Schneider Energy Monitor

Installation Guide

TME39049

April 2024

https://www.se.com/

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Contact Information

For country-specific details, please contact your local Schneider Electric Sales Representative or visit the Schneider Electric website at: https://www.se.com/

Information About Your System

As soon as you open your product, inspect the contents and record the following information and be sure to keep your proof of purchase. If any damage is found, contact customer support.

Serial Number	_____	Purchased From	_____
Product Number	_____	Purchase Date	_____

Document Number: TME39049 **Date:** April 2024

Model Name: WP3

Audience

This document is intended for use by qualified personnel installing and operating a system involving the Schneider Energy Monitor. 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.

Qualified personnel have training, knowledge, and experience in:

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

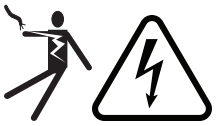
Purpose

This manual provides safety guidelines and procedures for installing the Schneider Energy Monitor in compatible Square D Load Centers, and Schneider Pulse Backup Controller.

Safety Information

Important Information

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 documentation 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.

Protective Earth (grounding) conductor terminal

Refer to the Installation or Operation instructions

⚠ 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.

NOTICE

NOTICE is used to address practices not related to physical injury.

Qualified Personel

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved. For more information, see Audience.

Product Safety Information

READ AND SAVE THESE INSTRUCTIONS - DO NOT DISCARD

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, AND FIRE

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E, CSA Z462, or NOM 029-STPS.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment.
- Before installing or servicing current transformers, always open or disconnect circuits from the power distribution system (or service) of the building.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.
- Thoroughly inspect the equipment before energizing. Verify that no tools or objects have been left inside the equipment.
- Secure current transformer and route conductors so that they do not directly contact live terminals or bus.

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

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, AND FIRE

The monitor and all parts of its antenna extension assembly must be kept at least 1 in. (25 mm) away from all energized parts of the electric panel (bus bars, bus stabs, circuit breakers, and power wires).

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

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, AND FIRE

Thoroughly inspect the load center prior to energizing. Verify that no tools or materials have inadvertently been left inside the load center, and that all covers and doors are properly closed and secured.

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

⚠ WARNING

HAZARD OF ELECTRIC SHOCK, EXPLOSION, AND FIRE

The Ethernet cable and Ethernet knockout cable that come with the Schneider Energy Monitor package are 600V-rated. If additional Ethernet cables are required they must be Power over Ethernet (PoE) CAT5E 600 V-rated cable (SEMONITORMTM or similar).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

EQUIPMENT DAMAGE

If the load center is outdoors, select a knockout on the bottom of the enclosure for the antenna to help maintain weatherproofing.

Failure to follow these instructions can result in equipment damage.

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1 Introduction

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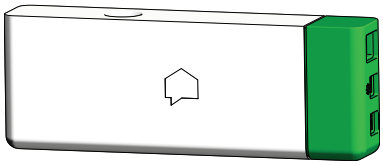
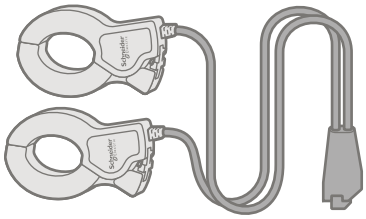
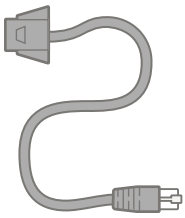
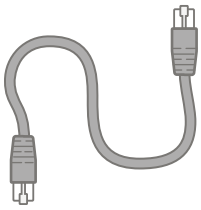
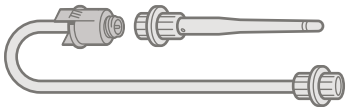
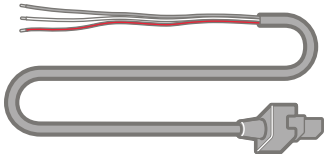
Overview

The Schneider Energy Monitor is a home energy monitoring device. It is used to measure the current and voltage in the service mains. The device monitors two phases of 120 VAC each.

What’s in the Box

 Energy monitor	 Current sensors (2 pairs)
 Ethernet knockout cable for primary port	 Secondary Ethernet cable
 Antenna assembly	 Power cable

2 Pre-Install

What's in This Chapter?

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Required Software 13
Lock-out and Tag-out Procedure 13
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Required Tools and Equipment

The following materials and tools are not supplied but are required for installation:

- Screwdriver: Philips #2
- Screwdriver: Slot
- Flashlight or other battery-powered light source
- Cable conduits and fittings per NEC requirements

Required Software

Download the *Sense Pro Square D Edition* app.

Download on the App Store https://apps.apple.com/ca/app/sense-pro-square-d-edition/id1483773682

GET IT ON Google Play https://play.google.com/store/apps/details?id=com.sense.installer.se&hl=en_CA&gl=US&pli=1

Lock-out and Tag-out Procedure

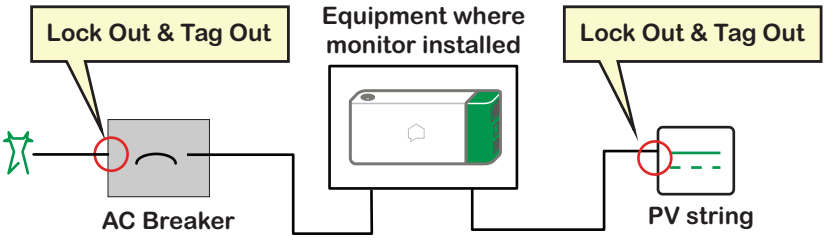
De-energize, lock-out and tag-out the equipment in which the Schneider Energy Monitor is installed from all power sources.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, AND FIRE

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Never energize the equipment in which the Schneider Energy Monitor is installed with the covers removed.
- Always use a properly rated voltage sensing device to confirm all circuits are de-energized.
- The equipment in which the Schneider Energy Monitor is installed is energized from multiple sources. Before opening any doors or covers, identify all power sources, de-energize, lock-out and tag out, and wait five minutes for circuits to discharge.
- **Note:** Turning OFF only the main circuit breaker is insufficient to remove power completely from the panel.

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



To lock-out and tag-out the equipment in which the Schneider Energy Monitor is installed:

1. Identify and open the PV disconnect. Lock-out and tag-out the disconnect.
2. Identify the AC panel breaker and then turn off/open, lock-out and tag-out the breaker.
3. Wait five minutes for circuits to discharge.
4. Use a calibrated, properly rated voltage sensing device to confirm that all circuits are in a zero energy state before performing work.

Pre-installation

The monitor is designed to fit within the load center in order to monitor a home's energy consumption.

Before removing the load center cover:

- Turn off all power supplying the load center before working on or inside the equipment. See "Lock-out and Tag-out Procedure" on the previous page.
- Be sure to have an alternate, independantly-powered light source (flashlight or similar) available .
- Do not begin the installation procedures until you have confirmed all power is completely disconnected from the equipment including any alternate power sources.
- Read and follow all danger statements in the safety precautions page.

Finding a locaiton

To find a location for the Schneider Energy Monitor:

1. Open the load center door.
2. Remove the cover screws and remove the load center cover.
3. Find a location inside the load center for the Schneider Energy Monitor.

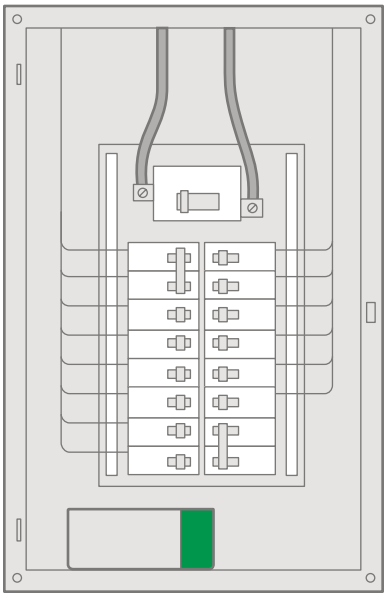
⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, AND FIRE

The monitor and all parts of its antenna extension assembly must be kept at least 1 in. (25 mm) away from all energized parts of the electric panel (bus bars, bus stabs, circuit breakers, and power wires).

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

Figure 1 Example location



Note: If there is no open space available, use an external NEMA enclosure following National Electrical Code® (NEC) and local standards.

3 Installing the Monitor

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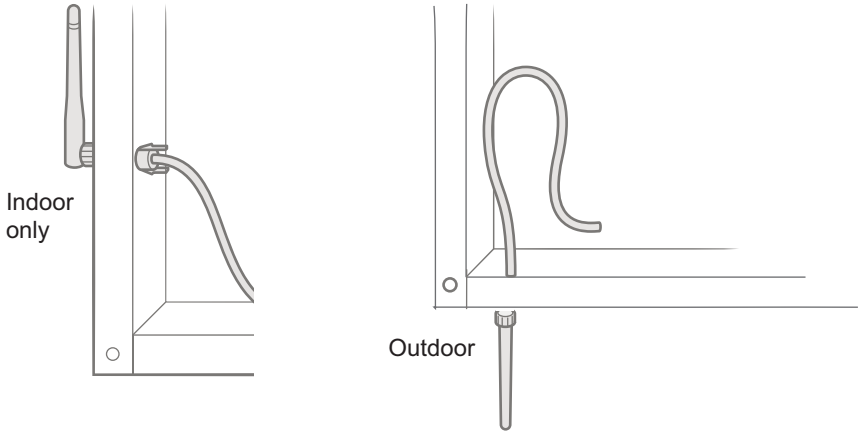
Installing the Antenna

To install the antenna:

1. Remove a load center knockout to create a mounting point for the antenna.

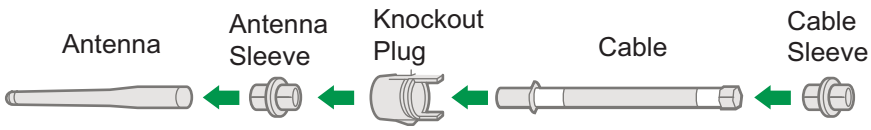
NOTICE
EQUIPMENT DAMAGE If the load center is outdoors, select a knockout on the bottom of the enclosure for the antenna to help maintain weatherproofing. **Failure to follow these instructions can result in equipment damage.**

Figure 2 Antenna location



2. Assemble the antenna and cable:
   a. Slide the antenna sleeve over the base of the antenna.
   b. Thread the male end of the cable through the knockout plug.
   c. Holding the antenna sleeve, screw the antenna firmly on to the male end of cable extending out of the plug.
   d. Slide the cable sleeve over the female end of the cable.

Figure 3 Antenna and cable assembly



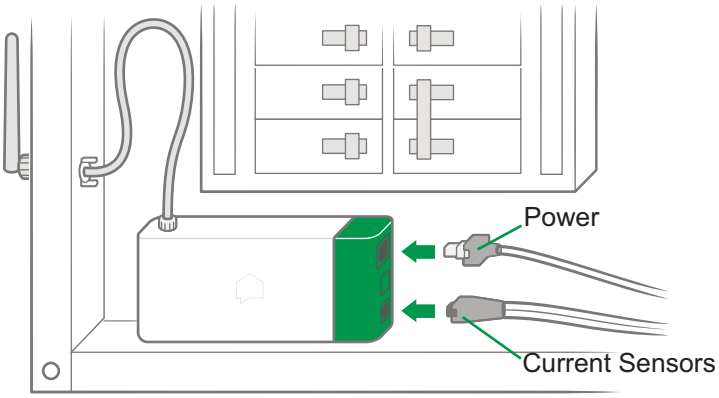
3. Thread the antenna and plug through the enclosure knockout hole, starting from the inside, until the retaining tabs on the plug click into place on the outside of the enclosure.
4. Holding the cable sleeve, screw the cable into the port at the top of the Schneider Energy Monitor.

Cable Connection

To connect the cables:

1. Connect the power cable, antenna cable, and current sensors to the monitor as shown.

   Figure 4 Power cable and sensor connections



   Note: Be sure to insert the main current sensors into the outer port. The middle port is for auxiliary current sensors.

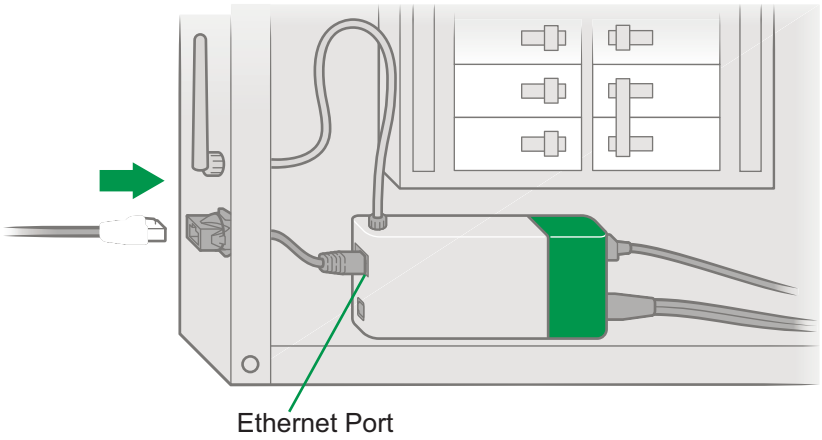
2. **Optional:** Install and connect the Ethernet knockout cable.
   The Ethernet cable enables a wired connection to the home's network router. If you are setting up the monitor with WiFi instead of Ethernet, skip this step.

   a. After the wireless antenna is installed, punch out another knockout cover in the load center.

   b. Insert the panel-mount end of the Ethernet knockout cable from inside the load center to outside the panel using the knockout.

   c. Connect the other side of the knockout cable to the monitor. Connect the house router's Ethernet cable to the panel-mount end of the Ethernet knockout cable.

   Figure 5 Ethernet knockout cable connection



3. Connect the Secondary Ethernet Cable.
   The secondary Ethernet cable (with two male ends) provides Power over Ethernet (PoE) and Ethernet Industrial Protocol (EIP). This enables a wired connection to the Schneider Inverter, or the Schneider Pulse Backup Controller, or both.

⚠ WARNING

HAZARD OF ELECTRIC SHOCK, EXPLOSION, AND FIRE

The Ethernet cable and Ethernet knockout cable that come with the Schneider Energy Monitor package are 600V-rated. If additional Ethernet cables are required they must be Power over Ethernet (PoE) CAT5E 600 V-rated cable (SEMONITORMTM or similar).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

   a. Connnect the secondary Ethernet cable to the RJ45 Ethernet port, located at the bottom of the Schneider Inverter or the side of the Schneider Pulse Backup Controller.
      For more information on connecting to the Schneider Inverter, see the *Schneider Inverter Installation and Operation Guide (TME12664)*.
      For more information on connecting to the Schneider Pulse Backup Controller, see the *Schneider Pulse Backup Controller Installation and Operation Guide (TME13781)*.

      Note: A dedicated knockout for this cable is provided in the Schneider Pulse Backup Controller. A knockout in an existing load center can also be used.

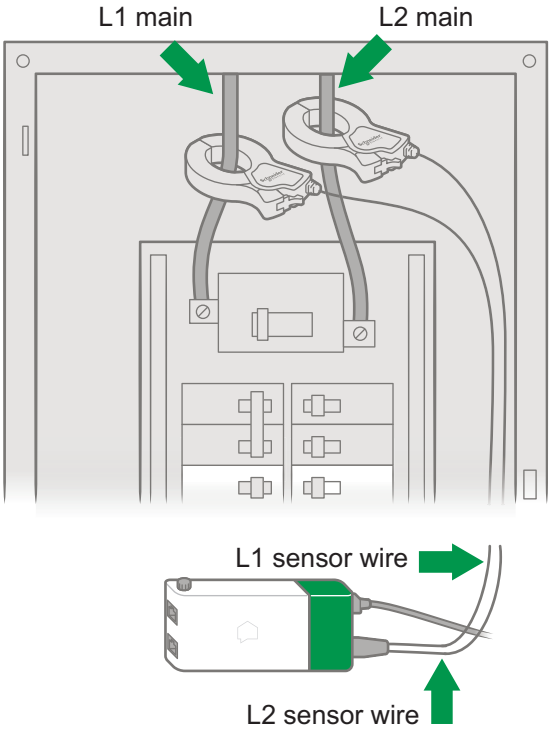
   b. Route the cable through conduit to the Schneider Energy Monitor.

Installing Current Sensors

To install current sensors:

1. Locate and identify the wires for the L1 and L2 phases of the incoming service mains.
2. Clamp sensors around service mains. If the sensors are labled L1 and L2, follow the labeling. If the sensors are not labeled L1 and L2, clamp the sensor connected to the upper wire of the Schneider Energy Monitor connection to the L1 main, and the lower wire from the connection to the L2 main, as shown below.

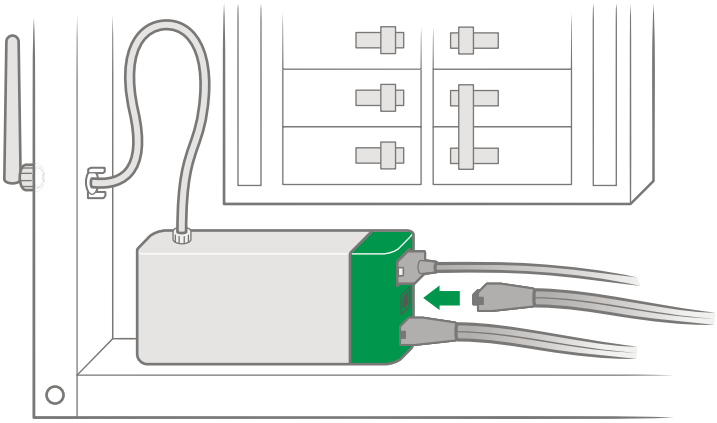
Figure 6 Sensor location



Note: Clamp the sensors around the service mains so that both labels are facing in the same direction. The labels must both be facing either the power source or facing away from the power source.

3. Once placed in the final locations, push the sensor locks in until you hear a click.
4. Connect the second set of current sensors to the middle port on the monitor.

Figure 7 Connect auxiliary current sensors



5. Locate the incoming connections from the solar or battery inverters, and identify them as L1 or L2 phase.
6. Clamp the auxiliary sensors around the wires from the incoming inverters. If the sensors are labeled L1 and L2, follow the labeling. If the sensors are not labled L1 and L2, clamp the sensor connected to the upper wire of the Schneider Energy Monitor connection to the L1 main, and the lower wire from the connection to the L2 main, as shown below.

Figure 8 Auxiliary current sensor placement

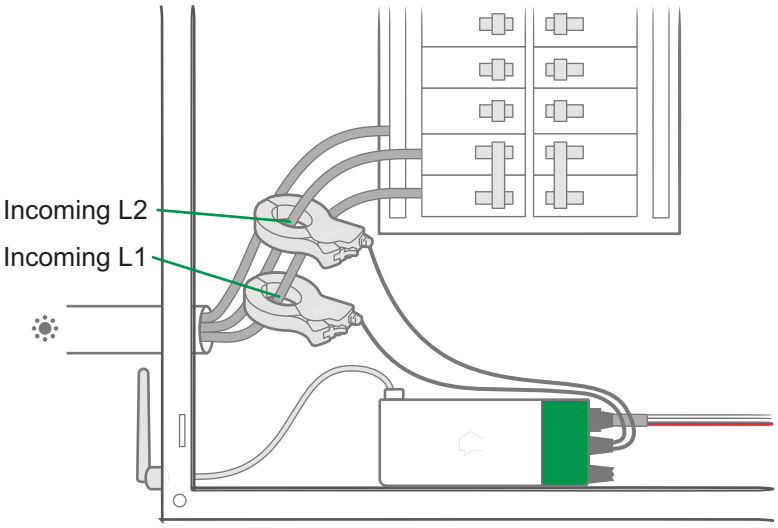
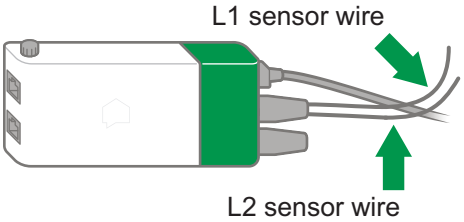


Figure 9 Auxiliary current sensor wires



Note:

- If there are multiple inverters connected to the load center, the sensors may need to be clamped over multiple wires to measure the total current from all inverters.
- Clamp the sensors around the incoming solar feed so that both labels are facing the inverters.

7. Once placed in the final locations, push the sensor locks in until you hear a click.

Connect the Power Wires

The power wires for the Schneider Energy Monitor can be connected inside the load center using one of the following methods.

Note:

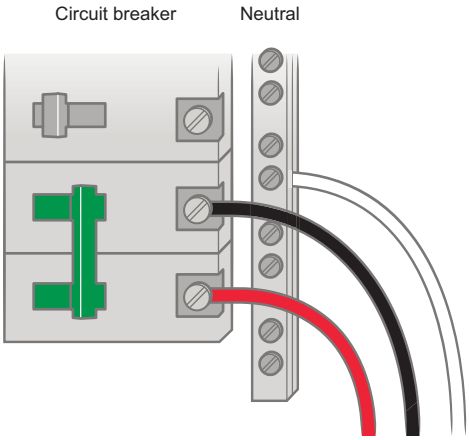
- For all three methods, follow the NEC and circuit breaker manufacturer guidelines for installation of the Schneider Energy Monitor power wires.
- For all three methods, connect the Schneider Energy Monitor black wire to L1, the red wire to L2, and the white neutral wire to an appropriately rated terminal on the load center neutral bus bar. See " Dedicated circuit breaker wiring" on the next page.

Dedicated Circuit Breaker Method

You can use this method if you have empty circuit breaker locations in the load center.

1. Add a new two-pole 15–20 A circuit breaker into the load center.
2. With circuit breaker OFF, connect the black power wire to one circuit breaker terminal and connect the red wire to the other terminal.

Figure 10 Dedicated circuit breaker wiring



Two Wire Rated Lug Method

You can use this method if an existing 15–30 A thermal magnetic two-pole circuit breaker in the load center has terminals that can accept two conductors.

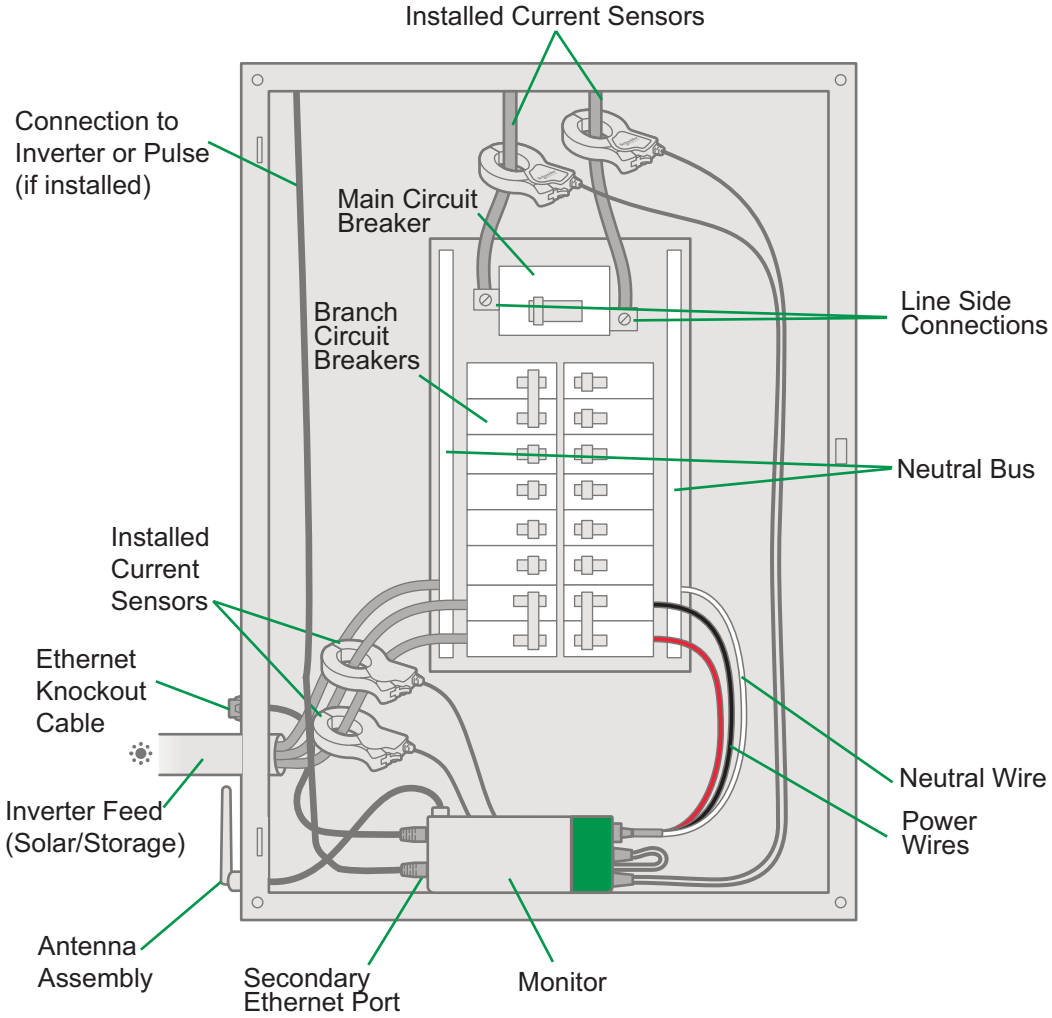
- With the circuit breaker OFF, connect the Schneider Energy Monitor power wires to the second conductor in the terminals.

Pigtail Wire Method

You can use this method to pigtail the Schneider Energy Monitor power wires to an existing power connection.

- With the circuit breaker OFF, create a splice connection to the two-pole circuit breaker following the NEC and circuit breaker manufacturer guidelines for splice connection types and wire size.

Figure 11 Example installation

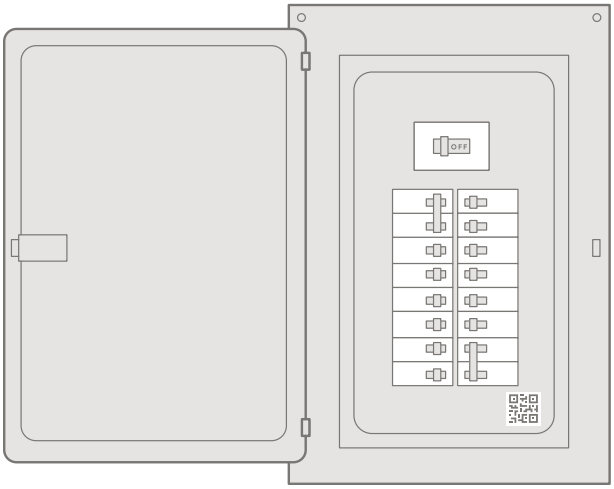


Replace the Load Center Panel Cover

To replace the load center panel cover:

1. Replace the panel cover. Check that the panel does not put pressure on the current sensor clamps that could cause them to open, then screw the panel into place.
2. Label the Schneider Energy Monitor circuit breaker.
3. Paste the QR code in the Schneider Energy Monitor packaging on the load center panel near the Schneider Energy Monitor circuit breaker.
   This code is used to add the monitor to the Schneider Home app.

Figure 12 QR code placement



4 Completing Installation

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Turning the Monitor On

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, AND FIRE

Thoroughly inspect the load center prior to energizing. Verify that no tools or materials have inadvertently been left inside the load center, and that all covers and doors are properly closed and secured.

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

1. Turn power ON. Power to the monitor will be energized through the Secondary Ethernet cable or when the connected circuit breaker is closed.
2. Within one minute, you should hear one the following sounds:

	Success Chime Installation was successful.
	Repeating Beep There is an installation problem. Check cable connections.
	No Sound The Schneider Energy Monitor cannot start. Check power cable connections.

3. Download the *Sense Pro Square D Edition* app to commission the monitor. See "Required Tools and Equipment" on page 13.

For troubleshooting help, visit http://help.sense.com.

Commissioning the System

Download the *Sense Pro Square D Edition* app to commission your Schneider Energy Monitor. See "Required Tools and Equipment" on page 13.

5 Specifications

What's in This Chapter?

Specifications 29

Specifications

Monitor Specifications	
Compatibility	CAT II 120 Vac (90–130 V)
Power Use	< 5 W, 0.1 A. 120 VAC (L-N) from single phase (split-phase), overvoltage category II, 50-60 Hz, 0.1 A; or POE 48 VDC, 0.1 A
Wi-Fi	2.4 GHz 802.11 b/g/n
Ethernet capable	POE+, IEEE 802.3af/at Backwards compatible to Type 1 POE: power usage is below 12.95 W.
Current Sensor Specifications	
Current Sensor Rating	CAT IV 250 V 200 A max / 333 mV max
Cable length	46 in. I Oval: 1.083 x 1.565 in.
May be used on uninsulated conductors	
Climate Specifications	
Relative Humidity	< 90%: IPx0 Rating
Temperature	-31°F to 158°F (-35°C to 70°C)
Elevation	Below 9842 ft. (3000 m)

The Schneider Energy Monitor System has been tested and certified for use with Square D™ circuit breakers, load centers and combination service entrance devices (CSEDs) as installed per this manual.

For use in non-Square D load centers and CSEDs please consult with the manufacturer for compatibility.

E496043

Certified to CSA STD C22.2 No. 61010-1-12
Conforms to UL STD 61010-1
Conforms to CAN ICES-3(B)/NMB-3(B)
Conforms to UL STD 2808

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. Operation is subject to the following conditions:

1. It may not cause harmful interference.
2. It must accept any interference received, including interference that may cause undesired operation. If it is not installed and used as per the instructions, it may cause interference which is harmful to wireless communications. There is no guarantee that interference will not occur in a particular installation. If it does cause interference we recommend: reorienting or relocating the receiving antenna, or increasing the separation between the device and the receiver.
3. Patents: http://sense.com/patents.

Schneider Electric

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