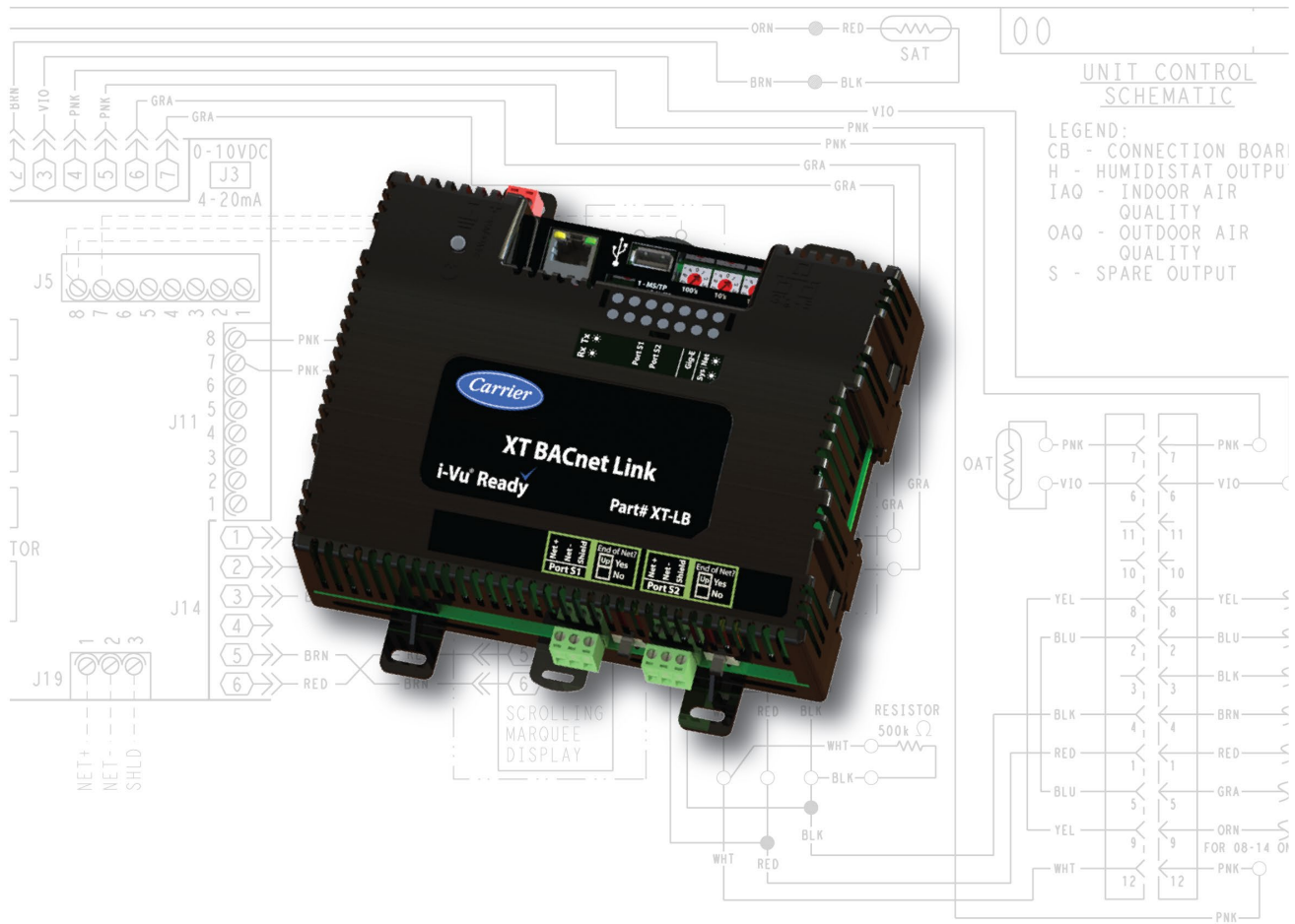# i-Vu® XT BACnet Link (part no. XT-LB) (drv_gen5)

Installation and Start-up Guide

⚠ Verify that you have the most current version of this document from **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.

Contents

What is the XT-LB?

The i-Vu® XT BACnet Link (part no. XT-LB) with drv_gen5 driver is a BACnet router that:

- Provides BACnet routing between any supported BACnet communication types
- Runs control programs
- 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
- Can serve as both an IP and a serial gateway for third-party protocols

The XT-LB has 4 physical ports for communication with BACnet and/or third-party protocols. For more information on using third-party protocols, see the specific protocol's integration guide.

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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-LB also has a USB port for recovery.

Critical Product Announcement

Due to the global semiconductor supply chain uncertainty, starting July 2022, the XT-LB no longer supports communication over the ARCNET network. ARCNET-disabled XT-LBs have a serial number starting with the prefix and have an updated label. See To get the XT-LB's serial number.
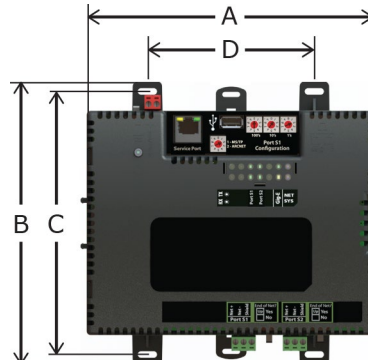
The XT-LB's driver properties and controller setup pages only show available communication selection options.

Specifications

Driver	drv_gen5_< version >.driverx
	NOTE For the fwex driver instructions, see the *i-Vu® XT BACnet Link (part no. XT-LB) (drv_fwex) Installation and Start-up Guide.*
Maximum number of control programs[1]	999
Maximum number of BACnet objects[1]	12000
Default number of third-party BACnet integration points	1500
Default number of FLEX Points[2]	500
Maximum FLEX Points	5000

[1] Depends on available memory
[2] Increase by purchasing FLEXPacks

Power	24 Vac ±10%, 50–60 Hz, 50 VA 26 Vdc ±10%, 15 W

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Gig-E port	10/100/1000 BaseT, full duplex, Ethernet port for communication with the following BACnet protocols and/or third party protocols: • BACnet/IP • BACnet/IPv6 • BACnet/Ethernet • BACnet/SC **NOTE** For communication with third-party protocols, see the specific protocol's integration guide.
Port S1	For communication with either of the following BACnet protocols: • A BACnet ARCNET network at 156 kbps • A BACnet MS/TP network at 9600 to 115200 bps **NOTE** For communication with third-party protocols, see the specific protocol's integration guide. This port's **End of Net?** switch can be set to **Yes** to terminate the network segment.
Port S2	For communication with either of the following: • A BACnet MS/TP network at 9600 to 115200 bps • A Modbus serial network at 9600 to 115200 bps This port's **End of Net?** switch can be set to **Yes** 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. **NOTE** 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. ⚠ **CAUTION** 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	• Tricolor **NET** LED to show network status
	• Tricolor **SYS** LED to show system status
	• A **TX** (Transmit) and **RX** (Receive) LED for the following ports:
	
	  • Gig-E
	
	  • Port S1
	
	  • Port S2
	
	See *LEDs* (page 51).

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Environmental operating range	-40 to 158°F (-40 to 70°C), 10-95% relative humidity, non-condensing **NOTES** • The XT-LB is suitable for installation inside or outside the building envelope. • Install in a UL Listed enclosure only. • Do not change the position of the power or **End of Net** switch at temperatures below -22°F (-30C) to ensure proper operation and electrical connectivity.
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
Overall dimensions	A: 7.1 in. (18.03 cm) B: 6.95 in. (17.65 cm) Depth: 2.09 in. (5.31 cm)
Screw mounting dimensions	C: 6.45 in (16.38 cm) D: 4.1 in. (10.4 cm)

Weight	1 lb. 1 oz. (0.482 kg)
Compliance	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
	Canada: Industry Canada Compliant, ICES-003, Class A cUL Listed UL 916, PAZX7, Energy Management Equipment
	Europe: CE Mark, UK: UKCA 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
	Australia and New Zealand: C-Tick Mark, AS/NZS 61000-6-3

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To mount the XT-LB

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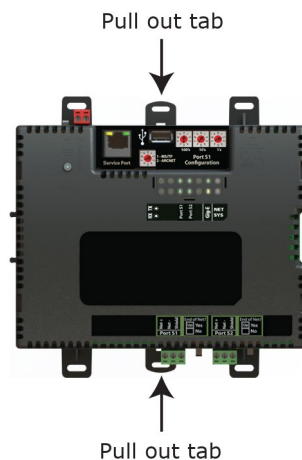
2   Place the XT-LB on the DIN rail so that the rail is in the trough on the back of the XT-LB.

3   Push the center tabs towards the XT-LB until you hear them click.

4   Pull gently on the XT-LB to verify that it is locked in place.

Screw Mount

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

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

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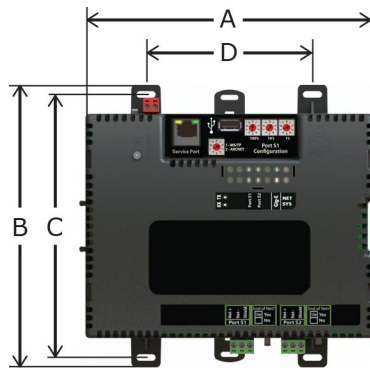
A: 7.1 in. (18.03 cm)

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)

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Wiring for power

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

⚠️ **CAUTIONS**

- The XT-LB 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-LB's power switch is in the **OFF** position to prevent it from powering up before you can verify the correct voltage.
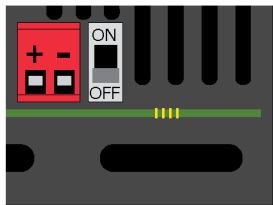
2 Remove power from the power supply.

3 Pull the red screw terminal connector from the XT-LB'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-LB'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-LB's power switch.

11 Verify that the ⏻ LED on top of the XT-LB 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.

---

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Connecting to the XT-LB through the Service Port

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

- View/change XT-LB and network settings. Changes take effect immediately after clicking **Restart ↻** .
- View the XT-LB'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-LB to a computer using the Carrier wireless service adapter:

1   Insert the Carrier wireless service adapter (part# USB-W) into the XT-LB'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-LB 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-LB to a computer using a cable:

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

Connect to computer's Ethernet port

Connect to controller's Service Port
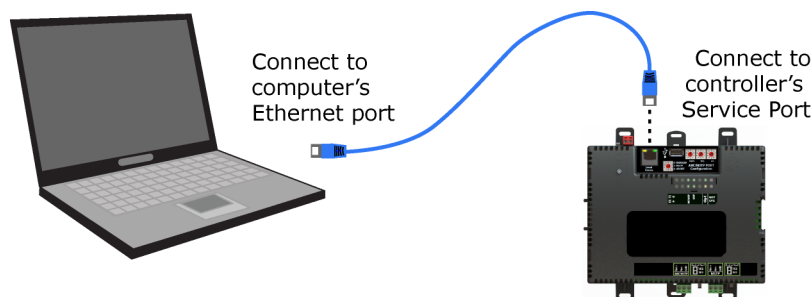
2   Turn off the computer's Wi-Fi if it is on.

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-LB 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-LB.

Connecting to the XT-LB through the Gig-E Port

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

- Address and configure controllers

- View/change XT-LB and network settings. Changes take effect immediately after clicking **Restart ⟳**.
- View the XT-LB'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-LB.

2 Right-click XT-LB, 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-LB 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-LB for interfacing with the Ethernet network.

NOTE The first time you access the XT-LB 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-LB.

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Addressing the XT-LB

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

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

Use a...	If...
DHCP IP Address generated by a DHCP server	The IP network uses a DHCP server for IP addressing
Custom Static IP Address 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: • Share a facility's existing IP data network? • Have 254 or more devices with static IP addresses? • Be connected to the Internet? • Have at least one device located on the other side of an IP router? • Have any third-party IP devices?
Default IP Address 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 [gear icon], select **Modstat** from the drop-down list, find the XT-LB'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 [Restart ↻].

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-LB 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-LB 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 [Restart ↻].

To set a default IP address

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

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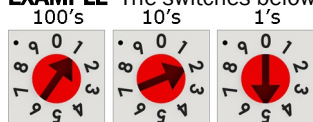
2 On the **Connections** page, under the **Gig-E Port** tab > **Primary BACnet/IP**, select **Default IP Address** in the drop-down list for **Address Mode**.

3 Click [Restart ↻].

⚠ **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-LB:

  ○ Click [Restart ↻].
- Cycle the XT-LB'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.

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To set an IPv6 address

You must define the XT-LB's IPv6 addressing (IPv6 address, multicast address, and default gateway) in the Service Port controller setup pages so that the XT-LB can communicate with the i-Vu 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...
Default IP Address that your system creates	fd01::192:168:168:<rotary>
Custom Static from your network administrator	You have a permanent IP address which does not change and is usually obtained from the network administrator.
DHCP generated by a DHCP server	The IP network uses a DHCP server for IP addressing
Link-Local	This is an autogenerated private IP address used for local network segment communications. Segment starts with FE80.
SLAAC	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-LB 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-LB:

- **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

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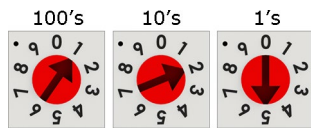
2   In the Service Port controller setup pages on the **Connections** page, under the **Gig-E Port** tab > **BACnet/IPv6**, select **Default IP Address** in the drop-down list for **Address Mode**.

3   Click [Restart ⟳].

 CAUTIONS

- If you configure your XT-LB 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-LB:

  - Go to the controller setup **Connections** page and click [Restart ⟳].
  - Cycle the XT-LB'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

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 ⟳].

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To set the Port S2 address and baud rate

1 On the **Connections** > **Port S2** tab, select **BACnet MSTP** from the droplist.

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 .

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 on of the methods described below.

Wiring for communications

The XT-LB communicates on the following ports.

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

[1] Set the **Port S1 Configuration** rotary switch to:
  0 if the port is not used
  1 for MS/TP
  2 for ARCNET
  3 for Modbus
  4 for other third-party protocols

[2] Default for MS/TP is 76.8 kbps.

[3] See *Connecting to the XT-LB through the Service Port* (page 8).

Wiring specifications

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

*   See the *Open Controller Network Wiring Guide*.

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

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To connect the XT-LB to the Ethernet

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

If your system has multiple routers that reside on different IP subnets, you must set up one router on each IP subnet as a BACnet/IP Broadcast Management Device (BBMD).

Every subnet with a router must have a BBMD configured in order for broadcasts from routers on that subnet to reach the rest of the routers on the network.

NOTES

- The i-Vu® Standard or Plus application - If the i-Vu® web server is on a separate subnet than the rest of the routers, the internal router must be assigned a routable IP address and configured as a BBMD.

- The i-Vu® Pro application - If the i-Vu® Pro server is on a separate subnet than the rest of the routers, you must register it as a foreign device to a router acting as a BBMD device.

Use the **BBMD Configuration Tool** to:

- Write/read the **Broadcast Distribution Table** (BDT) of each BBMD device

- Allow controllers on one subnet to communicate with controllers on other subnets

- Enable the i-Vu® application to see, upload, or configure controllers on different subnets

To wire to a BACnet/ARCNET network

1 Turn **off** the XT-LB'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-LB has a **Port S1 Configuration** rotary switch, set it to 2.

5 If the XT-LB is at either end of a network segment, set the port's **End of Net** switch to **Yes**.

   NOTE The XT-LB's **End of Net** switch applies network termination and bias. See the *Open Controller Network Wiring Guide.*

6 Turn on the XT-LB's power.

7 To verify communication with the network, get a Module Status report in the i-Vu® interface for a XT-LB on the ARCNET network.

   NOTE This step requires that you have discovered and uploaded the XT-LB in the i-Vu® application.

To wire to a BACnet MS/TP network

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

1 Turn **on** the XT-LB'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-LB XT-LB is at either end of a network segment, set the port's **End of Net?** switch to **Yes**.

NOTE The XT-LB's **End of Net** switch applies network termination and bias. See the *Open Controller Network Wiring Guide.*

6 Turn on the XT-LB's power.

7 To verify communication with the network, get a Module Status report in the i-Vu® interface for a XT-LB on the MS/TP network.

NOTE This step requires that you have discovered and uploaded the XT-LB in the i-Vu® application.

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-LB:

• 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-Vux.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-LB's driver in SiteBuilder.

• If you change any of the above items or the XT-LB'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-LB 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-LB. You can change those settings by connecting directly to the Service Port.

After you download the driver to the XT-LB, 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-LB 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

Dashboard tab

This page shows general controller information.

Controller Status	
Number of alarms undelivered by the controller	Click to view undelivered alarms.
BACnet System Status	Current state of the controller
Sys|Net	Current connection status 💡 **TIP** Click the **Sys** or **Net** LED to view LED descriptions. See *LEDs* (page 51).

Performance	
CPU Load	Percentage of CPU used
Program Load	Percentage of time used by control programs
Memory Load	Percentage of long-term memory used

Port Info	
Device Instance	Unique ID assigned to the controller
Enabled BACnet Ports	indicates the port set as the home network

Active Alarms	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

Technical Support Tools	Enable the toggle switch to view the Challenge key. Send the displayed **Challenge** key to the Carrier Controls System Support representative who will provide an **Activation Key** 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.
Logs	• **Retrieve all** — Downloads all logs in a zip file to your computer • **Specific log** — Allows you to choose to download the application logs (by date) or the system logs • **Delete all —** Deletes all logs, including current logs
Blink	To physically identify a device that is displayed on the **Local Devices** table, click **Blink** to light the **Locator LED** in the actuator release button.

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Packet Capture	This allows you to capture network communication on the corresponding port and then download the capture file for troubleshooting.
Primary/secondary BACnet/IP	
BACnet/IPv6	• **Start now** — Start a capture immediately. The capture runs until you click **Stop** or until it reaches the file size limit, whichever occurs first.
BACnet/Ethernet	
Primary/secondary BACnet SC	• **Start continuous** — Start a continuous capture immediately. The capture stores the most recent 5MB of captured data and runs continuously until you click **Stop**.
Port S1 BACnet/MSTP	**NOTES**
Port S1 BACnet/ARCNET	○ The number of continuous captures that you can run simultaneously is limited.
Port S2 BACnet/MSTP	
	○ Continuous captures are disabled when the XT-LB is in a low-memory state.
	• **Schedule** — 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.
	• **Capture Data of Type** — Choose whether to capture all packets or only BACnet packets (BACnet MS/TP only).
	• **Get capture file** — Download the capture file once you have stopped the capture or the capture has reached the file size limit.
	NOTE Capture files have a 25MB limit. If you need a larger capture, you must attach a computer running Wireshark. Please see the *Carrier BACnet Integration Guide* for more details.
	Please contact the *Carrier Training Department* regarding Networking I/II classes for more details on using packet captures for diagnostics and troubleshooting.
Network Diagnostics	Click **Reset statistics** to reset values to 0, which then resume accumulating.
	See *Appendix - Module Status field descriptions* (page 58) for descriptions of these fields.

Connections tabs

Use these pages to set up communication with the XT-LB. 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.

NOTE For communication with third-party protocols, see the specific protocol's integration guide.

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.

Device Communication	The current BACnet BMS connection status
Auto Identity Scheme	• **Not Autogenerated**—you can enter a specific ID that is unique on the network. • **Autogenerated**—the **Device Instance** is automatically set. You cannot edit the field.
Device Instance	Contents and editability depend on your **Auto Identity Scheme** choice.

Identification	
Auto Name Scheme	• **Not Autogenerated**—you can enter a specific name that is unique on the network. • **Autogenerated**—the **Device Name** is automatically set as the word "device + the Device Instance". For example, "device2423911". You cannot edit the field.
Device Name	Contents and editability depend on your **Auto Name Scheme** choice.
Location	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 **Find Devices**.
Description	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-LB communicates.	
APDU Timeout	How many milliseconds the device waits before resending a message if no response is received.
APDU Segment Timeout	How many milliseconds the device waits before resending a message segment if no response is received.
Number of APDU Retries	The number of times the device resends a message.
Max APDU Length Accepted	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

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

IP Addressing

IPv4	
Address Mode	Select the type of addressing the XT-LB is to use. See Addressing the XT-LB.
	Select **Default IP Address** to automatically assign the following to the XT-LB:
	• 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
	Select **Custom Static** if you have a permanent IP address which does not change and is usually obtained from the network administrator.
	Select **DHCP** if the network uses a DHCP server for IP addressing.
Address	Displays the unique address of the device, if assigned. Editable only if using **Custom Static** addressing.
Subnet Mask	Displays the Subnet Mask of the device, if assigned. Editable only if using **Custom Static** addressing.
Default Gateway	Displays the Default Gateway of the device, if assigned. Editable only if using **Custom Static** addressing.
Inhibit BACnet/IP on loss of DHCP lease	Inhibits BACnet communications via the IPv4 port when DHCP lease is not available or not renewed.
	NOTE Checkbox visible only if using DHCP 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**.

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Protocols

BACnet (bacnet://)

Advanced	
Back Off Period	How long (0:01 to 10:00 min:sec) the XT-LB waits before trying to connect to a device after the last failed connection attempt. The default is 5:00 min:sec.
Interpacket Delay	How long (0 milliseconds to 10 seconds) the XT-LB waits between sending request packets to the device. The default is 20 milliseconds.
Max Multiple Properties	The maximum number of properties that the XT-LB can read from or write to the device at one time.

Primary BACnet/IP	
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	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. **NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
UDP Port	The port that the XT-LB will use for BACnet communication. If the XT-LB 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	
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.

Secondary BACnet/IP	Enable for a secondary BACnet/IP network.
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 secondary BACnet/IP network. This number must be unique for the system. **NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.

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UDP Port	The port that the XT-LB will use for BACnet communication.
	If the XT-LB 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.
	NOTE This UDP Port number must be different from the one used for the primary BACnet/IP port.

Secondary IPv4 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/IPv6

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

IP Addressing

IPv6	
Address Mode	Select the type of addressing the XT-LB is to use. See Addressing the XT-LB.
	Select **Default IP Address** to automatically assign the following to the XT-LB:
	• IP address = fd01::1
	• Prefix length = 64
	• Default Gateway = fe80::1
	Select **Custom Static** if you have a permanent IP address which does not change and is usually obtained from the network administrator.
	Select **DHCP** if the network uses a DHCP server for IP addressing.
Address	Displays the unique address of the device, if assigned. Editable only if using **Custom Static** addressing.

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IPv6	
Prefix Length	Value set between 10 and 128 to define the number of leftmost bits identifying the network portion of the address.
Default Gateway	Displays the Default Gateway of the device, if assigned. Editable only if using **Custom Static** 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 (bacnet://)	
Advanced	
Back Off Period	How long (0:01 to 10:00 min:sec) the XT-LB waits before trying to connect to a device after the last failed connection attempt. The default is 5:00 min:sec.
Interpacket Delay	How long (0 milliseconds to 10 seconds) the XT-LB waits between sending request packets to the device. The default is 20 milliseconds.
Max Multiple Properties	The maximum number of properties that the XT-LB can read from or write to the device at one time.

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-LB 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-LB will use for BACnet communication.

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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 router's IPv4 or IPv6 address information under **IP Addressing**. If the router 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.

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

IP Addressing

IPv4	
Address Mode	Select the type of addressing the XT-LB is to use. See Addressing the XT-LB. Select **Default IP Address** to automatically assign the following to the XT-LB: • 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 Select **Custom Static** if you have a permanent IP address which does not change and is usually obtained from the network administrator. Select **DHCP** if the network uses a DHCP server for IP addressing.
Address	Displays the unique address of the device, if assigned. Editable only if using **Custom Static** addressing.
Subnet Mask	Displays the Subnet Mask of the device, if assigned. Editable only if using **Custom Static** addressing.

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IPv4	
Default Gateway	Displays the Default Gateway of the device, if assigned. Editable only if using **Custom Static** 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	
Address Mode	Select the type of addressing the XT-LB is to use. See Addressing the XT-LB. Select **Default IP Address** to automatically assign the following to the XT-LB: • IP address = fd01::1 • Prefix length = 64 • Default Gateway = fe80::1 Select **Custom Static** if you have a permanent IP address which does not change and is usually obtained from the network administrator. Select **DHCP** if the network uses a DHCP server for IP addressing.
Address	Displays the unique address of the device, if assigned. Editable only if using **Custom Static** addressing.
Prefix Length	Value set between 10 and 128 to define the number of leftmost bits identifying the network portion of the address.
Default Gateway	Displays the Default Gateway of the device, if assigned. Editable only if using **Custom Static** 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..

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Protocols

BACnet (bacnet://)

Advanced	
Back Off Period	How long (0:01 to 10:00 min:sec) the XT-LB waits before trying to connect to a device after the last failed connection attempt. The default is 5:00 min:sec.
Interpacket Delay	How long (0 milliseconds to 10 seconds) the XT-LB waits between sending request packets to the device. The default is 20 milliseconds.
Max Multiple Properties	The maximum number of properties that the XT-LB can read from or write to the device at one time.

Primary BACnet SC/Secondary BACnet SC	
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	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. **NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
Address	The Virtual MAC address of the XT-LB on the BACnet/SC network. It is the hex representation of the Device Instance found on the **Connections** > **Device** tab. **NOTE** If the Device ID of the XT-LB 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.
Connection State	The status of the XT-LB's connection as a client on the BACnet/SC network.
Primary Hub URI	Web address used to connect to the primary hub. Format options (address can be an IP address or DNS name): • `wss://address (if using standard port 443)` • `wss://address:port` **NOTE** If you must use a proxy to reach the hub, enter proxy information on the **Advanced** > **Network** tab.
Primary Hub Status	The state of the primary hub communication.
Failover Hub URI	Web address used to connect to the optional failover hub. Format options (address can be an IP address or DNS name): • `wss://address (if using standard port 443)` • `wss://address:port` **NOTE** If you must use a proxy to reach the hub, enter proxy information on the **Advanced** > **Network** tab.
Failover Hub Status	The state of the failover hub communication.

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Advanced

Is Failover Hub?	Indicates if being used as a failover hub.
	NOTES
	• A XT-LB 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.
	• Using a XT-LB 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.
Listening Connection Type	When set as a failover hub, select interface type used to listen for connections.
Server Port	When set as a failover hub, enter the port on which the hub will be listening.
URIs	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 **Connections** > **Gig-E Port** tab.
Minimum Reconnect Time	Initial number of seconds to wait before retrying a connect to a hub which increases with each failure.
Maximum Reconnect Time	Maximum number of seconds to wait between connection retries to a hub.
Connection Wait Timeout	Number of seconds to wait for a hub to reply to a connection request.
Disconnect Wait Timeout	Number of seconds to wait for a hub to reply to a disconnect request.
Initiating Heartbeat Interval	Number of seconds to wait to send a heartbeat.
Accepting Heartbeat Interval	Number of seconds to wait to receive a heartbeat.
Primary SC Statistics **Secondary SC Statistics**	
Reset statistics	Resets values to 0, which then resume accumulating.
Manage certificates	See "To create or replace a BACnet/SC device's operational certificate" in the *BACnet/SC Setup Guide* for instructions on how to create the XT-LB's operational certificate, signed by the BACnet/SC network's Certificate Authority.

Gig-E Port using BACnet/Ethernet

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

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Protocols

BACnet (bacnet://)

Advanced	
Back Off Period	How long (0:01 to 10:00 min:sec) the XT-LB waits before trying to connect to a device after the last failed connection attempt. The default is 5:00 min:sec.
Interpacket Delay	How long (0 milliseconds to 10 seconds) the XT-LB waits between sending request packets to the device. The default is 20 milliseconds.
Max Multiple Properties	The maximum number of properties that the XT-LB can read from or write to the device at one time.

BACnet/Ethernet	
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/Ethernet network. This number must be unique for the system. **NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
MAC Address	A factory-assigned Ethernet MAC Address

Port S1 and Port S2

Port S1	
Port S1 BACnet/MSTP	Enable for a BACnet/MSTP network.
Auto Generate Network Number	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 **Custom Static Address Mode**.
Network Number	The network number is 0 by default. Filled in automatically if **Autogenerate Network Number** is checked. **NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
MAC Address	You set the address for Port S1, which must be unique for the system.
End of Network	Indicates status of the XT-LB's **End of Net?** switch.
Max Master	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.

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Max Info Frames	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. 💡 **TIP** Set **Max Info Frames** to a number in the range 20 to 100 so that the XT-LB does not become a bottleneck for traffic being routed from a high-speed network to the slower MS/TP network.
Baud Rate	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.
Port S1 MSTP Statistics	Shows statistics for the port. Click **Reset statistics** to refresh the data.

Port S1 BACnet/ARCNET	Enable for a BACnet/ARCNET network.
Auto Generate Network Number	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 **Custom Static Address Mode**.
Network Number	The network number is 0 by default. Filled in automatically if **Autogenerate Network Number** is checked. **NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
MAC Address	You set the address for Port S1, which must be unique for the system.
End of Network	Indicates status of the XT-LB's **End of Net?** switch.
Port S1 ARCNET Statistics	Shows statistics for the port. Click **Reset statistics** to refresh the data.

Port S2	
Port S2 BACnet/MSTP	Enable for a BACnet/MSTP network.
Auto Generate Network Number	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 **Custom Static Address Mode**.
Network Number	The network number is 0 by default. Filled in automatically if **Autogenerate Network Number** is checked. **NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder.
MAC Address	You set the address for Port S2, which must be unique for the system.
End of Network	Indicates status of the XT-LB's **End of Net?** switch.
Max Master	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.
Max Info Frames	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. 💡 **TIP** Set **Max Info Frames** to a number in the range 20 to 100 so that the XT-LB does not become a bottleneck for traffic being routed from a high-speed network to the slower MS/TP network.
Baud Rate	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.
Port S2 MSTP Statistics	Shows statistics for the port. Click **Reset statistics** to refresh the data.

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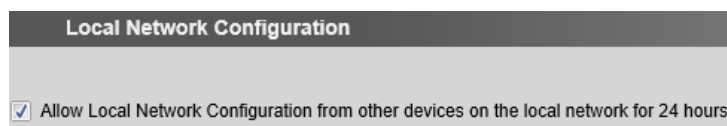
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Local Network tab

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	
Address Mode	Select the type of addressing the XT-LBis to use. See Addressing through the USB service port.
	Select **Custom Static** if you have a permanent IP address which does not change and is usually obtained from the network administrator.
	Select **DHCP** if the network uses a DHCP server for IP addressing.
Address	Displays the unique address of the device, if assigned. Editable only if using Custom Static addressing.
Subnet Mask	Displays the Subnet Mask of the device, if assigned. Editable only if using Custom Static addressing.
Default Gateway	Displays the Default Gateway of the device, if assigned. Editable only if using Custom Static addressing.
Device Instance	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 **Assign**.
Network Number	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-LB controller or by using the i-Vu® application. In the i-Vu® navigation tree, right-click the XT-LB, 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**.

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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	
Only Unconfigured	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.
Clear All	Erases all information in the table.
Export	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	
Select	Check to select devices for:
	• Changing the Mode
	• Resolving a Mismatch
	• Auto-assigning an IP Address
	NOTE You cannot select devices with a lock symbol.
MAC	Ethernet MAC address of device
Model	Displays the model number of discovered devices
Serial#	The discovered devices are in order by serial number.
	NOTE To change how the rows are sorted, click a different column heading.

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Local Devices table	
Mode	To change the **Mode:** **1** Select the devices you want to change. **2** Select one of the following IP addressing modes: • **Default IP** - Devices with rotary switches that are used when autogenerating the address (if applicable) • **Custom Static** - A permanent IP addresses which does not change and is usually obtained from the network administrator • **NOTE** Selecting this automatically sets the device's subnet and default gateway to match the connected controller. • **DHCP** - Allows the DHCP server to automatically assign an IP address **3** Click the **Set** button.
Address	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 **Assign**.
Location	You can describe the location of the device or any other helpful information.
Mismatch	A **Mismatch** occurs when the connected controller's mode is set to **Custom Static** and a discovered device's subnet and default gateway do not match the connected controller. The incorrect addresses are shown with **SN** for subnet and **GW** for default gateway. To resolve a mismatch, select the device(s) by clicking the **Select** checkbox and then clicking the **Resolve** button. The subnet mask and default gateway addresses of the selected devices change to match the connected controller.
Status	The following are the results of changing **Mode**, **Address**, **Location**, or pressing **Blink**: • **Success** - Successful operation • **No Response** - Device is not communicating • **Device Locked** - Device must be unlocked before you can make any changes using the **Local Devices** table. You can unlock the XT-LB by pressing the DSC button on the device or by using the i-Vu® application. (See instructions above.) **NOTE** The status of a device changes to locked 24 hours after unlocking it. • **Failure** - A conflict between the device and the information entered
Blink	Click the **Blink** 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 **Blink** button again. At the same time, the **Sys** and **Net** LEDs blink white, once per second for 10 seconds, and then stop. **NOTES** • The blue dot appears when you **Blink** a device. • You can **Blink** a locked device.

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.

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Licensing tab

Status	
Activate temporary license	Use for initial setup. A temporary license is valid for 30 days.
Import license	Upload a .device-license file to a controller to increase the number of permitted integration points as determined by protocol or add a new feature.
License Status	Current status of the license.
Features	
Enabled	Enable the toggle switch to enable the feature.
Points	
Point Distribution	Shows how points are distributed across protocols.
License Distribution	A negative value in the **Remaining** column indicates how many more points are required to restore proper function to the controller.

Advanced tabs

Security tab

Configuration Access	
Disable Service Ports	When checked, disables all communication through the Service Port. You can only configure the XT-LB in the i-Vu® application or Field Assistant.
Allow Configuration on Service Port	Enables access to the controller setup pages through the Service Port.
Allow Configuration on Gig-E Port	Enables access to the controller setup pages through the network that the Gig-E Port is connected to. See Connecting to the XT-LB through the Gig-E Port. **NOTE** You must first set a password in the i-Vu® application.
Disable Network Port Configuration via BACnet	When checked, disables Network Port Objects properties such as network numbers from being written to via BACnet.
Enable HTTP Redirect	When enabled allows http connections to the local webserver, but redirects automatically to https. When disabled the webserver is only available via https.
Allow Remote Management of IP Configuration	Enables you to configure IP settings remotely through tunneled Enhanced Access Protocol commands. **NOTE** The **Address Mode** must be set to **Custom Static**.
Allow Local Network Configuration from other Devices on the Local Network for 24 Hours.	Allows Local Network Configuration for 24 hours. It is the same as pressing the DCS button on the controller.

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Device Unlock Time Remaning	Displays the amount of time that the device will be unlocked.

TouchScreen Control	
TouchScreen Schedule Edit Enable	Check to enable.

BACnet Whitelist for Gig-E	
Enable BACnet Whitelist	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.
Enable Private IP Ranges	Permits communication with any BACnet device configured with a private IP address.
IPv4	List of IPv4 ranges that can be used in whitelisting
IPv6	List of IPv6 ranges that can be used in whitelisting

Whitelist	
Enable Custom Range Whitelist	Check to enable.
Address Ranges	Click **Add** to enter information or **Delete** to remove existing information.

Alarms tab

Use this tab to configure settings for the following Alarms:

- **Controller Halted**
- **Dead Controller Timeout**
- **Excessive COV**
- **BACnet/SC Certificate Expiration**
- **Locked I/O**
- **Point Count Exceeds Licenses**
- **Duplicate Address Alarm**
- **Program Unexpectedly Stopped**
- **Program Manually Stopped**
- **Port Authentication Expiration**

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Enable To Off-Normal Event	Clear this checkbox to disable Alarm or Return to off-normal messages of this type from the XT-LB.
Enable to Normal Event	Clear this checkbox to disable Alarm or Return to normal messages of this type from the XT-LB.
Time Delay	Specifies the delay between the onset of the Off-Normal condition and the reporting of the alarm to the i-Vu® application.
Description	Short message shown when this type of alarm is generated.
Notification Class	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.
Object Name	A unique alphanumeric string that defines the BACnet object.
Warning Threshold	If a certificate is within this number of days of expiring, it will appear yellow in the Certificate Management table. A weekly alarm will be triggered in the i-Vu® application when one of the XT-LB's BACnet/SC certificates is in this state.
Critical Threshold	If a certificate is within this number of days of expiring, it will appear red in the Certificate Management table. A daily alarm will be triggered in the i-Vu® application when one of the XT-LB's BACnet/SC certificates is in this state.

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.

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

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Recipient Type	Select **Recipient Device** for device recipients that support dynamic binding. Complete the **Recipient Device** field if you are using this recipient type.
	Select **Recipient Address** (static binding) for either of the following:
	• Third-party BACnet device recipients that do not support dynamic binding
	• When you want alarms to be broadcast (you must uncheck **Issue Confirmed Notifications**). This use is rare.
	Complete the **Network Number** and **MAC Address** fields if you are using this recipient type.
Recipient Device	Type the **Device Instance** from SiteBuilder (or from the network administrator for third-party devices) in the **#** field.
Network Number	Specify the number of the BACnet network on which to send the notification. 💡**TIP** For the home network, this can be set to 0.
MAC Address	MAC address of the recipient software or device.
Issue Confirmed Notifications	Select to have a device continue sending an alarm message until it receives delivery confirmation from the recipient.

Transitions to Send	Uncheck the types of alarms you do not want the recipient to receive.
Off Normal	BACnet priority for Alarms.
Fault	BACnet priority for Fault messages.
Normal	BACnet priority for Return-to-normal messages.

Days and Times to Send	
Monday to Sunday **From Time** **To Time**	Select days and times during which the recipient will receive alarms.
Process Identifier	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.

Acknowledgments Required	
To Fault Ack Required **To Normal Ack Required** **To Off-Normal Ack Required**	Specifies whether alarms associated with this Notification Class require a BACnet Acknowledgment for Off-Normal, Fault, or Normal alarms. 💡 **TIP** 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 **Alarm** > **Enable/Disable** tab, change the acknowledgment settings for an alarm source or an alarm category.

Priority	
To Fault Priority	BACnet priority for Fault messages.
To Normal Priority	BACnet priority for Return-to-normal messages.

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To Off Normal Priority	BACnet priority for Alarms.

Identification	
Notification Class	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.
Object Instance	The instance number of this BACnet Notification Class object. It must be unique within the BACnet Device that contains it.
Object Name	The alpha-numeric name of this BACnet Notification Class object.
Description	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	
Clock Fail Date	Date the XT-LB uses when its real-time clock is invalid.
Clock Fail Time	Time the XT-LB uses when its real-time clock is invalid.

Network Time Protocol	
	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**.
BACnet Time Synchronization	
Time Synchronization Sensitivity	When the XT-LB receives a time sync request, if the difference between the XT-LB's time and the time sync's time is greater than this field's value, the XT-LB's time is immediately changed. If the difference is less than this field's value, the XT-LB's time is slowly adjusted until the time is correct.
Time Broadcaster will synchronize time every	If you have third-party BACnet devices on one of the XT-LB's networks, you can have the XT-LB send a BACnet time sync to those devices at the interval you define in this field.
Time Synchronization Recipients	To define third-party BACnet devices as Time Synchronization Recipients:
	1 Click **Add**.
	2 Select **Recipient Type**:
	○ **Device ID**
	○ **Address**
	○ **Local Broadcaster**
	○ **Global Broadcaster**
	3 Enter the **Recipient Device** information.
	4 Click **Accept**.

Color Cache tab

Cache Group Number	For use by the i-Vu® system
Peer Caching Enabled	This checkbox is checked for the router that was defined in SiteBuilder as the peer caching router.

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Disable Color Cache	Clear (enable) to improve responsiveness of retrieving thermographic colors and prime values from networked controllers. See *EIKON® Help* for more information regarding thermographic colors and prime values.
	Select (disable) to reduce network traffic to third-party (non-color-supporting) devices.
	NOTE Selecting this checkbox also disables Dead Controller Timeout alarms.
Dead Controller Timeout	After this period (minutes:seconds) of non-response from a peer Carrier controller, the XT-LB sends an alarm to the server as defined by the Dead Controller Timeout alarm configuration.
Reports Colors To	The BACnet Object Identifier of the router that was defined in SiteBuilder as the peer caching router.

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

Technical Support Tools	Enable the toggle switch to view the Challenge key. Send the displayed **Challenge** key to the Carrier Controls System Support representative who will provide an **Activation Key** 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.
Logs	- **Retrieve all** — Downloads all logs in a zip file to your computer
	- **Specific log** — Allows you to choose to download the application logs (by date) or the system logs
	- **Delete all —** Deletes all logs, including current logs
Blink	To physically identify a device that is displayed on the **Local Devices** table, click **Blink** to light the **Locator LED** in the actuator release button.

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Packet Capture **Primary/secondary BACnet/IP** **BACnet/IPv6** **BACnet/Ethernet** **Primary/secondary BACnet SC** **Port S1 BACnet/MSTP** **Port S1 BACnet/ARCNET** **Port S2 BACnet/MSTP**	This allows you to capture network communication on the corresponding port and then download the capture file for troubleshooting. • **Start now** — Start a capture immediately. The capture runs until you click **Stop** or until it reaches the file size limit, whichever occurs first. • **Start continuous** — Start a continuous capture immediately. The capture stores the most recent 5MB of captured data and runs continuously until you click **Stop**. NOTES ○ The number of continuous captures that you can run simultaneously is limited. ○ Continuous captures are disabled when the XT-LB is in a low-memory state. • **Schedule** — 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. • **Capture Data of Type** — Choose whether to capture all packets or only BACnet packets (BACnet MS/TP only). • **Get capture file** — Download the capture file once you have stopped the capture or the capture has reached the file size limit. NOTE Capture files have a 25MB limit. If you need a larger capture, you must attach a computer running Wireshark. Please see the *Carrier BACnet Integration Guide* for more details. Please contact the *Carrier Training Department* regarding Networking I/II classes for more details on using packet captures for diagnostics and troubleshooting.
Network Diagnostics	Click **Reset statistics** to reset values to 0, which then resume accumulating. See *Appendix - Module Status field descriptions* (page 58) for descriptions of these fields.

Network tab

Device Host Name	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: • ASCII letters from A to Z, lower or upper case • 0 to 9 • hyphen A Host Name may not start with a hyphen or have only numerals
Enable Proxy	Enable this checkbox if the communication interface needs to get through a proxy firewall to communicate out to other networks.

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Proxy Server Address	Set the IP address of the proxy host.
	NOTE If you have a DNS set up on the **Gig-E Port** tab, you can use the DNS name of the proxy server here.
Proxy Port	Set the port for communication on the proxy host.
Proxy Username	Set a username if required to authenticate on the proxy server.
Proxy Password	Set a password if required to authenticate on the proxy server.
No Proxy For	Set addresses that do not require passing through the proxy to communicate. These addresses are typically exempt from the proxy requirements.

Control Programs tab

The Control Programs tab provides the following information as well as the items described in the table below.

- Number of control programs running

- Memory load percentage

- Estimated memory usage

- Maximum memory available

- Execution rate

BACnet COV Throttling	
Enable COV Throttling	Under normal circumstances, COV Throttling should be enabled to prevent excessive network traffic if an object's COV Increment is set too low. See EXCEPTION below.
	When enabled, if an object generates excessive COV broadcasts (5 updates in 3 seconds), the driver automatically throttles the broadcasts to 1 per second. Also, if the object's value updates excessively for 30 seconds, an alarm is sent to the i-Vu® application listing all objects that are updating excessively. A Return-to-normal alarm is sent only after all objects have stopped updating excessively.
	EXCEPTION: In rare circumstances, such as process control, a subscribing object may require COV updates more frequently than once per second. For these situations, clear this checkbox, but make sure that your network can support the increased traffic. You will also need to disable the **Excessive COV** alarms under the driver's **Common Alarms**.
Trend Sampling	
Collect a Daily Midnight Sample For All COV Points	For values that change infrequently, select to verify at midnight daily that the point is still able to communicate trend values.

Protocols tab

Select the tab for the protocol you are integrating and use the toggle switch to enable the protocol. See the specific protocol's integration guide for information on configuring the integration.

IoT tab

Enable the toggle switch to use the protocol.

NOTE   For communication with third-party protocols, see the specific protocol's integration guide.

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Managing third-party points and feature licenses

If a controller's remaining number of third-party integration points is a negative value, you must add additional points to the controller to restore proper function. Points are added in the form of a license.

You can also upload a license for a feature in the driver properties or controller setup interface in the **Licensing** tab.

To add more points or a feature to a controller, you must:

- purchase the points or feature in the E-Store
- generate a .requirements file in the i-Vu® application
- assign the points from your .requirements file and download the license on the Hardware License Manager page on the Carrier Community Portal website
- apply the license to your controllers

See the sections below.

To view points, license, and feature status

You can view feature status in the controller setup interface or driver properties under **Licensing** tab > **Features**.

You can view point license status information for a controller in two ways:

For a specific controller—in the controller setup interface or driver properties, go to **Licensing** tab > **Points**.

For one or more controllers—in the i-Vu® interface, use the navigation tree to select the controllers for which you want to view data. Then click **Reports** > **Point License Requirements**.

To generate a requirements file

A .requirements file specifies the number of licensed points needed for a given protocol in the controller. This file is used in the Hardware Point Manager to generate licenses.

1 In the i-Vu® interface, click ![icon], then select **System Options** > **License Administration**.

2 Under **Licenses for Controllers**, use the tree to select the areas or individual controllers for which you want to generate a .requirements file. Selecting an area automatically selects each license-supported controller within that area.

3 Click **Generate Requirements**.

💡 **TIP** You can also generate a .requirements file on the **Point License Requirements** report page. After running the report, click **Generate Requirements**.

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To download a license

You can download either a feature license or controller license. To download a controller license, you must upload a .requirements file and configure the points you have purchased.

To download a controller license

1   Go to the Carrier Partner Community website and select **Order Management** > **Hardware License Manager**.

2   Click the **Order Number** from which you want to assign points.If you do not have any work orders, you must purchase more points in the E-Store.

3   Click **Upload New Requirements** and select the .requirements file you previously downloaded from the i-Vu® application. Then, click **Load Requirements**.

4   In the **Points Assignment** tab, click **Edit Points**. Use the drop-down menu to select the number of packs to assign. Each pack contains a certain number of points.

5   Click **Save**, then click **Review**, then click **Submit**.

6   Click **Download** to download the .device-license files. These files are placed in a zip file.

   TIP   The .device-license file's file name is the serial number of the controller.

To download a feature license

1   Go to the Carrier Partner Community website and select **Order Management** > **Hardware License Manager**.

2   In the **Features** tab, locate the feature in the table and check **Enable**.

3   Click **Review**.

To apply a license to a controller

You can apply a license to each controller individually or to multiple controllers at once.

For a specific controller

1   In the controller setup interface or driver properties, go to the **Licensing** tab.

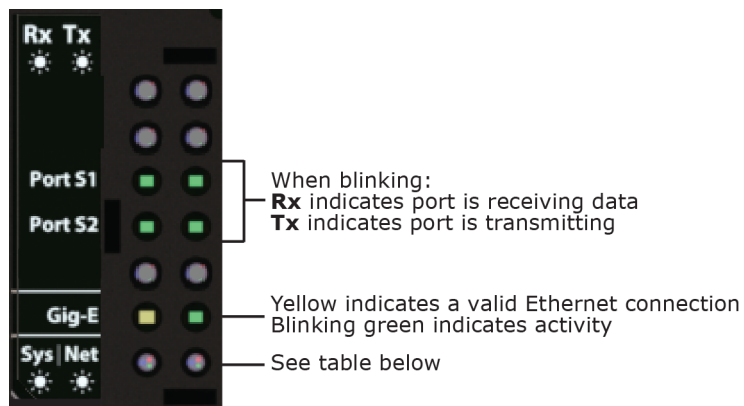2   Under **Status**, click **Import license** and upload the .device-license or zip file.

For one or more controllers

1   In the i-Vu® interface, click , then select **System Options** > **License Administration**.

2   Under **Licenses for Controllers**, select an area in the tree containing the controller(s) you want to apply the license(s) to. The system applies the license to any controller in the selected area that the .device-license or zip file has a license for.

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3   Click **Choose File** and select the .device-license or zip file you downloaded from the Hardware License Manager. To automatically apply to controllers, check **Apply to Controllers**. Then, click **Upload**.

4   If you did not check **Apply to Controllers** in the previous step, click **Apply to Controllers**.

Troubleshooting

LEDs

When blinking:
Rx indicates port is receiving data
Tx indicates port is transmitting

Yellow indicates a valid Ethernet connection
Blinking green indicates activity

See table below

NET (Network Status) Tricolor LED

Color	Pattern	Condition	Message in Module Status	Possible Solutions
Red	On	Ethernet connection problem	No Ethernet Link	• Connect Ethernet Cable • Check other network components
Red	1 blink	One of the following BACnet/IP (Ethernet) DLL reporting issue: • Unable to create tasks • Unable to open socket for BACnet port	BACnet/IP error	Cycle power
Red	2 blink	Current default IP address does not match the current rotary switch setting	Default IP address mismatch	• Use the controller setup **Ports** tab to set the IP address • Cycle power to accept new IP address • Change rotary switches to match current default IP address
Red	4 blink	Unable to get an IPV4 address using DHCP or an IPV6 address using SLACC	DHCP or SLAAC error	Check with network administrator
Red	5 blink	NAT configuration problem	NAT Configuration Error Detected	Check global IP address or hostname

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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	- Configuration issue – ex: no URL for hub - Certificate issue - No hub connection
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: - Port communication firmware did not load properly - Port communication firmware is not running - Invalid protocol selected	ARCNET/MSTP firmware error	- Change rotary switch to select valid protocol - Cycle power
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	- Check that network cable is connected properly - Check that baud rate is correct
Blue	4 blink	Excessive errors detected over 3 second period	Excessive communication errors on ARCNET/MSTP	- Check that network cable is connected properly - Check that baud rate is correct
Blue	5 blink	ARCNET traffic overload possibly due to circular router or excessive COVs (change of values)	Event System Error - FPGA RX FIFO full	- Check the network configuration for a circular route - Increase the time between COVs to reduce excessive COV traffic
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

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SYS (System Status) Tricolor LED

Color	Pattern	Condition	Message in Module Status	Possible Solution
Red	1 blink	XT-LB is stopped	Startup Aborted Detected	Restart the XT-LB or perform a memory download in the i-Vu® application.
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	3 blink	System is non-operational due to one or more control programs halted	Control program stopped due to program error	Remove control program and download
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-LB
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-LB with drv_gen5 driver is starting	N/A	No action required
Orange	2 blink	XT-LB 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-LB and verifies proper network communication with the XT-LB. You can get this report:

- In the i-Vu® application—Right-click the XT-LB 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 58).

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To get a Device Log

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

1 Select the XT-LB 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 ![home icon] > **Diagnostics** tab > **Packet Capture**, then click **Get capture file**.

To get the XT-LB's serial number

If you need the XT-LB'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-LB.

- A sticker on the front with the serial number, MAC address, and a QR code.

- In the driver properties or controller setup interface under ![home icon] > **Dashboard** tab > **Controller Status** > ![info icon] ⌄.

To replace the XT-LB's fuse

If you turn on the XT-LB's power switch and the ![power icon] LED is not lit, the fuse that protects the XT-LB 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 #
Littelfuse	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-LB and any other devices that share the power supply. Use the same polarity for all of them.

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To replace the fuse:

1 Turn off the XT-LB's power.

2 Remove the red power connector.

3 On both ends of the XT-LB, insert a small flathead screwdriver as shown below, and then gently pry up the cover until it is released from the base.

Insert screwdriver
about 1/8 in (.32 cm)
to pry up on cover
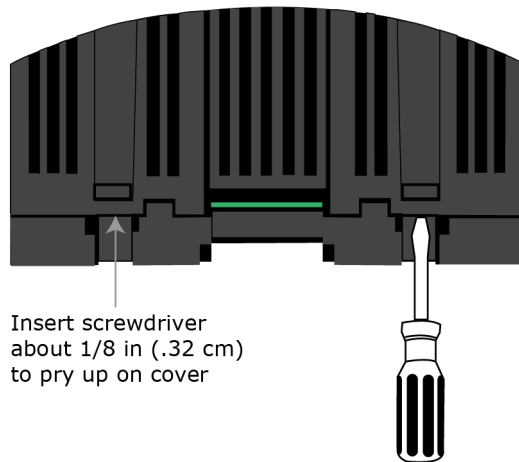
4 Remove the cover from the base.

5 The fuse labeled **F1** is located near the power connector. Use a fuse puller to remove the fuse.
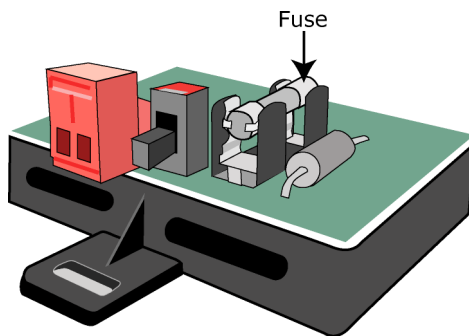
Fuse

6 Use the fuse puller to snap the new fuse into the fuse holder.

7 Replace the XT-LB's cover.

8 Replace the power connector.

9 Turn on the XT-LB's power switch.

10 Verify that the ⏻ LED on top of the XT-LB is on.

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To take the XT-LB out of service

If needed for troubleshooting or start-up, you can prevent the i-Vu® application from communicating with the XT-LB by shutting down communication from the XT-LB 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-LB.

2 On the **Properties** page, check **Out of Service**.

3 Click **Accept**.

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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.

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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 Java Version Processor Architecture	Underlying hardware and software architecture of the XT-LB
Device Instance	A unique ID assigned to the XT-LB
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
# PRGs initialized # PRGs running	If applicable, the number of control programs that were downloaded vs. the number that are running. If these numbers are not the same, the controller has a problem such as lack of memory.
Memory	Total size of the XT-LB's memory and the amount being used for the application and short term memory. **Cleanup** 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-LB was commanded to clear the reset counters. See **NOTE** below this table. **Power failures**—Interruption of incoming power **Commanded boots**—Includes commands issued from the i-Vu® interface such as the zap manual command, plus commands issued during a memory download. **System errors**—Error in the XT-LB's firmware or hardware **S/W Watchdog timeouts**—Watchdog is firmware that monitors the application firmware for normal operation. If the watchdog firmware detects a problem, it restarts the application firmware. **H/W Watchdog timeouts**—H/W Watchdog will restart the XT-LB if it detects a severe problem with the XT-LB's operating system
Network Information	The various network addresses for the XT-LB. The **Current** and **Assigned** addresses will be the same unless there are configuration changes that have not been activated.

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Field	Description
BBMD Configuration	Shows the following information for each active IP network: **BBMD Active** shows whether the BACnet Broadcast Management Device is currently active (true) or inactive (false). **BBMD Entries**—the number of entries in the BBMD table (500 maximum). **FDT Entries**—the number of entries in the Foreign Device Table (500 maximum).
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-LB, with expiration information.
Routing Information	BACnet networks that a XT-LB is currently routing traffic to. The list changes as BACnet routers are added or removed from the system.
Router statistics	**Dropped Packets**—Data packets that could not be delivered. **Route Not Found**—Packets that could not be delivered because the requested network does not exist. **Route Unreachable**—Routed packets whose destination network is either busy or offline. **Router Sourced Packets**—Shows the number of packets initiated by the XT-LB that are not in response to a request from another device.
Device statistics	Shows the number of incoming and outgoing unicast and broadcast packets for each of the XT-LB's networks. **Dropped Incoming** indicates the number of incoming packets that could not be delivered.
BACnet/IP Statistics	**Rx Unicasts**—BACnet/IP packets received from a single BACnet device. **Tx Unicasts**—BACnet/IP packets transmitted to a single BACnet device. **Rx Broadcasts**—BACnet/IP broadcast packets received by the XT-LB. **Tx Broadcasts**—BACnet/IP broadcast packets transmitted by the XT-LB. **Whitelist Rejections** (if BACnet Firewall is enabled)—Messages blocked by the BACnet Firewall because the IP address that sent the message was not in the whitelist.
Gig-E Port Statistics	**Rx packets**—All packets (including non-BACnet packets such as a ping) received by the XT-LB. **Tx packets**—All packets (including non-BACnet packets such as a ping) transmitted by the XT-LB. **Rx Error Count**—All errors related to received packets such as CRC errors, FIFO errors, frame errors, length errors, missed errors, and overrun errors. **Tx Error Count**—All errors related to transmitted packets such as aborted errors, carrier errors, dropped errors, FIFO errors, heartbeat errors, and window errors. **Dropped Packets**—Packets dropped by the XT-LB.
BACnet Protocol Details	**COV subscriptions**—Change of value subscriptions. **Communications**—Number of data packets transmitted and received by the XT-LB.

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Field	Description
IoT Publisher Information	**Connection State**—Current state of the connection to the broker.
	Last Connected—Timestamp of when the connection was last established.
	Protocol—Name of the protocol used
	Broker URI—Full connection string to the UDMI Broker
	Client Id—Identifier for a given client
Base and Core board hardware	Gives the following information about the XT-LB's boards:
	• Type and board numbers that are used internally by Carrier.
	• The manufacture date and serial number.
System status	Gives the current status of the XT-LB's operation. See *LED*s (page 51) for all possible conditions.
Network status	Gives the current status of the XT-LB's networks. See *LED*s (page 51) for all possible conditions.
Driver	The name, version, and date of the driver, as well as all the bundles and versions.
Switch Settings	**Protocol Rotary**—The XT-LB's rotary switch setting for Port S1 protocol
	Address Rotary—The XT-LB's rotary switch address (MAC address)
	Port S1 End of Network—End of Network switch position for Port S1
	Port S2 End of Network—End of Network switch position for Port S2
System error message history	High-severity errors since the last memory download. Shows the most recent 10 messages. See **NOTE** below this table.
Warning message history	Low-severity errors and warning messages since the last memory download. Shows the most recent 10 messages. See **NOTE** below this table.
Information message history	Information-only messages since the last memory download. Shows the most recent 10 messages. See **NOTE** below this table.

NOTE To clear the Reset counters and the three message history fields, click the **Clear Counts/Logs** button on the XT-LB'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**.

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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
4/17/25	Critical Product Announcement	New topic	C-PM-DD-J-DD
	Specifications	Updated FLEX Points	C-PM-EH-E-EH

* For internal use only

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