United Nations Development Program in partnership with the Government of India

Request for Proposals

FOR

Solarization of Head of State Residences in PIDF Member Countries

Engineering, Procurement and Construction (EPC) Services

ISSUED: 19/09/2022

DUE DATE: 17/10/2022

PACIFIC ISLANDS DEVELOPMENT FORUM ("PIDF")

56 domain Road Suva, Fiji,
P.O Box 2050 , Government Buildings,
Suva, FIJI

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Key Terms

AHJ	Authorities Having Jurisdiction
EPC Contract	The Design-Build Contract between Pacific Islands Development Forum (PIDF and successful Proposer for the Project, under which the successful Proposer agrees to design, build and commission the Facility.
EPC	Engineering, Procurement and Construction
Contractor	The selected Proposer, and EPC firm.
O&M	Operations and Maintenance
O&M Contract	Optional ten (10) year O&M Contract between PIDF and successful Proposer, under which the successful Proposer agrees to operate and maintain the Facility.
Local Utility	The load serving entity (LSE) – currently or planned to provide utility electric service to the host location. See supporting documents.
Proposer	An individual proprietorship, partnership, Limited Liability Company, corporation, or joint venture that is an experienced solar PV EPC firm.
Permission to Operate (PTO)	Notification from the Local Utility to which the project is interconnected that the project may be operated and connected with the Local Utility grid.
Facility	The ground/roof mounted solar photovoltaic (PV) and battery energy storage systems (ESS) and related equipment and mounting systems and structures, as described in the Base Project Scope, Attachment A, and as may be otherwise agreed to by PIDF and the successful Proposer in the EPC Contract.
Project Term	The duration of the relevant EPC Contract between the EPC Contractor and PIDF.
Substantial Completion	The date at which the solar photovoltaic (PV) system is wholly installed, commissioned and operational, the system is connected to the electrical grid and has achieved full operation with PTO.
Practical Completion	The date at which final commissioning has been achieved, all punch lists have been completed to the satisfaction of the inspector(s) and PIDF representatives, all documentation has been delivered to PIDF and all other EPC Contract items have been completed, delivered, and accepted by PIDF.

Key Terms

Defects Liability Period	This is a period of six months beginning after the completion of system commissioning, where PIDF can notify the builder of any defects in the works and the builder than has an opportunity to remedy those defects at the builders own cost. During this period the system is also to be monitored online for any system performance issue that might arise. Access to the online monitoring portal to be made available to the stakeholders after final commissioning.
Workmanship Warranty	Is a one-year warranty for works carried out by the contractor from the date of practical completion for a particular project site under the terms of this contract to provide coverage against all workmanship and installation errors at no cost to the project owner.

1. Project Background

The Pacific Islands Development Forum ("PIDF") is issuing this Request for Proposals ("RFP") to engage with contractors to provide EPC services to design, procure, build and commission ground and roof-mounted solar hybrid photovoltaic ("PV"), energy storage (ESS) systems and electric vehicle (EV) chargers (aka "Facility") under a turn-key, Design-Build Engineering, Procurement and Construction Contract ("EPC Contract"). The RFP will include a total of 12 facilities distributed across eleven pacific island states who are also members of the PIDF consisting of Fiji, Tonga, Kiribati, Nauru, Solomon Islands, Vanuatu, Martial Islands, Micronesia, Palau, Tuvalu, Timor-Leste and at the PIDF headquarters in Suva, Fiji. The Facilities will be located at executive residences or other publicly owned buildings of national importance of the PIDF member countries as gift to its people and to create awareness on the importance of renewable energy across the Small Island Developing States ("SIDS"). Preliminary system size is approximately 15 Kilowatts AC, to be finalized with the selected Contractor.

The successful Proposer(s) will be offered the opportunity to enter an EPC Contract(s) with PIDF that includes terms and conditions to design, permit and construct the Facilities, with PIDF oversight and approval. The proposed EPC agreement will be provided to the shortlisted Proposer(s). If the Proposer is unable to successfully negotiate an EPC Contract with PIDF, or design and permit the Facility, PIDF may then ask another proposer to design and permit the Facility and negotiate an EPC Contract with PIDF. PIDF reserves the right to negotiate with more than one party at any time and if needed choose a separate design contractor to the install contractor as is needed to meet project deadlines and requirements. The need to separate the design contractor to the Install contractor may arise due to restrictions caused by the current COVID-19 pandemic or lack of specialized skills and resources, etc.

PIDF will select the Contractor based upon several substantive variables, including but not limited to, contractor HSE policy, cost, system components, system performance, available resources and services, vendor experience, qualifications and financial standing, conceptual design, schedule and overall thoroughness of proposal and responsiveness to this RFP and the ability of the proposer to meet project objectives.

2. Project Details

Table 1 provides a general description of the project.

Table 1 - Project Description

Item	Description
Project Name	Solarization of Head of State Residences in PIDF Member Countries
Project Developer	United Nations Office for South-South Cooperation ("UNOSSC")
Project Owner and Contract Administrator	PIDF
Owners Representative and Engineer	Solar Head of State (SHOS)
Facility Size	15-20 kW DC (preliminary)
Interconnection	Point of Interconnection to AC grid local to PV array field, at building main service
PV Type	Roof Mount, Ground Mount
Project Site Locations	Refer Appendix A.1 - Site Evaluation Summary for more details.
Substantial Completion	November 30, 2023

3. Scope of Work

This Solarization of Head of State Residences program calls for tender request for the turn-key Engineering, Procurement and Construction ("EPC") of hybrid Solar PV and Battery Energy Storage Systems and Electric Vehicle (EV) chargers installed at chosen head of state residences in each of the PIDF Member Countries below.

Table 2 - Project Details

Location	Country	Location	Mounting Structure
1.	Fiji	PIDF Head Quarters	Ground Mounted System
2.	Fiji	President's Residence	Ground Mounted System
3.	Kiribati	State House	Roof Mounted System
4.	Palau	The Office of the Vice President	Roof Mounted System
5.	Marshall Islands	International Convention Center	Roof Mounted System

6.	Tonga	Langafonua 'A Fafine Tonga (National Women Council of Tonga)	Roof Mounted System
7.	Solomon Islands	Governor General's Official Residence	Ground Mounted System
8.	Tuvalu	Governor Generals Official Resident	Roof Mounted System
9.	Vanuatu	Port Villa (Exact location TBC)	Roof Mounted System
10.	Federated State of Micronesia	Palikir – Ministry of Foreign Affairs	Roof Mounted System
11.	Timor - Leste	Dili – Ministry of Foreign Affairs	Roof Mounted System
12.	Nauru	President's Residence	Roof Mounted System

3.1. Schedule

Table 3 below provides a preliminary schedule for the RFP process and approximate design and construction timeframes. These dates are provided for Proposer's convenience and, while PIDF does not anticipate changing the dates at this time, this schedule may be revised at the sole discretion of PIDF.

Proposer is to provide a detailed, Gantt style schedule for major milestones of their proposed work on each project they intend to bid, using the dates provided in Table 2 as a guide.

The goal is for all sites to reach substantial completion by November 30, 2023. As such, PIDF is pursuing an aggressive schedule to contract, design and implement the projects, and expects that several projects may be implemented in parallel.

Table 3 - High Level Project Schedule

Event	Time	Date
RFP Published		**19/09/2022**
Site Walk*	**9:30AM**	**Refer Section 6.3**
Proposals Due	**2:00PM**	**17/10/2022**
Potential Interview of Contractors		**19/10/2022 - 28/10/2022**
Selected Contractor Notified		**05/11/2022**

Event	Time	Date
Design, Permitting, Procurement		**11/11/2022 - 11/02/2023**
Construction Begins*		**Open for negotiation**
Substantial Completion		**As per** Appendix D
Final Completion		**30/11/2023**

*It is intended that the two sites in Fiji will be the first constructed, with other sites potentially following closely in parallel. Exact logistics and timing pending contractor negotiations.

3.2. Design

The selected Contractor will provide progress deliverables as follows:

Critical (40%) Design – The drawings, supporting calculations, reports and specifications that allow for procurement of equipment and panel construction. These drawing shall not be used for procurement until reviewed by PIDF and Owners Engineer (SHOS)

Final (80%) Design – These drawings incorporate revisions from the 40% design process and shall be stamped and signed by the proposers Engineer in responsible charge of the design.

"Construction" Drawings – shall be complete with all design information necessary for the construction and have a red stamp stating, "CERTIFIED FOR CONSTRUCTION" and include the contract number, revision and date. Construction drawing shall be revised to incorporate any comments or requirements received from AHJs or other project stakeholders prior to commencing with construction activities. Signed by a person authorized to bind the contractors. Full set of construction drawings to be supplied in a Minimum of PDF (Adobe V9 or higher)

"As Built" Drawings – Shall accurately reflect the actual installation following construction and commissioning with incremented one version up from the latest "Construction" issue and have a stamp stating, "AS BUILT" and the RFP contract number, Company Name, Revision and Date. The drawings to be signed by person authorized to bind the contractors. Drawing to be supplied to PIDF and Owners Engineer in PDF and AutoCAD version.

The design shall adhere to all codes applicable to the country of installation. In addition to the above the contractor will submit to PIDF a detailed list of Major, Overseas and Local materials for the project with delivery timelines. Excel sheet of this submission to be provided before procurement phase of the Major, Overseas and Local Materials.

The EPC Contractor is responsible for all surveys related to design of the PV System including Geotech and UXO that will be required unless agreed otherwise by PIDF.

3.3. Permitting

Environmental, Discretionary, and Ministerial Entitlements -
The Contractor shall comply in all aspects with all rules and regulations and by laws of local authorities having jurisdiction over the works. The contractor shall be responsible for all permits including the building permit from the appropriate authorities. Permit fees may be paid or reimbursed by PIDF. PIDF may assist by liaising with the Contractor and AHJs.

PIDF is committed and responsible environmental management and occupational health safety in its operations. Proposers will need to comply with all local and national environmental laws, permits and regulations. Where no local laws exist, the suppliers shall use a best practice model as a guideline when using available levels of technology and resources.

Utility Interconnection

Permitting and Grid interconnection requirements related to the internal distribution system will be performed by a licensed electrical contractor approved by local utility, Owner's Representative, and PIDF. The successful Proposer will be responsible for close interface with the interconnecting Utility and primary management of the interconnection process. Any utility fees will be paid by PIDF.

Licensed tradesmen conforming to and in accordance with the current local trade practice and regulation must execute all electrical wiring or any other work applicable to licensing or certification. The project manager or his representative at any stage could request the contractor to provide credentials of on-site tradesmen executing works. Non-conformance can lead to removal of tradesmen (worker) from site.

3.4. Facility Construction

This RFP will consist of facility construction of 12 separate projects across 11 countries: a turnkey (Facility) complete with connection to the load and interconnection to the local utility grid where applicable. The PV system will be the primary source of supply with the balance of loads supplied via Utility Grid, the battery system will serve as back up when PV and Utility is unavailable. The Generator (where applicable) will serve as the last option when everything else fails.

Construction of the solar PV project will be performed by the Contractor who will have an onsite project manager during all phases of construction, hold weekly progress meetings with PIDF, while maintaining an up-to-date schedule and provide coordination and access to Project owners representatives. Contractor will maintain an up-to-date budget and inventory control of components ordered, received, stored and installed. All materials once on site will be the responsibility of the contractor until the date of final handover and it is recommended that the contractor maintain site security or take appropriate measures throughout the construction phase to prevent theft of materials or equipment. Contractor to specify in the Proposal as to how site security will be maintained.

Interconnection and Permission to Operate (PTO) will require close coordination with the Utility and project stakeholders. During the project construction the contractor is required to adhere to all HSE requirements and submit a weekly report on HSE and Project Progress.

3.5. Procurement and Logistics

The PV modules for this project is being kindly donated by Solaria Cooperation based out of the USA and will consist of a total of 20kWp per site. The remainder of the major materials consisting of Batteries, PV Inverters and Battery Inverters, and EV chargers will be supplied by the PIDF. The list of materials donated or supplied directly by PIDF for this project is listed in Appendix C. All transportation, freight and storage cost for materials mentioned in Appendix C from supplier to the individual countries will be the responsibility of PIDF until they have been handed over to the successful Proposer. The installation, programming and commissioning of all above mentioned Major equipment will be the responsibility of the Proposer.

The procurement, freight and Storage of the remaining balance of all local and overseas materials and equipment's that will be required to successfully integrate, construct, commission the project which is not part of Appendix C will be the responsibility of the successful Proposer. Orders for all long lead items shall be made as soon as practicable after the award date and shall be tracked and reported unless PIDF has agreed otherwise. Local Proposers are to provide quotes which include duty, VAT and delivery to site on an "as and when required "basis. Overseas Proposers are to provide quotes which include Cost and Freight to the respective project sites.

3.6. Commissioning, Performance Testing and Startup

The Contractor shall provide full documentation of quality assurance checks, online monitoring login details and equipment access passwords, commissioning sheets, performance verification and workmanship warranty certificate on startup of the facility. Scope will include submittal of a detailed list of the commissioning, performance verification and startup procedures that will be performed (Commissioning Plan). The commissioning plan shall be submitted and approved prior to the commencement of construction. The Contractor is responsible for coordination with and assisting all PIDF representatives observing and verifying this process. All equipment serial details are to be noted and submitted as part of the warranty information in the operations and maintenance manuals. As Built Drawings are to be provided in both .pdf and .dwg files. One hardcopy file for the operation and maintenance manual complete with datasheets and as Built Drawings to be made available on site for future reference and a soft copy of all final documentations mentioned above to be made available to all stakeholders approved by PIDF. A detailed training is to be provided to the local staff on the operation of the system to develop knowledge and familiarity with system components and selection and system operation and maintenance after commissioning.

3.7. Safety and Protection of Property

It is the responsibility of the contractor to take all steps necessary to ensure the safety of his employees and all other persons who visit/or occupy the site. Protect operators from dangerous machinery, provide proper

safety gear, harnesses and PPE where required. Ensure that all employees are competent and fit for the tasks that they will be performing and should be able to deliver the high standard of works that is required for this project. The contractor is required to carry out job site hazard analysis and perform safety toolbox talks with its team members prior to start of work daily.

Comply with all safety regulations of the local government ministry of labor particularly the occupational health and safety act and the relevant laws of the country.

Protection of client's property/premises and proper handling of equipment should always be maintained. Failure to do so will incur the contractor with costs of making good damage or loss. It is the responsibility of the Contractor to retore site to preconstruction conditions or better as approved by the PIDF before demobilizing.

3.8. Training

On Site users will be trained to operate and maintain the PV systems based on systems day-to-day basis. Step by Step troubleshooting, switching, Equipment handling, Operation and Maintenance procedures and performance monitoring through an online portal is to be part of training.

3.9. Operations and Maintenance

Following substantial completion, the operational phase will consist of six months defects liability period, performance monitoring, and associated asset management support in turnover to the Owner.

O&M and repair may be provided under a separate contract either by the selected EPC Contractor or an independent O&M company or selected government organization. O&M firm selection may occur during the RFP or through a separate process. Third-party O&M services may be engaged on a case-by case basis. Proposers may submit a proposal for ongoing O&M services but are not required to do so.

4. Project Outcomes

The key outcomes of this project are:

- Successful design, procure, install, commission and handover of the Facility in each project location.
- Training of local operational staff to enhance local knowledge of PV system installation, and for Operation and Maintenance of the Facilities.

5. Ethics

- Any information shared during this process must be kept confidential
- Respondents must not attempt to influence or provide any form of personal inducement, reward, or benefit to any representative of the Buyer in relation to the RFP. This will lead to disqualification of the involved parties

6. Proposal Process

6.1. PIDF / Contract Administrator

The Contract Administrator for this RFP and the resulting EPC Contract is Secretary General Ambassador Solo Mara with PIDF or his designee. The Contract Administrator is the only individual authorized on the behalf of PIDF to make any modifications via addenda or otherwise to this RFP and the resulting EPC Contract, if any. The Proposer shall not rely upon any oral change from anyone, or a written request for change from someone other than the Contract Administrator. All changes/addenda must be in writing, signed by the Contract Administrator, and distributed on the electronic file sharing website. All addenda issued by the Contract Administrator shall be incorporated into this RFP and a part herein as if originally set forth in this RFP.

6.2. Distribution of this Document

This document and any attachments, exhibits, appendices, and addenda will be distributed electronically via a password protected website. Proposers must be registered to access the document distribution website. To register, please send a request to tender@pidf.int with the subject line, "Solarization of Head of State Residences in PIDF Member Countries RFP Registration." In the body of the email, include name, title and organization. The Proposer is responsible for ensuring that they are registered and able to access the RFP documents.

Please contact Contract Administrator at Viliame.kasanawaqa@pidf.int or +(679) 9907657 in the event you have any questions or require clarification of the items listed herein.

All questions pertaining to this RFP must be submitted via email to SHoSPROJECT@pidf.int with the subject line, "Solarization of Head of State Residences in PIDF Member Countries RFP Questions."

6.3. Site Walk

A non-mandatory site walk will be held on the date and time specified by PIDF for select EPCs. Failure to attend the site walk SHALL NOT disqualify the non-attending proposer from submitting a proposal in response to this RFP. The site walk order and schedule will be made available at the earliest possible date within the bid period. Each Proposer is encouraged to limit itself to one (1) vehicle for the site walk. The site walks maybe able to be performed virtually if required however this is at the sole discretion of PIDF.

6.4. Submission of Proposal Packages

Original signed proposal packages shall be submitted via tender link http://www.pidf.int/home/tenders/. Emails may also be submitted to back up tender link submissions if there is any confusion. Dropbox links may also be emailed to: tender@pidf.int

Proposals must be received by the PIDF Office no later than **2:00 pm local time on Monday, October 17, 2022**. Proposals shall be addressed to:

Ms. Sitla Sharma
Pacific Islands Development Forum ("PIDF")
56 Domain Road
Suva, Fiji Islands

Proposal packages must consist of the items and formats listed in Table 4 - Proposal Submittals below. Proposal packages must contain:

1. One (1) electronic copy of the proposal and forms in Adobe PDF and Microsoft Excel format, as shown in Table 4 below.

Table 4 - Proposal Submittals

Submittal Item/Format	Document	Description
1. A Single PDF File	Cover Letter	Introduction/Cover Letter with full business address of the Proposer, signed by an individual with authority to bind firm.
	Appendix B.1	Proposal Form with all questions addressed and signed and dated proposal certification.

Submittal Item/Format	Document	Description
	Appendix B.1 Attachments	Minimum Attachments shall include: - Company Profile - Company credentials, relevant experience, references, and recognitions - Contractors Licenses - Proof that Insurance Requirements can be met - A Detailed Schedule in Gantt Chart Format - Screen Shots and technical information of proposed Monitoring Software* - Example of Performance Reporting** - Proposed Equipment Warranty*** - Signed One Year Workmanship Warranty Statement - Reviewed/Audited financial statements - Company HSE Policy
	*	At a minimum it is expected that the monitoring software standard with the inverters shall be used. Additional third-party platforms may also be proposed, along with costs, and technical requirements. Any proposed solution must be compatible with the major equipment specified.
	**	If proposing O&M services.
	***	If any, beyond the major equipment OEM warranties secured by PIDF. Any O&M proposal shall specify warranty management.
2. A Single PDF File	Appendix B.2	EPC Contract Cost Proposal. A PDF of this file should be included as a separate document from the main proposal.

The Proposer is responsible for ensuring that all responses are received by the deadline. All responses to the RFP will become the property of PIDF and will not be returned. Proposals shall not be accepted in any other format other than in the document formats specified above. PIDF will not reimburse Proposers for the cost of proposal preparation.

Proposers shall provide only complete and accurate information. Proposers acknowledge that PIDF is relying on the truth and accuracy of the responses contained in the proposal. Each proposal must be signed under penalty of perjury in the manner designated at the end of the form, by an individual who has the legal authority to bind the Proposer on whose behalf that person is signing. If any information provided by a Proposer becomes inaccurate, the Proposer must immediately notify PIDF and provide

updated accurate information in writing, under penalty of perjury. Should a Proposer omit requested information or falsify information, PIDF may reject the proposal.

6.5. Proposal Evaluation Criteria

EPC proposals will be evaluated according to the responses provided on the forms in Table 4. Ranking of proposals will consider, but not be limited to, cost, system components, system performance, lifetime operating cost, vendor experience, qualifications and financial stability, conceptual design, schedule, and overall thoroughness of proposal and responsiveness to this RFP.

O&M proposals will be evaluated according to the responses provided on the forms in Table 4. Ranking of proposals will consider, but not be limited to system performance, lifetime operating cost, vendor experience and qualifications maintenance program, performance guarantee, and overall thoroughness of proposal and responsiveness to this RFP.

During the proposal evaluation, PIDF may request clarification of, or information about, any item in the proposal. The Proposer shall respond within the time requested. If the clarification or information is not forthcoming, PIDF may, at its sole discretion, disqualify a proposal if it determines that evaluation of the proposal cannot proceed in the absence of clarification. However, PIDF, in its sole discretion, may review and evaluate proposals and award a Contract based solely on the materials contained in the Contractor's proposal. PIDF may elect to hold interviews with the firms with the highest ranked proposals or may solely rely on proposals to make its selection.

PIDF and its consultants and representatives will solely perform all proposal reviews and will select the winning Proposer(s); PIDF will provide Contract administration and support immediately after the winning Contractor is selected. Proposers are expected to perform a careful review of the attached EPC agreement

PIDF reserves the right to waive minor irregularities and omissions in the information contained in the proposal submitted and to make all final determinations. There is no appeal from PIDF's decision not to review a proposal due to an incomplete or late proposal submission.

The proposal, its completion and submission by the Proposer, and its use by PIDF, shall not give rise to any liability on the part of PIDF to the Proposer or any third party or person. This is not a solicitation for bid. No guarantees are made or implied that the Project will be constructed, either in part or whole. The Proposer accepts all risk and cost associated with the completion of the proposal without financial guarantee.

6.6. Evaluation Approach

Selection will be based on the Proposer's ability to fully meet design, procurement and install requirements.

The Evaluation Panel will assess submissions in accordance with the evaluation criteria specified below:

Technical Requirements:

- The Proposer must demonstrate that their firm, team leader and staff have 10 years' experience in supplying and installation of the required equipment
- Evidence of successful past projects with similar nature
- Copy of relevant qualifications and experience for all experts involved in the project
- Letter from suppliers if any
- Evidence of any training carried out and applicable licenses and certifications

Apart from the technical specifications and the requirements listed in the general terms and conditions of the tender, our evaluation will also look at the following:

- Company Capability and experience
- Resourcing i.e., Trained Staff, Specialized tools, Machinery and equipment for testing and commissioning
- Price
- Ability to meet delivery time
- Quality Assurance
- Dedication to HSE
- Contact details of three referees

6.7. Pricing

The quoted price should be exclusive of procurement and delivery of Solar Panels, Inverters, EV charger and Batteries as this will be donated by the project development partners and should be valid for 90days from the lodgment/closing date.

6.8. Award Process

PIDF intends to award a Design-Build EPC Contract to the qualified Proposer whose offer conforms to the RFP, whose proposal proposes a Facility which will provide the best value to PIDF, best meets PIDF's needs and is most likely to assist PIDF in achieving its objectives, which PIDF shall determine in its sole and absolute discretion. In the event that the successful Proposer is unable and/or unwilling to execute an EPC Contract as negotiated by PIDF, PIDF in its sole discretion, may begin negotiations with the next Proposer whose proposal proposes a Facility which will provide the best value to PIDF, best meets PIDF's needs and is most likely to assist PIDF in achieving its objectives, which PIDF shall determine in its sole and absolute discretion. PIDF reserves the right to negotiate with more than one Proposer at any time. PIDF reserves the right to seek clarification of information submitted in response to this RFP. PIDF also reserves the right to make award without further discussion with any of the Proposers.

PIDF reserves the right, at its sole discretion, to accept a response that does not satisfy all requirements but which, in PIDF's sole judgment, sufficiently demonstrates the ability to produce, deliver, design,

permit and install the Facility and to satisfy the major requirements set forth in this RFP. PIDF expects to complete its evaluation process to select a qualified Proposer but reserves the right to change key dates and action as the need arises.

PIDF intends to award the Facility to one Proposer, however, PIDF retains the right to award one or more separate Contracts to one or more Proposers, or to split the design portion to the install portion of the contract to different proposers as PIDF sees fit, or to not award a Contract, in PIDF's sole discretion.

7. Issues/Risks (If Applicable)

- The service providers ability of supply and install equipment's around the pacific
- Covid related travel restriction and delays in logistics

8. Terms and Conditions

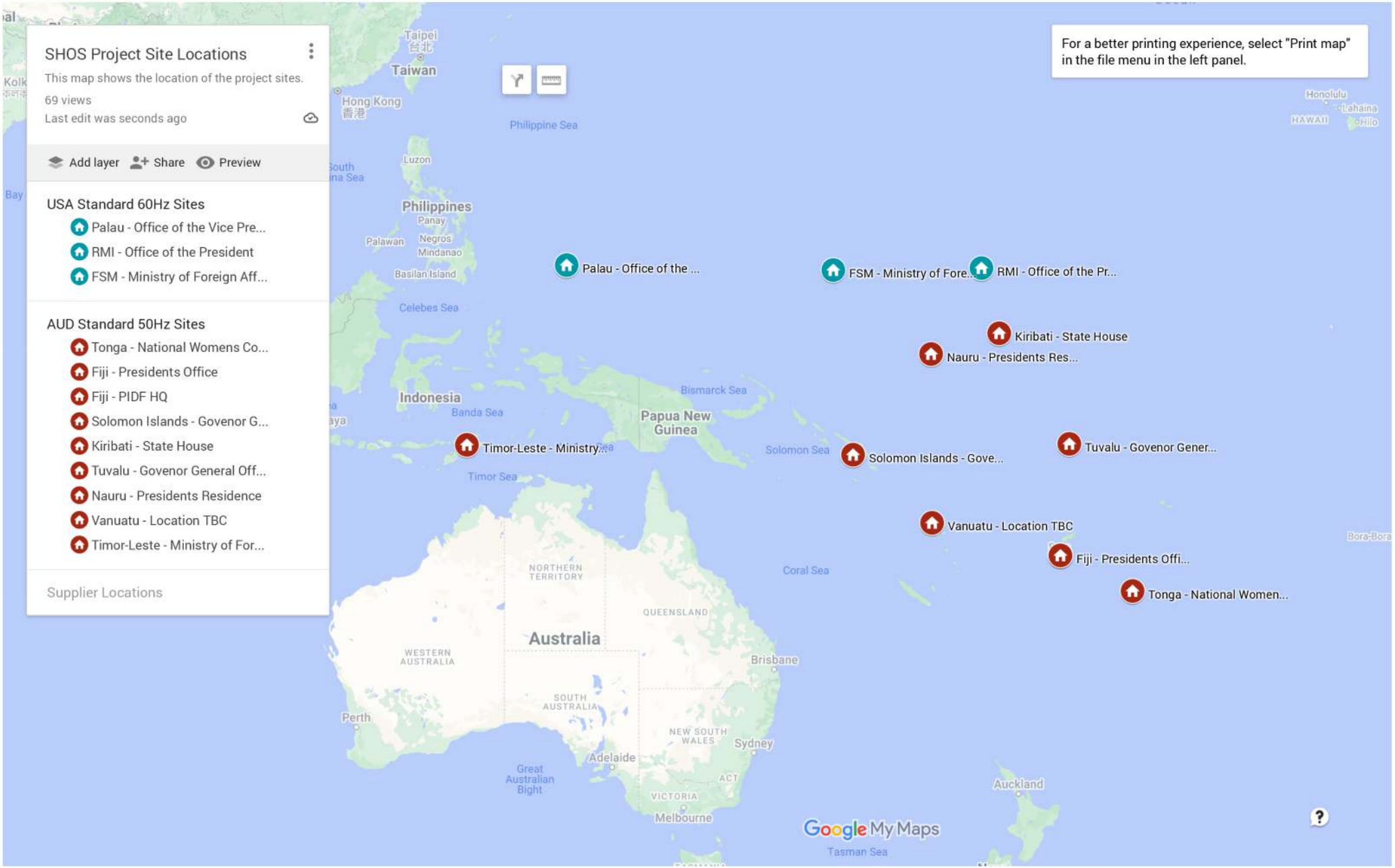
Respondents are to comply with the general terms and conditions for procurement of goods, services and works in this RFP and subsequent contracts, as applicable.

Appendix

Appendix A

Site Information

A.1 Overall Program Map and Site Location Information


SHOS Project Site Locations
This map shows the location of the project sites.
69 views
Last edit was seconds ago
Add layer
Share
Preview
USA Standard 60Hz Sites
Palau - Office of the Vice Pre...
RMI - Office of the President
FSM - Ministry of Foreign Aff...
AUD Standard 50Hz Sites
Tonga - National Womens Co...
Fiji - Presidents Office
Fiji - PIDF HQ
Solomon Islands - Govenor G...
Kiribati - State House
Tuvalu - Govenor General Off...
Nauru - Presidents Residence
Vanuatu - Location TBC
Timor-Leste - Ministry of For...
Supplier Locations
For a better printing experience, select "Print map" in the file menu in the left panel.
Palau - Office of the ...
FSM - Ministry of Fore...
RMI - Office of the Pr...
Kiribati - State House
Nauru - Presidents Res...
Timor-Leste - Ministry...
Solomon Islands - Gove...
Tuvalu - Govenor Gener...
Vanuatu - Location TBC
Fiji - Presidents Offi...
Tonga - National Women...
Taiwan
Philippine Sea
Philippines
Indonesia
Papua New Guinea
Australia
Bismarck Sea
Solomon Sea
Coral Sea
Timor Sea
Celebes Sea
Banda Sea
Tasman Sea
Brisbane
Sydney
Melbourne
Adelaide
Perth
Auckland
Google My Maps

A.2 Typical Site Single Line Diagrams

LOAD CALCULATIONS

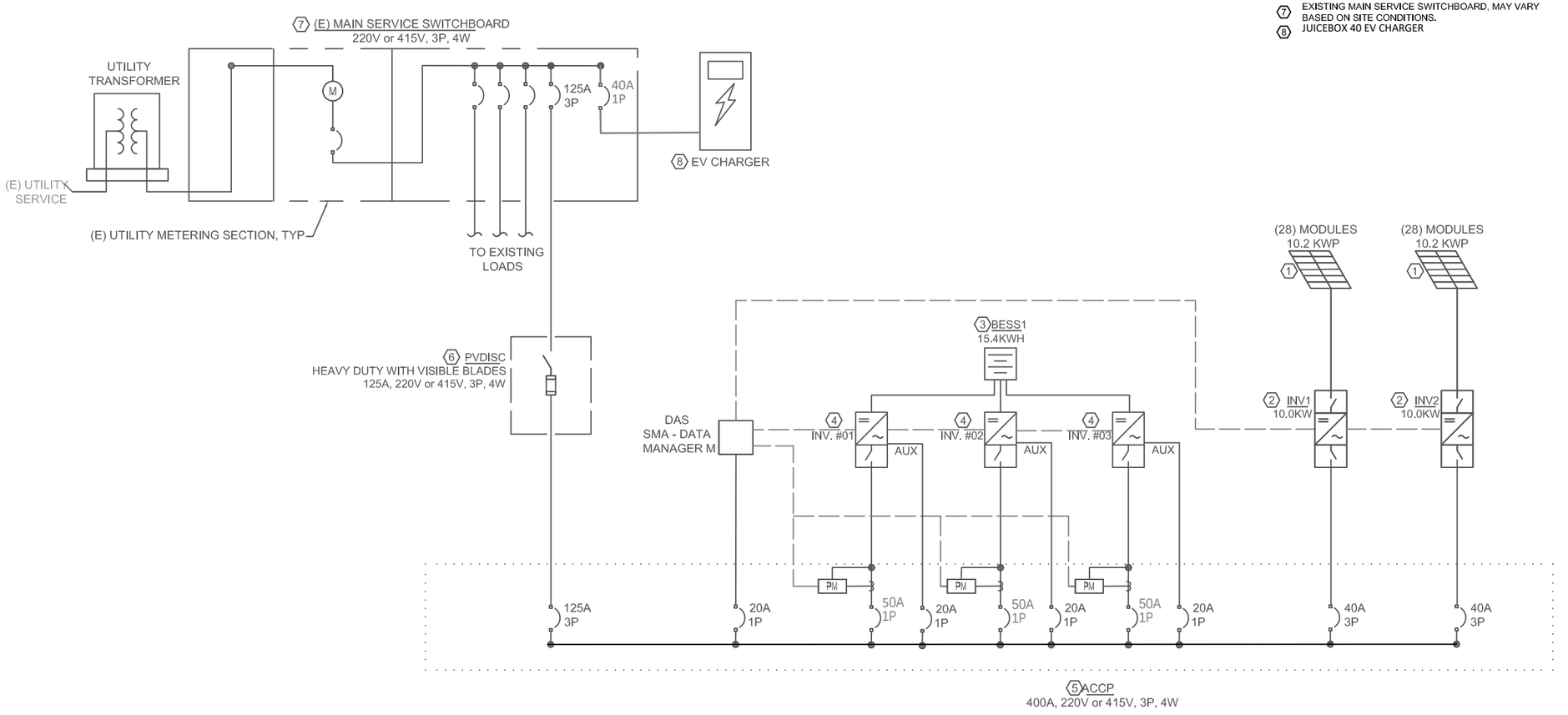
PV INV1	10.0KW / 3x14.5A max. @ 220V
PV INV2	10.0KW / 3x14.5A max. @ 220V
SOLAR INVERTER TOTAL:	20.0KW / 3x29.0A max. @ 220V
WITH 125% DEMAND:	25.0KW / 3x36.2A max. @ 220V
BESS INV 1	6.0 KW / 26.0A max. @ 220V
BESS INV 2	6.0 KW / 26.0A max. @ 220V
BESS INV 3	6.0 KW / 26.0A max. @ 220V
BESS TOTAL:	18.0 KW / 78.0A max. @ 220V
WITH 125% DEMAND:	22.5 KW / 97.5A max. @ 220V
SOLAR INVERTER TOTAL	20.0KW / 3x29.0A max. @ 220V
BESS INV TOTAL	18.0 KW / 78.0A max. @ 220V
ACCP TOTAL:	38.0KW / 107A max. @ 220V
WITH 125% DEMAND:	47.5KW / 133.8A max @ 220V

GENERAL NOTES

1. FOR CONCEPTUAL PURPOSES ONLY. EQUIPMENT AND CONFIGURATION SUBJECT TO CHANGE.
2. EACH INDIVIDUAL PROJECT DESIGN SHALL REVIEW AND ADHERE TO APPLICABLE CODES, STANDARDS, AND UTILITY REQUIREMENTS.
3. THE AC-COUPLED ARRANGEMENT AND MAJOR EQUIPMENT SHOWN ARE FOR APPLICATION ON PROJECTS OPERATING ON 50HZ.

KEY NOTES

1. SOLAR MODULES: SOLARIA POWERXT - 365R-PD (365W), 20.4 KWP, TYPICAL.
2. INVERTER: SMA SUNNY TRIPOWER10.0, 10KW NOMINAL TYPICAL.
3. BATTERY ENERGY STORAGE SYSTEM (BESS): BAT-BYD-BBOX-LVL-15.4 PREMIUM
4. BATTERY INVERTER. SMA SUNNY ISLAND SI 8.0H-13.
5. NEW AC LOAD PANEL, TYPICAL. MAY VARY BASED ON SITE CONDITIONS.
6. NEW FUSED LOCKABLE AC DISCONNECT, TYPICAL.
7. EXISTING MAIN SERVICE SWITCHBOARD, MAY VARY BASED ON SITE CONDITIONS.
8. JUICEBOX 40 EV CHARGER



1 S.L.D
SCALE: N.T.S

UNOSSC UNITED NATIONS OFFICE FOR SOUTH-SOUTH COOPERATION

Pacific Islands Development Forum

India-UN Development Partnership Fund

SOLAR HEAD OF STATE

OURENERGY

NOT FOR CONSTRUCTION

SHOS - PIDF
Pacific Program

REV. NO	DESCRIPTION	DATE

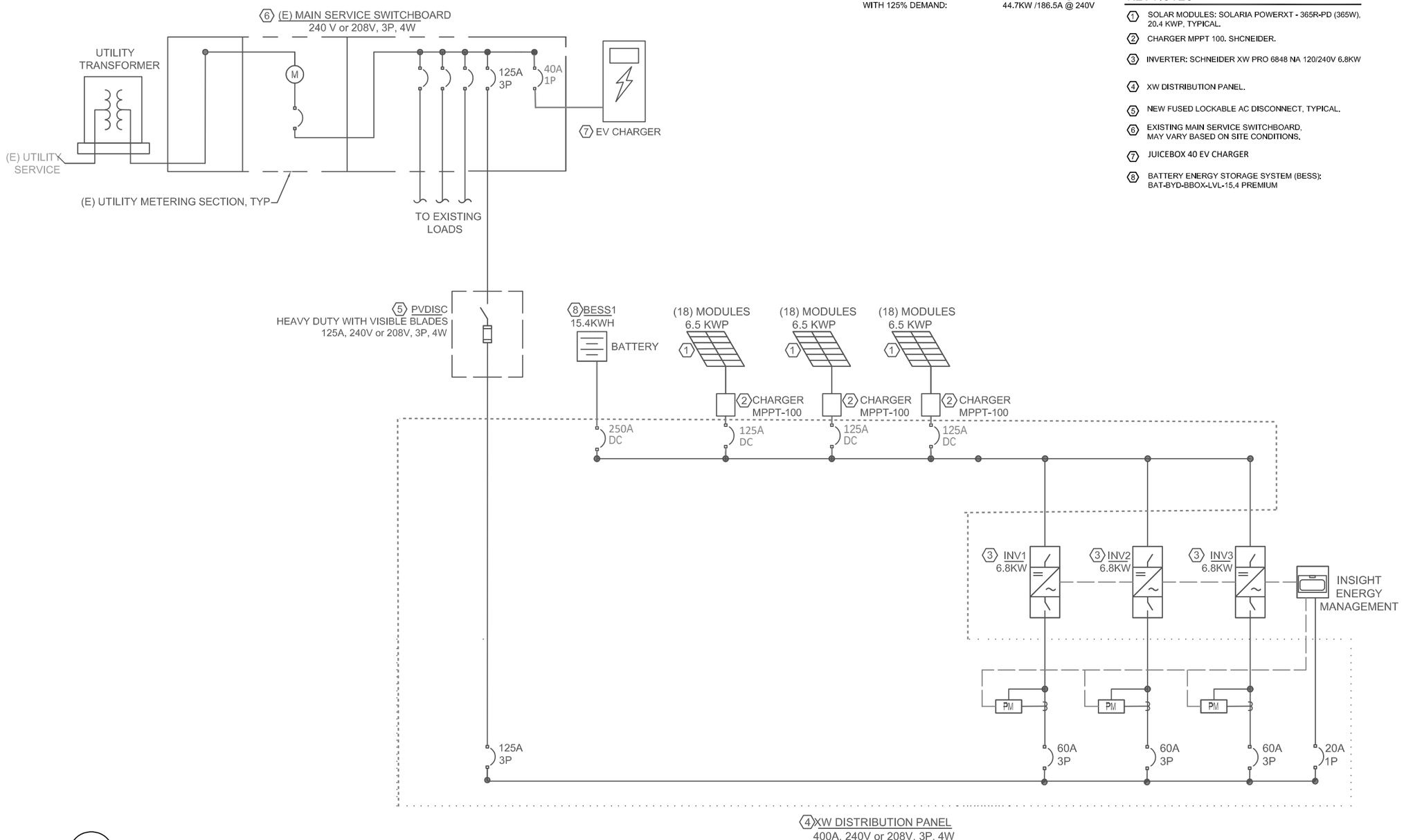
SHEET TITLE:

TYPICAL 50Hz SINGLE LINE DIAGRAM

DRAWING NO.:

PV-101

DRAWN BY:	DM
REVIEWED BY:	DJ
DATE:	08/30/2022
SCALE:	AS SHOWN
PROJECT NO.:	



LOAD CALCULATIONS

PV INV1	6.8KW / 52.0A max. @ 240V
PV INV2	6.8KW / 52.0A max. @ 240V
PV INV3	6.8KW / 52.0A max. @ 240V
SOLAR INVERTER TOTAL:	20.4KW / 156.0A max.@ 240V
WITH 125% DEMAND:	25.5KW /195.0A max.@ 240V
BESS 1	15.4 KWH
SOLAR INVERTER TOTAL	20.4KW / 85.0A @ 240V
BESS INV TOTAL	15.4KW / 64.2A @ 240V
ACCP TOTAL:	35.8KW /149.2A @ 240V
WITH 125% DEMAND:	44.7KW /186.5A @ 240V

GENERAL NOTES

1. FOR CONCEPTUAL PURPOSES ONLY. EQUIPMENT AND CONFIGURATION SUBJECT TO CHANGE.
2. EACH INDIVIDUAL PROJECT DESIGN SHALL REVIEW AND ADHERE TO APPLICABLE CODES, STANDARDS, AND UTILITY REQUIREMENTS.
3. THE DC-COUPLED ARRANGEMENT AND MAJOR EQUIPMENT SHOWN ARE FOR APPLICATION ON PROJECTS OPERATING ON 60HZ.

KEY NOTES

1. SOLAR MODULES: SOLARIA POWERXT - 365R-PD (365W), 20.4 KWP, TYPICAL.
2. CHARGER MPPT 100. SHCNEIDER.
3. INVERTER: SCHNEIDER XW PRO 6848 NA 120/240V 6.8KW
4. XW DISTRIBUTION PANEL.
5. NEW FUSED LOCKABLE AC DISCONNECT, TYPICAL.
6. EXISTING MAIN SERVICE SWITCHBOARD, MAY VARY BASED ON SITE CONDITIONS.
7. JUICEBOX 40 EV CHARGER
8. BATTERY ENERGY STORAGE SYSTEM (BESS): BAT-BYD-BBOX-LVL-15.4 PREMIUM

1 S.L.D
SCALE: N.T.S

UNOSSC UNITED NATIONS OFFICE FOR SOUTH-SOUTH COOPERATION

Pacific Islands Development Forum

India-UN Development Partnership Fund

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SHOS - PIDF
Pacific Program

REV. NO	DESCRIPTION	DATE
A	ISSUE FOR COMMENTS	08/30/2022

SHEET TITLE:

TYPICAL 60Hz SINGLE LINE DIAGRAM

DRAWING NO.:

PV-101

DRAWN BY:	DM
REVIEWED BY:	DJ
DATE:	08/30/2022
SCALE:	AS SHOWN
PROJECT NO.:	

Appendix B

Bid Forms

B.1 Proposer Details

Proposer Contact Details

Please indicate who shall be the principal contact during this sourcing process. Please include all relevant contact details.

Please complete table below:

Contact Requirements	**Supplier Response**
Company Name:	
Tax Identification Number:	
Corporate Address:	
Phone Number:	
Email Address:	
Chief Executive/General Manager:	
Company Contact:	
Contact Phone Number:	
Contact Email Address:	
Contact Address:	
Parent Company if Applicable:	

Office GPS Coordinates:	
Additional team and subcontractor information:	

A.1.1 Financial Data of Proposer

Revenue

PIDF would like to ensure that its suppliers are of appropriate size and standing relevant for the category. Please provide details of the size of your business in terms of the Total operating revenue, assets and liabilities.

Please complete table below:

Company	**2019 (USD)**	**2020 (USD)**	**2021 (USD)**
Revenue (Before Tax)			
Current Assets			
Current Liabilities			
Total Assets			
Total Liabilities			

A.1.1 Environmental, Health and Safety Data

As part of the submission, please complete the checklist below and outline the Environmental and Occupational Health and Safety (OHS) Policy advising how this will meet the project outcomes expectations as outlined above.

Supplier OHS evaluation check sheet

Date:		Organization:	
Respondent:		Position within organization:	

Item	**Description**	**Y**	**N**	**N/A**

1	Does the company have a dedicated health and safety officer			
2	Are the company employees trained in First Aid? If yes how often?			
3	Does the company have a OHS Policy Statement			
4	Has the supplier been required to report any injuries to local work cover/manpower authorities in the last 3 years? If yes how many times?.....			
5	Has the supplier conducted Hazard Identification and Risk Assessment as part of an injury reduction strategy?			
6	Does the company have a environmental policy or Environment Management System (EMS)?			
7	Are the policies above on display?			
8	Are employees dedicated to this project trained in working at heights? If yes how many?.....			
9	Is the company compliant to environmental regulations?			
10	Does the company conduct environmental audits or waste audits as part of a waste management strategy?			
11	Has the company ever been cited for non-compliance with environmental regulations? If yes how many times?			
12	Does the company appraise the EHS performance of their own suppliers and contractors?			

B.2 Cost Proposal Form

All Sites, Turn-key EPC Base Price (USD) ($)			**$_____**	Total, All Sites
Site Number	**Site Location**	**Site Description**	**Turn-key EPC Price ($)**	
1	Fiji	PIDF Headquarters	Total USD =	
		Hardware/Goods	=	
		Services and Installation	=	
		Freight and Logistics	=	
2	Fiji	President's Residence	Total USD =	
		Hardware/Goods	=	
		Services and Installation	=	
		Freight and Logistics	=	
3	Kiribati	State House	Total USD =	
		Hardware/Goods	=	
		Services and Installation	=	
		Freight and Logistics	=	
4	Palau	The Office of the Vice President	Total USD =	
		Hardware/Goods	=	
		Services and Installation	=	
		Freight and Logistics	=	
5	Marshall Islands	International Convention Center	Total USD =	
		Hardware/Goods	=	
		Services and Installation	=	
		Freight and Logistics	=	
6	Tonga	Langafonua 'A Fafine Tonga (National Women Council of Tonga)	Total USD =	
		Hardware/Goods	=	
		Services and Installation	=	
		Freight and Logistics	=	
7	Solomon Islands	Governor General's Official Residence	Total USD =	
		Hardware/Goods	=	
		Services and Installation	=	
		Freight and Logistics	=	
8	Tuvalu	Governor Generals Official Resident	Total USD =	
		Hardware/Goods	=	
		Services and Installation	=	

		Freight and Logistics	=
9	Vanuatu	Port Villa (Exact location TBC)	Total USD =
		Hardware/Goods	=
		Services and Installation	=
		Freight and Logistics	=
10	Federated State of Micronesia	Palikir – Ministry of Foreign Affairs	Total USD =
		Hardware/Goods	=
		Services and Installation	=
		Freight and Logistics	=
11	Timor - Leste	Dili – Ministry of Foreign Affairs	Total USD =
		Hardware/Goods	=
		Services and Installation	=
		Freight and Logistics	=
12	Nauru	President's Residence	Total USD =
		Hardware/Goods	=
		Services and Installation	=
		Freight and Logistics	=

*For those sites that are TBC – PIDF welcomes Proposer responses as to their ability to perform in the project location and may submit an indicative price.

**PIDF will negotiate in good faith with contractors and will give consideration to those that can legitimately demonstrate their ability to perform in the locations required.

Appendix C

Table C.1: Donated Equipment (50Hz)

For countries using the AS/NZS standards 50Hz (Fiji, Kiribati, Tuvalu, Tonga, SI, Nauru, Vanuatu, Timor-Leste)

Item	Equipment Description	Model	Qty per site
1.	SMA Sunny Island SI 8.0H-13 Battery Inverter; integrated WLAN and LAN communication via webserver or web connect	INV-SMA-S18.0H-13	3
2.	SMA STP10.0-3AV-40 Tri-power Inverter with Wi-Fi	INV-SMA-STP10.0-3AV-40	2
3.	BYD B-Box Premium LVL 15.4kWh Battery	BAT-BYD-BBOX-LVL-15.4- PREMIUM NEW	1
4.	BATTERY MANAGEMENT UNIT FOR BYD LV B-BOX PREMIUM (IP55)	ACC-BYD-LV-BMU-PREMIUM (IP55)	1
5.	Solaria - PV Modules	Solaria PowerXT®-365R-PD	20kWp
6.	Sunny Home Manager	Sunny Home Manager 2.0	1
7.	JUICEBOX 40 (3YR WARRANTY INC)	ENELX 2JBO401RNA-PJWX-200	1

Table C.2: Donated Equipment (60Hz)

For countries using the USA standards 60Hz (Palau, RMI, FSM)

Item	Equipment Description	Model	Qty per site
1.	CONTEXT XW Pro 6.8kW 120/240 Volt Inverter 48V Charger	SCHNEIDER 3 865-6848-21	3
2.	CONEXT MPPT 100-600 UL/CSA/CE	SCHNEIDER 865-1034	3
3.	XW POWER DIST PNL 1-POLE 250A 1	SCHNEIDER 865-1015-01	1
4.	XW INVERTER CONN KIT 1 POLE 250A	SCHNEIDER 865-1020-02	2
5.	120/240VAC BRKR KIT 3 SETS 2 POLE	SCHNEIDER 865-1215-01	1
6.	INSIGHT FACILITY	SCHNEIDER 865-0335	1
7.	DC BREAKER 125A 125VDC	SCHNEIDER DCBRK-125	2
8.	JUICEBOX 40 (3YR WARRANTY INC)	ENELX 2JBO401RNA-PJWX-200	1
9.	BYD B-Box Premium LVL 15.4kWh Battery	BAT-BYD-BBOX-LVL-15.4- PREMIUM NEW	1
10.	BATTERY MANAGEMENT UNIT FOR BYD LV B-BOX PREMIUM (IP55)	ACC-BYD-LV-BMU-PREMIUM (IP55)	1
11.	Solaria - PV Modules	Solaria PowerXT®-365R-PD	20kWp

Appendix D

Project Summary Matrix

To be used as a guide during the design and planning phase of this project. That contractor is requested to use this as a guide only and should carry out their due diligence in order to accurately capture data.

Site Evaluation Form Summary

Country	PIDF	Fiji Statehouse	Kiribati	Tuvalu	Tonga	Solomon Islands	Palau	RMI	Nauru	FSM	Vanuatu	Timor-Leste
Site Name	*PIDF HQ*	*Official Residence of the President*	*State House Kiribati*	*Govenor General Official Resident*	*LANGAFONUA 'A FAFINE TONGA*	*Govenor General Official Residence*	*Office of the Vice President*	*Office of the President*	*Presidents Residence*	*Office of Foreign Affairs*	*TBC*	*Office of Foreign Affairs*
Address	*56 Domain Road, Nasese Suva*	*Queen Elizabeth Drive*	*Bairiki, Tarwa, Kiribati*	*Vaiaku, Funafuti, Tuvalu*	*Taufa'ahau Road, Nuku'alofa*	*East Kolaridge, Honiara*	*Madalaii, Koror*	*Delap, Majuro Marshall Islands*		PS53, Palikir, Pohnpei State, FM 96941		*Dili, Timor-Leste*
Substantial Completion Date	*16/11/2022*	*14/12/2022*	*14/12/2022*	*26/05/2023*	*5/04/2023*	*16/04/2023*	*14/02/2023*	*22/11/2022*	*26/09/2023*	18/10/2023	*18/07/2023*	*30/11/2023*
GPS Coordinate	*18° 9'21.21"S, 178°25'51.21"E*	*18° 9'6.11"S, 178°25'34.02"E*	*from Simon's simulation*	*-8.528006, 179.19205*	*21° 8'2.16"S, 175°11'59.48"W*	*-9.440665, 159.983249*	*7.3413455, 134.4751262*	*7° 5'25.17"N, 171°22'49.53"E*		*6.924552, 158.159806*		*7.34131, 134.47542*
Type of Mount	*Ground*	*Ground*	*Carport min 2.5m high (2 rows of 300+ Wp portrait panels to allow for limited space)*	*Roof*	*Roof*	*Ground*	*Roof*	*Roof*		*Roof*	*Roof*	*Roof*
Standard	*AS/NZS*	*AS/NZS*	*AS/NZS*	*AS/NZS*	*AS/NZS*	*AS/NZS*	*USD*	*USD*	*AS/NZS*	*USD*	*AS/NZS*	*AS/NZS*
Three Phase Voltage	*415V*	*415V*	*230V*	*415V*	*415V*	*415V*	*208V*	*240V*	*415V*	*240V*	*415V*	*415V*
Single Phase Voltage	*230V*	*230V*	*415V*	*230V*	*230V*	*230V*	*120V*	*120V*	*230V*	*120V*	*230V*	*230V*
Type of supply to site	*3P*	*3P*	*3P*	*3P*	*3P*	*3P*	*3P*	*3P*	*3P*	*3P*	*3P*	*3P*
Frequency	*50Hz*	*50Hz*	*50Hz*	*50Hz*	*50Hz*	*50Hz*	*60Hz*	*60Hz*	*50Hz*	*60Hz*	*50Hz*	*50Hz*
Buiding Incommer Type	*3 Phase*	*3 Phase*	*3 Phase*	*3 Phase*	*3 Phase*	*3 Phase*	*3 Phase*	*3 Phase*	*3 Phase*	*3 Phase*	*3 Phase*	*3 Phase*
Load			*from PUB*		*8Kw*	*N/A*		*total connection load is 399 KVA*				
Tilt Angle				*25 deg*	*3:40*	*20 deg*		*5:12*				
UXO Required	*No*	*No*		*No*	*No*	*Yes*	*No*	*No*		*No*	*No*	*No*
GeoTech Required	*Yes*	*Yes*		*No*	*No*	*Yes*	*No*	*No*		*No*	*No*	*No*
Area					*80m²*	*48*		*20275.5 ft²*				
Shade	*None*	*Minor Shading*	*Clear from shade 9am to 4pm*	*None*	*None*	*None*		*None*				
Generator			*12 kVA*	*None*	*None*	*Yes*	*None*	*No generator installed*				
Type of Roofing Iron	*N/A*	*N/A*			*Galvanize iron roofing*	*N/A*		*aluminum "standing seam" roofing sheets (0.70mm pre-coated)*				
Purlin Spacing	*N/A*	*N/A*	*N/A*		*900mm*	*N/A*		*2 ft (or 600mm o.c)*				
Site Access	*Tar Sealed Roads*	*Tar Sealed Roads*						*Tar Sealed Roads*				
Delivery Address	***PIDF- FIJI*** *Viliame Kasanawaqa PIDF Secretariat 56 Domain Road, Nasese Suva, Fiji Ph: 3311517*	***FIJI*** *Kiti M. Temo Official secretary & Head of Corporate Services - Office of the President kiti.temo@govnet.gov.fj 9921584 PA - Makalesi - 9904354*	***KIRIBATI*** *Mr Thomas Tebateki Taoaba Contact Phone (office): 686 75126192 Address of delivery: Ministry of Infrastructure and Sustainable Energy, P.O Box 498 Betio, Tarawa, Kiribati. Street Address: Main Road, MISE HQ Office. City and State: Betio, Tarawa Country: Republic of Kiribati.*	***TUVALU*** *Vavau Fatuuga Secretary Vaiaku, Funafuti, Tuvalu Ph: (688) 20054*	***TONGA*** *Samiuela Matakaiongo Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC) Tel : +676 28 170 |*	***SOLOMON ISLANDS*** *John Korinihona - Director of Energy Division - Solomon Islands Government C/o Gabriel Aimaea Ministry of Mines, Energy and Rural Electrification, Honiara, Solomon Islands. Ph: +677 7776-216*	***PALAU*** *Shelley deBlair Remengesau Special Assistant to the Vice President Office of the Vice President Republic of Palau Telephone: (680) 488-3198 Cell: (680) 775-6722 Alt. Email: ShelleyRemengesau @my.unt.edu*	***MARSHALL ISLANDS*** *Mr Benjamin Wakefield Deputy Director National Energy Office Ministry of Environment Majuro Repubic of Marshall Islands email:benswakefield @gmail.com*	***NAURU*** *Mrs. Una Edward (nee Dowiyogo) Assistant Director - Pacific Affairs Division Department of Foreign Affairs & Trade Republic of Nauru Email: udowiyogo@gmail .com Office Telephone: +674 557 3133 Work Mobile: +674 557 3794*	***FSM*** *Mr. Faustino Yarofaisug Assistant Secretary Energy Division FSM Department of Resources & Development P.O. Box PS 12 Palikir, Pohnpei FSM 96941 Tel: (691) 320-5133 Website: www.fsmrd.fm email:fyarofaisug @gmail.com*	***VANUATU*** *Matthew Tasale Deputy Director of the Department of Energy, mtasale@vanuatu.gov.vu (678)25201 (678) 7712471 doe@vanuatu.gov.vu (678)25201*	***TIMOR LESTE*** *Mr. Aquilino Amaral Director Directorate of Regional Organisations Directorate General of Multilateral and Regional Affairs Ministry of Foreign Affairs and Cooperation Dili, Timor Leste Tel: +78621881/77119928 email: dor.mnectl@gmaill.com/ aquilino.amaral@mnec.gov.tl*
	2 x SMA STP 10.0 - 3AV - 40	*2 x SMA STP 10.0 - 3AV - 40*	*2 x SMA STP 10.0 - 3AV - 40*	*2 x SMA STP 10.0 - 3AV - 40*	*2 x SMA STP 10.0 - 3AV - 40*	*2 x SMA STP 10.0 - 3AV - 40*	*3 x Schneider XW Pro 6.8kW 120-240V 48V Charger*	*4 x Schneider XW Pro 6.8kW 120-240V 48V Charger*	*2 x SMA STP 10.0 - 3AV - 40*	*4 x Schneider XW Pro 6.8kW 120-240V 48V Charger*	*2 x SMA STP 10.0 - 3AV - 40*	*2 x SMA STP 10.0 - 3AV - 40*
	3 x SMA Sunny Island SI 8.0H-13	*3 x SMA Sunny Island SI 8.0H-13*	*3 x SMA Sunny Island SI 8.0H-13*	*3 x SMA Sunny Island SI 8.0H-13*	*3 x SMA Sunny Island SI 8.0H-13*	*3 x SMA Sunny Island SI 8.0H-13*	*Schneider Conect MPPT 100-600 UL/CSA/CE*	*Schneider Conect MPPT 100-600 UL/CSA/CE*	*3 x SMA Sunny Island SI 8.0H-13*	*Schneider Conect MPPT 100-600 UL/CSA/CE*	*3 x SMA Sunny Island SI 8.0H-13*	*3 x SMA Sunny Island SI 8.0H-13*

Country	PIDF	Fiji Statehouse	Kiribati	Tuvalu	Tonga	Solomon Islands	Palau	RMI	Nauru	FSM	Vanuatu	Timor-Leste
Equipments Already Purchased	*1 x BYD B-Box Premium LVL 15.*	*1 x BYD B-Box Premium LVL 15.*	*1 x BYD B-Box Premium LVL 15.*	*1 x BYD B-Box Premium LVL 15.*	*1 x BYD B-Box Premium LVL 15.*	*1 x BYD B-Box Premium LVL 15.*	*1 x BYD B-Box Premium LVL 15.*	*1 x BYD B-Box Premium LVL 15.*	*1 x BYD B-Box Premium LVL 15.*	*1 x BYD B-Box Premium LVL 15.*	*1 x BYD B-Box Premium LVL 15.*	*1 x BYD B-Box Premium LVL 15.*
	1 x Battery Management Unit for BYD LV B-Box Premium (IP55)	*1 x Battery Management Unit for BYD LV B-Box Premium (IP55)*	*1 x Battery Management Unit for BYD LV B-Box Premium (IP55)*	*1 x Battery Management Unit for BYD LV B-Box Premium (IP55)*	*1 x Battery Management Unit for BYD LV B-Box Premium (IP55)*	*1 x Battery Management Unit for BYD LV B-Box Premium (IP55)*	*1 x Battery Management Unit for BYD LV B-Box Premium (IP55)*	*1 x Battery Management Unit for BYD LV B-Box Premium (IP55)*	*1 x Battery Management Unit for BYD LV B-Box Premium (IP55)*	*1 x Battery Management Unit for BYD LV B-Box Premium (IP55)*	*1 x Battery Management Unit for BYD LV B-Box Premium (IP55)*	*1 x Battery Management Unit for BYD LV B-Box Premium (IP55)*
	1 x Sunny Home Manager 2.0	*1 x Sunny Home Manager 2.0*	*1 x Sunny Home Manager 2.0*	*1 x Sunny Home Manager 2.0*	*1 x Sunny Home Manager 2.0*	*1 x Sunny Home Manager 2.0*	*2 x XW Invetrer Conn Kit (1 pole 250A) 1 x 120/240VAC Brkr kit 3 sets 2 pole 1 x DC Breaker 125A 125VDC*	*2 x XW Invetrer Conn Kit (1 pole 250A) 1 x 120/240VAC Brkr kit 3 sets 2 pole 1 x DC Breaker 125A 125VDC*	*1 x Sunny Home Manager 2.0*	*2 x XW Invetrer Conn Kit (1 pole 250A) 1 x 120/240VAC Brkr kit 3 sets 2 pole 1 x DC Breaker 125A 125VDC*	*1 x Sunny Home Manager 2.0*	*1 x Sunny Home Manager 2.0*
	ENELX Juicebox 40	*ENELX Juicebox 40*	*ENELX Juicebox 40*	*ENELX Juicebox 40*	*ENELX Juicebox 40*	*ENELX Juicebox 40*	*ENELX Juicebox 40*	*ENELX Juicebox 40*	*ENELX Juicebox 40*	*ENELX Juicebox 40*	*ENELX Juicebox 40*	*ENELX Juicebox 40*
Battery Location	*Indoor*	*Indoor*	*Indoor*	*Indoor*	*Indoor*	*Indoor*	*Indoor*	*Indoor*	*Indoor*	*Indoor*	*Indoor*	*Indoor*
PV Inverter Location	*Indoor*	*Indoor*										
Battery Inverter Location	*Indoor*	*Indoor*										

LEGEND	
AUD	USD

Appendix E

50Hz System Datasheets – Supplied for this Project

Refer Appendix D for more details.

TSC®

TSC PowerXT® | DC Panel

PowerXT®-370R-PD

Achieving up to 20.5% efficiency, TSC PowerXT solar panels are one of the highest power panels in the residential and commercial market. Compared to traditional panels, PowerXT panels have fewer gaps between the solar cells and are manufactured with black backsheet and frames, giving them a striking appearance and higher efficiency.

Developed in America, TSC's patented cell cutting creates a highly reliable PowerXT cell where busbars and ribbon interconnections, common failure points, are eliminated. TSC's patented panel assembly then packages the cells into the PowerXT solar panel, reducing inactive space between the cells. This process leads to an exceptionally attractive and efficient solar panel.

Higher Efficiency, Higher Power

TSC PowerXT panels achieve up to 20.5% efficiency; traditional panels achieve 15% – 17% efficiency. TSC PowerXT panels are one of the highest power panels available.

Lower System Costs

PowerXT panels produce more power per square meter area. This reduces installation costs due to fewer balance of system components such as racking and cables.

Improved Shading Tolerance

Solar cell sub-strings are interconnected in parallel, within each of the four module quadrants, which dramatically lowers the shading losses and boosts energy yield.

Improved Aesthetics

Compared to traditional panels, PowerXT panels have a more uniform appearance and superior aesthetics, with a pure black photovoltaic panel.

Durability and Reliability

Solder-less cell interconnections are highly reliable and designed to exceed the industry leading product and power warranty of 25 years.

PID Resistant

TSC PowerXT panels are PID resistant. This insures stable and predictable energy production over time.

About TSC

TSC is the European division of an U.S. Silicon Valley company that has been operating in the photovoltaic (PV) industry for 20 years and holds over 250 issued and pending patents in PV solar cell and module technology. TSC and its parent company are leading the industry in high performance, Pure Black™ solar panels for residential and commercial applications.

TOP PERFORMER 2018 DNV·GL PV MODULE RELIABILITY SCORECARD

PV CYCLE

TÜVRheinland® Precisely Right.

PowerXT®-370R-PD

Panel of choice

Performance at STC (1000W/m², 25° C, AM 1.5)

TSC PowerXT-		365R-PD	370R-PD
Max Power (Pmax)	[W]	365	370
Efficiency	[%]	20.2	20.5
Open Circuit Voltage (Voc)	[V]	48.0	48.3
Short Circuit Current (Isc)	[A]	9.58	9.60
Max Power Voltage (Vmp)	[V]	39.9	40.2
Max Power Current (Imp)	[A]	9.16	9.20
Power Tolerance	[%]	-0/+3	-0/+3

Performance at NOCT (800W/m², 20°C Amb, Wind 1 m/s, AM 1.5)

Max Power (Pmax)	[W]	269	272
Open Circuit Voltage (Voc)	[V]	45.1	45.5
Short Circuit Current (Isc)	[A]	7.73	7.74
Max Power Voltage (Vmp)	[V]	36.7	37.0
Max Power Current (Imp)	[A]	7.32	7.35

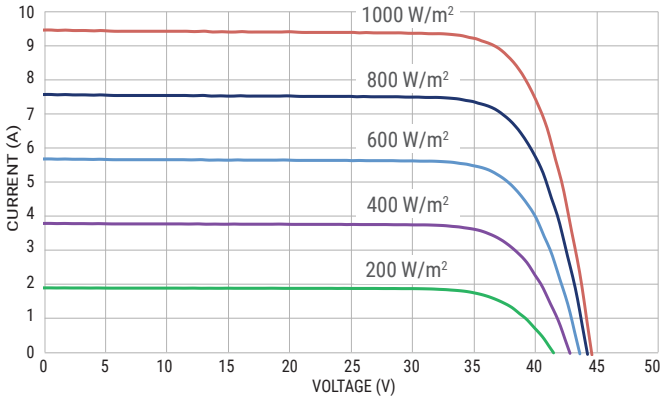
Temperature Characteristics

NOCT	[°C]	45 +/-2
Temp. Coeff. of Pmax	[% / °C]	-0.39
Temp. Coeff. of Voc	[% / °C]	-0.29
Temp. Coeff. of Isc	[% / °C]	0.04

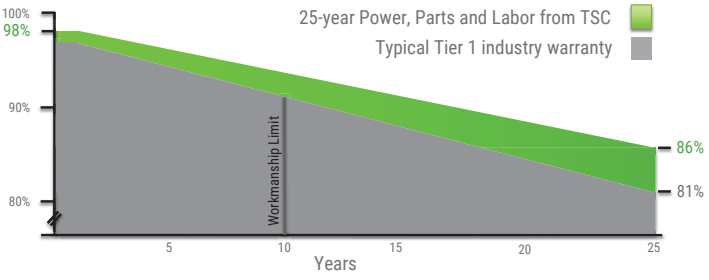
Design Parameters

Operating temperature	[°C]	-40 to +85
Max System Voltage	[V]	1000
Max Fuse Rating	[A]	15
Reverse Diodes	[#]	4

IV Curves vs. Irradiance



Comprehensive 25-Year Warranty



Mechanical Characteristics

Cell Type	Monocrystalline Silicon
Dimensions (L x W x H)	1621mm x 1116mm x 40mm
Weight	21 kg
Glass Type / Thickness	AR Coated, Tempered / 3.2mm
Frame Type	Black Anodized Aluminum
Cable Type / Length	PV Wire / 1000mm
Connector Type	MC4
Junction Box	IP67 / 4 diodes
Front Load	5400 Pa*
Rear Load	2400 Pa*

* Refer to Installation Manual for details

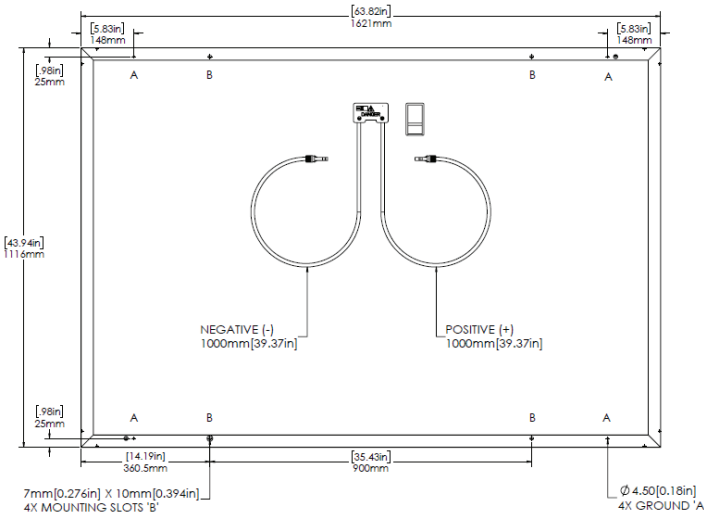
Certifications / Warranty

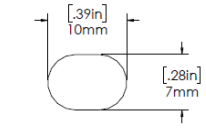
Certifications	UL 1703, CAN/CSA-C22.2 IEC 61215, IEC 61730
Fire Type, UL 1703 (US)	Type 1
Fire Class, UIA 9174 (Italy)	Class 1
Power, Parts & Labor Warranty	25 years*

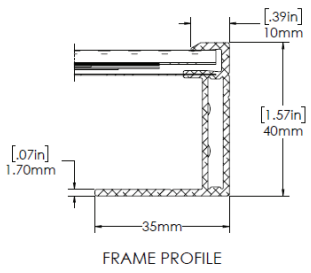
* Warranty details at www.solaria.com

Packaging

Stacking Method	Horizontal / Palletized
Panels / Pallet	25
Pallet Dimensions	1668mm x 1150mm x 1230mm
Pallet Weight	590 kg
Pallets / 40-ft Container	28
Panels / 40-ft Container	700







SUNNY ISLAND 4.4M / 6.0H / 8.0H
FOR ON-GRID AND OFF-GRID APPLICATIONS

SI4.4M-13 / SI6.0H-13 / SI8.0H-13

Communicative

- Sunny Portal powered by ennexOS
- State-of-the-art communication via Ethernet
- Commissioning via WLAN
- Webconnect
- Optimized data logging

Reliable

- 5 + 5-year warranty
- Very high overload capability
- IP54 for reliable operation in extreme environments

Flexible

- For use with self-consumption systems, battery backup systems and off-grid systems
- For single- and three-phase systems
- Modular and extendable

- For lead-acid batteries and approved lithium-ion batteries from various manufacturers

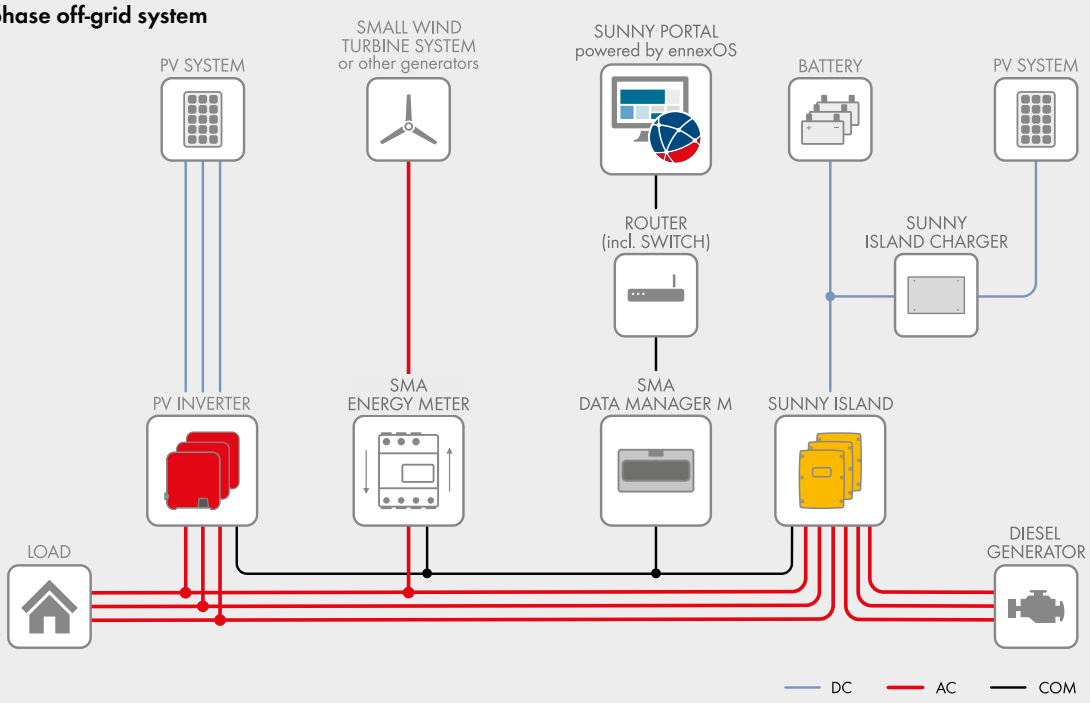
SUNNY ISLAND 4.4M / 6.0H / 8.0H

The most reliable all-purpose solution – easier than ever

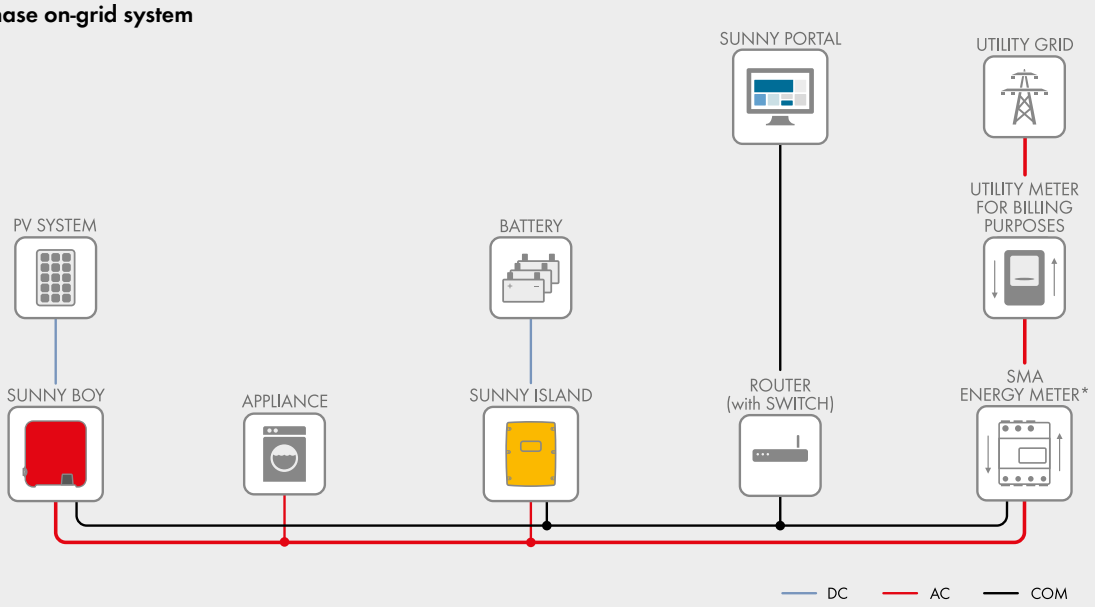
The Sunny Island battery inverter supports a wide range of on- and off-grid installations with compelling product features – from operation in off-grid areas to home energy management. Users can benefit from SMA's experience in having installed more than 100,000 Sunny Island inverters worldwide. Thanks to its integrated user interface and standard WLAN and Ethernet interfaces, the Sunny Island 4.4M / 6.0H / 8.0H can be immediately and easily commissioned and configured via smartphones or tablets. And being a core element in the SMA Flexible Storage System, the Sunny Island temporarily stores self-generated power in the battery thus making it possible to use solar power around-the-clock.
Its high protection class, wide temperature range and exceptional overload capacity always provide the kind of reliability needed for any kind of application. Intelligent load and energy management keeps the system running even in critical situations. The Sunny Island is the ultimate all-purpose solution – and includes a 10-year warranty*.

*) When registered in Sunny Portal.

Three-phase off-grid system

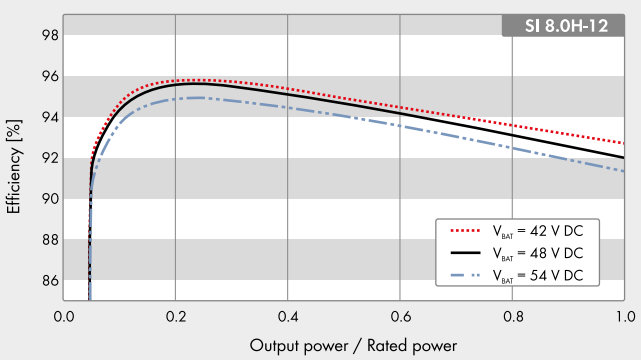


Single-phase on-grid system

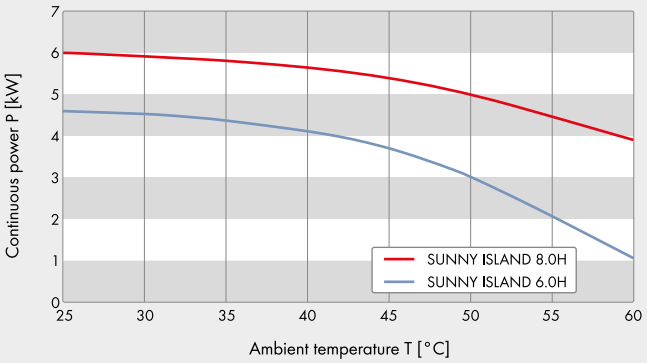


* Other functions with SMA Energy Meter powered by ennexOS and Sunny Home Manager 2.0 are possible.

Efficiency curve



Power-temperature curve



Technical data	Sunny Island 4.4M	Sunny Island 6.0H	Sunny Island 8.0H
Operation on the utility grid or generator			
Rated grid voltage / AC voltage range	230 V / 172.5 V to 264.5 V		
Rated grid frequency / permitted frequency range	50 Hz / 40 Hz to 70 Hz		
Maximum AC current for increased self-consumption (grid operation)	14.5 A	20 A	26 A[6]
Maximum apparent AC power for increased self-consumption (grid operation)	3.3 kVA	4.6 kVA	6 kVA[6]
Maximum AC input current	50 A	50 A	50 A
Maximum AC input power	11500 W	11500 W	11500 W
Adjustable displacement power factor	0.8 overexcited to 0.8 underexcited		
Stand-alone or emergency power operation			
Rated grid voltage / AC voltage range	230 V / 202 V to 253 V		
Rated frequency / frequency range (adjustable)	50 Hz / 45 Hz to 65 Hz		
Rated power (at Unom, fnom / 25°C / cos φ = 1)	3300 W	4600 W	6000 W
AC power at 25 °C for 30 min / 5 min / 3 sec	4400 W / 4600 W / 5500 W	6000 W / 6800 W / 11000 W	8000 W / 9100 W / 11000 W
AC power at 45°C continuously	3000 W	3700 W	5430 W
Rated current / maximum output current (peak)	14.5 A / 60 A	20 A / 120 A	26 A / 120 A
Total harmonic distortion output voltage / power factor at rated power	< 5% / −1 to +1	< 1.5% / −1 to +1	< 1.5% / −1 to +1
Battery DC input			
Rated input voltage / DC voltage range	48 V / 41 V to 63 V	48 V / 41 V to 63 V	48 V / 41 V to 63 V
Maximum battery charging current / rated DC charging current / DC discharging current	75 A / 63 A /75 A	110 A / 90 A / 103 A	140 A / 115 A /130 A
Battery type / battery capacity (range)	Li-Ion[1], FLA, VRLA / 100 Ah to 10000 Ah (lead-acid) 50 Ah to 10000 Ah (li-Ion)		
Charge control	IUoU charge procedure with automatic full charge and equalization charge		
Efficiency / self-consumption of the device			
Maximum efficiency	95.5 %	95.8 %	95.8 %
No-load consumption / standby	18 W / 6.8 W	25.8 W / 6.5 W	25.8 W / 6.5 W
Protective devices (equipment)			
AC short-circuit / AC overload	● / ●		
DC reverse polarity protection / DC fuse	– / –		
Overtemperature / battery deep discharge	● / ●		
Overvoltage category as per IEC 60664-1	III		
General Data			
Dimensions (W / H /D)	467 mm / 612 mm / 242 mm (18.4 inches / 21.1 inches / 9.5 inches)		
Weight	44 kg (97 lbs)	63 kg (138.9 lbs)	63 kg (138.9 lbs)
Operating temperature range	−25°C to +60°C (−13°F to +14°F)		
Protection class as per IEC 62103	I		
Climatic category as per IEC 60721	3K6		
Degree of protection according to IEC 60529	IP54		
RoHS-III compliant	●		
Features / function			
WLAN, Speedwire / Webconnect / SI-SYSCAN (Multicluster)	● / ● / –	● / ● / ○	● / ● / ○
Direct connection to Sunny Portal via Webconnect	●		
Sunny Portal powered by ennexOS via SMA Data Manager M or L	●		
Micro SD memory card for extended data logging	○		
Display via smartphone, tablet, laptop / multifunction relay	● / 2		
Three-phase systems (including rotating magnetic field)[2] / battery-backup function	● / ●		
State of charge calculation / full charge / equalization charge	● / ● / ●		
Battery temperature sensor / data cables	○ / ●		
Certificates and approvals	www.SMA-Solar.com		
Cover color yellow / aluminum white	○ / ○		
Warranty 5/10 years	● / ●[3]		
For off-grid applications			
Switching times for backup operation (without switch box or MC-Box)[4]	–	0 ms (high impedance) / 20 ms (low impedance)	
Automatic rotating magnetic field detection / generator support	● / ●		
Parallel connection / Multicluster	– / –	● / ●	● / ●
Integrated soft start	●		
Accessories			
For off-grid applications			
Multicluster boxes: MC-BOX-6.3 / MC-BOX-12.3 / MC-BOX-36.3	○		
Battery fuse[5]	○		
Sunny Island Charger: SIC50-MPT[5] / SI Charger Piggy Back SIC-PB	○ / ○		
Data Manager M	○		
For on-grid applications			
Sunny Home Manager / SMA Energy Meter	○ / ○		
Automatic transfer switch for battery backup[5]	○		
Type designation	SI4.4M-13	SI6.0H-13	SI8.0H-13

● Standard feature ○ Optional feature – Not available All specifications as of 09/2020

1) See "List of Approved Batteries" at www.SMA-Solar.com 2) 3 x Sunny Island 3) When registering in Sunny Portal 4) See "Switchovertime-TI-en-11 | Version 1.1" at www.SMA-Solar.com
5) Procurement from external suppliers 6) Different limitation depending on the configured country data set (e.g., VDE-AR-N 4105:2018= 4.6 kVA and 20 A)

SUNNY PORTAL powered by ennexOS

Energy Balance and System Analysis at a Glance

SMA-Solar.com

SMA Solar Technology

SUNNY TRIPOWER 8.0 / 10.0
with SMA SMART CONNECTED

STP8.0-3AV-40 / STP10.0-3AV-40

Compact

- One-person installation due to low weight of 20.5 kg
- Compact design means minimum space requirements

Easy to use

- 100% plug and play installation
- Free online monitoring via SMA Energy App
- Automated service thanks to SMA Smart Connected
- Warranty extension from 5 to 10 years – free of charge

High yields

- Use of surplus energy through dynamic active power limitation
- Yield increase without installation effort due to integrated shade management SMA ShadeFix

Combinable

- Intelligent energy management and storage solutions can be added anytime
- Can be expanded with SMA Power Limiter for use of a ripple control receiver

SUNNY TRIPOWER 8.0 / 10.0

Higher yields for private homes – intelligent solar power generation

The new Sunny Tripower 8.0–10.0 ensures maximum energy yields for private homes. This inverter combines the integrated SMA Smart Connected service with intelligent technology for all ambient conditions. Thanks to its extremely light design, the device can be installed quickly and easily. The Sunny Tripower can be commissioned quickly via smartphone or tablet thanks to its integrated web interface. For specific requirements on the roof, SMA ShadeFix maximizes the PV system's yield. Current communication standards make the inverter future-proof, meaning intelligent energy management solutions as well as SMA storage solutions can be flexibly added anytime.

SMA SMART CONNECTED

Integrated service for ease and comfort

SMA Smart Connected* is free monitoring of an inverter via the SMA Sunny Portal. If an inverter fails, SMA proactively informs the PV system owner and the installer. This saves valuable working time and costs.

With SMA Smart Connected, the installer benefits from rapid diagnoses by SMA. They can thus quickly rectify the fault and score points with the customer thanks to the additional, attractive services.

ACTIVATION OF SMA SMART CONNECTED

During registration of the system in the Sunny Portal, the installer activates SMA Smart Connected and benefits from automatic inverter monitoring by SMA.

AUTOMATIC INVERTER MONITORING

SMA takes on the job of inverter monitoring with SMA Smart Connected. SMA automatically checks the individual inverters for anomalies around the clock during operation. Every customer thus benefits from SMA's many years of experience.

PROACTIVE COMMUNICATION IN THE EVENT OF FAULTS

After a fault has been diagnosed and analyzed, SMA informs the installer and end customer immediately by email. Everyone is thus optimally prepared for the troubleshooting process. This minimizes downtime and saves time and money. Regular power reports also provide valuable information about the overall system.

REPLACEMENT SERVICE

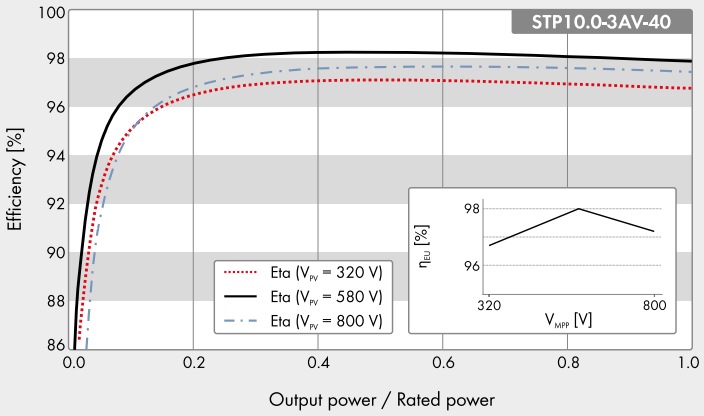
If a replacement device is necessary, SMA automatically supplies a new inverter within one to three days of the fault diagnosis. The installer can contact the PV system operator of their own accord and replace the inverter.

PERFORMANCE SERVICE

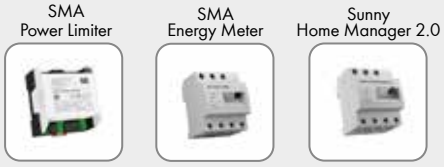
The PV system operator can claim compensation from SMA if the replacement inverter is not delivered within three days.

* Details: see document "Description of Services – SMA SMART CONNECTED"

Efficiency curve



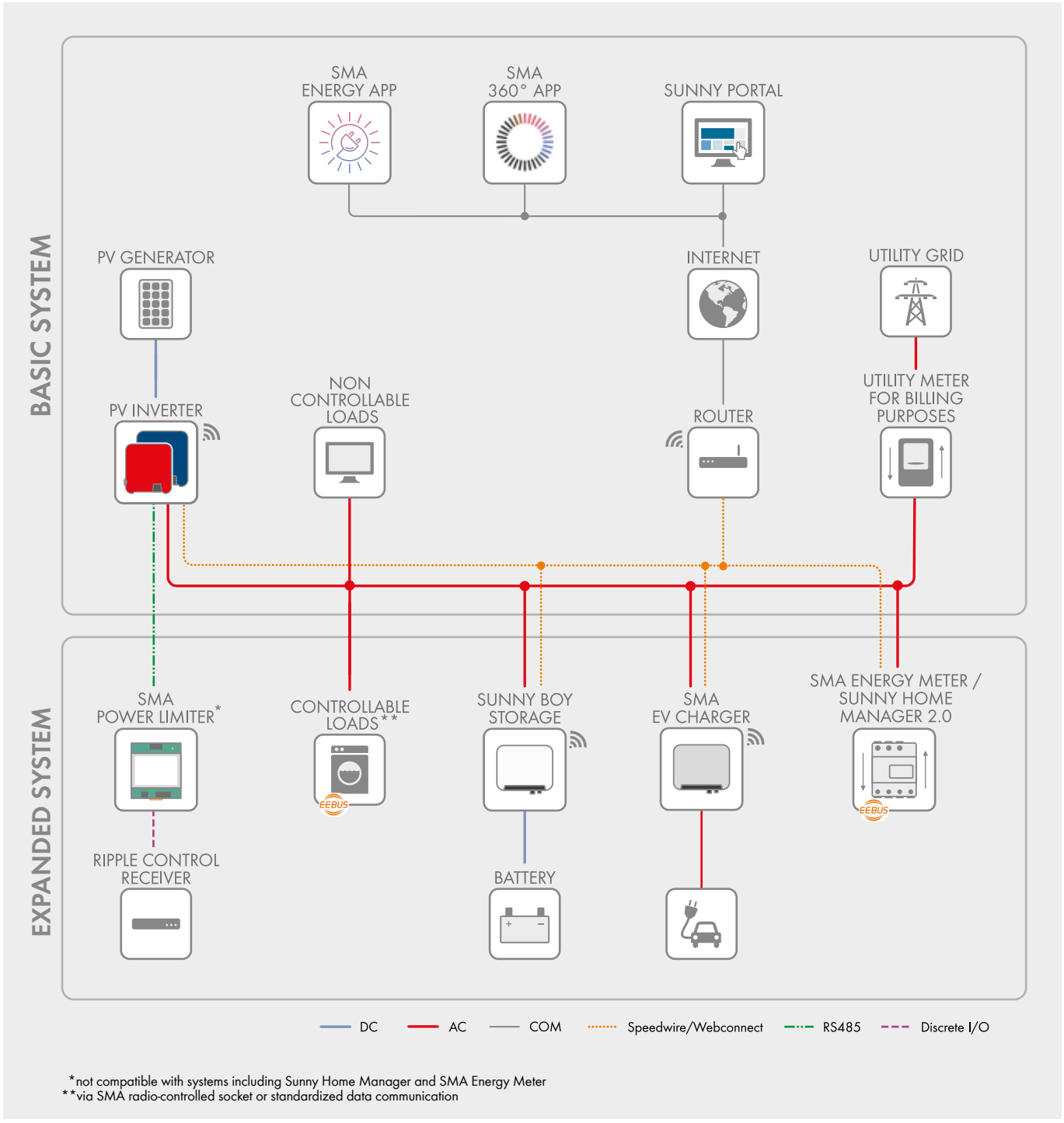
Accessories (optional)



● Standard features ○ Optional features – not available
Data in nominal conditions
Last updated: 12/2021

Technical data	Sunny Tripower 8.0	Sunny Tripower 10.0
Input (DC)		
Max. PV array power	15000 Wp	15000 Wp
Max. input voltage	1000 V	1000 V
MPP voltage range	260 V to 800 V	320 V to 800 V
Rated input voltage	580 V	
Min. input voltage / initial input voltage	125 V / 175 V	
Max. input current input A / input B	20 A / 12 A	
Max. DC short-circuit current input A / input B	30 A / 18 A	
Number of independent MPP inputs / strings per MPP input	2 / A:2; B:1	
Output (AC)		
Rated power (at 230 V, 50 Hz)	8000 W	10000 W
Rated / Max. apparent power	8000 VA / 8000 VA	10000 VA / 10000 VA
Rated voltage	3 / N / PE; 220 V / 380 V 3 / N / PE; 230 V / 400 V 3 / N / PE; 240 V / 415 V	
Voltage range	180 V to 280 V	
Grid frequency / range	50 Hz / 45 Hz to 55 Hz 60 Hz / 55 Hz to 65 Hz	
Rated grid frequency / rated grid voltage	50 Hz / 230 V	
Rated / Max. output current	3 x 11.6 A / 3 x 12.1 A	3 x 14.5 A / 3 x 14.5 A
Power factor at rated power / displacement power factor adjustable	1 / 0.8 overexcited to 0.8 underexcited	
Feed-in phases / connection phases	3 / 3	
Efficiency		
Max. efficiency / European efficiency	98.3 % / 97.7 %	98.3 % / 98.0 %
Protective devices		
Input-side disconnection point	●	
Ground fault monitoring / grid monitoring	● / ●	
DC reverse polarity protection / AC short circuit current capability / galvanically isolated	● / ● / –	
All-pole-sensitive residual-current monitoring unit	●	
Protection class (according to IEC 61140) / surge category (according to IEC 60664-1)	I / III	
General data		
Dimensions (W / H / D)	460 mm / 497 mm / 176 mm (18.1 inches / 19.6 inches / 6.9 inches)	
Weight	20.5 kg (45.2 lbs)	
Operating temperature range	–25 °C to +60 °C (–13 °F to +140 °F)	
Noise emission, typical	30 dB(A)	
Self-consumption (at night)	5.0 W	
Topology / cooling method	Transformerless / convection	
Degree of protection (according to IEC 60529)	IP65	
Climatic category (according to IEC 60721-3-4)	4K4H	
Max. permissible value for relative humidity (non-condensing)	100%	
Features		
DC connection / AC connection	SUNCLIX / AC connector	
Display via smartphone, tablet, laptop	●	
Interfaces: WLAN / Ethernet / RS485	● / ● / ●	
Communication protocols	Modbus (SMA, Sunspec), Webconnect, SMA Data	
Shade management: SMA ShadeFix (integrated)	●	
Warranty: 5 / 10 / 15 years	● / ●* / ○	
Certificates and permits (more available upon request)	AS4777.2, C10/11, CE, CEI 0-21, DEWA 2016, DIN EN 62109-1/IEC 62109-1, DIN EN 62109-2/IEC 62109-2, DK1/2 Typ A, EN 50549-1, EN 62116, G98-1, G99-1, IEC 61727, IE-EN 50438, NEN-EN 50438, NRS 097-2-1, PPDS, PPC, RD 1699, SI 4777.2, TOR Erzeuger Typ A, UTE C15-712, VDE-AR-N 4105, VDE-0126-1-1, VFR 2014	
Certificates and approvals (planned)	NBR 16149	
Country availability of SMA Smart Connected	AU, AT, BE, CH, DE, ES, FR, IT, LU, NL, UK	
Type designation	STP8.0-3AV-40	STP10.0-3AV-40

*) Device registration via the SMA product registration homepage (sma-service.com). The conditions of the SMA limited factory warranty apply. You can find additional information at SMA-Solar.com



*not compatible with systems including Sunny Home Manager and SMA Energy Meter
**via SMA radio-controlled socket or standardized data communication

BASIC SYSTEM functions

- Easy commissioning via integrated WLAN and Speedwire interface
- Maximum transparency thanks to visualization in Sunny Portal / SMA Energy App
- Safe investment through SMA Smart Connected
- Modbus as interface for third-party providers

Expanded SYSTEM FUNCTIONS

- Basic system functions
- Reduction in purchased electricity and increase in self-consumption through use of stored solar energy
- Maximum energy use thanks to forecast-based charging
- Increased self-consumption thanks to intelligent load control
- Easy integration of ripple control receivers via SMA Power Limiter

With SMA Energy Meter

- Maximum system usage through dynamic limiting of feed-in to the grid between 0% and 100%
- Visualization of energy consumption

BATTERY-BOX PREMIUM LVL (2021)

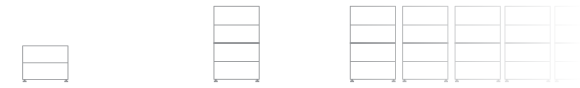
- Scalable from 15.4 to 983 kWh
- Compatible with 1 and 3 Phase Inverters
- Cobalt Free Lithium Iron Phosphate (LFP) Battery: Maximum Safety, Life Cycle, and Power
- Capable of High-Powered Back-up and Off-Grid Function
- Space Saving via the Ability to Stack 2 Premium Batteries
- Add Additional Batteries in Parallel to Expand the System

BATTERY-BOX PREMIUM LVL (2021)

The BYD Battery-Box Premium LVL is a lithium iron phosphate (LFP) battery for use with an external inverter.

Thanks to its control and communication unit (BMU), the Battery-Box Premium LVL scales to meet the project requirements, no matter how large they may be. Start with Battery-Box Premium LVL15.4 (15.36 kWh) and extend later to 983 kWh using parallel interconnection of up to 64 batteries.

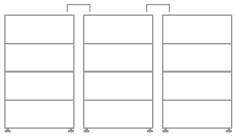
The version LVL (2021) is fully compatible with older LVL versions and brings additional advantages like an even easier installation.



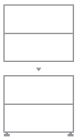
LVL15.4 | 2 x LVL15.4 | 64 x LVL15.4

FLEXIBLE, EFFICIENT, SIMPLE

Easy Installation
With Easy Transportation



15.4 - 983 kWh
Tailored Sizing for Each Application



Extend Anytime
Easily Adapts to New Requirements

High Power
Power for Every Application

TECHNICAL PARAMETERS **PREMIUM LVL (2021)**

	LVL15.4 (2021)
Number of Modules	2
Usable Energy [1]	15.36 kWh
Max Cont. Output Current [2]	250 A
Peak Output Current [2]	375 A, 5 s
Dimensions (H/W/D)	660 x 650 x 575 mm
Weight	168 kg
Nominal Voltage	51.2 V
Operating Voltage	40-57.6 V
Operating Temperature	-10 °C to +50°C
Battery Cell Technology	Lithium Iron Phosphate (cobalt-free)
Communication	CAN/RS485
Enclosure Protection Rating	IP20
Round-trip Efficiency	≥95%
Scalability	Max. 64 in Parallel (983 kWh)
Certification	IEC62619 / CE / CEC / UN38.3
Applications	ON Grid / ON Grid + Backup / OFF Grid
Warranty [3]	10 Years
Compatible Inverters	Refer to BYD Battery-Box Premium LVL Minimum Configuration List

[1] DC Usable Energy, Test conditions: 100% DOD, 0.2C charge & discharge at + 25 °C. System usable energy may vary due to system configuration parameters.
[2] Charge derating will occur between -10 °C and +5 °C
[3] Conditions apply. Refer to BYD Battery-Box Premium Limited Warranty Letter.

Innovative

- Energy manager with integrated measuring device
- Consumption analysis of individual loads
- Optimized battery charging in SMA storage systems

Easy to Use

- Quick plug-and-play installation
- Overview of all relevant appliances, PV generation and battery systems
- Use energy more efficiently and reduce electricity costs

Transparent

- Energy balance and load data shown in interactive diagrams
- Integrated weather and PV forecast data
- PV system monitoring via Sunny Portal

Flexible

- Appliance connection via standard protocols and switchable devices
- For compatible devices, such as heat pumps, electric vehicles and other household appliances, go to www.sma-solar.com

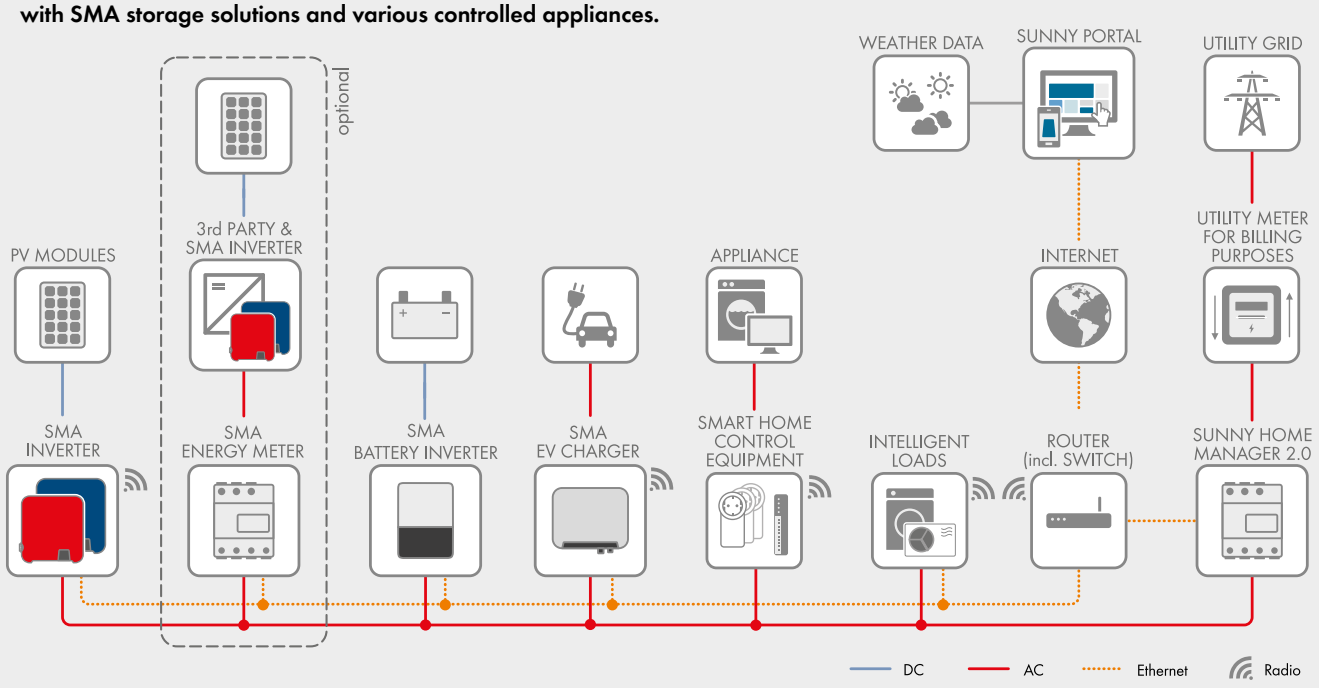
SUNNY HOME MANAGER 2.0

The control center for smart energy management

The Sunny Home Manager 2.0 is SMA's intelligent energy manager and enables the most efficient use of solar energy in the home. It optimizes PV self-consumption and significantly reduces electricity costs. To do this, it measures the power of PV generation, purchased electricity as well as grid feed-in, and gives an overview of all relevant energy flows in the household. By means of local PV generation forecasts and the measured household consumption profile, the self-learning device prompts the user with energy-related action recommendations. Operation of the controlled appliances is coordinated in a way to optimize the use of self-generated solar energy.

The path to intelligent energy management is quite easy. Simply install the Sunny Home Manager 2.0 at the grid connection point, connect it to the internet router using an Ethernet cable, then register the PV system in Sunny Portal free of charge and join more than 60,000 systems already installed worldwide in benefiting from greater energy efficiency.

An example of intelligent energy management: PV generation with SMA storage solutions and various controlled appliances.



Technical Data	Sunny Home Manager 2.0
Energy Manager	
Connection to the local router	via Ethernet cable (10/100 Mbit/s, RJ45 plug)
Connection of SMA PV inverters and battery systems	Ethernet or WLAN via local router
Connection of appliances for energy management	a. Direct data connection (EEBUS, SEMP) b. Indirect data connection (compatible switchable devices)
Integrated Measuring Device	
Measurement accuracy	≤1 %
Measuring cycle	200 ms, 600 ms or 1000 ms
Max. number of devices on the system (excluding the SMA Energy Meter)	
Total number of devices in the system	up to 24
of which devices as appliances in active energy management	up to 12
Inputs (voltage and current)	
Nominal voltage	110 V / 230 V/400 V
Frequency	50 Hz / 60 Hz
Nominal current/limiting current per line conductor	5 A/63 A (>63 A can be covered via external current transformers)
Connection cross-section	10 mm² to 16 mm² (for 63 A application)
Torque for screw terminals	2.0 Nm
Ambient Conditions in Operation	
Ambient temperature	-25°C to +40°C
Storage temperature range	-25°C to +70°C
Protection class (according to IEC 62103)	II
Degree of protection (according to IEC 60529)	IP20
Max. permissible value for relative humidity (non-condensing)	5% to 90%
Operation altitude range	0 m to 2000 m
General Data	
Dimensions (W/H/D)	70 mm/88 mm/65 mm
Top hat-rail width units	4
Weight	0.3 kg
Mounting location	Switch or meter cabinet
Mounting type	Top-hat rail mounting
Status display	3 x LED
Self-consumption	< 3 W
Features	
Operation and visualization	via Sunny Portal
Update function for the Sunny Home Manager and the connected SMA devices	automatic
Warranty	2 years
Certificates and approvals	www.SMA-Solar.com
Accessories	
SMA Energy Meter as complement to integrated measuring device	Precise three-phase measuring, connection via Ethernet in the local network.
Last updated: 05/2021	
Type designation	HM-20

enel x

JUICEBOX® 40

Residential Charging Stations

Charge forward with the best-selling smart home charging station

JuiceBox 40, the best-selling smart home charging station, combines speed, performance and value. Enjoyed by thousands of satisfied EV drivers, it delivers all the safety and smart charging features you need to make home charging easy, reliable and cost-effective.

JuiceBox is the only line of charging stations that affords both direct user control and smart grid optimization, accessible through our software platform, JuiceNet®.

- Control charging anywhere, anytime via our mobile app and web portal
- Reduce your energy costs by scheduling charging when rates are low
- Select a cleaner electricity mix to reduce your emissions (in applicable geographies)
- Participate in smart grid programs to further lower the cost of owning and driving your EV (in applicable geographies)

Why JuiceBox?

Up to 7x Faster Charging

Spend less time waiting for your EV to charge and more time enjoying the drive

Powered by JuiceNet

Monitor and schedule charging with intuitive mobile app & web portal to save time and money

Easy to Use and Install

Small, lightweight enclosure; lockable, quick-release mount; weatherproof for indoor/outdoor installation.

Universal Compatibility

SAE-J1772™ plug ensures compatibility with all EVs*

Cleaner Driving

Optimize charging times and participate in smart grid programs to reduce emissions; ENERGY STAR®-certified†

See Charger Status

Dynamic LED lights display WiFi connectivity and charging behavior

*Tesla requires adapter

JuiceBox® 40 Specifications

Electrical Characteristics	› Power: 40A, 9.6 kW maximum (adjustable) › Single phase input: nominal voltage 208/240 VAC, voltage range 177 – 264 VAC
Input Cable & Plug	› 2.3 ft (0.7 m) with NEMA 14-50 plug › 2.3 ft (0.7 m) UL-rated hardwire conduit & wiring
Output Cable & Connector	› 25 ft cable › J1772 standard compliant
JuiceNet® App	› Precision measurement of power, energy, voltage & current › Automatic notifications: time-of-use in effect, start of charge, end of charge, unit offline, unit back online, car needs to be plugged in to charge › Web-based portal for desktop access › See JuiceNet app data sheet for more on convenient features
Smart Grid Connectivity	› Built-in WiFi Connectivity (802.11 b/g/n 2.4 GHz)
Firmware	› End-to-end AES-256-based encrypted protocols › 90-day, 15-minute interval data storage › Over-the-air (OTA) upgradeable firmware › Persistent data storage upon power interruption
Emissions Reduction	› Available via optional JuiceNet Green software upgrade
Enclosure	› Dynamic LED lights show charging status: network connectivity, charging in progress, delaying charging, standby › Weatherproof, dust-tight, polycarbonate enclosure: NEMA 4X › Quick-release wall mounting bracket included › Built-in security lock and integrated cable management › Operating Temperature: -40°F to 140°F (-40°C to 60°C)
Weight & Dimensions	› Main enclosure: H: 18.5 in (469 mm) x W: 6.8 in (173 mm) x D: 5.8 in (147 mm) › 15 lbs (6.8 kg)
Codes & Standards	› FCC Part 15 Class B, NEC 625 compliant, ENERGY STAR®† › OpenADR 2.0b compliant
Safety	› UL and cUL Listed
Warranty	› 3-year limited product warranty (parts only) for use under normal residential operating conditions
Made in USA	› From domestic & imported parts

2020.01.16

†Certification pending

evcharging.enelx.com/contact

Customer Support +1-844-584-2329
Commercial Sales +1-844-885-5850

EnelXChargingNA
enelxnorthamerica

Enel X
EnelXChargingNA

Appendix F

60Hz System Datasheets – Supplied for this Project

Refer Appendix D for more details.

TSC®

TSC PowerXT® | DC Panel

PowerXT®-370R-PD

Achieving up to 20.5% efficiency, TSC PowerXT solar panels are one of the highest power panels in the residential and commercial market. Compared to traditional panels, PowerXT panels have fewer gaps between the solar cells and are manufactured with black backsheet and frames, giving them a striking appearance and higher efficiency.

Developed in America, TSC's patented cell cutting creates a highly reliable PowerXT cell where busbars and ribbon interconnections, common failure points, are eliminated. TSC's patented panel assembly then packages the cells into the PowerXT solar panel, reducing inactive space between the cells. This process leads to an exceptionally attractive and efficient solar panel.

Higher Efficiency, Higher Power

TSC PowerXT panels achieve up to 20.5% efficiency; traditional panels achieve 15% – 17% efficiency. TSC PowerXT panels are one of the highest power panels available.

Lower System Costs

PowerXT panels produce more power per square meter area. This reduces installation costs due to fewer balance of system components such as racking and cables.

Improved Shading Tolerance

Solar cell sub-strings are interconnected in parallel, within each of the four module quadrants, which dramatically lowers the shading losses and boosts energy yield.

Improved Aesthetics

Compared to traditional panels, PowerXT panels have a more uniform appearance and superior aesthetics, with a pure black photovoltaic panel.

Durability and Reliability

Solder-less cell interconnections are highly reliable and designed to exceed the industry leading product and power warranty of 25 years.

PID Resistant

TSC PowerXT panels are PID resistant. This insures stable and predictable energy production over time.

About TSC

TSC is the European division of an U.S. Silicon Valley company that has been operating in the photovoltaic (PV) industry for 20 years and holds over 250 issued and pending patents in PV solar cell and module technology. TSC and its parent company are leading the industry in high performance, Pure Black™ solar panels for residential and commercial applications.

TOP PERFORMER 2018 DNV·GL PV MODULE RELIABILITY SCORECARD

PV CYCLE

TÜVRheinland® Precisely Right.

TSC®

Panel of choice

PowerXT®-370R-PD

Performance at STC (1000W/m², 25° C, AM 1.5)

TSC PowerXT-		365R-PD	370R-PD
Max Power (Pmax)	[W]	365	370
Efficiency	[%]	20.2	20.5
Open Circuit Voltage (Voc)	[V]	48.0	48.3
Short Circuit Current (Isc)	[A]	9.58	9.60
Max Power Voltage (Vmp)	[V]	39.9	40.2
Max Power Current (Imp)	[A]	9.16	9.20
Power Tolerance	[%]	-0/+3	-0/+3

Performance at NOCT (800W/m², 20°C Amb, Wind 1 m/s, AM 1.5)

Max Power (Pmax)	[W]	269	272
Open Circuit Voltage (Voc)	[V]	45.1	45.5
Short Circuit Current (Isc)	[A]	7.73	7.74
Max Power Voltage (Vmp)	[V]	36.7	37.0
Max Power Current (Imp)	[A]	7.32	7.35

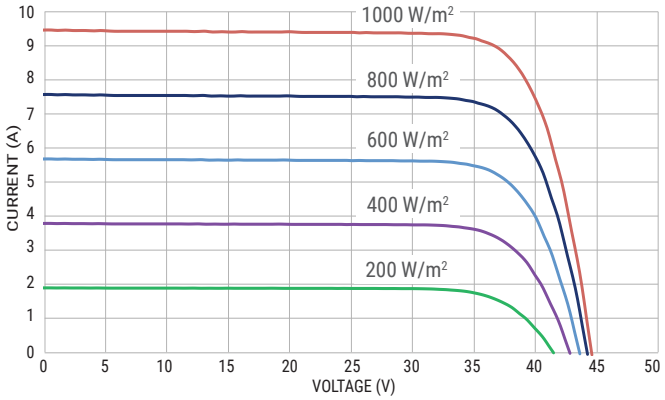
Temperature Characteristics

NOCT	[°C]	45 +/-2
Temp. Coeff. of Pmax	[% / °C]	-0.39
Temp. Coeff. of Voc	[% / °C]	-0.29
Temp. Coeff. of Isc	[% / °C]	0.04

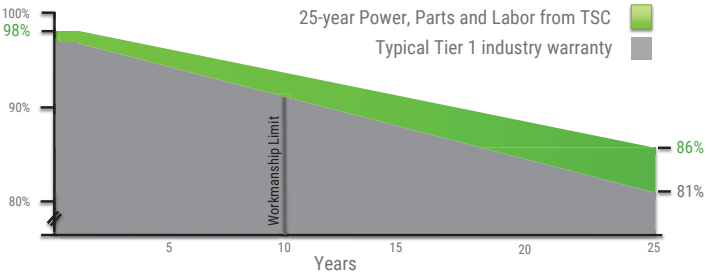
Design Parameters

Operating temperature	[°C]	-40 to +85
Max System Voltage	[V]	1000
Max Fuse Rating	[A]	15
Reverse Diodes	[#]	4

IV Curves vs. Irradiance



Comprehensive 25-Year Warranty



Mechanical Characteristics

Cell Type	Monocrystalline Silicon
Dimensions (L x W x H)	1621mm x 1116mm x 40mm
Weight	21 kg
Glass Type / Thickness	AR Coated, Tempered / 3.2mm
Frame Type	Black Anodized Aluminum
Cable Type / Length	PV Wire / 1000mm
Connector Type	MC4
Junction Box	IP67 / 4 diodes
Front Load	5400 Pa*
Rear Load	2400 Pa*

* Refer to Installation Manual for details

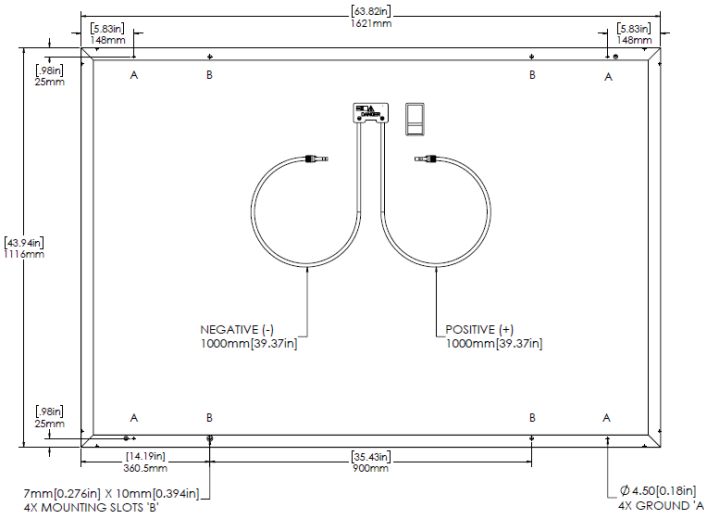
Certifications / Warranty

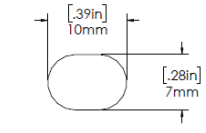
Certifications	UL 1703, CAN/CSA-C22.2 IEC 61215, IEC 61730
Fire Type, UL 1703 (US)	Type 1
Fire Class, UIA 9174 (Italy)	Class 1
Power, Parts & Labor Warranty	25 years*

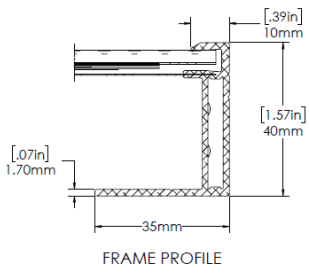
* Warranty details at www.solaria.com

Packaging

Stacking Method	Horizontal / Palletized
Panels / Pallet	25
Pallet Dimensions	1668mm x 1150mm x 1230mm
Pallet Weight	590 kg
Pallets / 40-ft Container	28
Panels / 40-ft Container	700







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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

solar.schneider-electric.com

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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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	**Insight**Home (865-0330), **Insight**Facility (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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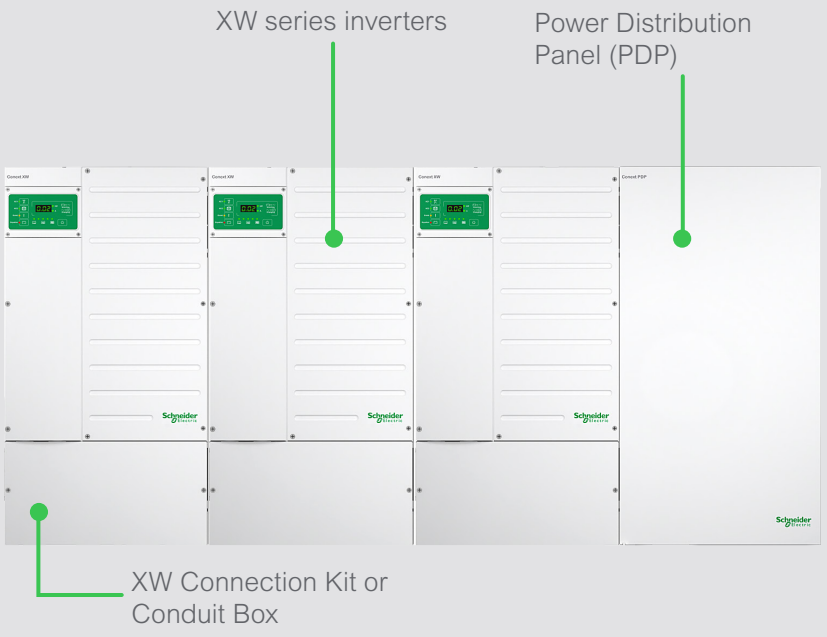
Conext™ XW Series Power Distribution

Easy to install, flexible and scalable balance of system solutions

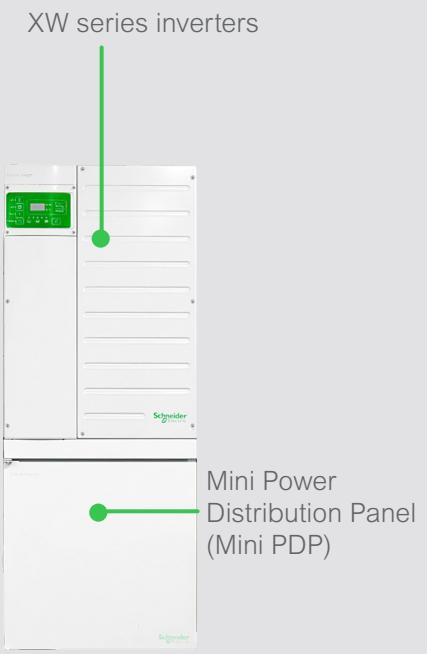
Conext™ XW Power Distribution Panels offer flexibility for your solar and storage system design, including:

- **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



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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)	

XW Connection Kit for Additional Inverters

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.

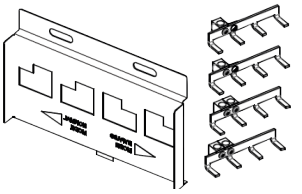
In addition, an internal sheet metal barrier is included to keep communications wires separate from AC and DC power wires.

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

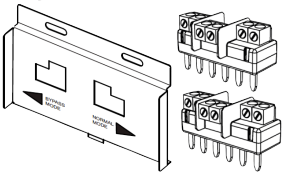


The 60 A, 120/240 VAC Breaker Kit is used for AC distribution for a second or third XW inverter connection to the Power Distribution Panel. If the Power Distribution Panel was ordered with AC breakers, a single breaker kit can be used for connecting two or three inverters. With two inverters, the three 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.

Conext XW+ Connection Kit for INV2 INV3 PDP Installation Guide

865-1020-02

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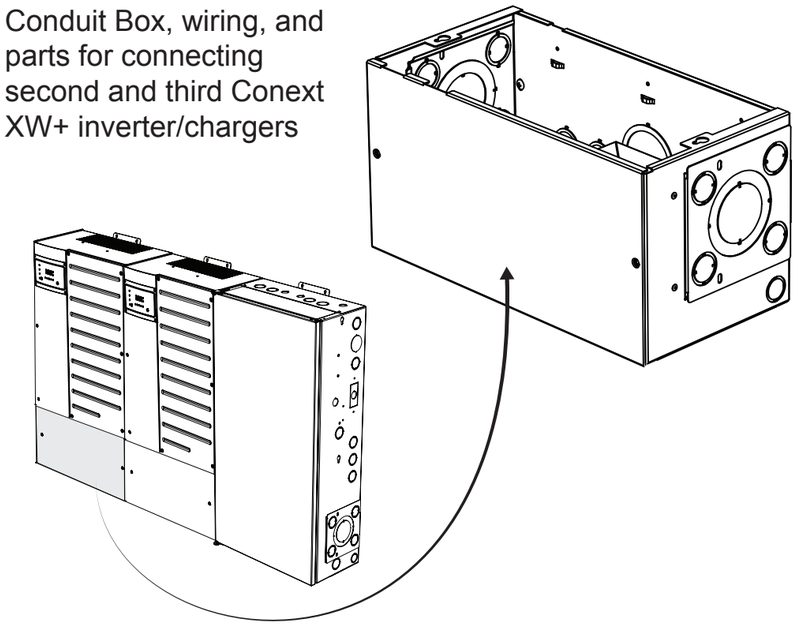
Conduit Box, wiring, and parts for connecting second and third Conext XW+ inverter/chargers



A Important Safety Information

Read and Save These Instructions - Do Not Discard

This guide contains important safety instructions for the Conext XW+ Inverter/Charger that must be followed during installation procedures. Read and keep this Installation Guide for future reference.

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.. The safety alert symbol shall not be used with this signal word.

Contact Information

solar.schneider-electric.com

Please contact your local Schneider Electric Sales Representative or visit the Schneider Electric website at:
http://solar.schneider-electric.com

A Important Safety Information

This Guide is intended for anyone who needs to operate, configure, and troubleshoot the Conext XW+ Inverter/Charger. Certain configuration tasks should only be performed by qualified personnel in consultation with your local utility and/or an authorized dealer. Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. Servicing of batteries must only be performed or supervised by qualified personnel with knowledge of batteries and their required precautions.

Qualified personnel have training, knowledge, and experience in:

- Installing electrical equipment
- Applying applicable installation codes
- Analyzing and reducing the hazards involved in performing electrical work
- Installing and configuring batteries
- Selecting and using Personal Protective Equipment (PPE)

No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

1. **Before using the inverter, read all instructions and cautionary markings on the unit, the batteries, and all appropriate sections of this manual.**
2. Use of accessories not recommended or sold by the manufacturer may result in a risk of fire, electric shock, or injury to persons.
3. The inverter is designed to be permanently connected to your AC and DC electrical systems. The manufacturer recommends that all wiring be done by a certified technician or electrician to ensure adherence to the local and national electrical codes applicable in your jurisdiction.
4. To avoid a risk of fire and electric shock, make sure that existing wiring is in good condition and that wire is not undersized. Do not operate the inverter with damaged or substandard wiring.
5. Do not operate the inverter if it has been damaged in any way.
6. This unit does not have any user-serviceable parts. Do not disassemble the inverter except where noted for connecting wiring and cabling. See your warranty for instructions on obtaining service. Attempting to service the unit yourself may result in a risk of electrical shock or fire. Internal capacitors remain charged after all power is disconnected.
7. To reduce the risk of electrical shock, disconnect both AC and DC power from the inverter before attempting any maintenance or cleaning or working on any components connected to the inverter. Putting the unit in Standby mode will not reduce this risk.
8. The inverter must be provided with an equipment-grounding conductor connected to the AC input ground.
9. Do not expose this unit to rain, snow, or liquids of any type. This product is designed for indoor use only. Damp environments will significantly shorten the life of this product and corrosion caused by dampness will not be covered by the product warranty.
10. To reduce the chance of short-circuits, always use insulated tools when installing or working with this equipment.
11. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with electrical equipment.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Never operate energized with covers removed
- Energized from multiple sources. Before removing covers identify all sources, de-energize, lock-out, and tag-out and wait 2 minutes for circuits to discharge
- Always use a properly rated voltage sensing device to confirm all circuits are de-energized.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Batteries can present a risk of electric shock and high short-circuit current. The following precautions must be observed when working with batteries:

- Remove watches, rings or other metal objects.
- Use tools with insulated handles.
- Wear protective glasses, gloves and boots.
- Do not lay tools or other metal parts on top of batteries.
- Disconnect the charging source prior to connecting or disconnecting battery terminals.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Battery Circuit Breakers must be installed according to the specifications and requirements specified by Schneider Electric.
- Servicing of batteries must only be performed by qualified personnel and the required precautions. Keep unqualified personnel away from batteries.

Failure to follow these instructions will result in death or serious injury.

Exclusion for Documentation

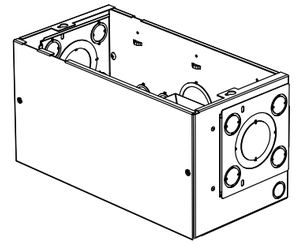
UNLESS SPECIFICALLY AGREED TO IN WRITING, SELLER

(A) MAKES NO WARRANTY AS TO THE ACCURACY, SUFFICIENCY OR SUITABILITY OF ANY TECHNICAL OR OTHER INFORMATION PROVIDED IN ITS MANUALS OR OTHER DOCUMENTATION;

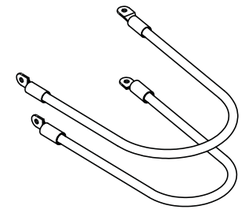
(B) ASSUMES NO RESPONSIBILITY OR LIABILITY FOR LOSSES, DAMAGES, COSTS, OR EXPENSES, WHETHER SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL, WHICH MIGHT ARISE OUT OF THE USE OF SUCH INFORMATION. THE USE OF ANY SUCH INFORMATION WILL BE ENTIRELY AT THE USER'S RISK, AND

(C) REMINDS YOU THAT IF THIS MANUAL IS IN ANY LANGUAGE OTHER THAN ENGLISH, ALTHOUGH STEPS HAVE BEEN TAKEN TO MAINTAIN THE ACCURACY OF THE TRANSLATION, THE ACCURACY CANNOT BE GUARANTEED, APPROVED CONTENT IS CONTAINED WITH THE ENGLISH LANGUAGE VERSION WHICH IS POSTED AT SOLAR.SCHNEIDER-ELECTRIC.COM.

B Materials List

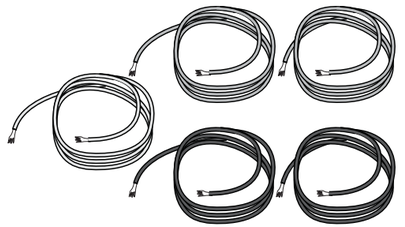


Conduit Box for attaching to the bottom of second or third Conext XW+ inverter/charger.

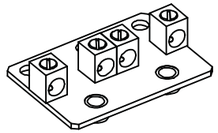


2 x #4/0 AWG (107 mm²) DC battery cables for connecting second or third inverter/chargers to the Power Distribution Panel (PDP)

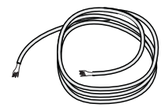
Bushings for AC wiring knockouts, AC Sync and Xanbus knockouts



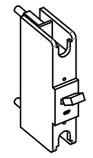
5 x #6 AWG (13.3 mm²) cables for GRID, LOAD and Neutral AC connections (labelled)



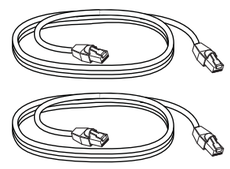
DC positive bus bar for up to 3 DC disconnect breakers. Replaces factory-installed bus bar.



1 x #4 AWG (21.15 mm²) cable for grounding (labelled)



GJ 250 Amp 160 VDC circuit breaker



AC Sync and Xanbus cables for network communication

Installer Provided Tools and Materials:

- Phillips head screwdriver
- 1/2" and 9/16" wrench
- Socket wrench with a 6" extension shaft (recommended)
- Torque wrench
- Screws for wall mounting the Conduit Box

C Knockout Dimensions

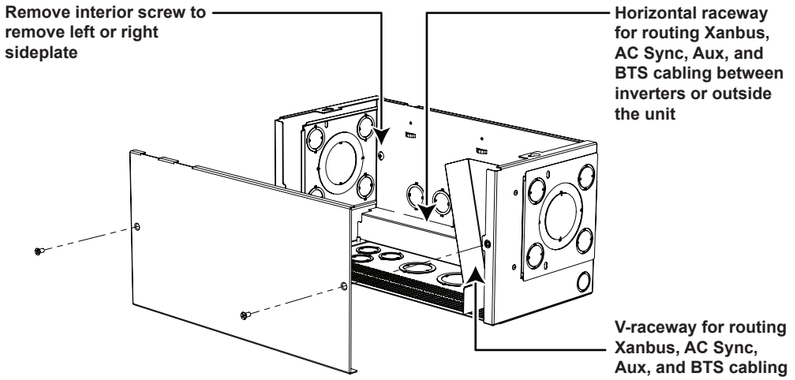
NOTICE

EQUIPMENT DAMAGE

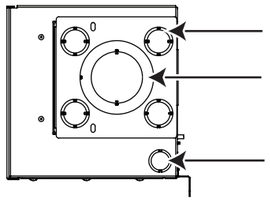
Do not drill, cut or punch holes into the Conduit Box, XW+ chassis, or Power Distribution Panel. Use only the knockouts provided for conduit entry.

Failure to follow these instructions can result in damage to equipment.

When removing your choice of knockouts, ensure no debris remains inside the chassis. Insert appropriately sized conduit bushings.



Side Knockouts

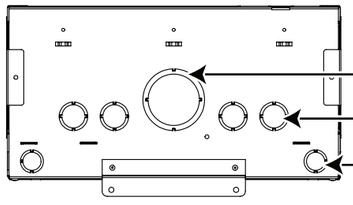


Inner: 3/4" trade (28.2 mm or PG21)
Outer: 1" trade (35.0 mm)

Inner: 2" trade (62.7 mm)
Outer: 3" trade (90.0 mm)

Inner: 1/2" trade (22.2 mm or PG16)
Outer: 3/4" trade (28.0 mm)

Back Knockouts

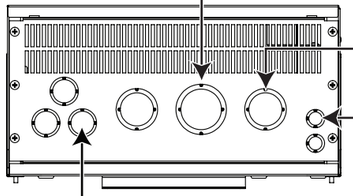


Inner: 2" Trade (62.7 mm)
Outer: 2 1/2" Trade (75.6 mm)

Inner: (22.2 mm or PG21)
Outer: (28.2 mm)

Inner: 1/2" trade (22.2 mm or PG16)
Outer: 3/4" trade (28.0 mm)

Bottom Knockouts



Inner: 1 1/2" Trade
Outer: 2" Trade

Inner: ISO-40
Outer: ISO-50

Inner: ISO-16
Outer: 1/2" Trade (PG 16)

Inner: 3/4" Trade (PG 21)
Outer: 1" Trade

D Wall Mounting the Conduit Box

Wall Mounting Considerations

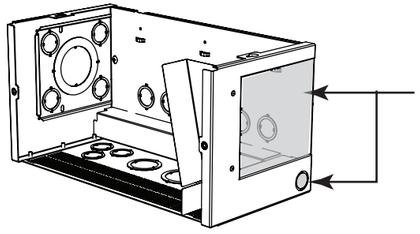
- If conduit is routed from the floor, remove the bottom panel of the Conduit Box before wiring. Remove the appropriate knockouts and re-attach the bottom panel to proceed with conduit installation and wiring.
- If conduit is routed through the wall on which the XW+ unit and PDP are mounted, remove the appropriate knockouts on the back panel of the Conduit Box.
- Use plastic cable ties (not supplied) for cable management inside the Conduit Box.

1 Wall mount the Conext XW+

IMPORTANT: Before installing the Conduit Box, wall mount the Conext XW+.

For detailed mounting instructions, see the *Conext XW+ Inverter/Charger Installation Guide*.

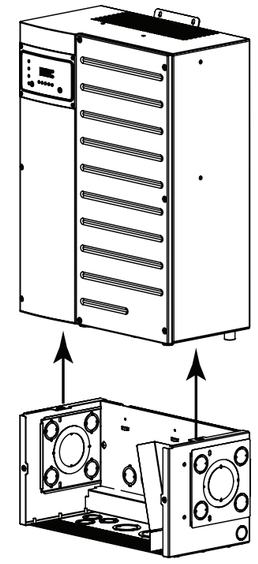
2 Remove the Conduit Box front panel, the left or right sideplate and the raceway knockout



Either sideplate can be removed depending on the location of the adjacent PDP and Conext XW+. If the Conduit Box is located between two XW+ units, then remove both sideplates and knockouts.

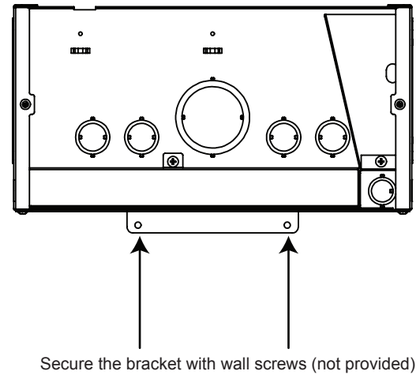
3 Secure the Conduit Box to the Conext XW+

1. Align the keyhole slots on the top edge of the Conduit Box with the corresponding screws on the bottom of the inverter. Loosen the screws if necessary.
2. Hang the Conduit Box on the XW+ unit by fitting the keyholes to the screws and pushing towards the wall until snug.



4 Secure the Conduit Box to the wall

Using two screws suitable for the type of wall material (not provided), secure the bracket at the bottom edge of the rear panel to the wall.



Conext XW+ Connection Kit for INV2 INV3 PDP Installation Guide
865-1020-02 http://solar.schneider-electric.com

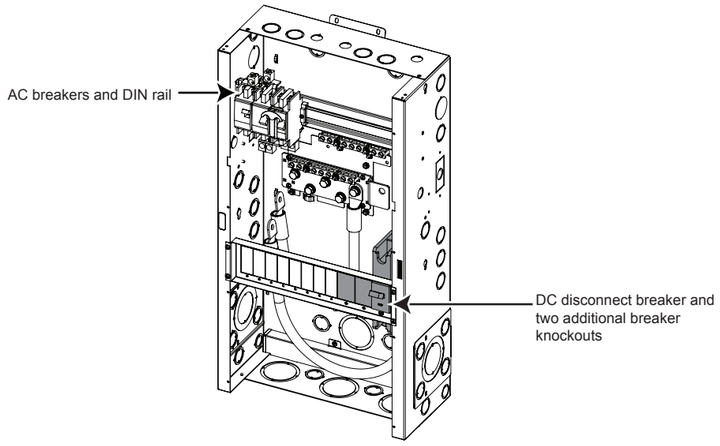
E Installing the DC Positive Bus Bar and DC Disconnect Breaker

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH
- Battery Circuit Breakers must be installed according to the specifications and requirements defined by Schneider Electric.
- Servicing of batteries must only be performed by qualified personnel knowledgeable about batteries and the required precautions. Keep unqualified personnel away from batteries.
- Disconnect the charging source prior to connecting or disconnecting battery terminals.

Failure to follow these instructions will result in death or serious injury.

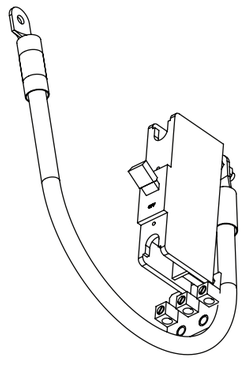
1 Remove the PDP door, and upper and lower faceplates



2 Disconnect all factory-installed wiring and power distribution jumpers in the PDP and save for re-use

3 Remove the DC breaker assembly from the mounting rail by unscrewing the two front breaker screws

The assembly includes the DC positive bus bar, DC breaker and attached battery cable.



4 Turn the assembly over, and detatch the DC bus bar from the breaker.
- Use a 9/16"-size wrench.
- Leave the battery cable connected to the stud terminal on the back of the breaker.

⚠ WARNING

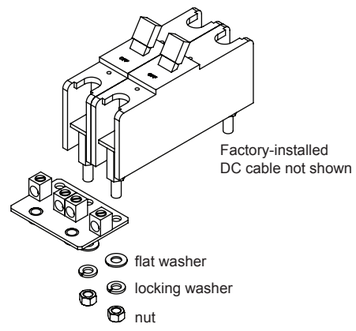
HAZARD OF FIRE

Overheating of the DC terminals or DC cables to dangerous temperatures may occur due to improper installation.
- Do not put anything between the cable lug and the terminal surface.
- Do not over-tighten connections; observe all recommended torque values.
- Do not apply any type of anti-oxidant paste until after the cable connection is tightened.

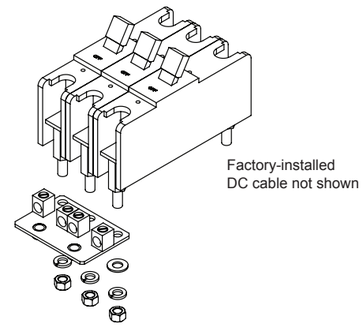
Failure to follow these instructions could result in death or serious injury.

5 Replace the factory-installed DC bus bar with the 3-position DC positive bus bar provided with the Connection Kit, and install additional DC disconnect breakers as needed
- Tighten DC terminals to the recommended torque values. See the *Tightening Torque* label inside the PDP.
- Connecting three DC disconnect breakers in a three-inverter system requires two Conext XW+ Connection Kits.

Two DC breakers
Install in the position shown.

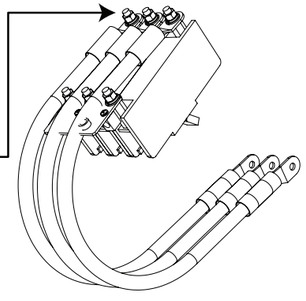


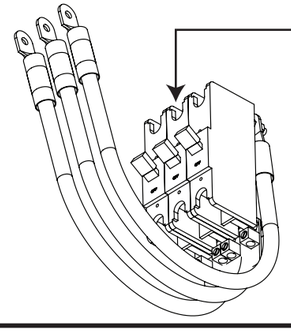
Three DC breakers
Install in the position shown.



6 Connect the positive (red) DC cable provided with the Connection Kit to the stud terminal on the back of the additional breaker(s)

Tighten DC terminals to the torque values recommended by the breaker manufacturer.





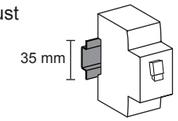
7 Re-attach the assembly to the DC breaker mounting rail using the front mounting screws (two per breaker)

Remove breaker knockouts on mounting rail as needed.

F Installing AC Breakers

Install additional AC breakers for two inverter/chargers or three inverter chargers onto the DIN rail next to the factory-installed AC breakers.

Compatible AC breakers must support DIN rail (35 mm).



North America (NEC)

The following AC breaker kits for NEC split phase and three-phase systems are available from Schneider Electric:
- Conext XW+ 120/240 VAC Breaker Kit (865-1215-01)
- Conext XW+ Three-Phase Breaker Kit (865-1315-01)

International (IEC)

The following compatible AC breakers are available from Schneider Electric:
- Acti 9 (formerly Multi 9)

G Wiring the AC, DC, and Network Cable Connections

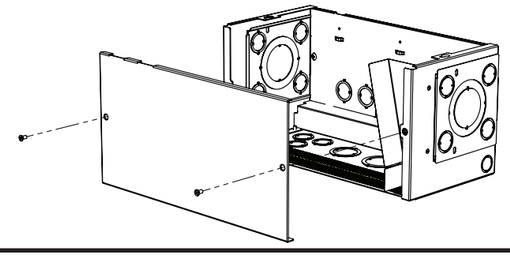
Connect the AC, DC and Xanbus network cables and route through the Conduit Box as instructed in the *Conext XW+ Inverter/Charger Installation Guide*.

For detailed instructions and wiring diagrams, see the *Conext XW+ Inverter/Charger Installation Guide*.

H Secure the Front Panel of the Conduit Box

Re-attach the front panel of the Conduit Box when the wiring is complete

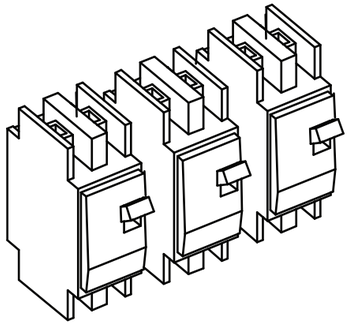
1. Slide the bottom lip of the front panel over the lower edge of the rear panel.
2. Align the two holes in the front panel with the two holes in the back panel.
3. Using two #10-32 screws (included), secure the front panel to the rear panel.



Conext 120/240VAC Breaker Kit for Parallel Inverter/Chargers – Installation Guide
865-1215-01

www.SEsolar.com

2-Pole, 60 Amp, 120/240 VAC circuit breakers and parts for connecting additional Conext XW+ inverter/chargers



A Important Safety Information

Read and Save These Instructions - Do Not Discard

This guide contains important safety instructions for the Conext XW+ Inverter/Charger that must be followed during installation procedures. Read and keep this Installation Guide for future reference.

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.. The safety alert symbol shall not be used with this signal word.

A Important Safety Information

This Guide is intended for anyone who needs to operate, configure, and troubleshoot the Conext XW+ Inverter/Charger. Certain configuration tasks should only be performed by qualified personnel in consultation with your local utility and/or an authorized dealer. Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. Servicing of batteries must only be performed or supervised by qualified personnel with knowledge of batteries and their required precautions.

Qualified personnel have training, knowledge, and experience in:

- Installing electrical equipment
- Applying applicable installation codes
- Analyzing and reducing the hazards involved in performing electrical work
- Installing and configuring batteries
- Selecting and using Personal Protective Equipment (PPE)

No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

1. **Before using the inverter, read all instructions and cautionary markings on the unit, the batteries, and all appropriate sections of this manual.**
2. Use of accessories not recommended or sold by the manufacturer may result in a risk of fire, electric shock, or injury to persons.
3. The inverter is designed to be permanently connected to your AC and DC electrical systems. The manufacturer recommends that all wiring be done by a certified technician or electrician to ensure adherence to the local and national electrical codes applicable in your jurisdiction.
4. To avoid a risk of fire and electric shock, make sure that existing wiring is in good condition and that wire is not undersized. Do not operate the inverter with damaged or substandard wiring.
5. Do not operate the inverter if it has been damaged in any way.
6. This unit does not have any user-serviceable parts. Do not disassemble the inverter except where noted for connecting wiring and cabling. See your warranty for instructions on obtaining service. Attempting to service the unit yourself may result in a risk of electrical shock or fire. Internal capacitors remain charged after all power is disconnected.
7. To reduce the risk of electrical shock, disconnect both AC and DC power from the inverter before attempting any maintenance or cleaning or working on any components connected to the inverter. Putting the unit in Standby mode will not reduce this risk.
8. The inverter must be provided with an equipment-grounding conductor connected to the AC input ground.
9. Do not expose this unit to rain, snow, or liquids of any type. This product is designed for indoor use only. Damp environments will significantly shorten the life of this product and corrosion caused by dampness will not be covered by the product warranty.
10. To reduce the chance of short-circuits, always use insulated tools when installing or working with this equipment.
11. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with electrical equipment.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Never operate energized with covers removed
- Energized from multiple sources. Before removing covers identify all sources, de-energize, lock-out, and tag-out and wait 2 minutes for circuits to discharge
- Always use a properly rated voltage sensing device to confirm all circuits are de-energized.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Batteries can present a risk of electric shock and high short-circuit current. The following precautions must be observed when working with batteries:

- Remove watches, rings or other metal objects.
- Use tools with insulated handles.
- Wear protective glasses, gloves and boots.
- Do not lay tools or other metal parts on top of batteries.
- Disconnect the charging source prior to connecting or disconnecting battery terminals.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Battery Circuit Breakers must be installed according to the specifications and requirements specified by Schneider Electric.
- Servicing of batteries must only be performed by qualified personnel and the required precautions. Keep unqualified personnel away from batteries.

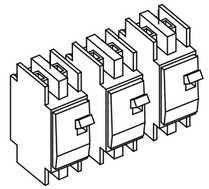
Failure to follow these instructions will result in death or serious injury.

Contact Information

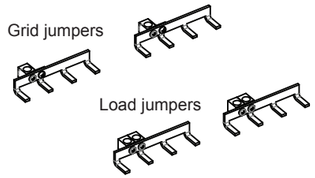
www.schneider-electric.com

Please contact your local Schneider Electric Sales Representative or visit the Schneider Electric website at: http://www.SEsolar.com

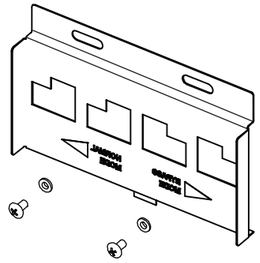
B Materials List



3 x 2-pole, 60 Amp 120/240 VAC circuit breakers (Square D QOU260)



2 x 4-tab power distribution jumpers for connecting an additional inverter/charger to the utility grid and AC loads. These replace factory-installed 2-tab jumpers.



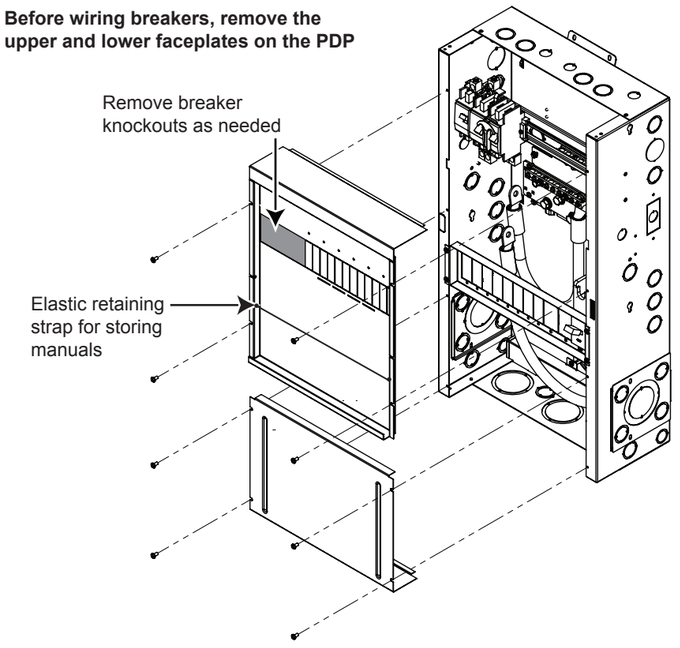
Bypass interlock plate and mounting hardware

Installer Provided Tools and Materials:

- Phillips head screwdriver
- Slotted head screwdriver
- Metal hacksaw to cut jumpers for triple inverter installations

C Removing the PDP Upper Faceplate

Before wiring breakers, remove the upper and lower faceplates on the PDP

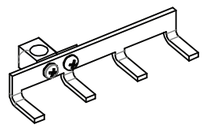


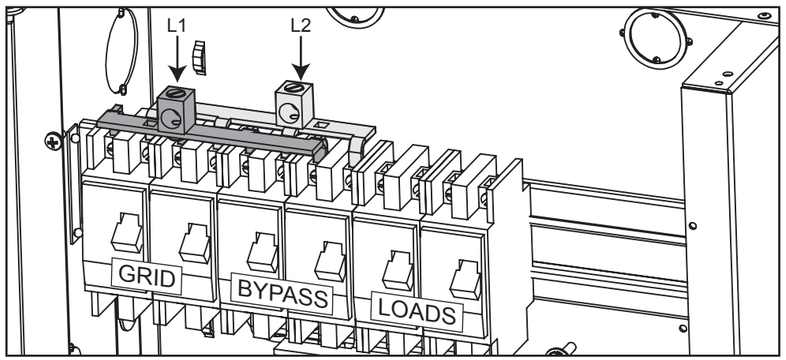
D Power Distribution Jumpers

Installation for 2 Parallel Inverter/Chargers with Bypass

1 Install the grid jumpers

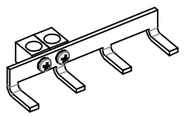
1. Install the L1 grid jumper starting at the first GRID breaker slot (position L1), facing FRONT to prevent the overlap of L1 and L2 terminals and potential shorting.
2. Install the L2 grid jumper in the second GRID breaker slot (position L2), facing REAR.
3. Tighten screws according to breaker manufacturer recommended torque values.

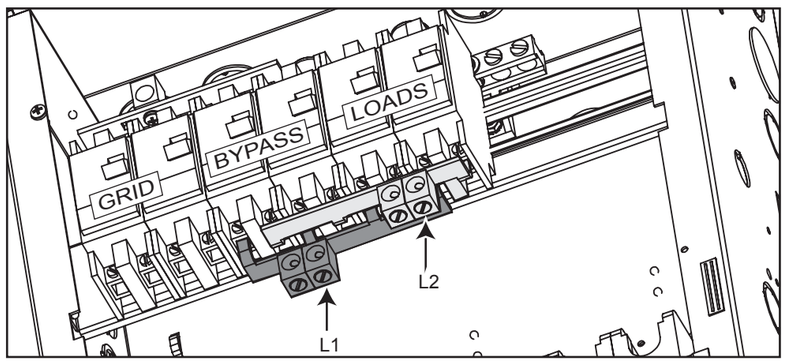




2 Install the load jumpers

1. Install the L1 load jumper starting at the first BYPASS breaker slot (position L1), facing REAR.
2. Install the L2 load jumper in the second BYPASS breaker slot (position L2), facing FRONT.
3. Tighten screws according to breaker manufacturer recommended torque values.



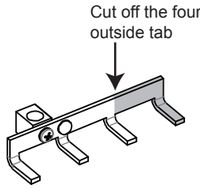


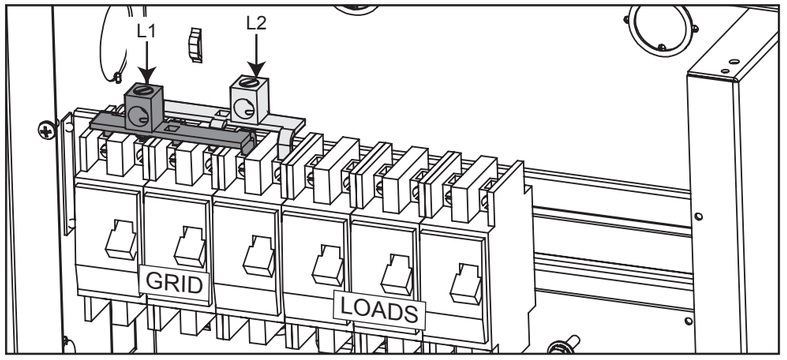
D Power Distribution Jumpers

Installation for 3 Parallel Inverter/Chargers without Bypass

1 Install the grid jumpers

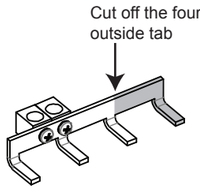
1. Install the L1 grid 3-tab jumper starting at the first GRID breaker slot (position L1), facing FRONT to prevent the overlap of L1 and L2 terminals and potential shorting.
2. Install the L2 grid 3-tab jumper in the second GRID breaker slot (position L2), facing REAR.
3. Tighten screws according to breaker manufacturer recommended torque values.

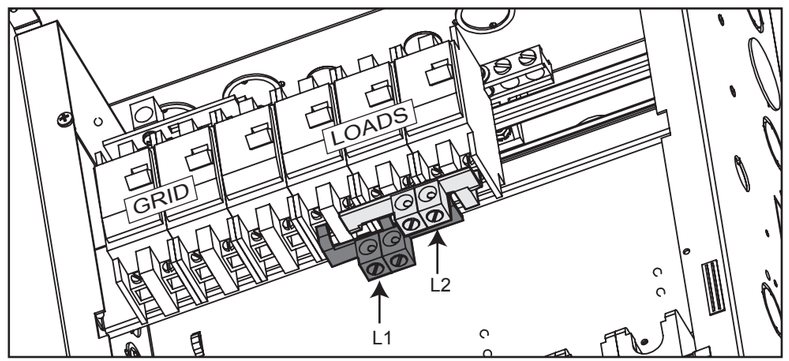




2 Install the load jumpers

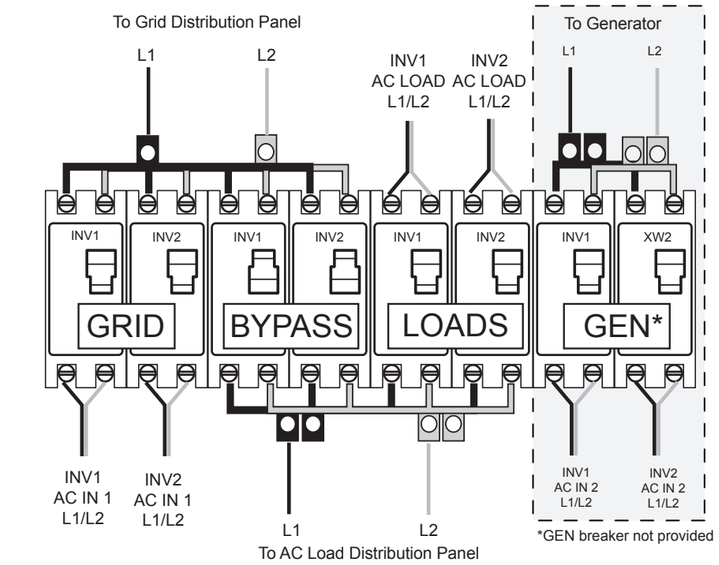
1. Install the L1 load 3-tab jumper starting at the first LOADS breaker slot (position L1), facing REAR.
2. Install the L2 load 3-tab jumper in the second LOADS breaker slot (position L2), facing FRONT.
3. Tighten screws according to breaker manufacturer recommended torque values.





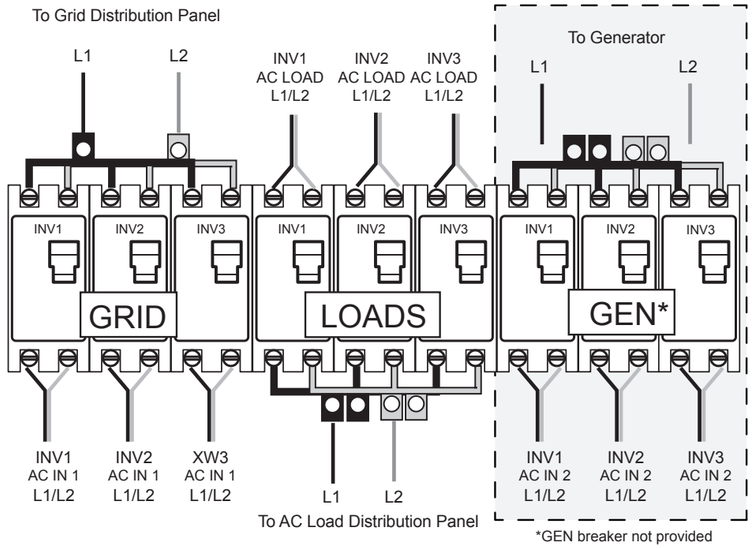
E AC Breaker Wiring

Wiring for 2 Inverter/Chargers



Wiring for 3 Inverter/Chargers

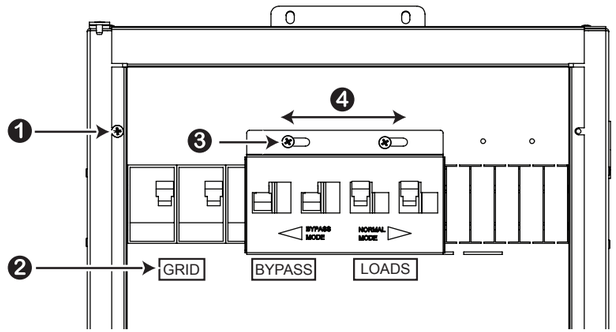
NOTE: Connecting three inverter/chargers requires one Conext XW+ 120/240V Breaker Kits, or the appropriate number of third party AC breakers and jumpers. Generator breakers are not provided.



For additional information and AC wiring diagrams, see the *Conext XW+ Inverter/Charger Installation Guide*.

F Bypass Interlock Plate

Installing the Bypass Plate for 2 Inverter/Chargers



1. Replace the upper and lower faceplates on the PDP. Do not over-tighten the screws.

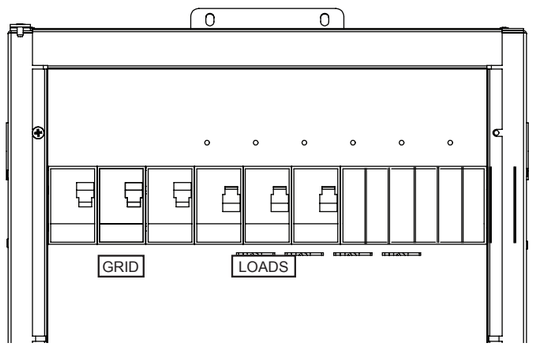
2. Attach the breaker labels supplied with the PDP.

3. Place the bypass interlock plate over the BYPASS and LOAD breakers and secure with the screws and washers provided.

4. **Normal position:**
   Slide the plate to the right to turn the LOAD breakers on.

   Bypass position:
   Slide the plate to the left to turn the BYPASS breakers on.

Bypass Plate Not Required for 3 Inverter/Chargers



The diagram shows the upper faceplate on a PDP wired for split phase (120/240V) with three inverter/chargers. Note the bypass interlock plate is not required.

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Insight Energy Management

for solar and storage systems

Powerful yet simple, Insight is Schneider Electric's energy management ecosystem for solar & storage. It provides intuitive mobile and web-browser based interfaces for homeowners and professionals alike.

Take command

- Take control of your energy management decisions, such as which energy source you use at different times of the day
- Optimize energy consumption based on time of use rates and demand charges

Flexible

- Built-in wireless access point (WAP) connectivity for easy configuration(wirelessly connect a laptop or mobile device)
- Built-in wireless station mode for connection to a local area network
- Li-ion battery integration for flexible design and easier configuration

Easy to service

- Upgrade InsightHome, InsightFacility and other Schneider Electric solar & storage devices' firmware through Insight mobile or web apps
- Remotely manage system settings and firmware updates from InsightCloud or InsightMobile App

Insight for homeowners

- Access from anywhere via cloud, local or mobile apps
- Monitor energy production and consumption in real-time
- See your money-savings and reduction in carbon emissions

Insight for professionals

- Manage your portfolio of installations at your fingertips
- Reduce site visits by 50% thanks to the powerful remote management features
- Simplify solar and storage system configuration using web-based or Modbus

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InsightHome and **Insight**Facility

	InsightHome	**Insight**Facility
		
Monitoring and Control		
Monitor through local network	●	●
Monitor from anywhere using InsightCloud or InsightMobile app	●	●
System commissioning (startup) local and anywhere	●	●
Access to live and historical data	●	●
Firmware		
Remote firmware update	●	●
Network		
Wireless LAN	Intermediate range	Long range
Xanbus & Modbus		
Number of Xanbus port	1	2
Number of Modbus port	1	2
Powered by Xanbus network	●	●
Modbus 485	●	●
Physical Specifications		
Mounting method	Wall mounting	DIN rail
System Size		
Installation size	Up to 25.5 kW Storage	Up to 3 MW Solar or 50 kW Storage

Technical Specifications

	InsightHome	InsightFacility
Electrical Specifications		
Power consumption	2 W average / 10 W peak	2 W average / 10 W peak
Xanbus	When connected to Conext XW Pro / SW, MPPT 100 600 or MPPT 80 600 providing network power	When connected to Conext XW Pro / SW, MPPT 100 600 or MPPT 80 600 providing network power
AC/DC adapter (option)	Input: 100-240V AC, 50-60Hz, 0.48A, Output: 12V DC, 1.6A, 5.5mm outer, 2.1mm center-positive jack * A SELV adapter is required.	Input: 100-240V AC, 50-60Hz, 0.6A, Output: 12V DC, 1.5A, 5.5mm outer, 2.1mm center-positive jack * A SELV adapter is required.
Physical Specifications		
Part number	865-0330	865-0335
Product weight	220 g (0.5 lb)	330 g / 0.73 lb
Product dimensions (W × H × D)	132 x 75 x 41 mm / 5.2 × 3.0 × 1.6 inches	137 x 130 x 48 mm / 5.4 × 5.1 × 1.9 inches
Shipping package weight	480 g / 1.1 lbs	724 g / 1.6 lb
Shipping package dimensions (W x H x D)	158 × 158 × 188 mm / 6.2 × 6.2 × 7.4 inches	190 × 158 × 100 mm / 7.5 × 6.2 × 3.9 inches
Housing / mounting system	ABS Plastic / Wall mounting	ABS Plastic / DIN rail
IP rating / mounting location	IP 20, NEMA 1, Indoor only	IP 20, NEMA 1, Indoor only
Status display	1 x LEDs	3 x LEDs
Temperature	Operating: 32 to 113 °F / 0 to 45 °C Storage: -40 to185 °F / -40 to 85 °C	Operating: -4 to 122 °F / -20 to 50 °C Storage: -40 to 185 °F / -40 to 85 °C
Humidity	Operating: < 95%, non-condensing Storage: <95%	Operating: < 95%, non-condensing Storage: <95%
Features		
Programmable dry contact relay	Screw 3-terminal, 16-24 AWG, NC-Com-NO, Form: Class 2, 24 V DC, 4 A max SELV input only	
Graphical user interface	Internet browser	
Remote firmware upgrades	Yes	
Max. number of Xanbus devices	Up to 6 units for XW Pro (4 in parallel or 6 in 3-phase)	
Regulatory		
EMC immunity	EN61000-6-1	
EMC emissions	EN61000-6-3, FCC Part 15 Class B, Ind. Canada ICES-003 Class B	
Substances / environmental	RoHS	
Compatible Products Part Numbers		
Storage inverters UL (120/240V)	XW Pro (865-6848-21), SW 4024 (865-4024-21), SW 4048(865-4048-21)	
Storage inverters IEC (230V)	XW Pro (865-8548-55), XW+ (865-8548-61), SW 4024 (865-4024-55), SW 4048(865-4048-55)	
String inverters EMEA, APAC	CL-60E (PVSCL60E), CL36 (PVSCL36E), CL33 (PVSCL33E), CL50 (PVSCL50E)	
String inverters Australia	CL30 (PVSCL30E), CL50 (PVSCL50E)	
MPPT Charge Controllers	MPPT 100 600 (865-1034), MPPT 80 600 (865-1032), MPPT 60 150 (865-1030-1)	
Accessories	System Control Panel (865-1050), Automatic Generator Start (865-1060), Battery Monitor (865-1080-01)	

DS20210512_InsightHome and InsightFacility.indd

enel x

JUICEBOX® 40

Residential Charging Stations

Charge forward with the best-selling smart home charging station

JuiceBox 40, the best-selling smart home charging station, combines speed, performance and value. Enjoyed by thousands of satisfied EV drivers, it delivers all the safety and smart charging features you need to make home charging easy, reliable and cost-effective.

JuiceBox is the only line of charging stations that affords both direct user control and smart grid optimization, accessible through our software platform, JuiceNet®.

- Control charging anywhere, anytime via our mobile app and web portal
- Reduce your energy costs by scheduling charging when rates are low
- Select a cleaner electricity mix to reduce your emissions (in applicable geographies)
- Participate in smart grid programs to further lower the cost of owning and driving your EV (in applicable geographies)

Why JuiceBox?

Up to 7x Faster Charging

Spend less time waiting for your EV to charge and more time enjoying the drive

Powered by JuiceNet

Monitor and schedule charging with intuitive mobile app & web portal to save time and money

Easy to Use and Install

Small, lightweight enclosure; lockable, quick-release mount; weatherproof for indoor/outdoor installation.

Universal Compatibility

SAE-J1772™ plug ensures compatibility with all EVs*

Cleaner Driving

Optimize charging times and participate in smart grid programs to reduce emissions; ENERGY STAR®-certified†

See Charger Status

Dynamic LED lights display WiFi connectivity and charging behavior

*Tesla requires adapter

JuiceBox® 40 Specifications

Electrical Characteristics	› Power: 40A, 9.6 kW maximum (adjustable) › Single phase input: nominal voltage 208/240 VAC, voltage range 177 – 264 VAC
Input Cable & Plug	› 2.3 ft (0.7 m) with NEMA 14-50 plug › 2.3 ft (0.7 m) UL-rated hardwire conduit & wiring
Output Cable & Connector	› 25 ft cable › J1772 standard compliant
JuiceNet® App	› Precision measurement of power, energy, voltage & current › Automatic notifications: time-of-use in effect, start of charge, end of charge, unit offline, unit back online, car needs to be plugged in to charge › Web-based portal for desktop access › See JuiceNet app data sheet for more on convenient features
Smart Grid Connectivity	› Built-in WiFi Connectivity (802.11 b/g/n 2.4 GHz)
Firmware	› End-to-end AES-256-based encrypted protocols › 90-day, 15-minute interval data storage › Over-the-air (OTA) upgradeable firmware › Persistent data storage upon power interruption
Emissions Reduction	› Available via optional JuiceNet Green software upgrade
Enclosure	› Dynamic LED lights show charging status: network connectivity, charging in progress, delaying charging, standby › Weatherproof, dust-tight, polycarbonate enclosure: NEMA 4X › Quick-release wall mounting bracket included › Built-in security lock and integrated cable management › Operating Temperature: -40°F to 140°F (-40°C to 60°C)
Weight & Dimensions	› Main enclosure: H: 18.5 in (469 mm) x W: 6.8 in (173 mm) x D: 5.8 in (147 mm) › 15 lbs (6.8 kg)
Codes & Standards	› FCC Part 15 Class B, NEC 625 compliant, ENERGY STAR®† › OpenADR 2.0b compliant
Safety	› UL and cUL Listed
Warranty	› 3-year limited product warranty (parts only) for use under normal residential operating conditions
Made in USA	› From domestic & imported parts

2020.01.16

†Certification pending

evcharging.enelx.com/contact

Customer Support +1-844-584-2329
Commercial Sales +1-844-885-5850

EnelXChargingNA
enelxnorthamerica

Enel X
EnelXChargingNA

BATTERY-BOX PREMIUM LVL (2021)

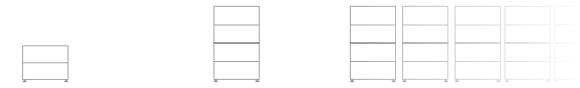
- Scalable from 15.4 to 983 kWh
- Compatible with 1 and 3 Phase Inverters
- Cobalt Free Lithium Iron Phosphate (LFP) Battery: Maximum Safety, Life Cycle, and Power
- Capable of High-Powered Back-up and Off-Grid Function
- Space Saving via the Ability to Stack 2 Premium Batteries
- Add Additional Batteries in Parallel to Expand the System

BATTERY-BOX PREMIUM LVL (2021)

The BYD Battery-Box Premium LVL is a lithium iron phosphate (LFP) battery for use with an external inverter.

Thanks to its control and communication unit (BMU), the Battery-Box Premium LVL scales to meet the project requirements, no matter how large they may be. Start with Battery-Box Premium LVL15.4 (15.36 kWh) and extend later to 983 kWh using parallel interconnection of up to 64 batteries.

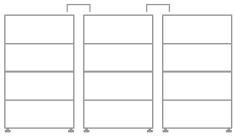
The version LVL (2021) is fully compatible with older LVL versions and brings additional advantages like an even easier installation.



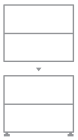
LVL15.4 | 2 x LVL15.4 | 64 x LVL15.4

FLEXIBLE, EFFICIENT, SIMPLE

Easy Installation
With Easy Transportation



15.4 - 983 kWh
Tailored Sizing for Each Application



Extend Anytime
Easily Adapts to New Requirements

High Power
Power for Every Application

TECHNICAL PARAMETERS **PREMIUM LVL (2021)**

	LVL15.4 (2021)
Number of Modules	2
Usable Energy [1]	15.36 kWh
Max Cont. Output Current [2]	250 A
Peak Output Current [2]	375 A, 5 s
Dimensions (H/W/D)	660 x 650 x 575 mm
Weight	168 kg
Nominal Voltage	51.2 V
Operating Voltage	40-57.6 V
Operating Temperature	-10 °C to +50°C
Battery Cell Technology	Lithium Iron Phosphate (cobalt-free)
Communication	CAN/RS485
Enclosure Protection Rating	IP20
Round-trip Efficiency	≥95%
Scalability	Max. 64 in Parallel (983 kWh)
Certification	IEC62619 / CE / CEC / UN38.3
Applications	ON Grid / ON Grid + Backup / OFF Grid
Warranty [3]	10 Years
Compatible Inverters	Refer to BYD Battery-Box Premium LVL Minimum Configuration List

[1] DC Usable Energy, Test conditions: 100% DOD, 0.2C charge & discharge at + 25 °C. System usable energy may vary due to system configuration parameters.
[2] Charge derating will occur between -10 °C and +5 °C
[3] Conditions apply. Refer to BYD Battery-Box Premium Limited Warranty Letter.