



Samsara PM-Series Power Monitoring Install Guide

Installation Setup

Safety Precautions

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Samsara for any consequences arising out of the use of this material. Turn off all power supplying the equipment before performing the installation.

System Summary

System Type	Description	Allowable Voltages	CTs Needed
Single phase, 2-Wire	1 line and neutral	20-480V	1
Single phase, 3-Wire	2 lines and neutral	120-480V	2
3-Phase, 3-Wire	3 lines and no neutral	120-415V	2
3-Phase, 4-Wire	3 lines and neutral	120-480V	3

Required Materials

GW22 IoT Gateway
GW22 Gateway Adapter
Current transformers (CTs)
Fuses
Samsara PM10 or PM20 Power Monitor
22/3 or 22/4 shielded cable (not included)

Power Monitoring Installation

1. Turn Off Power

Disconnect or switch power off before attempting to install, connect, disconnect or service the power meter or the external current transformers (CTs).

2. Determine System Type

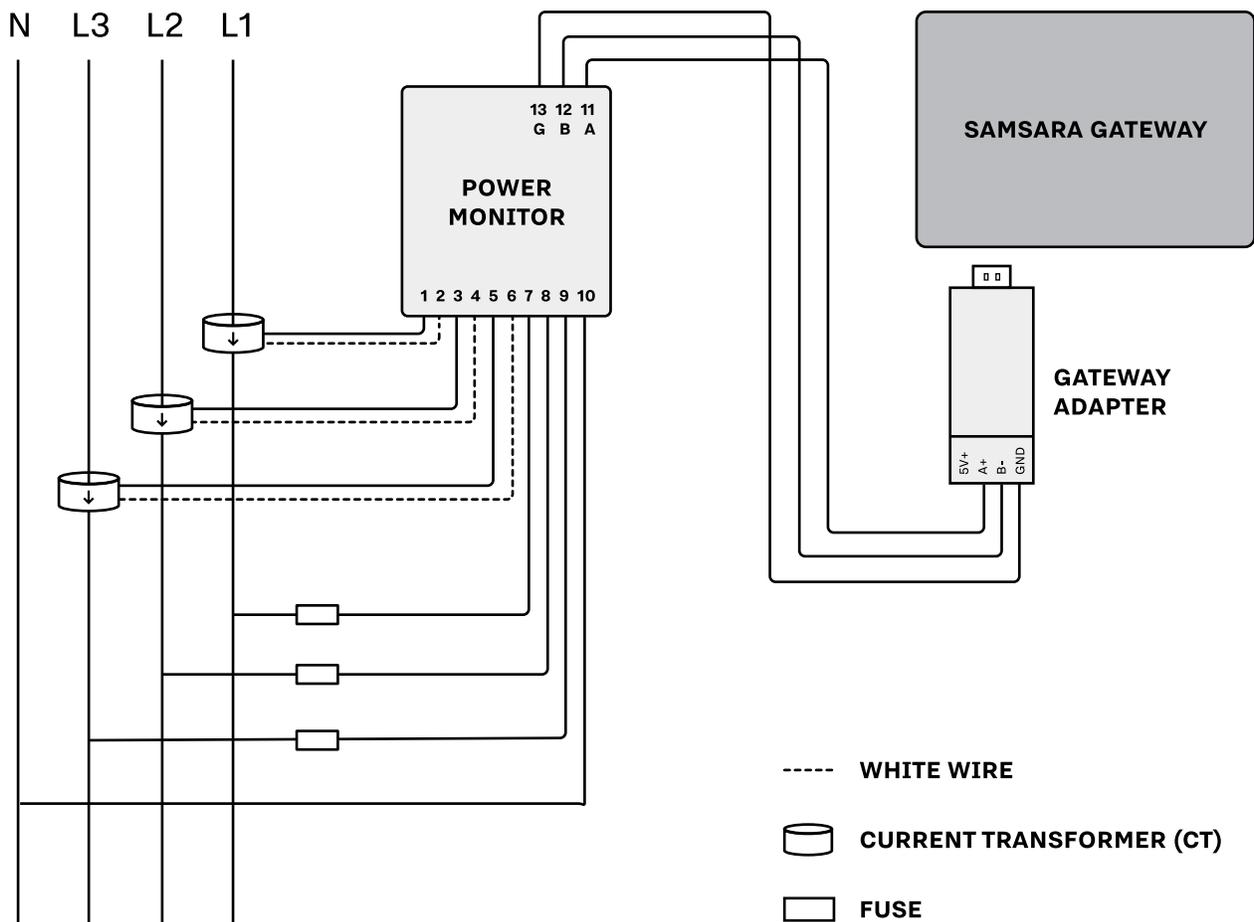
Distinguish and then identify the neutral and hot line(s) (hot wire(s), usually black or red). Label the neutral and then hot wire(s).

System Type	Labeling	CTs Needed	Wiring Diagram
3-Phase, 4-Wire	Label the hot wires as L1, L2 and L3. Label the neutral as N.	3	See below
3-Phase, 3-Wire	Label the hot wires as L1, L2 and L3. There is no neutral.	2	See Appendix
Single phase, 3-Wire	Label the hot wires as L1 and L2. Label the neutral as N.	2	See Appendix
Single phase, 2-Wire	Label the hot wire as L1. Label the neutral as N.	1	See Appendix

4. Connect Power Meter

3-Phase 4-Wire Power Monitoring Wiring for up to 480V

1. Wire the CT1, CT2, and CT3 to ports 1-6 on the power meter respectively. Connect black wires to ports 1,3,5 and white wires to ports 2,4,6. Must be completed BEFORE connecting CTs to L1, L2, and L3 hot wires.
2. Connect the CT1 so that the L1 hot wire passes through it and the arrow on the CT points towards the load. Repeat for CT2, and CT3 respectively. Ensure all CTs are oriented with the arrow pointing towards the load.
3. Connect the L1, L2, L3 hot line voltage reference wire to port 7,8,9 on the power meter.
4. Connect the neutral line voltage reference wire to port 10 on the power meter.



5. Wire Power Meter to Gateway Adapter

Wire ports 11,12, and 13 on the power meter to the gateway adapter, and plug it into the gateway. Use 22/3 or 22/4 shielded wire.

1. Connect port 11 (A) on the power meter to A on the gateway adapter.
2. Connect port 12 (B) on the power meter to B- on the adapter.
3. Connect port 13 (G) on the power meter to GND on the adapter.

6. Connect Gateway to Power

Connect the gateway to power with the 120V AC wall adapter, or with the direct 12V-48V DC adapter.

7. Turn Power On

Once the meter is properly mounted to the DIN Rail or enclosure, all wiring is completed, and terminal block covers are installed, power can be turned back on.

With power back on, the gateway will automatically connect to the cloud via its cellular connection and update to the latest software. The LED indicates the gateway status. Confirm that the gateway LED turns green.



Solid Orange: The gateway is booting up



Blinking Orange: The gateway is attempting to establish a secure cellular or WiFi connection



Solid Green: The gateway is securely connected to the cloud

8. Verify Power measurements in the Cloud

Log into your Samsara account at cloud.samsara.com and click on the power tab. Click the > button to show power monitor details. Confirm phase voltage is correct given your system voltage. Not all possible systems are listed below.

System Type	System Voltage	Approximate Phase Voltage Reading in Samsara Cloud
Single phase, 2-Wire	120V	~ 120V
Single phase, 3-Wire	120/240V	~ 120V
Single phase, 3-Wire	120/208V	~ 120V
3-Phase, 4-Wire	277/480V	~ 277V for each phase

3-MILE ▾
Fleet
Current Loop
Power
Alerts
⚙️

Search

katie@samsara.com ▾

← All Sensors

Day ▾

<

FEB 1 - FEB 2

>

Live

●
Power - Pump 9 ⚙️

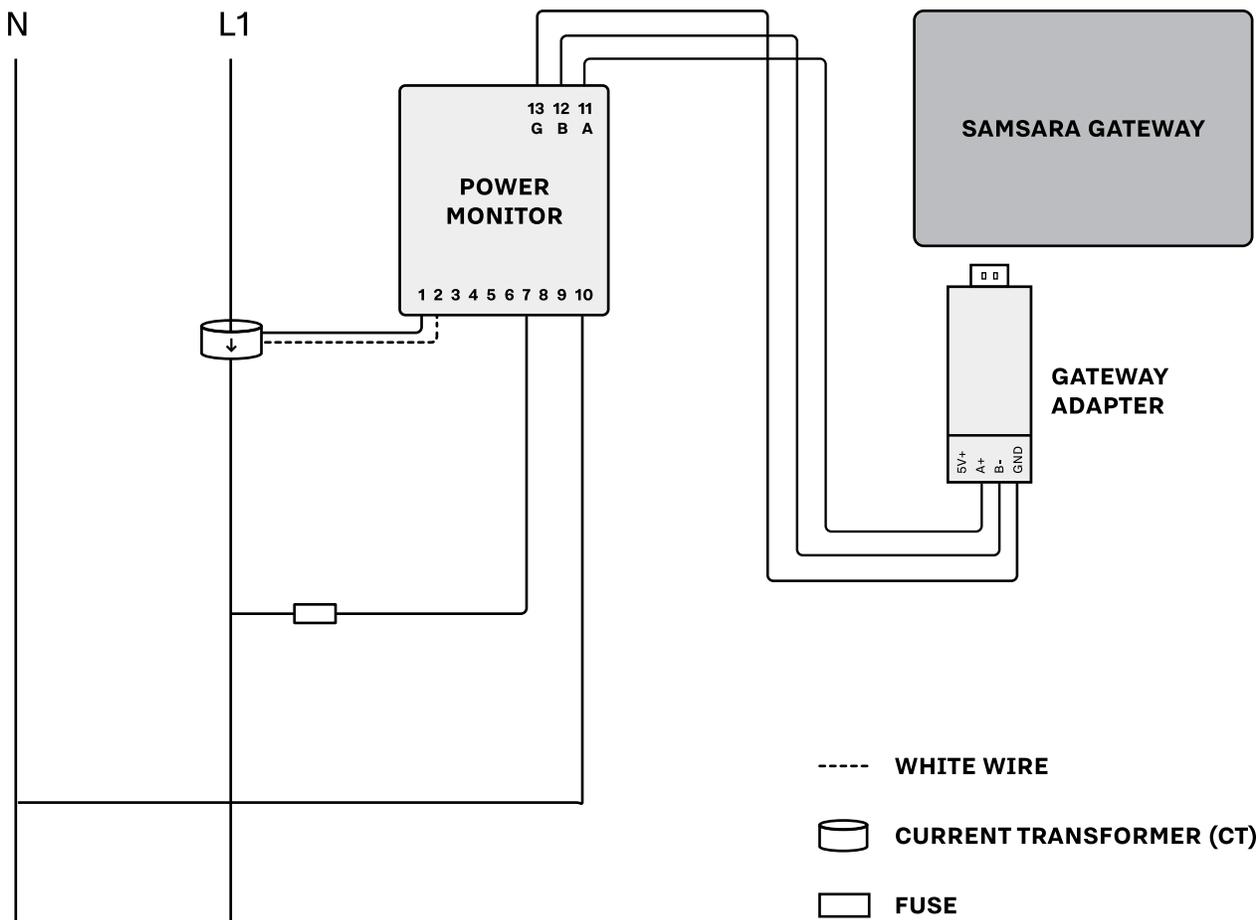
MAC address	b0:25:aa:00:48:de		
Product Type	PM20		
Connected to	📶 3-Mile PLC Cabinet		
Last location	S Bascom Ave, San Jose, CA		
Total Power	136.77kW		
Power	Phase 1: 45.60kW	Phase 2: 45.28kW	Phase 3: 45.88kW
Voltage	Phase 1: 279.6V	Phase 2: 279.2V	Phase 3: 279.3V
Current	Phase 1: 192.00A	Phase 2: 190.00A	Phase 3: 192.00A
Power Factor	Phase 1: 1.15	Phase 2: 1.15	Phase 3: 1.14
Asset View	Asset view		

Appendix

Single-Phase 2-Wire Power Monitoring Wiring for 120V, 240V, 230V

Alternate wiring for Step 4, connecting the power meter.

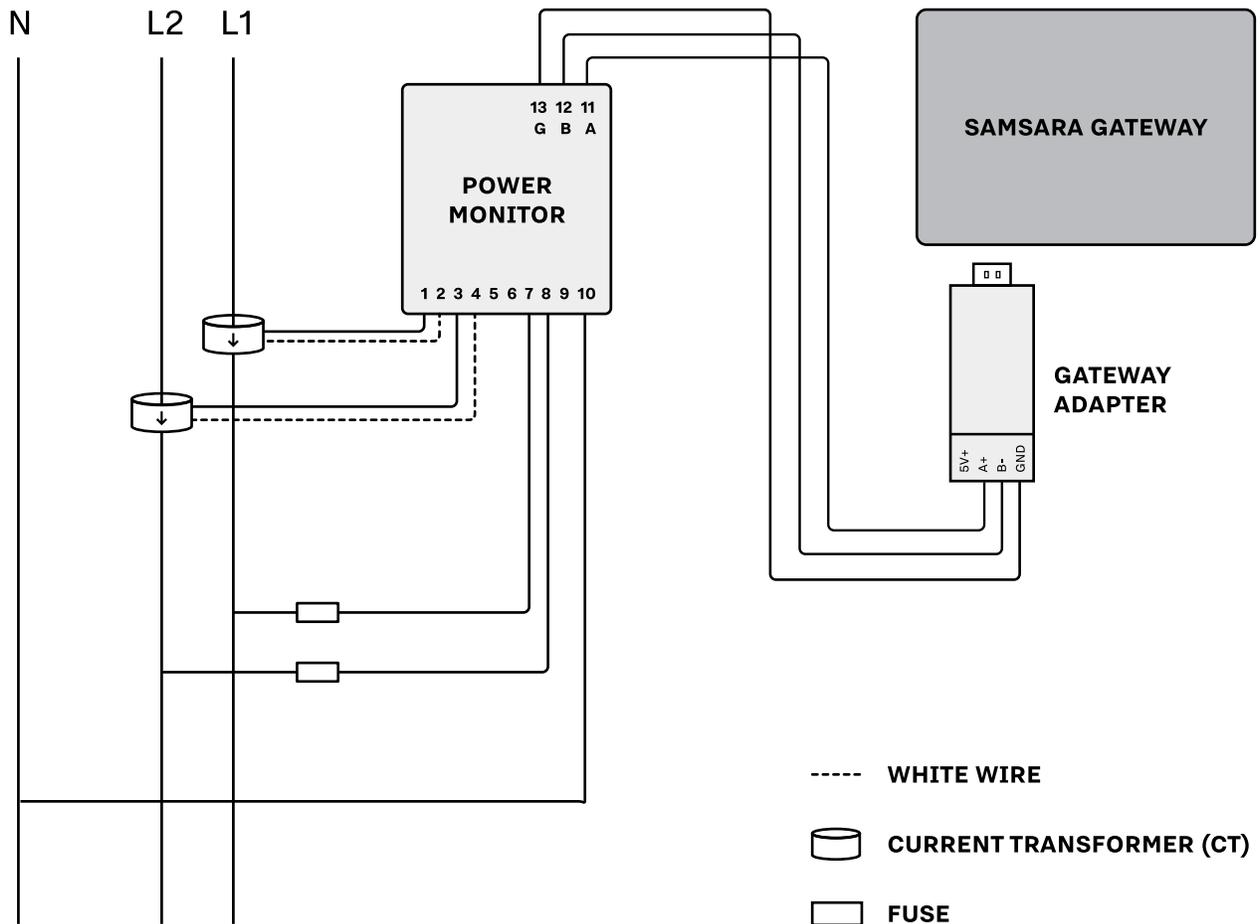
1. Connect the CT black wire to port 1 on the power meter and the CT white wire to port 2 on the power meter. Must be completed BEFORE connecting the CT to the hot wire.
2. Connect the CT so that the L1 hot wire passes through it and the arrow on the CT points towards the load.
3. Connect the L1 hot line voltage reference wire to port 7 on the power meter.
4. Connect the neutral line voltage reference wire to port 10 on the power meter.



Single-Phase 3-Wire Power Monitoring Wiring for 120/240 volt or 120/208 volt

Alternate wiring for Step 4 (connect power meter).

1. Wire the 2 CTs to ports 1-4 on the power meter. Connect black wires to ports 1 and 3 and white wires to ports 2 and 4. Must be completed BEFORE connecting CTs to L1 and L2 hot wires.
2. Connect the CT1 so that the L1 hot wire passes through it and the arrow on the CT points towards the load. Repeat for CT2. Ensure all CTs are oriented with the arrow pointing towards the load.
3. Connect the L1 and L2 hot line voltage reference wire to port 7 and 8 on the power meter.
4. Connect the neutral line voltage reference wire to port 10 on the power meter.



Single-Phase 3-Wire Power Monitoring Wiring for up to 415 volts

Alternate wiring for Step 4 (connect power meter).

1. Connect the CT1 black wire to port 1 on the power meter and the CT1 white wire to port 2 on the power meter.
2. Connect the CT3 black wire to port 5 on the power meter and the CT3 white wire to port 6 on the power meter. Must be completed BEFORE connecting CT to hot wire.
3. Connect the CT1 so that the L1 hot wire passes through it and the arrow on the CT points towards the load. Connect the CT3 so that the L3 hot wire passes through it and the arrow on the CT points towards the load.
4. Connect the L1 hot line voltage reference wire to port 7 on the power meter.
5. Connect the L3 hot line voltage reference wire to port 9 on the power meter.
6. Install a jumper wire from port 8 to port 10 on the power meter.

