GOVERNMENT OF PUERTO RICO
DEPARTMENT OF HOUSING

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COMMUNITY DEVELOPMENT BLOCK GRANT – DISASTER RECOVERY (CDBG-DR) / MITIGATION (CDBG-MIT)

AGREEMENT FOR
INCREASE CAPACITY PV SYSTEM, WATER STORAGE SYSTEM ACQUISITION, AND INSTALLATION SERVICES
FOR COMMUNITY ENERGY AND WATER RESILIENCE INSTALLATIONS PROGRAM (CEWRI)
BETWEEN THE
PUERTO RICO DEPARTMENT OF HOUSING
AND
FR-BLDM, LLC

PRDOH
REGISTERED
NOV 30 2022
2023-DR0052
CDBG-DR CONTRACT ADMINISTRATION

THIS AGREEMENT FOR INCREASE CAPACITY PV SYSTEM, WATER STORAGE SYSTEM ACQUISITION, AND INSTALLATION SERVICES (hereinafter referred to as "**Agreement**") is entered into in San Juan, Puerto Rico, this 29 of November, 2022, by and between the **PUERTO RICO DEPARTMENT OF HOUSING** (hereinafter, "**PRDOH**"), a public agency created under Law No. 97 of June 10, 1972, as amended, 3 L.P.R.A. § 441 *et seq.*, known as the "Department of Housing Governing Act" ("Organic Act") with principal offices at 606 Barbosa Avenue, San Juan, Puerto Rico, herein represented by William O. Rodríguez Rodríguez, attorney, of legal age, single, and resident of San Juan, Puerto Rico, in his capacity as Secretary; and **FR-BLDM, LLC** (hereinafter, "**CONTRACTOR**"), with principal offices in 1010 Harvard St., University Gardens, San Juan, Puerto Rico, 00927, herein represented by José M. Fullana-Morales, in his capacity as Managing Director, of legal age, married, and resident of San Juan, Puerto Rico, duly authorized by Resolution by the CONTRACTOR.

WHEREAS, on September 2017, Hurricanes Irma and María made landfall in Puerto Rico causing catastrophic island wide damage, knocking out power, water, and telecommunications for the entire island and its island municipalities. Hurricane María caused major structure and infrastructure damage to family homes, businesses and government facilities triggering the displacement of thousands of residents of the Island from their homes and jobs.

WHEREAS, under the Continuing Appropriations Act, 2018 and Supplemental Appropriations for Disaster Relief Requirements Act, 2017, signed into law September 8, 2017 (Pub. L. 115-56), $1.5 billion were allocated by the U.S. Department of Housing and Urban Development (HUD) for disaster recovery assistance to the Government of Puerto Rico under the CDBG-DR. These funds are intended to provide financial assistance to address unmet needs that arise and that are not covered by other sources of financial aid.

WHEREAS, on February 9, 2018, a Notice was published in the Federal Register, Vol. 83, No. 28 (83 FR 5844), that allocated $1.5 billion for disaster recovery assistance to the Government of Puerto Rico.

WHEREAS, under the Bipartisan Budget Act of 2018, signed into law February 9, 2018 (Pub. L. 115-123), an additional $8.22 billion were allocated by HUD for disaster recovery assistance to the Government of Puerto Rico under CDBG-DR.

WHEREAS, pursuant to a letter dated February 23, 2018 sent by the former Governor of Puerto Rico to the Secretary of HUD, the PRDOH is the governmental agency designated as grantee of the CDBG-DR funds allocated to the Government of Puerto Rico.

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WHEREAS, on August 14, 2018, a Notice was published in the Federal Register Vol. 83, No. 157, (83 FR 40314) that made an additional allocation to Puerto Rico of $8.22 billion for recovery. With these allocations of funding, the PRDOH aims to lead a transparent, comprehensive recovery to benefit the residents of Puerto Rico. PRDOH holds accountability and is committed to the responsible, efficient, and transparent administration of CDBG-DR grant funding.

WHEREAS, On September 20, 2018, the Governor of Puerto Rico and the Secretary of HUD signed the Grant Agreement.

WHEREAS, under the Further Additional Supplemental Appropriations Act for Disaster Relief Requirements Act, 2018, (Division B, Subdivision 1 of the Bipartisan Budget Act of 2018, Pub. L. 115–123, approved February 9, 2018), $8.285 billion were allocated by the U.S. Department of Housing and Urban Development (HUD) for mitigation activities and assistance to the Government of Puerto Rico under the Community Development Block Grant – Mitigation (CDBG-MIT) Program. These funds are intended to provide financial assistance in areas impacted by recent disasters. Moreover, CDBG-MIT funds represent a unique and significant opportunity for Puerto Rico to carry out strategic and high-impact activities to mitigate disaster risks and reduce future losses.

WHEREAS, on August 30, 2019, a Notice was published in the Federal Register, Vol. 84, No. 169, (84 Fed. Reg. 45838), which described the grant requirements and procedures applicable to future allocations of CDBG-MIT funds to the Government of Puerto Rico.

WHEREAS, on May 12, 2021, the PRDOH Secretary and the Secretary of HUD signed Grant Agreement Number B-18-DP-72-0002; allowing PRDOH access to $8,285,284,000 in CDBG-MIT funding, obligated under Pub. L. 115-123, as amended.

WHEREAS, the PRDOH is the government agency designated as grantee of the CDBG-MIT funds allocated to the Government of Puerto Rico.

WHEREAS, the PRDOH is interested in contracting a qualified vendor to assist PRDOH with Photovoltaic Systems (**PV Systems**) and Water Storage system acquisition and installation Services for the Community Energy and Water Resilience Installation (**CEWRI**) Program under the CDBG-DR Program. These activities are specifically intended for the equipment and installation of PV Systems and Water Storage systems or homes that have been repaired or reconstructed under the Home Repair, Reconstruction, or Relocation Program (**R3**) and Social Interest Housing Program (**SHI**). This firm will support PRDOH's objectives of ensuring compliance with all CDBG-DR/MIT, HUD and applicable federal and local requirements, rules and regulations, as well as in PRDOH's objectives of the Action Plan, as amended, and adequately coordinating and monitoring all CDBG-DR related activities.

WHEREAS, on January 21, 2022 the PRDOH issued an Invitation for Bid (**IFB**) No. CDBG-DR-IFB-2022-03 for "**Increase Capacity PV System, Water Storage System Acquisition, And Installation Services**" with CDBG-DR and CDBG-MIT funds. This request was placed through the CDBG-DR website and the "Registro Único de Subastas" ("**RUS**", by its Spanish acronym). Afterwards, PRDOH requested Quotations or Proposals from qualified Proposers therein registered. Through this procurement process, PRDOH was able to reach **twelve (12)** qualified firms listed for their capacity and experience with federal grants to deliver qualified services.

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WHEREAS, on March 18, 2022, the CONTRACTOR submitted a proposal (hereinafter referred to as the "Proposal"), which fully complied with the requirements set forth by the PRDOH.

WHEREAS, on August 23, 2022, **FR-BLDM, LLC** was chosen to perform the required services at a reasonable proposed cost to assist PRDOH in the Puerto Rico's recovery efforts according to the award criteria established in the IFB.

WHEREAS, the PRDOH desires to enter into an agreement with **FR-BLDM, LLC** to secure its services and accepts the CONTRACTOR's Proposal and costs, and the CONTRACTOR by its acceptance of the terms and conditions of this Agreement is ready, willing and able to provide the requested services contemplated under this Agreement.

NOW THEREFORE, in consideration of the mutual promises and the terms and conditions set forth herein, the PRDOH and the CONTRACTOR agree as follows:

I. TYPE OF CONTRACT

Contract Type: This is a unit and system price contract. Under this Agreement, CONTRACTOR shall submit monthly invoices to the PRDOH based on the Cost Form (**Attachment C**) and as the services are rendered. Any and all changes and/or modifications to this Agreement shall be in writing and must be signed by both parties.

Attachments Incorporated: The following attachments are incorporated into this Agreement by reference and are hereby made part of this Agreement:

Attachment A	Proposal
Attachment B	Scope of Work
Attachment C	Cost Form
Attachment D	Performance Requirements
Attachment E	Insurance Requirements
Attachment F	HUD General Provisions
Attachment G	Contractor Certification Requirement
Attachment H	Labor Agreement
Attachment I	HUD Form 4010 (English and Spanish version)
Attachment J	SAM Wage Determination
Attachment K	Non-Conflict of Interest Certification

All Attachments hereto are fully incorporated herewith such that the terms and conditions of the Attachments shall be as binding as any terms and conditions of this executed written Agreement. Should any inconsistency appear between the Attachments and this Agreement, the Agreement shall prevail.

II. TERM OF AGREEMENT

A. This Agreement shall be in effect and enforceable between the parties from the date of its execution. The Term of this Agreement will be for a performance period of **twenty-four (24) months**, ending on November, 29, 2024.

B. **Contract Extensions:** PRDOH may, at its sole discretion, extend the Agreement's term for **one (1)** additional term of **twelve (12) months**, or expressed in days, **three hundred sixty-five (365) days** upon mutual written agreement of the parties.

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C. The term of this Agreement shall not exceed the lifetime of the initial Grant Agreement between PRDOH and HUD, unless the term of the initial Grant Agreement is extended by HUD, in which case the Agreement shall not exceed said extended period.

III. SCOPE OF WORK

The CONTRACTOR will provide the services described in **Attachment B** of the Agreement. The parties agree that the CONTRACTOR shall furnish all permits, consents, licenses, equipment, software and supplies necessary to perform the Services, at CONTRACTOR's sole cost.

IV. COMPENSATION AND PAYMENT

A. The PRDOH agrees to pay the CONTRACTOR for allowable Services rendered under this Agreement in accordance with the rates and amounts described in **Attachment C** of this Agreement.

B. The PRDOH will pay the CONTRACTOR, for allowable services performed during the term of this Agreement, a maximum amount not to exceed **TWENTY-EIGHT MILLION SIX HUNDRED TWENTY THOUSAND ONE DOLLARS AND THIRTY-FIVE CENTS ($28,620,001.35)**; **Account Number: R02H14HER-DOH-LM 6090-01-000.**

C. Such payment shall be compensation for all allowable services required, performed and accepted under this Agreement included in **Attachment C** and **Attachment D.**

D. Any additional funds to complete the services requested by the PRDOH to the CONTRACTOR will be subject to evaluation before acceptance as well as funds availability and will require an amendment to this Agreement.

E. The CONTRACTOR shall submit an invoice to PRDOH on a monthly basis. Said invoice must be submitted including all required invoice supporting documents, including but not limited to monthly reports, timesheets, invoice and photos evidence, expense plan and/or work projections. If PRDOH determines that the submitted invoice and supporting documents are acceptable, then the invoice will be approved for payment.

F. The services rendered under the Agreement, shall be payable within forty-five (45) business days from the date the invoice is received and approved by a PRDOH representative for payment. If PRDOH raises any objections, PRDOH will return the invoice for corrections and the CONTRACTOR shall modify the invoice and return it within five (5) business days. Once the CONTRACTOR returns the modified invoice, the PRDOH shall resume and conclude the payment process within the next forty-five (45) business days.

G. An authorized representative of the PRDOH will review each invoice and, if adequate, will approve and process its payment. Payments to the CONTRACTOR shall be made by electronic funds transfer (EFT). PRDOH reserves the right to conduct any audits it deems necessary. The CONTRACTOR agrees to cooperate fully with any such audit or audits.

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H. While providing the services under this Agreement, the CONTRACTOR must adhere to applicable requirements of the CDBG-DR grant. If the CONTRACTOR performs ineligible activities under the CDBG-DR grant or program, the CONTRACTOR cannot include them in the invoice for payment to the CONTRACTOR.

I. CONTRACTOR shall be liable to the PRDOH for any costs disallowed pursuant to financial and/or compliance audit(s) of funds received under this Agreement. CONTRACTOR shall reimburse such disallowed costs from funds other than those CONTRACTOR received under this Agreement.

J. The CONTRACTOR acknowledges and agrees to repay any CDBG-DR funds used for ineligible costs.

K. Extended overhead costs is an Ineligible cost under this Agreement and shall not be reimbursable.

L. In order for the CONTRACTOR to receive payment for any work performed hereunder, the following certification must be included in each application for payment or invoice submitted to the PRDOH for payment:

> **"Under penalty of absolute nullity, I hereby certify that no public servant of the government entity is a party to or has an interest of any kind in the profits or benefits to be obtained under the contract which is the basis of this invoice, and should he be a party to, or have an interest in, the profits or benefits to be obtained under the contract, a waiver has been previously issued. The only consideration to provide the contracted goods or services under the contract is the payment agreed upon with the authorized representative of the government entity. The amount that appears in the invoice is fair and correct. The work has been performed, the goods have been delivered, and the services have been rendered, and no payment has been received therefor."**

V. REIMBURSABLE EXPENSES

The PRDOH will not reimburse any costs incurred by the CONTRACTOR not included in the approved Proposal or in an executed written amendment.

VI. ADDITIONAL SERVICES

Should additional services be needed by the PRDOH, such additional services shall be agreed upon by the parties in a written document signed by both parties, prior to the issuance of a notice to proceed with the performance of such additional services.

VII. OWNERSHIP AND USE OF DOCUMENTS

A. With the exception of the CONTRACTOR's working papers, the CONTRACTOR acknowledges the PRDOH's ownership of all information, drafts, documents, reports, papers, and other materials developed and prepared by the CONTRACTOR, its agents or representatives, for purposes of performing key obligations hereunder. In the event of any termination, the CONTRACTOR shall deliver such information, drafts, reports, papers and other materials to the PRDOH, in document form or as computer program data, and the CONTRACTOR recognizes the PRDOH's right to request such

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documentation or computer program data. If the CONTRACTOR fails to deliver said information, the PRDOH may seek a judicial order to enforce its rights.

B. Proof of expenditures incurred by the CONTRACTOR on behalf of PRDOH shall be made available to PRDOH. The CONTRACTOR agrees to maintain accurate records and files of all contract documents, correspondence, book estimates, bills, and other information related to the CONTRACTOR account. These documents shall be open for the PRDOH examination at all reasonable times during the term of this Agreement, and up to **five (5) years** from closeout of the grant to the state, or the period required by other local applicable laws and regulations.

VIII.DOCUMENTATION AND RECORKEEPING

A. **Records to be Maintained:** The CONTRACTOR shall maintain records of the state and units of general local government, including supporting documentation, which shall be retained for the greater of **five (5) years** from closeout of the grant to the state, or the period required by other local applicable laws and regulations. Such records include but are not limited to: Records providing a full description of each activity undertaken; Records demonstrating that each activity undertaken meets one of the National Objectives of the CDBG-DR ad CDBG-MIT program; Records required to determine the eligibility of activities; Records required to document the acquisition, improvement, use or disposition of real property acquired or improved with CDBG-DR assistance; Records documenting compliance with the fair housing and equal opportunity requirements of the CDBG-DR program regulations; Financial records as required by 24 C.F.R. § 570.506, and 2 C.F.R. part 200, including records necessary to demonstrate compliance with all applicable procurement requirements; and other records necessary to document compliance with this agreement, any other applicable Federal statutes and regulations, and the terms and conditions of PRDOH's Federal award.

B. **Access to Records:** The CONTRACTOR shall permit the PRDOH and auditors to have access to the CONTRACTOR's records and financial statements as necessary for the PRDOH to meet its audit requirements under the Federal award.

C. **Record Retention and Transmission of Records to the PRDOH:** Prior to close out of this Agreement, the CONTRACTOR must transmit to the PRDOH records sufficient for the PRDOH to demonstrate that all costs under this Agreement met the requirements of the Federal award.

D. **CONTRACTOR's Data and Privileged Information:** The CONTRACTOR is required to maintain confidential data demonstrating client eligibility for activities provided under this Agreement. Such data may include, but not be limited to, client name, address, income level or other basis for determining eligibility, and description of activities provided.

E. **PII Policy:** The CONTRACTOR must comply with the PRDOH CDBG-DR Personal Identifiable Information Policy, as found in the CDBG-DR Website (www.cdbg-dr.pr.gov), which is herein included and made integral part of this Agreement, as it may be updated from time to time.

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IX. ACCESS TO RECORDS

A. The CONTRACTOR agrees to provide the Government of Puerto Rico, PRDOH, HUD's Secretary, the Comptroller General of the United States, or any of their authorized representative's access to any books, documents, papers, and records of the CONTRACTOR which are directly pertinent to this Agreement for the purposes of making audits, examinations, excerpts, and transcriptions.

B. The CONTRACTOR agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

X. NON-DISCLOSURE AND CONFIDENTIALITY

A. Confidential Information; Definition: The term Confidential Information as used throughout this Section, means any information concerning PRDOH operations and that of its CONTRACTOR (e.g., the projects, computer processing systems, object and source codes and other PRDOH business and financial affairs). The term Confidential Information shall also deem to include all notes, analysis, compilation, studies and interpretation or other documents prepared by CONTRACTOR, its agents or representatives, in connection with PRDOH operations.

B. Non-Disclosure: CONTRACTOR agrees to take all reasonable steps or measures to keep confidential all Confidential Information and will not, at any time, present or future, without PRDOH express written authorization, signed by the Secretary of the PRDOH, use or sell, market or disclose any Confidential Information to any third party, contractor, corporation, or association for any purpose whatsoever. CONTRACTOR further agrees that, except as they relate to the normal course of the service, the CONTRACTOR will not make copies of the Confidential Information except upon PRDOH express written authorization, signed by an authorized representative of PRDOH, and will not remove any copy or sample of Confidential Information without prior written authorization from PRDOH. CONTRACTOR retains the right to control its work papers subject to these confidentiality provisions.

C. Return Documents: Upon receipt of written request from the PRDOH, CONTRACTOR will return to PRDOH all copies or samples of Confidential Information which, at the time of the notice are in CONTRACTOR's or its agent's possession. CONTRACTOR reserves the right to retain a set of its work papers.

D. Equitable Relief: The CONTRACTOR acknowledges and agrees that a breach of the provision of subparagraph B and C of this Section will cause PRDOH to suffer irreparable damage that could not be remedied or compensated adequately only by mere monetary retribution. The CONTRACTOR further agrees that money damages may not be a sufficient remedy for any breach of this Section. Accordingly, the CONTRACTOR agrees that PRDOH shall have the right to seek injunctive relief and the specific performance of the provisions of this Section to enjoin a breach or attempted breach of the provision hereof, such right being in addition to any and all other rights and remedies that are available to PRDOH by law, equity, or otherwise.

XI. PERFORMANCE WARRANTY

(a) CONTRACTOR warrants that it will perform all work and provide all Deliverables under this Contract in a manner consistent with the degree of care and skill

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ordinarily exercised by members of the same profession currently practicing under similar circumstances.

(b) CONTRACTOR warrants that all Deliverables it completes under this Contract shall: meet or exceed the standards of CONTRACTOR's trade, profession, or industry; meet or exceed the specifications set forth in the Attachments to this Agreement; and be fit for ordinary use, of good quality, and with no material defects.

(c) If CONTRACTOR submits Deliverables that do not meet specifications, fails to complete Deliverables timely, or fails to perform its obligation under this Contract, PRDOH may require CONTRACTOR, at its sole expense, to:

1. repair or replace Deliverables that do not meet specifications;
2. refund payment for Deliverables that do not meet specifications and accept the return of such Deliverables;
3. pay liquidated damages for any past due Deliverable; and
4. take necessary action to ensure that future performance and Deliverables meet specifications and conform to the Contract.

XII. TERMINATION

A. Termination for Cause or Default: The PRDOH may terminate this Agreement, in whole or in part, because of CONTRACTOR's failure to fulfill any of its obligations. The PRDOH shall terminate this Agreement by delivering to the CONTRACTOR a **thirty (30) calendar day** notice of termination specifying the extent to which the performance of the service under this Agreement is terminated, the reason therefor and the effective date of termination. CONTRACTOR shall, upon written notice, be provided a **ten (10) calendar day** opportunity to cure the alleged defect that resulted in the perceived default. If the defect is not cured within that period of time, CONTRACTOR shall immediately discontinue all such services being terminated and deliver to the PRDOH all information, notes, drafts, documents, analysis, reports, compilations, studies and other materials accumulated or generated in performing the services contemplated in this Agreement, whether completed or in process. Notwithstanding the above, the CONTRACTOR shall not be relieved of liability to the PRDOH for damage sustained to PRDOH CDBG-DR Program by virtue of any breach of the Agreement by the CONTRACTOR. The PRDOH may withhold any payments to the CONTRACTOR, for the purpose of off-set or partial payment, as the case may be, of amounts owed to the PRDOH by the CONTRACTOR. PRDOH shall make payment, in accordance with the terms of this Agreement, of any amounts due to CONTRACTOR for allowable services rendered prior to the termination notice.

B. Termination for Convenience: The PRDOH may terminate this Agreement, in whole or in part, whenever the PRDOH determines that such termination is necessary or convenient to the Agency. The PRDOH will terminate this Agreement by delivering to the CONTRACTOR a **thirty (30) calendar day** notice of termination specifying the extent to which the performance of the work under this Agreement is terminated, and the effective date of termination. Upon receipt of such notice, the CONTRACTOR shall immediately discontinue all services affected and deliver to the PRDOH all information, studies and other materials property of the PRDOH. In the event of a termination by Notice, the PRDOH shall be liable only for payment of services rendered up to and including the effective date of termination. PRDOH shall make payment, in accordance with the terms of this Agreement, of any amounts due to CONTRACTOR for allowable services rendered prior to the termination notice.

C. Termination by Unilateral Abandonment: The PRDOH will consider this Agreement immediately terminated, in the event that the CONTRACTOR unilaterally and without

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prior notice, chooses to abandon (in any shape, form or fashion) cease and desist in the specific performance of its general and particular duties and responsibilities as agreed in this Agreement. Upon the knowledge of such event, the PRDOH will not be held liable and will immediately, automatically and retroactively deduct from any future reimbursement, all funds from the day such unilateral abandonment took place. The PRDOH will not be compelled to continue the performance of the Agreement, should the CONTRACTOR breach the Agreement by unilateral abandonment. For the purposes of this Section, Abandonment shall mean that CONTRACTOR voluntarily and intentionally disavows its contractual duties in a manner that is overt and without question a relinquishment of said contractual duties.

D. **Unilateral Termination:** The PRDOH may terminate this Agreement, in whole or in part, at PRDOH's sole discretion, with or without cause, at any time. The PRDOH will terminate this Agreement by delivering to the CONTRACTOR a **thirty (30) calendar day** notice of termination specifying the extent to which the performance of the work under this Agreement is terminated, and the effective date of termination. Upon receipt of such notice, the CONTRACTOR shall immediately discontinue all services affected and deliver to the PRDOH all information, studies and other materials property of the PRDOH. In the event of a termination by Notice, the PRDOH shall be liable only for payment of services rendered up to and including the effective date of termination.

E. **Suspension:** The PRDOH may suspend this Agreement in whole or in part at any time for the PRDOH's convenience. The PRDOH shall give the CONTRACTOR **five (5) business days'** written notice of such suspension. Upon receipt of said notice the CONTRACTOR shall immediately discontinue all Services affected.

F. **Immediate Termination:** In the event the CONTRACTOR is subjected to a criminal or civil action, suit, proceeding, inquiry or court of applicable jurisdiction, or any governmental agency, or the CONTRACTOR shall be subject to an order, judgment, or opinion, issued by any federal or local authority, a court of applicable jurisdiction, or any governmental agency, in connection with the execution, delivery, and performance by the CONTRACTOR of this Agreement or the CONTRACTOR of this Agreement has been noncompliant, breach, inaccuracy of any representation, warranties, covenants, or the certifications provided herein, whether the noncompliance, breach or inaccuracy takes place before or after the execution of this Agreement, the PRDOH shall have the right to the immediate termination of this Agreement notwithstanding, any provisions to the contrary herein. This Section will apply in the event of any judgment that may obligate the PRDOH to terminate the Agreement pursuant to Act Number 2 of January 2, 2018, as amended, known as the Anti-Corruption Code for the New Puerto Rico.

G. **Period of Transition:** Upon termination of this Agreement, and for **ninety (90) consecutive calendar days** thereafter (the Transition Period), CONTRACTOR agrees to make himself available to assist the PRDOH with the transition of services assigned to CONTRACTOR by the PRDOH. CONTRACTOR shall provide to the PRDOH the assistance reasonably requested to facilitate the orderly transfer of responsibility for performance of the Services to the PRDOH or a third party designated by the PRDOH. PRDOH reserves the right to provide for the execution of a Transition Services Agreement for the Transition Period. In such instance, the CONTRACTOR will be paid at a reasonable, agreed upon, hourly rate for any work performed for the PRDOH during the Transition Period. Moreover, during that Transition Period, all finished or

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unfinished records (files, data, work product) connected with this Agreement will be turned over to PRDOH.

XIII. PENALTIES AND LIQUIDATED DAMAGES

A. Penalties

1. In the event the CONTRACTOR is determined to have engaged in any proscribed conduct or otherwise is in default as to any applicable term, condition, or requirement of this Agreement, at any time following the Effective Date of the Agreement, the CONTRACTOR agrees that, PRDOH may impose sanctions against the CONTRACTOR for any default in accordance with **Attachment B** and **Attachment D** and this Section. Refer to all required provisions set forth at 2 C.F.R. § 200.326 and 24 C.F.R. § 570.489(g), if applicable, and the Contract and Subrecipient Agreement Manual , Section 2, Subsection 2.4.1(a), as found in the CDBG-DR Website (www.cdbg-dr.pr.gov) which is herein included and made integral part of this Agreement, as it may be updated from time to time.

2. If the CONTRACTOR fails to comply with federal statutes, regulations or the terms and conditions of the Agreement, PRDOH may take one or more of the following actions:

    i. Temporarily withhold cash payments pending correction of the deficiency by the CONTRACTOR.
    ii. Disallow all or part of the cost of the activity or action not in compliance.
    iii. Initiate suspension or debarment proceedings as authorized under 2 C.F.R. part 180.
    iv. Withhold further Federal awards for the project or program.
    v. Take other remedies that may be legally available.

B. Liquidated damages

The CONTRACTOR shall pay to PRDOH, as liquidated damages, as related to their timeframes of performance. The PRDOH and the CONTRACTOR will agree on the timetable for the deliverable of each task. The CONTRACTOR shall pay to PRDOH, as liquidated damages, the amount stablished below for each calendar day that a deliverable required is late until deemed in compliance subject to a maximum of amount as stablished below.

Type of Work	**Liquidated Damages for each calendar day**	**Maximum Amount of Liquidated Damages per occurrence, deliverable and task.**
PV System Equipment, Installation, and related services	$500.00	$5,000.00
WSS Equipment, Installation, and related services	$100.00	$1,000.00

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Said sum, in view of the difficulty of accurately ascertaining the loss which PRDOH will suffer by reason of delay in the completion of the Work hereunder, is hereby fixed and agreed as the liquidated damages that PRDOH will suffer by reason of such delay. Liquidated damages received hereunder are not intended to be nor shall they be treated as either a partial or full waiver or discharge of the PRDOH's right to indemnification, or the CONTRACTOR's obligation to indemnify the PRDOH pursuant to this Contract, or to any other remedy provided for in this Contract or by Law. Liquidated damages may be assessed at the sole discretion of PRDOH. For the purpose of applying and calculating such liquidated damages, a grace period of **ten (10) business days** shall be observed. The PRDOH may deduct and retain out of the monies which may become due hereunder, the amount of any such liquidated damages; and in case the amount which may become due hereunder shall be less than the amount of liquidated damages due to the PRDOH per the formula above, the CONTRACTOR shall be liable to pay the difference.

XIV. LIABILITY

In no event, the PRDOH shall be liable for any indirect, incidental, special or consequential damages, or damages for loss of profits, revenue, data or use, incurred by either party or any third party, whether in an action in contract or tort, even if the other party or any person has been advised of the possibility of such damages. Third parties operating under this program, with their agency, will have their own general civil and criminal liability imposed by law towards the PRDOH, the CONTRACTOR and any citizen.

The CONTRACTOR shall carry the insurances as are required by law (if applicable), as set forth below. The CONTRACTOR shall furnish PRDOH certificates of insurance.

XV. INSURANCE

A. Required Coverage

The CONTRACTOR shall keep in force and effect for the period beginning from the execution of the Agreement and ending at the completion of all services to be provided hereunder, insurance policies in compliance with the Insurance Requirements, attached hereto and made an integral part hereof as **Attachment E**. The CONTRACTOR shall meet all other insurance requirements as may be imposed by PRDOH from time to time.

PRDOH will execute this Agreement conditioned to the submission, within thirty (**30**) days of the signing of this Agreement, of the following insurance policies:

- State Insurance Fund
- Commercial General Liability
- Auto Liability
- Professional Liability
- Umbrella
- Employment Practices Liability
- Pollution
- Builder's Risk
- Payment & Performance Bond

Failure to comply with the submission of the aforementioned insurance may result in the termination of the Agreement.

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Upon the execution of this Agreement, the CONTRACTOR shall furnish PRDOH with original and two (2) certified copies of the insurance policies described in **Attachment E** and any other evidence PRDOH may request as to the policies' full force and effect.

Any deductible amount, under any of the policies, will be assumed in whole by the CONTRACTOR for any and all losses, claims, expenses, suits, damages, costs, demands or liabilities, joint and several of whatever kind and nature arising from the Agreement resulting from this solicitation by and between the CONTRACTOR and PRDOH.

The PRDOH shall not be held responsible under any circumstances for payments of any nature regarding deductibles of any Commercial Liability Policies for the aforementioned Agreement.

B. Endorsements

Each insurance policy maintained by the CONTRACTOR must be endorsed as follows:

1. PRDOH, Government of Puerto Rico, HUD and its officers, agents and employees are named as additional insured (except Worker's Compensation) but only with respect to liability arising out of tasks performed for such insured by or on behalf of the named insured.

2. To provide waiver of subrogation coverage for all insurance policies provided or herein in favor of PRDOH and its respective officers, agents and employees.

3. The insurer shall be required to give PRDOH written notice at least **thirty (30) days** in advance of any cancellation in any such policies.

The CONTRACTOR shall furnish to PRDOH, prior to commencement of the work, certificates of insurance from insurers with a rating by the A.M. Best Co. of B+ and five (5) or over on all policies, reflecting policies in force, and shall also provide certificates evidencing all renewals of such policies. Insurers shall retain an A.M. Best Co. rating of B+ and five (5) or over on all policies throughout the term of this Agreement and all policy periods required herein. The insurance company must be authorized to do business in Puerto Rico and be in good standing.

C. Related Requirements

The CONTRACTOR shall furnish original Certificates of Insurance evidencing the required coverage to be in force on the Effective Date of Agreement. In the case of Payment and Performance Bond, Certificate of Authority, Power of Attorney and Power of Attorney License issued by the Commissioner of Insurance shall be furnished. THE REQUIRED DOCUMENTATION MUST BE RECEIVED PRIOR TO THE CONTRATOR COMMENCING WORK. NO CONTRACTOR OR ITS AUTHORIZED REPRESENTATIVES ARE TO BEGIN THEIR RESPONSIBILITIES UNDER THE AGREEMENT PRIOR TO FULL COMPLIANCE WITH THIS REQUIREMENT AND NOTIFICATION FROM PRDOH TO PROCEED.

Renewal Certificates of Insurance or such similar evidence is to be received by the Contract Administration of the Legal Division and/or the Finance area of the CDBG-DR and CDBG-MIT program prior to expiration of insurance coverage. At PRDOH's option, non-compliance will result in one or more of the following actions: (1) The PRDOH will purchase insurance on behalf of the CONTRACTOR and will charge back all cost to the

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CONTRACTOR; (2) all payments due the CONTRACTOR will be held until the CONTRACTOR has complied with the Agreement; and/or (3) The CONTRACTOR will be assessed **Five Thousand Dollars ($5,000.00) for every day of non-compliance.**

The receipt of any certificate does not constitute agreement by PRDOH that the insurance requirements in the Agreement have been fully met or that the insurance policies indicated on the certificate are in compliance with the requirements of the Agreement. The insurance policies shall provide for **thirty (30) days** written notice to be given to PRDOH in the event coverage is substantially changed, cancelled or non-renewed.

The CONTRACTOR shall require all subcontractors or consultants to carry the insurance required herein or the CONTRACTOR, may provide the coverage for any or all of its subcontractors and if so, the evidence of insurance submitted shall so stipulate and adhere to the same requirements and conditions as outlined above.

The CONTRACTOR expressly understands and agrees that whenever the CONTRACTOR is covered by other primary, excess, or excess contingent insurance that, any insurance or self-insurance program maintained by PRDOH shall apply in excess of and will not contribute with insurance provided by the CONTRACTOR under this Agreement.

XVI. HOLD HARMLESS

The CONTRACTOR and its affiliates, its successors and assignees will indemnify the PRDOH from any damages and/or losses arising out of any breach of this Agreement by the CONTRACTOR or against personal injuries or property damage resulting from any act of negligence or omission by the CONTRACTOR and its affiliates in connection with this Agreement.

XVII. FORCE MAJEURE

In the event of a fire, flood, earthquake, natural disaster, hurricane, riot, act of governmental authority in its sovereign capacity, pandemic officially declared by the Government of Puerto Rico, strike, labor dispute or unrest, embargo, war, insurrection or civil unrest, any *Force Majeure* including inclement weather, herein collectively referred to as *Force Majeure* during the term of this Agreement, neither the PRDOH nor the CONTRACTOR shall be liable to the other party for nonperformance during the conditions created by such event.

The CONTRACTOR shall notify, as soon as possible, the PRDOH of the occurrence of the *Force Majeure* event and describe in reasonable detail, the nature of the *Force Majeure* event.

XVIII. CONFLICTS OF INTEREST

The CONTRACTOR shall comply with the ethics requirements set forth herein and warrant that to the best of its knowledge and belief and except as otherwise disclosed, it does not have any organizational conflict of interest which is defined as a situation in which the nature of the work under a PRDOH contract and CONTRACTOR'S organizational, financial, contractual or other interest are such that:

a) Award of the Agreement may result in an unfair competitive advantage; or
b) The CONTRACTOR's objectivity in performing the contract work may be

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impaired.

The CONTRACTOR agrees that if after award he or she discovers an organizational conflict of interest with respect to this Agreement, it shall make an immediate (within the next **seventy-two (72) hours**) and full disclosure in writing to the Contracting Officer, which shall include a description of the action, which the CONTRACTOR has taken or intends to take to eliminate or neutralize the conflict. The CONTRACTOR will disclose the details of any existing or future contract to provide services to third parties participating or for the purpose to participate in disaster recovery programs or projects in Puerto Rico. The PRDOH may, however, terminate the Agreement for the convenience of PRDOH if it would be in its best interest.

In the event the CONTRACTOR was aware of an organizational conflict of interest before the award of this Agreement and did not disclose the conflict to the Contracting Officer, the PRDOH may terminate the Agreement for default.

The provisions of this clause shall be included in all subcontracts and/or consulting agreements wherein the work to be performed is similar to the services provided by the CONTRACTOR. The CONTRACTOR shall include in such subcontracts and consulting agreements any necessary provision to eliminate or neutralize conflicts of interest.

XIX. INDEPENDENT CONTRACTOR

The relationship of the CONTRACTOR to PRDOH shall be that of an independent CONTRACTOR rendering professional services. Neither the CONTRACTOR nor any personnel of the CONTRACTOR shall have any authority to execute contracts or make commitments on behalf of PRDOH. Nothing contained herein shall be deemed to create the relationship of employer/employee, principal/agent, joint venture or partner between the CONTRACTOR and PRDOH. Further, the CONTRACTOR recognizes that in view of its status as an independent CONTRACTOR, neither it nor its employees or subcontractors will be entitled to participate in or receive any fringe benefits normally granted to PRDOH employees under such programs, including, but not limited to, worker's compensation, voluntary disability, travel accident insurance, medical/dental insurance, life insurance, long-term disability, holiday pay, sick pay, salary continuation pay, leaves of absence (paid or unpaid), pension plan and savings plan.

The CONTRACTOR shall have exclusive control over its employees and subcontractors (and the CONTRACTOR's employees and subcontractors are herein, collectively, referred to as the "CONTRACTOR Personnel"), its labor and employee relations and its policies relating to wages, hours, working conditions and other employment conditions. The CONTRACTOR has the exclusive right to hire, transfer, suspend, lay off, recall, promote, discipline, discharge and adjust grievances with its CONTRACTOR Personnel. The CONTRACTOR is solely responsible for all salaries and other compensation of its CONTRACTOR Personnel who provide Services.

The CONTRACTOR is solely responsible for making all deductions and withholdings from its employees' salaries and other compensation and paying all contributions, taxes and assessments, including union payments. The CONTRACTOR shall be responsible for and shall defend, indemnify and hold harmless PRDOH, and its agents, officers, directors, employees, representatives, CONTRACTOR's, successors and assigns against all costs, expenses and liabilities, including without limitation reasonably prudent attorneys' fees relative to the situation, in connection with the CONTRACTOR's employment and/or hiring of any CONTRACTOR Personnel providing any of the Services, including without

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limitation: (i) payment when due of wages and benefits, (ii) withholding of all payroll taxes, including but not limited to, unemployment insurance, workers' compensation, FICA and FUTA, (iii) compliance with the Immigration Reform Control Act, and (iv) compliance with any other applicable laws relating to employment of any CONTRACTOR Personnel of, and/or hiring by, CONTRACTOR in connection with the Services.

XX. NOTICES

All notices required or permitted to be given under the Agreement shall be in writing, and shall be deemed given when delivered by hand or sent by registered or certified mail, return receipt requested, to the address as follows:

To: PRDOH	William O. Rodríguez Rodríguez, Esq. Secretary Puerto Rico Department of Housing 606 Barbosa Ave. Juan C. Cordero Dávila Bldg. San Juan, PR 00918
To: CONTRACTOR	José M. Fullana-Morales Managing Director FR-BLDM, LLC P.O. Box 9932 San Juan, PR 00908-9932

XXI. THIRD PARTIES

Nothing contained in this Agreement shall create a contractual relationship with, or a cause of action of a third party against either the PRDOH or the CONTRACTOR.

XXII. SUBCONTRACTS

A. **General:** All subcontracts shall contain the applicable provisions described in **Attachment F** (HUD General Provisions), as well as applicable provisions set forth in 2 C.F.R. § 200.101. The PRDOH shall review subcontracts as part of the compliance, monitoring, and oversight process performed by PRDOH or upon request.

B. **Specific Requirements:** All subcontracts shall contain provisions specifying:
   i. That the work performed by the subcontractor be in accordance with the applicable terms of this Agreement between the PRDOH and CONTRACTOR;
   ii. That nothing contained in such subcontract agreement shall impair the rights of the PRDOH;
   iii. That nothing contained herein, or under this Agreement will create any contractual relation between the subcontractor and the PRDOH;
   iv. That the subcontractor specifically agrees to be bound by the confidentiality provision regarding Personal Identifiable Information set forth in this Agreement;
   v. That CONTRACTOR will be responsible for ensuring all subcontract work is performed consistent with federal and state regulations and/or policies to be eligible for reimbursement of the approved work; and

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vi. All Federal flow down provisions are included in the subcontract agreement per Federal guidelines.

C. **Monitoring:** CONTRACTOR shall diligently monitor all subcontracted services. If CONTRACTOR discovers any areas of noncompliance, CONTRACTOR shall provide the PRDOH summarized written reports supported with documented evidence of corrective action.

D. **Content:** CONTRACTOR shall cause all the applicable provisions of this Agreement to be included in, and made a part of, any subcontract executed in the performance of this Agreement.

E. **Notification:** CONTRACTOR shall notify and provide a copy of any and all subcontracts related to this Agreement and CDBG-DR and CDBG-MIT funds to the Contract Administration Area of the PRDOH CDBG-DR Legal Division within **three (3) business days** of its execution.

XXIII. CERTIFICATION OF COMPLIANCE WITH LEGAL REQUIREMENTS

Given that the Agreement involves funds for which HUD is the oversight agency, the CONTRACTOR agrees to carry out its obligations under this Agreement in compliance with all the requirements described in **Attachment F** (HUD General Provisions), **Attachment G** (Contractor Certification Requirement) and the following provisions:

A. **Compliance with Executive Order No. OE-2022-014**: The CONTRACTOR agrees to faithfully comply with the provisions of the Executive Order No. OE-2022-014 of February 20, 2022 (OE-2022-014), the Labor Project Agreement[1] signed by the PRDOH and the Contractor (**Attachment H**).

The CONTRACTOR will provide a minimum salary of fifteen dollars ($15.00) per hour to skilled construction workers and eleven dollars ($11.00) to un-skilled construction workers, for the work performed within the "Construction Project ", as defined in the OE-2022-014.

The CONTRACTOR commits to acquire and use cement produced in Puerto Rico in compliance with Act No. 109 of July 12, 1985 for the completion of the "Construction Project". The CONTRACTOR acknowledges that this is an essential condition of this Agreement whose breach by itself, or by any subcontractor, will release PRDOH from disburse funds for any part or section of the "Construction Project" completed in non-compliance with OE-2022-014. In addition, the CONTRACTOR recognizes that non-compliance with this clause could lead to cancellation, without more, of this Agreement.

The CONTRACTOR shall include in any awarded contract to perform the work on behalf of the PRDOH, a clause in which obligate the subcontractor to comply with all provisions of OE-2022-014 (including the provisions concerning the acquisition of cement produced in Puerto Rico and the minimum compensation for workers who work within the "Construction Project"), the Labor Project Agreement signed between the PRDOH and the Contractor, as well as any other document issued pursuant to OE-2022-014.

[1] The OE 2022-014 implements a pilot program for the incorporation of the Labor Agreements. The Secretary of Labor has to issue a new Labor Agreement in compliance with OE-2022-014. Until such agreement has been issued, the Labor Agreement under Executive Order No. OE-2018-033 remains in effect.

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Similarly, the clause to be included by the CONTRACTOR must provide for any subcontractor to include a similar compliance clause in any subcontract that provides for the release of its obligation before the CONTRACTOR.

B. **Compliance with Act No. 173.** The CONTRACTOR hereby certifies that in signing this Agreement it is in compliance with Act No. 173 of August 12, 1988, as amended, known as the "Board of Examiners of Engineers, Architects, Surveyors, and Landscape Architects of Puerto Rico Act", 20 L.P.R.A. §§ 711-711z to exercise the profession of engineering, architecture, surveying or landscaping architecture in Puerto Rico, is registered in the official Register of the Board, and is an active member of the College of Engineers and Surveyors of Puerto Rico or the College of Architects and Landscape Architects of Puerto Rico, as applicable.

C. **Compliance with Executive Order 24:** Pursuant to Executive Order 24 of June 18, 1991, the CONTRACTOR certifies and guarantees that at the signing of this Agreement it has filed all the necessary and required income tax returns to the Government of Puerto Rico for the last **five (5) years.** The CONTRACTOR further certifies that it has complied and is current with the payment of any and all income taxes that are, or were due, to the Government of Puerto Rico. The CONTRACTOR shall hand out, to the satisfaction of the PRDOH and whenever requested by the PRDOH during the term of this Agreement, the necessary documentation to support its compliance of this clause. The CONTRACTOR will be given a specific amount of time by the PRDOH to produce said documents. During the term of this Agreement, the CONTRACTOR agrees to pay and/or to remain current with any repayment plan agreed to by the CONTRACTOR with the Government of Puerto Rico.

D. **Compliance with Executive Order 52:** Pursuant to Executive Order 52 of August 28, 1992, amending EO-1991-24, the CONTRACTOR certifies and warrants that it has made all payments required for unemployment benefits, workmen's compensation and social security for chauffeurs, whichever is applicable, or that in lieu thereof, has subscribed a payment plan in connection with any such unpaid items and is in full compliance with the terms thereof. The CONTRACTOR accepts and acknowledges its responsibility for requiring and obtaining a similar warranty and certification from each and every CONTRACTOR and subcontractor whose service the CONTRACTOR has secured in connection with the services to be rendered under this Agreement and shall forward evidence to PRDOH as to its compliance with this requirement.

E. **Social Security and Income Tax Retentions:** The CONTRACTOR will be responsible for rendering and paying the Federal Social Security and Income Tax Contributions for any amount owed as a result of the income from this Agreement.

F. **Government of Puerto Rico Municipal Tax Collection Center (*CRIM, for its Spanish acronym*):** The CONTRACTOR certifies and guarantees that at the signing of this Agreement it has no current debt with regards to property taxes that may be registered with the Government of Puerto Rico's Municipal Tax Collection Center. The CONTRACTOR further certifies to be current with the payment of any and all property taxes that are or were due to the Government of Puerto Rico. The CONTRACTOR shall hand out, to the satisfaction of the PRDOH and whenever requested by the PRDOH during the term of this Agreement, the necessary documentation to support its compliance of this clause. The CONTRACTOR will deliver upon request any documentation requested under this clause as per request of PRDOH. During the Term of this Agreement, the CONTRACTOR agrees to pay and/or to remain current with

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any repayment plan agreed to by the CONTRACTOR with the Government of Puerto Rico with regards to its property taxes.

G. **Income Tax Withholding:** The PRDOH shall retain the corresponding amount from all payments made to the CONTRACTOR, as required by the Puerto Rico Internal Revenue Code. The PRDOH will advance such withholdings to the Government of Puerto Rico's Treasury Department (known in Spanish as *Departamento de Hacienda del Gobierno de Puerto Rico*). The PRDOH will adjust such withholdings provided the CONTRACTOR produces satisfactory evidence of partial or total exemption from withholding.

H. **Compliance with Act No. 45 of April 18, 1935, as amended, 11 L.P.R.A. § 1, *et seq.*:** The CONTRACTOR certifies and guarantees that at the signing of this Agreement has valid insurance issued by the State Insurance Fund Corporation (CFSE, for its Spanish Acronym), as established by Act No. 45, *supra*, known as the "Puerto Rico Workers' Accident Compensation Act".

I. **Government of Puerto Rico's Agency for the Collection of Child Support (*ASUME, for its Spanish acronym*):** The CONTRACTOR certifies and guarantees that at the signing of this Agreement that the CONTRACTOR nor any of its Partners, if applicable, have any debt or outstanding debt collection legal procedures with regards to child support payments that may be registered with the Government of Puerto Rico's Child Support Administration. The CONTRACTOR hereby certifies that it is a limited liability company organized and existing in good standing under the laws of the Government of Puerto Rico. The CONTRACTOR shall present, to the satisfaction of PRDOH, the necessary documentation to substantiate the same. The CONTRACTOR will be given a specific amount of time by PRDOH to deliver said documents.

J. **Compliance with Act No. 168-2000, as amended, 8 L.P.R.A. § 711, *et seq.*:** The CONTRACTOR is in full compliance with Act No. 168-2000, as amended, known as "Act for the Improvement of Elderly Support of Puerto Rico."

K. **Compliance with Act No. 1-2012, as amended, 3 L.P.R.A. § 1854, *et seq.*:** The PRDOH and the CONTRACTOR hereby certify that in signing this Agreement they are in compliance with Act No. 1-2012, as amended, known as "Puerto Rico Government Ethics Act of 2011", in connection with the possibility of a conflict of interest.

L. **Clause of Governmental Ethics Certification of Absence of Conflict of Interests** - The CONTRACTOR certifies that: (1) No public servant of this executive agency has a pecuniary interest in this contract, purchase or commercial transaction. (2) No public servant of this executive agency has requested me or accepted from me, directly or indirectly, for him (her), for any member of his family unit or for any person, gifts, bonuses, favors, services, donations, loans or anything else of monetary value. (3) No public servant (s) requested or accepted any good of economic value, linked to this transaction, from any person of my entity as payment for performing the duties and responsibilities of their employment. (4) No public servant has requested from me, directly or indirectly, for him (her), for any member of her family unit, or for any other person, business or entity, some of economic value, including gifts, loans, promises, favors or services in exchange for the performance of said public servant is influenced in my favor or of my entity. (5) I have no kinship relationship, within the fourth degree of consanguinity and second by affinity, with any public servant who has the power to influence and participate in the institutional decisions of this executive agency.

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M. Ethics. CONTRACTOR also acknowledges receipt and agrees to obey with the Anticorruption Code for the New Puerto Rico known in Spanish as "Código Anticorrupción para el Nuevo Puerto Rico".

N. Non-Conviction. The CONTRACTOR certifies that it has not been convicted nor accused of a felony or misdemeanor against the government, public faith and function, or that involves public property or funds, either federal or local in origin. Furthermore, CONTRACTOR also certifies that:

1. It has not been convicted, nor has pleaded guilty at a state or federal bar, in any jurisdiction of the United States of America, of crimes consisting of fraud, embezzlement or misappropriation of public funds, as stated in Act Number 2 of January 2, 2018, as amended, known as the Anti-Corruption Code for the New Puerto Rico, which prohibits the award of Offers or government contracts to those convicted of fraud, misappropriation of public fund.

2. It understands and accepts that any guilty plea or conviction for any of the crimes specified in Article 3 of said Act, will also result in the immediate cancellation of any contracts in force at the time of conviction, between the undersigned and whichever Government Agencies, Instrumentalities, Public Corporations, Municipalities and the Legislative or Judicial Branches.

3. It declares under oath the above mentioned in conformity with what is established as in Act Number 2 of January 2, 2018, as amended, known as the Anti-Corruption Code for the New Puerto Rico, which prohibits awarding Offers for government contracts, to those convicted of fraud, embezzlement or misappropriation of publics funds.

4. The CONTRACTOR represents and guarantees that none of its employees, officials or agents have been convicted of a felony or misdemeanor as described in this sub-section. Moreover, the CONTRACTOR agrees to notify PRDOH should any employee, official, or agent is convicted of a felony or misdemeanor as described in this sub-section after the date of this Agreement. Said notice shall be made within **ten (10) business days** from the time of the conviction.

O. Other payments or compensation: The CONTRACTOR certifies that it does not receive payment or compensation for regular services rendered as an official or public employee to another government entity, agency, public corporation or municipality, and knows the ethical standards of his profession and assumes responsibility for his actions.

P. Consequences of Non-Compliance: The CONTRACTOR expressly agrees that the conditions outlined throughout this Section are essential requirements of this Agreement; thus, should any one of these representations, warrants, and certifications be incorrect, inaccurate or misleading, in whole or in part, there shall be sufficient cause for PRDOH to render this Agreement null and void and the CONTRACTOR reimburse to PRDOH all moneys received under this Agreement.

Q. Non-Conflict of Interest Certification: The CONTRACTOR shall comply with **Attachment K** (Non-Conflict of Interest Certification), attached herein and made an integral part of this Agreement, which outlines several situations that may reasonably be considered as conflicts of interest. The aforementioned certification aids PRDOH, in its

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role as grantee, to identify, evaluate, disclose and manage apparent potential, or actual conflicts of interest related to CDBG-DR and CDBG-MIT funded projects, activities, and/or operations.

XXIV. ACT NO. 18 OF OCTOBER 30, 1975, as amended, 2 L.P.R.A. secs. 97-98

The parties to this Agreement agree that its effective date will be subject to the due registration and remittance to the Office of the Comptroller of Puerto Rico. No rendering or consideration subject matter of this Agreement will be required before its registration at the Office of the Comptroller of Puerto Rico pursuant to Act No. 18 of October 30, 1975, as amended. The CONTRACTOR will be responsible for ensuring that this Agreement has been registered before the rendering of services by requesting a copy of the registered Agreement with its proper number and date of registry. No services under this Agreement will continue to be delivered after its effective date unless at the expiration date, an amendment signed by both parties and duly registered exists. No services performed in violation of this provision will be paid. The party violating this clause will be doing so without any legal authority, this action will be deemed as *ultra vires*.

XXV. MEMORANDUM NO. 2021-003; CIRCULAR LETTER 001-2021 OF THE OFFICE OF THE CHIEF OF STAFF OF THE GOVERNOR (SECRETARÍA DE LA GOBERNACIÓN) & THE OFFICE OF MANAGEMENT AND BUDGET (OFICINA DE GERENCIA Y PRESUPUESTO)

A. **Interagency Services Clause:** Both contracting parties acknowledge and agree that services retained may be provided to any entity of the Executive Branch with which the contracting entity makes an interagency agreement or by direct provision of the Office of the Chief of Staff of the Governor (*Secretaría de la Gobernación*). These services will be performed under the same terms and conditions in terms of hours of work and compensation set forth in this Agreement. For purposes of this clause, the term "Executive Branch entity" includes all agencies of the Government of Puerto Rico, as well as public instrumentalities and corporations and the Office of the Governor.

B. **Termination Clause:** The Chief of Staff (*Secretario de la Gobernación*) of the Governor shall have the power to terminate this Agreement at any time.

C. **Contract Review Policy of the Financial Supervision and Administration Board for Puerto Rico:** The parties acknowledge that the contractor has submitted the certification entitled "Contractor Certification Requirement" required in accordance with the Contract Review Policy of the Financial Oversight and Management Board (FOMB) for Puerto Rico, effective as of November 6, 2017 as amended on October 30, 2020, signed by the Contractor's Executive Director (or another official with an equivalent position or authority to issue such certifications). A signed copy of the "Contractor's Certification Requirement" is included as **Attachment G** to this contract.

XXVI. MEMORANDUM NO. 2021-029; CIRCULAR LETTER NO. 013-2021 OF THE OFFICE OF THE CHIEF OF STAFF OF THE GOVERNOR (SECRETARÍA DE LA GOBERNACIÓN) & THE OFFICE OF MANAGEMENT AND BUDGET (OFICINA DE GERENCIA Y PRESUPUESTO):

A. The PRDOH certifies that the CONTRACTOR was selected as the provider of the services described in this agreement, pursuant to OE 2021-029.

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B. The Parties certify that they acknowledge the provisions stated in OE 2021-029 and CC 013-2021. Any failure to comply with the requirements set forth in OE 2021-029 and CC 013-2021 will result in the termination of this agreement.

C. The CONTRACTOR certifies that it has informed PRDOH of any current contractual relationship with any government entities of the Government of Puerto Rico. The CONTRACTOR certifies that said entities are all the entities of the Government of Puerto Rico with which they maintain a contractual relationship. In addition, the CONTRACTOR recognizes and accepts that omitting any information regarding any current contractual relationship with any governmental entity could result in the termination of this agreement if so required by PRDOH.

D. The CONTRACTOR certifies that it has informed the PRDOH whether or not the entity is a public corporation whose shares are exchanged in a stock exchange properly regulated. In the event that the CONTRACTOR certifies that it is not a public corporation that exchanges shares in a stock change, the CONTRACTOR certifies it has completed the applicable certification as stated in CC-013-2021.

XXVII. FINANCIAL OVERSIGHT AND MANAGEMENT BOARD FOR PUERTO RICO (FOMB) POLICY: REVIEW OF CONTRACTS, AS MODIFIED ON APRIL 30,2021, REGARDING PROFESSIONAL SERVICES

The FOMB Policy requires that all agreements that contemplate recurring professional services that may be performed by appropriately trained government staff include a provision of compliance with the adequate transfer of skills and technical knowledge to the pertinent public sector personnel. This requirement shall not apply to contracts which contemplate non-recurring professional services or specialized professional services that may not be performed by existing staff at the applicable governmental entity, including as a result of independence requirements.

Accordingly, given that the agreements under CDBG-DR are non-recurring professional services or specialized professional services, the PRDOH certifies that the transfer of skills and technical knowledge required by the Certified Fiscal Plan is inapplicable given the non-recurring or specialized nature of the contracted services.

As mentioned before, HUD allocated funds for disaster recovery assistance to the Government of Puerto Rico under the CDBG-DR Program. These funds are intended to provide financial assistance to address unmet needs that arise and that are not covered by other sources of financial aid. In addition, with these allocations of funding under the Grant Agreement, the PRDOH will conduct a comprehensive recovery to benefit the residents of Puerto Rico.

XXVIII. COMPLIANCE WITH THE FINANCIAL OVERSIGHT AND MANAGEMENT BOARD FOR PUERTO RICO (FOMB) POLICY, REVIEW OF CONTRACTS

As part of the PRDOH contract process, and pursuant to Section 204(b)(2) of the "Puerto Rico Oversight, Management, and Economic Stability Act," 48 U.S.C. §2101, et seq., also known as "PROMESA", the Financial Oversight and Management Board for Puerto Rico (FOMB) require approval of certain contracts and amendments to assure that they "promote market competition" and "are not inconsistent with the approved fiscal plan." For the approval process, the FOMB requests, among other information, the Contractor Certification Requirement for its evaluation.

In compliance with the above, the CONTRACTOR represents and warrants that the information included in the Contractor Certification Requirement is complete, accurate

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and correct, and that any misrepresentation, inaccuracy of falseness in such Certification will render the contract null and void and CONTRACTOR will have the obligation to reimburse immediately to the Commonwealth any amounts, payments or benefits received from the Commonwealth under the proposed Amendment and original Agreement.

XXIX. COMPLIANCE WITH FEDERAL LAW, REGULATIONS, & EXECUTIVE ORDERS

The CONTRACTOR acknowledges that HUD financial assistance will be used to fund the Agreement only. Also, the CONTRACTOR shall comply with all applicable Federal, state and local laws, rules, regulations, and policies relating to CDBG-DR and CDBG Program services. This includes without limitation, applicable Federal Registers; 2 C.F.R. part 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards; Housing and Community Development Act of 1974; 24 C.F.R. part 570 Community Development Block Grant; applicable waivers; Fair Housing Act, 24 C.F.R. Part 35, 24 C.F.R. Part 58, 24 C.F.R. Part 135; National Historic Preservation Act, and any other applicable state laws or regulations, including the requirements related to nondiscrimination, labor standards, and the environment; and Action Plan amendments and HUD's guidance on the funds. Also, CONTRACTOR shall comply, without limitation, those set forth in **Attachment F** and in compliance with all the requirements described in **Attachment G.**

XXX. FEDERAL LAWS AND REGULATIONS APPLICABLE TO CONSTRUCTION CONTRACTS

A. COPELAND "ANTI-KICKBACK" ACT

Salaries of personnel performing work under this Agreement shall be paid unconditionally and not less often than once a month without payroll deduction or rebate on any account except only such payroll deductions as are mandatory by law or permitted by the applicable regulations issued by the Secretary of Labor pursuant to the Copeland "Anti-Kickback Act" of June 13, 1934 (48 Stat. 948; 62 Stat. 740; 63 Stat. 108; Title 18 U.S.C. § 874; and Title 40 U.S.C. § 276c).

The CONTRACTOR, as well as any subcontractors, shall provide a weekly statement with respect to the wages paid to each of its employees engaged on work covered by the Copeland "Anti-Kickback Act" during the preceding weekly payroll period.[2] The CONTRACTOR, as well as any subcontractors, shall deliver each weekly statement within seven days after the regular payment date of the payroll period, to the PRDOH. After such examination and check as may be made, such statement, or a copy thereof, shall be kept available, or shall be transmitted together with a report of any violation, in accordance with applicable procedures prescribed by the U.S. Department of Labor. The CONTRACTOR shall preserve his weekly payroll records for a period of 6 years from date of completion of this Agreement and also the Subrecipients must comply with the record retention requirements, as established in the policy on document handling, administration and accessibility, in accordance with the RKMA policy, and ensure that all documentations is always available for any internal or external tracing visit. Such payroll records shall be made available at all times for inspection by the contracting officer or his authorized representative, and by authorized representatives of the Department of Labor.

The CONTRACTOR, as well as any subcontractors, shall comply with all applicable "Anti-Kickback" regulations and shall insert HUD form 4010 and any additional provisions in all

[2] This statement shall be executed by the contractor or by an authorized officer or employee of the contractor who supervises the payment of wages, and shall be on the back of Form WH 347, "Payroll (For Contractors Optional Use)" or on any form with identical wording. Copies of WH 347 may be obtained from the Government contracting or sponsoring agency or from the Wage and Hour Division Web site at *http://www.dol.gov/whd/forms/index.htm* or its successor site.

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subcontracts covering work under this Agreement to ensure compliance by subcontractors with such regulations as applicable, and shall be responsible for the submission of affidavits and Statements of Compliance required of subcontractors thereunder except as the Secretary of Labor may specifically provide for variations of or exemptions from the requirements thereof.[3]

B. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The CONTRACTOR, as well as any subcontractors, shall comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (CWHSSA) (40 U.S.C. §§ 33701-3708) as supplemented by Department of Labor regulations (29 C.F.R. Part 5). Where applicable, all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or labors. The provisions of CWHSSA apply to all labors and mechanic, including watchmen and guards. 40 U.S.C. Section 3701(b)(2).

The CONTRACTOR, as well as any subcontractors, agrees to compute the wages of every mechanic and laborer on the basis of a standard work week of forty (40) hours in accordance with and subject to the provisions of the CWHSSA. Any work in excess of the standard work week is permissible provided that the worker is compensated at a rate of no less that on and a half times the basic rate of pay for all hours worked in excess of forty (40) hours in the work week. The CONTRACTOR will not require any laborer or mechanic employed in the performance of this Agreement to work in surroundings or under working conditions that are unsanitary, hazardous, or dangerous to health or safety, as established under construction safety and health standards.

The CONTRACTOR, as well as any subcontractors, shall insert appropriate provisions of the CWHSSA in all subcontracts covering work under this Agreement to ensure compliance by subcontractors with such regulations, and shall be responsible for the submission of affidavits required of subcontractors thereunder except as the Secretary of Labor may specifically provide for variations of or exemptions from the requirements thereof.

The CONTRACTOR, as well as any subcontractors, shall comply with all regulations issued pursuant to that act and with other applicable Federal laws and regulations pertaining to labor standards.[4]

C. DAVIS-BACON ACT

The CONTRACTOR, as well as any subcontractors, shall comply with the Davis Bacon Act (40 U.S.C. §§ 3141-3148) as supplemented by the Department of Labor regulations (29 C.F.R. Part 5).

All laborers and mechanics employed by the CONTRACTOR, as well as any subcontractors, including employees of other governments, on construction, work assisted under this Agreement, and subject to the provisions of the federal acts and regulations listed in this paragraph, shall be paid wages at rates not less than those prevailing on similar construction in the locality as determined by the Secretary of Labor in accordance with the Davis-Bacon Act. The advertised specifications for every contract in excess of $2,000, for construction, alteration, or repair, including painting and decorating, of public buildings and public works. 40 U.S.C. Sec. 3142.[5]

The CONTRACTOR, as well as any subcontractors, shall pay all mechanics and laborers employed directly on the site of the work, unconditionally and at least once a week, and

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[3] https://www.dol.gov/agencies/whd/government-contracts/copeland-anti-kickback

[4] https://www.dol.gov/agencies/whd/government-contracts/cwhssa

[5] Section 110 of the Act, determines the DBRA applicability to CDBG-DR. The Act further provides that Section 5310 (Section 110 of the Act) apply to the rehabilitation of residential property only if such property contains not less than eight (8) units. (8 units or more)

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without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the advertised specifications, regardless of any contractual relationship which may be alleged to exist between the contractor or subcontractor and the laborers and mechanics. The CONTRACTOR will post the scale of wages to be paid in a prominent and easily accessible place at the site of the work.

There may be withheld from the CONTRACTOR so much of accrued payments as the contracting officer considers necessary to pay to laborers and mechanics employed by the contractor or any subcontractor on the work the difference between the rates of wages required by the contract to be paid laborers and mechanics on the work and the rates of wages received by the laborers and mechanics and not refunded to the contractor or subcontractors or their agents.

On a semi-annual basis, the CONTRACTOR shall submit Form HUD 4710 (Semi-Annual labor Standards Enforcement Report) to PRDOH. All covered subcontracts must include Davis-Bacon and other labor standards clauses and the applicable federal wage determinations as well as the local prevailing wage established in this contract. The Federal Labor Standards Provisions on Form HUD 4010 covers the Davis-Bacon and related acts expected in all subcontracts covering work under this Agreement to ensure compliance by subcontractors with such regulations, and shall be responsible for the submission of affidavits required of subcontractors thereunder except as the Secretary of Labor may specifically provide for variations of or exemptions from the requirements thereof.

The HUD Form 4010 and a Spanish translation of the original form is included as **Attachment I** to this contract. The attachment ensures contractors, with a predominant fluency in Spanish, are able to immediately reference labor requirements to ensure full compliance for Davis-Bacon and related Acts.

In addition, the applicable wage determination is included as **Attachment J** to this contract. The attachment guarantees that the contractors are informed of the prevailing wages to ensure compliance with federal and state regulations.

D. FAIR LABOR STANDARDS ACT OF 1938, AS AMENDED

The CONTRACTOR, as well as any subcontractors, shall comply with the provisions of the Fair Labor Standards Act (29 U.S.C. §§ 201-219), which governs such matters as Federal minimum wage rates and overtime, as supplemented by the Department of Labor regulations (29 C.F.R. Parts 500-899).

The CONTRACTOR agrees to comply and implement the applicable regulations of the U.S. Department of Labor at 29 C.F.R. Parts 500-899.[6]

XXXI. CDBG-DR POLICIES AND PROCEDURES

In addition to what is established in this Agreement, the CONTRACTOR shall comply with all CDBG-DR and CDBG-MIT program specific and general policies and procedures, including, but not limited to, the Contract and Subrecipient Agreement Manual, OS&H Guideline, MWBE Policy, Procurement Manual for the CDBG-DR Program , URA & ADP Guidelines, Cross Cutting Guidelines, AFWAM Policy, Section 3 Policy, Personally Identifiable Information, Confidentiality, and Nondisclosure Policy and Conflict of Interest and Standards of Conduct Policy, as found in the CDBG-DR Website (www.cdbg-dr.pr.gov), which are herein included and made integral part of this Agreement, as they may be updated from time to time, and reporting requirements as established by the PRDOH.

[6] https://www.dol.gov/agencies/whd/flsa

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XXXII. SECTION 3 CLAUSE

A. The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

B. The parties to this contract agree to comply with HUD's regulations in 24 C.F.R. part 75, which implement Section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediments that would prevent them from complying with the part 75 regulations.

C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

D. The contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 C.F.R. part 75 and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 C.F.R. part 75. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 C.F.R. part 75.

E. The contractor acknowledges that subrecipients, contractors, and subcontractors are required to meet the employment, training, and contraction requirements of 24 CFR 75.19, regardless of whether Section 3 language is included in recipient or subrecipient agreements, program regulatory agreements, or contracts.

F. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 C.F.R. part 75 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 C.F.R. part 75.

G. Noncompliance with HUD's regulations in 24 C.F.R. part 75 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD-assisted contracts.

H. With respect to work performed in connection with Section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (46 U.S.C. § 5307) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for

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training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of Section 3 and section7(b) agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with section7(b).

I. The Contractor agrees to submit, and shall require its subcontractors to submit to them, quarterly reports to the PRDOH detailing the total number of labor hours worked on the Section 3 Project, the total number of labor hours worked by Section 3 Workers, and the total number of hours worked by Targeted Section 3 Workers, and any affirmative efforts made during the quarter to direct hiring efforts to low- and very low-income persons, particularly persons who are Section 3 Workers and Targeted Section 3 Workers.

XXXIII.BYRD ANTI-LOBBYING AMENDMENT, 31 U.S.C. § 1352

The CONTRACTOR certifies, to the best of his or her knowledge, that:

A. -No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

B.--If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Forms-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

C. -The CONTRACTOR shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub recipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. §1352 (as amended by the Lobbying Disclosure Act of 1995). The CONTRACTOR acknowledges that any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure. The CONTRACTOR certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the CONTRACTOR understands and agrees that the provisions of 31 U.S.C. §3801 *et seq.*, apply to this certification and disclosure, if any.

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XXXIV.EQUAL OPPORTUNITY

A. -The CONTRACTOR will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity or national origin. The CONTRACTOR will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

B.--The CONTRACTOR will, in all solicitations or advertisements for employees placed by or on behalf of the CONTRACTOR, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

C.-When applicable, the CONTRACTOR will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the CONTRACTOR's commitments under this Section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

D. -The CONTRACTOR will comply with all provisions of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and as supplemented by the rules, regulations, and relevant orders of the United States Secretary of Labor.

E.--The CONTRACTOR will furnish all information and reports required by Executive Order 11246 of September 24, 1965, as amended, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

F.--In the event of the CONTRACTOR's noncompliance with the nondiscrimination clauses of this Agreement or with any of the said rules, regulations, or orders, this Agreement may be canceled, terminated, or suspended in whole or in part and the CONTRACTOR may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, as amended, and such other sanctions as may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, as amended, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

G.-The CONTRACTOR will include the portion of the sentence immediately preceding paragraph (A) and the provisions of paragraphs (A) through (F) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, as amended, so that such provisions will be binding upon

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each subcontractor or vendor. The CONTRACTOR will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however, that in the event a CONTRACTOR becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

XXXV.SOLID WASTE DISPOSAL ACT

1) In the performance of this contract, the CONTRACTOR shall make maximum use of products containing recovered materials that are Environmental Protection Agency (EPA)- designated items unless the product cannot be acquired:

a. Competitively within a timeframe providing for compliance with the contract performance schedule;
b. Meeting contract performance requirements; or
c. At a reasonable price.

2) Information about this requirement, along with the list of EPA- designated items, is available at EPA's Comprehensive Procurement Guidelines web site, https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program.
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3) Contractor must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include:

a. procuring only items designated in guidelines of the EPA at 40 C.F.R. part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds ten thousand dollars ($10,000) or the value of the quantity acquired during the preceding fiscal year exceeded ten thousand dollars ($10,000);
b. procuring solid waste management services in a manner that maximizes energy and resource recovery; and
c. establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

XXXVI. DRUG FREE WORKPLACE

The CONTRACTOR should establish procedures and policies to promote a Drug-Free workplace. Further, the CONTRACTOR should notify all employees of its policy for maintaining a Drug-Free workplace, and the penalties that may be imposed for drug abuse violations occurring in the workplace. Further, the CONTRACTOR shall notify the PRDOH if any of its employees is convicted of a criminal drug offense in the workplace no later than **ten (10) days** after such conviction.

XXXVII.SUSPENSION AND DEBARMENT

A. -This Agreement is a covered transaction for purposes of 2 C.F.R. part 180 and 2 C.F.R. part 2424. As such, the CONTRACTOR is required to verify that none of the CONTRACTOR, its principals (defined at 2 C.F.R. § 180.995), or its affiliates (defined at 2 C.F.R. §180.905) are excluded (defined at 2 C.F.R. §180.940) or disqualified (defined at 2 C.F.R. §180.935).

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B.--The CONTRACTOR must comply with 2 C.F.R. part 180, subpart C and 2 C.F.R. part 2424, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.

C. -This certification is a material representation of fact relied upon by PRDOH. If it is later determined that the CONTRACTOR did not comply with 2 C.F.R. part 180, subpart C and 2 C.F.R. part 2424, in addition to remedies available to PRDOH, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.

D. -The CONTRACTOR agrees to comply with the requirements of 2 C.F.R. part 180, subpart C and 2 C.F.R. part 2424, while this Agreement is valid. The CONTRACTOR further agrees to include a provision requiring such compliance in its lower tier covered transactions.

XXXVIII. SYSTEM FOR AWARD MANAGEMENT (SAM) REGISTRATION

The CONTRACTOR certifies that it is cleared and eligible for award of a contract and is not suspended, debarred, or on a HUD-imposed limited denial of participation. Subsequently, the CONTRACTOR must be registered in the System for Award Management (**SAM**) and shall maintain its registration active during contract performance and through final payment. The CONTRACTOR is responsible during performance and through final payment for the accuracy and completeness of the data within SAM. Failure to maintain registration in SAM may impact obligations and payments under this Agreement.

XXXIX. NO OBLIGATION BY THE FEDERAL GOVERNMENT

The Federal Government is not a party to this Agreement and is not subject to any obligations or liabilities to the non-Federal entity, CONTRACTOR, or any other party pertaining to any matter resulting from the Agreement.

XL. PROGRAM FRAUD & FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS

The CONTRACTOR acknowledges that 31 U.S.C. Chapter 38 (Administrative Remedies for False Claims and Statements) applies to the CONTRACTOR's actions pertaining to this Agreement.

XLI. BANKRUPTCY

In the event that CONTRACTOR files for bankruptcy protection, the Government of Puerto Rico and PRDOH may deem this Agreement null and void, and terminate this Agreement without notice.

XLII. ENTIRE AGREEMENT

This Agreement and all its attachments represent the entire and integrated agreement between PRDOH and the CONTRACTOR and supersede all prior negotiations, representations, agreements and/or understandings of any kind. This Agreement may be amended only by written document signed by both PRDOH and the CONTRACTOR.

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XLIII. MODIFICATION OF AGREEMENT

Any modification of this Agreement or additional obligation assumed by either party in connection with this Agreement shall be binding only if written and signed by both parties, and its authorized representatives. Those amendments shall make specific reference to this Agreement, comply with programmatic policies, procedures, and guidelines. Such amendments shall not invalidate this Agreement, nor relieve or release the Parties from their obligations under this Agreement.

However, PRDOH reserves the right to notify in writing to CONTRACTOR any applicable policies, procedures, regulations, requirements, guidelines, or change in law, whether existing or to be established, as well as changes and/or amendments thereof, and the notified policies, procedures, regulations, requirements, guidelines and laws shall be deemed incorporated by reference to this Agreement without the need of executing a separate written and signed amendment.

XLIV. BINDING EFFECT

This Agreement shall be binding upon and shall inure to the benefit of PRDOH and the CONTRACTOR, their successors and assigns.

The CONTRACTOR shall not assign this Agreement, in whole or in part, without the prior written consent of PRDOH, and any attempted assignment not in accordance herewith shall be null and void and of no force or effect.

XLV. ASSIGNMENT OF RIGHTS

The rights of each party hereunder are personal to that party and may not be assigned or otherwise transferred to any other person, contractor, corporation, or other entity without the prior, express, and written consent of the other party.

XLVI. NON-WAIVER

The failure or delay of either party to insist upon the performance of and/or the compliance with any of the terms and conditions of this Agreement shall not be construed as a waiver of such terms and conditions or the right to enforce compliance with such terms and conditions.

XLVII. ORDER OF PRECEDENCE

In the event of an inconsistency in this Agreement or if a conflict occurs between this Agreement and any Attachment, Appendix, Exhibit, or Schedule, unless otherwise specifically stated in those documents, the order of precedence shall be: Federal laws, regulations, and policies applicable to this Agreement, this Contract and the HUD General Provisions (Attachment F), the Scope of Work (Attachment B), the Cost Form (Attachment C), and lastly, the CONTRACTOR's proposal (Attachment A).

XLVIII. GOVERNING LAW JURISDICTION

This Agreement shall be governed by, interpreted, and enforced in accordance with the laws of the Government of Puerto Rico and any applicable federal laws and regulations.

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The parties further agree to assert any claims or causes of action that may arise out of this Agreement in the Puerto Rico Court of First Instance, Superior Court of San Juan, Puerto Rico.

XLIX. CONSOLIDATIONS, MERGERS, CHANGE OF NAME, OR DISSOLUTIONS

A. Consolidation or Merger

In the event that the signing party (e.g. Subrecipient, Contractor, or Subcontractor) of the Agreement with the PRDOH moves for a consolidation or merger with another entity (private or public), by its discretion or otherwise, written notice of such decision or event shall be delivered to the PRDOH **at least fifteen (15) business days prior to the effective date** of the consolidation or merger. The notice shall include, but not limited to, a description of: the expected effective date of the consolidation or merger; name of each of the constituent entities moving to consolidate or merge into the single resulting or surviving entity; the proposed name of the resulting entity (in case of a consolidation) or the name of the surviving entity (in case of a merger) if necessary; reference to the projected capacity of the resulting or surviving entity to comply with the terms, conditions, obligations, tasks, services, and performance goals or requirements included in the Agreement as well as its Exhibits or Attachments; and a brief summary of the proposed plan to achieve the transition of duties (Scope of Work), tasks, and performance goals or requirements to the resulting or surviving entity.

Upon the consolidation or the merger becoming effective, and supporting evidence of such event is notified to PRDOH, execution of an Amendment to the Agreement may follow. The Amendment would include, but not limited to, modifications to the clauses that refer to the identity, personal circumstances, address, and any other information related to the signing party deemed relevant by PRDOH for the execution of the Amendment. **No amendment to the Agreement will be necessary if the Subrecipient, Contractor, or Subcontractor becomes the surviving entity following a merger.**

Failure to comply with any of the before mentioned conditions, may result in the activation of the termination clauses provided in the Agreement.

B. Change of Name

In the event that the signing party (e.g. Subrecipient, Contractor, or Subcontractor) of the Agreement with the PRDOH initiates a change of name process, written notice of such decision or event shall be delivered to the PRDOH **at least fifteen (15) business days** prior to the effective date of such event. The notice shall include, but not limited to, a description of: the expected effective date of the change of name; the proposed name; inform of any change of address; and reference of any change in the capacity of the entity to comply with the terms, conditions, obligations, tasks, services, and performance goals or requirements included in the Agreement, as well as its Exhibits or Attachments.

Upon the change of name becoming effective, and supporting evidence of such event is notified to PRDOH, execution of an Amendment to the Agreement may follow. The Amendment would include, but not limited to, modifications to the clauses that refer to the identity, personal circumstances, address, and any other information related to the signing party deemed relevant by PRDOH for the execution of the Amendment.

Failure to comply with any of the before mentioned conditions, may result in the activation of the termination clauses provided in the Agreement.

C. Dissolution

In the event that the signing party (e.g. Subrecipient, Contractor, or Subcontractor) of the Agreement with the PRDOH moves for dissolution of the entity, written notice of such decision or event shall be delivered to the PRDOH **at least fifteen (15) business days** prior to the effective date of such event. The notice shall include, but not limited to, a description of the expected effective date of the dissolution; and contact information of one or more of its directors, officials or agents. Upon dissolution, becoming effective, and supporting evidence of such event is notified to PRDOH, termination of the Agreement will follow. Consequently, the signing party acknowledges and agrees to provide to the PRDOH, after termination of the Agreement, the assistance reasonably requested to

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facilitate the orderly transfer of responsibility for performance of the tasks or services to the PRDOH or a third party designated by the PRDOH. Moreover, all finished or unfinished records (files, data, work product) connected with this Agreement will be turned over to PRDOH following the Agreement termination.

L. HEADINGS

The titles to the paragraphs of this Agreement are solely for reference purposes and the convenience of the parties and shall not be used to explain, modify, simplify, or aid in the interpretation of the provisions of this Agreement.

LI. FEDERAL FUNDING

The fulfillment of this Agreement is based on those funds being made available to the PRDOH as the lead administrative agency for Recovery. All expenditures under this Agreement must be made in accordance with this Agreement, the policies and procedures promulgated under the CDBG-DR and CDBG-MIT Program, and any other applicable laws. Further, CONTRACTOR acknowledges that all funds are subject to recapture and repayment for non-compliance.

LII. RECAPTURE OF FUNDS

PRDOH may recapture payments it makes to CONTRACTOR that (i) exceed the maximum allowable rates; (ii) are not allowed under applicable laws, rules, or regulations; or (iii) are otherwise inconsistent with this Agreement, including any unapproved expenditures. CONTRACTOR must refund such recaptured payments within **thirty (30) business days** after the PRDOH issues notice of recapture to CONTRACTOR.

LIII. OVERPAYMENT

CONTRACTOR shall be liable to the PRDOH for any costs disallowed pursuant to financial and/or compliance audit(s) of funds received under this Agreement. CONTRACTOR shall reimburse such disallowed costs from funds other than those CONTRACTOR received under this Agreement.

LIV. SEVERABILITY

If any provision of this Agreement shall operate or would prospectively operate to invalidate the Agreement in whole or in part, then such provision only shall be deemed severed and the remainder of the Agreement shall remain operative and in full effect.

LV. COUNTERPARTS

This Agreement may be executed in any number of counterparts, each of whom shall be deemed to be an original, however, all of which together shall constitute one and the same instrument. If the Agreement is not executed by the PRDOH within **thirty (30) calendar days** of execution by the other party, this Agreement shall be null and void.

LVI.SURVIVAL OF TERMS AND CONDITIONS

The terms and conditions of this Agreement related to the following subjects shall survive the termination or expiration of this Agreement: interpretive provisions; consideration; warranties; general affirmations, federal assurances, federal and state certifications;

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CDBG-DR, CDBG-MIT and state funding, recapture of CDBG-DR, CDBG-MIT and/or state funds, overpayment of CDBG-DR, CDBG-MIT and/or state funds; ownership and intellectual property, copyright; records retention methods and time requirements; inspection, monitoring and audit; confidentiality; public records; indemnification and liability; infringement of intellectual property rights; independent contractor relationship; compliance with laws; notices; choice of law and venue; severability; dispute resolution; consolidations, merger, change of name, and dissolution. Terms and conditions that, explicitly or by their nature, evidence the Parties' intent that they should survive the termination or expiration of this Agreement shall so survive.

IN WITNESS THEREOF, the parties hereto execute this Agreement in the place and on the date first above written.

PUERTO RICO DEPARTMENT OF HOUSING	**FR-BLDM, LLC**
William O. Rodríguez Rodríguez William O. Rodríguez Rodríguez (Nov 29, 2022 22:03 AST)	Jose Fullana (Nov 29, 2022 08:13 AST)
William O. Rodríguez Rodríguez, Esq. Secretary	José M. Fullana-Morales Managing Director

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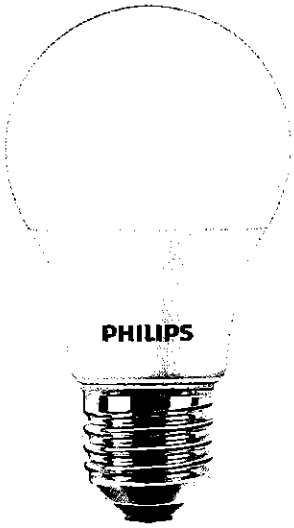
Attachment A

PHILIPS

Lighting



Ecohome

EcoHome LEDBulb 8W E27 6500KLV 1PF/12NL

Las EcoHome LEDbulbs son compatibles con los sistemas existentes con soporte E27 y están diseñadas para el reemplazo por renovación de las lámparas incandescentes, halógenas y de bajo consumo. Además, ofrecen enormes ahorros de energía y minimizan el costo de inversión inicial.

Datos del producto

Funcionamiento de emergencia	
Tapa y base	E27 [E27]
Cumple con el reglamento RoHS de la UE	SI
Vida útil nominal (nominal)	6000 h
Ciclo de alternado	50000X
Tipo técnico	8-50W
Rendimiento inicial (conforme con IEC)	
Código de color	865 [CCT of 6500K]
Ángulo de haz (nominal)	150 °
Flujo luminoso (nominal)	550 lm
Designación de color	Cool Daylight
Temperatura de color correlacionada (nominal)	6500 K
Eficacia lumínica (promedio) (nominal)	68,00 lm/W
Consistencia de color	<6
Índice de reproducción de color (Nom)	80
LLMF At End Of Nominal Lifetime (Nom)	70 %
Mecánicos y de carcasa	
Frecuencia de entrada	50 to 60 Hz
Power (Rated) (Nom)	8 W
Lamp Current (Nom)	100 mA
Equivalente en potencia en vatios	50 W

Tiempo de inicio (nominal)	0,5 s
Tiempo de calentamiento para 60 % de luz (nominal)	0.5 s
Factor de potencia (nominal)	0.5
Voltaje (nominal)	100-130 V
Temperatura	
T° estuche máxima (nominal)	85 °C
Controles y regulación	
Con regulación de intensidad	No
Datos técnicos de la luz	
Acabado del foco	Frosted
Aprobación y aplicación	
Etiqueta de eficiencia energética (EEL)	Not applicable
Consumo de energía kWh/1000 h	- kWh
Datos de producto	
Código del producto completo	871869976545300
Nombre del producto del pedido	EcoHome LEDBulb 8W E27 6500KLV 1PF/12NL

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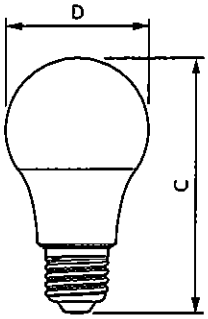
EAN/UPC producto	8718699765453
Código del pedido	929002324597
Numerator - Quantity Per Pack	1
Numerator - Packs per outer box	12

Material Nr. (12NC)	929002324597
Net Weight (Piece)	0,060 kg

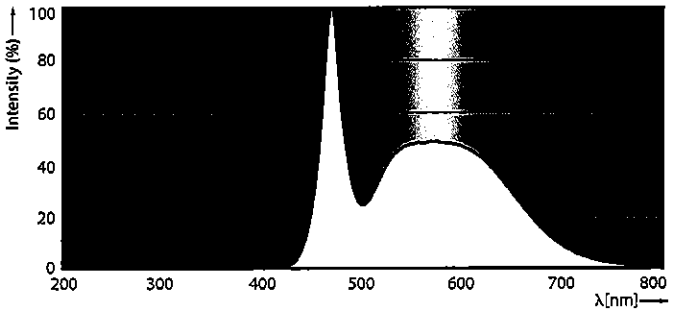
Plano de dimensiones



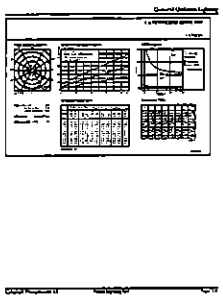
Bulb A60 LV 6-W 550lm 6500K E27 ND FR

Product	D	C
EcoHome LEDBulb 8W E27 6500KLV 1PF/12NL	60 mm	108 mm

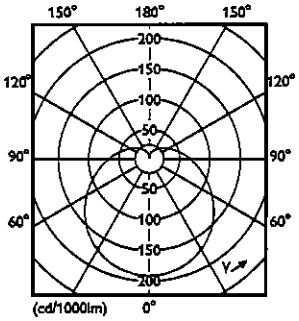
Datos fotométricos



LEDbulb ECO 8W A19 E27 865 FR



LEDbulb ECO 8W A19 E27 865 FR



LEDbulb ECO A19 8W E27 550lm 865 FR

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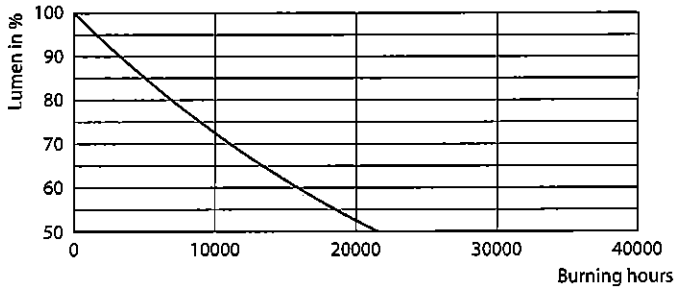

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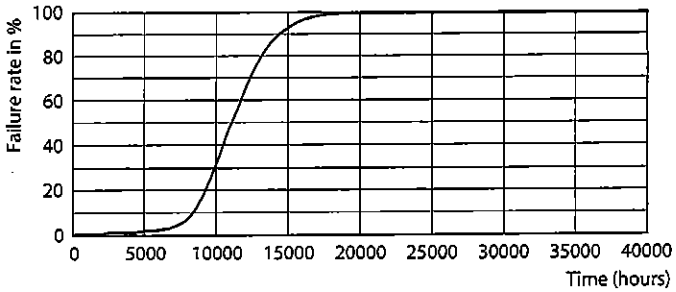

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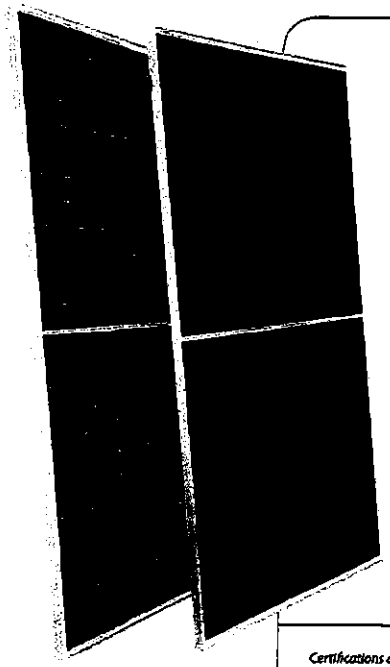
HIPro Series

144-CELL HALF CUT MONOCRYSTALLINE SOLAR MODULE

390-410 Watt

STPXXXS - A72U/Vnh

STPXXXS - A72U/Vfh



Features

High power output
Compared to normal module, the power output can increase 5W-10W

High PID resistant
Advanced cell technology and qualified materials lead to high resistance to PID

Excellent weak light performance
More power output in weak light condition, such as haze, cloudy, and morning

Lower operating temperature
Lower operating temperature and temperature coefficient increases the power output

Extended load tests
Module certified to withstand front side maximum static test load (5400 Pascal) and rear side maximum static test loads (3800 Pascal) *

Withstanding harsh environment
Reliable quality leads to a better sustainability even in harsh environment like desert, farm and coastline

Certifications and standards:
IEC 61215, IEC 61730, conformity to CE

Trust Suntech to Deliver Reliable Performance Over Time

- World-class manufacturer of crystalline silicon photovoltaic modules
- Unrivaled manufacturing capacity and world-class technology
- Rigorous quality control meeting the highest international standards: ISO 9001, ISO 14001 and ISO17025
- Regular independently checked production process from international accredited institute/company
- Tested for harsh environments (salt mist, ammonia corrosion and sand blowing testing: IEC 61701, IEC 62716, DIN EN 60068-2-68)***
- Long-term reliability tests
- 2 × 100% EL inspection ensuring defect-free modules

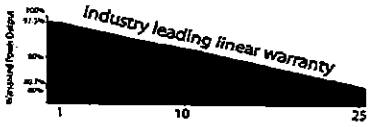
Special Cell Design

The unique cell design leads to reduced electrodes resistance and smaller current, thus enables higher fill factor. Meanwhile, it can reduce losses of mismatch and cell wear, and increase total reflection.

5 BB

9 BB

Industry-leading Warranty based on nominal power



- 97.5% in the first year, thereafter, for years two (2) through twenty-five (25), 0.7% maximum decrease from MODULE's nominal power output per year, ending with the 80.7% in the 25th year after the defined WARRANTY STARTING DATE.****
- 12-year product warranty
- 25-year linear performance warranty

IP68 Rated Junction Box

The Suntech IP68 rated junction box ensures an outstanding waterproof level, supports installations in all orientations and reduces stress on the cables. High reliable performance, low resistance connectors ensure maximum output for the highest energy production.

* Please refer to Suntech Standard Module Installation Manual for details. **WEEE only for EU market.
*** Please refer to Suntech Product Near-coast Installation Manual for details. **** Please refer to Suntech Product Warranty for details.

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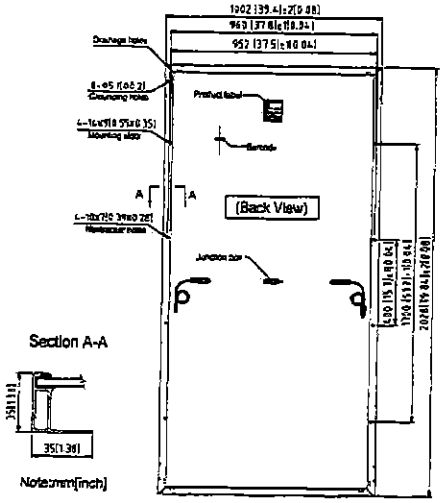
Electrical Characteristics

STC	STPXXXS-A72U/Vfh				
Maximum Power at STC (Pmax)	410 W	405 W	400 W	395 W	390 W
Optimum Operating Voltage (Vmp)	42.2 V	42.0 V	41.8 V	41.6 V	41.4 V
Optimum Operating Current (Imp)	9.72 A	9.65 A	9.57 A	9.50 A	9.43 A
Open Circuit Voltage (Voc)	49.4V	49.2V	49.0V	48.8V	48.6V
Short Circuit Current (Isc)	10.61A	10.54A	10.47A	10.40A	10.33A
Module Efficiency	20.2%	19.9%	19.7%	19.4%	19.2%
Operating Module Temperature	-40 °C to +85 °C				
Maximum System Voltage	1500 V DC (UL)				
Maximum Series Fuse Rating	20 A				
Power Tolerance	0/+5 W				

STC: Irradiance 1000 W/m², module temperature 25 °C, AM=1.5;
Tolerance of Pmax is within +/- 3% and tolerances of Voc and Isc are within +/- 5%.

NMOT	STPXXXS-A72U/Vfh				
Maximum Power at NMOT (Pmax)	308.1 W	304.6 W	300.8 W	297.3 W	293.8 W
Optimum Operating Voltage (Vmp)	38.8 V	38.7 V	38.5 V	38.3 V	38.1 V
Optimum Operating Current (Imp)	7.93 A	7.88 A	7.82 A	7.76 A	7.71 A
Open Circuit Voltage (Voc)	46.3 V	46.1 V	45.9 V	45.7 V	45.5 V
Short Circuit Current (Isc)	8.33 A	8.27 A	8.21 A	8.16 A	8.10 A

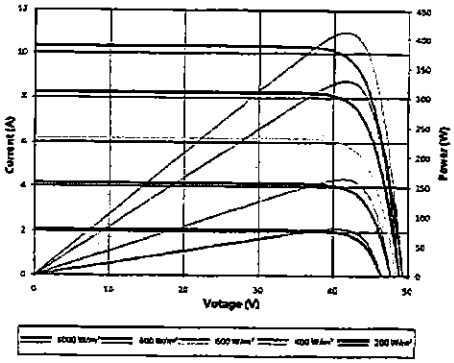
NMOT: Irradiance 800 W/m², ambient temperature 20 °C, AM=1.5, wind speed 1 m/s.



Temperature Characteristics

Nominal Module Operating Temperature (NMOT)	42 ± 2 °C
Temperature Coefficient of Pmax	-0.37%/°C
Temperature Coefficient of Voc	-0.304%/°C
Temperature Coefficient of Isc	0.050%/°C

Current-Voltage & Power-Voltage Curve (410S)



Mechanical Characteristics

Solar Cell	Monocrystalline silicon 158.75 mm
No. of Cells	144 (6 × 24)
Dimensions	2028 × 1002 × 35 mm (79.8 × 39.4 × 1.4 inches)
Weight	22.7 kgs (50.0 lbs.)
Front Glass	3.2 mm (0.13 inches) tempered glass
Frame	Anodized aluminium alloy
Junction Box	IP68 rated (3 bypass diodes)
Output Cables	4.0 mm², Portrait: (-)350 mm and (+)160 mm in length Landscape: (-)1400 mm and (+)1400 mm in length or customized length
Connectors	MC4 EVO2, Cable 01S

Dealer information

Packing Configuration

Container	20'GP	40'HC
Pieces per pallet	31	31
Pallets per container	5	22
Pieces per container	155	682
Packaging box dimensions	2058 × 1130 × 1173 mm	
Packaging box weight	756 kg	

Information on how to install and operate this product is available in the installation instruction. All values indicated in this data sheet are subject to change without prior announcement. The specifications may vary slightly. All specifications are in accordance with standard EN 50380. Color differences of the modules relative to the figures as well as discolorations of/in the modules which do not impair their proper functioning are possible and do not constitute a deviation from the specification.

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SINGLE BUSINESS PORTAL

Estimado/a German Vel◆zquez:

El pago para el tr◆mite 2020-CER-005795 ha sido procesado con éxito. El caso ha sido asignado a un oficial evaluador.

La solicitud fue sometida por German Vel◆zquez, para el Permiso 2020-CER-005795.

Presione aquí para entrar a SBP
Atentamente,
SBP Admin
Dear German Vel◆zquez:

The payment for Application 2020-CER-005795 has been processed successfully. The case has been assigned to an official evaluator.

The application has been submitted by German Vel◆zquez, for Application 2020-CER-005795.

Click here to enter the Single Business Portal.
Best regards,
SBP Admin

[redacted]

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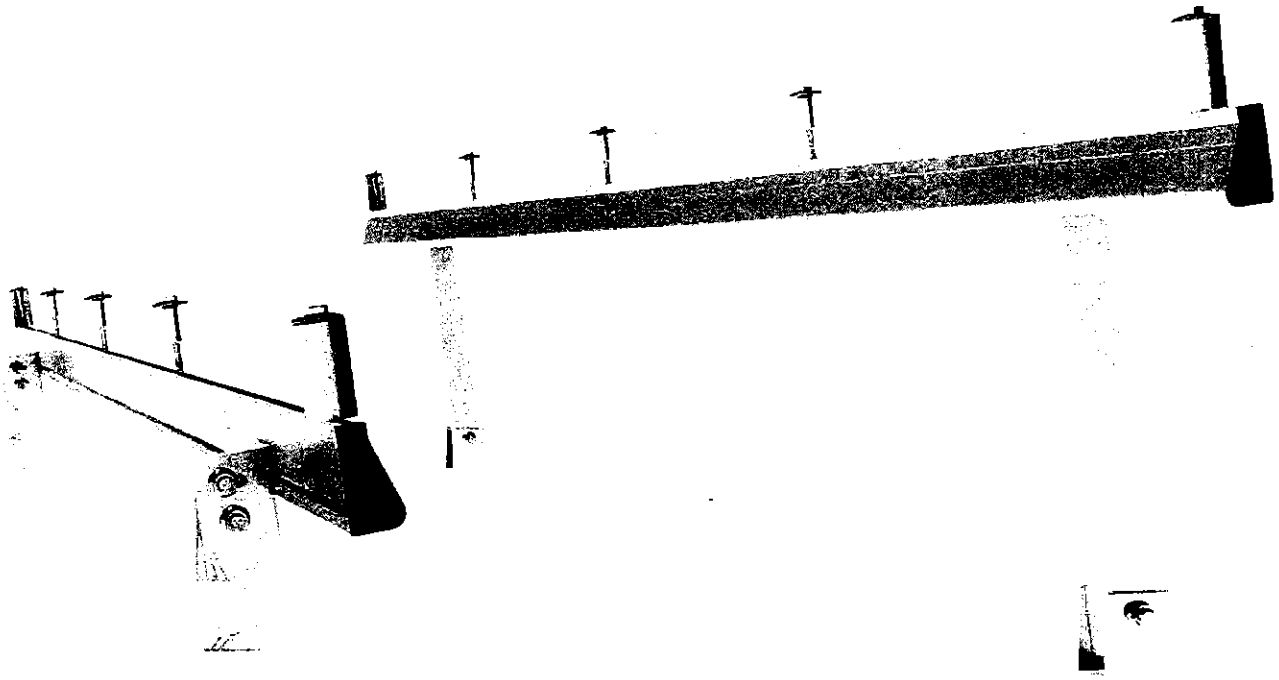
IRONRIDGE

Datasheet

Tilt Mount System



Trust your system at every angle.

The IronRidge Tilt Mount System supports a wide range of solar module tilting angles, while also resisting the extreme wind and snow forces experienced over a building's lifetime.

Every component has been carefully engineered and rigorously tested, and the entire system uses only aluminum and stainless steel materials to resist corrosion.

Roof Friendly

Lightweight and compatible with industry-standard attachments.

PE Certified

Pre-stamped engineering letters available in most states.

Strength Tested

All components evaluated for superior structural performance.

Design Assistant

Online software makes it simple to create, share, and price projects.

UL 2703 Listed System

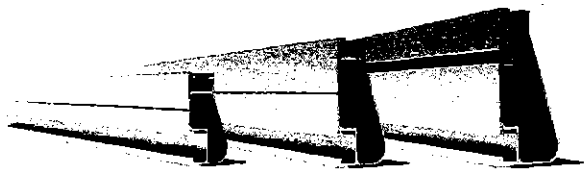
Meets newest effective UL 2703 standard.

25-Year Warranty

Products guaranteed to be free of impairing defects.

XR Rails & Tilt Legs

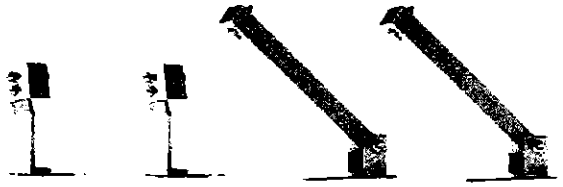
XR Rails



Attach directly to Tilt Legs. Available in three targeted sizes to support specific wind and snow loads.

- Unique curved profile
- Spanning capabilities up to 12'
- Clear and black finish

Tilt Legs



Tilt assembly to desired angle, up to 30 degrees. Kits include South and North Tilt Leg and all hardware.

- Available in multiple lengths for a wide angle range
- Assembled South Tilt Legs include angle indicators
- Legs are electrically bonded to rails

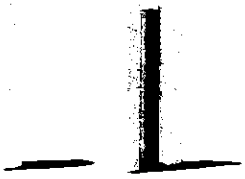
Clamps & Grounding

UFOs

Universal Fastening Objects secure and bond modules to rails.

- Fully assembled and lubricated
- Single, universal size
- Clear and black finish

Stopper Sleeves



Snap onto the UFO to transform into a bonded end clamp.

- Bonds modules to rails
- Sized to match modules
- Clear and black finish

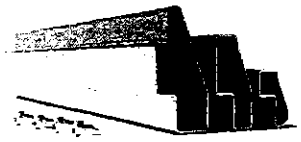
Grounding Lugs

Connects Tilt Mount system to equipment ground.

- Low profile
- Single tool installation
- Mounts in any direction

Accessories

Bonded Splices



XR Rails use internal splices for seamless connections.

- Self-drilling screws
- Varying versions to match rails
- Forms secure bonding connection

End Caps

Provide a finished look for rails while preventing debris buildup.

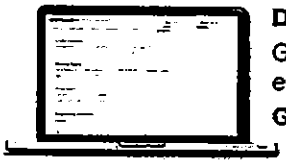
- Easy snap-in installation
- Varying versions to match rails
- UV-stabilized polymer

Wire Clips

Organize electrical wires from the rail's top slot.

- Simple snap-in installation
- Holds up to ten 5mm wires
- UV-stabilized polymer

Resources



Design Assistant
Go from rough layout to fully engineered system. For free.
Go to IronRidge.com/design

NABCEP Certified Training
Earn free continuing education credits, while learning more about our systems.
Go to IronRidge.com/training

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IRONRIDGE

28357 Industrial Blvd
Hayward, CA 94545
1-800-227-9523
IronRidge.com

March 5, 2021

To whom it may concern:

This letter is to certify that CARIBBEAN ENERGY DISTRIBUTOR, LLC of Carolina, Puerto Rico is an authorized distributor of IRONRIDGE, LLC products.

Regards,

Sean McDonald
Vice President of Sales
IronRidge

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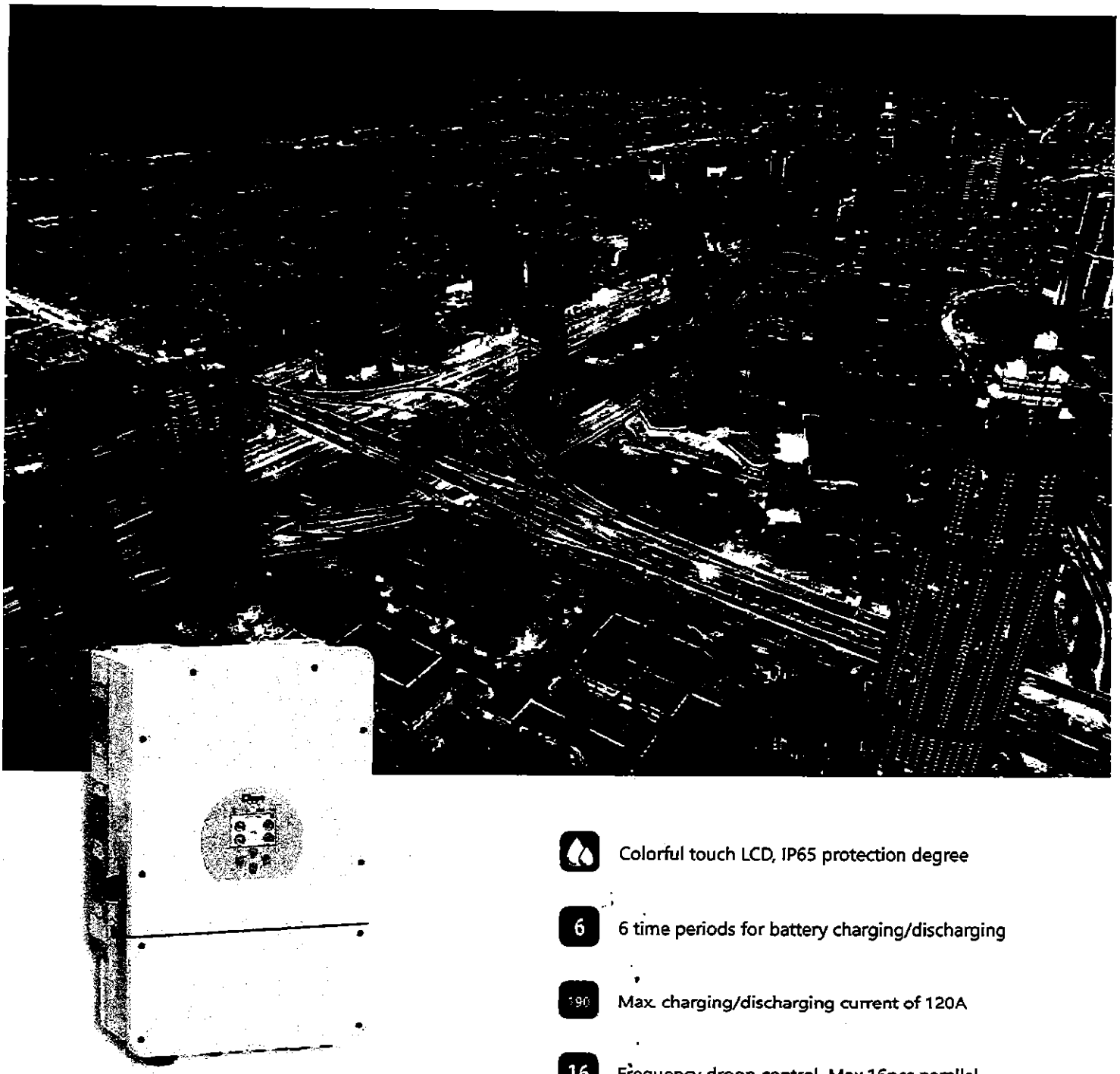
Hybrid Inverter

SUN-5K-SG01LP1-US



- Colorful touch LCD, IP65 protection degree
- 6 time periods for battery charging/discharging
- Max. charging/discharging current of 120A
- Frequency droop control, Max.16pcs parallel
- DC couple and AC couple to retrofit existing solar system
- Support storing energy from diesel generator

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Clean Power For You

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Model	SUN-5K-SG01LP1-US
Battery Input Data	
Battery Type	Lead-acid or Lithium-ion
Battery Voltage Range (V)	40~60V
Max. Charging Current (A)	120A
Max. Discharging Current (A)	120A
Charging Curve	3 Stages / Equalization
External Temperature Sensor	Optional
Charging Strategy for Li-Ion Battery	Self-adaption to BMS
PV String Input Data	
Max. DC Input Power (W)	6500W
PV Input Voltage (V)	370V (100V~500V)
MPPT Range (V)	125V-425V
Start-up Voltage (V)	150V
PV Input Current (A)	11A+11A
No.of MPPT Trackers	2
No.of Strings Per MPPT Tracker	1+1
AC Output Data	
Rated AC Output and UPS Power (W)	5000W
Max. AC Output Power (W)	5500W
Peak Power (off grid)	2 times of rated power, 10 S
AC Output Rated Current (A)	20.8A
Max. AC Current (A)	22.9A
Max. Continuous AC Passthrough (A)	35A
Output Frequency and Voltage	50 / 60Hz; 120 / 240Vac (split phase)
Grid Type	Split phase
Current Harmonic Distortion	THD<3% (Linear load<1.5%)
Efficiency	
Max. Efficiency	97.60%
Euro Efficiency	97.00%
MPPT Efficiency	99.90%
Protection	
PV Input Lightning Protection	Integrated
Anti-islanding Protection	Integrated
PV String Input Reverse Polarity Protection	Integrated
Insulation Resistor Detection	Integrated
Residual Current Monitoring Unit	Integrated
Output Over Current Protection	Integrated
Output Shorted Protection	Integrated
Output Over Voltage Protection	Integrated
Surge protection	DC Type II / AC Type II
Certifications and Standards	
Grid Regulation	UL1741, IEEE1547, RULE21, VDE 0126, AS4777, NRS2017, G98, G99, IEC61683, IEC62116, IEC61727
Safety Regulation	IEC62109-1, IEC62109-2
EMC	EN61000-6-1, EN61000-6-3, FCC 15 class B
General Data	
Operating Temperature Range (°C)	-25~60°C, >45°C Derating
Cooling	Smart cooling
Noise (dB)	<30 dB
Communication with BMS	RS485; CAN
Weight (kg)	32
Size (mm)	420W×670H×233D
Protection Degree	IP65
Installation Style	Wall-mounted
Warranty	Standard 5-year factory warranty with 10-Year Extended Warranty Programs

Ningbo Deye Inverter Technology Co., Ltd

Add: No.26-30, South Yongjiang Road, Beilun, 315806, Ningbo, China | Tel: 0086-0574-86120560 | E-mail: market@deye.com.cn | Web: www.deyeinverter.com

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Equipos Aprobados

Tipo de Equipo	Marca	Modelo
Inversor	CyboInverter	1200A/H
Inversor	DARFON	G320 MICRO INVERTER
Inversor	DARFON MICRO INVERSOR	MIG300ULXX
Inversor	DARFON MICROINVERSOR	MIG240UL00
Inversor	DELTA	M28U_122
Inversor	DELTA	M36U_122
Inversor	DELTA	M42U_120
Inversor	DELTA	M42U_121
Inversor	DELTA	M42U_122
Inversor	DELTA	M60U_120
Inversor	DELTA	M60U_121
Inversor	DELTA	M60U_122
Inversor	DELTA	M80U_120
Inversor	DELTA	M80U_121
Inversor	DELTA	M80U_122
Inversor	DIRECT GRID	DGM-S460
Inversor	DYNAPOWER	CPS 1500
Inversor	DYNAPOWER	MPS-250
Inversor	Darfon	Darfon HB51
Inversor	Darfon	H5000
Inversor	Delta	E4-TL-US
Inversor	Delta	E6-TL-US
Inversor	Delta	E8-TL-US
Inversor	Deye	SUN-5K-SG01LP1-US

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Deye 德業®

宁波德业变频技术有限公司

NINGBO DEYE INVERTER TECHNOLOGY CO.,LTD

AUTHORIZED DISTRIBUTOR LETTER

March, 8th ,2021

To whom it may concern:

This letter is to CERTIFY, that **CARIBBEAN ENERGY OF PUERTO RICO**., is an **AUTHORISED DISTRIBUTOR** of our Company **Ningbo Deye Inverter Technology Co., Ltd,** and is permitted to sale and distribute our products in the country of **PUERTO RICO**. For any assistance please contact:

Jannies Cotto
CARIBBEAN ENERGY OF PUERTO RICO
General manager
PO Box 29155, San Juan PR 00929
Ph. 787.750.5566
Fax 787.760.3430
E. jcotto@cedpr.com

Should you have any further questions, please feel free to contact me at jidh@deye.com.cn.

Ware regards,

David Ji

International Sales Director

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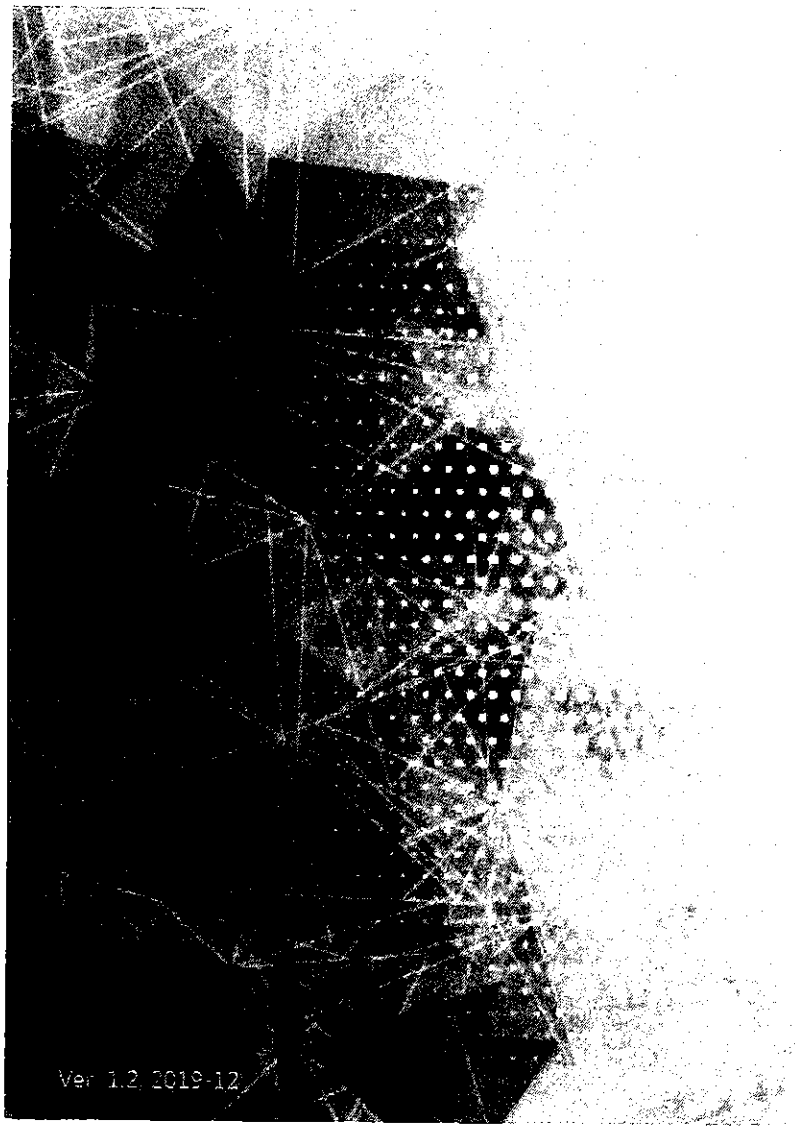

Deye®

Hybrid Inverter

SUN-5K-SG01LP1-US

SUN-6K-SG01LP1-US

SUN-7.6K-SG01LP1-US/EU

SUN-8K-SG01LP1-US/EU

User Manual

NINGBO DEYE INVERTER TECHNOLOGY CO., LTD.

Add: No.26-30, South Yongjiang Road, Beilun, 315806, Ningbo, China

Tel: +86 (0) 574 8622 8957

Fax: +86 (0) 574 8622 8852

E-mail: wutz@deye.com.cn

Web: www.deyeinverter.com

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Contents

1. Safety Introductions 01
2. Product instructions 01-04
2.1 Product Overview
2.2 Product Features
2.3 Basic System Architecture
3. Installation 04-19
3.1 Parts list
3.2 Mounting instructions
3.3 Battery connection
3.4 AC Input/Output Connection
3.5 PV Connection
3.6 CT Connection
3.7 Earth Connection(mandatory)
3.8 WIFI Connection
3.9 Wiring System for Inverter
3.10 Single phase parallel connection diagram
3.11 Split phase parallel connection diagram
3.12 Three phase Parallel Inverter
4. OPERATION 20
4.1 Power ON/OFF
4.2 Operation and Display Panel
5. LCD Display Icons 21-30
5.1 Main Screen
5.2 Solar Power Curve
5.3 Curve Page-Solar & Load & Grid
5.4 System Setup Menu
5.5 Basic Setup Menu

5.6 Battery Setup Menu
5.7 System Work Mode Setup Menu
5.8 Grid Setup Menu
5.9 Generator Port Use Setup Menu
5.10 Advanced Function Setup Menu
5.11 Device Info Setup Menu
6. Mode 30-32
7. Fault information and processing 32-34
8. Limitation of Liability 34-35
9. Datasheet 35-36

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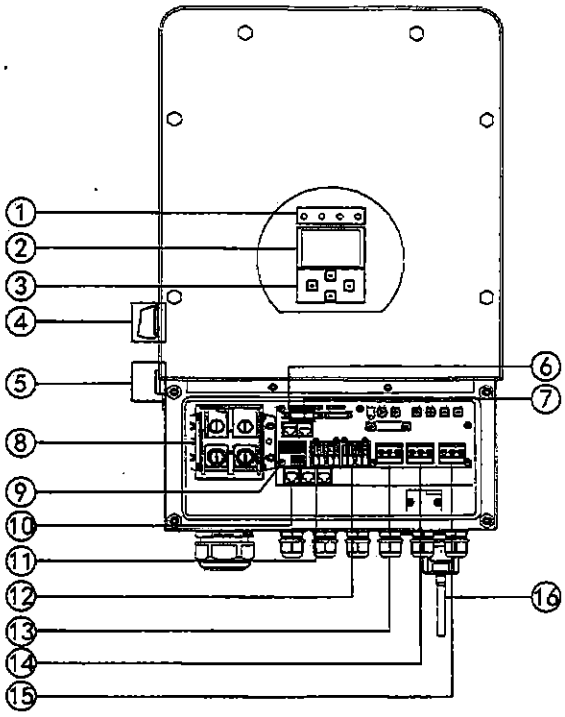
1. Safety Introductions

- This chapter contains important safety and operating instructions. Read and keep this manual for future reference.
- Before using the inverter, please read the instructions and warning signs of the battery and corresponding sections in the instruction manual.
- Do not disassemble the inverter. If you need maintenance or repair, take it to a professional service center.
- Improper reassembly may result in electric shock or fire.
- To reduce risk of electric shock, disconnect all wires before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
- Caution: Only qualified personnel can install this device with battery.
- Never charge a frozen battery.
- For optimum operation of this inverter, please follow required specification to select appropriate cable size.It is very important to correctly operate this inverter.
- Be very cautious when working with metal tools on or around batteries. Dropping a tool may cause a spark or short circuit in batteries or other electrical parts,even cause an explosion.
- Please strictly follow installation procedure when you want to disconnect AC or DC terminals. Please refer to " Installation" section of this manual for the details.
- Grounding instructions - this inverter should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.
- Never cause AC output and DC input short circuited. Do not connect to the mains when DC input short circuits.

2. Product Introduction

This is a multifunctional inverter,combining functions of inverter, solar charger and battery charger to offer uninterruptible power support with portable size. Its comprehensive LCD display offers user configurable and easy accessible button operation such as battery charging ,AC/solar charging, and acceptable input voltage based on different applications.

2.1 Product Overview



1: Inverter Indicators	7: CAN Port	13: Grid
2: LCD display	8: Battery input connectors	14: Generator input
3: Function Buttons	9: Function Port	15: Load
4: DC Switch	10: Parallel Box(master)	16: WiFi Interface
5: Power on/off button	11: Parallel port	
6: RS 485 Port	12: PV input with two MPPT	

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2.2 Product Features

- -220V Single phase,120V/240V Split phase Pure sine wave inverter.
- - Self-consumption and feed-in to the grid.
- - Auto restart while AC is recovering.
- - Programmable supply priority for battery or grid.
- - Programmable multiple operation modes:On grid,off grid and UPS.
- - Configurable battery charging current/voltage based on applications by LCD setting.
- - Configurable AC/Solar/Generator Charger priority by LCD setting.
- - Compatible with mains voltage or generator power.
- - Overload/over temperature/short circuit protection.
- - Smart battery charger design for optimized battery performance
- - With limit function,prevent excess power overflow to the grid.
- - Supporting WIFI monitoring and build-in 2 strings of MPP trackers
- -Smart settable three stages MPPT charging for optimized battery performance.
- -Time of use function.
- -Smart Load Function.

2.3 Basic System Architecture

The following illustration shows basic application of this inverter.

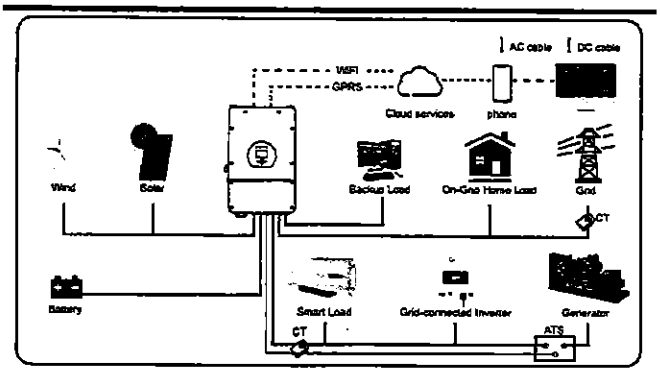
It also includes following devices to have a Complete running system.

- Generator or Utility

- PV modules

Consult with your system integrator for other possible system architectures depending on your requirements.

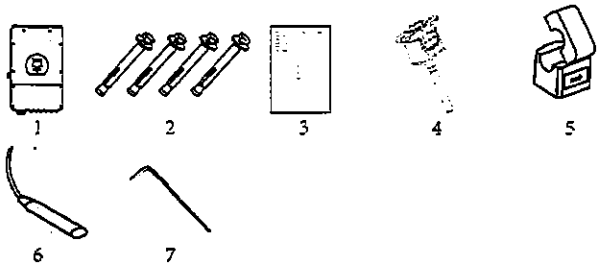
This inverter can power all kinds of appliances in home or office environment, including motor type appliances such as refrigerator and air conditioner.



3. Installation

3.1 Parts List

Check the equipment before installation. Please make sure nothing is damaged in the package. You should have received the items in the following package:



No	Description	Qty
1	SUN-5K/5K-SG01LP1-US hybrid inverter SUN-7.6K/8K-SG01LP1-US/EU hybrid inverter	1
2	Stainless steel expansion bolts M8*80	4
3	User manual	1
4	WiFi plug	1

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5	Current transformer (Optional)	2(US)/1(EU)
6	Battery sensor	1
7	L-type Hexagon wrench	1

Chart 3-1 Parts List

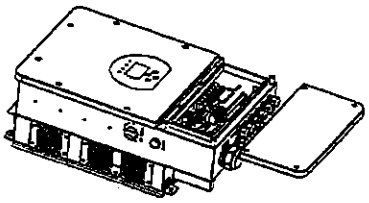
3.2 Mounting instructions

Installation Precaution

This Hybrid inverter is designed for outdoor use(IP65).Please make sure the installation site meets below conditions:

- Not in direct sunlight
- Not in areas where highly flammable materials are stored.
- Not in potential explosive areas.
- Not in the cool air directly.
- Not near the television Antenna or antenna cable.
- Not higher than altitude of about 2000 meters above sea level.
- Not in environment of precipitation or humidity(>95%)

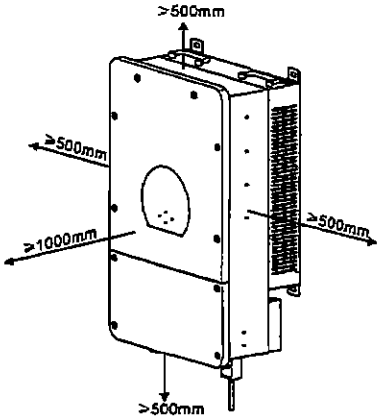
Please AVOID direct sunlight, rain exposure, snow laying up during installation and operation. Before connecting all wires,please take off the metal cover by removing screws as shown below:



Considering the following points before selecting where to install:

- Please select a vertical wall with load-bearing capacity for installation, suitable for installation on concrete or other non-flammable surfaces,installation is shown below.
- Install this inverter at eye level in order to allow the LCD display to be read at all times.

- The ambient temperature should be between -25~60℃ to ensure optimal operation.
- Be sure to keep other objects and surfaces as shown in the diagram to guarantee sufficient heat dissipation and have enough space for removing wires.



For proper air circulation to dissipate heat, allow a clearance of approx. 50cm to the side and approx.50cm above and below the unit.And 100cm to the front.

Mounting the inverter

Remember that this inverter is heavy!Please be careful when lifting out from the package. Choose the recommend drill head(as shown in below pic) to drill 4 holes on the wall. 52-60mm deep.

1. Use a proper hammer to fit the expansion bolt into the holes.
2. Carry the inverter and holding it,make sure the hanger aim at the expansion bolt,fix the inverter on the wall.
3. Fasten the screw head of the expansion bolt to finish the mounting.

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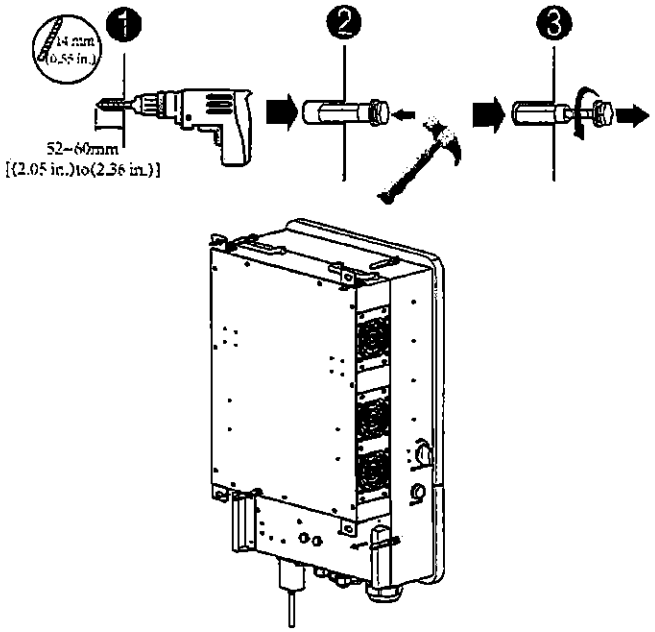


3.3 Battery connection

For safe operation and compliance, a separate DC over-current protector or disconnect device is required between the battery and the inverter. In some applications, switching devices may not be required but over-current protectors are still required. Refer to the typical amperage in the table below for the required fuse or circuit breaker size.

Model	Wire Size	Cable(mm²)	Torque value (max)
5/6/7.6/8Kw	2AWG	35	24.5Nm

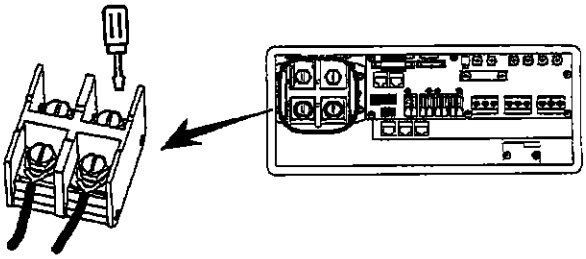
Chart 3-2 Cable size

All wiring must be performed by a professional person.

Connecting the battery with a suitable cable is important for safe and efficient operation of the system. To reduce the risk of injury, refer to Chart 3-2 for recommended cables.

Please follow below steps to implement battery connection:

1. Please choose a suitable battery cable with correct connector which can well fit into the battery terminals. 2. Use a suitable screwdriver to unscrew the bolts and fit the battery connectors in,then fasten the bolt by the screwdriver.make sure the bolts are tightened with torque of 24.5 N.M.
2. Nm in clockwise direction.make sure polarity at both the battery and inverter is correctly connected.



3. In case of children touch or insects go into the inverter,Please make sure the inverter connector is fasten to waterproof position by twist it clockwise.

Installation must be performed with care.

Before making the final DC connection or closing DC breaker/disconnect, be sure positive(+) must be connect to positive(+) and negative(-) must be connected to negative(-). Reverse palarity connection on battery will damage the inverter.

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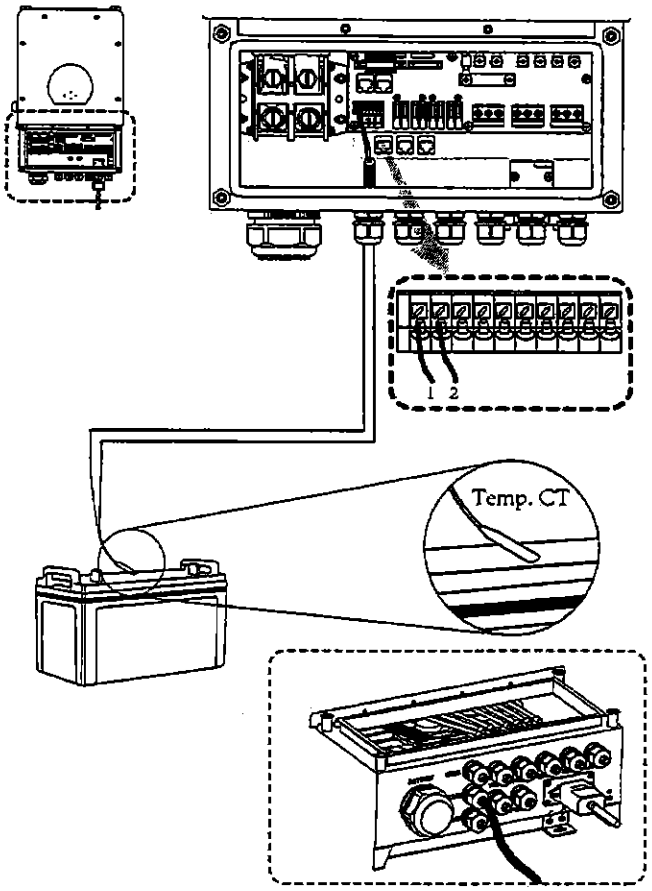
3.3.2 Battery temperature connection



3.4 AC Input/Output Connection

· Before connecting to AC input power source,please install a separate AC breaker between inverter and AC input power source.This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of AC input.The recommended of AC breaker is 50A for 5kw and 80A for 8KW.

· There are three terminal blocks with "Grid" "Load" and "GEN" markings.Please do not misconnect input and output connectors.

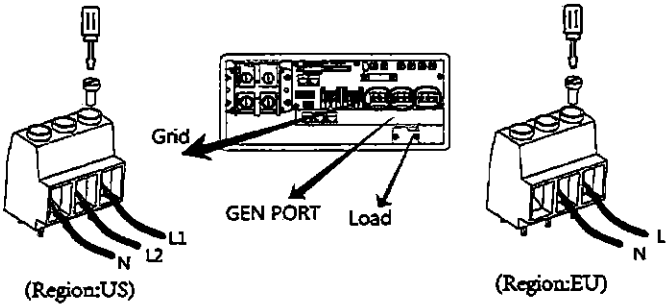
All wiring must be performed by a qualified personnel.It is very important for system safety and efficient operation to use appropriate cable for AC input connection. To reduce risk of injury,please use the proper recommended cable as below.

Model	Gauge	Cable(mm²)	Torque value
5/6KW	8AWG	8	1.2Nm
7.6/8KW	6AWG	13	1.2Nm

Chart 3-3 Recommended Size for AC wires

Please follow below steps to implement AC input/output connection:

1. Before making AC input/output connection,be sure to open DC protector or disconnector first.
2. Remove insulation sleeve 10mm length,unscrew the bolts,insert the AC input wires according to polarities indicated on the terminal block and tighten the terminal screws. Make sure the connection is complete.



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Be sure that AC power source is disconnected before attempting to wire it to the unit.

3. Then,insert AC output wires according to polarities indicated on the terminal block and tighten terminal. Be sure to connect corresponding N wires and PE wires to related terminals as well.
4. Make sure the wires are securely connected.
5. Appliances such as air conditioner are required at least 2-3 minutes to restart because it is required to have enough time to balance refrigerant gas inside of circuit.If a power shortage occurs and recovers in short time,it will cause damage to your connected appliances.To prevent this kind of damage,please check manufacturer of air conditioner if it is equipped with time-delay function before installation.Otherwise,this inverter will trigger overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner

3.5 PV Connection

Before connecting to PV modules,please install a separately DC circuit breaker between inverter and PV modules.It is very important for system safety and efficient operation to use appropriate cable for PV module connection.To reduce risk of injury,please use the proper recommended cable size as below.

Model	Wire Size	Cable(mm^2)	Torque value (max)
5/6/7.6/8KW	1X12AWG	4	1.2Nm

Chart 3-2 Cable size

To avoid any malfunction, do not connect any PV modules with possible current leakage to the inverter. For example, grounded PV modules will cause current leakage to the inverter. When using PV modules, please be sure NO grounding.

It is requested to use PV junction box with surge protection. Otherwise,it will cause damage on inverter when lightning occurs on PV modules.

3.5.1 PV Module Selection:

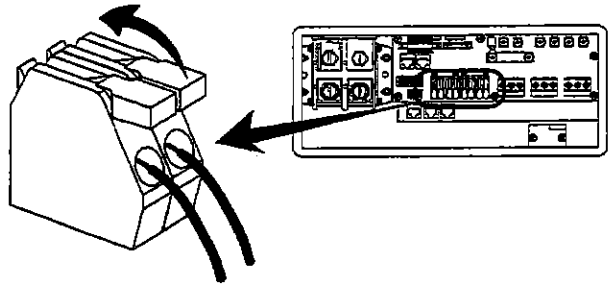
When selecting proper PV modules, please be sure to consider below parameters:
1) Open circuit Voltage (Voc) of PV modules not exceeds max. PV array open circuit voltage of inverter.
2) Open circuit Voltage (Voc) of PV modules should be higher than min. start voltage.

Inverter Model	5KW	6KW	7.6KW	8KW
PV Input Voltage	370V(100V~500V)			
PV Array MPPT Voltage Range	125Vdc-425Vdc			
No. of MPP Trackers	2			
No. of Strings per MPP Tracker	1+1	2+1	2+2	

Chart 3-5

3.5.2 PV Module Wire Connection:

Please follow below steps to implement PV module connection:
1. Remove insulation sleeve 10 mm for positive and negative conductors.
2. Suggest to put bootlace ferrules on the end of positive and negative wires with a proper crimping tool.
3. Check correct polarity of wire connection from PV modules and PV input connectors. Then, connect positive pole (+) of connection wire to positive pole (+) of PV input connector. Connect negative pole (-) of connection wire to negative pole(-)of PV input connector.Close the switch and make sure the wires are tightly fixed.



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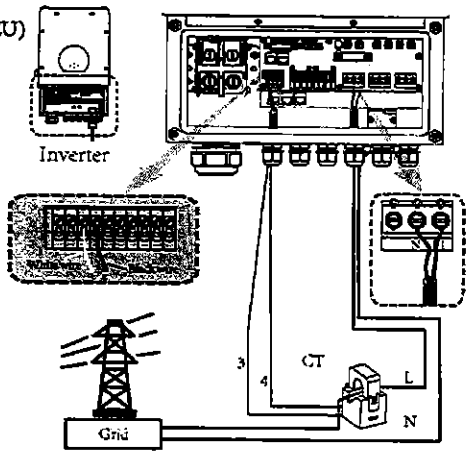
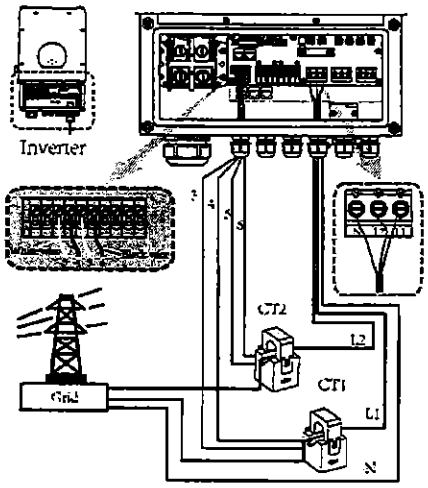
3.6 CT Connection

(Region:EU)



(Region:US)

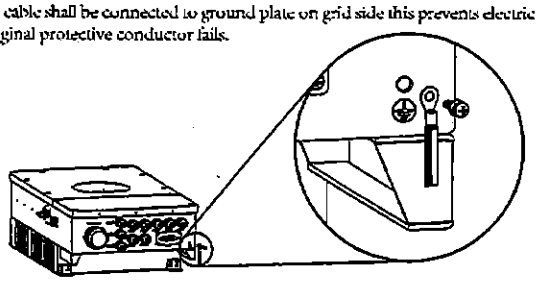


Note:

When the inverter is in the off-grid state, the N line needs to be connected to the earth.

3.7 Earth Connection(mandatory)

Ground cable shall be connected to ground plate on grid side this prevents electric shock, if the original protective conductor fails.



3.8 WIFI Connection

For the configuration of Wi-Fi Plug,please refer to illustrations of the Wi-Fi Plug.

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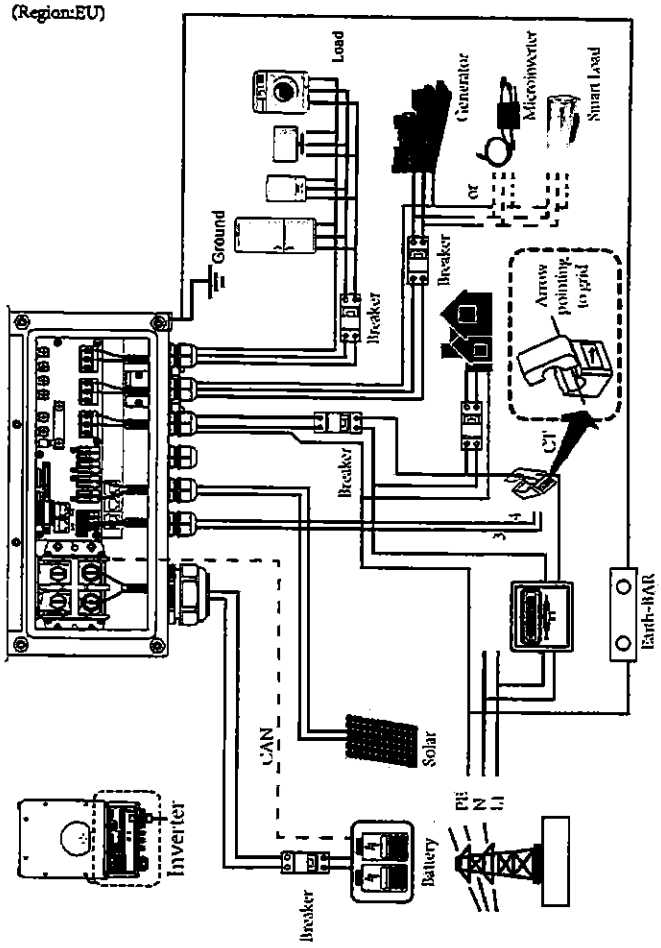
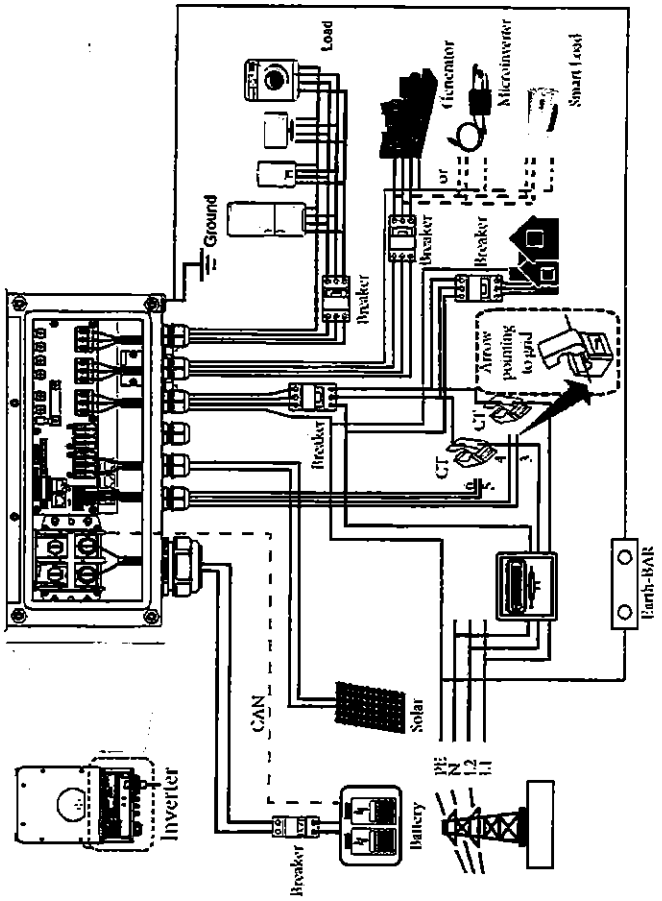
3.9 Wiring System for Inverter

(Region:EU)



(Region:US)



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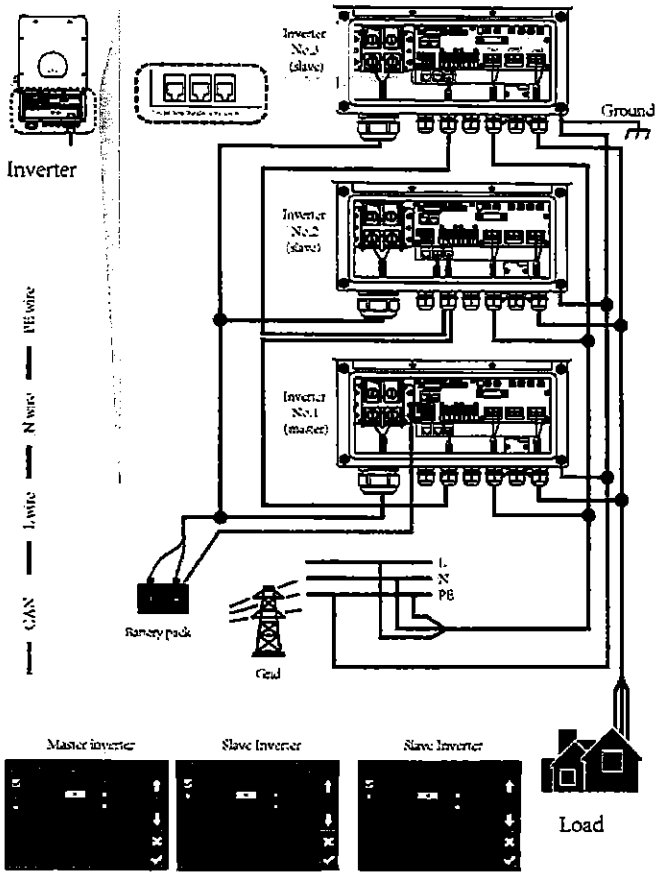
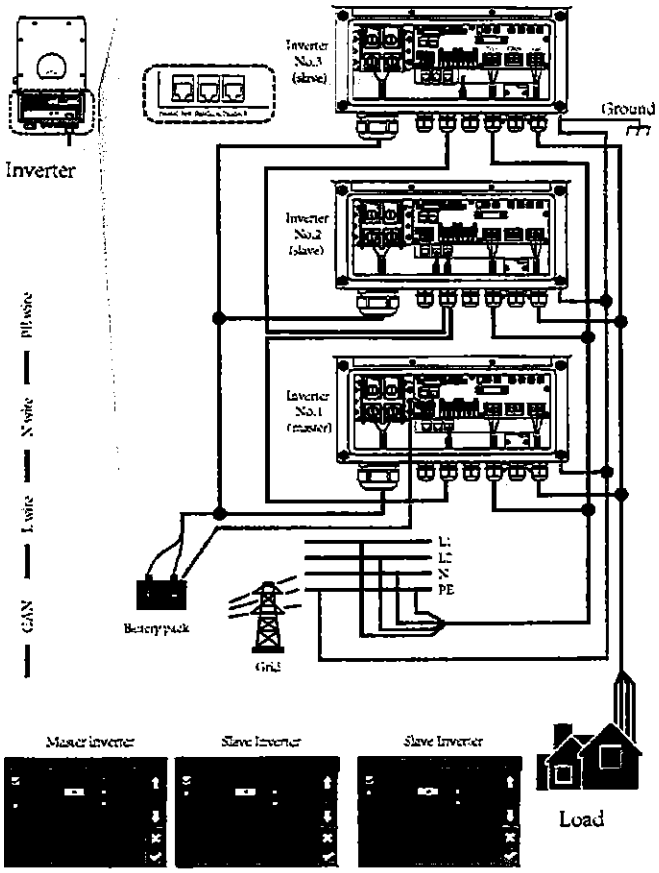
3.10 Single phase parallel connection diagram

(Region:EU)



3.11 Split phase parallel connection diagram

(Region:US)



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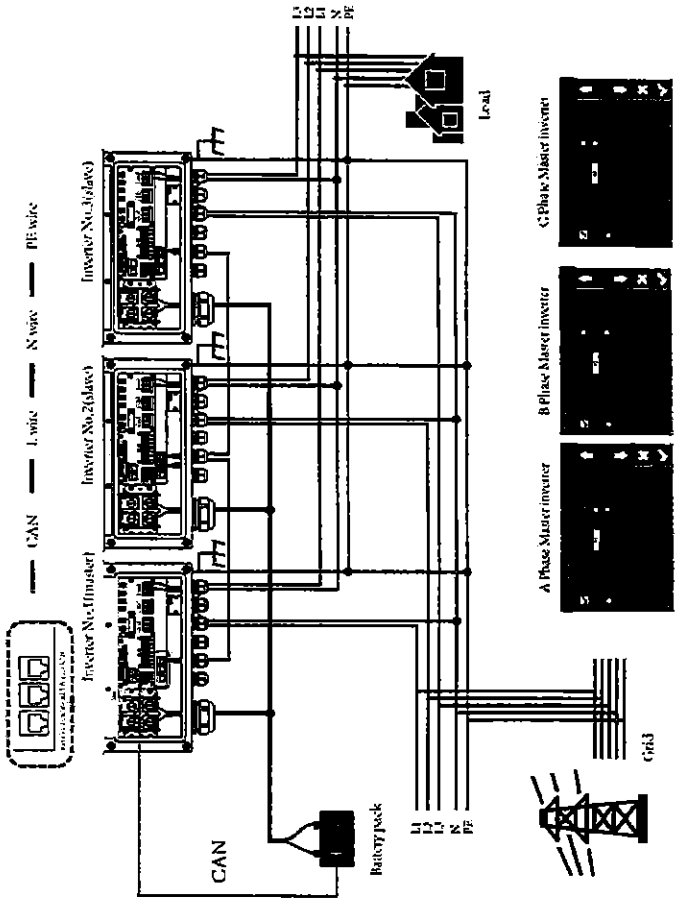
3.12 Three phase Parallel Inverter



4. OPERATION

4.1 Power ON/OFF

Once the unit has been properly installed and the batteries are connected well,simply press On/Off button(located on the left side of the case) to turn on the unit.When system without battery connected,but connect with either PV or grid,and ON/OFF button is switched off,LCD will still light up(Display will show OFF).In this condition,when switch on ON/OFF button and select NO battery,system can still working.

4.2 Operation and Display Panel

The operation and display panel,shown in below chart,is on the front panel of the inverter.It includes four indicators,four function keys and a LCD display,indicating the operating status and input/output power information.

LED Indicator		Messages
DC	Green led solid light	PV Connection normal
AC	Green led solid light	Grid Connection normal
Normal	Green led solid light	Inverter operating normal
Alarm	Red led solid light	Malfunction or warning

Chart 4-1 LED indicators

Function Key	Description
Esc	To exit setting mode
Up	To go to previous selection
Down	To go to next selection
Enter	To confirm the selection

Chart 4-2 Function Buttons

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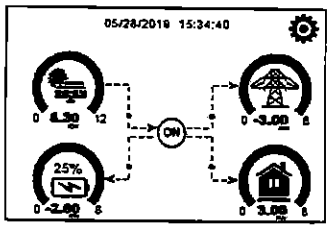
5. LCD Display Icons

5.1 Main Screen

The LCD is touchscreen,below screen shows the overall information of the inverter.



1.The icon in the center of the home screen indicates that the system is Normal operation. If it turns into "comm./F01-F64" it means the inverter has communication errors or other errors,the error message will display under this icon(F01-F64 errors,detail error info can be viewed in the System Alarms menu).

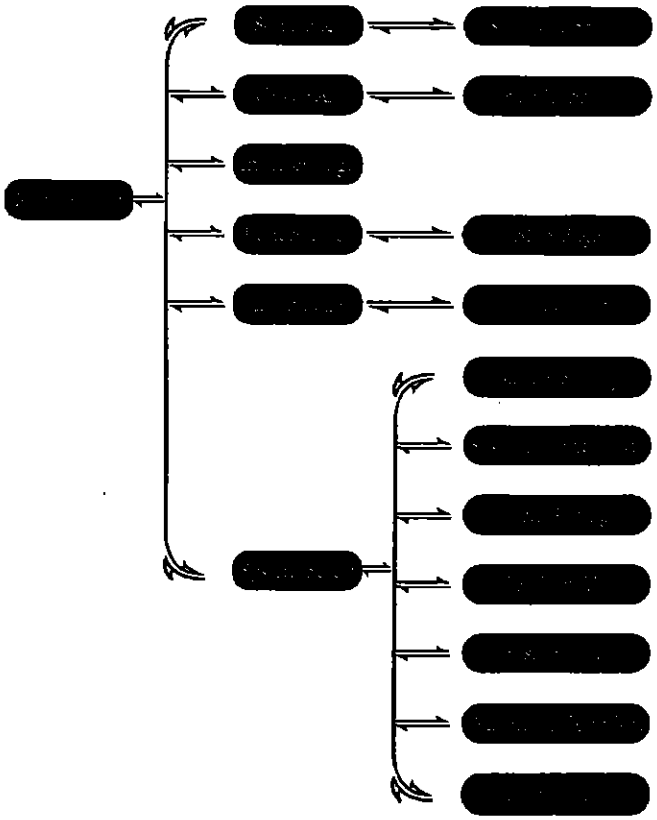
2.At the top of the screen is the time.

3.System Setup Icon,Press this set button,you can enter intothe system setup screen which including Basic Setup,Battery Setup,Grid Setup,System Work Mode,Generator port use, Advanced function and Li-Batt info.

4.The main screen showing the info including Solar,Grid,Load and Battery.Its also displaying the energy flow direction by arrow.When the power is approximate to high level, the color on the panels will changing from green to red so system info showing vividly on the main screen.

- PV power and Load power always keep positive.
- Grid power negative means sell to grid,positive means get from grid.
- Battery power negative means charge,positive means discharge.

5.1.1 LCD operation flow chart



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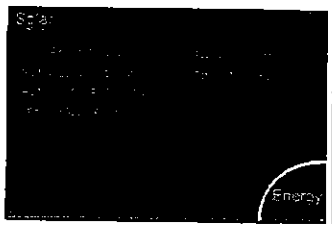
5.2 Solar Power Curve



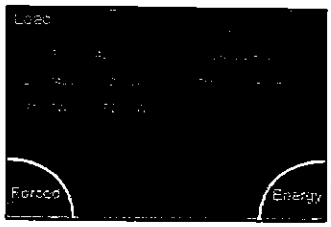
This is Solar Panel detail page.

① Solar Panel Generation.
② Voltage,Current,Power for each MPPT.
③ Solar Panel energy for Day and Total.

Press the "Energy" button will enter into the power curve page.

This is Inverter detail page.

① Inverter Generation.
② Voltage,Current,Power for each Phase.
③ DC-Tamean DC-DC temperature.
AC-Tamean Heat-sink temperature.

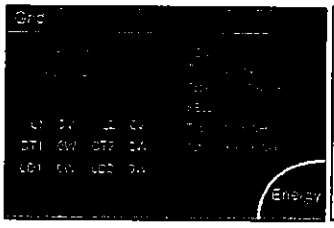


This is Back-up Load detail page.

① Back-up Power.
② Voltage,Power for each Phase.
③ Back-up consumption for Day and Total.

Press the "Energy" button will enter into the power curve page.

Press the "Forced" button will forced open the smart-load(While GEN PORT utilized as Smart-load output).



This is Grid detail page.

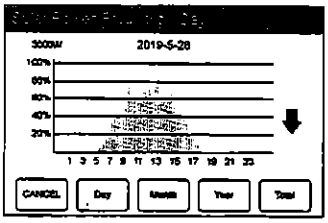
① Status,Power,Frequency.
② L1&L2:Voltage for each Phase
CT1&CT2:External Current Sensor Power
LD1&LD2:Internal Current Sensor Power.
③ BUY:Energy from Grid to Inverter.
SELL:Energy from Inverter to Load.

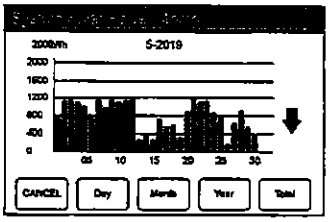
Press the "Energy" button will enter into the power curve page.

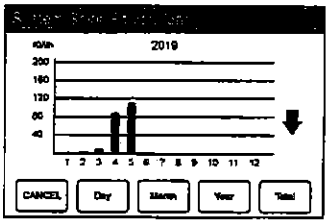
This is Battery detail page.

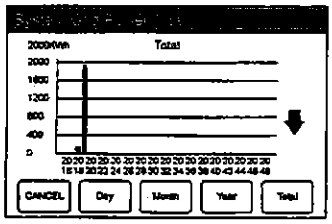
If you use Lithium Battery,you can enter BMS page.

5.3 Curve Page-Solar & Load & Grid









Solar power curve for daily,monthly,yearly and total can be roughly checked on the LCD. For more accuracy power generation,pls check on the monitoring system.Click the up and down arrow to check power curve of different period.

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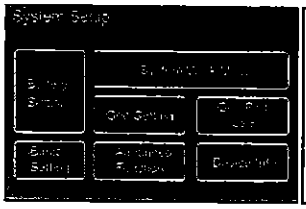
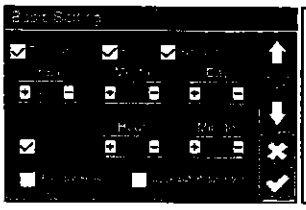
5.4 System Setup Menu



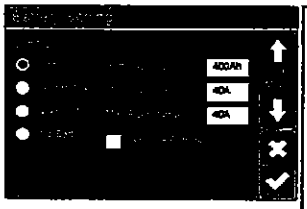
This is System Setup page.

5.5 Basic Setup Menu



This is Basic Setup page.

5.6 Battery Setup Menu



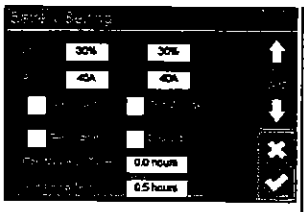
Lithium Battery

Batt Mode-------- Lithium
Max A charge-------- 0-185A
Max A Discharge-----0-185A
Activate Battery------Enable

AGM Battery

Batt Mode-------- Use Batt V or Use Batt V%
Batt Capacity-------- 50-2000Ah
Max A charge-------- 0-185A
Max A Discharge-----0-185A
Activate Battery ------Enable

No Batt --- No need to set other parameters, keep the default value.



This is Battery Setup page.①③

Start =30%---It indicates that the Generator will start when the Battery capacity is less than 30% in the condition of Off-grid mode.

A = 40A---It indicates the Current that the Generator charges the Battery after started.

Gen Charge---The Switch that the Generator charges the Battery.

Gen Signal ---It indicates whether the Generator's ATS signal is on.

Max RunTime(xxhours)Indicates that the generator is the longest in a day.The time xxhours can be run, and the generator will be turned off when the time is up. 24.0hours (default) means that It keeps running without shutting down.

DownTime(xxhours)It indicates the delay of the Generator to shut down after it has reached the run time.

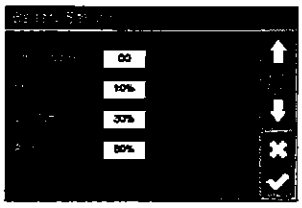
This is Grid Charge, you need select. ②

Start =20%---no use, for customization.

A = 40A--- It indicates the Current that the Grid charges the Battery.

Grid Charge---The Switch that the Generator charges the Battery.

Grid Signal ---Disable.



Lithium Mode--This is BMS protocol,default is 0 please reference the document (Approved Battery-Deye) .

Shutdown 10%--the inverter will shutdown if the SOC is below this.

Low Batt 20% --the inverter will shutdown if the SOC is below this.

Restart 40%--Restart level when inverter shutdown

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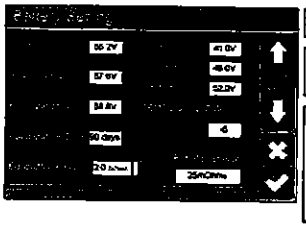


This is Battery 4 stages charge voltage. ①

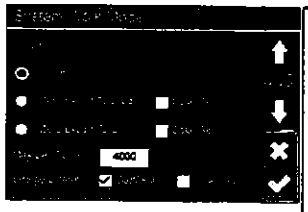
This is for professional installers,you can hold default if you do not know. ②

Shutdown 10%--the inverter will shutdown if the SOC is below this.

Low Batt 20%: —the inverter will alarm if the SOC is below this. ③

Restart 40% —Restart level when inverter shutdown.

5.7 System Work Mode Setup Menu



Work Mode

Selling First : It means that the excess energy has priority in grid connection.

Zero Export To Load : It means output power according to i. consumed by the load.

Zero Export To CT : It means output power according to the CT position.

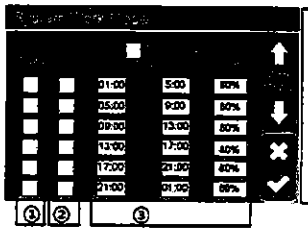
Solar Sell : It means that the excess solar energy can be integrated into the grid.

Max Sell Power 0-8000W

Energy Pattern

BattFirst--- It means solar power will charge battery first, when battery is full, then feed-out power to the Load or Grid.

LoadFirst— The solar energy will be used to supply the local load first,then to charge the battery.The redundant power will export to the public grid.



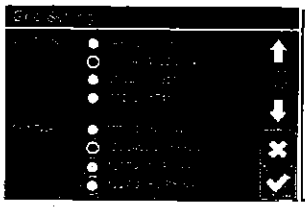
Time of use

① Switch for Grid charging the battery.

② Switch for Gen charging the battery.

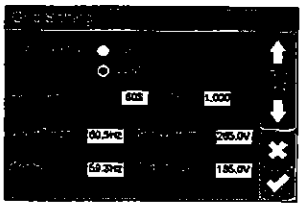
③ There are six time period can be set, each period must from small to large.

5.8 Grid Setup Menu



Please select the correct Grid Mode in your local area. If you are not sure, please choose General Standard.

Please select the correct Grid Type in your local area, otherwise the machine will not work or be damaged.

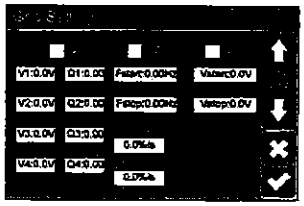


CT/174/1/3BPO/SC, CPUC RULE21, SRD-UL-1741

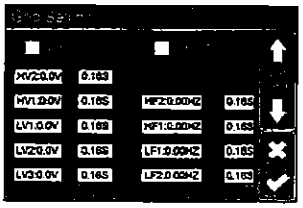
No need to set the function of this interface.

General Standard

Please select the correct Grid Frequency in your local area. You can hold this in default value.



For California only.



For California only.

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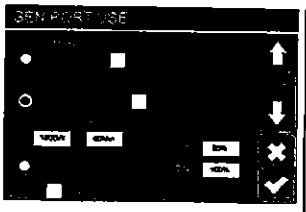
5.9 Generator Port Use Setup Menu



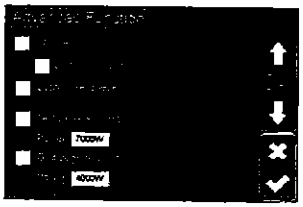
Generator Inputtuse Generator

SmartLoad Output: if the SOC is up than "ON" and solar power is high than 1000W, the inverter will open smartload.

On Grid always on:mean when have Grid,the smartload will always on

Micro Inv Input:Inverter will open Microinverter,if the SOC if below the "ON" and close if the SOC if up than the "OFF"

5.10 Advanced Function Setup Menu

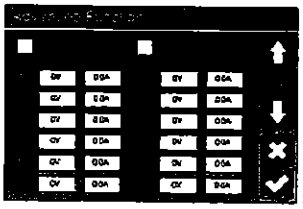


Solar Arc Fault ON---This is only for US.

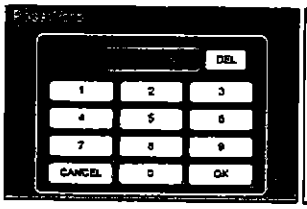
System selfcheck ---Disable. this is only for factory.

Gen Peak-shaving---Enable When the power of the generator exceeds the rated value of it, the inverter will provide the redundant part to ensure that the generator will not overload.

Grid Peak-shaving---Enable When the power of the grid exceeds the set value, the inverter will provide the redundant part to ensure that the grid power does not exceed the set value.



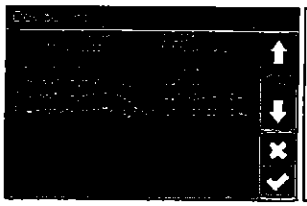
This is for WindTurbine



Factory restart: 9999

Lock out all changes:7777

5.11 Device Info Setup Menu



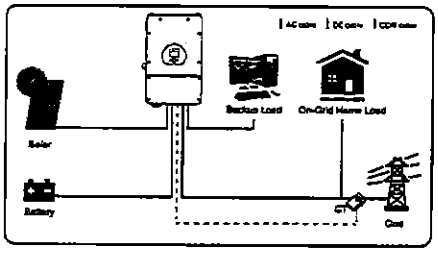
This page show Inverter ID, inverter version and alarm codes.

HMI: LCD version

MAIN: MCU version

6. Mode

Mode I:Basic



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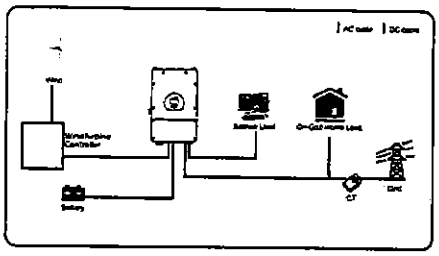
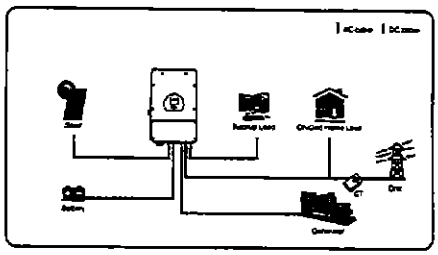
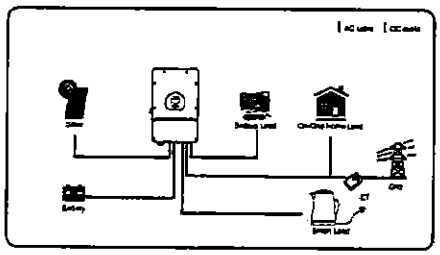
Mode II: With WindTurbine



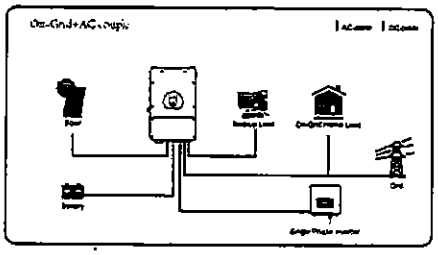
Mode III: With Generator



Mode IV: With Smart-Load



Mode V: With On-Grid Inverter



The 1st priority power of the system is always the PV power,then 2nd and 3rd priority power will be the battery bank or grid according to the settings. The last power backup will be the Generator if it is available.

7. Fault information and processing

The energy storage inverter is designed according to the grid-connected operation standard and meets the safety requirements and electromagnetic compatibility requirements. Before leaving the factory, the inverter undergoes several rigorous tests to ensure that the inverter can operate reliably.

If any of the fault messages listed in Table 6-1 appear on your inverter and the fault has not been removed after restarting, please contact your local dealer or service center. You need to have the following information ready.

1. Inverter serial number;
2. Distributor or service center of the inverter ;
3. On-grid power generation date;
4. The problem description (including the fault code and indicator status displayed on the LCD) is as detailed as possible.
5. Your contact information.In order to give you a clearer understanding of the inverter's fault information, we will list all possible fault codes and their descriptions when the inverter is not working properly.

In order to give you a clearer understanding of the inverter's fault information, we will list all possible fault codes and their descriptions when the inverter is not working properly.

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Error code	Description	Solutions
F13	Working mode change	Inverter work mode changed 1. wait for a minute and check; 2. Seek help from us, if can't go back to normal state.
F16	AC over current fault of hardware	AC side over current fault 1. Please check whether the backup load power and common load power are within the range; 2. Restart and check whether it is in normal; 3. Seek help from us, if can not go back to normal state.
F20	DC over current fault of the hardware	DC side over current fault 1. Check PV module connect and battery connect; 2. Turn off the DC switch and AC switch and then wait one minute,then turn on the DC/AC switch again; 3. Seek help from us, if can not go back to normal state.
F23	AC leakage current is transient over current	Leakage current fault 1. Check the cable of PV module and inverter; 2. Restart inverter; 3. Seek help from us, if can not go back to normal state.
F24	DC insulation impedance failure	PV isolation resistance is too low 1. Check the connection of PV panels and inverter is firmly and correctly; 2. Check whether the PE cable of inverter is connected to ground; 3. Seek help from us, if can not go back to normal state.
F26	The DC busbar is unbalanced	1. Please wait for a while and check whether it is normal; 2. If still same, and turn off the DC switch and AC switch and wait for one minute and then turn on the DC/AC switch; 3. Seek help from us, if can not go back to normal state.
F35	No AC grid	No Utility 1. Please confirm grid is lost or not; 2. Check the grid connection is good or not; 3. Check the switch between inverter and grid is on or not; 4. Seek help from us, if can not go back to normal state.
F41	AC Line W/U over voltage	Grid voltage fault 1. Check the AC voltage is in the range of standard voltage in specification; 2. Check whether grid AC cables are firmly and correctly connected; 3. Seek help from us, if can not go back to normal state.
F42	AC Line W/U low voltage	Grid voltage fault 1. Check the AC voltage is in the range of standard voltage in specification; 2. Check whether grid AC cables are firmly and correctly connected; 3. Seek help from us, if can not go back to normal state.
F47	AC Over frequency	Grid frequency out of range 1. Check the frequency is in the range of specification or not; 2. Check whether AC cables are firmly and correctly connected; 3. Seek help from us, if can not go back to normal state.

Error code	Description	Solutions
F48	AC lower frequency	Grid frequency out of range 1. Check the frequency is in the range of specification or not; 2. Check whether AC cables are firmly and correctly connected; 3. Seek help from us, if can not go back to normal state.
F56	DC busbar voltage is too low	Battery voltage low 1. Check whether battery voltage is too low; 2. If the battery voltage is too low, using PV or grid to charge the battery; 3. Seek help from us, if can not go back to normal state.
F63	ARC fault	1. ARC fault detection is only for US market; 2. Check PV module cable connection and clear the fault; 3. Seek help from us, if can not go back to normal state.
F24	DC insulation impedance failure	Heat sink temperature is too high 1. Check whether the work environment temperature is too high; 2. Turn off the inverter for 10mins and restart; 3. Seek help from us, if can not go back to normal state.

Chart 6-1 Fault information

Under the guidance of our company, customers return our products so that our company can provide service of maintenance or replacement of products of the same value. Customers need to pay the necessary freight and other related costs.

Any replacement or repair of the product will cover the remaining warranty period of the product. If any part of the product or product is replaced by the company itself during the warranty period, all rights and interests of the replacement product or component belong to Ningbo Deye Inverter Technology Co., Ltd.

Factory warranty does not include damage due to the following reasons:

- Damage during transportation of equipment;
- Damage caused by incorrect installation or commissioning;
- Damage caused by failure to comply with operation instructions, installation instructions or maintenance instructions;
- Damage caused by attempts to modify, alter or repair products;
- Damage caused by incorrect use or operation;
- Damage caused by insufficient ventilation of equipment;
- Damage caused by failure to comply with applicable safety standards or regulations;
- Damage caused by natural disasters or force majeure (e.g. floods, lightning, overvoltage, storms, fires, etc.)

In addition, normal wear or any other failure will not affect the basic operation of the product. Any external scratches, stains or natural mechanical wear does not represent a defect in the product.

8.Limitation of Liability

In addition to the product warranty described above, the state and local laws and regulations provide financial compensation for the product's power connection (including violation of

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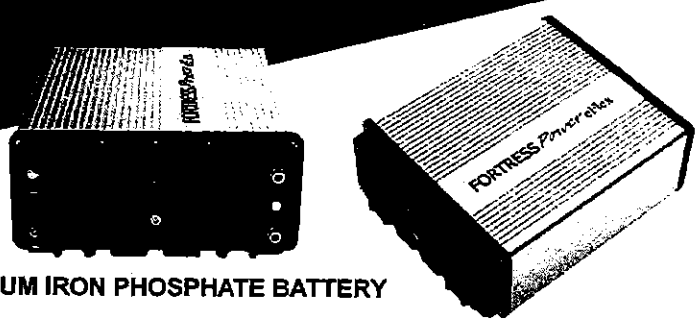
implied terms and warranties). The company hereby declares that the terms and conditions of the product and the policy cannot and can only legally exclude all liability within a limited scope.

9. Datasheet

Technical Data	SUN-5K-SG01LP1-US	SUN-6K-SG01LP1-US	SUN-7.6K-SG01LP1-US/EU	SUN-8K-SG01LP1-US/EU
Battery Input Data				
Battery Type	Lead-acid or Li-Ion			
Battery Voltage Range (V)	40V-60V			
Max. Charging Current (A)	120A	135A	190A	190A
Max. Discharging Current (A)	120A	135A	190A	190A
Charging Curve	3 Stages/equalization			
External Temperature Sensor	Optional			
Charging Strategy for Li-Ion Battery	Self-adaption to BMS			
PV String Input Data				
Max. DC Input Power (W)	6500W	7800W	9880W	10400W
PV Input Voltage (V)	370V(100V~500V)			
MPPT Range (V)	125V-425V			
Start-up Voltage (V)	125V			
PV Input Current (A)	11A+11A	18A+9A	18A+18A	18A+18A
No. of MPPT Trackers	2			
No. of Strings per MPPT Tracker	1+1	2+1	2+2	2+2
AC Output Data				
Rated AC Output and UPS Power (W)	5000W	6000W	7600W	8000W
Max AC Output Power(W)	5500W	6600W	8360W	8800W
Peak Power(off grid)	2 times of rated power, 10 S			
AC Output Rated Current(A)	20.8A	25A	31.7A/33A	33.4A/35A
Max. AC Current(A)	24A	28.8A	36.6A/38A	38.3A/40A
Max Continuous AC Passthrough(A)	55A	55A	50A	50A
Output Frequency and Voltage	50/60Hz 120/240Vac(split phase), 208Vac(2/3 phase),230Vac(single phase)			
Grid Type	Split phase、2/3 phase、Single Phase			
Current Harmonic Distortion	THD<3%(Linear loading<1.5%)			

Efficiency	
Max. Efficiency	97.60%
Euro Efficiency	97.00%
MPPT Efficiency	99.90%
Protection	
PV Arc Fault Detection	Integrated(Except European Type)
PV Input Lightning Protection	Integrated
Anti-islanding Protection	Integrated
PV String Input Reverse Polarity Protection	Integrated
Insulation Resistor Detection	Integrated
Residual Current Monitoring Unit	Integrated
Output Over Current Protection	Integrated
Output Shorted Protection	Integrated
Output Over Voltage Protection	Integrated
Certifications and Standards	
Grid Regulation	UL1741,IEEE1547,RULE21,VDE0126,AS4777,NRS2017,G98,G99
Safety Regulation	IEC62109-1, IEC62109-2
EMC	EN61000-6-1, EN61000-6-3, FCC 15 class B
General Data	
Operating Temperature Range (℃)	-25~60℃, >45℃ Derating
Cooling	Fan
Noise (dB)	<30
Communication with BMS	RS485; CAN
Weight (Kg)	32Kg
Size (Width*Height*Depth mm)	680×420×233mm
Protection Degree	IP65
Installation style	Wall-mounted
Warranty	5 years

eFLEX 5.4



LITHIUM IRON PHOSPHATE BATTERY

The Fortress Power eFlex is a 5.4 kWh scalable energy storage solution based on safe and energy dense prismatic Lithium Iron Phosphate cells. The digital processor Battery Management System (BMS) includes high amperage contactor disconnects and advanced Closed-Loop inverter communication, as well as individual cell voltage monitoring, temperature monitoring, and cell balancing to maximize reliability and longevity. Canbus, modbus, and wifi communication enable internet-of-things compatibility. The IP65 case ensures direct water spray and dust will not penetrate the battery internals from all directions. The unit can be wall mounted, floor mounted, and server rack mounted for hard-to-reach access in renewable, marine, RV, mobile, telecom, railway applications and more!

- **98% Roundtrip efficiency**
- **High Durability and Long-Lasting**
- **Safe Lithium Iron Phosphate Technology (LiFeP04)**
- **Flexible mounting options**
- **Data communication with popular hybrid inverters**
- **Remote monitoring**
- **Advanced cell level monitoring and balancing**
- **Integrated heat sink for 5x better thermal performance**

Electrical Specifications	
Nominal Voltage:	51.2V
Nominal Capacity:	105AH
Rated Capacity @ 0.5C (50A):	5.374 kWh
Resistance:	<10 mΩ
Efficiency (at 0.5C):	98%
Self-Discharge:	<1 % / Month
Maximum Allowed Modules in Parallel:	15

Charge Specifications	
Recommended Charge Current:	<55A
Maximum Charge Current:	100A
Recommended Charge Voltage:	54.4V
BMS Charge Voltage Disconnect:	>56V

Discharge Specifications	
Recommended Continuous Discharge Rate:	60A (3KW DC)
Peak Continuous Discharge Rate:	100A (5 KW 60 Min)
Maximum Surge Power Rate:	130A (6.6 KW 5S)
Recommended Low Voltage Disconnect:	48V
Battery Low Voltage Protection:	<45V
Battery recovery Voltage:	45V

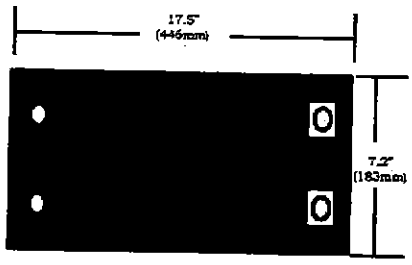
Temperature Specifications	
Discharge Temperature:	-4°F~131°F (-20°C ~ 55°C)
Charge Temperature:	32°F ~ 114°F (0°C ~ 45°C)
Storage Temperature:	20°F ~ 95°F (-6°C ~ 35°C)

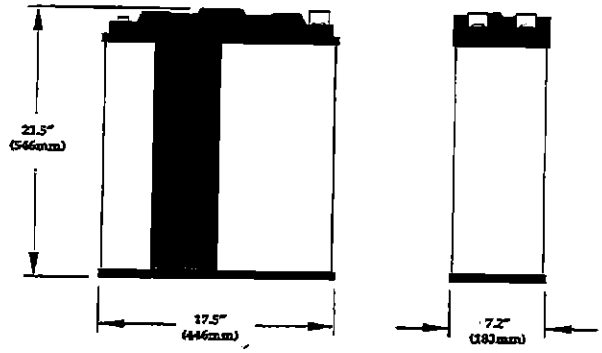
Mechanical Specifications	
Dimensions: (L*W*H)	21.5 x 23 x 17.5 x 7.3 inches 546 x 446 x 183 mm
Weight:	108 lbs (49kg)
Terminal Type:	M8
Ring Terminal Size:	3/8ths or larger
Terminal Torque:	7.0 – 7.7 Nm (5.1 – 5.7 ft-lb)
Case Material:	Anodized Aluminum
Enclosure Protection:	IP65
Cell Type Chemistry:	Prismatic - $LiFePO_4$

Compliance Specifications:	
Certifications:	UL1973, UL1642
Shipping Classification:	UN 38.3 CLASS 9

Basic Charging Profile	
Bulk + Absorb Charge	54.4V
Absorb Time	60 minutes
Float Charge	54V
Inverter Charging	2 Stage / No Float
Equalization	No equalization (typical) 54.6V for 10 seconds (rare)
Temperature Compensation	None

Intertek

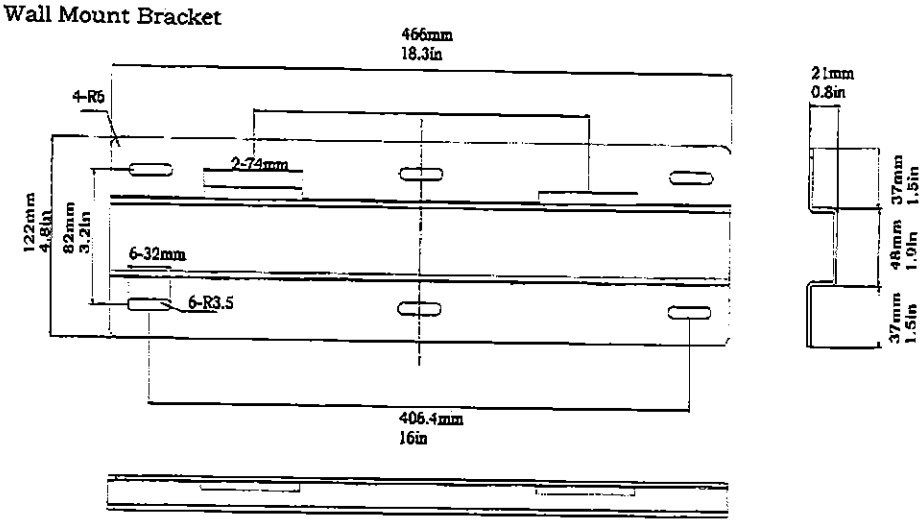




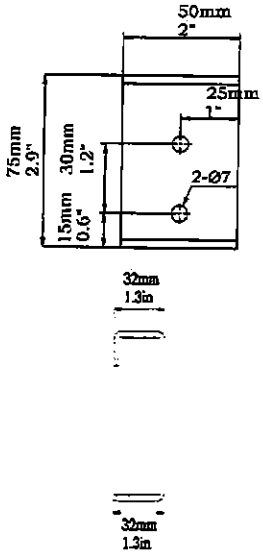
Accessories (Not Included)

Wall Mount Kit

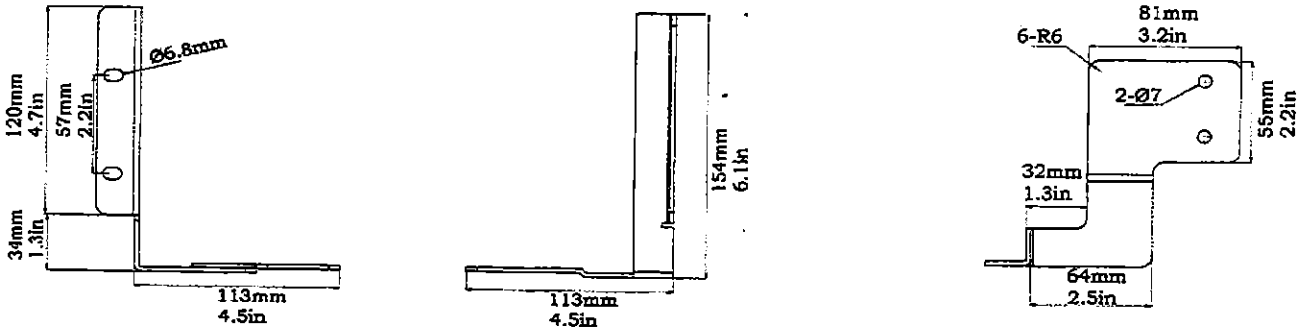
Wall Mount Bracket



Wall Mount Hook



Server Rack Mount Kit



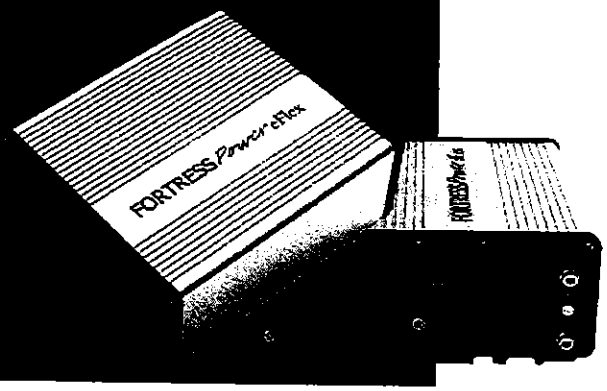
Scan for Installation Manual:

FORTRESS PowereFlex

eFlex 5.4 Lithium Battery Storage

Energy Savings & Security with Fortress Power

- Maximize Your Solar Investment with Battery Storage
- Achieve Grid Independence during Power Outages
- Reduce Your Electric Bill
- Versitile Applications including Home, Business, Mobile, Telecom and Railway



SCAN FOR INSTALLATION MANUAL

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FORTRESS Power

SECURE YOUR ENERGY

eFlex 5.4 kWh Solar Storage Battery

Taking Innovation to the Next Level

Safest Lithium Technology (LiFeP04) on the market

MODbus and CANbus Communication for Internet-of-Things Copatibility

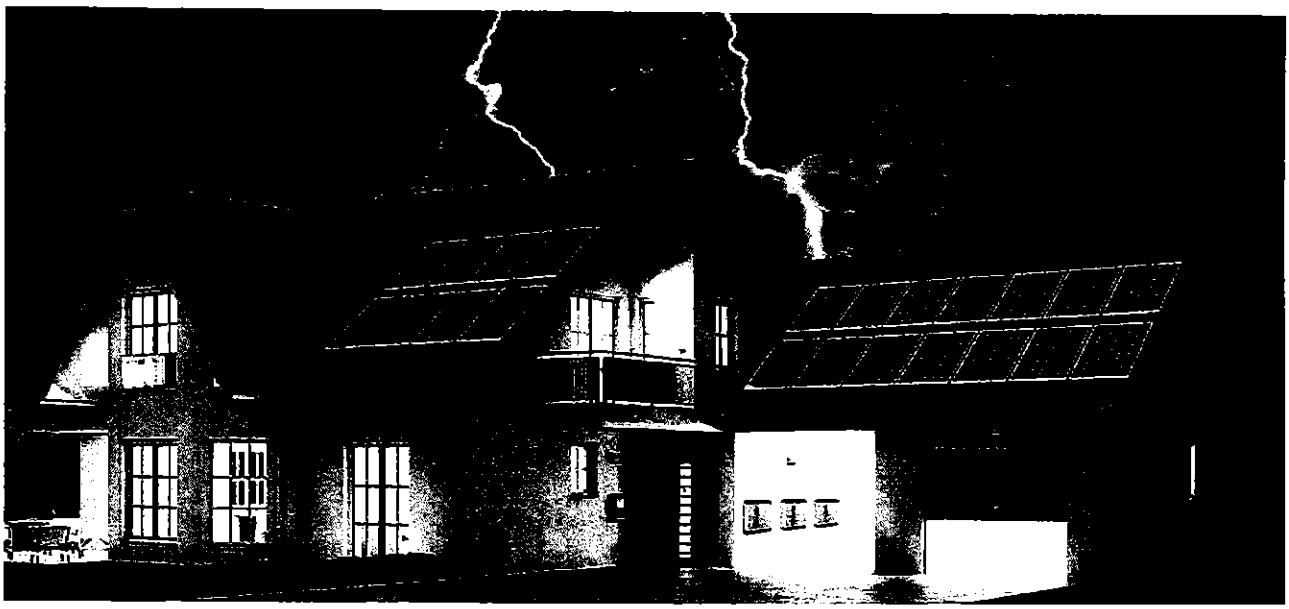
98% Roundtrip Efficiency

IP65 Dust and Water Proof Design

10 Year Warranty with Unlimited Partial Cycles

Data communication with popular hybrid inverters

Market Leading BMS Battery to Maximize Reliability and Longevity



"Few companies offer such support at all these levels"

"Fortress Power has been fantastic to work with. Their technical team is readily available for installation questions. Their shipping team keeps me informed of the timing of deliveries. The sales department makes sure we know about sale prices, new products, and their terrific discount for veterans. Few companies offer such support at all these levels. A super team to work with! "

- Lori Hunt
Practical Preppers LLC

www.fortresspower.com sales@fortresspower.com (877) 497-6937

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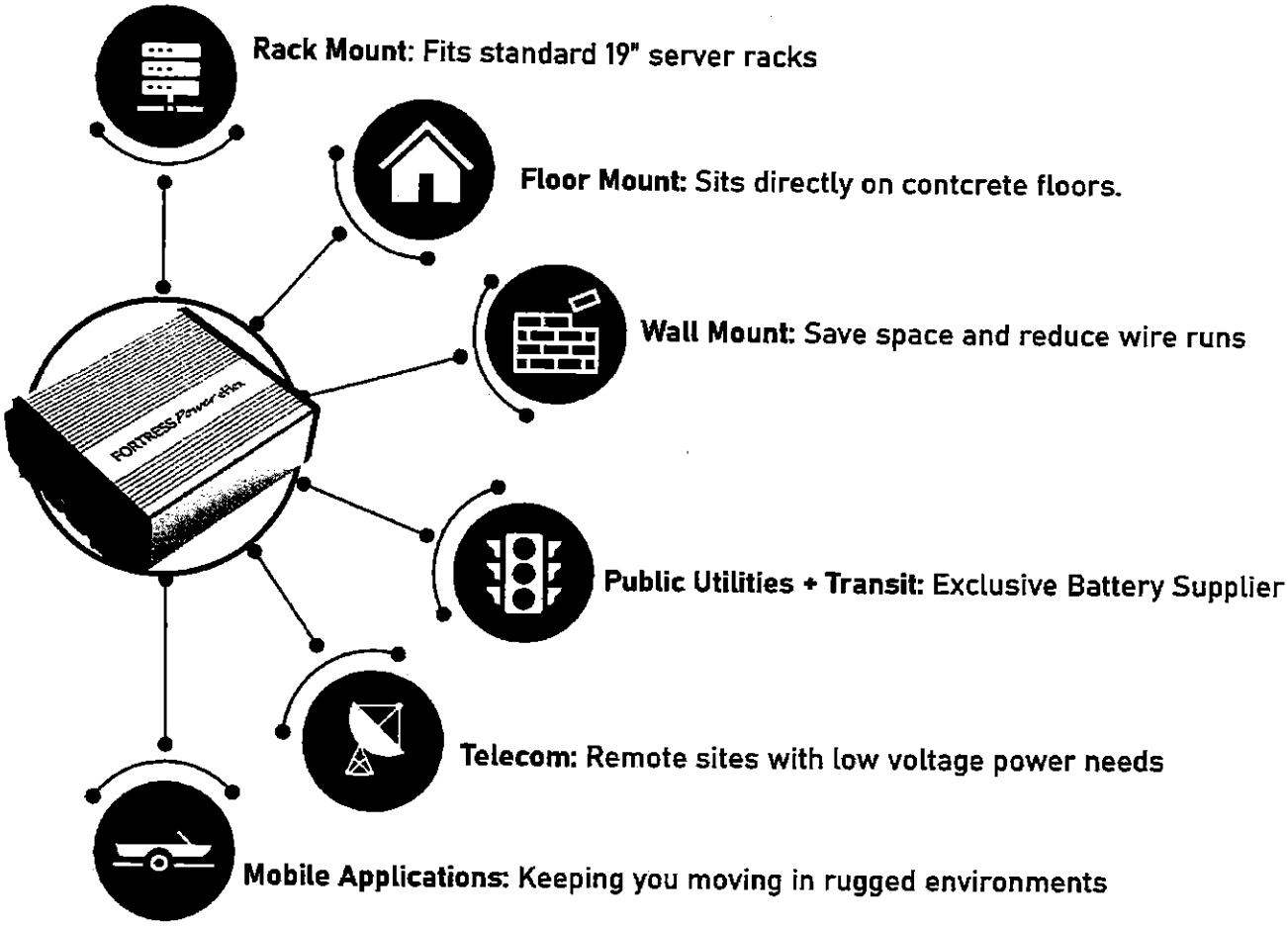
FORTRESS Power

SECURE YOUR ENERGY

Versatile Applications

Designed For Multiple Project Scenarios



"You Think It - We'll Power It"

SCAN ME

INTERESTED IN BECOMING A CERTIFIED INSTALLER?

Join us to bring the latest energystorages to millions of homes and businesses across the world!

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eFlex 5.4 kWh Lithium Storage

	eFlex 5.4
Total Energy (kWh)	5.4
Max. Charge Current (Continuous) [A]	100
Max. Discharge Current (Continuous) [A]	60
Max. Pulse Current (for 5sex) [A]	130
Capacity [Ah]	105
Voltage Range [V]	44-58.4
Charging Temperature [F]	32 to 113
Discharging Temperature [F]	32 to 140
Storage Temperature [F]	32 to 95
Dimension [LxWxH, Inch]	21.5 x 17.5 x 7.2
Weight [lbs]	116
Life Cycles	6000 @ 80% DoD
Round Trip Efficiency	>98%

Compatible with Most Inverters on the Market

Schneider Sol-Ark MidNite Solar OutBack Power SMA Morningstar

ABOUT FORTRESS POWER

Fortress Power proudly services homes, businesses, utilities, telecom and transportation companies worldwide. Our Pennsylvania-based team's passion for clean energy storage has earned us a place among the world's top energy storage battery manufacturers.

Our logistics centers in California, Florida and Pennsylvania offer easy distribution to all of our major markets. Fortress Power's high-performance solar lithium battery storage products are designed, engineered and inventoried along with live technical support in the United States.

Fortress Power has partnered with industry leading lending institutions to help make your solar investment as easy as possible. Please visit our website for purchasing and financing options.

Fortress Power is a manufacturer of high-performance solar lithium battery storage products that are designed, engineered and inventoried along with live technical support in the United States!

www.fortresspower.com sales@fortresspower.com (877) 497-6937

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GOBIERNO DE PUERTO RICO

Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2020-CER-005553

Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: GERMAN VELAZQUEZ

Correo Electrónico: gvelazquez@dynamicsolarpr.net

Compañía: DYNAMIC SOLAR

Datos de Equipo Certificado

Tipo de Equipo(s): Batería

Clasificación: Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
FORTRESS POWER	eFLEX 5.4		Capacidad: 105 Ah Voltaje Nominal: 52 VDC Tipo de Batería: LITHIUM IRON PHOSPHATE Tipo de Carga y Descarga: 100% DoD (Depth of Discharge) Dimensiones Nominales: 546 mm x 183 mm x 446 mm Peso nominal: 116 lbs. Garantía Manufactura: 10 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
18/AUG/2020

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

FORTRESS Power
SECURE YOUR ENERGY

AUTHORIZED DISTRIBUTOR LETTER

3/04/2021

To whom it may concern:

This letter is to CERTIFY, that **CARIBBEAN ENERGY OF PUERTO RICO**., is an **AUTHORIZED DISTRIBUTOR** of our Company **FORTRESS POWER,** and is permitted to sale and distribute our products in the country of **PUERTO RICO**. For any assistance please contact:

Jannies Cotto
CARIBBEAN ENERGY OF PUERTO RICO
General manager
PO Box 29155, San Juan PR 00929
Ph. 787.750.5566
Fax 787.760.3430
E. jcotto@cedpr.com

If you have any questions, please do not hesitate to contact me.

Jing Yu, CEO

Tigo® Flex MLPE

TS4-A-2F

PV Module Advanced Add-On

The TS4-A-2F (Fire Safety) is the advanced add-on rapid shutdown solution that brings smart module functionality to standard PV modules for higher reliability. Ensure safety by upgrading existing PV systems or by adding safety features to new installations.

The TS4-A-2F complies with NEC 2017 690.12 Rapid Shutdown specifications when installed with the Tigo RSS Transmitter or an inverter with built-in Tigo certified transmitter.

Included Features

Fire Safety

Enhanced **safety** for NEC 690.12 rapid shutdown compliance

Easy Installation

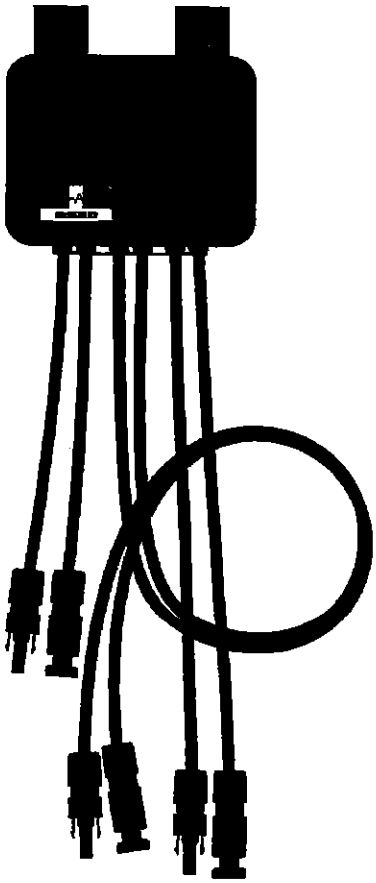
Snap to standard module frame or remove brackets for rack mounting

PLC Signaling

Control rapid shutdown with the Tigo RSS Transmitter

Automatic Shutdown

PV array enters rapid shutdown in event of AC grid loss



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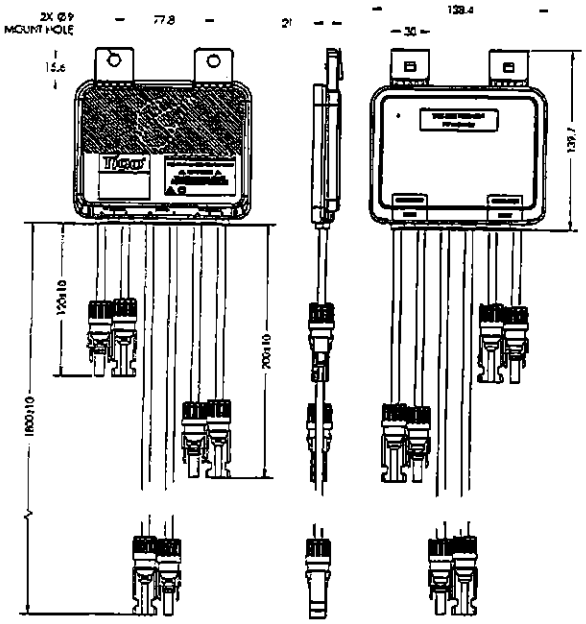
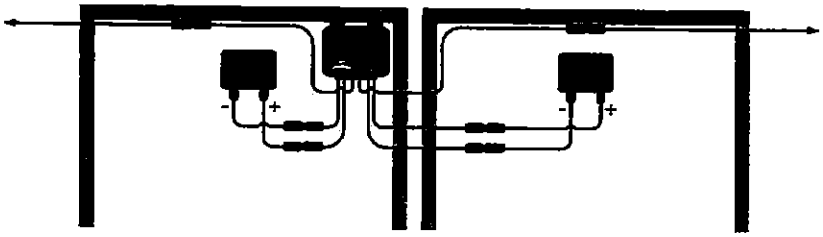
TS4-A-2F SPECIFICATIONS

Environmental	
Operating Temperature Range	-40°C to +70°C (-40°F to +158°F)
Outdoor Rating	IP68, NEMA 3R
Mechanical	
Dimensions	138.4mm x 139.7mm x 22.9mm
Weight	590g
Electrical	
Voltage Range (per input)	16 - 90V
Maximum Current (per input)	15A
Maximum Power (total)	1000W
Output Cable Length	1.2m or 2.2m
Connectors	MC4 (standard)
Communication Type	PLC
Rapid Shutdown UL Listed (NEC 2014 & 2017 690.12)	Yes



Rapid shutdown activation of TS4-A-2F requires RSS Transmitter.



Installation example: Serial connection of two PV modules to a TS4-A-2F

ORDERING INFORMATION

Standard	
484-00252-12	1500V UL, 1.2m cable, MC4
484-00252-22	1500V UL, 2.2m cable, MC4

For sales info:
sales@tigoenergy.com or 1.408.402.0802

For product info:
Visit tigoenergy.com/products

For technical info:
Visit support.tigoenergy.com

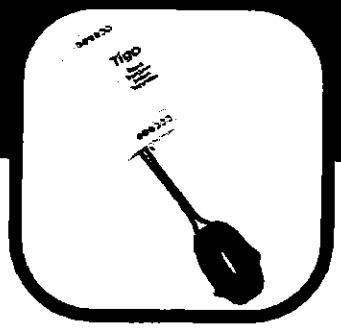
For additional info and product selection assistance, use Tigo's online design tool at tigoenergy.com/design

FC IC c UL us LISTED E469960 Photovoltaic Rapid Shutdown System Equipment, QUW

Tigo®

Tigo Energy, Inc. 655 Campbell Technology Pkwy Suite 150, Campbell, California 95008 USA
www.tigoenergy.com P: +1.408.402.0802 F:+1.408.358.6279 | sales@tigoenergy.com

Tigo® Flex MLPE



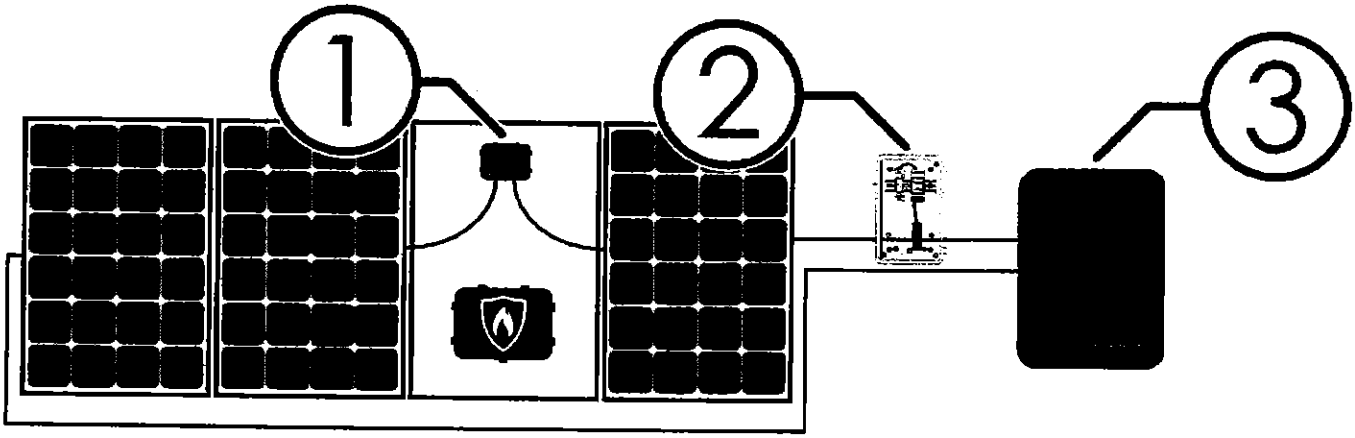
RSS TRANSMITTER

Rapid Shutdown with TS4-F

The Tigo Rapid Shutdown System (RSS) Transmitter is part of a rapid shutdown solution when paired with Tigo TS4-F (Fire Safety), a PV module rapid shutdown unit. While powered on, the RSS Transmitter sends a signal to the TS4-F units to keep their PV modules connected and supplying energy.

TS4-F units automatically enter rapid shutdown mode when the RSS Transmitter is switched off and resume energy production when power is restored to the RSS Transmitter. This solution complies with NEC 690.12 specifications for 2014 and 2017 and supports the SunSpec-defined signaling for rapid shutdown. The RSS Transmitter and TS4-F are compatible with many inverters and modules.

TS4-F and the RSS Transmitter require no separate commissioning process.



1. Modules equipped with Tigo TS4-F (Fire Safety)
2. Tigo RSS Transmitter
3. Inverter

SUNSPEC ALLIANCE

12/17/18

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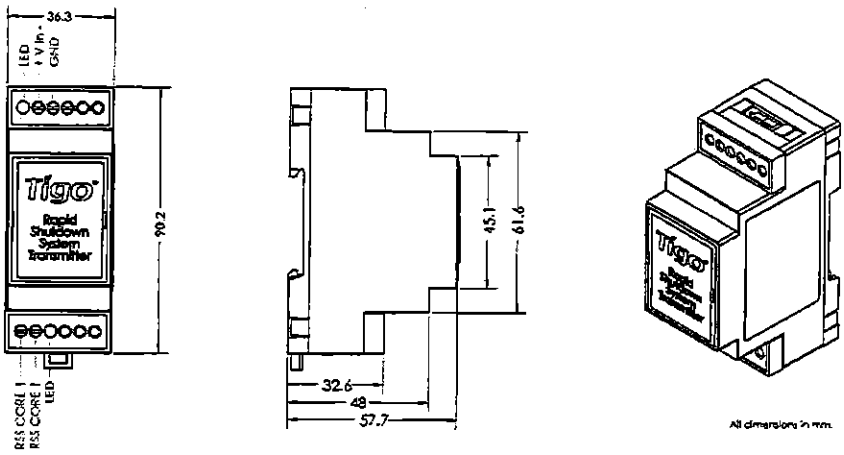
RSS TRANSMITTER

Meets NEC 690.12 requirements

Module-level deactivation with TS4-F

Automatic or manual shutdown

Supports SunSpec signaling



Input
Input Voltage: $12V_{DC}$
Input Current: 1A
Avg Supply Power: 0.85W
Recommended Power Supply Rating: $12V_{DC}$ and 2A
RSS Core
Max Current: 150A per Core (Single Core: 150A, Dual Core: 300A)
Max MPPT String Voltage: $1500V_{DC}$
Internal Opening for Wires: 27.5mm
Outside Dimensions: 59mm
Max Number of Strings per Core: 10
Max String Length: 30 modules
Environmental
Temperature: -40°C to 85°C

ORDERING OPTIONS

490-00100-10	RSS Transmitter PCBA, Single RSS Core
490-00100-20	RSS Transmitter PCBA, Dual RSS Core
490-00000-10	RSS Transmitter DIN Rail, Single RSS Core
490-00000-20	RSS Transmitter DIN Rail, Dual RSS Core
492-00000-10	RSS Transmitter Kit, DIN Rail PS, Single RSS Core, Outdoor
492-00000-20	RSS Transmitter Kit, DIN Rail PS, Dual RSS Core, Outdoor

For more information on Tigo products:
www.tigoenergy.com/products

For technical information:
http://support.tigoenergy.com

For sales and ordering information:
sales@tigoenergy.com or 1.408.402.0802

For additional info and product selection assistance, use Tigo's online design tool at www.tigoenergy.com/design

Tigo®

Tigo Energy, Inc. 420 Blossom Hill Rd. Los Gatos, California 95032 USA | www.tigoenergy.com
P: +1.408.402.0802 F: +1.408.358.6279 | sales@tigoenergy.com

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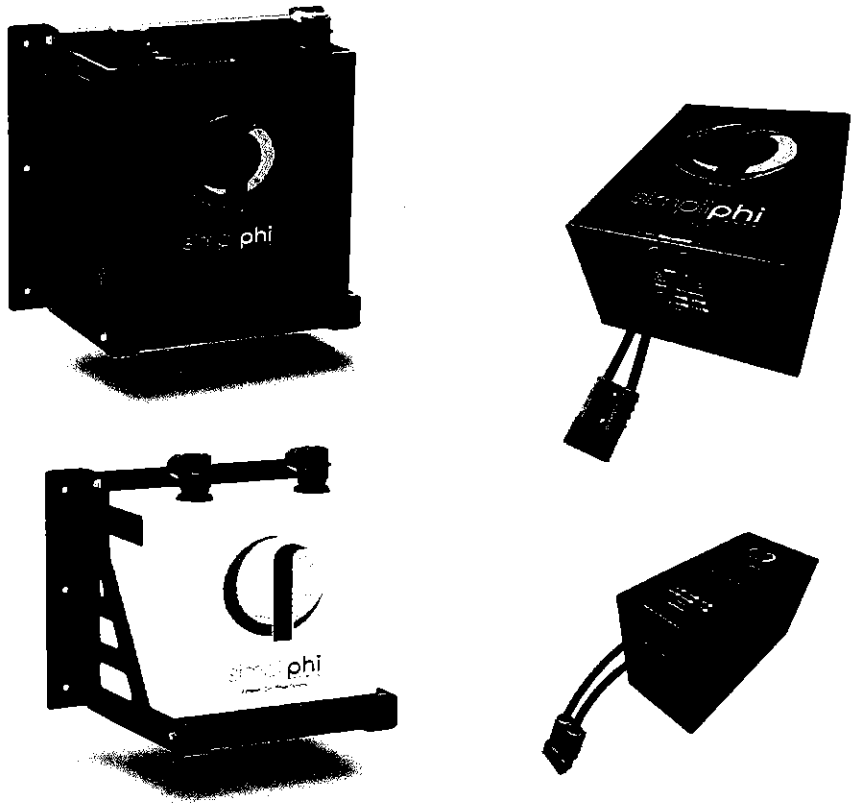
Power. On Your Terms.



10 Year Limited Warranty

PHI 3.8™ | PHI 2.9™ | PHI 1.4™ | PHI 730™

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THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY HAVE FURTHER LEGAL RIGHTS AND REMEDIES UNDER LOCAL LAWS IN YOUR COUNTRY. THE TERMS OF THIS LIMITED WARRANTY WILL APPLY TO THE EXTENT PERMITTED BY APPLICABE LAW. SOME COUNTRIES DO NOT ALLOW DISCLAIMERS OF IMPLIED WARRANTIES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, MEANING THE DISCLAIMERS AND LIMITATIONS SET FORTH IN THIS LIMITED WARRANTY MAY NOT APPLY TO YOU. SOME COUNTRIES REQUIRE SPECIFIC DISCLOSURES TO BE INSERTED IN AN IMPLIED WARRANTY. PLEASE SEE THE SPECIFIC DISCLOSURES SET FORTH IN THE APPENDIX TO THIS WARRANTY; SPECIFIC DISCLOSURES THAT MAY RELATE TO YOUR COUNTRY. FOR A FULL DESCRIPTION OF YOUR LEGAL RIGHTS YOU SHOULD REFER TO THE LAWS APPLICABLE IN YOUR COUNTRY.

THIS LIMITED WARRANTY AND ANY DISPUTE OR CLAIM ARISING OUT OF OR IN CONNECTION WITH IT (INCLUDING NON-CONTRACTUAL DISPUTES OR CLAIMS) IS GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE COUNTRY OR (IF APPLICABLE) STATE OR PROVINCE WHERE THE WARRANTED PRODUCT IS FIRST INSTALLED. IF ANY PROVISION OF THIS LIMITED WARRANTY IS HELD BY A COURT OF COMPETENT JURISDICTION TO BE UNENFORCEABLE BECAUSE IT IS INVALID OR IN CONFLICT WITH ANY LAW OF ANY RELEVANT JURISDICTION, THE VALIDITY OF THE REMAINING PROVISIONS SHALL NOT BE AFFECTED, AND THE RIGHTS AND OBLIGATIONS OF THE PARTIES SHALL BE CONSTRUED AND ENFORCED AS IF THE UNENFORCEABLE PROVISIONS WERE REPLACED BY VALID, LEGAL AND ENFORCEABLE PROVISIONS THAT COME CLOSEST TO THE INTENT UNDERLYING THE INVALID OR UNENFORCEABLE PROVISION. THE UNITED NATIONS CONVENTIONS ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS (1980) SHALL NOT APPLY TO THIS LIMITED WARRANTY OR ANY ASPECT OF ANY DISPUTE RELATING TO THIS LIMITED WARRANTY.

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10 Year Limited Warranty:
PHI 3.8™ | PHI 2.9™ | PHI 1.4™ | PHI 730™

Section 1.0 – Limited Pro-Rated Warranty Coverage

The SimpliPhi Power PHI 3.8™, PHI 2.9™, PHI 1.4™ and PHI 730™ Batteries (the "SimpliPhi Product") as manufactured and sold by SimpliPhi Power, Inc., a Delaware corporation, is warranted (the "Limited Warranty") by SimpliPhi Power, Inc. against manufacturing defects in materials and workmanship for a period of ten (10) years (the "Limited Warranty Period") or for 10,000 cycles on a prorated basis, whichever comes first, when installed and operated within the specifications provided in the SimpliPhi Installation Manual for Operating Parameters (Tables 1.0 & 2.0).

The term of this Limited Warranty (i) begins on the original date of purchase of the SimpliPhi Product(s) as indicated on the Limited Warranty Registration Card submitted to SimpliPhi Power and (ii) continues through the Limited Warranty Period. This Limited Warranty applies only to the original end-use purchaser of the SimpliPhi Power Product(s) and is transferable only if the SimpliPhi Power Product(s) remain installed in the Original Use Location. SimpliPhi Power does not warrant or guarantee workmanship performed by any person or firm installing the SimpliPhi Power Product(s). This Limited Warranty does not cover the cost of installation, removal, shipping or reinstallation. This Limited Warranty does not cover faults in design or installer error such as reverse polarity or misuse of system wide equipment or inaccurate programming of all ancillary equipment in your system. Failure to comply with the installation and operating parameters in the Installation Manual will void the Warranty.

This Limited Warranty applies only to SimpliPhi Power Product(s):

a) purchased from SimpliPhi Power Inc. or an authorized SimpliPhi Power distributor, dealer or reseller and
b) installed by a licensed professional. In the event you rent or lease the SimpliPhi Power Product(s), no end-user purchase takes place; therefore, this Limited Warranty does not apply and you must contact your rental or leasing company to determine whether Warranty coverage is applicable.

The liability of SimpliPhi Power under this Limited Warranty shall be limited to the repair or replacement of the SimpliPhi Power Product(s), at SimpliPhi Power's sole discretion. If the SimpliPhi Power Product(s) is found to be defective as a result of any manufacturing defect in materials and workmanship during the Limited Warranty Period, SimpliPhi Power will, at its sole discretion either (i) repair the SimpliPhi Power Product(s) or (ii) replace the SimpliPhi Power Product(s). If a SimpliPhi Power Product(s) is replaced, the returned SimpliPhi Power Product(s) will become the property of SimpliPhi Power and must be sent to SimpliPhi Power free of any third-party ownership claims. The Warranty period of any repaired SimpliPhi Power Product(s) or its replacement is twelve (12) months from the date of shipment from SimpliPhi Power, or the remaining term of the Limited Warranty Period, whichever is greater.

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CAUTION: Circuit Breakers, Disconnects and Fuses should be employed throughout several points of a Power storage and generation installation to effectively isolate and protect all components of the system to safeguard against faults, short circuits, polarity reversals or a failure of any component in the overall system. Fuses, breakers, wire ratings and values should be determined by established standards and evaluated by certified electricians, licensed installers, and regional code authorities. Although each PHI Battery contains both an 80 Amp circuit breaker and an internal BMS with circuitry that protects the Lithium Ferrous Phosphate cells from overcharge, over-discharge and excessive load amperage, the PHI Batteries must always be installed with a charge controller and the appropriate voltage settings to protect the PHI from open PV voltage and other high voltage charging sources. The PHI Battery Management System (BMS) and internal circuit breaker alone will not protect the PHI batteries from these extreme electrical phenomena. Failure to adhere to installation protocol will void the Warranty. To obtain maximum lifetime capacity (cycle life), a properly sized bank will operate at an average maximum output not to exceed C/2 (refer to other limitations as identified herein for each model). Ensure the size of the bank is greater than twice the kW potential load. Inverter/charger size shall follow a 1:2 ratio.

CAUTION: All PHI batteries must be fully charged before commissioning the system (i.e. before connecting loads). Failure to do so will void the Warranty.

CAUTION: Verify polarity at all connections with a standard volt meter before:

1.) Energizing the system and
2.) In the case of PHI 3.8 and PHI 2.9 models, before switching the breaker to the "ON" position. Reverse polarity at the battery terminals will void the Warranty and destroy the batteries.

CAUTION: Only use a SimpliPhi approved LFP charger if ancillary charging is required before installation, testing or troubleshooting. Failure to use a SimpliPhi approved LFP charger will damage the battery and void the Warranty.

CAUTION: Charging LFP batteries at temperatures below freezing. Do not attempt to charge the battery below 32° F (0° C). Attempts to charge at subfreezing temperatures can adversely affect SOH and cycle life, and will void the Warranty.

If the battery must be charged below 32° F (0° C), the rate of charge must be at no more than 5% of the battery's rated capacity (C/20).

Section 2.0 – SimpliPhi Power Guide for Operating Parameters

Although SimpliPhi batteries are capable of performing at very high rates and depths of discharge within a very wide temperature range, in order to achieve extended life cycles and to comply with the Warranty, follow all inverter and charge controller programming guidelines outlined in the relevant SimpliPhi Installation Manual and Integration Guide(s). These documents can be found on SimpliPhi's Product Documentation web page: https://simpliphipower.com/product-documentation/.

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Section 3.0 – Obtaining Warranty Service

To activate this Limited Warranty, the attached Limited Warranty Registration Form must be completed and forwarded to SimpliPhi Power pursuant to the instructions set forth in the Limited Warranty Registration Form in order for SimpliPhi Power to know the Original Use Location and the SimpliPhi Power Product(s) involved. It is important that you complete the Limited Warranty Registration Form since that is the only way SimpliPhi Power knows the Original Use Location and the SimpliPhi Power Product(s) involved. This Limited Warranty applies only to the SimpliPhi Power Product(s) that are (i) registered on the Limited Warranty Registration Form attached to this Limited Warranty and (ii) installed in the Original Use Location which shall be described by inserting the address of the Original Use Location in the space "Address of Installation" provided in the Limited Warranty Registration Form and name of installer/distributor or supplier.

To request Warranty service, your Installer/Distributor/Supplier must contact SimpliPhi Power Technical Support in writing at TechSupport@SimpliPhiPower.com within the Limited Warranty Period. Either SimpliPhi Power or its authorized representative will attempt to troubleshoot the SimpliPhi Power Product(s) at the Original Use Location to determine whether the SimpliPhi Power Product(s) are defective. If SimpliPhi Power determines that Warranty service is required, Technical Support will assist in getting authorization for a Return Material Authorization ("RMA") number and instruct you how to submit the RMA through TechSupport@SimpliPhiPower.com. To be prepared for Technical Support assistance, you need to provide in writing to your Installer/Distrbutor/Supplier all the following information (at a minimum):

- Proof of date and place of purchase in the form of a copy of the purchase invoice for the original SimpliPhi Power Product(s)
- The SimpliPhi Power Product model number and serial number
- Date of Power Product commissioning
- An electrical single line drawing or Balance of System (BoS) equipment details, including:
    - Solar panel quantity/make/model and wiring configuration (if applicable)
    - Battery-based inverter quantity/make/model
    - Charge controller quantity/make/model (if applicable)
    - Grid-tie inverter quantity/make/model (if applicable)
    - Non-solar charging sources (generator, grid, wind, micro-hydro, etc.)
- Inverter and/or charge controller equipment settings
- Photos of the SimpliPhi Power Product(s) and the overall system installation
- Battery wiring details, including:
    - Battery cables' gauge
    - Battery cables' length
    - DC busbars' make/model/rating
    - DC terminals' torque specifications
- A copy of the installation protocol
- Address where the SimpliPhi Power Product(s) are located
- Description of the problem
    - Events / symptoms leading up to the problem with the SimpliPhi Power Product(s)
    - Resolutions attempted

William O. Rodríguez Rodríguez

William O. Rodríguez Rodríguez (Nov 29, 2022 22:04 AST)

Jose Fuliana (Nov 29, 2022 08:15 AST)

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GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2019-CER-004191

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Carlos A Velazquez

Correo Electrónico: carlosalberto@espur.net

Compañía: ESPUR

Datos de Equipo Certificado

Tipo de Equipo(s): Inversor

Clasificación: Equipo Existente

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Sol-Ark	Sol-Ark-8k-48-ST	Certificación de Seguridad: UL 1741 Núm. Certificación: SGSNA/18/GZ/00127 Laboratorio: SGSUS	Interconectable: Sí Voltaje(s) Salida: 120/240 VAC Voltaje(s) Máximo Entrada: 500 VDC Eficiencia Máxima: 96.5% Tipo de Gabinete(NEMA): NEMA 1 Potencia Nominal: 8000Watts Garantía Manufactura: 5 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
09/AUG/2019

Arq. María R. Cintrón Flores
Secretaria Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Arq. María R. Cintrón Flores

Secretaria Auxiliar de la OGPe, DDEC

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

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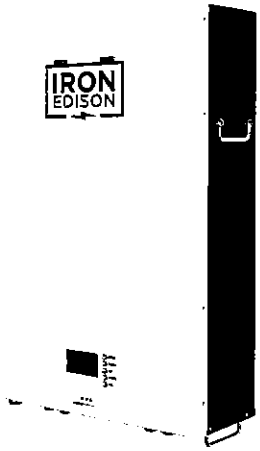
IRON EDISON Re-VOLT™

Lithium Iron Phosphate (LiFePO4) Battery

TECHNICAL SPECIFICATIONS

Revised 7/2020



- Renewable Energy & Backup Power Applications
- Safest Lithium-Ion Chemistry – LiFePO4
- Maximum Compatibility with Industry Standard 48v Equipment
- Integrated Battery Management System
- Stackable for Additional / Scalable Energy Storage
- 10 Year Warranty & Lifetime Technical Support

ELECTRICAL SPECIFICATIONS	REVO-5000	REVO-10000
Nominal Voltage	51.2 V	
Operating Voltage	45 V – 57.6 V	
Ah Capacity	100	200
Total Energy	5120 Wh	10240 Wh
Recommended Charge Current	50 A	100 A
Max Charge/Discharge Current	100 A	100 A
Max Batteries in Series	1	
Max Batteries in Parallel	14 / 15*	

CHARGE SPECIFICATIONS		
Bulk / Absorb Voltage	56 V	
Absorb End Amps	5 A	10 A
Float Voltage	54 V	

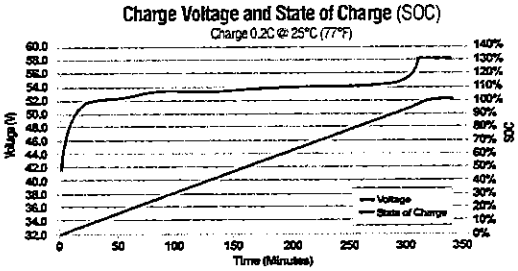
PHYSICAL SPECIFICATIONS		
Dimensions (L x W x H)	26.7 x 18.9 x 8.7 in (68 x 48 x 22 cm)	
Weight	129 lbs (58.5 kg)	212 lbs (96.5 kg)
Shipping Classification	UN 3480, Class 9	
Certification	UL1642, IEC 62619, CE, UN38.3, RoHS	

CLIMATE SPECIFICATIONS	
Operating Temperature	0°C to 45°C @60+/-25% Relative Humidity
Storage Temperature	-20°C to 60°C @60+/-25% Relative Humidity
Enclosure Rating	IP 21

- Charging at Recommended Charge Current to Bulk Termination / Absorb Voltage (1-Stage Bulk aka CC) will charge the battery to aprox 95% SoC.
- Charging at Bulk Termination / Absorb Voltage to Absorb Termination Current (2-Stage Bulk+Absorb aka CC/CV) will charge the battery to 100% SoC.
- Equalize charging is not needed or recommended.
- Temperature compensation for charge voltage is not required.

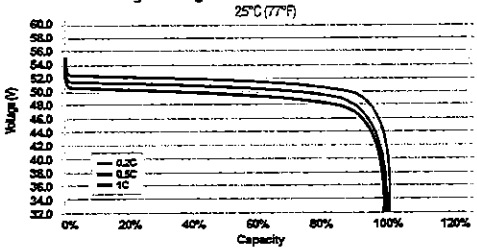
Charge Voltage and State of Charge (SOC)

Charge 0.2C @ 25°C (77°F)



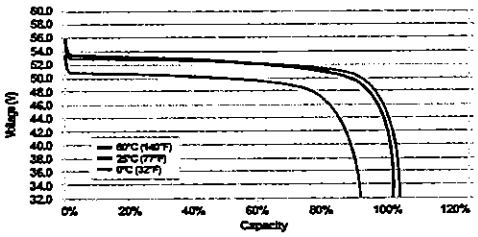
Discharge Voltage Characteristics at Various Rates

25°C (77°F)



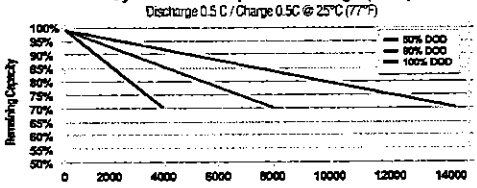
Discharge Voltage Characteristics at Various Temps

Discharge Rate 1C



Cycle Life vs. Depth of Discharge (DOD)

Discharge 0.5 C / Charge 0.5C @ 25°C (77°F)



UN38.3 CE IEC 12 Lithium

IRON EDISON

720-432-6433

IronEdison.com

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GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2020-CER-005865

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Orlando R Lopez de Victoria **Correo Electrónico:** permits@juapiprojects.com

Compañía: Juapi Project Services LLC

Datos de Equipo Certificado

Tipo de Equipo(s): Batería **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Iron Edison	REVO-5000		Capacidad: 100 Ah Voltaje Nominal: 48 VDC Tipo de Batería: Litio/Lithium Tipo de Carga y Descarga: Ciclo Profundo/Deep Cycle Dimensiones Nominales: 680 x 480 x 220 mm Peso nominal: 129 lbs. Garantía Manufactura: 10 año(s)
Iron Edison	REVO-10000		Capacidad: 200 Ah Voltaje Nominal: 48 VDC Tipo de Batería: Litio/Lithium Tipo de Carga y Descarga: Ciclo Profundo/Deep Cycle Dimensiones Nominales: 680 x 480 x 220 mm Peso nominal: 212 lbs. Garantía Manufactura: 10 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
24/NOV/2020

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Certificación de Equipos de Energía Renovable

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Discover® JF
Innovative Battery Solutions WORR
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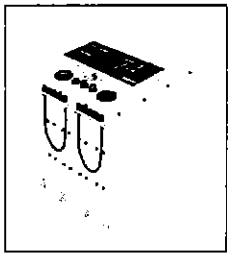
42-48-6650

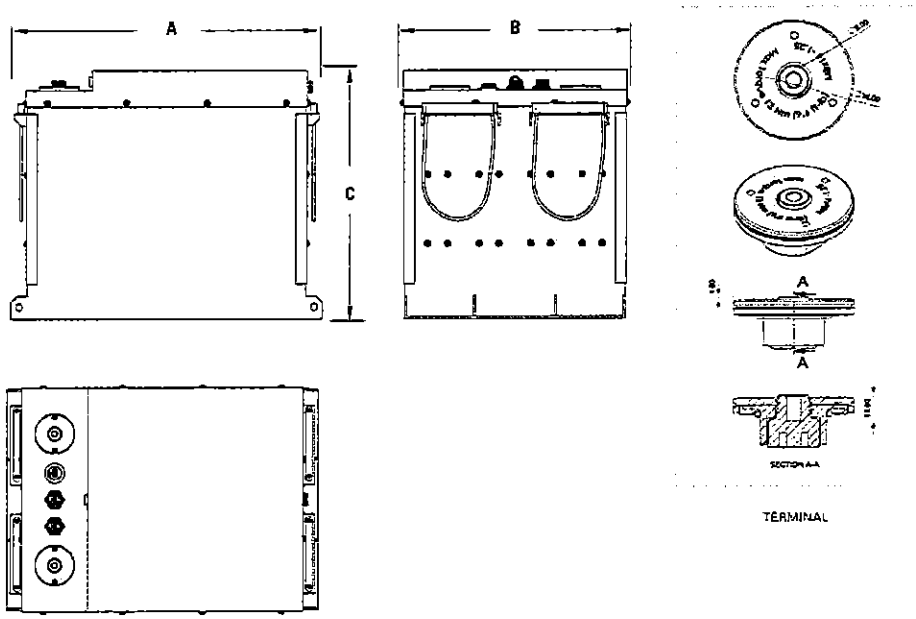
Printed: 03/11/2021



AES $LiFePO_4$ Solar Stationary Battery

Discover® Advanced Energy System (AES) $LiFePO_4$ Lithium solar batteries offer bankable performance and the lowest cost of energy storage per kWh. AES $LiFePO_4$ Lithium batteries are manufactured with the highest-grade $LiFePO_4$ cells and feature a proprietary high peak surge and transient voltage hardened BMS that delivers superior peak power, lightning fast charge and discharge rates and LYNK Solar Gateway functionality for Plug-and-play closed loop integration with the worlds best known off-grid Inverters and chargers turning a good system into a great one.

MECHANICAL DRAWINGS



TERMINAL

MECHANICAL SPECIFICATIONS

Length A (in/mm)	18.5	470
Width B (in/mm)	13.7	348
Height C (in/mm)	14.7	373
Weight (lbs/kgs)	192.0	87.0
Terminal*	M8	
Cell(s)	16S/26P	
Case Material	Steel	
Electrolyte	LiFePO4	

*TERMINAL TORQUE: 9 Nm +/- 3 / 6.64ft-lb

ELECTRICAL SPECIFICATIONS

Open Circuit Voltage (V)	51.2
Nominal Energy (kWh)	7.39
Useable DoD	90%
Rated Ah Capacity (1C)	129
Charge Voltage (Vdc)	54.4
Max Voltage (Vdc)	58.4
Min Voltage (Vdc)	44.8
Max Continuous Charge Current (Adc)	130
Max Continuous Discharge Current (Adc)	130
Max. Peak Current (Adc)	300
Self Discharge (25°C / 77°F)	< 3% per month (Battery Off)
Charge Temperature	Min: 0°C (32°F) | Max: 45°C (113°F)
Discharge Temperature	Min: -20°C (-4°F) | Max: 50°C (122°F)
Storage Temperature	Min: -20°C (-4°F) | Max: 45°C (113°F)

Electrical Specifications at 25°C.
* Do not exceed maximum voltage at the battery terminals.
CAUTION: Extra considerations must be given to depths of discharge, operating voltages and currents when designing systems for use at maximum operating temperatures.

Minutes of Discharge

@25A	@100A
312	78

FEATURES

LYNK PORT
- Connects battery string to LYNK Gateway
- Multi-battery BMS communication

HIGH-CURRENT BMS
- Field serviceable BMS and fuse protection
- Plug and Play system wide BMS communication
- Sets Voltage, broadcasts SoC and temperature

AES DASHBOARD
- Battery diagnostic software for PC
- Data export kWh, fault logs to PC
- Update battery BMS firmware

ACCESSORIES

LYNK SOLAR GATEWAY
- Integrated closed-loop communications with the world's best inverter chargers
- Plug and play charger configuration

BENEFITS

ENHANCED RUNTIME
- Double the high-current runtime of lead-acid battery
- Up to 100% usable capacity
- Up to 100% depth of discharge

EXTENDED SERVICE LIFE
- 10x the life of lead-acid battery (BCI-06)
- Unlimited Partial State of Charge cycles
- 10-year energy throughput warranty

FAST CHARGING
- Up to 5x faster than new lead-acid batteries
- Up to 10x faster than aged lead-acid batteries
- 2X faster charging than C/2 Rated lithium batteries
- 1C continuous charge rate, regardless of SoC

SURGE POWER
- Power for off-grid inverter surge demands
- Up to 3C peak power discharge rate
- 1C continuous discharge rate

HIGH-EFFICIENCY
- Up to 50% more energy efficient than a lead-acid battery
- Up to 98% round-trip efficiency

DYNAMIC PERFORMANCE
- Real-time optimization of the charge rate
- Faster recharge from 0% to 100% SoC than lead-acid battery

PARALLEL POWER
- Easy to parallel more capacity
- Linear scaling of charge, discharge and peak capacity
- Parallel up to 20 batteries or 160 kWh per LYNK device

QUICK INSTALL
- Fast installation. No special tools
- Drop-in lead-acid replacement

RELIABLE AND SAFE
- $LiFePO_4$ is thermally safe
- Maintenance-free
- Steel case and cover
- IP 55 rated

CERTIFIED QUALITY

Discover® manufacturing facilities are fully certified to ISO 9001/14001 and OSHA 18001 standards.

CERTIFICATION STANDARDS
- IEC 62133
- UL 1973
- UL 2271
- CE
- UN 38.3

SHIPPING CLASSIFICATION
- UN 3480, Class 9 (Lithium batteries)

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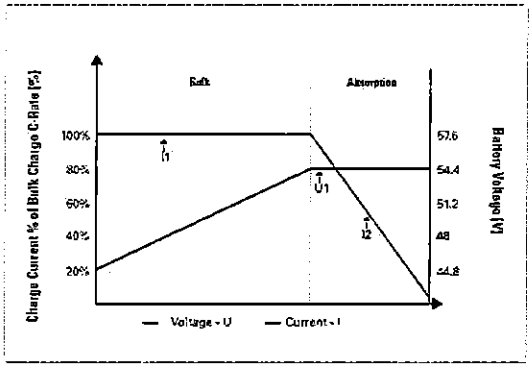
VOLTAGE REGULATED IU CURVE

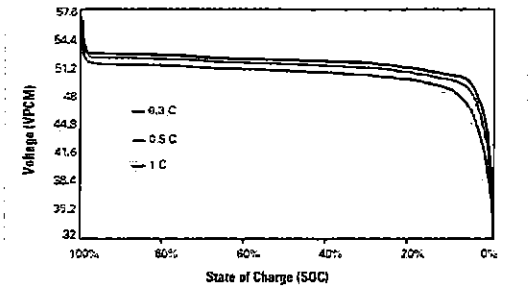


VOLTAGE REGULATED IU CHARGING CURVE PARAMETERS

Nominal Voltage	48 V
Bulk Current (I1)	65 Adc recommended 130 Adc maximum
Absorption Voltage (U1)	54.4 V
Termination Charge Current	I2 ≤ 2.5% C1 Capacity

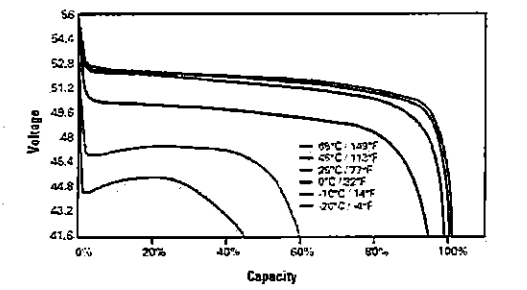
VOLTAGE IN RELATION TO THE STATE OF CHARGE (SOC)

Test Conditions: 25°C / 77°F, 0.5C Charge



DISCHARGE VOLTAGE IN RELATION TO THE TEMPERATURE

Testing Conditions: 1C Discharge, 1C Charge



CAUTION:

Direct connection to DC motors without proper safety protection, motor controllers, and external motor voltage clamping systems (such as high power anti-parallel diodes or braking resistor systems) may result in damage to the internal pack protection system which may result in unsafe situations. Please consult Discover technical support before directly connecting any motor loads.

Discover Energy Corp. attempts to ensure the correctness of the product description and data contained herein. We reserve the right to change designs, specifications and pricing at any time without notice or obligation. It is the responsibility of the reader of this information to verify any and all information presented herein.

64 -13511 Crestwood Place, Richmond, BC, V6V 2E9, Canada E: info@discoverbattery.com T: +1 (778) 776-3288

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GOBIERNO DE PUERTO RICO
Oficina de Gerencia de Permisos (OGPe)

Número de Caso:
2018-CER-002982

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Daniel Rios **Correo Electrónico:** danny.rios95@hotmail.com

Compañía: N/A

Datos de Equipo Certificado

Tipo de Equipo(s): Batería **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
DISCOVER	12-48-6650		Capacidad: 130 Ah Voltaje Nominal: 48 VDC Tipo de Batería: Lithium Ion Tipo de Carga y Descarga: AC/DC Dimensiones Nominales: 472mm x 375mm x 348mm Peso nominal: 192 lbs. Garantía Manufactura: 10 año(s)
DISCOVER	42-48-6650		Capacidad: 130 Ah Voltaje Nominal: 48 VDC Tipo de Batería: Lithium Ion Tipo de Carga y Descarga: AC/DC Dimensiones Nominales: 472mm x 375mm x 348mm Peso nominal: 192 lbs. Garantía Manufactura: 10 año(s)
DISCOVER	14-24-2800		Capacidad: 110 Ah Voltaje Nominal: 24 VDC Tipo de Batería: Lithium Ion Tipo de Carga y Descarga: AC/DC Dimensiones Nominales: 330 mm x 276 mm x 348 mm Peso nominal: 88 lbs. Garantía Manufactura: 10 año(s)
DISCOVER	44-24-2800		Capacidad: 110 Ah Voltaje Nominal: 24 VDC Tipo de Batería: Lithium Ion Tipo de Carga y Descarga: AC/DC Dimensiones Nominales: 330 mm x 276 mm x 348 mm Peso nominal: 88 lbs. Garantía Manufactura: 10 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
02/SEP/2018

Certificación de Equipos de Energía Renovable

Ing. Héctor Rodríguez Echevarría
Secretario Auxiliar Interino
Oficina de Gerencia de Permisos
Departamento de Desarrollo Económico y Comercio

Ing. Héctor Rodríguez Echevarría

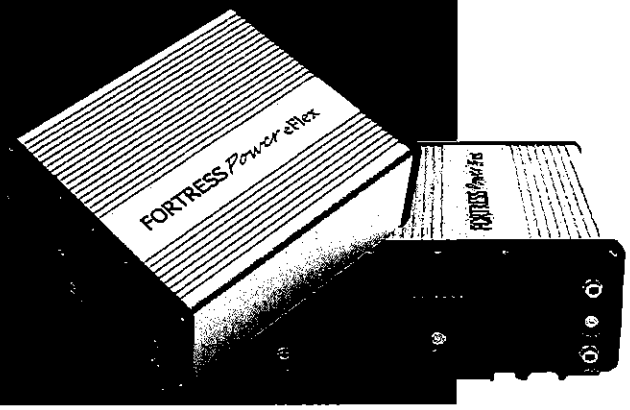
Secretario Auxiliar Interino de la OGPe, DDEC

FORTRESS *Power* eFlex

eFlex 5.4 Lithium Battery Storage

Energy Savings & Security with Fortress Power

- Maximize Your Solar Investment with Battery Storage
- Achieve Grid Independence during Power Outages
- Reduce Your Electric Bill
- Versitile Applications including Home, Business, Mobile, Telecom and Railway



SCAN FOR INSTALLATION MANUAL

FORTRESS Power
SECURE YOUR ENERGY

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eFlex 5.4 kWh Solar Storage Battery

Taking Innovation to the Next Level

Safest Lithium Technology (LiFePO4) on the market

MODbus and CANbus Communication for Internet-of-Things Copatibility

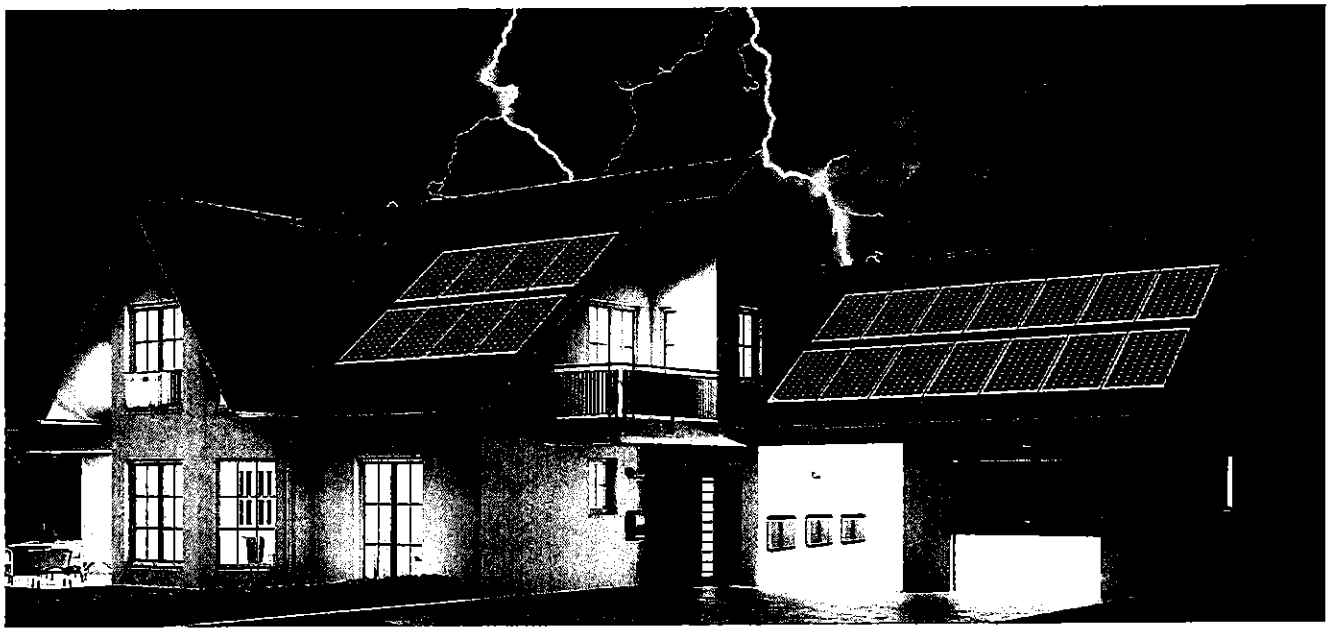
98% Roundtrip Efficiency

IP65 Dust and Water Proof Design

10 Year Warranty with Unlimited Partial Cycles

Data communication with popular hybrid inverters

Market Leading BMS Battery to Maximize Reliability and Longevity



"Few companies offer such support at all these levels"

"Fortress Power has been fantastic to work with. Their technical team is readily available for installation questions. Their shipping team keeps me informed of the timing of deliveries. The sales department makes sure we know about sale prices, new products, and their terrific discount for veterans. Few companies offer such support at all these levels. A super team to work with! "

- Lori Hunt
Practical Preppers LLC

www.fortresspower.com sales@fortresspower.com (877) 497-6937

FORTRESS Power
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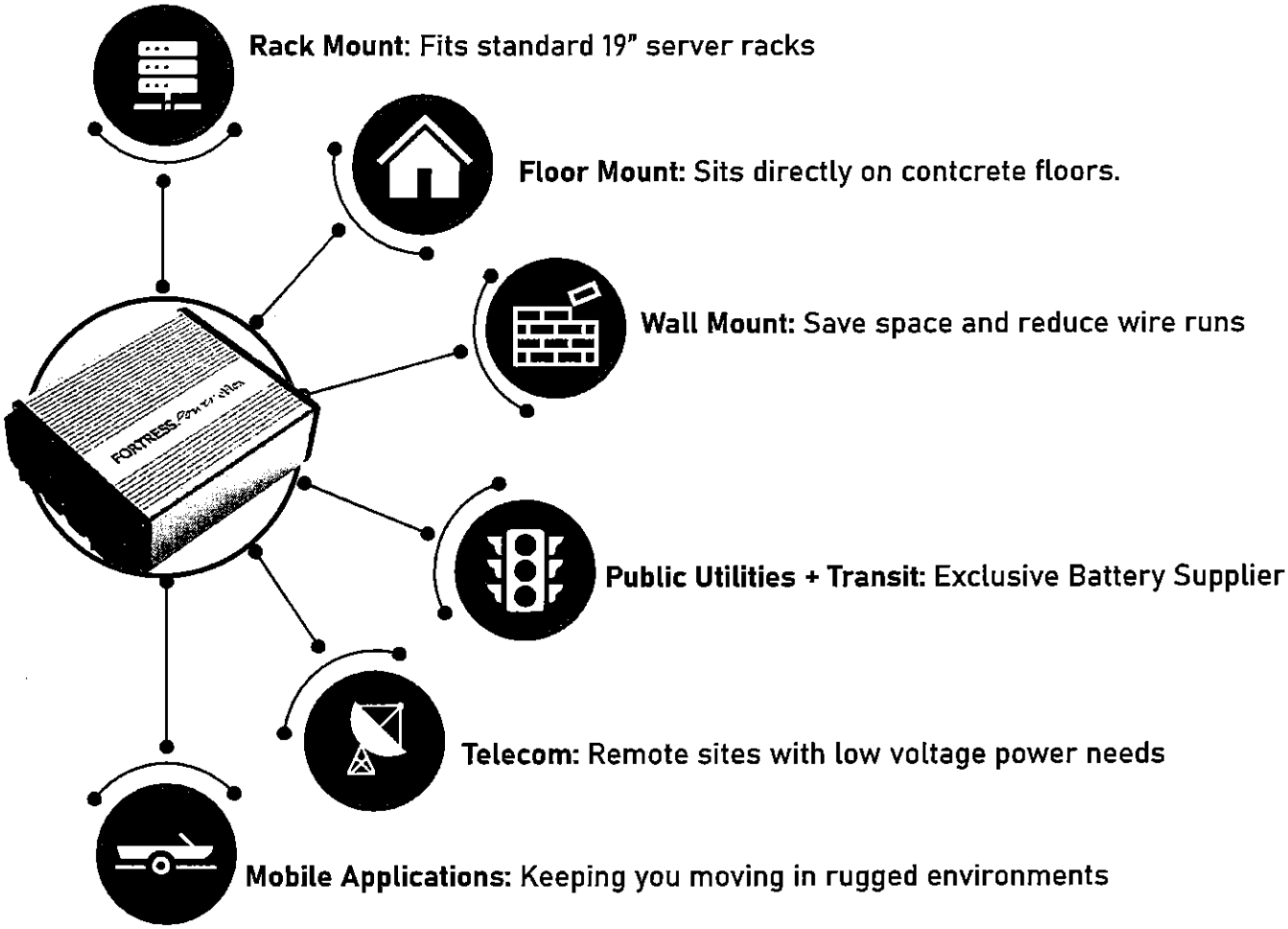
Versatile Applications

Designed For Multiple Project Scenarios



"You Think It - We'll Power It"

SCAN ME

INTERESTED IN BECOMING A CERTIFIED INSTALLER?

Join us to bring the latest energystorages to millions of homes and businesses across the world!

www.fortresspower.com sales@fortresspower.com (877) 497-6937

eFlex 5.4 kWh Lithium Storage

	eFlex 5.4
Total Energy (kWh)	5.4
Max. Charge Current (Continuous) [A]	100
Max. Discharge Current (Continuous) [A]	60
Max. Pulse Current (for 5sex) [A]	130
Capacity [Ah]	105
Voltage Range [V]	44-58.4
Charging Temperature [F]	32 to 113
Discharging Temperature [F]	32 to 140
Storage Temperature [F]	32 to 95
Dimension [LxWxH, Inch]	21.5 x 17.5 x 7.2
Weight [lbs]	116
Life Cycles	6000 @ 80% DoD
Round Trip Efficiency	>98%

Compatible with Most Inverters on the Market

Schneider Sol-Ark MidNite Solar OutBack Power SMA Morningstar

ABOUT FORTRESS POWER

Fortress Power proudly services homes, businesses, utilities, telecom and transportation companies worldwide. Our Pennsylvania-based team's passion for clean energy storage has earned us a place among the world's top energy storage battery manufacturers.

Our logistics centers in California, Florida and Pennsylvania offer easy distribution to all of our major markets. Fortress Power's high-performance solar lithium battery storage products are designed, engineered and inventoried along with live technical support in the United States.

Fortress Power has partnered with industry leading lending institutions to help make your solar investment as easy as possible. Please visit our website for purchasing and financing options.

Fortress Power is a manufacturer of high-performance solar lithium battery storage products that are designed, engineered and inventoried along with live technical support in the United States!

www.fortresspower.com sales@fortresspower.com (877) 497-6937

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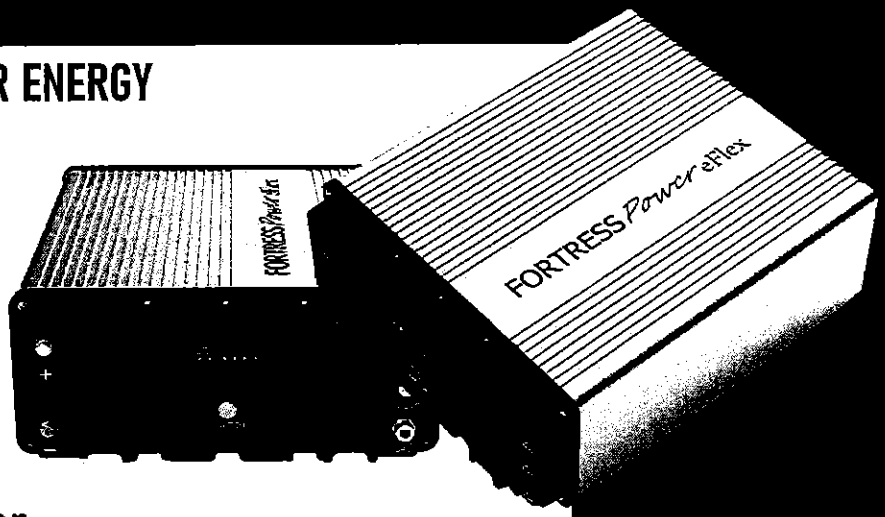
FORTRESS*Power*eFlex

SECURING YOUR ENERGY



Fortress Power

505 Keystone Rd. Southampton PA 18966 USA

www.fortresspower.com

sales@fortresspower.com

877-497-6937

FORTRESS Power
SECURE YOUR ENERGY

Minimum Advertised Price (MAP) Policy

Fortress Power Products

3/10/2021

This policy is made to protect the integrity of the Fortress Power Product Line and our network of distributors. **The Fortress Power MAP** policy applies to, but is not limited to, advertising in catalogs, direct mail, websites, in-store displays and any all-other forms of advertising media, including the internet and any other electronic medium available.

Your minimum advertise of must be equal or greater than Fortress Power's Manufacturer Suggested Retail price on every product. Any discounting that results in a lower advertised price of any Fortress Power item through rebates, coupons, percentage discounts or any other manner will be considered noncompliant to the MAP Policy.

In the event that Fortress Power agrees to offer a discount, promotion, or rebate on the Fortress Power Products, all the distributors will be equally informed.

If you have any questions, please do not hesitate to contact me.

Jing Yu, CEO

505 Keystone Road, Southampton PA, 18966 • jingy@fortresspower.com • (877)-497-6937

www.FortressPower.com

FORTRESS Power
SECURE YOUR ENERGY

P/N	MAP Per unit
eVault 18.5:	$ 10,150.00
eFlex 5.4:	$ 3,150.00
LFP-10:	$ 5,450.00
LFP-5K-48V:	$ 2,825.00

Agreed to by:

Distributor's name: _____

Distributor's Principal name printed: _____

Distributor's Principal Signature: _____ **Date:** _____

Distributor's Address: _____

Phone: _____

505 Keystone Road, Southampton PA, 18966 • jingy@fortresspower.com • (877)-497-6937

www.FortressPower.com

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GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2020-CER-006046

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Daniel Rios **Correo Electrónico:** daniel.rios@wecipr.com

Compañía: N/A

Datos de Equipo Certificado

Tipo de Equipo(s): Módulo Fotovoltaico **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Longi Solar	LR4-72HBD435M	Certificación de Potencia: IEC 61215 Núm. Certificación: Z2 099333 0039 REV. 13 Laboratorio: TUVPSG Certificación de Seguridad: UL 1703 Núm. Certificación: 70176031 Laboratorio: CSA	Potencia Nominal: 435Watts 10 años (Potencia): 93.95% 20 años (Potencia): 89.45% Dimensiones: 2131MM X 1052MM Garantía Manufactura: 12 año(s)
Longi Solar	LR4-72HBD430M	Certificación de Potencia: IEC 61215 Núm. Certificación: Z2 099333 0039 REV. 13 Laboratorio: TUVPSG Certificación de Seguridad: UL 1703 Núm. Certificación: 70176031 Laboratorio: CSA	Potencia Nominal: 430Watts 10 años (Potencia): 93.95% 20 años (Potencia): 89.45% Dimensiones: 2131MM X 1052MM Garantía Manufactura: 12 año(s)
Longi Solar	LR4-72HBD-415M	Certificación de Potencia: IEC 61215 Núm. Certificación: Z2 099333 0039 REV. 13 Laboratorio: TUVPSG Certificación de Seguridad: UL 1703 Núm. Certificación: 70176031 Laboratorio: CSA	Potencia Nominal: 415Watts 10 años (Potencia): 93.95% 20 años (Potencia): 89.45% Dimensiones: 2131MM X 1052MM Garantía Manufactura: 12 año(s)
Longi Solar	LR4-72HBD-420M	Certificación de Potencia: IEC 61215 Núm. Certificación: Z2 099333 0039 REV. 13 Laboratorio: TUVPSG Certificación de Seguridad: UL 1703 Núm. Certificación: 70176031 Laboratorio: CSA	Potencia Nominal: 420Watts 10 años (Potencia): 93.95% 20 años (Potencia): 89.45% Dimensiones: 2131MM X 1052MM Garantía Manufactura: 12 año(s)
Longi Solar	LR4-72HBD-425M	Certificación de Potencia: IEC 61215 Núm. Certificación: Z2 099333 0039 REV. 13 Laboratorio: TUVPSG Certificación de Seguridad: UL 1703 Núm. Certificación: 70176031 Laboratorio: CSA	Potencia Nominal: 425Watts 10 años (Potencia): 93.95% 20 años (Potencia): 89.45% Dimensiones: 2131MM X 1052MM Garantía Manufactura: 12 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Certificación de Equipos de Energía Renovable

12/FEB/2021

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

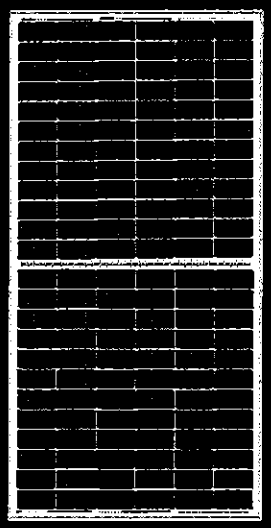
Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

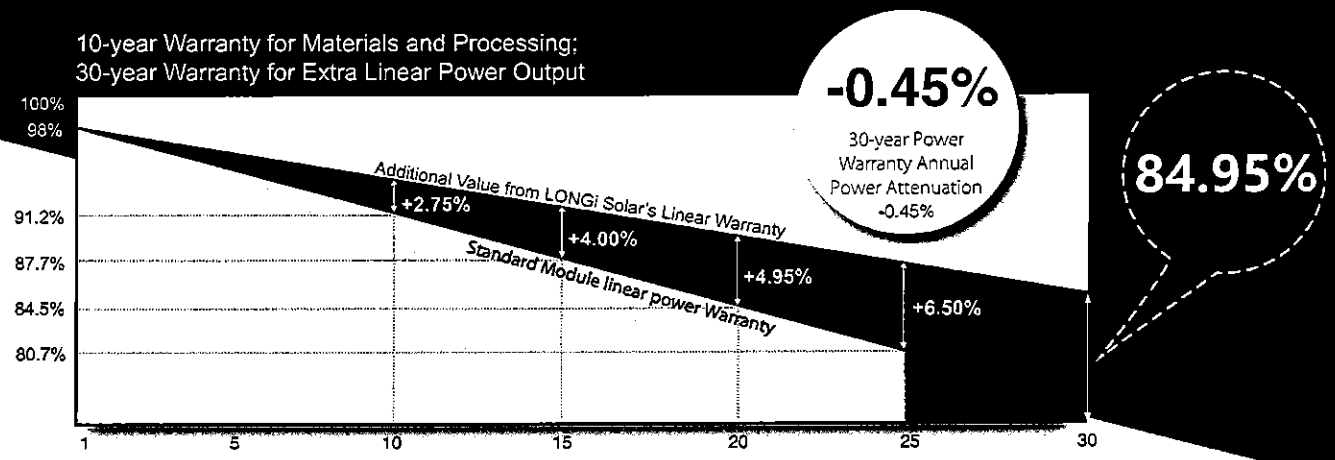
PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

LR4-72HBD
415~435M

Hi-MO4



High Efficiency Low LID Bifacial PERC with Half-cut Technology



Complete System and Product Certifications

IEC 61215, IEC61730, UL1703

ISO 9001:2008: ISO Quality Management System

ISO 14001: 2004: ISO Environment Management System

TS62941: Guideline for module design qualification and type approval

OHSAS 18001: 2007 Occupational Health and Safety

* Specifications subject to technical changes and tests. LONGi Solar reserves the right of interpretation.

Front side performance equivalent to conventional low LID mono PERC:
- High module conversion efficiency (up to 19.4%)
- Better energy yield with excellent low irradiance performance and temperature coefficient
- First year power degradation <2%

Bifacial technology enables additional energy harvesting from rear side (up to 25%)

Glass/glass lamination ensures 30 year product lifetime, with annual power degradation < 0.45%, 1500V compatible to reduce BOS cost

Solid PID resistance ensured by solar cell process optimization and careful module BOM selection

Reduced resistive loss with lower operating current

Higher energy yield with lower operating temperature

Reduced hot spot risk with optimized electrical design and lower operating current

LONGi

Room 801, Tower 3, Lujiazui Financial Plaza, No.826 Century Avenue, Pudong Shanghai, 200120, China
Tel: +86-21-80162606 E-mail: module@longi-silicon.com Facebook: www.facebook.com/LONGi Solar

Note: Due to continuous technical innovation, R&D and improvement, technical data above mentioned may be of modification accordingly. LONGi Solar have the sole right to make such modification at anytime without further notice; Demanding party shall request for the latest datasheet for such as contract need, and make it a consisting and binding part of lawful documentation duly signed by both parties.

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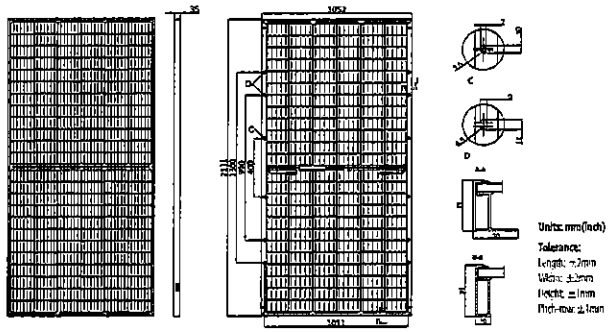
LR4-72HBD **415~435M**

Design（mm）



Mechanical Parameters

Cell Orientation: 144（6×24）
Junction Box: IP68, three diodes
Output Cable: 4mm², 300mm in length, length can be customized
Glass: Dual glass 2.0mm coated tempered glass
Frame: Anodized aluminum alloy frame
Weight: 29.5kg
Dimension: 2131×1052×35mm
Packaging: 30pcs per pallet
150pcs per 20'GP
600pcs per 40'HC

Operating Parameters

Operational Temperature: -40℃ ~ +85℃
Power Output Tolerance: 0 ~ +5 W
Voc and Isc Tolerance: ±3%
Maximum System Voltage: DC1500V (IEC/UL)
Maximum Series Fuse Rating: 20A
Nominal Operating Cell Temperature: 45±2℃
Safety Class: Class II
Fire Rating: UL type 3
Bifaciality: Glazing≥70%

Electrical Characteristics

Test uncertainty for Pmax: ±3%

Model Number	LR4-72HBD-415M		LR4-72HBD-420M		LR4-72HBD-425M		LR4-72HBD-430M		LR4-72HBD-435M	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	415	308.6	420	312.3	425	316.0	430	319.7	435	323.5
Open Circuit Voltage (Voc/V)	49.0	45.6	49.2	45.8	49.4	46.0	49.6	46.2	49.8	46.4
Short Circuit Current (Isc/A)	10.89	8.82	10.96	8.87	11.02	8.93	11.09	8.98	11.16	9.04
Voltage at Maximum Power (Vmp/V)	40.6	37.7	40.8	37.9	41.0	38.1	41.2	38.2	41.4	38.4
Current at Maximum Power (Imp/A)	10.23	8.19	10.30	8.25	10.37	8.30	10.44	8.36	10.51	8.42
Module Efficiency(%)	18.5		18.7		19.0		19.2		19.4	

STC (Standard Testing Conditions): Irradiance 1000W/m², Cell Temperature 25℃, Spectra at AM1.5

NOCT (Nominal Operating Cell Temperature): Irradiance 800W/m², Ambient Temperature 20℃, Spectra at AM1.5, Wind at 1m/S

Electrical characteristics with different rear side power gain (reference to 425W front)

Pmax /W	Voc/V	Isc /A	Vmp/V	Imp /A	Pmax gain
446	49.4	11.58	41.0	10.88	5%
468	49.4	12.13	41.0	11.40	10%
489	49.5	12.68	41.1	11.92	15%
510	49.5	13.23	41.1	12.44	20%
531	49.5	13.78	41.1	12.96	25%

Temperature Ratings（STC）

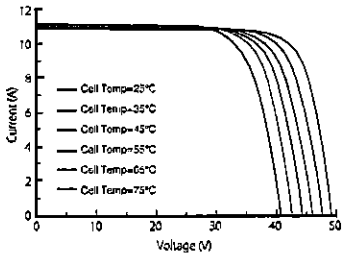
Temperature Coefficient of Isc	+0.050%/℃
Temperature Coefficient of Voc	-0.284%/℃
Temperature Coefficient of Pmax	-0.350%/℃

Mechanical Loading

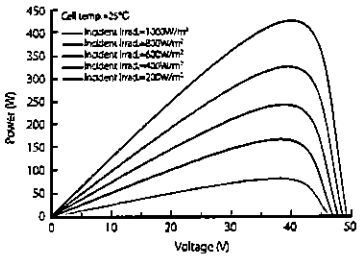
Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

I-V Curve

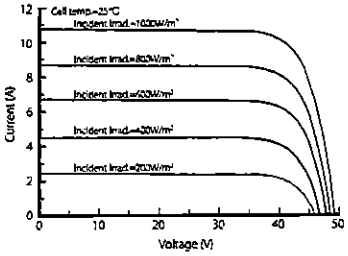
Current-Voltage Curve (LR4-72HBD-425M)



Power-Voltage Curve (LR4-72HBD-425M)



Current-Voltage Curve (LR4-72HBD-425M)



LONGi

Room 801, Tower 3, Lujiazui Financial Plaza, No.826 Century Avenue, Pudong Shanghai, 200120, China
Tel: +86-21-80162606 E-mail: module@longi-silicon.com Facebook: www.facebook.com/LONGi Solar

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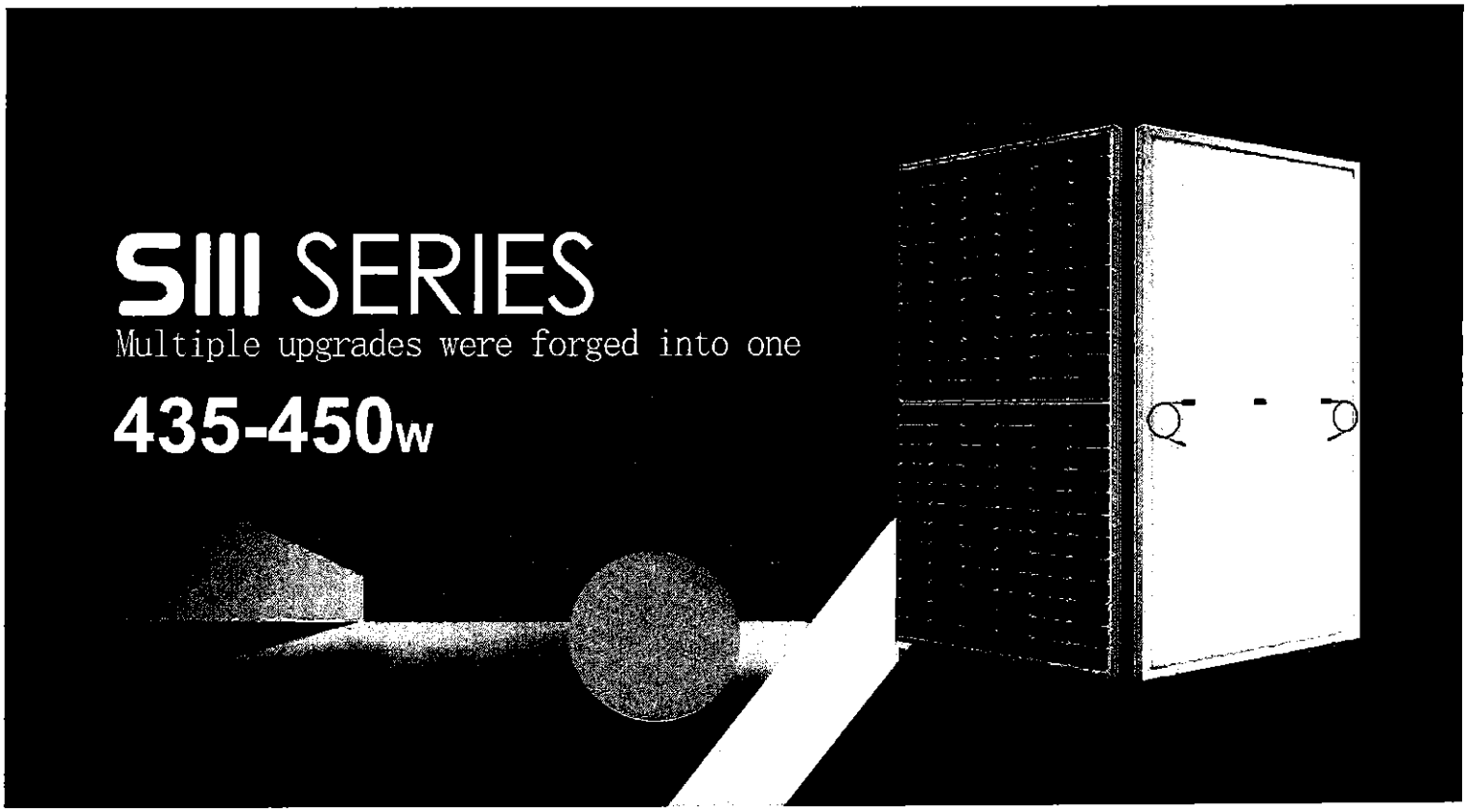
WORR SEG

SERAPHIM ENERGY GROUP (SEG)
www.seraphim-energy.us

SIII SERIES

Multiple upgrades were forged into one

435-450w



SIII SERIES

Seraphim Energy Group (SEG) redefined the high-efficiency module series by integrating 166mm silicon wafers with multi-busbar and half-cut cell technologies. SEG panel combined creative technology effectively and extremely improved the module efficiency and power output.

KEY FEATURES

- Less mismatch to get more power
- Less power loss by minimizing the shading impact
- Competitive low light performance
- 3 times EL test to ensure best quality
- Ideal choice for utility and commercial scale projects by reduced BOS and improve ROI
- PVEL Outstanding reliability proven by PVEL for stringent environment condition :
  - Sand, acid, salt, and hail stones
  - 2400pa wind load and 5400pa snow load
  - Anti-PID

QUALITY SYSTEM

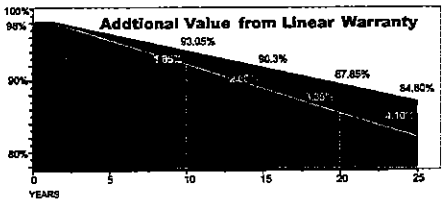
ISO19001 / ISO14001 / OHSAS18001

PRODUCT CERTIFICATION

INSURANCE

PICC

WARRANTY



15 YEARS Guarantee on product material and workmanship

25 YEARS linear power output warranty

SERAPHIM ENERGY GROUP (SEG)
Texas office: 973 Isom Road San Antonio, TX 78216
California office: 6200 Stoneridge Mall Rd, Ste 300, Pleasanton, CA 94588
Phone: (925) 468-4198 Web: www.seraphim-energy.us

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WORR

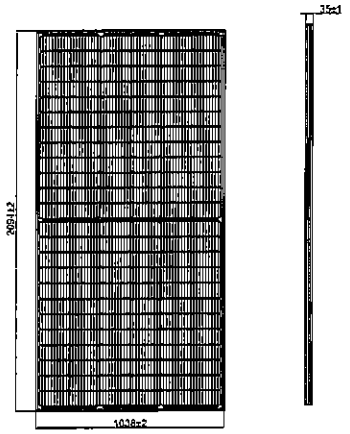
SEG

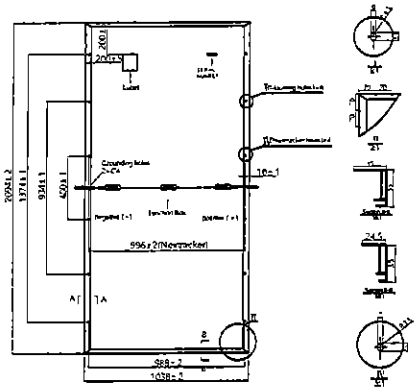
SERAPHIM ENERGY GROUP (SEG)
www.seraphim-energy.us

Electrical Characteristics

Module Type	SEG-435-BMA-HV		SEG-440-BMA-HV		SEG-445-BMA-HV		SEG-450-BMA-HV	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power at STC (Pmp)	435	324	440	328	445	332	450	336
Open Circuit Voltage (Voc)	49.6	45.3	49.7	45.4	49.9	45.6	50.1	45.8
Short Circuit Current (Isc)	11.18	9.02	11.27	9.10	11.34	9.17	11.41	9.24
Maximum Power Voltage (Vmp)	41.3	38.2	41.4	38.3	41.6	38.5	41.8	38.7
Maximum Power Current (Imp)	10.54	8.49	10.63	8.57	10.70	8.63	10.77	8.69
Module Efficiency at STC(ηm)	20.01		20.24		20.47		20.70	
Power Tolerance	(0, +3%)							
Maximum System Voltage	1500V DC							
Maximum Series Fuse Rating	20 A							

STC: Irradiance 1000 W/m² module temperature 25°C AM=1.5
Power measurement tolerance: +/-3%





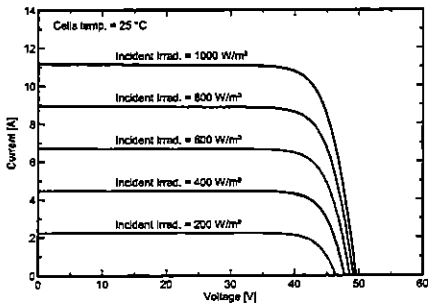
Temperature Characteristics

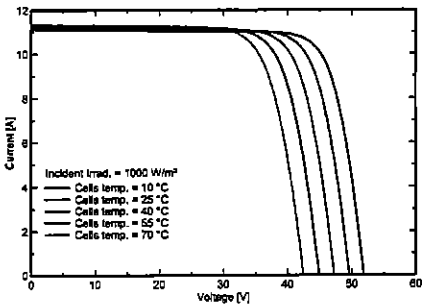
Pmax Temperature Coefficient	-0.35 %/°C
Voc Temperature Coefficient	-0.27 %/°C
Isc Temperature Coefficient	+0.05 %/°C
Operating Temperature	-40～+85 °C
Nominal Operating Cell Temperature (NOCT)	45 ± 2 °C

Mechanical Specifications

External Dimensions	2094x 1038 x 35 mm
Weight	23.5 kg
Solar Cells	PERC Mono 166 x 83mm (144 pcs)
Front Glass	3.2 mm AR coating tempered glass, low iron
Frame	Anodized aluminum alloy
Junction Box	IP68, 3 diodes
Output Cables	4.0 mm², 250mm(+)/350mm(-) or Customized Length
Mechanical Load	Front side 5400Pa / Rear side 2400Pa

I-V Curve





Packing Configuration

	2094 x 1038 x 35 mm	
Container	20'GP	40'HQ
Pieces per Pallet	31	31
Pallets per Container	5	22
Pieces per Container	155	682

For details, please consult SEG.

Specifications are subject to change without further notification SEG-DS-EN-2021V1.0 © Copyright 2021 SEG

SERAPHIM ENERGY GROUP (SEG)
Texas office: 973 Isom Road San Antonio, TX 78216
California office: 6200 Stoneridge Mall Rd. Ste 300, Pleasanton, CA 94588
Phone: (925) 468-4198 Web: www.seraphim-energy.us

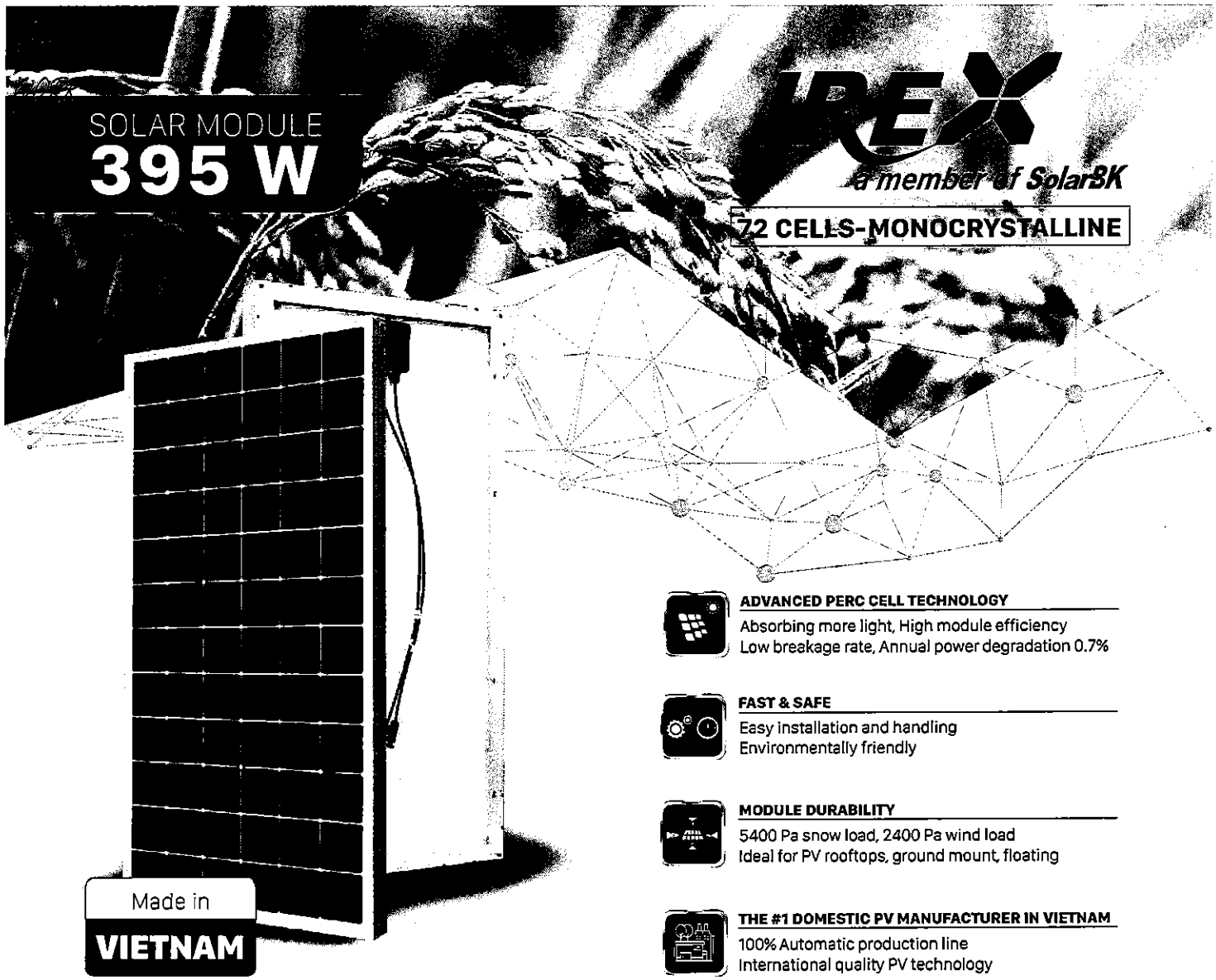
SOLAR MODULE

395 W

IREX

a member of SolarBK

72 CELLS-MONOCRYSTALLINE



Made in

VIETNAM

ADVANCED PERC CELL TECHNOLOGY

Absorbing more light, High module efficiency
Low breakage rate, Annual power degradation 0.7%

FAST & SAFE

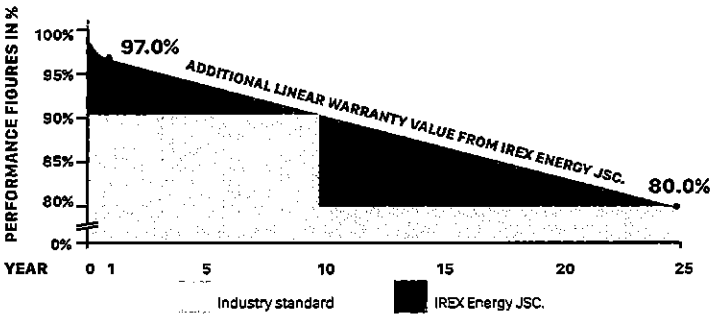
Easy installation and handling
Environmentally friendly

MODULE DURABILITY

5400 Pa snow load, 2400 Pa wind load
Ideal for PV rooftops, ground mount, floating

THE #1 DOMESTIC PV MANUFACTURER IN VIETNAM

100% Automatic production line
International quality PV technology



12 - years Material & workmanship

25 - years Linear power Output

Greetings from IPEX,

Founded in 2012 and inherited over 40 years of Research and Development from SolarBK - the leading smart renewable energy group in Vietnam, IREX's commitment is to provide the very best photovoltaic products originated from our country. We proudly present **the #1 Vietnamese-Made brand** with international certifications and having been exported all around the world, satisfying even the toughest regulation from North American and European photovoltaic markets.

With the finest price and customer service can only be found at IREX, we look forward to be working with you in the near future!

CERTIFICATES

TÜV Rheinland CERTIFIED — Management System ISO 9001:2015

QMS Certification Services — ISO 14001:2015 Environmental Management System

ISO 9001:2015: Quality Management System
ISO 14001:2015: Environmental Management System

IREX ENERGY JOINT STOCK COMPANY
Head Office: No. 47, Le Van Thiem Street, Quarter 5, Binh Trung Dong Ward, District 2, HCMC, Vietnam
Factory Address: Road No. 1A, Phu My I Industrial Zone, Phu My Town, Ba Ria - Vung Tau Province, Vietnam
Tel: +84-28-7300-1559 | Email: info@irex.vn | Website: www.irex.vn
Fax HCMC: +84-28-7300-6760 | Fax IREX Factory: +84-254-2923-594

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PERFORMANCE

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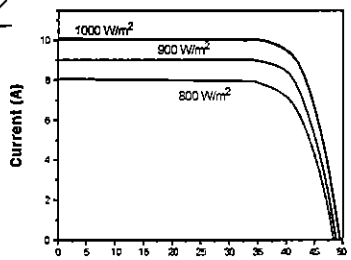
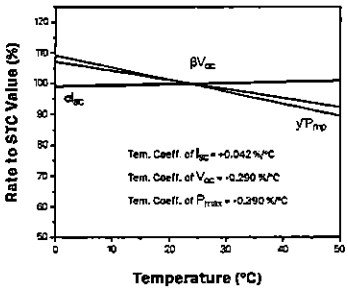
Electrical Performance at 25°C, AM 1.5



Temperature Dependence of Isc, Voc & Pmax at 1000 W/m², AM 1.5



ELECTRICAL CHARACTERISTICS STC IRM72S-395

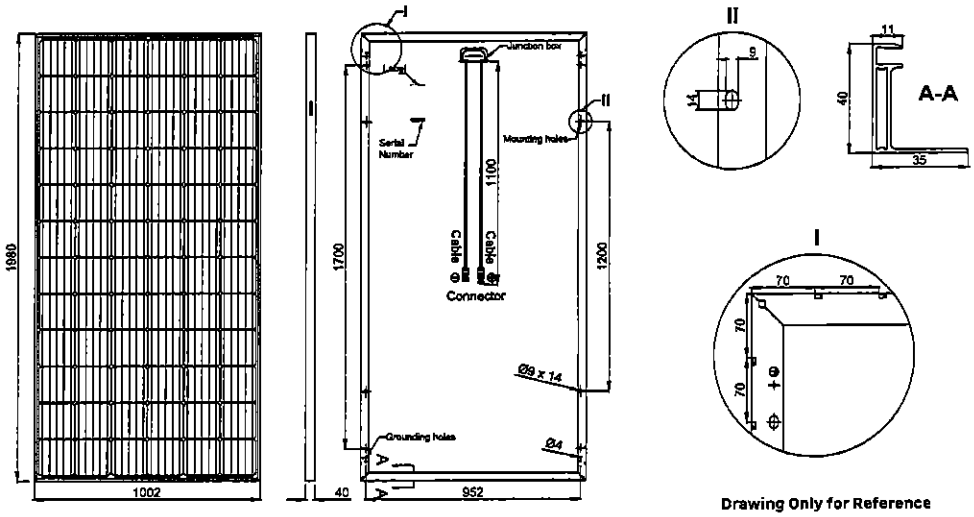
Maximum Power (Pmax)	395 W
Power Tolerance	0 ~ 3 %
Module Efficiency	19.91 %
Maximum Power Current (Imp)	9.38 A
Maximum Power Voltage (Vmp)	42.12 V
Short Circuit Current (Isc)	9.97 A
Open Circuit Voltage (Voc)	49.03 V

Values at Standard Test Conditions
(STC: AM 1.5 Spectrum, Irradiance of 1000 W/m², Cell Temperature 25°C)

ELECTRICAL CHARACTERISTICS NMOT IRM72S-395

Maximum Power (Pmax)	312.05 W
Maximum Power Current (Imp)	7.49 A
Maximum Power Voltage (Vmp)	41.70 V
Short Circuit Current (Isc)	7.97 A
Open Circuit Voltage (Voc)	48.54 V

Values at Nominal Module Operating Temperature
(NMOT: AM 1.5 Spectrum, Irradiance of 800 W/m², Ambient Temperature 20°C, Wind Speed 1 m/s)



Drawing Only for Reference

MECHANICAL CHARACTERISTICS

Cell Type	158.75 x 158.75 mm Monocrystalline, 72 (6 x 12) pcs in series
Front Cover	3.2 mm High Transmission, Low Iron, Tempered Glass with Anti-Reflective Coating
Back Cover	Composite film
Frame	Anodized Aluminum Alloy type 6063 - T5 (Silver/ Black)
Junction Box	3 bypass diodes, IP 68 rated in accordance with IEC 62790
Dimension	1980 x 1002 x 40 mm
Output Cable	4 mm² (IEC)/ 12 AWG (UL), 1100 mm in accordance with IEC 62852
Weight	23 kg (approx)
Connector	MC4 Compatible

PACKING INFORMATION

Container	20' GP	40' GP	40' HQ
Pallets per Container	10	24	24
Pieces per Container	270	648	696

OPERATING CONDITIONS

Operating Temperature	-40°C ~ +85°C
Maximum System Voltage	1500 VDC
Maximum Series Fuse Rating	20 A
NMOT	45°C ± 2°C
Application Class	Class A

SnapNrack
Solar Mounting Solutions

UR-40
UR-60

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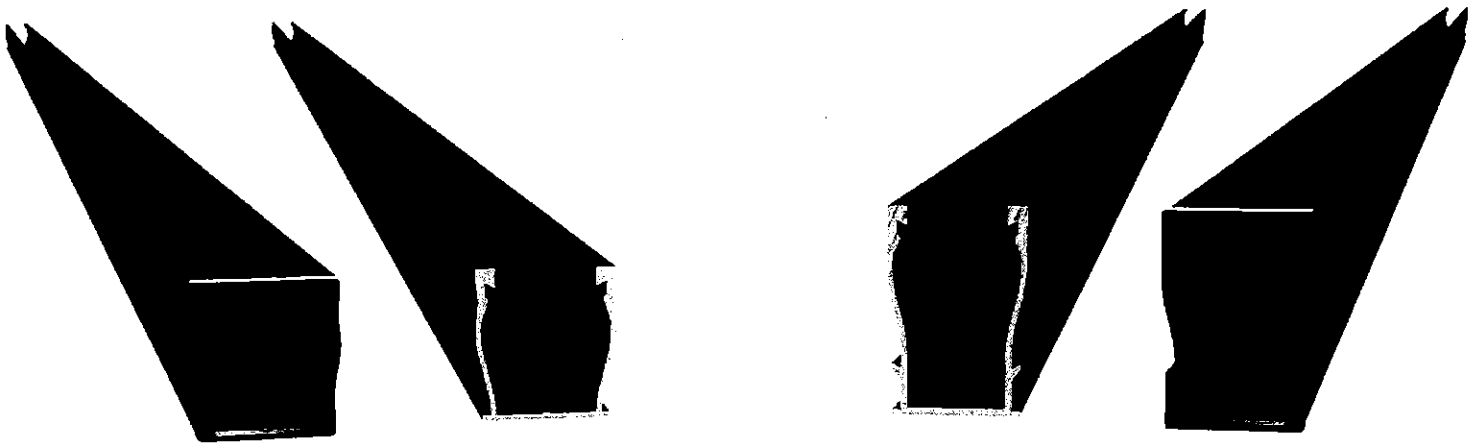
WORR

Ultra Rail



The Ultimate Value in Rooftop Solar

- Industry leading Wire Management Solutions
- Mounts available for all roof types
- Single Tool Installation
- All SnapNrack Module Clamps & Accessories are compatible with both rail profiles

Start Installing Ultra Rail Today

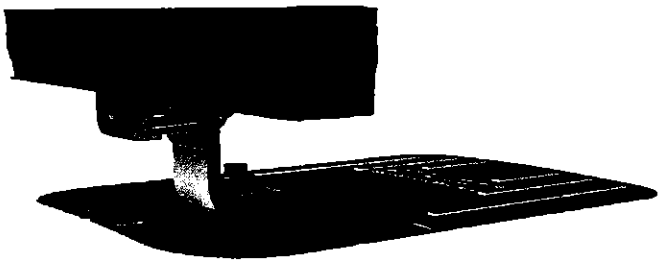
RESOURCES	snapnrack.com/resources
DESIGN	snapnrack.com/configurator
WHERE TO BUY	snapnrack.com/where-to-buy

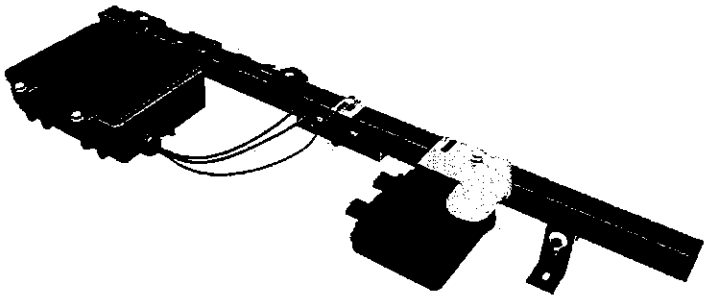
SnapNrack Ultra Rail System

A sleek, straightforward rail solution for mounting solar modules on all roof types. Ultra Rail features two rail profiles; UR-40 is a lightweight rail profile that is suitable for most geographic regions and maintains all the great features of SnapNrack rail, while UR-60 is a heavier duty rail profile that provides a larger rail channel and increased span capabilities. Both are compatible with all existing mounts, module clamps, and accessories for ease of install.

The Entire System is a Snap to Install

- New Ultra Rail Mounts include snap-in brackets for attaching rail
- Compatible with all the SnapNrack Mid Clamps and End Clamps customers love
- Universal End Clamps and snap-in End Caps provide a clean look to the array edge



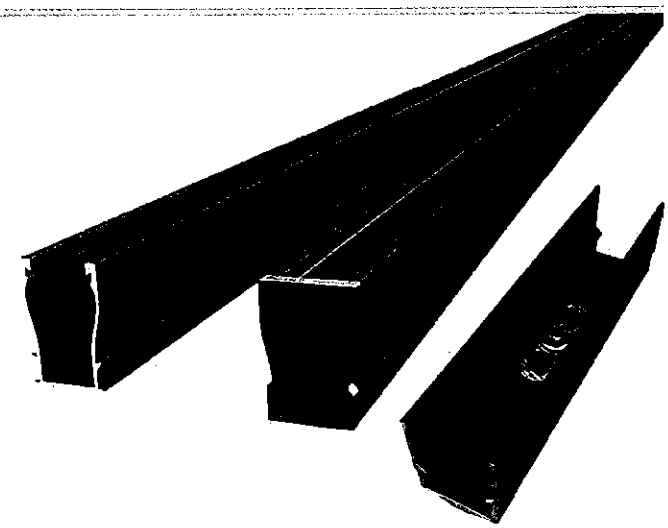


Unparalleled Wire Management

- Open rail channel provides room for running wires resulting in a long-lasting quality install
- Industry best wire management offering includes Junction Boxes, Universal Wire Clamps, MLPE Attachment Kits, and Conduit Clamps
- System is fully bonded and listed to UL 2703 Standard

Heavy Duty UR-60 Rail

- UR-60 rail profile provides increased span capabilities for high wind speeds and snow loads
- Taller, stronger rail profile includes profile-specific rail splice and end cap
- All existing mounts, module clamps, and accessories are retained for the same great install experience



William O. Rodríguez Rodríguez
William O. Rodríguez Rodríguez (Nov 29, 2022 22:10 AST)

Jose Fullana (Nov 29, 2022 08:19 AST)

Quality. Innovative. Superior.

SnapNrack Solar Mounting Solutions are engineered to optimize material use and labor resources and improve overall installation quality and safety.

877-732-2860 **www.snapnrack.com** **contact@snapnrack.com**

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At any point in the RMA process, SimpliPhi may determine that the SimpliPhi Power Product(s') warranty is void due to

- Improper battery bank sizing
- Improper battery wiring and/or installation
- Incorrect inverter and/or charge controller settings
- Power Products paired with incompatible equipment
- Other indications of damage due to improper system operation and/or installation

Once all required RMA Request information is gathered, SimpliPhi issues an RMA number and the RMA Request is determined to be either "In Warranty" or "Out of Warranty":

- "In Warranty" – the SimpliPhi Power Product has a manufacturing defect
- "Our of Warranty" – the SimpliPhi Power Product was damaged on site due to improper installation and/or operation

In Warranty

If SimpliPhi determines the RMA Request to be In Warranty, the SimpliPhi Power Product will be replaced at no cost to the customer, either with a refurbished product or a new replacement product. In this case, SimpliPhi will pay for the product shipment, but the customer will be required to pack the authorized SimpliPhi Power Product(s) for return, along with with the information described above and any other information requested on the RMA, in the original SimpliPhi Power Product shipping container or packaging providing equivalent protection protection with the RMA number marked clearly on the shipping container(s).

Out of Warranty

After receiving the RMA number, the SimpliPhi Power Product may be shipped to SimpliPhi for further evaluation as part of a Root Cause Analysis (RCA). The upfront RCA fee is $250. The customer will be required to pack the authorized SimpliPhi Power Product(s) for return, along with the information described above and any other information requested on the RMA, in the original SimpliPhi Power Product shipping container or packaging providing equivalent protection with the RMA number marked clearly on the shipping container(s). You must prepay all shipping charges covering shipment to the location designated by SimpliPhi Power, and you must insure the shipment and accept the risk of loss or damage during shipment. SimpliPhi Power is not responsible for shipping damage caused by an improperly packaged SimpliPhi Power Product, the repairs this damage might require, or the cost of these repairs.

If, upon receipt of the SimpliPhi Power Product(s), SimpliPhi Power determines the SimpliPhi Power Product(s) are defective and that the defect is not covered under the terms of this Limited Warranty, SimpliPhi Power will invoice for the replacement product. Upon receipt of payment, the SimpliPhi Power Product(s) will be shipped to you, freight prepaid, non-expedited, using a carrier of SimpliPhi Power's choice for shipment.

If, subsequent to the RCA's completion, SimpliPhi Power determines that the SimpliPhi Power Product(s) has a manufacturing defect, the RMA will be revised as "In Warranty", the RCA fee will be refunded and the SimpliPhi Power Product will be replaced at no additional cost to the customer.

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Section 4.0 – Exclusions and Limitations

This Limited Warranty does not apply to the SimpliPhi Power Product(s) or any SimpliPhi Power Product part (i) if the SimpliPhi Power Product(s) have logged in excess of 10,000+ cycles or a period of 10 years or (ii) if the SimpliPhi Power Product(s) or any SimpliPhi Power Product part has been modified or damaged by the following:

- Installation or Removal
- Alteration or Disassembly
- Normal Wear and Tear
- Accident or Abuse (Being Dropped, etc.)
- Corrosion - Inappropriate Environmental Exposure
- Repair or Service Provided by an Unauthorized Repair Facility
- Lightning
- Operation Contrary to Manufacturer Product Instructions
- Fire, Flood or Acts of God
- Excessive Heat or Cold Conditions
- Water Damage
- Shipping or Transportation
- Incidental or Consequential Damage Caused by Other Components of the Power System Including but not Limited to Inverters, Charge Controllers, Breakers, Bypass Switches, Fuses, etc.
- Any Product Whose Serial Number has been Altered, Defaced or Removed
- Operation in a Non-Intended Use, or a Use Which Exceeds the Recommended or Permitted Limits or Loads of the SimpliPhi Power Product outlined in the SimpliPhi Power Product Specification Sheets and Installation Manuals

THIS LIMITED WARRANTY IS THE EXCLUSIVE WARRANTY APPLICABLE TO THE SIMPLIPHI POWER PRODUCT(S). SIMPLIPHI POWER EXPRESSLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTIES OF THE SIMPLIPHI POWER PRODUCT(S), INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO WARRANTIES WHETHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY AFTER THE LIMITED WARRANTY PERIOD.

SIMPLIPHI POWER ALSO EXPRESSLY LIMITS ITS LIABILITY IN THE EVENT OF A PRODUCT DEFECT TO REPAIR OR REPLACE IN ACCORDANCE WITH THE TERMS OF THIS LIMITED WARRANTY. ANY AND ALL LIABILITY FOR INCIDENTIAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR SIMPLIPHI POWER PRODUCT(S) NOT BEING AVAILABLE FOR USE OR LOST REVENUES OR PROFITS, EVEN IF SIMPLIPHI POWER HAS BEEN ADVISED OF THE POTENTIAL FOR SUCH DAMAGES, ARE EXPRESSLY EXCLUDED FROM THIS LIMITED WARRANTY. SOME STATES (OR JURISDICTIONS) MAY NOT ALLOW THE EXCLUSION OR LIMITATION OF CERTAIN WARRANTIES OR DAMAGES, SO SOME OF THE ABOVE EXCLUSIONS MAY NOT APPLY TO YOU.

If there is any inconsistency between this Limited Warranty and any other agreement or statement included with or relating to SimpliPhi Power Product(s) or services, this Limited Warranty shall govern. If any provision of this Limited Warranty is found invalid or unenforceable, it shall be deemed modified to

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the minimum extent necessary to make it enforceable and the remainder of this Limited Warranty shall remain valid and enforceable according with its terms.

Section 5.0 – Consumer Protection and Other Laws May Apply

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. Some states may provide for additional warranty rights and remedies, and the provisions contained in this Limited Warranty are not intended to limit, modify, take away from, disclaim or exclude any mandatory Warranty requirements provided by states, including certain implied Warranties. This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state. **Your acceptance and use of the SimpliPhi Power Product(s) constitutes acceptance of the terms, conditions and limitations of this Limited Warranty.** The terms, conditions and limitations of this Limited Warranty will supersede any other agreement or document relating to the subject matter hereof, including, but not limited to, the terms and conditions that are part of a purchase order covering the SimpliPhi Power Product(s) or other document sent to SimpliPhi Power by you relating to the SimpliPhi Power Product(s).

Section 6.0 – Contacting SimpliPhi

To obtain Warranty service, please contact us as follows:

SimpliPhi Power, Inc.
3100 Camino Del Sol
Oxnard, California, 93030
805.640.6700
techsupport@simpliphipower.com

For technical support, please contact us as follows:

805.640.6700
techsupport@simpliphipower.com

Section 7.0 – Warranty Registration

Instructions for Warranty registration:
Please fill out the attached form, detach, affix First Class postage, include your return address, fold and tape shut with clear tape on bottom and sides before mailing. We recommend you keep a copy of your completed Warranty Registration Form for your records. This form is for product registration. Failure to complete and return the form does not diminish the consumer's warranty rights. *It is important that you complete the Limited Warranty Registration Form since that is the only way SimpliPhi Power knows the Original Use Location and the SimpliPhi Power Product(s) involved.

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SimpliPhi Power Warranty Registration

Customer Information:

Name: _____

Address of Installation: _____

_____

Phone: _____

Email: _____

Product Model: _____

Quantity: _____ Date of Installation: _____ Date of Commissioning: _____

Serial Numbers:

1._____	8._____	15._____
2._____	9._____	16._____
3._____	10._____	17._____
4._____	11._____	18._____
5._____	12._____	19._____
6._____	13._____	20._____
7._____	14._____	21. _____

For orders that exceed (21) PHI batteries please provide Serial Numbers on a separate page.

Date of Purchase: _____

First time Purchase, Replacement or Additional? _____

Where did you purchase this product? _____

Company Name of Licensed Installer: _____

Licensed Installer Contact Information:

Contact: _____

Address: _____

Phone: _____

Email: _____

SimpliPhi Power, Inc.

3100 Camino Del Sol

Oxnard, CA 93030

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Appendix A – Country Specific Disclosures

A.1 – Australia

THIS LIMITED WARRANTY IS PROVIDED IN ADDITION TO, AND DOES NOT EXCLUDE RESTRICT OR LIMIT, ANY RIGHTS A CUSTOMER HAS UNDER THE AUSTRALIAN CONSUMER LAW.

THE PRODUCT, THE SUBJECT OF THIS LIMITED WARRANTY, COMES WITH GUARANTEES THAT CANNOT BE EXCLUDED UNDER THE AUSTRALIAN CONSUMER LAW. YOU ARE ENTITELD TO A REPLACEMENT OR REFUND FOR A MAJOR FAILURE AND FOR COMPENSATION FOR ANY OTHER REASONABLY FORESEEABLE LOSS OR DAMAGE. YOU ARE ALSO ENTITLED TO HAVE THE PRODUCT, THE SUBJECT OF THIS LIMITED WARRANTY, REPAIRED OR REPLACED IF IT FAILS TO BE OF ACCEPTABLE QUALITY AND THE FAILURE DOES NOT AMOUNT TO A MAJOR FAILURE. THESE CONSUMER GUARANTEE RIGHTS APPLY FOR A "REASONABLE PERIOD", WHICH DEPENDS UPON ALL THE RELEVANT CIRCUMSTANCES INCLUDING THE PRICE OF THE PRODUCT, THE USES TO WHICH IT HAS BEEN PUT AND THE NATURE OF THE PRODUCT.

A.2 – New Zealand

THIS LIMITED WARRANTY IS PROVIDED IN ADDITION TO, AND DOES NOT EXCLUDE, RESTRICT OR LIMIT ANY RIGHTS A CUSTOMER HAS UNDER THE CONSUMER GUARANTEES ACT 1993 AND THE FAIR TRADING ACT 1986 (THE "NEW ZEALAND CONSUMER LAW").

IF THE PRODUCT IS ACQUIRED FOR THE PURPOSES OF A BUSINESS, THEN THE CONSUMER GUARANTEES ACT 1993 SHALL NOT APPLY.

YOUR RIGHTS UNDER NEW ZEALAND CONSUMER LAW MAY ALSO APPLY TO ANY REPARIED OR REPLACED PRODUCT.

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PHI 3.8™ BATTERY

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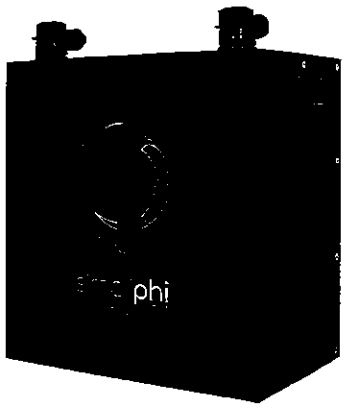
Power. On Your Terms.™



SimpliPhi Power's PHI 3.8™ Battery utilizes the safest Lithium Ion chemistry available, Lithium Ferro Phosphate (LFP). No cobalt or explosive hazards that put customers at risk. By eliminating cobalt, the risk of thermal runaway, fire propagation, operating temperature constraints, and toxic coolants are reduced. When combined with our integrated high-performance Battery Management System (BMS), accessible 80A DC breaker On/Off switch and overcurrent protection (OCPD), the PHI 3.8 Battery delivers safe, highly efficient and cost-effective service over the life of both residential and commercial installations, on or off-grid. Compatible with all industry-standard inverter charge controllers, the PHI 3.8 Battery supports balance-of-system equipment and optimizes any power generation source - solar, wind, grid, generator - with scalable, on-demand energy storage solutions for critical back-up and daily savings on electricity bills.

PHI 3.8 kWh Module	24V	48V
SKU	PHI-3.8-24-60	PHI-3.8-48-60
DC Voltages - Nominal	25.6 VDC	51.2 VDC
Amp-Hours	151 Ah	75 Ah
Rated kWh Capacity	3.8 kWh DC @ 100% DOD 3.04 kWh DC @ 80% DOD	3.8 kWh DC @ 100% DOD 3.04 kWh DC @ 80% DOD
MAX Discharge Rate (10 minutes)	80 Amps DC (2.05 kW DC)	80 Amps DC (4.1 kW DC)
MAX Continuous Discharge Rate	75 Amps DC (1.9 kW DC)	37.5 Amps DC (1.9 kW DC)
MAX Continuous Charge Rate	75 Amps DC (1.9 kW DC)	37.5 Amps DC (1.9 kW DC)
DC Voltage Range[1]	24 VDC to 28 VDC	48 VDC to 56 VDC
Depth of Discharge[1]	up to 100%	
Charging Temperature[1]	32° to 120° F (0° to 49° C)	
Operating Temperature[1]	-4° to 140° F (-20° to 60° C)	
Storage Temperature	6 months: 14° to 77° F (-10° to 25° C) 3 months: -4° to 113° F (-20° to 45° C)	
Self-Discharge Rate	< 1% per month	
Cycle Life	10,000+ cycles (@ 80% DOD)	
Memory Effect	None	
Warranty	10 Years	
Weight	78.24 lbs. (35.5 kg)	
Dimensions (W x H x D)	13.5 x 14 x 8 in. (15.5" H w/terminals) / 0.88 ft3 (34.3 x 35.6 x 20.3 cm / 0.025 m3)	
Model Number	PHI3.8 24V 60 VTE BRK	PHI3.8 48V 60 VTE BRK

1. Max operating ranges. Refer to Warranty for recommended conditions.
- All specifications listed are typical/nominal and subject to change without notice.
- UN 3480, Lithium ion batteries, 9, II
- UL, CE, UN/DOT and RoHS compliant components - UL Compliant
- Designed and manufactured in California, USA

Intertek

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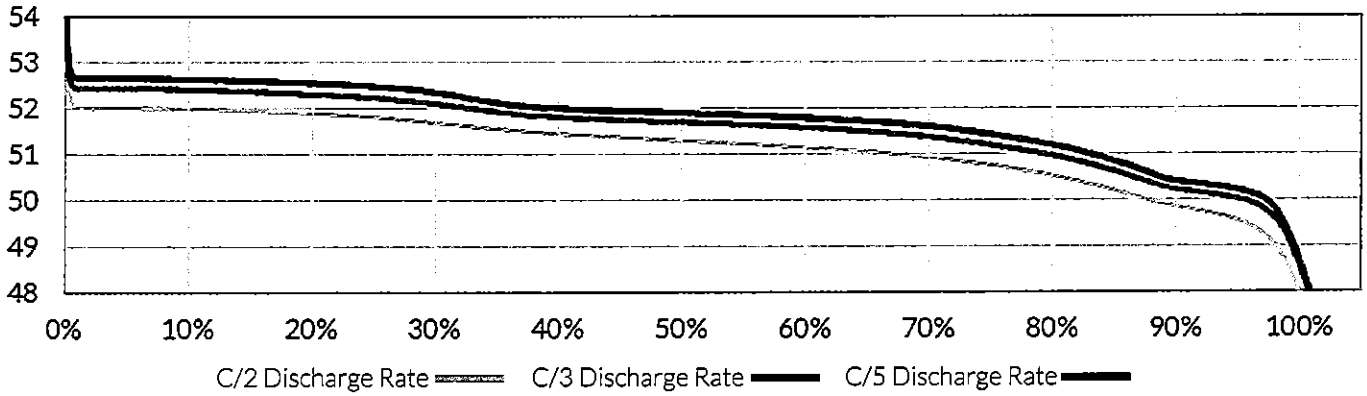
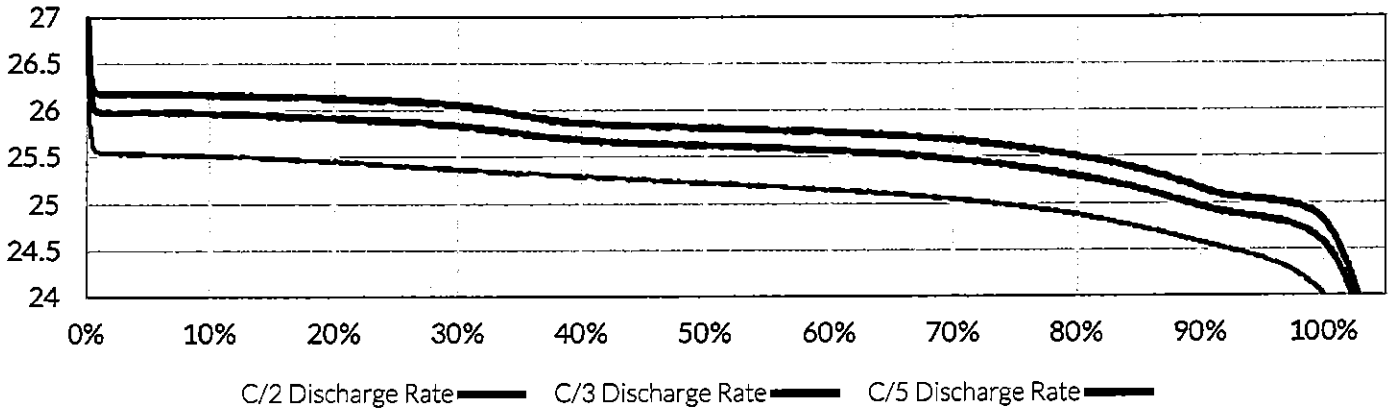
48V Battery Voltage VS. Discharged Capacity

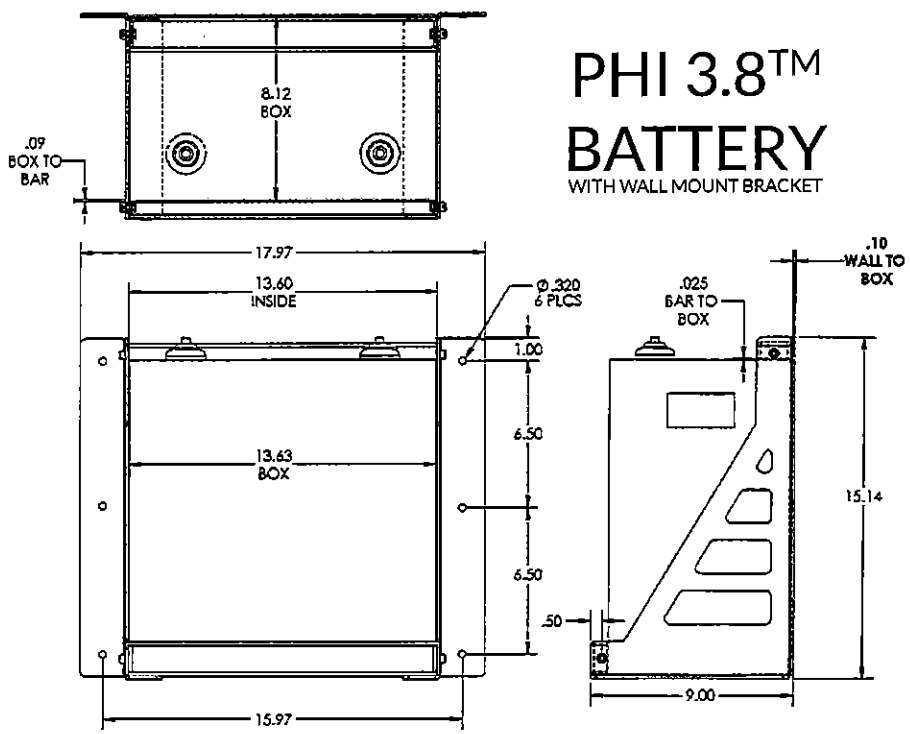


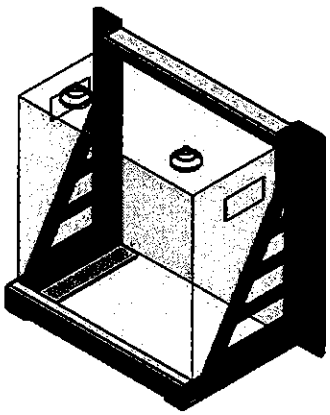
24V Battery Voltage VS. Discharged Capacity



PHI 3.8™ BATTERY

WITH WALL MOUNT BRACKET





Terminals	3/8 IN	10 MM
Battery Cables	6 AWG MINIMUM	

Refer to the Integration Guide section of SimpliPhi's Product Documentation web page for wiring instructions, inverter and/or charge controller specific settings. Must be followed to maintain PHI Warranty.

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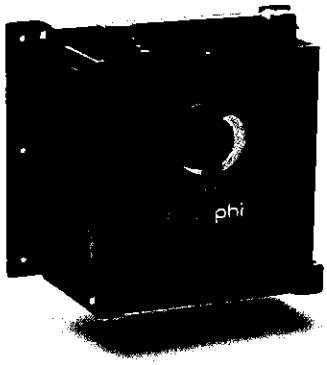
PHI 3.8™ BATTERY



CHEMISTRY	Lithium Ferro Phosphate (LFP) The safest Lithium Ion chemistry available No cobalt or risk of thermal runaway
OCPD	Built-in, accessible 80 Amp DC breaker on/off switch
BMS	Built-in Battery Management System
COMPATIBILITY	Compatible with all industry standard inverters and charge controllers Battery bank-to-inverter output sizing must adhere to a 2:1 ratio: $battery\ quantity = \frac{inverter\ kW_{AC}\ rating \div inverter\ efficiency}{battery\ MAX\ Continuous\ Discharge\ Rate\ (kW_{DC})}$
MAINTENANCE	Maintenance-free No ventilation, cooling or thermal regulation required

PHI 3.8 kWh Module	24V	48V
DC Voltages - Nominal	25.6 VDC	51.2 VDC
Amp-Hours	151 Ah	75 Ah
Rated kWh Capacity	3.8 kWh DC @ 100% DOD 3.04 kWh DC @ 80% DOD	3.8 kWh DC @ 100% DOD 3.04 kWh DC @ 80% DOD
MAX Discharge Rate (10 minutes)	60 Amps DC (1.53 kW DC)	60 Amps DC (3.07 kW DC)
MAX Continuous Discharge Rate	45 Amps DC (**1.15 kW DC**)	37.5 Amps DC (**1.92 kW DC**)
MAX Continuous Charge Rate	45 Amps DC (1.15 kW DC)	37.5 Amps DC (1.92 kW DC)
DC Voltage Range[1]	24 VDC to 28 VDC	48 VDC to 56 VDC
Depth of Discharge[1]	up to 100%	
Operating Efficiency	98%	
Charging Temperature[1]	32° to 120° F (0° to 49° C)	
Operating Temperature[1]	-4° to 140° F (-20° to 60° C)	
Storage Temperature	6 months: 14° to 77° F (-10° to 25° C) 3 months: -4° to 113° F (-20° to 45° C)	
Self-Discharge Rate	< 1% per month	
Cycle Life	10,000+ cycles (@ 80% DOD)	
Memory Effect	None	
Warranty	10 Years or 10,000 cycles (@ 80% DOD)	
Weight	78.24 lbs. (35.5 kg)	
Dimensions (W x H x D)	13.5 x 14 x 8 in. (15.5" H w/terminals) / 0.88 ft^3 (34.3 x 35.6 x 20.3 cm / 0.025 m^3)	

1. Max operating ranges. Refer to Warranty for recommended conditions.

- All specifications listed are typical/nominal and subject to change without notice.
- UN 3480, Lithium ion batteries, 9, II
- UL, CE, UN/DOT and RoHS compliant components - UL Compliant
- Designed and manufactured in California, USA

CERTIFIED TO UL 1973

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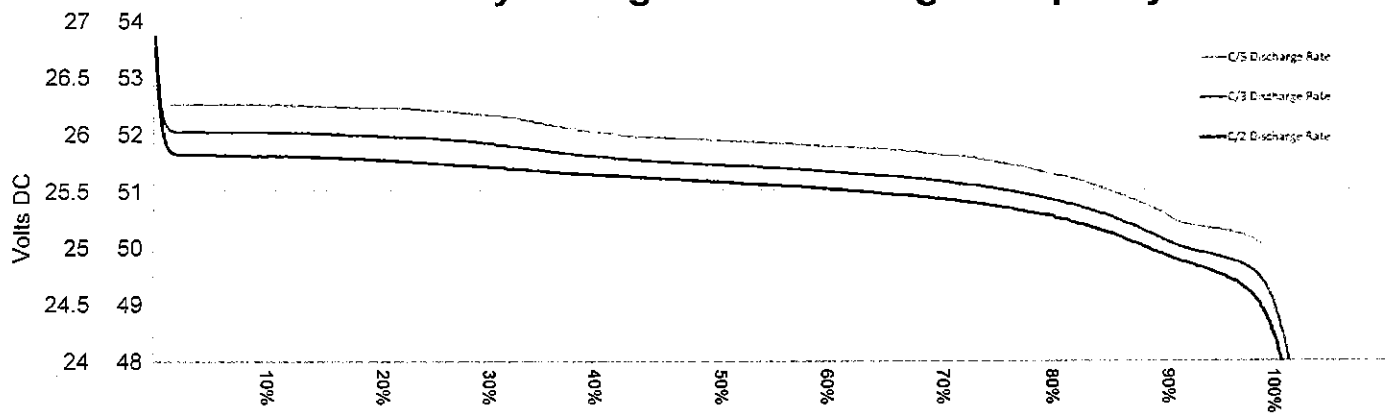
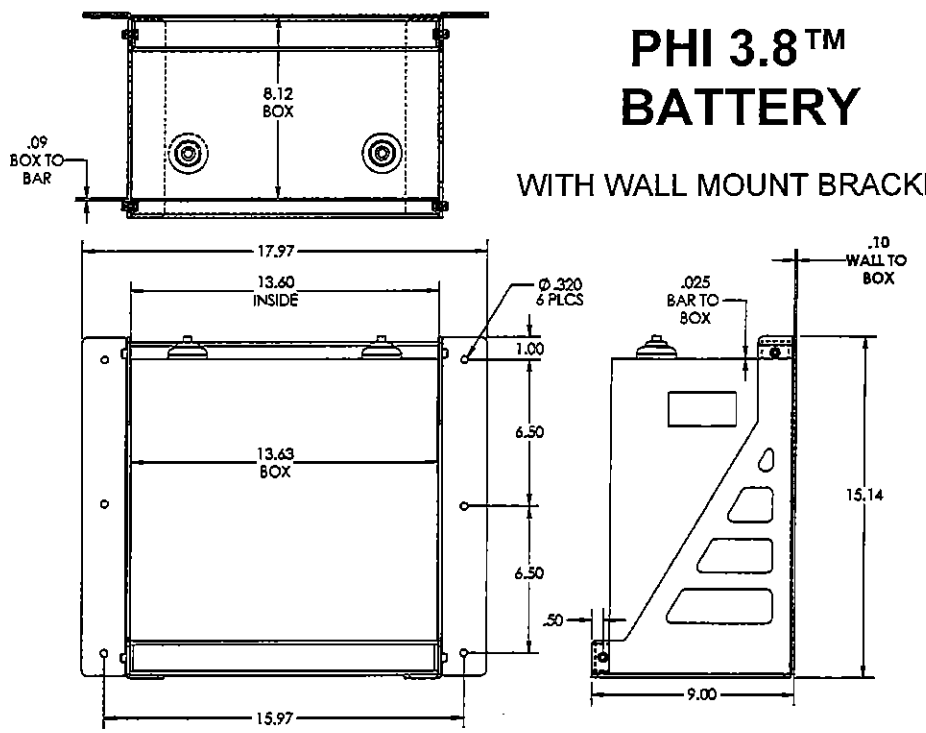
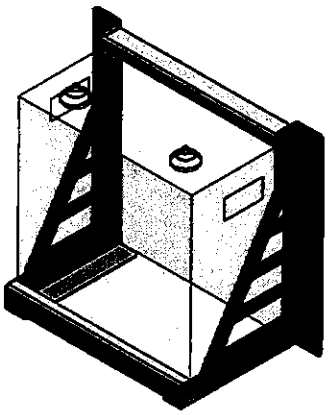
Battery Voltage VS. Discharged Capacity



PHI 3.8™ BATTERY

WITH WALL MOUNT BRACKET





Terminals	3/8 IN	10 MM
Battery Cables	6 AWG MINIMUM	

See Installation Manual for detailed wiring instructions.

Short Circuit Current

Absolute discharge rate limits:

Based on	Amps DC
internal battery impedance	~2,000 A
battery management system	~200 A
built-in circuit breaker	80 A (continuous) 200 A (1 second) 400 A (100 microseconds) 550 A (10 microseconds)

All PHI batteries monitor internal temperatures. Operating within the specified and warrantied parameters ensures these temperatures are not exceeded and the battery is not adversely stressed. When critical temperatures are exceeded, the BMS will disconnect the battery from the DC Bus at indeterminate times and without notice/warning. Repeated exposure to these extremes adversely affects the health of the battery and voids the Warranty.

PHI 3.8 ™	24V	48V
Bulk & Absorb Charge	27.2 VDC	54.4 VDC
Absorb Time	1 HR	1 HR
Charge Controller Float Charge	27 VDC	54 VDC
Inverter Charging	2 STAGE NO FLOAT	
Equalization Charge	NONE	
Temperature Compensation	NONE	

Refer to the Integration Guide section of SimpliPhi's Product Documentation web page for inverter and/or charge controller specific settings. Must be followed to maintain PHI Warranty.

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GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2019-CER-004210

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Ricardo R Acevedo **Correo Electrónico:** racevedo@glenninternational.com

Compañía: Glenn International Inc.

Datos de Equipo Certificado

Tipo de Equipo(s): Batería **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Simpliphi	PHI-3.8-24-60		Capacidad: 151 Ah Voltaje Nominal: 24 VDC Tipo de Batería: Lithium Ferro Phosphate Tipo de Carga y Descarga: 100 Dimensiones Nominales: 13.5 x 14 x 8 in Peso nominal: 78 lbs. Garantía Manufactura: 10 año(s)
Simpliphi	PHI-3.8-48-60		Capacidad: 75 Ah Voltaje Nominal: 48 VDC Tipo de Batería: Lithium Ferro Phosphate Tipo de Carga y Descarga: 100 Dimensiones Nominales: 13.5 x 14 x 8 in Peso nominal: 78 lbs. Garantía Manufactura: 10 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
15/SEP/2019

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Certificación de Equipos de Energía Renovable

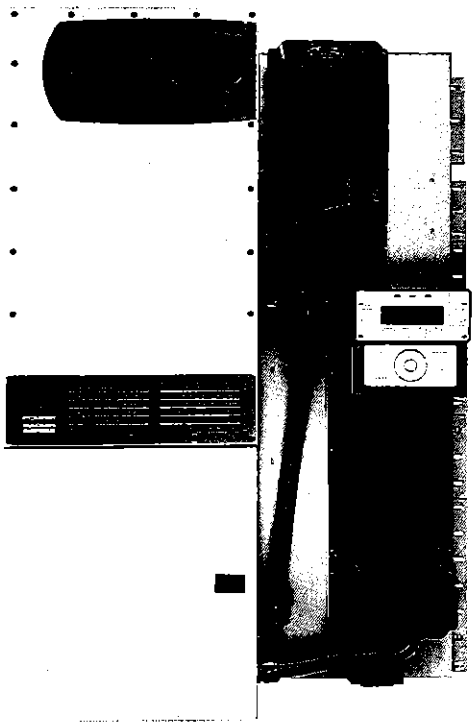
Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

OutBack POWER™
an EnerSys company

FLEXpower Radian™

Fully Pre-assembled 4 and 8kw Inverter Systems

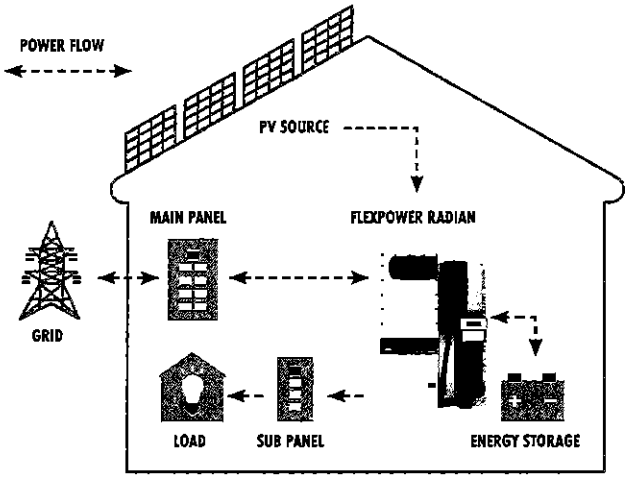


- 4kW: Ideal for smaller power applications including homes, cabins, remote communication sites and backup power systems.
- 8kW: Ideal for medium-sized power requirements including larger homes, light commercial or backup power systems.
- Radian inverter/charger is programmable for seven different operational modes, with generator assist
- 300VDC models provide up to 99% peak efficiency with FLEXmax 100 charge controller

OutBack's pre-assembled and pre-wired power systems take the concept of fast, easy installation to a new level of value and flexibility with the FLEXpower Radian.

Everything needed, outside of power sources and battery backup, is completely integrated—just install the mounting bracket, hang the system on a wall, make the necessary connections and the system is fully operational.

Available in the Radian A Series 4kW or 8kW inverter/charger, both models incorporate OutBack's GridZero technology, a superior level of intelligence in energy management for self-generation and self-consumption programs. It provides precise balancing between using stored energy, solar and utility power, blending-in the latter to overcome surges and load spikes. Both models support leading-edge battery technologies such as lithium-ion and others, and enhanced diagnostics for improved performance.



FLEXpower Radian Specifications

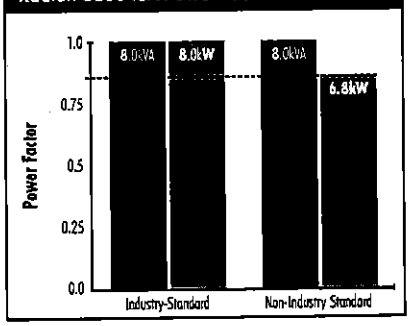
08/2019

Model*	Description	Inverter	GSLC	Bypass	Inverter OCPD**	PV OCPD**	GFDI	AFCI	RTS	Charge Controller
FPR-4048A-300AFCI	GS4048A FLEXpower Radian AFCI	GS4048A	GSLC-PV1-300VDC	120/240VAC	175A	80A	Yes	Yes	Yes	(1) FLEXmax 100 AFCI
FPR-4048A-300VDC	GS4048A FLEXpower Radian 300VDC	GS4048A	GSLC-PV1-300VDC	120/240VAC	175A	80A	Yes	No	Yes	(1) FLEXmax 100
FPR-4048A-01	GS8048A FLEXpower Radian	GS4048A	GSLC175-PV1-120/240	120/240VAC	175A	80A	Yes	No	Yes	(1) FLEXmax 80
FPR-8048A-300AFCI	GS8048A FLEXpower Radian AFCI	GS8048A	GSLC-PV-300VDC	120/240VAC	(2×) 175A	(2×) 80A	Yes	Yes	Yes	(2) FLEXmax 100 AFCI
FPR-8048A-300A-LT	GS4048A FLEXpower Radian AFCI Lite	GS8048A	GSLC-PV1-300VDC	120/240VAC	175A	80A	Yes	Yes	Yes	(1) FLEXmax 100 AFCI
FPR-8048A-300VDC	GS4048A FLEXpower Radian	GS8048A	GSLC-PV-300VDC	120/240VAC	(2×) 175A	(2×) 80A	Yes	No	Yes	(2) FLEXmax 100
FPR-8048A-01	GS4048A FLEXpower Radian	GS8048A	GSLC175-PV-120/240	120/240VAC	(2×) 175A	(2×) 80A	Yes	No	Yes	(2) FLEXmax 80

Details	FPR-4048A-300AFCI	FPR-4048A 300VDC	FPR-4048A	FPR-8048A-300AFCI	FPR-8048A-300A-LT	FPR-8048A 300VDC	FLEXpower Radian 8048A
Finished Dimensions H × W × D (in/cm)	47.0 × 33.5 × 9.84 / 119.4 × 85.1 × 24.9	47.0 × 33.5 × 9.84 / 119.4 × 85.1 × 24.9	47.0 × 33.5 × 9.84 / 119.4 × 85.1 × 24.9	47.0 × 33.5 × 9.84 / 119.4 × 85.1 × 24.9	47.0 × 33.5 × 9.84 / 119.4 × 85.1 × 24.9	47.0 × 33.5 × 9.84 / 119.4 × 85.1 × 24.9	47.0 × 33.5 × 9.84 / 119.4 × 85.1 × 24.9
Weight (lb/kg)	199 / 91	201 / 91.2	195 / 88.5	258 / 116.4	236 / 107.4	262 / 118.8	250 / 113.4
Shipping Dimensions H × W × D (in/cm)	48 ×40 × 18 / 121.9 × 101.6 × 45.7	48 ×40 × 18 / 121.9 × 101.6 × 45.7	48 × 40 × 18 / 121.9 × 101.6 × 45.7	48 ×40 × 18 / 121.9 × 101.6 × 45.7	48 ×40 × 18 / 121.9 × 101.6 × 45.7	48 × 40 × 18 / 121.9 × 101.6 × 45.7	48 × 40 × 18 / 121.9 × 101.6 × 45.7
Shipping Weight (lb/kg)	218 / 98.6	220 / 99.8	213 / 96.6	280 / 126.4	260 / 117.4	284 / 128.8	272 / 123.4

*All pre-wired systems include a Radian Series inverter/charger, FLEXmax charge controller(s), MATE3s system display and communications, FLEXnet DC system monitor, AC and DC wiring boxes, HUB10.3 communications, surge protector and remote temperature sensor (RTS). The FLEXpower Radian is also equipped with battery, PV array breakers, GFDI, AFCI and input-output-bypass. See individual product datasheets or product guide for full specifications.
**Overcurrent protective device.

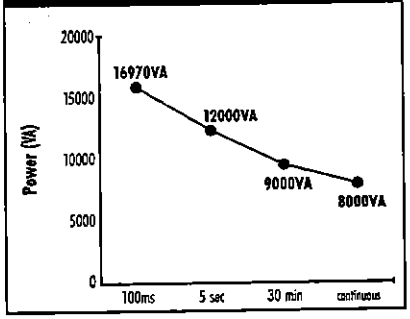
Radian GS8048A Power Factor Chart



Power Rating Notes

Inverters that specify power in VA but do not use the unity standard Power Factor (PF) **could have misleading power specifications.** Volt-Amps (VA) is a total inverter output, while Watts (W) represent the power consumed by the electrical loads. PF, which varies by types of loads, is the ratio of W to VA, and the difference between the two is power in the circuit that does no useful work. At 1.0PF (unity), all power is used. This is the industry-standard used by OutBack Power.

Radian GS8048A Power Rating Chart



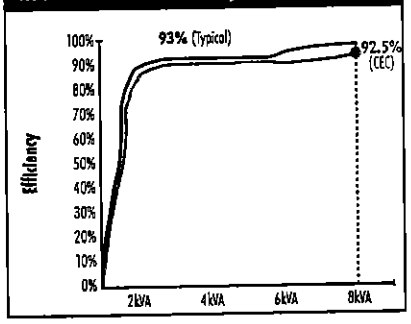
Instantaneous Power Rating
Most stringent, massive load start **GS8048A:** 16970VA

Surge Power Rating
Less stringent load start **GS8048A:** 12000VA

Peak Power Rating
Frequent "heavy duty" load requirements **GS8048A:** 9000VA

Continuous Power Rating
Sustained "real world" load requirements **GS8048A:** 8000VA

Radian GS8048A Efficiency Rating Chart



INVERTING	SELLING

Typical Efficiency Rating
Real world efficiency with variable loads **GS8048A:** 93%

CEC Efficiency Rating
Most stringent US rating **GS8048A:** 92.5%

OutBack POWER
an EnerSys company

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www.outbackpower.com
#980-00075-01-001 REV A

El cliente debe asegurar el envío o aceptar el riesgo de pérdida o daños durante el envío. Si es necesaria una caja de envío para la devolución de un Producto, OutBack se la enviará bajo petición.

IMPORTANTE:

OutBack no se hace responsable de los daños durante el transporte ocasionados por Productos incorrectamente embalados, de las reparaciones que estos daños podrían requerir ni de los costes de estas reparaciones.

Si, a la recepción del Producto, OutBack determina que el Producto o parte del Producto es defectuoso y que el defecto se incluye en los términos de esta Garantía, OutBack enviará entonces y solo entonces al comprador un Producto reparado o de sustitución o la parte del Producto a portes pagados, en envío no urgente, empleando un servicio de mensajería elegido por OutBack.

Si el Producto se avería en un plazo igual o inferior a noventa (90) días desde la fecha de compra original, OutBack lo cambiará por uno nuevo. Si el Producto se avería en un plazo superior a noventa (90) días e inferior o igual a la duración de la garantía, OutBack, a su criterio, reparará y devolverá el Producto, o enviará un Producto de repuesto. OutBack determinará si un Producto debe ser reparado o sustituido de acuerdo con la antigüedad y el modelo del Producto. OutBack autorizará el envío por adelantado de un repuesto en función de la antigüedad y el modelo del Producto.

En los casos en los que un comerciante o distribuidor de OutBack cambie un Producto de más de noventa (90) días por otro nuevo, OutBack NO indemnizará a dicho comerciante o distribuidor con existencias nuevas a menos que el intercambio haya sido autorizado por adelantado por OutBack.

Solución de problemas/Ningún honorario encontrado de defecto

En caso de que falle un Producto, el cliente se deberá contactar con un representante del servicio de asistencia técnica de OutBack y llevar a cabo los pasos que se le indiquen para la resolución del problema. Este paso debe realizarse antes de que se pueda efectuar una devolución. La resolución de problemas requiere que esté presente en las instalaciones del Producto un técnico calificado con un voltímetro de calidad tanto de CC como de CA. Deberá proporcionar al representante de OutBack las lecturas del voltímetro, los mensajes de error del Producto y cualquier otro tipo de información. Una gran cantidad de problemas puede resolverse en las instalaciones del Producto. Si el cliente no está dispuesto o no puede proporcionar estas lecturas (o visitar las instalaciones) y se descubre que el Producto no tiene problemas tras la devolución, OutBack puede obligar al cliente a pagar hasta 180,00 dólares americanos por la mano de obra y la manipulación.

Fuera de Garantía

Si un Producto está fuera de garantía, OutBack podrá repararlo y sustituirlo si el cliente asume los costes. De forma alternativa, si fuese aplicable y bajo petición, OutBack puede enviar por adelantado piezas de repuesto a cambio de una suma de dinero.

Si es necesaria una caja de envío para la devolución de un Producto fuera de garantía, OutBack se la enviará bajo petición. El cliente es responsable del pago del envío a OutBack.

El período de garantía de cualquier Producto reparado o de sustitución, así como de cualquier parte del Producto, es de noventa (90) días a partir de la fecha de envío desde OutBack, o igual al período de validez restante de la garantía inicial, el que sea mayor de los dos.

Esta Garantía queda anulada para cualquier Producto que haya sido modificado por el cliente sin la autorización de OutBack. Un Producto con una garantía anulada se tratará del mismo modo que uno con la garantía vencida.

Actualizaciones de Garantía

Para las actualizaciones de la declaración de garantía, consulte el sitio web siguiente:

http://www.outbackpower.com/resources/warranty/

Información sobre el reciclaje

IMPORTANTE: Reciclaje de sistemas electrónicos y baterías

Las baterías se consideran residuos peligrosos y se deben reciclar de acuerdo con la normativa local. Los inversores y otros sistemas electrónicos contienen metales y plásticos que se deben reciclar. Los siguientes sitios web y números de teléfono proporcionan información adicional para el reciclaje de productos electrónicos y baterías.

Earth 911, EE. UU.

Sitio web: http://www.Earth911.com
Dirección: 14646 N. Kierland Blvd., Suite 100
Scottsdale, AZ 85254
Tel.: +1.480.337.3025 (directo)

Agencia para la protección del medio ambiente (EPA), EE.UU.

Sitio web: http://www.epa.gov/wastes/conserve/materials/ecycling/donate.htm
Dirección: EPA USA
Office of Resource Conservation and Recovery
(5305P) 1200 Pennsylvania Avenue NW
Washington, DC 20460

Keep America Beautiful, EE. UU.

Sitio web: http://www.kab.org/
Correo electrónico: info@kab.org
Dirección: 1010 Washington Boulevard
Stamford, CT 06901
Tel.: +1.203.659.3000 (Número principal)
Fax: +1.203.659.3001

Instituto nacional de recicladores, México

Sitio web: http://www.inare.org.mx/
Correo electrónico: a57841279@prodigy.net.mx, margarita@inare.org.mx
Tel.: +1.55.57.85.9160
Fax: +1.55.57.84.1279

Departamento de recursos naturales de Canadá

Sitio web: http://www.nrcan-rncan.gc.ca/mms-smm/busi-indu/rec-rec-eng.htm
Dirección: 580 Booth
Ottawa, ON K1A 0E8
Tel.: +1.613.995.0947
Teléfono para sordomudos: +1.613.996.4397 (Teléfono general y para sordomudos: de lunes a viernes, de 8:30 a.m. a 4:30 p.m., hora del Este)

EuroRecycle.net, Europa

El siguiente sitio web proporciona información sobre el reciclaje en Europa. También incluye una lista de compañías y organizaciones que proporcionan información y ayuda sobre el reciclaje.

Sitio web: http://euro.recycle.net
Correo electrónico: http://euro.recycle.net/cig-bin/feedback1.cgi?w=27 (Esta dirección es un formulario en línea que se utiliza como medio para ponerse en contacto con los propietarios del sitio web).

OutBack POWER™
member of The alpha Group™

5-Year Limited Warranty

OutBack Power Technologies, Inc. ("OutBack") provides a five (5) year limited warranty ("Warranty") against defects in materials and workmanship for its Inverter/chargers, charge controllers, communication/monitoring products, and system integration equipment and enclosures ("Product"), with the exception of the OBX OutBack Extreme Series products, which have a one (1) year limited warranty.

The term of this Warranty begins on the Product(s) initial purchase date, or the date of receipt of the Product(s) by the end user, whichever is later. This must be indicated on the invoice, bill of sale, and/or warranty registration card (or online form) submitted to OutBack. This Warranty applies to the original OutBack Product purchaser, and is transferable only if the Product remains installed in the original use location.

The warranty does not apply to any Product or Product part that has been modified or damaged by the following:

- Installation or removal;
- alteration or disassembly;
- normal wear and tear;
- accident or abuse;
- corrosion;
- lightning;
- repair or service provided by an unauthorized repair facility;
- operation or installation contrary to manufacturer product instructions;
- fire, floods or acts of God;
- incidental or consequential damage caused by other components of the power system;
- any product whose serial number has been altered, defaced or removed.

OutBack's liability for any defective Product, or any Product part, shall be limited to the repair or replacement of the Product, at OutBack's discretion. OutBack does not warrant or guarantee workmanship performed by any person or firm installing its Products. This Warranty does not cover the costs of installation, removal, shipping (except as described below), or reinstallation of Products or parts of Products.

THIS LIMITED WARRANTY IS THE EXCLUSIVE WARRANTY APPLICABLE TO OUTBACK PRODUCTS. OUTBACK EXPRESSLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTIES OF ITS PRODUCTS, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. OUTBACK ALSO EXPRESSLY LIMITS ITS LIABILITY IN THE EVENT OF A PRODUCT DEFECT TO REPAIR OR REPLACEMENT IN ACCORDANCE WITH THE TERMS OF THIS LIMITED WARRANTY AND EXCLUDES ALL LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR PRODUCTS NOT BEING AVAILABLE FOR USE OR LOST REVENUES OR PROFITS, EVEN IF IT IS MADE AWARE OF SUCH POTENTIAL DAMAGES. IF YOU ARE A CONSUMER THAT PURCHASED THIS PRODUCT IN A MEMBER STATE OF THE EUROPEAN UNION, YOU MAY HAVE ADDITIONAL STATUTORY RIGHTS UNDER DIRECTIVE 1999/44/EC. THESE RIGHTS MAY VARY FROM EU MEMBER STATE TO EU MEMBER STATE. SOME STATES (OR JURISDICTIONS) MAY NOT ALLOW THE EXCLUSION OR LIMITATION OF WARRANTIES OR DAMAGES. SO THE ABOVE EXCLUSIONS OR LIMITATIONS MAY NOT APPLY TO YOU.

How to Register the Product

To register your product, use the online form at the following website location:

http://www.outbackpower.com/resources/warranty/

Or, complete the Warranty Registration card provided with the product and mail it to the address provided on the card.

How to Arrange for Warranty Service

During the warranty period beginning on the invoice date, OutBack Power Technologies will repair or replace products covered under this limited warranty that are returned to OutBack Power Technologies' facility or to an OutBack Power Technologies authorized repair facility, or that are repaired on site by an OutBack Power Technologies authorized repair person.

Contacting OutBack Technical Support

To request warranty service:

Telephone: **+1.360.435.6030** (Main Office)
+1.360.618.4363 (Technical Support)

Email: **support@outbackpower.com**

To ensure warranty coverage, this contact must be within the effective warranty period. If service is required, the OutBack Technical Support representative will issue a Return Material Authorization (RMA) number.

Return Material Authorization (RMA)

A request for an RMA number requires all of the following information:

1. Product model and serial number;
2. Proof-of-purchase in the form of a copy of the original Product purchase invoice or receipt confirming the Product model number and serial number;
3. Description of the problem;
4. Validation of problem by Technical Support, and
5. Shipping address for the repaired or replacement equipment.

Upon receiving this information, the OutBack representative can issue an RMA number.

Returning Product to OutBack

After receiving the RMA number, the customer must pack the Product(s) authorized for return, along with a copy of the original purchase invoice and product registration, *in the original Product shipping container(s) or packaging providing equivalent or reasonable protection.* The RMA number must be written on the outside of the packaging where it is clearly visible.

If Product is within the warranty period, OutBack will cover pre-paid shipping with prior arrangement.

The Product(s) must be shipped back to OutBack Power Technologies in their original or equivalent packaging, to the following address:

OutBack Power Technologies
RMA # _____
17827 – 59th Avenue N.E.
Arlington, WA 98223 USA

The customer must insure the shipment, or accept the risk of loss or damage during shipment. If a shipping box is needed for return of a Product, OutBack will, upon request, send a shipping box.

WORR

IMPORTANT:

OutBack is not responsible for shipping damage caused by improperly packaged Products, the repairs this damage might require, or the costs of these repairs.

If, upon receipt of the Product, OutBack determines the Product or Product part is defective and that the defect is covered under the terms of this Warranty, OutBack will then ship a repaired or replacement Product or Product part to the purchaser freight prepaid, non-expedited, using a carrier of OutBack's choice, where applicable.

If Product fails in ninety (90) or fewer days from original purchase date, OutBack will replace with a new Product. If Product fails after ninety (90) days and up to expiration of warranty, OutBack will, at its discretion, either repair and return a Product, or ship a replacement Product. OutBack will determine whether a Product is to be repaired or replaced in accordance with Product age and model. OutBack will authorize advance shipment of a replacement based on Product age and model.

In cases where an OutBack dealer or distributor replaces a Product more than ninety (90) days old with a new Product, OutBack will NOT compensate that dealer or distributor with new stock unless the exchange was authorized in advance by OutBack.

Troubleshooting/No-Fault-Found Fee

In the event of a Product failure, the customer will need to work with an OutBack Technical Support representative to perform the necessary troubleshooting. This is a required step before a return can be performed. Troubleshooting requires a qualified technician to be present at the site of the Product, with a quality voltmeter that measures both DC and AC. The OutBack representative will request voltmeter readings, error messages, and other information. Several problems can be resolved on-site. If the customer is unable to provide the requested information and the Product is found to have no problems upon return, OutBack may choose to charge additional labor and handling fees up to $180.00 U.S.

Out of Warranty

If Product is out of warranty, OutBack will repair and return Product for a fee. Alternately, if applicable, OutBack will advance-ship replacement parts for a fee upon request.

If a shipping box is needed for return of out-of-warranty Product, OutBack will send a shipping box upon request. The customer is responsible for paying shipping to OutBack.

The warranty period of any repaired or replacement Product or Product part is ninety (90) days from the date of shipment from OutBack, or the remainder of the initial warranty term, whichever is greater.

This Warranty is void for any Product that has been modified by the customer without authorization by OutBack. A Product with a voided warranty will be treated the same as one with an expired warranty.

Warranty Updates

For updates to the warranty statement, check the following website:

http://www.outbackpower.com/resources/warranty/

Recycling Information

IMPORTANT: Recycle Electronics and Batteries

Batteries are considered hazardous waste and must be recycled according to local jurisdiction. Inverters and other electronics contain metals and plastics that should also be recycled. The following websites and phone numbers provide additional information for recycling electronic products and batteries.

Earth 911, USA

Website: http://www.Earth911.com
Address: 14646 N. Kierland Blvd., Suite 100
Scottsdale, AZ 85254
Phone: +1.480.337.3025 (direct)

Environmental Protection Agency, USA

Website: http://www.epa.gov/wastes/conserve/materials/ecycling/donate.htm
Address: EPA USA
Office of Resource Conservation and Recovery (5305P)
1200 Pennsylvania Avenue NW
Washington, DC 20460

Keep America Beautiful, USA

Website: http://www.kab.org/
Email: info@kab.org
Address: 1010 Washington Boulevard
Stamford, CT 06901
Phone: +1.203.659.3000 (Main number)
Fax: +1.203.659.3001

OurEarth.org, USA

There is a place on the Website for contacting OurEarth.org using email. No direct email address is provided.

Website: http://www.ourearth.org
Address: P.O. Box 62133
Durham, NC 27715
Phone: +1.410.878.6485

National Institute of Recyclers, Mexico

Website: http://www.inare.org.mx/
Email: a57841279@prodigy.net.mx, margarita@inare.org.mx
Phone: +1.55.57.85.9160
Fax: +1.55.57.84.1279

Office of Waste Management, Canada

Website: http://www.portaec.net/library/recycling/recycling_in_canada.html
Address: Office of Waste Management
Conservation and Protection
Environment Canada
Ottawa, Ontario K1A 0H3
Phone: +1.819.997.2800

EuroRecycle.net, Europe

The following website provides general information about recycling in Europe. It also provides a list of companies and organizations that provide recycling information or assistance.

Website: http://euro.recycle.net
Email: http://euro.recycle.net/cgi-bin/feedback1.cgi?w=27
(This is an online form providing a means to contact the owners of the website.)

OutBack POWER™
member of The Xantrex Group™

De cinco años (5) limitó garantía

OutBack Power Technologies, Inc. ("OutBack") proporciona cinco (5) años de garantía limitada ("Garantía") contra defectos en materiales y habilidad para sus inversor/corceles, controladores de carga, monitor de batería y productos de comunicación ("Producto"), a excepción del interior de OBX productos de serie Extremos, que tienen un uno (1) año de garantía limitada.

El plazo de vigencia de esta Garantía comienza en la fecha de compra inicial del Producto, o en la fecha de la recepción del Producto por el usuario final, la fecha que sea posterior. Esto debe indicarse en la factura, recibo y/o registro de la garantía enviado a OutBack. Esta Garantía es aplicable al comprador original del Producto OutBack, y es transferible únicamente si el Producto permanece instalado en el lugar de uso original.

La garantía no es aplicable a ningún Producto o parte del Producto que haya sufrido modificaciones o daños por lo siguiente:

- Instalación o desmontaje;
- Modificación o desarme;
- Desgaste normal;
- Accidente o abuso;
- Corrosión;
- Rayos;
- Reparación o servicio realizados por un taller no autorizado;
- Funcionamiento o instalación contrarios a las instrucciones del fabricante;
- Fuego, inundación o fuerza mayor;
- Daños accidentales o derivados, ocasionados por otros componentes del sistema eléctrico;
- Cualquier producto cuyo número de serie haya sido alterado, desfigurado o eliminado.

La responsabilidad de OutBack por cualquier Producto defectuoso, o cualquier parte del Producto, estará limitada a la reparación o sustitución del Producto, a criterio de OutBack. OutBack no garantiza los trabajos realizados por la persona o empresa que instale sus Productos. Esta Garantía no cubre los costos de instalación, desmontaje, transporte (salvo las excepciones que se describen más adelante) o reinstalación de los Productos o partes de Productos.

ESTA GARANTÍA LIMITADA ES LA ÚNICA GARANTÍA APLICABLE A PRODUCTOS OUTBACK. OUTBACK RECHAZA EXPRESAMENTE CUALQUIER OTRA GARANTÍA EXPLÍCITA O IMPLÍCITA DE SUS PRODUCTOS, INCLUIDAS, ENTRE OTRAS, LAS GARANTÍAS IMPLÍCITAS DE COMERCIABILIDAD O IDONEIDAD PARA UN FIN DETERMINADO. OUTBACK TAMBIÉN LIMITA EXPRESAMENTE SU RESPONSABILIDAD EN CASO DE REPARACIÓN O SUSTITUCIÓN DE UN PRODUCTO DEFECTUOSO DE ACUERDO CON LOS TÉRMINOS DE ESTA GARANTÍA LIMITADA Y EXCLUYE TODA RESPONSABILIDAD POR LOS DAÑOS ACCIDENTALES O DERIVADOS, INCLUYENDO, SIN LIMITACION ALGUNA, CUALQUIER RESPONSABILIDAD POR LA INDISPONIBILIDAD DE LOS PRODUCTOS O LUCRO CESANTE, INCLUSO EN EL CASO DE QUE HAYA SIDO ADVERTIDA DE TALES DAÑOS POTENCIALES. SI ES UN CONSUMIDOR QUE ADQUIRIÓ ESTE PRODUCTO EN UN ESTADO MIEMBRO DE LA UNIÓN EUROPEA, PUEDE TENER DERECHOS LEGALES ADICIONALES BAJO LA DIRECTIVA 1999/44/CE. ESTOS DERECHOS PUEDEN VARIAR DE UN ESTADO MIEMBRO DE LA UE A OTRO. ALGUNOS ESTADOS (O JURISDICCIONES) NO CONTEMPLAN LA EXCLUSIÓN O LIMITACIÓN DE GARANTÍAS O DAÑOS, POR LO QUE ESTAS LIMITACIONES O EXCLUSIONES PUEDEN NO AFECTARLE.

Cómo registrar el producto

Para registrar su producto, utilice la forma en línea en la posición siguiente de sitio web:

http://www.outbackpower.com/resources/warranty/

O, completa la tarjeta de Matrícula de Garantía proporcionado con el producto y envíe lo a la dirección proporcionado en la tarjeta.

Cómo solicitar el servicio de la garantía

Durante el plazo de garantía que comienza en la fecha de la factura, OutBack Power Technologies reparará o cambiará aquellos productos cubiertos por esta garantía limitada que sean devueltos a las instalaciones de OutBack Power Technologies o a un taller de reparación autorizado por OutBack Power Systems, o que sean reparados en las instalaciones del consumidor por un técnico de reparaciones autorizado por OutBack Power Technologies.

Para contactar OutBack Apoyo Servicio de asistencia técnica

Para solicitar el servicio de la garantía:

Teléfono: **+1.360.435.6030** (Oficina principal)
+1.360.618.4363 (Asistencia técnica)
Correo electrónico: **support@outbackpower.com**

Para asegurar la cobertura de la garantía, deberá ponerse en contacto con OutBack durante el período efectivo de la garantía. Si fuese necesario el servicio, el representante de la asistencia técnica de OutBack emitirá un número de autorización de devolución del material (RMA).

Autorización de devolución de material (RMA)

Para solicitar un número RMA debe facilitarse toda la información que se indica a continuación:

1. modelo y número de serie del Producto,
2. la prueba de compra en forma de copia de la factura original del Producto o un recibo que confirme el número de modelo y el número de serie del Producto,
3. descripción del problema,
4. la validación del problema por asistencia técnica; y
5. dirección de envío del equipo reparado o de sustitución.

Tras la recepción de esta información, el representante de OutBack podrá emitir un número RMA.

Devolución de un Producto a OutBack

Después de recibir el número RMA, el cliente debe embalar el/los Producto/s autorizado/s para su devolución, junto con una copia de la factura de compra original y el certificado de garantía, en el embalaje original del Producto/s o en un embalaje que ofrezca una protección equivalente o razonable. El número RMA debe escribirse en el exterior del embalaje donde se pueda ver claramente.

Si el producto se encuentra dentro del período de garantía, OutBack cubrirá los costos prepagos del transporte con previo acuerdo.

El Producto o los Productos deben enviarse de vuelta a OutBack Power Technologies en su embalaje original o equivalente a la siguiente dirección:

OutBack Power Technologies
RMA # _____
17827 – 59th Avenue N.E.
Arlington, WA 98223 Estados Unidos

JF

GOBIERNO DE PUERTO RICO

Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2020-CER-005367

WORR
WORR

Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: RICARDO R ACEVEDO **Correo Electrónico:** racevedo@glenninternational.com

Compañía: Glenn International, Inc.

Datos de Equipo Certificado

Tipo de Equipo(s): Controlador de Carga **Clasificación:** Equipo Existente

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Outback Power	FM100	Certificación de Seguridad: UL 1741 Núm. Certificación: 3004905 Laboratorio: ITSNA	Voltaje(s) Salida: 24 / 36 / 48 VAC Voltaje(s) Máximo Entrada: 300 VDC Eficiencia Máxima: 98.8% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 5Kilowatts Garantía Manufactura: 5 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
24/JUN/2020

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

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ESTADO LIBRE ASOCIADO DE PUERTO RICO
Oficina de Gerencia de Permisos

Núm. Caso
2014-REC-00399
Fecha: 18-feb-2015

Recomendaciones

CERTIFICACION DE EQUIPO

Datos de localización

De acuerdo a la información suministrada se solicita la certificación para módulo fotovoltaicos Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según identificado(s) a continuación:

Correo Electrónico:
Krisk@warrendelcaribe.com

Organización:
Warren Del Caribe

DATOS DE EQUIPO CERTIFICADO

Tipo de Equipo: Inversores
Tipo de Gabinete (NEMA): 1

Marca: Outback Power

Modelos: GS4048A & GS8048A (Radian Series)

Garantía: Manufactura = 5 años

Potencia Nominal: (4000 & 8000)W

Voltaje de Salida: 120/240 VAC

Eficiencia Máxima: 92.5%

Voltaje Máximo Entrada: 64VDC

Seguridad UL1741: ETL
Cert. Núm: 3004905

EDIFICABILIDAD

Los siguientes requerimientos y recomendaciones corresponden a la División de Edificabilidad:

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos y Reglamento para la Certificación de Sistemas Fotovoltaicos e Instaladores, vigentes.

Condiciones especiales

Bajo ninguna circunstancia, deberá interpretar que esta recomendación favorable implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondiente permiso de construcción.

Firmas / Sellos

Arq. Alberto Lastra Power
Director Ejecutivo

Fecha de expedición
18 de febrero de 2015

Life Is On | Schneider Electric

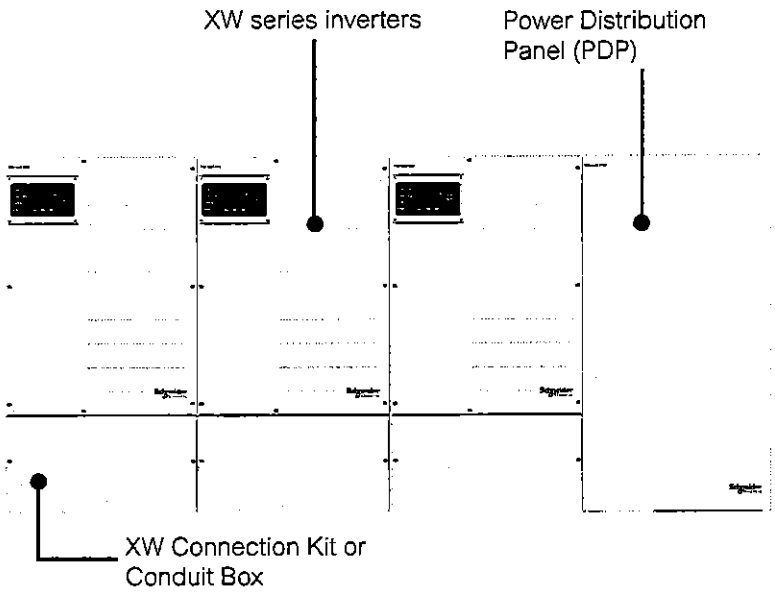
Conext™ XW Series Power Distribution

Easy to install, flexible and scalable balance of system solutions

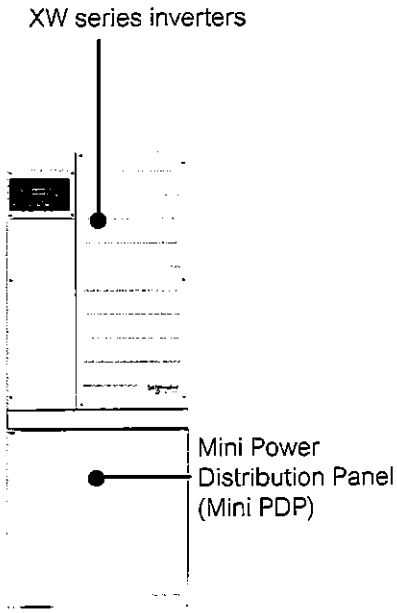
Conext™ XW Power Distribution Panels offer flexibility for your solar and storage system design, including:

- **Mini-Power Distribution Panel and Power Distribution Panel**
- **XW Connection Kit**
- **XW Conduit Box**
- **Compatible Breakers**

Configuration with XW PDP

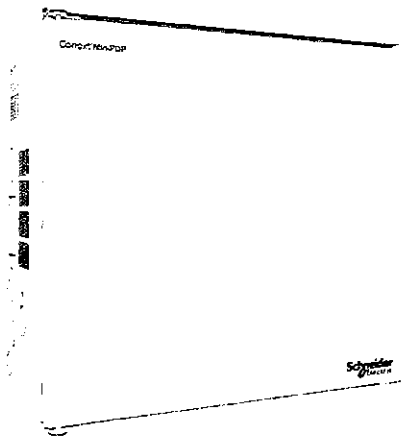


Configuration with XW Mini PDP



XW Mini Power Distribution Panel

The XW Mini Power Distribution Panel (Mini PDP) provides a compact, easy to install DC and AC power distribution cabinet compatible with the Conext XW series inverters. The Mini PDP can be used for managing power distribution to the XW inverter, MPPT Charge Controllers, the battery, and a generator.



The PDP is designed for compact installation below the XW inverter and easy installation:

- Includes a main 250 A DC breaker for the battery
- Includes AC breakers for AC input, Bypass, and AC Out (load)
- Breaker expansion positions on DC side for solar charge controllers and AC side for generator or AC coupled PV inverter
- AC wiring and DC bus bars for direct connection to the XW inverter
- Split phase, single phase applications
- Mounts below the XW inverter
- Multiple conduit knockouts and a field reversable door
- Compatible with Conext MPPT charge controllers, and includes mounting provisions for MPPT 60 150 Charge Controllers on the either side
- Saves installation time with a pre-wired solution

XW Mini PDP	
Part number	865-1013-01
Standards	UL
AC Distribution	
Included breakers	Three 60 A, 120/240 Vac, two-pole, Square D QOU260 AC breakers for AC input, bypass and AC load (factory-installed)
Mounting	DIN rail (35 mm)
Breaker expansion positions	One additional expansion position for a 2 pole Square D QOU breaker
AC wiring	Factory installed and labeled Arctic Ultraflex Blue™ wiring, including five #6 AWG Arctic AC cables for AC connections: L1, L2, Neutral
DC Distribution	
Included breakers	One GJ 250A 160 Vdc, 3/8" stud DC breaker installed
Mounting	Panel mounted
Breaker expansion positions	2 expansion positions for charge controller DC breakers. Can be used for outputs of MPPT 60/80/100, as well as MPPT 60 input.
DC wiring	Integrated DC busbars for easy installation with the XW series inverters
General Specifications	
Wiring connections	Termination lugs for ground, AC neutral and DC bus bar for battery connection
Enclosure	Indoor rated, field-reversible panel door and integrated wall mounting bracket
Certification	UL1741, CSA107.1
Product dimensions (H x W x D)	47.0 x 40.6 x 22.5 cm (18.5 x 16 x 8.9 in). 24.9 in door swing clearance, measured from back of unit
Shipping dimensions (H x W x D)	53.5 x 56.5 x 33 cm (21.0 × 28.6 × 13.0 in)
Shipping weight	13 kg (28.2 lb)

XW Power Distribution Panel

The XW Power Distribution Panel (PDP) provides an easy to install DC and AC power distribution cabinet compatible with the Conext XW series inverters. The PDP can be used for managing power distribution for up to three XW inverters, MPPT Charge Controllers, the battery, and a generator.

The PDP is designed for easy installation and flexibility:

- Includes a main 250 A DC breaker for the battery
- Available with or without AC breakers for AC input, Bypass, and AC Out (load)
- Breaker expansion positions on DC side for solar charge controllers and additional battery disconnects/breakers and AC side for additional inverters, generator or AC coupled PV inverter
- Compatible with up to three XW inverters
- Provision for mounting surge arresters e.g. Square D SDSA1175, Square D SDSA3650
- Extremely flexible Arctic Ultraflex Blue™ wiring for direct connection to the XW inverter as described in the specifications
- Split phase, single phase, and three phase applications
- Mount on either side of the XW inverter, multiple conduit knockouts and a field reversable door
- Mounts flush beside Conext 600V MPPT Charge Controllers. Includes mounting provisions for two MPPT 60 150 Charge Controllers on the side
- Saves installation time with factory installed, ready to connect wiring
- Includes a Conduit Box and mounting plate for seamless integration with XW inverters

	XW PDP with AC Breakers	XW PDP without AC Breakers
Part number	865-1015-01	865-1014-01
Standards	UL	UL / IEC
AC Distribution		
Included breakers	Three 60 A, 120/240 Vac, two-pole, Square D QOU260 AC breakers for AC input, bypass and AC load (factory-installed)	Breakers not included. Refer to compatible breaker accessories.
Mounting	DIN rail (35 mm)	DIN rail (35 mm)
Breaker expansion positions	Six expansion positions	Nine 2-pole expansions (QOU breakers)
AC wiring	Factory installed and labeled Arctic Ultraflex Blue™ wiring, including five #6 AWG AC cables for AC connections: L1, L2, Neutral	AC wiring not included
DC Distribution		
Included breakers	One GJ 250A 160 Vdc DC, 3/8" stud breaker installed	
Mounting	Panel mounted	
Breaker expansion positions	Two expansion positions for battery 250A DC breakers Eight expansion positions for charge controller DC breakers	
DC wiring	One pair of Arctic Ultraflex Blue™ #4/0 AWG battery cables	
General Specifications		
Wiring connections	Termination lugs for ground, AC neutral and DC bus bar for battery connection	
Enclosure	Indoor rated, field-reversible panel door. A wall mount bracket is included, as well as an XW Conduit box for wiring to the XW terminals.	
Product dimensions (H x W x D)	76.1 x 40.6 x 21.0 cm (30.0 × 16.0 × 8.3 in)	
Shipping dimensions (H x W x D)	122.0 x 53.3 x 34.3 cm (48.0 × 21.0 × 13.5 in)	
Shipping weight	30.5 kg (67.2 lb)	

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XW Connection Kit for Additional Inverters

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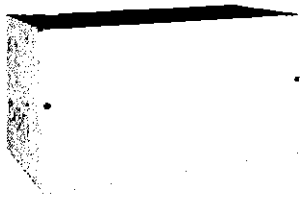
The XW Connection Kit is used for connecting a second or third XW inverter to a Power Distribution Panel (PDP). One XW Connection Kit is used for each of the additional XW Inverters.

The XW Connection Kit is designed for easy installation of multiple inverter systems and includes:

- XW Conduit Box
- Includes a main 250A DC breaker for the battery
- One pair #4/0 AWG battery cables, 64" length to reach from the third inverter to the PDP
- Five #6 AWG cables for AC In (grid), AC Out (load), and neutral
- AC Sync and Xanbus cables for network communication
- DC positive bus bar for up to 3 DC disconnect breakers for installation in the PDP

XW Installation Kit for INV2 INV 3 PDP	
Part number	865-1020-02
General Specifications	
Product dimensions (H x W x D)	22.9 x 40.6 x 21.0 cm (8.5 x 16.0 x 8.3 in)
Shipping dimensions (H x W x D)	44.5 x 33.3 x 30.5 cm (17.5 × 13.0 × 12.0 in)
Shipping weight	10.5 kg (23.1 lb)

XW Conduit Box



The XW Conduit Box mounts directly to the bottom of an XW inverter to safely protect end-users from inadvertent contact with wiring or connections. The XW Conduit Box is bundled with the Power Distribution Panel and the XW Connection Kit, however, it is also available for order on its own.

The Conduit Box is easily secured with two screws provided on the bottom of the inverter. The bottom flange of the conduit box can then be attached (fasteners not provided) to the wall to complete the installation. The front panel of the conduit box can be removed by removing the two screws on the front, allowing ample space to make all necessary wiring connections.

In multi-unit installations, the sides of adjacent conduit boxes can be removed to create an effective raceway with lots of volume to run AC and DC inverter cabling. The conduit box also includes multiple cable strap points, allowing the final installation to look clean and professional.

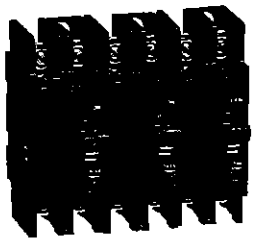
In addition, an internal sheet metal barrier is included to keep communications wires separate from AC and DC power wires.

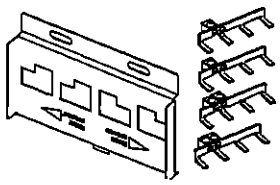
XW Conduit Box	
Part number	865-1025-01
General Specifications	
Product dimensions (H x W x D)	22.9 x 40.6 x 21.0 cm (8.5 x 16.0 x 8.3 in)
Shipping dimensions (H x W x D)	44.5 x 33.0 x 30.5 cm (17.5 × 13.0 × 12.0 in)
Shipping weight	4.6 kg (10.0 lb)

Compatible AC breakers for XW Power Distribution Panel

Application	Compatible Breakers
UL Standards	
120/240 VAC	60 A, 120/240 VAC Breaker Kit (865-1215-01); or Customize with Square D type QOU DIN-rail mount breakers
120/208 VAC	60 A, Three-Phase Breaker Kit (865-1315-01); or Customize with Square D type QOU DIN-rail mount breakers
IEC Standards	
230 VAC	Schneider Electric Acti9 and Multi9 DIN-rail mount breakers

60 A, 120/240 VAC Breaker Kit



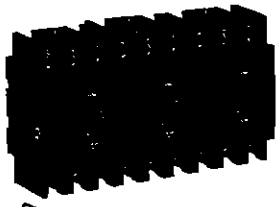


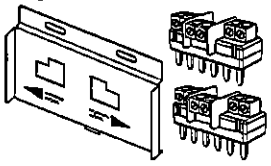
The 60 A, 120/240 VAC Breaker Kit is used for AC distribution for a second or third XW inverter connection to the Power Distribution Panel. If the Power Distribution Panel was ordered with AC breakers, a single breaker kit can be used for connecting two or three inverters. With two inverters, the three additional breakers are used for AC in (grid), bypass, and AC Out (load). With three inverters the breakers in the PDP are used for AC in (grid) and AC Out (load), and bypass functionality would be installed externally (not included). Includes:

- Three 60A, 120/240 Vac, two-pole, Square D, type QOU, DIN-rail mountable AC breakers
- Four Jumpers with four tabs each
- Bypass interlock plate for dual inverter systems

XW Conduit Box	
Part number	865-1215-01

60 A, Three-Phase Breaker Kit





The 60 A, Three-Phase Breaker Kit is used to connect three XW+ inverters in a 120/208V three phase configuration in the Power Distribution Panel. The three, 60A three-pole breakers are used for connecting AC In (grid), bypass, and AC Out (load). Includes:

- Three 60A, 120/208 Vac, three-pole, Square D QOU360, DIN-rail mountable AC breakers
- Power distribution jumpers
- Bypass interlock for three-phase systems using three XW inverters

Three-Phase Breaker Kit for XW PDP	
Part number	865-1315-01

DC Breaker Accessories

Compatible with XW Power Distribution Panels.

	Single Unit Part Number	Masterpack Part Number	Masterpack Qty	Application
Battery Disconnect/Breaker				
250A, 160VDC, Panel Mount DC Breaker	865-DCBRK-250	865-1065	6 units	XW inverter connection to battery
Charge Controller Breakers				
125A, 125VDC, Panel Mount DC Breaker	865-DCBRK-125	-	-	MPPT 100 600 output connection to battery
100A, 125VDC, Panel Mount DC Breaker	865-DCBRK-100	865-1080	12 units	MPPT 80 600 output connection to battery
80A, 125VDC, Panel Mount DC Breaker	865-DCBRK-80	865-1070	12 units	MPPT 60 150 output connection to battery
60A, 160VDC, Panel Mount DC Breaker	865-DCBRK-60	865-1075	48 units	MPPT 60 150 input connection to PV array. Not used when the MPPT 60 150 is installed with MPPT Disconnect RS

Example XW Power Distribution Configurations

The following table shows example ordering information for some typical configurations. Other configurations are also possible such as adding additional MPPT charge controllers or integrating PV with AC Coupling. Please refer to the Mini-PDP, PDP, and other product specifications and manuals for more information.

	Part Number	1 XW 120/240V 1 MPPT	2 XW 120/240V 2 MPPT	3 XW 120/240V 3 MPPT	3 XW 3-phase 3 MPPT
XW Pro or XW+	865-6848-21 or 865-6848-01	1	2	3	3[1]
MPPT 100 600 or MPPT 80 600	865-1034 or 865-1032	1	2	3	3
Optional: MPPT Disconnect RS	865-1036 and 865-1039	1 1	1 1	2 1	2 1
XW Mini PDP	865-1013-01[2]	1			
XW PDP with AC Breakers	865-1015-01[2]		1	1	
XW PDP without AC Breakers	865-1014-01				1
XW Connection Kit	865-1020-02		1	2	2
60A 120/240 VAC Breaker Kit	865-1215-01[2]		1	1	
60A Three Phase Breaker Kit	865-1315-01[2]				1
Charge Controller Output Breaker	Refer to DC breaker accessories	1	2	3	3
Optional: Extra AC Breakers for Generator Integration	Refer to AC breaker accessories	One 2-pole	Two 2-pole	Three 2-pole	One 3-pole
Manual Bypass		Included	Included with 865-1215-01	Installed externally (not included)	Included with 865-1315-01

[1] XW+ must be used for three-phase applications
[2] For IEC markets, substitute the PDP without AC Breakers (865-1014-01), and refer to compatible AC breaker accessories.

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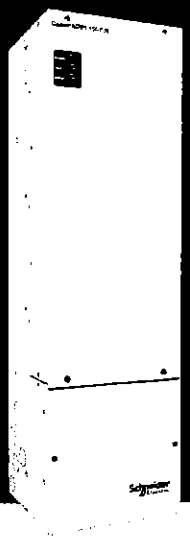


MPPT PV Optimization

600 Vdc Solar Charge Controllers

6 kW MPPT 100 600 (Part Number 865-1034)
4.8 kW MPPT 80 600 (Part Number 865-1032)

The MPPT 80 and MPPT 100 600 Vdc Solar Charge Controllers optimize the power from PV arrays for DC coupled solar and storage installations, with easy, flexible installation.

Optimum System Performance

- High power, 600 Vdc MPPT PV optimization and battery charge control
- Flexibility for oversized PV array power ratings up to 8.5 kW with the MPPT 100 or 6.8 kW with the MPPT 80
- High efficiency from PV to battery to grid, ideal for the self-consumption of solar energy
- Black start batteries from solar, providing maximum energy resilience for longer duration grid outages
- Harvest more energy with shade tolerant fast sweep MPPT algorithm

Flexible

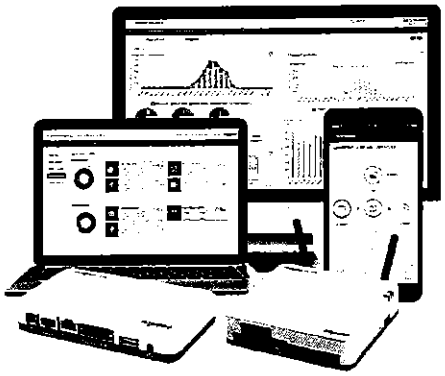
- Flexible string sizing with a wide MPPT and PV operating voltage range
- Compatible with XW Pro and SW series hybrid inverters for a complete grid tied or off grid solar and storage solution

Easy to Install

- 2 string installations and smaller wire sizing with 600 Vdc PV arrays, allowing faster, lower cost installations
- No need for a combiner box with DC breakers or fuses
- Easy to install PV disconnect and NEC 2017 compliant rapid shutdown transmitter with the MPPT Disconnect RS accessory, UL1741 PVRSS certified

Compatible with Insight Energy Management

- Setup and configuration
- Remote monitoring & control with advanced data security
- Web and mobile app
- Multi-site management for installers



Insight Energy Management

solar.schneider-electric.com

Technical Specifications

	MPPT 80 600	MPPT 100 600
Electrical Specifications		
Max PV array open circuit voltage	600 V	600 V
MPPT voltage range	195 to 510 VDC	195 to 510 VDC
PV array operating voltage	195 to 550 V	195 to 550 V
Max. array short circuit current at STC	28 A	35 A
Max. input operating current	23 A	29 A
Max. output power	4800 W (nominal 48 V systems)	6000 W (nominal 48 V systems)
Nominal battery voltage	24 and 48 VDC	24 and 48 VDC
Battery voltage operating range	16 to 67 VDC	16 to 67 VDC
Max. output charge current	80 A	100 A
Charger regulation method	Three-stage (bulk, absorption, float) plus manual equalization Two-stage (bulk, absorption) plus manual equalization	
Supported battery types	Flooded, GEL, AGM, Lithium-ion, Custom	
Efficiency		
Max. power conversion efficiency	95% (nominal 48 V), 92% (nominal 24 V)	
General Specifications		
Power consumption, night time	< 1 W	
Battery temperature sensor	Included	
Auxiliary output	Dry contact switching up to 60 VDC, 30 VAC, 8 A	
Enclosure material	Enclosure material: Indoor, ventilated, aluminium sheet metal chassis	
Knockout dimensions	44.0 mm, 35.0 mm , 28.2 mm, and 22.2 mm knockouts for 1-1/4, 1, ¾, and ½ inch trade size fittings	
IP degree of protection	IP20	
Product weight	13.5 kg (29.8 lb)	
Shipping weight	20.4 kg (45 lb)	
Product dimensions (H x W x D)	76.0 × 22.0 × 22.0 cm (30.0 × 8.6 × 8.6 in)	
Shipping dimensions (H x W x D)	113.39 × 28.68 × 31.90 cm (44.64 × 11.29 × 12.56 in)	
Ambient air temperature for operation	-20 °C to 65 °C (-4 °F to 149 °F), power derating above 40 °C	
Storage temperature range	-40 °C to 85 °C (-40 °F to 185 °F)	
Operating altitude	Sea level to 2000 m (6562 ft)	
System network and remote monitoring	Available with Insight Energy Management	
Warranty	Please refer to our website, SEsolar.com for the latest version of the warranty statement.	
Part number	865-1032	865-1034
Regulatory Approvals		
Safety	CSA certified (UL1741, CSA 107.1) and CE marked for the Low-voltage Directive (EN50178)	
EMC	FCC and Industry Canada (Class B), CE marked for the EMC Directive (EN61000-6-1, -6-3)	
Compatible Products List		
XW Pro hybrid inverter	XW Pro 6848 120/240 VAC (865-6848-21), XW Pro 8548 230 VAC 865-8548-55)	
XW+ hybrid inverter	XW+ 8548 230 VAC (865-8548-61)	
SW IEC (230 VAC)	SW 4024 230 VAC (865-4024-55), SW 4048 230 VAC (865-4048-55)	
SW UL (120/240 VAC)	SW 4024 120/240 VAC (865-4024-21), SW 4048 120/240 VAC (865-4048-21)	
XW Power Distribution Panels	865-1015-01, 865-1014-01	
XW Mini Power Distribution Panels	865-1013-01	
MPPT Disconnect RS and RS initiator Switch	865-1036, 865-1039	
Insight Energy Management	InsightHome (865-0330), InsightFacility (865-0335), Insight	
Conext System Control Panel	865-1050-01	
Conext Automatic Generator Start	865-1060-01	
Conext Battery Monitor	865-1080-01	

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Schneider Electric Solar CONTRACTUAL WARRANTY

This Schneider Electric Solar Contractual Warranty applies to the following products:

- CONEXT CL125A grid tie string Inverter model: PVSCL125A
- CONEXT CL60A grid tie string Inverter model: PVSCL60A
- CONEXT XW PRO 6848 NA model: 865-6848-21

Geographic Validity:

These warranty conditions apply to the United States of America, including their 50 states and commonwealths of Puerto Rico and Northern Mariana Islands (excluding their associated islands and overseas territories).

Warranty Duration:

- Five (5) years, unless applicable law requires a longer period, in which case it will be that period of time.
- You may obtain an additional promotional five (5) years of warranty, for a total of ten (10) years, provided that You register Your Product within six (6) months from the date of the Schneider Electric Solar commercial invoice via the instructions provided. Additional information can be found at http://solar.schneider-electric.com/product-registration.

"Schneider Electric Solar" means the following Schneider Electric solar entities:

- Schneider Electric Solar Inverters USA, Inc.

"Distributor" means any Schneider Electric Solar-approved retailer, reseller or distributor of the Product which may include a Schneider Electric entity other than the Schneider Electric Solar entities listed above.

"Product" means the Schneider Electric Solar or related branded inverter product (or other related device) as identified above that You purchased from Schneider Electric Solar or through an authorized Distributor.

"You and Your" means the end-customer that has purchased and uses the Product and is entitled to the benefits of this Contractual Warranty.

1. Warranty Period and Coverage

This Contractual Warranty is provided by Schneider Electric Solar and covers defects in workmanship and materials in Your Product. In the event You purchased the Product from a Distributor, this warranty period commences upon the date of shipment from Distributor to You. In the event You purchased the Product directly

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from Schneider Electric Solar, this warranty period commences ninety (90) days after the Product is shipped from Schneider Electric Solar. The warranty period expires on the same date either (a) five (5) years later or (b) if You properly registered Your Product as specified above, ten (10) years later, unless otherwise agreed in writing (the "Warranty Period"). This Contractual Warranty, with prior written notice, is transferable to subsequent owners but only for the unexpired portion of the Warranty Period.

This Contractual Warranty does not cover and Schneider Electric Solar is not responsible for labor costs arising from or expenses related to the removal of defective Product(s) and the installation of replacement Product(s).

2. Warranty Claims

If Your Product becomes defective and You notify Schneider Electric Solar of such defect within the Warranty Period, Schneider Electric Solar will, at its sole discretion, either (i) repair the defective Product or (ii) replace with new, reconditioned parts or similar parts of equivalent depreciated value, provided that Schneider Electric Solar through inspection establishes the existence of such a defect which is covered by this Contractual Warranty. If Schneider Electric Solar elects to perform any onsite warranty services, Schneider Electric Solar requires a site escort (arranged and paid for by You) for all such warranty services. Accordingly, if Schneider Electric Solar elects to perform such on-site warranty servicing, You will need to provide Schneider Electric Solar with the relevant contact information for Your site escort for scheduling purposes. Alternatively, Schneider Electric Solar may elect, at its sole discretion, to provide You with cash compensation equal to the Product's value depreciated by the number of years of operation under the Warranty Period.

If Schneider Electric Solar repairs or replaces a Product, its warranty continues for the remaining portion of the original Warranty Period or ninety (90) days from the date of the repair or return shipment to the customer whichever is greater. All replaced Products and all parts removed from repaired Products become the property of Schneider Electric Solar.

3. Warranty Limitations

This Contractual Warranty does not warrant uninterrupted or error-free operation of the Product or cover normal wear and tear of the Product or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. The warranty claims that relate to damages, failures or defects caused by any of the following factors are not covered by this Contractual Warranty:

- Failure to commission the Product within twenty-four (24) months[1] from the date of the Schneider Electric Solar commercial invoice,
- If the Product has been commissioned and shut down or depowered for a period in excess of twenty-four (24) months,
- Improper use or non-compliance with installation, commissioning, operation or maintenance instructions (e.g., the Owners Guide, the Installation Guide),
- Unauthorized commissioning, modifications, changes or attempted repairs,
- Vandalism or destruction through external influences including damages caused by persons or animals,

[1] The Product may need to be charged, recharged or reconditioned to restore the internal properties of the Product's capacitor if it has not been operated for an extensive period of time in which case You will be responsible for all applicable fees and costs of such restorative services. If You plan to store the Product prior to commissioning or to depower the Product after commissioning, please review the storage instructions and guidelines within the Owner's Guide.

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- Use in an unsuitable environment, including any environment or location that causes excessive wear and tear or that is difficult or unsafe for Schneider Electric Solar representatives to access,
- Insufficient ventilation,
- Installation in a corrosive environment including, for example, an environment in which the Product is exposed to acid rain, hydrogen sulfide or excessive salt in the air (except for any such exposure to environmental conditions that Your Product was specifically designed to withstand as indicated in the applicable specifications for Your Product),
- Failure to observe applicable safety standards and regulations,
- Damages during transportation or storage,
- Force majeure, examples include, but not limited to: fire, flood, earthquakes, storm damage, overvoltage and lightning strikes
- Exposure to fire, water, snow, moisture, or liquid ingress or sand (except for any such exposure to environmental conditions that Your Product was specifically designed to withstand as indicated in the applicable specifications for Your Product),
- Used as a component part of another product expressly warranted by another manufacturer,
- If the original identification (trade-mark, serial number, QR code) markings have been defaced, altered, or removed,
- Consumable components of any type are not covered by this Contractual Warranty, including but not limited to fuses, surge arrestors and fans, and
- Cosmetic shortcoming which do not impair the use of the Product for the intended purpose i.e. supply of energy.

Warranty claims also exclude:

- Damages arising due to the fact that the use of the Product for the intended purpose is no longer possible or only possible with restrictions as a result of amendments to the statutory provisions applicable to the operation of the Product made after the delivery of the Product,
- Compensation for damages related to loss of power production or business operation or any expenses incurred by customer towards repair, removal and/or replacement of the Product (including but not limited to labor, transportation, temporary power),
- Costs or damages arising from changes to existing PV systems, building installations or other site changes,
- Any Products that are damaged during shipment, and
- This warranty only applies to defects in workmanship and materials which does not include claims involving regulatory compliance. To make sure Your Product meets the applicable regulatory requirements which are in place at the time of purchase, please see the applicable Product Manuals and/or Your sales contract.

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4. Warranty Return and Repair Process

Contact Schneider Electric Solar with a brief description of the error to evaluate and troubleshoot the issue while the Product is in the field, as many problems can be solved with remote guidance.

Please have Your Owner's Manual ready for reference and be prepared to supply:

- The serial number and part number of Your Product
- A copy of Your dated commercial invoice
- Information about the installation and commissioning or inspection certificate
- Information about the failure

Schneider Electric Solar or designated service provider reserves the right to refuse exchange requests for lack of proper documentation and information.

i. Return Material Authorization (RMA) for defective Products

After attempts to correct the problem remotely with Your assistance and if the Product must be returned to Schneider Electric Solar or designated service provider for replacement or repair, You must obtain a Return Material Authorization (RMA) number and the correct return center "Ship to" address. **Product shipments will be refused and returned at Your expense if they are unauthorized or returned without an RMA number.**

ii. Once an RMA has been issued for exchange for defective Products

Schneider Electric Solar or designated service provider, at its sole discretion, will ship an equivalent replacement Product to You. The allegedly defective Product must be returned in the same transport packaging that the replacement product was provided in. The defective Product must be shipped back to Schneider Electric Solar within **ten (10)** working days after receiving the replacement Product. If Schneider Electric Solar does not receive the Product within this timeframe, the Product cost will be billed back to You (including shipping costs, handling fees and if applicable all taxes, duties and tariffs).

Specific Information Regarding Warranty Coverage

Visually evident damage caused by shipping or mishandling is to be reported to the freight carrier within twenty-four (24) hours. Shipping damage is the responsibility of the freight carrier, not Schneider Electric Solar and should always be duly noted with the freight carrier prior to accepting and signing for the Product.

5. Invalid Warranty Claim

If the allegedly defective Product that is returned to Schneider Electric Solar (or service partner) pursuant to this Warranty Statement is found by Schneider Electric Solar to be free of defects, Schneider Electric Solar will charge a flat-rate inspection charge for each Product of €235, plus any Warranty Logistics Costs incurred by Schneider Electric Solar. In the event that Schneider Electric Solar ships a replacement Product to You before its inspection and thereafter determines the alleged defective Product to be defect free based on its inspection,

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Schneider Electric Solar will (i) return the defect free Product to You and (ii) charge You for the replacement Product.

6. Disclaimer of Implied and Other Warranties and Limitation of Liability

THIS CONTRACTUAL WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY PROVIDED BY SCHNEIDER ELECTRIC SOLAR IN CONNECTION WITH YOUR SCHNEIDER ELECTRIC SOLAR PRODUCT AND IS, WHERE PERMITTED BY LAW, IN LIEU OF ALL OTHER WARRANTIES, CONDITIONS, GUARANTEES, REPRESENTATIONS, OBLIGATIONS AND LIABILITIES, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE IN CONNECTION WITH THE PRODUCT, HOWEVER ARISING (WHETHER BY CONTRACT, TORT, NEGLIGENCE, PRINCIPLES OF MANUFACTURER'S LIABILITY, OPERATION OF LAW, CONDUCT, STATEMENT OR OTHERWISE), INCLUDING WITHOUT RESTRICTION ANY IMPLIED WARRANTY OR CONDITION OF QUALITY, MERCHANTABILITY, MERCHANTABLE QUALITY, OR FITNESS FOR A PARTICULAR PURPOSE.

ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, MERCHANTABLE QUALITY OR FITNESS FOR A PARTICULAR PURPOSE TO THE EXTENT REQUIRED UNDER APPLICABLE LAW TO APPLY TO THE PRODUCT SHALL BE LIMITED IN DURATION TO THE PERIOD STIPULATED UNDER THIS CONTRACTUAL WARRANTY.

LIMITATION OF LIABILITY

WHERE APPLICABLE LAW ALLOWS AND DOES NOT PROHIBIT OR RESTRICT SUCH LIMITATION, SCHNEIDER ELECTRIC SOLAR'S LIABILITY FOR ANYTHING RELATING TO THIS PRODUCT SHALL BE LIMITED TO THE PRICE PAID FOR THE PRODUCT.

TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW, IN NO EVENT WILL SCHNEIDER ELECTRIC SOLAR BE LIABLE FOR: (A) ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, LOST REVENUES, FAILURE TO REALIZE EXPECTED SAVINGS, OR OTHER COMMERCIAL OR ECONOMIC LOSSES OF ANY KIND, EVEN IF SCHNEIDER ELECTRIC SOLAR HAS BEEN ADVISED, OR HAD REASON TO KNOW, OF THE POSSIBILITY OF SUCH DAMAGE; AND/OR (B) ANY DAMAGE OR INJURY ARISING FROM OR AS A RESULT OF MISUSE OR ABUSE, OR THE INCORRECT INSTALLATION, INTEGRATION OR OPERATION OF THE PRODUCT BY PERSONS NOT AUTHORIZED BY SCHNEIDER ELECTRIC SOLAR.

EXCLUSIONS AND CLARIFICATIONS

THE CONTRACTUAL AND/OR STATUTORY WARRANTY OBLIGATION OF THE PRODUCT SELLER AND YOUR CORRESPONDING STATUTORY WARRANTY RIGHTS WHICH MAY NOT LAWFULLY BE EXCLUDED OR LIMITED ARE NOT AFFECTED BY THIS CONTRACTUAL WARRANTY. FURTHERMORE, SHOULD THIS CONTRACTUAL WARRANTY VIOLATE ANY NATIONAL, STATE, PROVINCIAL OR OTHER GOVERNMENTAL STATUTORY RIGHTS WHICH MAY NOT LAWFULLY BE EXCLUDED OR LIMITED AND WHICH GRANT YOU ANY RIGHTS IN ADDITION TO THE CONTRACTUAL WARRANTY, THEN SUCH STATUTORY RIGHTS SHALL NOT BE AFFECTED BY THE PROVISIONS OF THIS CONTRACTUAL WARRANTY.

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IF THIS PRODUCT IS A CONSUMER PRODUCT, THE APPLICABLE LAW MIGHT NOT ALLOW AN EXCLUSION OF IMPLIED WARRANTIES AND/OR MAY EXTEND ADDITIONAL BENEFITS OR PROTECTION TO YOU. TO THE EXTENT YOU ARE ENTITLED TO IMPLIED WARRANTIES OR ADDITIONAL BENEFITS OR PROTECTION UNDER APPLICABLE LAW, SUCH ARE LIMITED (TO THE MAXIMUN EXTENT ALLOWED BY APPLICABLE LAW) TO THE DURATION OF THIS CONTRACTUAL WARRANTY. SOME STATES, PROVINCES AND JURISDICTIONS DO NOT ALLOW LIMITATIONS OR EXCLUSIONS ON IMPLIED WARRANTIES OR ON THE DURATION OF AN IMPLIED WARRANTY OR ON THE LIMITATION OR EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION(S) OR EXCLUSION(S) MAY NOT APPLY TO YOU. THIS CONTRACTUAL WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE, PROVINCE TO PROVINCE OR JURISDICTION TO JURISDICTION.

Effective: January 01, 2021

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GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2020-CER-005709

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: RICARDO R ACEVEDO **Correo Electrónico:** racevedo@glenninternational.com

Compañía: Glenn International, Inc.

Datos de Equipo Certificado

Tipo de Equipo(s): Inversor **Clasificación:** Equipo Existente

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
SCHNEIDER	CONEXT XW PRO 6848 NA	Certificación de Seguridad: UL 1741 Núm. Certificación: 70194014 Laboratorio: CSA	Interconectable: Sí Voltaje(s) Salida: 240 VAC Voltaje(s) Máximo Entrada: 60 VDC Eficiencia Máxima: 95.0% Tipo de Gabinete(NEMA): NEMA Type 1 Indoor Potencia Nominal: 6800Watts Garantía Manufactura: 5 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
03/SEP/2020

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

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GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2019-CER-004190

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: RICARDO R ACEVEDO **Correo Electrónico:** racevedo@glenninternational.com

Compañía: Glenn International, Inc.

Datos de Equipo Certificado

Tipo de Equipo(s): Controlador de Carga **Clasificación:** Equipo Existente

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Midnite Solar	Classic 150 MPPT	Certificación de Seguridad: UL 1741 Núm. Certificación: 3084883 Laboratorio: ITSNA	Voltaje(s) Salida: 12-48V DC VAC Voltaje(s) Máximo Entrada: 150 VDC Eficiencia Máxima: 98% Tipo de Gabinete(NEMA): Not Applicable (indoor rated) Potencia Nominal: 5022Watts Garantía Manufactura: 5 año(s)
MidNite Solar	Classic 200 MPPT	Certificación de Seguridad: UL 1741 Núm. Certificación: CSA C22.2 #107.1 Laboratorio: CSA	Voltaje(s) Salida: 200 VAC Voltaje(s) Máximo Entrada: 240 VDC Eficiencia Máxima: 98% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 2800Watts Garantía Manufactura: 5 año(s)
Midnite Solar Inc.	MNKID-B	Certificación de Seguridad: UL 1741 Núm. Certificación: 3084883 Laboratorio: ITSNA	Voltaje(s) Salida: 12-48 VAC Voltaje(s) Máximo Entrada: 150 VDC Eficiencia Máxima: 100% Tipo de Gabinete(NEMA): 1 Potencia Nominal: 2Kilowatts Garantía Manufactura: 5 año(s)
SHENEIDER-ELECTRIC (XANTREX)	XW MPPT80-600		
MidNite Solar	Classic Lite 250	Certificación de Seguridad: UL 1741 Núm. Certificación: 3084883 Laboratorio: ITSNA	Voltaje(s) Salida: 12, 24, 48, 72 VDC Voltaje Máxima de Entrada: 250 VDC Eficiencia Máxima: 98% Tipo de Gabinete(NEMA): Nema 1 Potencia en Corriente Continua: 732, 1488, 2640, 3096 Watts Garantía Manufactura: 5 año(s)
SHENEIDER-ELECTRIC (XANTREX)	XW MPPT60-150		
Midnite Solar	Classic 250 MPPT	Certificación de Seguridad: UL 1741 Núm. Certificación: 3084883 Laboratorio: ITSNA	Voltaje(s) Salida: 12-48V DC VAC Voltaje(s) Máximo Entrada: 250 VDC Eficiencia Máxima: 98% Tipo de Gabinete(NEMA): Not Applicable (indoor rated) Potencia Nominal: 3728Watts Garantía Manufactura: 5 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Certificación de Equipos de Energía Renovable

Fecha de Expedición:
08/AUG/2019

Arq. María R. Cintrón Flores
Secretaria Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Arq. María R. Cintrón Flores

Secretaria Auxiliar de la OGPe, DDEC

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8232

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SUNPOWER®

Warranty for Maxeon PV Modules / SPR-MAX, SPR-X, SPR-E and COM

This Limited Warranty is effective for SunPower photovoltaic modules for commercial installation with "SPR-MAX, SPR-E" or "SPR-X" and "COM" in the product model number and sold after December 1, 2018. SunPower photovoltaic modules which include "AC" in the model number are covered by a different warranty.

1. Limited Warranty

Subject at all times to the terms and conditions as set out in this Limited Warranty, SunPower Corporation ("SunPower") warrants that for 25 years beginning on the Warranty Start Date[1] (the "Warranty Period"), its photovoltaic modules specified above ("PV Module(s)"), shall be free from defects in materials and workmanship under normal application, installation, use and service conditions, and the power of the PV Modules will be at least 98% of the Minimum Peak Power[2] rating for the first year, and will decline by no more than 0.25% per year for the following 24 years, so the power output at the end of the final year of the 25th year warranty period will be at least 92% of the Minimum Peak Power rating (the "Guaranteed Peak Power" rating).

2. Claims Process and Coverage

If any PV Module fails to conform to this Limited Warranty and provided that any loss in power is determined by SunPower (in its sole discretion) not to have resulted from one of the excluded events set forth in Section 4 below, then for the Warranty Period, SunPower will repair, replace or refund the defective PV Modules as set forth herein.

In the event you have a claim covered by this Limited Warranty, immediately contact SunPower Corporation directly at the contacts shown below. Upon receipt of a claim, SunPower may require additional information regarding the claim, which may include, without limitation, applicable warranty registration information, proof of purchase and/or delivery, installation, serial and model numbers, and evidence regarding the basis of claim. All SunPower warranty obligations hereunder are expressly contingent upon the timely and full provision of such additional information. The return of any PV Modules will not be accepted unless prior written authorization has been given by SunPower.

For any valid claim, SunPower will, in its sole discretion, either: (a) repair; (b) replace; or (c) refund the original purchase price subject to the conditions set out herein. In the event SunPower elects to repair or replace the affected PV Modules, SunPower will pay for reasonable and customary transportation costs for: (i) the return of the PV Modules from the place where the affected PV Modules were delivered by SunPower, and; (ii) reasonable and customary transportation costs for reshipment of any repaired or replaced PV Modules to the place where the affected PV Modules were delivered by SunPower.

In the event SunPower elects to replace any PV Module, SunPower will replace such PV Module with an electrically and mechanically compatible PV Module (including a refurbished or remanufactured PV Module) with a substantially equal or greater power rating. For any refund, SunPower may either refund the original purchase price, or refund the amount equal to the original purchase price multiplied by the difference between the Guaranteed Peak Power percentage and the actual power output percentage; provided, however, the original purchase price shall be prorated at 4.75% per year starting five years after the Warranty Start Date.

3. General Conditions for Warranty Claims

a) All warranty claims must be filed within the Warranty Period. Any claim filed outside the Warranty Period, including any claim for a latent or undiscovered defect, is invalid.
b) The Limited Warranty for any repaired or replaced PV Module shall not extend beyond the Warranty Period.
c) When PV Modules are used on a mobile platform of any type, such as a vehicle (not including Trackers), the Warranty Period shall be limited to 12 years.
d) PV Modules may be used with floating mounting system with written approval from SunPower
e) In cases of PV Module replacement, any replaced PV Module shall pass into the ownership of SunPower.

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[1] *"Warranty Start Date" is the earlier of (i) date of array interconnection and (ii) 6 months following the date of SunPower delivery. If the delivery date cannot be verified, manufacturing date will be used in its place.*

[2] *"Minimum Peak Power" is defined as the minimum rated power, as shown on the label. Peak Power is defined as the watt peak at Standard Test Conditions (1000W/m² irradiance, AM1.5, 25C. SOMS current, LACCS FF and Voltage from NREL calibration), as described in IEC61215, measured per IEC60904, and accounting for 3% measurement tolerance. SunPower modules shall, in any event, require a sweep rate of no less than 200ms to ensure an accurate power measurement. SunPower can provide a detailed testing procedure or a list of recognized testing agencies upon request.*

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4. Exclusions and Limitations

The Limited Warranty does not apply to any of the following:

a) PV Modules subjected to: (i) misuse, abuse, neglect or accident; (ii) alteration or improper installation (improper installation includes, without limitation, installation or array that does not comply with all SunPower installation instructions and operations and maintenance instructions of any type (as may be amended and updated from time to time at SunPower's sole discretion), and all national, state, and local laws, codes, ordinances, and regulations); (iii) repair or modification by someone other than an approved service technician of SunPower; (iv) conditions exceeding the voltage, wind, snow load specifications, and any other operational specification; (v) power failure surges, lightning, flood, or fire; (vi) damage from persons, biological activity, or industrial chemical exposure; (vii) glass breakage from impact or other events outside SunPower's control

b) Cosmetic effects stemming from normal wear and tear of PV Module materials or other cosmetic variations which do not cause power output lower than what is guaranteed by the Limited Warranty. Normal wear and tear of PV Module materials can include, but is not limited to, fading of frame color, weathering of glass coatings, and areas of discoloration around or over individual solar cells or any part of the PV Module.

c) PV Modules installed in locations, which in SunPower's absolute judgment may be subject to direct contact with bodies of salt water.

d) PV Modules for which the labels containing product type or serial number have been altered, removed or made illegible.

e) PV Modules which have been moved from their original installation location without the express written approval of SunPower.

f) PV Modules which have been installed on single-family homes or semi-detached homes, including but not limited to duplexes and townhomes. For clarity, apartment and condominiums are not excluded.

g) SunPower modules which include "AC" in the model number.

SunPower shall not be held responsible or liable to the customer or any third-party arising out of any non-performance or delay in performance of any terms and conditions of sale, including this Limited Warranty, due to acts of God, war, riots, strikes, fire, flood or any other cause or circumstance beyond the reasonable control of SunPower.

5. Assignment and Transfer of Warranty

This Limited Warranty is fully assignable and transferable provided that the warranty holder provides notice to SunPower at the address listed below within 90 days of the assignment or transfer of the Limited Warranty.

6. Limitation of Warranty Scope

SUBJECT TO THE LIMITATIONS UNDER APPLICABLE LAW, THE LIMITED WARRANTY SET FORTH HEREIN IS EXPRESSLY IN LIEU OF AND EXCLUDES ALL OTHER EXPRESS OR IMPLIED WARRANTIES, EXCEPT AS PROVIDED IN THIS LIMITED WARRANTY, ALL WARRANTIES OF ANY KIND, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR PARTICULAR PURPOSE, USE, OR APPLICATION, COURSE OF DEALING, OR USAGE OF TRADE AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF SUNPOWER ARE EXPRESSLY EXCLUDED AND DISCLAIMED. NOTWITSTANDING ANY PROVISION TO THE CONTRARY, SUNPOWER SHALL HAVE NO RESPONSIBILITY OR LIABILITY WHATSOEVER FOR DAMAGE OR INJURY TO PERSONS OR PROPERTY OR FOR OTHER LOSS OR INJURY RESULTING FROM ANY CAUSE WHATSOEVER ARISING OUT OF OR RELATED TO THE PV MODULES, INCLUDING, WITHOUT LIMITATION, ANY DEFECTS IN THE PV MODULE, OR FROM USE OR INSTALLATION. UNDER NO CIRCUMSTANCES SHALL SUNPOWER BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, HOWSOEVER CAUSED. LOSS OF USE, LOSS OF PROFITS, LOSS OF PRODUCTION, LOSS OF REVENUES ARE THEREFORE SPECIFICALLY BUT WITHOUT LIMITATION EXCLUDED. SUNPOWER'S AGGREGATE LIABILITY, IF ANY, IN DAMAGES OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE PAID TO SUNPOWER BY THE CUSTOMER, FOR THE UNIT OF PRODUCT OR SERVICE FURNISHED OR TO BE FURNISHED, AS THE CASE MAY BE, WHICH GAVE RISE TO THE WARRANTY CLAIM. SOME JURISDICTIONS DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES OR THE EXCLUSION OF DAMAGES SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

IF ANY PROVISION OF THIS LIMITED WARRANTY IS HELD UNENFORCEABLE OR ILLEGAL BY A COURT OR OTHER BODY OF COMPETENT JURISDICTION, SUCH PROVISIONS SHALL BE MODIFIED TO THE MINIMUM EXTENT REQUIRED SUCH THAT THE REST OF THIS LIMITED WARRANTY WILL CONTINUE IN FULL FORCE AND EFFECT.

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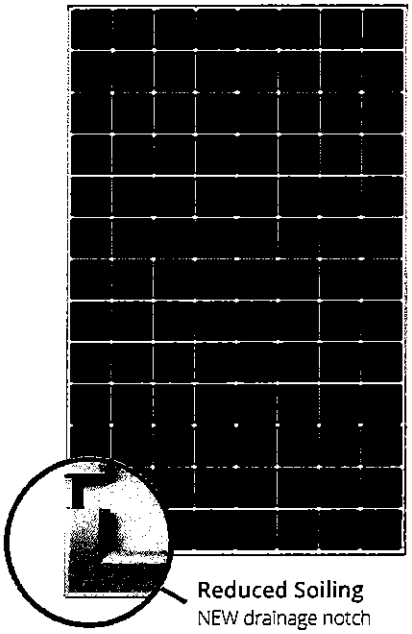
MAXEON®



Reduced Soiling
NEW drainage notch improves performance

MAXEON® 3 | 400 W

Commercial Solar Panel

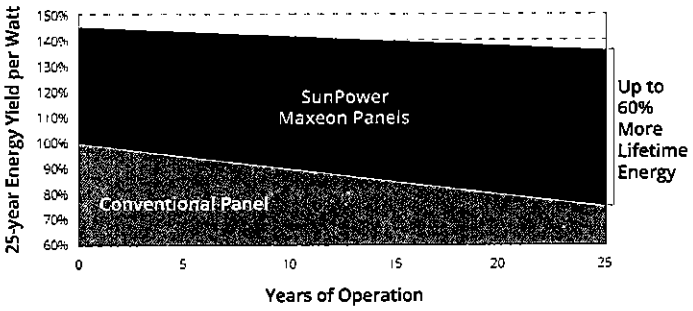
SunPower Maxeon panels combine the top efficiency, durability and warranty available in the market today, resulting in more long-term energy and savings. [1,2]

Maximum Power. Minimalist Design.

Generates more power and savings per available space, making it easier to meet your organization's goals.

Highest Lifetime Energy and Savings

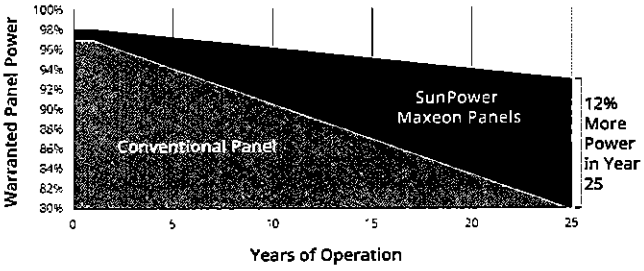
Designed to deliver 60% more energy in the same space over 25 years in real-world conditions like partial shade and high temperatures. [2]



Better Reliability, Better Warranty

With more than 25 million panels deployed around the world, SunPower technology is proven to last. That's why we stand behind our panel with an exceptional 25-year Combined Power and Product Warranty, including the highest Power Warranty in solar.

BETTER PRODUCT · BETTER WARRANTY
25-yr SunPower Complete Confidence



Fundamentally Different. And Better.

The SunPower Maxeon® Solar Cell

- Enables highest efficiency panels available [2]
- Unmatched reliability [3]
- Patented solid metal foundation prevents breakage and corrosion

LEED

CERTIFIED cradletocradle SILVER

As Sustainable As Its Energy

- Ranked #1 in Silicon Valley Toxics Coalition Solar Scorecard [4]
- First solar panels to achieve Cradle to Cradle Certified™ Silver recognition [5], *pending*
- Contributes to more LEED categories than conventional panels [6]

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MAXEON® 3 | 400 W Commercial Solar Panel

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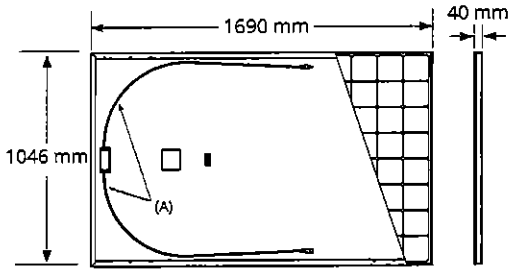
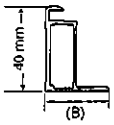
Electrical Data			
	SPR-MAX3-400-COM	SPR-MAX3-390-COM	SPR-MAX3-370-COM
Nominal Power (Pnom) [7]	400 W	390 W	370 W
Power Tolerance	+5/0%	+5/0%	+5/0%
Panel Efficiency	22.6%	22.1%	20.9%
Rated Voltage (Vmpp)	65.8 V	64.5 V	61.8 V
Rated Current (Impp)	6.08 A	6.05 A	5.99 A
Open-Circuit Voltage (Voc)	75.6 V	75.3 V	74.7 V
Short-Circuit Current (Isc)	6.58 A	6.55 A	6.52 A
Max. System Voltage	1000 V IEC		
Maximum Series Fuse	20 A		
Power Temp Coef.	−0.29% / °C		
Voltage Temp Coef.	−176.8 mV / °C		
Current Temp Coef.	2.9 mA / °C		

Operating Condition And Mechanical Data	
Temperature	−40°C to +85°C
Impact Resistance	25 mm diameter hail at 23 m/s
Solar Cells	104 Monocrystalline Maxeon Gen III
Tempered Glass	High-transmission tempered anti-reflective
Junction Box	IP-68, Multi-Contact (MC4), 3 bypass diodes
Weight	19 kg
Max. Load [9]	Wind: 4000 Pa, 408 kg/m² front & back Snow: 6000 Pa, 611 kg/m² front
Frame	Class 2 silver anodized

Tests And Certifications	
Standard Tests [8]	IEC 61215, IEC 61730
Quality Management Certs	ISO 9001:2015, ISO 14001:2015
EHS Compliance	RoHS (Pending), OHSAS 18001:2007, lead free, REACH SVHC-163 (Pending)
Sustainability	Cradle to Cradle Certified™ (Pending)
Ammonia Test	IEC 62716
Desert Test	MIL-STD-810G
Salt Spray Test	IEC 61701 (maximum severity)
PID Test	1000 V: IEC 62804
Available Listings	TUV



FRAME PROFILE



A. Cable Length: 1200 mm +/-10 mm
B. LONG SIDE: 32 mm
SHORT SIDE: 24 mm

Please read the safety and installation guide.

1 SunPower 400 W, 22.6% efficient, compared to a Conventional Panel on same-sized arrays (310 W, 16% efficient, approx. 2 m²), 8% more energy per watt (based on PVSyst pan files for avg EU climate), 0.5%/yr slower degradation rate (Jordan, et. al. "Robust PV Degradation Methodology and Application." PVSC 2018).
2 DNV "SunPower Shading Study." 2013. Compared to a conventional front contact panel.
3 #1 rank in "Fraunhofer PV Durability Initiative for Solar Modules: Part 3". PVTech Power Magazine, 2015.
4 SunPower is rated #1 on Silicon Valley Toxics Coalition's Solar Scorecard.
5 Cradle to Cradle Certified is a multi-attribute certification program that assesses products and materials for safety to human and environmental health, design for future use cycles, and sustainable manufacturing.
6 Maxeon2 and Maxeon3 panels additionally contribute to LEED Materials and Resources credit categories.
7 Standard Test Conditions (1000 W/m² irradiance, AM 1.5, 25° C). NREL calibration Standard: SOMS current, LACCS FF and Voltage.
8 Class C fire rating per IEC 61730.
9 Calculated with a 1.5 Safety Factor.

Designed in USA
Made in Philippines (Cells)
Modules Assembled in Mexico

Visit www.sunpower.com.au for more information.
Specifications included in this datasheet are subject to change without notice.

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532420 REV B / A4_AU

JF

GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2020-CER-005606

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Ricardo R Acevedo **Correo Electrónico:** racevedo@glenninternational.com

Compañía: Glenn International, Inc.

Datos de Equipo Certificado

Tipo de Equipo(s): Módulo Fotovoltaico **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
SunPower	SPR-MAX3-370-COM	Certificación de Potencia: IEC 61215 Núm. Certificación: PV 60146577 Laboratorio: TUVPTL Certificación de Seguridad: UL 1703 Núm. Certificación: 20190926-E331841 Laboratorio: UL	Potencia Nominal: 370Watts 10 años (Potencia): 95.75% 20 años (Potencia): 93.25% Dimensiones: 5.54 X 3.43 Garantía Manufactura: 25 año(s)
SunPower	SPR-MAX3-390-COM	Certificación de Potencia: IEC 61215 Núm. Certificación: PV 60146577 Laboratorio: TUVPTL Certificación de Seguridad: UL 1703 Núm. Certificación: 20190926-E331841 Laboratorio: UL	Potencia Nominal: 390Watts 10 años (Potencia): 95.75% 20 años (Potencia): 93.25% Dimensiones: 5.54 X 3.43 Garantía Manufactura: 25 año(s)
SunPower	SPR-MAX3-400-COM	Certificación de Potencia: IEC 61215 Núm. Certificación: PV 60146577 Laboratorio: TUVPTL Certificación de Seguridad: UL 1703 Núm. Certificación: 20190926-E331841 Laboratorio: UL	Potencia Nominal: 400Watts 10 años (Potencia): 95.75% 20 años (Potencia): 93.25% Dimensiones: 5.54 X 3.43 Garantía Manufactura: 25 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
21/AUG/2020

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

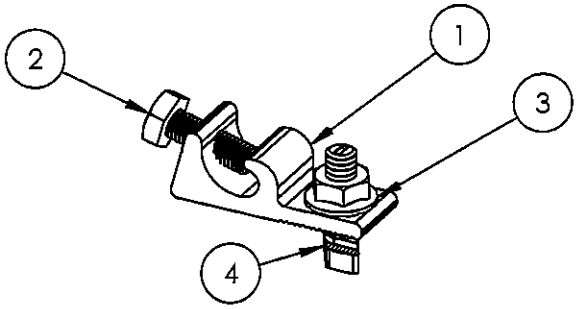
Certificación de Equipos de Energía Renovable

Secretario Auxiliar

Cut Sheet

IRONRIDGE

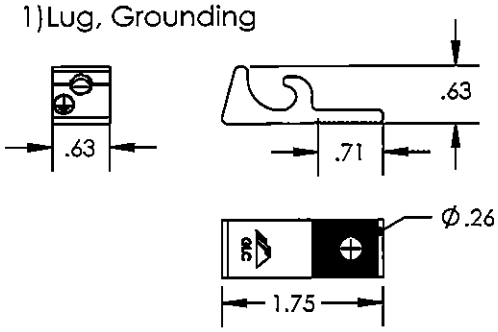
Grounding Lug



ITEM NO.	DESCRIPTION	QTY. IN KIT
1	LUG, GROUNDING, LAY-IN - LOW PROFILE	2
2	BOLT, 1/4-28 X .750" HEX CS SST	2
3	NUT, FLANGE HEX 1/4-20 SST	2
4	BOLT, T CSTM 1/4-20 X 1.188" LOCK SS	2

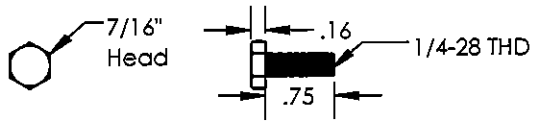
Part Number	Description	Wire Size Range (AWG)
GD-LUG-003	KIT, 2PCS, GROUNDING LUG, LOW PROFILE	4-10

1)Lug, Grounding



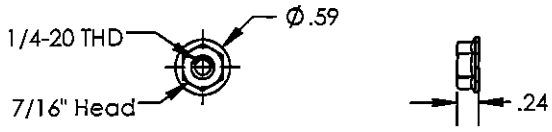
Property	Value
Material	Tin Plated Copper
Finish	Clear Matte

2) Bolt, 1/4-28 x .750 Hex



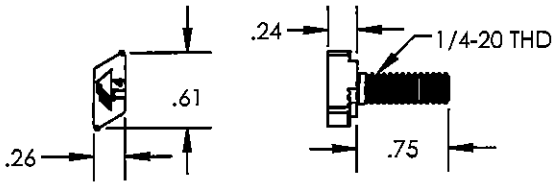
Property	Value
Material	300 Series Stainless Steel
Finish	Clear

3) Nut, Flange Hex 1/4-20



Property	Value
Material	300 Series Stainless Steel
Finish	Clear

4) Bolt, T CSTM 1/4-20 x .750



Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.0

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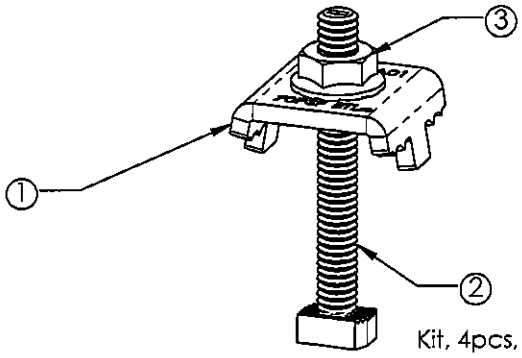
Cut Sheet

IRONRIDGE

Grounding Mid Clamp



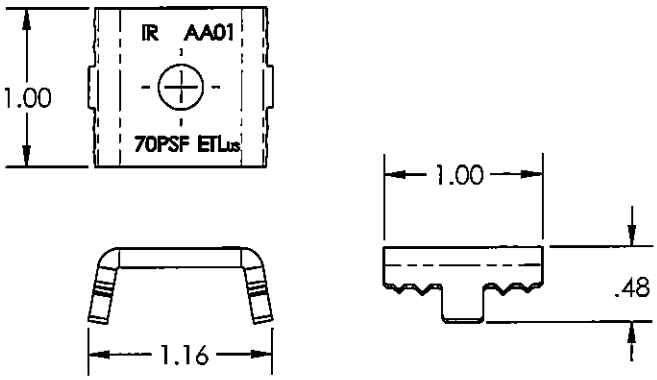
Kit, 4pcs, Grounding Mid Clamp

Item Number	Component	Qty in Kit
1	Clamp, Grounding Mid	4
2	Bolt, T Cstm 1/4-20	4
3	Nut, Flange Hex 1/4-20 SST	4

Kit, 4pcs, Grounding Mid Clamp

Clear Part Number	Black Part Number	Description / Length	Bolt Length
RS-GD-MCL-200	RS-GD-MCL-200B	Kit, 4pcs, Grounding Mid Clamp 2.00"	2.00"
RS-GD-MCL-225	RS-GD-MCL-225B	Kit, 4pcs, Grounding Mid Clamp 2.25"	2.25"
RS-GD-MCL-250	RS-GD-MCL-250B	Kit, 4pcs, Grounding Mid Clamp 2.50"	2.50"
RS-GD-MCL-275	RS-GD-MCL-275B	Kit, 4pcs, Grounding Mid Clamp 2.75"	2.75"

1) Integrated Grounding Mid Clamp



Property	Value
Material	300 Series Stainless Steel
Finish	CLEAR

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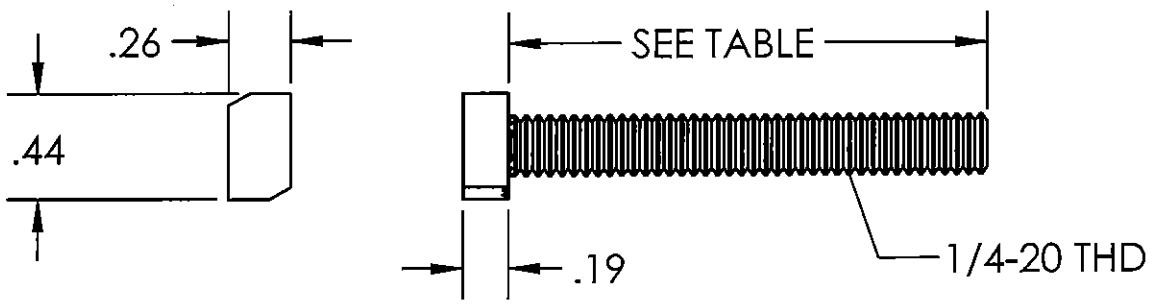
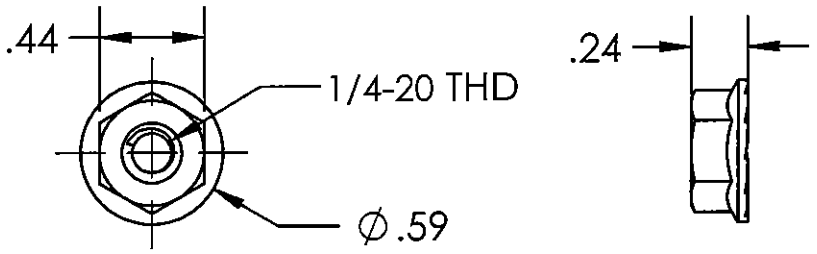
2) Bolt, T Cstm 1/4-20



Property	Value
Material	300 Series Stainless Steel
Finish	Clear

3) Nut, Flange Hex 1/4-20 SST

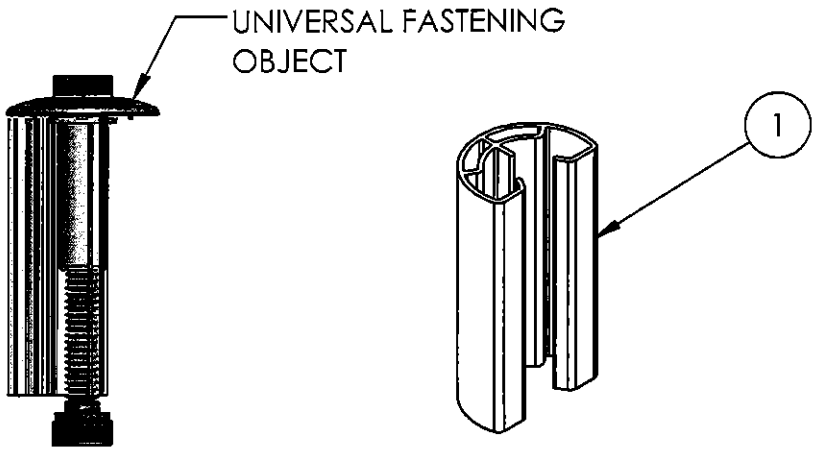


Property	Value
Material	300 Series Stainless Steel
Finish	Clear

Cut Sheet

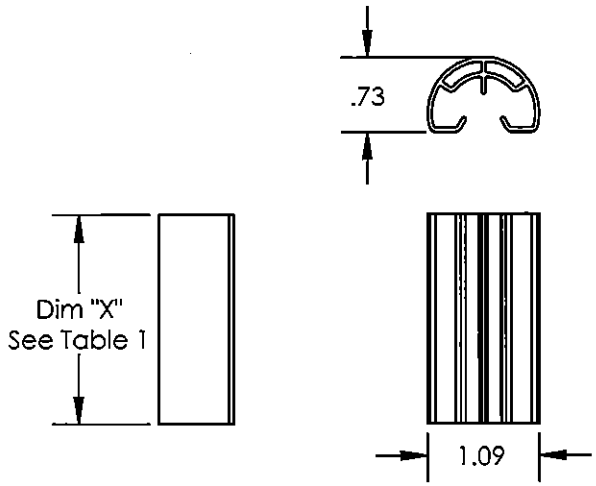
IRONRIDGE

Stopper Sleeve



ITEM NO.	COMPONENT	QTY. IN KIT
1	STOPPER SLEEVE	4

TABLE 1: STOPPER SLEEVE PART NUMBES AND HEIGHT		
MILL PART NUMBER	BLACK PART NUMBER	HEIGHT "X" (mm)
UFO-STP-30 mm	UFO-STP-30 mm-B	30
UFO-STP-32 mm	UFO-STP-32 mm-B	32
UFO-STP-33 mm	UFO-STP-33 mm-B	33
UFO-STP-35 mm	UFO-STP-35 mm-B	35
UFO-STP-38 mm	UFO-STP-38 mm-B	38
UFO-STP-40 mm	UFO-STP-40 mm-B	40
UFO-STP-42 mm	UFO-STP-42 mm-B	42
UFO-STP-46 mm	UFO-STP-46 mm-B	46



Property	Value
Material	6000 Series Aluminum
Finish	Mill or Black

v1.20

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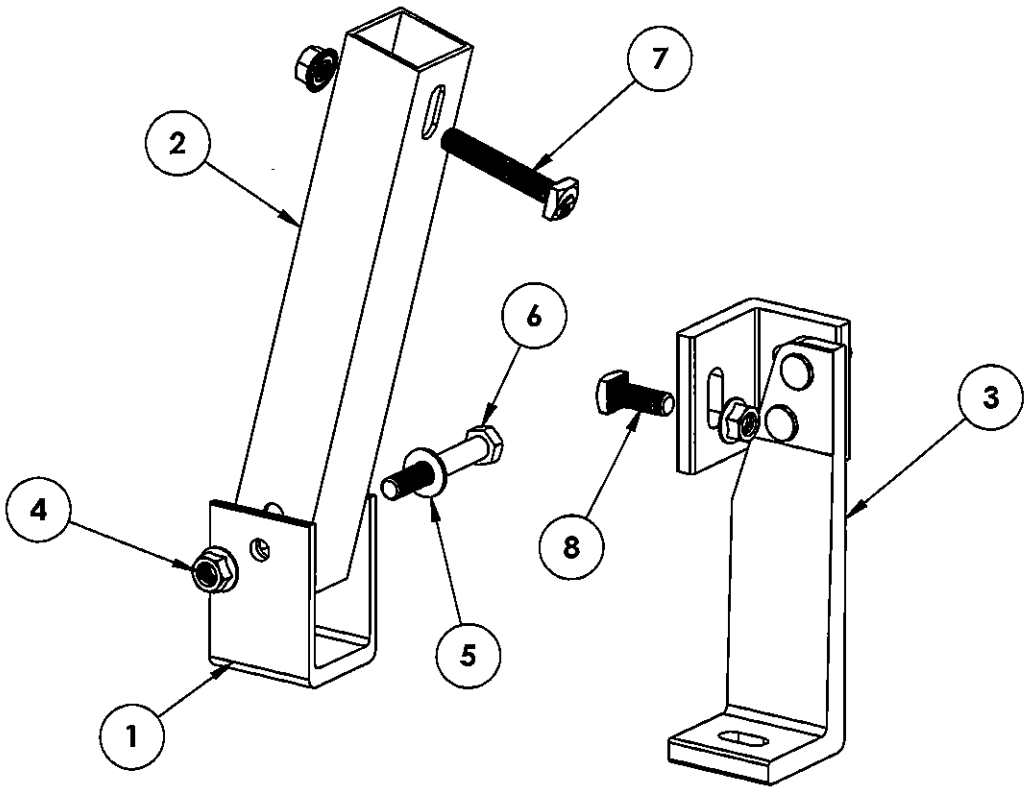
Cut Sheet

IRONRIDGE

Tilt Leg



ITEM NO.	DESCRIPTION	QTY.
1	U-FOOT	1
2	NORTH TILT LEG, 1.5" SQ, LENGTH VARIES	1
3	PRE-ASSEMBLED SOUTH TILT LEG	1
4	NUT, FLANGE HEX 3/8-16 SS	3
5	WASHER, FLAT 3/8 SS	1
6	BOLT, 3/8-16 X 2.5" CS SST	1
7	BOLT, BONDING 3/8-16 SQ HEAD, 2.25"	1
8	BOLT, BONDING 3/8-16 SQ HEAD, 1.0"	1

Part Number	Description	North Tilt Leg Length
TM-FTL-007	Kit, Fixed Tilt Leg, 7", Mill	7"
TM-FTL-010	Kit, Fixed Tilt Leg, 10", Mill	10"
TM-FTL-015	Kit, Fixed Tilt Leg, 15", Mill	15"
TM-FTL-020	Kit, Fixed Tilt Leg, 20", Mill	20"
TM-FTL-025	Kit, Fixed Tilt Leg, 25", Mill	25"
TM-FTL-030	Kit, Fixed Tilt Leg, 30", Mill	30"

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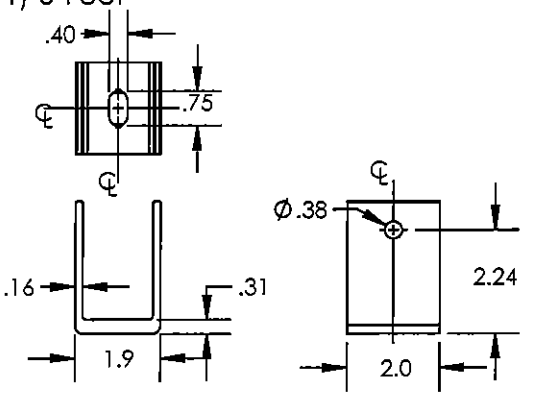
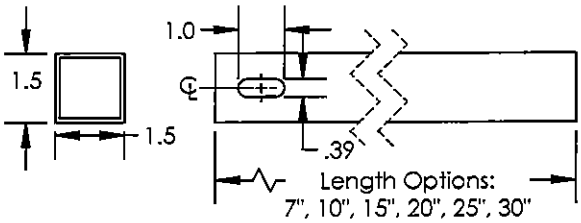
1) U-Foot



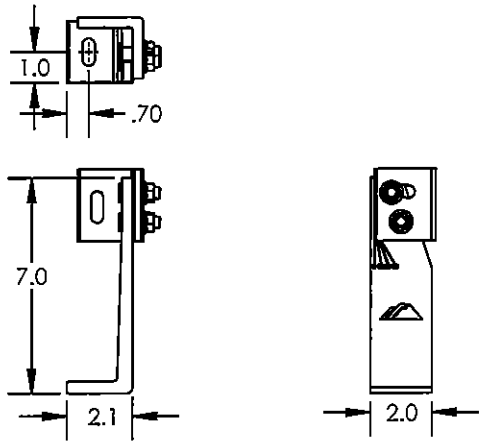
Property	Value
Material	Aluminum
Finish	Mill

2)North Tilt Leg



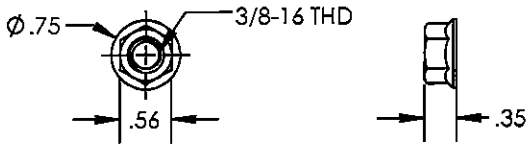
Property	Value
Material	Aluminum
Finish	Mill

3)Pre-assembled South Tilt Leg



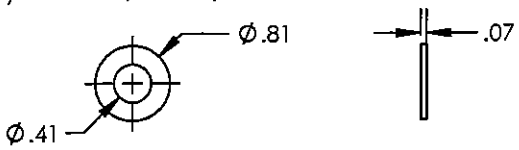
Property	Value
Material	Aluminum
Finish	Mill

4) Nut, Flange Hex 3/8-16 SS



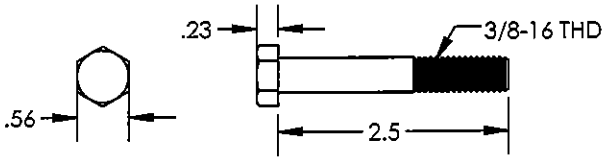
Property	Value
Material	Stainless Steel
Finish	Clear

5) Washer, Flat 3/8 SS



Property	Value
Material	Stainless Steel
Finish	Clear

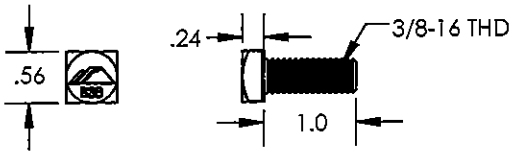
6) Bolt, 3/8-16 X 2.5" CS SS



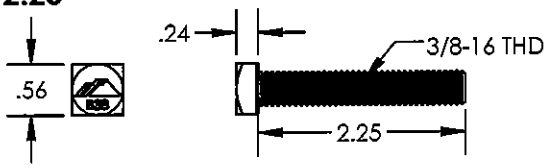
Property	Value
Material	Stainless Steel
Finish	Clear

7, 8) Bolt, Bonding 3/8-16 Sq Head

1.0"



2.25"



Property	Value
Material	Stainless Steel
Finish	Clear

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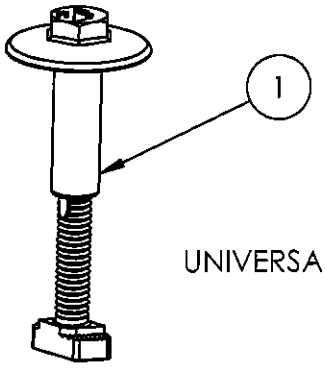
Cut Sheet

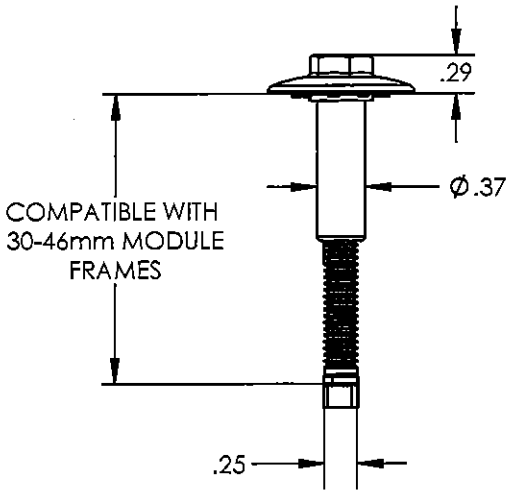
IRONRIDGE

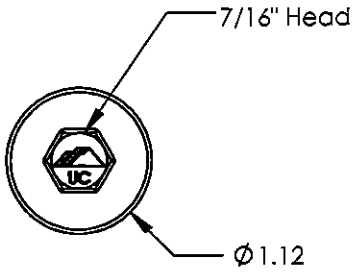
Universal Fastening Object



UNIVERSAL FASTENING OBJECT

ITEM NO.	DESCRIPTION	QTY. IN KIT
UFO-CL-001	KIT, 4PCS, UNIVERSAL MODULE CLAMP, CLEAR	4
UFO-CL-001-B	KIT, 4PCS, UNIVERSAL MODULE CLAMP, BLACK	4





Property	Value
Material	300 Series Stainless Steel
Finish	Clear and Black

v1.20

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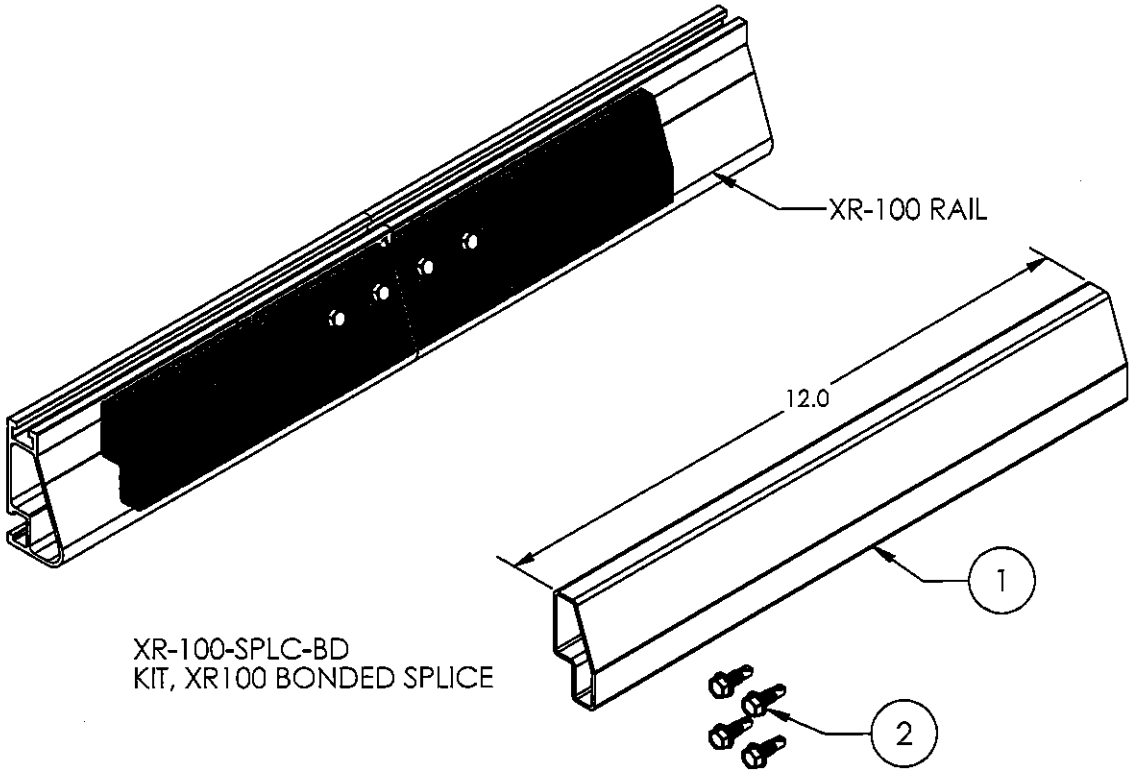
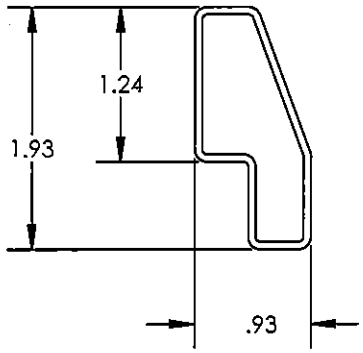
Cut Sheet

IRONRIDGE

XR100 Bonded Splice

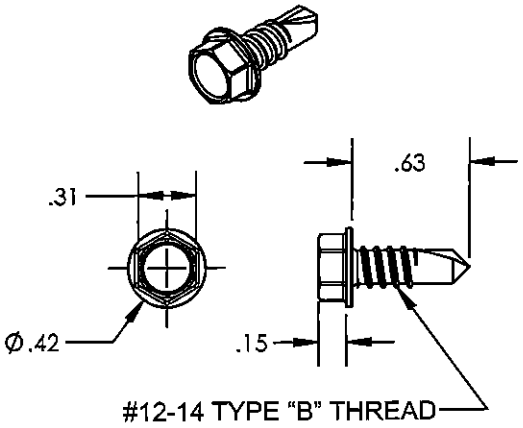


1) Splice, XR100, Mill 12" long



Property	Value
Material	6000 Series Aluminum
Finish	Mill

2) Screw, Self Drilling



Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.0

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Cut Sheet

IRONRIDGE

XR100 Rail

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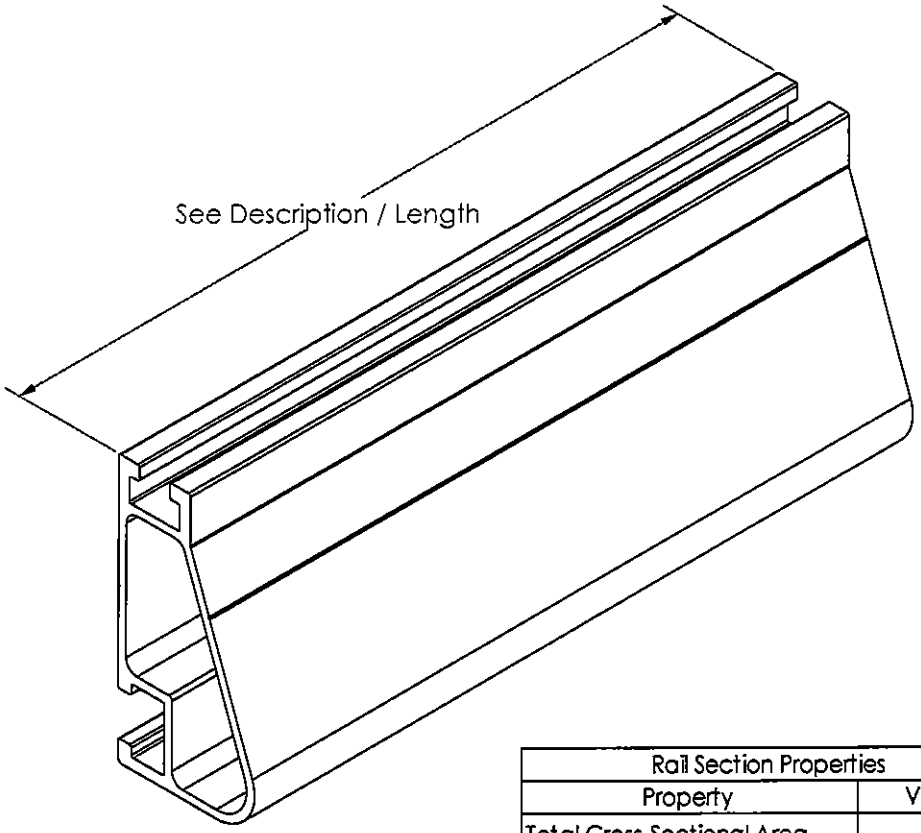

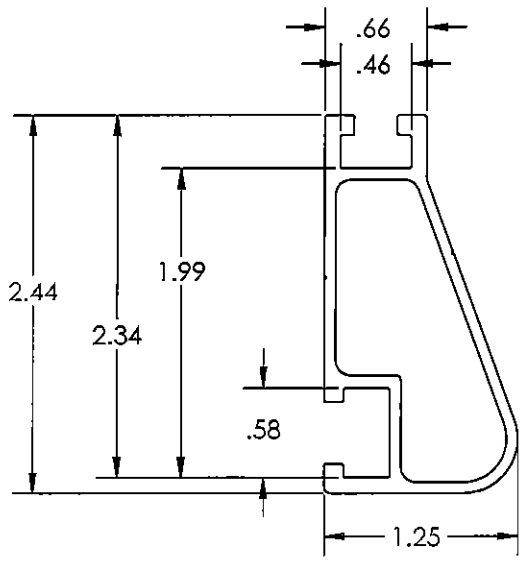

Rail Section Properties	
Property	Value
Total Cross-Sectional Area	0.582 in^2
Section Modulus (X-axis)	0.297 in^3
Moment of Inertia (X-axis)	0.390 in^4
Moment of Inertia (Y-axis)	0.085 in^4
Torsional Constant	0.214 in^3
Polar Moment of Inertia	0.126 in^4

APPROVED MATERIALS:
6005-T6, 6005A-T61, 6105-T5, 6N01-T6
(34,000 PSI YIELD STRENGTH MINIMUM)

Clear Part Number	Black Part Number	Description / Length	Material	Weight
XR-100-132A	XR-100-132B	XR100, Rail 132" (11 Feet)	6000-Series Aluminum	7.50 lbs.
XR-100-168A	XR-100-168B	XR100, Rail 168" (14 Feet)		9.55 lbs.
XR-100-204A	XR-100-204B	XR100, Rail 204" (17 Feet)		11.60 lbs.

v1.1

William O. Rodríguez Rodríguez
William O. Rodríguez Rodríguez (Nov 29, 2022 22:06 AST)

Jose Fuliana (Nov 29, 2022 08:17 AST)

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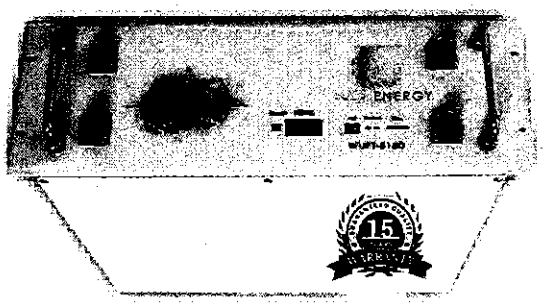
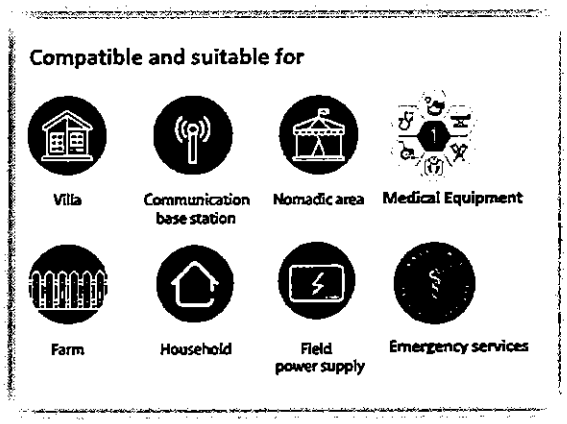
WARU LiFePO4 BATTERY MODULES 4.8kWh



FEATURES

- Easy connection, saving installation time and cost.
- Compatible with CAN / RS485 communication interface.
- Scalable battery design for easy expansion.
- 15 years warranty.



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Industrial Víctor M Fernández
315 calle 3
San Juan, PR 00926

Tel. (787) 680-0008
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DATASHEET	WUPR4.8KWH
BATTERY TYPE	LiFePO4
WEIGHT	39kg
DIMENSION (WxDxH)	958mm X 360mm x 177.8mm
CYCLE LIFE	12,000 cycles
IP PROTECTION	IP 20
WARRANTY	15 years
ENERGY CAPAACITY	4.8kWh
USABLE CAPACITY	4.8kWh
DEPTH OF DISCHARGE (DoD)	100%
NOMINAL VOLTAGE	48.0V
MAX. CHARGING CURRENT	100A
MAX. DISCHARGE CURRENT	100A
COMMUNICATION INTERFACE	CAN+RS485
ENVIRONMENTAL TEMPERATURE	.-10°C ~+ 60°C
ALLOWED HUMIDITY RANGE	≤95% RH
INSTALLATION MODE	CABINET

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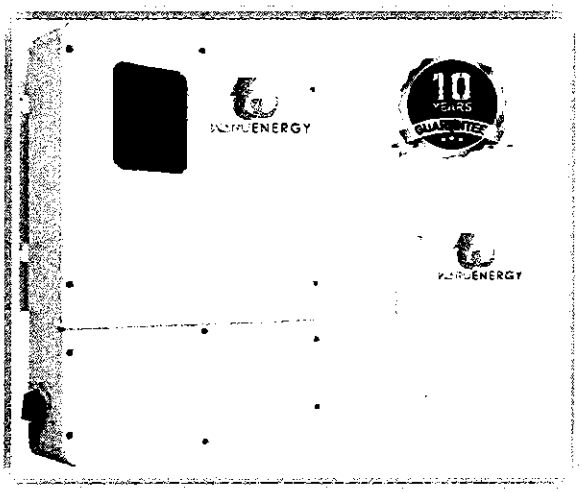
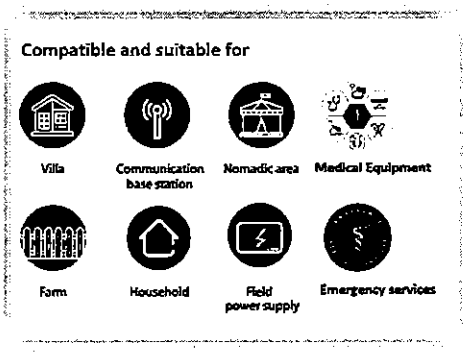
WARU HYBRID INVERTER 7.6KW AND 11.4KW





FLEXIBLE

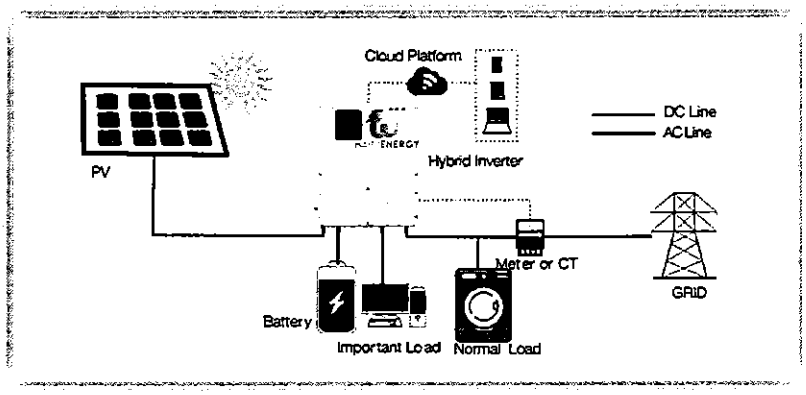
- The model covers 7.6kW – 11.4kW, with unified appearance design.
- Compatible with WARU LiFePO4 battery modules.
- Up to 10 inverters in parallel
- 10 years warranty

GRACE

- Fashionable appearance, convenient wiring.
- IP65 design, natural cooling, external fan free design, low noise, improve the whole machine life.

RELIABLE

- Battery reverse connect protection, the charge and discharge are controlled by intelligent software to improve the battery life.
- Input and Output lighting protection, PV arcing detection.
- Discharge at full power and disconnect the charger automatically when the battery is full.
- Off-grid full power output, transient 1.5 times overload, soft start mode, with air conditioning, water pump and other loads.
- Insulation detection, leakage battery, ground fault detection, island protection to prevent



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MODEL	WRU7.6KW	WRU11.4KW
PV INPUT		
PV INPUT POWER	10KW	14.82KW
MPPT NUMBER	4	4
PV VOLTAGE RANGE	150-500V	150-500V
MAX PV INPUT VOLTAGE	500V	500V
EACH MPPT INPUT CURRENT	13A	14A
AC OUTPUT (ON GRID)		
RATED AC OUTPUT	120/208/240V 7.6KVA	120/208/240 11.4KVA
AC OUTPUT VOLTAGE	120/240 SPLIT PHASE, 208 TWO/THREE PHASE	120/240 SPLIT PHASE, 208 TWO/THREE PHASE
AC OUTPUT FREQUENCY	50/60Hz	50/60Hz
MAX OUTPUT CURRENT	32A	47.5A
AC REVERSE CHARGING	YES	YES
POWER FACTOR	0.8leading....0.8lagging	0.8leading....0.8lagging
THDI	<2%	<2%
BACKUP AC OUTPUT		
RATED BACKUP OUTPUT POWER	7.6KVA	11.4KVA
MAX BACKUP OUTPUT POWER	9.5KVA 60S / 11.4KVA 1S	14.25KVA 60S / 17.1KVA 1S
BACKUP AC OUTPUT VOLTAGE	120/240 SPLIT PHASE, 208 TWO/THREE PHASE	120/240 SPLIT PHASE, 208 TWO/THREE PHASE
AC FREQUENCY	50/60Hz	50/60Hz
OUTPUT THDI	<2%	<2%
BATTERY		
MAX CHARGE & DISCHARGE CURRENT	100A/100A	100A/100A
BATTERY VOLTAGE RANGE	96V ~ 336V	96V ~ 336V
BATTERY CAPACITY RANGE	6.6 to 66kWh	6.6 to 66kWh
BATTERY TYPE	Lithium LiFePO4	Lithium LiFePO4
COMMUNICATION	CAN, RS485	CAN, RS485
EFFICIENCY		
MAX EFFICIENCY	≥98.2%	≥98.2%
CEC EFFICIENCY	≥97.2%	≥97.2%
PROTECTION		
COMPLETE PROTECTION	Ground protection;AFCI protection;islanding protection;DC disconnect detection;Battery Reverse protection;Battery charge and discharge protection;insulation testing;GFCI;DC&AC anti thunder;Overvoltage and under-voltage protections;AC&DC over-current protection;AC short-circuit current protection;overheating protection	
GENERAL DATA		
AC AND BACKUP OUTPUT CONDUIT SIZ	25.4MM	25.4MM
PV INPUT CONDUIT SIZE	25.4MM	25.4MM
BATTERY INPUT CONDUIT SIZE	34.5MM	34.5MM
OPERATION TEMPERATURE RANGE	-25 ~ +60°C	-25 ~ +60°C
ENVIRONMENT HUMIDITY	0-95%	0-95%
ALTITUDE	0~4000M (Derating when over 2000m)	0~4000M (Derating when over 2000m)
IP GRADE	IP65	IP65
WEIGHT	30kg	30kg
DIMENSION (W x H x D)	530x660x200mm	530x660x200mm
COOLING	NATURAL COOLING	NATURAL COOLING
NOISE EMISSION (dB)	<25dB	<29dB
DISPLAY	LCD	LCD
COMMUNICATION	MODBUS, RS485, WIFI, 4G	MODBUS, RS485, WIFI, 4G
SELF-CONSUMPTION AT NIGHT	<2.5W (with battery enabling < 5W)	<2.5W (with battery enabling < 5W)
NO TRANSFORMER	YES	YES
SAFETY	UL1741 SA all options, UL1699B, CSA 22.2	UL1741 SA all options, UL1699B, CSA 22.2
EMC	FCC PART 15 CLASS B	FCC PART 15 CLASS B
WARRANTY	10 YEARS	10 YEARS

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office@waruenergy.com

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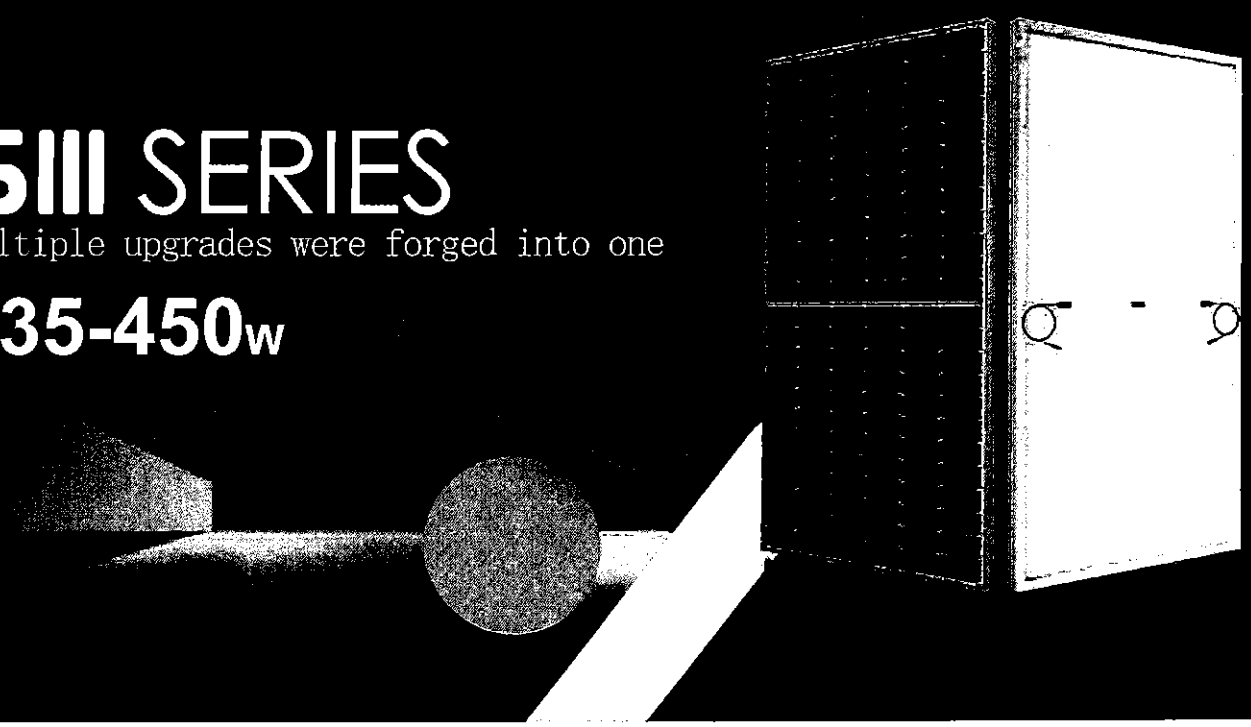
SERAPHIM ENERGY GROUP (SEG)
www.seraphim-energy.us

SIII SERIES

Multiple upgrades were forged into one

435-450w



SIII SERIES

Seraphim Energy Group (SEG) redefined the high-efficiency module series by integrating 166mm silicon wafers with multi-busbar and half-cut cell technologies. SEG panel combined creative technology effectively and extremely improved the module efficiency and power output.

KEY FEATURES

- Less mismatch to get more power
- Less power loss by minimizing the shading impact
- Competitive low light performance
- 3 times EL test to ensure best quality
- Ideal choice for utility and commercial scale projects by reduced BOS and improve ROI
- PVEL Outstanding reliability proven by PVEL for stringent environment condition :
  - Sand, acid, salt, and hail stones
  - 2400pa wind load and 5400pa snow load
  - Anti-PID

QUALITY SYSTEM

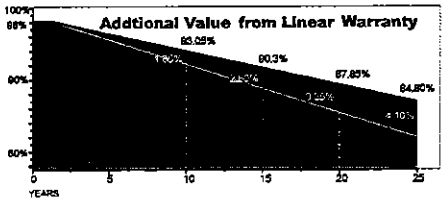
IS019001 / IS014001 / OHSAS18001

PRODUCT CERTIFICATION

INSURANCE

PICC

WARRANTY



15 YEARS Guarantee on product material and workmanship

25 YEARS linear power output warranty

SERAPHIM ENERGY GROUP (SEG)
Texas office: 973 Isom Road San Antonio, TX 78216
California office: 6200 Stoneridge Mall Rd, Ste 300, Pleasanton, CA 94588
Phone: (925) 468-4198 Web: www.seraphim-energy.us

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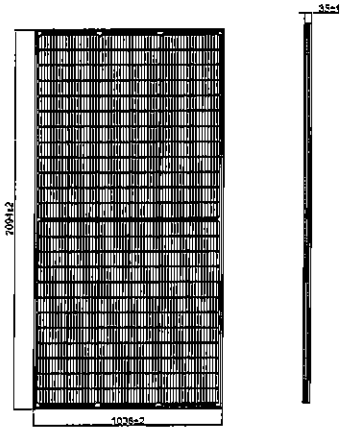
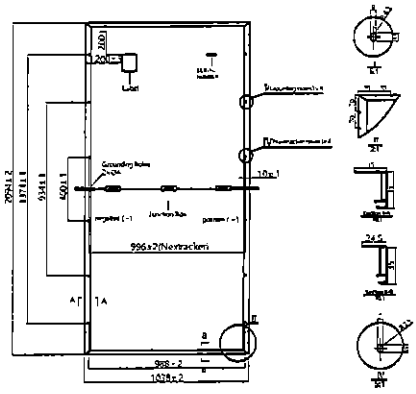
SERAPHIM ENERGY GROUP (SEG)
www.seraphim-energy.us

Electrical Characteristics

Module Type	SEG-435-BMA-HV		SEG-440-BMA-HV		SEG-445-BMA-HV		SEG-450-BMA-HV	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power at STC (Pmp)	435	324	440	328	445	332	450	336
Open Circuit Voltage (Voc)	49.6	45.3	49.7	45.4	49.9	45.6	50.1	45.8
Short Circuit Current (Isc)	11.18	9.02	11.27	9.10	11.34	9.17	11.41	9.24
Maximum Power Voltage (Vmp)	41.3	38.2	41.4	38.3	41.6	38.5	41.8	38.7
Maximum Power Current (Imp)	10.54	8.49	10.63	8.57	10.70	8.63	10.77	8.69
Module Efficiency at STC(ηm)	20.01		20.24		20.47		20.70	
Power Tolerance	(0, +3%)							
Maximum System Voltage	1500V DC							
Maximum Series Fuse Rating	20 A							

STC: Irradiance 1000 W/m² module temperature 25°C AM=1.5
Power measurement tolerance: +/-3%





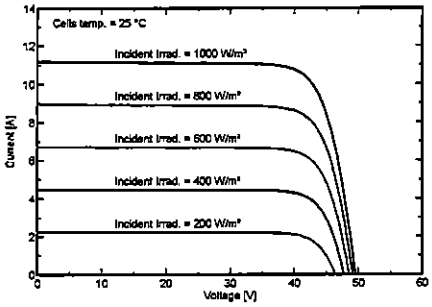
Temperature Characteristics

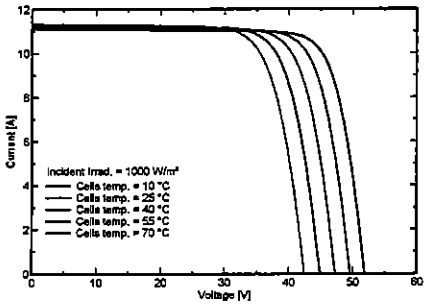
Pmax Temperature Coefficient	-0.35 %/°C
Voc Temperature Coefficient	-0.27 %/°C
Isc Temperature Coefficient	+0.05 %/°C
Operating Temperature	-40～+85 °C
Nominal Operating Cell Temperature (NOCT)	45 ± 2 °C

Mechanical Specifications

External Dimensions	2094x 1038 x 35 mm
Weight	23.5 kg
Solar Cells	PERC Mono 166 x 83mm (144 pcs)
Front Glass	3.2 mm AR coating tempered glass, low iron
Frame	Anodized aluminum alloy
Junction Box	IP68, 3 diodes
Output Cables	4.0 mm², 250mm(+)/350mm(-) or Customized Length
Mechanical Load	Front side 5400Pa / Rear side 2400Pa

I-V Curve





Packing Configuration

	2094 x 1038 x 35 mm	
Container	20'GP	40'HQ
Pieces per Pallet	31	31
Pallets per Container	5	22
Pieces per Container	155	682

For details, please consult SEG.

Specifications are subject to change without further notification SEG-DS-EN-2021V1.0 © Copyright 2021 SEG

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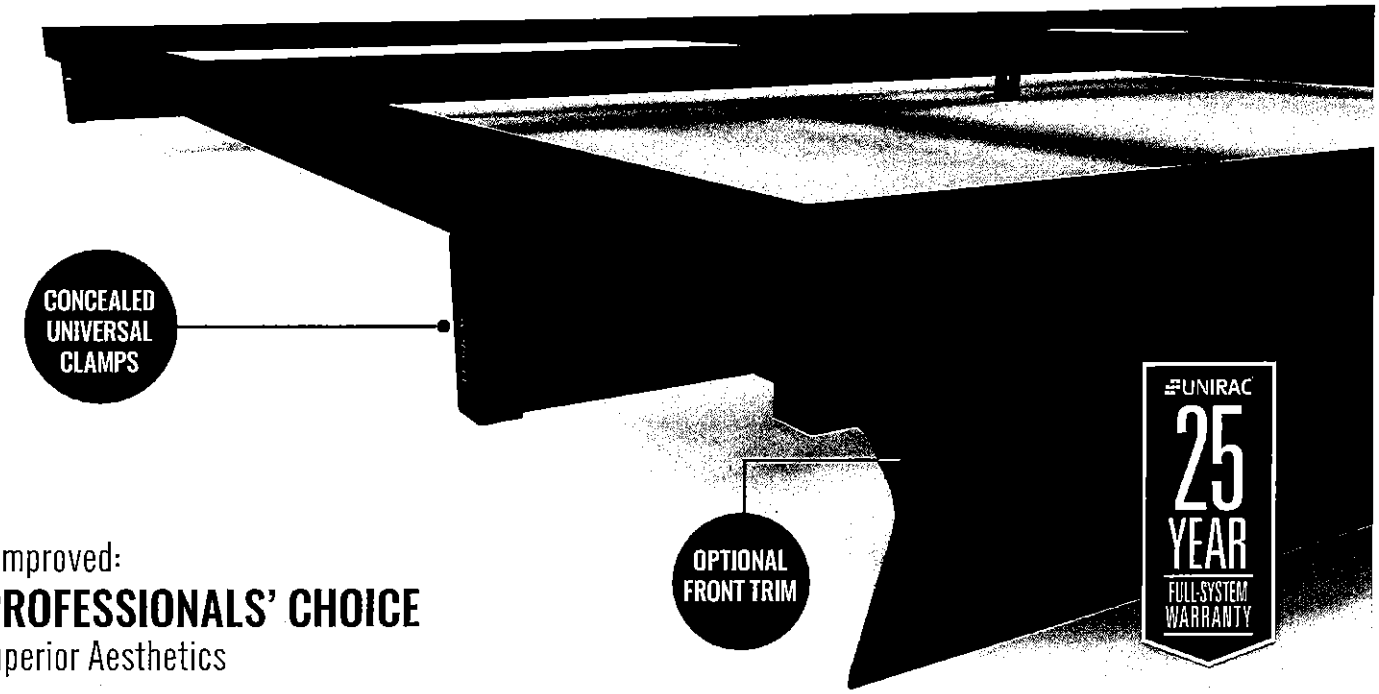
SOLARMOUNT is the professionals' choice for residential PV mounting applications. Every aspect of the system is designed for an easier, faster installation experience. **SOLAR**MOUNT is a complete solution with revolutionary universal clamps, **FLASHKIT** PRO, full system UL 2703 certification and 25-year warranty. Not only is **SOLAR**MOUNT easy to install, but best-in-class aesthetics make it the most attractive on any block!



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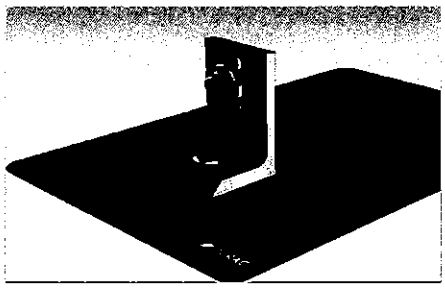
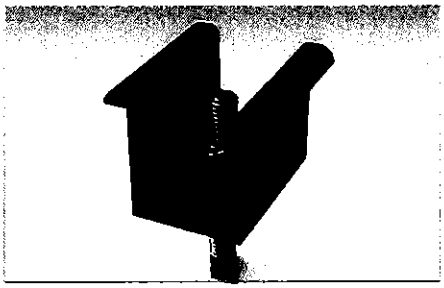
With Superior Aesthetics



NOW FEATURING FLASHKIT PRO

The Complete Roof Attachment Solution

FEATURING SHED & SEAL TECHNOLOGY



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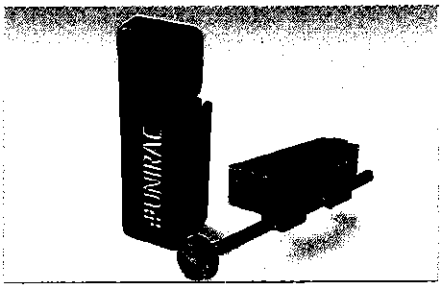
Accommodates 30mm-51mm module frames

One tool, one-person installs are here!



REVOLUTIONARY NEW ENDCLAMPS

Concealed design and included End Caps

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BEST INSTALLATION EXPERIENCE • CURB APPEAL • COMPLETE SOLUTION • UNIRAC SUPPORT

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ONE SYSTEM - MANY APPLICATIONS

Quickly set modules flush to the roof on steep pitched roofs. Orient a large variety of modules in Portrait or Landscape. Tilt the system up on flat or low slow roofs. Components available in mill, clear, and dark finishes to optimize your design financials and aesthetics.

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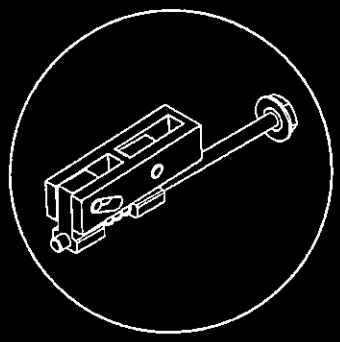
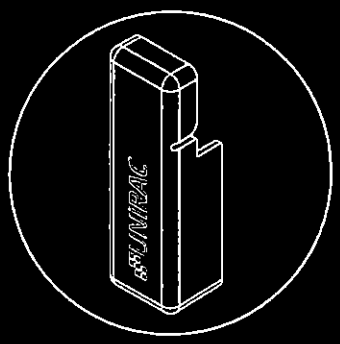
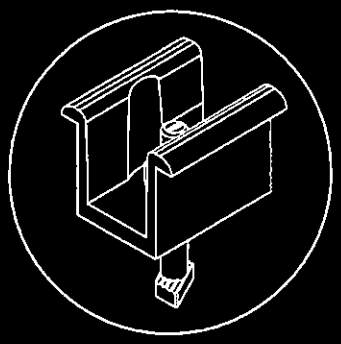


CONCEALED UNIVERSAL ENDCLAMPS



END CAPS INCLUDED WITH EVERY ENDCLAMP



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Unirac's technical support team is dedicated to answering questions & addressing issues in real time. An online library of documents including engineering reports, stamped letters and technical data sheets greatly simplifies your permitting and project planning process.

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Unirac is the only PV mounting vendor with ISO certifications for 9001:2008, 14001:2004 and OHSAS 18001:2007, which means we deliver the highest standards for fit, form, and function. These certifications demonstrate our excellence and commitment to first class business practices.

BANKABLE WARRANTY

Don't leave your project to chance. Unirac has the financial strength to back our products and reduce your risk. Have peace of mind knowing you are providing products of exceptional quality. SOLARMOUNT is covered by a 25 year limited product warranty and a 5 year limited finish warranty.

ENHANCE YOUR REPUTATION WITH QUALITY RACKING SOLUTIONS BACKED BY ENGINEERING EXCELLENCE AND A SUPERIOR SUPPLY CHAIN

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MANUFACTURER'S LIMITED PRODUCT WARRANTY

Unirac, Inc., ("Unirac") warrants to the buyer ("Buyer") at the original installation site ("Site") that any of the **SOLARMOUNT** components designed and manufactured by Unirac❶ and installed at the Site ("Product") shall be free from defects in material and workmanship which substantially impair their ability to perform their intended function, as referenced in the Unirac Product Information, for a period of twenty five (25) years – except that any factory-applied finish is warranted to be free from substantial manufacturing-related visible peeling or cracking or chalking under normal atmospheric conditions for a period of five (5) years ("Finish Warranty") – from the earlier of 1) the date the installation of the Product at the Site is substantially complete, or 2) 120 days after the purchase of the Product by the original Buyer of the Product ("Warranty Period").

WARRANTY TRANSFERENCE

Buyer may transfer this Warranty to subsequent Site owners, or if original Buyer is a contractor, to the Site owner, so long as the transferee agrees to the terms of this Limited Warranty as if it were the Buyer. Proof of purchase is required for any warranty claim.

FINISH WARRANTY LIMITATIONS

The Finish Warranty does not apply to any issues caused by foreign residue deposited on the finish, or an installation in atmospheric conditions more corrosive than normal conditions. The Finish Warranty is VOID if the practices specified by AAMA 609 & 610-02 – "Cleaning and Maintenance for Architecturally Finished Aluminum" (www.aamanet.org) are not followed.

WARRANTY LIMITATIONS

This Limited Warranty covers only the Product, and not PV modules, electrical components and or wiring used in conjunction with the Product or any other materials not provided by Unirac. Goods which may be sold by Unirac, but which are not designed or manufactured by Unirac are not warranted by Unirac, are sold only with the warranties, if any, of the original manufacturers thereof. This Limited Warranty does not cover damage to the Product that occurs during its shipment, storage, installation or use, or from force majeure acts including fire, flood, earthquake, storm, hurricane or other natural disaster, war, terrorist activities, acts of foreign enemies and criminal acts. This Limited Warranty does not cover damages or problems caused by the connection to or use of alternative materials not purchased from Unirac Price List. This Limited Warranty shall be void if A) installation of the Product is not performed in accordance with the Unirac Product Information, B) if the Product has been modified, repaired, or reworked in a manner not previously authorized by Unirac in writing, or C) the Product is installed in an environment for which it was not designed, each as determined by Unirac in its sole discretion.

WARRANTY CLAIMS

If, within the Warranty Period, the Product shall be proven at Unirac's sole discretion to be nonconforming, then Unirac shall repair or provide a replacement for the nonconforming Product, or any nonconforming part thereof, at Unirac's option. Any such repair or replacement does not cause the beginning of new warranty terms, nor shall the Warranty Period of this Limited Warranty be extended. Unirac's aggregate liability for all warranty claims shall not exceed the original Purchase Price of the nonconforming Product. Buyer shall bear all costs of shipment or transportation related to the repair or replacement of the nonconforming product. Such repair or replacement shall be Buyer's sole remedy and shall fulfill all of Unirac's obligations with respect to the Product and all warranty claims.

EXCEPT FOR THE LIMITED WARRANTY EXPRESSED ABOVE, UNIRAC MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND WHATSOEVER AND HEREBY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, COURSE OF DEALING AND USAGE OF TRADE.

UNIRAC SHALL NOT BE LIABLE FOR LOSS OF USE, REVENUE OR PROFIT, OR FOR DIRECT, INDIRECT, SPECIAL, PUNITIVE, LIQUIDATED, INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR FOR ANY OTHER LOSS OR COST OF A SIMILAR TYPE, OR FOR CLAIMS BY BUYER FOR DAMAGES OF BUYER'S CUSTOMERS, CLAIMS OF THIRD PARTIES OR INJURY TO PERSONS OR PROPERTY ARISING OUT OF ANY DEFECT OR NONCONFORMITY IN THE PRODUCT COVERED BY THIS WARRANTY, EVEN IF CAUSED BY THE NEGLIGENCE OF UNIRAC. ALL SUCH DAMAGES AND EXPENSES ARE HEREBY EXCLUDED.

❶ Excluding Plastic Wire Management Clips

EFFECTIVE DATE: FEBRUARY 28, 2017

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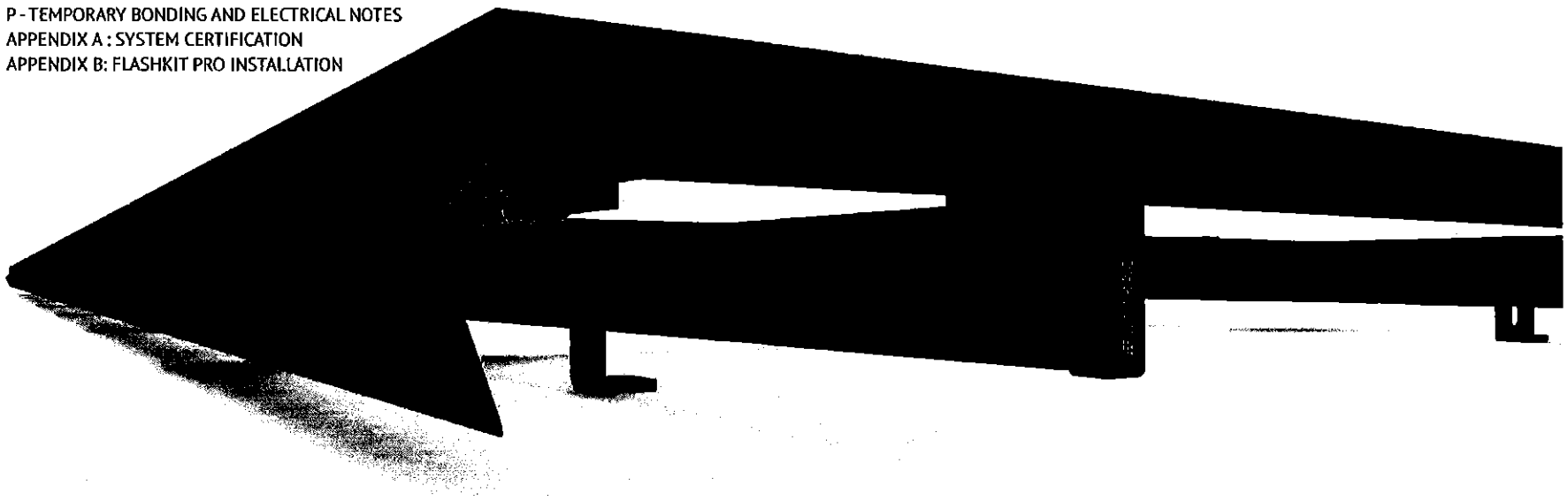
INSTALLATION GUIDE

TABLE OF CONTENTS

A - SYSTEM COMPONENTS
B - SYSTEM LAYOUT
C - CODE COMPLIANCE NOTES
D - ROOF ATTACHMENT & L-FEET
E - SPLICE & THERMAL BREAK
F - ATTACH RAIL TO L-FEET
G - MICROINVERTER MOUNTING
H - MICROINVERTER SYSTEM GROUNDING
I - GROUNDING, MICROINVERTER W/THERMAL BREAK
J - STANDARD SYSTEM GROUNDING
K - END CLAMP, FIRST MODULE
L - BONDING MID CLAMP
M - REMAINING MODULES
N - TRIM INSTALLATION
O - BONDING CONNECTION GROUND PATHS
P - TEMPORARY BONDING AND ELECTRICAL NOTES
APPENDIX A : SYSTEM CERTIFICATION
APPENDIX B: FLASHKIT PRO INSTALLATION



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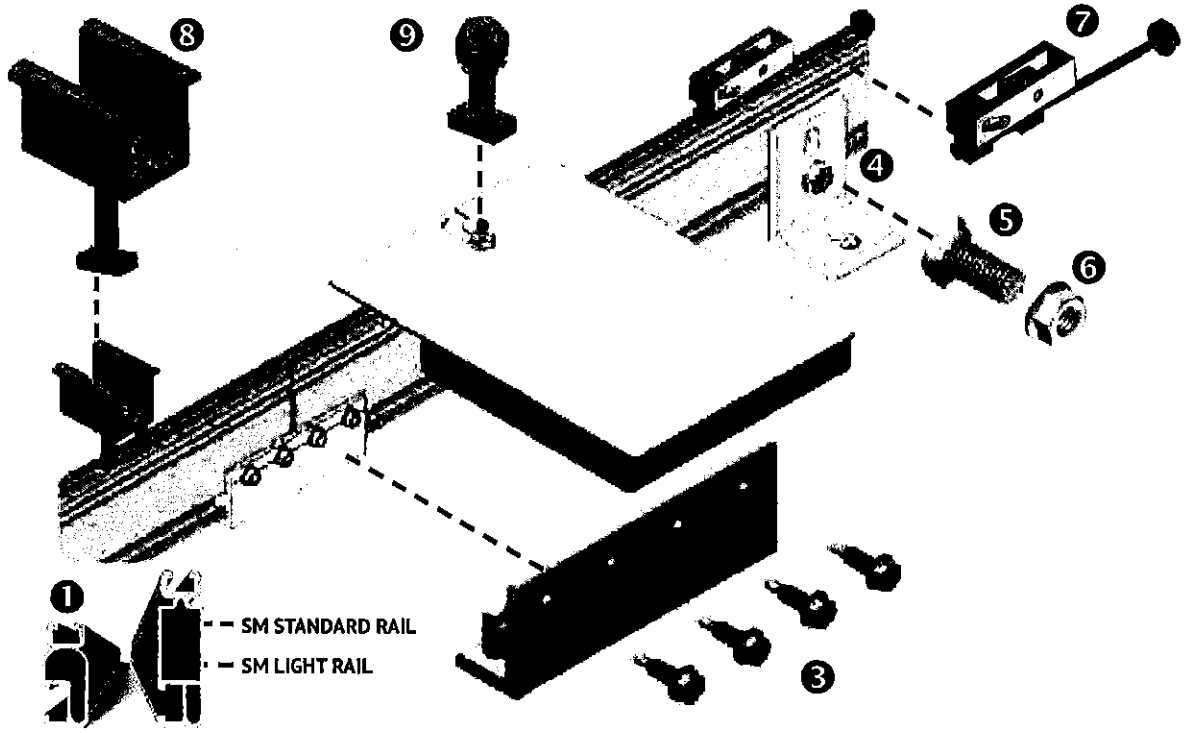
SM SOLAR MOUNT

STANDARD SYSTEM COMPONENTS

INSTALLATION GUIDE

A PAGE



❶RAIL: Supports PV modules. Use at least two per row of modules. Aluminum extrusion, available in mill, clear anodized, or dark anodized.

❷RAIL SPLICE: Non structural splice joins, aligns, and electrically bonds rail sections into single length of rail. Forms a rigid splice joint, 4 inches long, predrilled (see page I). Anodized aluminum extrusion available in clear or dark.

❸SELF-DRILLING SCREW: (No. 12 x ¾") – Use 4 per rigid splice. Stainless steel. Supplied with splice. In combination with rigid splice, provides rail to rail bond.

❹L-FOOT: Use to secure rails through roofing material to building structure. Refer to loading tables or U-Builder for spacing.

❺ L-FOOT T- BOLT: (3/8" x ¾" or 1") – Use one per L-foot to secure rail to L-foot. Stainless steel. Supplied with L-foot in combination with flange nut, provides electrical bond between L-foot and rail.

❻SERRATED FLANGE NUT : Use one per L-foot to secure and bond rail to Lfoot. Stainless steel. Supplied with L-foot.

❼MODULE ENDCLAMP: Pre-assembled universal clamp that secures module to rail at module flange by tightening 1/2" hex head bolt.

❽MODULE MIDCLAMP: Pre-assembled clamp provides module to module and module to rail bond. Aluminum clamp with stainless steel bonding pins and T-bolt. Available in clear or dark finish.

❾MICROINVERTER MOUNTING BOLT: Preassembled bolt, nut, and captive star washer attaches and bonds microinverter to rail.

NOTE - POSITION INDICATOR: T-bolts have a slot in the hardware end corresponding to the direction of the T-Head.

[illegible]		
	Wrench or Socket Size	Recommended Torque (ft-lbs)
Mid Clamp ❽	1/2"	11
MLPE Mount ❾	1/2"	10
End Clamp ❼	1/2"	3
L-Foot to Rail ❹	1/2"	30
Rail Splice ❷	5/16"	10

[illegible]

Stainless steel hardware can seize up, a process called galling. To significantly reduce its likelihood:
1. Apply minimal lubricant to bolts only where indicated in Installation process, preferably Anti-Seize commonly found at auto parts stores (Anti-seize has been factory applied to mid clamp bolts)
2. Shade hardware prior to installation, and
3. Avoid spinning stainless nuts onto bolts at high speed.

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PLANNING YOUR SOLARMOUNT INSTALLATIONS

The installation can be laid out with rails parallel to the rafters or perpendicular to the rafters. Note that SOLARMOUNT rails make excellent straight edges for doing layouts.

Center the installation area over the structural members as much as possible.

Leave enough room to safely move around the array during installation. Some building codes and fire codes require minimum clearances around such installations, and the installer should check local building code requirements for compliance.

The length of the installation area is equal to:

- the total width of the modules,
- plus 1" inch for each space between modules (for mid- clamp),
- plus 0 to 1" (0 to ½ inches for each Endclamp)

LAYING OUT L-FEET FOR TOP CLAMPS

L-feet, in conjunction with proper flashing equipment and techniques, can be used for attachment through existing roofing material, such as asphalt shingles, sheathing or sheet metal to the building structure.

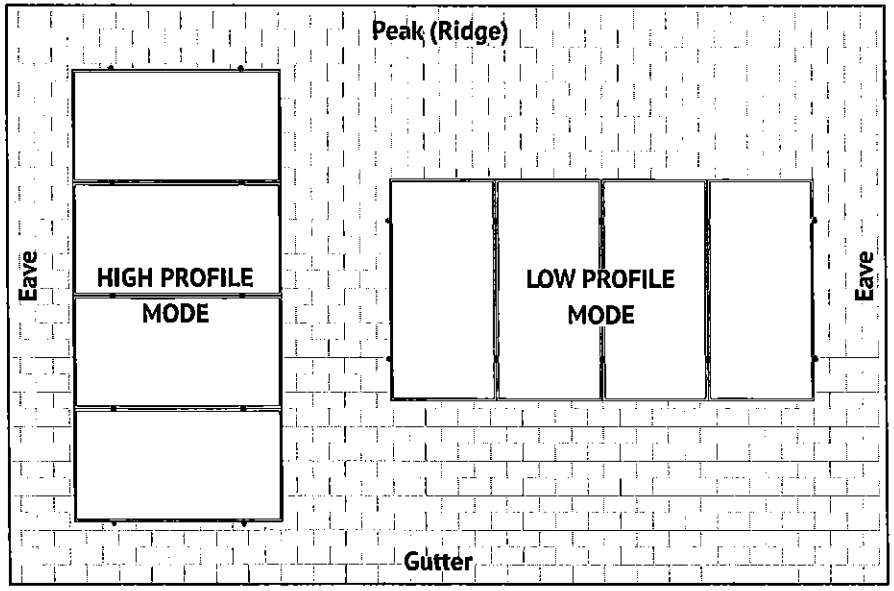
Locate and mark the position of the L-feet lag screw holes within the installation area as shown below. Follow manufacturer module installation guide for rail spacing based on appropriate mounting locations

NOTE: FOR EXPANSION JOINT REQUIREMENTS, REFER TO PAGE I. RAIL LENGTHS AND LOCATIONS OF L-FEET FOR EXPANSION JOINTS WILL NEED TO BE DETERMINED AT THIS STAGE IN PLANNING SYSTEM LAYOUT.

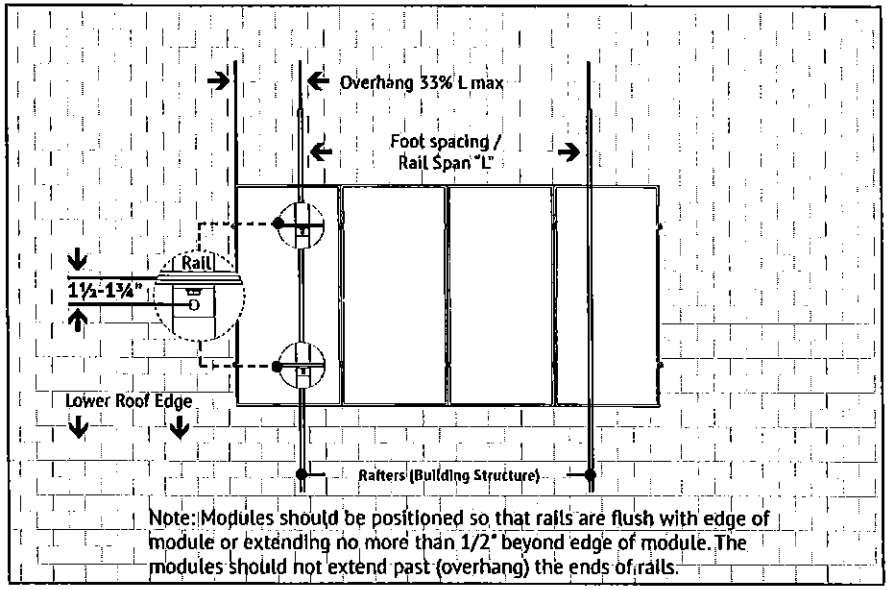
If multiple rows are to be installed adjacent to one another, it is not likely that each row will be centered above the rafters. Adjust as needed, following the guidelines below as closely as possible.

Refer to Unirac Solarmount D&E Guide & U-Builder for allowable spans and cantilevers.

RAILS MAY BE PLACED PARALLEL OR PERPENDICULAR TO RAFTERS



LAYOUT WITH RAILS PERPENDICULAR TO RAFTERS (RECOMMENDED)



Note: Modules should be positioned so that rails are flush with edge of module or extending no more than 1/2" beyond edge of module. The modules should not extend past (overhang) the ends of rails.

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CODE COMPLIANCE NOTES
INSTALLATION GUIDE | PAGE

SYSTEM LEVEL FIRE CLASSIFICATION

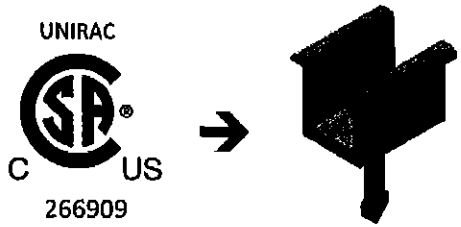
The system fire class rating requires installation in the manner specified in the SOLARMOUNT Installation Guide. SOLARMOUNT has been classified to the system level fire portion of UL 1703. This UL 1703 classification has been incorporated into our UL 2703 product certification. SOLARMOUNT has achieved system level performance for steep sloped roofs. System level fire performance is inherent in the SOLARMOUNT design, and no additional mitigation measures are required. The fire classification rating is only valid on roof pitches greater than 2:12 (slopes ≥ 2 inches per foot, or 9.5 degrees). The system is to be mounted over fire resistant roof covering rated for the application. There is no required minimum or maximum height limitation above the roof deck to maintain the system fire rating for SOLARMOUNT. Module Types & System Level Fire Ratings are listed below:

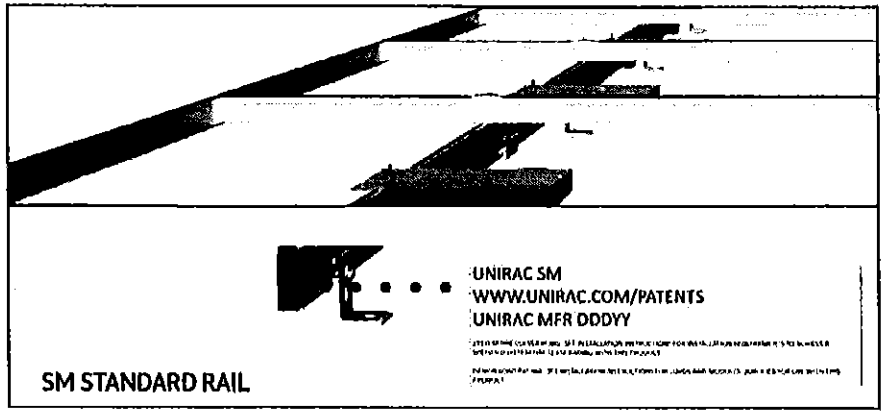
Rail Type	Module Type	System Level Fire Rating	Rail Direction	Module Orientation	Mitigation Required
Standard Rail	Type 1, Type 2, Type 3 & Type 10	Class A, Class B & Class C	East-West	Landscape OR Portrait	None Required
			North-South	Landscape OR Portrait	None Required
Light Rail	Type 1 & Type 2	Class A, Class B & Class C	East-West	Landscape OR Portrait	None Required
			North-South	Landscape OR Portrait	None Required

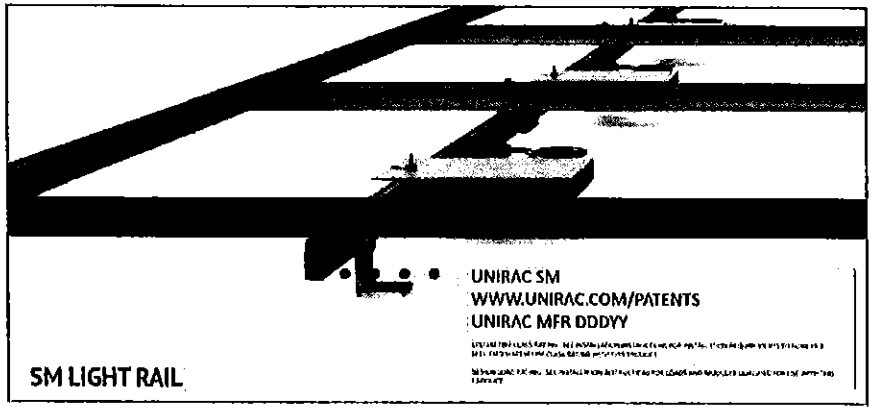
This racking system may be used to ground and/or mount a PV module complying with UL1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

UL2703 CERTIFICATION MARKING LABEL

Unirac SOLARMOUNT is listed to UL 2703. Certification marking is embossed on all mid clamps as shown. Labels with additional information will be provided . After the racking system is fully assembled, a single label should be applied to the SOLARMOUNT rail at the edge of the array. Note: The sticker label should be placed such that it is visible, but not outward facing.







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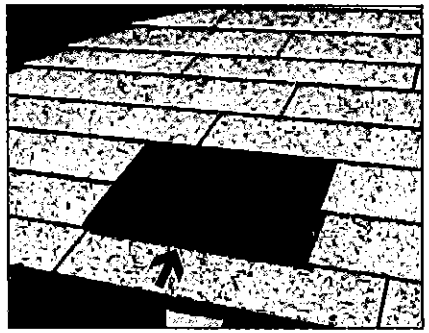
ROOF ATTACHMENT & L-FEET INSTALLATION GUIDE

ROOF PREPARATION: Layout and install flashing at rafter locations determined per Design and Engineering Guide.

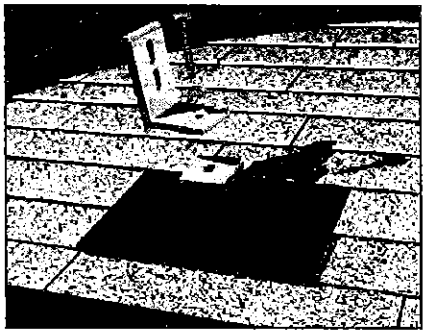
DRILL PILOT HOLES: Center the roof attachment over the rafter and drill a pilot hole(s) for the lag bolt(s).

NOTE: Determine lag bolt size and embedment depth.

Quick Tip: Pre-drill the pilot hole through the flat flashing lag bolt location for easier installation.

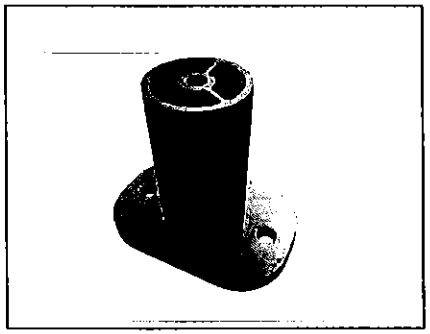


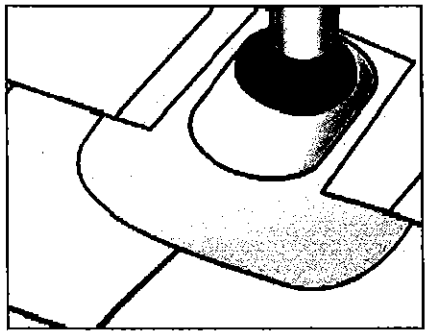
FLAT FLASHING INSTALLATION: Insert the Flat Flashing so the top part is under the next row of shingles and the hole lines up with the pilot hole.



INSTALL LAG BOLTS & L-FOOT: Insert the lag bolt through the L-Foot in the order shown in the illustration. Verify proper orientation before tightening lag bolts.

See Appendix B for Additional Details

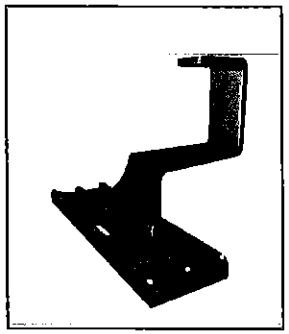


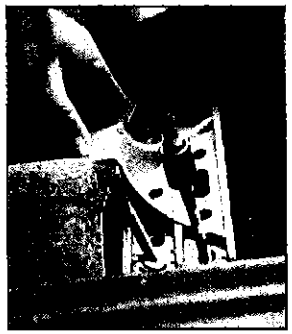


2 PIECE ALUMINUM STANDOFF WITH FLASHING & L-FOOT:

- If necessary cut an opening in the roofing material over a rafter to accommodate the flashing riser.
- Install the standoff, ensuring that both lag bolts are screwed into the rafter.
- Insert the flashing under the shingle above and over the shaft of the standoff. (No-Calk™ collar does not require sealing of the flashing and standoff shaft)
- Add L-Foot to top with bolt that secures the EPDM washer to the top of the standoff.

See Standoffs & Flashings Installation Manual 907.2 for Additional Details.

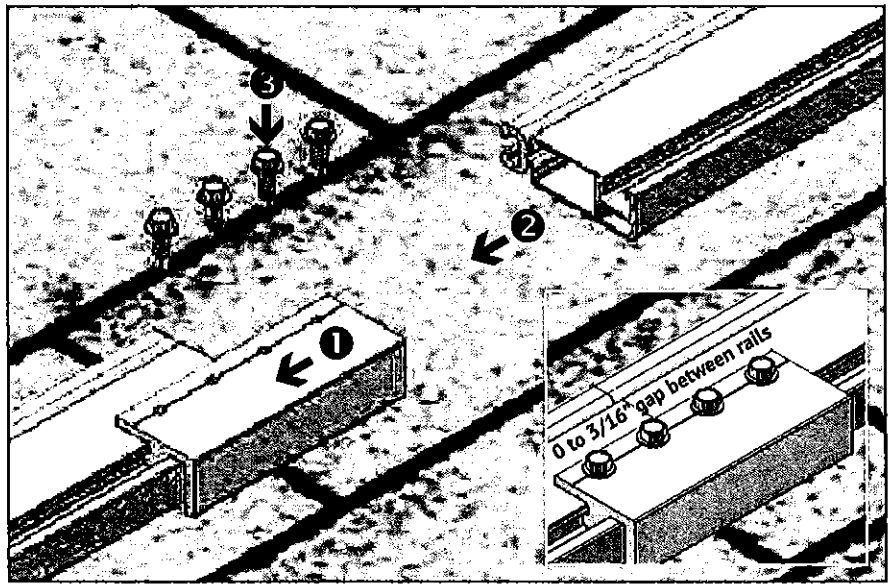




TOP MOUNT TILE HOOK & L-FOOT:

- Remove or slide up the roof tile, position the roof hook above the roof rafter
- Place Tile Hook in the middle of the underlying interlocking tile's valley. Drill 3/16 inch pilot holes through the underlayment into the center of the rafters. Securely fasten each tile hook to the rafters with two 5/16" x 3½" lag screws. Slide down or re-insert the tile.
- Attach L Foot to tile roof hook.

See Tile Hook Universal Mount Installation Manual for Additional Information.



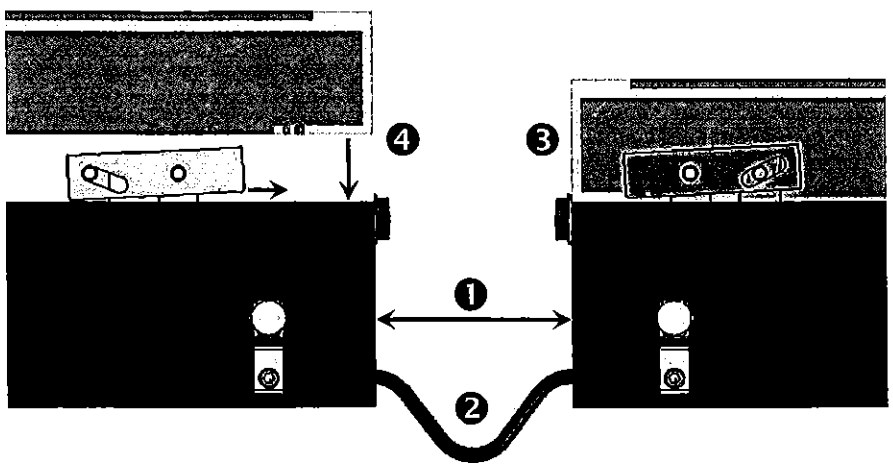
SPLICE INSTALLATION (IF REQUIRED PER SYSTEM DESIGN)

If your installation uses SOLARMOUNT splice bars, attach the rails together before mounting to the L-feet / footings. Use splice bars only with flush installations or those that use low-profile tilt legs. A rail should always be supported by more than one footing on both sides of the splice. There should be a gap between rails, up to 3/16" at the splice connections. T-bolts should not be placed less than a distance of 1" from the end of the rail regardless of a splice.

TORQUE VALUE (See Note on PG. A)

Hex head socket size 5/16" - Do not exceed 10 ft-lbs. Do not use Anti-Seize.

Max length of spliced rail is 40 ft. An expansion joint is required > 40 ft.



EXPANSION JOINT USED AS THERMAL BREAK

Expansion joints prevent buckling of rails due to thermal expansion. Splice bars may be used for thermal expansion joints. To create a thermal expansion joint, slide the splice bar into the footing slots of both rail lengths. Leave approximately ½" between the rail segments. Secure the splice bar with two screws on one side only. Footings (such as L-feet or standoffs) should be secured normally on both sides of the splice. No PV module or mounting hardware component should straddle the expansion joint. Modules must clearly end before the joint with mounting hardware (top mount Endclamps) terminating on that rail. T-bolts should not be placed less than a distance of 1" from the end of the rail regardless of a splice. The next set of modules would then start after the splice with mounting hardware beginning on the next rail. **A thermal break is required every 40 feet of continuously connected rail. For additional concerns on thermal breaks in your specific project, please consult a licensed structural engineer. Runs of rail less than 40 feet in length, with more than two pairs spliced together, are an acceptable installation for the SOLARMOUNT systems.**

Bonding connection for splice used as a thermal break. Option shown uses two Ilsco lugs (Model No. GBL-4DBT P/N GBL-4DBT - see product data sheet for more details) and solid copper wire.

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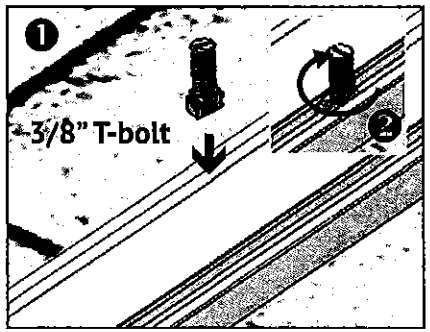
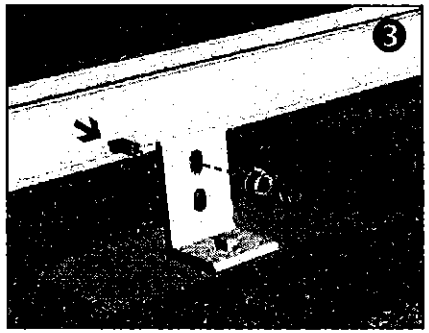
ATTACH RAIL TO L-FEET

INSTALLATION GUIDE | PAGE

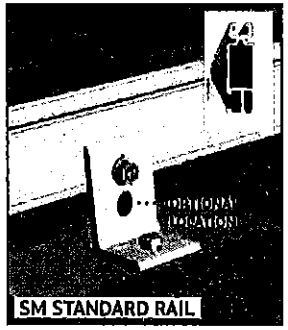


PLACE T-BOLT INTO RAIL & SECURE BOLT: Insert 3/8" T-bolt into rail at L-foot locations. Apply Anti-Seize to bolt. Rotate T-bolt into position.

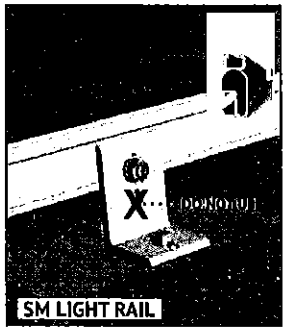


SECURE T-BOLT: Apply Anti-Seize to bolt. Rotate T-bolt into position.

Note:
Allowable L-foot slot locations for SM Standard & Light Rail.



SM STANDARD RAIL: Use either slot to connect the L-foot to the rail to obtain the desired height and alignment when using SM Standard rail.



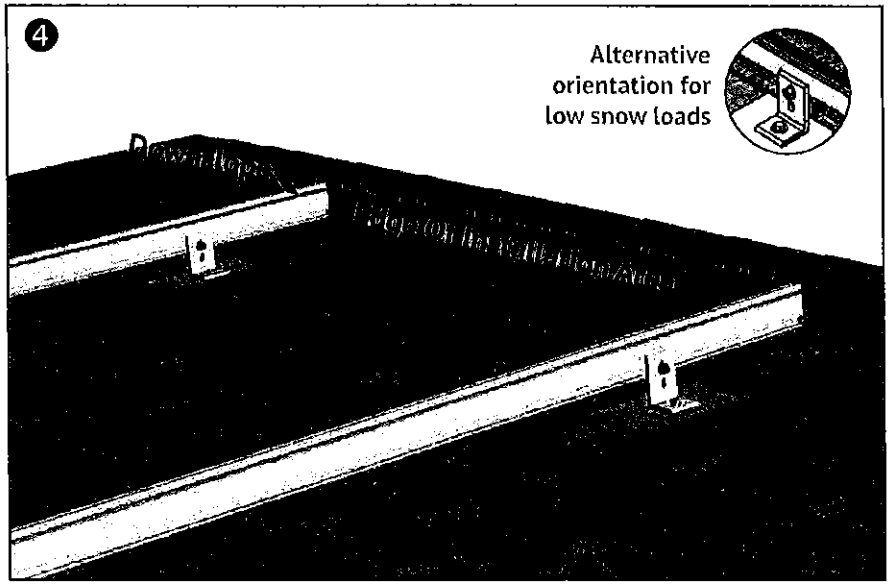
SM LIGHT RAIL: For a lower profile array when using SM Light rail, rotate the L-foot to orient the side with only one (1) slot against the rail. **Only use the slot location closet to the rail to connect the lag bolt to the flashing / roof on the side with two (2) slots.**

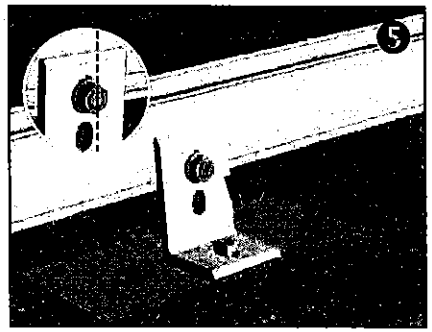
NOTE: Use only the top slot to connect the L-foot to the rail to obtain the desired height and alignment when using SM Light rail.

ALIGN RAILS: Align one pair of rail ends to the edge of the installation area. The opposite pair of rail ends will overhang installation area. Do not Trim them off until the installation is complete. If the rails are perpendicular to the rafters, either end of the rails can be aligned, but the first module must be installed at the aligned end.

If the rails are parallel to the rafters, the aligned end of the rails must face the lower edge of the roof. Securely tighten all hardware after alignment is complete.

Mount modules to the rails as soon as possible. Large temperature changes may bow the rails within a few hours if module placement is delayed.





ALIGN POSITION INDICATOR: Hand tighten nut until rail alignment is complete. Verify that position indicator on bolt is vertical (perpendicular to rail)

TORQUE VALUE (See Note on PG. A)
3/8" nut to 30 ft-lbs

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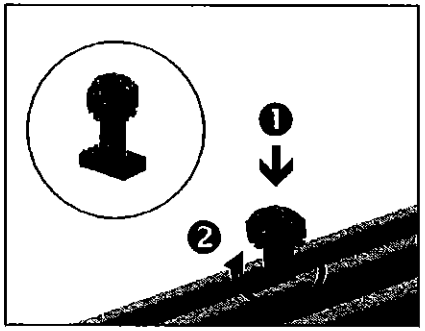
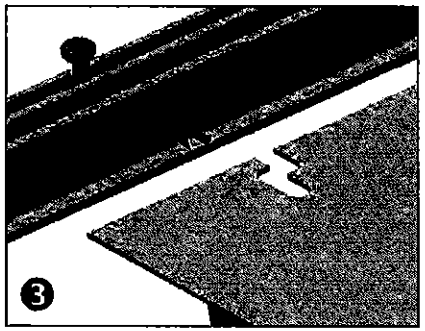
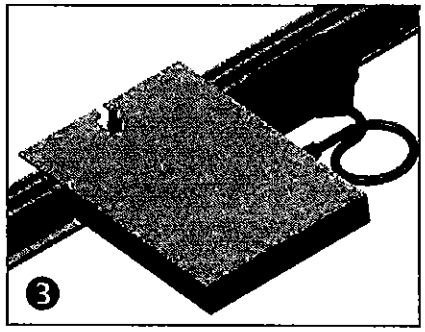


INSTALL MICROINVERTER MOUNT T-BOLT: Apply Anti-Seize and install pre-assembled ¼" dia. bonding T-bolts into top ¼" rail slot at microinverter locations. Rotate bolts into position.

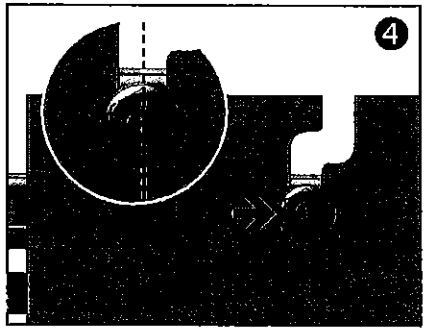


INSTALL MICROINVERTER: Install microinverter on to rail. Engage with bolt.



INSTALL MICROINVERTER:

TORQUE VALUE (See Note on PG. A)
1/4" nut to 10 ft-lbs w/Anti-Seize



ALIGN POSITION INDICATOR: Verify that position indicator on bolt is perpendicular to rail.

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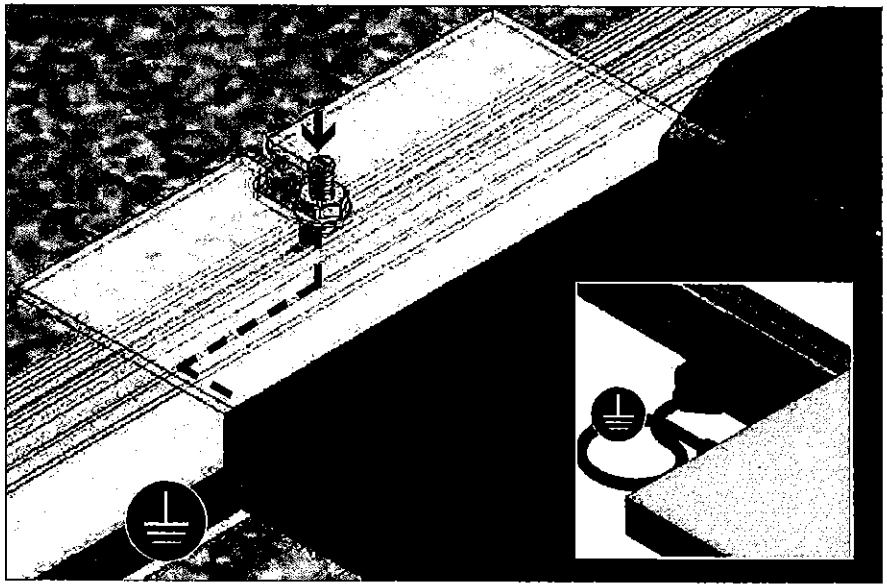

SM EQUIPMENT GROUNDING THROUGH ENPHASE MICROINVERTERS

The Enphase M215 and M250 microinverters have integrated grounding capabilities built in. In this case, the DC circuit is isolated from the AC circuit, and the AC equipment grounding conductor (EGC) is built into the Enphase Engage integrated grounding (IG) cabling.

In order to ground the SOLARMOUNT racking system through the Enphase microinverter and Engage cable assembly, there must be a minimum of three PV modules connected to the same trunk cable within a continuous row. Continuous row is defined as a grouping of modules installed and bonded per the requirements of this installation guide sharing the same two rails. The microinverters are bonded to the SOLARMOUNT rail via the mounting hardware. Complete equipment grounding is achieved through the Enphase Engage cabling with integrated grounding (IG). No additional EGC grounding cables are required, as all fault current is carried to ground through the Engage cable.

SOLARMOUNT INTEGRATED BONDING ADVANTAGE
WITH SYSTEM GROUNDING THROUGH ENPHASE MICROINVERTERS AND TRUNK CABLES
LOSE ALL THE COPPER & LUGS

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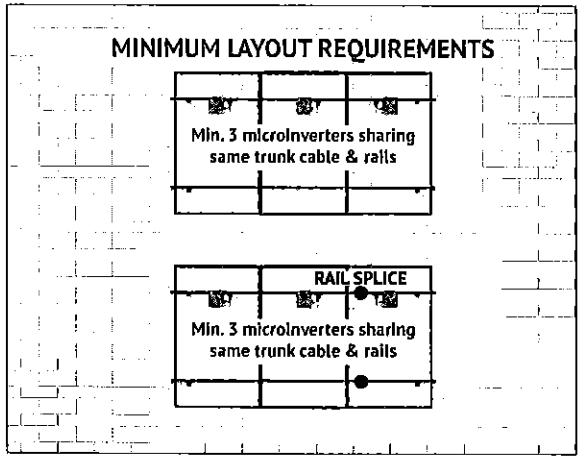
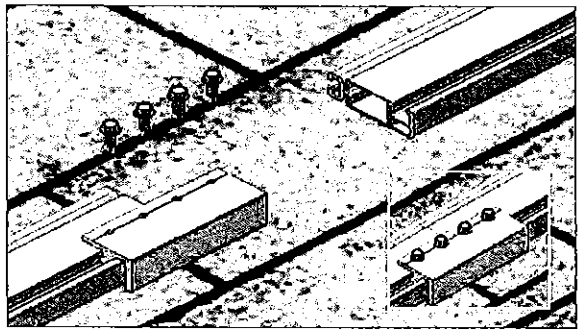
SM SOLAR MOUNT — ELECTRICAL GROUNDING W/ ENPHASE MICROINVERTER FOR SPLICE & THERMAL BREAK INSTALLATION GUIDE

Enphase Microinverter (MI) Requirements (Model No. M215 & M250)

3 Microinverters sharing same trunk cable & rails

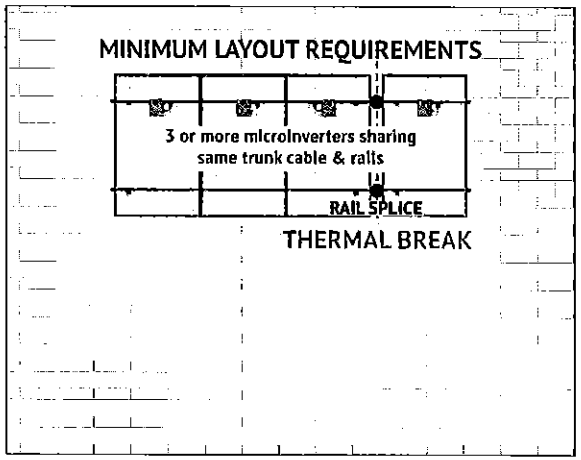


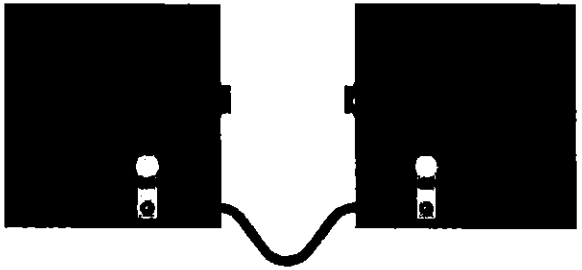


ELECTRICAL BONDING SPLICE

Enphase Microinverter (MI) Requirements (Model No. M215 & M250)

3 or more Microinverters sharing same trunk cable & rails

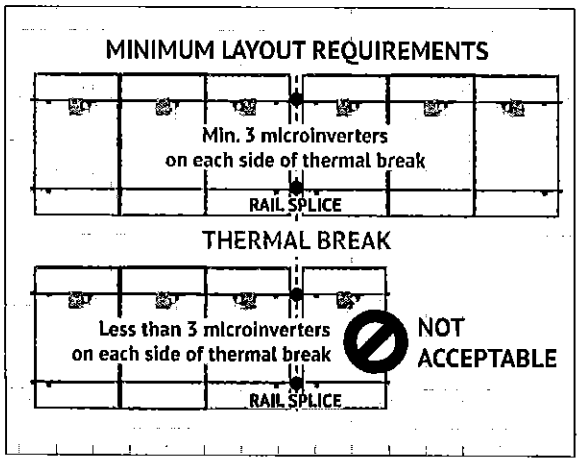




EXPANSION JOINT USED AS THERMAL BREAK W/ GROUNDING LUGS & COPPER JUMPER

Enphase Microinverter (MI) Requirements (Model No. M215 & M250)

Min. 3 Microinverters on each side of thermal break



EXPANSION JOINT USED AS THERMAL BREAK W/O ELECTRICAL BONDING CONNECTION

NOTE: THE ABOVE IMAGES ARE SAMPLE CONFIGURATIONS TO ILLUSTRATE THE REQUIREMENTS FOR SM SYSTEM GROUNDING THROUGH ENPHASE MICROINVERTERS DESCRIBED ON PAGE I-2

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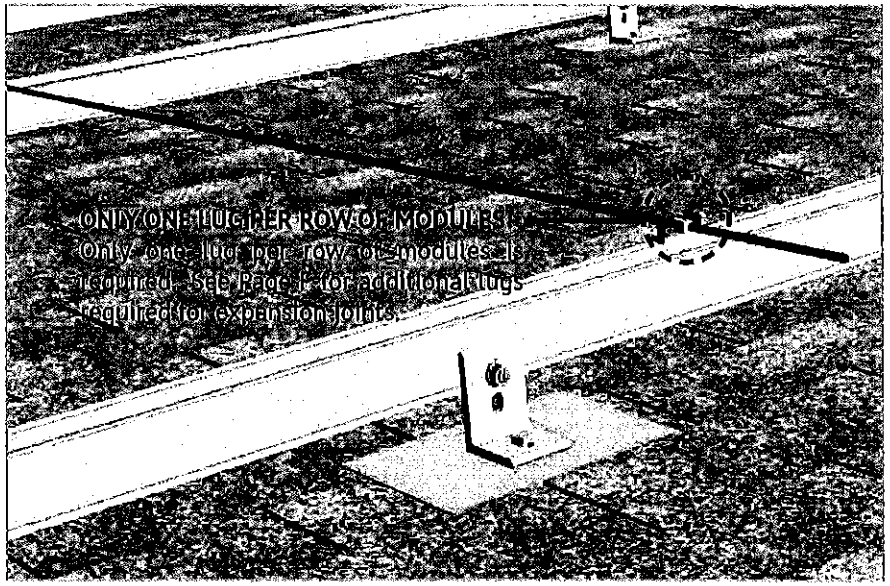
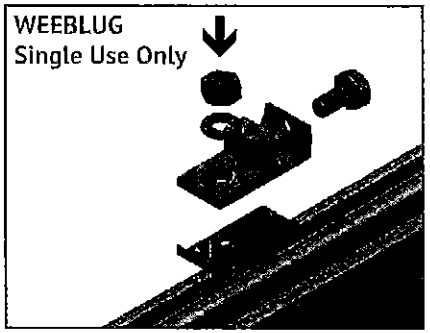
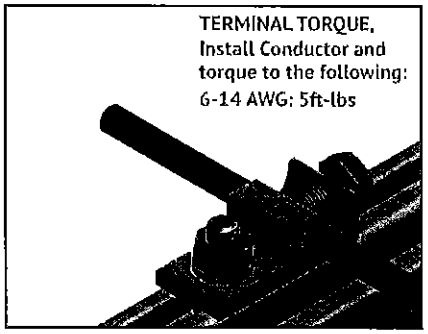
SM SOLAR MOUNT

STANDARD SYSTEM GROUNDING

INSTALLATION GUIDE | PAGE





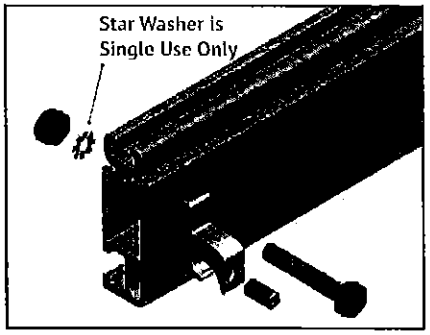


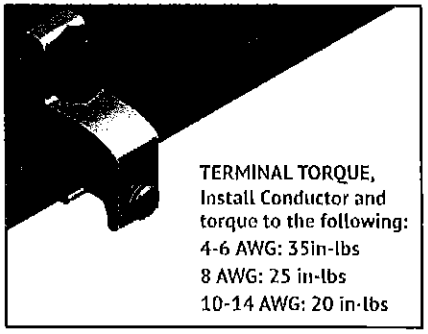
WEEBLUG CONDUCTOR - UNIRAC P/N 008002S:
Apply Anti Seize and insert a bolt in the aluminum rail and through the clearance hole in the stainless steel flat washer. Place the stainless steel flat washer on the bolt, oriented so the dimples will contact the aluminum rail. Place the lug portion on the bolt and stainless steel flat washer. Install stainless steel flat washer, lock washer and nut. Tighten the nut until the dimples are completely embedded into the rail and lug.
TORQUE VALUE 10 ft lbs. (See Note on PG. A)
See product data sheet for more details, Model No. WEEB-LUG-6.7

GROUNDING LUG MOUNTING DETAILS:
Details are provided for both the WEEB and Ilsco products. The WEEBLug has a grounding symbol located on the lug assembly. The Ilsco lug has a green colored set screw for grounding indication purposes. Installation must be in accordance with NFPA NEC 70, however the electrical designer of record should refer to the latest revision of NEC for actual grounding conductor cable size.
Required if not using approved integrated grounding microinveters

GROUND LUG	BOLT SIZE	DRILL SIZE
WEEBLug	1/4"	N/A - Place in Top SM Rail Slot
ILSCO Lug	#10-32	7/32"

- Torque value depends on conductor size.
- See product data sheet for torque value.





ILSCO LAY-IN LUG CONDUCTOR - UNIRAC P/N 008009P: Alternate Grounding Lug - Drill, deburr hole and bolt thru both rail walls per table.
TORQUE VALUE 5 ft lbs. (See Note on PG. A)
See ILSCO product data sheet for more details, Model No. GBL-4DBT.

NOTE: ISOLATE COPPER FROM ALUMINUM CONTACT TO PREVENT CORROSION

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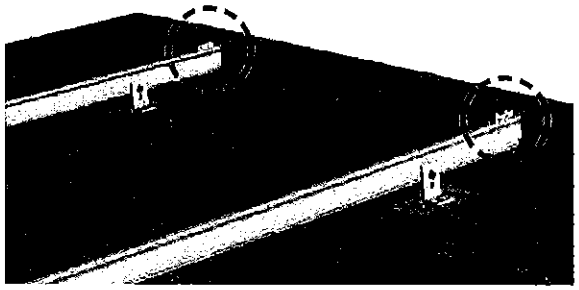
SM SOLAR MOUNT

ENDCLAMP, FIRST MODULE &TRIM

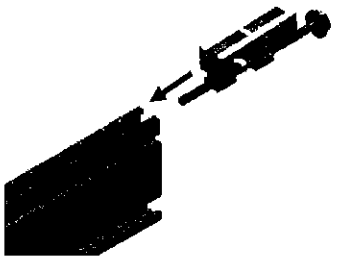
INSTALLATION GUIDE

K PAGE



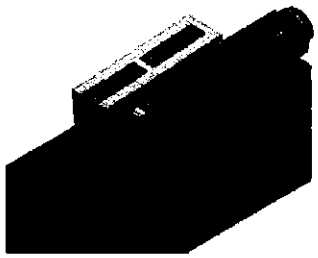
INSTALL MODULE END CLAMPS: The End clamp is supplied as an assembly with a 1/2" hex head bolt that is accessible at the ends of rails. The clamp should be installed on the rails prior to installing end modules.

❶

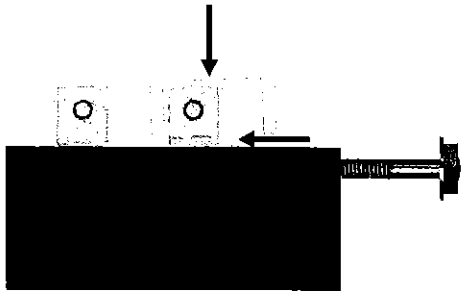


INSTALL END CLAMPS ON RAIL: Slide end clamp on to rail by engaging the two t-guide brackets with the top slot of the rails. Ensure bolt is extended as far as possible so that clamp is positioned at max. distance from end of rail.

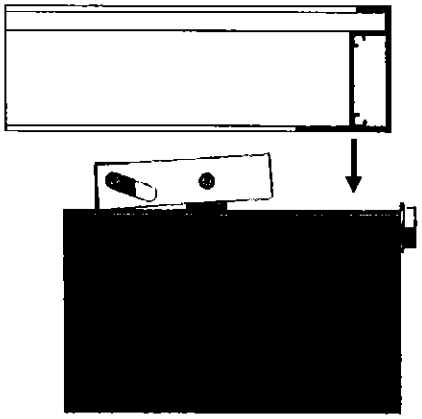
❷



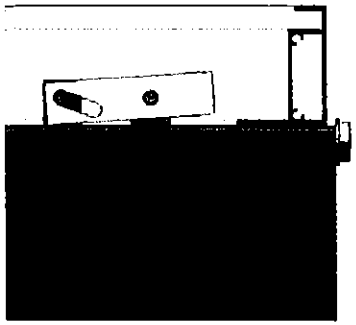
POSITION END CLAMPS: Slide end clamp assembly on to rail until bolt head engages with end of rail End clamps are positioned on rails prior to the first end module and prior to the last end module.

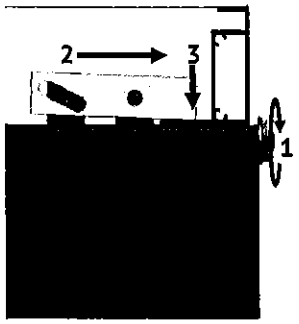


NOTE: To assist insertion of clamp into rail slot, Pressure may be applied to top or side of bracket as shown. Do not force clamp into rail by pushing on bolt with excessive force.

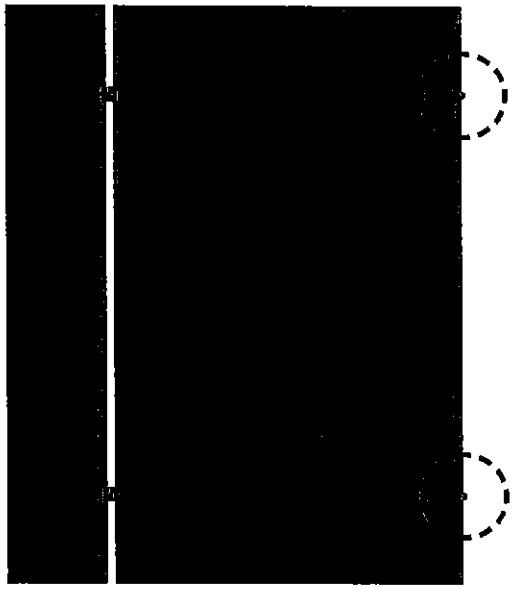


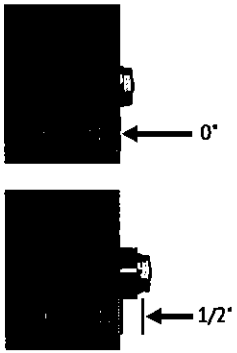
INSTALL FIRST MODULE: Install the first end module onto rails with the flange of the module frame positioned between end clamps an ends of rails.





ENGAGE CLAMP: While holding module in position and with flange in full contact with rail, rotate end clamp bolt until clamp engages with flange to provide clamp force.
To ensure bolt is not over-torqued, use low torque setting on drill or If using an impact driver, stop rotation as soon as impact action of driver begins.
TORQUE VALUE (See table and notes on PG. 1)
End clamp bolt to **3 ft-lbs**, No anti-seize





For best appearance, position module flush with ends of rails. Rails should not extend more than 1/2" beyond module. Module must be fully supported by rails and cannot overhang ends of rails.

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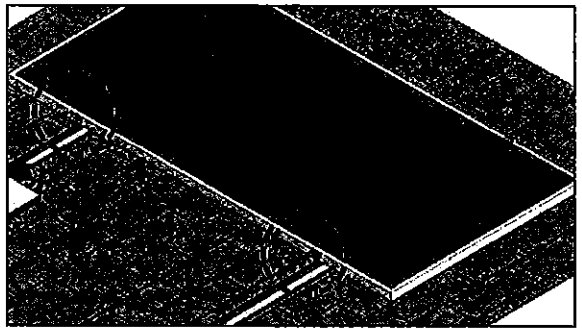
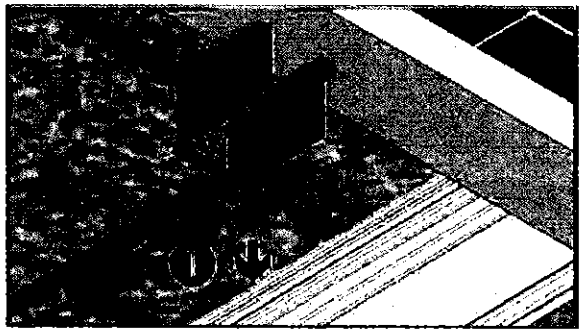
SM SOLAR MOUNT

BONDING MIDCLAMP & TRIM

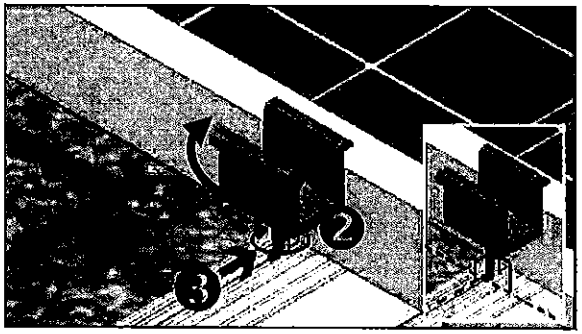
INSTALLATION GUIDE | PAGE



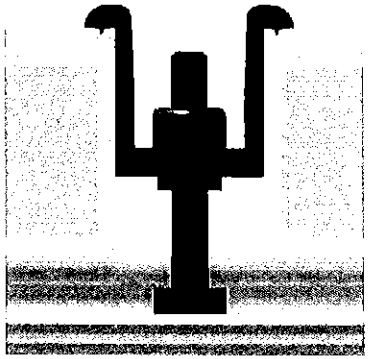
INSTALL MIDCLAMPS: Midclamp is supplied as an assembly with a T-bolt for module installation. Clamp assemblies may be positioned in rail near point of use prior to module placement.



INSERT MIDCLAMP ASSEMBLY: Insert 1/4" T-Bolt into top slot of rail



MIDCLAMP: Rotate midclamp assembly and slide until clamp is against module frame. Do not tighten nut until next module is in position. Ensure bolt is perpendicular to rail.



PLACE ADJACENT MODULE AGAINST CLAMPS: Modules must be tight against clamps with no gaps. Tighten nut to required torque.

TORQUE VALUE (See table and notes on PG. A)
11 ft-lbs. No anti-seize.

POSITION INDICATOR - SERRATED T-BOLT: Verify the T-bolt position indicator is perpendicular to the rail.

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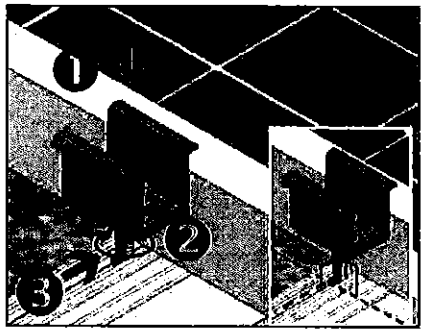
SM SOLAR MOUNT

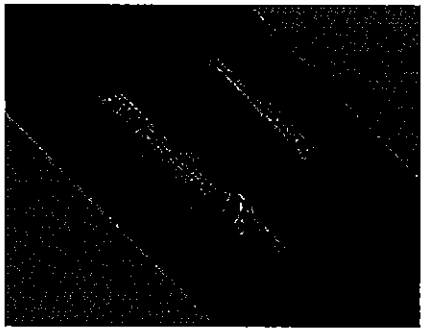
REMAINING MODULES

INSTALLATION GUIDE

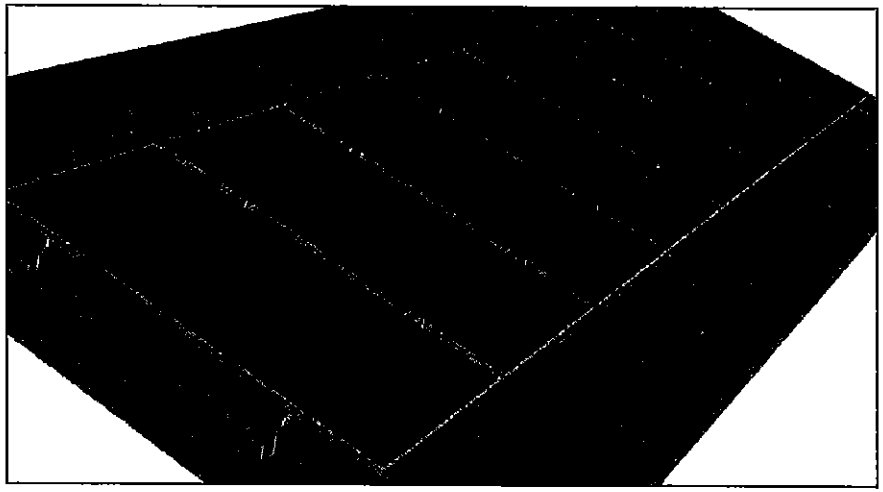
M PAGE



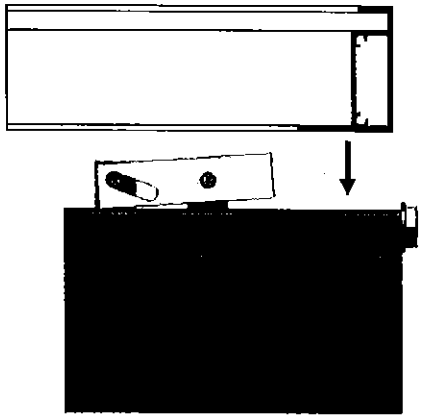
INSTALL REMAINING MID-CLAMPS: Proceed with module installation. Engage each module with previously positioned Midclamp assemblies.



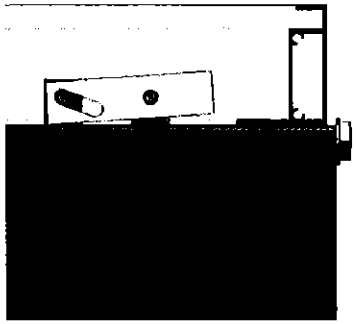
POSITION T-BOLT ALIGNMENT MARKS: Verify that the position indicator(s) & T-bolt shaft(s) are angled in the correct position. Tighten to final torque.
TORQUE VALUE (See table and notes on PG. A) 11 ft-lbs. No anti-seize.

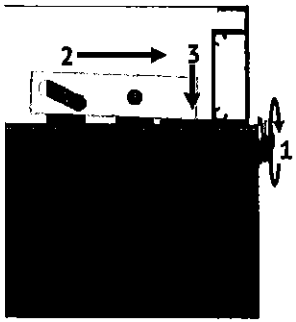


FINISH MODULE INSTALLATION: Proceed with module installation. Engage each module with the previously positioned clamp assembly:

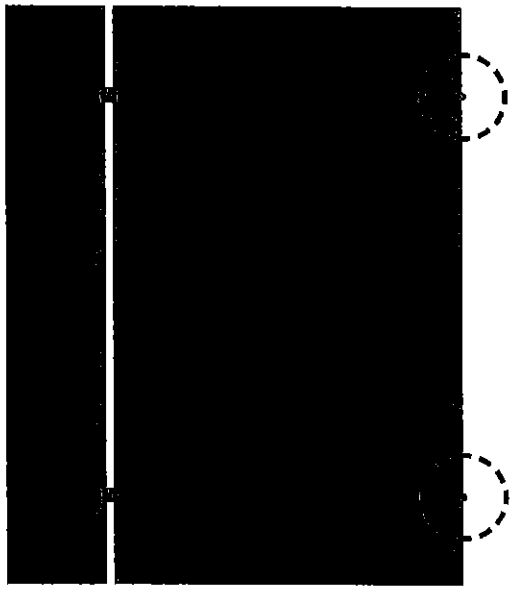


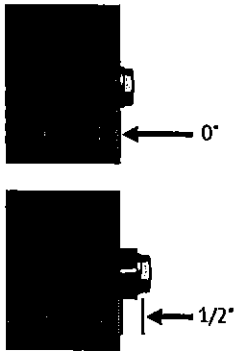
INSTALL LAST MODULE: After trimming rails to required length (0" to 1/2" beyond module), insert end clamps into rail slots. Install the last end module onto rails with the flange of the module frame positioned between end clamps and ends of rails.





ENGAGE CLAMP: While holding module in position and with flange in full contact with rail, rotate end clamp bolt until clamp engages with flange to provide clamp force. **To ensure bolt is not over-torqued, use low torque setting on drill or if using an impact driver, stop rotation as soon as impact action of driver begins.**
TORQUE VALUE (See table and notes on PG. 1)
End clamp bolt to **3 ft-lbs**, No anti-seize.





For best appearance, trim module flush with ends of rails. Rails should not extend more than 1/2" beyond module. Module must be fully supported by rails and cannot overhang ends of rails.

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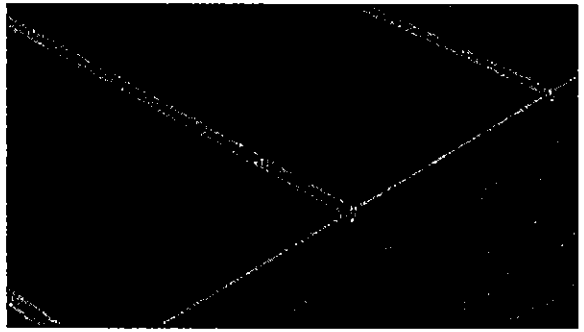
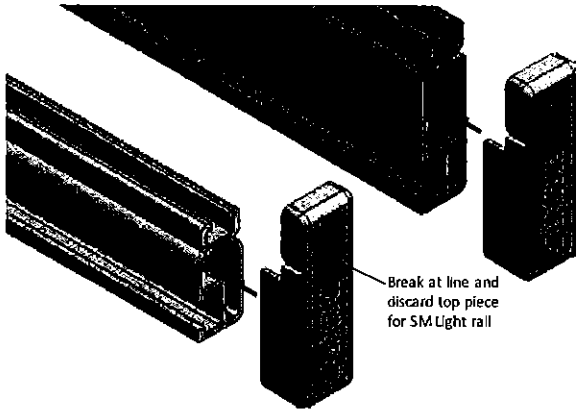
TRIM AND END CAP INSTALLATION



TRIM MIDCLAMPS: Ensure Trim lip is in contact with module face and verify alignment marks on T-bolts are in proper position, tighten midclamp on Trim, repeat at each gap between modules.

TORQUE VALUE (See table and notes on PG. 1)
11 ft-lbs. No anti-seize.



INSTALL END CAPS: End caps install as supplied on SM standard rail and SM light rail. If desired for SM light rail, the end cap may be modified as shown by hand, or by using a cutting tool.

FINISH TRIM INSTALLATION. CUT EXCESS TRIM AND INSTALL TRIM CLIPS:
Attach trim to modules with at least one trim clip at each end of array and at locations where additional support is needed. Each section of trim must be attached to modules with at least one mid clamp.

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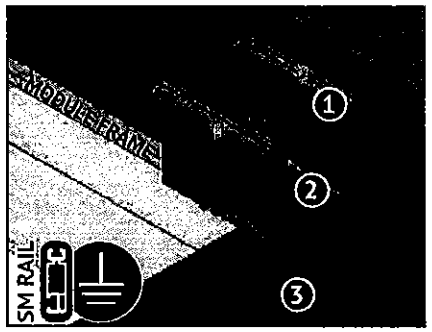
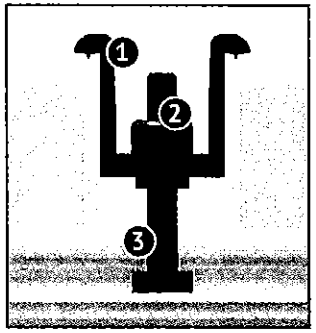
SM SOLAR MOUNT BONDING CONNECTION GROUND PATHS

INSTALLATION GUIDE | PAGE

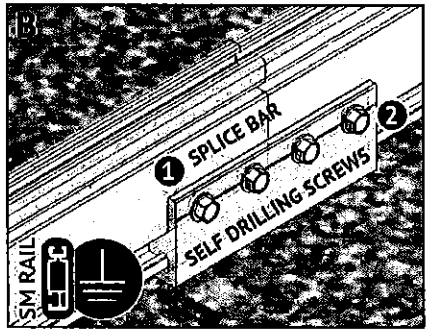


BONDING MIDCLAMP ASSEMBLY

1. Aluminum mid clamp with stainless steel bonding pins that pierce module frame anodization to bond module to module through clamp
2. Stainless steel nut bonds aluminum clamp to stainless steel T-bolt
3. Serrated T-bolt head penetrates rail anodization to bond T-bolt, nut, clamp, and modules to SM rail



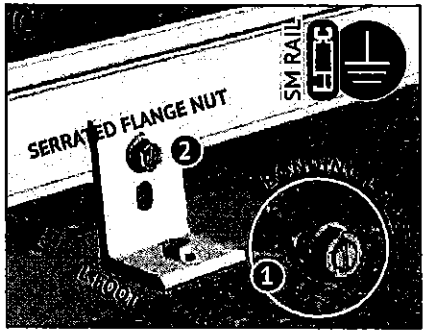
BONDING MIDCLAMP ASSEMBLY



BONDING RAIL SPLICE BAR

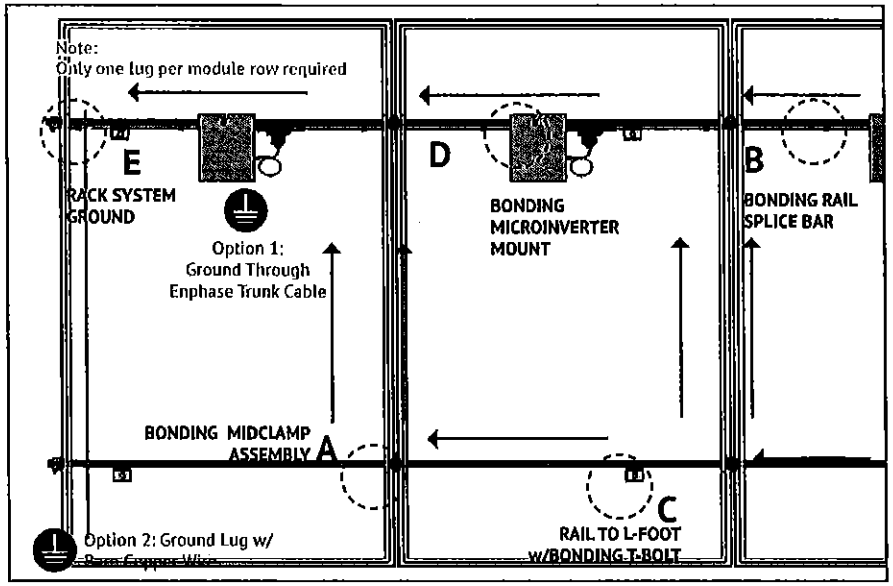
1. Stainless steel self drilling screws drill and tap into splice bar and rail creating bond between splice bar and each rail section
2. Aluminum splice bar spans across rail gap to create rail to rail bond. Rail on at least one side of splice will be grounded.

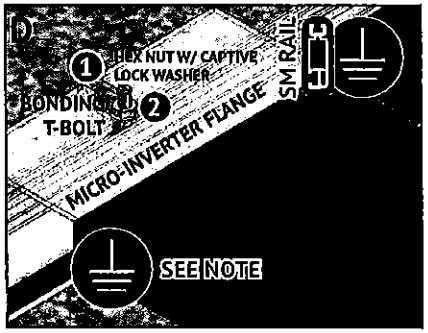
Note: Splice bar and bolted connection are non-structural. The splice bar function is rail alignment and bonding.



RAIL TO L-FOOT w/BONDING T-BOLT

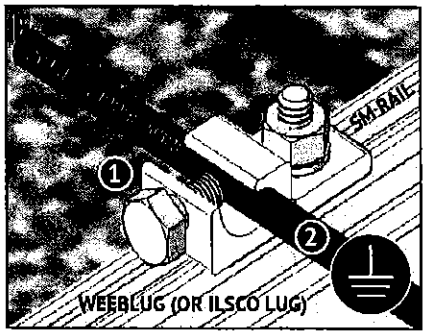
1. Serrated flange nut removes L-foot anodization to bond L-Foot to stainless steel T-bolt
2. Serrated T-bolt head penetrates rail anodization to bond T-bolt, nut, and L-foot to grounded SM rail





BONDING MICROINVERTER MOUNT

1. Hex nut with captive lock washer bonds metal microinverter flange to stainless steel T-bolt
2. Serrated T-bolt head penetrates rail anodization to bond T-bolt, nut, and L-foot to grounded SM rail System ground including racking and modules may be achieved through the trunk cable of approved microinverter systems. See page I for details



RACK SYSTEM GROUND

1. WEEB washer dimples pierce anodized rail to create bond between rail and lug
2. Solid copper wire connected to lug is routed to provide final system ground connection.
NOTE: Ilsco lug can also be used when secured to the side of the rail. See page I-3 for details

William O. Rodríguez Rodríguez
William O. Rodríguez Rodríguez (Nov 29, 2022 22:11 AST)

Jose Fontana (Nov 29, 2022 08:20 AST)

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Make Solar Stronger.

1495 Zephyr Avenue
Hayward, CA 94544
(800) 227-9523
IronRidge.com

Limited Warranties and Disclaimer

For products sold after June 1, 2018, IronRidge provides, to the original purchaser of the Products from IronRidge, and any subsequent owner of the Products, subject to assignability below ("Purchaser"), the following warranties for "Products" (defined as products manufactured by IronRidge, including BX Chassis but excluding other polymeric components) and installed properly and used for the purpose for which the Products are designed (collectively the "Warranty"), commencing on the earlier of:

a) the date of complete installation of the Products or
b) 30 days after the initial purchase of the Products from IronRidge:
c) for a period of five years, Products with finishes (excluding Products that are mill finished and excluding surface finish of BX Chassis) will be free of visible defects, peeling, or cracking; and
d) for a period of 25 years, Products will be free of defects in materials and manufacturing which materially impair the use of the Product for the purpose for which it was designed.

The Warranty excludes:

a) any defect that has not been reported to IronRidge in writing (i) within the warranty periods set forth above and (ii) within 60 days after discovery of such defect;
b) normal wear, or damage resulting from misuse, overloading, abuse, improper installation (including failure to follow professional instruction and certification), negligence, or accident, or from force majeure acts including any natural disasters, extreme weather, war, or criminal acts;
c) Products that have been altered, modified or repaired without written authorization from IronRidge or its authorized representative;
d) damage to or caused by, or defects in, parts or materials not sold by IronRidge (irrespective of IronRidge documentation);
e) Products installed, used or maintained in a manner contrary to IronRidge documentation; and
f) damage to the Products during shipment, storage, installation or use.

The finish warranty above does not apply to surface oxidation or any foreign residue deposited on the Product finish, or to Products installed in corrosive atmospheric conditions, and is void if the practices specified by AAMA 609 & 610-02 – "Cleaning and Maintenance for Architecturally Finished Aluminum", or ASTM A780/A780M - 09 "Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings", as applicable, are not followed.

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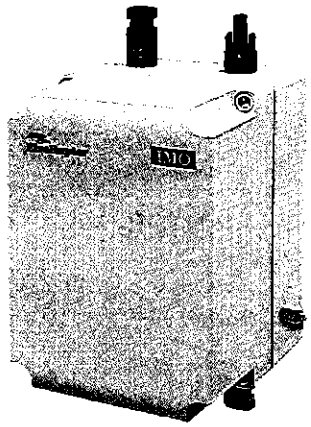
IMO

Capacitor Discharge Unit
Installation Guide

v2 [ERS-CBLD]

FireRaptor

Solar Panel Rapid Shutdown



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SAVE THESE INSTRUCTIONS - This manual contains important instructions for IMO Precision Controls Rapid Shutdown System Equipment that shall be followed during installation and maintenance of the Rapid Shutdown System Equipment, FRS-CBLD, FRS-CBLD1, FRS-CBLD2 and FRS-CBLDx-y.

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LIMITED WARRANTY

For Warranty Terms & Conditions go to https://downloads.imopc.com/fireraptor-limited-warranty.pdf

CONTACT DETAILS

Please contact the below concerning technical questions about this product:-

United Kingdom	01707 414 444	imo@imopc.com	Australia / New Zealand	08 9302 5246	support@imopacific.com.au
USA	404 476 8810	sales-na@imopc.com	Canada	905 799 9237	sales-na@imopc.com
France	0800 912 712	imo-fr@imopc.com	South Africa	021 551 1787	info@imopc.co.za
Italy	800 930 872	imo-it@imopc.com	Rest Of The World	+44 (0)1707 414 444	imo@imopc.com

SAFETY SYMBOLS / SYMBOLES DE SÉCURITÉ

Warning - Failure to heed the information indicated by this symbol may lead to dangerous conditions, possibly resulting in death or serious bodily injury.

Avertissement - Le non-respect des informations indiquées par ce symbole peut peut entraîner des conditions dangereuses, pouvant entraîner la mort ou des blessures graves.

Caution - Failure to heed this the information indicated by this symbol may lead to dangerous conditions, possibly resulting in minor or light bodily injuries and/or substantial property damage.

Attention - Le non-respect des informations indiquées par ce symbole peut peut entraîner des conditions dangereuses, pouvant entraîner des blessures corporelles mineures ou légères et / ou des dommages matériels importants.

Information - Denotes important information about safety issues.

Information - Indique des informations importantes sur les problèmes de sécurité.

Note - Denotes additional information.

Note - Indique des informations supplémentaires.

SAFETY INSTRUCTIONS / CONSIGNES DE SÉCURITÉ

WARNING - THIS PHOTOVOLTAIC RAPID SHUTDOWN EQUIPMENT (PVRSE) DOES NOT PERFORM ALL OF THE FUNCTIONS OF A COMPLETE PHOTOVOLTAIC RAPID SHUTDOWN SYSTEM (PVRSS). THIS PVRSE MUST BE INSTALLED WITH OTHER EQUIPMENT TO FORM A COMPLETE PVRSS THAT MEETS THE REQUIREMENTS OF NEC (NFPA 70) SECTION 690.12 FOR CONTROLLED CONDUCTORS OUTSIDE THE ARRAY. OTHER EQUIPMENT INSTALLED IN OR ON THIS PV SYSTEM MAY ADVERSLY AFFECT THE OPERATION OF THE PVRSS. IT IS THE RESPONSIBILITY OF THE INSTALLER TO ENSURE THAT THE COMPLETED PV SYSTEM MEETS THE RAPID SHUT DOWN FUNCTIONAL REQUIREMENTS. THIS EQUIPMENT MUST BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

AVERTISSEMENT - CET ÉQUIPEMENT DE COUPURE RAPIDE PHOTOVOLTAÏQUE (PVRSE) NE CONTIENT PAS TOUTES LES FONCTIONS D'UN SYSTÈME D'ARRÊT RAPIDE PHOTOVOLTAÏQUE COMPLET (PVRSS). CE PVRSE DOIT ÊTRE INSTALLÉ AVEC D'AUTRES ÉQUIPEMENTS POUR FORMER UN PVRSS COMPLET QUI RÉPOND AUX EXIGENCES DE LA SECTION 690.12 DU NEC (NFPA 70) POUR LES CONDUCTEURS CONTRÔLÉS À L'EXTÉRIEUR DU RÉSEAU. D'AUTRES ÉQUIPEMENTS INSTALLÉS DANS OU SUR CE SYSTÈME PV PEUVENT AFFECTER LE FONCTIONNEMENT DU PVRSS. IL EST DE LA RESPONSABILITÉ DE L'INSTALLATEUR DE S'ASSURER QUE LE SYSTÈME PV COMPLET RÉPOND AUX EXIGENCES FONCTIONNELLES DE COUPURE RAPIDE. CET ÉQUIPEMENT DOIT ÊTRE INSTALLÉ SELON LES INSTRUCTIONS D'INSTALLATION DU FABRICANT.

The FireRaptor is an electrical product and should only be installed by a suitably qualified person, in accordance with local regulations such as BS7671 (UK) and ANSI/NFPA70 (USA).

Le FireRaptor est un produit électrique et ne doit être installé que par une personne qualifiée, conformément aux réglementations locales telles que BS7671 (UK) et ANSI / NFPA70 (USA).

PV Voltages up to 1000VDC can be present within these products and as such the installer must ensure adequate isolation is present so the field wiring of the 24VDC (LV) control cables are prevented from contacting this high voltage; this can be, but not limited to, usage for 1000VDC UL approved wiring for the control cables or some UL approved tubing with sufficient isolation being added on the wire inside the FRS-CBLD e.g. shrinking tube or isolation tube.

Des tensions PV jusqu'à 1000VDC peuvent être présentes dans ces produits et en tant que tel, l'installateur doit garantir une isolation adéquate afin que le câblage sur site des câbles de commande 24VDC (BT) ne puisse pas entrer en contact avec cette haute tension; cela peut être, mais sans s'y limiter, une utilisation pour un câblage approuvé UL 1000VDC pour les câbles de contrôle ou certains tubes approuvés UL avec une isolation suffisante ajoutée sur le fil à l'intérieur du FRS-CBLD, par ex. tube rétractable ou tube d'isolation.

When modifying an existing installation, isolate the inverter from the PV array by turning OFF the DC isolator / switch disconnect or turn OFF the inverter and the AC switch.

Lors de la modification d'une installation existante, isolez l'onduleur des panneaux photovoltaïque en coupant le sectionneur / interrupteur DC ou en coupant l'onduleur et l'interrupteur AC.

PV input and output connectors are not environmentally sealed until they are mated. Disconnected connectors should be plugged into an appropriate mating part or used with suitable watertight caps.

Les connecteurs d'entrée et de sortie PV ne sont pas scellés à l'environnement tant qu'ils ne sont pas accouplés. Les connecteurs déconnectés doivent être branchés dans une pièce d'accouplement appropriée ou utilisés avec des capuchons étanches appropriés.

The IMO FireRaptor is fitted with Multi Contact MC4 (KBT4/KST4) connectons and to maintain UL connector approval listings these should only be mated with their counterpart connector. PV connectors should not be connected or disconnected under load.

Le FireRaptor IMO est équipé de connecteurs Multi Contact MC4 (KBT4 / KST4) et pour maintenir les listes d'homologation des connecteurs UL, ceux-ci doivent uniquement être couplés avec leur connecteur homologue. Les connecteurs PV ne doivent pas être connectés ou déconnectés sous charge.

Incorrect connections to the FireRaptor may cause failure.

Des connexions incorrectes au FireRaptor peuvent entraîner une panne.

CAUTIONS / ATTENTION

Installation of the IMO FireRaptor without ensuring compatibility of the module\inverter connectors with the FireRaptor connectors may be unsafe and cause operational problems. For mechanical compatibility of the modules\inverter and the FireRaptor, use identical connectors from the same manufacturer on both the FireRaptor and modules, or obtain verification that the connectors to be used are compatible.

L'installation du FireRaptor IMO sans garantir la compatibilité des connecteurs module \ onduleur avec les connecteurs FireRaptor peut être dangereuse et entraîner des problèmes de fonctionnement. Pour la compatibilité mécanique des modules \ onduleur et du FireRaptor, utilisez des connecteurs identiques du même fabricant sur le FireRaptor et les modules, ou vérifiez que les connecteurs à utiliser sont compatibles.

INTRODUCTION

The IMO Precision Controls FireRaptor FRS-CBLD product is piece of Rapid Shut Down Equipment (PVRSE) suitable for connection between IMO's FRS-01 and FRS-02 (RSDU) and PV inverters in order to achieve compliance to 2017 NEC 690.12 and 2020 NEC 690.12.

The IMO FireRaptor RSDUs automatically shut down the PV array output to the PV inverter when it detects a temperature in excess to 85°C (FRS-01) and 92°C (FRS-02) {this function was not evaluated by UL}, or through user intervention.

When the RSS operation occurs in a PV installation using IMO RSDUs then the DC supply from the PV modules is isolated however, in some instances PV inverters have input capacitors which can hold a voltage greater than the 30V, and for longer than the 30s, which does not meet the requirements of NEC 2017/2020 and therefore it is necessary to implement a system that will reduce this voltage to a compliant level and IMO FRS-CBLD performs such an operation.

The use of an IMO FRS-CBLD unit has to be assessed based upon the PV inverter to which it is to be connected. Once the correct model (see below for variants) required for implementation of the system has been ascertained, the FRS-CBLD unit can be installed without any set-up. "Plug & Play" style installation using industry standard connectors makes the IMO FRS-CBLD suitable for new installations as well as retro-fit; and its mains powered independent DC power supply and emergency switch unit allows flexibility for positioning for user convenience giving Manual Emergency Shutdown, as well as responding to local or area grid shutdown.

PARTS

FRS-CBLD	FireRaptor Capacitor Discharge Unit
FRS-CBLD1	FireRaptor Capacitor Discharge Unit with Ground
FRS-CBLD2*	FireRaptor Capacitor Discharge Unit with DC- to Ground Discharge
FRS-CBLDx-y	FireRaptor Capacitor Discharge (type -x) for Multi MPPTs (-y)

* Fronius inverters tested and approved for use with FRS-CBLD2:

PRIMO 3.8 -1 208-240	PRIMO 10.0 -1 208-240
PRIMO 5.0 -1 208-240	PRIMO 11.4 -1 208-240
PRIMO 6.0 -1 208-240	PRIMO 12.5 -1 208-240
PRIMO 7.6 -1 208-240	PRIMO 15.0 -1 208-240
PRIMO 8.2 -1 208-240	

FRS-CBLD FireRaptor Capacitor Discharge Unit

This is the base unit which uses a specially designed contactor to electromechanically place a resistor between DC+ and DC-. The resistance chosen allows a 1000V 320uF PV inverter input capacitance system to discharge in under 30s, to a voltage less than 30V. If the voltage is less, or capacitance is less, then of course the discharge time will be shorter; however, alternative resistors could be chosen to ensure <30s/30V is achieved (refer to IMO for more details).

This unit can be implemented where there is just a requirement to discharge DC+ to DC- but also in systems where the PV inverter is grounded (i.e. DC- connected to GND within the inverter).

On manual instigation of RSS (operation of the IMO FRS-ESW unit) the of loss of the power operates the contactor connecting DC+ to DC- through the discharge resistor thereby decaying the PV input capacitance. See overleaf for FRS-CBLD schematics.

FRS-CBLD1 FireRaptor Capacitor Discharge Unit with Ground

This model is identical to the FRS-CBLD unit except it includes a GND terminal (M4 nut and bolt system) which is connected within FRS-CBLD1 to DC- therefore giving the option to GND a PV system within the IMO unit.

On manual instigation of RSS (operation of the IMO FRS-ESW unit) the of loss of the power operates the contactor connecting DC+ to DC- (connected to GND via terminal) through the discharge resistor thereby decaying the PV input capacitance. See overleaf for FRS-CBLD1 schematics.

FRS-CBLD2 FireRaptor Capacitor Discharge Unit with DC- to Ground Discharge

(For use with FRONIUS PRIMO 3.8 -1 208-240, PRIMO 5.0 -1 208-240, PRIMO 6.0 -1 208-240, PRIMO 7.6 -1 208-240, PRIMO 8.2 -1 208-240, PRIMO 10.0 -1 208-240, PRIMO 11.4 -1 208-240, PRIMO 12.5 -1 208-240 & PRIMO 15.0 -1 208-240)

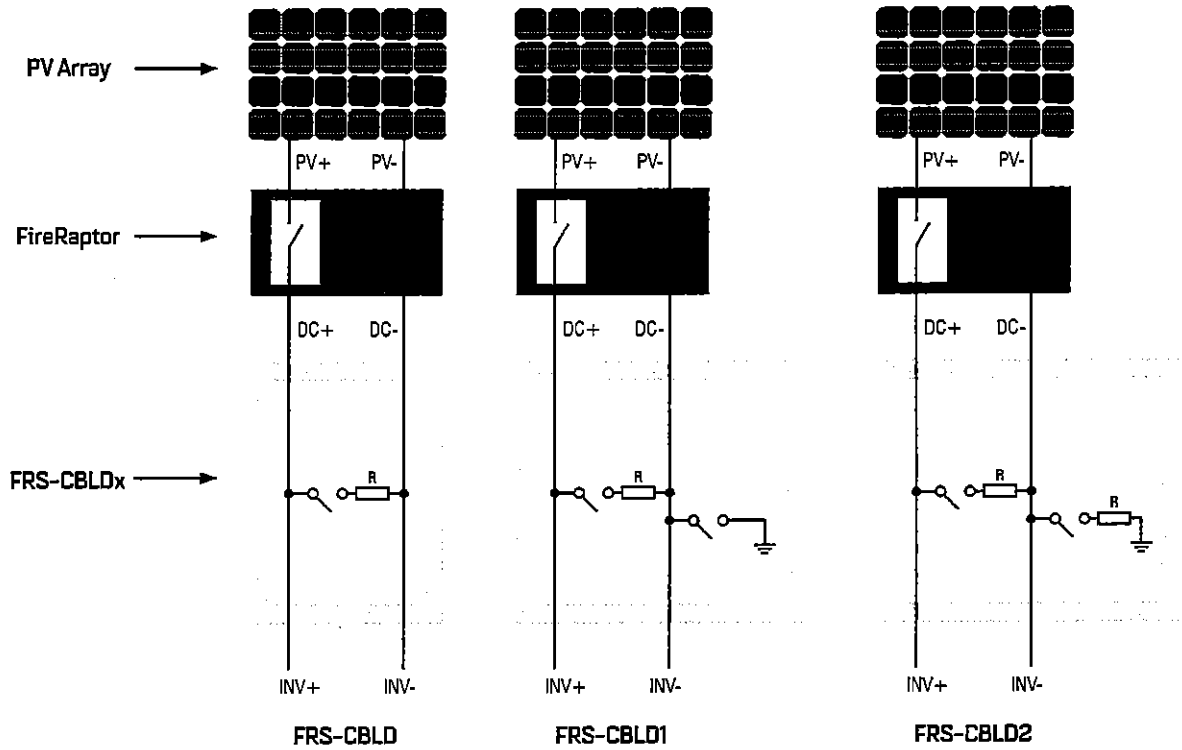
This is the same as the FRS-CBLD1 unit but it includes a secondary discharge circuit to allow for PV inverters that have capacitance on both DC+ and DC- to ground.

On manual instigation of RSS (operation of the IMO FRS-ESW unit) the of loss of the power operates an auxiliary circuit that discharges DC- by connecting it to GND through a resistor thereby decaying this capacitance; then very shortly after this the main contactor connects DC+ to DC- through the main discharge circuit, thereby decaying the PV input capacitance. See below for FRS-CBLD2 schematics.

Multi-MPPT Inverters

FRS-CBLD units are offered as a singular MPPT device however the design is scalable to allow for multiple MPPT (please refer to IMO for more details).

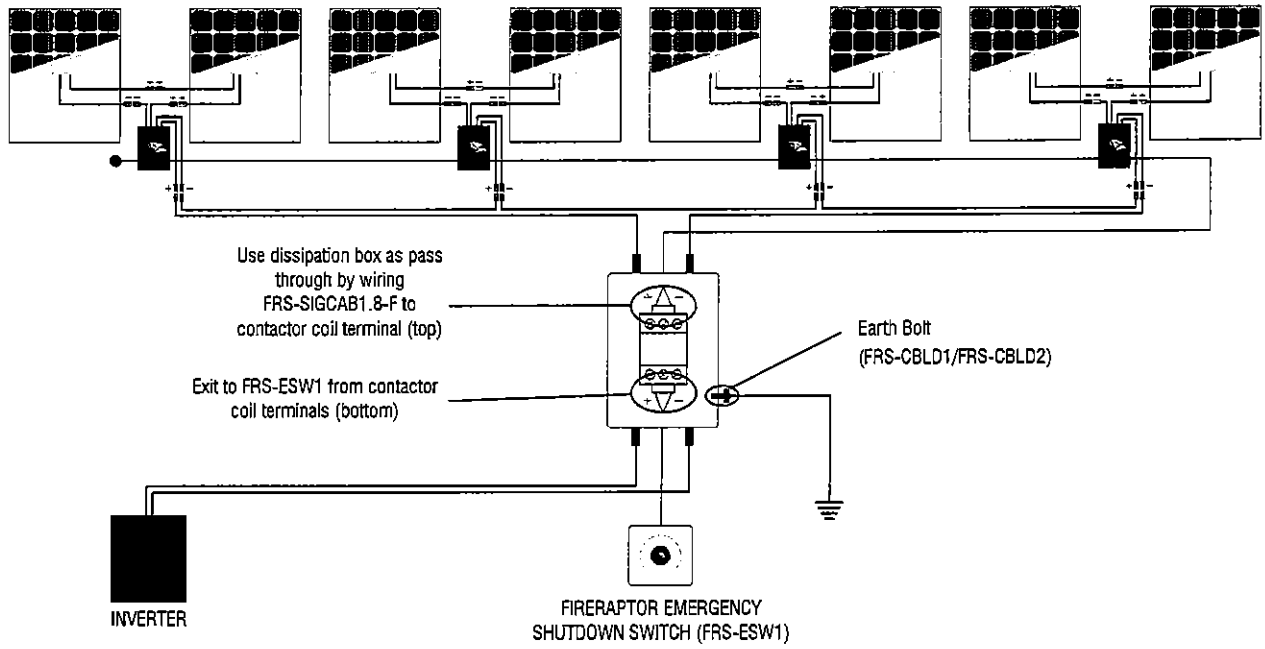
IMO FRS-CBLD Schematics



As described above, operation of the IMO FRS-CBLD units requires the removal of supply to the RSS system which for all IMO RSDUs can achieved by operation of the push button switch in the IMO FRS-ESW units. Supply removal can also be achieved as part of the operation of IMO FireRaptor FRS-02 units (refer to FireRaptor FRS-01_02 Installation Guide).

INSTALLATION & CONNECTION

In normal configuration, one FRS-CBLD is required for each string (MPPT), although consideration must be given to the inverter input capacitance in conjunction with the FRS-CBLD specification to ensure adherance to rapid shutdown regulations. If the inverter being used utilizes multi-MPPT then refer to IMO for more details about the FRS-CBLDx-y.



Refer to the Technical Specification section to ensure compliance with the product's ratings

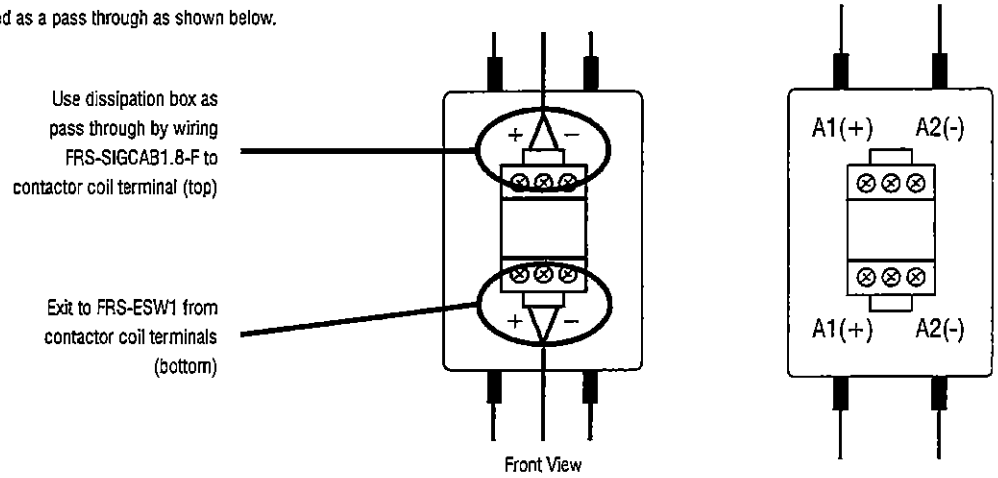
Se référer à la section Spécifications Techniques pour garantir la conformité.

The FRS-CBLD is housed in a plastic enclosure therefore grounding of the product is unnecessary except where specified for correct unit operation.

Where the combined rating of two panels exceeds the rating of the FRS-01/FRS-02 in a 2-to-1 configuration (as shown in the diagram above) the FRS-01/FRS-02 should be utilized in a 1-to-1 configuration of one FireRaptor per PV module.

Lorsque la puissance combinée de deux panneaux dépasse la capacité du FRS-01 / FRS-02 dans une configuration 2 pour 1 (comme indiqué dans le diagramme ci-dessus), le FRS-01 / FRS-02 doit être utilisé dans une configuration 1 pour 1 avec un FireRaptor par module PV.

The IMO FRS-CBLD units are supplied with pre-wired input and output MC4 PV connectors only. The installer must ascertain suitable positions for the DC supply to enter and exit the enclosure however IMOs' recommendation is that the DC Supply enters the unit at the bottom and exits to from the top to supply the IMO RSDUs and that the FRS-CBLD unit is used as a pass through as shown below.



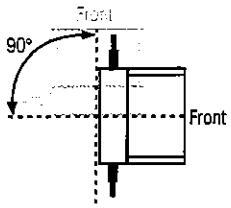
Once cable entry and exit positions are decided affix appropriately sized cable glands which have a suitable environmental rating (IP65/NEMA 3/raintight) to maintain the sealing level of the unit. (Refer to Technical Specifications for details).

Locate a convenient position for mounting the FRS-CBLD unit and using appropriate hardware attach the FRS-CBLD using the enclosure's two external mounting points to ensure environmental sealing levels are maintained.

The FRS-CBLD enclosure can be mounted using rear fixings however special attention should be paid to attaining an appropriate sealing level as incorrect sealing could lead to material ingress and compromising of the unit's functionality.

Connect the 2-core cable (refer Technical Specifications section for electrical details) from the IMO FRS-ESW unit to the FRS-CBLD unit ensuring correct polarity of connections; A1 - +24VDC, A2 – 0V. Verify secureness of cables. Connect the 2-core cable (refer Technical Specifications section for electrical details) from the IMO FRS-CBLD unit to the FRS RSDU units ensuring correct polarity of connections; A1 - +24VDC, A2 – 0V. Verify secureness of cables.

The FRS-CBLD must be mounted either vertically or horizontally (flat, such that the front face of the unit is uppermost). If mounted in any other way the warranty will be invalidated.



Strip 24VDC wire length 10-11mm. Contactor tightening torque 1.2Nm (11lb-in).

If FRS-CBLD1 or FRS-CBLD2 are being used then ensure that a ground (GND) cable is put in place and is connected to the M4 bolt on the right-hand side of the enclosure using a suitable fixing.

Blue Crimp M4 Ring 1.5-2.5mm2 (UL certified under ZMVV/ZMVV7)

TECHNICAL SPECIFICATION

Emergency Shutdown Cable (FRS-ESW to FRS-CBLD)	2x1mm² cable (AWG 14-17)
Emergency Shutdown Cable (FRS-CBLD to FRS RSS units)	2x1mm² cable + Tyco SuperSeal 2-pole female plug or IMO FRS-SIGCAB1.8-F (linking cable typically 2x1mm² / AWG 14-17)
Tightening Torque for Field Wiring Connections	0.8-1.4Nm (recommended 1.2Nm)
DC Supply	24VDC
DC Supply Power	3W (inrush 3W)
Maximum DC+ to DC- Voltage	1000V
Maximum DC- to GND Voltage	600V (refer to IMO for more details)
Maximum PV Inverter Input DC+ to DC- Capacitance	320uF
Maximum PV Inverter Input DC- to GND Capacitance	110nF (refer to IMO for more details)
Maximum Through Voltage	1000V
Maximum Through Current	12A
Maximum Shutdown Time	<30s for specified voltage/capacitance
Ambient Operating Temperature	-30°C to +55°C
IP Rating	IP65 / NEMA Type 3
PV Casing	Flame retardant Polycarbonate - UL94V-2/5VA
PV Connectors	Multi contact MC4 (KBT4/KST4)

IMO Precision Controls Ltd
The Interchange, Frobisher Way, Hatfield, Herts. AL10 5TG
Tel: +44 (0)1707 414 444 **Fax:** +44 (0)1707 414 445
Email: sales@imopc.com **Web:** www.imopc.com

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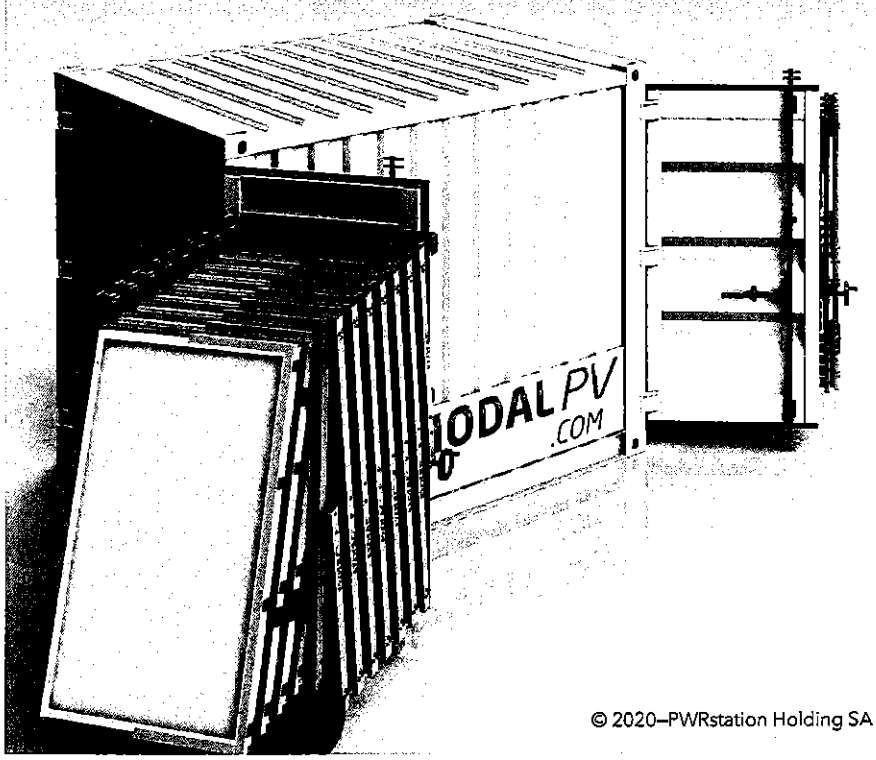

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Trujillo Alto, PR 00976-6077
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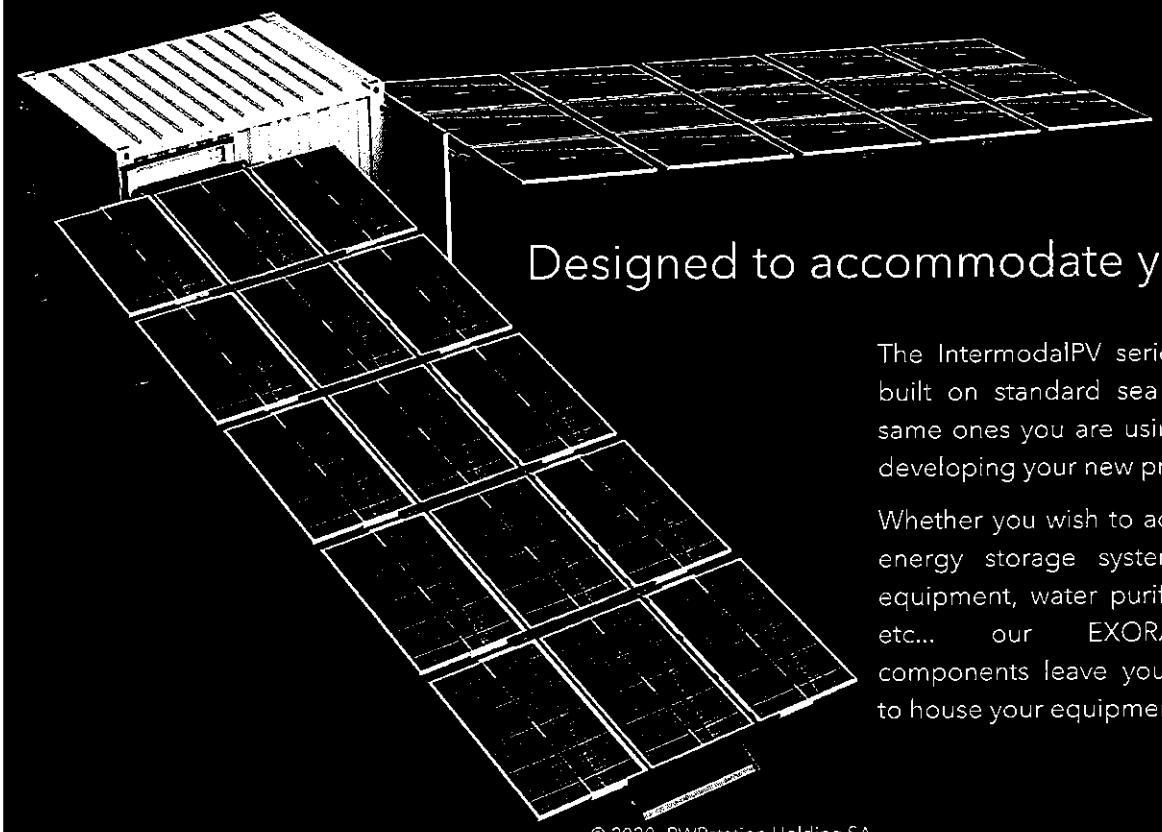

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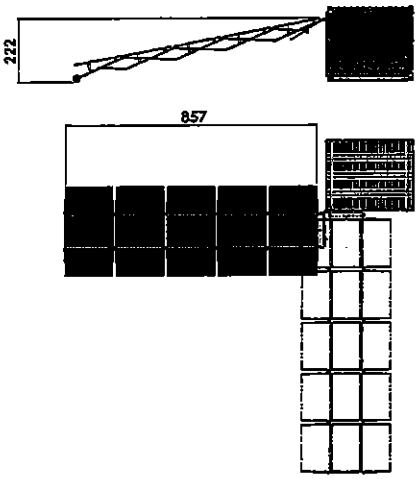

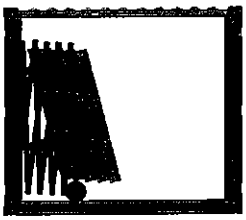

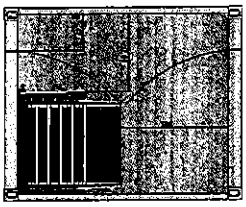

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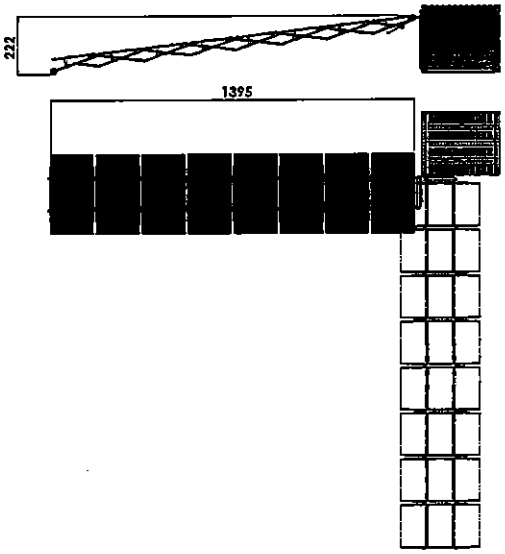
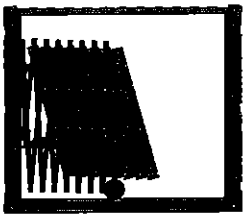
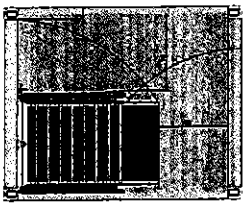
8 kWp







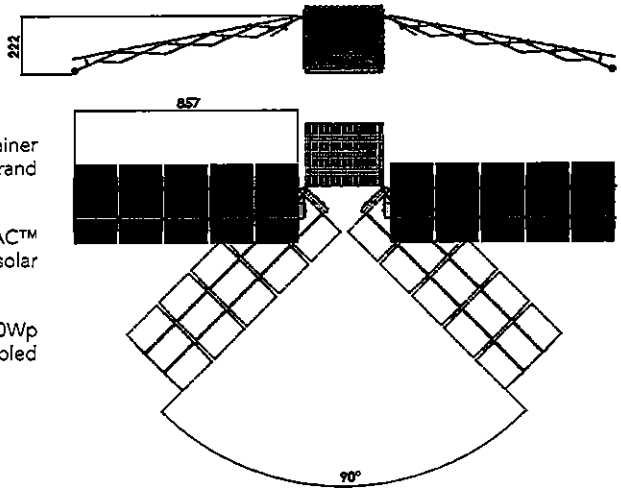
White color 10 foot standard sea container including "Exorac Inside" and your brand stickers.

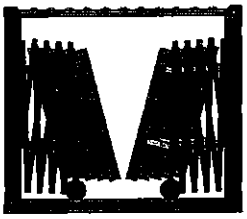
One retractable racking system EXORAC™ TRYPTIC, with a capacity of 24 solar panels.

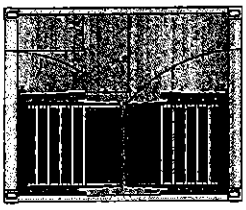
24 world-class branded (Tier-1) 350Wp mono-crystalline solar panels, assembled and fixed (not wired).

IntermodalPV 1030

10 kWp







White color 10 foot standard sea container including "Exorac Inside" and your brand stickers.

Two retractable racking systems EXORAC™ TRYPTIC, with total capacity of 30 solar panels.

30 world-class branded (Tier-1) 350Wp mono-crystalline solar panels, assembled and fixed (not wired).

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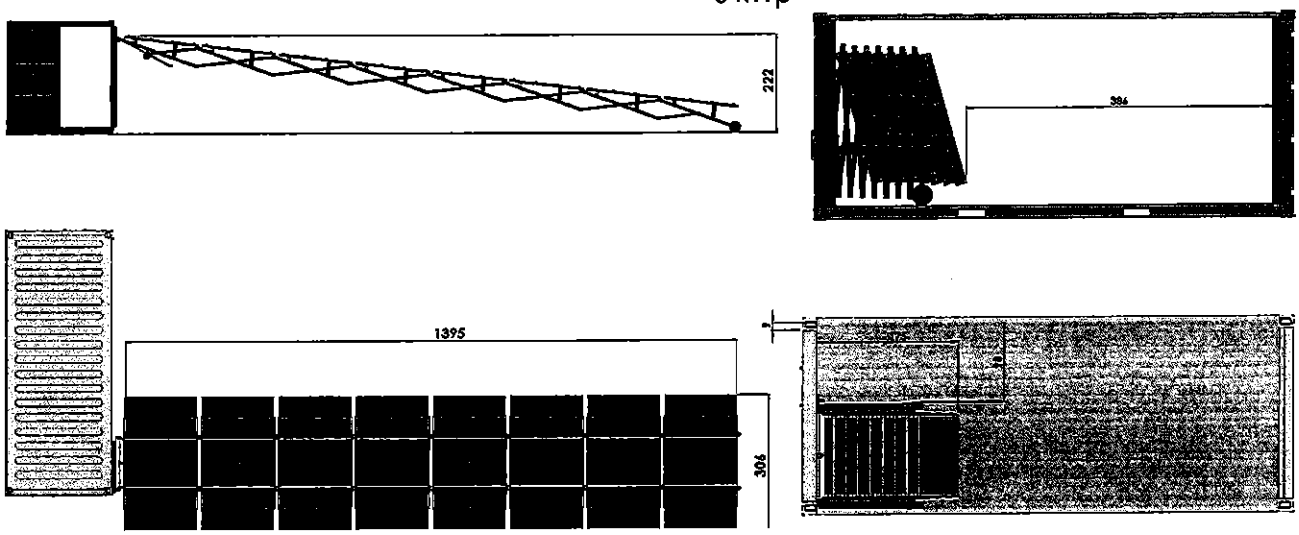
INTERMODAL *PV*
Series

www.intermodal*PV*.com

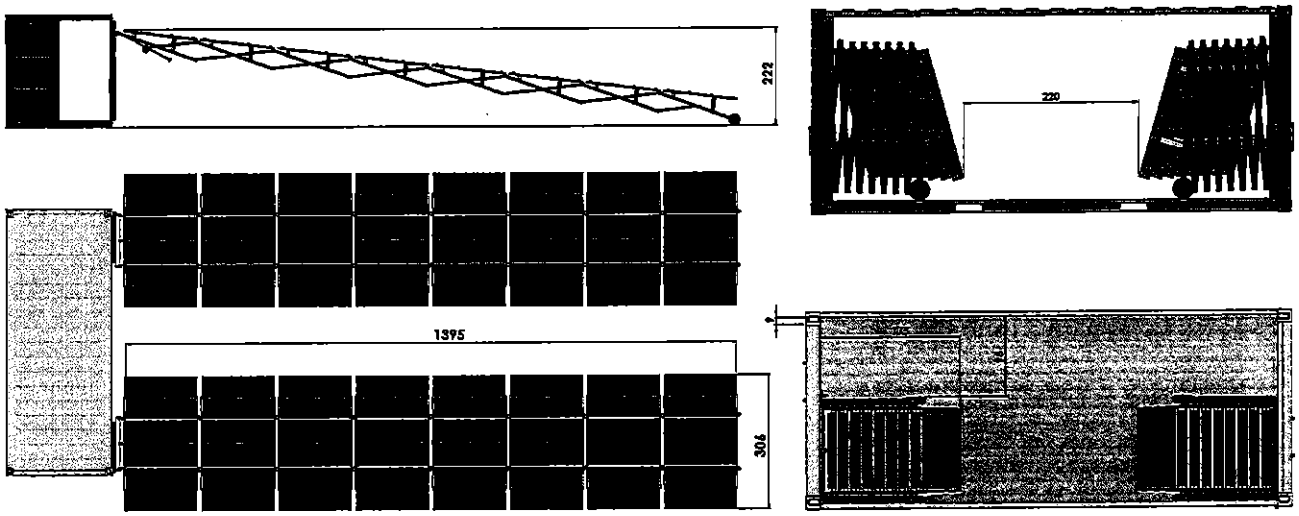
IntermodalPV 2024

8 kWp



IntermodalPV 2048

16 kWp



SPECIFICATIONS & FEATURES

White color 20 foot standard-size sea container with one or two doors, including "Exorac Inside" and your brand stickers.

One or two retractable racking system(s) EXORAC™ TRYPTIC, with a capacity of 15 or 24 solar panels.

15 or 24 world-class branded (Tier-1) 350Wp mono-crystalline solar panels, assembled and fixed (not wired).

Steam & Combustion Technology, Inc.
O: 407-446-1015 | M: 407-304-6346, 787-529-2484
jorge.gonzalez@steamcombustion.com

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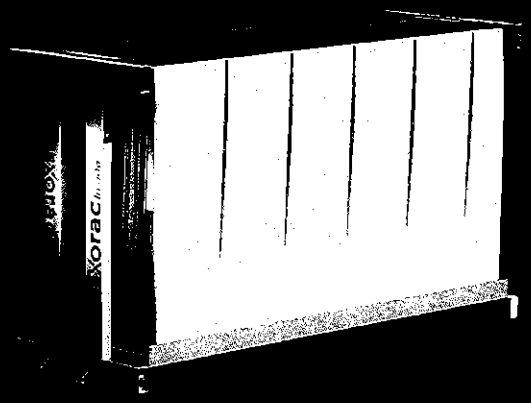
SOLEOPTER



Versatile, Instant Power for Everyday or Emergency use and ...cheaper than Diesel

- Any solar professional can turn our SOLEOPTER Solar array into a Solar generator by adding batteries and inverter
- SOLEOPTER Solar Generators are comparable to portable diesel generators but without the noise, gas, or fumes
- SOLEOPTER Solar generators works right out of the box and turns on with the push of a button, not the pull of a cord, so it's easy for everyone to use

Get rid of the Grid

Moving towards Energy Freedom protects populations from rising gas and electricity prices and puts the power back in their hands

Solar Power for short / long term

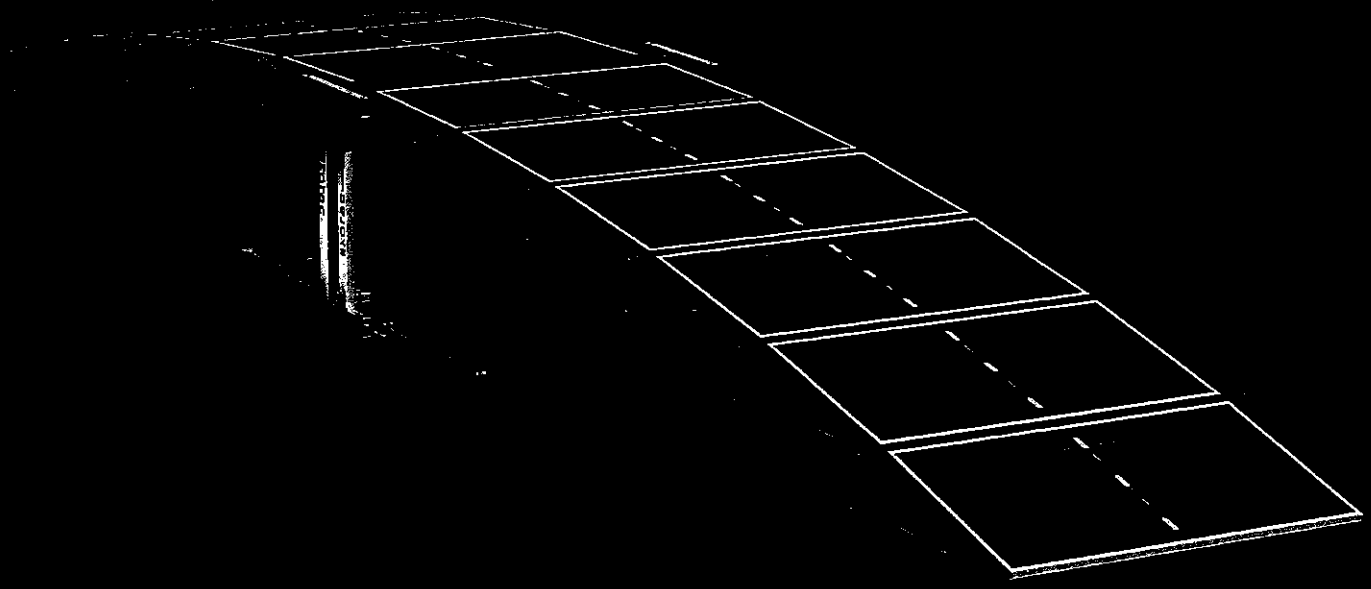
The SOLEOPTER Solar Generator is the perfect source of clean renewable power for short to long term power requirements, such as at events , construction projects and mining / oil / gas exploration projects

Cheap clean energy

On the basis of LCOE (Levelized cost of energy) renewables are already the lowest-cost source of new power generation in many parts of the world today

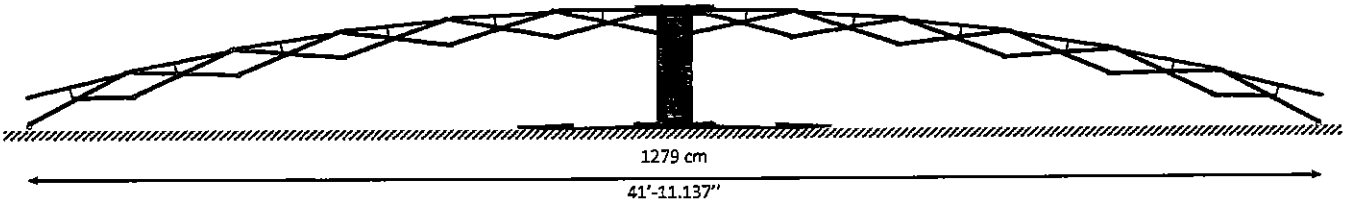
Hurricane-proof design

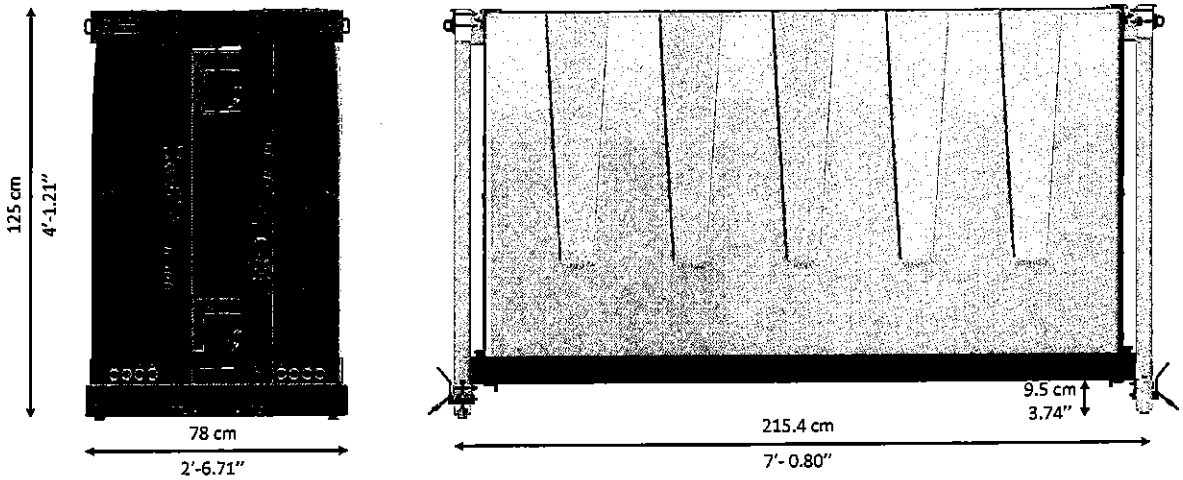
SOLEOPTER Solar Generators include two metal shields that fully enclose the solar panels in case of storm or strong winds and protect owner's assets



Exorac™ inside

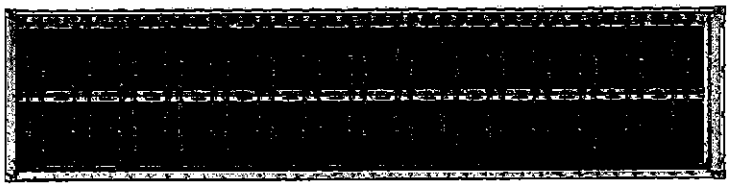
SOLEOPTER™





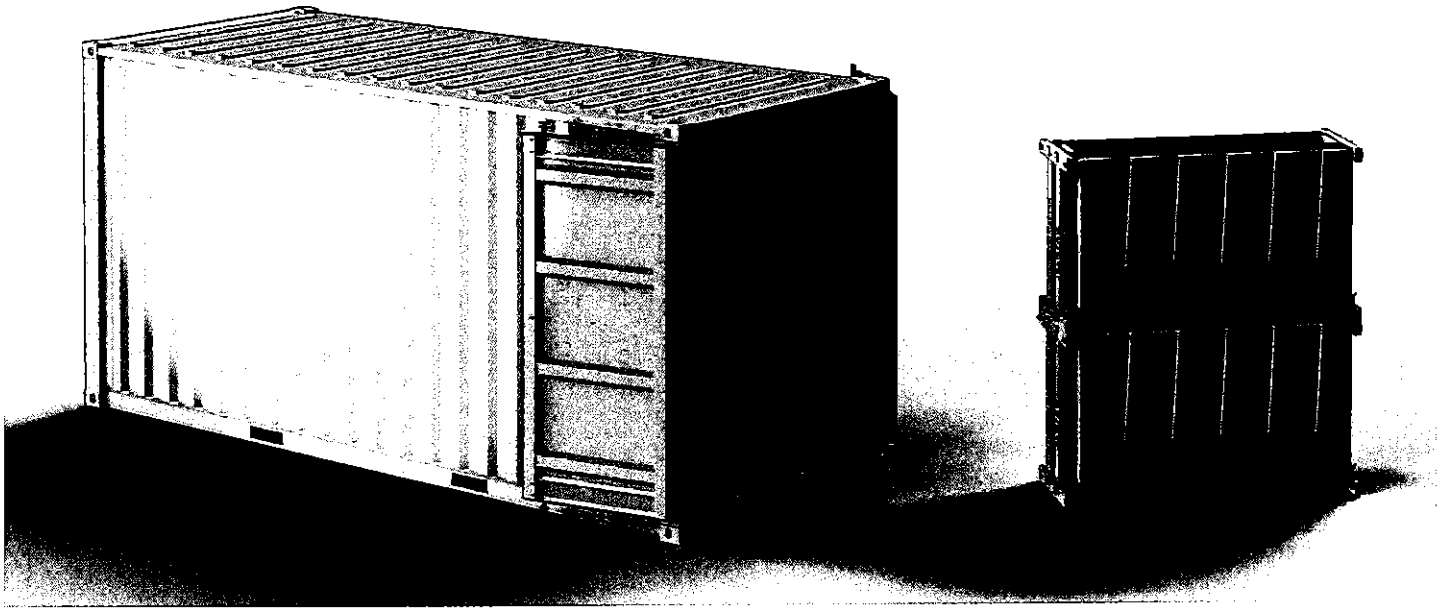
Designed for intermodal transportation

This product range has been designed to allow maximum mobility, from handling by forklift to storage or transportation by container.



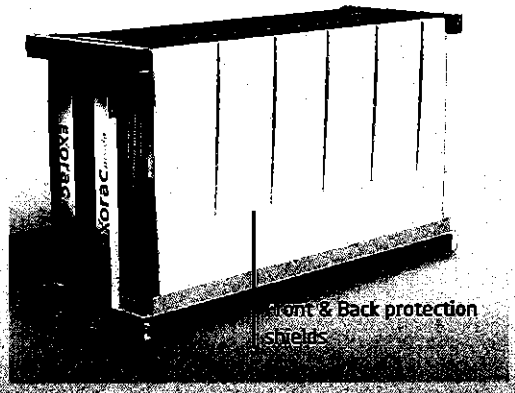
High Cube container
20' = 2x 7 unit layer, for a total output power of **57 kWp**
40' = 2x 15 unit layer, for a total output power of **122.4 kWp**

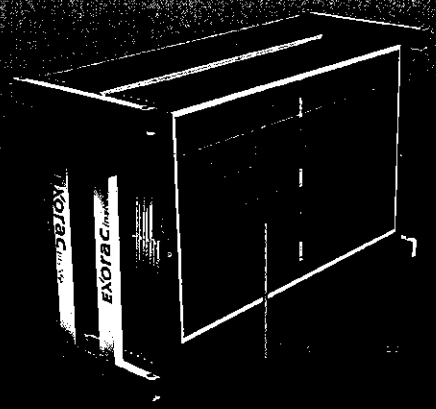
Standard container
20' = 1x 7 unit layer, for a total output power of **28.5**
40' = 1x 15 unit layer, for a total output power of **61.2 kWp**

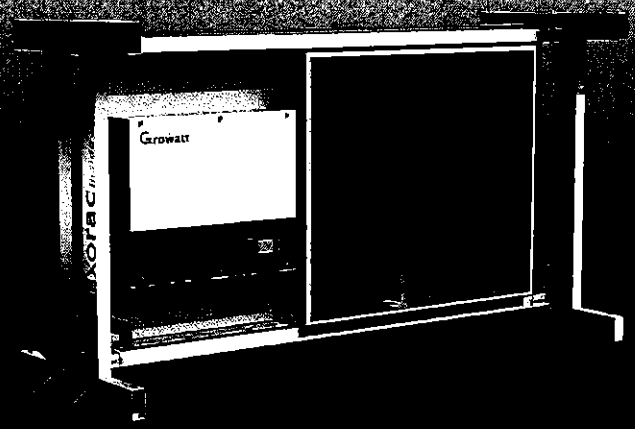


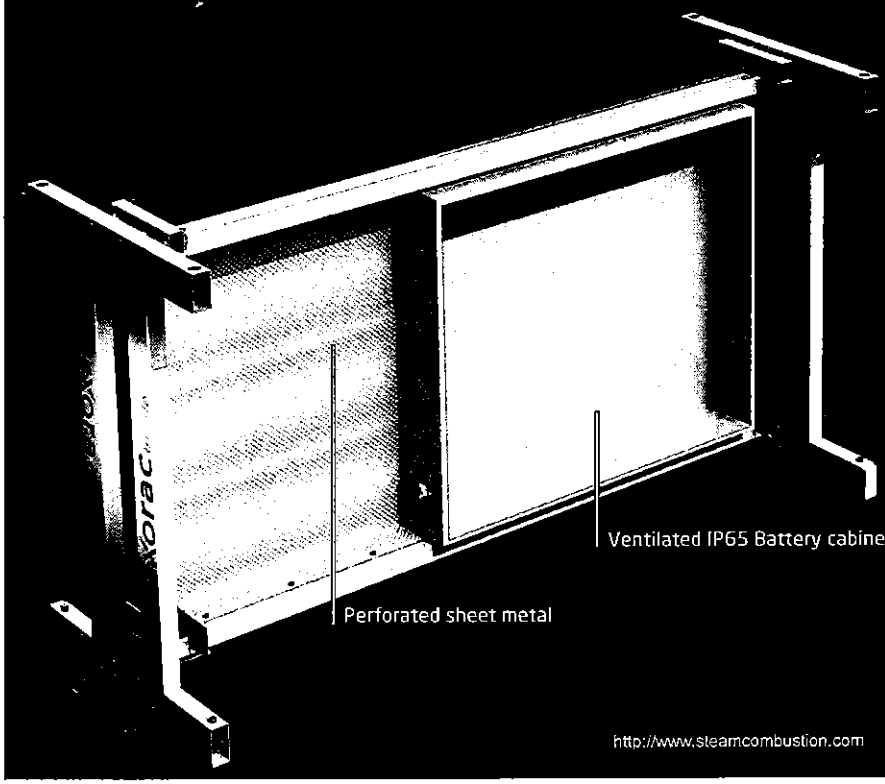
SOLE OPTER™

GENERAL SPECIFICATIONS	
Product/shipping weight	475 kg (1,047.2 lb.)
Product dimensions (H x W x D)	125 cm x 215.4 cm x 78 cm (4'-1.21'' x 6'-9.10'' x 2'-6.71'')
Ground-fixing system	Ballasted, attached, or hybrid
Base Materials	Main structure: Steel, powder-coating finishing
Tilt angle of Solar panels	7° (Average)
Racking technology	EXOrac™ V4 asymmetric pantograph
Solar panels	2 x 6 Solar panel arrays
Max. size of panels (H x W x D)	100.4cm x 170cm x 3.5cm 39.37'' x 66.93'' x 1.181''
Storage	Battery Cabinet with ventilation system
Shields	Front + Rear
Material	Steel
Product warranty	Five (5) Years









PWRstation Holding SA

Steam & Combustion Technology, Inc.
54 Paseo de las Orquideas
Urb. Primavera, Encantada Dev.
Trujillo Alto, PR 00976-6077
M (787) 529-2484, (407) 304-6346
O (407) 446-1015

http://www.economizacombustiblepr.com

http://www.steamcombustion.com

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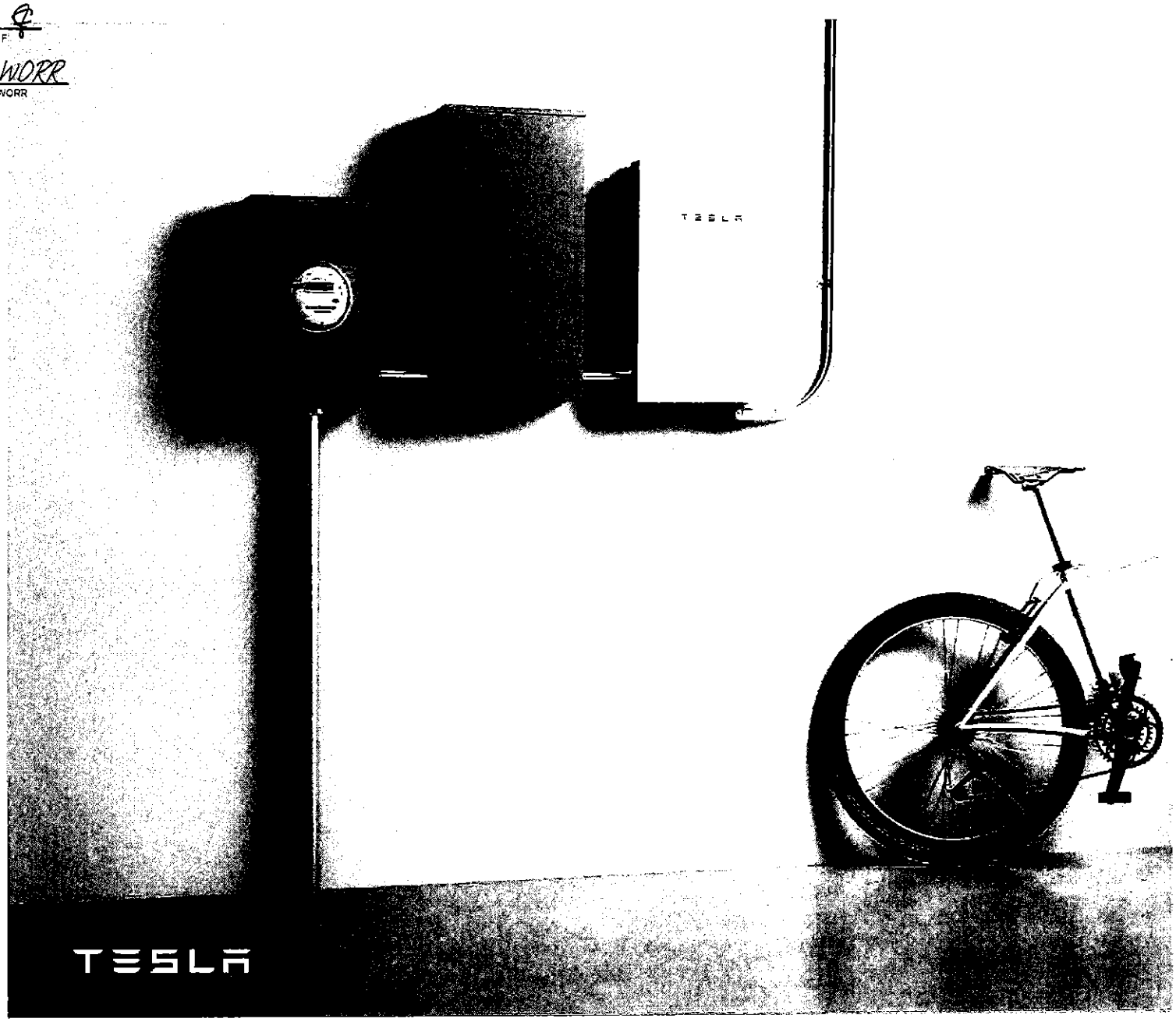

SOLAR INVERTER

3.8 kW | 7.6 kW

Tesla Solar Inverter completes the Tesla home solar system, converting DC power from solar to AC power for home consumption. Tesla's renowned expertise in power electronics has been combined with robust safety features and a simple installation process to produce an outstanding solar inverter that is compatible with both Solar Roof and traditional solar panels. Once installed, homeowners use the Tesla mobile app to manage their solar system and monitor energy consumption, resulting in a truly unique ecosystem experience.

KEY FEATURES

- Built on Powerwall 2 technology for exceptional efficiency and reliability
- Wi-Fi, Ethernet, and cellular connectivity with easy over-the-air updates
- Designed to integrate with Tesla Powerwall and Tesla App
- 3.8 kW and 7.6 kW models available

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SOLAR INVERTER

Tesla Solar Inverter provides DC to AC conversion and integrates with the Tesla ecosystem, including Solar Panels, Solar Roof, Powerwall, and vehicle charging, to provide a seamless sustainable energy experience.

KEY FEATURES

- Integrated rapid shutdown, arc fault, and ground fault protection
- No neutral wire simplifies installation
- 2x the standard number of MPPTs for high production on complex roofs

ELECTRICAL SPECIFICATIONS

MODEL NUMBER	1534000-xx-y	1538000-xx-y
OUTPUT (AC)	[illegible]	[illegible]
Nominal Power	3,800 W	7,600 W
Maximum Apparent Power	3,328 VA at 208 V 3,840 VA at 240 V	6,656 VA at 208 V 7,680 VA at 240 V
Maximum Continuous Current	16 A	32 A
Breaker (Overcurrent Protection)	20 A	40 A
Nominal Power Factor	1 - 0.9 (leading / lagging)	
THD (at Nominal Power)	<5%	
INPUT (DC)		
MPPT	2	4
Input Connectors per MPPT	1-2	1-2-1-2
Maximum Input Voltage	600 VDC	
DC Input Voltage Range	60 - 550 VDC	
DC MPPT Voltage Range[1]	60 - 480 VDC	
Maximum Current per MPPT (I_{mp})	11 A	
Maximum Short Circuit Current per MPPT (I_{sc})	15 A	

PERFORMANCE SPECIFICATIONS

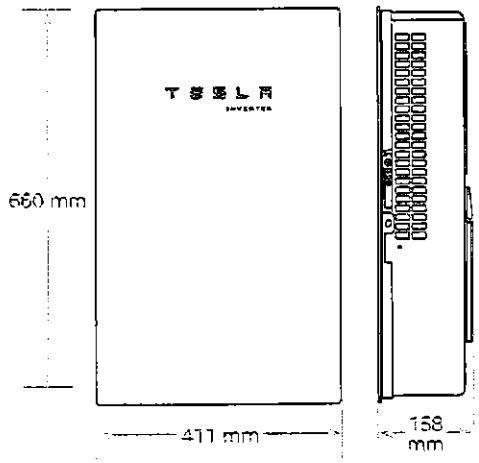
Peak Efficiency[2]	97.5%	98.0%
CEC Efficiency[2]	97.5%	
Allowable DC/AC Ratio	1.4	
Customer Interface	Tesla Mobile App	
Internet Connectivity	Wi-Fi (2.4 GHz, 802.11 b/g/n), Ethernet, Cellular (LTE/4G)[3]	
AC Remote Metering Support	Wi-Fi (2.4 GHz, 802.11 b/g/n), RS-485	
Protections	Integrated arc fault circuit interruoter (AFCI), Rapid Shutdown	
Supported Grid Types	60 Hz, 240 V Split Phase 60 Hz, 208 V Wye	
Required Number of Tesla Solar Shutdown Devices per Solar Module	See *Solar Shutdown Device Requirements per Module* on page 3	
Warranty	12.5 years	

[1] Maximum current.
[2] Expected efficiency pending final CEC listing.
[3] Cellular connectivity subject to network operator service coverage and signal strength.

MECHANICAL SPECIFICATIONS

Dimensions	660 mm x 411 mm x 158 mm (26 in x 16 in x 6 in)
Weight	52 lb[4]
Mounting options	Wall mount (bracket)

[4] Door and bracket can be removed for a mounting weight of 37 lb.



ENVIRONMENTAL SPECIFICATIONS

Operating Temperature[5]	-30°C to 45°C (-22°F to 113°F)
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	-30°C to 70°C (-22°F to 158°F)
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Rating	Type 3R
Ingress Rating	IP55 (Wiring compartment)
Pollution Rating	PD3 for power electronics and terminal wiring compartment, PD3 for all other components
Operating Noise @ 1 m	< 40 dB(A) nominal, < 50 dB(A) maximum

[5] For the 7.6 kW Solar Inverter, performance may be de-rated to 6.2 kW at 240 V or 5.37 kW at 208 V when operating at temperatures greater than 45°C.

COMPLIANCE INFORMATION

Grid Certifications	UL 1741, UL 1741 SA, IEEE 1547, IEEE 1547.1
Safety Certifications	UL 1699B, UL 1741, UL 1998 (US)
Emissions	EN 61000-6-3 (Residential), FCC 47CFR15.109 (a)

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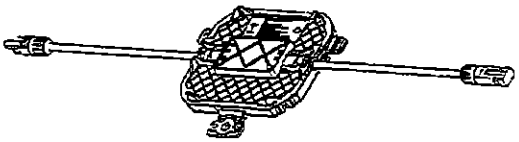
SOLAR SHUTDOWN DEVICE

The Tesla Solar Shutdown Device is part of the PV system rapid shutdown (RSD) function in accordance with Article 690 of the applicable NEC. When paired with the Tesla Solar Inverter, solar array shutdown is initiated by any loss of AC power.



ELECTRICAL SPECIFICATIONS

Nominal Input DC Current Rating (I_{MP})	12 A
Maximum Input Short Circuit Current (I_{SC})	15 A
Maximum System Voltage	600 V DC

RSD MODULE PERFORMANCE

Maximum Number of Devices per String	5
Control	Power Line Excitation
Passive State	Normally open
Maximum Power Consumption	7 W
Warranty	25 years

COMPLIANCE INFORMATION

Certifications	UL 1741 PVRSS PVRSA (Photovoltaic Rapid Shutdown Array)

PVRSA

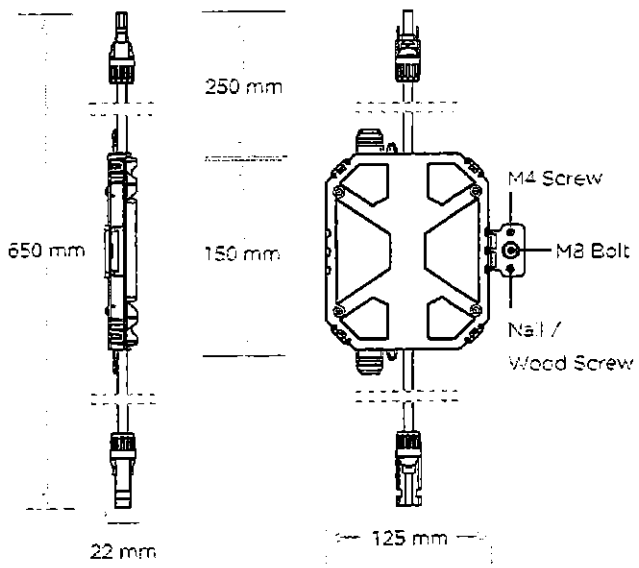
RSD Initiation Method	Loss of AC power
Compatible Equipment	Tesla Solar Inverter

ENVIRONMENTAL SPECIFICATIONS

Ambient Temperature	-40°C to 50°C (-40°F to 122°F)
Storage Temperature	-30°C to 70°C (-22°F to 158°F)
Enclosure Rating	NEMA 4 / IP68

MECHANICAL SPECIFICATIONS

Electrical Connections	MC4 Connector
Housing	Plastic
Dimensions	125 mm x 150 mm x 22 mm (5 in x 6 in x 1 in)
Weight	350 g (0.77 lb)
Mounting Options	ZEP Home Run Clip M4 Screw (#10) M8 Bolt (5/15") Nail / Wood screw



SOLAR SHUTDOWN DEVICE REQUIREMENTS PER MODULE

The following modules have been certified as part of a PV Rapid Shutdown Array (PVRSA) when installed together with the Tesla Solar Inverter and Tesla Solar Shutdown Devices. See the Tesla Solar Inverter Installation Manual for guidance on installing Tesla Solar Inverter and Solar Shutdown Devices with other modules.

Brand	Model	Required Solar Shutdown Devices
Tesla	Solar Roof V3	1 Solar Shutdown Device per 10 modules
Hanwha	Q.PEAK DUO BLK-G5	1 Solar Shutdown Device per 3 modules
Hanwha	Q.PEAK DUO BLK-G6+	1 Solar Shutdown Device per 3 modules

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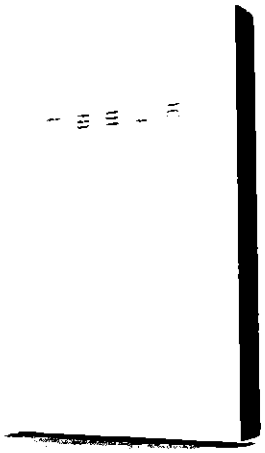
POWERWALL

Tesla Powerwall is a fully-integrated AC battery system for residential or light commercial use. Its rechargeable lithium-ion battery pack provides energy storage for solar self-consumption, time-based control, and backup.

Powerwall's electrical interface provides a simple connection to any home or building. Its revolutionary compact design achieves market-leading energy density and is easy to install, enabling owners to quickly realize the benefits of reliable, clean power.



PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240 V
Feed-In Type	Split Phase
Grid Frequency	60 Hz
Total Energy[1]	14 kWh
Usable Energy[1]	13.5 kWh
Real Power, max continuous	5 kW (charge and discharge)
Real Power, peak (10s, off-grid/backup)	7 kW (charge and discharge)
Apparent Power, max continuous	5.8 kVA (charge and discharge)
Apparent Power, peak (10s, off-grid/backup)	7.2 kVA (charge and discharge)
Maximum Supply Fault Current	10 kA
Maximum Output Fault Current	32 A
Overcurrent Protection Device	30 A
Imbalance for Split-Phase Loads	100%
Power Factor Output Range	+/- 1.0 adjustable
Power Factor Range (full-rated power)	+/- 0.85
Internal Battery DC Voltage	50 V
Round Trip Efficiency[1,2]	90%
Warranty	10 years

[1]Values provided for 25°C (77°F), 3.3 kW charge/discharge power.
[2]AC to battery to AC, at beginning of life.

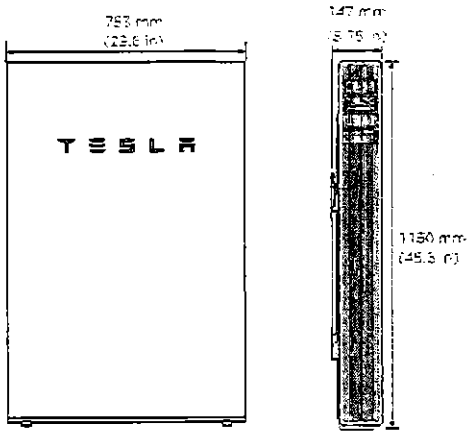
COMPLIANCE INFORMATION

Certifications	UL 1642, UL 1741, UL 1973, UL 9540, IEEE 1547, UN 38.3
Grid Connection	Worldwide Compatibility
Emissions	FCC Part 15 Class B, ICES 003
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (High)

MECHANICAL SPECIFICATIONS

Dimensions[3]	1150 mm x 755 mm x 147 mm (45.3 in x 29.6 in x 5.75 in)
Weight[3]	114 kg (251.3 lbs)
Mounting options	Floor or wall mount

[3]Dimensions and weight differ slightly if manufactured before March 2019. Contact Tesla for additional information.



ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Recommended Temperature	0°C to 30°C (32°F to 86°F)
Operating Humidity (RH)	Up to 100%, condensing
Storage Conditions	-20°C to 30°C (-4°F to 86°F) Up to 95% RH, non-condensing State of Energy (SoE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R
Ingress Rating	IP67 (Battery & Power Electronics) IP56 (Wiring Compartment)
Wet Location Rating	Yes
Noise Level @ 1m	< 40 dBA at 30°C (86°F)

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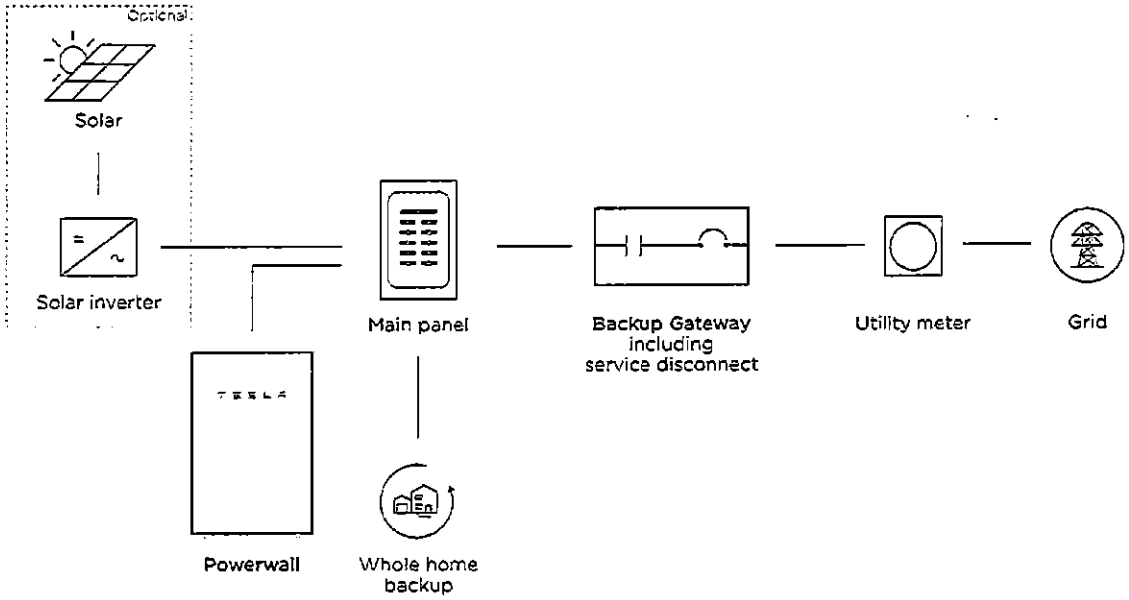
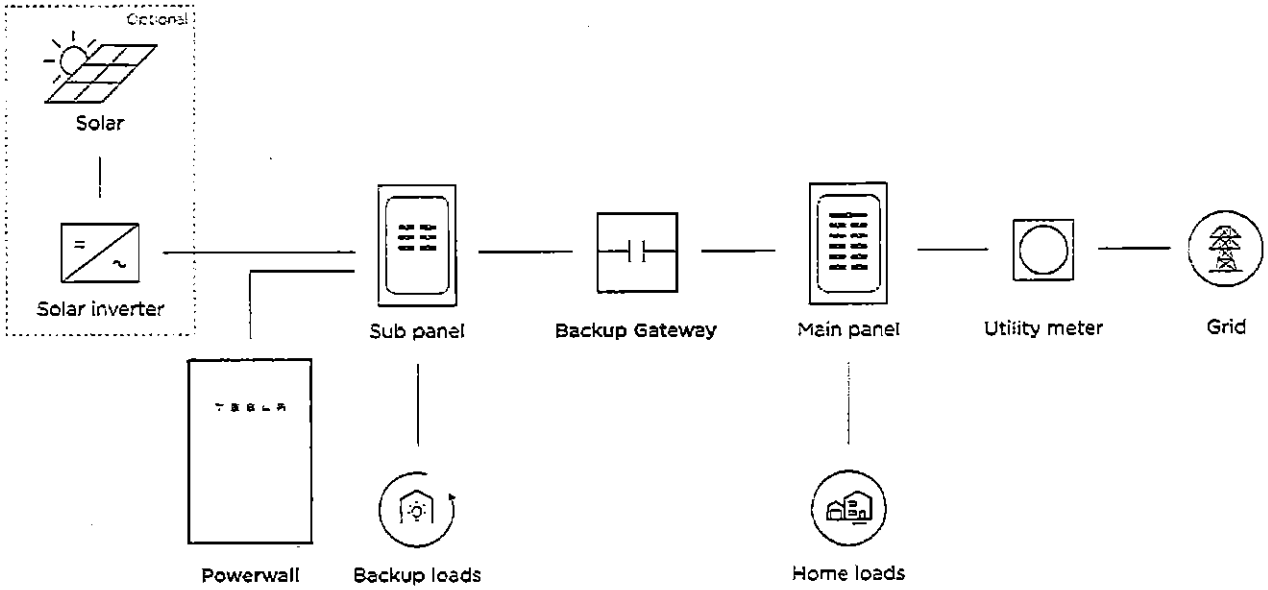
TYPICAL SYSTEM LAYOUTS

WHOLE HOME BACKUP



PARTIAL HOME BACKUP



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Recomendaciones

CERTIFICACION DE EQUIPO

Datos de localización

De acuerdo a la información suministrada se solicita la certificación para módulo fotovoltaicos Comercial-Privado, en territorio del Gobierno de Puerto Rico, según identificado(s) a continuación:

Correo Electrónico:
dgonzalez@glennintemational.com

Organización:
Glenn International, Inc.

DATOS DE EQUIPO CERTIFICADO

Tipo de Equipo: Inversor
Tipo de Gabinete (NEMA): 3R

Marca: SMA

Modelo: Sunny Island 6048-US

Garantía: Manufactura = 10 años

Potencia Máxima Continua: 5750 W
Eficiencia Máxima: 96%

Voltaje Salida: 240 VAC
Voltaje Máximo Entrada: 600 VDC

Seguridad: UL1741
Cert. Núm.: 20120607-E210376

EDIFICABILIDAD

Los siguientes requerimientos y recomendaciones corresponden a la División de Edificabilidad:

Se recomienda la instalación del equipo de fuente de energía renovable "inversor" sometido ante la OGPe y evaluado por la Administración de Asuntos Energéticos, a tenor con el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos y Reglamento para la Certificación de Sistemas Fotovoltaicos e Instaladores (Reglamento 7796), vigentes.

Condiciones especiales

Bajo ninguna circunstancia, deberá interpretar que esta recomendación favorable implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondiente permiso de construcción.

Firmas / Sellos

OFICINA DE GERENCIA DE PERMISOS
OGPe

Arq. Alberto Lastra Power
Director Ejecutivo

Fecha de expedición
20 de agosto de 2013

JF

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ESTADO LIBRE ASOCIADO DE PUERTO RICO
Oficina de Gerencia de Permisos

Núm. Caso
2014-REC-00399
Fecha: 18-feb-2015

Recomendaciones

CERTIFICACION DE EQUIPO

Datos de localización

De acuerdo a la información suministrada se solicita la certificación para módulo fotovoltaicos Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según identificado(s) a continuación:

Correo Electrónico:
Krisk@warrendelcaribe.com

Organización:
Warren Del Caribe

DATOS DE EQUIPO CERTIFICADO

Tipo de Equipo: Inversores
Tipo de Gabinete (NEMA): 1

Marca: Outback Power

Modelos: GS4048A & GS8048A (Radian Series)

Garantía: Manufactura = 5 años

Potencia Nominal: (4000 & 8000)W

Voltaje de Salida: 120/240 VAC

Eficiencia Máxima: 92.5%

Voltaje Máximo Entrada: 64VDC

Seguridad UL1741: ETL
Cert. Núm: 3004905

EDIFICABILIDAD

Los siguientes requerimientos y recomendaciones corresponden a la División de Edificabilidad:

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos y Reglamento para la Certificación de Sistemas Fotovoltaicos e Instaladores, vigentes.

Condiciones especiales

Bajo ninguna circunstancia, deberá interpretar que esta recomendación favorable implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondiente permiso de construcción.

Firmas / Sellos

OFICINA DE GERENCIA DE PERMISOS
OGPe

Arq. Alberto Lastra Power
Director Ejecutivo

Fecha de expedición
18 de febrero de 2015

JF

GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2020-CER-005146

WORR
WORR

Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Jose Colom **Correo Electrónico:** jose.colom@sma-america.com

Compañía: SMA Solar Technology America, LLC

Datos de Equipo Certificado

Tipo de Equipo(s): Inversor **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
SMA	SB 7.0-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.9% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 7000Watts Garantía Manufactura: 5 año(s)
SMA	SB 6.0-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.7% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 6000Watts Garantía Manufactura: 5 año(s)
SMA	SB 7.7-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.5% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 7680Watts Garantía Manufactura: 5 año(s)
SMA	SB 3.0-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.6% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 3000Watts Garantía Manufactura: 5 año(s)
SMA	SB 5.0-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.6% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 5000Watts Garantía Manufactura: 5 año(s)
SMA	SB 3.8-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.6% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 3840Watts Garantía Manufactura: 5 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8292

Certificación de Equipos de Energía Renovable

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
08/MAY/2020

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8232

JF

GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2020-CER-005238

WORR
WORR

Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: RICARDO R ACEVEDO **Correo Electrónico:** racevedo@glenninternational.com

Compañía: Glenn International, Inc.

Datos de Equipo Certificado

Tipo de Equipo(s): Inversor **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Generac	X7602	Certificación de Seguridad: UL 1741 Núm. Certificación: 5005377 Laboratorio: ITSNA	Interconectable: Sí Voltaje(s) Salida: 120/240 VAC Voltaje(s) Máximo Entrada: 420 VDC Eficiencia Máxima: 97% Tipo de Gabinete(NEMA): NEMA 3R Potencia Nominal: 7600Watts Garantía Manufactura: 10 año(s)
Generac	X11402	Certificación de Seguridad: UL 1741 Núm. Certificación: 5005377 Laboratorio: ITSNA	Interconectable: Sí Voltaje(s) Salida: 120/240 VAC Voltaje(s) Máximo Entrada: 420 VDC Eficiencia Máxima: 98% Tipo de Gabinete(NEMA): NEMA 3R Potencia Nominal: 11400Watts Garantía Manufactura: 10 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
29/JUL/2020

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

JF

GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2021-CER-006375

WORR
WORR

Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Ismael Diaz **Correo Electrónico:** ismael.diaz@warren-ecm.com

Compañía: WARREN

Datos de Equipo Certificado

Tipo de Equipo(s): Módulo Fotovoltaico **Clasificación:** Equipo Existente

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Canadian Solar	CS3U-375MS	Certificación de Potencia: IEC 61215 Núm. Certificación: Z2180384937020 Laboratorio: TUVPSG Certificación de Seguridad: UL 1703 Núm. Certificación: 2284121 Laboratorio: CSA	Potencia Nominal: 375Watts 10 años (Potencia): 91% 20 años (Potencia): 84% Dimensiones: 6.56 ft. x 3.25 ft Garantía Manufactura: 10 año(s)
Canadian Solar	CS3U-395MS	Certificación de Potencia: IEC 61215 Núm. Certificación: 40045991 Laboratorio: vde Certificación de Seguridad: UL 1703 Núm. Certificación: 2284121 Laboratorio: CSA	Potencia Nominal: 395Watts 10 años (Potencia): 93.13% 20 años (Potencia): 84.2% Dimensiones: 6.5ft x 3.25ft Garantía Manufactura: 10 año(s)
CANADIAN SOLAR	CS3W-450MS	Certificación de Potencia: IEC 61215 Núm. Certificación: 40045991 Laboratorio: VDE Certificación de Seguridad: UL 1703 Núm. Certificación: 2284121 Laboratorio: CSA	Potencia Nominal: 450Watts 10 años (Potencia): 93.05% 20 años (Potencia): 87.55% Dimensiones: 6.92ft x 3.44FT Garantía Manufactura: 12 año(s)
CANADIAN SOLAR	CS3W-440MS	Certificación de Potencia: IEC 61215 Núm. Certificación: 40045991 Laboratorio: VDE Certificación de Seguridad: UL 1703 Núm. Certificación: 2284121 Laboratorio: CSA	Potencia Nominal: 440Watts 10 años (Potencia): 93.05% 20 años (Potencia): 87.55% Dimensiones: 6.92ft x 3.44FT Garantía Manufactura: 12 año(s)
CANADIAN SOLAR	CS3W-445MS	Certificación de Potencia: IEC 61215 Núm. Certificación: 40045991 Laboratorio: VDE Certificación de Seguridad: UL 1703 Núm. Certificación: 2284121 Laboratorio: CSA	Potencia Nominal: 445Watts 10 años (Potencia): 93.05% 20 años (Potencia): 87.55% Dimensiones: 6.92ft x 3.44FT Garantía Manufactura: 12 año(s)
CANADIAN SOLAR	CS3W-455MS	Certificación de Potencia: IEC 61215 Núm. Certificación: 40045991 Laboratorio: VDE Certificación de Seguridad: UL 1703 Núm. Certificación: 2284121 Laboratorio: CSA	Potencia Nominal: 455Watts 10 años (Potencia): 93.05% 20 años (Potencia): 87.55% Dimensiones: 6.92ft x 3.44FT Garantía Manufactura: 12 año(s)
Canadian Solar	CS3U-385MS	Certificación de Potencia: IEC 61215 Núm. Certificación: 5008436-3972-0002 Laboratorio: VDE Certificación de Seguridad: UL 1703 Núm. Certificación: 2284121 Laboratorio: CSA	Potencia Nominal: 385Watts 10 años (Potencia): 355% 20 años (Potencia): 334% Dimensiones: 2000mm x 992mm Garantía Manufactura: 10 año(s)
CANADIAN SOLAR	CS3W-435MS	Certificación de Potencia: IEC 61215 Núm. Certificación: 40045991 Laboratorio: VDE Certificación de Seguridad: UL 1703 Núm. Certificación: 2284121 Laboratorio: CSA	Potencia Nominal: 435Watts 10 años (Potencia): 93.05% 20 años (Potencia): 87.55% Dimensiones: 6.92ft x 3.44FT Garantía Manufactura: 12 año(s)
Canadian Solar	CS3U-380MS	Certificación de Potencia: IEC 61215 Núm. Certificación: Z2180384937020 Laboratorio: TUVPSG Certificación de Seguridad: UL 1703 Núm. Certificación: 2284121 Laboratorio: CSA	Potencia Nominal: 380Watts 10 años (Potencia): 91% 20 años (Potencia): 84% Dimensiones: 6.56 ft. x 3.25 ft Garantía Manufactura: 10 año(s)

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Certificación de Equipos de Energía Renovable

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Canadian Solar	CS3U-370MS	Certificación de Potencia: IEC 61215 Núm. Certificación: Z2180384937020 Laboratorio: TUVPSG Certificación de Seguridad: UL 1703 Núm. Certificación: 2284121 Laboratorio: CSA	Potencia Nominal: 370Watts 10 años (Potencia): 91% 20 años (Potencia): 84% Dimensiones: 6.56 ft x 3.25 ft Garantía Manufactura: 10 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
20/JAN/2021

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2019-CER-004318

Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Gabriel E Ferrer **Correo Electrónico:** gferrer@enphase.com

Compañía: Enphase Energy, Inc.

Datos de Equipo Certificado

Tipo de Equipo(s): Inversor **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Enphase	IQ7A-72-2-US	Certificación de Seguridad: UL 1741 Núm. Certificación: 20190826-E341165 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 240 VAC Voltaje(s) Máximo Entrada: 58 VDC Eficiencia Máxima: 96.5% Tipo de Gabinete(NEMA): NEMA 6 Potencia Nominal: 349Watts Garantía Manufactura: 25 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
24/SEP/2019

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

JF

GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2019-CER-004191

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Carlos A Velazquez

Correo Electrónico: carlosalberto@espur.net

Compañía: ESPUR

Datos de Equipo Certificado

Tipo de Equipo(s): Inversor

Clasificación: Equipo Existente

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Sol-Ark	Sol-Ark-8k-48-ST	Certificación de Seguridad: UL 1741 Núm. Certificación: SGSNA/18/GZ/00127 Laboratorio: SGSUS	Interconectable: Sí Voltaje(s) Salida: 120/240 VAC Voltaje(s) Máximo Entrada: 500 VDC Eficiencia Máxima: 96.5% Tipo de Gabinete(NEMA): NEMA 1 Potencia Nominal: 8000Watts Garantía Manufactura: 5 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
09/AUG/2019

Arq. María R. Cintrón Flores
Secretaria Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Arq. María R. Cintrón Flores

Secretaria Auxiliar de la OGPe, DDEC

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Panasonic

11/1/2018

Addendum to

Authorized Distributor Contract Application

Panasonic Battery Pricing and Terms effective November 1st 2018:

1. **Lead time:**
   a. 7-10 business days (subjected to availability and forecast)
   b. Forecast: 6 months rolling forecast

2. **Price:**

Model	Description	Price
DCB-105 (BJ-DCB05ZKAX)	2.85kWh (usable) Li-ion battery module	$1317.50 per unit

For use with Pika Energy Harbor only. No other applications supported or warrantied.

3. **Shipping Cost:**

   Free shipping if ordered full pallet (set of 24) for delivery within the 48 contiguous states of USA (excludes HI and AK). Shipping to commercial address only. Absolutely no residential delivery.

4. **Payment Terms:**
   NET 45 days after invoice date from Company.

5. **Price Protection:**
   Price protection will be applied to battery modules in stock / in-transit / on order and not sold in 60 days prior to new pricing effective date. POS by customer and Inventory on hand each month is required in order to qualify.

6. **Warranty:**
   Product (Workmanship) Limited Warranty: 10 years
   Product must be registered within 60-days after installation

   See Limited Warranty document for exclusions and limitations
   ftp://ftp.panasonic.com/batterystorage/brochure/limited_warranty.pdf

7. **Other Conditions:**
   a. Account must be in good standing, no past dues;
   b. Provide monthly Inventory / number of modules in stock by warehouse (1st week of the month);
   c. Additional shipping and handling will be charged for less than pallet(24 pc) order.
   d. All deliveries of Products must be accepted by Distributor/installer;
   e. Purchase order ("PO") cancellation or diversion - if PO is diverted, Distributor will bear all costs and expenses arising from or in connection to the diversion, including storage and handling for direct ship PO's. Cancellation of PO's are not allowed.
   f. Distributor must provide POS data including date of sales and name of customer, forecast once a month (1st week of the month)

This document supersedes any other previous document and is effective November 1st, 2018

Panasonic Eco Solutions Company of North America (PESNA) reserves the right in its sole discretion to change these terms at any time upon notice.

JF

GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2020-CER-005281

WORR
WORR

Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Gabriel E Ferrer **Correo Electrónico:** gferrer@enphase.com

Compañía: Enphase Energy, Inc.

Datos de Equipo Certificado

Tipo de Equipo(s): Batería **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Enphase	ENCHARGE-3-1P-NA		Capacidad: 19 Ah Voltaje Nominal: 67 VDC Tipo de Batería: Litio Hierro Fosfato Tipo de Carga y Descarga: 1.28 KVA Dimensiones Nominales: 664mm x 367mm x 319mm Peso nominal: 115 lbs. Garantía Manufactura: 10 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
19/JUN/2020

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

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GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2020-CER-005282

WORR
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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Gabriel E Ferrer **Correo Electrónico:** gferrer@enphase.com

Compañía: Enphase Energy, Inc.

Datos de Equipo Certificado

Tipo de Equipo(s): Batería **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Enphase	ENCHARGE-10-1P-NA		Capacidad: 156 Ah Voltaje Nominal: 67 VDC Tipo de Batería: Litio Hierro Fosfato Tipo de Carga y Descarga: 3.84 KVA Dimensiones Nominales: 1070mm x 664mm x 319mm Peso nominal: 341 lbs. Garantía Manufactura: 10 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
19/JUN/2020

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

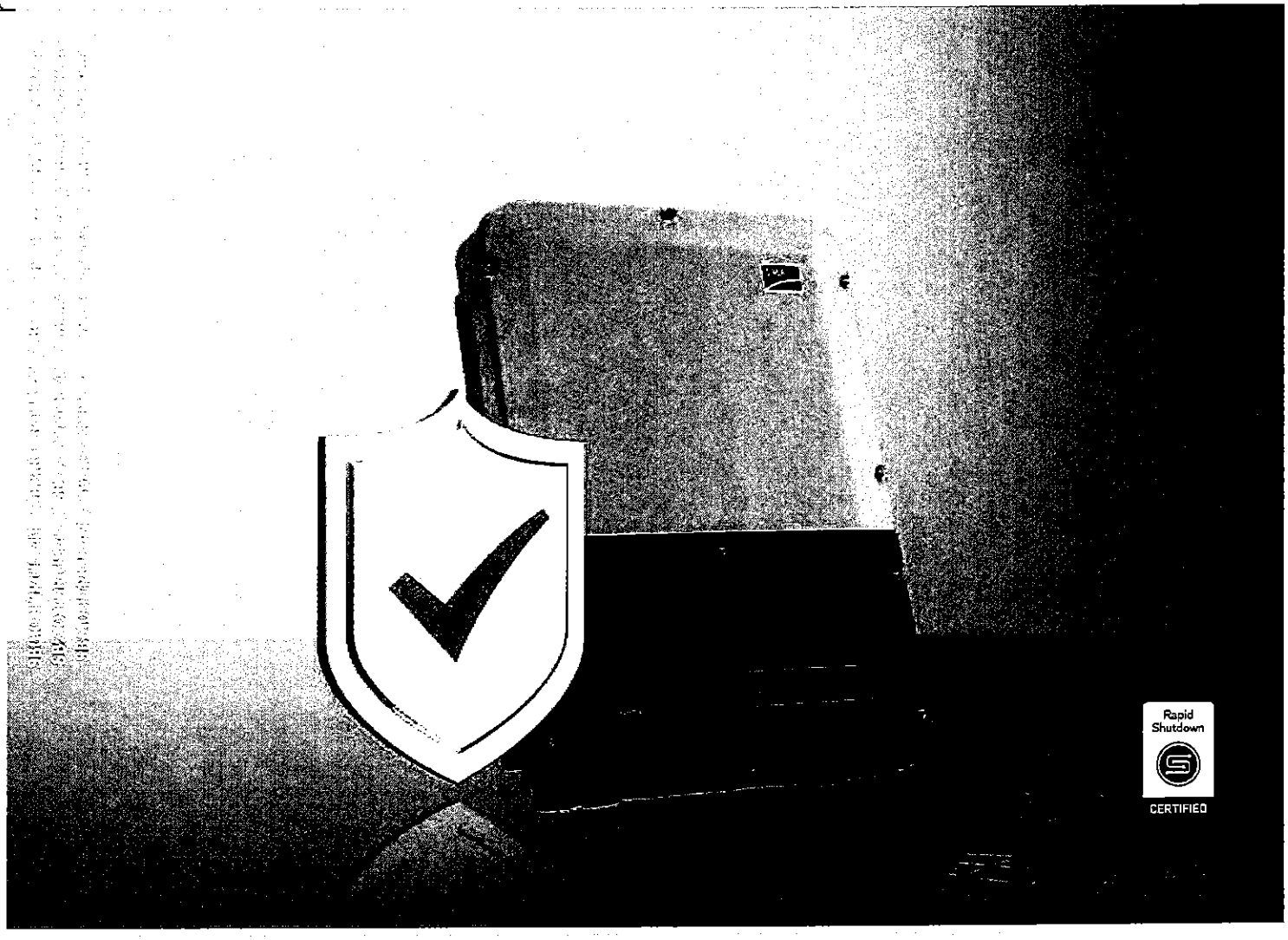
Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8232

JF

SUNNY BOY
3.0-US / 3.8-US / 5.0-US / 6.0-US / 7.0-US / 7.7-US

WORR



Value-Added Improvements

- SunSpec certified technology for cost-effective module-level shutdown
- Advanced AFCI compliant to UL 1699B for arc fault protection

Reduced Labor

- New Installation Assistant with direct access via smartphone minimizes time in the field
- Advanced communication interface with fewer components creates 50% faster setup and commissioning

Optimized Power Production

- ShadeFix, SMA's proprietary shade management solution, produces more power than alternatives
- Reduced component count provides maximum system reliability

Trouble-Free Service

- SMA Service Mobile App provides simplified, expedited field service
- Equipped with SMA Smart Connected, a proactive service solution that is integrated into Sunny Portal

SUNNY BOY 3.0-US / 3.8-US / 5.0-US / 6.0-US / 7.0-US / 7.7-US

Power with a purpose

The residential PV market is changing rapidly. Your bottom line matters more than ever—so we've designed a superior residential solution to help you decrease costs at every stage of your business operations. The Sunny Boy 3.0-US/3.8-US/5.0-US/6.0-US/7.0-US/7.7-US join the SMA lineup of field-proven solar technology backed by the world's #1 service team. This improved residential solution features ShadeFix, SMA's proprietary technology that optimizes system performance. ShadeFix also provides superior power production with a reduced component count versus competitors, which provides maximum reliability. No other optimized solution generates more power or is as easy as systems featuring SMA ShadeFix and SunSpec certified devices. Finally, SMA Smart Connected will automatically detect errors and initiate the repair and replacement process so that installers can reduce service calls and save time and money.

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Technical data	Sunny Boy 3.0-US		Sunny Boy 3.8-US		Sunny Boy 5.0-US	
	208 V	240 V	208 V	240 V	208 V	240 V
Input (DC)						
Max. PV power	4800 Wp		6144 Wp		8000 Wp	
Max. DC voltage			600 V			
Rated MPP voltage range	155 - 480 V		195 - 480 V		220 - 480 V	
MPPT operating voltage range			100 – 550 V			
Min. DC voltage / start voltage			100 V / 125 V			
Max. operating input current per MPPT			10 A			
Max. short circuit current per MPPT			18 A			
Number of MPPT tracker / string per MPPT tracker	2/1				3 / 1	
Output (AC)						
AC nominal power	3000 W	3000 W	3330 W	3840 W	5000 W	5000 W
Max. AC apparent power	3000 VA	3000 VA	3330 VA	3840 VA	5000 VA	5000 VA
Nominal voltage / adjustable	208 V / ●	240 V / ●	208 V / ●	240 V / ●	208 V / ●	240 V / ●
AC voltage range	183 – 229 V	211 – 264 V	183 – 229 V	211 – 264 V	183 – 229 V	211 – 264 V
AC grid frequency	60 Hz / 50 Hz					
Max. output current	14.5 A	12.5 A	16.0 A	16.0 A	24.0 A	21.0 A
Power factor (cos φ) / harmonics	1 / < 4 %					
Output phases / line connections	1 / 2					
Efficiency						
Max. efficiency	97.2 %	97.6 %	97.3 %	97.6 %	97.3 %	97.6 %
CEC efficiency	96.0 %	96.5 %	96.5 %	96.5 %	96.5 %	97.0 %
Protection devices						
DC disconnect device / DC reverse polarity protection	● / ●					
Ground fault monitoring / Grid monitoring	●					
AC short circuit protection	●					
All-pole sensitive residual current monitoring unit (RCMU)	●					
Arc fault circuit interrupter (AFCI)	●					
Protection class / overvoltage category	I / IV					
General data						
Dimensions (W / H / D) in mm (in)	535 x 730 x 198 (21.1 x 28.5 x 7.8)					
Packaging dimensions (W / H / D) in mm (in)	600 x 800 x 300 (23.6 x 31.5 x 11.8)					
Weight / packaging weight	26 kg (57 lb) / 30 kg (66 lb)					
Temperature range: operating / non-operating	-25°C ...+60°C / -40°C ...+60°C					
Environmental protection rating	NEMA 3R					
Noise emission (typical)	39 dB(A)					
Internal power consumption at night	< 5 W					
Topology / cooling concept	transformerless / convection					
Features						
Ethernet ports	2					
Secure Power Supply	●*					
Display (2 x 16 characters)	●					
2.4 GHz WLAN / External WLAN antenna	●/○					
ShadeFix technology for string level optimization	●					
Cellular (4G / 3G) / Revenue Grade Meter	○/○**					
Warranty: 10 / 15 / 20 years ***	●/○/○					
Certificates and approvals	UL 1741, UL 1741 SA incl. CA Rule 21 RSD, UL 1998, UL 1699B Ed. 1, IEEE1547, FCC Part 15 (Class A & B), CAN/CSA V22.2 107.1-1, HECO Rule 14H, PV Rapid Shutdown System Equipment					
Type designation	SB3.0-1SP-US-41 / SB3.0-1TP-US-41		SB3.8-1SP-US-41 / SB3.8-1TP-US-41		SB5.0-1SP-US-41 / SB5.0-1TP-US-41	

● Standard features ○ Optional features — Not available

NOTE: US inverters ship with gray lids. Data at nominal conditions * Not compatible with SunSpec shutdown devices **Standard in SBX.X-1TP-US-41

Accessories

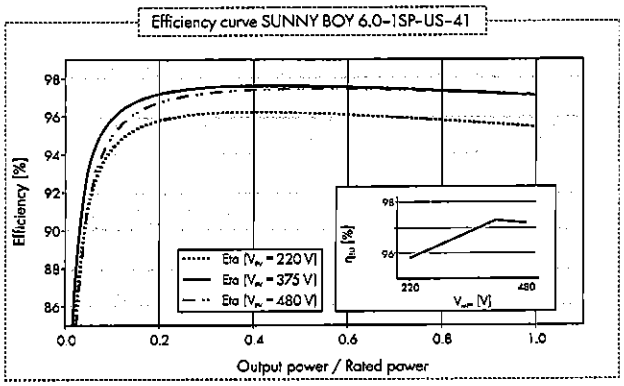
External WLAN antenna
EXTANT-US-40

SunSpec Certified
Rapid Shutdown
Receivers

Revenue Grade
Meter Kit
RGM05KIT-US-10

Cellular Modem Kit
CELLMODKIT-US-10

*** Listed warranty terms are applicable in SMA-designated primary support countries, including the U.S., Canada, and Mexico. Reduced terms or restrictions may apply in other Americas regions and territories including the Pacific and Caribbean.



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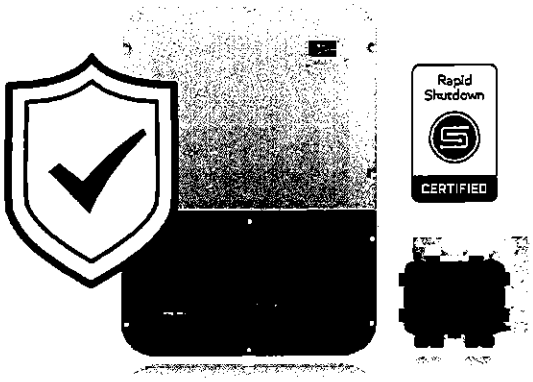
Technical data	Sunny Boy 6.0-US		Sunny Boy 7.0-US		Sunny Boy 7.7-US	
	208 V	240 V	208 V	240 V	208 V	240 V
Input (DC)						
Max. PV power	9600 Wp		11200 Wp		12320 Wp	
Max. DC Voltage	600 V					
Rated MPP Voltage range	220 – 480 V		245 - 480 V		270 - 480 V	
MPPT operating voltage range	100 – 550 V					
Min. DC voltage / start voltage	100 V / 125 V					
Max. operating input current per MPPT	10 A					
Max. short circuit current per MPPT	18 A					
Number of MPPT tracker / string per MPPT tracker	3 / 1					
Output (AC)						
AC nominal power	5200 W	6000 W	6660 W	7000 W	6660 W	7680 W
Max. AC apparent power	5200 VA	6000 VA	6660 VA	7000 VA	6660 VA	7680 VA
Nominal voltage / adjustable	208 V / ●	240 V / ●	208 V / ●	240 V / ●	208 V / ●	240 V / ●
AC voltage range	183 – 229 V	211 – 264 V	183 – 229 V	211 – 264 V	183 – 229 V	211 – 264 V
AC grid frequency	60 Hz / 50 Hz					
Max. output current	25.0 A	25.0 A	32.0 A	29.2 A	32.0 A	32.0 A
Power factor (cos φ) / harmonics	1 / < 4 %					
Output phases / line connections	1 / 2					
Efficiency						
Max. efficiency	97.3 %	97.7 %	97.3 %	97.9 %	97.3 %	97.5 %
CEC efficiency	96.5 %	97.0 %	96.5 %	97.0 %	96.5 %	97.0 %
Protection devices						
DC disconnect device / DC reverse polarity protection	● / ●					
Ground fault monitoring / Grid monitoring	●					
AC short circuit protection	●					
All-pole sensitive residual current monitoring unit (RCMU)	●					
Arc fault circuit interrupter (AFCI)	●					
Protection class / overvoltage category	I / IV					
General data						
Dimensions (W / H / D) in mm (in)	535 x 730 x 198 (21.1 x 28.5 x 7.8)					
Packaging Dimensions (W / H / D) in mm (in)	600 x 800 x 300 (23.6 x 31.5 x 11.8)					
Weight / packaging weight	26 kg (57 lb) / 30 kg (66 lb)					
Temperature range: operating / non-operating	-25°C ...+60°C / -40°C ...+60°C					
Environmental protection rating	NEMA 3R					
Noise emission (typical)	39 dB(A)		45 dB(A)			
Internal power consumption at night	< 5 W					
Topology / cooling concept	transformerless / convection		transformerless / fan			
Features						
Ethernet ports	2					
Secure Power Supply	●*					
Display (2 x 16 characters)	●					
2.4 GHz WLAN / External WLAN antenna	●/○					
ShadeFix technology for string level optimization	●					
Cellular (4G / 3G) / Revenue Grade Meter	○/○**					
Warranty: 10 / 15 / 20 years ***	●/○/○					
Certificates and approvals	UL 1741, UL 1741 SA incl. CA Rule 21 RSD, UL 1998, UL 1699B Ed. 1, IEEE1547, FCC Part 15 (Class A & B), CAN/CSA V22.2 107.1-1, HECO Rule 14H, PV Rapid Shutdown System Equipment					
● Standard features ○ Optional features — Not available						
NOTE: US inverters ship with gray lids. Data at nominal conditions * Not compatible with SunSpec shutdown devices **Standard in SBX.X-1TP-US-41						
Type designation	SB6.0-1SP-US-41 / SB6.0-1TP-US-41		SB7.0-1SP-US-41 / SB7.0-1TP-US-41		SB7.7-1SP-US-41 / SB7.7-1TP-US-41	

POWER+ SOLUTION

The SMA Power+ Solution combines legendary SMA inverter performance and SunSpec certified shutdown devices in one cost-effective, comprehensive package. In addition, SMA ShadeFix technology optimizes power production and provides greater reliability than alternatives.

This rapid shutdown solution fulfills UL 1741, NEC 2014, and NEC 2017 requirements and is certified to the power line-based SunSpec Rapid Shutdown communication signal over DC wires, making it the most simple and cost-effective rapid shutdown solution on the market.



Visit www.SMA-America.com for more information.

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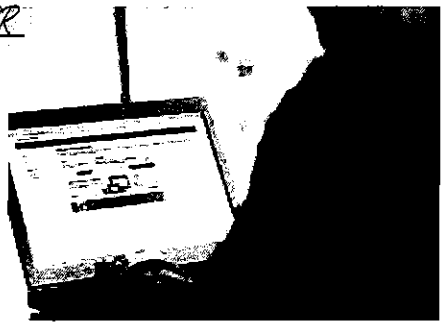


SIMPLE, FLEXIBLE DESIGN

Speed the completion of customer proposals and maximize the efficiency of your design team with the Sunny Boy-US series, which provides a new level of flexibility in system design by offering:

» Hundreds of stringing configurations and multiple independent MPPTs

» SMA's proprietary ShadeFix technology optimizes power production

» Diverse application options including on- and off-grid compatibility

SMA
IHS RESEARCH
#1 INVERTER
BRAND

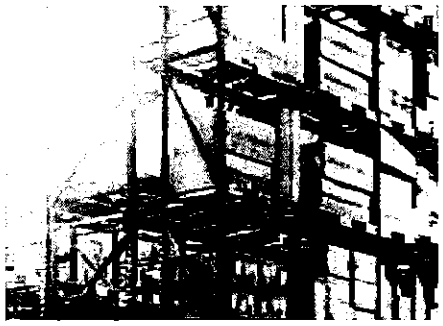
VALUE-DRIVEN SALES ENABLEMENT

SMA wants to enable your sales team by arming them with an abundance of feature/benefit support. Show your customers the value of the Sunny Boy-US series by utilizing:

» The opportunity to join the SMA PowerUP network of installers who receive in-depth training, enhanced service, and prioritized marketing support

» SMA's 35 year history and status as the #1 global inverter manufacturer instills homeowners with peace of mind and the long-term security they demand from a PV investment

» The most economical solution for shade mitigation with superior power production

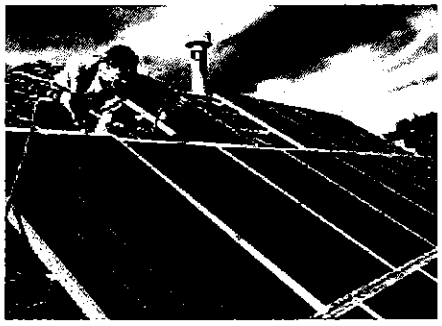


IMPROVED STOCKING AND ORDERING

Ensure that your back office business operations run smoothly and succinctly while mitigating potential errors. The Sunny Boy-US series can help achieve cost savings in these areas by providing:

» An integrated DC disconnect that simplifies equipment stocking and allows for a single inverter part number

» All communications integrated into the inverter, eliminating the need to order additional equipment



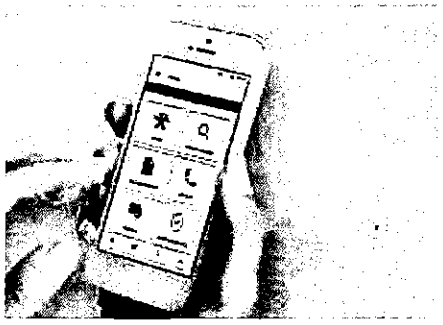
STREAMLINED INSTALLATION AND COMMISSIONING

Expedite your operations in the field by taking advantage of the new Sunny Boy's installer-friendly feature set including:

» Direct access via smartphone and utilization of SMA's Installation Assistant, which minimizes time/labor spent in the field and speeds the path to commissioning

» Simple commissioning and monitoring setup in a single online portal

» The fastest, easiest installation thanks to SMA ShadeFix and SunSpec certified shutdown devices



SUPERIOR SERVICE

SMA understands the factors that contribute to lifetime PV ownership cost, that's why the Sunny Boy-US series was designed for maximum reliability and backstopped by an unmatched service offering. Benefit from:

» SMA Smart Connected, a proactive service solution integrated into Sunny Portal that automatically detects errors and initiates the repair and replacement process

» The SMA Service Mobile App, which provides simplified, expedited field service

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GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2021-CER-006713

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Daniel Rios **Correo Electrónico:** daniel.rios@wecipr.com

Compañía: Wholesale Electric

Datos de Equipo Certificado

Tipo de Equipo(s): Inversor **Clasificación:** Equipo Existente

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
SMA	Sunny Island 6048-US		
SMA	SB 6.0-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.7% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 6000Watts Garantía Manufactura: 5 año(s)
SMA	SB 3.8-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.6% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 3840Watts Garantía Manufactura: 5 año(s)
SMA	SB 7.7-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.5% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 7680Watts Garantía Manufactura: 5 año(s)
SMA	SB 7.0-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.9% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 7000Watts Garantía Manufactura: 5 año(s)
SMA	SB 3.0-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.6% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 3000Watts Garantía Manufactura: 5 año(s)
SMA	SB 5.0-1SP-US-41	Certificación de Seguridad: UL 1741 Núm. Certificación: 2019-03-13-E210376 Laboratorio: UL	Interconectable: Sí Voltaje(s) Salida: 208-240 VAC Voltaje(s) Máximo Entrada: 600 VDC Eficiencia Máxima: 97.6% Tipo de Gabinete(NEMA): 3R Potencia Nominal: 5000Watts Garantía Manufactura: 5 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Certificación de Equipos de Energía Renovable

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
11/MAR/2021

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

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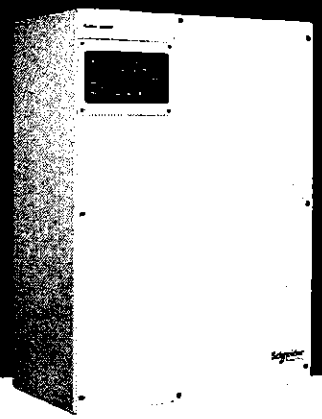
XW Pro

6.8/8.5 kW Hybrid Inverter for North America

865-6848-21



Protect your home's power supply when the grid goes out. Save on energy costs with utility time of use and demand charge optimization. The XW Pro solar hybrid inverter is the heart of your home power system, connecting solar and battery storage with the grid for backup power and energy security. It can be used for solar and storage, or backup power systems without solar.

Backup power performance

- Reliable operation of backup power and off-grid loads with a high overload power rating (2x)
- Seamless transition to backup power with an integrated high-speed transfer switch
- Grid and Generator input ports
- Field proven product quality and reliability, building on two decades of experience in solar and storage

Flexible

- 120/240 V output with stacking capability up to 4 units
- Configurable for 120 V output for 3 phase systems
- Connects solar with Conext™ MPPT Charge Controllers or PV inverters for DC-coupled or AC-coupled systems
- Lithium Ion battery integration
- Grid tied and off-grid systems, Rule 21, HECO Rule 14H and PREPA compliant

Easy to install

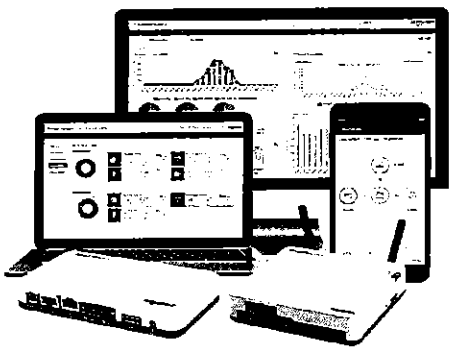
- Configures quickly using Insight
- AC Out port for backuploads
- Full ecosystem and accessories for single unit or scalable systems

Smart energy management

- Optimize energy consumption for time of use rates or demand charges
- Self-consumption of solar energy

Compatible with Insight

- Remote monitoring & control with advanced data security
- Web and mobile app
- Multi-site management for installers



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Technical Specifications

	XW Pro 6848 NA 120/240 V	XW Pro 6848 NA 120 V
Inverter AC Output (Standalone)		
Output power (continuous) at 25°C	6800 W	5760 W
Overload 30 min/60 sec at 25°C	8500 W/12000 W	7200 W/12000 W
Output power (continuous) at 40°C	6000 W	5760 W
Maximum output current 60 seconds (rms)	52 A (240 V)	104 A (120 V)
Output frequency	50/60 Hz	50/60 Hz
Output voltage	Split phase 120/240 V +/- 3%	120 V +/- 3%
Total harmonic distortion at rated power	< 5 %	< 5 %
Idle consumption search mode	< 8 W	< 8 W
Input DC voltage range	40 to 64 V (48 V nominal)	40 to 64 V (48 V nominal)
Maximum input DC current	180 A	180 A
Charger DC Output		
Maximum output charge current	140 A	120 A
Output charge voltage range	40 – 64 V (48 V nominal)	
Charge control	Three stage, two stage, boost, external BMS, custom	
Charge temperature compensation	Battery temperature sensor included	
Power factor corrected charging	0.98	
Compatible battery types	Flooded (default), Gel, AGM, Lithium ion, custom	
Battery bank range	440 – 10000 Ah	
AC Input		
AC 1 (grid) input current (selectable limit)	3 – 60 A (60 A default)	3 – 60 A (60 A default)
AC 2 (generator) input current (selectable limit)	3 – 60 A (60 A default)	3 – 60 A (60 A default)
Automatic transfer relay rating/typical transfer time	60 A / 8 ms	60 A / 8 ms
AC input voltage limits (bypass/charge mode)	L-L: 156 - 280 V (240 V nominal)	L-N: 78 - 140 V (120 V nominal)
AC input frequency range (bypass/charge mode)	52 – 68 Hz (allowable)	52 – 68 Hz (allowable)
AC Grid-Tie Output		
Grid sell power	6000 W	5760 W
Grid sell current (selectable limit)	0 to 27 A (240 V)	0 to 48 A (120 V)
Efficiency		
Peak	95.1%	94.8%
CEC weighted efficiency	94.1%	93.6%
General Specifications		
Part number	865-6848-21	
Product/shipping weight	55.2 kg (121.7 lb)/ 76.7 kg (169.0 lb)	
Product dimensions (H x W x D)	58 x 41 x 23 cm (23 x 16 x 9 in)	
Shipping dimensions (H x W x D)	71.1 x 57.2 x 39.4 cm (28.0 x 22.5 x 15.5 in)	
IP degree of protection	NEMA Type 1 Indoor	
Operating air temperature range	-25°C to 70°C (-13°F to 158°F) (power derated above 25°C (77°F))	
Features		
System monitoring and network communications	Available (through Insight)	
Intelligent features	Grid sell, peak load shave, generator support, solar self-supply	
Auxiliary port	0 to 12 V, maximum 250 mA DC output, selectable triggers	
Off-grid AC coupling	Frequency shifting	
Regulatory Approval		
Safety	UL1741, CSA 107.1	
EMC directive	FCC and Industry Canada Class B	
Interconnect	IEEE 1547, UL 1741-SA, Rule 21, Rule 14H, PREPA, and CSA 107.1	
Compatible Products Part Numbers		
Power Distribution Panels	XW Mini PDP (865-1013-01), XW PDP (865-1015-01)	XW PDP without AC Breakers (865-1014-01), 60 A Three Phase Breaker Kit (865-1315-01)
MPPT Charge Controllers	MPPT 100 600 (865-1034), MPPT 80 600 (865-1032), MPPT 60 150 (865-1030-1)	
Monitoring	**Insight**Home (865-0330), **Insight**Facility (865-0335)	
Accessories	Automatic Generator Start (865-1060), Battery Monitor (865-1080-01), Configuration Tool (865-1155-01)	

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Schneider Electric Solar CONTRACTUAL WARRANTY

This Schneider Electric Solar Contractual Warranty applies to the following products:

- CONEXT CL125A grid tie string Inverter model: PVSCL125A
- CONEXT CL60A grid tie string Inverter model: PVSCL60A
- CONEXT XW PRO 6848 NA model: 865-6848-21

Geographic Validity:

These warranty conditions apply to the United States of America, including their 50 states and commonwealths of Puerto Rico and Northern Mariana Islands (excluding their associated islands and overseas territories).

Warranty Duration:

- Five (5) years, unless applicable law requires a longer period, in which case it will be that period of time.
- You may obtain an additional promotional five (5) years of warranty, for a total of ten (10) years, provided that You register Your Product within six (6) months from the date of the Schneider Electric Solar commercial invoice via the instructions provided. Additional information can be found at http://solar.schneider-electric.com/product-registration.

"Schneider Electric Solar" means the following Schneider Electric solar entities:

- Schneider Electric Solar Inverters USA, Inc.

"Distributor" means any Schneider Electric Solar-approved retailer, reseller or distributor of the Product which may include a Schneider Electric entity other than the Schneider Electric Solar entities listed above.

"Product" means the Schneider Electric Solar or related branded inverter product (or other related device) as identified above that You purchased from Schneider Electric Solar or through an authorized Distributor.

"You and Your" means the end-customer that has purchased and uses the Product and is entitled to the benefits of this Contractual Warranty.

1. Warranty Period and Coverage

This Contractual Warranty is provided by Schneider Electric Solar and covers defects in workmanship and materials in Your Product. In the event You purchased the Product from a Distributor, this warranty period commences upon the date of shipment from Distributor to You. In the event You purchased the Product directly

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from Schneider Electric Solar, this warranty period commences ninety (90) days after the Product is shipped from Schneider Electric Solar. The warranty period expires on the same date either (a) five (5) years later or (b) if You properly registered Your Product as specified above, ten (10) years later, unless otherwise agreed in writing (the "Warranty Period"). This Contractual Warranty, with prior written notice, is transferable to subsequent owners but only for the unexpired portion of the Warranty Period.

This Contractual Warranty does not cover and Schneider Electric Solar is not responsible for labor costs arising from or expenses related to the removal of defective Product(s) and the installation of replacement Product(s).

2. Warranty Claims

If Your Product becomes defective and You notify Schneider Electric Solar of such defect within the Warranty Period, Schneider Electric Solar will, at its sole discretion, either (i) repair the defective Product or (ii) replace with new, reconditioned parts or similar parts of equivalent depreciated value, provided that Schneider Electric Solar through inspection establishes the existence of such a defect which is covered by this Contractual Warranty. If Schneider Electric Solar elects to perform any onsite warranty services, Schneider Electric Solar requires a site escort (arranged and paid for by You) for all such warranty services. Accordingly, if Schneider Electric Solar elects to perform such on-site warranty servicing, You will need to provide Schneider Electric Solar with the relevant contact information for Your site escort for scheduling purposes. Alternatively, Schneider Electric Solar may elect, at its sole discretion, to provide You with cash compensation equal to the Product's value depreciated by the number of years of operation under the Warranty Period.

If Schneider Electric Solar repairs or replaces a Product, its warranty continues for the remaining portion of the original Warranty Period or ninety (90) days from the date of the repair or return shipment to the customer whichever is greater. All replaced Products and all parts removed from repaired Products become the property of Schneider Electric Solar.

3. Warranty Limitations

This Contractual Warranty does not warrant uninterrupted or error-free operation of the Product or cover normal wear and tear of the Product or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. The warranty claims that relate to damages, failures or defects caused by any of the following factors are not covered by this Contractual Warranty:

- Failure to commission the Product within twenty-four (24) months[1] from the date of the Schneider Electric Solar commercial invoice,
- If the Product has been commissioned and shut down or depowered for a period in excess of twenty-four (24) months,
- Improper use or non-compliance with installation, commissioning, operation or maintenance instructions (e.g., the Owners Guide, the Installation Guide),
- Unauthorized commissioning, modifications, changes or attempted repairs,
- Vandalism or destruction through external influences including damages caused by persons or animals,

[1] The Product may need to be charged, recharged or reconditioned to restore the internal properties of the Product's capacitor if it has not been operated for an extensive period of time in which case You will be responsible for all applicable fees and costs of such restorative services. If You plan to store the Product prior to commissioning or to depower the Product after commissioning, please review the storage instructions and guidelines within the Owner's Guide.

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- Use in an unsuitable environment, including any environment or location that causes excessive wear and tear or that is difficult or unsafe for Schneider Electric Solar representatives to access,
- Insufficient ventilation,
- Installation in a corrosive environment including, for example, an environment in which the Product is exposed to acid rain, hydrogen sulfide or excessive salt in the air (except for any such exposure to environmental conditions that Your Product was specifically designed to withstand as indicated in the applicable specifications for Your Product),
- Failure to observe applicable safety standards and regulations,
- Damages during transportation or storage,
- Force majeure, examples include, but not limited to: fire, flood, earthquakes, storm damage, overvoltage and lightning strikes
- Exposure to fire, water, snow, moisture, or liquid ingress or sand (except for any such exposure to environmental conditions that Your Product was specifically designed to withstand as indicated in the applicable specifications for Your Product),
- Used as a component part of another product expressly warranted by another manufacturer,
- If the original identification (trade-mark, serial number, QR code) markings have been defaced, altered, or removed,
- Consumable components of any type are not covered by this Contractual Warranty, including but not limited to fuses, surge arrestors and fans, and
- Cosmetic shortcoming which do not impair the use of the Product for the intended purpose i.e. supply of energy.

Warranty claims also exclude:

- Damages arising due to the fact that the use of the Product for the intended purpose is no longer possible or only possible with restrictions as a result of amendments to the statutory provisions applicable to the operation of the Product made after the delivery of the Product,
- Compensation for damages related to loss of power production or business operation or any expenses incurred by customer towards repair, removal and/or replacement of the Product (including but not limited to labor, transportation, temporary power),
- Costs or damages arising from changes to existing PV systems, building installations or other site changes,
- Any Products that are damaged during shipment, and
- This warranty only applies to defects in workmanship and materials which does not include claims involving regulatory compliance. To make sure Your Product meets the applicable regulatory requirements which are in place at the time of purchase, please see the applicable Product Manuals and/or Your sales contract.

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4. Warranty Return and Repair Process

Contact Schneider Electric Solar with a brief description of the error to evaluate and troubleshoot the issue while the Product is in the field, as many problems can be solved with remote guidance.

Please have Your Owner's Manual ready for reference and be prepared to supply:

- The serial number and part number of Your Product
- A copy of Your dated commercial invoice
- Information about the installation and commissioning or inspection certificate
- Information about the failure

Schneider Electric Solar or designated service provider reserves the right to refuse exchange requests for lack of proper documentation and information.

i. Return Material Authorization (RMA) for defective Products

After attempts to correct the problem remotely with Your assistance and if the Product must be returned to Schneider Electric Solar or designated service provider for replacement or repair, You must obtain a Return Material Authorization (RMA) number and the correct return center "Ship to" address. **Product shipments will be refused and returned at Your expense if they are unauthorized or returned without an RMA number.**

ii. Once an RMA has been issued for exchange for defective Products

Schneider Electric Solar or designated service provider, at its sole discretion, will ship an equivalent replacement Product to You. The allegedly defective Product must be returned in the same transport packaging that the replacement product was provided in. The defective Product must be shipped back to Schneider Electric Solar within **ten (10)** working days after receiving the replacement Product. If Schneider Electric Solar does not receive the Product within this timeframe, the Product cost will be billed back to You (including shipping costs, handling fees and if applicable all taxes, duties and tariffs).

Specific Information Regarding Warranty Coverage

Visually evident damage caused by shipping or mishandling is to be reported to the freight carrier within twenty-four (24) hours. Shipping damage is the responsibility of the freight carrier, not Schneider Electric Solar and should always be duly noted with the freight carrier prior to accepting and signing for the Product.

5. Invalid Warranty Claim

If the allegedly defective Product that is returned to Schneider Electric Solar (or service partner) pursuant to this Warranty Statement is found by Schneider Electric Solar to be free of defects, Schneider Electric Solar will charge a flat-rate inspection charge for each Product of €235, plus any Warranty Logistics Costs incurred by Schneider Electric Solar. In the event that Schneider Electric Solar ships a replacement Product to You before its inspection and thereafter determines the alleged defective Product to be defect free based on its inspection,

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Schneider Electric Solar will (i) return the defect free Product to You and (ii) charge You for the replacement Product.

6. Disclaimer of Implied and Other Warranties and Limitation of Liability

THIS CONTRACTUAL WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY PROVIDED BY SCHNEIDER ELECTRIC SOLAR IN CONNECTION WITH YOUR SCHNEIDER ELECTRIC SOLAR PRODUCT AND IS, WHERE PERMITTED BY LAW, IN LIEU OF ALL OTHER WARRANTIES, CONDITIONS, GUARANTEES, REPRESENTATIONS, OBLIGATIONS AND LIABILITIES, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE IN CONNECTION WITH THE PRODUCT, HOWEVER ARISING (WHETHER BY CONTRACT, TORT, NEGLIGENCE, PRINCIPLES OF MANUFACTURER'S LIABILITY, OPERATION OF LAW, CONDUCT, STATEMENT OR OTHERWISE), INCLUDING WITHOUT RESTRICTION ANY IMPLIED WARRANTY OR CONDITION OF QUALITY, MERCHANTABILITY, MERCHANTABLE QUALITY, OR FITNESS FOR A PARTICULAR PURPOSE.

ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, MERCHANTABLE QUALITY OR FITNESS FOR A PARTICULAR PURPOSE TO THE EXTENT REQUIRED UNDER APPLICABLE LAW TO APPLY TO THE PRODUCT SHALL BE LIMITED IN DURATION TO THE PERIOD STIPULATED UNDER THIS CONTRACTUAL WARRANTY.

LIMITATION OF LIABILITY

WHERE APPLICABLE LAW ALLOWS AND DOES NOT PROHIBIT OR RESTRICT SUCH LIMITATION, SCHNEIDER ELECTRIC SOLAR'S LIABILITY FOR ANYTHING RELATING TO THIS PRODUCT SHALL BE LIMITED TO THE PRICE PAID FOR THE PRODUCT.

TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW, IN NO EVENT WILL SCHNEIDER ELECTRIC SOLAR BE LIABLE FOR: (A) ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, LOST REVENUES, FAILURE TO REALIZE EXPECTED SAVINGS, OR OTHER COMMERCIAL OR ECONOMIC LOSSES OF ANY KIND, EVEN IF SCHNEIDER ELECTRIC SOLAR HAS BEEN ADVISED, OR HAD REASON TO KNOW, OF THE POSSIBILITY OF SUCH DAMAGE; AND/OR (B) ANY DAMAGE OR INJURY ARISING FROM OR AS A RESULT OF MISUSE OR ABUSE, OR THE INCORRECT INSTALLATION, INTEGRATION OR OPERATION OF THE PRODUCT BY PERSONS NOT AUTHORIZED BY SCHNEIDER ELECTRIC SOLAR.

EXCLUSIONS AND CLARIFICATIONS

THE CONTRACTUAL AND/OR STATUTORY WARRANTY OBLIGATION OF THE PRODUCT SELLER AND YOUR CORRESPONDING STATUTORY WARRANTY RIGHTS WHICH MAY NOT LAWFULLY BE EXCLUDED OR LIMITED ARE NOT AFFECTED BY THIS CONTRACTUAL WARRANTY. FURTHERMORE, SHOULD THIS CONTRACTUAL WARRANTY VIOLATE ANY NATIONAL, STATE, PROVINCIAL OR OTHER GOVERNMENTAL STATUTORY RIGHTS WHICH MAY NOT LAWFULLY BE EXCLUDED OR LIMITED AND WHICH GRANT YOU ANY RIGHTS IN ADDITION TO THE CONTRACTUAL WARRANTY, THEN SUCH STATUTORY RIGHTS SHALL NOT BE AFFECTED BY THE PROVISIONS OF THIS CONTRACTUAL WARRANTY.

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IF THIS PRODUCT IS A CONSUMER PRODUCT, THE APPLICABLE LAW MIGHT NOT ALLOW AN EXCLUSION OF IMPLIED WARRANTIES AND/OR MAY EXTEND ADDITIONAL BENEFITS OR PROTECTION TO YOU. TO THE EXTENT YOU ARE ENTITLED TO IMPLIED WARRANTIES OR ADDITIONAL BENEFITS OR PROTECTION UNDER APPLICABLE LAW, SUCH ARE LIMITED (TO THE MAXIMUN EXTENT ALLOWED BY APPLICABLE LAW) TO THE DURATION OF THIS CONTRACTUAL WARRANTY. SOME STATES, PROVINCES AND JURISDICTIONS DO NOT ALLOW LIMITATIONS OR EXCLUSIONS ON IMPLIED WARRANTIES OR ON THE DURATION OF AN IMPLIED WARRANTY OR ON THE LIMITATION OR EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION(S) OR EXCLUSION(S) MAY NOT APPLY TO YOU. THIS CONTRACTUAL WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE, PROVINCE TO PROVINCE OR JURISDICTION TO JURISDICTION.

Effective: January 01, 2021

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GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2019-CER-004432

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: GERMAN VELAZQUEZ RODRIGUEZ **Correo Electrónico:** solaraee@gmail.com

Compañía: DYNAMIC SOLAR

Datos de Equipo Certificado

Tipo de Equipo(s): Inversor **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
SCHNEIDER	CONEXT XW PRO 6848 NA	Certificación de Seguridad: UL 1741 Núm. Certificación: 70194014 Laboratorio: CSA	Interconectable: Si Voltaje(s) Salida: 240 VAC Voltaje(s) Máximo Entrada: 60 VDC Eficiencia Máxima: 95.0% Tipo de Gabinete(NEMA): NEMA Type 1 Indoor Potencia Nominal: 6800Watts Garantía Manufactura: 5 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
29/OCT/2019

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

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Good On & Off Grid

Navajo Tribal Utility Rushes To Connect Over 500 Homes Before CARES Act Funding Deadline

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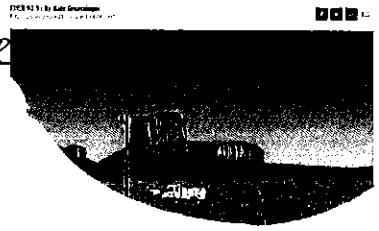


Fleet Mgmt & Instant Messaging

Inverter Status Statistics

9730 Total

Normal 9349

Off Line [illegible]

Warning [illegible]

Fault 7

Plant List | Plant Map

	Plant	Power(kW)	Efficiency	Today(kWh)
All				
Normal				
Fault	[illegible]	0.0	[illegible]	0
Warning	[illegible]	[illegible]	[illegible]	[illegible]
Off Line	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	0.0	62%	0
	Sol-Ark Coby	0.0	-	0
	[illegible]	0.0	[illegible]	0
	[illegible]	0.0	-	0
	[illegible]	0.0	[illegible]	0
	[illegible]	0.0	-	0
	[illegible]	20	[illegible]	[illegible]
	[illegible]	0.0	-	0

● Normal ● Warning ● Fault ● Off-line

Sell-back to PREPA

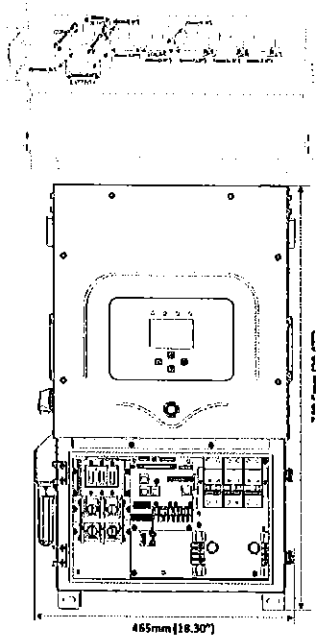
UPS medical grade

#1 round-trip efficiency

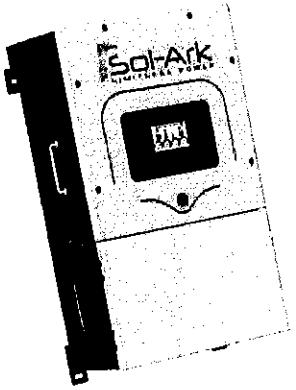
Outdoors or Indoors

Sol-Ark-8K-48-ST Specifications	
Solar Output Power 9000W	
Max allowed PV Power	5500W+5500W = 11,000W
Max PV power delivered to Battery & AC outputs	12000W
Max DC voltage	500V@18A
MPPT voltage range	150-425V
Starting voltage	175V
Number of MPPT	2
Solar Strings per MPPT	2 w/o fuses, 3 w/ fuses
Max DC current per MPPT (self limiting)	18A@400V
Max AC Coupled Input (Micro/String Inverters)	9,600W / 9,600W
AC Output Power 8000W On Grid & 8000W Off Grid	
Connections	120/240/208V split phase
Continuous AC power to Grid (On-Grid)	8000W 33.3A L-L (240V) 4800W 40A L-N (120V)
Continuous AC power to Load (Off-Grid)	8000W 33.3A L-L (240V) 4800W 40A L-N (120V)
Surge AC power 10sec Surge AC power 16ms	16,000VA L-L (240V) 25,000VA L-N (120V)
Parallel Stacking	Not Supported
Frequency	60/50Hz
Continuous AC power with Grid or Generator	15120W 63A L-L (240V) 7560W 63A L-N (120V)
CEC Efficiency	96.5% (Peak 97.5%)
Idle Consumption typical – no load	60W
	Limited to Household or
Sellback power modes	Full Grid-Tied
Design (DC to AC)	Transformerless DC
Response Time (Grid-Tied to Off-Grid)	4ms
Power Factor	+-0.9 - 1.0
Battery (optional) Output Power 8000W	
Type	Lead-Acid or Li-Ion
Nominal DC Input	48V
Capacity	50 – 9900Ah
Voltage Range	43.0 – 63.0V
Continuous Battery charging output	185A
Charging curve	3-stage w/ equalization
Grid to Battery Charging Efficiency	96.0%
External temperature sensor	Included
Current shunt for accurate % SOC	Integrated
External Generator Start based on voltage or % SOC	Integrated
Communication to Lithium battery	Canbus & RS485
General	
Dimensions (H x W x D)	30.0" x 18.30" x 10.00"
Weight	78 lbs
Enclosure	NEMA-3R
Ambient Temperature (3 variable speed fans)	-25 to 55C, >45C derating
Display	Color touch screen
Wi-Fi Communication (monitoring or SW updates)	Included
Snap on sensors for limited selling to Household	Included
Standard Warranty (verified by HALT testing)	5 / 10 years

Protection & Certifications	
Electronics certified safety by SGS labs to NEC & UL specs – NEC 690.4B & NEC 705.4/6	Yes
Grid Sell Back – UL1741-2010/2018, IEEE1547a-2003/2014, FCC 15 class B, UL1741SA, CA Rule 21, HECO Rule 14H	Yes
PV DC disconnect switch – NEC 240.15	Integrated
Ground Fault Detection – NEC 690.5	Integrated
PV rapid shutdown control – NEC 690.12	Integrated
PV Arc Fault detection – NEC 690.11/ UL1699B	Integrated
PV input lightning protection	Integrated
AC input/output 50A breakers	Integrated
Battery breaker / disconnect	Integrated
User wiring enclosure w/ ¾" & 1" knock-outs	Integrated
Solar Flare/EMP Hardened to 2015 MIL-STD-461G (independently tested June 2018)	optional



465mm (18.30")



[redacted]

10 kWh

6000 cycles

LIFePO4

comms ready

OUTDOOR RATED

10 year warranty

[redacted]

14 kWh

Customer Satisfaction

	Rating	Reviews
Sol-Ark	☆☆☆☆☆	14
[illegible]	☆☆☆☆☆	117
[illegible]	☆☆☆☆☆	20
[illegible]	☆☆☆☆☆	13
SMA	☆☆☆☆☆	2
[illegible]	☆☆☆☆☆	16
[illegible]	☆☆☆☆☆	2
[illegible]	☆☆☆☆☆	1
[illegible]	☆☆☆☆☆	2
[illegible]	☆☆☆☆☆	2
[illegible]	☆☆☆☆☆	2
[illegible]	☆☆☆☆☆	2
[illegible]	☆☆☆☆☆	1
[illegible]	☆☆☆☆☆	1
[illegible]	☆☆☆☆☆	0
[illegible]	☆☆☆☆☆	0
[illegible]	☆☆☆☆☆	0

Sol-Ark LIMITLESS POWER

William O. Rodríguez Rodríguez

William O. Rodríguez Rodríguez (Nov 29, 2022 22:08 AST)

Jose Fontana (Nov 29, 2022 06:18 AST)

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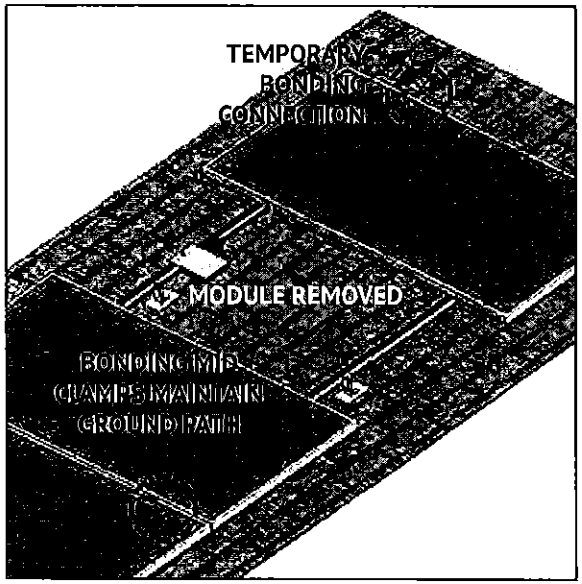
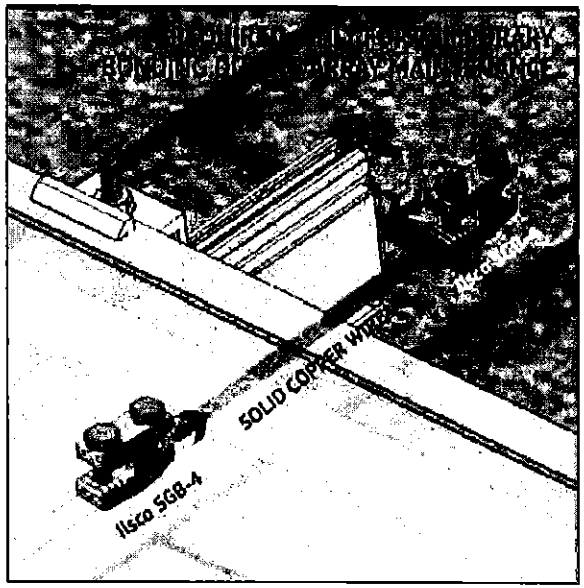
SM SOLAR MOUNT BONDING CONNECTION GROUND PATHS

INSTALLATION GUIDE | PAGE





TEMPORARY BONDING CONNECTION DURING ARRAY MAINTENANCE

When removing modules for replacement or system maintenance, any module left in place that is secured with a bonding Midclamp will be properly grounded. If a module adjacent to the end module of a row is removed or if any other maintenance condition leaves a module without a bonding mid clamp, a temporary bonding connection must be installed as shown

- Attach Ilsco SGB4 to wall of rail
- Attach Ilsco SGB4 to module frame
- Install solid copper wire jumper to Ilsco lugs

ELECTRICAL CONSIDERATIONS

SOLARMOUNT is intended to be used with PV modules that have a system voltage less than or equal to that allowable by NEC. For standard system grounding a minimum 10AWG, 105°C copper grounding conductor should be used to ground a system, according to the National Electric Code (NEC). It is the installer's responsibility to check local codes, which may vary. See below for interconnection information.

INTERCONNECTION INFORMATION

There is no size limit on how many SOLARMOUNT & PV modules can be mechanically interconnected for any given configuration, provided that the installation meets the requirements of applicable building and fire codes.

GROUNDING NOTES

The installation must be conducted in accordance with the National Electric Code (NEC) and the authority having jurisdiction. Please refer to these resources in your location for required grounding lug quantities specific to your project.

The grounding / bonding components may overhang parts of the array so care must be made when walking around the array to avoid damage.

Conductor fastener torque values depend on conductor size. See product data sheets for correct torque values.

PERIODIC INSPECTION: Conduct periodic inspections for loose components, loose fasteners or any corrosion, immediately replace any affected components.

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SM SOLAR MOUNT

APPENDIX A
System Certification

The SOLARMOUNT system has been certified and listed to the UL 2703 standard (Rack Mounting Systems and Clamping Devices for Flat-Plate Photovoltaic Modules and Panels). This standard included electrical grounding, electrical bonding, mechanical load and fire resistance testing.

In conducting these tests, specific modules are selected for their physical properties so that the certifications can be broadly applied. The following lists the specific modules that were tested and the applicability of those certifications to other modules that might come onto the market.

In addition to UL 2703 certification, Unirac performs internal testing beyond the requirements of certification tests in order to establish system functional limits, allowable loads, and factors of safety. These tests include functional system tests, and destructive load testing.

Mechanical Load Test Modules

The modules selected for UL 2703 mechanical load testing were selected to represent the broadest range possible for modules on the market. The tests performed cover the following basic module parameters:

- Frame thicknesses greater than or equal to 1.0 mm
- Basic single and double wall frame profiles (some complex frame profiles could require further analysis to determine applicability)
- Clear and dark anodized aluminum frames
- UL2703 Certification Load Ratings:
  - o Down– 113.4 PSF , Up – 50.4 PSF , Down-Slope – 14.7 PSF
- Tested Loads:
  - o Down – 170.10 PSF , Up – 75.60 PSF, Down-Slope – 22.05 PSF
- Maximum Area of Module = 21.06 sqft

Tested Modules	
Module Manufacturer	Model/Series
Hyundai	HiS-S325TI

System Level Fire Classification

The system fire class rating requires installation in the manner specified in the SOLARMOUNT Installation Guide. SOLARMOUNT has been classified to the system level fire portion of UL 1703. This UL 1703 classification has been incorporated into our UL 2703 product certification. Class A system level fire performance is inherent in the SOLARMOUNT design, and no additional mitigation measures are required. The fire classification rating is only valid on roof pitches greater than 2:12 (slopes ≥ 2 inches per foot, or 9.5 degrees). There is no required minimum or maximum height limitation above the roof deck to maintain the system fire rating for SOLARMOUNT. Module Types & System Level Fire Ratings are listed below:

Rail Type	Module Type	System Level Fire Rating	Rail Direction	Module Orientation	Mitigation Required
Standard Rail	Type 1, Type 2, Type 3, & Type 10	Class A, B, & C	East-West North-South	Landscape OR Portrait	None Required
Light Rail	Type 1 & Type 2	Class A, B, & C	East-West North-South	Landscape OR Portrait	None Required

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SM SOLAR MOUNT

APPENDIX A
System Certification

PAGE

Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the SOLARMOUNT system.

Manufacturer	Series/Model
Aleo	P18, P19, S18, S59, S79
AU Optronics (BenQ Solar)	PM Series
Canadian Solar	CS5A-M, CS6P-M, CS6P-P, CS6X-P, CSX-P, ELPS CS6P-MM, ELPS CS6A-MM, CS6U-P, CS6U-M, CS6K-MS, CS6K-M, CS6K-P, CS3U-P, CS3U-MS, CS3K-P, CS3K-MS, CS1K-MS
Centrosolar America	C-Series, E-Series
CertainTeed	CTxxxMxx-01, CTxxxP01, CTxxxMxx02
Eco Solargy	Orion 1000, Apollo 1000
ET Solar	ET AC Module, ET Module
Flextronics	FXS
Hanwha SolarOne	HSL 60
Hellene	72M, 72P, 72M-BLK, 60M, 60P, 60M-BLK, 36M, 36P
Hyundai Heavy Industries	MG, RW, RG, KG, TG Series
Hyundai Heavy Industries	KI, TI, RI Series
ITEK	iT HE and iT SE
JA Solar	*JAP6(k)-72-xxx/4BB; JAP72SYY-xxx/ZZ; JAP6(k)-60-xxx/4BB; JAP60SYY-xxx/ZZ JAM6(k)-72-xxx/ZZ; JAM72SYY-xxx/ZZ; JAM6(k)-60-xxx/ZZ; JAM60SYY-xxx/ZZ YY = Backsheet, ZZ Cell technology*
Jinko 60 Cell	Jinko 60: JKMxxxP-60,
	Jinko Eagle 60: JKMxxxPP-60,
	Jinko Eagle MX60: JKMSxxxPP-60,
	Jinko MX60: JKMSxxxP-60,
	Jinko Black 60: JKMxxxPP-60B
	Jinko 60: JKMxxxPP-60
Jinko 72 Cell	Jinko 72: JKMxxxP-72,
	Jinko Eagle 72: JKMxxxPP-72,
	Jinko Eagle MX72: JKMxxxPP-72
Kyocera	KD-F Series, KU-60 Series, KU2XX-6MCA

LG Electronics	*Mono Neon, Mono X, NeON 2 LGxxxN2W-G4, NeON LGxxxN2W-B3, NeON LGxxxS1C-G4, Mono X LGxxxS2W-G4, Mono X Plus LGxxxS1C-A5, NeON 2 LGxxxN1C-A5 NeON R LGxxxQ1C(Q1K)-A5 NeON 2 LGxxxN1C(N1K)-A5 NeON 2 Bifacial LGxxxN2T-A5 NeON 2 LGxxxN2W-A5 Mono X Plus LGxxxS2W-A5 NeON 2 ACe LGxxxE1C-A5 NeON 2 LGxxxN1C(N1K)-G4 *
Mission Solar	MSE Mono 60, MSE Mono 72 MSE PERC 60, MSE PERC 72
Mitsubishi	MJE, MLE, NSP
Panasonic	VBHNxxxSA06, VBHNxxxSA06B, VBHNxxxSA11, VBHNxxxSA11B, VBHNxxxSA15, VBHNxxxSA15B,
	VBHNxxxSA16, VBHNxxxSA16B, VBHNxxxKA, VBHNxxx SA17/18/KA03/04
Phono Solar Technology	All Standard Modules
Q-Cells	Q.PEAK-G3.1 XXX, Q.PEAK BLK-G3.1 XXX, Q.PLUS BFR G3.1 XXX,
	Q.PLUS-G3 XXX, Q.PRO G3 XXX, Q.PRO BFR-G3 XXX,
	Q.PEAK-G3 XXX, Q.PEAK BLK-G3 XXX, Q.PLUS BFR G4.1 XXX,
	Q.PRO BFR G4 XXX, Q.PRO BFR G4.1 XXX, Q.PRO BFR G4.3 XXX,
	Q.PEAK-G4.1 XXX, Q.PEAK-G4.1/MAX XXX,
	Q.PEAK BLK G4.1 XXX, Q.PRO G4 XXX, Q.PLUS G4 XXX,
	Q.PEAK-G4.1/TAA XXX, Q.PEAK BLK G4.1/TAA XXX,
	Q.PLUS BFR G4.1/TAA XXX, Q.PLUS BFR G4.1/MAX XXX,
	B.LINE PLUS BFR G4.1 XXX, B.LINE PRO BFR G4.1 XXX,
	Q.PRO EC-G4.4 XXX, Q.PRO L-G2 XXX, Q.PEAK L G4.2 XXX,
	Q.PLUS L G4.2 XXX, Q.PLUS L G4.1 XXX, Q.PLUS L G4 XXX,
	Q.PRO L G4 XXX, Q.PRO L G4.1 XXX, Q.PRO L G4.2 XXX,
	B.LINE PLUS L G4.2 XXX, B.LINE PRO L G4.1 XXX,
	B.LINE PRO L G4.2 XXX, Q.PLUS L-G4.2/TAA

The modules selected for UL 2703 bonding and grounding testing represent the broadest possible range of modules on the market. The tests were performed for each specific bonding location using representative module frame profile sections. The tests performed cover the following basic module parameters:

- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A

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Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the SOLARMOUNT system.

Manufacturer	Series/Model
REC	TwinPeak 72 45mm
	Peak Energy 72 45mm
	Peak Energy 38mm
	TwinPeak (2) (BLK2) - 38mm
	TwinPeak2S 72 Series - RECxxxTP2S 72 30mm
Renesola	All 60-cell modules
Seraphim	SEG-6PA, SEG-6PB, SEG-6MA,SEG-E01, SEG-E11, SRP-6QA, SRP-6QB (40mm only)
Sharp	ND240QCJ,
	ND240QCS,
	NDQ235F4
Silfab	SLAXXXM, SLAXXXP, SLGXXXP, SLGXXXM
Solartech	STU-XXX HIT, b. STU-XXX PERC, Quantum PERC
SolarWorld	SunModule Protect, SunModule Plus, SunModule Pro
Sun Edison / MEMC	F-Series, R-Series
Suniva	MV Series,
	OPTIMUS Series
SunPower	AC, E-Series,
	Sig Black, X-Series
	P-Series
Suntech	STP "XXX"
Talesun	TP672, TP660, TP654, TP572, TP596, Hipor M350, Smart
Trina	PD05, PA05, DD05, DD14, PE14, PD14, DE14
TSMC Solar	TS-150C2 CIGS
Winaico	WST, WSP
Yingli	Panda 60, YGE 60, YGE-Z 60 YGE-U72

The modules selected for UL 2703 bonding and grounding testing represent the broadest possible range of modules on the market. The tests were performed for each specific bonding location using representative module frame profile sections. The tests performed cover the following basic module parameters:

- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A

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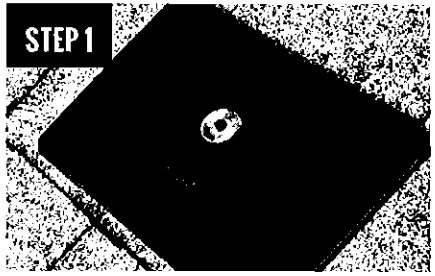
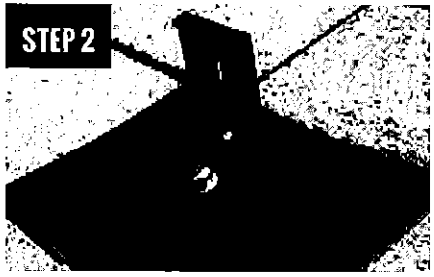
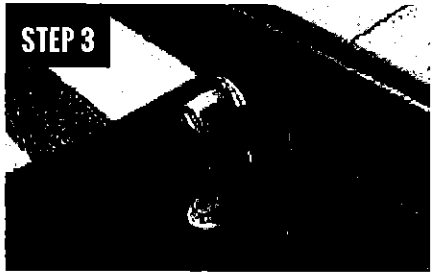
APPENDIX B
FLASHKIT PRO INSTALLATION PAGE



INSTALL **FLASH**KIT PRO FLASHING



INSTALL L-FOOT



ATTACH L-FOOT TO RAIL

PRE-INSTALL SYSTEM LAYOUT

- Locate rafters and snap horizontal and vertical lines to mark the installation position for each flashing.
- Drill a pilot hole (1/4" diameter) for the lag bolt. Backfill with sealant.

STEP 1 INSTALL **FLASH**KIT PRO FLASHING

- Insert the flashing so the top part is under the next row of shingles and pushed far enough upslope to prevent water infiltration through vertical joint in shingles.
- The leading edge of flashing must butt against upper row of nails to prevent turning when torqued.

QUICK TIP:

- For vertical adjustment when leading edge of flashing hits nails in upper shingle courses, slide flashing up under shingles until leading edge engages nails. Measure remaining distance to adjust upslope.
- Remove flashing and cut a "V" notch at marks where nail shafts engaged leading edge of flashing the distance desired in Step 1. Notch depth not to exceed 2" in length by 1/2" in width.
- Re-install flashing with notched area upslope, and position notched leading edge underneath nail heads.

STEP 2 INSTALL L-FOOT

- Line up pilot hole with **FLASH**KIT PRO fastener hole.
- Insert the lag bolt through the EPDM washer, the top L-101-3 compression bracket, and the gasketed hole in the flashing and into the rafter.
- Torque to 100-140 torque inch-pounds depending on the type of wood and time of year. The visual indicator for proper torque is when the EPDM on the underside of the bonded washer begins to push out the sides as the washer compresses. If using an impact wrench to install the fasteners be careful not to over torque the fastener. You may need to stop and use a ratchet to finish the install.

STEP 3 ATTACH L-FOOT TO RAIL

- Slide the 3/8"-16 racking hardware into rail slot, spacing bolts to match the spacing of the attachments.
- Torque 3/8" nut to 30ft-lbs. Use anti-seize to prevent galling.

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Schneider Electric Solar CONTRACTUAL WARRANTY

This Schneider Electric Solar Contractual Warranty applies to the following products:

- CONEXT CL125A grid tie string Inverter model: PVSCL125A
- CONEXT CL60A grid tie string Inverter model: PVSCL60A
- CONEXT XW PRO 6848 NA model: 865-6848-21

Geographic Validity:

These warranty conditions apply to the United States of America, including their 50 states and commonwealths of Puerto Rico and Northern Mariana Islands (excluding their associated islands and overseas territories).

Warranty Duration:

- Five (5) years, unless applicable law requires a longer period, in which case it will be that period of time.
- You may obtain an additional promotional five (5) years of warranty, for a total of ten (10) years, provided that You register Your Product within six (6) months from the date of the Schneider Electric Solar commercial invoice via the instructions provided. Additional information can be found at http://solar.schneider-electric.com/product-registration.

"Schneider Electric Solar" means the following Schneider Electric solar entities:

- Schneider Electric Solar Inverters USA, Inc.

"Distributor" means any Schneider Electric Solar-approved retailer, reseller or distributor of the Product which may include a Schneider Electric entity other than the Schneider Electric Solar entities listed above.

"Product" means the Schneider Electric Solar or related branded inverter product (or other related device) as identified above that You purchased from Schneider Electric Solar or through an authorized Distributor.

"You and Your" means the end-customer that has purchased and uses the Product and is entitled to the benefits of this Contractual Warranty.

1. Warranty Period and Coverage

This Contractual Warranty is provided by Schneider Electric Solar and covers defects in workmanship and materials in Your Product. In the event You purchased the Product from a Distributor, this warranty period commences upon the date of shipment from Distributor to You. In the event You purchased the Product directly

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from Schneider Electric Solar, this warranty period commences ninety (90) days after the Product is shipped from Schneider Electric Solar. The warranty period expires on the same date either (a) five (5) years later or (b) if You properly registered Your Product as specified above, ten (10) years later, unless otherwise agreed in writing (the "Warranty Period"). This Contractual Warranty, with prior written notice, is transferable to subsequent owners but only for the unexpired portion of the Warranty Period.

This Contractual Warranty does not cover and Schneider Electric Solar is not responsible for labor costs arising from or expenses related to the removal of defective Product(s) and the installation of replacement Product(s).

2. Warranty Claims

If Your Product becomes defective and You notify Schneider Electric Solar of such defect within the Warranty Period, Schneider Electric Solar will, at its sole discretion, either (i) repair the defective Product or (ii) replace with new, reconditioned parts or similar parts of equivalent depreciated value, provided that Schneider Electric Solar through inspection establishes the existence of such a defect which is covered by this Contractual Warranty. If Schneider Electric Solar elects to perform any onsite warranty services, Schneider Electric Solar requires a site escort (arranged and paid for by You) for all such warranty services. Accordingly, if Schneider Electric Solar elects to perform such on-site warranty servicing, You will need to provide Schneider Electric Solar with the relevant contact information for Your site escort for scheduling purposes. Alternatively, Schneider Electric Solar may elect, at its sole discretion, to provide You with cash compensation equal to the Product's value depreciated by the number of years of operation under the Warranty Period.

If Schneider Electric Solar repairs or replaces a Product, its warranty continues for the remaining portion of the original Warranty Period or ninety (90) days from the date of the repair or return shipment to the customer whichever is greater. All replaced Products and all parts removed from repaired Products become the property of Schneider Electric Solar.

3. Warranty Limitations

This Contractual Warranty does not warrant uninterrupted or error-free operation of the Product or cover normal wear and tear of the Product or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. The warranty claims that relate to damages, failures or defects caused by any of the following factors are not covered by this Contractual Warranty:

- Failure to commission the Product within twenty-four (24) months[1] from the date of the Schneider Electric Solar commercial invoice,
- If the Product has been commissioned and shut down or depowered for a period in excess of twenty-four (24) months,
- Improper use or non-compliance with installation, commissioning, operation or maintenance instructions (e.g., the Owners Guide, the Installation Guide),
- Unauthorized commissioning, modifications, changes or attempted repairs,
- Vandalism or destruction through external influences including damages caused by persons or animals,

[1] The Product may need to be charged, recharged or reconditioned to restore the internal properties of the Product's capacitor if it has not been operated for an extensive period of time in which case You will be responsible for all applicable fees and costs of such restorative services. If You plan to store the Product prior to commissioning or to depower the Product after commissioning, please review the storage instructions and guidelines within the Owner's Guide.

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- Use in an unsuitable environment, including any environment or location that causes excessive wear and tear or that is difficult or unsafe for Schneider Electric Solar representatives to access,
- Insufficient ventilation,
- Installation in a corrosive environment including, for example, an environment in which the Product is exposed to acid rain, hydrogen sulfide or excessive salt in the air (except for any such exposure to environmental conditions that Your Product was specifically designed to withstand as indicated in the applicable specifications for Your Product),
- Failure to observe applicable safety standards and regulations,
- Damages during transportation or storage,
- Force majeure, examples include, but not limited to: fire, flood, earthquakes, storm damage, overvoltage and lightning strikes
- Exposure to fire, water, snow, moisture, or liquid ingress or sand (except for any such exposure to environmental conditions that Your Product was specifically designed to withstand as indicated in the applicable specifications for Your Product),
- Used as a component part of another product expressly warranted by another manufacturer,
- If the original identification (trade-mark, serial number, QR code) markings have been defaced, altered, or removed,
- Consumable components of any type are not covered by this Contractual Warranty, including but not limited to fuses, surge arrestors and fans, and
- Cosmetic shortcoming which do not impair the use of the Product for the intended purpose i.e. supply of energy.

Warranty claims also exclude:

- Damages arising due to the fact that the use of the Product for the intended purpose is no longer possible or only possible with restrictions as a result of amendments to the statutory provisions applicable to the operation of the Product made after the delivery of the Product,
- Compensation for damages related to loss of power production or business operation or any expenses incurred by customer towards repair, removal and/or replacement of the Product (including but not limited to labor, transportation, temporary power),
- Costs or damages arising from changes to existing PV systems, building installations or other site changes,
- Any Products that are damaged during shipment, and
- This warranty only applies to defects in workmanship and materials which does not include claims involving regulatory compliance. To make sure Your Product meets the applicable regulatory requirements which are in place at the time of purchase, please see the applicable Product Manuals and/or Your sales contract.

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4. **Warranty Return and Repair Process**

Contact Schneider Electric Solar with a brief description of the error to evaluate and troubleshoot the issue while the Product is in the field, as many problems can be solved with remote guidance.

Please have Your Owner's Manual ready for reference and be prepared to supply:

- The serial number and part number of Your Product
- A copy of Your dated commercial invoice
- Information about the installation and commissioning or inspection certificate
- Information about the failure

Schneider Electric Solar or designated service provider reserves the right to refuse exchange requests for lack of proper documentation and information.

i. Return Material Authorization (RMA) for defective Products

After attempts to correct the problem remotely with Your assistance and if the Product must be returned to Schneider Electric Solar or designated service provider for replacement or repair, You must obtain a Return Material Authorization (RMA) number and the correct return center "Ship to" address. **Product shipments will be refused and returned at Your expense if they are unauthorized or returned without an RMA number.**

ii. Once an RMA has been issued for exchange for defective Products

Schneider Electric Solar or designated service provider, at its sole discretion, will ship an equivalent replacement Product to You. The allegedly defective Product must be returned in the same transport packaging that the replacement product was provided in. The defective Product must be shipped back to Schneider Electric Solar within **ten (10)** working days after receiving the replacement Product. If Schneider Electric Solar does not receive the Product within this timeframe, the Product cost will be billed back to You (including shipping costs, handling fees and if applicable all taxes, duties and tariffs).

Specific Information Regarding Warranty Coverage

Visually evident damage caused by shipping or mishandling is to be reported to the freight carrier within twenty-four (24) hours. Shipping damage is the responsibility of the freight carrier, not Schneider Electric Solar and should always be duly noted with the freight carrier prior to accepting and signing for the Product.

5. **Invalid Warranty Claim**

If the allegedly defective Product that is returned to Schneider Electric Solar (or service partner) pursuant to this Warranty Statement is found by Schneider Electric Solar to be free of defects, Schneider Electric Solar will charge a flat-rate inspection charge for each Product of €235, plus any Warranty Logistics Costs incurred by Schneider Electric Solar. In the event that Schneider Electric Solar ships a replacement Product to You before its inspection and thereafter determines the alleged defective Product to be defect free based on its inspection,

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Schneider Electric Solar will (i) return the defect free Product to You and (ii) charge You for the replacement Product.

6. Disclaimer of Implied and Other Warranties and Limitation of Liability

THIS CONTRACTUAL WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY PROVIDED BY SCHNEIDER ELECTRIC SOLAR IN CONNECTION WITH YOUR SCHNEIDER ELECTRIC SOLAR PRODUCT AND IS, WHERE PERMITTED BY LAW, IN LIEU OF ALL OTHER WARRANTIES, CONDITIONS, GUARANTEES, REPRESENTATIONS, OBLIGATIONS AND LIABILITIES, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE IN CONNECTION WITH THE PRODUCT, HOWEVER ARISING (WHETHER BY CONTRACT, TORT, NEGLIGENCE, PRINCIPLES OF MANUFACTURER'S LIABILITY, OPERATION OF LAW, CONDUCT, STATEMENT OR OTHERWISE), INCLUDING WITHOUT RESTRICTION ANY IMPLIED WARRANTY OR CONDITION OF QUALITY, MERCHANTABILITY, MERCHANTABLE QUALITY, OR FITNESS FOR A PARTICULAR PURPOSE.

ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, MERCHANTABLE QUALITY OR FITNESS FOR A PARTICULAR PURPOSE TO THE EXTENT REQUIRED UNDER APPLICABLE LAW TO APPLY TO THE PRODUCT SHALL BE LIMITED IN DURATION TO THE PERIOD STIPULATED UNDER THIS CONTRACTUAL WARRANTY.

LIMITATION OF LIABILITY

WHERE APPLICABLE LAW ALLOWS AND DOES NOT PROHIBIT OR RESTRICT SUCH LIMITATION, SCHNEIDER ELECTRIC SOLAR'S LIABILITY FOR ANYTHING RELATING TO THIS PRODUCT SHALL BE LIMITED TO THE PRICE PAID FOR THE PRODUCT.

TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW, IN NO EVENT WILL SCHNEIDER ELECTRIC SOLAR BE LIABLE FOR: (A) ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, LOST REVENUES, FAILURE TO REALIZE EXPECTED SAVINGS, OR OTHER COMMERCIAL OR ECONOMIC LOSSES OF ANY KIND, EVEN IF SCHNEIDER ELECTRIC SOLAR HAS BEEN ADVISED, OR HAD REASON TO KNOW, OF THE POSSIBILITY OF SUCH DAMAGE; AND/OR (B) ANY DAMAGE OR INJURY ARISING FROM OR AS A RESULT OF MISUSE OR ABUSE, OR THE INCORRECT INSTALLATION, INTEGRATION OR OPERATION OF THE PRODUCT BY PERSONS NOT AUTHORIZED BY SCHNEIDER ELECTRIC SOLAR.

EXCLUSIONS AND CLARIFICATIONS

THE CONTRACTUAL AND/OR STATUTORY WARRANTY OBLIGATION OF THE PRODUCT SELLER AND YOUR CORRESPONDING STATUTORY WARRANTY RIGHTS WHICH MAY NOT LAWFULLY BE EXCLUDED OR LIMITED ARE NOT AFFECTED BY THIS CONTRACTUAL WARRANTY. FURTHERMORE, SHOULD THIS CONTRACTUAL WARRANTY VIOLATE ANY NATIONAL, STATE, PROVINCIAL OR OTHER GOVERNMENTAL STATUTORY RIGHTS WHICH MAY NOT LAWFULLY BE EXCLUDED OR LIMITED AND WHICH GRANT YOU ANY RIGHTS IN ADDITION TO THE CONTRACTUAL WARRANTY, THEN SUCH STATUTORY RIGHTS SHALL NOT BE AFFECTED BY THE PROVISIONS OF THIS CONTRACTUAL WARRANTY.

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IF THIS PRODUCT IS A CONSUMER PRODUCT, THE APPLICABLE LAW MIGHT NOT ALLOW AN EXCLUSION OF IMPLIED WARRANTIES AND/OR MAY EXTEND ADDITIONAL BENEFITS OR PROTECTION TO YOU. TO THE EXTENT YOU ARE ENTITLED TO IMPLIED WARRANTIES OR ADDITIONAL BENEFITS OR PROTECTION UNDER APPLICABLE LAW, SUCH ARE LIMITED (TO THE MAXIMUN EXTENT ALLOWED BY APPLICABLE LAW) TO THE DURATION OF THIS CONTRACTUAL WARRANTY. SOME STATES, PROVINCES AND JURISDICTIONS DO NOT ALLOW LIMITATIONS OR EXCLUSIONS ON IMPLIED WARRANTIES OR ON THE DURATION OF AN IMPLIED WARRANTY OR ON THE LIMITATION OR EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION(S) OR EXCLUSION(S) MAY NOT APPLY TO YOU. THIS CONTRACTUAL WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE, PROVINCE TO PROVINCE OR JURISDICTION TO JURISDICTION.

Effective: January 01, 2021

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GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2019-CER-004432

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: GERMAN VELAZQUEZ RODRIGUEZ **Correo Electrónico:** solaraee@gmail.com

Compañía: DYNAMIC SOLAR

Datos de Equipo Certificado

Tipo de Equipo(s): Inversor **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
SCHNEIDER	CONEXT XW PRO 6848 NA	Certificación de Seguridad: UL 1741 Núm. Certificación: 70194014 Laboratorio: CSA	Interconectable: Sí Voltaje(s) Salida: 240 VAC Voltaje(s) Máximo Entrada: 60 VDC Eficiencia Máxima: 95.0% Tipo de Gabinete(NEMA): NEMA Type 1 Indoor Potencia Nominal: 6800Watts Garantía Manufactura: 5 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
29/OCT/2019

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8232

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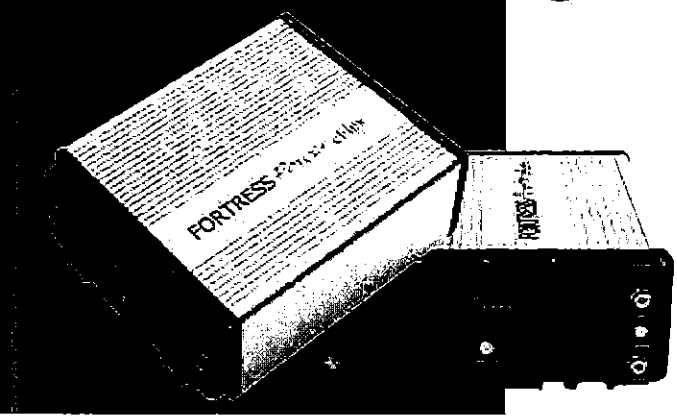

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SCAN FOR INSTALLATION MANUAL

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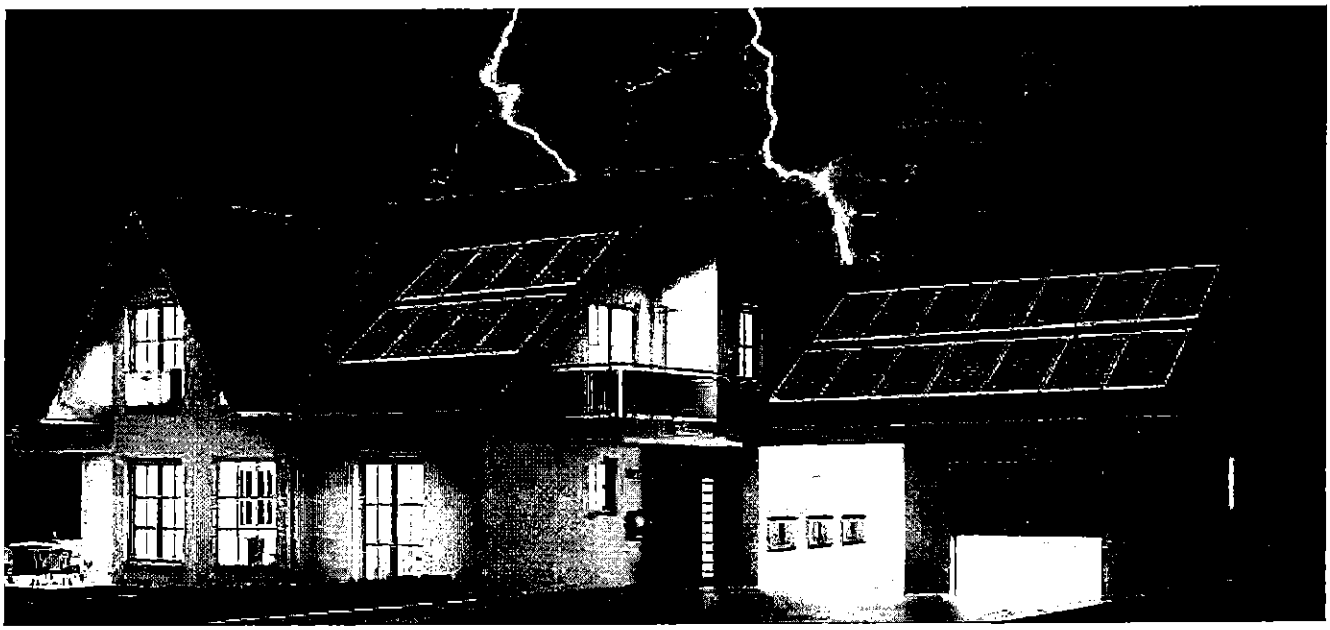

"Few companies offer such support at all these levels"

"Fortress Power has been fantastic to work with. Their technical team is readily available for installation questions. Their shipping team keeps me informed of the timing of deliveries. The sales department makes sure we know about sale prices, new products, and their terrific discount for veterans. Few companies offer such support at all these levels. A super team to work with! "

- Lori Hunt
Practical Preppers LLC

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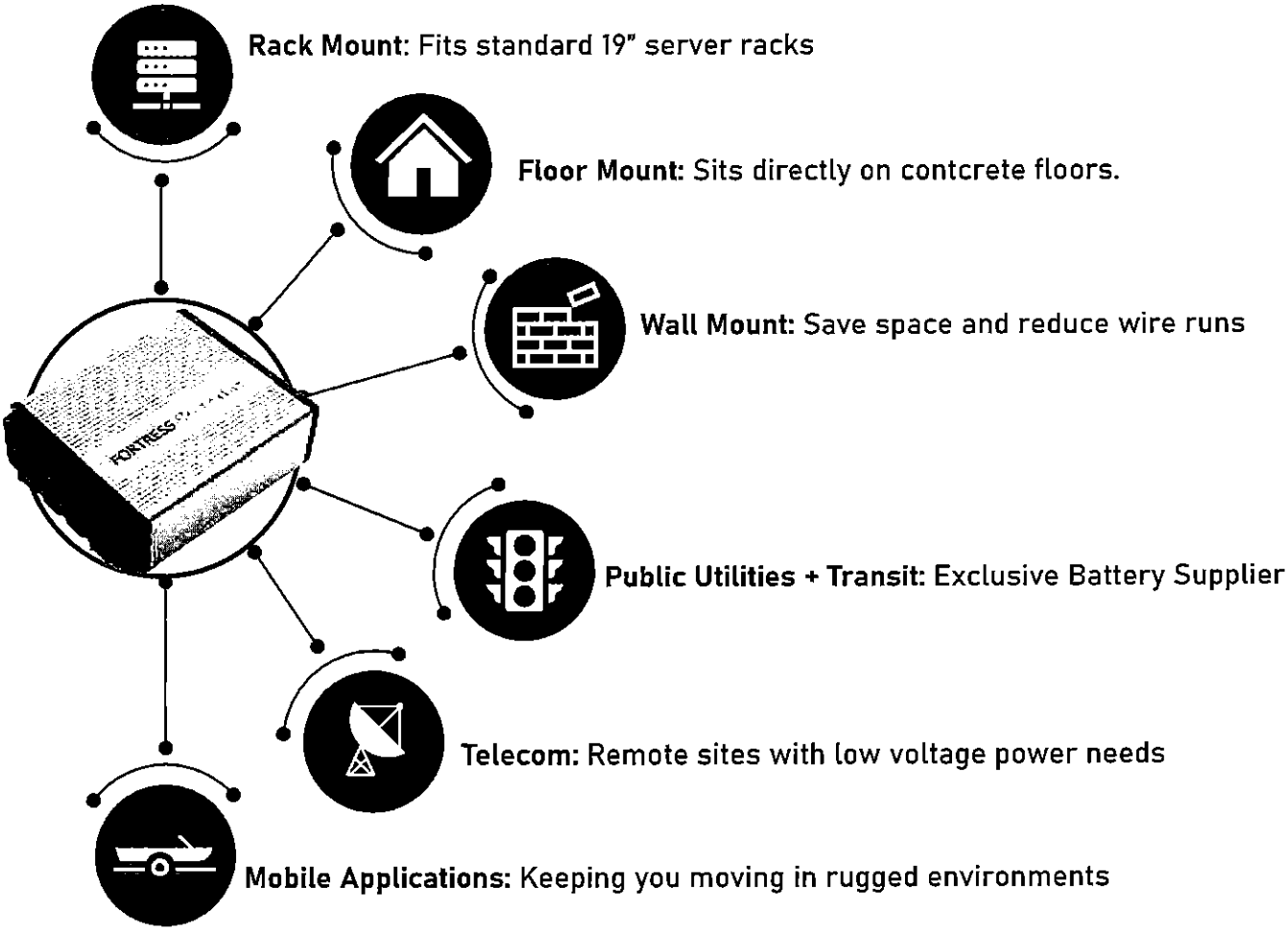

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	eFlex 5.4
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Max. Discharge Current (Continuous) [A]	60
Max. Pulse Current (for 5sex) [A]	130
Capacity [Ah]	105
Voltage Range [V]	44-58.4
Charging Temperature [F]	32 to 113
Discharging Temperature [F]	32 to 140
Storage Temperature [F]	32 to 95
Dimension [LxWxH, Inch]	21.5 x 17.5 x 7.2
Weight [lbs]	116
Life Cycles	6000 @ 80% DoD
Round Trip Efficiency	>98%

Compatible with Most Inverters on the Market

Schneider Sol-Ark MidNite Solar OutBack Power SMA Morningstar

ABOUT FORTRESS POWER

Fortress Power proudly services homes, businesses, utilities, telecom and transportation companies worldwide. Our Pennsylvania-based team's passion for clean energy storage has earned us a place among the world's top energy storage battery manufacturers.

Our logistics centers in California, Florida and Pennsylvania offer easy distribution to all of our major markets. Fortress Power's high-performance solar lithium battery storage products are designed, engineered and inventoried along with live technical support in the United States.

Fortress Power has partnered with industry leading lending institutions to help make your solar investment as easy as possible. Please visit our website for purchasing and financing options.

Fortress Power is a manufacturer of high-performance solar lithium battery storage products that are designed, engineered and inventoried along with live technical support in the United States!

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Minimum Advertised Price (MAP) Policy

Fortress Power Products

3/10/2021

This policy is made to protect the integrity of the Fortress Power Product Line and our network of distributors. **The Fortress Power MAP** policy applies to, but is not limited to, advertising in catalogs, direct mail, websites, in-store displays and any all-other forms of advertising media, including the internet and any other electronic medium available.

Your minimum advertise of must be equal or greater than Fortress Power's Manufacturer Suggested Retail price on every product. Any discounting that results in a lower advertised price of any Fortress Power item through rebates, coupons, percentage discounts or any other manner will be considered noncompliant to the MAP Policy.

In the event that Fortress Power agrees to offer a discount, promotion, or rebate on the Fortress Power Products, all the distributors will be equally informed.

If you have any questions, please do not hesitate to contact me.

Jing Yu, CEO

505 Keystone Road, Southampton PA, 18966 • jingy@fortresspower.com • (877)-497-6937

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eVault 18.5:	$ 10,150.00
eFlex 5.4:	$ 3,150.00
LFP-10:	$ 5,450.00
LFP-5K-48V:	$ 2,825.00

Agreed to by:

Distributor's name: _____

Distributor's Principal name printed: _____

Distributor's Principal Signature: _____ **Date:** _____

Distributor's Address: _____

Phone: _____

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GOBIERNO DE PUERTO RICO
Departamento de Desarrollo Económico y Comercio
Oficina de Gerencia de Permisos

Número de Caso:
2021-CER-007108

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Certificación de Equipos de Energía Renovable

Datos de la Solicitud

De acuerdo a la información suministrada se solicita la certificación para equipo(s) de energía renovable Comercial-Privado, en territorio del Estado Libre Asociado de Puerto Rico, según indicado(s) a continuación:

Solicitante: Orlando R Lopez de Victoria **Correo Electrónico:** permits@juapiprojects.com

Compañía: Juapi Energy

Datos de Equipo Certificado

Tipo de Equipo(s): Inversor **Clasificación:** Equipo Nuevo

MARCA	MODELO	CERTIFICACIONES	ESPECIFICACIONES
Sol-Ark	Sol-Ark 5K-48-ST	Certificación de Seguridad: UL 1741 Núm. Certificación: SGSNA/18/GZ/00127 Laboratorio: SGSUS	Interconectable: Sí Voltaje(s) Salida: 240 VAC Voltaje(s) Máximo Entrada: 500 VDC Eficiencia Máxima: 97.5% Tipo de Gabinete(NEMA): NEMA 1 Potencia Nominal: 5000Watts Garantía Manufactura: 5 año(s)

División de Edificabilidad

Se recomienda la instalación del equipo de fuente de energía renovable sometido ante la OGPe, a tenor con el Reglamento para la Certificación de Sistemas de Energía Renovable y el Reglamento Conjunto para Obras de Construcción y Usos de Terrenos, vigentes.

Condiciones Especiales

Bajo ninguna circunstancia, deberá interpretar que esta certificación implique la aprobación de instalación de equipos en un proyecto de construcción, ni que se autorice iniciar obras de construcción de clase alguna, sin el trámite del correspondientes permiso de construcción.

Firmas / Sellos

Fecha de Expedición:
23/JUL/2021

Ing. Gabriel Hernández
Secretario Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Ing. Gabriel Hernández Rodríguez

Secretario Auxiliar

Puerto Rico water®
MANAGEMENT
LA AUTORIDAD EN CISTERNAS

¡Tenemos el INVENTARIO MÁS COMPLETO disponible en Puerto Rico!

• CISTERNAS • BOMBAS ELÉCTRICAS • TANQUES PRESURIZADOS
• VENTA • INSTALACIÓN • MANTENIMIENTO

Las cisternas son manufacturadas con polietileno lineal de primera calidad y resina aprobada por la FDA para almacenar agua.

- **Fabricadas en una sólida estructura y reforzada con costillas en todo su diámetro para mayor fortaleza**
- **Anticorrosiva 100%**
- **Protector contra los rayos solares para evitar el crecimiento de algas**
- **Sistema de anclaje contra huracanes**

Tel. 787-728-1000 /PuertoRicoWaterManagement /PuertoRicoWater

216 Calle del Valle, Marg. Baldorioty de Castro, Santurce info@puertoricowater.net

CAGE Code: 4VQP5 DUNS: 146065391 HUBZone: 61897 WOSB (Women-Owned)
NAICS Code: 2389 / 237110 / 45299 / 3561 / 5999 / 333914 EDWOSB

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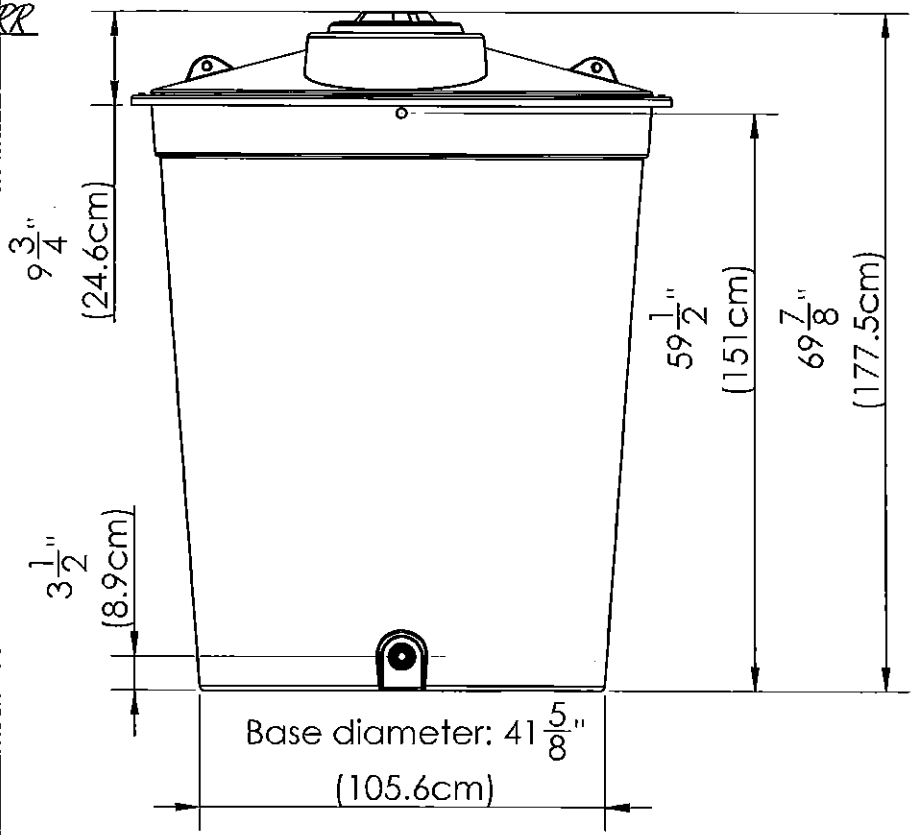

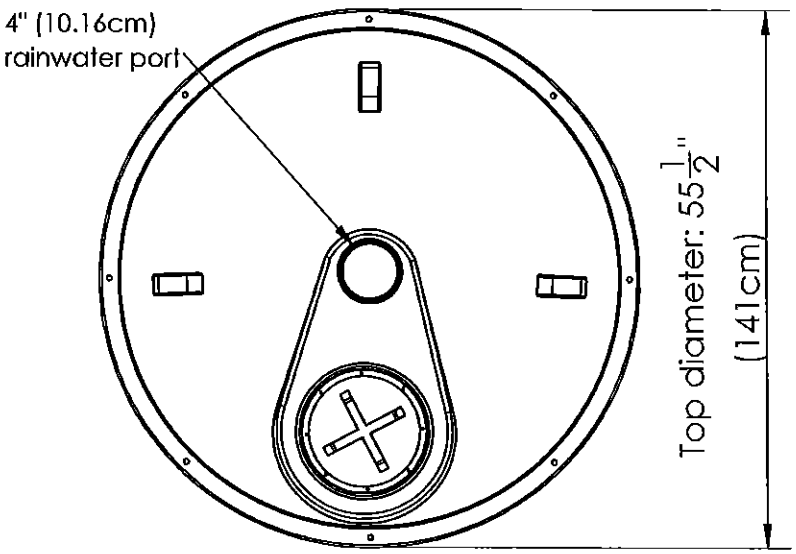

TUFF TANK HEALTH GARD

400 US gal CKD Tank

Specifications

- Fitting size: 3/4" (1.905cm)
- Effective capacity: 374 gal (1415.74 L)
- Weight: 78lbs (35.4kg)
- Material: LDPE
- Cover: 10" (25.4cm) screw cover
- Height without top: 53 1/4" (135.3cm)

Date: 17/09/2021	Sheet: 1/1

Drawn by: Jesse Ramsubhag

Confidential
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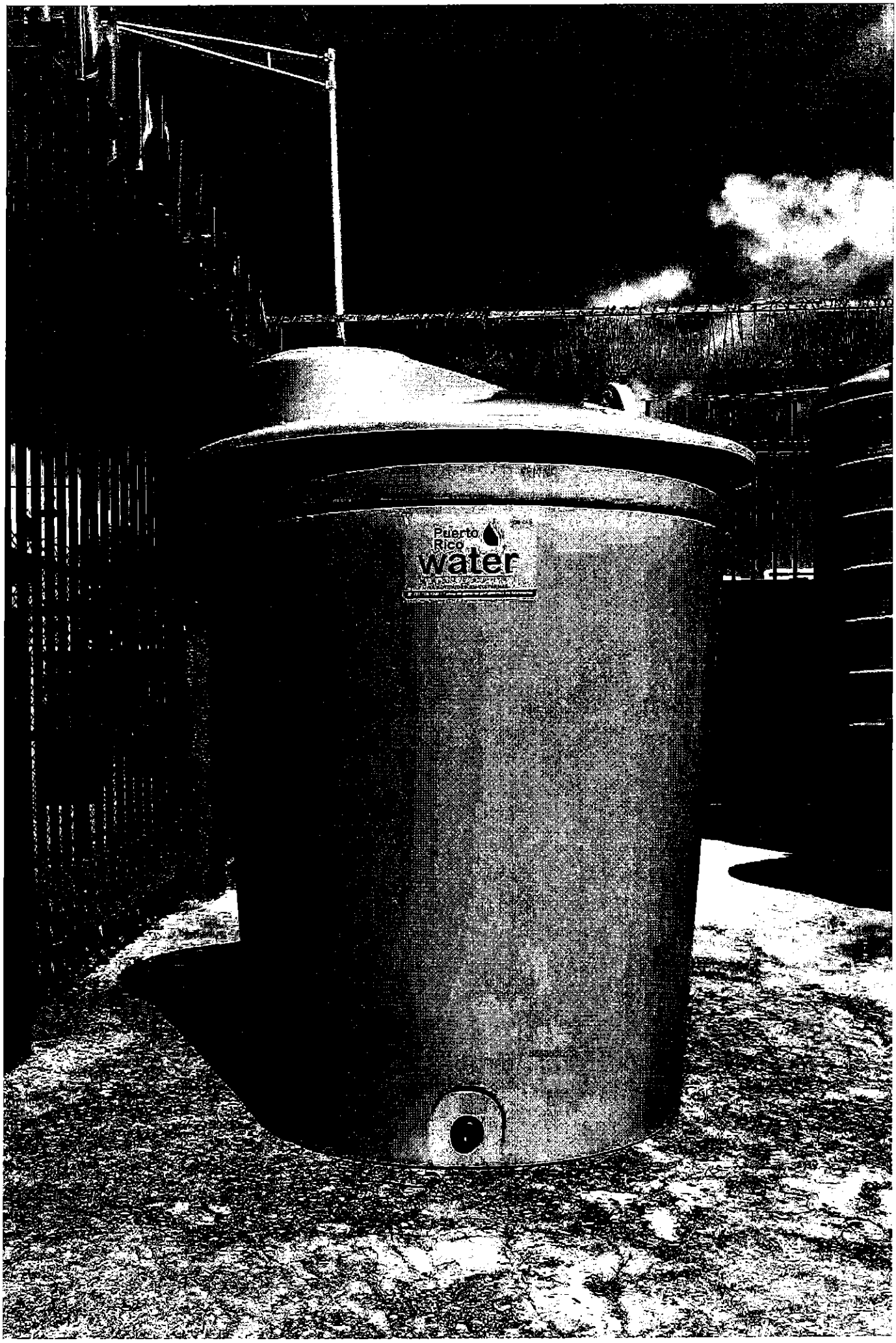
ROTOPLASTICS TRINIDAD LIMITED

27-29 Don Miguel Road Extension, El Socorro Extension
El Socorro 280616, Trinidad & Tobago
Tel: 868-674-TANK(8265) Fax: 868-674-8339
Website: www.rotoplastics.co.tt


Puerto
Rico
Water

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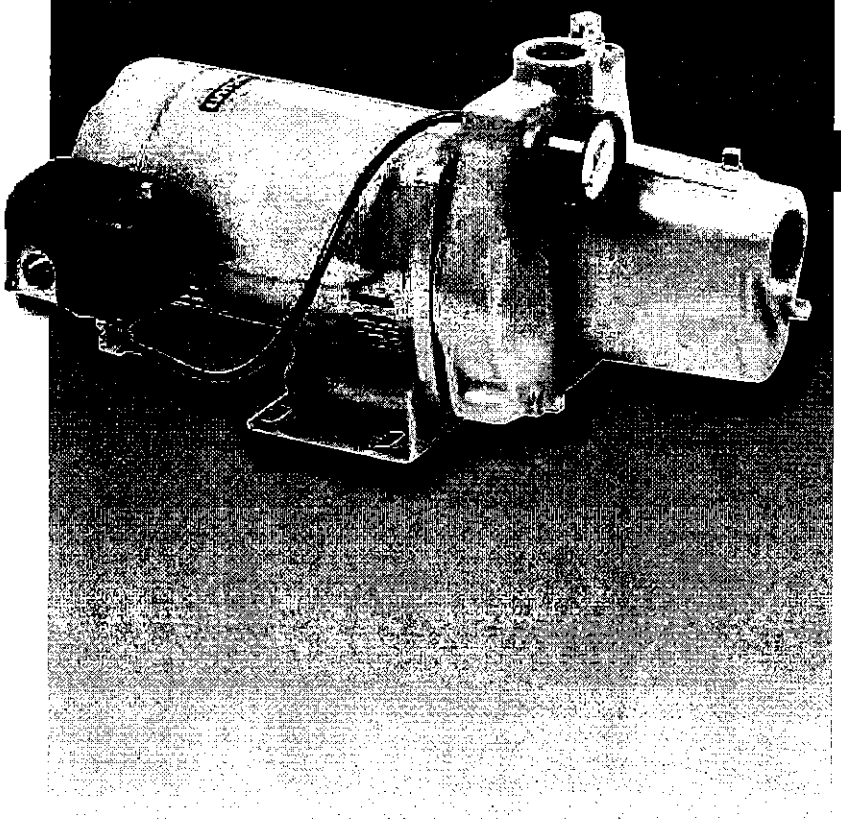
Shallow Well Jet Pumps



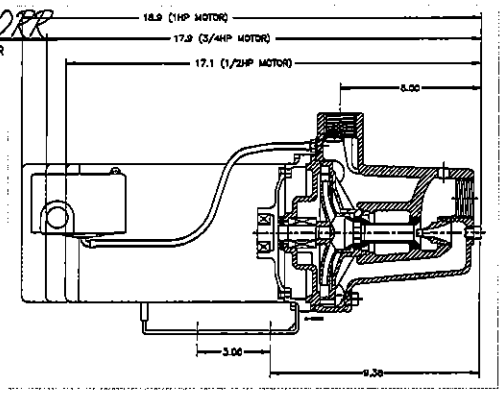
Applications:

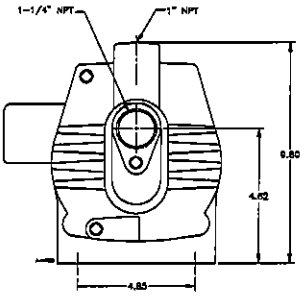
- For supplying fresh water to rural homes, farms and cabins
- For installations where the vertical distance from the pump to the pumping water level does not exceed 25 feet

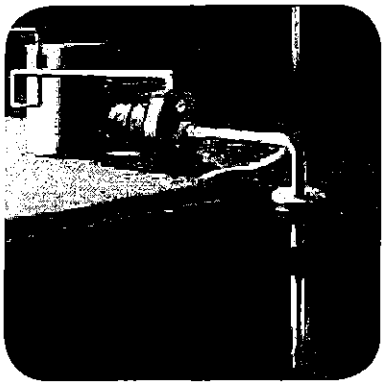
Features:

- Cast iron casing and seal plate for durability and long life
- A.O. Smith higher than standard NEMA service factor dual compartment motor
- Dual voltage 115/230V
- Square D pressure switch preset at 30-50 PSI
- 1-1/4" suction, 1" NPT discharge and brass flow control valve
- Pressure gage included with all models
- Stainless steel motor shaft and dual ball bearings
- Precision engineered thermoplastic impeller, diffuser, nozzle and venturi
- Clean-out plug to easily unclog nozzle
- Fully serviceable with two-year warranty

Dimensional Outlines:







Specifications:

1/2 HP

Item #	Model	Total Suction Lift (ft. / m)	Pump Capacity GPM (LPM) Discharge Pressure in PSI									Maximum Pressure
			20	25	30	35	40	45	50	55	60	
558274	JP-050-C	5 (1.5)	12.8 (48.5)	12.5 (47.3)	12.3 (46.6)	12.1 (45.8)	11.2 (42.4)	9.5 (36)	6.9 (26.1)	4.3 (16.3)	2 (7.6)	64.2 (4.5kg/cm²)
		10 (3.1)	11.5 (43.5)	11.3 (42.8)	11 (41.6)	10.8 (40.9)	10.4 (39.4)	8.5 (32.2)	6 (22.7)	3.4 (12.9)	1 (3.8)	62 (4.4kg/cm²)
		15 (4.6)	9.8 (37.1)	9.7 (36.7)	9.6 (36.4)	9.5 (36)	9.4 (35.6)	7.3 (27.7)	4.7 (17.8)	2.2 (8.3)	–	59.9 (4.2kg/cm²)
		20 (6.1)	8.3 (31.4)	8.1 (30.7)	7.8 (29.5)	7.7 (29.2)	7.6 (28.8)	5.7 (21.6)	3.5 (13.3)	1 (3.8)	–	57.7 (4.06kg/cm²)
		25 (7.6)	5.6 (21.2)	5.5 (20.8)	5.5 (20.8)	5.4 (20.5)	5.3 (20.1)	4.1 (15.5)	2.3 (8.7)	0.2 (.8)	–	55.5 (3.9kg/cm²)

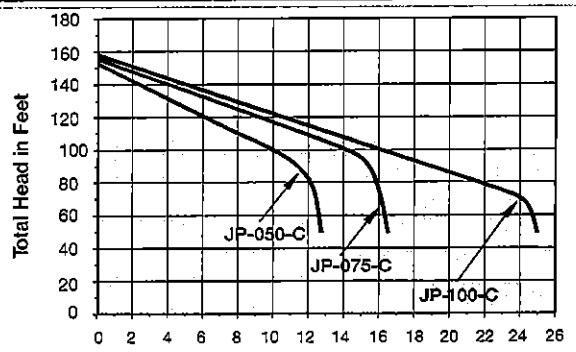
3/4 HP

Item #	Model	Total Suction Lift (ft. / m)	Pump Capacity GPM (LPM) Discharge Pressure in PSI									Maximum Pressure
			20	25	30	35	40	45	50	55	60	
558275	JP-075-C	5 (1.5)	16.2 (61.3)	16 (60.6)	15.8 (59.8)	15.6 (59.1)	15.4 (58.3)	12.1 (45.8)	8.7 (33)	5.7 (21.6)	2.9 (11)	65 (4.6kg/cm²)
		10 (3.1)	14.3 (54.1)	14 (53)	13.7 (51.9)	13.5 (51.1)	13.2 (50)	10.6 (40.1)	7.6 (28.8)	4.6 (17.4)	1.6 (6.1)	62.8 (4.4kg/cm²)
		15 (4.6)	12.1 (45.8)	11.7 (44.3)	11.3 (42.8)	11 (41.7)	10.6 (40.1)	9.3 (35.2)	6.3 (23.9)	3.2 (12.1)	0.2 (.8)	60.6(4.3kg/cm²)
		20 (6.1)	9.9 (37.5)	9.6 (36.3)	9.3 (35.2)	9 (34.1)	8.7 (33)	7.8 (29.5)	4.8 (18.2)	1.9 (7.2)	–	58.5 (4.1kg/cm²)
		25 (7.6)	7.2 (27.3)	7.1 (26.9)	7 (26.5)	6.9 (26.1)	6.8 (25.8)	6.7 (25.4)	3.5 (13.3)	0.6 (2.3)	–	56.3 (4kg/cm²)

1 HP

Item #	Model	Total Suction Lift (ft. / m)	Pump Capacity GPM (LPM) Discharge Pressure in PSI										Maximum Pressure
			20	25	30	35	40	45	50	55	60	65	
558276	JP-100-C	5 (1.5)	24.8 (93.9)	24.7 (93.5)	23.2 (87.8)	19.8 (75)	16.5 (62.5)	13.1 (49.6)	9.5 (36)	6.3 (23.9)	3.4 (12.9)	0.5 (1.9)	66.2 (4.7kg/cm²)
		10 (3.1)	21.5 (81.4)	21.2 (80.3)	20.1 (76.1)	18.4 (69.7)	15.2 (57.6)	11.5 (43.6)	7.9 (29.9)	4.9 (18.6)	2.4 (9.1)	–	64.2 (4.5kg/cm²)
		15 (4.6)	18.1 (68.5)	17.8 (67.7)	17.4 (65.9)	16.7 (63.2)	13.8 (52.2)	10.3 (39)	6.9 (26.1)	4 (15.1)	1.3 (4.9)	–	62.1 (4.4kg/cm²)
		20 (6.1)	14.4 (54.5)	14.3 (54.2)	14.2 (53.8)	14.6 (55.3)	12.3 (46.7)	9 (34.1)	5.3 (20.1)	2.3 (8.7)	0.2 (.6)	–	60.1 (4.2kg/cm²)
		25 (7.6)	10.5 (39.8)	10.5 (39.8)	10.4 (39.4)	10.3 (39)	8.8 (33.3)	7 (26.5)	4.2 (15.9)	1.3 (4.9)	–	–	57.2 (4kg/cm²)

Performance:



Capacity - Gallons per Minute
at 20 PSI with 5 feet suction lift

Franklin Electric

P.O. Box 12010
Oklahoma City, OK 73157-2010
Phone: 1.800.701.7894
Fax: 1.800.678.7867
www.LittleGiantPump.com

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Form 995259 1/08

Little GIANT®
Pumps. People. Partnerships.

PRE-CHARGED PRESSURE TANKS

APPLICATIONS

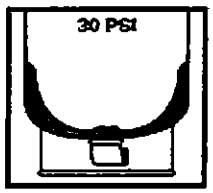
For maintaining the water pressure in a residential water pump system when the pump is not running.

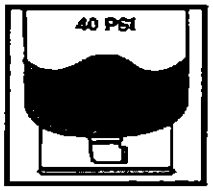
FEATURES & BENEFITS

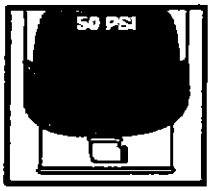
- ANSI/NSF Standard 61 approved assures safe, clean drinking water
- Blended butyl rubber diaphragm system isolates the air charge from the water chamber; reinforced in specific wear areas for longer life
- Heavy-duty, cold-rolled steel construction
- Leak-resistant, O-ring sealed air valve cap allows adjustment of air pre-charge
- Unique, patented dual water/air seal design offers superior leak protection
- Durable two-part paint finish is suitable for outdoor use and provides hundreds of hours of UV and salt spray protection in moderate climates*

Model	Item No.	UPC	Gallons	Drawdown @ 30/50 psi (gal (gal))	Fixtures	Type	System Connect
RL2	604452	0 10121 12335 9	2.1	0.7	-	Inline	3/4" MNPT
RL4	604453	0 10121 12336 6	4.8	1.5	-	Inline	3/4" MNPT
RL8	604454	0 10121 12337 3	8.5	2.6	-	Inline	3/4" MNPT
RL6H	604529	0 10121 12126 3	5.3	1.6	1	Horizontal	3/4" MNPT
RL14H	604493	0 10121 12324 9	14.0	4.3	4	Horizontal	3/4" MNPT
RL16*	604587	0 10121 15197 0	15.9	4.9	5	Vertical	1" NPT
RL20H*	604581	0 10121 15158 1	21.1	6.2	7	Horizontal	1" NPT
RL21*	604582	0 10121 15159 8	21.1	6.5	7	Vertical	1" NPT
RL34*	604583	0 10121 15160 4	34.3	10.6	11	Vertical	1" NPT
RL40*	604584	0 10121 15161 1	40.0	12.4	13	Vertical	1" NPT
RL81	604541	0 10121 12365 6	81.0	27.6	27	Vertical	1-1/4" NPT
RL119	604531	0 10121 12360 1	119.0	40.6	39	Vertical	1-1/4" NPT

5 FIVE YEAR WARRANTY







CARTON SPECIFICATIONS

Model	Length	Width	Height	Weight (lbs)	Carton Cubes (cu ft)	Pallet Quantity	Quantity per Layer	Layers per Pallet
RL2	8.33"	8.33"	12.75"	5.0	0.51	60	20	3
RL4	11.12"	11.12"	15"	10.0	1.07	36	12	3
RL8	13.5"	19.5"	13.5"	15.4	2.06	18	6	3
RL6H	10.5"	18"	12.25"	13.3	1.34	18	6	3
RL14H	15.75"	21.25"	17.25"	27.0	3.34	8	4	2
RL16	15.5"	15.75"	25.13"	24.9	3.55	6	6	1
RL20H	15.75"	29"	17.25"	35.8	4.56	6	3	2
RL21	15.75"	15.5"	32.75"	35.8	4.63	6	6	1
RL34	17.25"	17.5"	43.25"	58.8	7.56	4	4	1
RL40	21.5"	21.25"	37.25"	76.3	9.85	2	2	1
RL81	21.5"	21.5"	60"	101.0	16.05	2	2	1
RL119	26.75"	26.75"	61.5"	160.0	25.47	1	1	1

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POLNAC

POLIMEROS NACIONALES S.A. DE C.V.
Lázaro Cárdenas No. 49
Col. San Jerónimo Tepetlacalco,
Tlalnepantla, Edo. de México, C.P. 54090
Tels.: 53 62 53 60, 53 62 61 73, 53 62 61 74
53 62 61 75, Fax: 53 97 13 76
http://www.polnac.com

TECHNICAL DATA SHEET

EDITION: 01/01.16

CODE: ***BDL 39035***
DESCRIPTION: LINEAR LOW DENSITY POLYETHYLENE.

Uses and suggestions: BDL 39035 is a linear low density polyethylene. Is especially designed for rotational molding process articles and easy processability. Material additive antioxidant and UV protector grade V8. The material meets the requirements of the Food and Drug Administration of the United States of America, Title 21.CFR177.1520 and Europeanstandard85/572/EEC, 90/128/EEC and 97/48/EC.

PROPERTY	INTERNAL TEST METOD/ REFERENCE	VALUE	UNITS
MELT FLOW INDEX @190°C, 2.16 kg	ITCC-00-01 /ASTM D1238	3.50	g/10min
DENSITY	ITCC-00-08 / ASTM D792A	0.939	g/cm^3
TENSILE STRENGTH@YIELD	ITCC-00-04 / ASTM D638	17.7	MPa
TENSILE ELONGATION@BREAK	ITCC-00-05 / ASTM D638	> 1000	%
FLEXURAL MODULUS 1% SECANT	ITCC-00-06 / ASTM D790-1	730	MPa
ENVIROMENTAL RESISTANCE ESCR f50			
100% IGEPAL	ASTM D1693	> 1000	Hrs
10% IGEPAL	ASTM D1693	185	Hrs
HDT			
66 PSI	ITCC-00-10 / ASTM D648	61.1	°C
264 PSI	ITCC-00-10 / ASTM D648	38.1	°C

Test and presented outputs have been gotten using methods of laboratory; the which they don't offer guarantee any according to the ends that it destines the user, who determines their application and conditions of extrusion molding (temperature, pressure).

Polímeros Nacionales, S.A. de C.V. don't give additional expressed or implicit guarantees, for example, guarantees of commercialization or of specific applications in the use of this material and no case the company will be sponsor of any damage. The use of the product indicates the acceptance previously mentioned.

WORR

Cast Iron

Shallow Well Jet Pumps

With Built-in Pressure Switch

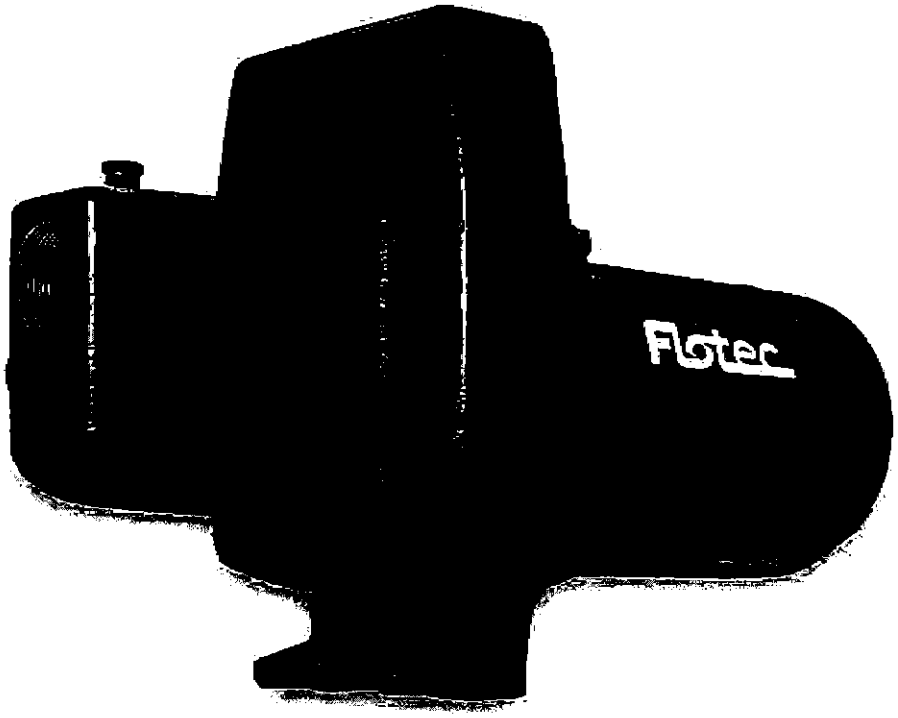
Puerto Rico Water Management
216 Calle Del Valle
Marginal Baldorioty de Castro
San Juan, PR 00911-2328

Rugged Pump Housing
Durable cast iron construction

Superior Performance
At depths to water of 25' or less

Heavy-Duty Dual-Voltage Motor
3/4 HP preset at 230V
1/2 HP preset at 115V

Self-Priming After Pump Housing Is Initially Filled
Check valve or foot valve required, sold separately

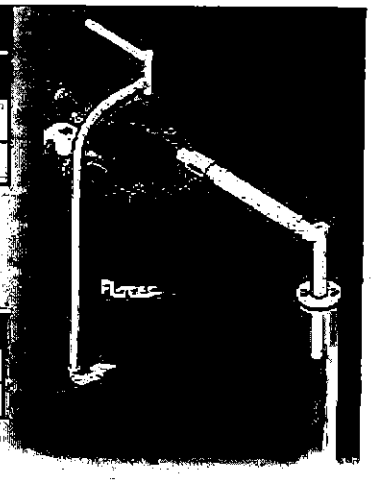


3/4 HP 14.7 GPM FP4122

1/2 HP 8.8 GPM FP4112

PERFORMANCE (GPM)							MAX PRESSURE SHUTOFF	VOLTAGE	PRESSURE SWITCH	
DEPTH TO WATER	0'	5'	10'	15'	20'	25'			ON	OFF
FP4122	14.7	14.4	12.8	11.8	9.4	7.3	70 PSI	115/230	30	50
FP4112	8.8	8.5	7.8	6.8	5.6	4.5	69 PSI	115/230	30	50

• All performance shown in gallons per minute at 40 PSI discharge pressure



MODEL	WARRANTY	UPC	CARTON DIMENSIONS	PALLET QTY.	WEIGHT
FP4122	1 YEAR	922315100619	21.5" x 13.44" x 10.33"	24	43.3 LBS.
FP4112	1 YEAR	922315100602	21.5" x 13.44" x 10.33"	24	41 LBS.

Includes:

Factory-installed 30/50 preset pressure switch, detailed owner's manual

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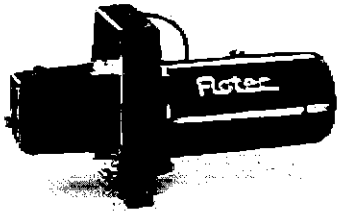
OVERVIEW

Pentair Flotec FP4112 1/2 HP Cast Iron Shallow Well Jet Pump

JUMP TO



Cast iron shallow well jet pumps provide superior performance and high capacities with more pressure for shallow wells 25' or less.

Find out where to purchase online or in a retail location near you.

WHERE TO BUY

KEY FEATURES

- Superior performance at depths to water of 25' or less
- Rugged, heavy-duty cast iron pump housing
- Ready-to-install dual voltage (115v/230v) motor
- 1-1/4" NPT suction and 1" NPT discharge pipe sizes

WARRANTY

1 year limited warranty

PERFORMANCE CURVES

PERFORMANCE (GPM)							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

All performance shown in gallons per minute at 40 PSI discharge pressure.

BODY CONSTRUCTION: Cast Iron
MAXIMUM CAPACITY: 8.8 GPM
FLOW AT 10' LIFT and 40 PSI: 7.8 GPM
MAX PSI: 56 psi
PRESSURE SWITCH SETTING: 30/50
SUCTION PIPE SIZE: 1-1/4" NPT
MINIMUM SUCTION PIPE SIZE: 1" NPT
DISCHARGE PIPE SIZE: 1"
MINIMUM DISCHARGE PIPE SIZE: 3/4"
AMP DRAW: 9.4 amps
VOLTAGE: 115v/230v (preset to 115v), 60 Hz
RECOMMENDED BREAKER: 15 amp
LIQUID TEMP RANGE: 32°F-140 °F (0°C-60 °C)
JET KIT: Included
ACCESSORIES INCLUDED: none

Puerto Rico Water Management
216 Calle Del Valle
Marginal Baldorioty de Castro
San Juan, PR 00911-2328

SPECIFICATIONS

Heavy Duty Float Valves

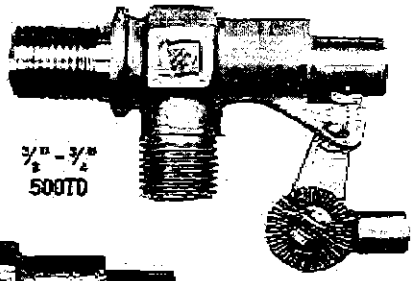
Series 375, 500, 750, 1000, 1250, 1500 and 2000

(Heavy Duty Mechanical Float Valves with Threaded or Non-Threaded Outlets)

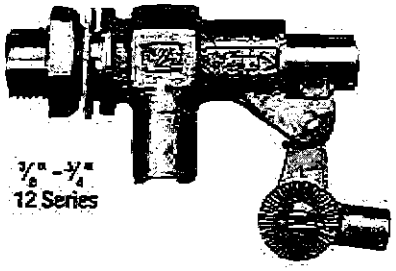
Heavy Duty Mechanical Float Valves are used in commercial, industrial, and agricultural applications for controlling high capacity water flow, and can be mounted on tank walls. The valves are constructed of a bronze body with a 1" to 2" (25 to 50mm) female NPT pipe threaded inlet connection and male straight-pipe threaded for locknut on the outlet side. It has serrated arms for easy adjustment of water level, bronze long and short arms, replaceable seals, and no-jam single lever action. This series is ideal for use in air conditioning, refrigeration, and irrigation systems.

Maximum Pressure: 165psi (11.4 bar).

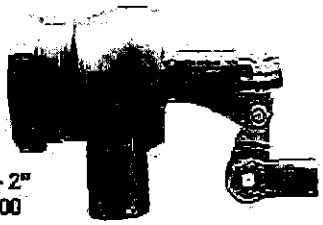
For technical specifications refer to ES-HDV on watts.com.



3/8" - 3/4"
500TD



3/8" - 3/4"
12 Series



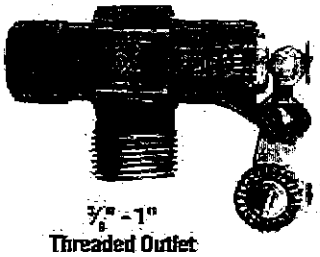
1" - 2"
1000

Standard Duty Float Valve

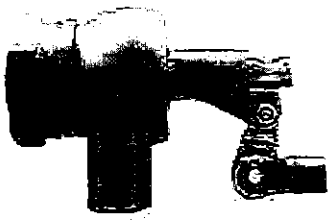
Standard Duty

Brass valves with threads on both ends.

(For other sizes consult factory.)



3/8" - 1"
Threaded Outlet
ST500



1 1/4" - 2"
Non-Threaded Outlet
ST1000

Heavy Duty Floats

CX Series
Copper Heavy Duty Floats

Composed of high grade copper construction and feature firmly bonded overlapping joints.

CX

PX

PX Series
Plastic Heavy Duty Floats

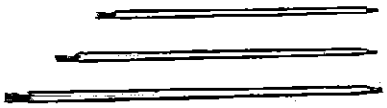
These non-electrolytic and highly corrosion resistant floats are ideal for use with salts and caustic fluids. Composed of injection-molded polyethylene, they are resistant to sunlight and deterioration.

Heavy Duty Stems and Adaptors

Stems

Brass with Threads on Both Ends

Heavy Duty Stems are available in 10" to 12" (250 to 300mm) lengths with threads on both ends. These stems are composed of heavy duty brass.

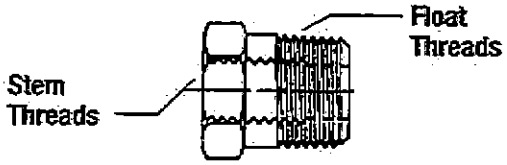


Nuzzle Assembly

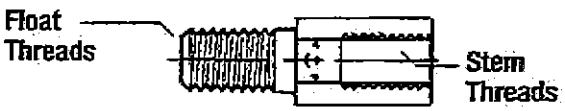
For Exposed Cattle Watering Systems

Nuzzle Assemblies are designed for use on exposed cattle water systems. Cattle can nuzzle the ball without harming or activating the valve. Assembly consists of thumb screws, hooks, swivel joint, and threaded stem at one end. Assembly is manufactured out of brass.

Thread Adaptors For Floats



AD1 through AD4



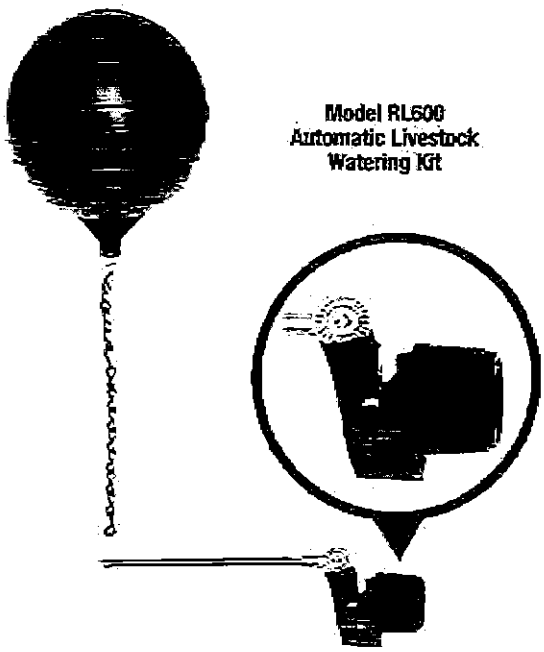
AD10 through AD15

Automatic Livestock Watering Kits

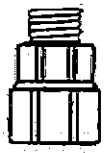
Model RL600 1¼" MNPT

Threaded with ½" FNPT threaded inlet. Consists of RL600V, RL600SC and P6 float. For use on RUBBERMAID® brand livestock tanks. Model RL600 plus universal tank adaptor (Model UA600) for use in all livestock tanks.

- High capacity
- Easy installation
- Animal proof
- Resists freezing
- Durable



Model RL600
Automatic Livestock
Watering Kit

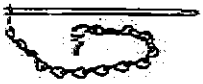


AP-112
Garden Hose Adaptor

UA600
Universal Tank Adaptor

RL600V
Nozzle and Arm
Assembly

RL600A
Arm and Seat



RL600-SC
Stem and Chain
Assembly

Table 14.1. Copper Tube: Types, Standards, Applications, Tempers, Lengths

WORR

Tube type	Color code	Standard	Application [1]	Commercially available lengths [2] Nominal or standard sizes	Drawn	Annealed
Type K	Green	ASTM B 88 [3]	- Domestic water service and distribution - Fire protection - Solar - Fuel/fuel oil - HVAC - Snow melting - Compressed air - Natural gas - Liquified petroleum (LP) gas - Vacuum	**Straight lengths:**		
				1/4 inch to 8 inch	20 ft.	20 ft.
				10 inch	18 ft.	18 ft.
				12 inch	12 ft.	12 ft.
				Coils:		
				1/4 inch to 1 inch	-	60 ft.
					-	100 ft.
				1-1/4 inch and 1-1/2 inch	-	60 ft.
					-	40 ft.
				2 inch	-	45 ft.
Type L	Blue	ASTM B 88	- Domestic water service and distribution - Fire protection - Solar - Fuel/fuel oil - Natural gas - Liquified petroleum (LP) gas - HVAC - Snow melting - Compressed air - Vacuum	**Straight lengths:**		
				1/4 inch to 10 inch	20 ft.	20 ft.
				12 inch	18 ft.	18 ft.
				Coils:		
				1/4 to 1 inch	-	60 ft.
					-	100 ft.
				1-1/4 inch to 1-1/2 inch	-	60 ft.
				2 inch	-	40 ft.
					-	45 ft.
Type M	Red	ASTM B 88	- Domestic water service and distribution - Fire protection - Solar - Fuel/fuel oil - HVAC - Snow melting - Vacuum	**Straight lengths:**		
				1/4 inch to 12 inch	20 ft.	N/A
DWV	Yellow	ASTM B 306	- Drain, waste, vent - HVAC - Solar	**Straight lengths:**		
				1-1/4 inch to 8 inch	20 ft.	N/A
ACR	Blue	ASTM B 280	- Air conditioning - Refrigeration - Natural gas - Liquefied petroleum (LP) gas - Compressed air	**Straight lengths:**		
				1/4 inch to 4-1/8 inch	20 ft.	[4]
				Coils:		
				1/8 inch to 1-5/8 inch	-	50 ft.
OXY, MED OXY/MED OXY/ACR ACR/MED	(K) Green (L) Blue	ASTM B 819	- Medical gas - Compressed medical air - Vacuum	**Straight lengths:**		
				1/4 inch to 8 inch	20 ft.	N/A

[1] There are many other copper and copper alloy tubes and pipes available for specialized applications. For information on these products, contact the Copper Development Association, Inc.

[2] Individual manufacturers may have commercially available lengths in addition to those shown in this table.

[3] Tube made to other ASTM standards is also intended for plumbing applications, although ASTM B 88 is by far the most widely used. ASTM Standard Classifications B 698 lists six plumbing tube standards including B 88.

[4] Available as special order only.

F

Table 14.2b. Dimensions and Physical Characteristics of Copper Tube: Type L

WORR

	Nominal dimensions, inches			Calculated values (based on nominal dimensions)				
Nominal or standard size, inches	Outside diameter	Inside diameter	Wall thickness	Cross sectional area of bore, sq. inches	Weight of tube only, pounds per linear ft.	Weight of tube & water, pounds per linear ft.	Volume of tube, per linear ft. Cu ft.	Gal.
¼	.375	.315	.030	.078	.125	.160	.00054	.00405
⅜	.500	.430	.035	.145	.198	.261	.00101	.00753
½	.625	.545	.040	.233	.285	.386	.00162	.0121
⅝	.750	.666	.042	.348	.362	.505	.00232	.0174
¾	.875	.785	.045	.484	.455	.654	.00336	.0251
1	1.125	1.025	.050	.825	.655	1.01	.00573	.0429
1¼	1.375	1.265	.055	1.26	.884	1.43	.00875	.0655
1½	1.625	1.505	.060	1.78	1.14	1.91	.0124	.0925
2	2.125	1.985	.070	3.09	1.75	2.09	.0215	161
2½	2.625	2.465	.080	4.77	2.48	4.54	.0331	.248
3	3.125	2.945	.090	6.81	3.33	6.27	.0473	.354
3½	3.625	3.425	.100	9.21	4.29	8.27	.0640	.476
4	4.125	3.905	.110	12.0	5.38	10.1	.0764	.571
5	5.125	4.875	.125	18.7	7.61	15.7	.130	.971
6	6.125	5.845	.140	26.8	10.2	21.8	.186	1.39
8	8.125	7.725	.200	46.9	19.3	39.6	.326	2.44
10	10.125	9.625	.250	72.8	30.1	61.6	.505	3.78
12	12.125	11.565	.280	105	40.4	85.8	.729	5.45

Table 14.2c. Dimensions and Physical Characteristics of Copper Tube: Type M

VORR

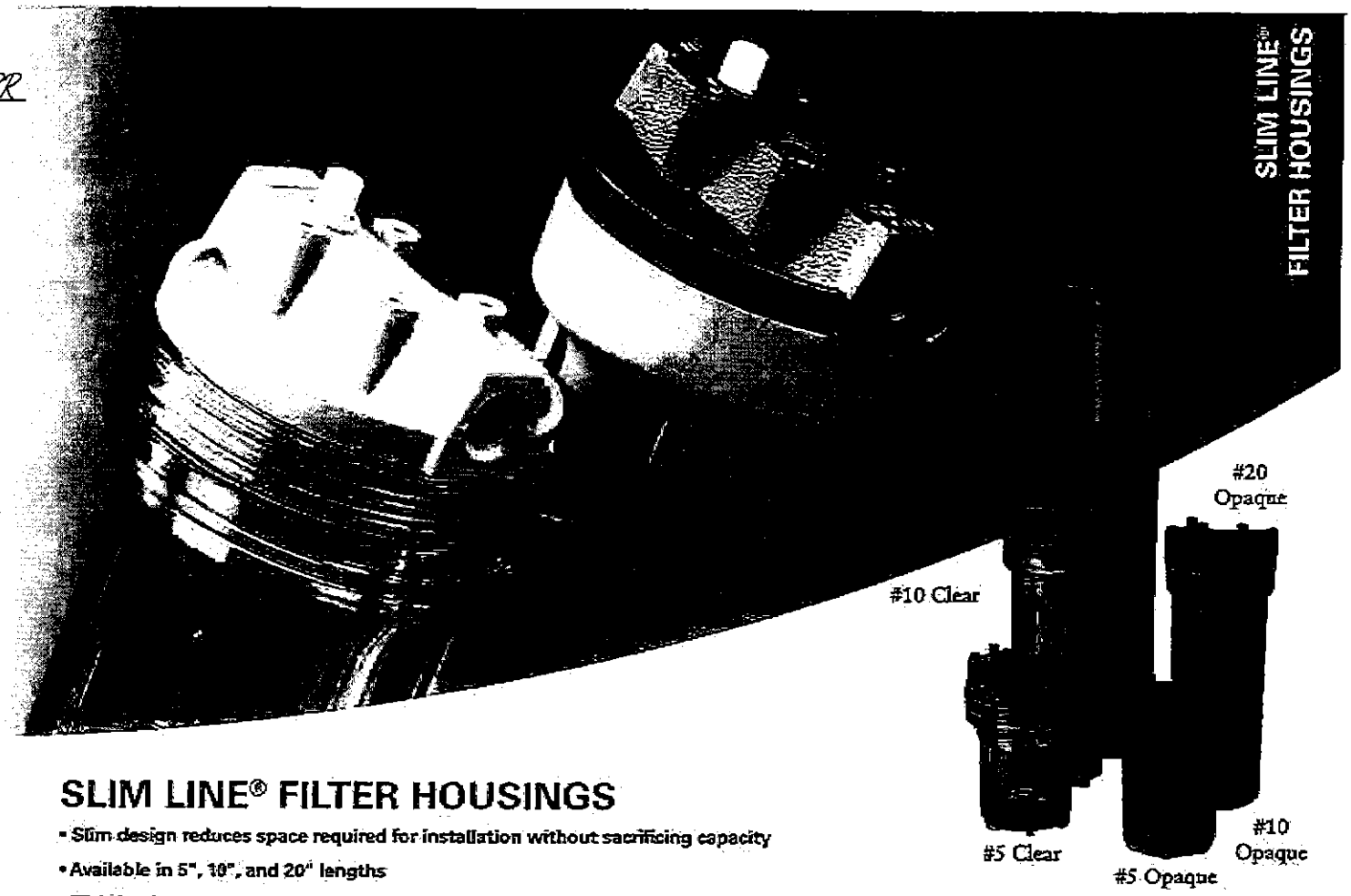
ORR

	Nominal dimensions, inches			Calculated values (based on nominal dimensions)				
							Volume of tube, per linear ft.	
Nominal or standard size, inches	Outside diameter	Inside diameter	Wall thickness	Cross sectional area of bore, sq. inches	Weight of tube only, pounds per linear ft.	Weight of tube & water, pounds per linear ft.	Cu ft.	Gal.
3/8	.500	.450	.025	.159	.145	.214	.00110	.00826
1/2	.625	.569	.028	.254	.204	.314	.00176	.0132
3/4	.875	.811	.032	.517	.328	.551	.00359	.0269
1	1.125	1.055	.035	.874	.465	.843	.00607	.0454
1 1/4	1.375	1.291	.042	1.31	.682	1.25	.00910	.0681
1 1/2	1.625	1.527	.049	1.83	.940	1.73	.0127	.0951
2	2.125	2.009	.058	3.17	1.46	2.83	.0220	.165
2 1/2	2.625	2.495	.065	4.89	2.03	4.14	.0340	.254
3	3.125	2.981	.072	6.98	2.68	5.70	.0485	.363
3 1/2	3.625	3.459	.083	9.40	3.58	7.64	.0653	.488
4	4.125	3.935	.095	12.2	4.65	9.69	.0847	.634
5	5.125	4.907	.109	18.9	6.66	14.8	.131	.982
6	6.125	5.881	.122	27.2	8.92	20.7	.189	1.41
8	8.125	7.785	.170	47.6	15.5	37.1	.331	2.47
10	10.125	9.701	.212	73.9	25.5	57.5	.513	3.84
12	12.125	11.617	.254	106	36.7	82.5	.736	5.51

LEVEL CONTROL (FLOW SWITCH)

Operating temperature: 0~75°C
Electrical life: 1 x 100 000 times
Mechanical life: 5 x 100 000 times
Environment: pool, oil, weak acids, and bases in water or oil pool
Cylinder: 61x55mm/ 2.4x2.17in
Wire length: 0.6/2/3/4m

Features:
1. It can test pressure of liquid.
2. The float switch is a switch which regulates fluid level in the tank or well etc
3. The float switch is resistant to water(sewage water)
4. It is relative capable of being used for oil,mostacids and alkalis
5. This Water Level Sensor is made of high quality material to ensure a long lasting performance, and it is a type of non-toxic material to ensure a safety use
6. The float switch is not explosion proof.
7. This Float Switch Liquid Fluid Water Level Sensor can be widely used in water supply, drainage and liquid level automatic control with a variety of pump supporting.
8. This Liquid Water Level Sensor is easy to install, and convenient to use



SLIM LINE® FILTER HOUSINGS

- Slim design reduces space required for installation without sacrificing capacity
- Available in 5", 10", and 20" lengths
- FDA Grade
- Optional pressure relief button on inlet side of cap
- Leak-proof seal with top-seated o-ring
- Available with clear or opaque sumps

Slim Line® filter housings are available in either reinforced polypropylene or clear Styrene-Acrylonitrile (SAN) in 5", 10" and 20" lengths. The black or blue reinforced polypropylene housing caps are available with 1/4", 3/8" or 1/2" NPT connections. Four bosses are molded into every cap for mounting purposes.

They are equipped with a black, reinforced polypropylene cap and offer an optional pressure-relief button on the inlet side to relieve pressure inside the housing when changing filter cartridges.

Slim Line® filter housings are an excellent choice for low-flow applications and when space and chemical compatibility are primary concerns.

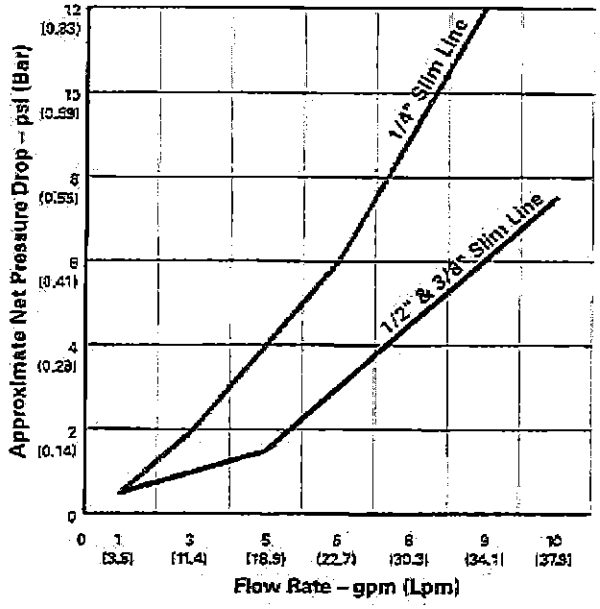
Opaque Slim Line® Filter Housings Molded from rugged reinforced polypropylene, Opaque Slim Line® filter housings offer outstanding chemical compatibility and are ideal for use in a variety of low-flow applications. These applications include under-sink and countertop residential filtration, pre- and post-reverse osmosis filtration, recreational vehicle filtration, food service and humidifying systems.

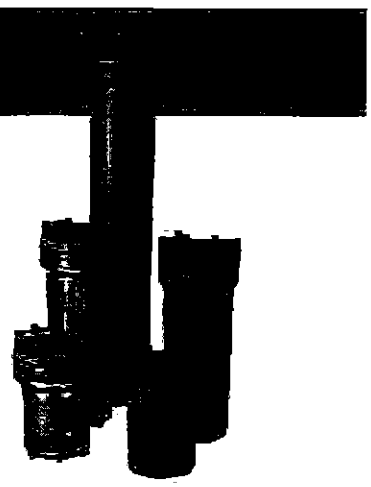
Clear Slim Line® Filter Housings offer on-site examination of flow, performance, and cartridge life. They are also ideal for a variety of applications.

Manufactured of clear Styrene-Acrylonitrile (SAN), the sumps are annealed to relieve stress, adding clarity and strength.

PENTEK
Pentair Water

SLIM LINE®
Filter Housings





NSF COMPONENT

The 158005, 158006, 158114, 158115, 158120, 158125, 158126, 158128, 158129, 158131, 158149, 158195, 158196, 158204, and 158205 are Tested and Certified by NSF International to NSF/ANSI Standard 42 for material and structural integrity requirements.

Housing Specifications and Performance Data

Model	Approximate Dimensions	Initial ΔP (psi) @ Flow Rate (gpm)
#5 Clear	7¾" x 4⅝" (187 mm x 118 mm)	1/4" NPT–2 psi @ 3 gpm (0.14 bar @ 11 Lpm)
#10 Clear	12¼" x 4⅝" (308 mm x 118 mm)	3/8" NPT–2 psi @ 5 gpm (0.14 bar @ 19 Lpm)
#5 Opaque	7" x 4⅜" (178 mm x 111 mm)	1/4" NPT–2 psi @ 3 gpm (0.14 bar @ 11 Lpm)
#10 Opaque	11¾" x 4⅜" (299 mm x 111 mm)	1/2" NPT–2 psi @ 5 gpm (0.14 bar @ 19 Lpm)
#20 Opaque	21⅞" x 4⅜" (556 mm x 111 mm)	1/2" NPT–2 psi @ 5 gpm (0.14 bar @ 19 Lpm)

Materials of Construction

Housing	SAN (Clear) or Polypropylene (Opaque)
Cap	Reinforced Polypropylene
Button Assembly	300-series Stainless Steel, EPDM, and Polypropylene
O-Ring	Buna-N
Maximum Temperature	125°F (51.7°C)
Maximum Pressure	125 psi (8.62 bar)

CAUTION: Protect against freezing to prevent cracking of the filter and water leakage.

PENTEK
Pentair Water

502 Indiana Avenue • P.O. Box 1047 • Sheboygan, Wisconsin 53082-1047
Customer Service: 800.645.0267 • Fax: 888.203.7561 • supportspecialist@pentekfiltration.com
International: 920.457.9435 • Fax: 920.457.2417 • international@pentekfiltration.com
www.pentekfiltration.com

ISO-9001

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Printed in USA MR06 310050

CERTIFIED LEAD FREE INSERT FITTINGS

MADE IN U.S.A.

MAS — *Male Adapter*

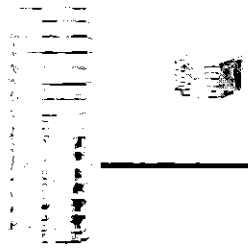
Galvanized Steel Part No.	Red Brass Part No.	Size Inches	Carton Quantity	Weight Each lbs.
MAS-2	MAB-2	1/2	25	.15
MAS-3	MAB-3	3/4	25	.2
MAS-4	MAB-4	1	20	.3
MAS-5	MAB-5	1 1/4	20	.5
MAS-6	MAB-6	1 1/2	10	.7
MAS-8	MAB-8	2	10	.9

XS → *Long Adapter*

Galvanized Steel Part No.	Red Brass Part No.	Size Inches	Carton Quantity	Weight Each lbs.
XS-4	XB-4	1	Bulk	.5
XS-5	XB-5	1 1/4	Bulk	.8

VMAS → *Venturi Male Adapter*

Galvanized Steel Part No.	Red Brass Part No.	Size Inches	Carton Quantity	Weight Each lbs.
VMAS-4x6	VMAB-4x6	1	Bulk	.7
VMAS-4x8	—	1	Bulk	.9



CS → *Coupling*

Galvanized Steel Part No.	Red Brass Part No.	Size Inches	Carton Quantity	Weight Each lbs.
CS-3	CB-3	3/4	25	.2
CS-4	CB-4	1	20	.2
CS-5	CB-5	1 1/4	20	.5
CS-6	—	1 1/2	10	.5
CS-8	—	2	10	1.0

NS → *Swaged Nipple*

Galvanized Steel Part No.	Red Brass Part No.	Size Inches	Carton Quantity	Weight Each lbs.
NS-4-3	—	1 x 3/4	Bulk	.4
NS-5-4	—	1 1/4 x 1	Bulk	.5

Steel Fittings are A53 Galvanized Grade B Hot Roll Electric Weld.
Brass Fittings are B43 Red Brass.

PLASTIC SERIES VALVES

Brady Foot Valve

- Sizes – 3/4" through 1 1/2."
- Spring loaded.
- Acetal polymer material.

Part No.	Size	Weight Each lbs.
445	3/4	.2
446	1	.2
447	1 1/4	.3
448	1 1/2	.8

Brady Check Valve

- Sizes – 3/4" through 1 1/2."
- Spring loaded.
- Acetal polymer material.

Part No.	Size	Weight Each lbs.
645	3/4	.1
646	1	.2
647	1 1/4	.3
648	1 1/2	.4

Brady valves have a maximum working pressure of 175 psi.

Certified Lead Free.

Foot Valve - Import* - Brass.

Part No.	Size	Weight lbs.
7402	3/4	.4
7403	1	.6
7405	1 1/4	1.1
7406	1 1/2	1.3
7407	2	2.1

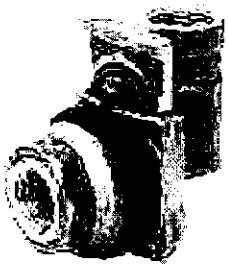
Certified Lead Free.

Check Valve - Import* - Brass.

Part No.	Size	Weight lbs.
7501	1/2	.4
7502	3/4	.6
7503	1	.8
7504	1 1/4	1.2
7505	1 1/2	1.4
7506	2	2.4

Certified Lead Free.

Valves furnished with Buna-N O-Ring, stainless steel spring, stainless steel washer, and stainless steel locknut. All valves have a working pressure of 200 psi, 190 Degree Maximum Temprature Rating.



BRONZE Pitless Adapter - Import

- Bronze body.
- Buna-N O-Ring.
- Vertical position indicator.

Part No.	Size	Hole Size Required	Weight Each lbs.	Carton Quantity
1850LF	1	1 5/8	3.0	6
1851LF	1 1/4	2 1/8	4.5	6
1853LF	2	3 1/8	4.5	6

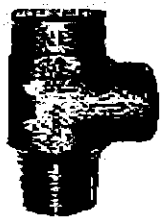
Certified Lead Free.

Stainless Steel Pitless Adapter - Import

- Stainless Steel body.
- Buna-N O-Ring.
- Vertical position Indicator.

Part No.	Size	Hole Size Required	Weight Each lbs.	Carton Quantity
1850LF	1	1 5/8	3.0	6
1851LF	1 1/4	2 1/8	4.5	6

Certified Lead Free.



LEAD FREE Brass Relief Valve - Import

- Cast brass.
- Pressure only relief valve.
- Factory preset.

Part No	Size Inches	PSI	Carton Quantity	Master Carton Quantity
450-5	1/2	75	1	50
450-75	3/4	75	1	50
451-5	1/2	100	1	50
451-75	3/4	100	1	50

Certified Lead Free.

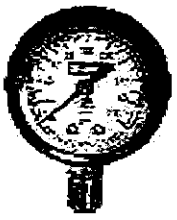
LEAD FREE Boiler Drain - Import

- Cast brass.

Part No	Size Inches	Carton Quantity	Master Carton Quantity
1322	1/2 MIP x 3/4 GHT	1	50
1323	3/4 MIP x 3/4 GHT	1	50

Certified Lead Free.

Dry Pressure Gauges - Import



- Steel case.
- Glass face.
- No Lead Brass mount.
- Individually boxed.

Part No.	Size Inches	Range	Connection	Weight Each lbs.	Carton Quantity
1311	2	0-15 lbs.	1/4 L.M.	.25	100
1312	2	0-30 lbs.	1/4 L.M.	.25	100
1313	2	0-60 lbs.	1/4 L.M.	.25	100
1305	2	0-100 lbs.	1/4 L.M.	.25	100
1307	2	0-100 lbs.	1/8 C.B.M.	.25	100
1315	2	0-100 lbs.	1/4 C.B.M.	.25	100
1314	2	0-160 lbs.	1/4 L.M.	.25	100
1306	2	0-200 lbs.	1/4 L.M.	.25	100

Certified Lead Free.

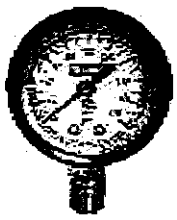
Dry Pressure Gauges, Individually Blister Packed - Import

- Steel case.
- Glass face.
- No Lead Brass mount.

Part No.	Size Inches	Range	Connection	Weight Each lbs.	Carton Quantity
1308	2	0-100 lbs.	1/4 L.M.	.25	100
1309	2	0-200 lbs.	1/4 L.M.	.25	100
1310	2	0-100 lbs.	1/8 C.B.M	.25	50

Certified Lead Free.

Dry Pressure Gauges - Import



- Steel case.
- Glass face.
- Brass mount.
- Individually Boxed

Part No.	Size Inches	Range	Connection	Each lbs.	Carton Quantity
1300	2	0-100 lbs.	1/4 L.M.	.25	100
1301	2	0-200 lbs.	1/4 L.M.	.25	100
1302	2	0-100 lbs.	1/8 C.B.M.	.25	100

Contains Lead, for export only.

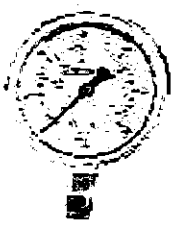
2" Liquid Filled Pressure Gauges - Import

- Stainless Steel or Steel case.
- Glass face.
- No Lead Brass mount.
- Individually boxed.

Part No.	Size Inches	Case	Range	Connection	Each lbs.	Carton Quantity
1330	2	SS	0-100 lbs.	1/4 L.M.	.25	100
1331	2	SS	0-200 lbs.	1/4 L.M.	.25	100
1338	2	SS	0-200 lbs.	1/4 C.B.M.	.25	100
1332	2	Steel	0-100 lbs.	1/4 L.M.	.25	100
1333	2	Steel	0-200 lbs.	1/4 L.M.	.25	100
1339	2	Steel	0-100 lbs.	1/4 C.B.M.	.25	100

Certified Lead Free.

2 1/2" Liquid Filled Pressure Gauges - Import



- Stainless Steel case.
- Glass face.
- No Lead Brass mount.
- Individually boxed.

Part No.	Size Inches	Case	Range	Connection	Each lbs.	Carton Quantity
1334	2-1/2	SS	0-60 lbs.	1/4 L.M.	.75	50
1335	2-1/2	SS	0-100 lbs.	1/4 L.M.	.75	50
1340	2-1/2	SS	0-100 lbs.	1/4 C.B.M.	.75	50
1336	2-1/2	SS	0-160 lbs.	1/4 L.M.	.75	50
1337	2-1/2	SS	0-200 lbs.	1/4 L.M.	.75	50

Certified Lead Free.

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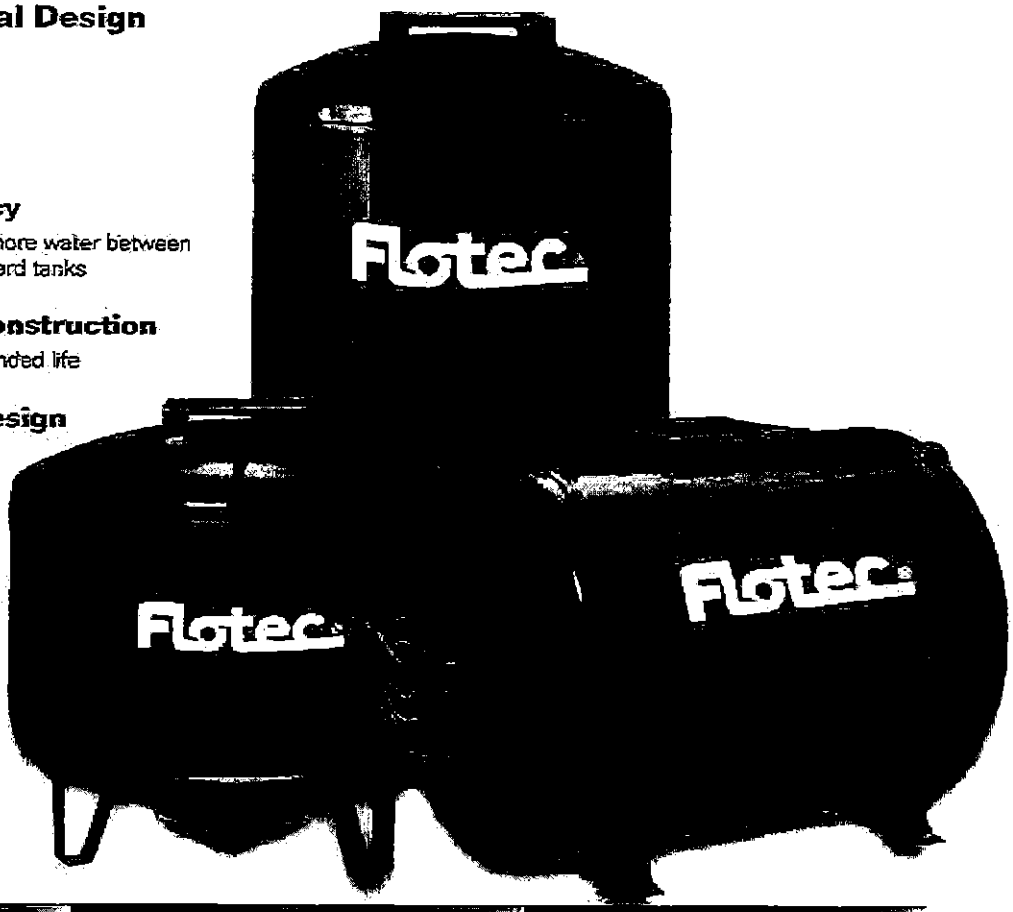
19 Gallon Precharged

Pressure Tanks

Vertical or Horizontal Design



Factory Precharged to 40 PSI for Efficiency
Extends pump life by providing more water between pump cycles compared to standard tanks

Heavy-Gauge Steel Construction
For maximum durability and extended life

Precision Press Fit Design
Minimizes gaps between components, reducing corrosion and seam leaks

Convenient Size
Ideal for household applications

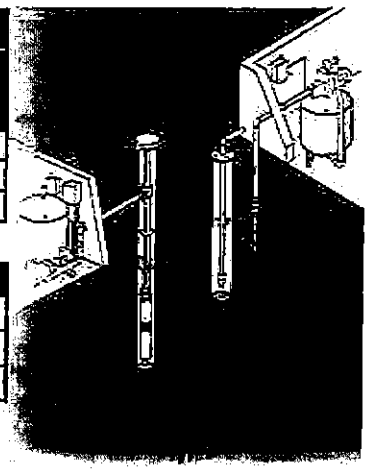
Easy Maintenance
NSF-61-approved tank
Replaceable air/water separator

19 GAL FP7110T | **19 GAL FP7110TH** | **19 GAL FP7110**

PERFORMANCE

MODEL	STANDARD TANK EQUIVALENCY	ACTUAL TANK CAPACITY	DRAWDOWN COMPARISON						STYLE	PLUMBING CONNECTION
			PRECHARGED			STANDARD				
			20/40	30/50	40/60	20/40	30/50	40/60		
FP7110T	42 Gallons	19 Gallons	6.9	5.9	5.0	6.5	4.3	3.0	Vertical	1"
FP7110TH	42 Gallons	19 Gallons	6.9	5.9	5.0	6.5	4.3	3.0	Horizontal	1"
FP7110	42 Gallons	19 Gallons	6.9	5.9	5.0	6.5	4.3	3.0	Vertical	1"

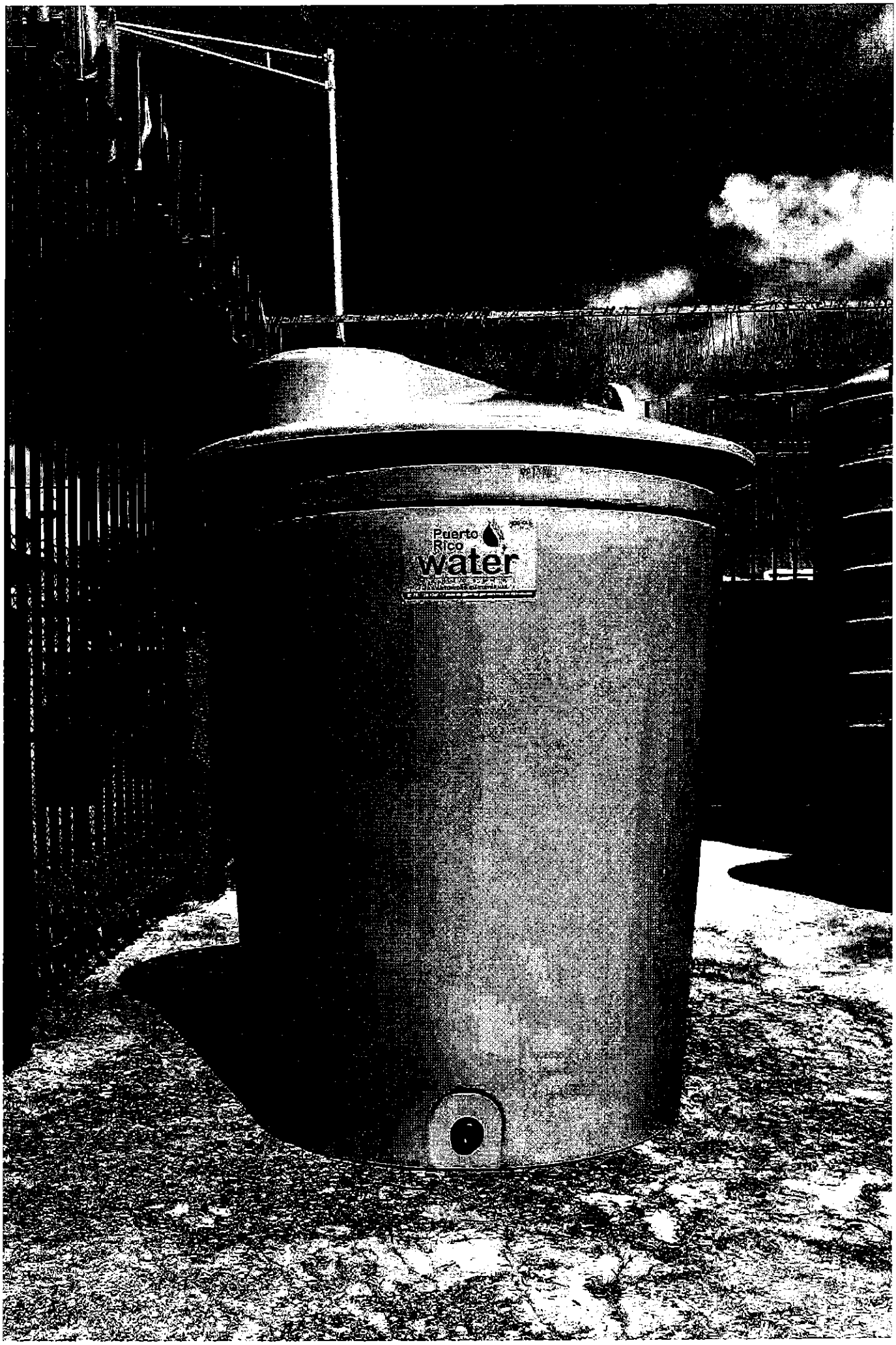
MODEL	WARRANTY	UPC	CARTON DIMENSIONS	PALLET QTY.	WEIGHT
FP7110T	5 YEAR	022315101203	16.75" x 16.75" x 29.313"	4	36.5 LBS.
FP7110TH	5 YEAR	022315101388	18.31" x 16.813" x 27.313"	6	38.5 LBS.
FP7110	5 YEAR	022315101098	14.063" x 12.813" x 17.313"	18	18.9 LBS.



Includes:

Detailed owner's manual

Puerto Rico Water Management
216 Calle Del Valle
Marginal Baldorioty de Castro
San Juan, PR 00911-2328


Puerto
Rico
water

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POLNAC

POLIMEROS NACIONALES S.A. DE C.V.
Lázaro Cárdenas No. 49
Col. San Jerónimo Tepetlacalco,
Tlalnepantla, Edo. de México, C.P. 54090
Tels.: 53 62 53 60, 53 62 61 73, 53 62 61 74
53 62 61 75, Fax: 53 97 13 76
http://www.polnac.com

TECHNICAL DATA SHEET

EDITION: 01/01.16

CODE: ***BDL 39035***
DESCRIPTION: LINEAR LOW DENSITY POLYETHYLENE.

Uses and suggestions: BDL 39035 is a linear low density polyethylene. Is especially designed for rotational molding process articles and easy processability. Material additive antioxidant and UV protector grade V8. The material meets the requirements of the Food and Drug Administration of the United States of America, Title 21.CFR177.1520 and Europeanstandard85/572/EEC, 90/128/EEC and 97/48/EC.

PROPERTY	INTERNAL TEST METOD/ REFERENCE	VALUE	UNITS
MELT FLOW INDEX @190°C, 2.16 kg	ITCC-00-01 /ASTM D1238	3.50	g/10min
DENSITY	ITCC-00-08 / ASTM D792A	0.939	g/cm^3
TENSILE STRENGTH@YIELD	ITCC-00-04 / ASTM D638	17.7	MPa
TENSILE ELONGATION@BREAK	ITCC-00-05 / ASTM D638	> 1000	%
FLEXURAL MODULUS 1% SECANT	ITCC-00-06 / ASTM D790-1	730	MPa
ENVIROMENTAL RESISTANCE ESCR f50 100% IGEPAL	ASTM D1693	> 1000	Hrs
10% IGEPAL	ASTM D1693	185	Hrs
HDT			
66 PSI	ITCC-00-10 / ASTM D648	61.1	°C
264 PSI	ITCC-00-10 / ASTM D648	38.1	°C

Test and presented outputs have been gotten using methods of laboratory; the which they don't offer guarantee any according to the ends that it destines the user, who determines their application and conditions of extrusion molding (temperature, pressure).

Polímeros Nacionales, S.A. de C.V. don't give additional expressed or implicit guarantees, for example, guarantees of commercialization or of specific applications in the use of this material and no case the company will be sponsor of any damage. The use of the product indicates the acceptance previously mentioned.

4

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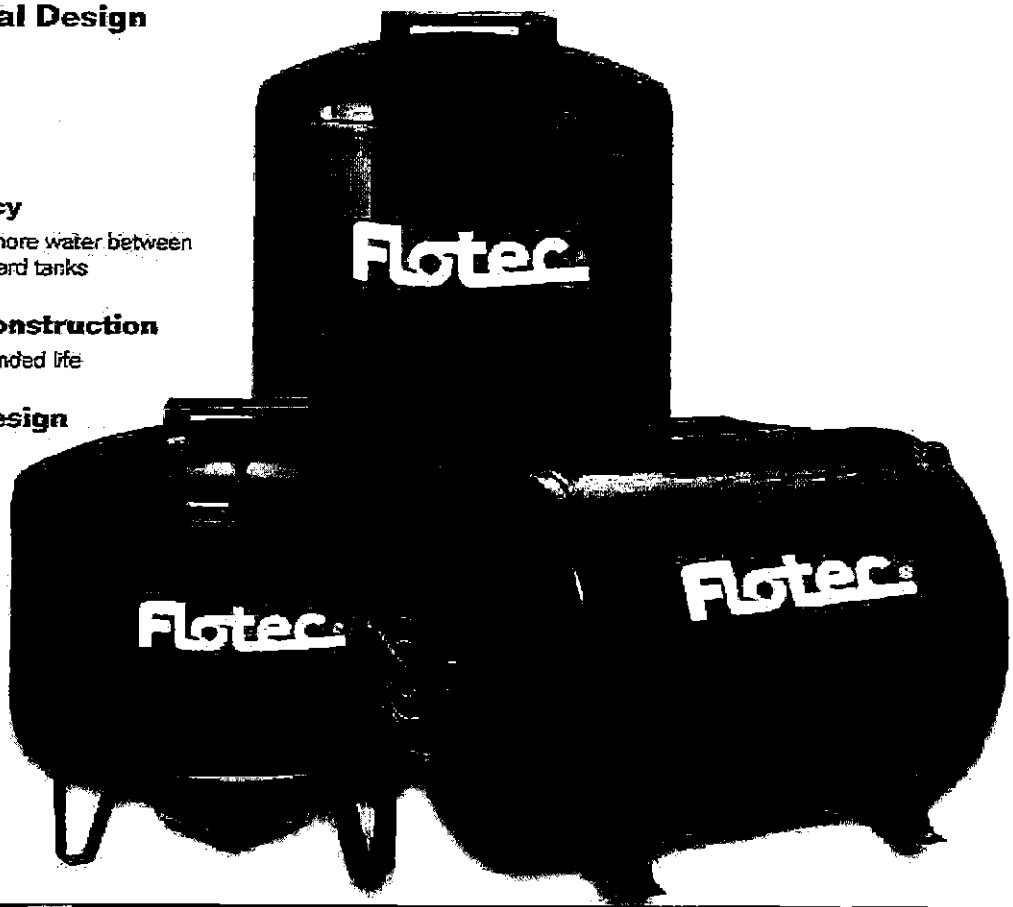
19 Gallon Precharged

Pressure Tanks

Vertical or Horizontal Design



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19 GAL FP7110T | **19 GAL FP7110TH** | **19 GAL FP7110**

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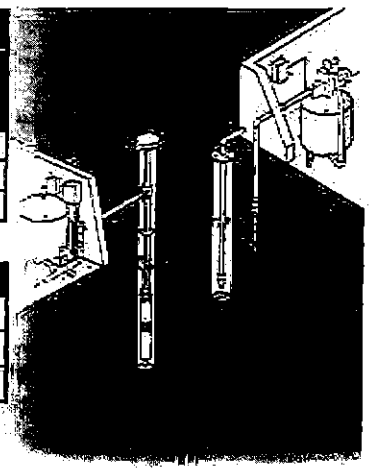

Includes:

Detailed owner's manual

Puerto Rico Water Management
216 Calle Del Valle
Marginal Baldorioty de Castro
San Juan, PR 00911-2328

NORR
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Cast Iron

Shallow Well Jet Pumps

With Built-in Pressure Switch

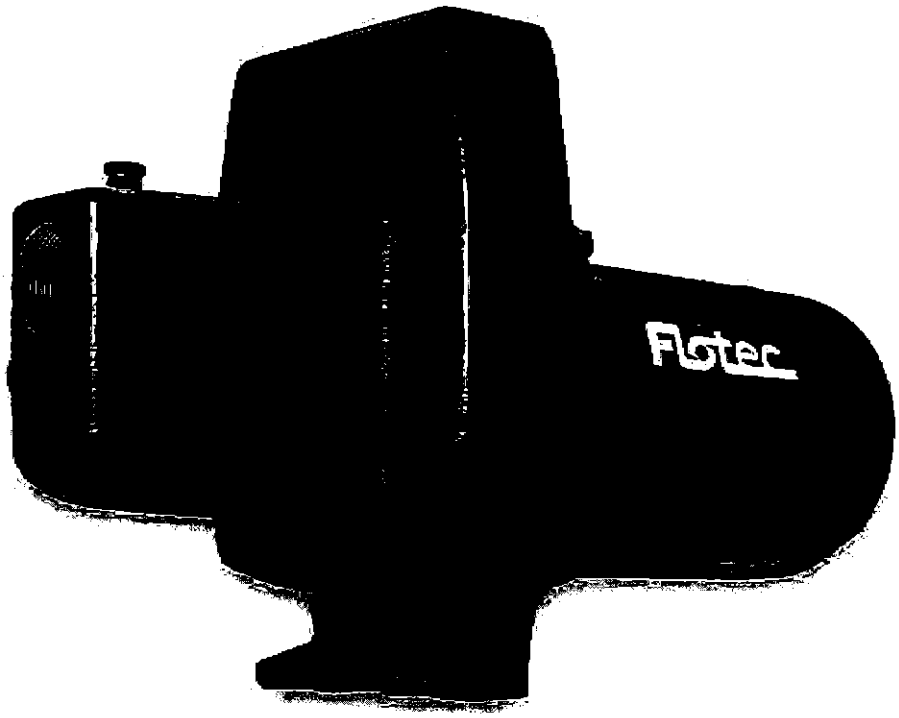
Puerto Rico Water Management
216 Calle Del Valle
Marginal Baldorioty de Castro
San Juan, PR 00911-2328

Rugged Pump Housing
Durable cast iron construction

Superior Performance
At depths to water of 25' or less

Heavy-Duty Dual-Voltage Motor
3/4 HP preset at 230V
1/2 HP preset at 115V

Self-Priming After Pump Housing Is Initially Filled
Check valve or foot valve required, sold separately

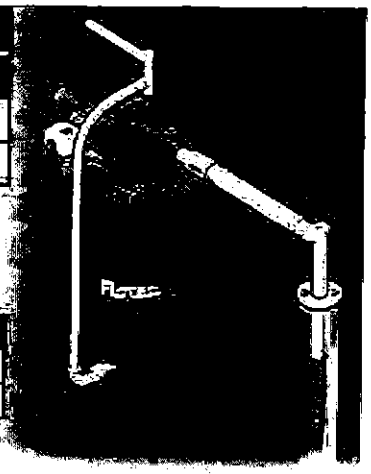


3/4 HP 14.7 GPM FP4122

1/2 HP 8.8 GPM FP4112

PERFORMANCE (GPM)							MAX PRESSURE SHUTOFF	VOLTAGE	PRESSURE SWITCH	
DEPTH TO WATER	0'	5	10'	15'	20'	25			ON	OFF
FP4122	14.7	14.4	12.8	11.3	9.4	7.3	70 PSI	115/230	30	50
FP4112	8.8	8.5	7.8	6.8	5.6	4.6	69 PSI	115/230	30	50

• All performance shown in gallons per minute at 40 PSI discharge pressure



MODEL	WARRANTY	UPC	CARTON DIMENSIONS	PALLET QTY.	WEIGHT
FP4122	1 YEAR	022315100619	21.5" x 13.44" x 10.33"	24	43.3 LBS.
FP4112	1 YEAR	022315100602	21.5" x 13.44" x 10.33"	24	41 LBS.

Includes:

Factory-installed 30/50 preset pressure switch, detailed owner's manual

Extended Warranty Confirmation

Jannies Cotto
CARIBBEAN ENERGY OF PUERTO RICO
General manager
PO Box 29155, San Juan PR 00929
Ph. 787.750.5566
Fax 787.760.3430
E. jcotto@cedpr.com

March, 15th ,2021

This letter is to confirm that the product warranty of SUN-5K-SG01LP1-US is extended to 10 years for PRDH project CDBG-DR-IFB-2021-01.

Should you have any further questions, please feel free to contact me at jidh@deye.com.cn.

Ware regards,

David Ji

International Sales Director

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CARIBBEAN ENERGY

P.O. Box 29155 San Juan. P.R. 00929-0155
Ph. (787) 750-5566 E. info@cedpr.com

8 de marzo de 2021

Ito Fullana
President & Founding Partner
F&R Construction Group, Inc.

RE: CDBG-DR-IBF-2021-01

Saludos,

Por este medio deseo notificar que Caribbean Energy Distributor Corp. es líder autorizado para la comercialización, distribución y venta de las marcas Fortress Power LLC., Suntech HongKong Limited, Schneider Electric Solar Inverters USA, Inc., IronRidge, Deye, MidNite Solar Inc. y TIGO Energy Inc.; entre otras. Cartas de suplidores se incluyen en paquete cotizado.

Siendo distribuidor oficial de las marcas antes mencionadas y de los equipos cotizados; autorizamos a F&R Construction Group, Inc. para ofrecer y suplir nuestros productos en la licitación CDBG-DR-IBF-2021-01.

Cordialmente,

Ing. Alex G. Rivera Rolón

Vice President & Managing Partner

BRIAN K. FITZPATRICK
1ST DISTRICT, PENNSYLVANIA

COMMITTEE ON FOREIGN AFFAIRS

COMMISSION ON SECURITY AND COOPERATION IN EUROPE

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

1722 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-4276

1757 LANDHORNE-NEWTOWN RD.
SUITE 225
LANDHORNE, PA 19047
(215) 579-8102

Congress of the United States

House of Representatives
Washington, DC 20515

March 9, 2021

The Puerto Rico Housing Department
CDBG-DR Procurement Area
Director William Maldonado, Esq.
PO Box 21365
San Juan, Puerto Rico

Director Maldonado,

I write today regarding Fortress Power's application to the Community Development Block Grant-Disaster Recovery (CDBG-DR) program through the Puerto Rico Housing Department. Fortress Power is a thriving business in in the Southeastern Pennsylvania region and have had great success in providing lithium batteries to energy storage systems utilized by Solar Power sites throughout the United States. This has allowed Fortress Power to provide Americans with a critical source of reliable energy during power outages.

According to the information provided to my office, Fortress Power will have the potential to provide energy storage to 3,750 homes, businesses, and public facilities in Puerto Rico if awarded the CDBG-DR grant. As many are aware, reliable electrical power in Puerto Rico is critical – the services provided by Fortress Power have the potential to have a positive impact on several thousand families that are currently without a basic reliable source of electrical energy.

As a result, I strongly urge full and fair consideration regarding Fortress Power's application to the Community Development Block Grant-Disaster Recovery program.

Please do not hesitate to reach out to my office at 215-579-8102 if my office can be of any further assistance in this matter.

Sincerely,

Brian Fitzpatrick

Brian K. Fitzpatrick (PA-01)
Member of Congress

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GENESIS
green systems

www.genesisgreenpr.com

8 de abril de 2021

Sr. José Gil Rodríguez Rivera
Bermúdez, Longo, Díaz-Massó LLC.
San Juan, PR

Estimado señor Rodriguez:

La presente es a los fines de autorizar a Bermúdez, Longo, Diaz-Massó, LLC a ofrecer, suplir e instalar los productos que representamos en Puerto Rico de forma oficial y autorizada por los respectivos manufactureros según descrita abajo:

Módulos Fotovoltaicos Marca Philadelphia Solar PV 400W
Genesis Hybrid Inverter 7.6 KW
Genesis Powerwall 5, 7 y 10 KWH – LifePO4 Ion Battey

De requerir cualquier información adicional, puede comunicarse con nosotros a los teléfonos abajo indicados.

Sin otro particular, quedo de usted

Cordialmente,

Walter Muller
Presidente & CEO

(787) 200-8787 info@genesisgreenpr.com @genesisgreenpr P.O. Box 193243 San Juan, PR 00919

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GLENN INTERNATIONAL

11 de marzo de 2021

Sr. José Gil Rodriguez
Estimador Eléctrico
BLDM
PO Box 191213
San Juan, PR 00919-1213

Re: CDBG-DR IBF-2021-01 PV Systems & Water Storage Systems

Estimado señor Rodriguez:

Confirmamos que **Glenn International, Inc.** es representante autorizado para la venta y distribución de las marcas de equipos para sistemas de energía solar Ironridge, Fortress, Schneider Electric, Outback, Generac, Simpliphi, Canadian Solar, Sunpower, y SMA, las cuales le ofrecemos para los trabajos de instalación de sistemas de energía solar a llevarse a cabo en el proyecto de referencia.

Siendo **Glenn International, Inc.** representante autorizado para la venta y distribución de las marcas antes mencionadas, por este medio autorizamos a **BLDM**, a ofrecer, suplir, e instalar nuestros productos en la propuesta para la subasta, y posteriormente en la ejecución de los trabajos del proyecto de referencia.

Atentamente,

Ricardo M. Diaz
Tesorero – CFO
Glenn International, Inc.

Glenn International, Inc. | PO Box 3500, Carolina, PR 00984-3500 | Rosendo Vela Acosta Street, Building #9, Carolina, PR 00987
(t) 787.757.6000 | (f) 787.769.1851 | (@) info@glenninternational.com | www.glenninternational.com

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Steam & Combustion Technology, Inc.

54 Paseo De Las Orquideas
Urb. Primavera, Encantada Development
Trujillo Alto PR 00976-6077
O (407) 446-1015 | M (787) 529-2484, (407) 304-6346
jorge.gonzalez@steamcombustion.com
www.steamcombustion.com
www.economizacombustiblepr.com

From the desk of: Jorge González García, President

4.07.2021

Engr. Luis Marín Cordero, P.E. – Senior Energy Consultant
Brmúdez, Longo & Díaz Massó
PO Box 191213
San Juan, Puerto Rico 919-1213

Subject: CDBG-DR-IFB-2021-01 Bid, Section 6.1.6, Bermúdez, Longo & Díaz Massó authorization as Contractor & Installer for PWRstation Soleopter PV Solar Generator Units and Tryptic Intermodal PV Generation systems.

Dear Engr. Marín Cordero,

Receptive to your request, please be advised on the following:

We are hereby appointing the Bermúdez, Longo & Díaz Massó as an Authorized Contractor & Installer for the above subject CDBG-DR Bid (CDBG-DR-IFB-2021-01) for our represented PWRstation Holding, SA - PV Solar Generator Units model Soleopter in 3.0kW/10.5kWh and 4.2kW/14.0kWh PV solar generator configurations.

In addition to the Soleopter, they are also appointed as contractors and installers for the Tryptic, Intermodal PV Solar Generator systems for communities and microgrids to provide Hurricane Proof PV Solar Energy Generation.

If additional information is required, please do not hesitate in contacting us at your earliest convenience.

Cordially,

Jorge González García,
President

Steam & Combustion Technology, Inc.

http://www.steamcombustion.com

O (407) 304 6346, M (787) 529-2484, (407) 304-6346.

STEAM & COMBUSTION TECHNOLOGY INC
CORPORATE
SEAL
SAN JUAN, P.R.

Steam Boilers & Appurtenances • Combustion & Instrumentation Controls • Deaerators • Exhaust Systems • Heat Exchangers • Industrial Pumps • Water Heaters • Water Softeners• Boiler Seminars • Services & Parts.

JF

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WORR

ENPHASE.

To Whom It May Concern:

Re: **Enphase Energy, Inc., authorized contractors**

This letter serves to confirm that the company Warren del Caribe is an Enphase authorized distributor.

Santiago Desentis
Latin America Country Manager Enphase Energy, Inc.
1420 North Mc DowellBlvd.
Petaluma, CA 94952
Email: sdesentis@enphaseenergy.com

© 2021 Enphase Energy, Inc.

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CanadianSolar
MAKE THE DIFFERENCE

Canadian Solar (USA) Inc.
A: 3000 Oak Road, Ste. 400, Walnut Creek, CA 94597
P: +1 888 998 7739 | F: +1 925 866 2704
| W: www.canadiansolar.com

Regarding Prepa Vivienda Program: CDBG-DR-IFB-2021-01

March 9th, 2021

To Whom it May Concern,

Warren del Caribe (WDC Puerto Rico, Inc.), based in Caguas, Puerto Rico is authorized to purchase, hold stock of, and resell all Canadian Solar products.

Canadian Solar is one of the leading solar manufacturers in the world, and we are excited at the opportunity to work with WDC by offering competitively priced modules and inverters with high quality and performance standards, advanced technical support, and a 25-30 year module performance warranty. WDC has proven to be a good partner with excellent capabilities and we are looking forward to support your project through them.

Best regards,
Nichole R Koontz

Nichole Koontz
Canadian Solar (USA), Inc
Eastern USA Manager of System & Component Sales
MSS Business Unit
Nichole.koontz@csisolar.com
480-236-4117

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FORTRESS Power
SECURE YOUR ENERGY

AUTHORIZED DISTRIBUTOR LETTER

3/09/2021

To whom it may concern:

This letter is to CERTIFY, that **WARREN-ECM.**, is an **AUTHORIZED DISTRIBUTOR** of our Company **FORTRESS POWER,** and is permitted to sale and distribute our products.

If you have any questions, please do not hesitate to contact me.

Jing Yu, CEO
Office: (877)-497-6937
Cell: (646)-520-7673
jingy@fortresspower.com

William O. Rodríguez Rodríguez
William O. Rodríguez Rodríguez (Nov 29, 2022 22:13 AST)

Jose Fuliana (Nov 29, 2022 08:22 AST)

GOVERNMENT OF PUERTO RICO
DEPARTMENT OF HOUSING

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SCOPE OF WORK
Invitation for Bid
Increase Capacity
PV Systems, Water Storage System Acquisition, and Installation Services
Community Development Block Grant – Disaster Recovery
Puerto Rico Department of Housing
CDBG-DR-IFB-2022-03

1. Introduction

The Puerto Rico Department of Housing solicits the bids for the purchase of PV Systems and Water Storage System and Installation Services for the Community Energy and Water Resilience Installation Program (**CEWRI**) funded by the Community Development Block Grant – Disaster Recovery (**CDBG-DR**) Program. This document defines the work and requirements the Selected Bidder(s) must perform under a contract with PRDOH across a broad range of the CDBG-DR and Community Development Block Grant – Mitigation (**CDBG-MIT**) funded programs. The process is designed to promote fair and open competition while seeking a cost-competitive solution.

A detailed description of CDBG-DR Programs is included in the Action Plan approved by the U.S. Housing and Urban Development (**HUD**). A complete copy of the CDBG-DR Action Plan is available at www.cdbg-dr.pr.gov/action-plan. A complete copy of the CDBG-MIT Action Plan is available at https://cdbg-dr.pr.gov/en/download/cdbg-mit-action-plan-effective-on-april-19th-2021/.

Program Overview

The CEWRI Program provides homeowners energy and water efficiency improvements to promote resilience during emergencies with the installation of Photovoltaic System (**PV Systems**) with battery back-up for critical loads and Water Storage System (**WSS**). The CEWRI program also assists homeowners that have been recipients of Rehabilitation, Reconstruction, or New Construction under the Repair, Reconstruction, or Relocation Program (**R3 Program**).

The purchase and installation of PV Systems and WSS are specifically for the homes that have been repaired or reconstructed under the R3 Program. We are defining homes as those involving the construction, alteration, or repair of single-family houses or apartment buildings of no more than four stories in height. Homes that do not fall under this category are not included in this scope of work.

The PRDOH seeks, at its discretion and in the best interest of the program implementation, to award multiple contracts with a two (2) year term of services and an option to extend up to one (1) year. The acquisition of equipment and the required installation services will be made on an as-needed basis and issued on a work order.

No guarantee of the acquisition of any specific quantity or total dollar amount is made. The PRDOH reserves the right to increase or decrease amounts proposed on all goods/services. The PRDOH reserves the right to add or delete goods/services. Proposed

quantities represent a reasonable estimate under this contract for bidding purposes. This IFB should be considered an "all or non-basis". However, Bidders are encouraged to provide a bid for all goods and services listed in this Scope of Work. Bidders must provide bids for equipment and installation of Photovoltaic System PV System and Water Storage System.

The selected Bidder will be directly responsible for ensuring the accuracy, timeliness, and completion of all tasks assigned under this contract. Therefore, we encourage a careful analysis of the requirements of this document. The scope of work represents the present need and circumstances at the time the IFB is released. The selected Bidder must guarantee the prices of all the goods/services for the contract term. The PRDOH reserves the right to modify or delete the tasks/goods listed and, if appropriate, add additional tasks/goods before and during the term of the contract.

2. PRDOH's Reservation of Rights

The PRDOH reserves the right, without limitations, to:

(i) Reject any or all bids, to waive any informality in the IFB process, or to terminate the IFB process at any time, if deemed by to be in its best interests.

(ii) Reject and not consider any bid that does not meet the requirements of this IFB, including but not necessarily limited to incomplete bids and/or bids offering alternate or non-requested services.

(iii) Cancel this solicitation and reissue the IFB or another version of it, if it deems that doing so is in the best interest of the Public Interest.

(iv) PRDOH shall have no obligation to compensate any bidder for any costs incurred in responding to this IFB.

(v) To reduce or increase estimated or actual quantities in whatever amount necessary without prejudice or liability to, if:

a. Funding is not available,
b. Legal restrictions are placed upon the expenditure of monies for this category.
c. PRDOH's requirements in good faith change after award of the contract.

(vi) Make an award to more than one bidder based on ratings.

(vii) To require additional information from all bidders to determine level of responsibility.

(viii) To contact any individuals, entities, or organizations that have had a business relationship with the proposer regardless of their inclusion in the reference section of the proposal submittal.

(ix) In the event any resulting contract is prematurely terminated due to nonperformance and/or withdrawal by the Contractor, PRDOH reserves the right to:

a. seek monetary restitution (to include but not limited to withholding of monies owed) from the Contractor to cover costs for interim services and/or cover the difference of a higher cost (difference between terminated Contractor's rate and new company's rate) beginning the date of Contractor's termination through the contract expiration date.

(x) Amend the contract(s) of the Selected Bidder(s) to, among others, extend its original duration, as further explained in the IFB, or to extend the scale of its scope to include work under subsequent CDBG-DR and CDBG-MIT action plans as related to the services requested herein, or to reduce the scale of its scope to decrease work as a consequence of underperformance or inexcusable delates related to the services requested herein.

(xi) To contract with one or more qualified bidders as result of the selection of qualified Proposers or the cancellation of this IFB.

3. Requirements

3.1. General Requirements:

- The Bidder selected to provide services regarding Photovoltaic System (**PV System**) must have a minimum of 5 years of experience within the renewable energy sector.
- The Bidder selected to provide services regarding Water Storage System (**WSS**) must have a minimum of 2 years of experience in the installation of WSS.
- The Bidders offering services under this IFB must satisfy both conditions above. All equipment to be supplied and installed by the selected Bidder shall be new, no reconditioned, refurbished, or otherwise used parts or components will be accepted.
- All technical support or any warranty servicing from the manufacturers shall be generated and managed by the selected Bidder once contracted by the PRDOH.
- The selected Bidder shall not provide equipment that is close to the end of life or may become unsupported by the manufacturer during the required warranty period. If any equipment becomes unsupported by the manufacturer, the Bidder will be obligated to replace the equipment with an equivalent that meets the applicable warranty period, with similar or better specifications of the original, without incurring any additional financial obligation from PRDOH.
- All prices submitted by the Bidder shall include all expenses including incidentals, taxes, delivery fees, installation fees, profits, overhead, and any other administrative fees that apply to this acquisition. The PRDOH will not cover any additional costs. Only the unit price submitted for the equipment and installation services will be taken into consideration.
- The PRDOH will not be responsible for reimbursement or expense related to per-diem, tolls, parts or labors for equipment under warranty service.

3.2. Code Compliance:

- Installation and equipment shall comply with applicable building, mechanical, fire, seismic, structural, and electrical codes, included in the Joint Regulation for the Evaluation and Grant of Permits Related to Developments, Land Use, and Business Operations (**Joint Regulation**), as amended. Bidders must abide

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by the "Joint Regulation", as amended, "Regulation No. 7796", "Regulation No. 8080," and any other State regulation that regulates the installations within this Program.

- Bidder must install solar system equipment in compliance with Puerto Rico Residential Code 2018 (**PRRC**), National Electric Code (**NEC**), Puerto Rico Electrical Power Authority (**PREPA**) and Permit Management Office (**OGPe**, for its Spanish acronym) Regulations.

3.3. Contractor Responsibilities:

3.3.1. Contractor Levels

Bidders are required to demonstrate financial resources and meet a Line of Credit or Cash availability requirement as outlined in the Invitation for Bid under Section 6.1.8. Based on the information provided and financial capacity demonstrated, the bidders will be categorized Level 1 Contractor or Level 2 Contractor.

Level 1 Contractor:

- Level 1 Contractors must demonstrate and meet the financial capacity requirement as outlined in Section 6.1.8.3, entitled "Line of Credit or Cash Availability";
- Will be frequently evaluated and held responsible for the performance of their team and organization, including designers, consultants, suppliers, manufacturers, and subcontractors;
- Will provide periodical status reports to PRDOH and its representatives; and
- Will attend or conduct meeting with the PRDOH and its representatives.

Level 2 Contractor:

- Level 2 Contractors must demonstrate and meet the financial capacity requirement as outlined in Section 6.1.8.3, entitled "Line of Credit or Cash Availability";
- Will be frequently evaluated and held responsible for the performance of their team and organization, including designers, consultants, suppliers, manufacturers, and subcontractors;
- Will provide periodical status reports to PRDOH and its representatives; and
- Will attend or conduct meeting with the PRDOH and its representatives.

3.4. General Responsibilities:

It is the responsibility of the selected Bidder to deliver quality services in compliance with the project requirements. Also, it is the responsibility of the selected Bidder to:

- Hold the correct permits and licenses necessary to conduct business in Puerto Rico and the city where the project is taking place, and the Bidder must have qualified and licensed personnel as required by the Puerto Rico government to perform PV Systems and/or WSS installations.
- The Designer for the PV Systems must be a licensed engineer in compliance with Puerto Rico's Act Number 173 of August 12, 1988, with the Renewable Solar Energy Installer (Photovoltaic) Certificate from the Public Energy Policy Program (**PEPP**) under the Department of Economic Development and Commerce (**DDEC**, for its Spanish acronym). Must have at least five (5) years of experience performing PV system design. Such designer will also be in charge of the Pre-Installation Assessment.
- PV Systems installers must be a professional with the Renewable Solar Energy Installer (Photovoltaic) Certificate from the Public Energy Policy Program (**PEPP**) under the Department of Economic Development and Commerce (**DDEC**, for its Spanish acronym).
- The Designer for the WSS must be a licensed engineer in compliance with Puerto Rico's Act Number 173 of August 12, 1988. Must have at least two (2) years of experience performing WSS design. Such designer will also be in charge of the Pre-Installation Assessment.
- Uphold a professional demeanor while on a job site.
- Coordinate with PRDOH selected Program Managers (**PMs**) with tasks related to this Scope of Work.
- Coordinate with the selected PM in order to Conduct a Pre-Installation Assessment. This will provide the Designer with the necessary data to perform the design and/or to determine what remediation will be needed for the installation.
- Conduct a pre-award site visit. Assist the PMs during the applicant award process. The Bidder will be responsible for clarifying the owner any design-related clarification that might be needed.
- Perform a Pre-Installation Assessment site visit.
- Perform work after the corresponding reviews, approvals, and or notices to proceed are issued by the selected PRDOH Program Manager.
- Perform work as specified in accordance with all project requirements and all applicable laws and codes.
- Dispose of all materials in a safe manner in accordance with all local and federal regulations.
- Perform commissioning tests and correct any findings. Corrections will be paid by the Bidder, and PRDOH will not reimburse for them.

- Participate in closeout inspections and address findings.
- Work with PMs to ensure the project is completed within the project timeline and budget while minimizing disturbance.

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4. Photovoltaic System:

4.1. Pre-Installation Assessment:

The Bidder shall be responsible for the Pre-Installation Assessment of each project site where installation will be performed. A certified installer, a licensed professional engineer, and/or a licensed architect in Puerto Rico with the expertise of five years or more in the Photovoltaic system industry shall conduct the assessment. Assessment includes but is not limited to the following activities:

- Evaluate the property's roof capacity to support the PV system by completing a roof capacity checklist for home installations. The selected bidder will generate a scope of work based on the findings from the roof capacity checklist. A full evaluation shall provide information on roof load capacity, shading study, and other required studies to allow the system to function properly at the installation site. The Scope of Work generated shall detail the installation plan, either on the roof of the dwelling unit to support its installation and full functionality.
- Shading Analysis: Assess if the proposed array location supports a solar resource potential of more than 75 percent of the same site's optimal solar resource potential.
- Assess the home's interior and exterior elements and determine their conditions to facilitate the installation of conduits and electrical equipment. Home interior and exterior elements may include (but is not limited to):
    - Structural, electrical, plumbing, and HVAC systems installed in the roof;
    - Main panelboard
    - Branch circuits
    - Exterior Shade Element
    - Lightning protection
    - Electrical service entry including overhead wires, electric meter, service entry conductor
    - Other relevant components
- After examining the home's roof elements and determine their condition, other considerations may include (but are not limited to) home site elements:
    - Site restrictions
    - Site accessibility
    - Yards and courts

- Structural analysis: Verify the roof's load capacity to support the equipment load, home's exterior elements, and determine their conditions. Home external elements may include (but are not limited to):
  - Roof weatherproofing and covering including asphalt shingles, wood shingles or shakes, metal roofing, cement shingles, built-up roofing, single-ply membranes, and roll roofing, among others;
  - Skylights;
  - Gutters and downspouts; and
  - Parapets and gables.

  The structural analysis shall be conducted by a licensed engineer with a structural engineer degree or studies.

- Equipment Location
  - Determine the best locations for the PV System and all components as per designer and manufacturer's specification.
  - In the Pre-Installation Assessment report and Scope of Work, the selected Bidder must clearly define the location of the PV System and all components in accordance with applicable codes.

4.2. Design Service:

- Selected Bidder must design a standard photovoltaic system with battery back-up for single-family homes. System shall be capable of running critical loads, some household appliances (refrigerators, water pump, etc.), life support devices, and permit the occupants to shelter-in-place during electrical grid outages. Design should be standard, with minimal deviation to allow for consistency in cost across various single-family homes. The selected Bidder shall adhere to the following design guidelines:
  - A licensed professional structural engineer must certify that the existing roofs are structurally sound for the installation of the PV System and that the proposed system meets code requirement and the requirement of this IFB.
  - System layout shall meet local fire department, code, and ordinance requirements for roof access.
  - The PV System installation shall not interfere with roof drains, water drainage, expansion joints, air intakes, existing electrical and mechanical equipment, and existing antennas.
  - The system shall be directly attached to the roof unless the structural engineer deems the roof incapable of holding the PV System. If the structural integrity of the house does not support the load of the system, then, the applicant will immediately be ineligible for the PV System installation.
  - Racking Structure needs to be corrosion resistant and meet applicable local building code requirements concerning rain, wind, and earthquake factors.

- All penetrations and structural connections associated with supports and conduit shall be kept to a minimum and shall be waterproof.
- All roof penetrations shall be designed and constructed in collaboration with a roofing professional or manufacturer responsible for the roof and roofing material warranty for the specific site. All roof installations and weatherproofing of penetrations shall not compromise the roof warranty, or if the roof has no warranty, accepted best practice. The roof penetration and roof connections shall be warranted for weather tightness from the installer, including parts and labor (see Section 7 in this document for warranty details). The roofing contractor shall provide a warranty letter specifying that the roofing impermeabilization warranty is still in effect after the installation of the PV System.

4.3. Award Visit:

Refer to Section 6, Other Tasks applicable for services of PV System and Water Storage System, for additional information.

4.4. Permits

The selected Bidder shall obtain all required permits and licenses for the project. Also, the selected Bidder shall be responsible for any certification and/or notification to the applicable state agencies regarding the services to be provided to each project, including interconnection certifications and fees in accordance with the Act 17 of April 11 of 2019 ("Ley de Política Pública Energética de Puerto Rico"). All fees associated with the permits, notifications, and licenses are the responsibility of the selected Bidder.

Any additional documentation required, or corrections of deficiencies identified by Puerto Rico Electric Power Authority (**PREPA**) or any other permitting agencies, after the certification and notification required by the Program, must be addressed and brought to a conclusion by the Bidder at no additional cost to PRDOH.

4.5. PV System Installation Service:

- Selected Bidder shall be responsible for acquiring all permits and endorsements for system installation, system operation, and system interconnection in accordance with Act 17 -2019 ("Ley de Política Pública Energética de Puerto Rico").

- Installation of PV System- selected Bidder shall supply, install, and commission the PV System. Installation costs shall be standardized to accommodate installation across various types of single-family homes. System shall only be installed at sites with at least an 75% solar access, systems shall not be installed on roofs with significant shading. If the site does not have at least an 75% solar access, then, the applicant will be ineligible for the PV System installation. Inverters and batteries shall be installed in a shaded location and shall not be exposed to direct sun light.

- Install materials following the manufacturer's requirements.

- Provide all labor, materials, tools, equipment, and services required to complete the project as specified.
- Responsible for the cost of all items required for a complete and operating system.
- The selected Bidder shall be obligated to maintain a torque log of the installations, following designers' specifications.
- No material should be installed if:
  - Materials are not compatible with existing conditions.
  - Installation of materials violates equipment warranty.
  - Installation is not to code or industry standard.
  - Such are not in compliance with the conditions established by the program, federal or state regulations or this IFB.
- The PV System installations shall follow the best installation practices described by the National Renewable Energy Laboratory (**NREL**) in the following documents or any other industry related document:
  - Solar Photovoltaic in Severe Weather: Cost Consideration for Storm Hardening PV Systems for Resilience
  - Solar Photovoltaic Systems in Hurricanes and Other Severe Weather

  The United States Department of Energy Guidance's mentioned above are included as an attachment to this IFB.

4.6. Commissioning

- Perform commissioning and Inspection following the International Electrotechnical Commission (**IEC**) standard IEC 62446, any local or state regulation, program requirements, and correct any finding. The commissioning should verify that the project is performing as per project design.
- The designer shall perform commissioning of the entire PV system. This data shall be used to confirm the proper performance of the PV system. Performance tests shall be conducted at the final commissioning/acceptance testing. A digital copy of the commissioning report must be uploaded into Canopy and/or any other PRDOH management tool. A second system re-commissioning is mandatory at the end of the first year of operation. A re-commissioning report will be provided to PRDOH after the re-commissioning has been performed. In the event of a re-commissioning test failure, the Bidder will be responsible for the corrections, repairs, and proper functioning of the system.

4.7. Inspection

Refer to Section 6, Other Tasks applicable for services of PV System and Water Storage System, for additional information.

4.8. Technical Specifications for PV systems:

- The program offers standard packages for PV systems and battery storage based on the following two scenarios:

  - **Scenario #1:** For dwelling units where an ENERGY STAR refrigerator that consumes 489 kWh/yr or less is present, the following package will be installed. A standard package of a required system minimum of **3kW DC**[1] PV modules with a minimum Battery bank voltage of **48V**[2] and a required battery bank output of a minimum of **9 kWh**[3] with an **autonomy of 20 hours** for units with Energy Star Refrigerators; loads also includes one medical life support device. The required battery chemistry is Lithium-Ion.

  - **Scenario #2:** For dwelling units where a non-ENERGY STAR refrigerator that consumes 489 kWh/yr or less is present and such refrigerator would not be replaced or the applicants do not which to replace it with an ENERGY STAR Refrigerator, the following package will be installed. A standard package of a required system minimum of **4.3 kW DC** PV modules with a minimum Battery bank voltage of **48V** and a required battery bank output of a minimum of **12.8 kWh** with an **autonomy of 20 hours** for households with no Energy Star certified Refrigerators; loads also includes one medical life support device. The required battery chemistry is Lithium-Ion.

  Both standard packages shall have the capability of supplying electricity to an itemized list of devices, appliances and lighting fixtures identified as critical loads. The system will supply electricity to the critical loads independently as a stand-alone system, with the capability of interconnecting with the grid. For the purpose of the CEWRI Program, the Bidder must submit to PREPA the Interconnection package. Nevertheless, the approval of the Interconnection by PREPA will not be required for the closeout of the case.

- Systems shall be capable of running critical electrical loads, some household appliances and equipment (refrigerators, lighting, water pump, etc.), life support or medical devices, and permit shelter-in-place occupants' ability during electrical grid outages. Design should be standard, with minimal deviation to allow for consistency in cost across various single-family homes. In the event of a power outage, the protected appliances, tank's water pump, medical devices, and any load connected to the PV and battery back-up system will continue to work with no disruptions.

- The selected Bidder shall perform all professional services as necessary to provide applicants with a complete design of the proposed project. The system shall be designed and engineered to maximize the solar energy resource, considering the residents' electrical demand and load patterns, proposed installation site, and available solar resource. After concurrence of a final design by PRDOH's Program Manager, the selected Bidder shall provide

[1] kW stands for kilowatt and DC for direct current.
[2] V stands for voltage.
3 kWh stands for kilowatt hour.

all necessary materials, equipment, and labor to complete the PV System installation and interconnection with the electrical grid in accordance with Act 17 of April 11 of 2019 ("Ley de Política Pública Energética de Puerto Rico").

- The selected Bidder shall also provide and install a manual transfer switch to allow for system operation in standalone mode.
- The selected Bidder shall also provide to the applicant written instructions and procedures for shutdown and start-up activities for all system components.
- Photovoltaic (**PV**) Modules
    - PV modules shall be a commercial off-the-shelf product, must be OGPe Certified.
    - PV modules shall have a 25-year limited warranty that modules will generate no less than 80 percent of rated output under Standard Test Conditions (**STC**). PV modules that do not satisfy this warranty condition shall be replaced.
    - Modules shall be through-bolted to the underlying racking; top down clamps shall not be used under any circumstances, unless the designer specify the contrary.
    - The PV system shall be physically attached to the building roof and tilted at 5 to 10 degrees to the south.
- Inverter(s)
    - Inverters shall be a commercial off-the-shelf product.
    - The inverter shall have at a minimum the following features:
        - OGPe Certification
        - UL/ETL[4] listed
        - Peak efficiency of 96 percent or higher
        - Inverter shall have operational indicators of performance and have built-in data acquisition and remote monitoring.
        - Warning labels shall be posted in compliance with local and federal regulations
        - Operating instructions shall be posted on or near the system and on file with facilities operation and maintenance documents.
        - Provide detailed instructions on how to turn of the equipment.
        - The inverter shall be 120/240 V split phase.
        - The inverter must provide a Pure Sine Wave.
- Electrical Wiring
    - Areas where wiring passes through ceilings, walls, or other areas of the residence shall be adequately restored, booted, sealed, and returned to their original condition.

[4] Acronyms stand for the following respectively: Underwriters Laboratory/Electrical Testing Laboratories

- It is mandatory to include a subpanel for the critical loads served by the PV with battery inverter System.

- Structural Components
  - All structural components shall be non-corrosive (preferably marine stainless steel or aluminum). All hardware shall be marine stainless steel or aluminum. All components shall be designed to obtain a minimum 20-year design life.
  - All connections shall be bolted and torqued to specified value. Under no circumstances shall clamping systems or self-tapping sheet metal screws be used to hold:
    - Underlying structural frame members together
      Module frame to underlying structural frame member

- Back-Up Storage System
  - The required battery chemistry is Lithium-Ion.
  - The required battery bank voltage is 48 V.

5. Water Storage System (WSS):

5.1. Pre-Installation Assessment"

The designer shall be responsible for the Pre-Installation Assessment of the projects to be performed a service. A certified installer, a licensed professional engineer, and/or licensed architect in Puerto Rico with the expertise of five years or more in the construction industry shall conduct the assessment (except for the load analysis, which must be performed by a licensed professional structural engineer). Such task includes but is not limited to the following activities:

- Evaluate the property's roof's capacity to support the WSS system by completing a roof capacity checklist for home installations. The selected bidder will generate a scope of work based on the findings from the roof capacity checklist. A full evaluation should provide information on roof load capacity and all required analysis to allow the system to function properly at the installation site. The Scope of Work generated shall detail the installation plan, either on the roof of the dwelling unit to support its installation and full functionality.

- Assess if the proposed equipment can be located on the rooftop without interfering with the other equipment mounted and/or to be mounted on it.

- Assess the home's interior and exterior elements and determine their conditions to facilitate the WSS components installation. This assessment should be included within the PV System assessment whenever possible. Home interior and exterior elements may include (but are not limited to):
  - Structural, electrical, plumbing, and Heating, Ventilation, and Air Conditioning (**HVAC**) systems installed in the roof.
  - Main panelboard

- Any electrical conduit that might interfere with the WSS components installation.

- After examining the home's roof elements and determining their condition, home site elements shall be examined which include (but are not limited to):
  - Site restrictions
  - Site accessibility
  - Yards and courts

- Verify the roof's load capacity to support the equipment load, home's exterior elements, and determine their conditions. Home external elements may include (but are not limited to):
  - Roof weatherproofing and covering including asphalt shingles, wood shingles or shakes, metal roofing, cement shingles, built-up roofing, single-ply membranes, and roll roofing, among others.
  - Skylights
  - Gutters and downspouts
  - Parapets and gables
  - Lightning protection
  - Electrical service entry including overhead wires, electric meter, service entry conductor

5.2. Design Service:

Selected bidder must design the Water Storage System for single-family homes following the requirements stated in Section 4.8 of this Scope of Work (Technical Specifications for the Water Storage System).

5.3. Award Visit:

Refer to Section 6, Other Tasks applicable for services of PV System and Water Storage System, for additional information.

5.4. Water Storage System Installation Services

- Selected Bidder shall be responsible for acquiring all equipment and be responsible for its installation.

- Selected Bidder shall be responsible for all permits and endorsements for system installation (as required).

- Installation of Water Storage System- Selected Bidder shall install the Water Storage System. Installation costs shall be standardized to accommodate installation across various types of single-family homes.

- Install materials following the manufacturer's requirements. The Selected Bidder must coordinate with PV system installers to make sure the water pump is connected to a PV standalone electrical system circuit (as required).

- The water pump shall not shade or otherwise obstruct to the photovoltaic modules.
- Provide all labor, materials, tools, equipment, and services required to complete the project as specified.
- Responsible for the cost of all items required for a complete and operating system.
- No materials shall be installed if:
    - Materials are not compatible with existing conditions.
    - Installation of materials violates equipment warranty.
    - Installation is not to code or industry standard.
    - Materials are not in compliance with the conditions established by the program, federal or state regulation or this IFB.

5.5. Inspection:
Refer to Section 6, Other Tasks applicable for services of PV System and Water Storage System, for additional information.

5.6. Technical Specifications for Water Storage System: The selected Bidder shall obtain all necessary equipment, materials, design, and testing services for the installation of the WSS. The system shall:

- Provide domestic water to the home from the water storage tank using an electric water pump, controls and a diaphragm type pressurized tank to provide back-up water supply to the domestic water line. Tank should be sized to meet water needs of the home by providing an adequate level of pressure without damaging water fixtures. The WSS shall supply each household at least two days of potable water supply during a disaster scenario.

- If the roof structure allows, the water storage tank shall store a maximum capacity of 500 Gallons per household, complete with all its necessary accessories and instrumentation for full functionality of water storage and distribution within the home during a disaster scenario. The capacity of the tank should be defined by the designer according to the household needs. The water storage tank shall be connected to the utility's main water line with a water level control valve and backflow preventer designed to prevent backflow from the water storage tank to the utility main water line. The water storage tank shall have instrumentation to monitor and control pressure and water level.

- The water storage tank shall be located on the rooftop of the home. If the structural integrity of the house does not support the load of any of the applicable water tank size options, then, the applicant will immediately be ineligible for the WSS installation.

- In case the house loses power, the electric pump should be able to work off-grid from the main electrical utility supported by the PV and battery system granted to the applicant from the CEWRI program, when applicable.
- The water storage tank shall be constructed of ultraviolet (UV) and corrosion resistant material, approved for potable water, and have the Food and Drug Administration (FDA) and the National Safety Foundation (NSF) approval.
- Other related material for complete installation should include but is not limited to:
    - Pump: ½ horsepower with pressurized tank
    - Diaphragm type pressurized tank should be sized to provide adequate pressure to meet the water demands of the home.
    - Piping: Only copper piping is authorized. Sediment filter: Should be able to filtrate 10 microns particles.
    - Sensor level: Recommended use whenever possible.
    - Install a Buoy
    - Backflow prevention system to prevent cross-connection between household water system and water main.
    - The water storage tank must be watertight and intended for potable water use.
- All water storage tanks must be specifically manufactured for potable water use in accordance with FDA food-grade specifications, NSF standards, or other nationally recognized standards for potable water. Documentation from the manufacturer stating that tanks are approved for potable water must be available for inspection. Water Storage tanks must be installed according to the manufacturers' specific instructions.
- All water storage tanks must be vented to allow the free flow of air into and out of the tank as the water level inside the cistern changes. The vent opening must be turned down and must be screened with a 24-mesh screen cloth to prevent the entry of insects, birds, and other animals.
- Connect to water utility main to provide continuous flow of water through the water storage tank.
- Before filling and using, the water storage tank and pressure tank must first be cleaned and disinfected.
- Disinfection of the water storage tank and pressure tank after installation is mandatory, and the selected Bidder must follow the manufacturer's recommendation for potable water systems.

6. **Other tasks applicable for services of PV System and Water Storage System:**

6.1. Pre-Installation Assessment Visit, Report, and Case Work Orders

- Perform a Pre-Installation Assessment visit to each dwelling units and develop the Pre-Installation Assessment report for each case project. Submit report to the PMs for approval.
- Develop case Scope of Work for each project. Submit scope of work to the PMs for approval.

6.2. Award Visit:

The Selected Bidder will perform the following tasks during the award visit including but not limited to:

- Perform award visit with the PMs to each applicant's property to complete the Project Grant Agreement.
- Perform orientation to Applicants of the measures that are being offered and that may be installed in the unit.
- Ensure that the applicant is informed on the process, the works to be performed, and the conditions of the award prior to any work being performed.
- Assist the PMs during the applicant award process. The Bidder will be responsible for clarifying the owner any design-related clarification that might be needed.

6.3. Inspection

The Selected Bidder will visit the project site along with the PRDOH Program Manager and inspect works for overall quality standards. Upon completion of the installation, PM's Inspector will perform an inspection of the physical installation, as well as all paperwork submitted by the selected Bidder. Once on-site, the PM's Inspector shall ensure that all contractually agreed upon work was completed and confirm:

- That the equipment installation is in accordance with the design and installation drawings and specifications.
- That the model of the equipment installed is in accordance with the designer's specifications.
- Quality workmanship of installation.
- A brief review of findings as compared to the initial description of the site, scope of work, any change order(s) and final invoice.
- All warranties are included and active.

During the post-install site inspection, the Inspector will record any corrections to the installation that need to be made by the selected Bidder. If, during the post-installation inspection, the Program finds discrepancies between the work performed and the scope of work, installation standards and/or equipment specifications, the selected Bidder will be responsible, at the selected Bidder's

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expense, for bringing the installation into conformance before the selected Bidder is paid. Installation corrections, as noted during final acceptance or the post-installation inspection, shall be performed within ten (10) business days. If the selected Bidder cannot undertake corrective actions within ten (10) business days, the Selected Bidder shall deliver to the PM, in writing, reasons for the delay. PM shall determine validity and allow for a delay no longer than twenty (20) calendar days after validity is determined. Any discrepancies or disagreements between PM and selected Bidder shall be escalated to the adjudicating official within PRDOH.

6.4. Orientation and Training to Applicants

- The Selected Bidder shall perform orientation and training to the Applicants regarding operation and maintenance of the installed systems and equipment.
- Selected Bidder must deliver all applicable Operation and Maintenance Manuals of the installed systems to each Applicant receiving a system along with any other required documents.

6.5. Health and Safety:

The Selected Bidder shall observe and comply with all applicable laws, ordinances, codes, and regulations of governmental agencies, including federal, state, municipal, and local governing bodies having jurisdiction over any or all of the scope of services, including all provisions of the Occupational Safety and Health Act of 1979 as amended, and all other applicable federal, state, municipal and local safety regulations. All services performed by the Selected Bidder must be in accordance with these laws, ordinances, codes, and regulations. The Selected Bidder shall release, defend, indemnify and hold harmless the PRDOH, its officers, agents, volunteers, and employees from all damages, liability, fines, penalties, and consequences from any non-compliance or violation of any laws, ordinances, codes, or regulations. Additionally, the following requirements must be met:

- The Selected Bidder must develop and submit to the PMs a safety plan for approval.
- Provide a statement of how your firm will be prepared to work within the project timeline and on time, ensure conformance with quality control standards, and respond to quality control issues during and after completing the project.
- Develop, monitor, and implement health and safety policies as to ensure that projects follow health and safety laws and regulations, in order to reduce or prevent hazards, dangers, and accidents.
- All roof access points shall be securely locked at the end of each day.
- Suppose a release of hazardous materials or hazardous waste that cannot be controlled occurs connected with this contract's performance. In that case, the Selected Bidder shall immediately notify the appropriate public safety service (police, fire rescue, or emergency medical services), PRDOH Program Director, and project designees. The

Selected Bidder shall not store hazardous materials or hazardous waste without proper permits.

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6.6. Damage and Disposal:

The Selected Bidder shall proceed with work in a manner that does not damage existing materials/infrastructure unless otherwise directed by Organization:

- The Selected Bidder shall document pre-existing damage to the materials/infrastructure and report any such damage to the PMs.
- The Selected Bidder shall repair at its expense damage to buildings and equipment caused by this project's work.
- The Selected Bidder shall remove all materials, equipment, and debris immediately upon completion of the project or at the end of each workday (unless the dwelling unit owner agrees to provide storage space).
- The Selected Bidder shall keep access to all areas of the dwelling unit clear.
- The Selected Bidder shall not use on-premises refuse containers for disposal of any material whatsoever without prior approval of CEWRI PMs.
- The Selected Bidder shall protect people and property from damage and debris at all times during the construction process.

6.7. Hazardous Material Clean-Up:

All surfaces and articles contaminated by hazardous materials during this work shall be cleaned in accordance with all applicable laws, codes, and ordinances and be transported safely to the appropriate destruction/servicing facilities. The Selected Bidder shall comply with the regulations to manage hazardous waste as specified in the [applicable state code].

6.8. Reporting

The selected Bidder should be responsible for the creation and submission of the following reports to the CEWRI Program Manager:

- Pre-Installation Assessment Report
- Systems Installation Report
- Project Commissioning Report
- Pre-Inspection Package documentation in support to the requested CEWRI Inspection to ensure that current works performed merit the Final Inspection. If documentation submitted to the Program Manager does not merit a Final Inspection, the Program Manager shall deny the Final Inspection request to the PRDOH PV system and water storage system contractor and state the reasons as to why the CEWRI Inspection was denied.

7. **Warranty:** Selected Bidder shall warrant all its products for the following period:

- **Ten (10) years** guarantee for the Solar Photovoltaic System Panels.

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- **Twenty-five (25) years** of Linear Performance Guarantee for the Solar PV modules.
- **Ten (10) years** guarantee on Battery Bank and inverter.
- **Five (5) years** for the WSS.

Warranties shall include:

- Parts, labor, faulty material, manufacturing defects, defective items, emergency works of the systems and installation costs related to the failure of equipment under warranty (when due to equipment failure during the warranty period during the ten years of operation for PV system and five years of operation for the WSS).
- Repair or replacement of all system components for both systems, including but not limited to faulty material, manufacturing defects, during the warranty period.
- All unscheduled or emergency warranty works must be completed within (7) seven days of notification to Selected Bidder from the homeowner at no additional cost to PRDOH or the homeowner during the warranty period. If the 7-day period is not enough due to equipment shortage, the selected Bidder must provide a written explanation and a copy of the equipment's delivery documents.
- Full warranty documents for all installation shall be submitted to the Applicants and in duplicate to the CEWRI PMs firm.

After full payment for the installation, no further costs will be paid by PRDOH

8. **Deliverables:** The key deliverables to be provided include, but are not limited to, the following:
   - Selected Bidder must submit monthly reports to CEWRI Program Manager and PRDOH. Monthly reports shall be due the fifth (5th) day of each month and shall include:
     - Copies of all notifications from CEWRI PMs
     - Inspection orders placed within previous calendar month and inspection reports, as applicable.
     - Notices to begin the design phase within the previous calendar month
     - Notices of accepted/rejected designs within previous calendar month
     - Locations of all pending and completed tasks within the previous calendar month.
     - Explanation of pending and completed design tasks within the previous calendar month.
     - Explanation of pending and completed installation tasks within the previous calendar month.
     - Copies of all payment requests sent to PM within the previous month.
     - Payment receipt notifications with the date payment was received.

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- Selected Bidder must develop and submit to the PMs the following but not limited to:
    - Pre-Installation Assessment Visit and Report for each project
    - Case Scope of work for each project.
    - System Designs for each Projects
    - Systems Installation Report
    - Commissioning Report
    - All technical documentation, including Component's data sheets and listing
    - Warranties
    - Installation and operation manuals
    - As-built version of system drawings, cable lists and routing, wirings, grounding system,
    - Any other documentation required or requested by PRDOH.
- Selected Bidder must provide the equipment and installations in accordance with Section 9, Delivery Schedule.

9. Delivery Schedule

- Coordinate with Applicant and CEWRI Program Manager for any pre-installation assessment visits, installation, and closeout inspections.
- Upon notice from the CEWRI PM firm, the selected Bidder shall, within three (3) working days, perform the pre-installation assessment and report.
- Upon notice from the CEWRI PM firm, the selected Bidder shall, within six (6) working days, perform the design of the project.
- Upon notice from the CEWRI PM firm, the selected Bidder shall, within seven (7) working days, install the system(s), perform the commissioning of the project, submission of the Interconnection Package to PREPA, and submission of the Pre-Inspection Package. If the 7-day period is not enough due to equipment shortage, the selected Bidder must provide a written explanation and a copy of the equipment's delivery documents.
- Upon completion of installation, Selected Bidder shall submit the official payment request to CEWRI PM with all applicable documentation, including warranty. Warranty documentation shall be submitted in duplicate (one for PM/PRDOH and one for the homeowner/applicant) Selected Bidder is responsible for delivering warranty information to the homeowner/applicant.

10. Terms and Conditions

The following terms and conditions are designed to state expectations relating to the project and the selected Bidder's work performed. Should the Selected Bidder deviate from these standards and guidelines, all costs and liability associated with the observed deviation will be the Selected Bidder's sole responsibility.

10.1. Interpretation of Scope of Work:

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The selected Bidder is responsible for reading and fully understanding the scope of work. The design-build approach allows for continual collaboration; however, any proposed changes to the original proposal must be approved in writing by the Selected Bidder and PM through the change order process before proceeding.

10.2. Existing Conditions:

The selected Bidder is responsible for verifying the installation site's existing conditions as reported in this Invitation for Bids before construction begins.

10.3. Installation Schedule:

The selected Bidder will complete the installation within the timeline described in **Section 9.** Once the installation has begun, the selected Bidder is required to be on-site every day during regular business hours (or at a time pre-arranged with PRDOH) for the full work period until the installation is complete.

- The selected Bidder shall have all required materials in stock prior to beginning installation.
- The selected Bidder shall give the PMs an estimate of the date the installation will be completed and shall inform the PMs if the installation appears to be taking longer than the original estimate.
- Corrections as identified during final acceptance or as a result of the quality control process shall be performed within ten (10) business days unless the problem interrupts PRDOH normal business operations or presents a health and safety threat, in which case the correction shall be made immediately. Exceptions to this rule shall be granted in circumstances beyond the control of the Selected Bidder (e.g., unforeseen existing conditions, material backorders, etc.). The selected Bidder shall notify PRDOH (verbally and in writing) that the correction will or may violate this provision.

10.4. Communication:

The selected Bidder shall respond to information requests within two (2) business days. Response form will be determined by the request. The response may be in the following forms but not be limited to: E-mail, hardcopy, fax.

10.5. Change Orders and Scope of Work Modification:

The contract may be increased or decreased after the proposal is accepted. Under no circumstances shall the selected Bidder deviate from the work defined in the scope of work without advance written approval from PRDOH.

10.6. Final Acceptance:

A project will not be considered complete until all project steps are completed, including quality control inspection, training, and all project deliverables.

END SCOPE OF WORK

GOVERNMENT OF PUERTO RICO
DEPARTMENT OF HOUSING

Exhibit O-1
COST FORM
Invitation for Bids
Increase Capacity
PV Systems, Water Storage System Acquisition, and Installation Services
Community Development Block Grant – Disaster Recovery/MIT
CDBG-DR-IFB-2022-03

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Name of Proposer: FR-BLDM, LLC

Cost Form 1. Unit Pricing

Equipment Description[1]	Price per Unit
Photovoltaic (PV) System with Battery Storage and related Services[5][6]	
Cost per Watt ($/W DC)	$8.18
Water Storage System (WSS) and related Services[4][5][6][7]	
300 gallons WSS	$4,100.00
350 gallons WSS	$4,100.00
400 gallons WSS	$4,100.00
450 gallons WSS	$4,500.00
500 gallons WSS	$4,100.00

Notes

(1) All equipment to be submitted with the Bid to comply with the specifications for such included in the Scope of Work.
(2) Bidder shall submit technical/specification documentation for all equipment offered as part of the bid.
(3) All equipment offered as part of the bid is subject to the Warranty conditions set forth in the Scope of Work.
(4) Bids which do not contain pricing for every item requested will be considered unresponsive by the PRDOH.
(5) Pricing must include all services associated with the PV System and WSS included in the Scope of Work.
(6) Pricing must include all expenses, including incidental, taxes, handling, and delivery costs, as well as any other administrative costs associated with the goods and services. The PRDOH will not consider any additional costs. Only the unit prices submitted will be taken into consideration. The PRDOH will not be responsible for reimbursement of expenses related to per-diem, tolls, parts, or labors for equipment under warranty.
(7) Bidders shall provide the pricing for water storage systems inclusive of a 0.5 horsepower (hp) water pump with a pressurized tank and copper tubing/connections.

Name of Proposer: FR-BLDM, LLC

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Cost Form 2. System Pricing

Equipment Description[8]	Price per Unit	Qty.[16]	Total
PV System with Battery Storage and related Services[11][12][13]			
3 kW DC with 9kWh/day Battery Storage	$27,967.09	675	$18,877,785.75
4.3 kW DC with 12.8 kWh/day Battery Storage	$30,310.16	225	$6,819,786.00
[A] Sub-Total PV System			$25,697,571.75
Water Storage System and related Services[11][12][13][14][15]			
500 Gallons	$4,058.93	720	$2,922,429.60
[B] Sub-Total Water Storage System			$2,922,429.60
Total (PV System + Water Storage System): [A]+[B]			**$28,620,001.35**

Notes

(8) All equipment to be submitted with the Bid must comply with the specifications included in the Scope of Work.
(9) Bidder shall submit technical/specification documentation for all equipment offered as part of the bid.
(10) All equipment offered as part of the bid is subject to the Warranty conditions set forth in the Scope of Work.
(11) Bids which do not contain pricing for every item requested will be considered unresponsive by the PRDOH.
(12) Pricing must include all services associated with the PV System and WSS included in the Scope of Work.
(13) Pricing must include all expenses, including incidental, taxes, handling, and delivery costs, as well as any other administrative costs associated with the goods and services. The PRDOH will not consider any additional costs. Only the unit prices submitted will be taken into consideration. The PRDOH will not be responsible for reimbursement of expenses related to per-diem, tolls, parts, or labors for equipment under warranty.
(14) Bidders shall provide the pricing for water storage systems inclusive of a 0.5 horsepower (hp) water pump with a pressurized tank and copper tubing/connections.
(15) For quotation purposes, the Bidder will quote for the 500-gallon WSS. The PRDOH will determine, during the assessments of applications, which WSS will be installed at each project from those included in Cost Form 1.
(16) Maximum quantity of applications included in the Cost Form are the PRDOH's expectation for the current CEWRI allocation of the program at the moment. Therefore, the actual quantities of applications, and therefore units, to be included in the Selected Bidder's contract and that the Selected Proposer might be able to perform will be dependent on the final number of Selected Bidders that might be awarded through the IFB. For Level 1 Contractors, this does not limit the PRDOH in amending the contract of any Selected Bidder to include additional estimated quantities of applications based on performance metrics of the Selected Bidders and according to the Program funds availability. For Level 2 Contractors, PRDOH reserves the right to amend the contracts to include additional applications based on performance metrics up to 500 PV systems and 400 WSS.

Name of Proposer: FR-BLDM, LLC

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Cost Type	Total Amount
PV Systems- Acquisition and Installation	$25,697,571.75
WSS – Acquisition and Installation	$2,922,429.60

TOTAL BID COST $28,620,001.35

Sum of **(a)** PV Systems – Acquisition and Installation Cost; plus, **(b)** WSS – Acquisition and Installation Costs.

Notes on TOTAL PROPOSAL COST:

1. The TOTAL PROPOSAL COST represents the potential total cost for the equipment and services requested for all the PV Systems, Water Cisterns Acquisition and Installation Services.

2. The PRDOH aims to contract, at its discretion and in the best interest of the overall programs' implementation, one or more bidders(s).

3. Based on the number of Bidders finally awarded through this IFB, contracts may be signed to manage quantities of systems lower than those considered in this Cost Form.

4. PRDOH will reserve the discretion to amend contracts of awarded Bidders(s) to include additional amounts of systems based on performance metrics.

5. The Bid is to be awarded to the "Responsible Bidder" that submitted the "Responsive Bid" with the lowest cost, taking in consideration the Contractor Levels and Cost Forms. The Contractor Level must no be use as subterfuge to submit a lower Bid Bond.

END OF COST FORM

GOVERNMENT OF PUERTO RICO
DEPARTMENT OF HOUSING

ATTACHMENT D

PERFORMANCE REQUIREMENTS

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Increase Capacity PV System and Water Storage System Acquisition and Installation Services Invitation for Bids. CDBG-DR-IFB-2022-03

Scope of Work

The Contractor is responsible for compliance with all aspects of the Scope of Work included as **Attachment B** of the Contract.

Practice of Licensed Professions

Contractor and its subcontractors, agents, and employees, shall comply with all applicable federal and local laws and regulations, including but not limited to those that relate to the practice of licensed professions and those that could affect the Contractor's ability to carry out the Scope of Work under the Contract. Contractor certifies that it possesses all necessary permits, endorsements, and approvals necessary to perform the Work, which are to be valid and updated for the duration of the Contract. Contractor and each of its employees, agents, subcontractors, and subconsultants must have all licenses, permits, authorizations, consents, and approvals necessary for the performance of the Scope of Work under the contract, and such licenses, permit, authorizations, consents, and approvals are to be up to date and in full force and effect from the date of Contract execution and for the duration of the Contract. Contractor must always ensure that professional, architectural, or engineering work is performed by qualified professionals with the proper education, know-how, training, knowledge, expertise, experience, and license to perform such works, according to applicable federal and local rules and regulations.

Code Compliance

Installation and equipment shall comply with applicable building, mechanical, fire, seismic, structural, and electrical codes, included in the Joint Regulation for the Evaluation and Grant of Permits Related to Developments, Land Use, and Business Operations (Joint Regulation), as amended. The Contractor must abide by the "Joint Regulation", as amended, "Regulation No. 7796", "Regulation No. 8080," and any other State regulation that regulates the installations within this Program.

Contractor must install solar system equipment in compliance with Puerto Rico Residential Code 2018 (PRRC), National Electric Code (NEC), Puerto Rico Electrical Power Authority (PREPA) and Permit Management Office (OGPe, for its Spanish acronym) Regulations, as they may be amended.

Deliverables

The key deliverables to be provided include, but are not limited to, the following:

- Installer/Contractor must submit monthly reports to CEWRI Program Manager and PRDOH. Monthly reports shall be due the fifth (5th) day of each month and shall include:
  - Copies of all notifications from CEWRI PMs
  - Inspection orders placed within previous calendar month and inspection reports, as applicable.
  - Notices to begin the design phase within the previous calendar month
  - Notices of accepted/rejected designs within previous calendar month

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- Locations of all pending and completed tasks within the previous calendar month.
- Explanation of pending and completed design tasks within the previous calendar month.
- Explanation of pending and completed installation tasks within the previous calendar month.
- Copies of all payment requests sent to PM within the previous month.
- Payment receipt notifications with the date payment was received.

- Installer/Contractor must develop and submit to the PMs the following but not limited to:
  - Pre-Installation Assessment Visit and Report for each project
  - Case Scope of work for each project
  - System Designs for each Projects
  - Commissioning Report
  - All technical documentation, including Component data sheets and listing
  - Warranties
  - Installation and operation manuals
  - As-built version of system drawings, cable lists and routing, wirings, grounding system,
  - Any other documentation required or requested by PRDOH.

Delivery Schedule

- Coordinate with Applicant and CEWRI Program Manager for any pre-installation assessment visits, installation, and closeout inspections.
- Upon notice from the CEWRI PM firm, the Installer/Contractor shall perform the pre-installation assessment and report within the timeframe indicated in the table below.
- Upon notice from the CEWRI PM firm, the Installer/Contractor shall perform the design of the project and submission of the Interconnection Package to PREPA within the timeframe indicated in the table below.
- Upon notice from the CEWRI PM firm, the Installer/Contractor shall install the system(s), perform the commissioning of the project, and submission of the Pre-Inspection Package within the timeframe indicated in the table below. If the afforded timeframe is not enough due to equipment shortage, the Installer/Contractor must provide a written explanation and a copy of the equipment's delivery documents.
- Upon completion of installation, Installer/Contractor shall submit the official payment request to CEWRI PM with all applicable documentation, including warranty. Warranty documentation shall be submitted in duplicate (one for PM/PRDOH and one for the homeowner/applicant) Installer/Contractor is responsible for delivering warranty information to the homeowner/applicant.

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Tasks and Services	DESCRIPTION	TIMEFRAME DATES	DELIVERABLES
Pre-Installation Assessment and Scope of Work	- Perform a Pre-Installation Assessment visit to each dwelling units and develop the Pre-Installation Assessment report for each case project. Submit report to the PMs for approval. -Develop case Scope of Work for each project. Submit scope of work to the PMs for approval.	Upon notice from the CEWRI PM firm, the Installer/Contractor shall, **within ten (10) business days**, perform the pre-installation assessment and report.	For each Application, provide the Pre-Installation Report Form signed and sealed by the licensed professional, and provide any other document required by PRDOH.
Design Services & Permits	The Installer/Contractor must design a standard photovoltaic system with battery back-up and/or Water Storage System for single-family homes.	Upon notice from the CEWRI PM firm, the Installer/Contractor shall, **within six (6) business days**, perform and submit the design of the project.	For each assigned project, the Installer/Contractor must submit System Designs and any applicable permit for each Projects.
Installation Service & Commissioning	- For each assigned project, the Installer/Contractor shall install the system(s) and perform the commissioning of the project. -The Installer/Contractor shall perform orientation and training to the Applicants regarding operation and maintenance of the installed systems and equipment. - The Installer/Contractor must deliver all applicable Operation and Maintenance Manuals of the installed systems to each Applicant receiving a system along with any other required documents.	Upon notice from the CEWRI PM firm, the Installer/Contractor shall, **within seven (7) business days,** install the system(s), perform the commissioning of the project, and submission of the Pre-Inspection Package. If the 7-day period is not enough due to equipment shortage, the Installer/Contractor must provide a written explanation and a copy of the equipment's delivery documents.	For each assigned project, the Installer/Contractor must submit the Pre-Inspection Package, including but not limited to the Commissioning Report, all technical documentation, including components data sheets and listing, warranties, installation and operation & maintenance manuals, as-built version of system drawings, cable lists and routing, wirings, grounding system, and any other document required by PRDOH. The Pre-Inspection package must also include evidence of submission of the Interconnection Package to the utility company.

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Tasks and Services	DESCRIPTION	TIMEFRAME DATES	DELIVERABLES
Award Visit	-Perform award visit with the PMs to each applicant's property to complete the Project Grant Agreement. -Perform orientation to Applicants of the measures that are being offered and that may be installed in the unit. -Ensure that the applicant is informed on the process, the works to be performed, and the conditions of the award prior to any work being performed. - Assist the PMs during the applicant award process.	- As per coordination with Applicant and CEWRI Program Manager for award visit.	For each assigned project, the Installer/Contractor must participate and assist in the Award Visit.
Inspections	For each project the Installer/Contractor will visit the project site along with the PRDOH Program Manager and inspect works for overall quality standards.	- As per coordination with Applicant and CEWRI Program Manager for closeout inspections. -Installation corrections, as noted during final acceptance or the post- installation inspection, shall be performed within ten **(10) business days.** If the Installer/Contractor cannot undertake corrective actions **within ten (10) business days**, the Installer/Contractor shall deliver to the PM, in writing, reasons for the delay.	For each assigned project, the Installer/Contractor must participate and assist in the Inspection Visit.

Tasks and Services	DESCRIPTION	TIMEFRAME DATES	DELIVERABLES
Reporting	-Periodic Reporting is required to update the Program's implementation and development status, while providing visibility of the Program's actual status to stakeholders.	-Installer/Contractor must submit monthly reports to CEWRI Program Manager and PRDOH. Monthly reports shall be **due the fifth (5th) day of each month**	The Installer/Contractor shall submit the following: - Copies of all notifications from CEWRI PMs - Inspection orders placed within previous calendar month and inspection reports, as applicable. - Notices to begin the design phase within the previous calendar month - Notices of accepted/rejected designs within previous calendar month - Locations of all pending and completed tasks within the previous calendar month. - Explanation of pending and completed design tasks within the previous calendar month. - Explanation of pending and completed installation tasks within the previous calendar month. - Copies of all payment requests sent to PM within the previous month. - Payment log. - Any other document required by PRDOH.

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At PRDOH's discretion and in benefit to the Program, taking into consideration the particular circumstances of each case, timelines may be modified without the need to amend the contract.

The Installer/Contractor shall develop workplans, schedules, reports and/or any other document as may be requested by PRDOH or Representative in connection to the above timelines and performance goals. The Installer/Contractor shall submit any of such documents for review and approval as requested by the PRDOH within the specified time frame provided for such request. PRDOH reserves the rights to request any information as part of the Grantee responsibilities. The Installer/Contractor is also responsible for providing and performing all the services stated in the Scope of Work.

Liquidated Damages & Penalties

Contractor performance is subject to the following liquidated damages and penalties:

- **Liquidated Damages:** The Contractor shall pay to PRDOH, as liquidated damages, as related to their timeframes of performance. The PRDOH and the Contractor will agree on the timetable for the deliverable of each task. The Contractor shall pay to the PRDOH, as

liquidated damages, the amount established below for each calendar day that a deliverable required is late until deemed in compliance subject to a maximum amount as established below.

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Type of Work	Liquidated Damages for each calendar day	Maximum Amount of Liquidated Damages per occurrence, deliverable and task
PV System Equipment, Installation, and related services	$500.00	$5,000.00
WSS Equipment, Installation, and related services	$100.00	$1,000.00

Said sums, in view of the difficulty of accurately ascertaining the loss which PRDOH and/or homeowner will suffer by reason of delay in the completion of Works requested, are hereby fixed and agreed as the liquidated damages that PRDOH and/or the homeowner will suffer by reason of such delay. Liquidated damages received are not intended to be nor shall they be treated as either a partial or full waiver or discharge of the PRDOH's right to indemnification, or the Contractor's obligation to indemnify the PRDOH, or to any other remedy provided for as a provision of the Contract or Law. Liquidated damages may be assessed at the sole discretion of PRDOH. For the purpose of applying and calculating such liquidated damages, a grace period of ten (10) days shall be observed. The PRDOH may deduct and retain out of the monies which may become due to the Contractor, the amount of any such liquidated damages; and in case the amount which may become due is less than the amount of liquidated damages due to the PRDOH per the formula above, the Contractor shall be liable to pay the difference.

GOVERNMENT OF PUERTO RICO
DEPARTMENT OF HOUSING

Attachment E

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Insurance Requirements - Amended

Invitation for Bid
Increase Capacity
PV Systems, Water Cisterns Acquisition and Installation Services
CEWRI Program
Community Development Block Grant – Disaster Recovery/Mitigation
Puerto Rico Department of Housing
Contract Division

SPECIAL INSURANCE AND BONDING SPECIFICATIONS FOR PROFESSIONAL SERVICES

LICITATION NUMBER: CDBG-DR-IFB-2022-03

A. All bidders will submit a BID BOND

The bid will be accompanied of a bid bond of five percent (5%) of the amount of the bid and option of the bidder, which will be able to be my means of:

a. Certified check, or
b. Bank draft

The Bid Bond must be issued by a surety appearing in the latest US Department of Treasury's Listing of Approved Sureties (Circular Letter 570) and authorized to do business in Puerto Rico.

B. The successful bidder before commencing work or receiving a written notice to proceed with, or being allowed to start to work, must submit to the ***Puerto Rico Department of Housing (*PRDOH),*** the hereafter mentioned insurance policies and/or bonds, thus including all endorsements and agreements required under the special contractual conditions as per the following:

1. (X) State Insurance Fund Workmen's Compensation Insurance Policy

In accordance with the Workmen's Compensation Act No. 45, to facilitate its acquisition, the ***PRDOH*** shall provide a letter to the successful bidder addressed to the State Insurance Fund.

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2. (X) **Commercial General Liability (Broad Form) including the following insurance coverage**

COVERAGE	LIMIT
I. Commercial General Liability:	
• Each Occurrence	$2,000,000
• General Aggregate	$2,000,000
• Products & Complete Operations	$2,000,000
• Personal Injury & Advertising	$2,000,000
• Fire Damage	$100,000 (Any one Fire)
• Medical Expense	$10,000 (Any one person)
II. Employer's Liability Stop Gap:	
• Bodily Injury by Accident Each Employee Each Accident	 $1,000,000 $1,000,000
• Bodily Injury by Disease Each Employee Each Accident	 $1,000,000 $1,000,000

3. (X) **Comprehensive Automobile Liability Form including the following insurance coverages**

LIMIT
• Auto Liability - $1,000,000 • Physical Damages - $1,000,000 • Medical Payments - $ 10,000
The Commercial Auto cover must be applied to the following symbols:
• Liability Coverage -1
• Physical Damages – 2 and 8
• Hired – Borrowed Auto – 8
• Non-Owned Auto Liability – 9

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4. **(X) <u>Professional Liability and/or Errors & Omissions</u>**

(X) A. Risk, interest, location and limits

(X) A.1 Description of work to be done
(X)A.2 Limit:

(X) each occurrence	$ 5,000,000
(X) Aggregate	$ 5,000,000
(X) Deductible	$ 10,000

(X) A.3 Certification that the insurance contract has been given as surplus lines coverage under the Commonwealth Insurance Code, when applicable.

5. **(X) <u>Employment Practices Liability</u>**

Limit - $1,000,000

6. **(X) <u>Contractor's Pollution Liability</u>**

Limit - $1,000,000

7. **(X) <u>Umbrella</u>**

Limit - $10,000,000

8. **(X) Builder's Risk – 100% of Finished Value**

(x) a. Form for all risks including "DIC" and earthquake.
(x) b. 100% total finished cash value for all finished construction equipment and/or installation equipment.
(x) c. The *"PRDOH"*, HUD and the Government of Puerto Rico must be included as additional insured.

9. **(X) Payment and Performance Bond, Wage Payment Bond, and Labor Materials Payment Bond:**

(X) a. The successful bidder must provide a Payment & Performance Bond for the total cost of the project under contract.

(X) b. The surety must be issued by a surety appearing in the latest US Department of Treasury's Listing of Approved Sureties (Circular Letter 570) and authorized to do business in Puerto Rico.

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(X) c. You must provide an endorsement on the Performance and Payment Bond to guarantee the payment of wages at the Department of Labor of the Government of Puerto Rico as an Obliged Guarantor under Laws of Puerto Rico.

(X) d. Certificate of Authority, Power of Attorney and Power of Attorney License issued by the Commissioner of Insurance.

(X) e. Performance and payment bonds will be required for 100% of the contract price to cover the construction work and the standard one year warranty/maintenance period after completion of the work.

10. The policies to be obtained must contain the following endorsements including as additional insured the ***Puerto Rico Department of Housing (*PRDOH), U.S. Department of Housing and Urban Development (HUD),*** and the ***Government of Puerto Rico.***

(X) a. Breach of warranty
(X) b. Waiver and / or Release of Subrogation
(X) c. Additional Insured Clause
(X) d. Hold Harmless Agreement
(X) e. 30 Days Cancellation Clause

11. The insurance carrier or carriers, which will present said certificates of insurance must have at least a B+ Rating according to the Best Rating Guide.

C. TERMS AND CONDITIONS

1. All certified checks or bank drafts must be paid to the Order of the Bidding Agency.

2. All Bid Bonds must be issued by an Insurance Company authorized by the Insurance Commissioner of Puerto Rico and must be accompanied by the following documents:

3. Certificate of Authority in the name of the Insurer issued by the Insurance Commissioner.

4. Power of Attorney, issued by the Insurer, in the name of its attorney-in-fact.

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5. Power of Attorney License, issued by the Commissioner of Insurance pursuant to the power of attorney issued by said Insurer.

6. If, at the time the bidding, documents are opened, any of the documents referred to in paragraph a, band c above are missing, this shall not constitute grounds for disqualifying the contractor, but the successful bidder shall submit such documents within two (2) working days from the date and time of the auction.

7. It is implicit that, by issuing the Bid Bond, the insurer undertakes to issue a Performance and Payment Bond in accordance with the conditions of the auction.

8. In any bidding or protest, the interested party shall be obliged to write down each risk with its individual cost of premium and shall then reflect the total sum of all insurance premiums as project costs.

D. IMPORTANT NOTICE TO INSURANCE AND SURETY COMPANIES AND THEIR REPRESENTATIVES

All insurance companies and all guarantors who issue policies or bonds under our special contractual conditions are subject to:

1. Be authorized to do business within the Commonwealth of Puerto Rico and have the corresponding license issued by the Commissioner of Insurance.

2. To be enjoying a good economic situation and to be classified under the Category of B+ Rating according to the "Best Rating Guide".

3. Submit to the ***PRDOH** a written certification as evidence of full payment of premiums by the Contractor. Mention each risk coverage premium separately.

4. Avoid sub-contractual obligations of premium financing or any other kind, which may be detrimental to the public interest.

5. Avoid any request for cancellation by the contractor prior to the expiration date of the policy, without the consent of the Contract Division of the ***PRDOH**: Discuss any refund of unearned premium.

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6. Follow all Federal Bail and Acceptance Insurance Regulations, when applicable.

7. Indicate in the appropriate place of all insurance policies and/or bonds, the full description of the project, work or service to be rendered.

8. Not to make any amendments to insurance policies and bonds issued under the special conditions mentioned above, unless approved by the Insurance Section of the ***PRDOH**.

9. To ensure that all insurance policies or bonds are issued to comply with all of our special insurance conditions with respect to the period of coverage, type of risk coverage, as well as all limits, as specified, and also to eliminate those exclusions in accordance with our request.

10. Clarify any questions regarding insurance requirements by any means of communication with the Insurance Section of the ***PRDOH** under the Secretary for Legal Affairs.

E. EVIDENCE OF INSURANCE COVERAGE OF EACH SUBCONTRACTOR TO BE SUBMITTED BY THE SUCCESSFUL BIDDER AS THE PRIME CONTRACTOR:

The successful bidder, as the prime contractor, has the duty to require each of the subcontractors or subcontractors to maintain in force all insurance policies and/or bonds necessary to cover their individual participation in the risk or risks related to the subcontracted work or service to be rendered.

Therefore, we emphasize that prior to commencing work or receiving written notice to proceed with such work or being authorized to commence work, the successful prime contractor has the responsibility to provide the ***PRDOH** with evidence to the effect that all insurance and/or bonds required under the special conditions or required under the sub-contract to each of the sub-contractors or sub-sub-contractors are current and duly approved by the Contract Division of the ***PRDOH.**

All insurance policies shall remain in effect for the entire contractual period, so that with any order of change and/or amendment resulting in alteration of the original project completion date or total

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original cost, the prime contractor shall take the necessary steps to request the insurer to include such changes in all related insurance policies and/or bonds and to submit evidence by appropriate endorsements with effective dates. Cancellations without consent are not accepted.

The ***PRDOH** reserves the right to stop any work or service under contract until the breach of these requirements has been remedied, so that any delay in the performance of the contract based on any breach of the insurance coverage requirements shall be deemed the sole responsibility of the Main Contractor.

F. CONFLICT OR DIFFERENCE BETWEEN THE SPECIFICATIONS OF THE TENDERING, PROCEDURE AND SPECIAL INSURANCE CONDITIONS AND BONDS

In the event of any conflict or difference in the description of coverage or in amounts or limits, etc., with respect to insurance requirements, the "*Special Conditions of Insurance and Bonds*" as set forth in this **Insurance Requirements** shall prevail over any other insurance specifications.

PRDOH reserves the right to modify any Insurance Requirements at any time, in accordance with the Program's needs.

G. CERTIFICATE OF CONTRACT DIVISION

We hereby certify, to our best knowledge and understanding, that we have prepared the aforementioned "*Insurance and Bonds Special Conditions*" after a proper evaluation of the related risks, based on the information of the nature of the project and description submitted to us, as requested by the Contracting Program through a written application.

DESCRIPTION OF THE SERVICES:

Increase Capacity
PV Systems, Water Cisterns Acquisition and Installation Services
CEWRI Program

March 3rd, 2022
Date

Candice M. Noriega Morales
Candice M. Noriega Morales
Insurance Specialist
CDBG-DR Program

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GOVERNMENT OF PUERTO RICO
DEPARTMENT OF HOUSING

ATTACHMENT F
HUD GENERAL PROVISIONS

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Given that the Contract involves funds for which the U.S. Department of Housing and Urban Development (**HUD**) is the oversight agency, the following terms and conditions may apply to this Contract. In addition, Contractor shall comply with the Federal Labor Standards Provisions set forth in Form HUD-4010, available at https://www.hudexchange.info/resource/2490/hud-form-4010-federal-labor-standards-provisions/.

The CONTRACTOR shall include these terms and conditions in all subcontracts or purchase orders directly servicing the Contract.

These general provisions may be updated from time to time. It is the sole responsibility of the CONTRACTOR to be aware of any changes hereto, to amend and implement such changes and to ensure subcontracts terms and conditions are modified as necessary, if any.

General Provisions:

1. PROVISIONS REQUIRED BY LAW DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion or correction.

2. STATUTORY AND REGULATORY COMPLIANCE

CONTRACTOR shall comply with all laws and regulations applicable to the Community Development Block Grant-Disaster Recovery funds appropriated by: the Continuing Appropriations Act, 2018, and Supplemental Appropriations for Disaster Relief Requirements, 2017 (**Pub. L. 115-56**) approved on September 8, 2017, as amended; the Bipartisan Budget Act of 2018 **(Pub. L. 115-123)** approved on February 9, 2018, as amended; the Additional Supplemental Appropriations for Disaster Relief Act, 2019, **(Pub. L. 116-20)** approved on June 6, 2019, as amended; as well as including, but not limited ,to the applicable Office of Management and Budget Circulars, which may impact the administration of funds and/or set forth certain cost principles, including if certain expenses are allowed.

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3. BREACH OF CONTRACT TERMS

The Puerto Rico Department of Housing (**PRDOH**) reserves its right to all administrative, contractual, or legal remedies, including but not limited to suspension or termination of this Contract, in instances where the CONTRACTOR or any of its subcontractors violate or breach any Contract term. If the CONTRACTOR or any of its subcontractors violate or breach any Contract term, they shall be subject to such sanctions and penalties as may be appropriate. The duties and obligations imposed by the Contract documents, and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

4. REPORTING REQUIREMENTS

The CONTRACTOR shall complete and submit all reports, in such form and according to such schedule, as may be required by PRDOH and/or the Government of Puerto Rico. The CONTRACTOR shall cooperate with all the PRDOH and/or the Government of Puerto Rico efforts to comply with HUD requirements and regulations pertaining to reporting, including but not limited to 24 C.F.R. §§ 85.40-41 (or 84.50-52, if applicable) and § 570.507, when applicable.

5. ACCESS TO RECORDS

The Government of Puerto Rico, the PRDOH, HUD, the Comptroller General of the United States, or any of their duly authorized representatives, shall have, at any time and from time to time during normal business hours, access to any work product, books, documents, papers, and records of the CONTRACTOR which are related to this Contract, for the purpose of inspection, audits, examinations, and making excerpts, copies and transcriptions.

6. MAINTENANCE/RETENTION OF RECORDS

All records (files, data, work product) connected with this Contract will be turned over to PRDOH following the Agreement termination to be maintained for the remainder of the grant and post grant closeout.

7. SMALL AND MINORITY FIRMS, WOMEN'S BUSINESS ENTERPRISES, AND LABOR SURPLUS AREA FIRMS

The CONTRACTOR will take necessary affirmative steps to assure that minority firms, women's business enterprises, and labor surplus area firms are used in subcontracting when possible. Steps include, but are not limited to:

(i) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

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(ii) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
(iii) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises;
(iv) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises; and
(v) Using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the Department of Commerce.

Additionally, for contracts of **$10,000 or more**, the CONTRACTOR shall file Form HUD 2516 (Contract and Subcontract Activity) with the PRDOH on a quarterly basis.

8. RIGHTS TO INVENTIONS MADE UNDER A CONTRACT OR AGREEMENT

Contracts or agreements for the performance of experimental, developmental, or research work shall provide for the rights of the Federal Government and the recipient in any resulting invention in accordance with 37 C.F.R. Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements", and any implementing regulations issued by HUD.

9. TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

The Proposer will comply with the provisions of Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin in any program or activity that receives Federal funds or other Federal financial assistance. Programs that receive Federal funds cannot distinguish among individuals on the basis of race, color or national origin, either directly or indirectly, in the types, quantity, quality or timelines of program services, aids or benefits that they provide or the manner in which they provide them. This prohibition applies to intentional discrimination as well as to procedures, criteria or methods of administration that appear neutral but have a discriminatory effect on individuals because of their race, color, or national origin. Policies and practices that have such an effect must be eliminated unless a recipient can show that they were necessary to achieve a legitimate nondiscriminatory objective.

10. SECTION 109 OF THE HOUSING AND COMMUNITY DEVELOPMENT ACT OF 1974

The CONTRACTOR shall comply with the provisions of Section 109 of the Housing and Community Development Act of 1974. No person in the United States shall on the grounds of race, color, national origin, religion or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with funds made available under this title. Section 109 further provides

that discrimination on the basis of age under the Age Discrimination Act of 1975 or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973, as amended, is prohibited.

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11. SECTION 504 OF THE REHABILITATION ACT OF 1973

The CONTRACTOR shall comply with Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794), as amended, and any applicable regulations.

The CONTRACTOR agrees that no qualified individual with handicaps shall, solely on the basis of handicap, be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any program or activity that receives Federal financial assistance from HUD.

12. AGE DISCRIMINATION ACT OF 1975

The CONTRACTOR shall comply with the Age Discrimination Act of 1975 (42 U.S.C. § 6101 *et seq.*), as amended, and any applicable regulations. No person in the United States shall, on the basis of age, be excluded from participation in, be denied the benefits of, or be subjected to, discrimination under, any program or activity receiving Federal financial assistance.

13. DEBARMENT, SUSPENSION, AND INELIGIBILITY

The CONTRACTOR represents and warrants that it and its subcontractors are not debarred or suspended or otherwise excluded from or ineligible for participation in Federal assistance programs subject to 2 C.F.R. Part 2424.

14. CONFLICTS OF INTEREST

The CONTRACTOR shall notify the PRDOH as soon as possible if this Contract or any aspect related to the anticipated work under this Contract raises an actual or potential conflict of interest (as defined at 2 C.F.R. Part 215 and 24 C.F.R. § 85.36 or 84.42, if applicable). The CONTRACTOR shall explain the actual or potential conflict in writing in sufficient detail so that the PRDOH is able to assess such actual or potential conflict. The CONTRACTOR shall provide the PRDOH any additional information necessary to fully assess and address such actual or potential conflict of interest. The CONTRACTOR shall accept any reasonable conflict mitigation strategy employed by the PRDOH, including but not limited to the use of an independent subcontractor(s) to perform the portion of work that gives rise to the actual or potential conflict.

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15. SUBCONTRACTING

When subcontracting, the CONTRACTOR shall solicit for and contract with such subcontractors in a manner providing for fair competition. Some of the situations considered to be restrictive of competition include, but are not limited to:

(i) Placing unreasonable requirements on firms in order for them to qualify to do business;
(ii) Requiring unnecessary experience and excessive bonding;
(iii) Noncompetitive pricing practices between firms or between affiliated Companies;
(iv) Noncompetitive awards to consultants that are on retainer contracts,
(v) Organizational conflicts of interest;
(vi) Specifying only a brand name product instead of allowing an equal product to be offered and describing the performance of other relevant requirements of the procurement; and
(vii) Any arbitrary action in the procurement process.

The CONTRACTOR represents to the PRDOH that all work shall be performed by personnel experienced in the appropriate and applicable profession and areas of expertise, taking into account the nature of the work to be performed under this Contract.

The CONTRACTOR will include these HUD General Provisions in every subcontract issued by it, so that such provisions will be binding upon each of its subcontractors as well as the requirement to flow down such terms to all lower-tiered subcontractors.

16. ASSIGNABILITY

The CONTRACTOR shall not assign any interest in this Agreement, and shall not transfer any interest in the same (whether by assignment or novation) without prior written approval of the PRDOH.

17. INDEMNIFICATION

The CONTRACTOR shall indemnify, defend, and hold harmless the Government of Puerto Rico and PRDOH, its agents and employees, from and against any and all claims, actions, suits, charges, and judgments arising from or related to the negligence or willful misconduct of the CONTRACTOR in the performance of the services called for in this Contract.

18. COPELAND "ANTI-KICKBACK" ACT

(Applicable to all construction or repair contracts)

Salaries of personnel performing work under this Contract shall be paid unconditionally and not less often than once a month without payroll deduction or rebate on any account except only such payroll deductions as are mandatory by law or permitted by

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the applicable regulations issued by the Secretary of Labor pursuant to the Copeland "Anti-Kickback Act" of June 13, 1934 (48 Stat. 948; 62 Stat. 740; 63 Stat. 108; Title 18 U.S.C. § 874; and Title 40 U.S.C. § 276c). The CONTRACTOR shall comply with all applicable "Anti-Kickback" regulations and shall insert appropriate provisions in all subcontracts covering work under this Agreement to ensure compliance by subcontractors with such regulations, and shall be responsible for the submission of affidavits required of subcontractors thereunder except as the Secretary of Labor may specifically provide for variations of or exemptions from the requirements thereof.

19. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT
(Applicable to construction contracts exceeding $2,000 and contracts exceeding $2,500 that involve the employment of mechanics or laborers)

The CONTRACTOR shall comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 3701-3708) as supplemented by Department of Labor regulations (29 C.F.R. Part 5).

All laborers and mechanics employed by CONTRACTORS or subcontractors shall receive overtime compensation in accordance with and subject to the provisions of the Contract Work Hours and Safety Standards Act, and the CONTRACTORS and subcontractors shall comply with all regulations issued pursuant to that act and with other applicable Federal laws and regulations pertaining to labor standards.

20. DAVIS-BACON ACT
(Applicable to construction contracts exceeding $2,000 when required by Federal program legislation)

The CONTRACTOR shall comply with the Davis Bacon Act (40 U.S.C. §§ 3141, *et seq.*) as supplemented by Department of Labor regulations (29 C.F.R. Part 5).

All laborers and mechanics employed by CONTRACTORs or subcontractors, including employees of other governments, on construction work assisted under this Contract, and subject to the provisions of the federal acts and regulations listed in this paragraph, shall be paid wages at rates not less than those prevailing on similar construction in the locality as determined by the Secretary of Labor in accordance with the Davis-Bacon Act.

On a semi-annual basis, the CONTRACTOR shall submit Form HUD 4710 (Semi-Annual labor Standards Enforcement Report) to PRDOH.

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21. TERMINATION FOR CAUSE
(Applicable to contracts exceeding $10,000)

If, through any cause, the CONTRACTOR shall fail to fulfill in a timely and proper manner his or her obligations under this Contract, or if the CONTRACTOR shall violate any of the covenants, agreements, or stipulations of this Contract, the PRDOH shall thereupon have the right to terminate this Contract by giving written notice to the CONTRACTOR of such termination and specifying the effective date thereof, at least five (5) days before the effective date of such termination. In such event, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports prepared by the CONTRACTOR under this Agreement shall, at the option of the PRDOH, become the PRDOH's property and the CONTRACTOR shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder. Notwithstanding the above, the CONTRACTOR shall not be relieved of liability to the Government of Puerto Rico and PRDOH for damages sustained by the Government of Puerto Rico and/or PRDOH by virtue of any breach of the Agreement by the CONTRACTOR, and the Government of Puerto Rico and/or PRDOH may withhold any payments to the CONTRACTOR for the purpose of set-off until such time as the exact amount of damages due to the Government of Puerto Rico and/or PRDOH from the CONTRACTOR is determined.

22. TERMINATION FOR CONVENIENCE
(Applicable to contracts exceeding $10,000)

The PRDOH may terminate this Contract at any time by giving at least ten (10) days' notice in writing to the CONTRACTOR. If the Contract is terminated by the PRDOH as provided herein, the CONTRACTOR will be paid for the time provided and expenses incurred up to the termination date.

23. SECTION 503 OF THE REHABILITATION ACT OF 1973
(Applicable to contracts exceeding $10,000)

The CONTRACTOR shall comply with Section 503 of the Rehabilitation Act of 1973 (29 U.S.C. § 793), as amended, and any applicable regulations.

Equal Opportunity for Workers with Disabilities:

1) The CONTRACTOR will not discriminate against any employee or applicant for employment because of physical or mental disability in regard to any position for which the employee or applicant for employment is qualified. The CONTRACTOR agrees to take affirmative action to employ, advance in employment and otherwise treat qualified individuals with disabilities without discrimination based on their physical or mental disability in all employment practices, including the following:

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(i) Recruitment, advertising, and job application procedures;

(ii) Hiring, upgrading, promotion, award of tenure, demotion, transfer, layoff, termination, right of return from layoff and rehiring;

(iii) Rates of pay or any other form of compensation and changes in compensation;

(iv) Job assignments, job classifications, organizational structures, position descriptions, lines of progression, and seniority lists;

(v) Leaves of absence, sick leave, or any other leave;

(vi) Fringe benefits available by virtue of employment, whether or not administered by the CONTRACTOR;

(vii) Selection and financial support for training, including apprenticeship, professional meetings, conferences, and other related activities, and selection for leaves of absence to pursue training;

(viii) Activities sponsored by the CONTRACTOR including social or recreational programs; and

(ix) Any other term, condition, or privilege of employment.

2) The CONTRACTOR agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the act.

3) In the event of the CONTRACTOR's noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the act.

4) The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Deputy Assistant Secretary for Federal Contract Compliance Programs, provided by or through the contracting officer. Such notices shall state the rights of applicants and employees as well as the CONTRACTOR'S obligation under the law to take affirmative action to employ and advance in employment qualified employees and applicants with disabilities. The CONTRACTOR must ensure that applicants and employees with disabilities are informed of the contents of the notice (e.g., the CONTRACTOR may have the notice read to a visually disabled individual, or may lower the posted notice so that it might be read by a person in a wheelchair).

5) The CONTRACTOR will notify each labor organization or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the CONTRACTOR is bound by the terms of Section 503 of the Rehabilitation Act

of 1973, as amended, and is committed to take affirmative action to employ and advance in employment individuals with physical or mental disabilities.

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6) The CONTRACTOR will include the provisions of this clause in every subcontract or purchase order in excess of $10,000, unless exempted by the rules, regulations, or orders of the Secretary issued pursuant to Section 503 of the act, as amended, so that such provisions will be binding upon each subcontractor or vendor. The CONTRACTOR will take such action with respect to any subcontract or purchase order as the Deputy Assistant Secretary for Federal Contract Compliance Programs may direct to enforce such provisions, including action for noncompliance.

24. EQUAL EMPLOYMENT OPPORTUNITY
(Applicable to construction contracts and subcontracts exceeding $10,000)
The CONTRACTOR shall comply with Executive Order 11246 of September 24, 1965, entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 C.F.R. chapter 60).

During the performance of this Agreement, the CONTRACTOR agrees as follows:

1) The CONTRACTOR shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The CONTRACTOR shall take affirmative action to ensure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

2) The CONTRACTOR shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by Contracting Officer setting forth the provisions of this non-discrimination clause. The CONTRACTOR shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

3) The CONTRACTOR will, in all solicitations or advertisements for employees placed by or on behalf of the CONTRACTOR, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

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4) The CONTRACTOR will send to each labor union or representative of workers with which he or she has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers representative of the CONTRACTOR's commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

5) The CONTRACTOR will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor.

6) The CONTRACTOR will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to books, records and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

7) In the event of the CONTRACTOR's non-compliance with the non-discrimination clause of this Agreement or with any of such rules, regulations or orders, this Agreement may be cancelled, terminated or suspended in whole or in part and the CONTRACTOR may be declared ineligible for further government contracts in accordance with procedures authorized in Executive Order 11246 and such other sanctions as may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

8) CONTRACTOR shall incorporate the provisions of 1 through 7 above in every subcontract or purchase order unless exempted by rules, regulations or orders of the Secretary of Labor so that such provisions shall be binding on such subcontractor. The CONTRACTOR will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for non- compliance, provided, however, that in the event the CONTRACTOR becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

25. CERTIFICATION OF NONSEGREGATED FACILITIES
(Applicable to construction contracts exceeding $10,000)

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The CONTRACTOR certifies that it does not maintain or provide for its establishments, and that it does not permit employees to perform their services at any location, under its control, where segregated facilities are maintained. It certifies further that it will not maintain or provide for employees any segregated facilities at any of its establishments, and it will not permit employees to perform their services at any location under its control where segregated facilities are maintained. The CONTRACTOR agrees that a breach of this certification is a violation of the equal opportunity clause of this Agreement.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are, in fact, segregated on the basis of race, color, religion, or national origin because of habit, local custom, or any other reason.

The CONTRACTOR further agrees that (except where it has obtained for specific time periods) it will obtain identical certification from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the equal opportunity clause; that it will retain such certifications in its files; and that it will forward the preceding notice to such proposed subcontractors (except where proposed subcontractors have submitted identical certifications for specific time periods).

26. CERTIFICATION OF COMPLIANCE WITH CLEAN AIR AND WATER ACTS
(Applicable to contracts exceeding $100,000)

CLEAN AIR ACT

1)--The CONTRACTOR agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 *et seq.*

2)--The CONTRACTOR agrees to report each violation to the PRDOH and understands and agrees that the PRDOH will, in turn, report each violation as required to assure notification to the Government of Puerto Rico, HUD, and the appropriate Environmental Protection Agency Regional Office.

3)--The CONTRACTOR agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by HUD.

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WATER POLLUTION CONTROL ACT

1)--The CONTRACTOR agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. §1251, *et seq.*

2)--The CONTRACTOR agrees to report each violation to the PRDOH and understands and agrees that the PRDOH will, in turn, report each violation as required to assure notification to the Government of Puerto Rico, HUD, and the appropriate Environmental Protection Agency Regional Office.

3)--The CONTRACTOR agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by HUD.

The CONTRACTOR and all subcontractors shall comply with the requirements of the Clean Air Act, as amended, 42 U.S.C. § 7401 *et seq.*, the Federal Water Pollution Control Act, as amended, 33 U.S.C. § 1251 *et seq.*, and the regulations of the Environmental Protection Agency with respect thereto, at 40 C.F.R. Part 15 and 32, as amended, Section 508 of the Clean Water Act (33 U.S.C. § 1368) and Executive Order 11738.

In addition to the foregoing requirements, all nonexempt contractors and subcontractors shall furnish to the owner, the following:

1) A stipulation by the CONTRACTOR or subcontractors, that any facility to be utilized in the performance of any nonexempt contract or subcontract, is not listed on the Excluded Party Listing System pursuant to 40 C.F.R. Part 32 or on the List of Violating Facilities issued by the Environmental Protection Agency (**EPA**) pursuant to 40 C.F.R. Part 15, as amended.

2) Agreement by the CONTRACTOR to comply with all the requirements of Section 114 of the Clean Air Act, as amended, (42 U.S.C. § 7414) and Section 308 of the Federal Water Pollution Control Act, as amended, (33 U.S.C. § 1318) relating to inspection, monitoring, entry, reports and information, as well as all other requirements specified in said Section 114 and Section 308, and all regulations and guidelines issued thereunder.

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3) A stipulation that as a condition for the award of the Agreement, prompt notice will be given of any notification received from the Director, Office of Federal Activities, EPA, indicating that a facility utilized, or to be utilized for the Agreement, is under consideration to be listed on the Excluded Party Listing System or the EPA List of Violating Facilities.

4) Agreement by the CONTRACTOR that he or she will include, or cause to be included, the criteria and requirements in paragraph (1)through (4) of this section in every nonexempt subcontract and requiring that the CONTRACTOR will take such action as the government may direct as a means of enforcing such provisions.

27. ANTI-LOBBYING (Applicable to contracts exceeding $100,000)

By the execution of this Contract, the CONTRACTOR certifies, to the best of his or her knowledge and belief, that:

1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the CONTRACTOR, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the CONTRACTOR shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities", in accordance with its instructions.

3) The CONTRACTOR shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title

31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

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28. BONDING REQUIREMENTS
(Applicable to construction and facility improvement contracts exceeding $100,000)

The CONTRACTOR shall comply with Puerto Rico bonding requirements, unless they have not been approved by HUD, in which case the CONTRACTOR shall comply with the following minimum bonding requirements:

1) A bid guarantee from each bidder equivalent to five percent (5%) of the bid price. The "bid guarantee" shall consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of his or her bid, execute such contractual documents as may be required within the time specified.

2) A performance bond on the part of the CONTRACTOR for one hundred percent (100%) of the Agreement price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the CONTRACTOR's obligations under such contract.

3) A payment bond on the part of the CONTRACTOR for one hundred percent (100%) of the Agreement price. A "payment bond" is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

29. SECTION 3 OF THE HOUSING AND URBAN DEVELOPMENT ACT OF 1968 (As required by applicable thresholds)

1) The work to be performed under this Agreement is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. § 1701u (**Section 3**). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

2) The parties to this Agreement agree to comply with HUD's regulations in 24 C.F.R. Part 75 which implement Section 3. As evidenced by their execution of this Agreement,

the parties to this Agreement certify that they are under no contractual or other impediment that would prevent them from complying with the Part 75 regulations.

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3) The CONTRACTOR agrees to send to each labor organization or representative of workers with which the CONTRACTOR has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the CONTRACTOR's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

4) The CONTRACTOR agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 C.F.R. Part 75, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 C.F.R. Part 75. The CONTRACTOR will not subcontract with any subcontractor where the CONTRACTOR has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 C.F.R. Part 75.

5) The CONTRACTOR will certify that any vacant employment positions, including training positions, that are filled: (1) after the CONTRACTOR is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 C.F.R. Part 75 require employment opportunities to be directed, were not filled to circumvent the CONTRACTOR's obligations under 24 C.F.R. Part 75.

6) Noncompliance with HUD's regulations in 24 C.F.R. Part 75 may result in sanctions, termination of this Agreement for default, and debarment or suspension from future HUD assisted contracts.

7) With respect to work performed in connection with Section 3 covered Indian housing assistance, Section 7(b) of the Indian Self-Determination and Education Assistance Act (46 U.S.C. § 5307) also applies to the work to be performed under this Agreement. Section 7(b) requires that to the greatest extent feasible: (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this Agreement that are subject to the provisions of Section 3 and Section 7(b) agree to comply with

Section 3 to the maximum extent feasible, but not in derogation of compliance with Section 7(b).

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8) For contracts exceeding $100,000, the CONTRACTOR shall submit Form HUD 60002 (Section 3 Summary Report) to PRDOH on a quarterly basis, notwithstanding the annual reporting requirement set forth in that form's instructions.

30. FAIR HOUSING ACT

CONTRACTOR shall comply with the provisions of the Fair Housing Act of 1968, as amended. The act prohibits discrimination in the sale or rental of housing, the financing of housing or the provision of brokerage services against any person on the basis of race, color, religion, sex, national origin, handicap or familial status. The Equal Opportunity in Housing Act prohibits discrimination against individuals on the basis of race, color, religion, sex or national origin in the sale, rental, leasing or other disposition of residential property, or in the use or occupancy of housing assisted with Federal funds.

31. ENERGY POLICY AND CONSERVATION ACT

CONTRACTOR shall comply with mandatory standards and policies relating to energy efficiency as contained in the Government of Puerto Rico's energy conservation plan, issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6201 *et seq*).

32. HATCH ACT

CONTRACTOR agrees to comply with mandatory standards and policies relating to Hatch Act, Public Law 76-252, as amended.

The Hatch Act applies to political activities of certain state and local employees. As a Puerto Rico Department of Housing CONTRACTOR, you may do any of the following activities: be a candidate in nonpartisan elections; attend political meetings and conventions; contribute money; campaign in partisan elections; and hold office in political parties.

The CONTRACTOR may not do the following activities: be a candidate in partisan elections; use official influence to interfere in elections; coerce political contributions from subordinates in support of political parties or candidates. The office of special counsel operates a website that provides guidance concerning hatch act issues.

33. HEALTH AND SAFETY STANDARDS

All parties participating in this project agree to comply with Sections 107 and 103 of the Contract Work Hours and Safety Standards Act. Section 107 of the Act is applicable to construction work and provides that no laborer or mechanic shall be required to work in

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surroundings or under working conditions, which are unsanitary, hazardous, or dangerous to his or her health and safety as determined under construction, safety, and health standards promulgated by the Secretary of Labor. These requirements do not apply to the purchase of supplies or materials or articles ordinarily available on the open market, or contracts for transportation.

34. PERSONNEL

The CONTRACTOR represents that it has, or will secure at its own expense, all personnel required in performing the services under this Agreement. Such personnel shall not be employees of, or have any contractual relationship with, the contracting party. All the services required hereunder will be performed by the CONTRACTOR or under its supervision, and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under State and local law to perform such services. No person who is serving sentence in a penal or correctional institution shall be employed on work under this Contract.

35. WITHHOLDING OF WAGES

If in the performance of this Agreement, there is any underpayment of wages by the CONTRACTOR or by any subcontractor thereunder, the PRDOH may withhold from the CONTRACTOR out of payment due to him or her an amount sufficient to pay to employees underpaid the difference between the wages required thereby to be paid and the wages actually paid such employees for the total number of hours worked. The amounts withheld may be disbursed by the PRDOH for and on account of the CONTRACTOR or subcontractor to the respective employees to whom they are due.

36. CLAIMS AND DISPUTES PERTAINING TO WAGE RATES

Claims and disputes pertaining to wage rates or to classifications of professional staff or technicians performing work under this Contract shall be promptly reported in writing by the CONTRACTOR to the PRDOH for the latter's decision, which shall be final with respect thereto.

37. DISCRIMINATION BECAUSE OF CERTAIN LABOR MATTERS

No person employed on the services covered by this Agreement shall be discharged or in any way discriminated against because he or she has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable hereunder to his or her employer.

38. INTEREST OF MEMBERS OF LOCAL PUBLIC AGENCY AND OTHERS

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The CONTRACTOR agrees to establish safeguards to prohibit employees from using positions for a purpose that is or gives the appearance of being motivated by a desire for private gain for themselves or others, particularly those with whom they have a family, business, or other tie. The CONTRACTOR will be aware of and avoid any violation of the laws of this State which prohibit municipal officers and employees from having or owning any interest or share, individually or as agent or employee of any person or corporation, either directly or indirectly, in any contract made or let by the governing authorities of such municipality for the construction or doing of any public work, or for the sale or purchase of any materials, supplies or property of any description, or for any other purpose whatsoever, or in any subcontract arising therefrom or connected therewith, or to receive, either directly or indirectly, any portion or share of any money or other thing paid for the construction or doing of any public work, or for the sale or purchase of any property, or upon any other contract made by the governing authorities of the municipality, or subcontract arising therefore or connected therewith.

The CONTRACTOR will also be aware of and avoid any violation of the laws of this State which prescribe a criminal penalty for any public officer who has an interest in any contract passed by the board of which he or she is a member during the time he or she was a member and for one year thereafter.

39. INTEREST OF CERTAIN FEDERAL OFFICERS

No member of, or delegate to, the Congress of the United States and no Resident Commissioner shall be admitted any share or part of this Agreement or to any benefit to arise therefrom.

40. INTEREST OF CONTRACTOR

The CONTRACTOR agrees that it presently has no interest and shall not acquire any interest, direct or indirect, in the above described project or any parcels therein or any other interest which would conflict in any manner or degree with the performance of the Work hereunder. The CONTRACTOR further agrees that no person having any such interest shall be employed in the performance of this Agreement.

41. POLITICAL ACTIVITY

The CONTRACTOR will comply with the provisions of the Hatch Act (5 U.S.C. § 1501 *et seq.*), which limits the political activity of employees.

42. RELIGIOUS ACTIVITY

The CONTRACTOR agrees to abstain from using any funds related to this Agreement for inherently religious activities prohibited by 24 C.F.R. § 570.200(j), such as worship, religious instruction, or proselytization.

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43. FLOOD DISASTER PROTECTION ACT OF 1973

The CONTRACTOR will ensure that procedures and mechanisms are put into place to monitor compliance with all flood insurance requirements as found in the Flood Disaster Protection Act of 1973, 24 C.F.R. § 570.605.

44. LEAD BASED PAINT

The CONTRACTOR must comply with the regulations regarding lead-based paint found at 24 C.F.R. Part 35 on LEAD-BASED PAINT POISONING PREVENTION IN CERTAIN RESIDENTIAL STRUCTURES with regards to all housing units assisted using CDBG-DR funds.

45. VALUE ENGINEERING
(Applicable to construction contracts exceeding $2,000 when required by Federal program legislation)

The CONTRACTOR must comply with the regulations regarding systematic and organized approach to analyze functions of systems, equipment, facilities, services, and materials to ensure they achieve their essential functions at the lowest cost consistent to life cycle in execution, reliability, quality, and safety, in accordance with 24 C.F.R. § 200.318(g).

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APPENDIX C
CONTRACTOR CERTIFICATION
FINANCIAL OVERSIGHT AND MANAGEMENT BOARD FOR PUERTO RICO
CONTRACTS REVIEW POLICY

FR-BLDM, LLC

The following is hereby certified to the Oversight Board regarding the request for authorization for **Increased Capacity- PV Systems, Water Cisterns Acquisition and Installation Services for the Community Energy and Water Resilience Installation Services** contract by and between the **Puerto Rico Department of Housing** and **FR-BLDM, LLC**:

1. The expected contractor's subcontractor(s) in connection with the contract[1] is (are) the following:

   See annex A1

2. Neither the contractor nor any of its owners[2], partners, directors, officials or employees, has agreed to share or give a percentage of the contractor's compensation under the contract to, or otherwise compensate, any third party, whether directly or indirectly, in connection with the procurement, negotiation, execution, or performance of the contract, except as follows:

F&R Construction Group, Inc and it's Principals	48%
Bermúdez, Longo, Díaz-Masso, LLC and it's Principals	49%

   See annex B for information of the officials of FR-BLDM, LLC

3. To the best knowledge of the signatory (after due investigation), no person has unduly intervened in the procurement, negotiation, or execution of the contract, for its own benefit or that of a third person, in contravention of applicable law.

4. To the best knowledge of the signatory (after due investigation), no person has: (i) offered, paid, or promised to pay money to; (ii) offered, given, or promised to give anything of value to; or (iii) otherwise influenced any public official or employee with the purpose of securing any advantages, privileges, or favors for the benefit of such person in connection with the contract (such as the execution of a subcontract with contractor, beneficial treatment under the contract, or the written or unwritten promise of a gift, favor, or other monetary or non-monetary benefit.

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[1] As used herein, the term "contract" is inclusive of any amendments, modifications or extensions.

[2] For purposes of this certification, a contractor's "owner" shall mean any person or entity with more than a ten percent (10%) ownership interest in the contractor.

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5. Neither the contractor, nor any of its owners, partners, directors, officials or employees or, to the best of its knowledge (after due investigation), its representatives or sub-contractors, has required, directly or indirectly, from third persons to take any action with the purpose of influencing any public official or employee in connection with the procurement, negotiation, or execution of the contract.

6. Any incorrect, incomplete or false statement made by the contractor's representative as part of this certification shall cause the nullity of the proposed contract and the contractor must reimburse immediately to the Commonwealth any amounts, payments or benefits received from the Commonwealth under the proposed contract.

I hereby certify under penalty of perjury that the foregoing is complete, true, and correct.

Signature	September 21, 2022 *Date*
José Fullana *Printed Name*	Managing Director *Position*

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Expected Contractor's Subcontractors

#	Company	Contact	Phone	Email
1	F&R Construction Group, Inc	Néstor Amador	787-753-7010	namador@frcg.net
2	Bermúdez, Longo, Díaz-Masso, LLC	Dámaso Bermúdez	787-761-3030	damaso@bldmpr.com

FR-BLDM LLC

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ANNEX B - Appendix C

Contractor Certification
Financial Oversight AND Management Board for Puerto Rico
Contracts Review Policy

The following table includes the names of the officials with significant responsibility of controlling, administrating or leading in the ordinary business decision making of the legal entity:

Name	% Participation
Angel Antonio Fullana-Olivencia	12.00%
Antonio Fullana-Morales	7.20%
Néstor A. Amador-Chacón	2.40%
Francisco Díaz-Masso	69.09%
Lizzette Díaz-Masso	10.91%
José A. Santiago-Marrero	0.00%

PO Box 9932 | San Juan, PR 00908-9932 • University Gardens, 1010 Harvard St., San Juan, PR 00927
Tel. 787.753.7010 • Fax 787.763.0269

GOVERNMENT OF PUERTO RICO
DEPARTMENT OF HOUSING

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GOVERNMENT OF PUERTO RICO

PROJECT LABOR AGREEMENT

BETWEEN

PUERTO RICO DEPARTMENT OF HOUSING (PRDOH)

AND

FR-BLDM, LLC

ARTICLE 1. —LEGAL BASIS

This Project Labor Agreement (hereinafter, "Agreement") is hereby adopted in accordance and in compliance with Section 3 of Administrative Bulletin No. OE-2018-033, titled "Executive Order of the Governor of Puerto Rico, Hon. Ricardo A. Rosselló Nevares, to increase minimum wage for construction workers, implement laws that require the use of cement produced in Puerto Rico, and require the use of labor agreements in construction projects paid using public funds", enacted on July 30, 2018 (hereinafter, "OE-2018-033").

ARTICLE 2. —PURPOSE

The Government of Puerto Rico wishes to contribute to the economic welfare of construction workers, increase peace in the workplace and employee safety, and promote efficient and punctual performance of the Construction Project, as defined in Article 4 of this Agreement, in such a way that complies with the public policy set forth in OE-2018-033. In accordance with Section 4 of OE-2018-033, this Agreement shall promote these objectives and it exclusively: binds all contractors and subcontractors who participate in the Construction Project; contains tools to avoid interruptions based on labor disputes; promotes harmony in the workplace; provides uniform mechanisms to solve labor conflicts, and increases cooperation between contractors and workers in matters related to productivity and occupational safety.

ARTICLE 3. —PARTIES TO THE AGREEMENT

This document is a Project Labor Agreement entered into by Puerto Rico Department of Housing (PRDOH), as agency of the Executive Branch of the Government of Puerto Rico (hereinafter, "Agency"), and FR-BLDM, LLC as a contractor who employs construction workers for the Construction Project (hereinafter, "Contractor"). Project Labor Agreement (AGENCY AND CONTRACTOR)

ARTICLE 4. —CONSTRUCTION PROJECT

The Construction Project (hereinafter, "Construction Project") is described in the Agreement between PRDOH and the Contractor, to which this Project Labor Agreement is an attachment of.

ARTICLE 5. —RESPONSIBILITIES AND OBLIGATIONS OF THE PARTIES

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This Agreement shall be binding on the Agency and on all Contractors at all levels who are part of the Construction Project, as defined in OE-2018-033 and Circular Letter No. 2018-01 of the Department of Labor and Human Resources (hereinafter, "DTRH" for its Spanish acronym). Contractors shall include a clause in any subcontract entered into during the term of this Agreement to the effect that their subcontractors, on all levels, shall be parties that are governed by this Agreement as to any work subcontracted within the scope of the Construction Project. Furthermore, all Contractors and subcontractors who are a part of the Construction Project, as defined in OE-2018-033 and DTRH Circular Letter No. 2018-01, shall include a clause in the contract in which they agree to comply with the provisions of this Agreement.

The Agency shall not be responsible for any violation of this Agreement. The Agency and any Contractor shall not be liable for violations to this Agreement committed by other Contractors. Liability of any Contractor under this Agreement shall be individual and shall not be joint liability ("mancomunada", in Spanish). The Agency and any Contractor shall not be liable for violations to this Agreement committed by another Contractor. It is further provided that the Contractor shall be responsible for compensating workers hired by subcontractors who did not comply with the minimum wage requirement.

Nothing in this Article shall limit the exclusive discretion of the Agency to determine what Contractor to award contracts to for the Construction Project. The Agency retains the authority to totally or partially cancel, delay, or suspend the Construction Project.

In addition to the provisions of this Agreement, in the event that there is a collective bargaining agreement between the Contractor and an exclusive union representative of its employees, or a certification of a relevant forum establishing a labor union as the exclusive union representative of the workers or group of workers for the Contractor, the liability of the latter shall be governed as expressly agreed in the appropriate collective bargaining agreement and/or relevant case law of the National Labor Relations Board.

ARTICLE 6. —WAGES

All workers covered by this Agreement shall be paid a wage of no less than fifteen dollars ($15.00) per hour, in accordance with OE-2018-033, DTRH Circular Letter No. 2018-01 and Article 9 of this Agreement. In the event that the worker is entitled to earn a wage greater than what is contemplated under OE-2018-033, due to some federal or state law, the contractor and subcontractors shall be required to pay the higher wage. The Contractor shall put up the poster made by the DTRH as to minimum wage established under OE-2018-033 in a visible location in the Construction Project. It is further provided that the classification of a person as independent contractor shall not, in and of itself, be grounds to avoid the minimum wage provided under OE-2018-033.

As provided by Section 3 of Law No. 17 enacted on April 17, 1931, as amended, known as "Wage Payment Law", workers shall receive compensation either in cash,

by check, direct deposit, transfer, or credit to a payroll card, in intervals that shall not exceed fifteen (15) days. When a worker is terminated or resigns from his or her job during any day of the week, the Contractor shall pay the amount for the number of days worked, no later than the next official pay day in the manner agreed upon.

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If the provisions of Law No. 379 enacted on May 15, 1948, as amended, known as the "Law to Establish Work Hours in Puerto Rico", is applicable because there is no collective bargaining agreement in effect negotiated by a labor organization, the Contractor shall provide each worker with a pay stub containing the following information: name and address of the Contractor, name of the employee, position, dates and period of work covered by the payment, total regular hours and overtime, salary earned for regular hours and overtime; additions and deductions, indicating the reasons therefor; and the net amount received by the worker. The employer shall provide, within five (5) calendar days subsequent to payment, a check stub through a method that guarantees delivery in accordance with Article XV of DTRH Regulation No. 9017 enacted on April 4, 2018, "Regulations to Administer Law No. 379 enacted on May 15, 1948, as amended, known as the 'Law to Establish Work Hours in Puerto Rico'".

The Parties reaffirm their policy of non-discrimination in the workplace based on any of the reasons prohibited by law, as well as public policy, intended to promote equal pay for equal work in accordance with Law 16-2017, "Puerto Rico Equal Salary Act," and Law 61-2017. Furthermore, the Contractor acknowledges that he or she has consulted the "Uniform Guidelines for Self-Study as to Equal Salary in the Workplace" of August 10, 2017, in order to make any internal assessment to corroborate that it does not engage in salary discrimination of its employees based on sex.

Every other aspect of the legislation and federal and state regulations regarding how minimum wage is paid and what is considered to be work hours or time shall be applicable.

ARTICLE 7. —PROCEEDINGS BEFORE THE LABOR AND HUMAN RESOURCES DEPARTMENT

Any worker covered by this Agreement, by the provisions of OE-2018-033 and by DTRH Circular Letter No. 2018-01, who alleges a violation of the wage provisions may contact the DTRH's Work Regulations Bureau to report the violation. The DTRH shall initiate an expedited process to hear these claims for prompt decision in accordance with the Secretary's Memorandum No. 2018-05.

The Contractor shall cooperate with the Investigators of the Work Regulations Bureau and with any other employee or officer granted authority by the Secretary of the DTRH to investigate these claims. Furthermore, the Contractor shall be required to deliver payroll documents, a copy of the contracts or any other documents requested by said employees and/or officers with delegated authority.

In accordance with Law 115-1991, as amended, the Contractor shall not be able to terminate, threaten, or discriminate against any worker in relation to the terms, conditions, compensation, location, benefits, or privileges of employment based on the worker offering or attempting to offer any verbal or written testimony, statement or information, related to the rights given by the OE-2018-033, before the DTRH or any

other judicial, administrative, or legislative forum, if said statements are not defamatory or constitute a disclosure of privileged information established by law.

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Nothing provided in this Article prevents workers from turning to the courts to enforce their rights, request any other legal remedies that are necessary to enforce the terms of the OE-2018-033, and compel compliance with the rules, orders, and determinations issued by the Secretary of the DTRH in the exercise of the powers given to the same under it.

ARTICLE 8. —DISPUTE RESOLUTION

The Contractor, as well as any other subcontractor, must take affirmative steps to solve labor controversies in order to avoid, but not prohibit, cessation of work, strikes, stoppages, or closures, which could put at risk the timely conclusion of the Construction Project. If, after attempting to solve the controversy internally, any of these conflicts materializes, both the Agency and the Contractor agree to notify the DTRH within a period of forty-eight (48) hours from conclusion of the internal resolution attempts. The DTRH shall send a DTRH mediator or arbitrator, within a period of two (2) business days from notice to the same, who shall attempt to solve the situation. The alternative conflict resolution process before the DTRH shall have priority and must be concluded within thirty (30) days from designation of the mediator or arbitrator.

Nothing provided in this Article prevents the parties from turning to any other judicial, administrative, or legislative forum to enforce their rights.

ARTICLE 9. —SAFETY AND PROTECTION REQUIREMENTS

At the Construction Project site, each Contractor must comply with and maintain the current safety requirements in accordance with the applicable state and federal rules and regulations, including the ones promulgated by the Puerto Rico Occupational Safety and Health Administration ("PR OSHA"), an entity under the DTRH.

Within sixty (60) days of signing the agreement, the Contractor must contact PR OSHA to request training regarding the occupational safety and health standards which must be implemented during the course of the Construction Project.

Furthermore, each Contractor must make sure that non-skillful workers ("obreros no-diestros" in Spanish) participate in training programs regarding subjects that are relevant to the construction industry, related to construction codes, safety, permits, among others, in accordance with the procedures and guidelines issued by the Office of Management and Permits of the Government of Puerto Rico ("OGPe," for its acronym in Spanish) in this regard. Compliance with said training programs shall be an indispensable requirement for non-skillful workers to be able to continue earning the minimum salary of fifteen dollars ($15.00) per hour provided in the OE-2018-033 and interpreted in DTRH Circular Letter No. 2018-01. It shall be the responsibility of each Contractor to comply with the duties and guidelines issued by the OGPe in this regard.

ARTICLE 10. —UNIONS

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The implementation of the provisions of this Agreement shall not be considered as the recognition by the Contractor or the Agency of a labor union as the exclusive union representative of any group of employees at the shop, in accordance with Section 9 of the OE-2018-033.

In the event that there is a collective bargaining agreement between the Contractor and an exclusive union representative of its employees, or a certification from a relevant forum establishing a labor union as the exclusive union representative of the workers or group of workers of the Contractor, it shall be the responsibility of the latter to negotiate work conditions and the controversy resolution process with the union representative. Therefore, the relationship between the Contractor and the workers shall be governed by the specific agreements in the corresponding collective bargaining agreement and/or relevant case law of the National Labor Relations Board, in all parts and sections that are not incompatible with the Agreement.

ARTICLE 11. —APPLICABILITY TO EMPLOYEES

The provisions of this agreement apply to all (skillful or non-skillful ("diestro o no diestro", in Spanish) construction workers who perform manual or physical duties in the Construction Project, as defined in the OE-2018-033 and the DTRH Circular Letter No. 2018-01. The following persons are not subject to the provisions of this Agreement, even if they perform Construction Project duties:

a. "Professionals", "executives", and "administrators", as defined by the Regulations of the DTRH No. 7082 dated January 18, 2006, known as "Regulation Number 13 — Fifth Revision (2005)."

b. Employees who do not directly perform manual or physical duties in the Construction Project, only performing duties in connection to public work, such as: security/surveillance area monitors, timekeepers, mailpersons, office works, secretaries, messengers, guards, accounting duties (payroll, bookkeeping), technicians, receptionists, switchboard operators, electronic data processing, record keepers, and other analogous duties, and all other employees who only perform administrative duties.

c. Employees of the Agency, or of any other state entity, even if they work at the Construction Project site while it is in progress.

ARTICLE 12. —APPLICABILITY TO ENTITIES

This Agreement shall be available and shall be fully applied to any winning bidder for the Construction Project who becomes the signer of the same, regardless of whether or not it performs work in other projects. This Agreement shall not apply to the work of any Contractor performed in other projects. Furthermore, it shall not apply to the headquarters, subsidiaries, or affiliates of any Contractor, which does not participate in the Construction Project directly.

Work conditions under this Agreement shall not apply to the Agency, nor to any other public entity, and nothing contained in this document shall be interpreted to prohibit its employees from working in or outside of the Construction Project location.

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ARTICLE 13. —SEVERABILITY

If any part of this Agreement is nullified, found to violate the law, or to potentially result in the loss of all or part of the Construction Project financing, it shall be considered temporarily or permanently null and void. However, the rest of the Agreement shall remain in full force and effect to the extent allowed by law. It is the express and unequivocal will of the Parties that the corresponding forums enforce the provisions and the application of this Agreement to the greatest extent possible, even if any part of it, or its application to any person or circumstance, is revoked, nullified, invalidated, affected, or declared unconstitutional.

ARTICLE 14. —EXCLUSIVITY OF AGREEMENTS

This document contains the only agreements of all signers in relation to the labor conditions governing the Construction Project and replace any other agreement between the parties regarding labor conditions which would otherwise completely or partially apply to the Construction Project. It shall not be required for any Contractor to execute another agreement regarding labor conditions as a requirement to carry out Construction Project.

ARTICLE 15. —EFFECTIVE PERIOD

This Agreement shall come into effect immediately upon being approved and signed by (1) the Agency appointing authority and (2) the Contractor. It is understood that this Agreement, along with all of its provisions, shall remain in effect for the entire Construction Project until it is concluded, even if it is not completed before the agreement expiration date.

AND SINCE THEY ARE IN AGREEMENT AS TO THE FOREGOING, the parties sign this Agreement on November 29, 2022.

PUERTO RICO DEPARTMENT OF HOUSING	**FR-BLDM, LLC**
William O. Rodríguez Rodríguez William O. Rodríguez Rodríguez (Nov 29, 2022 22:16 AST)	Jose Fullana (Nov 29, 2022 08:25 AST)
William O. Rodríguez Rodríguez, Esq., Secretary	**José M. Fullana-Morales** Managing Director

A. APPLICABILITY

The Project or Program to which the construction work covered by this Contract pertains is being assisted by the United States of America, and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

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(1) MINIMUM WAGES

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment, computed at rates not less than those contained in the wage determination of the Secretary of Labor (which is attached hereto and made a part hereof), regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH1321)) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place, where it can be easily seen by the workers.

(ii) Additional Classifications.

(A) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination;

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor, the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division ("Administrator"), Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget ("OMB") under OMB control number 1235-0023.)

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, or HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1235-0023.)

(D) The wage rate (including fringe benefits, where appropriate) determined pursuant to subparagraphs (1)(ii)(B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this Contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

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(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1235-0023.)

(2) **Withholding.** HUD or its designee shall, upon its own action or upon written request of an authorized representative of the U.S. Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The U.S. Department of Labor shall make such disbursements in the case of direct Davis-Bacon Act contracts.

(3) **Payrolls and basic records.**

(i) **Maintaining Payroll Records.** Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification(s), hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid.

Whenever the Secretary of Labor has found, under 29 CFR 5.5(a)(1)(iv), that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1235-0023 and 1215-0018)

(ii) **Certified Payroll Reports.**

(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead, the payrolls only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at **https://www.dol.gov/agencies/whd/forms** or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the U.S. Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1235-0008.)

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(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract; and

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph (a)(3)(ii)(b).

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph (a)(3)(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the U.S. Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency (where appropriate), to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program.

If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

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(ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed, unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) **Equal employment opportunity.** The utilization of apprentices, trainees, and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

(5) **Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this Contract.

(6) **Subcontracts.** The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs (1) through (11) in this paragraph (a) and such other clauses as HUD or its designee may, by appropriate instructions, require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

(7) **Contract termination; debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) **Compliance with Davis-Bacon and Related Act Requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this Contract.

(9) **Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

(10) **Certification of Eligibility.**

(i) By entering into this Contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) Anyone who knowingly makes, presents, or submits a false, fictitious, or fraudulent statement, representation or certification is subject to criminal, civil and/or administrative sanctions, including fines, penalties, and imprisonment (e.g., 18 U.S.C. §§ 287, 1001, 1010, 1012; 31 U.S.C. §§ 3729, 3802.

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(11) **Complaints, Proceedings, or Testimony by Employees.** No laborer or mechanic, to whom the wage, salary, or other labor standards provisions of this Contract are applicable, shall be discharged or in any other manner discriminated against by the contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The provisions of this paragraph (b) are applicable where the amount of the prime contract exceeds **$100,000**. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) **Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work, which may require or involve the employment of laborers or mechanics, shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek, unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) **Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in subparagraph B(1) of this paragraph, the contractor, and any subcontractor responsible therefor, shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph B(1) of this paragraph, **in the sum set by the U.S. Department of Labor at 29 CFR 5.5(b)(2)** for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in subparagraph B(1) of this paragraph. In accordance with the Federal Civil Penalties Inflation Adjustment Act of 1990 (28 U.S.C. § 2461 Note), the DOL adjusts this civil monetary penalty for inflation no later than January 15 each year.

(3) **Withholding for unpaid wages and liquidated damages.** HUD or its designee shall, upon its own action or upon written request of an authorized representative of the U.S. Department of Labor, withhold or cause to be withheld from any moneys payable on account of work performed by the contractor or subcontractor under any such contract, or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages, as provided in the clause set forth in subparagraph B(2) of this paragraph.

(4) **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph B(1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs B(1) through (4) of this paragraph.

C. HEALTH AND SAFETY

The provisions of this paragraph (c) are applicable where the amount of the prime contract exceeds **$100,000**.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his or her health and safety, as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The contractor shall comply with all regulations issued by the Secretary of Labor pursuant to 29 CFR Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96), 40 U.S.C. § 3701 et seq.

(3) The contractor shall include the provisions of this paragraph in every subcontract, so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

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A. APLICABILIDAD

El Proyecto o Programa al que se refiere el trabajo de construcción cubierto por este Contrato está siendo asistido por los Estados Unidos de América, y las siguientes Disposiciones de Normas Laborales Federales están incluidas en este Contrato de conformidad con las disposiciones aplicables a dicha asistencia federal.

(1) SALARIOS MÍNIMOS

(i) Todos los trabajadores y mecánicos empleados o que trabajen en el sitio del trabajo serán pagados incondicionalmente y con una frecuencia no inferior a una vez por semana, y sin deducciones o descuentos subsiguientes en ninguna cuenta (excepto las deducciones de nómina permitidas por los reglamentos emitidos por el Secretario de Trabajo en virtud de la Ley Copeland (29 CFR Parte 3)), el monto total de los salarios y los beneficios complementarios de buena fe (o sus equivalentes en efectivo) adeudados al momento del pago, calculados a tasas no inferiores a las contenidas en la determinación del salario del Secretaría del Trabajo (que se adjunta al presente y forma parte del mismo), independientemente de cualquier relación contractual que pueda alegarse que existe entre el contratista y dichos trabajadores y mecánicos. Las contribuciones hechas o los costos razonablemente anticipados por beneficios complementarios de buena fe bajo la Sección 1(b)(2) de la Ley Davis-Bacon en nombre de trabajadores o mecánicos se consideran salarios pagados a dichos trabajadores o mecánicos, sujeto a las disposiciones de 29 CFR 5.5 (a)(1)(iv); también, las contribuciones periódicas realizadas o los costos incurridos durante más de un período semanal (pero con una frecuencia no inferior a la trimestral) en virtud de planes, fondos o programas que cubran el período semanal en particular, se considerarán realizados o incurridos de manera constructiva durante dicho período semanal.

Dichos trabajadores y mecánicos recibirán el salario correspondiente y los beneficios complementarios según la determinación del salario para la clasificación del trabajo realmente realizado, sin tener en cuenta la habilidad, excepto según lo dispuesto en 29 CFR 5.5(a)(4).
Los trabajadores o mecánicos que realicen trabajos en más de una clasificación podrán ser compensados a la tarifa especificada para cada clasificación por el tiempo realmente trabajado en la misma: Siempre que los registros de nómina del empleador establezcan con precisión el tiempo empleado en cada clasificación en la que se realiza el trabajo. El contratista y sus subcontratistas deberán publicar en todo momento la determinación del salario (incluida cualquier clasificación adicional y tarifas salariales conforme a 29 CFR 5.5(a)(1)(ii) y el cartel de Davis-Bacon (WH1321)) en el sitio de la obra en un lugar visible y accesible, donde los trabajadores puedan verla fácilmente.

(ii) Clasificaciones Adicionales.

(A) Cualquier clase de trabajadores o mecánicos que no figuren en la determinación del salario y que deban emplearse en virtud del contrato se clasificarán de conformidad con la determinación del salario. HUD aprobará una clasificación adicional y una tasa de salario y beneficios complementarios solo cuando se cumplan los siguientes criterios:

(1) El trabajo para realizar por la clasificación solicitada no es realizado por una clasificación en la determinación del salario;
(2) La clasificación es utilizada en el área por la industria de la construcción; y
(3) La tasa salarial propuesta, incluidos los beneficios complementarios de buena fe, tiene una relación razonable con las tasas salariales contenidas en la determinación del salario.

(B) Si el contratista, los trabajadores y los mecánicos que se emplearán en la clasificación (si se conocen), o sus representantes, y HUD o su designado acuerdan la clasificación propuesta y la tarifa salarial (incluida la cantidad designada para beneficios complementarios, cuando corresponda).), HUD o su designado enviará un informe de la acción tomada al Administrador de la División de Horas y Salarios ("Administrador"), Administración de Normas Laborales, Departamento de Trabajo de EE. UU., Washington, D.C. 20210. El Administrador, o un representante autorizado, aprobará, modificará o desaprobará cada acción de clasificación adicional dentro de los 30 días posteriores a la recepción y así informará a HUD o su designado o notificará a HUD o su designado dentro del período de 30 días que se requiere de tiempo adicional. (Aprobado por la Oficina de Gerencia y Presupuesto ("OMB") bajo el número de control OMB 1235-0023).

(C) En caso de que el contratista, los trabajadores o mecánicos que se emplearán en la clasificación o sus

representantes, o HUD o su designado no estén de acuerdo con la clasificación propuesta y la tarifa salarial (incluida la cantidad designada para beneficios complementarios, cuando corresponda), HUD o su designado remitirá las preguntas, incluidas las opiniones de todas las partes interesadas y la recomendación de HUD o su designado, al Administrador para su determinación. El Administrador, o un representante autorizado, emitirá una determinación dentro de los 30 días posteriores a la recepción y así informará a HUD o su designado o notificará a HUD o su designado dentro del período de 30 días que se necesita tiempo adicional. (Aprobado por la Oficina de Gerencia y Presupuesto bajo el Número de Control OMB 1235-0023).

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(D) El salario (incluidos los beneficios complementarios, cuando corresponda) determinado de conformidad con los subpárrafos (1)(ii)(B) o (C) de este párrafo, se pagará a todos los trabajadores que realicen trabajos en la clasificación conforme a este Contrato desde el primer día en que se realiza el trabajo en la clasificación.

(iii) Siempre que la tasa de salario mínimo prescrita en el contrato para una clase de trabajadores o mecánicos incluya un beneficio adicional que no se exprese como una tarifa por hora, el contratista deberá pagar el beneficio según se establece en la determinación del salario o deberá pagar otro bono beneficio marginal de buena fe o un equivalente en efectivo por hora del mismo.

(iv) Si el contratista no realiza pagos a un fideicomisario u otra tercera persona, el contratista puede considerar como parte de los salarios de cualquier trabajador o mecánico el monto de cualquier costo razonable anticipado al proporcionar beneficios complementarios de buena fe bajo un plan o programa, siempre que la Secretaría del Trabajo haya determinado, previa solicitud por escrito del contratista, que se han cumplido las normas aplicables de la Ley Davis-Bacon. La Secretaria del Trabajo podrá requerir al contratista que aparte en una cuenta separada activos para el cumplimiento de las obligaciones bajo el plan o programa. (Aprobado por la Oficina de Gerencia y Presupuesto bajo el Número de Control OMB 1235-0023).

(2) Retenciones. HUD o su designado deberá, por su propia acción o por solicitud por escrito de un representante autorizado del Departamento de Trabajo de EE. UU., retener o hacer que se retenga del contratista en virtud de este contrato o cualquier otro contrato federal con el mismo contratista principal, o cualquier otro contrato con asistencia federal sujeto a los requisitos de salario prevaleciente de Davis-Bacon que esté en manos del mismo contratista principal, tanto de los pagos o anticipos devengados según se considere necesario para pagar a los trabajadores y mecánicos, incluidos los aprendices, personas en entrenamiento y ayudantes, empleados por el contratista o cualquier subcontratista, el monto total de los salarios requeridos por el contrato. En caso de que no se pague a cualquier trabajador o mecánico, incluido cualquier aprendiz, persona en entrenamiento o ayudante, empleados o que trabaje en el sitio de trabajo, la totalidad o parte de los salarios requeridos por el contrato, HUD o su designado puede, después de un aviso por escrito al contratista, patrocinador, solicitante o propietario, tomar las medidas que sean necesarias para provocar la suspensión de cualquier otro pago, adelanto o garantía de fondos hasta que tales violaciones hayan cesado. HUD o su designado puede, después de una notificación por escrito al contratista, desembolsar dichos montos retenidos por y a cuenta del contratista o subcontratista a los respectivos empleados a quienes se les adeuda. El Departamento de Trabajo de los Estados Unidos hará tales desembolsos en el caso de contratos directos de la Ley Davis-Bacon.

(3) Nóminas y registros básicos.

(i) Mantenimiento de registros de nómina. Las nóminas y los registros básicos relacionados con las mismas deberán ser mantenidos por el contratista durante el curso del trabajo y conservados por un período de tres años a partir de entonces para todos los trabajadores y mecánicos que laboren en el sitio del trabajo. Dichos registros deberán contener el nombre, la dirección y el número de seguro social de cada trabajador, su(s) clasificación(es) correcta(s), las tarifas por hora de los salarios pagados (incluidas las tasas de contribuciones o los costos previstos para los beneficios complementarios de buena fe o los equivalentes en efectivo de los mismos de los tipos descritos en la Sección 1(b)(2)(B) de la Ley Davis-Bacon), el número de horas diarias y semanales trabajadas, las deducciones realizadas y los salarios reales pagados.

Siempre que la Secretaría del Trabajo haya determinado, conforme a 29 CFR 5.5(a)(1)(iv), que los salarios de cualquier trabajador o mecánico incluyen el monto de cualquier costo anticipado razonablemente al brindar beneficios bajo un plan o programa descrito en la Sección 1(b)(2)(B) de la Ley Davis-Bacon, el contratista deberá mantener registros que demuestren que el compromiso de proporcionar dichos beneficios es exigible, que el plan o programa es financieramente responsable y que el plan o programa ha sido comunicados por escrito a los trabajadores o mecánicos afectados, y registros que muestren los costos previstos o el costo real incurrido en la prestación de dichos beneficios.

Los contratistas que empleen aprendices o personas en entrenamiento bajo programas aprobados deberán mantener evidencia escrita del registro de los programas de aprendices y la certificación de los programas de aprendizaje, el

registro de los aprendices y personas en entrenamiento, y las proporciones y tarifas salariales prescritas en los programas aplicables. (Aprobado por la Oficina de Gerencia y Presupuesto bajo los Números de Control OMB 1235-0023 y 1215-0018)

(ii) Informes Certificados de Nómina.

(A) El contratista deberá presentar semanalmente, por cada semana en la que se realice cualquier trabajo por contrato, una copia de todas las nóminas a HUD o su designado si la agencia es una parte del contrato, pero si la agencia no es tal parte, el contratista enviará las nóminas al patrocinador solicitante o propietario, según sea el caso, para su transmisión a HUD o a su designado. Las nóminas enviadas deberán establecer de manera precisa y completa toda la información que se requiere mantener según 29 CFR 5.5(a)(3)(i), exceptuando los números de seguro social completos y las direcciones de las casas que no se incluirán en las transmisiones semanales. En cambio, las nóminas solo deben incluir un número de identificación individual para cada empleado (por ejemplo, los últimos cuatro dígitos del número de seguro social del empleado). La información de nómina semanal requerida se puede enviar en cualquier forma deseada. El formulario opcional WH-347 está disponible para este propósito en el sitio web de la División de Horas y Salarios en **https://www.dol.gov/agencies/whd/forms** o en su sitio sucesor. El contratista primario
es responsable de la presentación de copias de las nóminas por parte de todos los subcontratistas.

Los contratistas y subcontratistas deberán mantener el número de seguro social completo y la dirección actual de cada trabajador cubierto, y deberán proporcionarlos a pedido del HUD o su designado si la agencia es una parte del contrato, pero si la agencia no es tal parte, el contratista enviará las nóminas al patrocinador solicitante o al propietario, según sea el caso, para que las transmita al HUD o su designado, al contratista o a la División de Horas y Salarios del Departamento de Trabajo de los EE. UU. para fines de una investigación o auditoría de cumplimiento de los requisitos salariales vigentes. No es una violación de este subpárrafo que un contratista principal requiera que un subcontratista proporcione direcciones y números de seguro social al contratista principal para sus propios registros, sin la presentación semanal al HUD o su designado. (Aprobado por la Oficina de Gerencia y Presupuesto bajo el Número de Control OMB 1235-0008).

(B) Cada nómina presentada deberá estar acompañada de una "Declaración de Cumplimiento", firmada por el contratista o subcontratista o su agente que paga o supervisa el pago de las personas empleadas bajo el contrato y deberá certificar lo siguiente:

(1) Que la nómina para el período de nómina contiene la información que debe proporcionarse según 29 CFR 5.5(a)(3)(ii), la información adecuada se mantiene según 29 CFR 5.5(a)(3)(i), y que dicha información es correcta y completa;

(2) Que a cada trabajador o mecánico (incluido cada ayudante, aprendiz y persona en entrenamiento) empleado bajo contrato durante el período de nómina se le haya pagado el salario semanal completo que haya ganado, sin descuento, ya sea directa o indirectamente, y que no se hayan hecho deducciones ya sea directa o indirectamente de los salarios completos ganados, que no sean las deducciones permitidas según lo establecido en 29 CFR Parte 3;

(3) Que a cada trabajador o mecánico se le haya pagado no menos de las tasas salariales aplicables y beneficios marginales o equivalentes en efectivo para la clasificación del trabajo realizado, como se especifica en la determinación salarial aplicable incorporada en el contrato; y

(C) La presentación semanal de una certificación debidamente ejecutada establecida en el reverso del formulario opcional WH-347 que cumpla con el requisito de presentación de la "Declaración de cumplimiento" requerida por el subpárrafo (a)(3)(ii)(b).

(D) La falsificación de cualquiera de las certificaciones anteriores puede someter al contratista o subcontratista a un proceso civil o penal conforme a la Sección 1001 del Título 18 y la Sección 3729 del Título 31 del Código de los Estados Unidos.

(iii) El contratista o subcontratista deberá hacer que los registros requeridos bajo el subpárrafo (a)(3)(i) estén disponibles para inspección, copia o transcripción por parte de representantes autorizados de HUD o su designado o del Departamento del Trabajo de los EE. UU., y permitirá a tales representantes entrevistar a los empleados durante las horas de trabajo estando en el trabajo. Si el contratista o subcontratista no presenta los registros requeridos o no los pone a disposición, HUD o su designado puede, después de notificar por escrito al contratista, patrocinador, solicitante o propietario, tomar las medidas que sean necesarias para provocar la suspensión de cualquier pago adicional, anticipo o garantía de fondos. Además, la falta de presentación de los registros requeridos a petición o de no poner dichos registros a disposición puede ser motivo de acción de inhabilitación de conformidad con 29 CFR 5.12.

(4) Aprendices y Personas en entrenamiento.

(i) **Aprendices.** A los aprendices se les permitirá trabajar a una tarifa inferior a la predeterminada por el trabajo que realizaron cuando estén empleados de conformidad con un programa de aprendizaje de buena fe registrado individualmente en el Departamento del Trabajo de los EE. UU., Administración de Empleo y Capacitación, Oficina de Capacitación de Aprendices, Servicios Laborales y de Empleadores, o con una Agencia Estatal de Aprendizaje reconocida por la Oficina, o si una persona está empleada en sus primeros 90 días de empleo a prueba como aprendiz en dicho programa de aprendizaje, que no está registrado individualmente en el programa, pero que ha sido certificado por la Oficina de Capacitación de Aprendices, Servicios Laborales y de Empleadores, o una Agencia Estatal de Aprendices (cuando corresponda), para ser elegible para un empleo de prueba como aprendiz.

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La proporción permitida de aprendices a jornaleros en el sitio de trabajo en cualquier clasificación de oficio no será mayor que la proporción permitida al contratista en cuanto a la fuerza de trabajo total bajo el programa registrado. Cualquier trabajador que figure en una nómina con una tasa de salario de aprendiz, que no esté registrado o empleado de otra manera como se indicó anteriormente, recibirá un pago no inferior a la tasa de salario aplicable en la determinación del salario para la clasificación del trabajo realmente realizado. Además, cualquier aprendiz que realice un trabajo en el sitio de trabajo que exceda la proporción permitida por el programa registrado deberá recibir un pago no inferior al salario aplicable en la determinación del salario por el trabajo realmente realizado. Cuando un contratista esté realizando la construcción de un proyecto en una localidad distinta a la que tiene registrado su programa, se observarán las proporciones y tarifas salariales (expresadas en porcentajes de la tarifa por hora del jornalero) especificadas en el programa registrado del contratista o subcontratista.

A cada aprendiz se le debe pagar a un nivel no menor a la tarifa especificada en el programa registrado para el nivel de progreso del aprendiz, expresada como un porcentaje de la tarifa por hora del jornalero especificada en la determinación salarial aplicable.
Los aprendices recibirán beneficios complementarios de acuerdo con las disposiciones del programa de aprendizaje.

Si el programa de aprendizaje no especifica los beneficios complementarios, los aprendices deben recibir el monto total de los beneficios complementarios que figuran en la determinación del salario para la clasificación aplicable. Si el Administrador determina que prevalece una práctica diferente para la clasificación de aprendiz aplicable, los beneficios complementarios se pagarán de acuerdo con esa determinación. En caso de que la Oficina de Capacitación de Aprendices, Servicios Laborales y de Empleadores, o una Agencia Estatal de Aprendices reconocida por la Oficina, retire la aprobación de un programa de aprendices, el contratista ya no podrá utilizar aprendices a una tarifa inferior a la predeterminada aplicable para el trabajo realizado hasta que se apruebe un programa aceptable.

(ii) **Personas en entrenamiento.** Salvo lo dispuesto en 29 CFR 5.16, no se permitirá que las personas en entrenamiento trabajen a una tarifa inferior a la predeterminada por el trabajo realizado, a menos que estén empleados de conformidad con un programa que haya recibido aprobación previa, evidenciado por una certificación formal del Departamento de Trabajo, Administración de Empleo y Capacitación de EE. UU. La proporción de personas en entrenamiento a jornaleros en el lugar de trabajo no será mayor que lo permitido según el plan aprobado por la Administración de Empleo y Capacitación. A cada persona en entrenamiento se le debe pagar a no menos de la tarifa especificada en el programa aprobado para el nivel de progreso de la persona en entrenamiento, expresada como un porcentaje de la tarifa por hora especificada del jornalero en la determinación salarial aplicable. Las personas en entrenamiento recibirán beneficios complementarios de acuerdo con las disposiciones del programa de aprendices. Si el programa de entrenamiento no menciona los beneficios complementarios, a las personas en entrenamiento se les pagará el monto total de los beneficios complementarios enumerados en la determinación del salario, a menos que el Administrador de la División de Horas y Salarios determine que existe un programa de aprendizaje asociado con la tasa salarial del oficial correspondiente en la determinación del salario que prevé menos de los beneficios complementarios completos para los aprendices. Cualquier empleado que figure en la nómina con una tarifa de persona en entrenamiento que no esté registrado y que no participe en un plan de capacitación aprobado por la Administración de Empleo y Capacitación recibirá un pago no inferior al salario aplicable en la determinación del salario por el trabajo realmente realizado.

Además, a cualquier persona en entrenamiento que realice labores en el sitio de trabajo que exceda la proporción permitida por el programa registrado se le pagará no menos que la tarifa salarial aplicable en la determinación del salario por el trabajo realmente realizado. En caso de que la Administración de Empleo y Capacitación retire la aprobación de un programa de capacitación, el contratista ya no podrá utilizar personas en entrenamiento a una tarifa inferior a la predeterminada aplicable para el trabajo realizado hasta que se apruebe un programa aceptable.

(iii) **Igualdad de oportunidades de empleo.** La utilización de aprendices, personas en entrenamiento y jornaleros bajo 29 CFR Parte 5 deberá estar en conformidad con los requisitos de igualdad de oportunidades de empleo de la Orden

Ejecutiva 11246, enmendada, y 29 CFR Parte 30.

(5) **Cumplimiento de los requisitos de la Ley Copeland.** El contratista deberá cumplir con los requisitos de 29 CFR Parte 3, que se incorporan por referencia en este Contrato.

(6) **Subcontratos.** El contratista o subcontratista insertará en cualquier subcontrato las cláusulas contenidas de los subpárrafos (1) al (11) en este párrafo (a) y cualquier otra cláusula que HUD o su designado pueda requerir, mediante las instrucciones apropiadas, y una copia de la correspondiente decisión sobre el salario prevaleciente, y también una cláusula que requiere que los subcontratistas incluyan estas cláusulas en cualquier subcontrato de nivel inferior. El contratista principal será responsable del cumplimiento por parte de cualquier subcontratista o subcontratista de nivel inferior de todas las cláusulas del contrato en este párrafo.

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(7) **Terminación del contrato; exclusión.** El incumplimiento de las cláusulas del contrato en 29 CFR 5.5 puede ser motivo de rescisión del contrato y de inhabilitación como contratista y subcontratista según lo dispuesto en 29 CFR 5.12.

(8) **Cumplimiento con los Requisitos de la Ley Davis-Bacon y Leyes Relacionadas.** Todos los fallos e interpretaciones de Davis-Bacon y Actos Relacionados contenidos en 29 CFR Partes 1, 3 y 5 se incorporan aquí por referencia en este Contrato.

(9) **Controversias relativas a las normas laborales.** Las disputas que surjan de las disposiciones sobre normas laborales de este Contrato no estarán sujetas a la cláusula general de disputas de este Contrato. Dichas disputas se resolverán de acuerdo con los procedimientos del Departamento de Trabajo de los EE. UU. establecidos en 29 CFR Partes 5, 6 y 7. Las disputas dentro del significado de esta cláusula incluyen disputas entre el contratista (o cualquiera de sus subcontratistas) y HUD o su designado, el Departamento de Trabajo de los Estados Unidos, o los empleados o sus representantes.

(10) **Certificación de la elegibilidad.**

(i) Al celebrar este Contrato, el contratista certifica que ni él (ni él o ella) ni ninguna persona o firma que tenga un interés en la firma del contratista es una persona o firma inelegible para adjudicarse contratos del Gobierno en virtud de la Sección 3 (a) de la Ley Davis-Bacon o 29 CFR 5.12(a)(1) o para recibir contratos de HUD o participar en programas de HUD de conformidad con 24 CFR Parte 24.

(ii) Ninguna parte de este Contrato se subcontratará a ninguna persona o firma que no sea elegible para la adjudicación de un contrato del Gobierno en virtud de la Sección 3(a) de la Ley Davis-Bacon o 29 CFR 5.12(a)(1) o para ser adjudicado contratos de HUD o participar en programas de HUD de conformidad con 24 CFR Parte 24.

(iii) Cualquier persona que a sabiendas haga, presente o envíe una declaración, representación o certificación falsa, ficticia o fraudulenta está sujeta a sanciones penales, civiles y/o administrativas, incluidas multas, sanciones y encarcelamiento (p. ej., 18 U.S.C. §§ 287, 1001, 1010, 1012, 31 USC §§ 3729, 3802.

(11) **Quejas, Procedimientos o Testimonio de los Empleados.** Ningún trabajador o mecánico, a quien se apliquen las disposiciones sobre sueldos, salarios u otras normas laborales de este Contrato, será despedido o discriminado de ninguna otra manera por parte del contratista o cualquier subcontratista porque dicho empleado haya presentado una queja o instituido o causado a haber iniciado cualquier procedimiento o ha declarado o está a punto de declarar en cualquier procedimiento bajo o relacionado con las normas laborales aplicables en virtud de este Contrato a su empleador.

B. **LEY DE NORMAS DE SEGURIDAD Y HORAS DE TRABAJO POR CONTRATO**

Las disposiciones de este párrafo (b) se aplican cuando el monto del contrato principal excede los **$100,000**. Tal como se usa en este párrafo, los términos "obreros" y "mecánicos" incluyen vigilantes y guardias.

(1) **Requisitos de horas extras.** Ningún contratista o subcontratista que contrate para cualquier parte del trabajo del contrato, que pueda requerir o involucrar el empleo de trabajadores o mecánicos, requerirá o permitirá que dicho trabajador o mecánico en cualquier semana laboral en la que el individuo esté empleado en dicho trabajo trabaje en exceso. de 40 horas en dicha semana laboral, a menos que dicho trabajador o mecánico reciba una compensación a una tasa no inferior a una vez y media la tasa básica de pago por todas las horas trabajadas en exceso de 40 horas en dicha semana laboral.

(2) **Violación; responsabilidad por salarios no pagados; daños y perjuicios.** En caso de cualquier violación de la cláusula establecida en el inciso B (1) de este párrafo, el contratista, y cualquier subcontratista responsable por ello, será responsable por los salarios no pagados. Además, dicho contratista y subcontratista serán responsables ante los Estados Unidos (en el caso de trabajos realizados bajo contrato para el Distrito de Columbia o un territorio, ante dicho Distrito o territorio) por daños y perjuicios. Dichos daños y perjuicios se calcularán con respecto a cada trabajador o mecánico individual, incluidos los vigilantes y guardias, empleados en violación de la cláusula establecida en el subpárrafo B(1) de este párrafo, **en la suma establecida por el Departamento de Trabajo de los EE. UU. en 29 CFR 5.5(b)(2)** por cada día calendario en el que se requirió o permitió que dicha persona trabajara más de la semana laboral estándar de 40 horas sin

el pago de los salarios por horas extras requeridos por la cláusula establecida en el subpárrafo B(1) de este párrafo. De acuerdo con la Ley Federal de Ajuste de Sanciones Civiles por Inflación de 1990 (28 U.S.C. § 2461 Note), el DOL ajusta esta sanción monetaria civil por inflación a más tardar el 15 de enero de cada año.

(3) **Retención por salarios no pagados y daños y perjuicios.** HUD o su designado deberá, por su propia acción o previa solicitud por escrito de un representante autorizado del Departamento de Trabajo de los EE. UU., retener o hacer que se retenga cualquier dinero pagadero a cuenta del trabajo realizado por el contratista o subcontratista en virtud de dicho contrato, o cualquier otro contrato federal con el mismo contrato principal, o cualquier otro contrato con asistencia federal sujeto a la Ley de estándares de seguridad y horas de trabajo por contrato que esté en manos del mismo contratista principal, las sumas que se determinen como necesarias para satisfacer cualquier responsabilidad de dicho contratista o subcontratista por salarios no pagados y daños y perjuicios, según lo dispuesto en la cláusula establecida en el subpárrafo B(2) de este párrafo.

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(4) **Subcontratos.** El contratista o subcontratista insertará en cualquier subcontrato las cláusulas establecidas en el subpárrafo B (1) a (4) de este párrafo y también una cláusula que requiera que los subcontratistas incluyan estas cláusulas en cualquier subcontrato de nivel inferior. El contratista principal será responsable del cumplimiento por parte de cualquier subcontratista o subcontratista de nivel inferior de las cláusulas establecidas en los subpárrafos B (1) a (4) de este párrafo.

C. SALUD Y SEGURIDAD

Las disposiciones de este párrafo (c) se aplican cuando el monto del contrato principal excede los **$100,000**.

(1) No se le exigirá a ningún trabajador o mecánico que trabaje en un entorno o en condiciones de trabajo insalubres, riesgosas o peligrosas para su salud y seguridad, según lo determinen las normas de seguridad y salud en la construcción promulgadas por la Secretaría del Trabajo mediante reglamentos.

(2) El contratista deberá cumplir con todos los reglamentos emitidos por el la Secretaria del Trabajo de conformidad con 29 CFR Parte 1926 y el incumplimiento puede resultar en la imposición de sanciones de conformidad con la Ley de Normas de Seguridad y Horas de Trabajo por Contrato, (Ley Pública 91-54, 83 Stat 96), 40 U.S.C. § 3701 y siguientes.

(3) El contratista deberá incluir las disposiciones de este párrafo en cada subcontrato, de modo que dichas disposiciones sean vinculantes para cada subcontratista. El contratista tomará las medidas con respecto a cualquier subcontratista que la Secretaría de Vivienda y Desarrollo Urbano o la Secretaría del Trabajo indiquen como un medio para hacer cumplir dichas disposiciones.

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"General Decision Number: PR20220003 02/25/2022

ATTACHMENT J

Superseded General Decision Number: PR20210003

State: Puerto Rico

Construction Type: Residential

Counties: Puerto Rico Statewide.

RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories)

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026. Please note that this Executive Order applies to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at https://www.dol.gov/agencies/whd/government-contracts.

Modification Number	Publication Date
0	01/07/2022
1	02/25/2022

* SUPR1993-002 10/29/1993

	Rates	Fringes
CARPENTER	$ 7.25 **	.65
CEMENT MASON/CONCRETE FINISHER	$ 7.25 **	
ELECTRICIAN	$ 7.25 **	.64
IRONWORKER	$ 7.25 **	.63

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Laborer, Unskilled.....$ 7.25 ** .36

PAINTER.....$ 7.25 **

PLUMBER.....$ 7.25 ** .56

Power equipment operators:
Cranes.....$ 7.25 ** 1.14
Diggers.....$ 7.25 **

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TRUCK DRIVER.....$ 7.25 **

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($15.00). Please see the Note at the top of the wage determination for more information.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that

no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

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WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

GOVERNMENT OF PUERTO RICO
DEPARTMENT OF HOUSING

JF

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WORR

ATTACHMENT K
NON-CONFLICT OF INTEREST CERTIFICATION

FR-BLDM, LLC

The CONTRACTOR certifies that:

1. No public servant of this executive agency has a pecuniary interest in this contract, subrecipient agreement, purchase, or commercial transaction.

2. No public servant of this executive agency has requested me or accepted from me, directly or indirectly, for him (her), for any member of his family unit or for any person, gifts, bonuses, favors, services, donations, loans or anything else of monetary value.

3. No public servant (s) requested or accepted any good of economic value, linked to this transaction, from any person of my entity as payment for performing the duties and responsibilities of their employment.

4. No public servant has requested from me, directly or indirectly, for him (her), for any member of his or her family unit, or for any other person, business, or entity, something of economic value, including gifts, loans, promises, favors or services in exchange for the performance of said public servant is influenced in my favor or of my entity.

5. I have no kinship relationship, within the fourth degree of consanguinity and second by affinity, with any public servant who has the power to influence and participate in the institutional decisions of this executive agency.

"I hereby certify under penalty of perjury that the foregoing is complete, true, and correct."

Signature

November 18, 2022
Date

José Fullana – Managing Director / Chief Estimator
Printed Name

Managing Director
Position

Increase Capacity CEWRI Agreement FR-BLDM part 1

Final Audit Report 2022-11-30

Created:	2022-11-23
By:	Arleene Rodríguez (amrodriguez@vivienda.pr.gov)
Status:	Signed
Transaction ID:	CBJCHBCAABAA1KVY91f_Bg2NTaxmGXvTJhABa4mzx1JF

"Increase Capacity CEWRI Agreement FR-BLDM part 1" History

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2022-11-23 - 6:49:00 PM GMT

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2022-11-23 - 6:53:15 PM GMT

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2022-11-30 - 2:01:34 AM GMT

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2022-11-30 - 2:03:09 AM GMT

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Increase Capacity CEWRI Agreement FR-BLDM part 2.1

Final Audit Report 2022-11-30

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"Increase Capacity CEWRI Agreement FR-BLDM part 2.1" History

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2022-11-30 - 2:04:43 AM GMT

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Increase Capacity CEWRI Agreement FR-BLDM part 2.2

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"Increase Capacity CEWRI Agreement FR-BLDM part 2.2" History

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Increase Capacity CEWRI Agreement FR-BLDM part 3.1 (1)

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Increase Capacity CEWRI Agreement FR-BLDM part 3.2 (2)

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"Increase Capacity CEWRI Agreement FR-BLDM part 3.2 (2)" History

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2022-11-30 - 2:10:10 AM GMT

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Increase Capacity CEWRI Agreement FR-BLDM part 3.2 (3)

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Increase Capacity CEWRI Agreement FR-BLDM part 4 (1)

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Increase Capacity CEWRI Agreement FR-BLDM part 5

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"Increase Capacity CEWRI Agreement FR-BLDM part 5" History

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