

ELECTRIQ  POWER™

The Smart Home Battery Solution



Quick Install Guide for the Electriq Power PowerMeter








*Model Number:
WND-WR-MB*

V. 043120

IMPORTANT SAFETY WARNINGS

PLEASE READ ALL INSTRUCTIONS AND CAUTIONARY MARKINGS ON THE UNIT AND THIS MANUAL BEFORE USING THE POWERMETER. AND, STORE THIS USER MANUAL WHERE IT CAN BE ACCESSED EASILY.

Safety Symbols

	Read, understand, and follow all instructions including warnings and precautions before installing and using the product.
	Potential Shock Hazard from Dangerous High Voltage.
	Functional ground; should be connected to earth ground if possible, but is not required for safety grounding.
	UL Listing mark for U.S.A. and Canada.
	FCC Mark. This logo indicates compliance with part 15 of the FCC rules.
	Complies with the regulations of the European Union for Product Safety and Electro-Magnetic Compatibility. <ul style="list-style-type: none">• Low Voltage Directive – EN 61010-1:2010 (3rd Edition)• EMC Directive – EN 61326-1:2006 Industrial Locations
	This indicates an AC voltage.

1. Precautions

1.1 Symbols

- Only qualified personnel or licensed electricians should install the PowerMeter. The mains voltages of 120 to 600 Vac can be lethal!
- Follow all applicable local and national electrical and safety codes.

Important Safety Warnings

- The terminal block screws are not insulated. Do not contact metal tools to the screw terminals if the circuit is live!
- Verify that circuit voltages and currents are within the proper range for the meter model.
- Use only CTs provided in the PowerMeter kit.
- Protect the line voltage conductors to the meter with fuses or circuit breakers (not needed for the neutral or ground wires).
- Disconnect equipment from HAZARDOUS LIVE voltages before access.
- If the meter is not installed correctly, the safety protections may be impaired.

2. Overview

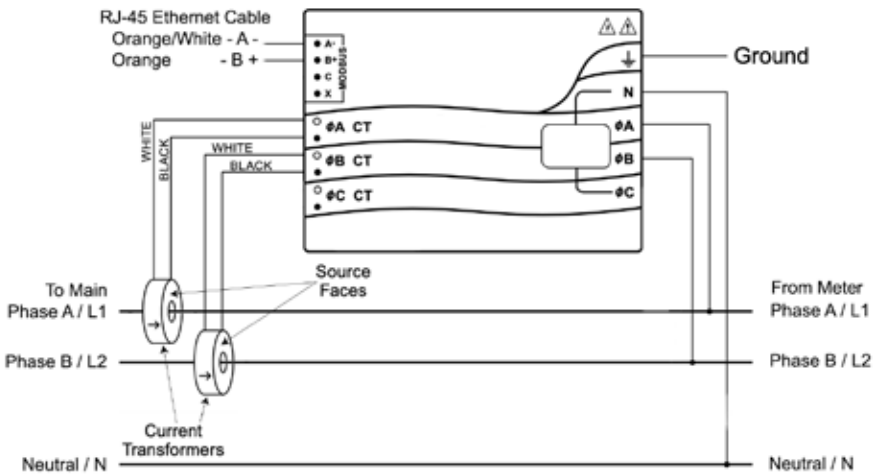


Figure 1: US Single-Phase Three-Wire with Neutral

3. Installation

3.1 Installation Checklist

See the sections referenced below for installation details.

- Turn off power** before making line voltage connections.
- Mount the meter (**see 3.2**).
- Connect circuit breakers or fuses and disconnects (**see 3.3.1**).
- Connect the line voltage wires to the meter's green terminal block (**see 3.3.2**).
- Mount the CTs around the line conductors. Make sure the CTs face the source (**see 3.4**).
- Connect the twisted white and black wires from the CTs to the black terminal block on the meter, matching the wire colors to the white and black dots on the meter label (**see 3.4.1**).
- Check that the CT phases match the line voltage phases (**see 3.4**).
- Connect the output terminals of the meter to the monitoring equipment (**see 3.5**).
- Check that all the wires are securely installed in the terminal blocks by tugging on each wire.
- Turn on power to the meter.

3.2 Mounting

- Protect the meter from temperatures below -40°C (-40°F) or above 75°C (167°F), excessive moisture, dust, salt spray, or other contamination, using a NEMA rated enclosure if necessary. The meter requires an environment no worse than pollution degree 2 (normally only non-conductive pollution; occasionally, a temporary conductivity caused by condensation).
- The meter must be installed in an electrical service panel or an enclosure.
- Do not** use the meter as a drilling guide; the drill chuck can damage the screw terminals and metal shavings may fall into the connectors. The meter has two mounting holes spaced 5.375 in. (137 mm) apart (center-to-center). These mounting holes are normally obscured by the detachable screw terminals. Remove the screw terminals to mark the hole positions and mount the meter. Self-tapping #8 sheet metal screws are included. Don't over-tighten the screws, as long-term stress on the case can cause cracking.

3.3 Connect Voltage Terminals

3.3.1 Circuit Protection

The PowerMeter is considered “permanently connected equipment” and requires a disconnect means (circuit breaker, switch, or disconnect) and overcurrent protection (fuse or circuit breaker).

The meter only draws 10-30 milliamps, so the rating of any switches, disconnects, fuses, or circuit breakers is determined by the wire gauge, the mains voltage, and the current interrupting rating required.

- ❑ The disconnect or circuit breaker must be clearly marked, suitably located, and easily reached.
- ❑ Use circuit breakers or fuses rated for 20 amps or less.
- ❑ Use ganged circuit breakers when monitoring more than one line voltage.
- ❑ The circuit breakers or fuses must protect the mains terminals labeled **ØA and ØB**. In the rare cases where neutral has overcurrent protection, then the overcurrent protection device must interrupt both neutral and the ungrounded conductors simultaneously.
- ❑ The circuit protection / disconnect system must meet IEC 60947 1 and IEC 60947-3, as well as all national and local electrical codes.

3.3.2 Line Wiring

- ❑ **Always turn off power** before connecting the line voltage inputs to the meter.
- ❑ For the line voltage wires, Electriq Power recommends 18 to 12 AWG stranded wire, type THHN, MTW, or THWN, 600 V.
- ❑ Use copper conductors only. The screw terminals are only rated for copper wire.
- ❑ Do not place more than one wire in a screw terminal; use additional wire nuts or terminal blocks if needed.

The screw terminals handle wire up to 12 AWG. Connect each voltage line to the green terminal block as shown in **Figure 1** above. After the voltage lines have been connected, make sure both terminal blocks are fully seated in the meter.

Connect each line voltage to the appropriate phase; also connect ground and neutral.

3.4 Connect Current Transformers

- ❑ **WARNING:** To reduce the risk of electric shock, always open or disconnect circuit from power- distribution system or service of the building before installing or servicing current transformers.
- ❑ Use only the CTs provided in the meter kit. They are matched and configured for the meter. The CTs are not suitable for Class 2 wiring methods and must be treated as Class 1 wires.
- ❑ Secure each current transformer and route the lead wires so that they do not directly contact live terminals or buses.
- ❑ Do not install current transformers where they would: 1) exceed 75 percent of the wiring space of any cross-sectional area within the equipment, 2) would block ventilation openings, or 3) would be in an area of breaker arc venting.
- ❑ Be careful to match the CTs with the voltage phases. Make sure the **ØA CT** is measuring the current on the same phase being monitored by the **ØA** voltage input, and the same for phase B. Use the supplied colored labels or colored tape to identify the CT leads.
- ❑ Find the source arrow or label "THIS SIDE TOWARD GRID" on the CT and face/point toward the source of current.

Install the CTs around the conductor to be measured and connect the CT leads to the meter as shown in **Figure 1** above.

Split-core CTs can be opened for installation around a conductor. A nylon cable tie may be secured around the CT to prevent inadvertent opening.

CTs are directional. If they are mounted backwards or with their white and black wires swapped the measured power will be negative.

3.4.1 CT Wiring

The current transformers connect to the six position black screw terminal block. Connect the white and black CT wires to the meter terminals marked **ØA CT** and **ØB CT** (see **Figure 1** above). Excess length may be trimmed from the wires if desired. Connect each CT with the white wire aligned with the white dot on the label, and the black wire aligned with the black dot. Note the order in which the phases are connected, as the line voltage phases **must** match the current phases for accurate power measurement.

3.5 Connect the Modbus Signals

- ❑ Route the provided CAT6 cable (black 4-pin connector) from the main panel / PowerMeter location to the inverter panel (RJ-45 male end).
- ❑ Replace the existing USB/RS-485 cable that connects the PowerHub to the inverter with the one provided in the PowerMeter kit (add the RJ-45 coupler on the inverter side).
- ❑ Plug the RJ-45 male end of cable into the coupler on the USB RS-485 cable that connects to inverter (see Figure 2).
- ❑ Plug the 4-pin black connector into the RS-485/Modbus socket on the PowerMeter (see Figure 1).

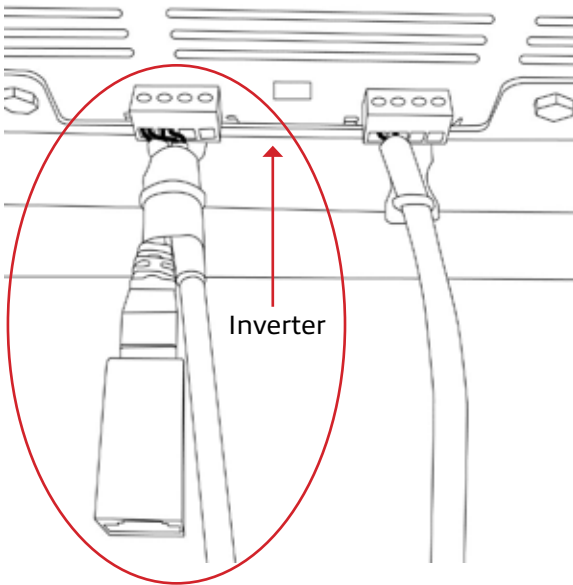


Figure 2: USB/RS485 cable with RJ45 connector and barrow

3.6 Maintenance and Repair

The PowerMeter requires no maintenance. It is not user serviceable and there are no replaceable parts except the pluggable screw terminals. There are no diagnostic tests that can be performed by the installer.

In the event of any failure, the meter must be returned for service (contact Electriq Power Support for an RMA at support@electriqpower.com).



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