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INSTALLATION MANUAL

Sol-Ark Optimization Rapid Shutdown System

0900-80V**TX 12K-A**

V2.0

July, 2023







READ THE INSTRUCTIONS COMPLETELY BEFORE OPERATING THE EQUIPMENT



Verify that the inverter is turned off before installing the TX 12K-A.



To use the TX 12K-A transmitter in the Sol-Ark 12K-2P-N a battery system is required.

LEGAL WARNING

UNLESS AGREED TO IN WRITING, SOL-ARK:

(a) DOES NOT WARRANT 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 ANY LOSS OR DAMAGES, WHETHER DIRECT, INDIRECT, CONSEQUENTIAL, OR INCIDENTAL, ARISING OUT OF THE USE OF SUCH INFORMATION. USE OF SUCH INFORMATION SHALL BE ENTIRELY AT THE USER'S RISK.

Sol-Ark is not responsible for system failure, damage or injury resulting from improper installation of its products.

Information in this manual is subject to change without notice.

This version is only focused on O900-80V optimizers and TX 12K-A transmitters.

SAFETY INSTRUCTIONS

- Familiarize yourself with the functions and features by thoroughly reviewing the contents of this manual.
- This manual provides detailed instructions on the product functions, installation process, and operation of the O900-80V in conjunction with the PLC TX 12K-A transmitter. Prior to installation and use, please ensure a comprehensive understanding of this product.
- **Caution: Risk of electric shock!** Avoid removing the cover, disassembling, or repairing internal components of the equipment. In the event of equipment failure, contact Sol-Ark Technical Support. Tampering or opening the product will void the warranty.
- Adhere to local codes and regulations when performing electrical installations.
- DO NOT disconnect the PV module from the O900-80V while it is under load.
- Take note that the body of the TX 12K-A transmitter board is susceptible to static shock. It is recommended to wear an antistatic wrist strap before touching the body of the TX 12K-A board.
- Avoid installing the equipment in adverse weather conditions.
- Exercise caution as the O900-80V in operation contains a heat sink that can reach high temperatures. To prevent burns, refrain from touching the area where the heat sink is located.
- For the latest product information and access to technical support documents, visit the official Sol-Ark website at www.sol-ark.com and download the most recent version of the user manual.
- To comply with rapid shutdown requirements, it is necessary to install an emergency button connected to pins 11 and 12 of the sensor pin-out board in the Sol-Ark 12K-2P-N. This will enable the "EMERGENCY STOP" functionality.

To enhance safety during the installation and operation of the Sol-Ark O900-80V optimizer and TX 12K-A transmitter, this document employs specific symbols to denote hazardous conditions and provide important safety instructions. These symbols are included to mitigate the risk of electric shock and ensure a secure environment.



A dangerous situation that could result in injury or product damage.



Important operating notes.

The following symbols appear on the O900-80V optimizers.



Risk of electric shock.



Risk of burns.

PROPERLY QUALIFIED PERSONNEL

Operators/maintenance personnel must have relevant electrical knowledge, understand circuit principles, and have a sense of safe operation.

In this manual, a "qualified person" refers to an individual who possesses knowledge and expertise in EMC, electrical systems, and safety regulations. They are authorized to perform tasks such as energizing, grounding, and labeling equipment, systems, and circuits in compliance with established safety protocols.

CONTENT

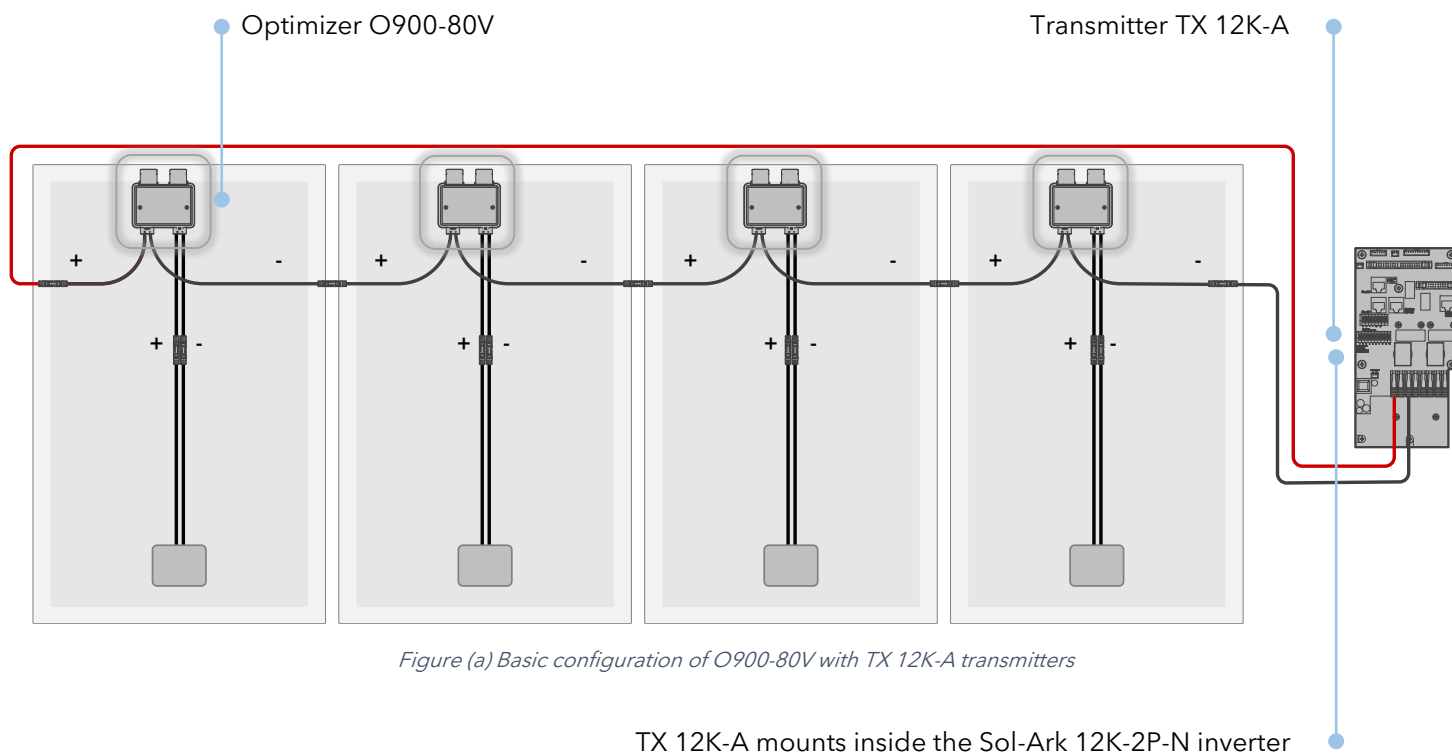
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SYSTEM OVERVIEW

The Sol-Ark Rapid Shutdown System with Optimization incorporates the O900-80V optimizers and the TX 12K-A transmitter, seamlessly integrated into the Sol-Ark 12K-2P-N inverters. This system is designed to provide a PV Rapid Shutdown System (PVRSS) that is UL listed and compliant with NEC regulations for both new and existing PV systems.

By deactivating the TX 12K-A transmitter, the O900-80V receivers will reduce the voltage to 0.9 VDC per O900-80V and bring the string voltage below 30 VDC.

Furthermore, in addition to facilitating Rapid PV Shutdown (PVRSS), the O900-80V optimizers offer the advantage of power optimization for each PV module, serving as independent maximum power point trackers.



The integration of the TX 12K-A transmitter into the Sol-Ark 12K-2P-N inverter streamlines the installation of the PV Rapid Shutdown System (PVRSS). With this integration, the strings equipped with O900-80V optimizers can be directly connected to the PV inputs on the inverter, simplifying the overall installation process.

1. PRODUCTS

O900-80V



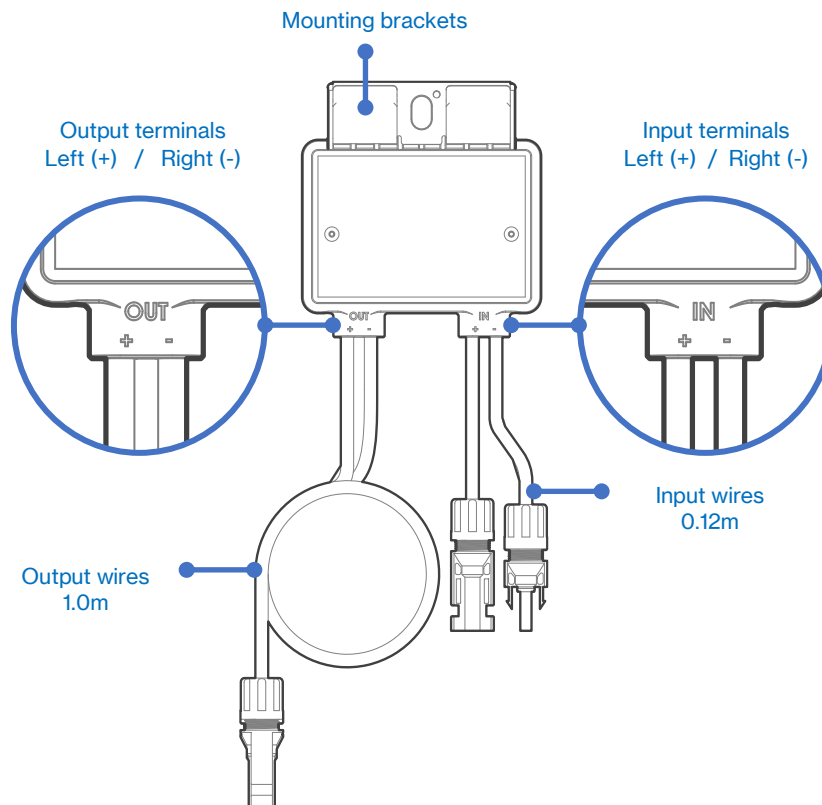
- Maximum production efficiency towards the inverter in optimal or shady conditions
- SunSpec RSD certified for interoperability with compatible inverters
- Complies with rapid shutdown listed in 2017 NEC 690.12 and 2020 NEC 690.12

Characteristics:

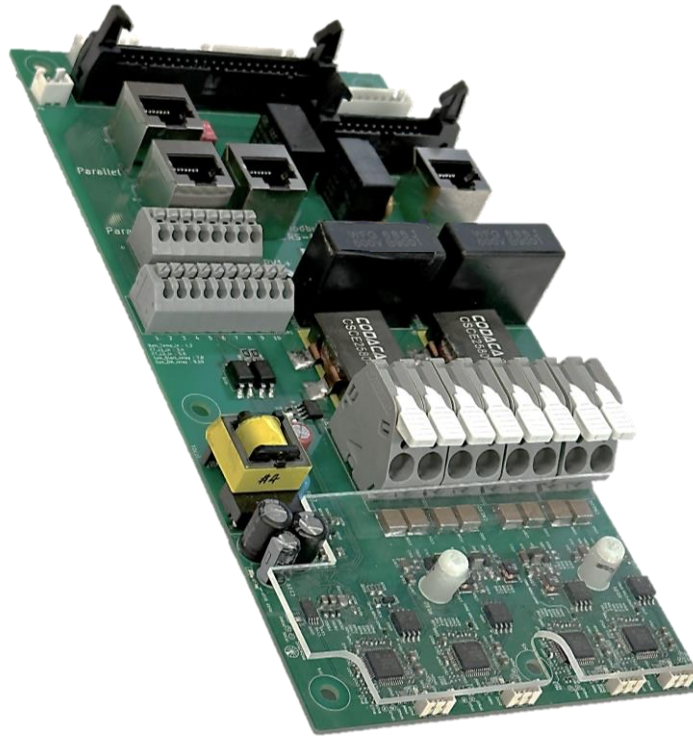
The Sol-Ark O900-80V incorporates advanced features including PV module Rapid Shutdown Device (RSD) and Maximum Power Point Tracking (MPPT) energy optimization.

Each PV module can be connected to the O900-80V to ensure compliance with UL 1741 and NEC 690.12 requirements for Rapid Photovoltaic Shutdown (RSD). The O900-80V compensates for shaded panels to maintain optimal power output.

Upon receiving a "clear to operate" signal from the TX 12K-A or TX 15K-A transmitters, the O900-80V is activated, enabling proper operation of the PV system.



TX 12K-A



- Provides "permission to operate" signal for Rapid Shutdown
- SunSpec Rapid Shutdown Certification
- Complies with rapid shutdown listed in 2017 NEC 690.12 and 2020 NEC 690.12
- No need to add cores for PLC communication

Characteristics:

Sol-Ark TX 12K-A transmitters are part of the Rapid Shutdown Line, located inside Sol-Ark 12K-2P-N inverters.

When paired with the Sol-Ark O900-80V or any other SunSpec-RSD certified device, the TX 12K-A transmitters use Power Line Communication (PLC) to provide the necessary "permission to operate" signal, ensuring compliance with Rapid Shutdown requirements outlined in the 2017 and 2020 NEC 690.12 specifications.

These transmitters can be easily installed in existing, previously commissioned Sol-Ark 12K-2P-N inverters without the need for additional toroids or external PLC equipment, as the transmitter is integrated into the MPPT board of the inverter.

2. INSTALLATION NOTES

It is essential to adhere to local safety codes during the installation process:

- Please note that only qualified professionals should handle the installation or replacement of the TX 12K-A transmitter.
- Before installing or using the TX 12K-A, carefully read and follow all instructions and warnings provided in the technical documents and on the Sol-Ark 12K-2P-N inverter, as well as on the PV array.
- Keep in mind that installing this equipment carries the risk of electric shock.
- Avoid contact with any live component of the system, including the PV array, once it is connected to the grid.
- Prior to installing a TX 12K-A, ensure that both the PV module and inverter are disconnected from their power sources.

sources.



When implementing parallel string connections, it is crucial to follow these guidelines:

Install O900-80V optimizers on all parallel strings if required.

Avoid creating parallel connections between strings that have the O900-80V optimizers and those that do not.

Recommended Practices

- Ensure that the round-trip length (positive to negative) of a PV conductor does not exceed 300m (985ft).
- Maintain a minimum distance of 20cm (8in) between other conductors that utilize different PLC transmitters.
- The maximum open circuit voltage of the PV module should not surpass the specified maximum input voltage of the O900-80V.

Once you have installed the TX 12K-A transmitter into the Sol-Ark 12K-2P-N inverter, it is essential to also connect a NEC 690.12 (C) approved "emergency stop" RSS quick disconnect to pins 11 and 12 on the sensor connection board of the Sol-Ark 12K-2P-N.



Place the Rapid Shutdown System label no more than 1m (3 feet) from the igniter or any emergency stop switch.

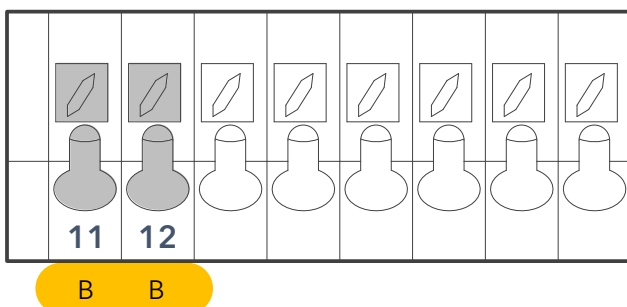


Figure (2.1) Terminal board for sensors on the Sol-Ark 12K-2P-N

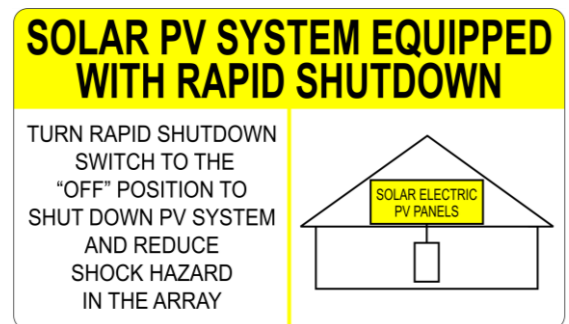


Figure (2.2) Rapid Shutdown System Label, NEC 690.12 (C)

3. INSTALLING THE OPTIMIZER O900-80V

Installation procedure

STEP 1: Remove the barcode label.

Please remove the QR/barcode label and affix it to the "Installation Map Card" found at the back of this manual. For convenient access to the most up-to-date product information, you can locate the Installation Map Card on our official Sol-Ark website: www.sol-ark.com.

1. Each Sol-Ark O900-80V is equipped with a labeled barcode and unique serial number. Remove the label from each optimizer and affix it to the designated spot on the installation map.
2. Clearly mark the MPPT where each string of the photovoltaic array is connected.
3. Ensure the registration of the O900-80V optimizers is completed on the www.mysol-ark.com portal for monitoring purposes. Additionally, remember to register the equipment warranty on the www.sol-ark.com website.

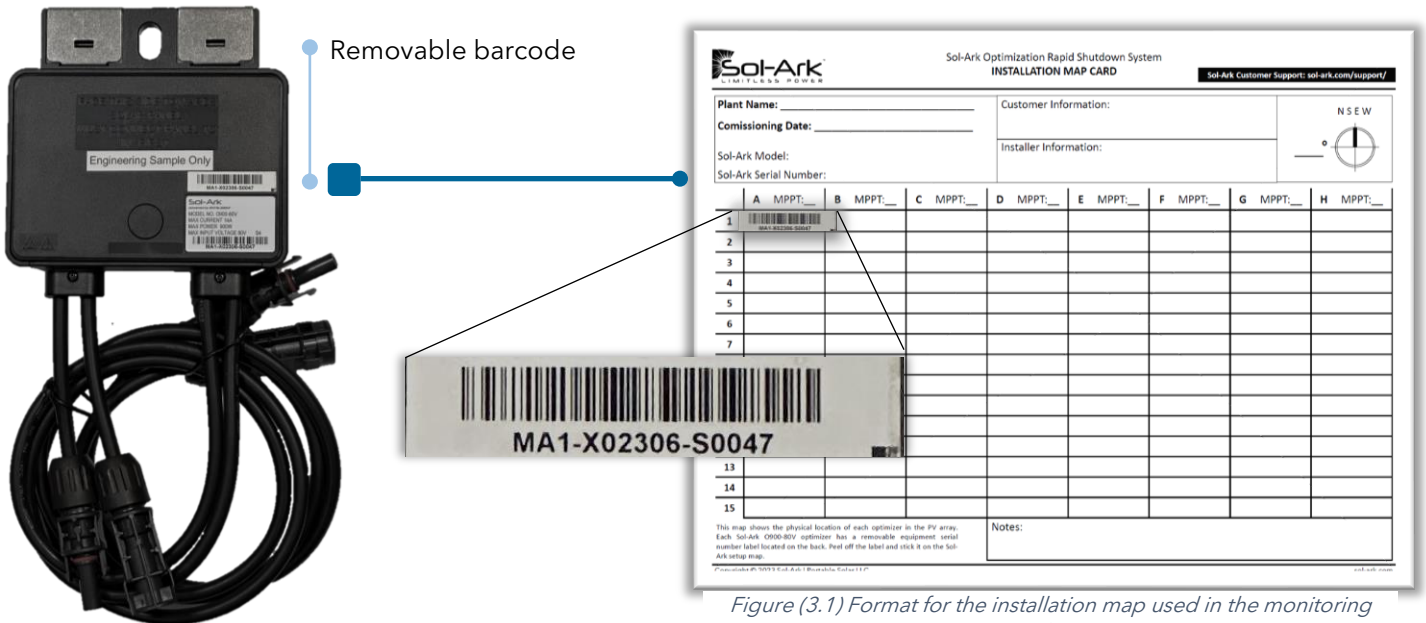


Figure (3.1) Format for the installation map used in the monitoring programming process.

Please complete the Sol-Ark registration card, which includes system information and the installation map. If a larger or more complex installation map is needed, you can use your own layout. The Installation Map Card is designed to accommodate landscape-oriented labels.

To learn more about programming in the MySol-Ark app, please consult the Sol-Ark Rapid Shutdown System with Optimization Programming and Monitoring Guide available at www.sol-ark.com/resources.

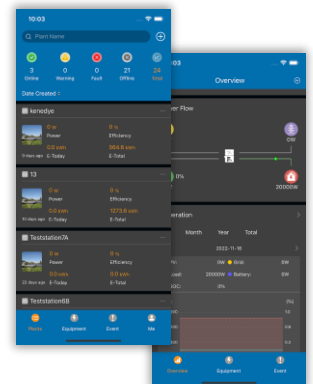


Figure (3.2) Views of the MySol-Ark App

STEP 2: Secure each O900-80V to the solar panel frame.

Ensure that the O900-80V module is securely fastened to the solar panel frame. The heat sink side should face away from the solar module, and make sure that the wires and connectors of the O900-80V do not come into contact with the roof surface.

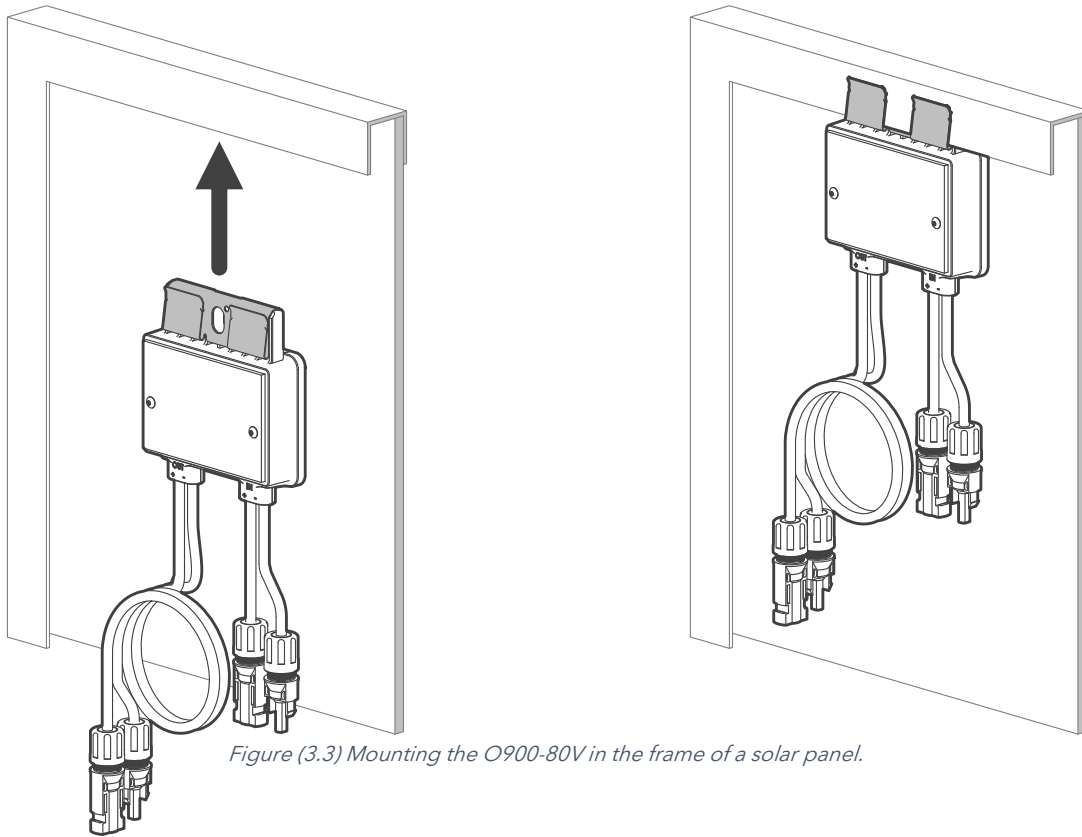


Figure (3.3) Mounting the O900-80V in the frame of a solar panel.



Ensure that the O900-80V is not positioned in direct sunlight, exposed to rain or snow, or placed between solar modules.

Maintain a minimum gap of 1.5cm (0.75in) between the surface of the solar panel and the bottom of the O900-80V to facilitate adequate airflow.



Before installing the O900-80V on the PV module frame, verify the dimensions to ensure proper space for natural ventilation.

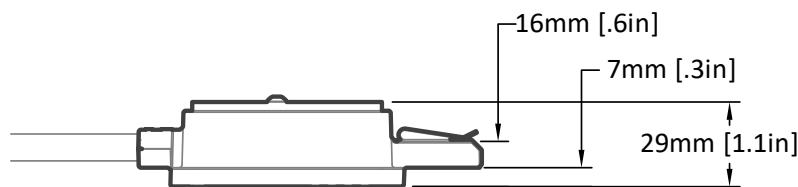
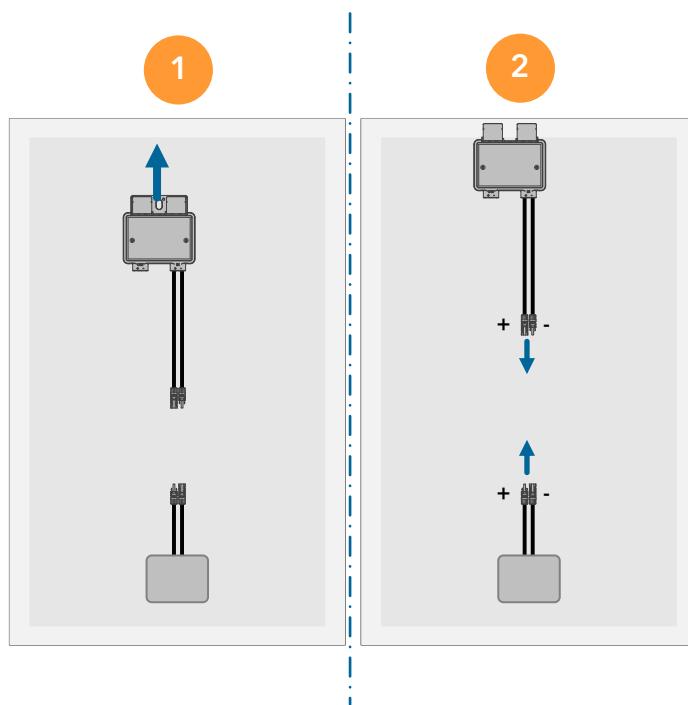


Figure (3.4) Side view of the O900-80V with the measurements of its sides, not including the cables and connectors.

STEP 3: Connect the shorter cables to the PV modules.

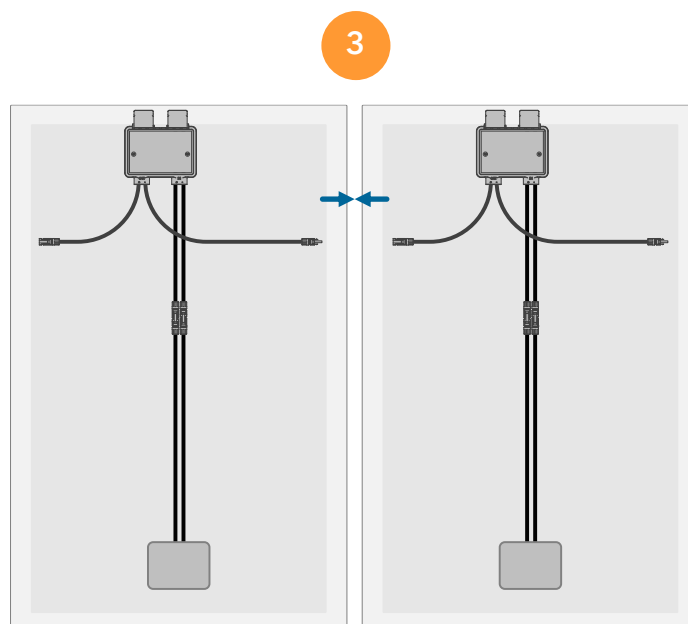
Connect the input terminals of each O900-80V module to the positive and negative wires respectively of each of the solar panels.



To prevent damage to the O900-80V units, ensure that you connect the shorter input cables from the O900-80V to the PV modules before connecting them to the remaining O900-80V units in the string series.

STEP 4: Connect the longer wires to build a string.

To create a string, connect the longer set of output cables from the O900-80V to the neighboring optimizer.



Mounting the O900-80V on specialized solar modules

To mount the O900-80V on a frameless PV module, screws, and nuts (not included) can be used in addition to the support clip. Prior to installation, ensure that the solar panel has a hole for this purpose or the mounting rail.

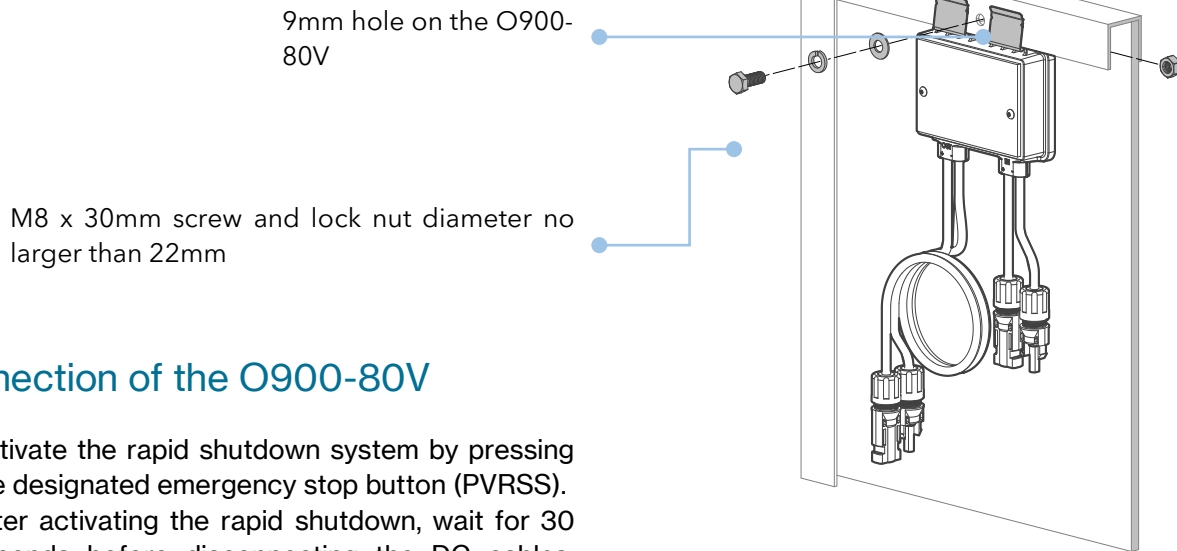
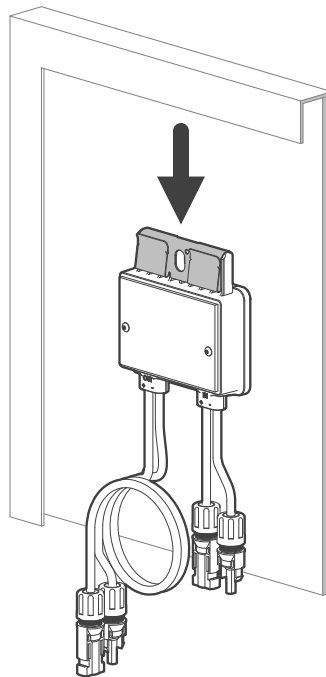


Figure (3.5) Mounting the O900-80V using screws and nuts for mounting.

Disconnection of the O900-80V

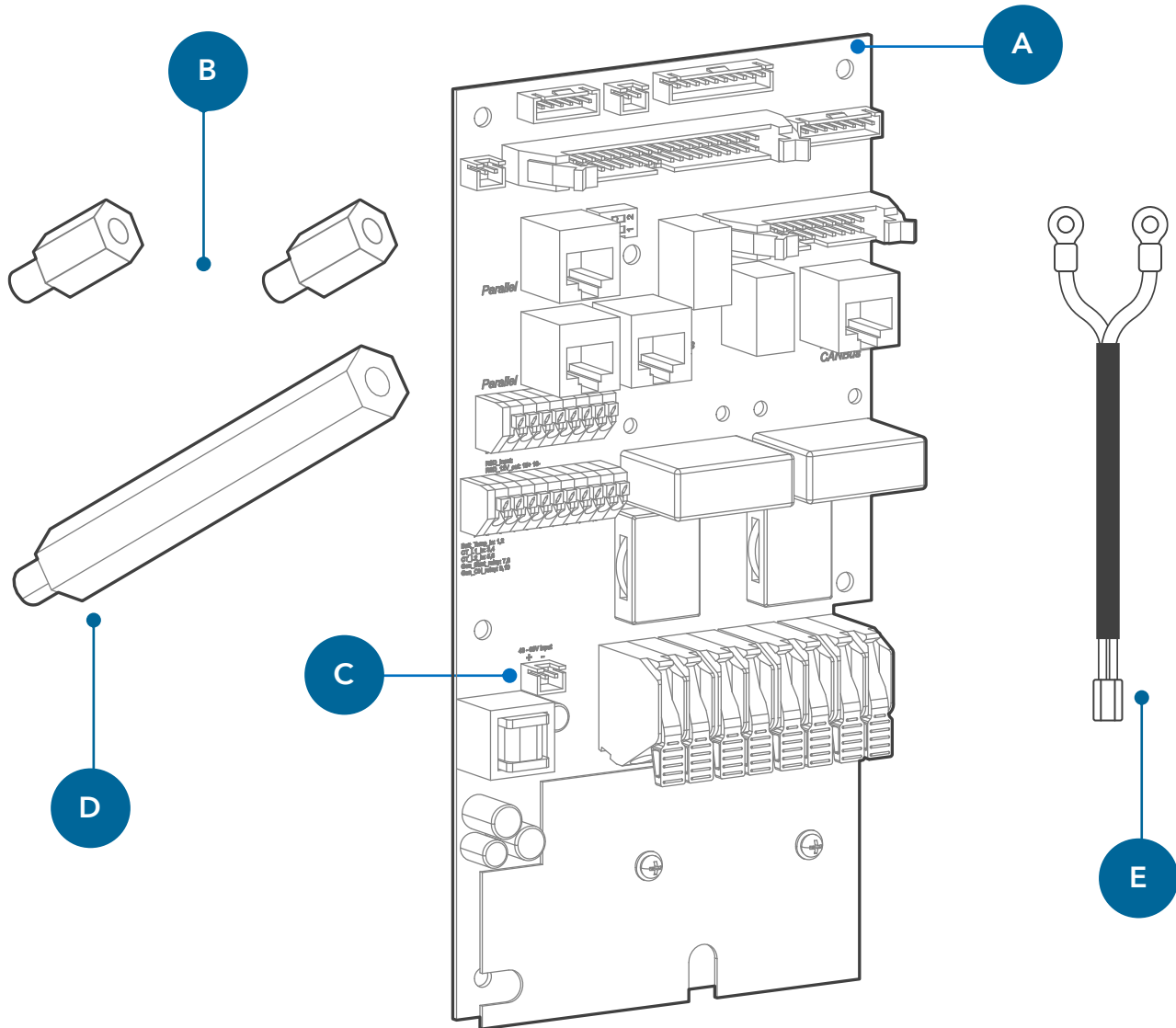
- Activate the rapid shutdown system by pressing the designated emergency stop button (PVRSS).
- After activating the rapid shutdown, wait for 30 seconds before disconnecting the DC cables. Ensure that the voltage is below 30V.
- Before disconnecting the O900-80V input wires from each module's junction box, first disconnect the individual O900-80V output wires from the string.



Always assume that the O900-80V is energized and in the "ON" state of operation.

4. INSTALLATION OF THE TRANSMITTER TX 12K-A

Parts and components



Component	Description
A	Transmitter TX 12K-A
B	2 x 10mm standoffs
C	Connector to 48VDC power supply
D	50mm standoff
E	Power cable for the TX 12K-A



If the TX 12K-A transmitter is already installed in your Sol-Ark 12K-2P-N inverter, please proceed to **page 20** to continue with the installation of the rapid shutdown label on the system.

Installation procedure

The PLC TX 12K-A transmitter will be installed in the wiring area of the Sol-Ark 12K-2P-N inverter. By default, the inverter comes with a pre-installed "CON board" that facilitates communication with other components of the inverter. To install the TX 12K-A, the CON board is replaced with the new TX 12K-A board.

Once the TX 12K-A is installed, the Sol-Ark 12K-2P-N gains SunSpec capabilities, allowing it to send a "permission to operate" signal to the O900-80V optimizer receivers through PLC. The system will operate normally until the signal is disrupted.

STEP 1: Access the wiring area.

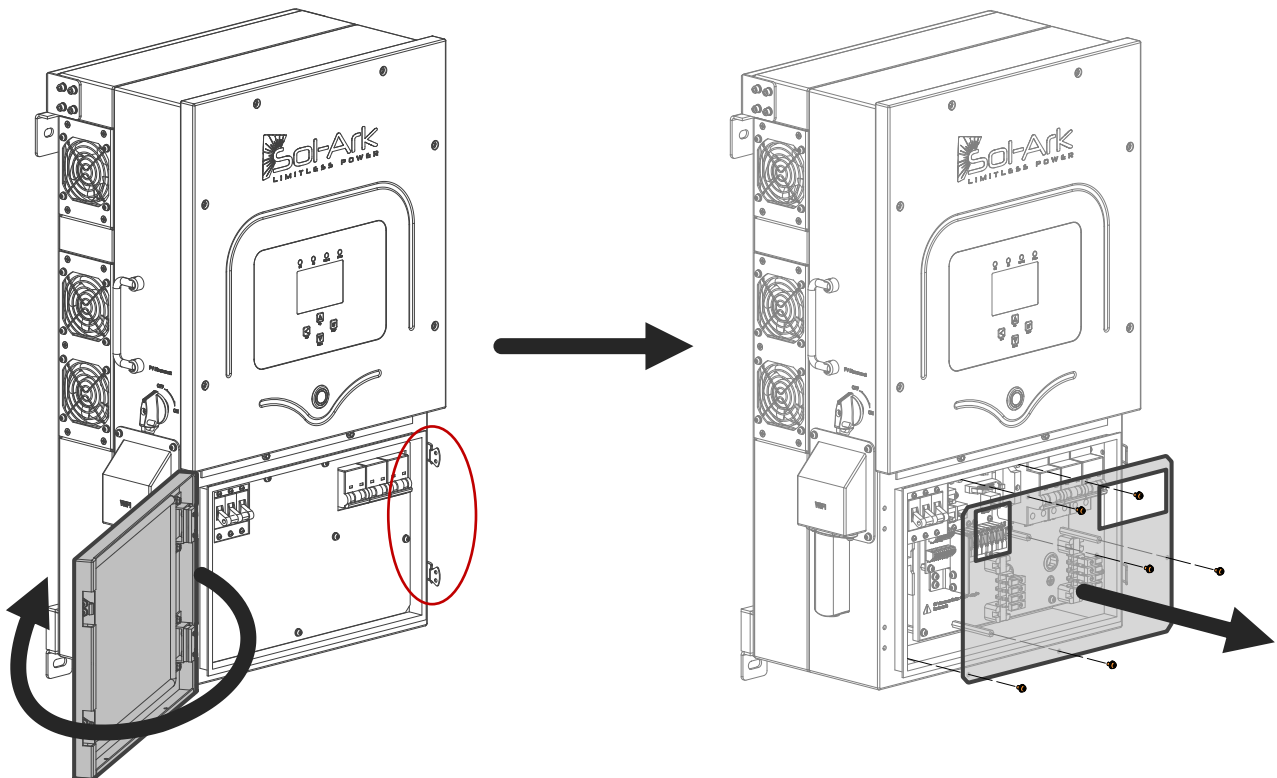


Ensure that the Sol-Ark 12K-2P-N is powered off and all electrical connections are disconnected.

Verify that the PV switch for the solar panels is set to the OFF position.

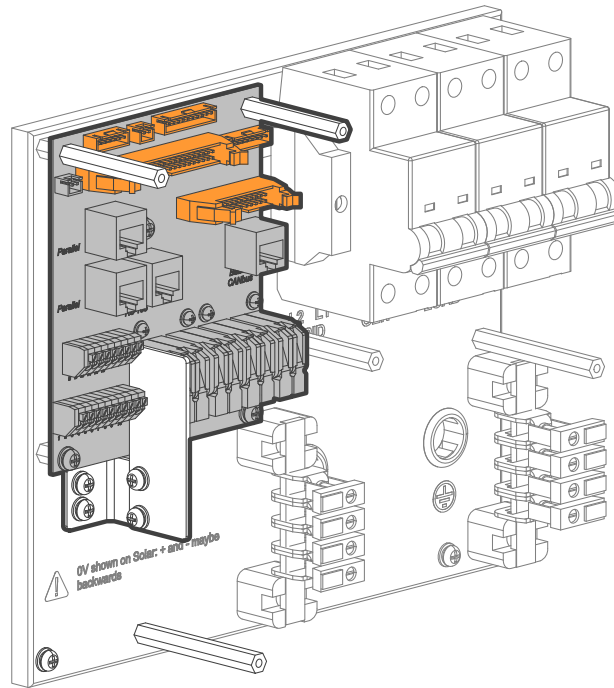
To access the wiring area, follow these steps:

- Open the lower door in the wiring area by releasing the two (2) metal latches located on the right side of the equipment.
- Remove the six (6) screws securing the plastic cover, then take off the plastic cover to reveal the wiring area.
- Ensure that the DC power cables from the solar array are not connected to the MPPT terminals.
- Disconnect all sensors and communication cables from the CON board that houses the MPPT terminals.



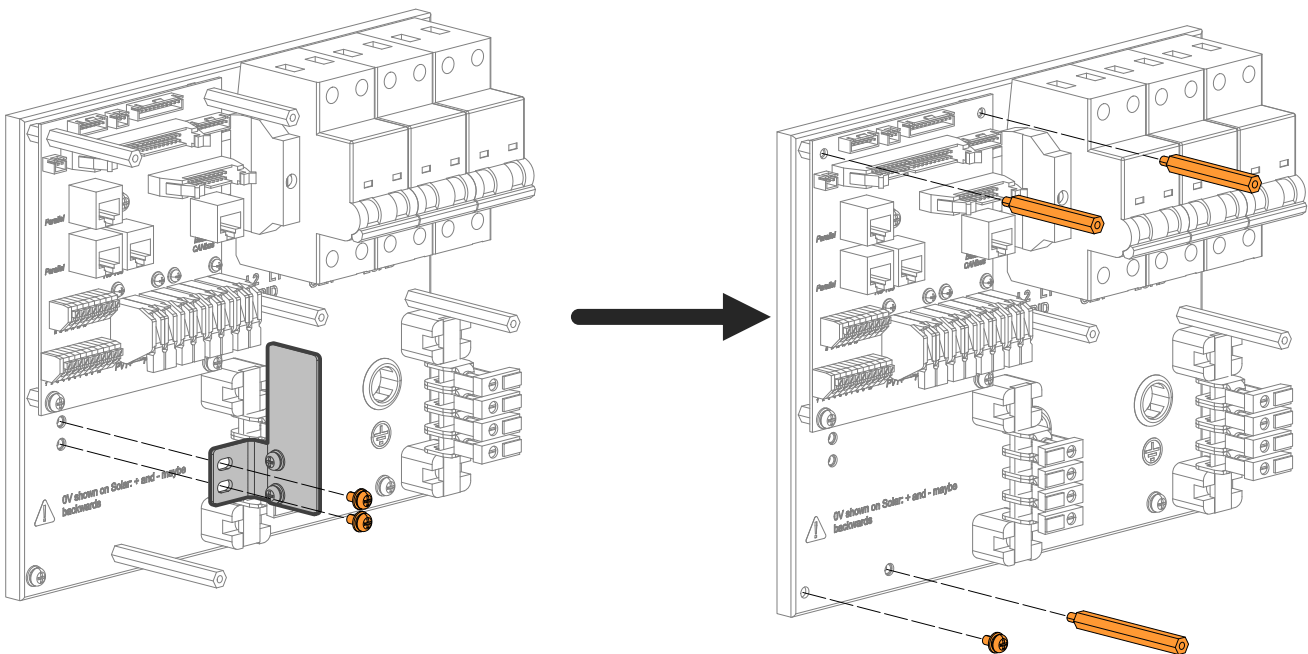
STEP 2: Remove the existing board.

Identify and disconnect the three (3) ribbon cables and the three (3) connectors positioned at the top of the communications board.

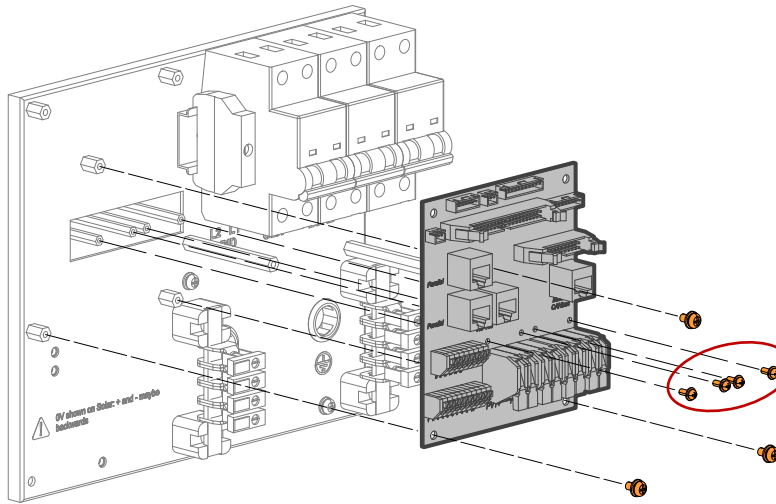


To remove the communications board, follow these steps:

- Unscrew and remove the plastic separator located to the left of the MPPT terminals in the wiring area.
- Remove the three (3) standoffs of 50mm and 60mm positioned at the top and bottom of the communications board.
- Take out the M5 screw located at the bottom left corner.



Carefully unscrew and remove the four (4) M3 screws located at the top of the MPPT terminals (M1, M2, M3, and M4) to detach the communications board. Afterward, remove the remaining screws on the communications board.



Avoid using an electric screwdriver to remove the four (4) M3 screws on the MPPTs.

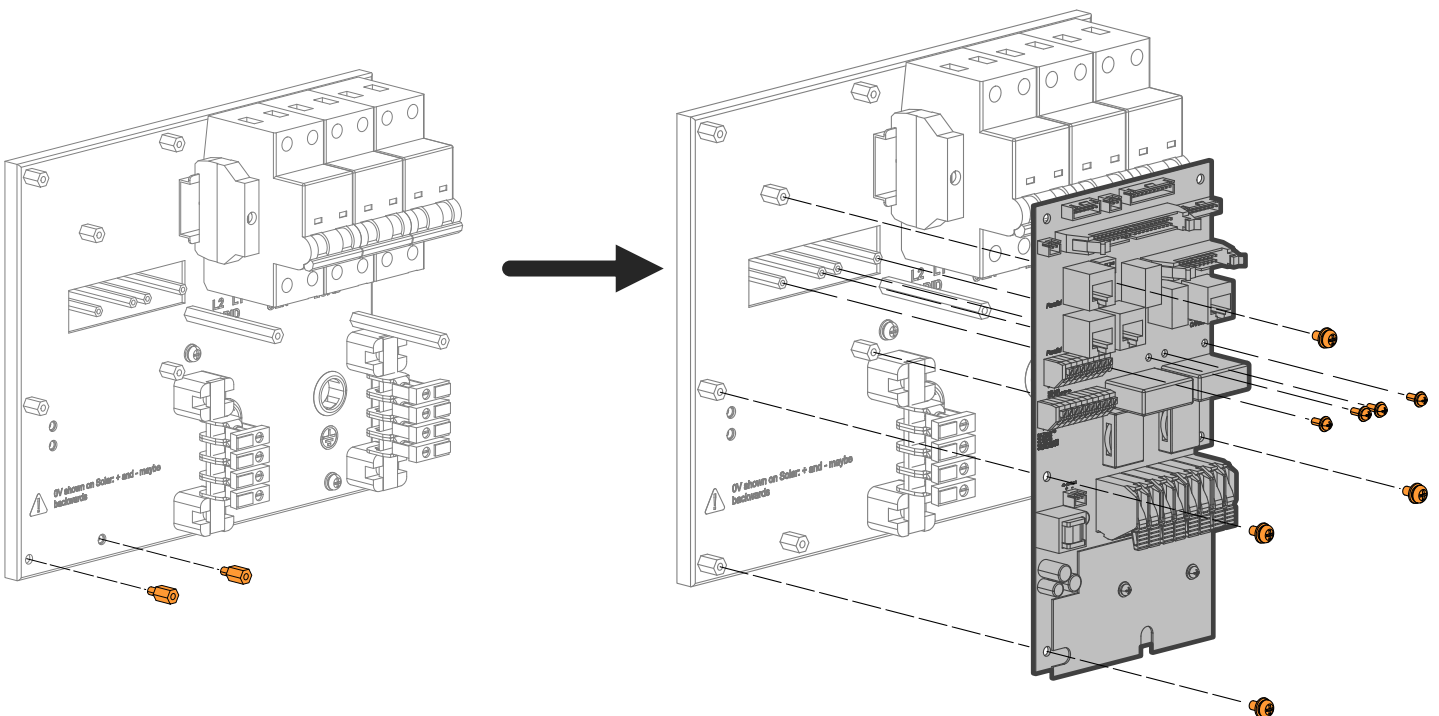
Exceeding 4 in-lbs of torque on the bolts should be avoided as it can cause damage to the equipment.

Adjustment screws of the MPPTs circuits.

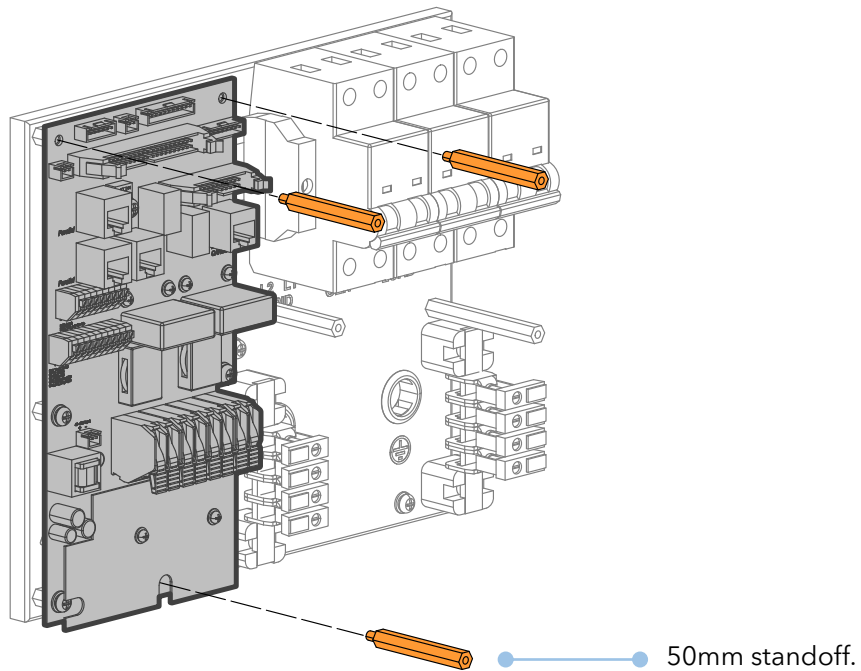
STEP 3: Place the TX 12K-A board in position.

After removing the communications board, follow these steps to install the TX 12K-A board with the integrated transmitter:

- Install two (2) standoffs to securely hold the TX 12K-A board in place.
- Use four (4) M5 screws to fasten the TX 12K-A board in the inverter wiring area.
- Utilize the four (4) previously removed M3 screws (M1, M2, M3, and M4) to secure the connections of the MPPTs connectors. Be careful not to exceed a maximum torque of 4 in-lbs.



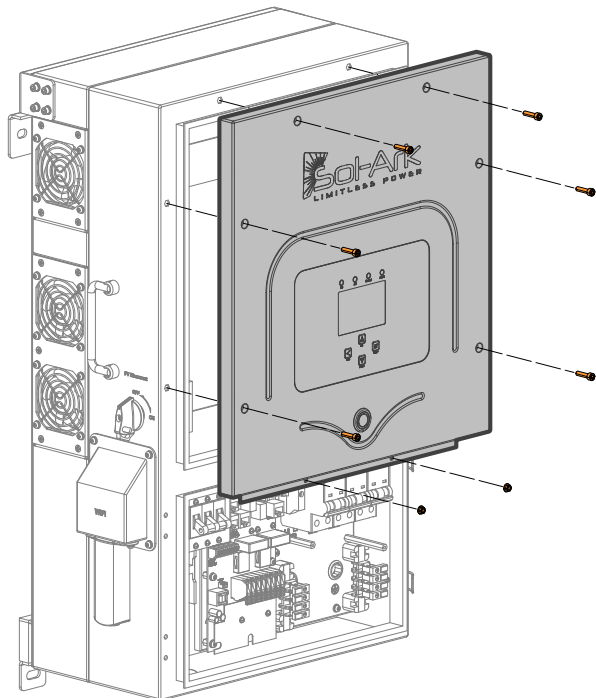
Install the two (2) 50mm standoffs on the top side of the TX 12K-A board. Additionally, use the extra 50mm standoff, which is included in the installation pack, to secure the board on the bottom side.



STEP 4: Connect the power cable to the TX 12K-A

Once the TX 12K-A board is securely installed, follow these steps to remove the top cover of the inverter and access the battery power bars:

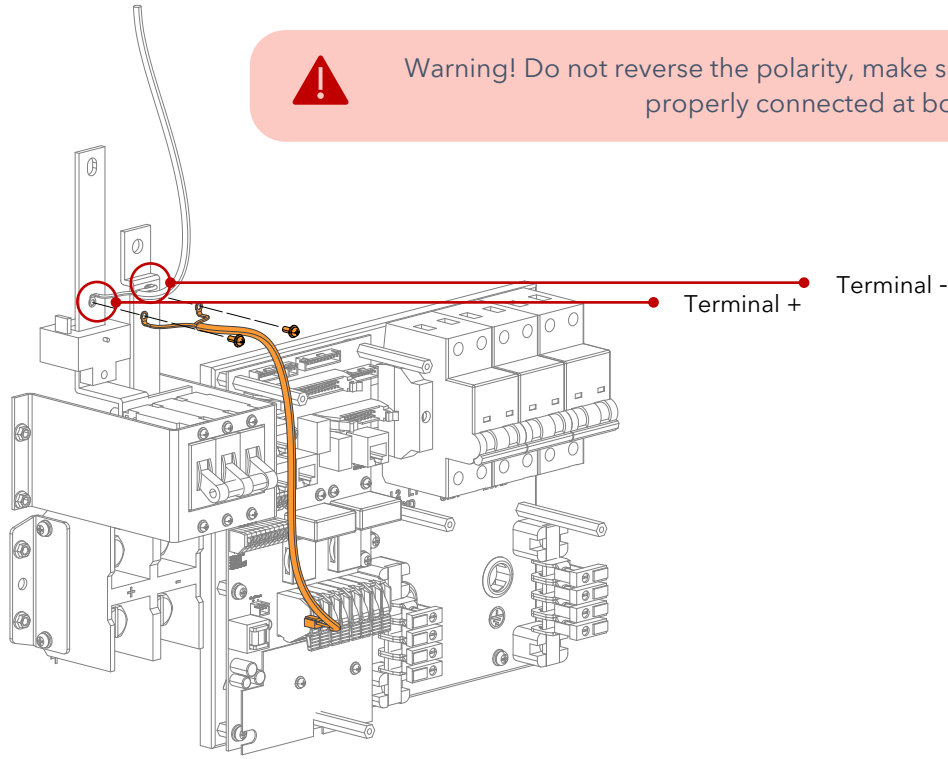
- Remove the two (2) nuts located at the bottom of the cover.
- Unscrew and remove the six (6) screws at the ends of the cover.



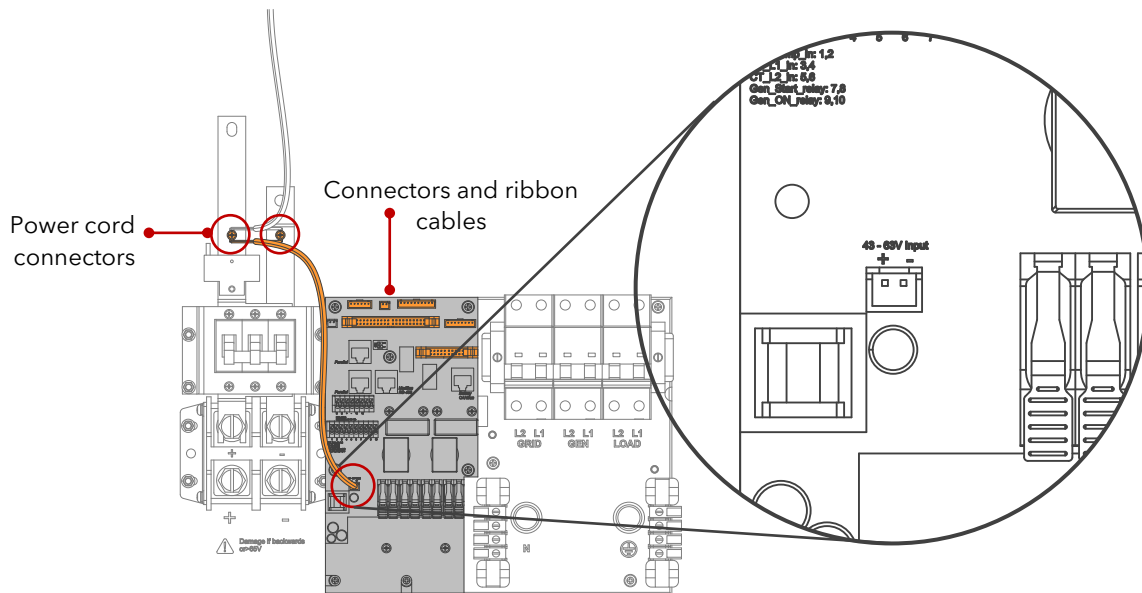
To prevent damage to the connectors, slide the top cover of the inverter to the side. This cover houses three (3) ribbon cables responsible for powering the LCD.

To make the power cable connection, follow these steps:

- Locate the two (2) screws positioned on the bar terminals at the top of the battery switch.
- Remove these screws and use them to secure the power cable of the TX 12K-A board.
- Connect the red wire to the positive terminal and the black wire to the negative terminal.



Connect the power cable to the "43-63V" input of the TX 12K-A board. Afterward, reattach the three (3) ribbon cables and three (3) connectors to the TX 12K-A board.

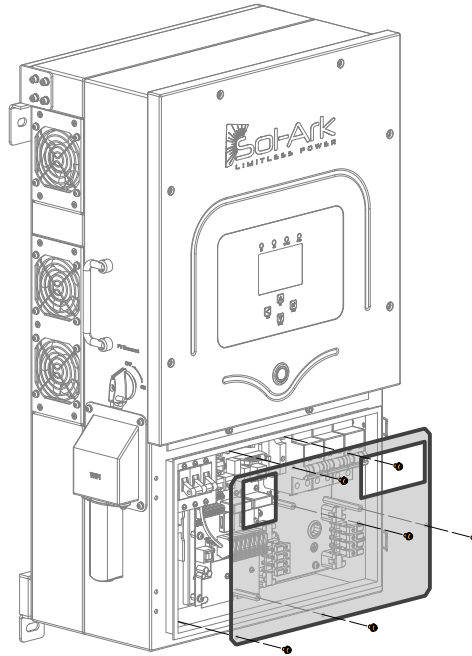


The TX 12K-A board will activate once the battery terminals reach 48V, so it is important to ensure that the battery breaker is in the ON position.

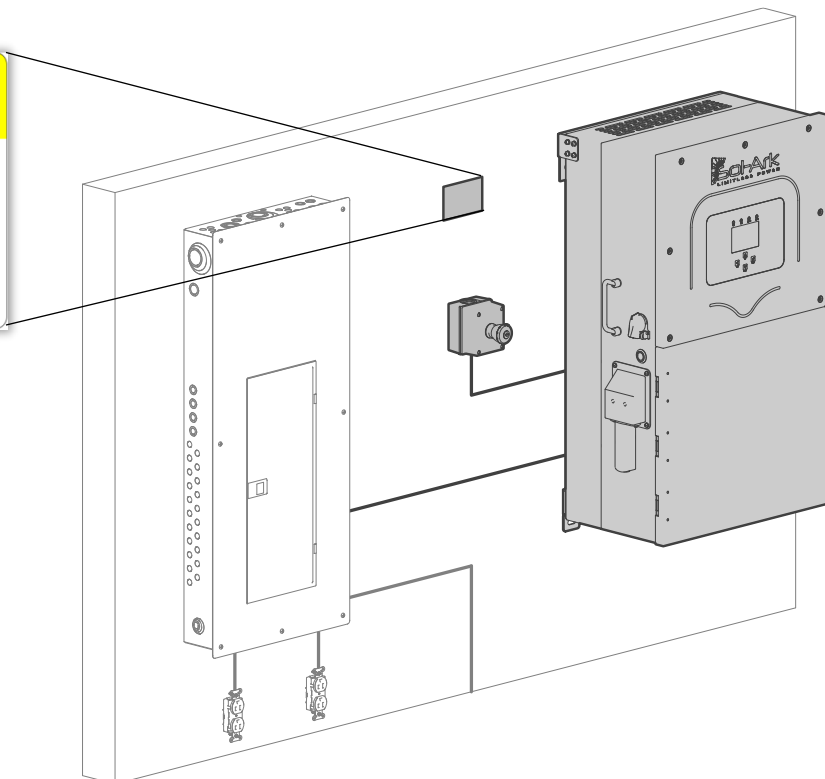
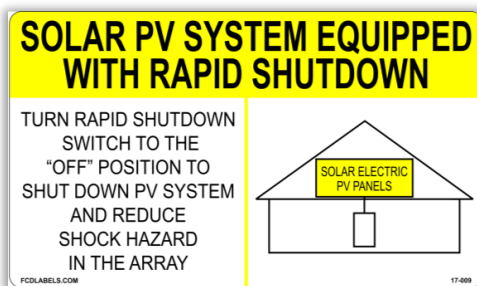
STEP 5: Installing the top cover and rapid shutdown label.

After securely mounting the TX 12K-A board, reattach the top cover of the inverter and reconnect the DC PV wires.

Next, install the plastic cover in the wiring area of the Sol-Ark 12K-2P-N.



After installing the TX 12K-A transmitter, connect a rapid shutdown device to the Sol-Ark 12K-2P-N. Ensure easy access to the emergency stop button and place the emergency stop label within 1m (3ft) of the device. Follow local codes.



5. COMMISSIONING TESTS

Before starting up the system, ensure the following installation conditions are met:

- All PV modules are connected to an O900-80V.
- The power supply of the TX 12K-A board is correctly wired.
- The string voltage is ≤ 0.9 V multiplied by the number of O900-80V in the string.
- The PVRSS label is within three (3) feet of the E-Stop switch or another initiating device.

To power up the TX 12K-A transmitter, the Sol-Ark 12K-2P-N must be powered up by battery and the TX 12K-A board will automatically power up. Using a multimeter, confirm that all strings carry full voltage at the inverter terminals.

To test system functionality with the TX 12K-A transmitter

- Ensure that the test string is functioning correctly and that all modules are generating voltage.
- Verify the status of the four (4) green LEDs located on the bottom side of the TX 12K-A.
- Activate the string rapid shutdown initiator and observe the voltage, which should decrease to below 30V within 30 seconds.
- Confirm that the string voltage drops below 0.9V multiplied by the number of O900-80Vs in the string, indicating proper functionality of the rapid shutdown system.



Please note: Wait for 60 seconds after activating the rapid shutdown device before disconnecting the DC cables from the TX 12K-A.

6. TROUBLESHOOTING

Please note: Troubleshooting tests should be performed by qualified personnel.

TX 12K-A transmitter does not turn on:

- Ensure that the transmitter is receiving voltage from the battery terminals. Check if the system has a connected battery and if the Sol-Ark 12K-2P-N inverter is in one of the battery modes of operation.
- Verify the polarity of the power cable connected to the battery bars.
- Make sure the power connector is securely attached to the TX 12K-A transmitter.
- Confirm that the power cable is plugged into the correct connector labeled "43-63V input" on the TX 12K-A board.

A string has no voltage:

- If the string output voltage is 0VDC, there may be an open circuit. If the voltage is between 0.9V and 10V, the system is in emergency stop operation, as each O900-80V delivers 0.9V.
- Check the polarity at the MPPT terminals if the output voltage is still at 0VDC.
- Conduct a visual inspection of the O900-80V modules, ensuring that the wiring and connectors are in good condition. Verify that the equipment is properly connected.

An O900-80V has no voltage:

If the O900-80V optimizer does not output 0.9VDC when disconnected from the TX 12K-A transmitter:

- If the Power off the system for 1 minute, then turn it back on and measure the O900-80V voltage (should be 0.9V). If still 0V, disconnect the solar panel and check its Voc (should be at least 18V). If not, replace the panel and retest.
- If the Voc voltage at the solar panel is in the operating range of O900-80V, then the equipment has a technical fault, contact Sol-Ark technical support at www.sol-ark.com/support/.

Technical Support

If the issue persists after completing the troubleshooting steps provided in this manual, please visit the Sol-Ark website, and reach out to technical support. When opening a support ticket, kindly include the following information:

- Brief description of the performed tests.
- Name of the inverter's plant.
- Serial numbers of the O900-80V and the Sol-Ark inverter.
- System information, including the number of strings, type of solar panels, and length of the photovoltaic array strings.

7. TECHNICAL SPECIFICATIONS

O900-80V Spec Sheet

MODEL

O900-80V

INPUT DATA (DC)

Input Operating Voltage Range	18-80V
Maximum Input Current (Imax)	14A
Maximum Short Circuit Current (Isc)	15A
Maximum Power	900W

OUTPUT DATA (DC)

Output Operating Voltage Range	18-80V
Maximum System Voltage	1000V
Maximum Series Fuse Rating	30A
Safety Voltage (without heartbeat signal)	0.9V

MECHANICAL DATA

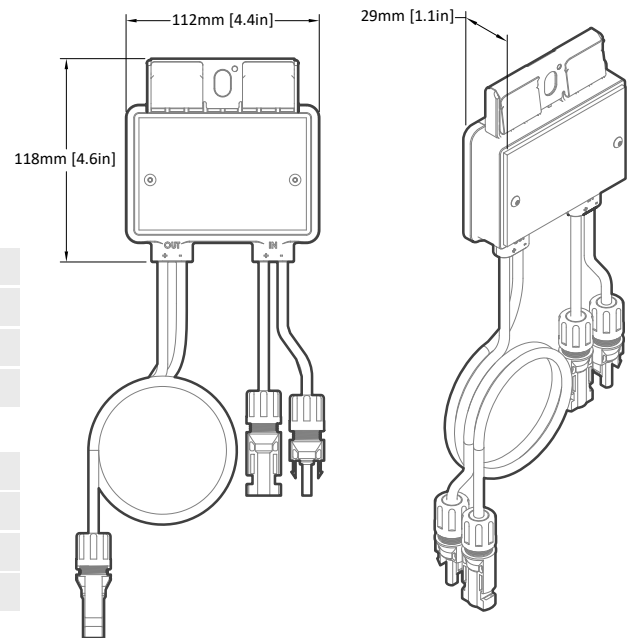
Operating Ambient Temperature Range	-40F to + 185F (-40°C to +85°C)
Passthrough mode capacity	14A up to 140F / 9A up to 185F (+65°C, +85°C)
Optimization mode capacity	14A up to 95F / 6A up to 185F (+35°C, +85°C)
Dimensions W x L x H (without cable & connectors)	4.41in x 4.64in x 1.1in (112mm x 118mm x 28mm)
Cable Length	Input 4.72in, Output 39.37in (0.12m, 1m)
Cable Cross Section Size	UL: 12AWG
Connector	Friends PV5e (MC4 Compatible)
Enclosure Rating	NEMA Type 6P / IP68

FEATURES

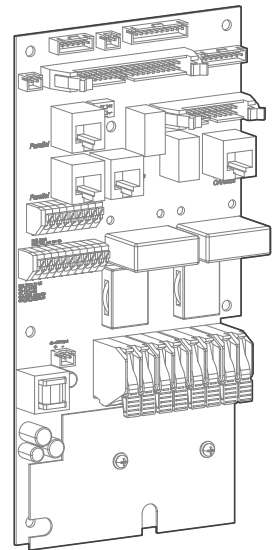
Power Optimization	Yes (MPPT)
Communication Signal	Power Line Communication (P LC)
Maximum number of PV modules per O900-80V MLPE	1
Over-Temperature Protection	Yes
Warranty	25 years

STANDARDS COMPLIANCE

Photovoltaic Rapid Shutdown System	NEC 2017 (690.12), NEC 2020 (690.12)
Safety Compliance	UL 1741, CSA 22.2 No. 107.1
EMC Compliance	FCC Part 15 Class B; IEC 61000-6-2; IEC 61000-6-3
Others	SunSpec RSD Certified



TX 12K-A Spec Sheet



MODEL

TX 12K-A

INPUT DATA (DC)

On-board Power Supply Input Voltage	48VDC**
On-board Power Supply Input Current	0.5A
Maximum PV System Voltage	500VDC
Number of PV String Inputs	4
Maximum RSD Devices in series per string	30 (subject to NEC 690.12)

MECHANICAL DATA

Dimensions	110 mm x 214 mm
Weight	316g
PV String Connection	WAGO Terminal block 221-613 10WG

ENVIRONMENTAL

Operating Ambient Temperature Range	-13F to +131F (-25°C to + 55°C)
Altitude	4000m (13,100ft)
Cooling Method	Natural Convection (within Sol-Ark inverter wire box)
Installation Method	Field replaceable

FEATURES

Communication Signal	Power Line Communication (PLC)
Warranty	10 years

STANDARDS COMPLIANCE

Photovoltaic Rapid Shutdown System	NEC 2017 (690.12), NEC 2020 (690.12)
Safety Compliance	UL 1741, CSA 22.2 No. 107.1
EMC Compliance	FCC Part 15 Class B; IEC 61000-6-2; IEC 61000-6-3
Others	SunSpec RSD Certified

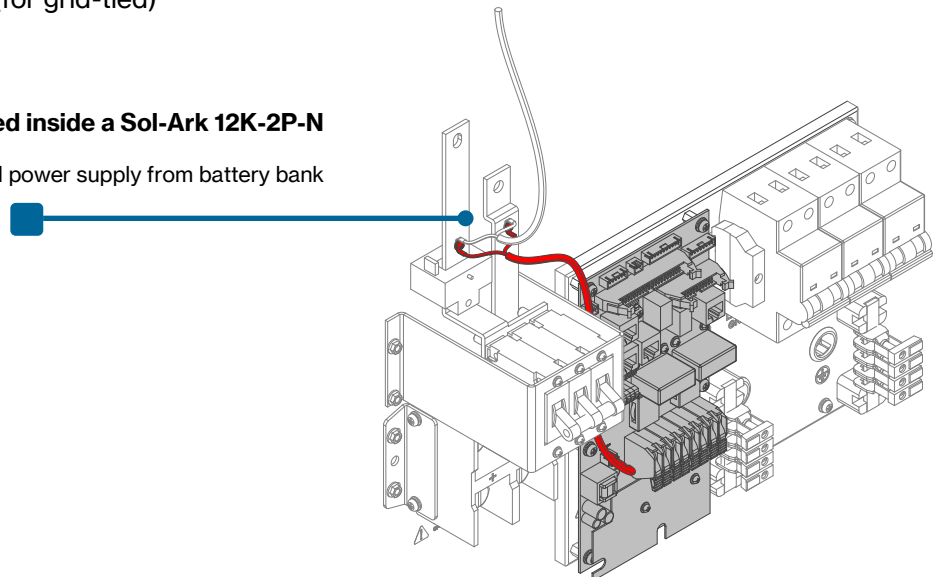
** It is required to have a **battery based system** to use the On-board Power Supply.

Transmitter TX 12K-A can be powered from:

- On-board Power Supply (Battery required, see TX 12K-A Quick Installation Guide for more details).
- External 48VDC power supply (for grid-tied)

TX 12K-A installed inside a Sol-Ark 12K-2P-N

Installation using on-board power supply from battery bank



8. WARRANTY

25-year limited warranty for SOL-ARK (Portable Solar LLC) O900-80V. Sol-Ark offers a limited twenty-five (25) year “Warranty” against defects in material and workmanship on its Sol-Ark products. The term of this warranty begins on the date of initial purchase of the product(s), or the date the product(s) is received by the end user, whichever is later. This must be indicated on the invoice, bill of sale from your installer. This warranty applies to the original purchaser of the Sol-Ark product and is transferable only if the product remains installed in the original place of use. Call Sol-Ark to let us know if you are selling your home and tell us the name and contact information of the new owner.

The warranty will not apply to products or parts of products that have been modified or damaged by the following:

- Installation or uninstallation
- Modification or disassembly
- Normal wear and tear
- Accident or abuse
- Firmware / Software updates or unauthorized programming alterations
- Corrosion
- Repair or service by an unauthorized repair shop/center
- Operation or installation contrary to the manufacturer's instructions
- Fire, flood, or natural phenomena
- Shipping or transportation
- Incidental or consequential damage caused by other components of the energy service
- Any product whose serial number has been altered, defaced, or removed
- Any other event not foreseeable by Sol-Ark (Portable Solar, LLC)

Sol-Ark (Portable Solar LLC)'s liability for any defective Product, or any part of the Product, shall be limited to repair or replacement of the Product, at Sol-Ark's (Portable Solar LLC) option. Sol-Ark does not warrant or guarantee the workmanship performed by any person or company installing its products. This warranty does not cover the costs of installation, removal, shipping or reinstallation of products or parts of products.

THIS LIMITED WARRANTY IS THE EXCLUSIVE WARRANTY APPLICABLE TO SOL-ARK (PORTABLE SOLAR LLC) PRODUCTS. SOL-ARK EXPRESSLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTIES ON ITS PRODUCTS. SOL-ARK ALSO EXPRESSLY LIMITS ITS LIABILITY FOR A PRODUCT DEFECTIVE TO REPAIR OR REPLACEMENT IN ACCORDANCE WITH THE TERMS OF THIS LIMITED WARRANTY AND EXCLUDES ALL LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, ANY LIABILITY FOR PRODUCTS NOT AVAILABLE FOR YOUR USE OR LOSS OF REVENUE OR PROFITS, EVEN IF YOU ARE AWARE OF SUCH POTENTIAL DAMAGES.

Return Policy - Returns will not be accepted without prior authorization and must include the Return Material Authorization (RMA) number. Call and speak to one of our engineers to obtain this number at (EU)1-972-575-8875. Return Material Authorization (RMA) - Request for an RMA number requires all of the following information: 1. Product model and serial number; 2. Proof of purchase in the form of a copy of the original purchase invoice for the product or receipt confirming the model number and serial number of the product; 3. Description of the problem; 4. Validation of the problem by Technical Support and 5. Shipping address for the repaired or replaced equipment. Upon receipt of this information, the Sol-Ark representative can issue an RMA number. Any product being returned must be new, in excellent condition, and packaged in the original manufacturer's box with all applicable hardware and documentation. Returns must be shipped freight prepaid and ensured through the shipping company of your choice to arrive at Sol-Ark within 30 days of initial delivery or pickup. Shipping costs are not refundable. All returns are subject to a 35% restocking fee. Returns will not be accepted beyond 30 days after original delivery. If you have any questions about our returns policy, please email us at sales@sol-ark.com or call us at the number above during normal business hours (Monday to Friday).

Installation Map Card

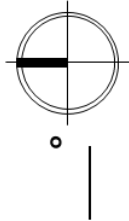
Sol-Ark Optimization Rapid Shutdown System
INSTALLATION MAP CARD



Sol-Ark Customer Support: sol-ark.com/support/

Plant Name: _____ Commissioning Date: _____ Sol-Ark Model: _____ Sol-Ark Serial Number: _____	Customer Information: Installer Information: _____
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N S E W



	A	B	C	D	E	F	G	H
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Notes:

This map shows the physical location of each optimizer in the PV array. Each Sol-Ark 0900-80V optimizer has a removable equipment serial number label located on the back. Peel off the label and stick it on the Sol-Ark setup map.

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NOTES:

A large grid of small dots for taking notes, consisting of approximately 30 columns and 30 rows.

