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.

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

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- Small flathead screwdriver
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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 PV5x
   Select location, mount bracket and secure with appropriate hardware, and fit PV5x onto bracket.

2. Wire the PV5x Power
   Remove PV5x 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.

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 PV5x (AC Modules already connected through service panel)
   - Connect cable from meter to open RS-485 port
   - Replace the enclosure cover

4. Use the PV5 Management App to Commission
   Turn laptop Wi-Fi off, connect Ethernet cable from laptop to PV5x 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.

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.

Refer to the PV5x Devices Guide for installation and wiring instructions.

DC Inverter Communication
Connect the cable with the blue connector cable from the RS-485 2-WIRE port to the first inverter.

External Meter Communication
Connect the cable with the green connector cable from the RS-485 2/4-WIRE port to the meter communication terminals.
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.
      - Run CT wires for consumption monitoring from the service panel, through the power conduit, and land one set of CT wires in the PVS5x terminals.
   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 hole, on the right if you ran through 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 WiFi 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 module.
   4. Replace the PVS5x enclosure cover and tighten three screws on bottom of enclosure.

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

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**Safety & Certifications**

**Safety Instructions.** In addition to SunPower's products, the system is also designed and tested in accordance with the necessary safety and performance standards. Ensure that your system is installed in accordance with the manufacturer's instructions. If you are not knowledgeable or if you are uncertain about the performance of your electrical system, we encourage you to consult a professional. This equipment should be installed and operated with minimum distance 25 cm between the radiator and your body.

**FCC Compliance**

- This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions:
  - This device may not cause harmful interference.
  - 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 NOTICE:** Radiation Exposure Statement

The maximum SAR of this device in test configuration and with decommissioned devices is 100 W/kg, which is below the FCC human body exposure limits. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device must not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

**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 accessories must not be operated or connected in cooperation with any other antenna or television receiver to assure compliance with FCC Rules and Regulations Part 15.

**Safety Certification:**

- UL Listed: https://www.ul.com and CSA Certified 22 for indoor use
- The PVS5x is not a utility meter, distributed 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 PVS5x (PVS5x) to start receiving monitoring data.

See the safety and installation manual for complete instructions.