








Kit Contents

PV Supervisor 5x (PVS5x) 	Bracket 	Power Line Ethernet Adapter and Cable 
Current Transformers (CTs) Consumption CTs 	(Optional) Production CT 	
Communication Cables Inverters (blue connector) 	External Meter (green connector) 	
Hardware (2) M4 x 12 mm screws (2) hole plugs (2) 3/4" sealing washers (4) 3/4" to 1/2" reducing washers		

You Will Need

- Phillips screwdriver
- Small flathead screwdriver
- RJ45 crimp tool
- Wire cutter
- Wire stripper
- Laptop with IE, Chrome, or Firefox installed
- Ethernet cable
- Your SunPower monitoring website credentials
- (Optional) Customer's Wi-Fi network and password

Routing Wire and Cable

- Any openings in the enclosure must be filled with Type 4 or better rated components to maintain the integrity of the enclosure's environmental system
- Drill extra openings with appropriate knockout tools (**do not use** screwdriver and hammer)
- Only use the provided conduit openings or knockout locations and never cut holes in the top or sides of the enclosure
- Never run communications cable and AC wiring in same conduit

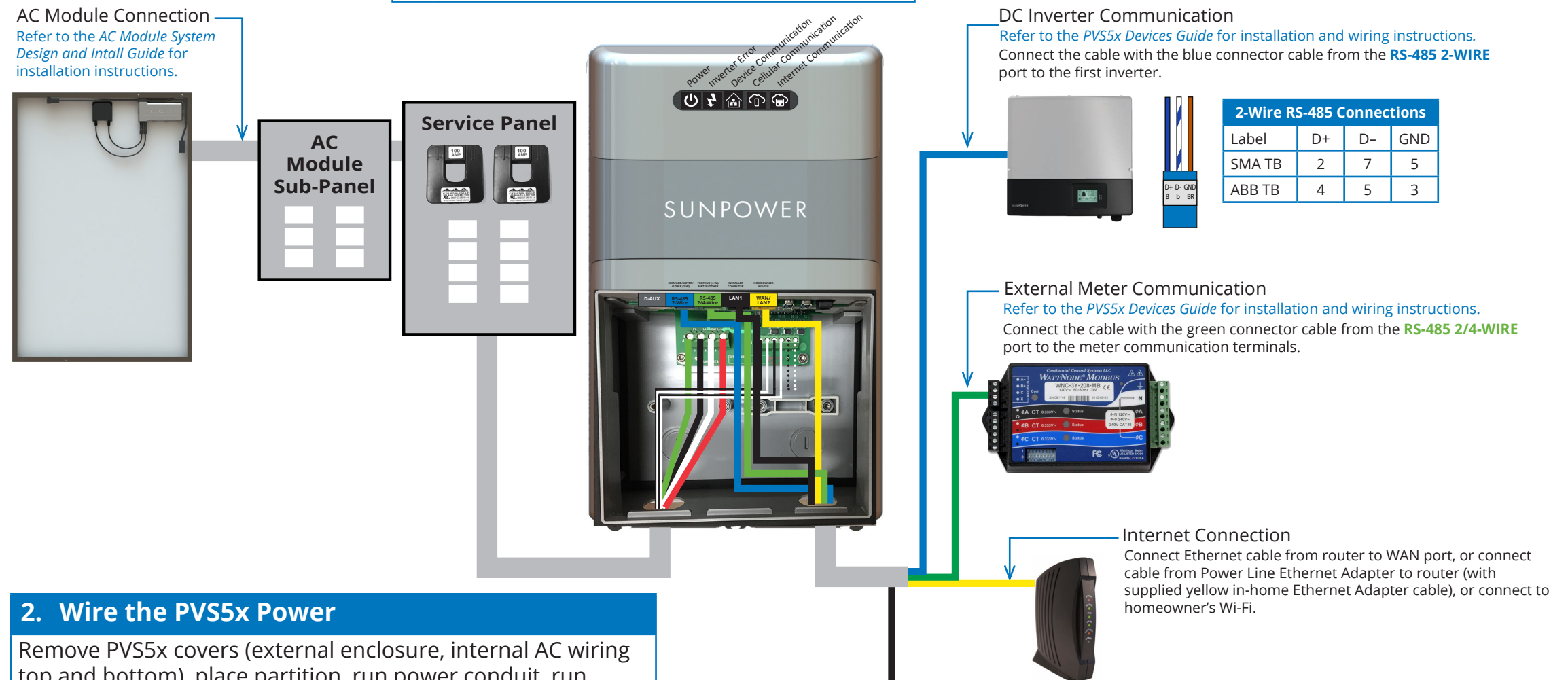
Connection Diagram

See other side for detailed installation instructions.

Warning! Do not power up the solar system until after you complete Steps 1 through 3.
Important! Do not run communication cables through same opening or conduit as power wire.

1. Mount the PVS5x

Select location, mount bracket and secure with appropriate hardware, and fit PVS5x onto bracket.



2. Wire the PVS5x Power

Remove PVS5x covers (external enclosure, internal AC wiring top and bottom), place partition, run power conduit, run 240 VAC and land in terminals, run CT wires and land in J16, replace AC wiring covers.

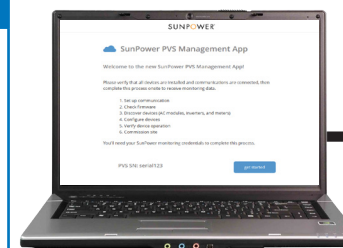


4. Use the PVS Management App to Commission

Turn laptop Wi-Fi off, connect Ethernet cable from laptop to PVS5x **LAN1** (black) port, open a browser and type:

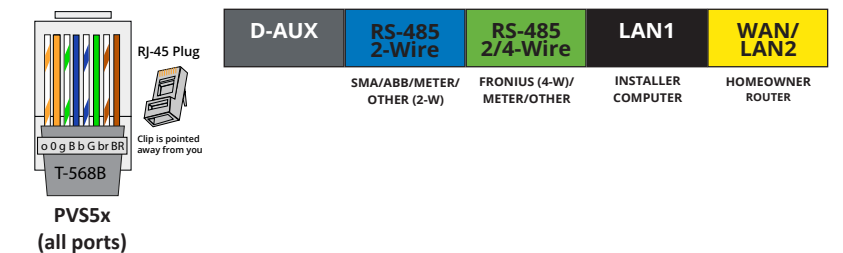
www.sunpowerconsole.com

Follow the instructions to setup communication, check firmware, discover devices, verify device operation, and commission the site.



3. Connect Communication

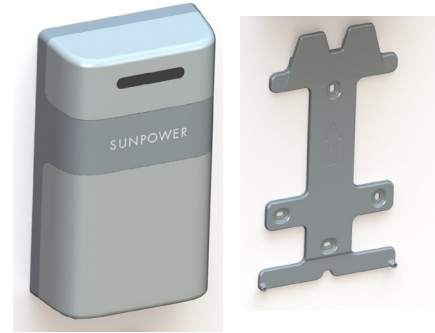
- Run communication conduit
- Install Ethernet cable, or Power Line Ethernet Adapter, or connect to homeowner's Wi-Fi
- Connect inverter communication to PVS5x (AC Modules already connected through service panel)
- Connect cable from meter to open RS-485 port
- Replace the enclosure cover



Detailed Installation Instructions

1. Mount the PVS5x

1. Select an installation location that is not in direct sunlight.
2. Mount PVS5x bracket using appropriate hardware for the surface type that supports 6.8 kg (15 lbs).
3. Fit PVS5x onto bracket until the pins fully engage the PVS5x holes.
4. Secure PVS5x to bracket using the two included M4 x 12 mm screws.



2. Wire the PVS5x Power

Warning! Do not power up the system until after you complete Step 2 and Step 3 and are ready to configure the PVS5x.

1. Ensure that the circuit breaker is OFF.
2. Prepare the PVS5x for AC wiring:
 - Remove the PVS5x enclosure cover by loosening three screws on the bottom of the enclosure.
 - Remove the top AC wiring cover.
 - Remove the bottom AC wiring cover.
 - Flip the AC wiring partition to the opposite side of where your AC wiring will be incoming.

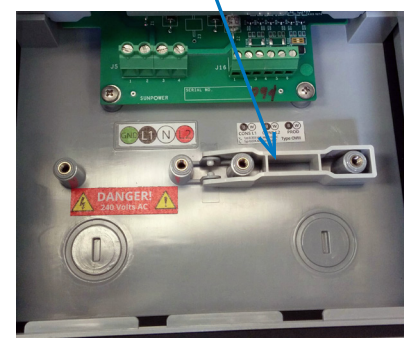
ENCLOSURE COVER



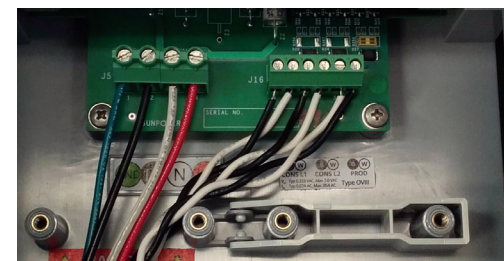
AC WIRING COVERS
TOP
BOTTOM



AC WIRING PARTITION



3. Run power conduit from the service panel to the PVS5x.
Note. The PVS5x is preconfigured with openings for 3/4" conduit. You can use 1/2" conduit with supplied reducing washers and gaskets. If you use the rear conduit entrances, seal the holes on the bottom of the enclosure with the included hole plugs.
4. For electrical wiring code compliance and optimal communications, connect the PVS5x to a dedicated UL listed 15 A rated dual-pole breaker using 14AWG wiring, or a UL listed 20 A rated dual-pole breaker using 12AWG wiring. When using AC modules, this breaker should be in the same service panel containing the 20 A dual-pole breakers for the modules.
5. Strip wires and land the black wire to **L1**, the red wire to **L2**, the white wire to **N**, and the green wire to **GND** in the PVS5x terminals.
6. Run CT wires for consumption monitoring from the service panel, through the power conduit, and land one set of CT wires in **CONS L1** and the second set in **CONS L2**. Verify that the CT phases are consistent with the AC wiring phases.
7. (Optional) If installing production monitoring with solid core production CT: run CT wires from the service panel, through the power conduit, and land this set of CT wires in **PROD**.
8. Replace the bottom AC wiring cover.
9. Replace the top AC wiring cover over the AC power wires (on the left if you ran through left hole, on the right if you ran through the right hole).



3. Connect Communications to PVS5x

SunPower recommends connecting PVS5x **directly** to the customer's router with an Ethernet cable.

1. Run communication conduit to the PVS5x conduit opening. The PVS5x is preconfigured with 3/4" conduit openings. You can use 1/2" conduit with supplied reducing washers and gaskets. Seal all unused holes with the included Type 4 hole plugs.
Important! Do not run communication cables through same opening or conduit as power wire.
2. Connect to homeowner's Internet using Ethernet cable, Power Line Ethernet Adapter, or their Wi-Fi network.
3. To connect communication for each device. Follow the *Quick Start Guide: SunPower Monitoring System PVS5x Devices* for complete instructions.
 - **AC modules:** You should have already connected AC modules to the service panel. The PVS5x communicates with AC modules using PLC protocol.
 - **SMA, ABB:** Connect the cable with a blue connector from the PVS5x **RS-485 2-WIRE** communications port (blue) and land wires in the only, or first, inverter in the daisy-chain.
 - **Meter:** Connect the cable with a green connector from the PVS5x **RS-485 2/4-WIRE** port (green) to the (optional) external meter communication terminals.
4. Replace the PVS5x enclosure cover and tighten three screws on bottom of enclosure.

D-AUX	RS-485 2-Wire	RS-485 2/4-Wire	LAN1	WAN/ LAN2
	SMA/ABB/METER/ OTHER (2-W)	FRONIUS (4-W)/ METER/OTHER	INSTALLER COMPUTER	HOMEOWNER ROUTER

4. Use the PVS Management App to Commission

1. Turn laptop Wi-Fi off.
2. Connect an Ethernet cable from laptop to PVS5x **LAN1** port.
3. Open a browser and type: www.sunpowerconsole.com.
4. Follow the instructions to set up communication, check firmware, discover devices, verify device operation, and commission the site.

Safety & Certifications

Safety Instructions

- Installation and field service is to be performed only by qualified, trained personnel with the necessary skills and knowledge to work on this type of electrical device. Field service is limited to the components contained in the lower compartment of the PVS5x.
- Perform all electrical installations in accordance with any national and local codes, such as the National Electrical Code (NEC) ANSI/NFPA 70.
 - This enclosure is suitable for use indoors or outdoors (Type 3R). Operating ambient from -30°C to 60°C.
 - Before connecting power, the PVS5x must be securely mounted to an inside or outside wall following the instructions in this document.
 - For permanently connected equipment, a readily accessible disconnect device must be incorporated external to the PVS5x.
 - For electrical wiring code compliance, connect the PVS5x to a dedicated UL listed 15 A rated breaker using 14AWG wiring, or a UL listed 20 A rated breaker using 12AWG wiring. The input operating current is less than 0.1 amp with AC nominal voltages of 240 VAC (L1-L2).
 - The PVS5x contains internal transient surge protection for connection to the load side of the service entrance AC service panel (overvoltage category III). For installations in areas at risk of surges generated by high voltage utilities, industry or by lightning, it is recommended that an external surge protective device also be installed.
 - Do not attempt to repair the PVS5x. If the PVS5x fails, please return the unit to your distributor for servicing. Tampering with or opening the upper compartment voids the product warranty.
 - For pluggable devices, the socket-outlet must be installed near the equipment and must be easily accessible.

FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

IMPORTANT NOTES:

Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 25 cm between the radiator and your body.

Caution

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

Safety Certification

- UL listed to UL60950-1 ITE and UL60950-22 for outdoor use.
- The PVS5x is not a utility meter, disconnect device, or power distribution device.

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Quick Start Guide: SunPower Monitoring System with PVS5x

Follow these instructions to install, configure, and commission the PVS Supervisor 5x (PVS5x) to start receiving monitoring data.

See the safety and installation manual for complete instructions.

Quick Start Guide: SMS PVS5x
513403 Rev C
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