

Branch Circuit Monitor

Quick Setup Guide

Thank you for purchasing Raritan's Branch Circuit Monitor (BCM). The Branch Circuit Monitor provides a centralized power monitoring solution that measures and displays real-time current, voltage, power and energy consumption of 3-phase electrical panel circuits. The product is intended to be used with panel(s) of a cabinet used for ITE equipment in the data center.

This Quick Setup Guide explains how to install and configure the Branch Circuit Monitor. For additional information on this Branch Circuit Monitor, see the Branch Circuit Monitor User Guide, which is provided by Raritan.

Package Contents

The following describes the equipment shipped with a Branch Circuit Monitor device. If anything is missing or damaged, contact the local dealer or Raritan Technical Support for help.

- The Branch Circuit Monitor
- Ring terminals
- Split-core mains current transformers (Optional)
- Split-core branch circuit current transformers (Optional)
- A null-modem cable with DB9 connectors on both ends (Raritan number: 254-01-0006-00) (optional)
- Cable ties

Safety Guidelines

WARNING! Read and understand all sections in this guide before installing or operating this product. Failure to heed any of the following WARNINGS may result in electric shock, fire, personal injury and death. Prior to operating this product, the user should read the online help and specifically the warnings in the online help.

WARNING! These instructions must be performed by a licensed electrician.

WARNING! Connect this product to an AC power source whose voltage is within the range specified on the product's nameplate.

WARNING! Connect this product to an AC power source that is current limited by a suitably rated fuse or circuit breaker in accordance with national and local electrical codes.

WARNING! Use this product in a dry location.

WARNING! Connect this product to a protective earth ground.

WARNING! A current transformer (CT) must never be operated when it is not connected to the Branch Circuit Monitor. Operating a CT "open circuit" will cause permanent damage to the CT.

WARNING! Snap CTs only onto circuit conductors that are properly insulated per national and local electrical codes.

Safety Instructions

1. Installation of this product and current transformers (CTs) should only be performed by a licensed electrician.
2. Make sure the line cord is disconnected from power before physically mounting or moving the location of this product.
3. Connect the line cord of this product only to a 3-phase AC power source that is current limited by a suitably rated branch circuit breaker in accordance with national and local electrical codes.
4. Examine the branch circuit that will supply electric power to this product. Make sure the branch circuit's power lines, neutral and protective earth ground terminals are wired correctly and are the correct voltage and phase. Make sure the branch circuit is protected by a suitably rated circuit breaker.
5. Before installing CTs, make sure there are no damages, cuts or wear on the insulation of CT leads.
6. Do NOT operate a CT when it is not connected to the Branch Circuit Monitor. Operating a CT "open circuit" causes permanent damage to the CT. Make sure the branch circuit breaker is turned OFF before snapping the CT onto a branch circuit conductor and do NOT turn the breaker on until the CT is properly connected to the Branch Circuit Monitor.
7. Make sure that the circuit conductors that CTs will monitor are properly insulated per national and local electrical codes, and the conductor's insulation is at least 0.4mm thick.

Checking the AC Electrical Panel

Before installing the Branch Circuit Monitor, verify that the electrical panel that it will monitor satisfies the following requirements:

- A 3-phase Wye-connected AC power system.
- The current and voltage ratings meet the ratings specified on the Branch Circuit Monitor's nameplate or label.
- Contains at least one 3-phase branch circuit breaker rated at 20A or 16A, conforming to national and local codes, such as UL508A Sec.17.5 in North America or EN/IEC 60934 and VDE 0642 in Europe. The Branch Circuit Monitor is connected to such a 3-phase branch circuit for electricity reception.
- Free of extreme temperatures and humidity. See Maximum Ambient Operating Temperature in the User Guide.

For example, an electrical panel must meet the following for a BCM-2400 model:

Power system	3-phase Wye-connected
Rated current	Max. 250A, or higher -- depending on the mains CT used
Rated voltage	190 to 415VAC
Circuit breaker	Contains at least one 3-phase branch circuit breaker rated at 20A or 16A

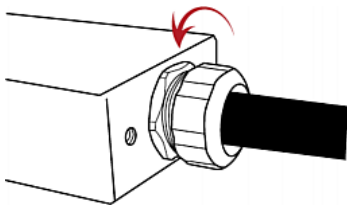
Connecting an Electrical Conduit

A conduit connector is shipped with and pre-installed on the Branch Circuit Monitor. You need to install an appropriate electrical conduit to protect your Branch Circuit Monitor's flexible cord.

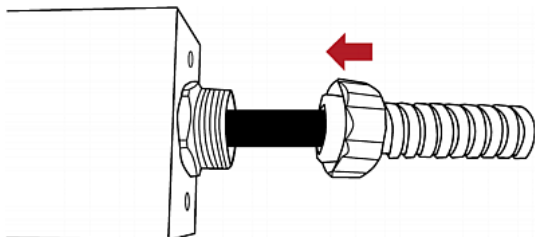
Note: Raritan does not provide the electrical conduit.

▶ To attach an electrical conduit:

1. Remove the conduit connector along with the inside plastic ring from the Branch Circuit Monitor.



2. Thread the electrical conduit through the opening of the conduit connector and the inside plastic ring.
3. Slowly thread the Branch Circuit Monitor's flexible cord into the electrical conduit.



Warning: Make sure the insulation of the flexible cord is not damaged or cut by the electrical conduit. Any damages to the insulation may result in electrical shock, fire, personal injury or death.

4. Tighten the conduit connector to the torque of 33.9 N·m (300 lbf-in).

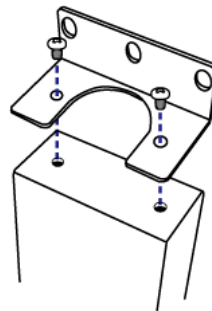
Mounting the Branch Circuit Monitor

Attach the L-brackets to the Branch Circuit Monitor so that it can be mounted on a rack or the equipment near the electrical panel that it will monitor.



▶ To install L-brackets on two ends of this product:

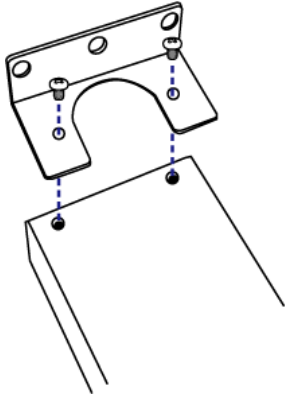
1. Attach an L-bracket to each end of the Branch Circuit Monitor with provided screws. The rackmount side of the bracket should face towards the rear of the Branch Circuit Monitor.



2. Using rack screws, fasten the Branch Circuit Monitor device to the rack through the L-brackets.

► **To install L-brackets on the rear of this product:**

1. Attach an L-bracket to two of the four screw holes on the rear of the Branch Circuit Monitor with provided screws.



2. If one L-bracket is not enough to mount this product, install an additional L-bracket on the other side of the rear panel.
3. Using rack screws, fasten the Branch Circuit Monitor device to the rack through the L-brackets.

Channel Convention

A channel on the Branch Circuit Monitor is used to monitor a circuit, which may be phase A, B or C. Channels are divided into two categories: MAINS and BRANCH CIRCUITS. MAINS channels are for monitoring the main circuits, and BRANCH CIRCUITS channels are for branch circuits.

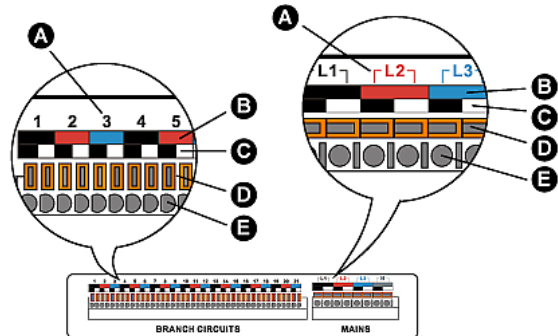
Important: Mains and branch circuits that are monitored by a Branch Circuit Monitor must belong to the same electrical panel.

A channel is identified with a number and a color. A Branch Circuit Monitor has three channel colors, which vary depending on the model you purchased. All channels marked with the same channel color are used to monitor the same phase. See the table below for which phase matches which channel color.

Phase	Black, red and blue	Brown, black and gray
A	Black	Brown
B	Red	Black
C	Blue	Gray

A channel, which is connected to a CT, comprises two CT terminals. Every CT terminal is marked with either black or white because a Raritan CT has a black lead and a white lead, and the terminal colors help indicate which CT lead to plug.

This diagram illustrates the channels on the BCM-2400 model, which uses black, red and blue channel colors.



Item	Description
A	Channel numbers.
B	Channel colors - three colors are available. Each color is used to monitor a specific phase.
C	Terminal colors - black or white. Connect a Raritan CT's black lead to a black terminal and the white lead to a white terminal.
D	Terminal buttons for controlling the springs inside the corresponding CT terminals.
E	CT terminals.

Setting Up a Power Monitoring System

Both the Branch Circuit Monitor and CTs are REQUIRED for establishing a power monitoring system on an electrical panel.

For the maximum current ratings supported by the MAINS and BRANCH CIRCUITS channels, see the nameplate or label affixed to your Branch Circuit Monitor.

The Branch Circuit Monitor contains a flexible cord containing the five wires for a 5-wire (3P+N+PE) AC connection. Make sure the electrical panel has a 3-phase branch circuit to power the Branch Circuit Monitor.

► **To set up a power monitoring system:**

1. Mount the Branch Circuit Monitor near the electrical panel that it will monitor. See **Mounting the Branch Circuit Monitor** (on page 2) for details.
2. Power OFF this electrical panel.
3. Connect the Branch Circuit Monitor to the electrical panel by wiring the 5-wire flexible cord as described below:
 - a. Connect the L1 wire to a phase A connection point in the panel.
 - b. Connect the L2 wire to a phase B connection point in the panel.
 - c. Connect the L3 wire to a phase C connection point in the panel.
 - d. Connect the N wire to the panel's neutral bus.

- e. Connect the GND wire to the panel's ground bus.
4. Snap mains CTs onto the panel's mains circuit conductors, and then connect these CTs to the MAINS channels on the Branch Circuit Monitor. For details, see **Connecting Mains CTs** (on page 5).
 - a. Connect the phase A's CT to L1 on the Branch Circuit Monitor.
 - b. Connect the phase B's CT to L2 on the Branch Circuit Monitor.
 - c. Connect the phase C's CT to L3 on the Branch Circuit Monitor.

Note: The Branch Circuit Monitor does not support measuring the neutral bus so do NOT connect any CT to the channel labeled N.

5. Make sure the 1-pole or 3-pole circuit breakers that you want to monitor have been powered off.
6. Snap branch circuit CTs onto the conductors of these circuit breakers and connect the CTs to the BRANCH CIRCUITS channels on the Branch Circuit Monitor. For details, see **Connecting Branch Circuit CTs** (on page 6).
 - Connect a phase A's CT to one of the channels for monitoring phase A on the Branch Circuit Monitor, such as channel #1, #4, #7, #10, and so on.
 - Connect a phase B's CT to one of the channels for monitoring phase B on the Branch Circuit Monitor, such as channel #2, #5, #8, #11 and so on.
 - Connect a phase C's CT to one of the channels for monitoring phase C on the Branch Circuit Monitor, such as channel #3, #6, #9, #12 and so on.
 - For a 3-phase branch circuit connection, make sure all three CTs are connected to three consecutive channels comprising phase A, phase B and phase C in sequence. For example, all three CTs can be connected to channels #1 to #3, or #4 to #6, or #7 to #9, and the like.
 - Record the panel numbers of the branch circuits and the channel numbers of CTs. This information is required for mapping the branch circuits with the Branch Circuit Monitor's channels. You can use the Circuit Monitoring Worksheet provided in the Branch Circuit Monitor User Guide to note down this information.

Warning: The Branch Circuit Monitor does not support measuring 2-pole branch circuit breakers so do not use the CT with a 2-pole breaker.

7. Use cable ties provided by Raritan to secure CT leads in place, and make sure the CT leads do not touch any wire terminals on the electrical panel.
8. Verify that all CTs have been properly connected to the Branch Circuit Monitor.
9. Power ON the electrical panel, and verify all circuit breakers where the Branch Circuit Monitor is connected and CTs are snapped are also switched on.

Important: You must log in to the web interface to enter correct information for these CTs, such as CT ratings or turns ratio. Otherwise the Branch Circuit Monitor may generate incorrect measurements. See Configuring the Mains Channels and Configuring the Branch Circuit Channels in the Branch Circuit Monitor User Guide

Raritan Current Transformers (Optional)

A current transformer (CT) can detect the current of the circuit conductor that passes through it and transmit the data to the Branch Circuit Monitor where it is connected.

Raritan provides different CTs with different ratings. The CTs are categorized into two types: mains CTs and branch circuit CTs. Both types are split-core CTs.

- Raritan mains CTs are for measuring main circuits rated up to 200A, 250A or higher. Contact Raritan Technical Support for additional information.
- Raritan branch circuit CTs are for branch circuits rated up to 60A or 100A.

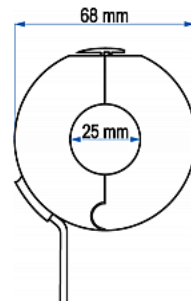
The Raritan CT has two leads to connect to two CT terminals of any channel on the Branch Circuit Monitor.

Warning: Do NOT use mains CTs to measure branch circuits or use branch circuit CTs to measure mains circuits. This is because the mains CTs must have built-in burden resistors but the branch circuit CTs must not have built-in burden resistors.

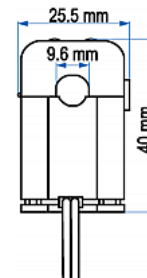
CT Dimensions

Sizes of different Raritan CTs are different.

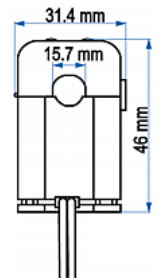
**Mains CT
rated at 200A or
250A**



**Branch circuit
CT rated at 60A**

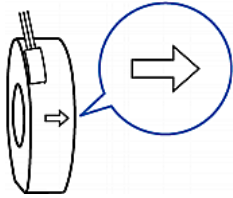


**Branch circuit
CT rated at 100A**



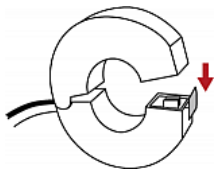
Connecting Mains CTs

When snapping the CT onto a circuit conductor, make sure the CT's arrow mark points towards the load. The arrow mark of a mains CT is located on the CT's side. Note that this arrow is NOT the one shown on the CT's release tab.

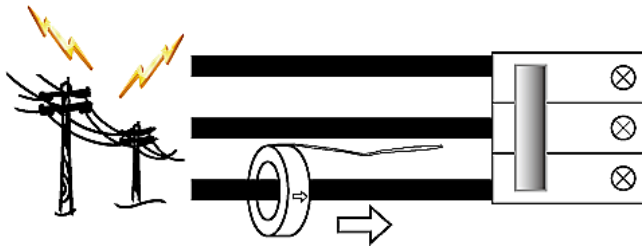


► To connect mains CTs:

1. Make sure the electrical panel has been powered off.
2. Open the CT by unlocking its release tab. An arrow marked on the release tab indicates the direction to open the mains CT.

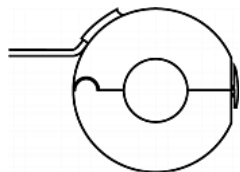


3. Slip the CT over the panel's mains phase A conductor and snap it.
 - Make sure the CT's arrow direction is the same as the following illustration.

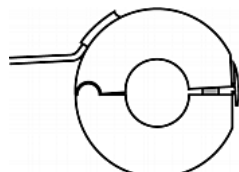


- Close the CT's release tab properly.

Proper



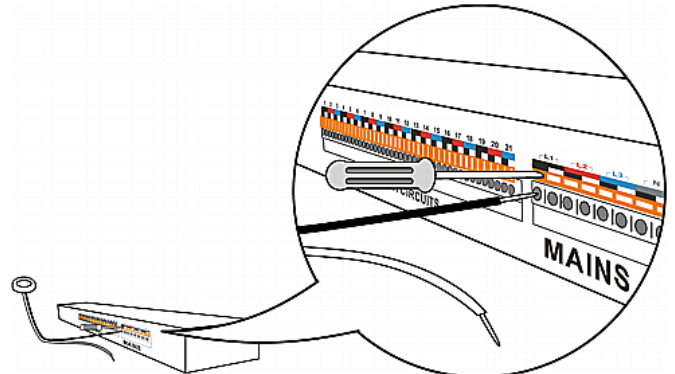
Improper



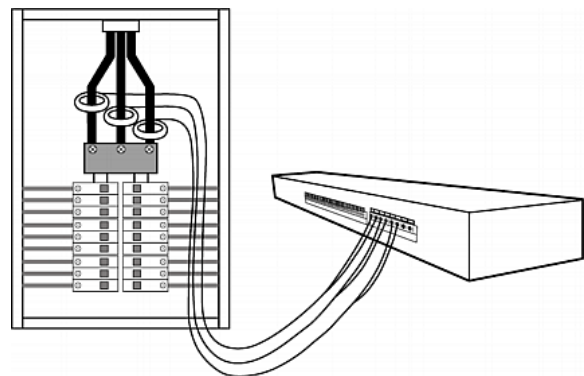
4. Strip the insulation of the CT leads around 6mm from the end.
5. Connect the CT leads to the corresponding CT terminals on the Branch Circuit Monitor.
 - a. Locate the L1 channel on the Branch Circuit Monitor.
The channel comprises two CT terminals - one is black and the other is white.

- b. Use a small flat head screwdriver to press and hold down the button above the black CT terminal.
- c. Plug the CT's black lead into the black CT terminal.

Important: The CT lead must be plugged into the CT terminal that has the same color. Otherwise, the CT signals are reversed and the Branch Circuit Monitor incorrectly measures the current values. See **Channel Convention** (on page 3) for terminal colors.



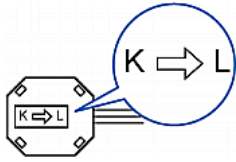
- d. Release the button. Verify that the CT's black lead is securely fastened.
- e. Repeat the above steps to plug the CT's white lead into the white CT terminal of the same channel.
6. Repeat the same steps to snap a mains CT onto the panel's mains phase B conductor and connect the CT to the L2 channel of the MAINS channel group on the Branch Circuit Monitor.
7. Repeat the same steps to snap a mains CT onto the panel's mains phase C conductor and connect the CT to the L3 channel of the MAINS channel group on the Branch Circuit Monitor.



Note: The Branch Circuit Monitor does not support measuring the neutral bus so do NOT connect any CT to the channel labeled N.

Connecting Branch Circuit CTs

When snapping the CT onto a circuit conductor, make sure the CT's arrow mark points towards the load. The arrow mark of a Raritan branch circuit CT is located on the bottom.



► To connect branch circuit CTs:

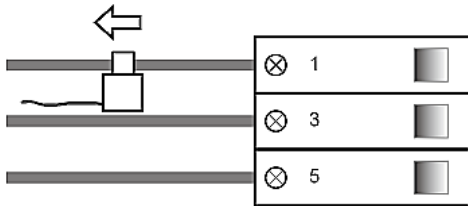
1. Make sure the 1-pole or 3-pole circuit breaker(s) where the branch circuit CTs will monitor are powered OFF.

Warning: The Branch Circuit Monitor does not support measuring 2-pole branch circuit breakers so do not use the CT with a 2-pole breaker.

2. Open the CT by unlocking its release tab.

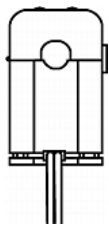


3. Slip the CT over the circuit breaker's phase A conductor and snap it.
 - Make sure the CT's arrow direction is the same as the following illustration.

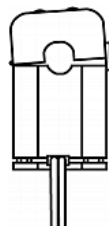


- Close the CT's release tab properly.

Proper



Improper



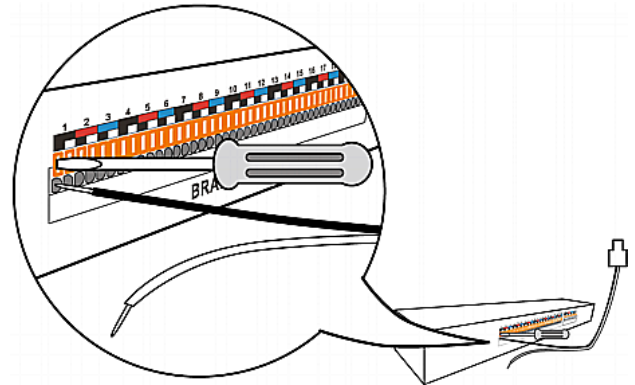
4. Strip the insulation of the CT leads around 6mm from the end.
5. Connect the CT leads to the corresponding CT terminals on the Branch Circuit Monitor.

- a. Locate one of the Branch Circuit channels for monitoring phase A on the Branch Circuit Monitor. See **Channel Convention** (on page 3) for information on identifying a channel.

The channel comprises two CT terminals - one is black and the other is white.

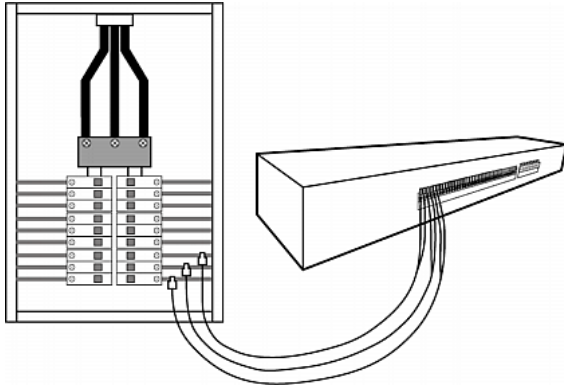
- b. Use a small flat head screwdriver to press and hold down the button above the black CT terminal.
- c. Plug the CT's black lead into the black CT terminal.

Important: The CT lead must be plugged into the CT terminal that has the same color. Otherwise, the CT signals are reversed and the Branch Circuit Monitor incorrectly measures the current values. See **Channel Convention** (on page 3) for terminal colors.



- d. Release the button. Verify that the CT's black lead is securely fastened.
 - e. Repeat the above steps to plug the CT's white lead into the white CT terminal of the same channel.
6. Repeat the same steps to snap a branch circuit CT onto the circuit breaker's phase B conductor, and connect the CT to one of the channels for monitoring phase B on the Branch Circuit Monitor.
 - For a 3-phase branch circuit connection, the phase B channel chosen must be next to the phase A channel. For example, if the phase A's CT is connected to the channel #4, the phase B channel must be the channel #5.
 7. Repeat the same steps to snap a branch circuit CT onto the circuit breaker's phase C conductor, and connect the CT to one of the channels for monitoring phase C on the Branch Circuit Monitor.

- For a 3-phase branch circuit connection, the phase C channel chosen must be next to the phase B channel. For example, if the phase B's CT is connected to the channel #5, the phase C channel must be the channel #6.



- Power on this circuit breaker.
- To monitor additional branch circuits, repeat the above steps to snap branch circuit CTs onto other circuit breaker conductors, and connect these CTs to the remaining channels on the Branch Circuit Monitor.

Connecting the Branch Circuit Monitor to Your Network

To use the web interface to administer the Branch Circuit Monitor, you must connect the Branch Circuit Monitor to your local area network (LAN). The Branch Circuit Monitor can be connected to a wired or wireless network.

▶ To make a wired connection:

- Connect a standard network patch cable to the ETHERNET port on the Branch Circuit Monitor.
- Connect the other end of the cable to your LAN.

▶ To make a wireless connection:

Do one of the following:

- Plug a supported USB wireless LAN adapter into the USB-A port on your Branch Circuit Monitor.
- Connect a USB docking station to the USB-A port on the Branch Circuit Monitor and plug the supported USB wireless LAN adapter into the appropriate USB port on the docking station.

See **USB Wireless LAN Adapters** (on page 7) for a list of supported wireless LAN adapters.

USB Wireless LAN Adapters

The following table lists USB wireless LAN adapters that the Branch Circuit Monitor supports.

Wi-Fi LAN adapter

Supported 802.11 protocols

Proxim Orinoco 8494	A/B/G
Zyxel NWD271N	B/G
Edimax EW-7722UnD	A/B/G/N
TP-Link TL-WDN3200 v1	A/B/G/N
Raritan USB WIFI	A/B/G/N

Note: To use the Edimax EW-7722UnD or Raritan USB WIFI wireless LAN adapter to connect to an 802.11n wireless network, the handshake timeout setting must be changed to 500 or greater, or the wireless connection will fail.

Supported Wireless LAN Configuration

If wireless networking is preferred, ensure that the wireless LAN configuration of your Branch Circuit Monitor matches the access point. The following is the wireless LAN configuration that the Branch Circuit Monitor supports.

- Network type: 802.11 A/B/G/N
- Protocol: WPA2 (RSN)
- Key management: WPA-PSK, or WPA-EAP with PEAP and MSCHAPv2 authentication
- Encryption: CCMP (AES)

Important: Raritan only supports specific wireless LAN adapters. Supported 802.11 network protocols vary according to the wireless LAN adapter being used with the Branch Circuit Monitor. See *USB Wireless LAN Adapters* (on page 7).

Initial Configuration

There are two ways to configure the Branch Circuit Monitor for the first time.

- Connect the Branch Circuit Monitor device to a computer to configure it.
 - STEP 1: Connect the Branch Circuit Monitor to a Computer** (on page 7)
 - STEP 2: Configure the Branch Circuit Monitor** (on page 8)
- Connect the Branch Circuit Monitor device to a TCP/IP network that supports DHCP, and use the IPv4 address and web browser to configure the Branch Circuit Monitor. The IP address can be retrieved by operating the LCD display of the Branch Circuit Monitor. See **IP Address** (on page 10).

Step 1: Connect the Branch Circuit Monitor to a Computer

Connect the Branch Circuit Monitor to a computer via an RS-232 or USB cable.

► **RS-232 connection:**

1. Connect one end of the null-modem cable to the male RS-232 port labeled CONSOLE/MODEM on the Branch Circuit Monitor.
2. Connect the other end to your computer's RS-232 port (COM).

► **USB connection:**

1. A USB-to-serial driver is required in Windows®. Install this driver before connecting the USB cable. See **Installing the USB-to-Serial Driver (Optional)** (on page 8).
2. Connect one end of a USB cable to the USB-B port on the Branch Circuit Monitor.
3. Connect the other end to your computer's USB-A port.

Installing the USB-to-Serial Driver (Optional)

The Branch Circuit Monitor can emulate a USB-to-serial converter over a USB connection. A USB-to-serial driver named "Dominion PX2 Serial Console" is required for Microsoft® Windows® operating systems. Download the *USB Driver* file, which contains *dominion-serial.inf*, *dominion-serial.cat* and *dominion-serial-setup-<n>.exe* files, from Raritan website's **PX2 Support Files page** (<https://www.raritan.com/support/product/px2/px2-support-files>).

Note: <n> in the filename of "dominion-serial-setup-<n>.exe" represents the file's version number.

There are two ways to install this driver: automatic and manual installation. Automatic driver installation is highly recommended.

► **Automatic driver installation in Windows®:**

1. Make sure the Branch Circuit Monitor is NOT connected to the computer via a USB cable.
2. Run *dominion-serial-setup-<n>.exe* on the computer and follow online instructions to install the driver.

Note: If any Windows security warning appears, accept it to continue the installation.

3. Connect the Branch Circuit Monitor to the computer via a USB cable. The driver is automatically installed.

Note: Manually install the driver only if the automatic installation fails. See the section titled "Installing the USB-to-Serial Driver (Optional)" in the online help for manual installation procedure.

► **In Linux:**

No additional drivers are required, but you must provide the name of the tty device, which can be found in the output of the "dmesg" after connecting the Branch Circuit Monitor to the computer. Usually the tty device is "/dev/ttyACM#" or "/dev/ttyUSB#", where # is an integer number.

For example, if you are using the kermit terminal program, and the tty device is "/dev/ttyACM0," perform the following commands:

```
> set line /dev/ttyACM0
> connect
```

Step 2: Configure the Branch Circuit Monitor

1. On the computer connected to the Branch Circuit Monitor, open a communications program such as HyperTerminal or PuTTY.
2. Select the appropriate COM port, and set the following port settings:
 - Bits per second = 115200 (115.2Kbps)
 - Data bits = 8
 - Stop bits = 1
 - Parity = None
 - Flow control = None

Tip: For a USB connection, you can determine the COM port by choosing Control Panel > System > Hardware > Device Manager, and locating the "Dominion PX2 Serial Console" under the Ports group.

3. In the communications program, press Enter to send a carriage return to the Branch Circuit Monitor.
4. The Branch Circuit Monitor prompts you to log in. Both user name and password are case sensitive.
 - a. Username: `admin`
 - b. Password: `raritan` (or a new password if you have changed it).
5. If prompted to change the default password, follow onscreen instructions to type your new password.
6. The # prompt appears.
7. Type `config` and press Enter.
8. To configure network settings, type appropriate commands and press Enter. All commands are case sensitive.
 - a. To set the networking mode, type this command:


```
network mode <mode>
```

 where <mode> is *wired* (default) or *wireless*.
 - b. For the wired network mode, you may configure the LAN interface settings. In most scenarios, the default setting (auto) works well and should not be changed unless required.

To set	Use this command
LAN interface speed	<code>network interface LANInterfaceSpeed <option></code> <code><option> = auto, 10Mbps, or 100Mbps.</code>

To set	Use this command
LAN interface duplex mode	<pre>network interface LANInterfaceDuplexMode <mode></pre> <p><mode> = <i>half</i>, <i>full</i> or <i>auto</i>.</p>

Tip: You can combine multiple commands to configure multiple parameters at a time. For example,

```
network interface LANInterfaceSpeed <option>
LANInterfaceDuplexMode <mode>
```

- c. For the wireless network mode, you must configure the Service Set Identifier (SSID) parameter.

To set	Use this command
SSID	<pre>network wireless SSID <ssid></pre> <p><ssid> = SSID string</p>

If necessary, configure more wireless parameters shown in the following table.

To set	Use this command
BSSID	<pre>network wireless BSSID <bssid></pre> <p><bssid> = AP MAC address or <i>none</i></p>
Authentication method	<pre>network wireless authMethod <method></pre> <p><method> = <i>psk</i> or <i>eap</i></p>
PSK	<pre>network wireless PSK <psk></pre> <p><psk> = PSK string</p>
EAP outer authentication	<pre>network wireless eapOuterAuthentication <outer_auth></pre> <p><outer_auth> = <i>PEAP</i></p>
EAP inner authentication	<pre>network wireless eapInnerAuthentication <inner_auth></pre> <p><inner_auth> = <i>MSCHAPv2</i></p>
EAP identity	<pre>network wireless eapIdentity <identity></pre> <p><identity> = your user name for EAP authentication</p>
EAP password	<pre>network wireless eapPassword</pre> <p>When prompted to enter the password for EAP authentication, type the password.</p>

To set	Use this command
EAP CA certificate	<pre>network wireless eapCACertificate</pre> <p>When prompted to enter the CA certificate, open the certificate with a text editor, copy and paste the content into the communications program.</p>

The content to be copied from the CA certificate does NOT include the first line containing "BEGIN CERTIFICATE" and the final line containing "END CERTIFICATE." If a certificate is installed, configure the following:

Whether to	Use this command
Verify the certificate	<pre>network wireless enableCertVerification <option1></pre> <p><option1> = <i>true</i> or <i>false</i></p>
Accept an expired or not valid certificate	<pre>network wireless allowOffTimeRangeCerts <option2></pre> <p><option2> = <i>true</i> or <i>false</i></p>
Make the connection successful by ignoring the "incorrect" system time	<pre>network wireless allowConnectionWithIncorrectClock <option3></pre> <p><option3> = <i>true</i> or <i>false</i></p>

- d. To determine which IP protocol (IPv4 or IPv6) is enabled and which IP address (IPv4 or IPv6) returned by the DNS server is used, configure the following parameters.

To set	Use this command
IP protocol	<pre>network ip proto <protocol></pre> <p><protocol> = <i>v4Only</i>, <i>v6Only</i> or <i>both</i></p>
IP address returned by the DNS server	<pre>network ip dnsResolverPreference <resolver></pre> <p><resolver> = <i>preferV4</i> or <i>preferV6</i></p>

- e. After enabling the IPv4 or IPv6 protocol in the earlier step, configure the IPv4 or IPv6 network parameters.

To set	Use this command
IPv4 configuration method	network ipv4 ipConfigurationMode <mode> <mode> = <i>dhcp</i> (default) or <i>static</i>
IPv6 configuration method	network ipv6 ipConfigurationMode <mode> <mode> = <i>automatic</i> (default) or <i>static</i>

- Configure the preferred host name for the IPv4 DHCP or IPv6 automatic configuration.

Note: The <version> variable in all of the following commands is either *ipv4* or *ipv6*, depending on the type of the IP protocol you have enabled.

To set	Use this command
Preferred host name (optional)	network <version> preferredHostName <name> <name> = preferred host name

Tip: To override the DHCP-assigned DNS servers with those you specify manually, type this command:

```
network <version> overrideDNS <option>
```

where <option> is *enable* or *disable*. See the table below for the commands for manually specifying DNS servers.

- For static IP configuration, configure these parameters.

To set	Use this command
Static IPv4 or IPv6 address	network <version> ipAddress <ip address> <ip address> = static IP address
IPv4 subnet mask	network ipv4 subnetMask <netmask> <netmask> = subnet mask
IPv4 or IPv6 gateway	network <version> gateway <ip address> <ip address> = gateway's IP address

To set	Use this command
IPv4 or IPv6 primary DNS server	network <version> primaryDNSServer <ip address> <ip address> = IP address of the primary DNS server
IPv4 or IPv6 secondary DNS server (optional)	network <version> secondaryDNSServer <ip address> <ip address> = IP address of the secondary DNS server

- To quit the configuration mode, type either of the following commands, and press Enter.

Command	Description
apply	Save all configuration changes and exit.
cancel	Abort all configuration changes and exit.

The # prompt appears, indicating that you have quit the configuration mode.

- To verify whether all settings are correct, type the following commands one by one.

Command	Description
show network	Show network parameters.
show network ip all	Show all IP configuration parameters.
show network wireless details	Show all wireless parameters.

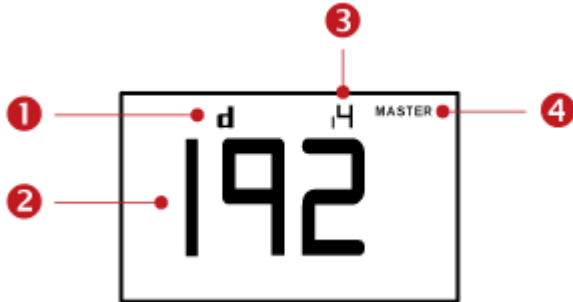
Tip: You can type "show network wireless" to display a shortened version of wireless settings.

- If all are correct, type *exit* to log out of the Branch Circuit Monitor. If any are incorrect, repeat Steps 7 to 10 to change network settings.

IP Address

The IP address is available in the Device mode, which is indicated by the alphabet 'd' shown at the top of the LCD display. Note that the LCD display only shows the IPv4 address (if available).

Below illustrates the IP address information shown on the LCD display.



Section	Example information
1	"d" means the LCD display has entered the Device mode.
2	The LCD display is showing 192, which is one of the IP address octets. It will cycle through four octets of the IP address.
3	"i4" indicates that the IP address shown on the LCD display is an IPv4 address.
4	The word "MASTER" indicates the Branch Circuit Monitor is the master device in a USB-cascading configuration. See Cascading the Branch Circuit Monitor via USB. For a standalone Branch Circuit Monitor, this word is NOT displayed.

If you connect your Branch Circuit Monitor to the wireless network, a Wi-Fi icon is displayed at the bottom-right corner.



► **To retrieve the IP address:**

1. Press the MODE button until device settings are displayed, indicated by a 'd' in at the top left of the display.
2. The LCD display cycles between the four octets of the IPv4 address, indicated by "i4" at the upper right corner of the display.

For example, if the IPv4 address is 192.168.84.4, the LCD display cycles through it as shown below:

192 --> 168 --> 84 --> 4

What To Do Next

1. From a computer connected to your LAN, open a browser and type the IP address of the Branch Circuit Monitor to access its web interface.
2. When prompted for a user name and password, enter *admin* and the default password *raritan* or the new password you assigned during the procedure titled **STEP 2: Configure the Branch Circuit Monitor** (on page 8).
3. The Branch Circuit Monitor page opens.
4. Choose Device Settings > Date/Time to configure the Branch Circuit Monitor with the proper date and time or synchronize it with an NTP server. The Branch Circuit Monitor device's time must be in sync with the LDAP server to use LDAP authentication.

Note: If you are using Raritan's Power IQ to manage the Branch Circuit Monitor, you must configure Power IQ and the Branch Circuit Monitor to have the same date/time or NTP settings.

5. Properly configure the mains and branch circuit channels based on each CT's specification. Click on the BCM device folder in the navigation tree and then click Setup Circuits on the BCM page.

Warning: The information entered for CTs must be correct, or the power measurement performed by this product is incorrect.

6. Assign a name to each channel for identifying the branch circuits they are monitoring by clicking Setup on each channel's page.
 - The panel worksheet affixed to the panel's cover is helpful for customizing the channel name. See **Mapping Channels with Branch Circuits** (on page 11).
7. Use the menu at the top of the page to create user profiles, set privileges, set security, and configure power thresholds.

Note: Detailed instructions are available in the **Branch Circuit Monitor User Guide**.

Mapping Channels with Branch Circuits

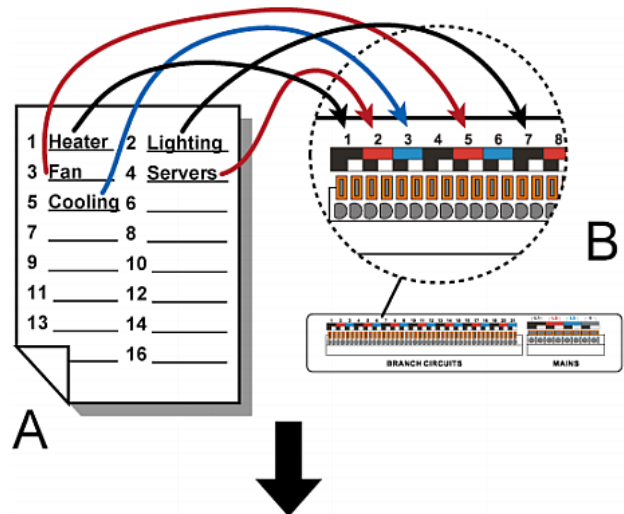
The best way to identify the branch circuit each channel is to customize the channel names in the web interface. A hard copy worksheet documenting the use of each branch circuit is usually affixed to the electrical panel. It is strongly recommended to contain this worksheet information when assigning the channel names.

► **To map channels with monitored branch circuits:**

1. You should have noted down every branch circuit's panel number and every CT's channel number in the procedure of **Setting Up a Power Monitoring System** (on page 3). If not yet, collect this information now.
2. Locate the electrical panel's worksheet, which is usually available on the panel's cover.

3. Log in to the web interface of the Branch Circuit Monitor. See Login in the User Guide.
4. Click the BCM folder in the navigation tree and then click Setup Circuits to configure branch circuits as single-phase or 3-phase circuits. See Configuring the Branch Circuit Channels in the User Guide.
5. Change the channel names according to the channel-mapping information and the panel's worksheet.
 - a. Click the desired channel in the navigation tree.
 - When there are no names assigned, a channel shows the channel number only.
 - For a 3-phase branch circuit, the channel number contains 3 numbers that are indicated with a dash, such as 1-3, 4-6, 7-9, 10-12 and so on.
 - b. Click Setup on the channel page to the right.
 - c. Type a name in the Name field. After assigning a channel name, the channel number is enclosed in parentheses, following the channel name.

Raritan strongly suggests including both of the panel number and the branch circuit's usage in the channel name. For example, if a CT attached to the branch circuit #2 (phase A) is connected to the channel #7 on the Branch Circuit Monitor and the panel worksheet indicates that the branch circuit #2 is used to power the lighting system, then you can name the channel 7 as "CB#2 Lighting."



- Branch Circuits
 - CB#1 Heater (1)
 - CB#4 Servers (2)
 - CB#5 Cooling (3)
 - 4
 - CB#3 Fan (5)
 - 6
 - CB#2 Lighting (7)
 - 8

Item	Description
A	Electrical panel's worksheet
B	Channels on the Branch Circuit Monitor
C	Channels shown in the web interface with customized channel names for channels #1, #2, #3, #5, and #7

Additional Information

For more information about the Branch Circuit Monitor and the entire Raritan product line, see Raritan's website (www.raritan.com). For technical issues, contact Raritan Technical Support. See the Contact Support page in the Support section on Raritan's website for technical support contact information worldwide.

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