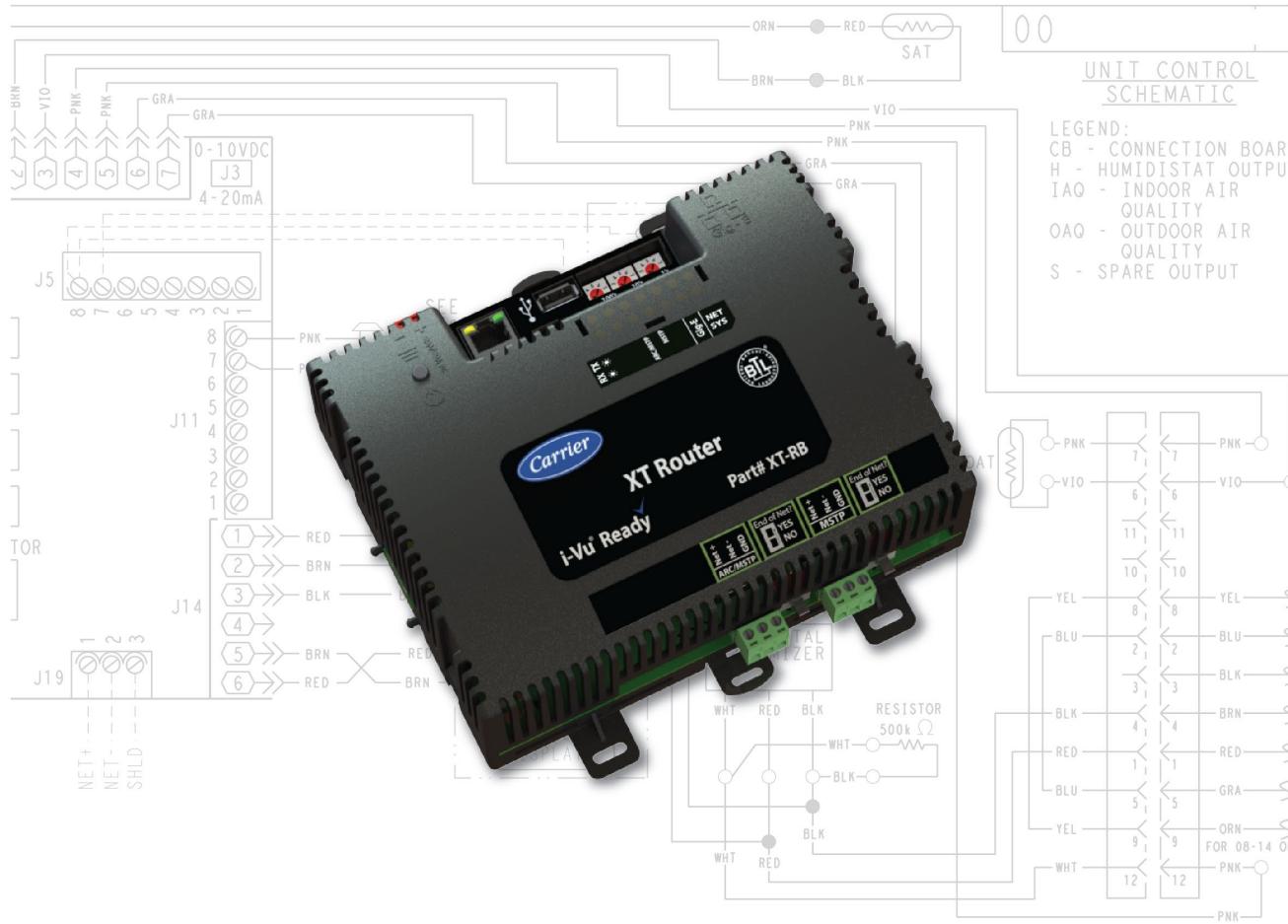


# i-Vu® XT Router (part no.XT-RB) (drv\_gen5)

## Installation and Start-up Guide





Verify that you have the most current version of this document from [www.hvacpartners.com](http://www.hvacpartners.com), the **Carrier Partner Community** website, or your local Carrier office.

Important changes are listed in **Document revision history** at the end of this document.

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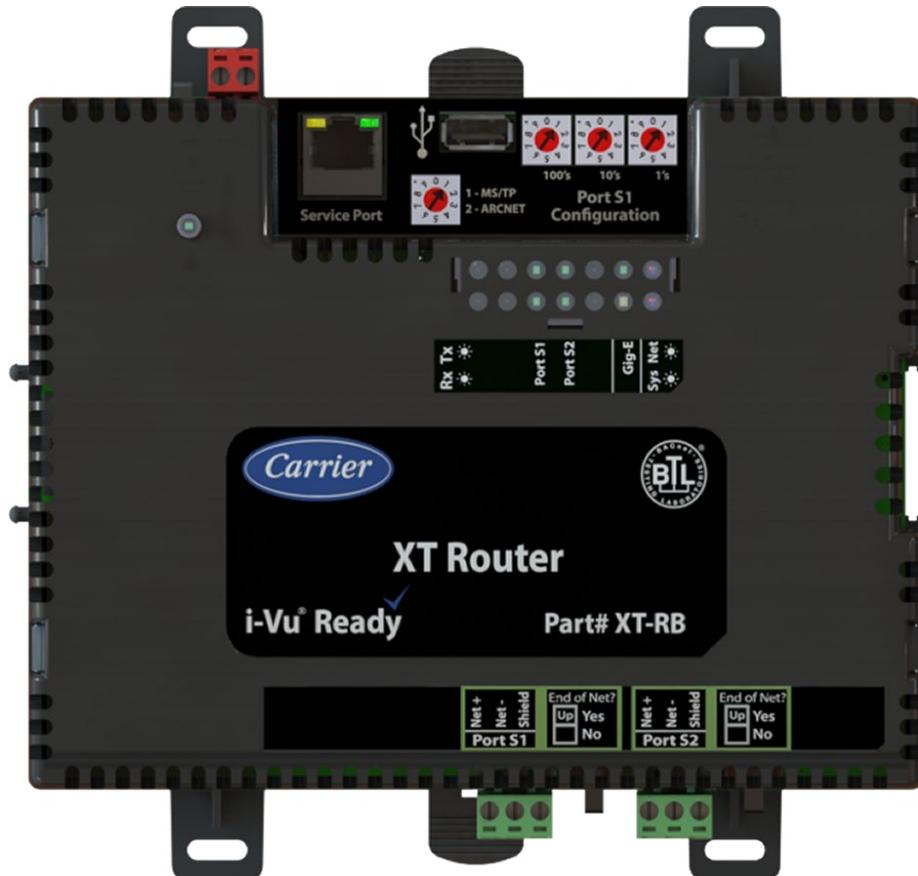
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## What is the XT-RB?

The i-Vu® XT Router (part no. XT-RB) with drv\_gen5 driver:

- Provides BACnet routing between any supported BACnet communication types
- Can have two BACnet/IP networks communicating on the Gig-E port
- Can serve as a BACnet Broadcast Management Device (BBMD) on each of the BACnet/IP networks
- Supports Foreign Device Registration (FDR)
- Supports DHCP IP addressing
- Has built-in network diagnostic capture functionality for troubleshooting
- Has network statistics that can be viewed numerically or as trend graphs
- Works with the i-Vu® v8.5 or later system



What is the XT-RB?

The XT-RB has 4 physical BACnet communication ports:

Port	Port type	For routing this type of communication...	At...
Gig-E	10/100/1000 Mbps Ethernet	BACnet/IP, BACnet/IPv6, BACnet/Ethernet, BACnet/SC	10, 100, or 1000 Mbps (1 Gbps)
S1	High-speed EIA-485 port	BACnet/ARCNET	156 kbps
		BACnet/MSTP	9.6 to 115.2 kbps
S2	Electrically isolated EIA-485 port	BACnet/MSTP	9.6 to 115.2 Kbps
Service Port	10/100 Mbps Ethernet HTTP/IP	BACnet/IP Service Port	10 or 100 Mbps

The XT-RB also has a USB port for recovery.

## Critical Product Announcement

Due to the global semiconductor supply chain uncertainty, starting July 2022, the XT-RB no longer supports communication over the ARCNET network. ARCNET-disabled XT-RBs have a serial number starting with the prefix RT4 and have an updated label. See [To get the XT-RB's serial number](#).

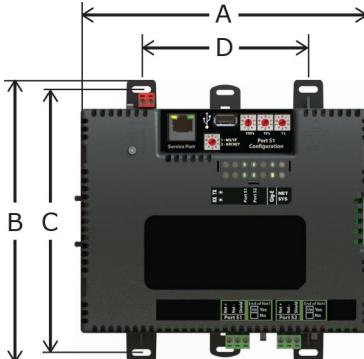
The XT-RB's driver properties and controller setup pages only show available communication selection options.

## Specifications

Driver	drv_gen5_< version >  <b>NOTE</b> For the fwex driver instructions, see the <i>i-Vu® XT Router (part no. XT-RB) (drv_fwex) Installation and Start-up Guide</i> .
Power	24 Vac $\pm 10\%$ , 50–60 Hz, 50 VA 26 Vdc $\pm 10\%$ , 15 W
Gig-E port	10/100/1000 BaseT, full duplex, Ethernet port for communication with the following BACnet protocols: <ul style="list-style-type: none"><li>• BACnet/IP</li><li>• BACnet/IPv6</li><li>• BACnet/Ethernet</li><li>• BACnet/SC</li></ul>

Port S1	<p>For communication with either of the following BACnet protocols:</p> <ul style="list-style-type: none"> <li>• A BACnet ARCNET network at 156 kbps</li> <li>• A BACnet MS/TP network at 9600 to 115200 bps</li> </ul> <p>This port's <b>End of Net?</b> switch can be set to <b>Yes</b> to terminate the network segment.</p>
Port S2	For communication with a BACnet MS/TP network at 9600 to 115200 bps. This port's <b>End of Net?</b> switch can be set to <b>Yes</b> to terminate the network segment.
Service Port	Ethernet port at 10 or 100 Mbps for setting up the controller and troubleshooting through a local connection to a computer.
USB port	USB 2.0 host port for device recovery and connecting the Carrier® wireless service adapter.
Microprocessor	32-bit ARM Cortex-A8, 600MHz, processor with multi-level cache memory
Memory	8 GBs eMMC Flash memory and 512 MB DDR3 DRAM (22 MB available to use). User data is archived to non-volatile Flash memory when parameters are changed, every 90 seconds, and when the firmware is deliberately restarted.
	<b>NOTE</b> When you change a parameter, you must wait 30 seconds before turning the power off, in order for the change to be saved.
Real-time clock	Real-time clock keeps track of time in the event of a power failure for up to 3 days.
Protection	Device is protected by a replaceable, fast acting, 250 Vac, 2A, 5mm x 20mm glass fuse.
	The power and network ports comply with the EMC requirements EN50491-5-2.
	 <b>CAUTION</b> To protect against large electrical surges on serial EIA-485 networks, place a PROT485 at each place wire enters or exits the building.
LED status indicators	<ul style="list-style-type: none"> <li>• Tricolor <b>NET</b> LED to show network status</li> <li>• Tricolor <b>SYS</b> LED to show system status</li> <li>• A <b>TX</b> (Transmit) and <b>RX</b> (Receive) LED for the following ports: <ul style="list-style-type: none"> <li>• Gig-E</li> <li>• Port S1</li> <li>• Port S2</li> </ul> </li> </ul> <p>See <i>LEDs</i> (page 45).</p>
Environmental operating range	-40 to 158°F (-40 to 70°C), 10-95% relative humidity, non-condensing
Physical	Fire-retardant plastic ABS, UL94-5VA
Terminal blocks and connectors	Screw-type terminal blocks. 0.2 in (5.08 mm) pitch connectors
Mounting	35mm DIN rail mounting or screw mounting

What is the XT-RB?

		
Overall dimensions	A: B: Depth:	7.1 in. (18.03 cm) 6.95 in. (17.65 cm) 2.09 in. (5.31 cm)
Screw mounting dimensions	C: D:	6.45 in (16.38 cm) 4.1 in. (10.4 cm)
Weight	1 lb. 1 oz. (0.482 kg)	
BACnet Support	Conforms to the BACnet Router (B-RTR), and BACnet Broadcast Management Device (B-BBMD) Standard Profile as defined in ANSI/ASHRAE Standard 135-2016 (BACnet) Annex L, Protocol revision 19.	
Compliance	<p>United States of America: FCC compliant to Title CFR47, Chapter 1, Subchapter A, Part 15, Subpart B, Class A; UL Listed to UL 916, PAZX, Energy Management Equipment</p> <p>Canada: Industry Canada Compliant, ICES-003, Class A cUL Listed UL 916, PAZX7, Energy Management Equipment</p> <p>Europe:   EN50491-5-2:2009; Part 5-2: EMC requirements for HBES/BACS used in residential, commercial and light industry environment RoHS Compliant: 2015/863/EU REACH Compliant</p>	
Australia and New Zealand:  C-Tick Mark, AS/NZS 61000-6-3		

## To mount the XT-RB

The XT-RB must be mounted in a metal enclosure or cabinet which is properly rated for the location where it is being installed.

**NOTE** We recommend screw mounting when installing in a high temperature and high humidity environment.

### DIN rail mount

- 1 Push down and pull out the center tabs shown below to clear the din rail trough on the back of the XT-RB.



- 2 Place the XT-RB on the DIN rail so that the rail is in the trough on the back of the XT-RB.



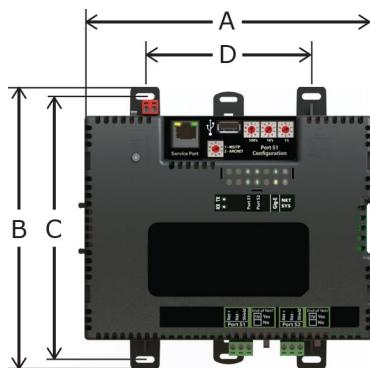
- 3 Push the center tabs towards the XT-RB until you hear them click.
- 4 Pull gently on the XT-RB to verify that it is locked in place.

### Screw Mount

Leave about 2 in. (5 cm) on each side of the XT-RB for wiring.

Insert #6 screws through the mounting holes. Use no more than 8 in.lbs. torque to secure plastic tab to mounting surface.

To mount the XT-RB



A: 7.1 in. (18.03 cm)

B: 6.95 in. (17.65 cm)

C: 6.45 in. (16.38 cm)

D: 4.1 in. (10.4 cm)

Depth: 2.09 in (5.31 cm)

## Wiring for power



**WARNING** Do not apply line voltage (mains voltage) to the XT-RB's ports and terminals.

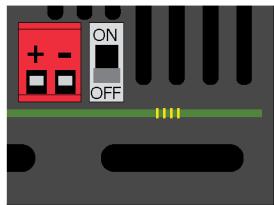


### CAUTIONS

- The XT-RB is powered by a Class 2 power source. Take appropriate isolation measures when mounting it in a control panel where non-Class 2 circuits are present.
- Carrier® controllers can share a power supply as long as you:
  - Maintain the same polarity.
  - Use the power supply only for Carrier® controllers.

## To wire for power

- 1 Make sure the XT-RB's power switch is in the **OFF** position to prevent it from powering up before you can verify the correct voltage.



- 2 Remove power from the power supply.
- 3 Pull the red screw terminal connector from the XT-RB's power terminals labeled **24 Vac/Vdc (+/-)**.
- 4 Connect the power supply's wires to the red screw terminal connector.
- 5 Connect an 18 AWG or larger wire from the power supply's negative (-) terminal to earth ground. This wire must not exceed 12 in. (30.5 cm).
- 6 Apply power to the power supply.
- 7 Measure the voltage at the red screw terminal connector to verify that the voltage is within the operating range of 20 to 30 Vac or 23.4 to 30 Vdc.
- 8 Insert the red screw terminal connector into the XT-RB's power terminals.
- 9 To verify the polarity of the wiring, measure the voltage from the negative terminal of the red screw terminal connector to a nearby ground. The reading should be 0V.
- 10 Turn on the XT-RB's power switch.
- 11 Verify that the  LED on top of the XT-RB is on.
- 12 Measure the voltage at the red screw terminal connector to verify that the voltage is within the operating range of 20 to 30 Vac or 23.4 to 30 Vdc.

## Connecting to the XT-RB through the Service Port

You can connect the XT-RB to a computer using a wireless or cable connection to the Service Port. This allows you to communicate with the XT-RB through a web browser to:

- View/change XT-RB and network settings. Changes take effect immediately after clicking **Restart**.
- View the XT-RB's Module Status report
- Troubleshoot

You can set a site level **Device Password** to restrict access to the Service Port controller setup pages of a device with a `drv_gen5` driver. Set up the password in any of the following locations:

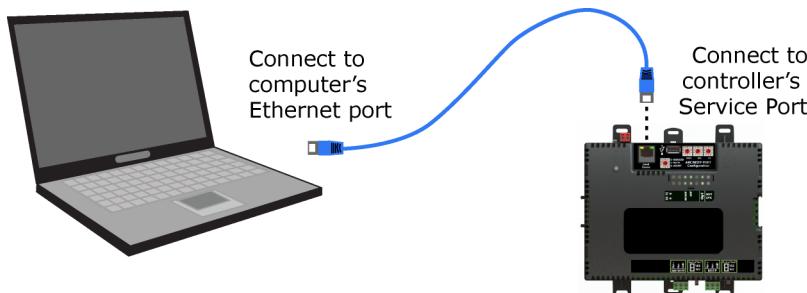
- In SiteBuilder, in the site dialog box
- In the i-Vu® interface, on the system level, on the **Devices > Advanced** tab
- If you have multiple sites, in the i-Vu® interface, at the site level > **Properties** page

### To connect the XT-RB to a computer using the Carrier® wireless service adapter:

- 1 Insert the Carrier® wireless service adapter (part# `USB-W`) into the XT-RB's USB Service Port to communicate with a Wi-Fi-compatible computer.
- 2 Open your computer's wireless network display to view your available wireless networks.  
**NOTE** The XT-RB only supports the 5 GHz band and not the 2.4 GHz band.
- 3 Connect to the wireless network using the network SSID and password that are printed on the Carrier® wireless service adapter.
- 4 Open a web browser on the computer and navigate to `https://local.access` or `https://169.254.1.1` to see the controller setup pages.

### To connect the XT-RB to a computer using a cable:

- 1 Connect an Ethernet cable from a computer to the XT-RB as shown below.



- 2 Turn off the computer's Wi-Fi if it is on.

- 3** If your computer uses a static IP address, use the following settings:
  - Address: 169.254.1.x, where x is 2 to 7
  - Subnet Mask: 255.255.255.248
  - Default Gateway: 169.254.1.1
- 4** If it uses a DHCP address, leave the address as it is.
- 5** Open a web browser on the computer.
- 6** Navigate to <https://local.access> or <https://169.254.1.1> to see the controller setup pages.

**NOTE** The first time you access the XT-RB in the i-Vu® interface after you have changed settings through the Service Port, be sure to upload the changes to the system database. This will preserve those settings when you download memory or parameters to the XT-RB.

## Connecting to the XT-RB through the Gig-E Port

Using a computer and an Ethernet cable, you can communicate with the XT-RB through a web browser to:

- Address and configure controllers
- View/change XT-RB and network settings. Changes take effect immediately after clicking 
- View the XT-RB's Module Status report
- Troubleshoot

### To access the controller setup pages through the Gig-E network

- 1 In the i-Vu® interface, on the navigation tree, select the XT-RB.
- 2 Right-click XT-RB, select **Driver Properties** > **Settings** tab > **Advanced** > **Security** tab.
- 3 Enable **Allow Configuration on Gig-E Port**.
- 4 You can set a site level **Device Password** to restrict access to the Service Port controller setup pages of a device with a drv\_gen5 driver. Set up the password in any of the following locations:
  - In SiteBuilder, in the site dialog box
  - In the i-Vu® interface, on the system level, on the **Devices** > **Advanced** tab
  - If you have multiple sites, in the i-Vu® interface, at the site level > **Properties** page
- 5 Connect an Ethernet cable from a computer to the Gig-E network that the XT-RB is communicating on.

**NOTE** Based on the building network configuration, this connection could be at a building switch or panel-mounted switch.

- 6 Turn off the computer's Wi-Fi if it is on.
- 7 If your computer uses a static IP address, use settings appropriate for the building network.
- 8 If it uses a DHCP address, leave the address as it is.
- 9 Open a web browser on the computer.
- 10 Navigate to <http://<router ip address>>.

**NOTE** The IP address is preset in the XT-RB for interfacing with the Ethernet network.

**NOTE** The first time you access the XT-RB in the i-Vu® interface after you have changed settings through the Service Port, be sure to upload the changes to the system database. This will preserve those settings when you download memory or parameters to the XT-RB.

## Addressing the XT-RB

Set this port's address ...	In this location...	See...
IP	Service Port	To set the IP address
IPv6	Service Port	To set an IPv6 address (page 13)
Port S1	Service Port	To set the Port S1 address and baud rate (page 14)
Port S2	Service Port	To set the Port S2 address and baud rate (page 15)

## To set the IP address

You must define the XT-RB's IP addressing (IP address, subnet mask, and default gateway) in the Service Port controller setup pages so that the XT-RB can communicate with the i-Vu Pro Server on the IP network.

Use one of the IP addressing schemes described below with the associated instructions that follow.

Use a...	If...
<b>DHCP IP Address</b> generated by a DHCP server	The IP network uses a DHCP server for IP addressing
<b>Custom Static IP Address</b> from your network administrator	You do not use a DHCP server and the answer to any of the following questions is yes. Will the i-Vu® system: <ul style="list-style-type: none"> <li>• Share a facility's existing IP data network?</li> <li>• Have 254 or more devices with static IP addresses?</li> <li>• Be connected to the Internet?</li> <li>• Have at least one device located on the other side of an IP router?</li> <li>• Have any third-party IP devices?</li> </ul>
<b>Default IP Address</b> that your system creates	The answer to all of the above questions is no.

**NOTE** Carefully plan your addressing scheme to avoid duplicating addresses. If third-party devices are integrated into the system, make sure your addresses do not conflict with their addresses.

### To set a DHCP IP address

- 1 On the Service Port controller setup, click  select **Modstat** from the drop-down list, find the XT-RB's **Ethernet MAC address**, and write it down.
- 2 On the **Connections** page, under the **Gig-E Port** tab > **Primary BACnet/IP**, select **DHCP** in the drop-down list for **Address Mode**.

- 3 Click 
- 4 Write down the **IP Address**.
- 5 Give the DHCP network administrator the IP address and Ethernet MAC address and ask him to reserve that IP address for the XT-RB so that it always receives the same IP address from the DHCP server.

### To set a custom IP address

- 1 Obtain the IP address, subnet mask, and default gateway address for the XT-RB from the facility network administrator.
- 2 On the **Connections** page, under the **Gig-E Port** tab > **Primary BACnet/IP**, select **Custom Static** in the drop-down list for **Address Mode**.
- 3 Enter the **IP Address**, **Subnet Mask**, and **Default Gateway** addresses given to you by the network administrator.

- 4 Click 

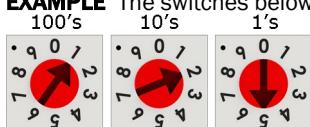
### To set a default IP address

Default IP addressing assigns the following to the XT-RB:

- IP address = 192.168.168.x  
where x is the setting on the rotary switches in the range from 1 to 253
- Subnet Mask = 255.255.255.0
- Default Gateway = 192.168.168.254

- 1 Set the XT-RB's three rotary switches to a unique address on the network. Set the left rotary switch to the hundreds digit, the middle switch to the tens digit, and the right switch to the ones digit.

**EXAMPLE** The switches below are set to 125.



- 2 On the **Connections** page, under the **Gig-E Port** tab > **Primary BACnet/IP**, select **Default IP Address** in the drop-down list for **Address Mode**.

- 3 Click 



#### CAUTION

- If you set the Default IP address on the controller setup **Connections** page > **Gig-E Port** tab and then change the rotary switches, you must do one of the following to correct the IP address in the XT-RB:

- Click 
- Cycle the XT-RB's power.

Correct the IP address in the i-Vu® application using Find Devices and Upload All Content. See the *i-Vu® Help* for more information.

**NOTE** The default address is an intranet address. Data packets from this address are not routable to the Internet.

## To set an IPv6 address

You must define the XT-RB's IPv6 addressing (IPv6 address, multicast address, and default gateway) in the Service Port controller setup pages so that the XT-RB can communicate with the i-Vu Pro Server on the IPv6 network.

Use one of the IPv6 addressing schemes described below with the instructions that follow. See the *IPv6 Best Practices Guide*.

Use a...	If...
<b>Default IP Address</b> that your system creates	fd01::192:168:168:<rotary>
<b>Custom Static</b> from your network administrator	You have a permanent IP address which does not change and is usually obtained from the network administrator.
<b>DHCP</b> generated by a DHCP server	The IP network uses a DHCP server for IP addressing
<b>Link-Local</b>	This is an autogenerated private IP address used for local network segment communications. Segment starts with FE80.
<b>SLAAC</b>	Used for Global Scope addressing and multicasting. This is defined by the building network administrator.

**NOTE** Carefully plan your addressing scheme to avoid duplicating addresses. If third-party devices are integrated into the system, make sure your addresses do not conflict with their addresses.

### To set a custom IP address

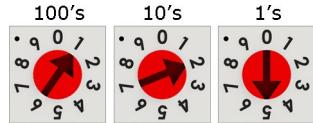
- 1 Obtain the IP address, subnet mask, and default gateway address for the XT-RB from the facility network administrator.
- 2 On the **Connections** page, under the **Gig-E Port** tab > **BACnet/IPv6**, select **Custom Static** in the drop-down list for **Address Mode**.
- 3 Enter the **IP Address**, **Prefix Length**, and **Default Gateway** addresses that the network administrator gave you.
- 4 Click **Restart** 

### To set a default IP address

Default IP addressing assigns the following to the XT-RB:

- **IP address** = fd01::192:168:168:**x**  
where **x** is the setting on the rotary switches in the range from 1 to 253
- **Prefix Length** = 64
- **Default Gateway** = fd01::192:168:168:254

- 1 Set the XT-RB's three rotary switches to a unique address on the network. Set the left rotary switch to the hundreds digit, the middle switch to the tens digit, and the right switch to the ones digit.  
**EXAMPLE** The switches below are set to 125.



- 2 In the Service Port controller setup pages on the **Connections** page, under the **Gig-E Port** tab > **BACnet/IPv6**, select **Default IP Address** in the drop-down list for **Address Mode**.
- 3 Click Restart



### CAUTIONS

- If you configure your XT-RB to use link-local addressing, then your IPv6 connection must also be configured to use link-local addressing. The i-Vu® Server address must start with fe80 and the Multicast Address must start with ff02.
- If you set the Default IP address on the controller setup **Connections** page > **Gig-E Port** tab and then change the rotary switches, you must do one of the following to correct the IP address in the XT-RB:
  - Go to the controller setup **Connections** page and click Restart
  - Cycle the XT-RB's power.Correct the IP address in SiteBuilder.

**NOTE** The default address is an intranet address. Data packets from this address are not routable to the Internet.

## To set the Port S1 address and baud rate

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The address should be in one of the following ranges based on the port's use.

- For ARCNET, the range is 1 to 254.
- For MS/TP, the range is 0 to 127.

On the **Connections > Port S1** tab, type the address in the **MAC Address** field.

**NOTE** ARCNET is not supported on Port S2.

### For MS/TP, set up the port's baud rate

- 1 On the **Connections > Port S1** tab, select the **Baud Rate**. The default is 76,800 bps.
- 2 Click Restart

## To set the Port S2 address and baud rate

- 1 On the **Connections > Port S2** tab, select **BACnet MSTP** from the dropdown.
- 2 Type the address in the **MAC Address** field. The address must be in the range of 0 to 127.
- 3 Select the **Baud Rate**. The default is 76,800 bps.

**NOTE** Select the same baud rate for all devices on the MS/TP network.

- 4 Click **Restart**.

## To set up the Local Network

You can use the controller setup **Local Network** tab to discover Carrier® devices on a single network. You can configure them and assign addresses to each one using one of the methods described below.

### Method 1: To address when you know the serial numbers

- 1 Connect your laptop to the Service Port of one device on the IP network.

**NOTE** This device is referred to as the "connected controller".

- 2 Browse to the Service Port address (<https://local.access> or <https://169.254.1.1>).
- 3 On the **Ports** tab, set the device's **IP Address** and **Subnet Mask**.
- 4 On the controller setup **Local Network** tab, click the **Clear All** button to erase the **Local Devices** table if there is information in the table.
- 5 On the **Local Network** tab, click the **Clear All** button to erase the **Local Devices** table if there is information in it.
- 6 Click **Discover**. The table finds and lists the first 256 unconfigured devices on the same subnet. The table is sorted by serial number.

**NOTE** A maximum of 256 controllers can be discovered and displayed in the **Local Devices** table. If you have more than 256 controllers on your network, configure some or all the controllers in the table and click **Clear**. Check **Only Unconfigured** and click **Discover** again. A count appears above the table to report the total number of controllers and the discovered number.

- 7 To configure devices:
  - One at a time - Enter the **IP Address** and **Location** or name (optional) of each device you wish to configure. When you enter the IP address, that device inherits the original device's subnet mask and default gateway.
  - Multiple devices simultaneously - **Select** the devices you want to address, enter the starting IP address in the field under the **Address** heading, and then click **Assign**. The selected devices are automatically assigned sequential IP addresses.

**NOTE** To change the IP Address, the device's **Mode** must be **Custom Static**.

For more details about discovering and configuring your devices, see **Local Network** tab.

## Method 2: To address when you do not know the serial numbers

You need physical access to each device so that you can press the DSC button on the bottom right of the XT-RB. This allows you to identify the device on the controller setup **Local Network** page.

- 1 Connect to the Service Port of one IP device on the network. Connection can be wireless or through USB.
- 2 Browse to the Service Port address (<https://local.access> or <https://169.254.1.1>).
- 3 On the **Ports** tab, set the device's **IP Address** and **Subnet Mask**.  
**NOTE** The other devices that you configure inherit this device's subnet mask and default gateway.
- 4 On the **Local Network** tab, click the **Clear All** button to erase any pre-existing data in the **Local Devices** table.
- 5 On the controller you want to address, press the DSC button on the bottom right. When pressed, a row appears in the **Local Devices** table on the **Local Network** tab. The row has a blue dot to indicate which controller has just had the button pressed.
- 6 In the row for the identified controller, enter the **Address** and **Location** (optional).
- 7 Repeat steps 3 and 4 for each controller that you want to address.
- 8 For more details about discovering and configuring your devices, see **Local Network** tab.

**NOTE** To physically identify a device with an actuator that is displayed on the **Local Devices** table, click the **Blink** button to light the Locator LED in the actuator release button. For all other devices the network status and system status LEDs simultaneously blink white.

The following are two possible methods you could use to identify and assign a network of controllers' addresses after following steps 1 - 4 above.

- Two technicians can work together if they are communicating throughout the process. The first technician physically travels around the building to each controller, tells his co-worker exactly where he is, and then presses the DSC button. The second technician, who is sitting at a computer connected to the controller, watches for the blue dot to show up on the **Local Devices** table on the **Local Network** tab, where he can enter the appropriate addressing and identifying information.
- One technician alone can address the controllers on a mobile device showing the Local Network page by plugging the Carrier® wireless service adapter into a controller's Service Port. Then, with the computer, move to each controller within 100 ft. of the adapter. Pressing the DSC button on the controller displays a blue dot in the table where the addressing information can be entered.

## Wiring for communications

The XT-RB communicates on the following ports.

Port	Protocol	Port type(s)	Speed(s)
<b>Gig-E</b>	BACnet/IPv4 BACnet/IPv6 and/or BACnet/Ethernet	Ethernet	10, 100, or 1000 Mbps (1 Gbps)
<b>Port S1</b> <sup>1</sup>	BACnet/ARCNET	EIA-485	156 kbps
<b>Port S1</b> <sup>1</sup> or <b>Port S2</b>	BACnet/MSTP	EIA-485	9.6 to 115.2 Kbps <sup>2</sup>
<b>Service Port</b> <sup>3</sup>	HTTPS/IP	Ethernet	10 Mbps 100 Mbps
<b>USB Port</b>	USB2.0	USB	

<sup>1</sup> Set the **Port S1 Configuration** rotary switch to:

- 0** if the port is not used
- 1** for MS/TP
- 2** for ARCNET

<sup>2</sup> Default for MS/TP is 76.8 kbps.

<sup>3</sup> See *Connecting to the XT-RB through the Service Port* (page 8).

## Wiring specifications

For...	Use...	Maximum Length
Ethernet	Cat5e or higher Ethernet cable	328 feet (100 meters)
ARCNET <sup>1</sup> and MS/TP <sup>2</sup>	22 AWG, low-capacitance, twisted, stranded, shielded copper wire	2000 feet (610 meters)

<sup>1</sup> See the *ARC156 Wiring Technical Instructions*.

<sup>2</sup> See the *MS/TP Networking and Wiring Technical Instructions*.



**WARNING** Do not apply line voltage (mains voltage) to the XT-RB's ports and terminals.

## To connect the XT-RB to the Ethernet

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Connect an Ethernet cable to the Gig-E Ethernet port.

**NOTE** If your system has controllers on different IP subnets separated by an IP router, you must configure one controller on each subnet as a BACnet Broadcast Management Device (BBMD). Do not configure more than one BBMD per subnet as this may cause circular routes. See "Setting up BACnet Broadcast Management Devices (BBMDs)" in SiteBuilder or i-Vu® Help.

## To wire to a BACnet/ARCNET network

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- 1 Turn **off** the XT-RB's power.
- 2 Check the communications wiring for shorts and grounds.
- 3 Connect the communications wiring to **Port S1**'s screw terminals labeled **Net +**, **Net -**, and **Shield**.  
**NOTE** Use the same polarity throughout the network segment.
- 4 If the XT-RB has a **Port S1 Configuration** rotary switch, set it to 2.
- 5 If the XT-RB is at either end of a network segment, set the port's **End of Net?** switch to **Yes**.  
**NOTE** The XT-RB's **End of Net** switch applies network termination and bias. If the XT-RB is at the end of a network segment that includes a DIAG485 that has its **Bias** jumper in the ON position, set the **End of Net?** switch to **No** and connect a 120 ohm termination resistor to the **Net+** and **Net-** terminals. See *DIAG485 Technical Instructions* for more information.
- 6 Turn on the XT-RB's power.
- 7 To verify communication with the network, get a Module Status report in the i-Vu® interface for a controller on the ARCNET network.  
**NOTE** This step requires that you have set up the XT-RB in SiteBuilder and downloaded it from the i-Vu® interface.

## To wire to a BACnet MS/TP network

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An MS/TP network can be wired to either **Port S1** or **Port S2**.

- 1 Turn **off** the XT-RB's power.
- 2 Check the communications wiring for shorts and grounds.
- 3 Connect the communications wiring to the **Port S1** or **Port S2** screw terminals labeled **Net +**, **Net -**, and **Shield**.  
**NOTE** Use the same polarity throughout the network segment.
- 4 If you are using **Port S1**, and the controller has a **Port S1 Configuration** rotary switch, set it to 1.  
**NOTE** If **Port S1** is not being used for any network, set this rotary switch to 0.

- 5 If the XT-RB is at either end of a network segment, set the port's **End of Net?** switch to **Yes**.  
**NOTE** The XT-RB's **End of Net** switch applies network termination and bias. If the XT-RB is at the end of a network segment that includes a DIAG485 that has its **Blas** jumper in the ON position, set the **End of Net?** switch to **No** and connect a 120 ohm termination resistor to the **Net+** and **Net-** terminals. See *DIAG485 Technical Instructions* for more information.
- 6 Turn on the XT-RB's power.
- 7 To verify communication with the network, get a Module Status report in the i-Vu® interface for a controller on the MS/TP network.  
**NOTE** This step requires that you have set up the XT-RB in SiteBuilder and downloaded it from the i-Vu® interface.

## Find and upload in the i-Vu® interface

In the i-Vu® interface, select the System level in the navigation tree.

- 1 On the **Devices** page > **Manage** tab, click **Find Devices** to discover your routers and their drivers and graphics.
- 2 Once routers are found, select one or more routers in the list on the **Manage** tab and click **Upload All Content** to upload to the i-Vu® application. Use **Ctrl+click**, **Shift+click**, or both to select multiple items.
- 3 Click **OK** when you see the message **This will upload all content for the controller. Are you sure you want to do this?**. When complete, a check mark under **Status** indicates a successful upload.

### NOTES

- If an error message appears, click on the message to view an explanation.
- For details, see the i-Vu® Help.

## Downloading the driver

Download to send the following items to the XT-RB:

- `drv_gen5_< version >.driverx` (See NOTES below.)
- Editable properties

### NOTES

- The driver must be in `<system_name>\drivers`. The exact location of the system directory depends on where you have saved it. It is typically under `i-Vu Prox.x\programdata\systems`.
- To verify that you have the driver's latest version, go to the Carrier® Partner Community website and compare the latest version to the XT-RB's driver in SiteBuilder.
- If you change any of the above items or the XT-RB's address after the initial download, you must download again. The first download takes longer than subsequent downloads.

## To stage a driver for later installation

To avoid interrupting controller function when installing a driver, you can first stage the driver to the controller before installing it. The controller retains full functionality while the new driver is staged and continues to use the existing driver until you install the new driver.

- 1 On the i-Vu® navigation tree, choose a network and go to the **Devices** > **Drivers** tab.
- 2 Select the XT-RB and click .
- 3 Check **Stage driver in controller**.

- 4** Do one of the following:
  - If the driver is in the **Driver Version** drop-down list:
    - a. Select the driver.
    - b. Click **Accept**.
  - If the driver is not in the list:
    - a. Click **Add**.
    - b. Browse to select the driver.
    - c. Click **Open**.
    - d. Click **Continue**.
    - e. Click **Close**.
    - f. Click **Close** again.
- 5** On the **Devices > Drivers** tab, click **Start Staging**.
- 6** Once you are ready to install the staged driver to the controller, click **Start Installation**.

## Adjusting driver properties and controller setup through the Service Port or the i-Vu® interface

The driver properties pages in the i-Vu® application are the same controller setup pages that you access by connecting to the Service Port.

### NOTES

- The **Home Network** portion of the **Connections > Device** tab is available only by connecting to the Service Port and not through the driver properties.
- Some properties, such as the home network settings, cannot be changed in the i-Vu® driver interface. This prevents losing communication to the XT-RB. You can change those settings by connecting directly to the Service Port.

After you download the driver to the XT-RB, you may want to change the driver's properties in the i-Vu® interface to suit your application.

- 1 On the i-Vu® navigation tree, right-click the XT-RB and select **Driver Properties** from the drop-down list.
- 2 Select **Driver > Settings** tab to open the controller setup pages, which are detailed below.

## Home tabs

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### Dashboard tab

This page shows general controller information.

#### Controller Status

<b>Number of alarms undelivered by the controller</b>	Click to view undelivered alarms.
<b>BACnet System Status</b>	Current state of the controller
<b>Sys Net</b>	Current connection status  <b>TIP</b> Click the <b>Sys</b> or <b>Net</b> LED to view LED descriptions. See <i>LEDs</i> (page 45).

#### Performance

<b>CPU Load</b>	Percentage of CPU used
<b>Memory Load</b>	Percentage of long-term memory used

<b>Port Info</b>	
<b>Device Instance</b>	Unique ID assigned to the controller
<b>Enabled BACnet Ports</b>	 indicates the port set as the home network
<b>Active Alarms</b>	
If there are any currently active alarms, they are shown here.	

## Diagnostics tab

This page allows you to:

- Access additional diagnostic tools with assistance from Carrier Controls System Support

**NOTE** You can only access this tool in the controller setup pages connecting through the Service Port.

- Download log files
- Blink the device's Locator LED
- Capture network communication and then download the capture file for troubleshooting
- View network diagnostics

<b>Technical Support Tools</b>	Enable the toggle switch to view the Challenge key. Send the displayed <b>Challenge</b> key to the Carrier Controls System Support representative who will provide an <b>Activation Key</b> for you to enter.
	Additional tools will be displayed to help Carrier Controls System Support troubleshoot issues. Enabling these tools has security implications, therefore they are automatically disabled after 2 hours.

<b>Logs</b>	<ul style="list-style-type: none"><li>• <b>Retrieve all</b> – Downloads all logs in a zip file to your computer</li><li>• <b>Specific log</b> – Allows you to choose to download the application logs (by date) or the system logs</li><li>• <b>Delete all</b> – Deletes all logs, including current logs</li></ul>
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<b>Blink</b>	To physically identify a device that is displayed on the <b>Local Devices</b> table, click <b>Blink</b> to light the <b>Locator LED</b> in the actuator release button.
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<b>Packet Capture</b>	This allows you to capture network communication on the corresponding port and then download the capture file for troubleshooting.
<b>Primary/secondary BACnet/IP</b>	
<b>BACnet/IPv6</b>	<ul style="list-style-type: none"><li>• <b>Start now</b> — Start a capture immediately. The capture runs until you click <b>Stop</b> or until it reaches the file size limit, whichever occurs first.</li></ul>
<b>BACnet/Ethernet</b>	<ul style="list-style-type: none"><li>• <b>Start continuous</b> — Start a continuous capture immediately. The capture stores the most recent 5MB of captured data and runs continuously until you click <b>Stop</b>.</li></ul>
<b>Primary/secondary BACnet SC</b>	<p><b>NOTES</b></p> <ul style="list-style-type: none"><li>○ The number of continuous captures that you can run simultaneously is limited.</li><li>○ Continuous captures are disabled when the XT-RB is in a low-memory state.</li></ul>
<b>Port S1 BACnet/MSTP</b>	
<b>Port S1 BACnet/ARCNET</b>	
<b>Port S2 BACnet/MSTP</b>	<ul style="list-style-type: none"><li>• <b>Schedule</b> — Schedule a packet capture to automatically run at a future date and time of your choosing. Choose whether the capture stops until it reaches the file size limit or specify a duration of time for the capture to run.</li><li>• <b>Capture Data of Type</b> — Choose whether to capture all packets or only BACnet packets (BACnet MS/TP only).</li><li>• <b>Get capture file</b> — Download the capture file once you have stopped the capture or the capture has reached the file size limit.</li></ul>
	<p><b>NOTE</b> Capture files have a 25MB limit. If you need a larger capture, you must attach a computer running Wireshark. Please see the <i>Carrier® BACnet Integration Guide</i> for more details.</p>
	<p>Please contact the <i>Carrier® Training Department</i> regarding Networking I/II classes for more details on using packet captures for diagnostics and troubleshooting.</p>
<b>Network Diagnostics</b>	<p>Click <b>Reset statistics</b> to reset values to 0, which then resume accumulating.</p> <p>See <i>Appendix - Module Status field descriptions</i> (page 52) for descriptions of these fields.</p>

## Connections tabs

Use these pages to set up communication with the XT-RB. The fields are editable when the setup pages are accessed by connecting directly to the Service Port. Some of those fields will not be editable when you access them through the i-Vu® system driver properties.

### Device tab

Typically, you define the information on the **Device** tab in the Service Port controller setup interface and then configure the same information in the i-Vu® interface. Except for the **Home Network**, you can adjust the settings on the **Device** tab in the i-Vu® system.

**NOTE** Carefully plan your addressing scheme to avoid duplicating addresses. If third-party devices are integrated into the system, make sure your addresses do not conflict with their addresses.

The **Device > Home Network** tab is autopopulated based on what is set for the home network. Refer to the Network Parameters listed in the appropriate section based on the home network you selected.

<b>Device Communication</b>	The current BACnet BMS connection status
<b>Auto Identity Scheme</b>	<ul style="list-style-type: none"> <li>• <b>Not Autogenerated</b>—you can enter a specific ID that is unique on the network.</li> <li>• <b>Autogenerated</b>—the <b>Device Instance</b> is automatically set. You cannot edit the field.</li> </ul>
<b>Device Instance</b>	Contents and editability depend on your <b>Auto Identity Scheme</b> choice.

#### Identification

<b>Auto Name Scheme</b>	<ul style="list-style-type: none"> <li>• <b>Not Autogenerated</b>—you can enter a specific name that is unique on the network.</li> <li>• <b>Autogenerated</b>—the <b>Device Name</b> is automatically set as the word "device + the Device Instance". For example, "device2423911". You cannot edit the field.</li> </ul>
<b>Device Name</b>	Contents and editability depend on your <b>Auto Name Scheme</b> choice.
<b>Location</b>	You can enter an intuitive location for the device in the i-Vu® interface. This will be the device's display name when discovered through <b>Find Devices</b> .
<b>Description</b>	You can enter an intuitive description for the device in the i-Vu® interface.

#### APDU

The following three fields refer to all networks over which the XT-RB communicates.

<b>APDU Timeout</b>	How many milliseconds the device waits before resending a message if no response is received.
<b>APDU Segment Timeout</b>	How many milliseconds the device waits before resending a message segment if no response is received.
<b>Number of APDU Retries</b>	The number of times the device resends a message.
<b>Max APDU Length Accepted</b>	The maximum length of a message or message segment that can be accepted by the BACnet device. The actual APDU length used for communication is automatically adjusted based on the capabilities of the enabled datalinks.

## Gig-E Port using BACnet/IPv4

<b>802.1x Port Authentication</b>	Enable the toggle switch to use 802.1x Port Authentication. Then, click <b>Manage port certificates</b> .
<b>Manage port certificates</b>	Opens the 802.1x Port Authentication window where you can manage port certificates. Enter your <b>Identity</b> and <b>User Private Key Password</b> , then upload the CA certificate, user certificate, and user private key. Upon successful upload, a <b>Certificate/key valid</b> message appears next to the upload button. Once the connection has been authenticated, <b>Port Authentication Status</b> will change from <b>Authentication Pending</b> to <b>Authenticated</b> . This may take up to a minute.

### IP Addressing

#### IPv4

<b>Address Mode</b>	Select the type of addressing the XT-RB is to use. See Addressing the XT-RB. Select <b>Default IP Address</b> to automatically assign the following to the XT-RB: <ul style="list-style-type: none"><li>IP address = 192.168.168.x where x is the setting on the rotary switches in the range from 1 to 253</li><li>Subnet Mask = 255.255.255.0</li><li>Default Gateway = 192.168.168.254</li></ul> Select <b>Custom Static</b> if you have a permanent IP address which does not change and is usually obtained from the network administrator. Select <b>DHCP</b> if the network uses a DHCP server for IP addressing.
<b>Address</b>	Displays the unique address of the device, if assigned. Editable only if using <b>Custom Static</b> addressing.
<b>Subnet Mask</b>	Displays the Subnet Mask of the device, if assigned. Editable only if using <b>Custom Static</b> addressing.
<b>Default Gateway</b>	Displays the Default Gateway of the device, if assigned. Editable only if using <b>Custom Static</b> addressing.
<b>Inhibit BACnet/IP on loss of DHCP lease</b>	Inhibits BACnet communications via the IPv4 port when DHCP lease is not available or not renewed. <b>NOTE</b> Checkbox visible only if using DHCP addressing.

#### DNS

##### Edit Servers

<b>Edit Servers</b>	DNS servers are required if Internet host name resolution for BBMD, NTP, or BACnet/SC are needed. For DHCP application, enter in the DNS name servers provided by the building network administrator. <ul style="list-style-type: none"><li>To add a server, click <b>Add</b> and then enter the <b>Name Server Address</b> field below.</li><li>To delete a server in the table, select it in the list and click <b>Delete</b>.</li></ul>
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## Protocols

Primary BACnet/IP	
<b>Home network or Set as home</b>	This is the network that communicates with the i-Vu® application. This sets the BACnet Address of the Device Object. To set this port as the home network, activate the toggle switch and click <b>Set as home</b> . To disable the port from use, deactivate the toggle switch.
<b>Auto Generate Network Number</b>	If checked, network number is automatically set to 1600. Uncheck to set the network number manually using <b>Custom Static Address Mode</b> .
<b>Network Number</b>	Specify a number for the BACnet/IP network or set to 0 if the port is not used. The network number is 0 by default. Filled in automatically if <b>Autogenerate Network Number</b> is checked. <b>NOTE</b> When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
<b>UDP Port</b>	The port that the XT-RB will use for BACnet communication. If the XT-RB has two BACnet/IP networks communicating on the Gig-E port, confirm that the home network interface has the port number set to what the i-Vu® application will use for BACnet communication.
Primary IPv4 Statistics	
<b>Reset statistics</b>	Resets values to 0, which then resume accumulating.
<b>Import BBMD</b> <b>Export BBMD</b>	If this network interface will be used to access BBMDs, set the BBMD tables by using the BBMD buttons. <ul style="list-style-type: none"> <li><b>Import BBMD</b>—Import BBMD tables in the specified format. See "Setting up BACnet Broadcast Management Devices (BBMDs)" in SiteBuilder or i-Vu® Help.</li> <li><b>Export BBMD</b>—Export the BBMD table that is in the controller to use for storage, viewing, or troubleshooting.</li> </ul>
Secondary BACnet/IP	
<b>Home network or Set as home</b>	This is the network that communicates with the i-Vu® application. This sets the BACnet Address of the Device Object. To set this port as the home network, activate the toggle switch and click <b>Set as home</b> . To disable the port from use, deactivate the toggle switch.
<b>Network Number</b>	The network number for the secondary BACnet/IP network. This number must be unique for the system. <b>NOTE</b> When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
<b>UDP Port</b>	The port that the XT-RB will use for BACnet communication. If the XT-RB has two BACnet/IP networks communicating on the Gig-E port, confirm that the home network interface has the port number set to what the i-Vu® application will use for BACnet communication. <b>NOTE</b> This UDP Port number must be different from the one used for the primary BACnet/IP port.

### Secondary IPv4 Statistics

<b>Reset statistics</b>	Resets values to 0, which then resume accumulating.
<b>Import BBMD</b> <b>Export BBMD</b>	If this network interface will be used to access BBMDs, set the BBMD tables by using the BBMD buttons.
	<ul style="list-style-type: none"><li>• <b>Import BBMD</b>—Import BBMD tables in the specified format. See "Setting up BACnet Broadcast Management Devices (BBMDs)" in SiteBuilder or i-Vu® Help.</li><li>• <b>Export BBMD</b>—Export the BBMD table that is in the controller to use for storage, viewing, or troubleshooting.</li></ul>

## Gig-E Port using BACnet/IPv6

<b>802.1x Port Authentication</b>	Enable the toggle switch to use 802.1x Port Authentication. Then, click <b>Manage port certificates</b> .
<b>Manage port certificates</b>	Opens the 802.1x Port Authentication window where you can manage port certificates. Enter your <b>Identity</b> and <b>User Private Key Password</b> , then upload the CA certificate, user certificate, and user private key. Upon successful upload, a <b>Certificate/key valid</b> message appears next to the upload button. Once the connection has been authenticated, <b>Port Authentication Status</b> will change from <b>Authentication Pending</b> to <b>Authenticated</b> . This may take up to a minute.

### IP Addressing

#### IPv6

<b>Address Mode</b>	Select the type of addressing the XT-RB is to use. See Addressing the XT-RB. Select <b>Default IP Address</b> to automatically assign the following to the XT-RB: <ul style="list-style-type: none"><li>• IP address = fd01::1</li><li>• Prefix length = 64</li><li>• Default Gateway = fe80::1</li></ul> Select <b>Custom Static</b> if you have a permanent IP address which does not change and is usually obtained from the network administrator. Select <b>DHCP</b> if the network uses a DHCP server for IP addressing.
<b>Address</b>	Displays the unique address of the device, if assigned. Editable only if using <b>Custom Static</b> addressing.
<b>Prefix Length</b>	Value set between 10 and 128 to define the number of leftmost bits identifying the network portion of the address.
<b>Default Gateway</b>	Displays the Default Gateway of the device, if assigned. Editable only if using <b>Custom Static</b> addressing.

**DNS****Edit Servers**

DNS servers are required if Internet host name resolution for BBMD, NTP, or BACnet/SC are needed. For DHCP application, enter in the DNS name servers provided by the building network administrator.

- To add a server, click **Add** and then enter the **Name Server Address** field below.
- To delete a server in the table, select it in the list and click **Delete**.

**IPv6 Network Interfaces****— IPv6 Network Interfaces —**

System message showing the setting for IPv6, including the display name, interface name, set address, Link-Local, Zone Index, MAC address, etc..

**Protocols****BACnet/IPv6**

**Home network or Set as home** This is the network that communicates with the i-Vu® application. This sets the BACnet Address of the Device Object. To set this port as the home network, activate the toggle switch and click **Set as home**. To disable the port from use, deactivate the toggle switch.

**Network Number** The network number for the BACnet/IPv6 network. This number must be unique for the system.

**NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.

**UDP Port** The port that the XT-RB will use for BACnet communication.

**Multicast Address** Used for broadcasts on an IPv6 network using SLAAC. Defined by the building network administrator.

**Multicast UDP Port** The port that the XT-RB will use for BACnet communication.

**IPv6 Statistics**

**Reset Statistics** Resets values to 0, which then resume accumulating.

**Import BBMD** **Export BBMD** If this network interface will be used to access BBMDs, set the BBMD tables by using the BBMD buttons.

- **Import BBMD**—Import BBMD tables in the specified format. See "Setting up BACnet Broadcast Management Devices (BBMDs)" in SiteBuilder or i-Vu® Help.
- **Export BBMD**—Export the BBMD table that is in the controller to use for storage, viewing, or troubleshooting.

**Gig-E Port using BACnet/SC**

**NOTE** Because BACnet/SC runs on your IP network, you must configure the XT-RB's IPv4 or IPv6 address information under **IP Addressing**. If the XT-RB will route to IP devices, you must enable the IP protocol in addition to the Secure Connect protocol.

The **BACnet/SC** sections provide hub status information and the ability to configure the items described in the table below for up to 2 Secure Connect ports.

<b>802.1x Port Authentication</b>	Enable the toggle switch to use 802.1x Port Authentication. Then, click <b>Manage port certificates</b> .
<b>Manage port certificates</b>	Opens the 802.1x Port Authentication window where you can manage port certificates. Enter your <b>Identity</b> and <b>User Private Key Password</b> , then upload the CA certificate, user certificate, and user private key. Upon successful upload, a <b>Certificate/key valid</b> message appears next to the upload button. Once the connection has been authenticated, <b>Port Authentication Status</b> will change from <b>Authentication Pending</b> to <b>Authenticated</b> . This may take up to a minute.

## IP Addressing

### IPv4

<b>Address Mode</b>	Select the type of addressing the XT-RB is to use. See Addressing the XT-RB: Select <b>Default IP Address</b> to automatically assign the following to the XT-RB: <ul style="list-style-type: none"><li>IP address = 192.168.168.x where x is the setting on the rotary switches in the range from 1 to 253</li><li>Subnet Mask = 255.255.255.0</li><li>Default Gateway = 192.168.168.254</li></ul> Select <b>Custom Static</b> if you have a permanent IP address which does not change and is usually obtained from the network administrator. Select <b>DHCP</b> if the network uses a DHCP server for IP addressing.
<b>Address</b>	Displays the unique address of the device, if assigned. Editable only if using <b>Custom Static</b> addressing.
<b>Subnet Mask</b>	Displays the Subnet Mask of the device, if assigned. Editable only if using <b>Custom Static</b> addressing.
<b>Default Gateway</b>	Displays the Default Gateway of the device, if assigned. Editable only if using <b>Custom Static</b> addressing.

### DNS

<b>Edit Servers</b>	DNS servers are required if Internet host name resolution for BBMD, NTP, or BACnet/SC are needed. For DHCP application, enter in the DNS name servers provided by the building network administrator. <ul style="list-style-type: none"><li>To add a server, click <b>Add</b> and then enter the <b>Name Server Address</b> field below.</li><li>To delete a server in the table, select it in the list and click <b>Delete</b>.</li></ul>
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**IPv6**

<b>Address Mode</b>	Select the type of addressing the XT-RB is to use. See Addressing the XT-RB.  Select <b>Default IP Address</b> to automatically assign the following to the XT-RB:
	<ul style="list-style-type: none"> <li>• IP address = fd01::1</li> <li>• Prefix length = 64</li> <li>• Default Gateway = fe80::1</li> </ul>
	Select <b>Custom Static</b> if you have a permanent IP address which does not change and is usually obtained from the network administrator.
	Select <b>DHCP</b> if the network uses a DHCP server for IP addressing.
<b>Address</b>	Displays the unique address of the device, if assigned. Editable only if using <b>Custom Static</b> addressing.
<b>Prefix Length</b>	Value set between 10 and 128 to define the number of leftmost bits identifying the network portion of the address.
<b>Default Gateway</b>	Displays the Default Gateway of the device, if assigned. Editable only if using <b>Custom Static</b> addressing.

**DNS**

<b>Edit Servers</b>	DNS servers are required if Internet host name resolution for BBMD, NTP, or BACnet/SC are needed. For DHCP application, enter in the DNS name servers provided by the building network administrator. <ul style="list-style-type: none"> <li>• To add a server, click <b>Add</b> and then enter the <b>Name Server Address</b> field below.</li> <li>• To delete a server in the table, select it in the list and click <b>Delete</b>.</li> </ul>
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**IPv6 Network Interfaces**

<b>— IPv6 Network Interfaces —</b>	System message showing the setting for IPv6, including the display name, interface name, set address, Link-Local, Zone Index, MAC address, etc..
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**Protocols****Primary BACnet/SC**  
**Secondary BACnet/SC**

<b>Home network or Set as home</b>	This is the network that communicates with the i-Vu® application. This sets the BACnet Address of the Device Object. To set this port as the home network, activate the toggle switch and click <b>Set as home</b> . To disable the port from use, deactivate the toggle switch.
<b>Network number</b>	Specify a number for the BACnet/SC network or set to 0 if the port is not used. The network number is 0 by default.  <b>NOTE</b> When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.

<b>Address</b>	The Virtual MAC address of the XT-RB on the BACnet/SC network. It is the hex representation of the Device Instance found on the <b>Connections &gt; Device</b> tab.
	<b>NOTE</b> If the Device ID of the XT-RB is zero (not recommended), a '01' is assigned to the third octet of this address because zero addresses are not valid on a BACnet/SC network.
<b>Connection State</b>	The status of the XT-RB's connection as a client on the BACnet/SC network.
<b>Primary Hub URI</b>	<p>Web address used to connect to the primary hub.</p> <p>Format options (address can be an IP address or DNS name):</p> <ul style="list-style-type: none"> <li>• <code>wss://address</code> (if using standard port 443)</li> <li>• <code>wss://address:port</code></li> </ul> <p><b>NOTE</b> If you must use a proxy to reach the hub, enter proxy information on the <b>Advanced &gt; Network</b> tab.</p>
<b>Primary Hub Status</b>	The state of the primary hub communication.
<b>Failover Hub URI</b>	<p>Web address used to connect to the optional failover hub.</p> <p>Format options (address can be an IP address or DNS name):</p> <ul style="list-style-type: none"> <li>• <code>wss://address</code> (if using standard port 443)</li> <li>• <code>wss://address:port</code></li> </ul> <p><b>NOTE</b> If you must use a proxy to reach the hub, enter proxy information on the <b>Advanced &gt; Network</b> tab.</p>
<b>Failover Hub Status</b>	The state of the failover hub communication.
<b>Advanced</b>	
<b>Is Failover Hub?</b>	Indicates if being used as a failover hub.
	<b>NOTES</b>
	<ul style="list-style-type: none"> <li>• A XT-RB can serve as a failover hub, but not as a primary hub. A supported BACnet/SC network requires a virtual or cloud-hosted hub to be used as the primary BACnet/SC hub.</li> <li>• Using a XT-RB as a failover hub is supported for up to 10 BACnet/SC router connections. For BACnet/SC networks with more than 10 router connections, purchase an additional BACnet/SC Virtual Hub to use as a failover hub.</li> </ul>
<b>Listening Connection Type</b>	When set as a failover hub, select interface type used to listen for connections.
<b>Server Port</b>	When set as a failover hub, enter the port on which the hub will be listening.
<b>URIs</b>	When set as a failover hub, this is the web address used by network devices to connect to the hub. The URI is derived from the IP Port configured on the <b>Connections &gt; Gig-E Port</b> tab.
<b>Minimum Reconnect Time</b>	Initial number of seconds to wait before retrying a connect to a hub which increases with each failure.
<b>Maximum Reconnect Time</b>	Maximum number of seconds to wait between connection retries to a hub.
<b>Connection Wait Timeout</b>	Number of seconds to wait for a hub to reply to a connection request.
<b>Disconnect Wait Timeout</b>	Number of seconds to wait for a hub to reply to a disconnect request.

<b>Initiating Heartbeat Interval</b>	Number of seconds to wait to send a heartbeat.
<b>Accepting Heartbeat Interval</b>	Number of seconds to wait to receive a heartbeat.
<b>Primary SC Statistics</b>	
<b>Secondary SC Statistics</b>	
<b>Reset statistics</b>	Resets values to 0, which then resume accumulating.
<b>Manage certificates</b>	See "To create or replace a BACnet/SC device's operational certificate" in the <i>BACnet/SC Setup Guide</i> for instructions on how to create the XT-RB's operational certificate, signed by the BACnet/SC network's Certificate Authority.

## Gig-E Port using BACnet/Ethernet

<b>802.1x Port Authentication</b>	Enable the toggle switch to use 802.1x Port Authentication. Then, click <b>Manage port certificates</b> .
<b>Manage port certificates</b>	<p>Opens the 802.1x Port Authentication window where you can manage port certificates. Enter your <b>Identity</b> and <b>User Private Key Password</b>, then upload the CA certificate, user certificate, and user private key. Upon successful upload, a <b>Certificate/key valid</b> message appears next to the upload button.</p> <p>Once the connection has been authenticated, <b>Port Authentication Status</b> will change from <b>Authentication Pending</b> to <b>Authenticated</b>. This may take up to a minute.</p>

## Protocols

<b>BACnet/Ethernet</b>	
<b>Home network</b> or <b>Set as home</b>	This is the network that communicates with the i-Vu® application. This sets the BACnet Address of the Device Object. To set this port as the home network, activate the toggle switch and click <b>Set as home</b> . To disable the port from use, deactivate the toggle switch.
<b>Network Number</b>	The network number for the BACnet/Ethernet network. This number must be unique for the system.
	<b>NOTE</b> When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
<b>MAC Address</b>	A factory-assigned Ethernet MAC Address

## Port S1 and Port S2

Port S1	
<b>Port S1 BACnet/MSTP</b>	Enable for a BACnet/MSTP network.
<b>Auto Generate Network Number</b>	If checked, network number is automatically set to ((IP network number + rotary switch address) x 10) + 0. Uncheck to set the network number manually using <b>Custom Static Address Mode</b> .
<b>Network Number</b>	The network number is 0 by default. Filled in automatically if <b>Autogenerate Network Number</b> is checked.  <b>NOTE</b> When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
<b>MAC Address</b>	You set the address for Port S1, which must be unique for the system.
<b>End of Network</b>	Indicates status of the XT-RB's <b>End of Net?</b> switch.
<b>Max Master</b>	To increase MS/TP performance, enter the highest address used on the MS/TP network for a master controller. This number must be less than or equal to 127.
<b>Max Info Frames</b>	This is the maximum number of information messages a controller may transmit before it must pass the token to the next controller. Valid values are 1 to 255.   <b>TIP</b> Set <b>Max Info Frames</b> to a number in the range 20 to 100 so that the XT-RB does not become a bottleneck for traffic being routed from a high-speed network to the slower MS/TP network.
<b>Baud Rate</b>	Set this to a baud rate that all other devices on the MS/TP network are set to. Select 9600, 19200, 38400, 57600, 76800, or 115200.
<b>Port S1 MSTP Statistics</b>	Shows statistics for the port. Click <b>Reset statistics</b> to refresh the data.
Port S1 BACnet/ARCNET	
<b>Port S1 BACnet/ARCNET</b>	Enable for a BACnet/ARCNET network.
<b>Auto Generate Network Number</b>	If checked, network number is automatically set to ((IP network number + rotary switch address) x 10) + 0. Uncheck to set the network number manually using <b>Custom Static Address Mode</b> .
<b>Network Number</b>	The network number is 0 by default. Filled in automatically if <b>Autogenerate Network Number</b> is checked.  <b>NOTE</b> When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
<b>MAC Address</b>	You set the address for Port S1, which must be unique for the system.
<b>End of Network</b>	Indicates status of the XT-RB's <b>End of Net?</b> switch.
<b>Port S1 ARCNET Statistics</b>	Shows statistics for the port. Click <b>Reset statistics</b> to refresh the data.

Port S2	
<b>Port S2 BACnet/MSTP</b>	Enable for a BACnet/MSTP network.
<b>Auto Generate Network Number</b>	If checked, network number is automatically set to ((IP network number + rotary switch address) x 10) + 3.  Uncheck to set the network number manually using <b>Custom Static Address Mode</b> .
<b>Network Number</b>	The network number is 0 by default. Filled in automatically if <b>Autogenerate Network Number</b> is checked.  <b>NOTE</b> When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
<b>MAC Address</b>	You set the address for Port S2, which must be unique for the system.
<b>End of Network</b>	Indicates status of the XT-RB's <b>End of Net?</b> switch.
<b>Max Master</b>	To increase MS/TP performance, enter the highest address used on the MS/TP network for a master controller. This number must be less than or equal to 127.
<b>Max Info Frames</b>	This is the maximum number of information messages a controller may transmit before it must pass the token to the next controller. Valid values are 1 to 255.   <b>TIP</b> Set <b>Max Info Frames</b> to a number in the range 20 to 100 so that the XT-RB does not become a bottleneck for traffic being routed from a high-speed network to the slower MS/TP network.
<b>Baud Rate</b>	Set this to a baud rate that all other devices on the MS/TP network are set to. Select 9600, 19200, 38400, 57600, 76800, or 115200.
<b>Port S2 MSTP Statistics</b>	Shows statistics for the port. Click <b>Reset statistics</b> to refresh the data.

## Local Network tab

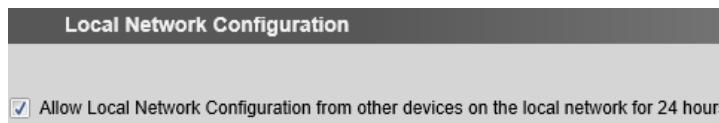
Use the **Local Network** tab to:

- Discover 256 devices on a single network at a time.
- Discover both configured or unconfigured devices on this controller's network.
- See the number of devices discovered and the total number on the network.
- Identify the controller that has had its DSC button pressed.
- Export the **Local Devices** that are present in the table (limited to 100) to a .csv file.
- Set a device's **Mode**, **Address**, and **Location**.
- Assign IP addresses to multiple devices at one time.
- Prompt an LED to blink on a device.

Port S1/Port S2	
<b>Address Mode</b>	Select the type of addressing the XT-RBis to use. See Addressing through the USB service port.
	Select <b>Custom Static</b> if you have a permanent IP address which does not change and is usually obtained from the network administrator.
	Select <b>DHCP</b> if the network uses a DHCP server for IP addressing.
<b>Address</b>	Displays the unique address of the device, if assigned. Editable only if using Custom Static addressing.
<b>Subnet Mask</b>	Displays the Subnet Mask of the device, if assigned. Editable only if using Custom Static addressing.
<b>Default Gateway</b>	Displays the Default Gateway of the device, if assigned. Editable only if using Custom Static addressing.
<b>Device Instance</b>	Displays the IP address of the device, if assigned. You can edit the address only if the device is set to Custom Static.  To auto-assign multiple sequential addresses, select the devices, enter the beginning address, and click <b>Assign</b> .
<b>Network Number</b>	Displays the network number of the lead device.

A device that is new from the factory or has not been previously configured with an IP address, can always be configured using the **Local Devices** table. However, once you have assigned a valid IP address, you have up to 24 hours to make any other changes. After 24 hours, the fields are not editable and the device is **Locked**.

You can unlock a device for 24 hours by either pressing the DSC button on the XT-RB controller or by using the i-Vu® application. In the i-Vu® navigation tree, right-click the XT-RB, select **Driver Properties** and go to **Driver > Settings tab > Local Network Configuration**. Check **Allow Local Network Configuration from other devices on the local network for 24 hours** and click **Accept**.



#### To discover devices on a network

- 1 To address a network of devices, you must first select one controller and set the **IP Address**, **Subnet Mask**, and **Default Gateway** on the **Ports** tab.  
  
**NOTE** This controller is referred to as the connected controller.
- 2 On the **Local Network** tab, at the top of the page, verify that the connected controller's **Mode**, **IP Address**, **Subnet Mask**, and **Default Gateway** are accurate.
- 3 Use the following settings to define the devices that you want to discover in the **Local Devices** table.

Local Devices	
<b>Only Unconfigured</b>	When checked, only discovers devices that do not have an IP address and are linked to the connected controller's network.  When unchecked, discovers both configured and unconfigured devices.
<b>Clear All</b>	Erases all information in the table.
<b>Export</b>	Creates .csv file of the data in the table, limited to 256 devices.

- 4 Click **Discover** to populate the table with your devices that are on a single network communicating with the connected controller.

### Sequential IP addressing

- 1 Follow the above steps to **Discover** devices.
- 2 In the **Select** column, click the checkbox for the devices you want to assign addresses to.

**NOTE** To change the IP Address, the device's **Mode** must be **Custom Static**.

- 3 Enter the starting IP address under **Address** and click **Assign** to automatically assign sequential IP addresses.

**NOTE** Changes in the Local Network interface are pending and need to be submitted. A warning will appear when navigating away with pending changes.

There are different workflows for using the **Local Devices** table to address your devices, depending on the information you have from the installation. See To address when you know the serial numbers or To address when you do not know the serial numbers.

Local Devices table	
<b>Select</b>	<p>Check to select devices for:</p> <ul style="list-style-type: none"> <li>• Changing the Mode</li> <li>• Resolving a Mismatch</li> <li>• Auto-assigning an IP Address</li> </ul> <p><b>NOTE</b> You cannot select devices with a lock symbol.</p>
<b>MAC</b>	Ethernet MAC address of device
<b>Model</b>	Displays the model number of discovered devices
<b>Serial#</b>	<p>The discovered devices are in order by serial number.</p> <p><b>NOTE</b> To change how the rows are sorted, click a different column heading.</p>
<b>Mode</b>	<p>To change the <b>Mode</b>:</p> <ol style="list-style-type: none"> <li>1 Select the devices you want to change.</li> <li>2 Select one of the following IP addressing modes:           <ul style="list-style-type: none"> <li>• <b>Default IP</b> - Devices with rotary switches that are used when autogenerating the address (if applicable)</li> <li>• <b>Custom Static</b> - A permanent IP addresses which does not change and is usually obtained from the network administrator</li> <li>• <b>NOTE</b> Selecting this automatically sets the device's subnet and default gateway to match the connected controller.</li> <li>• <b>DHCP</b> - Allows the DHCP server to automatically assign an IP address</li> </ul> </li> <li>3 Click the <b>Set</b> button.</li> </ol>
<b>Address</b>	<p>Displays the IP address of the device, if assigned. You can edit the address only if the device is set to <b>Custom Static</b>.</p> <p>To auto-assign multiple sequential addresses, select the devices, enter the beginning address, and click <b>Assign</b>.</p>
<b>Location</b>	You can describe the location of the device or any other helpful information.

Local Devices table	
<b>Mismatch</b>	<p>A <b>Mismatch</b> occurs when the connected controller's mode is set to <b>Custom Static</b> and a discovered device's subnet and default gateway do not match the connected controller. The incorrect addresses are shown with <b>SN</b> for subnet and <b>GW</b> for default gateway.</p> <p>To resolve a mismatch, select the device(s) by clicking the <b>Select</b> checkbox and then clicking the <b>Resolve</b> button. The subnet mask and default gateway addresses of the selected devices change to match the connected controller.</p>
<b>Status</b>	<p>The following are the results of changing <b>Mode</b>, <b>Address</b>, <b>Location</b>, or pressing <b>Blink</b>:</p> <ul style="list-style-type: none"> <li>• <b>Success</b> - Successful operation</li> <li>• <b>No Response</b> - Device is not communicating</li> <li>• <b>Device Locked</b> - Device must be unlocked before you can make any changes using the <b>Local Devices</b> table. You can unlock the XT-RB by pressing the DSC button on the device or by using the i-Vu® application. (See instructions above.)</li> </ul> <p><b>NOTE</b> The status of a device changes to locked 24 hours after unlocking it.</p> <ul style="list-style-type: none"> <li>• <b>Failure</b> - A conflict between the device and the information entered</li> </ul>
<b>Blink</b>	<p>Click the <b>Blink</b> button to prompt the Locator LED to flash for 15 seconds, allowing you to verify the controller's physical location. After flashing, whenever the actuator moves, the LED rotates in the same direction. LED rotation is automatically disabled after 1 hour and can be re-enabled by pressing the <b>Blink</b> button again.</p> <p>At the same time, the <b>Sys</b> and <b>Net</b> LEDs blink white, once per second for 10 seconds, and then stop.</p> <p><b>NOTES</b></p> <ul style="list-style-type: none"> <li>• The blue dot appears when you <b>Blink</b> a device.</li> <li>• You can <b>Blink</b> a locked device.</li> </ul>

**NOTE** If a device's IP address is the loopback address (127.0.0.1), it is considered unconfigured and unlocked. The IP address, subnet mask, and default gateway fields are blank in the **Ports** and **Local Network** tabs. You can configure it in the **Local Devices** table.

## Advanced tabs

### Security tab

Configuration Access	
<b>Disable Service Ports</b>	When checked, disables all communication through the Service Port. You can only configure the XT-RB in the i-Vu® application or Field Assistant.
<b>Allow Configuration on Service Port</b>	Enables access to the controller setup pages through the Service Port.

<b>Allow Configuration on Gig-E Port</b>	Enables access to the controller setup pages through the network that the Gig-E Port is connected to. See Connecting to the XT-RB through the Gig-E Port. <b>NOTE</b> You must first set a password in the i-Vu® application.
<b>Disable Network Port Configuration via BACnet</b>	When checked, disables Network Port Objects properties such as network numbers from being written to via BACnet.
<b>Enable HTTP Redirect</b>	When enabled allows http connections to the local webserver, but redirects automatically to https.  When disabled the webserver is only available via https.
<b>Allow Remote Management of IP Configuration</b>	Enables you to configure IP settings remotely through tunneled Enhanced Access Protocol commands.  <b>NOTE</b> The <b>Address Mode</b> must be set to <b>Custom Static</b> .
<b>Allow Local Network Configuration from other Devices on the Local Network for 24 Hours.</b>	Allows Local Network Configuration for 24 hours. It is the same as pressing the DCS button on the controller.
<b>Device Unlock Time Remaining</b>	Displays the amount of time that the device will be unlocked.

#### TouchScreen Control

<b>TouchScreen Schedule Edit</b>	Check to enable.
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#### BACnet Whitelist for Gig-E

<b>Enable BACnet Whitelist</b>	Check to enable. The list of IP addresses displayed on the page are the IP addresses the device is allowed to communicate with. Must include the server IP address.
<b>Enable Private IP Ranges</b>	Permits communication with any BACnet device configured with a private IP address.
<b>IPv4</b>	List of IPv4 ranges that can be used in whitelisting
<b>IPv6</b>	List of IPv6 ranges that can be used in whitelisting

#### Whitelist

<b>Enable Custom Range Whitelist</b>	Check to enable.
<b>Address Ranges</b>	Click <b>Add</b> to enter information or <b>Delete</b> to remove existing information.

## Alarms tab

Use this tab to configure settings for the following Alarms:

- **Controller Halted**
- **Dead Controller Timeout**

- **BACnet/SC Certificate Expiration**
- **Port Authentication Expiration**
- **Duplicate Address Alarm**

<b>Enable To Off-Normal Event</b>	Clear this checkbox to disable Alarm or Return to off-normal messages of this type from the XT-RB.
<b>Enable to Normal Event</b>	Clear this checkbox to disable Alarm or Return to normal messages of this type from the XT-RB.
<b>Time Delay</b>	Specifies the delay between the onset of the Off-Normal condition and the reporting of the alarm to the i-Vu® application.
<b>Description</b>	Short message shown when this type of alarm is generated.
<b>Notification Class</b>	<p>A BACnet alarm's Notification Class defines:</p> <ul style="list-style-type: none"> <li>• Alarm priority for Alarm, Fault, and Return to Normal states</li> <li>• Options for BACnet alarm acknowledgment</li> <li>• Where alarms should be sent (recipients)</li> </ul> <p>Alarms in the i-Vu® application use Notification Class #1. The i-Vu® application is automatically a recipient of these alarms.</p>
<b>Object Name</b>	A unique alphanumeric string that defines the BACnet object.
<b>Warning Threshold</b>	<p>If a certificate is within this number of days of expiring, it appears yellow in the Certificate Management table.</p> <p>A weekly alarm will be triggered in the i-Vu® application when one of the XT-RB's BACnet/SC certificates is in this state.</p>
<b>Critical Threshold</b>	<p>If a certificate is within this number of days of expiring, it appears red in the Certificate Management table.</p> <p>A daily alarm will be triggered in the i-Vu® application when one of the XT-RB's BACnet/SC certificates is in this state.</p>

## Notification Class tab

A BACnet alarm's Notification Class defines:

- Alarm priority for Alarm, Fault, and Return to Normal states
- Options for BACnet alarm acknowledgment
- Where alarms should be sent (recipients)

Alarms in the i-Vu® application use Notification Class #1. The i-Vu® application is automatically a recipient of these alarms.

<b>Notification Class Recipients</b>	The first row in this list is from the i-Vu® application. Do not delete this row. Click <b>Add</b> if you want other BACnet devices to receive alarms associated with this Notification Class.
<b>NOTE</b>	Additional entries in this table may be lost after a download.

<b>Recipient Type</b>	Select <b>Recipient Device</b> for device recipients that support dynamic binding. Complete the <b>Recipient Device</b> field if you are using this recipient type.
	Select <b>Recipient Address</b> (static binding) for either of the following: <ul style="list-style-type: none"> <li>Third-party BACnet device recipients that do not support dynamic binding</li> <li>When you want alarms to be broadcast (you must uncheck <b>Issue Confirmed Notifications</b>). This use is rare.</li> </ul> Complete the <b>Network Number</b> and <b>MAC Address</b> fields if you are using this recipient type.
<b>Recipient Device</b>	Type the <b>Device Instance</b> from SiteBuilder (or from the network administrator for third-party devices) in the <b>#</b> field.
<b>Network Number</b>	Specify the number of the BACnet network on which to send the notification.
	 <b>TIP</b> For the home network, this can be set to 0.
<b>MAC Address</b>	MAC address of the recipient software or device.
<b>Issue Confirmed Notifications</b>	Select to have a device continue sending an alarm message until it receives delivery confirmation from the recipient.
<b>Transitions to Send</b>	Uncheck the types of alarms you do not want the recipient to receive.
<b>Off Normal</b>	BACnet priority for Alarms.
<b>Fault</b>	BACnet priority for Fault messages.
<b>Normal</b>	BACnet priority for Return-to-normal messages.
<b>Days and Times to Send</b>	
<b>Monday to Sunday</b>	Select days and times during which the recipient will receive alarms.
<b>From Time</b>	
<b>To Time</b>	
<b>Process Identifier</b>	Change for third-party devices that use a BACnet Process Identifier other than 1. The i-Vu® application processes alarms for any 32-bit Process Identifier.
<b>Acknowledgments Required</b>	
<b>To Fault Ack Required</b>	Specifies whether alarms associated with this Notification Class require a BACnet Acknowledgment for Off-Normal, Fault, or Normal alarms.
<b>To Normal Ack Required</b>	
<b>To Off-Normal Ack Required</b>	 <b>TIP</b> You can require operator acknowledgment for an Alarm or Return-to-normal message (stored in the i-Vu® database). In the i-Vu® interface on the <b>Alarm &gt; Enable/Disable</b> tab, change the acknowledgment settings for an alarm source or an alarm category.
<b>Priority</b>	
<b>To Fault Priority</b>	BACnet priority for Fault messages.
<b>To Normal Priority</b>	BACnet priority for Return-to-normal messages.
<b>To Off Normal Priority</b>	BACnet priority for Alarms.

<b>Identification</b>	
<b>Notification Class</b>	A BACnet alarm's Notification Class defines: <ul style="list-style-type: none"><li>• Alarm priority for Alarm, Fault, and Return to Normal states</li><li>• Options for BACnet alarm acknowledgment</li><li>• Where alarms should be sent (recipients)</li></ul> Alarms in the i-Vu® application use Notification Class #1. The i-Vu® application is automatically a recipient of these alarms.
<b>Object Instance</b>	The instance number of this BACnet Notification Class object. It must be unique within the BACnet Device that contains it.
<b>Object Name</b>	The alpha-numeric name of this BACnet Notification Class object.
<b>Description</b>	The description of this BACnet Notification Class object.

## Controller Clock tab

The Controller Clock page provides the following information plus the items described in the table below:

- Date Format
- Local Date
- Time Format
- Local Time
- Time Zone Offset
- Daylight Saving Status
- Offset for Daylight Saving

### Advanced Clock Options

<b>Clock Fall Date</b>	Date the XT-RB uses when its real-time clock is invalid.
<b>Clock Fall Time</b>	Time the XT-RB uses when its real-time clock is invalid.
<b>Network Time Protocol</b>	

To define an NTP server to use for time synchronization:

- 1 Click **Add**.
- 2 Define **Server** by one of the following:
  - **IP Address**
  - **Host name**
  - **Fully qualified domain name**

**NOTE** DNS has to be set up on the **Gig-E Port** tab in order to use names on NTP.

- 3 Check the **Enable** box.
- 4 Click **Restart**.

<b>BACnet Time Synchronization</b>	
<b>Time Synchronization Sensitivity</b>	When the XT-RB receives a time sync request, if the difference between the XT-RB's time and the time sync's time is greater than this field's value, the XT-RB's time is immediately changed. If the difference is less than this field's value, the XT-RB's time is slowly adjusted until the time is correct.
<b>Time Broadcaster will synchronize time every</b>	If you have third-party BACnet devices on one of the XT-RB's networks, you can have the XT-RB send a BACnet time sync to those devices at the interval you define in this field.
<b>Time Synchronization Recipients</b>	<p>To define third-party BACnet devices as Time Synchronization Recipients:</p> <ol style="list-style-type: none"> <li>1 Click <b>Add</b>.</li> <li>2 Select <b>Recipient Type</b>: <ul style="list-style-type: none"> <li>o <b>Device ID</b></li> <li>o <b>Address</b></li> <li>o <b>Local Broadcaster</b></li> <li>o <b>Global Broadcaster</b></li> </ul> </li> <li>3 Enter the <b>Recipient Device</b> information.</li> <li>4 Click <b>Accept</b>.</li> </ol>

## Color Cache tab

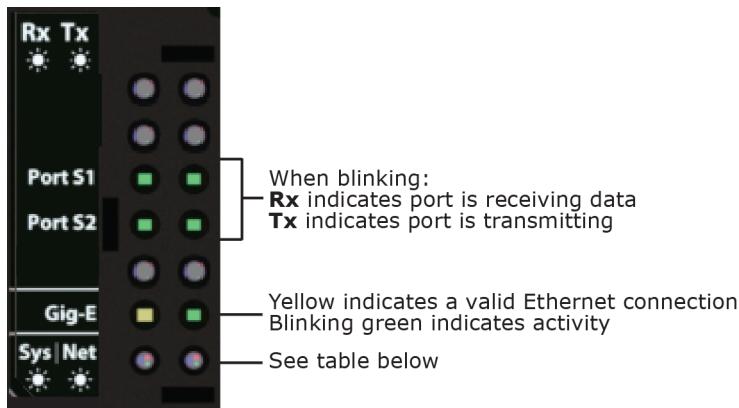
<b>Cache Group Number</b>	For use by the i-Vu® system
<b>Peer Caching Enabled</b>	This checkbox is checked for the router that was defined in SiteBuilder as the peer caching router.
<b>Disable Color Cache</b>	<p>Clear (enable) to improve responsiveness of retrieving thermographic colors and prime values from networked controllers. See <i>Snap Help</i> for more information regarding thermographic colors and prime values.</p> <p>Select (disable) to reduce network traffic to third-party (non-color-supporting) devices.</p> <p><b>NOTE</b> Selecting this checkbox also disables Dead Controller Timeout alarms.</p>
<b>Dead Controller Timeout</b>	After this period (minutes:seconds) of non-response from a peer Carrier® controller, the XT-RB sends an alarm to the server as defined by the Dead Controller Timeout alarm configuration.
<b>Reports Colors To</b>	The BACnet Object Identifier of the router that was defined in SiteBuilder as the peer caching router.

## Network tab

<b>Device Host Name</b>	Device name identified on the IP network. Primarily used for DHCP to help the IT administrator identify this device on their network.  Characters allowed are: <ul style="list-style-type: none"><li>• ASCII letters from A to Z, lower or upper case</li><li>• 0 to 9</li><li>• hyphen</li></ul> A Host Name may not start with a hyphen or have only numerals
<b>Enable Proxy</b>	Enable this checkbox if the communication interface needs to get through a proxy firewall to communicate out to other networks.
<b>Proxy Server Address</b>	Set the IP address of the proxy host.  <b>NOTE</b> If you have a DNS set up on the <b>Gig-E Port</b> tab, you can use the DNS name of the proxy server here.
<b>Proxy Port</b>	Set the port for communication on the proxy host.
<b>Proxy Username</b>	Set a username if required to authenticate on the proxy server.
<b>Proxy Password</b>	Set a password if required to authenticate on the proxy server.
<b>No Proxy For</b>	Set addresses that do not require passing through the proxy to communicate. These addresses are typically exempt from the proxy requirements.

## Troubleshooting

### LEDs



#### NET (Network Status) Tricolor LED

Color	Pattern	Condition	Message In Module Status	Possible Solutions
Red	On	Ethernet connection problem	No Ethernet Link	<ul style="list-style-type: none"> <li>• Connect Ethernet Cable</li> <li>• Check other network components</li> </ul>
Red	1 blink	One of the following BACnet/IP (Ethernet) DLL reporting issue: <ul style="list-style-type: none"> <li>• Unable to create tasks</li> <li>• Unable to open socket for BACnet port</li> </ul>	BACnet/IP error	Cycle power
Red	2 blink	Current default IP address does not match the current rotary switch setting	Default IP address mismatch	<ul style="list-style-type: none"> <li>• Use the controller setup <b>Ports</b> tab to set the IP address</li> <li>• Cycle power to accept new IP address</li> <li>• Change rotary switches to match current default IP address</li> </ul>
Red	4 blink	Unable to get an IPV4 address using DHCP or an IPV6 address using SLAAC	DHCP or SLAAC error	Check with network administrator
Red	5 blink	NAT configuration problem	NAT Configuration Error Detected	Check global IP address or hostname

**NET (Network Status) Tricolor LED**

Color	Pattern	Condition	Message In Module Status	Possible Solutions
White	1 blink	Unable to connect to BACnet/SC Hub	BACnet/SC Not Connected	<ul style="list-style-type: none"> <li>• Configuration issue – ex: no URL for hub</li> <li>• Certificate issue</li> <li>• No hub connection</li> </ul>
White	On	Unable to connect to BACnet/SC Hub, but connection to failover hub was successful	BACnet/SC Connected to failover hub	Fix any issues present with the primary hub connection
Blue	On	One of the following issues: <ul style="list-style-type: none"> <li>• Port communication firmware did not load properly</li> <li>• Port communication firmware is not running</li> <li>• Invalid protocol selected</li> </ul>	ARCNET/MSTP firmware error	<ul style="list-style-type: none"> <li>• Change rotary switch to select valid protocol</li> <li>• Cycle power</li> </ul>
Blue	1 blink	Invalid address selected for protocol	Invalid address selection for ARCNET/MSTP	Change rotary switch to valid address
Blue	2 blink	Router has same MAC address as another connected device	Duplicate address on ARCNET/MSTP	Change rotary switch to unique address
Blue	3 blink	Router is the only device on the network	No other devices detected on ARCNET/MSTP	<ul style="list-style-type: none"> <li>• Check that network cable is connected properly</li> <li>• Check that baud rate is correct</li> </ul>
Blue	4 blink	Excessive errors detected over 3 second period	Excessive communication errors on ARCNET/MSTP	<ul style="list-style-type: none"> <li>• Check that network cable is connected properly</li> <li>• Check that baud rate is correct</li> </ul>
Blue	5 blink	ARCNET traffic overload possibly due to circular router or excessive COVs (change of values)	Event System Error - FPGA RX FIFO full	<ul style="list-style-type: none"> <li>• Check the network configuration for a circular route</li> <li>• Increase the time between COVs to reduce excessive COV traffic</li> </ul>
Blue	6 blink	ARCNET or MSTP datalink configuration problem	Configuration Error	Check ARCNET or BACnet MS/TP network parameters
Green	On	All enabled networks are functioning properly	No errors	No action required

**SYS (System Status) Tricolor LED**

Color	Pattern	Condition	Message In Module Status	Possible Solution
Red	1 blink	XT-RB is stopped	Startup Aborted Detected	Restart the XT-RB or perform a memory download in the i-Vu® application.

## SYS (System Status) Tricolor LED

Color	Pattern	Condition	Message In Module Status	Possible Solution
Red	2 blink	Restarting after an abnormal exit	Auto restart delay due to system error on startup	After 5-minute delay has expired, if condition occurs again then cycle power
Red	4 blink	Firmware image is corrupt	Firmware error	Download driver again
Red	Fast blink	Firmware error has caused the firmware to exit and restart	Fatal error detected	No action required
Green	1 blink	No errors	Operational	No action required
Green	2 blink	Download of driver is in progress	Download in progress	No action required
Green	3 blink	BACnet Device ID is not set	Download required	Download the XT-RB
Green	Fast blink	Installation of recently downloaded driver is occurring	N/A	No action required
Blue	On	Router is starting up	N/A	No action required
Blue	Slow blink	Linux (operating system) is starting up	N/A	No action required
Blue	Fast blink	Linux is running but it could not start the firmware application	N/A	Download driver
Orange	slow blink	XT-RB with drv_gen5 driver is starting	N/A	No action required
Orange	2 blink	XT-RB with drv_gen5 driver has started but is not yet able to determine system and network status	N/A	No action required

## To get a Module Status report

A Module Status report provides information about the XT-RB and verifies proper network communication with the XT-RB. You can get this report:

- In the i-Vu® application—Right-click the XT-RB on the navigation tree, then select **Module Status**.
- In the controller setup interface through the Service Port—Click  and select **Modstat** from the drop-down list.

See *Appendix - Module Status field descriptions* (page 52).

## To get a Device Log

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If Carrier Controls System Support instructs you to get the XT-RB's Device Log containing diagnostic information for troubleshooting:

- 1 Select the XT-RB in the i-Vu® navigation tree.
- 2 On the **Properties** page, click **Device Log**.

### NOTES

- To download a file containing multiple Device Logs to your computer, click **Device Log Archive**.
- To download network packet captures, access the driver properties or controller setup interface and go to  > **Diagnostics** tab > **Packet Capture**, then click **Get capture file**.

## To get the XT-RB's serial number

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If you need the XT-RB's serial number when troubleshooting, the number is on:

- A Module Status report (Modstat). See To get a Module Status report.
- A laser-etched number and QR code on the circuit board inside the XT-RB.
- A sticker on the front with the serial number, MAC address, and a QR code.
- In the driver properties or controller setup interface under  > **Dashboard** tab > **Controller Status** > .

## To replace the XT-RB's fuse

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If you turn on the XT-RB's power switch and the  LED is not lit, the fuse that protects the XT-RB may be blown. Remove the fuse and use a multimeter to check it.

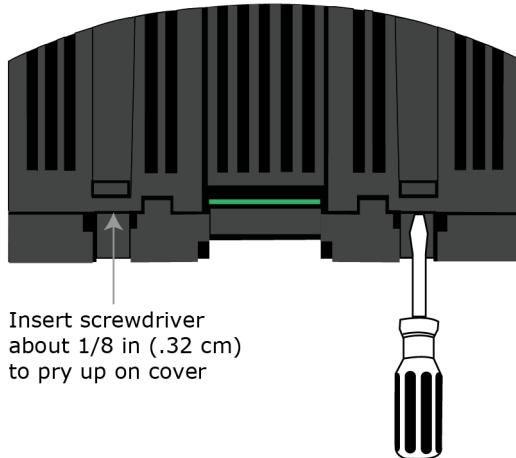
The fuse is a fast acting, 250Vac, 2A, 5mm x 20mm glass fuse that you can purchase from one of the following vendors:

Manufacturer	Mfr. Model #
Littlefuse	0217002.HXP
Bussmann	S500-2-R
Belfuse	5SF 2-R
Optifuse	FSD-2A

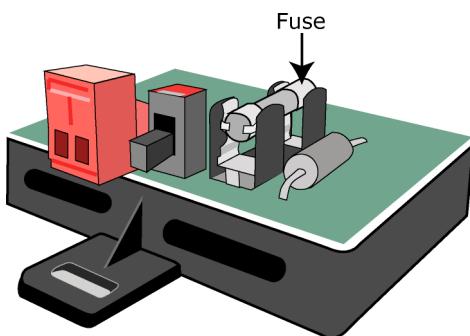
Before replacing the fuse, try to determine why the fuse blew. Check the power wiring polarity of the XT-RB and any other devices that share the power supply. Use the same polarity for all of them.

To replace the fuse:

- 1 Turn off the XT-RB's power.
- 2 Remove the red power connector.
- 3 On both ends of the XT-RB, insert a small flathead screwdriver as shown below, and then gently pry up the cover until it is released from the base.



- 4 Remove the cover from the base.
- 5 The fuse labeled **F1** is located near the power connector. Use a fuse puller to remove the fuse.



- 6 Use the fuse puller to snap the new fuse into the fuse holder.
- 7 Replace the XT-RB's cover.
- 8 Replace the power connector.
- 9 Turn on the XT-RB's power switch.
- 10 Verify that the  LED on top of the XT-RB is on.

## To take the XT-RB out of service

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If needed for troubleshooting or start-up, you can prevent the i-Vu® application from communicating with the XT-RB by shutting down communication from the XT-RB to the i-Vu® application. When **Out of Service**, i-Vu® no longer communicates properties, colors, trends, etc.

- 1 On the i-Vu® navigation tree, select the XT-RB.
- 2 On the **Properties** page, check **Out of Service**.
- 3 Click **Accept**.

## Compliance

### FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1 This device may not cause harmful interference.
- 2 This device must accept any interference received, including interference that may cause undesired operation.

**NOTE** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with this document, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.



**CAUTION** Any modifications made to this device that are not approved by Carrier® voids the authority granted to the user by the FCC to operate this equipment.

### CE and UKCA Compliance



**WARNING** This is a Class B product. In a light industrial environment, this product may cause radio interference in which case the user may be required to take adequate measures.

### Industry Canada Compliance

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

### BACnet Compliance

Compliance of listed products to requirements of ASHRAE Standard 135 is the responsibility of BACnet International. BTL® is a registered trademark of BACnet International.

## Appendix - Module Status field descriptions

Field	Description
Product Name	Identifies the Product Type
Version	The version of the driver
Date/Time	Date and time the Modstat was run
Product Serial Number	The serial number of the module set at the factory
Operating System	Underlying hardware and software architecture of the XT-RB
Java Version	
Processor Architecture	
Device Instance	A unique ID assigned to the XT-RB
Number of BACnet Objects	The number of BACnet objects that were created in the device and the number of those objects that are trends or events.
Model Name	Identifies the Product Type
Downloaded by	When and where the last download was performed
Memory	Total size of the XT-RB's memory and the amount being used for the application and short term memory. <b>Cleanup</b> indicates the rate of memory cleanup.
Reset Counters	The number of times each of the following events have occurred since the last time the XT-RB was commanded to clear the reset counters. See <b>NOTE</b> below this table. <p><b>Power failures</b>—Interruption of incoming power</p> <p><b>Commanded boots</b>—Includes commands issued from the i-Vu® interface such as the zap manual command, plus commands issued during a memory download.</p> <p><b>System errors</b>—Error in the XT-RB's firmware or hardware</p> <p><b>S/W Watchdog timeouts</b>—Watchdog is firmware that monitors the application firmware for normal operation. If the watchdog firmware detects a problem, it restarts the application firmware.</p> <p><b>H/W Watchdog timeouts</b>—H/W Watchdog will restart the XT-RB if it detects a severe problem with the XT-RB's operating system</p>
Network Information	The various network addresses for the XT-RB. The <b>Current</b> and <b>Assigned</b> addresses will be the same unless there are configuration changes that have not been activated.
BBMD Configuration	Shows the following information for each active IP network: <p><b>BBMD Active</b> shows whether the BACnet Broadcast Management Device is currently active (true) or inactive (false).</p> <p><b>BBMD Entries</b>—the number of entries in the BBMD table (500 maximum).</p> <p><b>FDT Entries</b>—the number of entries in the Foreign Device Table (500 maximum).</p>

Field	Description
BACnet/SC Information	BACnet/SC connection status as of when the Modstat was run. Also shows the web addresses used to access the primary and/or failover hubs.
BACnet/SC Certificates	Lists the operational certificates and certificate authorities installed on the XT-RB, with expiration information.
Routing Information	BACnet networks that a XT-RB is currently routing traffic to. The list changes as BACnet routers are added or removed from the system.
Router statistics	<p><b>Dropped Packets</b>—Data packets that could not be delivered.</p> <p><b>Route Not Found</b>—Packets that could not be delivered because the requested network does not exist.</p> <p><b>Route Unreachable</b>—Routed packets whose destination network is either busy or offline.</p> <p><b>Router Sourced Packets</b>—Shows the number of packets initiated by the XT-RB that are not in response to a request from another device.</p>
Device statistics	Shows the number of incoming and outgoing unicast and broadcast packets for each of the XT-RB's networks. <b>Dropped Incoming</b> indicates the number of incoming packets that could not be delivered.
BACnet/IP Statistics	<p><b>Rx Unicasts</b>—BACnet/IP packets received from a single BACnet device.</p> <p><b>Tx Unicasts</b>—BACnet/IP packets transmitted to a single BACnet device.</p> <p><b>Rx Broadcasts</b>—BACnet/IP broadcast packets received by the XT-RB.</p> <p><b>Tx Broadcasts</b>—BACnet/IP broadcast packets transmitted by the XT-RB.</p> <p><b>Whitelist Rejections</b> (if BACnet Firewall is enabled)—Messages blocked by the BACnet Firewall because the IP address that sent the message was not in the whitelist.</p>
Base and Core board hardware	Gives the following information about the XT-RB's boards: <ul style="list-style-type: none"> <li>Type and board numbers that are used internally by Carrier®.</li> <li>The manufacture date and serial number.</li> </ul>
System status	Gives the current status of the XT-RB's operation. See <i>LEDs</i> (page 45) for all possible conditions.
Network status	Gives the current status of the XT-RB's networks. See <i>LEDs</i> (page 45) for all possible conditions.
Driver	The name, version, and date of the driver, as well as all the bundles and versions.
Switch Settings	<p><b>Protocol Rotary</b>—The XT-RB's rotary switch setting for Port S1 protocol</p> <p><b>Address Rotary</b>—The XT-RB's rotary switch address (MAC address)</p> <p><b>Port S1 End of Network</b>—End of Network switch position for Port S1</p> <p><b>Port S2 End of Network</b>—End of Network switch position for Port S2</p>
System error message history	High-severity errors since the last memory download. Shows the most recent 10 messages. See <b>NOTE</b> below this table.
Warning message history	Low-severity errors and warning messages since the last memory download. Shows the most recent 10 messages. See <b>NOTE</b> below this table.

Field	Description
Information message history	Information-only messages since the last memory download. Shows the most recent 10 messages. See <b>NOTE</b> below this table.

**NOTE** To clear the Reset counters and the three message history fields, click the **Clear Counts/Logs** button on the XT-RB's **Properties** page in the i-Vu® application. To delete all logs, including current logs, click the **Delete All** button in the **Home > Diagnostics** tab under **Logs**.

## Document revision history

Important changes to this document are listed below. Minor changes such as typographical or formatting errors are not listed.

Date	Topic	Change description	Code*
6/23/25	Diagnostic tab	Updated notes in Packet Capture	X-TS-RB-J-RB
	Diagnostics tab	Blink Locater LED added	X-PO-DD-J-DD
	Gig-E Port using BACnet/IPv4	Added Inhibit BACnet/IP on loss of DHCP lease	
	Local Network Tab	Added	
	Security Tab	Added Enable HTTP Redirect	
	Appendix	Additional states added to LED chart	
7/22/24	Gig-E Port using BACnet/SC	Updated NOTE for BACnet/SC, and Protocols	X-PO-LO-J-LO
	Specifications	Updated Memory spec	X-PM-DD-J
	All topics	Updated for new Gen5 driver	X-PM-BM-R
6/10/22	Critical Product Announcement	New topic	X-PM-DD-E-BM
	Wiring for communications	Changed RS485 port to EIA-485	X-D
	Compliance > CE and UKCA Compliance	Added UKCA compliance	X-PM-AB-R-BH
	Specifications		
	Appendix - Module Status field descriptions	Rephrased description for Number of BACnet Objects	X-PM-LO-E
	Advanced tabs > Diagnostics tab	Referred to <ALC_Contact> for assistance working with packet captures	X-PM-LO-E
	Connections tabs > BACnet/SC Port tab	Added notes	X-PM-LO-O
	Advanced tabs > Color Cache tab	Rephrased for clarity	X-PM-LO-O
	Advanced tabs > Notification Class tab	Rephrased for clarity	X-PM-LO-E
1/11/22	Specifications	Updated EU Compliance	X-PM-BM-E
	BACnet/SC Port tab	Added note	X-PM-LO-O

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