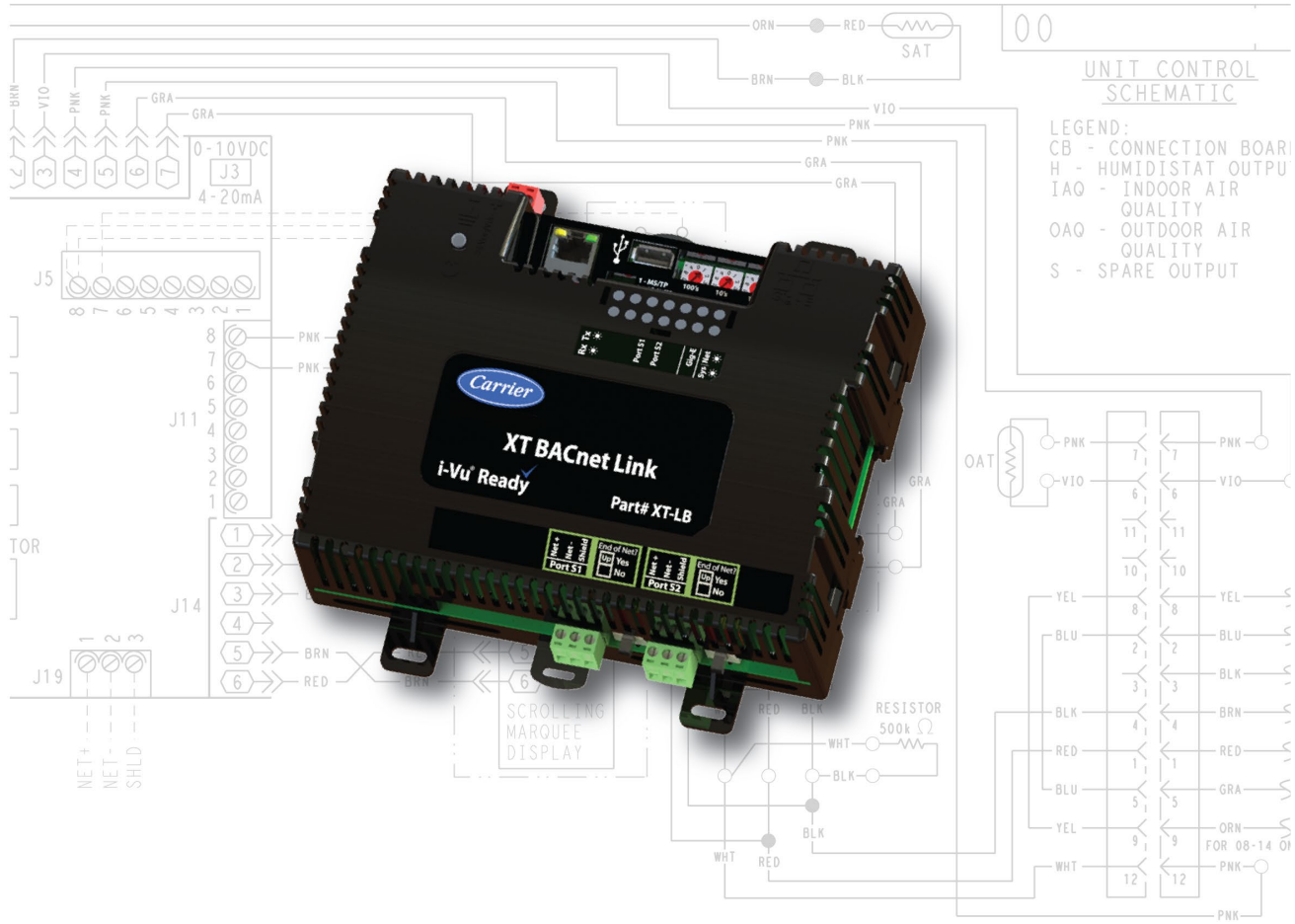


# i-Vu® XT BACnet Link (part no. XT-LB) (drv\_fwex)

## Installation and Start-up Guide





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

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

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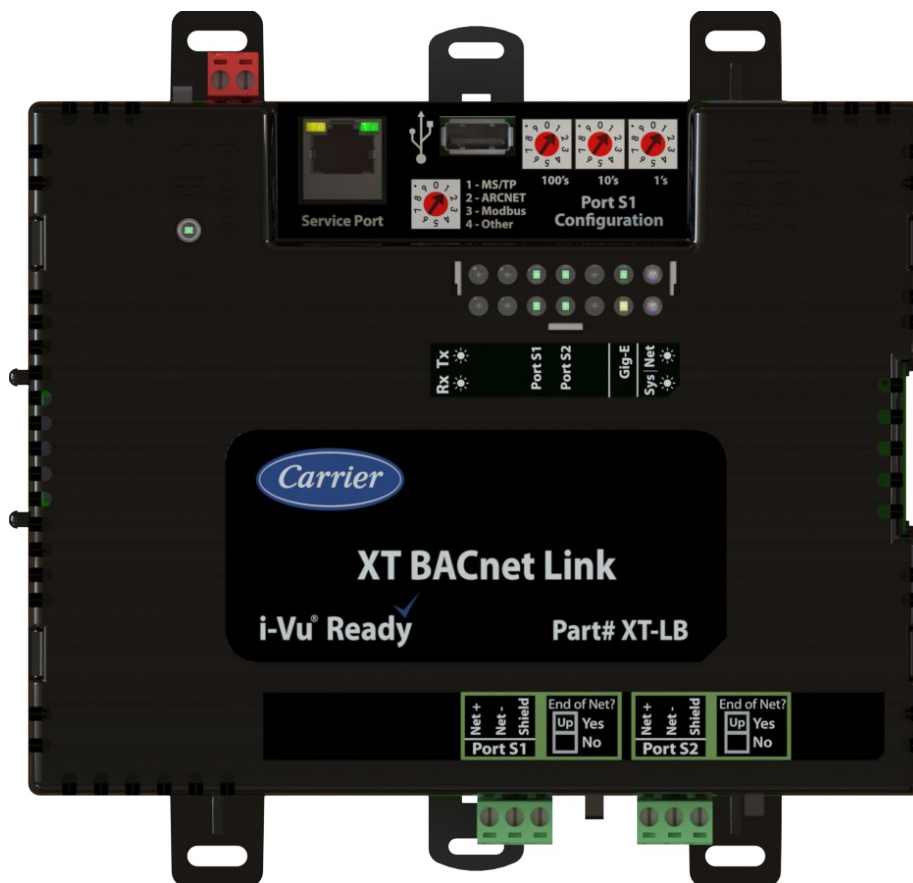
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## What is the XT-LB?

The i-Vu® XT BACnet Link (part no. XT-LB) 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® v6.5 or later system with the latest cumulative patch
- Can serve as a gateway that can act as a:
  - Master or slave on a Modbus serial network
  - Server or client on a Modbus TCP/IP network



What is the XT-LB?

The XT-LB has 4 physical BACnet or Modbus communication ports:

Port	Port type	For routing this type of communication...	At...
Gig-E	10/100/1000 Mbps Ethernet	BACnet/IP, BACnet/Ethernet, and/or Modbus TCP/IP	10, 100, or 1000 Mbps (1 Gbps)
S1	High-speed EIA-485 port	BACnet/ARCNET or BACnet/MSTP or Modbus Serial	156 kbps  9.6 to 115.2 kbps  9.6 to 115.2 kbps
S2	Electrically isolated EIA-485 port	BACnet/MSTP or Modbus Serial	9.6 to 115.2 Kbps  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 the following ports:

- USB port for recovery
- Ethernet Service Port for connecting locally to controller setup pages and the TruVu™ ET Display

## 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 RT4 and have an updated label. See *To get the XT-LB's serial number* (page 44).

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

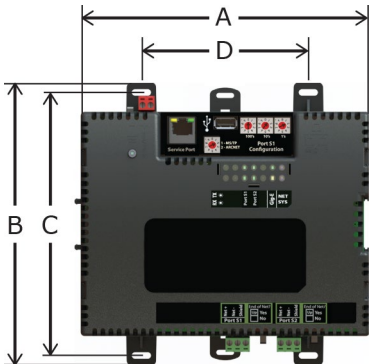



## Specifications

Driver	drv_fwex_< version >.driverx
Maximum number of control programs*	999
Maximum number of BACnet objects*	12000
Third-party BACnet integration points	1500
Third-party Modbus integration points	500

\* Depends on available memory.

Power	24 Vac $\pm 10\%$ , 50–60 Hz, 50 VA 26 Vdc $\pm 10\%$ , 15 W
Gig-E port	10/100/1000 BaseT, full duplex, Ethernet port for BACnet/IP and/or BACnet/Ethernet, or Modbus TCP/IP communication.
Port S1	For communication with either of the following: <ul style="list-style-type: none"> <li>• A BACnet ARCNET network at 156 kbps</li> <li>• A BACnet MS/TP network at 9600 to 115200 bps</li> <li>• A Modbus serial network at 9600 to 115200 bps</li> </ul> This port's <b>End of Net?</b> switch can be set to <b>Yes</b> to terminate the network segment.
Port S2	For communication with either of the following: <ul style="list-style-type: none"> <li>• A BACnet MS/TP network at 9600 to 115200 bps</li> <li>• A Modbus serial network at 9600 to 115200 bps</li> </ul> This port's <b>End of Net?</b> switch can be set to <b>Yes</b> to terminate the network segment.
Service Port	Ethernet port at 10 or 100 Mbps for setting up the controller and troubleshooting through a local connection to a computer or connecting to the TruVu™ ET Display
USB port	USB 2.0 host port for device recovery
Microprocessor	32-bit ARM Cortex-A8, 600MHz, processor with multi-level cache memory
Memory	8 GBs eMMC Flash memory and 512 MB DDR3 DRAM (22 MB available to use). User data is archived to non-volatile Flash memory when parameters are changed, every 90 seconds, and when the firmware is deliberately restarted.  <b>NOTE</b> When you change a parameter, you must wait 30 seconds before turning the power off, in order for the change to be saved.
Real-time clock	Real-time clock keeps track of time in the event of a power failure for up to 3 days.
Protection	Device is protected by a replaceable, fast acting, 250 Vac, 2A, 5mm x 20mm glass fuse.  The power and network ports comply with the EMC requirements EN50491-5-2.   <b>CAUTION</b> To protect against large electrical surges on serial EIA-485 networks, place a PROT485 at each place wire enters or exits the building.
LED status indicators	<ul style="list-style-type: none"> <li>• Tricolor <b>NET</b> LED to show network status</li> <li>• Tricolor <b>SYS</b> LED to show system status</li> <li>• A <b>TX</b> (Transmit) and <b>RX</b> (Receive) LED for the following ports: <ul style="list-style-type: none"> <li>• Gig-E</li> <li>• Port S1</li> <li>• Port S2</li> </ul> </li> </ul> See <i>LEDs</i> (page 41).
Environmental operating range	-40 to 158 °F (-40 to 70 °C), 10-95% relative humidity, non-condensing  <b>NOTES</b> <ul style="list-style-type: none"> <li>• The XT-LB is suitable for installation inside or outside the building envelope.</li> <li>• Install in a UL Listed enclosure only.</li> <li>• Do not change the position of the power or <b>End of Net</b> switch at temperatures below -22 °F (-30C) to ensure proper operation and electrical connectivity.</li> </ul>
Physical	Fire-retardant plastic ABS, UL94-5VA

What is the XT-LB?

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: B: Depth:	7.1 in. (18.03 cm) 6.95 in. (17.65 cm) 2.09 in. (5.31 cm)
Screw mounting dimensions	C: D:	6.45 in (16.38 cm) 4.1 in. (10.4 cm)
		
Weight	1 lb. 1 oz. (0.482 kg)	
BACnet support	Conforms to the BACnet Building Controller (B-BC) Standard Device Profile as defined in ANSI/ASHRAE Standard 135-2012 (BACnet) Annex L, Protocol Revision 14	
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:  Mark, UK:  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	

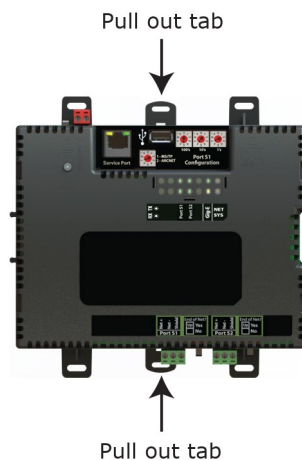
## To mount the XT-LB

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 router.



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



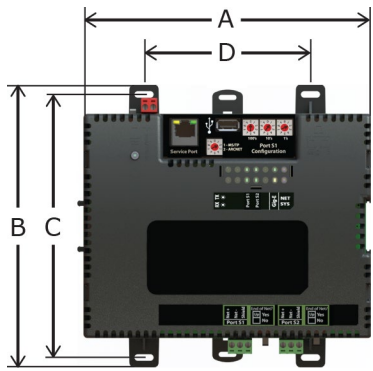
- 3 Push the center tabs towards the router until you hear them click.
- 4 Pull gently on the router to verify that it is locked in place.

### Screw Mount

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

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

To mount the XT-LB



A:	7.1 in. (18.03 cm)
B:	6.95 in. (17.65 cm)
C:	6.45 in. (16.38 cm)
D:	4.1 in. (10.4 cm)
Depth:	2.09 in (5.31 cm)

## Wiring for power



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

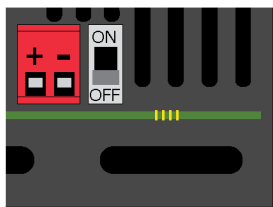



### CAUTIONS

- 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.



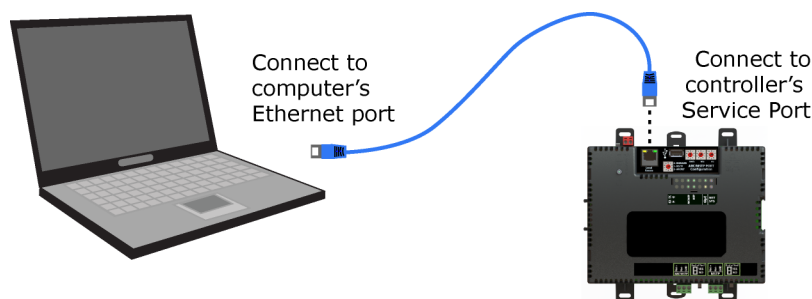
- 2 Remove power from the power supply.
- 3 Pull the red screw terminal connector from the router's power terminals labeled **24 Vac/Vdc (+/-)**.
- 4 Connect the power supply's wires to the red screw terminal connector.
- 5 Connect an 18 AWG or larger wire from the power supply's negative (-) terminal 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 router'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 router 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.

## Addressing the XT-LB

Set this port's address ...	In this location...	See...
IP	Service Port	To set the IP address (page 10)
Port S1	On the router's rotary switches	To set the Port S1 address and baud rate (page 12)
Port S2	Service Port	To set the Port S2 address and baud rate (page 12)

To access the controller setup through the **Service Port**:

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



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

See *To set up the controller through the Service Port* (page 33) for general information on using the controller setup pages.

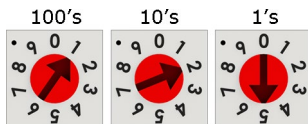
## Rotary switch settings

Rotary switch settings (see example below) are used to determine the following items in your system, so you should plan carefully before setting the switches.

- If you use a **Default IP address**, the final octet is the number created by the three rotary switch settings (must be a unique number from 1 to 253). See *To set the IP address* (page 10).
- If you autogenerate the following:
  - Device Instance**, the number is automatically set to a number equal to the ((IP network number x 100) + rotary switch settings).
  - BACnet Network Number** for Port S1, the number is automatically set to a number equal to the ((IP network number + rotary switch settings) x 10).

Autogenerating is set up through the *controller setup pages* (page 33).
- The rotary switch settings determine the router number in the i-Vu® interface.

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



**CAUTION** Do not leave the rotary switches set at 0 (the factory default). The XT-LB cannot be discovered if the rotary switches are left at 0.

## To set up autobaud

The XT-LB can automatically receive or establish the baud rate on a serial network. When you configure a device on the network for autobaud and then power it up, the device detects the incoming baud rate on the network and sets its baud to match.

Autobaud does not work unless there is a device on the network, whether Carrier or third party, that has the baud rate already set. You can manually set the baud rate on more than one device, as long as the rate is the same for every device.

### NOTES

- The received baud rate stays intact during power cycles.
- We recommend you set the baud rate manually on the router for the network.

## MS/TP

**MSTP Autobaud** can be configured in either the:

- **Service Port** controller setup pages > **BACnet** tab > **Port S1** or **Port S2**  
or
- The i-Vu® interface, right-click your XT-LB on the navigation tree, and select **Driver Properties** > **BACnet Router Properties** > **MS/TP Configuration** on Port S1 or on Port S2. See *BACnet Router Properties* (page 27).

## Modbus

**Modbus Serial Autobaud** can be configured in either the:

- **Service Port** controller setup pages > **Modbus** tab > **Modbus RS-485** > **Port Configuration**  
or
- The i-Vu® interface, right-click your XT-LB on the navigation tree, and select to **Driver Properties** > **Communication Status** > **Modbus Serial**

**NOTE** See the *Modbus Integration Guide*.

**NOTE** If you set **Autobaud** or make other changes in the controller setup pages, you must upload the changes to the system database the first time you access the router in the i-Vu® interface. This preserves those settings when you download memory or parameters to the router.

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

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

### To set a DHCP IP address

- 1 On the controller setup **Modstat** tab, find the router's **Ethernet MAC address** and write it down.
- 2 On the **Ports** tab under **IP Port**, select **DHCP**.
- 3 Click **Save**.
- 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 router 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 router from the facility network administrator.
- 2 On the controller setup **Ports** tab under **IP Port**, select **Custom Static**.
- 3 Enter the **IP Address**, **Subnet Mask**, and **Default Gateway** addresses given to you by the network administrator.
- 4 Click **Save**.

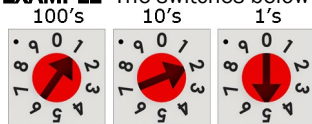
### To set a default IP address

Default IP addressing assigns the following to the router:

- 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 router'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 controller setup **Ports** tab under **IP Port**, select **Default IP Address**.
- 3 Click **Save**.



#### CAUTIONS

- The Default IP address range is 1 to 253. Setting the rotary switches to 0 will set the Default IP address to 1. Setting the switches to 255 will set the Default IP to 253. Do not set the switches to 254.
- If you set the Default IP address on the controller setup **Ports** tab and then change the rotary switches, you must do one of the following to correct the IP address in the router:
  - Go to the controller setup **Ports** tab and click the **Update IP Address**.
  - Cycle the router's power.

You will then need to correct the IP address in the i-Vu® application using **Find Devices** and **Upload All Content**. See the i-Vu® Help for more information.

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

## To set the Port S1 address and baud rate

---

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

### Port address

- For ARCNET, the range is 1 to 254.
- For MS/TP, the range is 0 to 127.
- For Modbus, the range is 1 to 247.

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

- 1 On the controller setup **BACnet** tab under **Port S1**, select the **MSTP Baud Rate** or select **Yes** for **MSTP Autobaud**. The default is 76,800 bps.

#### NOTES

- See *To set up autobaud* (page 9) for details.
- If not using autobaud, enter the identical baud rate for all devices on the same MS/TP network segment.

- 2 Click **Save**.

### Modbus

For Modbus, see the *Modbus Integration Guide*.

## To set the Port S2 address and baud rate

---

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

- 1 On the controller setup **BACnet** tab under **Port S2**, type the address in the **MSTP Address** field. The address must be in the range 0 to 127.
- 2 Select the **MSTP Baud Rate** or select **Yes** for **MSTP Autobaud**. The default is 76,800 bps.

#### NOTES

- See *To set up autobaud* (page 9) for details.
- If not using autobaud, enter the same baud rate for all devices on the MS/TP network.

- 3 Click **Save**.

### Modbus

For Modbus, see the *Modbus Integration Guide*.

## Configuring BACnet Device Instance and network number

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The XT-LB controller must have a unique Device Instance and Name. These BACnet addresses are automatically generated and usually do not require modification. However, sometimes you need to override the automatic addressing assignments.

### Autogenerated addressing scheme:

The XT-LB's rotary address setting determines the automatic BACnet addressing scheme for the connected Open network.

### Legend

16 = Carrier's BACnet Vendor ID

xxx = XT-LB's rotary switch address (See NOTES below.)

yy = Controller's rotary switch address (ARCNET/MSTP MAC address)

### For the XT-LB:

- BACnet Device Instance Number = (IP network number x 100) + rotary switch address
- BACnet Device Instance Name = the name "device" + the Device Instance
- BACnet IP Network Number = 1600
- BACnet ARC/MSTP Port S1 Network Number = ((IP network number + rotary switch address) x 10)
- Port S1 MSTP MAC Address = 0 by default (user configurable)
- Port S1 ARCNET Address = 254 by default (user configurable)
- BACnet MSTP Port S2 Network Number = ((IP network number + rotary switch address) x 10) + 3
- Port S2 MSTP MAC Address = 0 by default (user configurable)

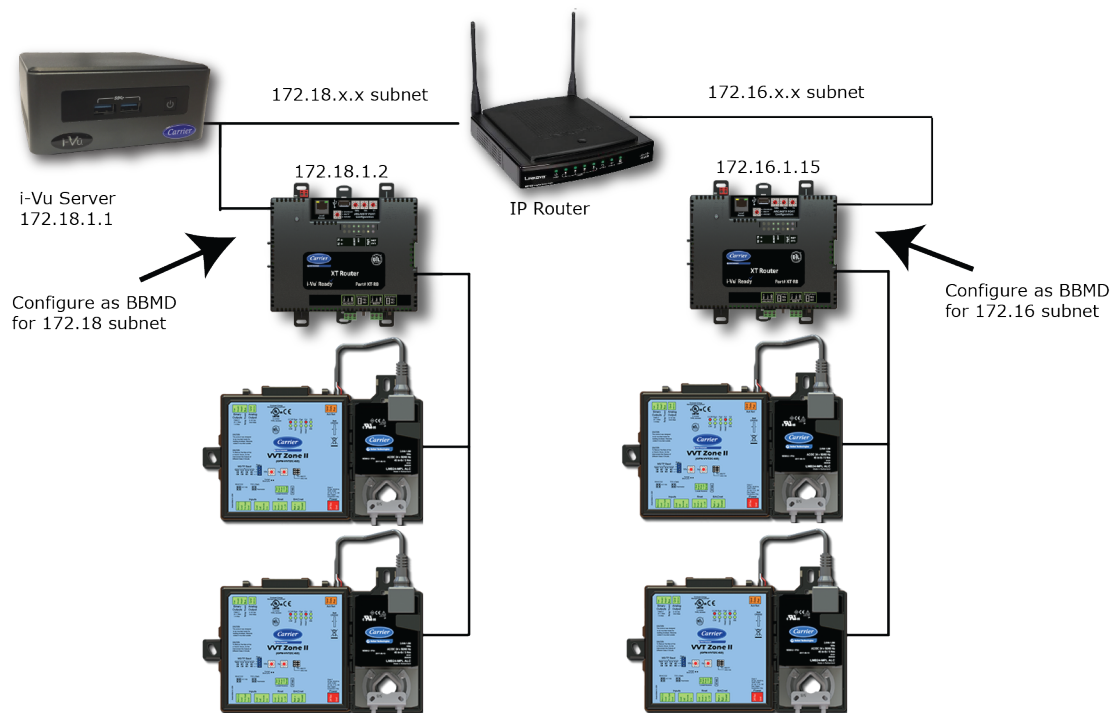
### For the Open controllers connected to the XT-LB

- BACnet MSTP Device Instance Number = BACnet MSTP Network Number + yy
- BACnet ARCNET Device Instance Number = BACnet ARCNET Network Number + yy
- BACnet MSTP Device Instance Name = the name "device" + Device Instance
- BACnet ARCNET Device Instance Name = the name "device" + Device Instance
- BACnet MSTP or ARCNET MAC Address = yy
- BACnet MSTP Network Number = 161xx (learned from the router, defaults to 16101 if no XT-LB is operating)

### NOTES

- Do not configure the rotary switches on the XT-LB to a number greater than 127 unless Port S1 is enabled for ARCNET. Doing so will not allow the i-Vu® server to discover the XT-LB.  
If you change the XT-LB's switches or jumpers, you must cycle its power for the changes to take effect.
- If the BACnet automatic settings need to be changed, see *To communicate through the Local Access port* (page 33).

## To set up BACnet Broadcast Management Devices (BBMDs)



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 set up BBMDs using the BBMD Configuration Tool

- 1 Assign an IP address, subnet mask, and default gateway for each XT-LB on the IP network. See *Addressing the XT-LB* (page 8).
- 2 Acquire the **BBMD Configuration Tool** from the Tech Tools USB drive or from either of the *Carrier Control Systems Support Sites* <http://www.hvacpartners.com/>. This is a stand-alone executable file and no installation is necessary.

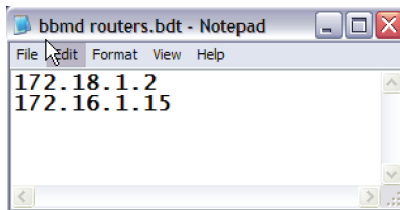
- 3 Make a list of the IP addresses for each router that will function as a BBMD in your system.

In the above illustration, the Carrier router, address 172.18.1.2, must be configured as a BBMD for the 172.18 subnet, while the Carrier router, address 172.16.1.15, must be configured as a BBMD for the 172.16 subnet.



#### CAUTIONS

- Define only one BBMD per subnet. Multiple BBMDs on an IP subnet disrupt network communications.
  - Unless explicitly modified, the UDP Port for BACnet/IP is 0xBACO (47808). Do not change this parameter unless you made a change in the router.
- 4 In a text editor such as Notepad, create a list of the routers that will be BBMDs. List each IP address on a separate line. (Maximum of 50 IP addresses per file)

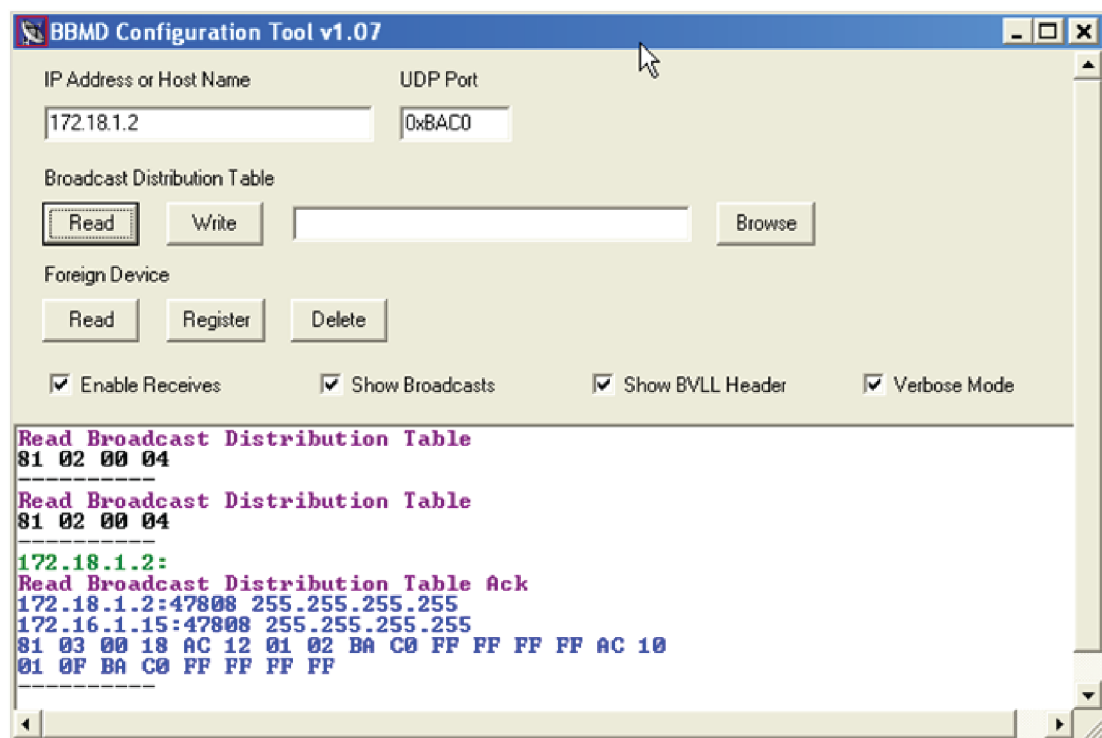


- 5 Save the file to your folder of choice with a .bdt, .bbmd, or .text extension instead of .txt.
- 6 Open the **BBMD Configuration Tool**.
- 7 In the **IP Address** or **Host Name** field, type the IP address of the router that functions as the BBMD (BACnet Broadcast Management Device) for its subnet.
- 8 To check if the router has an existing BBMD table, click the **Broadcast Distribution Table Read** button.
- 9 If the **Broadcast Distribution Table** contains IP addresses that are not in your file, verify that they are valid BBMDs and, if so, add them to your file.

#### NOTES

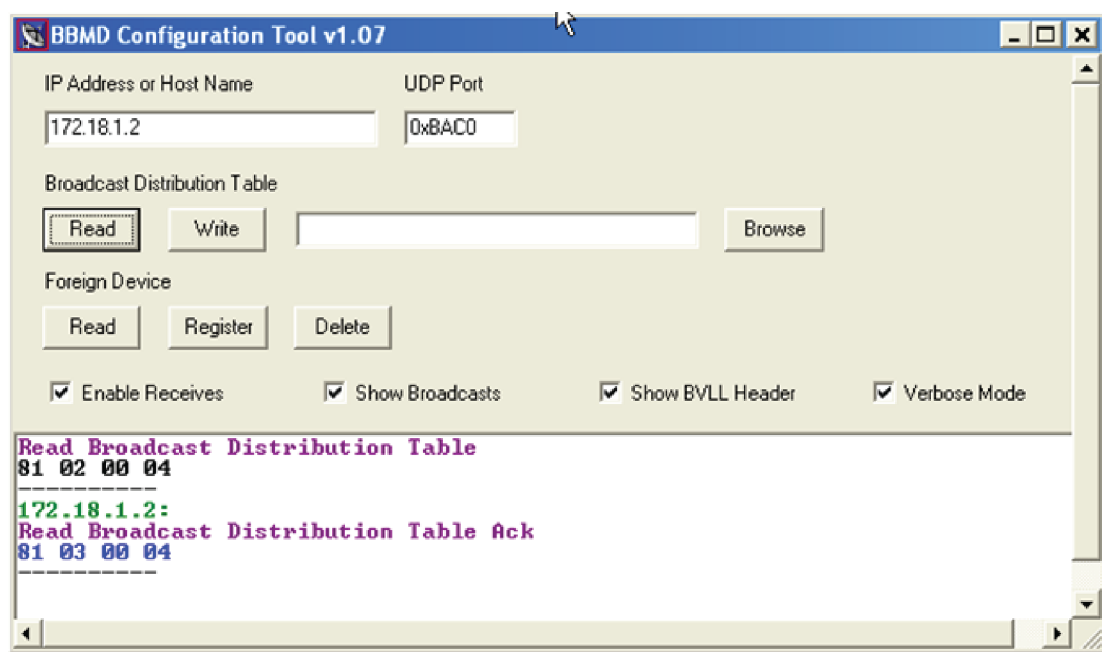
- The BDTs in each BBMD should be identical. Repeat this entire process whenever a BBMD is added.
  - If needed, disable the checkbox next to **Show Broadcast** to limit the amount of scrolling text that is displayed.
- 10 Click the **Broadcast Distribution Table Browse** button and select the file that you made in step 4.
- 11 Verify that the appropriate IP address is still in the **IP Address** or **Host Name** field.
- 12 Click the **Broadcast Distribution Table Write** button.
- 13 Click **Read** again to verify that the new file was written to the router. See example below.

**NOTE** If you have a large BDT, you may have to re-size the **BBMD Configuration Tool** window to see the **Broadcast Distribution Table**.



- 14 Using the next IP address in the file, repeat steps 7 through 14 until every file has been updated.

**NOTE** To clear the BBMD entries from a router, follow the steps above using an empty (blank) file. A cleared BBMD table contains just the router's IP address without entries in the BBMD table, as shown below.



## Wiring for communications

The XT-LB communicates on the following ports.

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

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

- 0** if port is not used
- 1** for MS/TP
- 2** for ARCNET
- 3** for Modbus
- 4** is for future use

<sup>2</sup> Default for MS/TP is 76.8 kbps.  
Default for Modbus is 38.4 kbps.

<sup>3</sup> See To set up the controller through the Service Port.

## Wiring specifications

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

\* For details see the *Open Controller Network Wiring Guide*.



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

## 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).

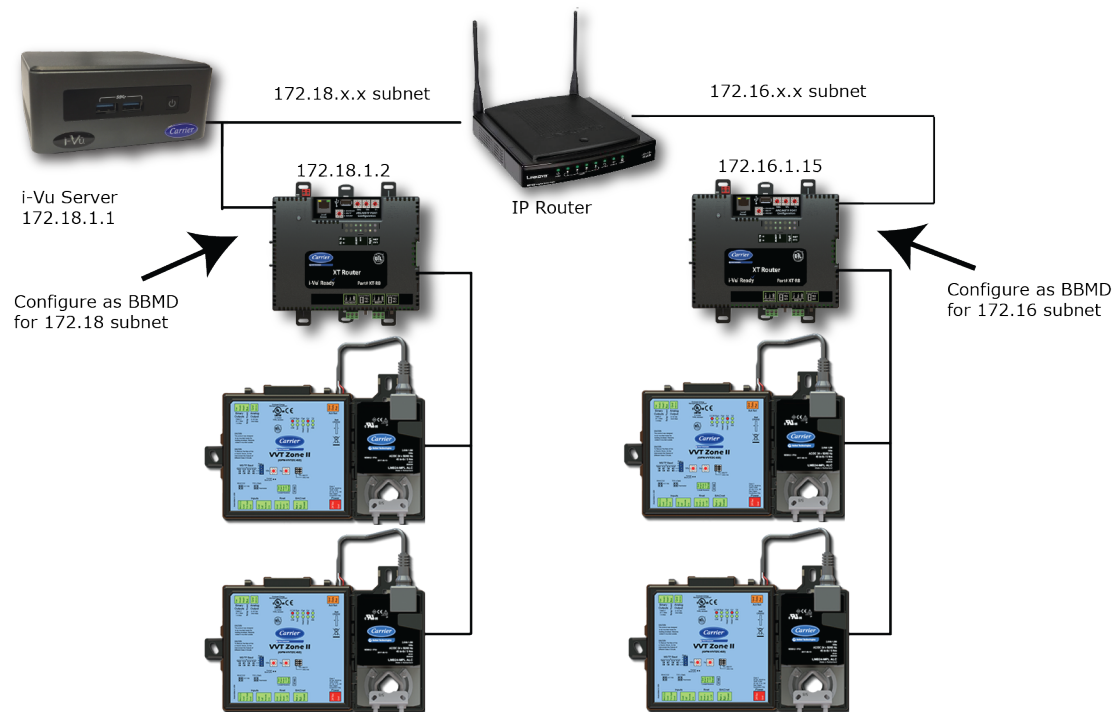
Every subnet with a router must have a BBMD configured in order for broadcasts from routers on that subnet to reach the rest of the routers on the network.

### 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 router 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 router's **End of Net** switch applies network termination and bias. See the *Open Controller Network Wiring Guide*.
- 6 Turn on the router's power.
- 7 To verify communication with the network, get a Module Status report in the i-Vu® interface for a router on the ARCNET network.  
**NOTE** This step requires that you have discovered and uploaded the router 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 router is at either end of a network segment, set the port's **End of Net?** switch to **Yes**.  
**NOTE** The router's **End of Net** switch applies network termination and bias. See the *Open Controller Network Wiring Guide*.
- 6 Turn on the router's power.
- 7 To verify communication with the network, get a Module Status report in the i-Vu® interface for a router on the MS/TP network.  
**NOTE** This step requires that you have discovered and uploaded the router in the i-Vu® application.

## To wire a third-party device

---

**BACnet:** You can wire a third-party BACnet device to the XT-LB's **Gig-E** port, **Port S1**, or **Port S2**. See the *BACnet Integration Guide* for the XT-LB.

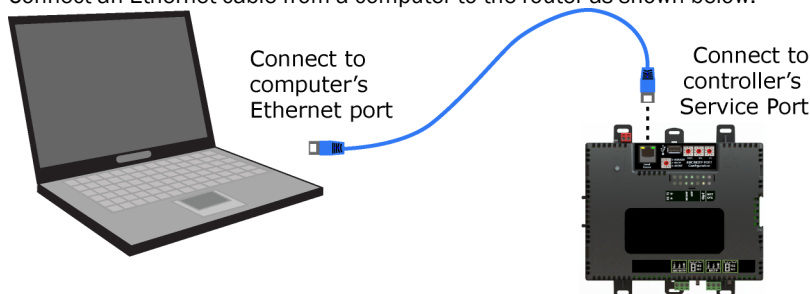
**Modbus:** You can wire a third-party Modbus TCP/IP device (client or server) to the XT-LB's **Gig-E** port or a Modbus master or slave device to **Port S1** or **Port S2**. See *Modbus Integration Guide* for the XT-LB.

## To communicate through the BACnet/IP Service Port network

You can connect to the Service Port to access your network through the:

- i-Vu® application
- Carrier touchscreen device

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



- 2 Turn off the computer's Wi-Fi if it is on.
- 3 If your computer uses a static IP address, use the following settings:
  - Address: 169.254.1.x, where x is 2 to 7
  - Subnet Mask: 255.255.255.248
  - Default Gateway: 169.254.1.1
- 4 If it uses a DHCP address, leave the address as it is.
- 5 Open a web browser on the computer and login to your i-Vu® Pro application.
- 6 In the i-Vu® Pro interface, on the **System Options** tree, select **Connections**.
- 7 On the **Properties** page > **Configure** tab, Select **BACnet/IP Service Port Connection** from the drop-down list and click **Add**.
- 8 If needed, enter the **Service Port Network Number** as follows:
  - **0** - the XT-LB will communicate only with the computer or TruVu™ ET Display
  - **1 to 65534** - the XT-LB's network number for network communication
  - **65535** - searches for an available network number from 65531 to 65534. If any of these numbers are not available, you will have to assign a network number and enter it.
- 9 Click **Apply**.
- 10 On the right of the page, in the **Networks using selected connection** table, click the checkbox next to the network you want to connect to.
- 11 Click **Apply**.
- 12 Select the **BACnet/IP Service Port Connection** and click **Start**. The status changes to **Connected**.
- 13 Click **Accept**.
- 14 On the navigation tree, right-click the controller that you are connected to and select **Module Status**. If a Modstat report appears, the i-Vu® application is communicating with the controller.

## 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, graphics, and touch files.
- 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.

## Adjusting the XT-LB driver properties

After you find and upload the XT-LB in the i-Vu® interface, you may want to customize the XT-LB's settings for your applications. You can change settings on the **Driver Properties** page.

- 1 In the i-Vu® interface, right-click the XT-LB in the navigation tree and select **Driver Properties**.
- 2 Adjust the driver as desired.

## Driver

On the **Driver** page > **Update** tab, you can:

- Obtain information about the XT-LB, get a Modstat and device logs
- Add, update, or delete drivers
- Add, update, or delete screen files for an Equipment Touch

The **Driver** page > **Settings** tab provides the following information plus the items described in the table below:

- The date/time of last parameter change or the last time the database was archived
- If control programs, properties, and schedules were successfully stored in memory
- Undelivered Alarm Status

TouchScreen Control	
<b>TouchScreen Schedule Edit Enable</b>	<p>Check this field to allow a user to edit this controller's schedules from an Equipment Touch or System Touch Schedules screen.</p> <p><b>NOTE</b> Schedules edited on an Equipment Touch or System Touch are not uploaded to the i-Vu® application. This could result in the controller operating on a schedule that differs from the one you see in the i-Vu® interface.</p>
Controller Clock	
<b>Clock Fall Date and Time</b>	Date and time the router uses when its real-time clock is invalid.
<b>Time Synch Sensitivity (seconds)</b>	When the router receives a time sync request, if the difference between the router's time and the time sync's time is greater than this field's value, the router's time is immediately changed. If the difference is less than this field's value, the router's time is slowly adjusted until the time is correct.
Network Microblocks	
<b>BACnet third party integration points capacity, integration points requested, and integration points active</b>	<p>Shows how many third-party BACnet points the XT-LB allows (capacity), how many points are in the control program (requested), and how many are currently active (not disabled in i-Vu®).</p> <p>For example, if the XT-LB allows 1500 points, the control program has 1450 points, and you disabled 30 points in i-Vu®, you would see:</p> <p>Integration points capacity: 1500            Integration points requested: 1450            Integration points active: 1420</p>

<b>Modbus integration points capacity and Integration points active</b>	Shows how many Modbus points the XT-LB allows (capacity) and how many are currently active.
<b>Number of poll retries before Network Input Microblocks Indicate failure</b>	The maximum number of retries after the initial attempt that a Network microblock will attempt to communicate with its target device. If unsuccessful, the point will transition to an idle state for 30 seconds before attempting to communicate again. Change this field only if directed by Technical Support.
<b>Periodic rebinding Interval</b>	If a microblock uses a wildcard in its address, this timer determines how often the microblock will attempt to find the nearest instance of its target. For example, if an outside air temperature address uses a wildcard, a VAV application will look for the outside air temperature on the same network segment or on the nearest device containing that object.
<b>Disable Eth1 Port</b>	
<b>Disable Eth1 Port</b>	Check this box to disable the second ethernet port, also called the "Service Port".
<b>Debug</b>	
<b>Enable Debug Messages</b>	Enable only if directed by Carrier Controls System Support.

## Device

The **Device** page provides the following information plus the items described in the table below:

- BACnet device object properties for the XT-LB
- The character sets supported by this device for BACnet communication

<b>Configuration</b>	
<b>BACnet System Status</b>	The current state of the router: Operational Download in Progress Download Required Backup in Progress Non-Operational
The following fields refer to all networks over which the XT-LB communicates.	
<b>APDU Timeout</b>	How many milliseconds the device waits before resending a message if no response is received.
<b>APDU Segment Timeout</b>	How many milliseconds the device waits before resending a message segment if no response is received.
<b>Number of APDU Retries</b>	The number of times the device resends a message.
<b>Controller Clock</b>	
<b>Time Broadcaster will synchronize time every ____</b>	If you have third-party BACnet devices on one of the router's networks, you can have the router send a BACnet time sync to those devices at the interval you define in this field.


<b>Time Synchronization Recipients</b>	<p>To define third-party BACnet devices as Time Synchronization Recipients:</p> <ol style="list-style-type: none"> <li>1 Click <b>Add</b>.</li> <li>2 Select <b>Device ID</b>, <b>Address</b>, <b>Local Broadcaster</b>, or <b>Global Broadcaster</b> in the <b>Recipient Type</b> field.</li> <li>3 If you selected <b>Device ID</b> or <b>Address</b>, enter the information.</li> <li>4 Click <b>Accept</b>.</li> </ol>
----------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## Notification Classes

A BACnet alarm's Notification Class defines:

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

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

<b>Priorities</b>	<b>NOTE</b> BACnet defines the following Network message priorities for Alarms and Events.										
	<table> <tr> <th>Priority range</th><th>Network message priority</th></tr> <tr> <td>00–63</td><td>Life Safety</td></tr> <tr> <td>64–127</td><td>Critical Equipment</td></tr> <tr> <td>128–191</td><td>Urgent</td></tr> <tr> <td>192–255</td><td>Normal</td></tr> </table>	Priority range	Network message priority	00–63	Life Safety	64–127	Critical Equipment	128–191	Urgent	192–255	Normal
Priority range	Network message priority										
00–63	Life Safety										
64–127	Critical Equipment										
128–191	Urgent										
192–255	Normal										
<b>Priority of Off-Normal</b>	BACnet priority for Alarms.										
<b>Priority of Fault</b>	BACnet priority for Fault messages.										
<b>Priority of Normal</b>	BACnet priority for Return-to-normal messages.										
<b>Ack Required for Off-Normal, Fault, and Normal</b>	<p>Specifies whether alarms associated with this Notification Class require a BACnet Acknowledgment for Off-Normal, Fault, or Normal alarms.</p> <p> <b>TIP</b> You can require operator acknowledgment for an Alarm or Return-to-normal message (stored in the i-Vu® database). In the i-Vu® interface on the <b>Alarm &gt; Enable/Disable</b> tab, change the acknowledgment settings for an alarm source or an alarm category.</p>										

<b>Recipient List</b>	
<b>Recipients</b>	The first row in this list is the i-Vu® application. Do not delete this row. Click <b>Add</b> if you want other BACnet devices to receive alarms associated with this Notification Class.
<b>Recipient Description</b>	Name that appears in the <b>Recipients</b> table.
<b>Recipient Type</b>	<p>Use <b>Address</b> (static binding) for either of the following:</p> <ul style="list-style-type: none"> <li>• Third-party BACnet device recipients that do not support dynamic binding</li> <li>• When you want alarms to be broadcast (you must uncheck <b>Issue Confirmed Notifications</b>). This use is rare.</li> </ul>

Days and times	The days and times during which the recipient will receive alarms.
<b>Recipient Device Object Identifier</b>	Type the <b>Device Instance</b> in the <b>#</b> field.
<b>Process Identifier</b>	Change for third-party devices that use a BACnet Process Identifier other than 1. The i-Vu® application processes alarms for any 32-bit Process Identifier.
<b>Issue Confirmed Notifications</b>	Select to have a device continue sending an alarm message until it receives delivery confirmation from the recipient.
<b>Transitions to Send</b>	Uncheck the types of alarms you do not want the recipient to get.

## Calendars

Calendars are provided in the driver for BACnet compatibility only. Instead, use the **Schedules** feature in the i-Vu® interface.

## Common and Specific Alarms

On these pages, you can enable/disable, change BACnet alarm properties, or set delays for the following BACnet alarms:

### Common alarms:

- All Programs Stopped
- Excessive COV
- Program Stopped
- Locked I/O
- Controller Halted
- Control Program
- Duplicate Address

### Specific alarm:

- Dead Controller Timeout

**NOTE** To set up alarm actions for controller generated alarms, see *Setting up alarm actions* in the i-Vu® Help.

### Controller Generated Alarm

<b>Description</b>	Short message shown on the <b>Alarms</b> page or in an alarm action when this type of alarm is generated.
<b>Events</b>	
<b>Alarm Category and Alarm Template</b>	See <i>Setting up an alarm source in the i-Vu® interface</i> in i-Vu® Help.
<b>Enable</b>	Clear these checkboxes to disable Alarm or Return to normal messages of this type from the XT-LB.
<b>Notification Class</b>	In a typical i-Vu® system, the Notification Class is 1; however, if needed, you can associate a different notification class with the alarm. See <i>Notification Classes</i> (page 25) to set up alarm delivery options for a specific Notification Class.

## BACnet Router Properties



**CAUTION** Do not change the settings on this page as it will result in communication failure. Use *the controller setup pages* (page 33) to change settings and then resolve mismatches in the i-Vu® application.

## BACnet Firewall

If this IP router is accessible from the Internet, you can increase security by enabling its BACnet firewall. When enabled, this feature prevents the router from responding to BACnet messages from unidentified sources and allows communication only with IP addresses that you define. These can be all private IP addresses and/or a list of IP addresses. Follow the instructions in the i-Vu® interface to set up the BACnet firewall.

## Network Diagnostics - Statistics

This page shows the network statistics for each of the XT-LB's ports that are in use. This same information is provided in a *Module Status report* (page 43).

Click the **Error Rate Trend** or **Packet Rate Trend** link at the bottom of each section to see the statistics displayed as trend graphs. You can also access these trends by clicking on the driver in the network tree, and then selecting **Trends > Enabled Points >** and the desired trend graph.

Click a port's **Reset** button to set all of the numbers to zero so the counting can start over.

Router Statistics	
<b>Error Counters</b>	<b>Dropped Packets</b> —Data packets that could not be delivered.
	<b>Route Not Found</b> —Packets that could not be delivered because the requested network does not exist.
	<b>Route Unreachable</b> —Routed packets whose destination network is either busy or offline.
<b>Network Activity</b>	Shows the number of incoming and outgoing unicast and broadcast packets for each of the XT-LB's networks.
<b>Router Sourced Packets</b>	Shows the number of packets initiated by the XT-LB that are not in response to a request from another device. The numbers in this table will also appear in the appropriate columns in the <b>Network Activity</b> tab.
<b>Trends</b>	<b>Error Rate Trend</b> —Shows the total number of errors within the trend sampling interval.
	<b>Packet Rate Trend</b> —Shows the total number of packets transmitted and received within the trend sampling interval.

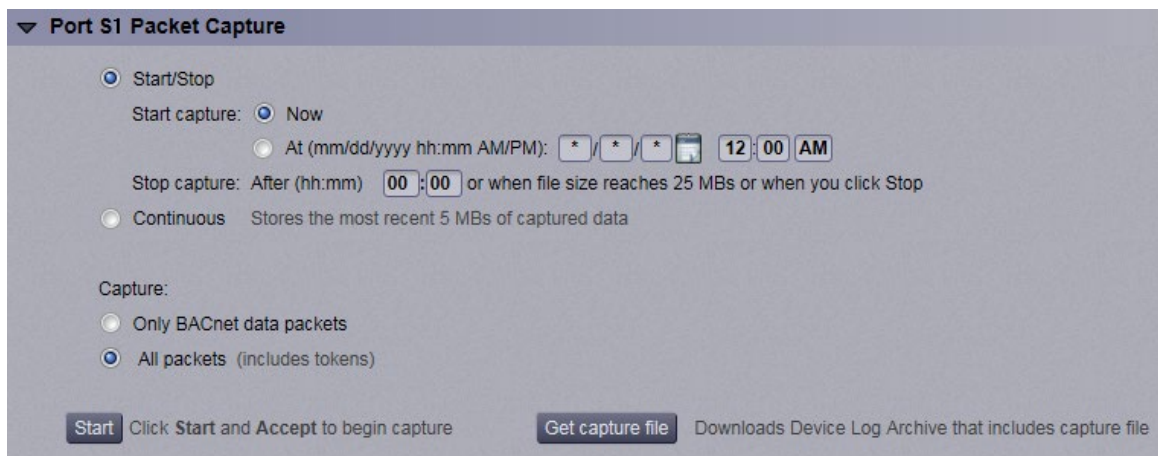
Gig-E Port Statistics	
<b>BACnet/IP Statistics</b>	<p><b>BACnet/IP Rx Unicast Packets</b>—BACnet/IP packets received from a single BACnet device.</p> <p><b>BACnet/IP Tx Unicast Packets</b>—BACnet/IP packets transmitted to a single BACnet device.</p> <p><b>BACnet/IP Rx Broadcast Packets</b>—BACnet/IP broadcast packets received by the XT-LB.</p> <p><b>BACnet/IP Tx Broadcast Packets</b>—BACnet/IP broadcast packets transmitted by the XT-LB.</p> <p><b>Whitelist Rejections</b> (if <i>BACnet Firewall</i> (page 27) is enabled)—Messages blocked by the BACnet Firewall because the IP address that sent the message was not in the whitelist.</p>
<b>Ethernet Statistics</b>	<p><b>Ethernet Rx packets</b>—All packets (including non-BACnet packets such as a ping) received by the XT-LB.</p> <p><b>Ethernet Tx packets</b>—All packets (including non-BACnet packets such as a ping) transmitted by the XT-LB.</p> <p><b>Receive Errors (total)</b>—All errors related to received packets such as CRC errors, FIFO errors, frame errors, length errors, missed errors, and overrun errors.</p> <p><b>Transmit Errors (total)</b>—All errors related to transmitted packets such as aborted errors, carrier errors, dropped errors, FIFO errors, heartbeat errors, and window errors.</p> <p><b>Dropped Packets</b>—Packets dropped by the XT-LB's Ethernet interface.</p>
<b>Trends</b>	<p><b>Error Rate Trend</b>—Shows the total number of errors within the interval time.</p> <p><b>Packet Rate Trend</b>—Shows the total number of packets transmitted and received within the trend sampling interval.</p>
Port S1 Statistics when used for ARCNET	
<b>Error Counters</b>	<p><b>Node Reconfiguration</b>—The ARCNET reconfigurations initiated by the XT-LB.</p> <p><b>Bus Reconfiguration</b>—An ARCNET reconfiguration not generated by the XT-LB (such as when a controller connects to the network).</p> <p><b>Excessive NACK</b>—Excessive NACKs received by the XT-LB's ARCNET chip. Excessive NACKs are usually the result of a station which is unable to process a steady stream of packets due to buffer overflows or slow responses.</p> <p><b>Dropped Packets</b>—Dropped receive and transmit frames. These may be dropped due to buffer allocation failures, length errors, or NACKed transmit packets.</p>
<b>Activity Counters</b>	<p><b>BACnet/ARCNET Rx Packets</b>—BACnet/ARCNET data packets received by the XT-LB.</p> <p><b>BACnet/ARCNET Tx Packets</b>—BACnet/ARCNET data packets transmitted by the XT-LB.</p>
<b>Latency</b>	<p><b>Average Value (milliseconds)</b>—The average time from when a packet is queued to be transmitted until it is actually transmitted on the bus.</p> <p><b>Maximum Value (milliseconds)</b>—The maximum time from when a packet is queued to be transmitted until it is actually transmitted on the bus.</p>

<b>Trends</b>	<p><b>Error Rate Trend</b>—Total number of errors within the interval time on this network, including break errors, framing errors, etc..</p> <p><b>Packet Rate Trend</b>—BACnet/ARCNET data packets transmitted through router, not the total utilization.</p>
<b>Port S1 Statistics</b> when used for MSTP or <b>Port S2 Statistics</b>	
<b>Error Counters</b>	<p><b>UART Errors</b>—UART receive and transmit errors such as break errors, framing errors, parity errors, and overrun errors.</p> <p><b>Invalid Frames</b>—Received MS/TP frames that contain an error such as CRC.</p> <p><b>Dropped Packets</b>—Dropped receive and transmit frames. These may be dropped due to buffer allocation failures, length errors, or APDU timeouts (in the case of transmit frames)</p> <p><b>Dropped Tokens</b>—Dropped tokens that have been retransmitted.</p> <p><b>No responses</b>—Messages that did not receive a response from the destination device.</p>
<b>Activity Counters</b>	<p><b>BACnet/MSTP Rx Packets</b>—BACnet/MSTP data packets received by the XT-LB.</p> <p><b>BACnet/MSTP Tx Packets</b>—BACnet/MSTP data packets transmitted by the XT-LB.</p>
<b>Latency</b>	<p><b>Average Value (milliseconds)</b>—The average time from when a packet is queued to be transmitted until it is actually transmitted on the bus.</p> <p><b>Maximum Value (milliseconds)</b>—The maximum time from when a packet is queued to be transmitted until it is actually transmitted on the bus</p>
<b>Trends</b>	<p><b>Error Rate Trend</b>—Total number of errors within the interval time on this network, including break errors, framing errors, etc.</p> <p><b>Packet Rate Trend</b>—Percentage of total bus bandwidth used to transmit data packets.</p> <p><b>NOTE</b> This is for all bus traffic, not just traffic generated by the XT-LB.</p>

## Network Diagnostics - Packet Capture

This page allows you to capture network communication on a port and then download the capture file for troubleshooting. Choose one of the following capture options:

- Start/Stop** - Define the start and stop criteria, and then click **Start** and **Accept** to begin the capture. When the capture stops, the capture file is generated.  
**NOTE** If a Start/Stop capture is running on any other port, the **Get capture file** button is disabled until all Start/Stop captures have completed.
  - Start capture:** - When you check **At (mm/dd/yyyy hh:mm AM/PM)**, enter the time and date, and click **Start**, the packet capture begins at the date and time you specified.  
**NOTE** The hours field is validated from 0 to 12, and minute field is validated from 0 to 59.
  - Continuous** - Click **Start** and **Accept** to begin the capture. Click **Save** to momentarily stop the capture and create the capture file. The capture will automatically resume. Click on the **Start/Stop** option to end the **Continuous** capture.
  - If the port is set up for MS/TP, select an option in the **Capture** section.



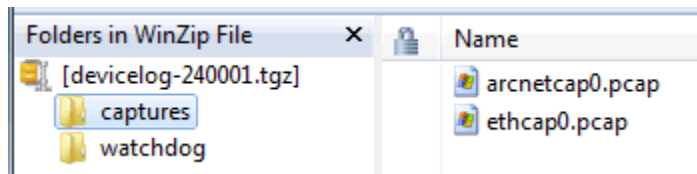
## To download the capture file

Capture files are Wireshark files that are added to the Device Log Archive .tgz file. Do the following to view the files.

- 1 If you do not have Wireshark installed on your computer, download the latest version from the *Wireshark website* (<http://www.wireshark.org>).
- 2 Run the install program, accepting all defaults. Include WinPcap in the installation.
- 3 On the i-Vu® **Packet Capture** page, click **Get capture file** to download the .tgz file. The message appears "Retrieving the file, this may take a little while". Click **OK**.

**NOTE** If the size of the .tgz is large, there could be a considerable delay (for example, over 2 minutes) after you click **Get capture file** until your browser begins the download.

- 4 Open the .tgz file. The files are in the **captures** folder.



Capture file names are based on the ports.

### NOTES

- If you have an MSTP capture file for both Port S1 and Port S2, the file names will be:  
**mstpcap0** for Port S1  
**mstpcap1** for Port S2
- Clicking **Get capture file** generates the port's .pcap file. If the port has a .pcap file from a previous capture, that file will be overwritten.

- 5 Extract the .pcap file from the .tgz file.
- 6 Open the .pcap file in Wireshark.

## Communication Status

The **Communication Status** page shows the status of the protocols currently running on the XT-LB's ports.

### Standalone Controller Detection

You can use the fields on this page with a binary input in your control program to detect when the controller does not receive a write request from the selected network within the specified amount of time. The input remains OFF as long as write requests are received, but switches to ON if the controller does not receive a request within the specified time. The binary input must have the Expander number and Input number set to **99** and the I/O Type set to **Special**.

### Modbus Serial, Modbus TCP/IP, and Modbus Error Definitions pages

If the router will be used with Modbus devices, see the *Modbus Integration Guide* for information on using these pages.

## To set up Network Statistic trends

**PREREQUISITE** To view Network Statistic trends, you must have a i-Vu® v6.5 or later system with the latest cumulative patch.

To view the *Network Statistics* (page 27) as trend graphs, select the controller in i-Vu®'s navigation tree and go to one of the following:

- On the **Driver Properties > Network Diagnostics > Statistics** page, click a **Trend** link at the bottom of each section.
- Click the **Trends** drop-down button, select **Enabled Points** and then the graph you want.

You can define:

- How the graph looks on the trend's **Configure** tab.
- How you want trend samples to be collected on the **Enable/Disable** tab. See the table below.

Field	Notes
<b>Sample every _:_ (hh:mm:ss)</b>	(Recommended method) To record the value at a regular time interval, enter hh:mm:ss in this field.
<b>Sample on COV (change of value)</b>	To record the value only when the value changes by at least the amount of the <b>COV Increment</b> , set the <b>Sample every</b> field to 0:00:00 and enter a value in the <b>COV Increment</b> field.
<b>Max samples</b>	Network Statistic trends have a non-configurable maximum trend log buffer size of 1440.  <b>NOTE</b> Trending consumes memory in the router. Click <b>Reset</b> to delete all samples currently stored in the router.

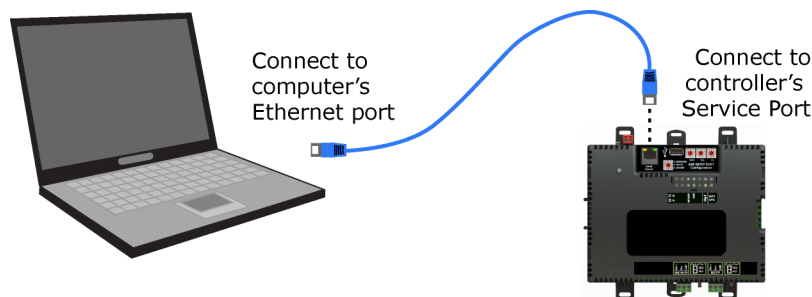
Field	Notes
<b>Stop When Full</b>	Check this field to stop trend sampling when the maximum number of samples is reached.
<b>Enable trend log at specific times only</b>	Collects trend data for the specific period of time you define in the time and date fields.
<b>Enable Trend Historian</b>	Archives trend data to the system database.
<b>Store Trends Now</b>	Writes all trend data in the router to the system database without having to enable trend historian.
<b>Write to historian every __ trend samples</b>	<p>Writes all trend data in the router to the system database each time the router collects the number of samples that you enter in this field. This number must be greater than zero and less than the number entered in the Max samples field. The number of trends specified must be accumulated at least once before the historical trends can be viewed.</p> <p><b>NOTE</b> Any trends not stored in the historian will be lost if the router loses power.</p>
<b>Trend samples accumulated since last notification</b>	Shows the number of samples stored in the router since data was last written to the database.
<b>Last Record Written to Historian</b>	Shows the number of trend samples that were last written to the database.
<b>Keep historical trends for __ days</b>	This is based on the date that the sample was read. Select the first option to use the system default that is defined on the <b>System Options &gt; System Settings &gt; General</b> tab. Select the second option to set a value for this trend only.

## To set up the controller through the Service Port

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

- View the router's Module Status report
- View/change router and network settings. Changes take effect immediately.
- Troubleshoot
- Use BACnet/IP Service Port to access the i-Vu® application or a touchscreen device. See *To communicate through the BACnet/IP Service Port network* (page 21).

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



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

**NOTE** The first time you access the router 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 router.

## ModStat tab

This tab provides the router's Module Status report that gives information about the router and network communication status. See *Appendix - Module Status field descriptions* (page 47).

## Device tab

BACnet Object	
<b>Device Instance</b>	<p><b>Autogenerated</b>—(Default) The Device ID is automatically set to a number equal to the (IP network number) x 100 + rotary switch address.</p> <p><b>Assigned</b>—Lets you enter a specific number that is unique on the BACnet network.</p>
<b>Device Name</b>	<p><b>Autogenerated</b>—(Default) The Device Name is automatically set as the word device + the Device Instance. For example, device2423911.</p> <p><b>Assigned</b>—Lets you enter a specific name that is unique on the BACnet network.</p>
<b>Device Location</b>	You can enter an intuitive location for the device in the i-Vu® interface.
<b>Device Description</b>	You can enter an intuitive description for the device in the i-Vu® interface.
Configuration	
<b>APDU Timeout</b>	How many milliseconds the device waits before resending a message if no response is received.
<b>APDU Segment Timeout</b>	How many milliseconds the device waits before resending a message segment if no response is received.
<b>APDU Retries</b>	The number of times the device resends a message.
Network Time Protocol	
<p>To define an NTP server to use for time synchronization:</p> <ol style="list-style-type: none"> <li>1 Click <b>Enable</b>.</li> <li>2 Define <b>NTP Server</b> by one of the following: <ul style="list-style-type: none"> <li>○ <b>IP Address</b></li> <li>○ <b>Host name</b></li> <li>○ <b>Fully qualified domain name</b></li> </ul> </li> <li>3 Click <b>Save</b>.</li> </ol>	
Controller Information	
<b>Clear Counts/Logs</b>	Clears Reset counters and the three message history fields from the Module Status.
Data Backup and Restore	
<b>Backup</b>	Displays time of the last backup. Click button to backup the controller's control programs, properties, and schedules.
<b>Restore</b>	Displays time of the last restore. Click button to restore the most recent backup of the controller's control programs, properties, and schedules.
Network Factory Defaults	
<b>Reset</b>	Resets the router to network factory default settings.
Core Dump Download	
<b>Move Core Dump to USB drive</b>	Downloads a core dump file to a USB drive. The status LED rapidly flashes blue while the download is in progress. This may take several minutes.

## Ports tab

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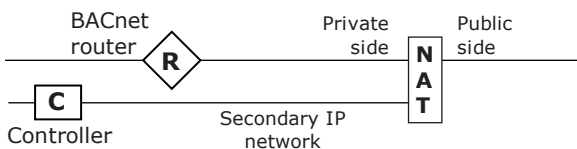

IP Port	
<b>IP Addressing</b>	Select the type of addressing the router is to use. See <i>Addressing the XT-LB</i> (page 8).
Port S1	
<b>End of Network</b>	Indicates status of the router's <b>End of Net?</b> switch.
<b>Active Protocol</b>	Indicates status of the router's <b>Port S1 Configuration</b> rotary switch. 0=Disabled 1=MS/TP 2=ARCNET 3=Modbus
<b>Address</b>	The address that is set on the three rotary switches. See <i>To set the Port S1 address and baud rate</i> (page 12).
Port S2	
<b>End of Network</b>	Indicates status of the router's <b>End of Net?</b> switch.
<b>Active Protocol</b>	The protocol that has been enabled for Port S2 on the BACnet or Modbus tab.


## BACnet tab

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IP Port	
<b>BACnet Network Number</b>	<b>Disable Routing</b> —Select if the IP port is not used. <b>Autogenerated</b> —The BACnet/IP network number is automatically set to 1600. <b>Assigned</b> —Lets you enter a specific number.
<b>BACnet UDP Port</b>	The port that the i-Vu® application will use for BACnet communication.
<b>Enable NAT Routing</b>	<b>For future use.</b> Check if the XT-LB is behind a NAT router (firewall).
<b>Global NAT IP Address</b>	<b>For future use.</b> Public IP address of the NAT router.
<b>Global NAT BACnet UDP Port</b>	<b>For future use.</b> Port number assigned to the NAT router's public interface.

To set up the controller through the Service Port

<b>BACnet Secondary IP Net Number</b>	<p>If the XT-LB has two BACnet/IP networks communicating on the Gig-E port, enter the second IP network number in this field.</p> <p>If the XT-LB is behind a NAT router and there is a second network with BACnet/IP devices behind the NAT router, enter the second network number in this field to logically connect the XT-LB to the devices on the second network.</p> 
<b>BACnet Secondary UDP Port</b>	<p>If the XT-LB has two BACnet/IP networks communicating on the Gig-E port, enter the port number that the i-Vu® application will use for BACnet communication. This port must be different than the <b>BACnet UDP Port</b>.</p>
<b>Ethernet Port</b>	
<b>MAC Address</b>	A factory assigned Ethernet MAC Address for the <b>Gig-E</b> port.
<b>BACnet Network Number</b>	Specify a number for the BACnet/Ethernet network or set to 0 if the port is not used.
<b>Port S1</b>	
<b>End of Network</b>	Indicates status of the router's <b>End of Net?</b> switch.
<b>Active Protocol</b>	<p>Indicates status of the router's Port S1 rotary switch.</p> <p>0=Disabled 1=MS/TP 2=ARCNET 3=Modbus</p>
<b>Address</b>	The address that is set on the three rotary switches. See <i>To set the Port S1 address and baud rate</i> (page 12).
<b>ARCNET Baud Rate</b>	156000
<b>MSTP Autobaud</b>	Select <b>Yes</b> to enable this slave device to automatically receive its baud rate from a master on the network that has the fixed baud rate.
<b>MSTP Baud Rate</b>	Set this to a baud rate that all other devices on the MS/TP network are set to.
<b>MSTP Max Master</b>	To increase MS/TP performance, enter the highest address used on the MS/TP network for a master controller. This number must be less than or equal to 127.
<b>MSTP Max Info Frames</b>	<p>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.</p> <p> <b>TIP</b> Set <b>Max Info Frames</b> to a number in the range 20 to 100 so that the router does not become a bottleneck for traffic being routed from a high-speed network to the slower MS/TP network.</p>
<b>BACnet Network Number</b>	<p>Select:</p> <p><b>Disable Routing</b> if Port S1 is not used.</p> <p><b>Autogenerated</b> to have the network number for Port S1 automatically set to a number equal to ((IP network number + rotary switch address) x 10).</p> <p><b>Assigned</b> to enter a specific number.</p>
<b>Port S2</b>	
<b>End of Network</b>	Indicates status of the router's <b>End of Net?</b> switch.

<b>Active Protocol</b>	Shows one of the following: <ul style="list-style-type: none"> <li>• <b>Modbus</b> if enabled on the <b>Modbus</b> tab</li> <li>• <b>BACnet/MSTP</b> if you enter a <b>BACnet Network Number</b> below for an MS/TP network</li> <li>• <b>Disabled</b> if neither of the above have been done</li> </ul>
<b>Address</b>	The router's unique address on the MS/TP network.
<b>MSTP Autobaud</b>	Select <b>Yes</b> to enable this slave device to automatically receive its baud rate from a master on the network that has the fixed baud rate.
<b>MSTP Baud Rate</b>	Set this to a baud rate that all other devices on the MS/TP network are set to.
<b>MSTP Max Master</b>	To increase MS/TP performance, enter the highest address used on the MS/TP network for a master controller. This number must be less than or equal to 127.
<b>MSTP Max Info Frames</b>	<p>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.</p> <p> <b>TIP</b> Set <b>Max Info Frames</b> to a number in the range 20 to 100 so that the router does not become a bottleneck for traffic being routed from a high-speed network to the slower MS/TP network.</p>
<b>BACnet Network Number</b>	<p>Select:</p> <p><b>Disable Routing</b> if Port S2 is not used.</p> <p><b>Autogenerated</b> to have the network number for Port S2 automatically set to a number equal to ((IP network number + rotary switch address) x 10) + 3.</p> <p><b>Assigned</b> to enter a specific number.</p>
<b>Home Network</b>	This is typically the network that is communicating with the building automation system's application. This sets the BACnet Address of the Device object.

## Modbus tab

If the router will be used with Modbus devices, see the *Modbus Integration Guide* for information on using this tab.

## Security tab

<b>BACnet Firewall</b>	<p>If your BACnet Firewall configuration in the i-Vu® interface did not include the i-Vu® server IP address, thus blocking communication with the i-Vu® server, you can disable the router's BACnet Firewall on the controller setup <b>Security</b> tab.</p> <p><b>NOTE</b> You can enable the BACnet Firewall only in the i-Vu® interface.</p>
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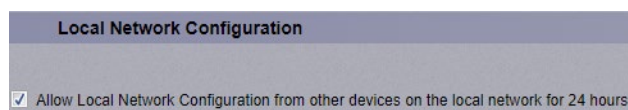
## Local Network tab

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 256) 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.

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**.



### To discover devices on a network

- 1 To address a network of devices, you must first select one controller and set the **IP Address**, **Subnet Mask**, and **Default Gateway** on the **Ports** tab.

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

- 2 On the **Local Network** tab, at the top of the page, verify that the connected controller's **Mode**, **IP Address**, **Subnet Mask**, and **Default Gateway** are accurate.
- 3 Use the following settings to define the devices that you want to discover in the **Local Devices** table.

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


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

**To auto-assign IP addresses to multiple devices at one time**

- 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.

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

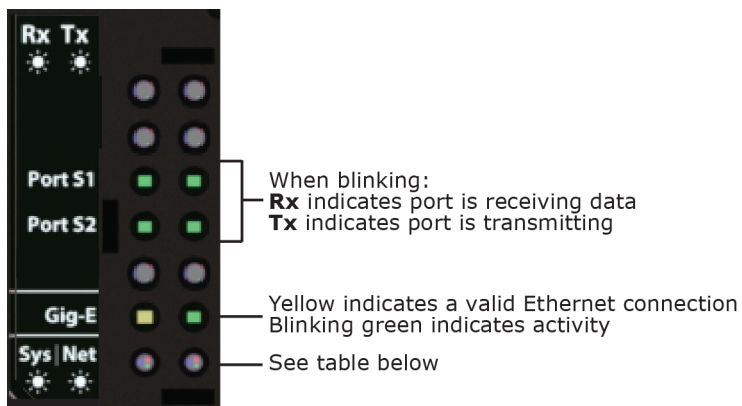
Local Devices table	
<b>Select</b>	Check to select devices for: <ul style="list-style-type: none"> <li>• Changing the Mode</li> <li>• Resolving a Mismatch</li> <li>• Auto-assigning an IP Address</li> </ul> <b>NOTE</b> You cannot select devices with a lock symbol.
<b>MAC</b>	Ethernet MAC address of device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

Local Devices table	
<b>Status</b>	<p>The following are the results of changing <b>Mode</b>, <b>Address</b>, <b>Location</b>, or pressing <b>Blink</b>:</p> <ul style="list-style-type: none"> <li>• <b>Success</b> - Successful operation</li> <li>• <b>No Response</b> - Device is not communicating</li> <li>• <b>Device Locked</b> - Device must be unlocked before you can make any changes using the <b>Local Devices</b> table. You can unlock the XT-LB by pressing the DSC button on the device or by using the i-Vu® application. (See instructions above.)</li> </ul> <p><b>NOTE</b> The status of a device changes to locked 24 hours after unlocking it.</p> <ul style="list-style-type: none"> <li>• <b>Failure</b> - A conflict between the device and the information entered</li> </ul>
<b>Blue dot</b>	<p>A blue dot appears for the most recent device to have the:</p> <ul style="list-style-type: none"> <li>• <b>Blink</b> button clicked in the table</li> <li>• <b>Address</b> or <b>Location</b> entered</li> <li>• DSC button pressed on the device</li> </ul> <p><b>NOTE</b> If the device is not already listed in the table, pressing the DSC button immediately adds it to the table and displays a blue dot.</p> <p> <b>TIP</b> You can build a table of devices in the order that you've pressed the DSC buttons. Clear the table and then press each DSC button in turn. The devices will be listed in the table in the order in which the button was pressed, but only the most recent one will show the blue dot.</p>
<b>Blink</b>	<p>Click the <b>Blink</b> button to prompt the Locator LED to flash for 15 seconds, allowing you to verify the controller's physical location. After flashing, whenever the actuator moves, the LED rotates in the same direction. LED rotation is automatically disabled after 1 hour and can be re-enabled by pressing the <b>Blink</b> button again.</p> <p>At the same time, the <b>Sys</b> and <b>Net</b> LEDs blink white, once per second for 10 seconds, and then stop.</p> <p><b>NOTES</b></p> <ul style="list-style-type: none"> <li>• The blue dot appears when you <b>Blink</b> a device.</li> <li>• You can <b>Blink</b> a locked device.</li> </ul>

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

## Troubleshooting

### LEDs



#### NET (Network Status) Tricolor LED

Color	Pattern	Condition	Message in Module Status	Possible Solutions
Red	On	Ethernet connection problem	No Ethernet Link	<ul style="list-style-type: none"> <li>Connect Ethernet Cable</li> <li>Check other network components</li> </ul>
Red	1 blink	One of the following BACnet/IP (Ethernet) DLL reporting issue: <ul style="list-style-type: none"> <li>Unable to create tasks</li> <li>Unable to open socket for BACnet port</li> </ul>	BACnet/IP error	Cycle power
Red	2 blink	Current default IP address does not match the current rotary switch setting	Default IP address mismatch	<ul style="list-style-type: none"> <li>Use the controller setup <b>Ports</b> tab to set the IP address</li> <li>Cycle power to accept new IP address</li> <li>Change rotary switches to match current default IP address</li> </ul>
Blue	On	One of the following issues: <ul style="list-style-type: none"> <li>Port communication firmware did not load properly</li> <li>Port communication firmware is not running</li> <li>Invalid protocol selected</li> </ul>	ARCNET/MSTP firmware error	<ul style="list-style-type: none"> <li>Change rotary switch to select valid protocol</li> <li>Cycle power</li> </ul>

## NET (Network Status) Tricolor LED

Color	Pattern	Condition	Message in Module Status	Possible Solutions
Blue	1 blink	Invalid address selected for protocol	Invalid address selection for ARCNET/MSTP	Change rotary switch to valid address
Blue	2 blink	Router has same MAC address as another connected device	Duplicate address on ARCNET/MSTP	Change rotary switch to unique address
Blue	3 blink	Router is the only device on the network	No other devices detected on ARCNET/MSTP	<ul style="list-style-type: none"> <li>Check that network cable is connected properly</li> <li>Check that baud rate is correct</li> </ul>
Blue	4 blink	Excessive errors detected over 3 second period	Excessive communication errors on ARCNET/MSTP	<ul style="list-style-type: none"> <li>Check that network cable is connected properly</li> <li>Check that baud rate is correct</li> </ul>
Blue	5 blink	ARCNET traffic overload possibly due to circular router or excessive COVs (change of values)	Event System Error - FPGA RX FIFO full	<ul style="list-style-type: none"> <li>Check the network configuration for a circular route</li> <li>Increase the time between COVs to reduce excessive COV traffic</li> </ul>
Green	On	All enabled networks are functioning properly	No errors	No action required

## SYS (System Status) Tricolor LED

Color	Pattern	Condition	Message in Module Status	Possible Solution
Red	2 blink	Restarting after an abnormal exit	Auto restart delay due to system error on startup	After 5 minute delay has expired, if condition occurs again then cycle power
Red	4 blink	Firmware image is corrupt	Firmware error	Download driver again
Red	Fast blink	Firmware error has caused the firmware to exit and restart	Fatal error detected	No action required
Green	1 blink	No errors	Operational	No action required
Green	2 blink	Download of driver is in progress	Download in progress	No action required
Green	3 blink	BACnet Device ID is not set	Download required	Download the router
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

## SYS (System Status) Tricolor LED

Color	Pattern	Condition	Message In Module Status	Possible Solution
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

## To get a Module Status report

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

- In the i-Vu® application—Right-click the router on the navigation tree, then select **Module Status**.
- In the Field Assistant application—Right-click the router in the navigation tree and select **Module Status**.
- On the controller setup **ModStat** tab—See *To set up the controller through the Service Port* (page 33).

See Module Status field descriptions in the Appendix.

## To get a Device Log

If Carrier Controls System Support instructs you to get the router'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**.

**NOTE** You can click **Device Log Archive** to download a file containing multiple Device Logs to your computer. This also contains any network packet captures that have been run from the *Network Diagnostics - Packet Captures* (page 29) driver page.

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

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If you need the router's serial number when troubleshooting, the number is on:

- A Module Status report (Modstat).
- A laser-etched number and QR code on the circuit board inside the router.
- A sticker on the front with the serial number, MAC address, and a QR code.

See *To get a Module Status report* (page 43).

## To replace the XT-LB's fuse

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

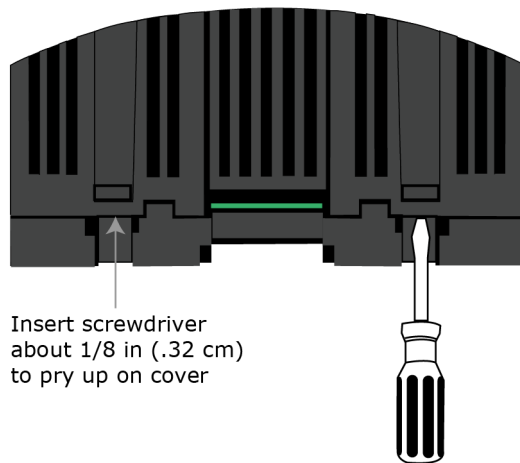
The fuse is a fast acting, 250Vac, 2A, 5mm x 20mm glass fuse that you can purchase from one of the following vendors:

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

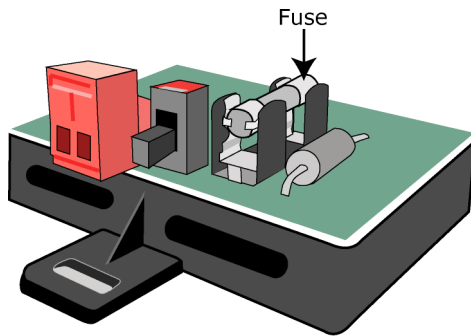
Before replacing the fuse, try to determine why the fuse blew. Check the power wiring polarity of the XT-LB and any other devices that share the power supply. Use the same polarity for all of them.


To replace the fuse:

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



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



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

## 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**.

## Compliance

### FCC Compliance

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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

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**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

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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

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

## Appendix - Module Status field descriptions

Field	Description
Date/Time	Date and time the Modstat was run
CM	The controller's rotary switch address (MAC address)
Model Name	Model Name identifies the Product Type
Device Instance	A unique ID assigned to the controller
Driver built	When the driver was built
Downloaded by	When and where the last download was performed
Data Partition Version	Data Partition identifies the clipping used when the product was manufactured.  <b>NOTE</b> This field will say <b>None</b> except for a Carrier product from the factory. If a Carrier product is subsequently downloaded in the field, then this field will say <b>None</b> .
# 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.
Driver version	The name, version, and date of the driver, as well as all the bundles and versions.
Reset Counters:	The number of times each of the following events have occurred since the last time the controller was commanded to clear the reset counters. See <b>NOTE</b> 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 controller'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 controller if it detects a severe problem with the controller's operating system
System status	Gives the current status of the controller's operation. See <i>LEDs</i> (page 41) for all possible conditions.
Network status	Gives the current status of the controller's networks. See <i>LEDs</i> (page 41) for all possible conditions.
System error message history	High-severity errors since the last memory download. Shows the most recent 10 messages. See <b>NOTE</b> below this table.
Warning message history	Low-severity errors and warning messages since the last memory download. Shows the most recent 10 messages. See <b>NOTE</b> below this table.

Field	Description
Information message history	Information-only messages since the last memory download. Shows the most recent 10 messages. See <b>NOTE</b> below this table.
ARC156 reconfigurations during the last hour	An ARCNET network normally reconfigures itself when a controller is added to or taken off the network. The <b>Total</b> field indicates the number of reconfigurations in the last hour. <b>Initiated by this node</b> indicates the number of reconfigurations initiated by this controller. Typical sources of the problem could be this controller, the controller with the next lower rotary switch address, any controller located on the network between these two controllers, or the wiring between these controllers. An excessive number in these fields indicates a problem with the network.
Core and Base board hardware	Gives the following information about the controller's boards: <ul style="list-style-type: none"> <li>Type and board numbers that are used internally by Carrier.</li> <li>The manufacture date and serial number.</li> </ul>
Number of BACnet Objects	Indicates the number of BACnet objects that were created in the device and the number of those objects that are network visible
Database Partition	<b>Non-Volatile</b> partition (16 MB maximum) contains data that needs to be preserved through a power cycle and archived to flash such as parameters and trend data.  <b>Volatile</b> partition (6 MB maximum) contains data that does not need to be preserved through a power cycle such as status values that are calculated during runtime.
IP Networks - BBMDs	Shows the following information for each active IP network:  <b>BBMD Active</b> shows whether the BACnet Broadcast Management Device is currently active (1) or inactive (0).  <b>BBMD Entries</b> —the number of entries in the BBMD table (500 maximum).  <b>FDT Entries</b> —the number of entries in the Foreign Device Table (500 maximum).
Third party integration points	Shows number of points used.
Network Information	The various network addresses for the controller. The <b>Current</b> and <b>Assigned</b> addresses will be the same unless the <b>Enable IP configuration changeover</b> on the <b>BACnet Router Properties</b> page is being implemented.
Statistics and Network Activity	Shows network communication statistics to assist with troubleshooting. See <i>Network Diagnostics - Statistics</i> (page 27) for more information.
Route Information Port Number	BACnet networks that a router is currently routing traffic to. The list changes as BACnet routers are added or removed from the system.

**NOTE** If you want to clear the Reset counters and the three message history fields, click the **Clear Counts/Logs** button on the controller's **Properties** page in the i-Vu® application or in the controller setup **Device** tab.

## 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	Local Network tab	Added	X-PM-DD-J
7/12/24	Specifications	Updated memory spec	X-PM-DD-J
	Device tab	Added Core Dump Download	X-AE-TG-E
7/14/23	Driver	Added Disable Eth1 Port	X-TS-RB-R-RB
	Device tab	Added Network Time Protocol and Network Factory Defaults rows	X-D
	All	Changed controller to router	C-D
6/9/22	Critical Product Announcement	New topic	X-PM-DD-E-BM
	Wiring for communications	Changed RS485 port to EIA-485	X-D
	Compliance > CE and UKCA Compliance	Added UKCA compliance	X-PM-AB-R-BH
	Specifications		
	Adjusting the XT-LB driver properties > Device	Added Local Broadcaster and Global Broadcaster options in Controller Clock > Time Synchronization recipients	X-D
	To set up BACnet Broadcast Management Devices (BBMDs)	Added .bbmd and .text as allowable file extensions, removed .bdt-specific instructions	X-TS-OC-O
1/25/22	Specifications	Updated EU Compliance	X-PM-BM-E
	Specifications	Added Maximum number of BACnet objects	C-D
9/20/21	Specifications	Changed Real time clock specification to "up to 3 days" from "at least 3 days". Changed EU RoHS compliance code.	X-PM-BM-O
6/11/21	Specifications	Added statement that Service Port connects through a local connection to a computer or connects to the TruVu™ ET Display	X-PM-JD-E
	What is the XT-LB?	Added statement that Ethernet Service Port connects locally to controller setup pages and the TruVu™ ET Display	
	To communicate through the BACnet/IP Service Port network	Removed statement that you can access your network using a touchscreen connected to the Service Port. Updated procedure for connecting to BACnet/IP Service Port for i-Vu® v8.0 interface	X-PM-BM-E
2/18/21	Configuring BACnet Device Instance and network number	Changed BACnet Device Instance Number formula to (IP network number x 100) + rotary switch address	C-TS-OC-E
	Specifications	Changed Real Time Clock spec to "at least 3 days" from "up to 3 days"	X-PM-BM-E
4/22/20	Wiring for communications	Port S1/S2 baud rate for Modbus changed from 1.2 to 115.2 kbps to 9.6 to 115.2 kbps	X-D
	To set up the controller through the Service Port > BACnet tab	Added autobaud information.	X-PM-KC-O
	Addressing the XT-LB > To set the Port S2 address and baud rate	Added autobaud information.	
	Addressing the XT-LB > To set the Port S1 address and baud rate	Added autobaud information.	
	Addressing the XT-LB > To set up autobaud	New topic	
	To set up the controller through the Service Port > Device tab	Added Data Backup and Restore.	
	To communicate through the BACnet/IP Service Port network	New topic	

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

Date	Topic	Change description	Code*
	To set up the controller through the Service Port	Added ability to access i-Vu® application or a touchscreen device through BACnet/IP Service Port. Corrected the static IP address settings.	X-D
	What is the XT-LB?	Added BACnet/IP Service Port to the ports table.	
	To get the XT-LB's serial number	A sticker is on the top of the controller and there is a laser-etched number and QR code on the inside circuit board.	
10/1/19	Configuring BACnet Device Instance and network number	Changed Port S1 MSTP MAC Address and Port S1 ARCNET Address from fixed to user configurable	X-PM-KC-O
	Specifications	Updated BTL to Revision 14	
4/12/19	What is the XT-LB?	Added Modbus to the ports table.	X-D
	Specifications To mount the XT-LB	Changed Depth dimension from 7.09 cm to 5.31 cm.	
	Configuring BACnet Device Instance and network number	New topics	
	To set up BACnet Broadcast Management Devices (BBMDs)		
	Wiring for communications	Added "NOTE 4 is for future use" to footnote 1 below table.	
	Driver	Added that you can add, update, or delete screen files for an Equipment Touch. Added description of TouchScreen Control and Network Microblocks fields.	
	BACnet firewall	Changed "controller from receiving" to "controller from responding to".	
	Network Diagnostics - Statistics	Changed names of Trend links at the bottom of each section. Added Latency under Port S1 Statistics	
10/2/18	Entire document	Major changes due to: - The addition of Modbus - Controller label changes - New and revised controller setup pages - Driver pages revisions	X-D
8/24/18	Driver	In description of "Number of integration points requested", removed "non-BACnet" from first line.	X-TS-TS-E
8/1/18	Specifications	Added Modbus functionality to several specifications.	X-D
	Wiring for communications	Added Modbus TCP/IP to Gig-E port and Modbus Serial to port S1 or S2.	
	BACnet tab Modbus tab	New topics.	
1/11/18	To set the ARC/MSTP port address and baud rate	Correction - default address for ARCNET is 254.	C-TS-CI-E

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