Raritan
A brand of legrand

QUICK SETUP GUIDE

BCM2 Series Branch Circuit Monitors

Safety Information

DANGER!

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.

This equipment must only be installed and serviced by qualified electrical personnel.

Read, understand and follow the instructions before installing this product.

Turn off all power supplying equipment before working on or inside the equipment.

Any covers that may be displaced during the installation must be reinstalled before powering the unit.

Use a properly rated voltage sensing device to confirm power is off.

DO NOT DEPEND ON THIS PRODUCT FOR VOLTAGE INDICATION

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

NOTICE

This product is not intended for life or safety applications.

Do not install this product in hazardous or classified locations.

The installer is responsible for conformance to all applicable codes.

Mount this product inside a suitable fire and electrical enclosure.

CAUTION

RISK OF EQUIPMENT DAMAGE

This product is designed only for use with 0.33V output current transducers (CTs).

DO NOT USE CURRENT OUTPUT (e.g. 5A) CTs ON THIS PRODUCT.

Failure to follow these instructions can result in overheating and permanent equipment damage.

For use in a Pollution Degree 2 or better environment only. A Pollution Degree 2 environment must control conductive pollution and the possibility of condensation or high humidity. Consider the enclosure, the correct use of ventilation, thermal properties of the equipment, and the relationship with the environment. Installation category: CAT II or CAT III

Provide overcurrent protection and disconnecting device for supply conductors with approved current limiting devices suitable for protecting the wiring.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the device may be impaired.

 This symbol indicates an electrical shock hazard exists.

 Documentation must be consulted where this symbol is used on the product.

Equipment Maintenance and Service

WARNING! This equipment must only be installed by qualified electrical personnel. This product contains no user serviceable parts. Do not open, alter or disassemble this product. All repairs and servicing must be performed by Raritan authorized service personnel. Failure to comply with this warning may result in electric shock, personal injury and death.

Raritan
400 Cottontail Lane, Somerset, NJ 08873 USA

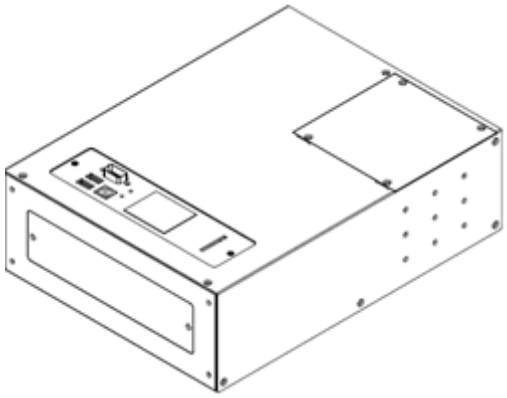
Product Overview

Raritan BCM2 is a 96 channel branch circuit monitor.

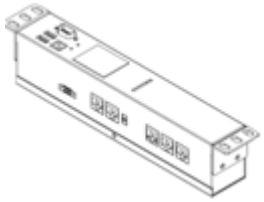
Models available with or without built-in meter controller, with power line cords or field wiring terminals.

One meter controller (built-in or external) interconnects one to eight BCM2. Built-in controller is top or front mountable. External controller rack mounts or attaches to PDU access door.

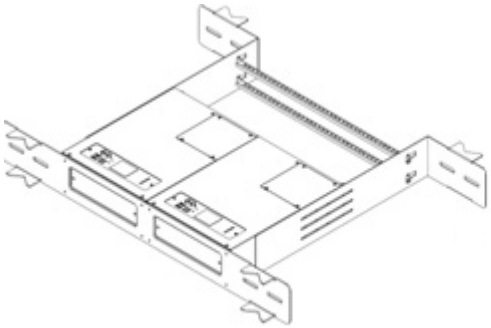
- **BCM2_96xx (with built-in controller)**



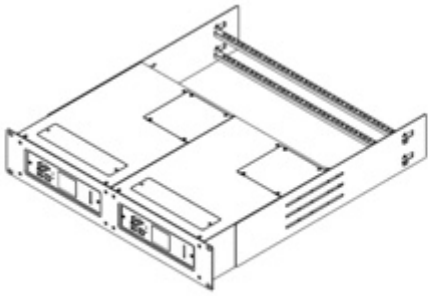
- **External meter controller**



Mounting kits are available for subfloor, rack or wall. Floor and rack mount kits hold one or two BCM2 meters.



BCM2_FLOOR_MOUNT_KIT



BCM2_RACK_MOUNT_KIT



BCM2_WALL_MOUNT_KIT

Product Specifications

Voltage Measurement Inputs:

Input Range*	90-277VLN, 156-480VLL
Phase to Ground*	277V
Measurement Category	CAT III, Pollution Level 2
Frequency	47-63 Hz
Input Impedance	10MΩ

*Ratings for models with field wiring terminals. For models with factory installed line-cords, rating is limited by plug and ratings are labeled on back on unit.

Current Measurement Inputs:

Input Range	0-400mV
Input Impedance	10k
CT Type	Voltage Output = 333mV at rated current
CT Rated Current	1-1200A

Meter Measurement Accuracy:

Active Power & Energy	0.5%: IEC 62053 Class .5, EN 50470-3 Class C
Reactive Power & Energy	2%
RMS Voltage & Current	0.2%
Frequency	0.1%
Sample Rate	64x AC frequency (phase locked)
Measurement Update Rate	3 seconds: IEC 61000-4-30 Class S

Power Requirements:

Voltage	90-240V
Current	0.2A
Overvoltage Category	CAT III, Pollution Level 2
Frequency	47-63 Hz

Environmental:

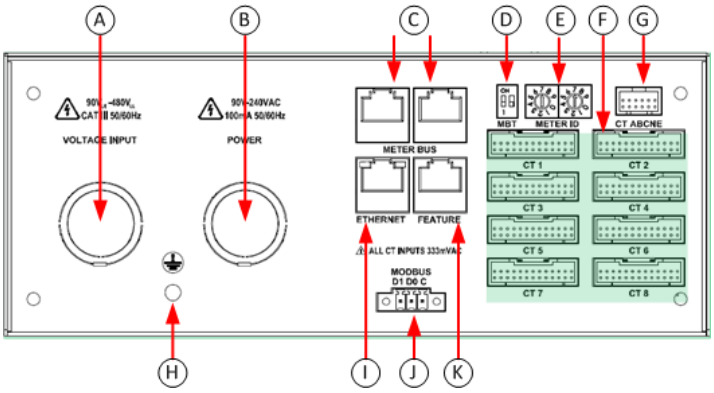
Operating Temperature	0-60°C
Operating Humidity	5-85%RH
Operating Elevation	0-3000m

Conformance:

Safety	UL/EN 61010-1
EMC/EMI	EN61326-1, FCC Part 15 Class A

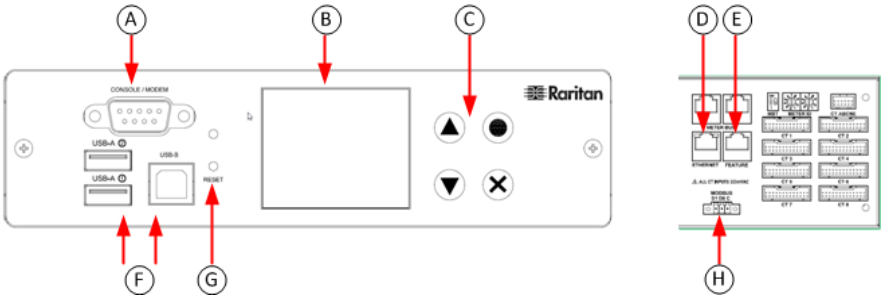
BCM2 Rear Panel Connectors and Controls

- **A** Voltage measurement input. Model dependent: line cord or conduit knockout
- **B** Meter power input. Not present on line cord models.
- **C** Meter Bus connectors. Daisy chains multiple meters to common controller.
- **D** Meter Bus Terminator Switch. Electrically terminates meter bus.
- **E** Meter ID switches. Assigns each meter a unique ID number.
- **F** Eight branch circuit CT connectors (CT1 through CT8).
- **G** Panel mains CT connector.
- **H** Ground connection point (optionally grounds meter to rack).
- **I** 10/100 base-t Ethernet jack. (Models with built-in meter controller.)
- **J** MODBUS RTU isolated RS485. (Models with built-in meter controller.)
- **K** Sensor port. (Models with built-in meter controller.)



Meter Controller Connectors and Controls

- **A** RS-232 for serial command line interpreter (CLI) or phone-line modem access.
- **B** LCD displays meter readings and configuration.
- **C** Keypad. Up, down, select, cancel.
- **D** 10/100 base-t Ethernet.
- **E** Sensor port (temperature, humidity, contact closure, etc.)
- **F** USB A & B ports: flash drives, WIFI, serial port.
- **G** Pin-hole access controller reset button
- **H** MODBUS RTU isolated RS-485



Voltage Measurement and Power Wiring

BCM2-96xx series products are available with factory installed line cords (PLUGGABLE EQUIPMENT) or conduit knockouts and field wiring terminals (PERMANENTLY CONNECTED EQUIPMENT).

This section describes how to wire models with conduit knockouts and field wiring terminals. Models with factory installed line cords are not end user wired and must not be opened or modified.

There are two conduit knockouts on the rear panel – one for voltage inputs (voltages that are measured), the other for power (power to run the product). In most cases, only voltage inputs are wired because power can be derived from the voltage inputs (see jumpers in figure).

Product power is taken from the voltage inputs using two jumpers. A separate circuit can be used for power which insures BCM2 continues to operate when voltages inputs fail. A separate power circuit MUST be used if the voltage inputs exceed power rating (90-240VAC). When using a separate circuit, remove factory jumpers and wire circuit to the power L1 and L2 terminals.

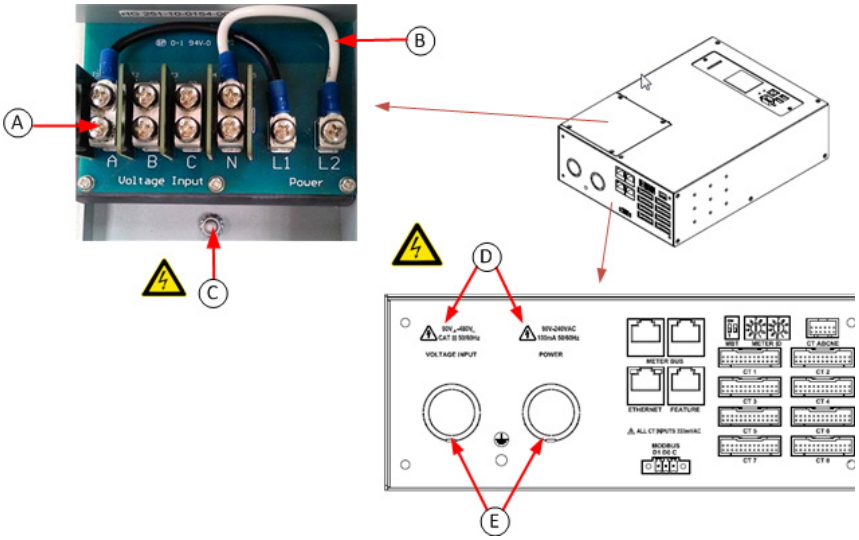
A Terminals accept 14-18 AWG solid or stranded wire. Use ring terminals on stranded wire. Use wire rated 75°C or higher.

B Jumpers power unit from voltage inputs. Move or remove as necessary.

C Connect ground wires to stud.

D Verify circuit voltages match product ratings.

E ½ and ¾ conduit fitting knockouts



Panel Voltage	Voltage Inputs				Power		CT ABCNE				
	A	B	C	N	L1	L2	A	B	C	N	E
1-phase 120V, 230V	X			X	A	N	X			O	O
1-phase 208V	X	X		O	A	B	X			O	O
Split-phase 120/240	X	X		X	A	B	X	X		O	O
3-phase 4-wire	X	X	X		A	B	X	X	X	O	O
3-phase 5-wire	X	X	X	X	A	N	X	X	X	O	O

Current Transformer (CT) Wiring

A Multi-conductor CT cable. Available lengths: 3m, 10m.

B Connect labeled end into matching labeled rear panel connector

C CT plugs into 2-pin locking connector (Molex 43640-0201)

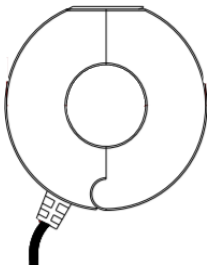
D Main Circuit: 3 phase lines (A,B,C), Neutral (N), Earth (E).

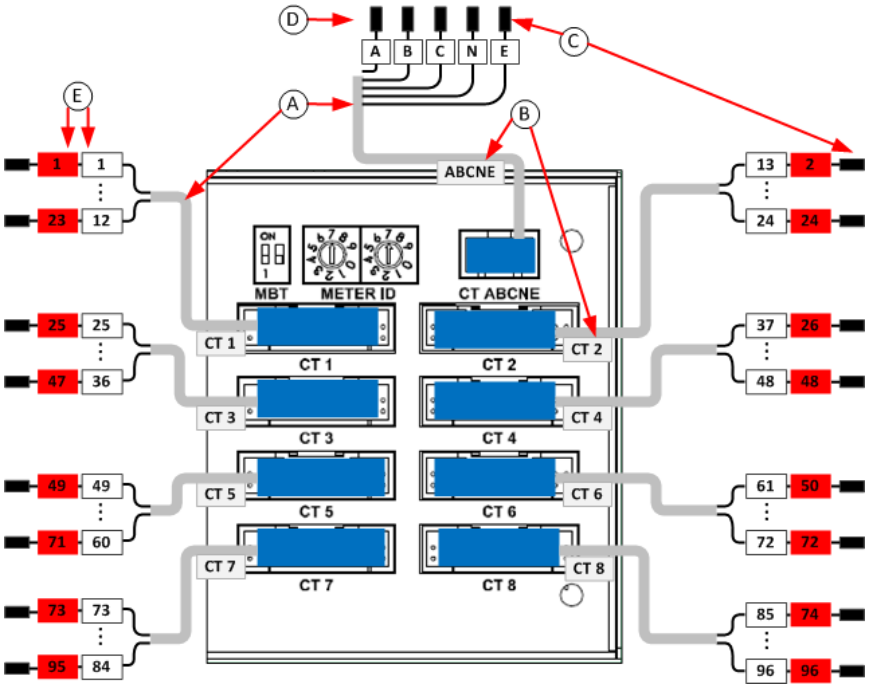
E Branch Circuits have two labels: Red labels for odd/even numbered panels. White labels for sequentially numbered panels.

All CTs 333mV output. DO NOT use current output CT.

CT can be connected to live circuit in either direction. Meter auto corrects polarity.

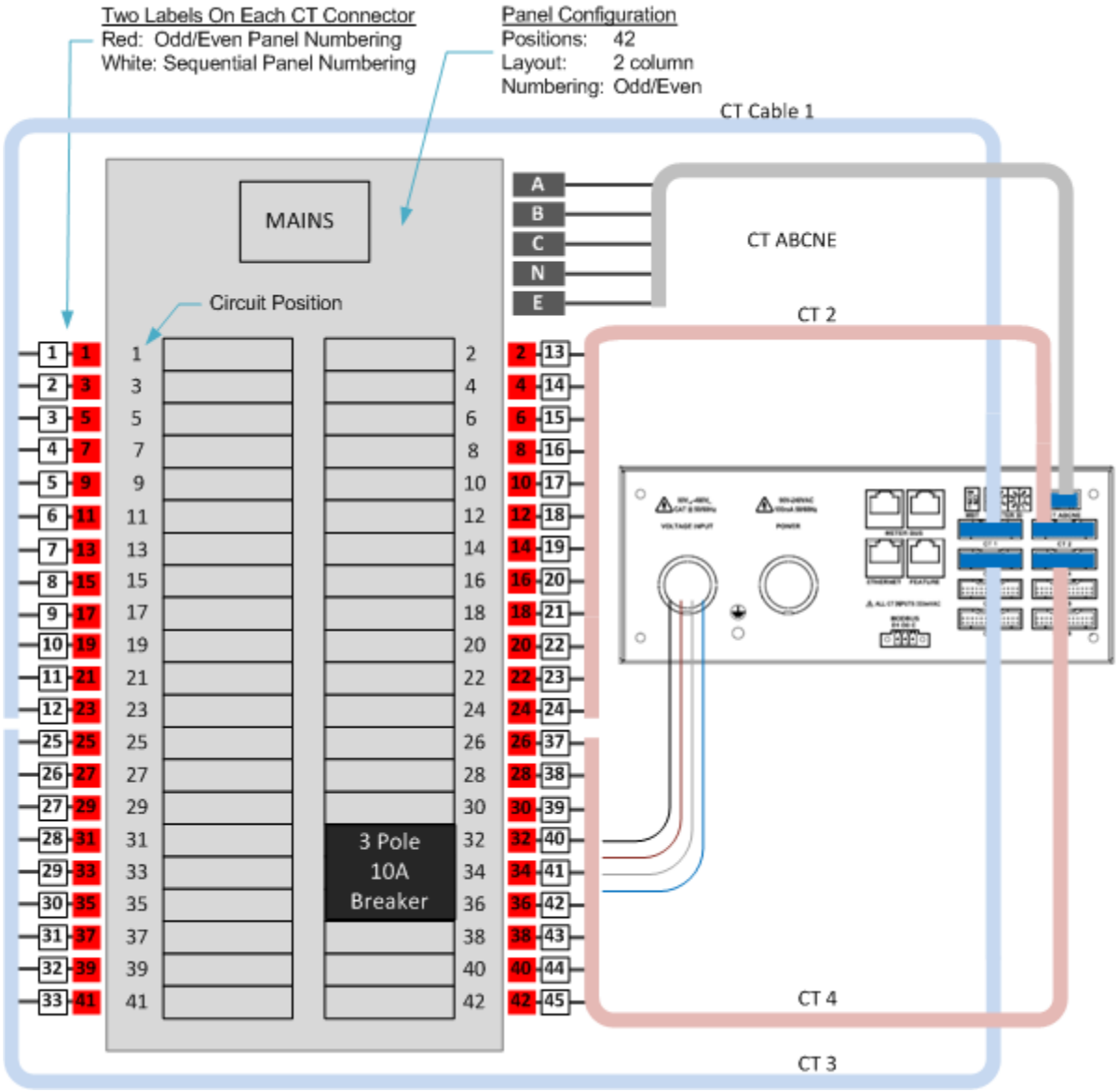
CT must be completely closed and tab locked to ensure proper energy metering.



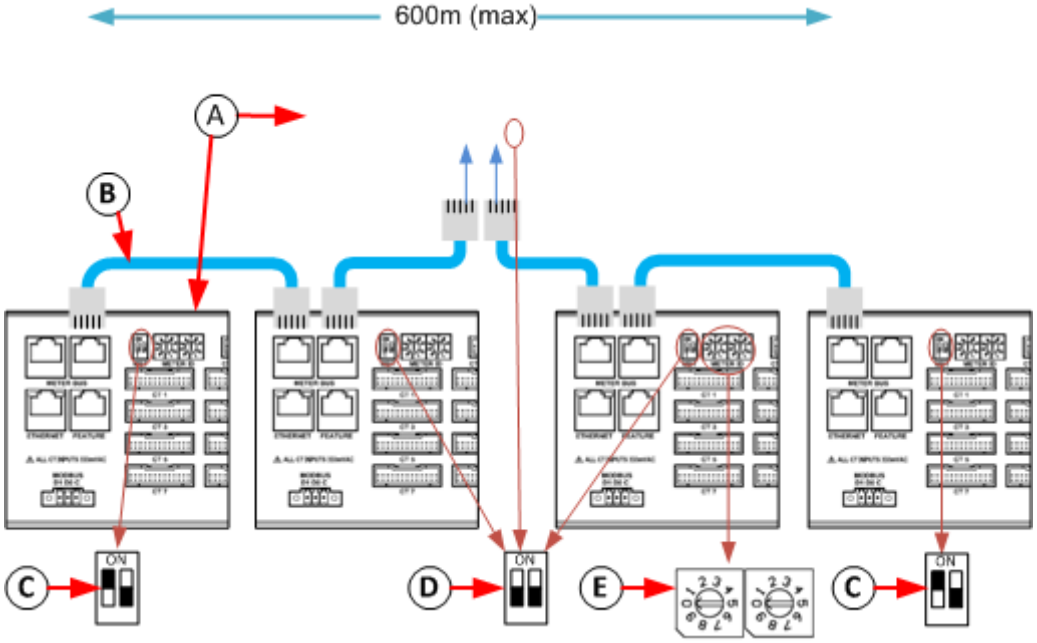


Branch Circuit	Description	Current Transformers	
		How Many	Connect To
Line-Neutral (LN)	120V/230V circuit wired to 1-pole circuit breaker	1	phase line
Line-Line (LL)	208/240/400V circuit wired to 2-pole circuit breaker	1	either phase line
Line-Line-Neutral (LLN)	120V+208/240V circuit wired to 2-pole circuit breaker	2	each phase line
Three-Phase (LLL, LLLN)	3-phase circuit wired to 3-pole circuit breaker	3	each phase line

Panel Wiring Example



Controller Wiring to Meters



	Daisy chain:
A	Meter with built-in controller + 1 to 7 controller-less meters or external controller + 1 to 8 controller-less meters.
B	All cables shielded Cat-5, each cable: 100m max. length.
C	Switch MBT (terminator) ON for devices at ends of daisy chain.
D	Switch MBT OFF for devices in middle of daisy chain.
E	Assign each meter unique ID: valid values 01 through 08

Login and Configuration

Connect your PC directly to the BCM2 to complete the initial configuration.

▸ **To access the web interface at the rack:**

1. Disable the wireless interface of the PC.
2. Connect a cat 5 cable between the PC and BCM2 network ports.
3. Open a browser. Enter the URL "https://pdu.local". The login page appears.

   If the URL does not resolve, use the IP address of the PMC. Retrieve the direct IP address using the LCD display: Menu > Device Information, scroll to the IPV4 settings. Enter the IP address in the web browser:"https://IP address/"

4. Login with the default username and password. Allow 30 seconds for first connection.
   - Username: admin
   - Password: raritan

Configuring Power Meters and Branch Circuit Monitors

You can configure your product with a spreadsheet, or in the product's web interface.

▸ **To configure with a spreadsheet:**

Go to Raritan.com and download the configuration spreadsheet from the BCM2 Support page. Follow the instructions in the spreadsheet.

▸ **To configure with the product web interface:**

Make a network connection to the product. See *Login and Configuration* (on page 8). Follow the instructions in this guide, starting with: Scan Power Meters.

Configure Using the Web Interface

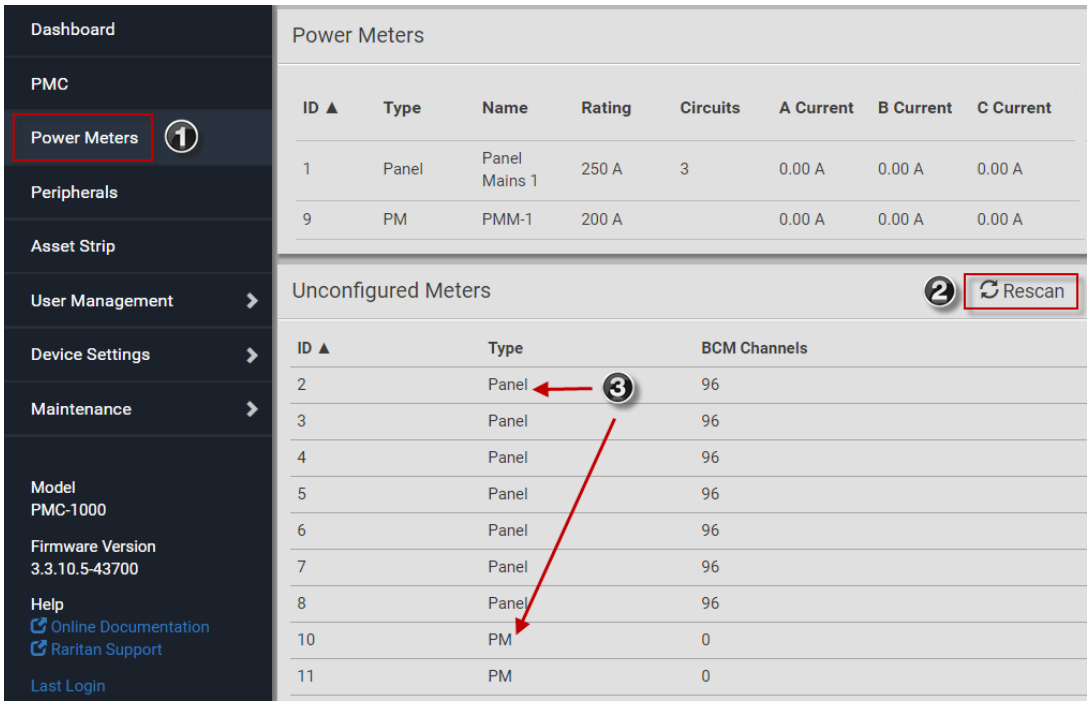
Scan Power Meters

1. Click Power Meters.
2. If nothing is configured, scan begins immediately in the Unconfigured Meters section. Click Rescan to refresh the list.
3. Click the power meter or panel in the discovered list to configure it.

   Types:

   PM: 3-phase

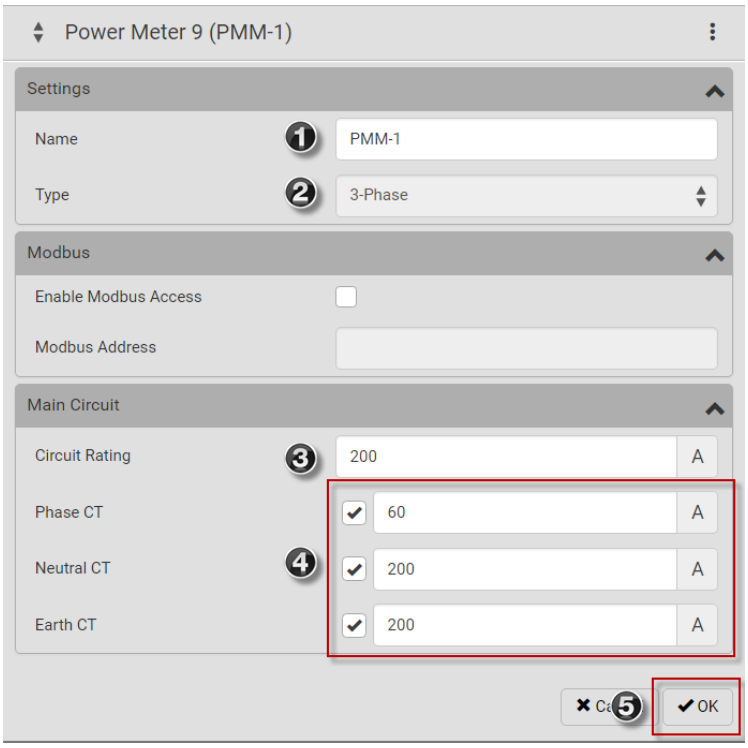
   Panel: BCM



Configure Power Meter (PMM without PMB)

1. Enter a name.
2. Select the circuit type:
   - Single Phase
   - Split Phase
   - 3-phase
3. Enter the mains circuit breaker rating.
4. Select the checkbox for each CT installed.
   Enter the CT rating. Ratings are marked on the CT.
5. Click OK.

The configured power meter displays in the dashboard and Power Meters page.



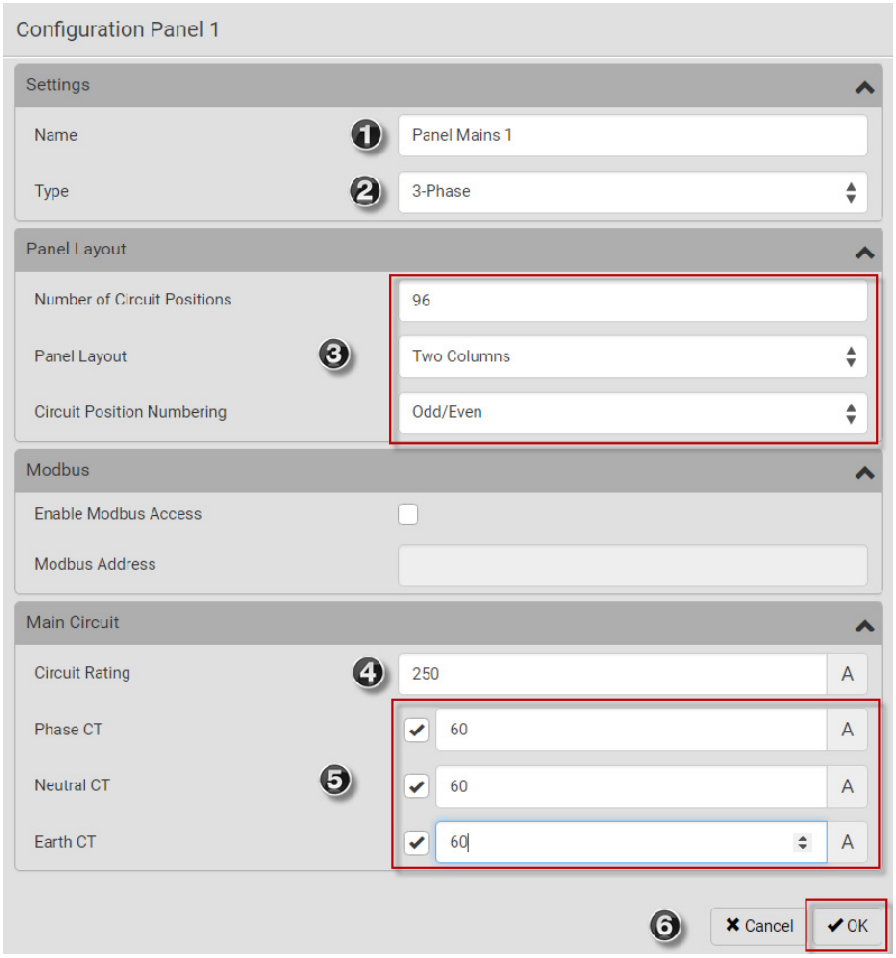
Configure Panel Mains Circuit

1. Enter a name.
2. Select the circuit type:
   - Single Phase
   - Split Phase
   - 3-phase

   Enter the number of circuit positions in the panel.
3. Select the panel layout: one or two columns.

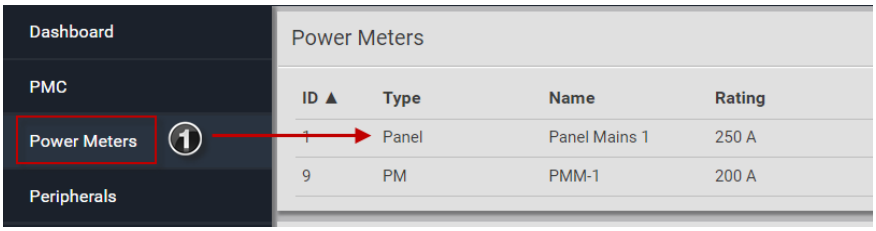
   Select the circuit position numbering style: sequential or odd/even.
4. Enter the current rating (circuit breaker rating) of the circuit.
5. Select the checkbox for each CT installed.

   Enter the CT rating. Ratings are marked on the CT.
6. Click OK.



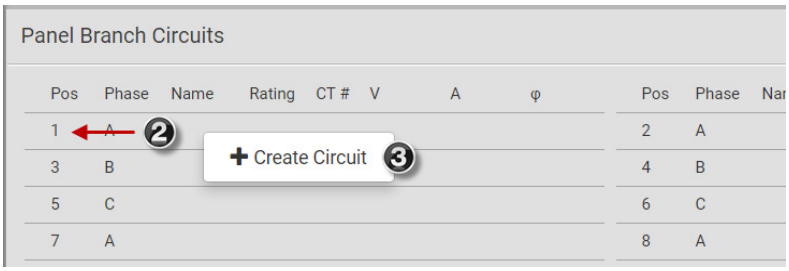
Configure Panel Branch Circuits

1. In the Power Meters page, click the panel.



The Panel details page opens.

2. In the Panel Branch Circuits section, click the circuit position to open the pop-up menu.



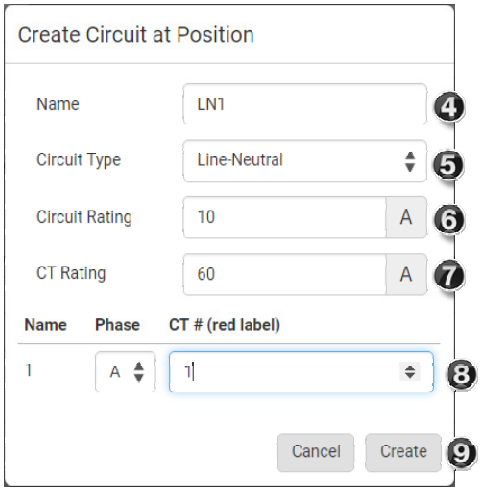
3. Click Create Circuit. The Create Circuit dialog opens.

4. Enter a name for the circuit.

5. Select the circuit type: One-Phase LN, One-Phase LL, One-Phase LLN, or Three-Phase. Circuit type cannot be changed later.

6. Enter the current rating of the circuit in Amps.

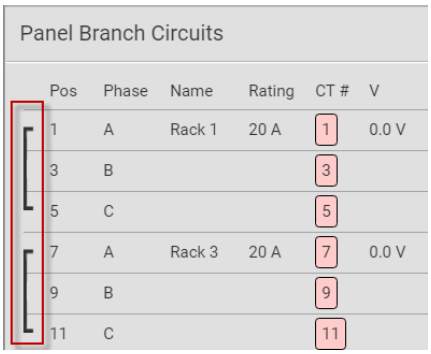
7. Enter the rating of the CT connected at this circuit position in Amps.



8. Click the Phase or CT# to edit the automatic labels.

9. Click Create.

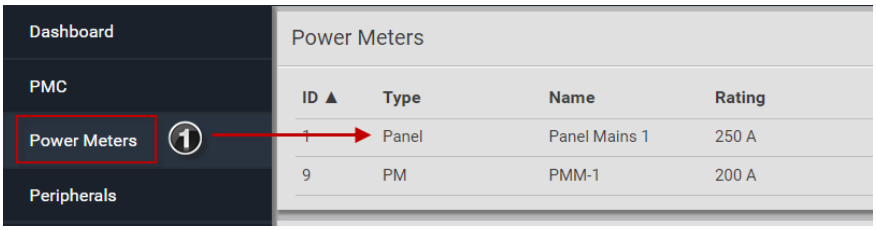
Circuits appear in the list with a black bracket around the circuit positions.



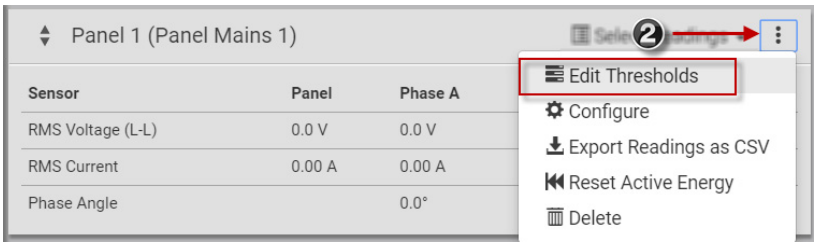
Configure Thresholds

1. In the Power Meters page, click the panel or power meter.

   The details page opens.



2. In the details page, click the actions icon, then choose Edit Thresholds.



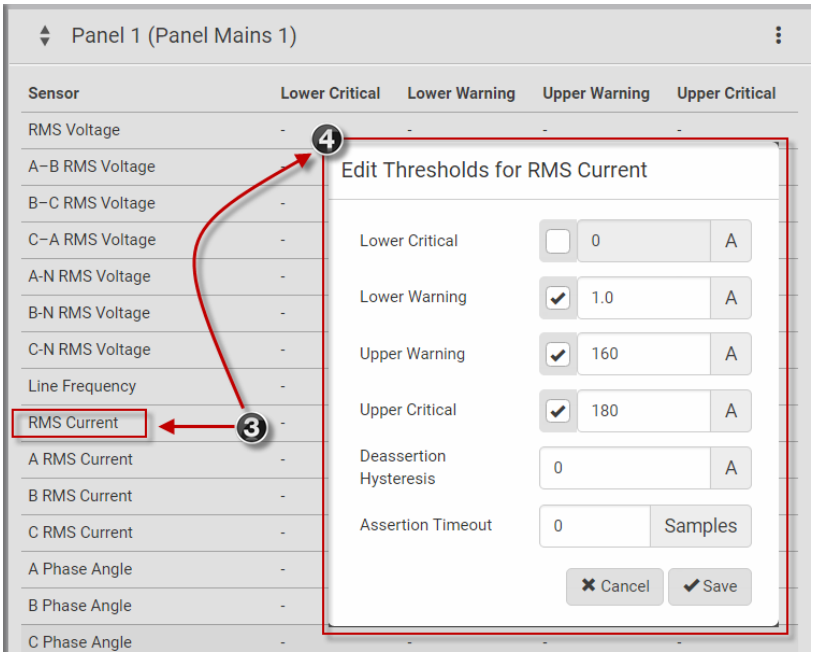
3. The sensor list displays.

   Click a sensor to open the Edit Threshold dialog.

4

Select the checkbox for the level, and enter the threshold current in amps. Click OK.

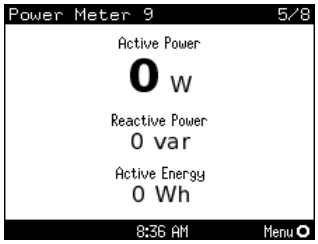
This example shows RMS Current thresholds set for upper warning and critical levels for the circuit max current rating, and a lower warning set for 1 amp.



Using the BCM2's Display

Automatic Mode:

The BCM2 has a display with automatic and manual modes. In automatic mode, the display scrolls through readings.



Manual Mode:

In manual mode, you can select readings and settings to view.

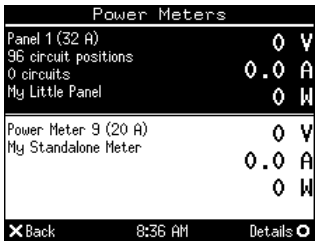
Press ● or ✕ to view the Main Menu.

To return to automatic mode, press ✕ once or several times.

Press ▲ ▼ to choose a menu item. Press ● to select.



Power Meters list



Power Meter details

