# TruVu™ Isolated Network Router (part no. TV-ISO-E2)

## Installation and Start-up Guide

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

# Contents

# What is the TruVu™ Network Isolator (part no. TV-ISO-E2)?

The TruVu™ Isolated Network Router (part no. TV-ISO-E2) with drv_gen5 driver:

- Provides BACnet routing between any supported BACnet communication types.

- Serves as a BACnet Broadcast Management Device (BBMD) for a BACnet/IP network connected to the Primary Port.

- Supports Foreign Device Registration (FDR).

- Supports DHCP IP addressing on the Isolated Port.

- 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® v9.0 or later system.



The TV-ISO-E2 has 4 physical BACnet communication ports:

| Port | Port type | For routing this type of communication... | At... |
|------|-----------|-------------------------------------------|-------|
| Primary | 10/100 Mbps Ethernet | BACnet/IP<br>BACnet/IPv6<br>BACnet/Ethernet<br>BACnet/SC | 10, 100 Mbps |
| Isolated | 10/100 Mbps Ethernet | BACnet/IP | 10, 100 Mbps |
| S1 | High-speed EIA-485 | BACnet/MSTP | 9.6 to 115.2 Kbps |
| S2 | High-speed EIA-485 | BACnet/MSTP | 9.6 to 115.2 Kbps |
| Service Port | USB | BACnet/IP Service Port | |

Router (part no. TV-ISO-E2)
Installation and Start-up Guide

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1

# Specifications

| | |
|---|---|
| Driver | drv_gen5_< version > |
| Power | 24 VAC +/- 10%, 50-60 Hz, 50 VA<br>24 VDC +/- 10%, 18 W |
| Primary Port | 10/100 BaseT, full duplex, Ethernet port |
| Isolated Port | 10/100 BaseT, full duplex, Ethernet port<br>No IP connectivity to Primary port. Only BACnet packets are routed between ports. |
| Port S1 | For communication with a BACnet MS/TP network at 9600 to 115200 bps.<br>This port's **End of Net** termination can be set to **Yes** to terminate the network segment. |
| Port S2 | For communication with a BACnet MS/TP network at 9600 to 115200 bps.<br>This port's **End of Net** termination can be set to **Yes** to terminate the network segment. |
| Service Port | USB 2.0 host port for setting up the router and troubleshooting through a local connection to a computer, connecting to the i-Vu interface, or the Carrier® wireless service adapter. |
| USB Communication port | For future use. |
| Microprocessor | 32-bit ARM Cortex-A8, 600MHz, processor with multi-level cache memory |
| Memory | 8 GBs eMMC Flash memory and 512 MB DDR3 DRAM (120 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. |
| 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, 3A, 5mm x 20mm glass fuse.<br>The power and network ports comply with the EMC requirements EN50491-5-2.<br>⚠️ **CAUTION**  To protect against large electrical surges on serial EIA-485 networks, place a PROT485 at each place wire enters or exits the building. |

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

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2

| LED status indicators | • Tricolor **NET** LED to show network status |
|---|---|
| | • Tricolor **SYS** LED to show system status |
| | • **POWER** LED |
| | • **S1 EON** LED |
| | • **S2 EON** LED |
| | • A **TX** (Transmit) and **RX** (Receive) LED for the following ports: |
| |     ○ Port S1 |
| |     ○ Port S2 |
| | See *LEDs*. |
| Environmental operating range | -40 to 158°F (-40 to 70°C), 10-95% relative humidity, non-condensing |
| | The TV-ISO-E2 is suitable for installation inside or outside the building envelope. |
| | It should be placed in a UL Listed enclosure. If installed outside, the enclosure must be suitable for the environmental conditions |
| Physical | Fire-retardant plastic ABS, UL94-5VA |
| Terminal blocks and connectors | Screw-type terminal blocks. 0.2 in (5.08 mm) pitch connectors |
| Mounting | 35mm DIN rail mounting or screw mounting |
| Overall dimensions | A: 5.51 in. (14 cm)<br>D: 5.88 in. (14.93 cm)<br>E: 4.41 in (11.20 cm)<br>Depth: 2.01 in. (5.11 cm) |  |
| Screw mounting dimensions | B: 3.00 in. (7.62 cm)<br>C: 5.29 in. (13.44 cm) | |
| Weight | 0.75 lb (0.3402 kg) |
| BACnet Support | Conforms to the BACnet Router (B-RTR) and BACnet Broadcast Management Device (B-BBMD) Standard Device Profiles as defined in ANSI/ASHRAE Standard 135-2016 (BACnet) Annex L, Protocol Revision 19. |
| Compliance | United States of America:<br>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: $C\!E$ Mark, UK: UKCA
EN50491-5-2:2009; Part 5-2: EMC requirements for HBES/BACS used in
residential, commercial and light industry environment
RoHS Compliant: 2015/863/EU
REACH Compliant

Australia and New Zealand:

C-Tick Mark, AS/NZS 61000-6-3

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

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4

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# To mount the TV-ISO-E2

The TV-ISO-E2 can be mounted on a DIN rail or screwed to a surface.

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

### DIN rail mount

**1**   In the trough on the back of thedevice , hook the edge of the DIN rail under the device's two mounting flanges.

**2**   Push the device toward the DIN rail until you hear it click and the spring-loaded latch secures the device to the DIN rail.

### Screw Mount

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

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

| Overall dimensions | A: | | 5.51 in. (14 cm) |
|---|---|---|---|
| | D: | | 5.88 in. (14.93 cm) |
| | E: | Depth: | 4.41 in (11.20 cm) |
| | | | 2.01 in. (5.11 cm) |
| Screw mounting dimensions | B: | | 3.00 in. (7.62 cm) |
| | C: | | 5.29 in. (13.44 cm) |

Router (part no. TV-ISO-E2)
Installation and Start-up Guide

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5

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## Wiring for power

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

**CAUTIONS**

- The TV-ISO-E2 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 same power supply only for Carrier controllers.

## To wire for power

**1** Remove power from the power supply.

**2** Pull the red screw terminal connector from the device's power terminals labeled **24 Vac/Vdc (+/-)**.

**3** Connect the power supply's wires to the red screw terminal connector.

**4** 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).

**5** Apply power to the power supply.

**6** Measure the voltage at the red screw terminal connector to verify that the voltage is within the operating range of 20.4 to 28.8 Vac or 21.6 to 28.8 Vdc.

**7** Insert the red screw terminal connector into the device's power terminals.

**8** 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.

**9** Verify that the ⏻ LED on top of the device is on.

**10** Measure the voltage at the red screw terminal connector to verify that the voltage is within the operating range of 20.4 to 28.8 Vac or 21.6 to 28.8 Vdc.

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Installation and Start-up Guide

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6

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## Connecting to the TV-ISO-E2 through the USB Service Port

You can connect the TV-ISO-E2 to a computer using a wireless or cable connection to the Service Port. This allows you to communicate with the TV-ISO-E2 through a web browser to:

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

You can set a site level **Device Password** to restrict access to the Service Port controller setup pages of a device with a drv_gen5 driver. You can set it in SiteBuilder in the site dialog box. You can also set it in the i-Vu® interface, at the site level on the **Network**  tree > **Properties** page.

**To connect the TV-ISO-E2 to a computer using the Carrier wireless service adapter:**

**1** Insert the Carrier® wireless service adapter (part# USB-W) into the device's USB Service Port to communicate with a Wi-Fi-compatible computer.

**2** Open your computer's wireless network display to view your available wireless networks.

   **NOTE**   The TV-ISO-E2 only supports the 5 GHz band and not the 2.4 GHz band.

**3** Connect to the wireless network using the network SSID and password that are printed on the Carrier® wireless service adapter.

**4** Open a web browser on the computer and navigate to **https:**//local.access or **https**://169.254.1.1 to see the controller setup pages.

**To connect the TV-ISO-E2 to a computer using a cable:**

**1** Connect a USB-A cable from a computer to the device 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 device 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 device.

Router (part no. TV-ISO-E2)  
Installation and Start-up Guide

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8

## Connecting to the device through the Primary Port

Using a computer and an Ethernet cable, you can communicate with the TV-ISO-E2 through a web browser to:

- Address and configure controllers

- View/change device and network settings. Changes take effect immediately after clicking **Restart ⟳** .
- View the device's Modstat
- Troubleshoot

You can set a site level **Device Password** to restrict access to the Service Port controller setup pages of a device with a drv_gen5 driver. You can set it in SiteBuilder in the site dialog box. You can also set it in the i-Vu® interface, at the site level on the Network 🖧 tree > **Properties** page.

**To access the controller setup pages through the Primary Port**

**1** In the i-Vu® interface, on the **Network** 🖧 tree, select the TV-ISO-E2.

**2** Navigate to the TV-ISO-E2's **Driver** > **Properties** > **Advanced** > **Security** tab.

**3** Ensure **Disable Service Ports** is unchecked.

**4** Enable **Allow Configuration on Primary Port** .

**5** On the **Network** 🖧 tree > **Properties** page, select the site level of the TV-ISO-E2.

**6** Set the **Device Password**, which will be required to access the setup pages.

   **NOTE** You can also set it in SiteBuilder in the site dialog box.

**7** Connect an Ethernet cable from a computer to the same IP subnet that the i-Vu® port of the TV-ISO-E2 is connected to.

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

**8** Turn off the computer's Wi-Fi, if it is on.

**9** If your computer uses a static IP address, use settings appropriate for the building network.

**10** If it uses a DHCP address, leave the address as it is.

**11** Open a web browser on the computer.

**12** Navigate to **https**://<router ip address>.

   **NOTE** The IP address is preset in the device for interfacing with the Ethernet network.

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

## Addressing through the Service Port

The TV-ISO-E2 is addressed using the device setup pages. The **Local Network** tab allows you to discover all devices on a single network and configure them from that page.

You can connect the TV-ISO-E2 to a computer using either the Carrier® wireless service adapter or a USB cable.

**NOTE** You cannot access the Service Port by plugging an Ethernet cable into Eth0 or Eth1.

## To set the Primary Port address

### To set an IPv4 address

You must define the TV-ISO-E2's IPv4 addressing (IPv4 address and default gateway) in the Service Port controller setup pages so that the device can communicate with the i-Vu® Server on the IPv4 network.

Use one of the IPv4 addressing schemes described below with the instructions that follow.

| Use a... | If... |
|---|---|
| **Custom Static** from your network administrator | You have a permanent IP address which does not change and is usually obtained from the network administrator. |
| **DHCP** generated by a DHCP server | The IP network uses a DHCP server for IP addressing |

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

#### To set a custom IP address

**1** Obtain the IP address, subnet mask, and default gateway address for the device from the facility network administrator.

**2** On the **Connections** page, under the **Primary Port** tab > **IP Addressing** > **IPv4**, select **Custom Static** in the drop-down list for **Address Mode**.

**3** Enter the **IP Address**, **Subnet Mask**, and **Default Gateway** addresses that the network administrator gave you.

**4** Click  .

Router (part no. TV-ISO-E2)
Installation and Start-up Guide

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10

# To set an IPv6 address

You must define the TV-ISO-E2's IPv6 addressing (IPv6 address and default gateway) in the Service Port controller setup pages so that the device can communicate with the i-Vu® Server on the IPv6 network.

| Use a... | If... |
|---|---|
| **Custom Static**<br>from your network administrator | You have a permanent IP address which does not change and is usually obtained from the network administrator. |
| **DHCP**<br>generated by a DHCP server | The IP network uses a DHCP server for IP addressing |
| **Link-Local** | This is an autogenerated private IP address used for local network segment communications. Segment starts with FE80. |
| **SLAAC** | Used for Global Scope addresssing and multicasting. This is defined by the building administrator. |

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

## To set a custom IP address

**1** Obtain the IP address, multicast address, and default gateway address for the device from the facility network administrator.

**2** On the **Connections** page, under the **Primary Port** tab > **IP Addressing** > **IPv6**, select **Custom Static** in the drop-down list for **Address Mode**.

**3** Enter the **IP Address**, **Prefix Length**, and **Default Gateway** addresses that the network administrator gave you.

**4** Click ![Restart ⟳] .

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Installation and Start-up Guide

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11

# To set the Isolated Port address

The Isolated Port is not discoverable through normal IP communications from the BAS port. It is not possible to ping a device on the isolated network from the main network.

**NOTE**   The Isolated Port address should not be set as the home network because certain BACnet functionalities are not enabled.

## To configure the IP address and DHCP server

**1**   On the **Connections** tab, under **Isolated Port** > **IP Addressing** > **IPv4**, enter the **Address** and **Subnet Mask.**

**2**   The DHCP server is not enabled by default. To enable, select the DHCP Server drop down arrow and click **Enable**.

**3**   Once enabled, the **Start Address**, **End Address**, and **Lease Time** fields will appear.

**NOTES**

- The IP address of the device on the **Isolated Port** cannot fall between the start and end addresses that the device issues.

- The configured DHCP **Start Address** issued by the device must be less than the **End Address**.

- The DHCP server on the Isolated Port will periodically attempt to detect other DHCP servers on the same port and will no longer issue a DHCP address if another DHCP server is detected. An error will display when invalid configuration is detected.

# 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.

**1**   On the **Connections** > **Port S1** tab, select **BACnet MSTP** from the droplist.

**2**   Type the address in the **MAC Address** field. The address must be in the range of 0 to 127.

**3**   Select the **Baud Rate**. The default is 76,800 bps.

**4**   Click the **Restart** button [Restart ↻].

# To set the Port S2 address and baud rate

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

**2**    Type the address in the **MAC Address** field. The address must be in the range of 0 to 127.

**3**    Select the **Baud Rate**. The default is 76,800 bps.

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

**4**    Click .

## To set up the Local Network

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

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

**1**   Connect one   device on the IP network to the Service port.

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

**2**   Browse to the Service Port address (**https:**//local.access or **https**://169.254.1.1).

**3**   On the **Connections** > **Primary Port** tab, select the **Address Mode**. For custom static, set the device's **IP Address** and **Subnet Mask**.

**NOTE**   The other devices that you configure inherit this device's subnet mask and default gateway.

**4**   On the **Connections > Local Network** tab, click the **Clear All** button to erase any pre-existing data in the **Local Devices** table.

**5**   In the **Local Devices** table, click the **Clear All** to erase any pre-existing data

**6**   Click **Discover**. The table finds and lists the first 256 unconfigured devices on the same subnet. The devices displayed in the table are sorted by MAC address, but are adjustable through the **Sort** column.

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

**7**   To configure devices:

○   One at a time - Enter the **IP Address** and **Location** or name (optional) of each device you wish to configure. When you enter the IP address, that device inherits the original device's subnet mask and default gateway.

○   Multiple devices simultaneously - **Select** the devices you want to address, enter the starting IP address in the field under the **Address** heading, and then click **Assign**. The selected devices are automatically assigned sequential IP addresses.

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

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

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

You will need physical access to each device so that you can press the DSC button on the bottom right of the TV-ISO-E2. This allows you to identify the device on the controller setup **Local Network** page.

**1**   Connect to the Service Port of one TruVu™ IP device on the network. Connection can be wireless or through USB.

**2**   On the **Connections** > **Primary Port** tab, select the **Address Mode**. For custom static, set the device's **IP Address** and **Subnet Mask**.

   **NOTE**   The other devices that you configure inherit this device's subnet mask and default gateway.

**3**   On the **Connections > Local Network** tab, click the **Clear All** button to erase any pre-existing data in the **Local Devices** table.

**4**   On the controller you want to address, press the DSC button on the bottom right. When pressed, a row appears in the **Local Devices** table on the **Local Network** tab. The row has a blue dot to indicate which controller has just had the button pressed.

**5**   In the row for the identified controller, enter the **Address** and **Location** (optional).

**6**   Repeat steps 3 and 4 for each controller that you want to address.

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

**NOTE**   To physically identify a device that is displayed on the **Local Devices** table, you can click the **Blink** button, which lights up the **Locator LED** in the actuator release button.

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

- Two technicians can work together if they are communicating throughout the process. The first technician physically travels around the building to each controller, tells his co-worker exactly where he is, and then presses the DSC button. The second technician, who is sitting at a computer connected to the controller, watches for the blue dot to show up on the **Local Devices** table on the **Local Network** tab, where he can enter the appropriate addressing and identifying information.

- One technician alone can address the controllers on a mobile device showing the Local Network page by plugging the Carrier® wireless service adapter into a controller's Service Port. Then, with the computer, move to each controller within 100 ft. of the adapter. Pressing the DSC button on the controller displays a blue dot in the table where the addressing information can be entered.

Router (part no. TV-ISO-E2)
Installation and Start-up Guide

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15

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# Wiring for communications

The TV-ISO-E2 communicates on the following ports.

| Port | Protocol | Port type(s) | Speed(s) |
|---|---|---|---|
| **Primary** | BACnet/IP<br>BACnet/IPv6<br>BACnet/Ethernet<br>BACnet/SC | Ethernet | 10, 100 Mbps |
| **Isolated** | BACnet/IP | Ethernet | 10, 100 Mbps |
| **Port S1** [1]<br>or<br>**Port S2** | BACnet/MSTP | EIA-485 | 9.6 to 115.2 Kbps |
| **Service Port**[2] | USB 2.0 | USB | |
| **USB Port** | USB2.0 | USB | |

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

[2]  See *Connecting to the device through the USB Service Port*.

Router (part no. TV-ISO-E2)
Installation and Start-up Guide

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16

# Wiring specifications

| For... | Use... | Maximum Length |
|---|---|---|
| Ethernet - not daisy chained | Cat5e or higher Ethernet cable | 328 feet (100 meters) |
| Ethernet - a daisy chain configuration | Cat5e or higher Ethernet cable | 164 feet (50 meters) |
| MS/TP | 22 AWG, low-capacitance, twisted, stranded, shielded copper wire | 2000 feet (610 meters) |

[1]  For details, see the *Open Controller Network Wiring Guide*.

![WARNING] **WARNING**

- Do not apply line voltage (mains voltage) to the device's ports and terminals.

- Do not exceed the minimum bend radius of the Cat5e or Cat6e Ethernet cable. Refer to Ethernet cable manufacturer specifications for minimum bend radius.

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

Carrier Proprietary and Confidential

17

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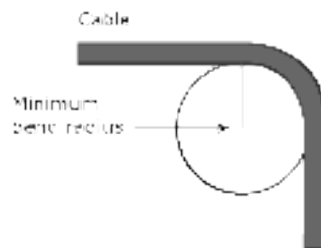
## To connect the TV-ISO-E2 to the Ethernet

Connect an Ethernet cable to the Primary port.

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

## To wire to a BACnet MS/TP network

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

1   If the TV-ISO-E2 is at either end of a network segment, set the **End of Network** termination to **Yes** on the **Connections > Port S1** or **Connections > Port S1** tab.

2   Remove power from the TV-ISO-E2 .

3   Check the communications wiring for shorts and grounds.

4   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.

5   Restore power to the device.

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

    **NOTE** This step requires that you have set up the device in SiteBuilder and downloaded it from the i-Vu® interface.

## Downloading the TV-ISO-E2

Download to send the following items to the TV-ISO-E2:

- drv_gen5_< version >. driverx (See **NOTES** below.)

- Editable properties

**NOTES**

- The driver must be in <system_name>**\drivers**. The exact location of the system directory depends on where you have saved it. It is typically under **I-Vux.x\programdata\systems.**

- To verify that you have the driver's latest version, go to the Carrier® Partner Community website. Compare the latest version to the TV-ISO-E2's driver in SiteBuilder.

- If you change any of the above items or the TV-ISO-E2's address after the initial download, you must download again. The first download takes longer than subsequent downloads.

## To download from the i-Vu® interface

**1** On the i-Vu® **Network** tree, select the TV-ISO-E2.

**2** Click **Downloads**.

**3** Do one of the following:

  ○ If the device is in the Downloads list, go to step 4.

  ○ If the device is not in the list:
    a. Click **Add**.
    b. In the pop-up, select the device.
    c. Select **All Content**.
    d. Click **Add**.
    e. Click **Close**.

**4** Select the device in the Downloads list.

**5** Click **Start**.

**NOTES**

- If the download fails, locate, and resolve the problem, then retry the download.

- You can also download from the **Devices** page.

# To stage a driver for later installation

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

1    On the i-Vu® Network  tree, choose a network and go to the **Devices** > **Drivers** tab.

2    Select the TV-ISO-E2 and click  .

3    Check **Stage driver in controller**.

4    Do one of the following:

   ○    If the driver is in the **Driver Version** drop-down list:

      a.   Select the driver.
      b.   Click **Accept**.

   ○    If the driver is not in the list:

      a. Click **Add**.
      b. Browse to select the driver.
      c. Click **Open**.
      d. Click **Continue**.
      e. Click **Close**.
      f.   Click **Close** again.

5    On the **Devices** > **Drivers** tab, click **Start Staging**.

6    Once you are ready to install the staged driver to the controller, click **Start Installation**.

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

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20

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

The driver properties pages are the same controller setup interface that you access by connecting to the Service Port.

**NOTES**

- The **Home Network** portion of the **Connections** > **Device** tab is available only by connecting to the Service Port and not through the driver properties.

- Some properties, such as the home network settings, cannot be changed through the i-Vu® driver interface. This prevents losing communication to the device. You can change those settings by connecting directly through the Service Port.

After you download the driver to the TV-ISO-E2, you may want to change the driver's properties in the i-Vu® interface to suit your application.

1   On the i-Vu® **Network** tree, click ▷ to the left of your TV-ISO-E2.

2   Click **Driver** to open the driver properties, which are detailed below.

## Home tabs

### Dashboard tab

This page shows general controller information.

| Controller Status | |
| --- | --- |
| **BACnet System Status** | Current state of the controller |
| **Sys\|Net** | Current connection status |

| Performance | |
| --- | --- |
| **CPU Load** | Percentage of CPU used |
| **Memory Load** | Percentage of long-term memory used |

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

## Diagnostics tab

This page allows you to:

- Access additional diagnostic tools with assistance from Carrier® Technical Support.

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

- Download log files

- Blink the device's Locator LED

- Capture network communication and then download the capture file for troubleshooting

- View network diagnostics

| Technical Support Tools | Enable the toggle switch to view the Challenge key. Send the displayed **Challenge key** to the Carrier® Technical Support representative who will provide an **Activation Key** for you to enter. |
| --- | --- |
| | Additional tools will be displayed to help Carrier® Technical Support troubleshoot issues. Enabling these tools has security implications, therefore they are automatically disabled after 2 hours. |
| Logs | - **Retrieve all** — Downloads all logs in a zip file to your computer<br>- **Specific log** — Allows you to choose to download the application logs (by date) or the system logs<br>- **Delete all** — Deletes all logs, including current logs |
| Locator LED | To physically identify a device that is displayed on the Local Devices table, click **Blink** to light the **Locator LED** in the actuator release button. |

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

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Installation and Start-up Guide

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23

# Connections tabs

Use these pages to set up communication with the TV-ISO-E2. The fields are editable when the setup pages are accessed by connecting directly to the Service Port. Some of those fields will not be editable when you access them through the i-Vu® system driver properties.

## Device tab

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

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

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

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

| Identification | |
|---|---|
| **Device Name** | Unique ID assigned to the controller. |
| **Location** | You can enter an intuitive location for the device in the i-Vu® interface. This will be the device's display name when discovered through **Find Devices**. |
| **Description** | You can enter an intuitive description for the device in the i-Vu® interface. |

| APDU | |
|---|---|

The following three fields refer to all networks over which the TV-ISO-E2 communicates.

| | |
|---|---|
| **APDU Timeout** | How many milliseconds the device waits before resending a message if no response is received. |
| **APDU Segment Timeout** | How many milliseconds the device waits before resending a message segment if no response is received. |
| **Number of APDU Retries** | The number of times the device resends a message. |

# Primary port

## *Primary Port using BACnet/IPv4*

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

## IP Addressing

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

**DNS**

| Edit Servers | DNS servers are required if Internet host name resolution for BBMD, NTP, or BACnet/SC are needed. For DHCP application, enter in the DNS name servers provided by the building network administrator. |
|---|---|
| | • To add a server, click **Add** and then enter the **Name Server Address** field below. |
| | • To delete a server in the table, select it in the list and click **Delete**. |

## Protocols

| Primary BACnet/IP | |
|---|---|
| Home network<br>or<br>Set as home | This is the network that communicates with the i-Vu® application. This sets the BACnet Address of the Device Object. To set this port as the home network, activate the toggle switch and click **Set as home**. To disable the port from use, deactivate the toggle switch. |
| Auto Generate Network Number | If checked, network number is automatically set to 2400.<br><br>Uncheck to set the network number manually using **Custom Static Address Mode**. |
| Network Number | Specify a number for the BACnet/IP network or set to 0 if the port is not used.<br><br>The network number is 0 by default. Filled in automatically if **Autogenerate Network Number** is checked.<br><br>**NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder. |
| UDP Port | The port that the TV-ISO-E2 will use for BACnet communication.<br><br>If the TV-ISO-E2 has two BACnet/IP networks communicating on the Gig-E port, confirm that the home network interface has the port number set to what the i-Vu® application will use for BACnet communication. |
| **Primary IPv4 Statistics** | |
| Reset statistics | Resets values to 0, which then resume accumulating. |
| Import BBMD<br>Export BBMD | If this network interface will be used to access BBMDs, set the BBMD tables by using the BBMD buttons.<br><br>• **Import BBMD**—Import BBMD tables in the specified format. See "Setting up BACnet Broadcast Management Devices (BBMDs)" in SiteBuilder or i-Vu® Help.<br><br>• **Export BBMD**—Export the BBMD table that is in the controller to use for storage, viewing, or troubleshooting. |

| Secondary BACnet/IP | Enable for a secondary BACnet/IP network. |
|---|---|
| Home network<br>or<br>Set as home | This is the network that communicates with the i-Vu® application. This sets the BACnet Address of the Device Object. To set this port as the home network, activate the toggle switch and click **Set as home**. To disable the port from use, deactivate the toggle switch. |

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Installation and Start-up Guide

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26

| | |
|---|---|
| **Network Number** | The network number for the secondary BACnet/IP network. This number must be unique for the system. |
| | **NOTE**   When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder. |
| **UDP Port** | The port that the TV-ISO-E2 will use for BACnet communication. |
| | If the TV-ISO-E2 has two BACnet/IP networks communicating on the Gig-E port, confirm that the home network interface has the port number set to what the i-Vu® application will use for BACnet communication. |
| | **NOTE**   This UDP Port number must be different from the one used for the primary BACnet/IP port. |

**Secondary IPv4 Statistics**

| | |
|---|---|
| **Import BBMD** **Export BBMD** | If this network interface will be used to access BBMDs, set the BBMD tables by using the BBMD buttons. |
| | • **Import BBMD**—Import BBMD tables in the specified format. See "Setting up BACnet Broadcast Management Devices (BBMDs)" in SiteBuilder or i-Vu® Help. |
| | • **Export BBMD**—Export the BBMD table that is in the controller to use for storage, viewing, or troubleshooting. |

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**Installation and** Start-up Guide

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27

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*Primary Port using BACnet/IPv6*

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

## IP Addressing

| **IPv6** | |
|---|---|
| **Address Mode** | Select the type of addressing the device is to use.<br><br>Select **Custom Static** if you have a permanent IP address which does not change and is usually obtained from the network administrator.<br><br>Select **DHCP** if the network uses a DHCP server for IP addressing.<br><br>Select **Link-Local** to autogenerate a private IP address for local network segment communications. Segments start with FE80.<br><br>Select **SLAAC** for Global Scope addressing and multicasting. This is defined by the building network administrator. |
| **Address** | Displays the unique address of the device, if assigned. Editable only if using **Custom Static** addressing. |
| **Prefix Length** | Value set between 10 and 128 to define the number of leftmost bits identifying the network portion of the address. |
| **Default Gateway** | Displays the **Default Gateway** of the device, if assigned. Editable only if using Custom Static addressing. |

| **DNS** | |
|---|---|
| **Edit Servers** | DNS servers are required if Internet host name resolution for BBMD, NTP, or BACnet/SC are needed. For DHCP application, enter in the DNS name servers provided by the building network administrator.<br><br>• To add a server, click **Add** and then enter the **Name Server Address** field below.<br><br>• To delete a server in the table, select it in the list and click **Delete**. |

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

## Protocols

| BACnet/IPv6 | |
| --- | --- |
| **Home network** <br> **or** <br> **Set as home** | This is the network that communicates with the i-Vu® application. This sets the BACnet Address of the Device Object. To set this port as the home network, activate the toggle switch and click **Set as home**. To disable the port from use, deactivate the toggle switch. |
| **Network Number** | The network number for the BACnet/IPv6 network. This number must be unique for the system. <br><br> **NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder. |
| **UDP Port** | The port that the TV-ISO-E2 will use for BACnet communication. |
| **Multicast Address** | Used for broadcasts on an Ipv6 network using SLAAC. Defined by the building network administrator. |
| **Multicast UDP Port** | The port that the TV-ISO-E2 will use for BACnet communication. |
| **IPv6 Statistics** | |
| **Import BBMD** <br> **Export BBMD** | If this network interface will be used to access BBMDs, set the BBMD tables by using the BBMD buttons. <br><br> • **Import BBMD**—Import BBMD tables in the specified format. See "Setting up BACnet Broadcast Management Devices (BBMDs)" in SiteBuilder or i-Vu® Help. <br><br> • **Export BBMD**—Export the BBMD table that is in the controller to use for storage, viewing, or troubleshooting. |

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**Installation and** Start-up Guide

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29

## *Primary Port using BACnet/SC*

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

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

### IP Addressing

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

| DNS | |
| --- | --- |
| **Edit Servers** | DNS servers are required if Internet host name resolution for BBMD, NTP, or BACnet/SC are needed. For DHCP application, enter in the DNS name servers provided by the building network administrator. |
| | • To add a server, click **Add** and then enter the **Name Server Address** field below. |
| | • To delete a server in the table, select it in the list and click **Delete**. |

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Installation and Start-up Guide

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30

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| IPv6 | |
|---|---|
| **Address Mode** | Select the type of addressing the device is to use. |
| | Select **Custom Static** if you have a permanent IP address which does not change and is usually obtained from the network administrator. |
| | Select **DHCP** if the network uses a DHCP server for IP addressing. |
| | Select **Link-Local** to autogenerate a private IP address for local network segment communications. Segments start with FE80. |
| | Select **SLAAC** for Global Scope addressing and multicasting. This is defined by the building network administrator. |
| **Address** | Displays the unique address of the device, if assigned. Editable only if using **Custom Static** addressing. |
| **Prefix Length** | Value set between 10 and 128 to define the number of leftmost bits identifying the network portion of the address. |
| **Default Gateway** | Displays the Default Gateway of the device, if assigned. Editable only if using **Custom Static** addressing. |

| DNS | |
|---|---|
| **Edit Servers** | DNS servers are required if Internet host name resolution for BBMD, NTP, or BACnet/SC are needed. For DHCP application, enter in the DNS name servers provided by the building network administrator. |
| | • To add a server, click **Add** and then enter the **Name Server Address** field below. |
| | • To delete a server in the table, select it in the list and click **Delete**. |

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

## Protocols

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

| | |
|---|---|
| **Address** | The Virtual MAC address of the device on the BACnet/SC network.   It is the hex representation of the Device Instance found on the **Connections** > **Device** tab. <br><br> **NOTE**   If the Device ID of the device is zero (not recommended), a '01' is assigned to the third octet of this address because zero addresses are not valid on a BACnet/SC network. |
| **Connection State** | The status of the device's connection as a client on the BACnet/SC network. |
| **Primary Hub URI** | Web address used to connect to the primary hub. <br><br> Format options (address can be an IP address or DNS name): <br><br> • `wss://address (if using standard port 443)` <br><br> • `wss://address:port` <br><br> **NOTE**   If you must use a proxy to reach the hub, enter proxy information on the **Advanced** > **Network** tab. |
| **Primary Hub Status** | The state of the primary hub communication. |
| **Failover Hub URI** | Web address used to connect to the optional failover hub. <br><br> Format options (address can be an IP address or DNS name): <br><br> • `wss://address (if using standard port 443)` <br><br> • `wss://address:port` <br><br> **NOTE**   If you must use a proxy to reach the hub, enter proxy information on the **Advanced** > **Network** tab. |
| **Failover Hub Status** | The state of the failover hub communication. |
| **Advanced** | |
| **Is Failover Hub?** | Indicates if being used as a failover hub. <br><br> **NOTES** <br><br> • A device can serve as a failover hub, but not as a primary hub. A supported BACnet/SC network requires a virtual or cloud-hosted hub to be used as the primary BACnet/SC hub. <br><br> • Using a device as a failover hub is supported for up to 10 BACnet/SC device connections. For BACnet/SC networks with more than 10 device connections, purchase an additional BACnet/SC Virtual Hub to use as a failover hub. |
| **Listening Connection Type** | When set as a failover hub, select interface type used to listen for connections. |
| **Server Port** | When set as a failover hub, enter the port on which the hub will be listening. |
| **URIs** | When set as a failover hub, this is the web address used by network devices to connect to the hub. The URI is derived from the IP Port configured on the **Connections** > **Gig-E Port** tab. |
| **Minimum Reconnect Time** | Initial number of seconds to wait before retrying a connect to a hub which increases with each failure. |

| | |
|---|---|
| **Maximum Reconnect Time** | Maximum number of seconds to wait between connection retries to a hub. |
| **Connection Wait Timeout** | Number of seconds to wait for a hub to reply to a connection request. |
| **Disconnect Wait Timeout** | Number of seconds to wait for a hub to reply to a disconnect request. |
| **Initiating Heartbeat Interval** | Number of seconds to wait to send a heartbeat. |
| **Accepting Heartbeat Interval** | Number of seconds to wait to receive a heartbeat. |
| **Primary SC Statistics** | |
| **Manage certificates** | See "To create or replace a BACnet/SC device's operational certificate" in the *BACnet/SC Setup Guide* for instructions on how to create the device's operational certificate, signed by the BACnet/SC network's Certificate Authority. |

## *Primary Port using BACnet/Ethernet*

### Protocols

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

# Isolated port

## Isolated Port using BACnet/IPv4

### IP Addressing

| IPv4 | |
|---|---|
| **Address** | Displays the unique address of the device, if assigned. Editable only if using **Custom Static** addressing. |
| **Subnet Mask** | Displays the Subnet Mask of the device, if assigned. Editable only if using **Custom Static** addressing. |
| **Enable** | If checked, DHCP server is enabled. |
| **Start Address** | The starting IP address of the range of IP addresses that the device issues. <br><br> **NOTE** The configured DHCP Start Address that the device issues must be less than the End Address. |
| **End Address** | The end of the range of IP addresses that the device issues. <br><br> **NOTE** The IP address of the device on the Isolated Port cannot fall between the Start and End Addresses that the device issues |
| **Lease Time** | Displays the amount of time the device can use the assigned IP address. |

### Protocols

| Private BACnet/IP | |
|---|---|
| **Network Number** | Specify a number for the BACnet/IP network or set to 0 if the port is not used. <br><br> The network number is 0 by default. Filled in automatically if **Autogenerate Network Number** is checked. <br><br> **NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder. |
| **UDP Port** | The port that the TV-ISO-E2 will use for BACnet communication. <br><br> If the TV-ISO-E2 has two BACnet/IP networks communicating on the Gig-E port, confirm that the home network interface has the port number set to what the i-Vu® application will use for BACnet communication. |

| Primary IPv4 Statistics | |
|---|---|
| **Reset statistics** | Resets values to 0, which then resume accumulating. |

## Port S1

| Port S1 | |
|---|---|
| **Auto Generate Network Number** | If checked, autogeneration uses the Port S1 **MAC Address**.<br><br>Uncheck to set the network number manually using **Custom Static Address Mode**. |
| **Network Number** | The network number is 0 by default. Filled in automatically if **Autogenerate Network Number** is checked.<br><br>**NOTE** When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder. |
| **MAC Address** | Editable once the protocol has been selected. |
| **End of Network** | Indicates status of the device's **End of Network** termination. |
| **Max Master** | To increase MS/TP performance, enter the highest address used on the MS/TP network for a master controller. This number must be less than or equal to 127. |
| **Max Info Frames** | This is the maximum number of information messages a controller may transmit before it must pass the token to the next controller. Valid values are 1 to 255.<br><br>**TIP** Set **Max Info Frames** to a number in the range 20 to 100 so that the device does not become a bottleneck for traffic being routed from a high-speed network to the slower MS/TP network. |
| **APDU Length** | The maximum length of a message or message segment that can be accepted by the BACnet device. |
| **Baud Rate** | Set this to a baud rate that all other devices on the MS/TP network are set to. Select 9600, 19200, 38400, 57600, 76800, or 115200. |

# Port S2

| Port S2 | |
| --- | --- |
| **Port S2 BACnet/MSTP** | Enable for a BACnet/MSTP network. |
| **Auto Generate Network Number** | If checked, autogeneration uses the Port S2 **MAC Address**.<br><br>Uncheck to set the network number manually using **Custom Static Address Mode**. |
| **Network Number** | The network number is 0 by default. Filled in automatically if **Autogenerate Network Number** is checked.<br><br>**NOTE**  When downloaded from the i-Vu® application, these numbers match those set using SiteBuilder. |
| **MAC Address** | You set the address for Port S2, which must be unique for the system. |
| **End of Network** | Indicates status of the device's **End of Network Command**. |
| **Max Master** | To increase MS/TP performance, enter the highest address used on the MS/TP network for a master controller. This number must be less than or equal to 127. |
| **Max Info Frames** | This is the maximum number of information messages a controller may transmit before it must pass the token to the next controller. Valid values are 1 to 255.<br><br>**TIP**  Set **Max Info Frames** to a number in the range 20 to 100 so that the device does not become a bottleneck for traffic being routed from a high-speed network to the slower MS/TP network. |
| **APDU Length** | The length of a message or message segment that can be accepted by the BACnet device. |
| **Baud Rate** | Set this to a baud rate that all other devices on the MS/TP network are set to. Select 9600, 19200, 38400, 57600, 76800, or 115200. |

# Local Network

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 device that has had its DSC button pressed.

- Export the **Local Devices** that are present in the table (limited to 100) to a .csv file.

- Set a device's **Mode**, **Address**, and **Location**.

- Assign IP addresses to multiple devices at one time.

- Prompt an LED to flash on a device. The **Blink** button is used to start an LED indication pattern on a discovered 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 TV-ISO-E2 controller or by using the i-Vu® application. In the i-Vu® navigation tree, right-click the TV-ISO-E2, 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**.

| Primary Port/Isolated Port | |
|---|---|
| **Address Mode** | Select the type of addressing the device is to use. See *Addressing through the USB service port* (page 10). |
| | Select **Custom Static** if you have a permanent IP address which does not change and is usually obtained from the network administrator. |
| | Select **DHCP** if the network uses a DHCP server for IP addressing. |
| **Address** | Displays the unique address of the device, if assigned. |
| | Editable only if using **Custom Static** addressing. |
| **Subnet Mask** | Displays the Subnet Mask of the device, if assigned. |
| | Editable only if using **Custom Static** addressing. |
| **Default Gateway** | Displays the Default Gateway of the device, if assigned. |
| | Editable only if using **Custom Static** addressing. |
| **Device Instance** | Unique ID assigned to the controller. |
| **Network Number** | Specify a number or set to 0 if the port is not used. |

**To discover devices on a network**

**1**   On the **Connections** > **Primary Port** > **IP Addressing**, select the **Address Mode**.

**2**   On the **Connections** > **Local Network** tab, select the Primary or Isolated port and verify the device's **Address, Subnet Mask, Default Gateway, Device Instance,** and **Network Number** displayed at the top of the page.

**3**   In the **Local Devices** table, click the **Clear All** to erase any pre-existing data

**4**   Click **Discover**. The table finds and lists the first 256 unconfigured devices on the same subnet. The devices displayed in the table are sorted by MAC address, but can be adjusted through the **Sort** column..

**5**   Use the following settings to define the devices that you want to discover in the **Local Devices** table.

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

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

**Sequential IP addressing**

**1**   Follow the above steps to **Discover** devices.

**2**   In the **Select** column, click the checkbox for the devices you want to assign addresses to.

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

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

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

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

| Local Devices table | |
| --- | --- |
| **Select** | Check to select devices for:<br><br>• Changing the Mode<br>• Resolving a Mismatch<br>• Auto-assigning an IP Address<br><br>**NOTE** You cannot select devices with a lock symbol. |
| **MAC** | Ethernet MAC address of device |
| **Serial#** | The discovered devices are in order by serial number.<br><br>**NOTE** To change how the rows are sorted, click a different column heading. |
| **Mode** | To change the **Mode:**<br><br>**1** Select the devices you want to change.<br><br>**2** Select one of the following IP addressing modes:<br><br>• **Default IP** - Devices with rotary switches that are used when autogenerating the address (if applicable)<br>• **Custom Static** - A permanent IP addresses which does not change and is usually obtained from the network administrator<br>• **NOTE** Selecting this automatically sets the device's subnet and default gateway to match the connected controller.<br>• **DHCP** - Allows the DHCP server to automatically assign an IP address<br><br>**3** Click the **Set** button. |
| **Address** | Displays the IP address of the device, if assigned. You can edit the address only if the device is set to **Custom Static**.<br><br>To auto-assign multiple sequential addresses, select the devices, enter the beginning address, and click **Assign**. |
| **Device Instance** | Unique ID assigned to the controller. |
| **Location** | You can describe the location of the device or any other helpful information. |
| **Mismatch** | A **Mismatch** occurs when the connected controller's mode is set to **Custom Static** and a discovered device's subnet and default gateway do not match the connected controller. The incorrect addresses are shown with **SN** for subnet and **GW** for default gateway, and **IP NET#** for network number.<br><br>To resolve a mismatch, select the device(s) by clicking the **Select** checkbox and then clicking the **Resolve** button. The subnet mask and default gateway addresses of the selected devices change to match the connected controller. |

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

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39

| Local Devices table | |
|---|---|
| **Status** | The following are the results of changing **Mode**, **Address**, **Location**, or pressing **Blink**:<br><br>• **Success** - Successful operation<br>• **No Response** - Device is not communicating<br>• **Device Locked** - Device must be unlocked before you can make any changes using the **Local Devices** table. You can unlock the TV-ISO-E2 by pressing the DSC button on the device or by using the i-Vu® application. (See instructions above.)<br><br>    **NOTE**  The status of a device changes to locked 24 hours after unlocking it.<br><br>• **Failure** - A conflict between the device and the information entered |
| **Device indicator** | A bullseye icon appears for the most recent device to have the:<br><br>• **Device Indicator Icon** clicked in the table<br>• **Address** or **Location** entered<br>• DSC button pressed on the device<br><br>    **NOTE**  If the device is not already listed in the table, pressing the DSC button immediately adds it to the table and displays a bullseye icon.<br><br>    **TIP**  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 bullseye icon. |
| **Blink** | Click the **Blink** button to prompt the Locator LED to flash for 15 seconds, allowing you to verify the controller's physical location. After flashing, whenever the actuator moves, the LED rotates in the same direction. LED rotation is automatically disabled after 1 hour and can be re-enabled by pressing the **Blink** button again.<br><br>At the same time, the **Sys** and **Net** LEDs blink white, once per second for 10 seconds, and then stop.<br><br>**NOTES**<br>• The blue dot appears when you **Blink** a device.<br>• You can **Blink** a locked device. |

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

# Advanced tabs

## Security tab

| Configuration Access | |
|---|---|
| **Disable Service Ports** | When checked, disables all communication through the Service Port. You can only configure the TV-ISO-E2 in the i-Vu® application or Field Assistant. |
| **Allow Configuration on Service Port** | Enables access to the controller setup pages through the Service Port. |
| **Allow Configuration on Gig-E Port** | Enables access to the controller setup pages through the network that the Gig-E Port is connected to. See Connecting to the device through the Gig-E Port. <br> **NOTE** You must first set a password in the i-Vu® application. |
| **Disable Network Port Configuration via BACnet** | When checked, disables Network Port Objects properties such as network numbers from being written to via BACnet. |
| **Allow Remote Management of IP Configuration** | Enables you to configure IP settings remotely through tunneled Enhanced Access Protocol commands. <br> **NOTE** The **Address Mode** must be set to **Custom Static**. |
| **Allow Local Network Configuration from other Devices on the Local Network for 24 Hours.** | Allows Local Network Configuration for 24 hours. It is the same as pressing the DCS button on the controller. |
| **Device Unlock Time Remaning** | Displays the amount of time that the device will be unlocked. |

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

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

# Alarms tab

Use this tab to configure settings for the following Alarms:

- **Controller Halted**

- **Port Authentication Expiration**

- **Dead Controller Timeout**

- **BACnet/SC Certificate Expiration**

- **Duplicate Address Alarm**

| | |
|---|---|
| **Enable To Off-Normal Event** | Clear this checkbox to disable Alarm or Return to off-normal messages of this type from the TV-ISO-E2. |
| **Enable to Normal Event** | Clear this checkbox to disable Alarm or Return to normal messages of this type from the TV-ISO-E2. |
| **Time Delay** | Specifies the delay between the onset of the Off-Normal condition and the reporting of the alarm to the i-Vu® application. |
| **Description** | Short message shown when this type of alarm is generated. |
| **Notification Class** | A BACnet alarm's Notification Class defines:<br><br>• Alarm priority for Alarm, Fault, and Return to Normal states<br>• Options for BACnet alarm acknowledgment<br>• Where alarms should be sent (recipients)<br><br>Alarms in the i-Vu® application use Notification Class #1. The i-Vu® application is automatically a recipient of these alarms. |
| **Object Name** | A unique alphanumeric string that defines the BACnet object. |
| **Warning Threshold** | If a certificate is within this number of days of expiring, it will appear yellow in the Certificate Management table.<br><br>A weekly alarm will be triggered in the i-Vu® application when one of the device's BACnet/SC certificates is in this state. |
| **Critical Threshold** | If a certificate is within this number of days of expiring, it will appear red in the Certificate Management table.<br><br>A daily alarm will be triggered in the i-Vu® application when one of the device's BACnet/SC certificates is in this state. |

# Notification Class tab

A BACnet alarm's Notification Class defines:

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

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

| | |
|---|---|
| **Notification Class Recipients** | The first row in this list is from the i-Vu® application. Do not delete this row. Click **Add** if you want other BACnet devices to receive alarms associated with this Notification Class.<br><br>**NOTE**   Additional entries in this table may be lost after a download. |
| **Recipient Type** | Select **Recipient Device** for device recipients that support dynamic binding. Complete the **Recipient Device** field if you are using this recipient type.<br><br>Select **Recipient Address** (static binding) for either of the following:<br>• Third-party BACnet device recipients that do not support dynamic binding<br>• When you want alarms to be broadcast (you must uncheck **Issue Confirmed Notifications**). This use is rare.<br><br>Complete the **Network Number** and **MAC Address** fields if you are using this recipient type. |
| **Recipient Device** | Type the **Device Instance** from SiteBuilder (or from the network administrator for third-party devices) in the **#** field. |
| **Network Number** | Specify the number of the BACnet network on which to send the notification.<br><br>**TIP**   For the home network, this can be set to 0. |
| **MAC Address** | MAC address of the recipient software or device. |
| **Issue Confirmed Notifications** | Select to have a device continue sending an alarm message until it receives delivery confirmation from the recipient. |

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

| |
|---|
| **Days and Times to Send** |

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

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43

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| | |
|---|---|
| **Monday to Sunday**<br>**From Time**<br>**To Time** | Select days and times during which the recipient will receive alarms. |
| **Process Identifier** | Change for third-party devices that use a BACnet Process Identifier other than 1. The i-Vu® application processes alarms for any 32-bit Process Identifier. |

| **Acknowledgments Required** | |
|---|---|
| **To Fault Ack Required**<br><br>**To Normal Ack Required**<br><br>**To Off-Normal Ack Required** | Specifies whether alarms associated with this Notification Class require a BACnet Acknowledgment for Off-Normal, Fault, or Normal alarms.<br><br>**TIP**  You can require operator acknowledgment for an Alarm or Return-to-normal message (stored in the i-Vu® database). In the i-Vu® interface on the **Alarm** > **Enable/Disable** tab, change the acknowledgment settings for an alarm source or an alarm category. |

| **Priority** | |
|---|---|
| **To Fault Priority** | BACnet priority for Fault messages. |
| **To Normal Priority** | BACnet priority for Return-to-normal messages. |
| **To Off Normal Priority** | BACnet priority for Alarms. |

| **Identification** | |
|---|---|
| **Notification Class** | A BACnet alarm's Notification Class defines:<br>• Alarm priority for Alarm, Fault, and Return to Normal states<br>• Options for BACnet alarm acknowledgment<br>• Where alarms should be sent (recipients)<br><br>Alarms in the i-Vu® application use Notification Class #1. The i-Vu® application is automatically a recipient of these alarms. |
| **Object Instance** | The instance number of this BACnet Notification Class object. It must be unique within the BACnet Device that contains it. |
| **Object Name** | The alpha-numeric name of this BACnet Notification Class object. |
| **Description** | The description of this BACnet Notification Class object. |

**Router (part no. TV-ISO-E2)**<br>**Installation and** Start-up Guide

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44

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# Controller Clock tab

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

- Date Format

- Local Date

- Time Format

- Local Time

- UTC Offset

- Daylight Saving Status

| Advanced Clock Options | |
|---|---|
| **Clock Fail Date** | Date the device uses when its real-time clock is invalid. |
| **Clock Fail Time** | Time the device uses when its real-time clock is invalid. |
| **Network Time Protocol** | |
| | To define an NTP server to use for time synchronization:<br>**1** Click **Add**.<br>**2** Define **Server** by one of the following:<br>    ○ **IP Address**<br>    ○ **Host name**<br>    ○ **Fully qualified domain name**<br>**NOTE** DNS has to be set up on the **Gig-E Port** tab in order to use names on NTP.<br>**3** Check the **Enable** box.<br>**4** Click **Restart**. |
| **BACnet Time Synchronization** | |
| **Time Synchronization Sensitivity** | When the device receives a time sync request, if the difference between the device's time and the time sync's time is greater than this field's value, the device's time is immediately changed. If the difference is less than this field's value, the device's time is slowly adjusted until the time is correct. |
| **Time Broadcaster will synchronize time every** | If you have third-party BACnet devices on one of the device's networks, you can have the device send a BACnet time sync to those devices at the interval you define in this field. |

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

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45

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| | |
|---|---|
| **Time Synchronization Recipients** | To define third-party BACnet devices as Time Synchronization Recipients: |
| | **1**   Click **Add**. |
| | **2**   Select **Recipient Type**: |
| |      ○   **Device ID** |
| |      ○   **Address** |
| |      ○   **Local Broadcaster** |
| |      ○   **Global Broadcaster** |
| | **3**   Enter the **Recipient Device** information. |
| | **4**   Click **Accept**. |

# Color Cache tab

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

# Network tab

| | |
|---|---|
| **Device Host Name** | Device name identified on the IP network. Primarily used for DHCP to help the IT administrator identify this device on their network. |
| | Characters allowed are: |
| | • ASCII letters from A to Z, lower or upper case |
| | • 0 to 9 |
| | • hyphen |
| | A Host Name may not start with a hyphen or have only numerals |
| **Enable Proxy** | Enable this checkbox if the communication interface needs to get through a proxy firewall to communicate out to other networks. |
| **Proxy Server Address** | Set the IP address of the proxy host. |
| | **NOTE** If you have a DNS set up on the **Gig-E Port** tab, you can use the DNS name of the proxy server here. |
| **Proxy Port** | Set the port for communication on the proxy host. |
| **Proxy Username** | Set a username if required to authenticate on the proxy server. |
| **Proxy Password** | Set a password if required to authenticate on the proxy server. |
| **No Proxy For** | Set addresses that do not require passing through the proxy to communicate. These addresses are typically exempt from the proxy requirements. |

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

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47

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# Troubleshooting

## LEDs



### NET (Network Status) Tricolor LED

| Color | Pattern | Condition | Message in Module Status |
|-------|---------|-----------|--------------------------|
| Red | On | Ethernet connection problem | No Ethernet Link |
| Red | 1 blink | One of the following BACnet/IP (Ethernet) DLL reporting issue:<br>• Unable to create tasks<br>• Unable to open socket for BACnet port | BACnet/IP error |
| Red | 2 blink | Current default IP address does not match the current rotary switch setting | Default IP address mismatch |
| RED | 4 blink | There was an error getting an IPv4 address using DHCP, or an IPV6 address using SLAAC | DHCP or SLAAC Error |
| RED | 5 blink | An error was detected in the NAT configuration. This is typically caused by:<br><br>NAT enabled but no global IP address or hostname provided | NAT Configuration Error Detected |

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Installation and Start-up Guide

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48

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| Color | Pattern | Condition | Message in Module Status |
|-------|---------|-----------|--------------------------|
| Blue | On | One of the following issues:<br>• Port communication firmware did not load properly<br>• Port communication firmware is not running<br>• Invalid protocol selected | ARCNET/MSTP firmware error |
| Blue | 1 blink | Invalid address selected for protocol | Invalid address selection for ARCNET/MSTP |
| Blue | 2 blink | Device has same MAC address as another connected device | Duplicate address on ARCNET/MSTP |
| Blue | 3 blink | Device is the only device on the network | No other devices detected on ARCNET/MSTP |
| Blue | 4 blink | Excessive errors detected over 3 second period | Excessive communication errors on ARCNET/MSTP |
| Blue | 5 blink | ARCNET traffic overload possibly due to circular device or excessive COVs (change of values) | Event System Error - FPGA RX FIFO full |
| Green | On | All enabled networks are functioning properly | No errors |

## SYS (System Status) Tricolor LED

| Color | Pattern | Condition | Message in Module Status |
|-------|---------|-----------|--------------------------|
| Red | 2 blink | Restarting after an abnormal exit | Auto restart delay due to system error on startup |
| Red | 4 blink | Firmware image is corrupt | Firmware error |
| Red | Fast blink | Firmware error has caused the firmware to exit and restart | Fatal error detected |
| Green | 1 blink | No errors | Operational |
| Green | 2 blink | Download of driver is in progress | Download in progress |
| Green | 3 blink | BACnet Device ID is not set | Download required |
| Green | Fast blink | Installation of recently downloaded driver is occurring | N/A |
| Blue | On | Device is starting up | N/A |
| Blue | Slow blink | Linux (operating system) is starting up | N/A |
| Blue | Fast blink | Linux is running but it could not start the firmware application | N/A |

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Installation and Start-up Guide

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49

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## To get a Module Status report

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

- In the i-Vu® application—Right-click the device on the **Network** tree, then select **Module Status**.

- In the controller setup interface through the Service Port—Click and select **Modstat** from the drop-down list.

See Appendix - Module Status field descriptions.

## To get a Device Log

If Carrier Technical Support instructs you to get the device's Device Log containing diagnostic information for troubleshooting:

**1** Select the TV-ISO-E2 in the i-Vu® **Network** tree.

**2** On the **Properties** page, click **Device Log**.

**NOTES**

- To download a file containing multiple Device Logs to your computer, click **Device Log Archive**.

- To download network packet captures, access the driver properties or controller setup interface and go to > **Diagnostics** tab > **Packet Capture**, then click **Get capture file**.

## To get the TV-ISO-E2's serial number

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

- A Module Status report (Modstat). See To get a Module Status report.

- A laser-etched number and QR code on the circuit board inside the device.

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

- In the driver properties or controller setup interface under > **Dashboard** tab > **Controller Status** > .

See *To get a module status report* (page 55)

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

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50

# To replace the TV-ISO-E2's fuse

The TV-ISO-E2 has one fuse. If the TV-ISO-E2 power ⏚ LED is not lit, this could be due to a blown power fuse.

If you suspect a fuse is blown, remove the fuse as described below, and use a multimeter to check it. If the fuse is blown, try to determine why it blew before you replace it. Check the power wiring polarity of the TV-ISO-E2 and any other devices that share the power supply. Use the same polarity for all of them.

You can purchase the 3A, fast-acting, 5mm x 20mm glass fuse from Littelfuse, mfr part #0235003.MXP

To replace the fuse:

**1** Remove power from the device

**2** On both ends of the device, insert a small flathead screwdriver as shown below, and then gently pry up the cover until it is released from the base.
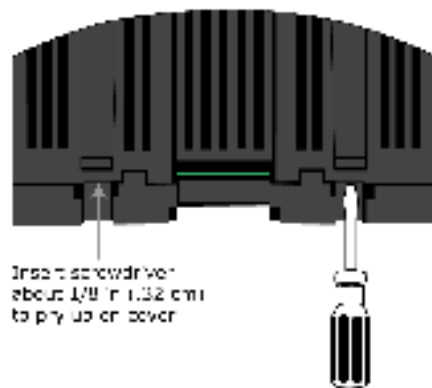


**3** Remove the cover from the base.

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



**5** Use the fuse puller to snap the new fuse into the fuse holder.

**6** Replace the device's cover.

**7** Restore power to the device.

**8** Verify that the ⏚ LED on top of the device is on.

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

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51

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# To revert to default settings

⚠️**WARNING**   This erases all archived information and user-configured settings. When recovery is complete, you must connect locally to the TV-ISO-E2 and manually reconfigure all BACnet, IP, and firewall information once the recovery is complete. We highly recommend that you revert the default settings only under the guidance of Carrier® Technical Support.

**1**   Copy the newest driver to the root directory of a FAT32-formatted USB flash drive.

   **NOTE**   To verify that you have the driver's latest version, go to the Carrier® Partner Community website. Compare the latest version to the TV-ISO-E2's driver in SiteBuilder.

**2**   Remove power from the TV-ISO-E2.

**3**   Press and keep holding the DSC button on the device, apply power, and release button after the **Sys** and **Net** LEDs change to flashing magenta.

**4**   Plug the USB flash drive into the device's USB port.

   ⚠️**WARNING**   Do not remove power or the USB flash drive until the **Sys** LED turns solid green and the **Net** LED turns solid magenta. This process could take several minutes to complete.

**5**   Remove power from the TV-ISO-E2.

**6**   Remove the USB drive from the USB port.

**7**   Apply power to the TV-ISO-E2.

   **NOTE**   The device is now running the new version of the firmware and is in the default state.

**8**   In SiteBuilder, configure the Device Instance, Network Number, and address so that the device can communicate with the server. Set these values by selecting an item in the **Network** tree.

**9**   In SiteBuilder, assign the new driver version to the device.

**10**   To recover the device's previous parameters and programs, click **Download all content** from the i-Vu® **Downloads** page.

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

Carrier Proprietary and Confidential

52

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## To take the TV-ISO-E2 out of service

If needed for troubleshooting or start-up, you can stop communication between the i-Vu® application and the TV-ISO-E2.

**1** On the i-Vu® **Network**  tree, select the TV-ISO-E2.

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

**3** Click **Accept**.

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## Compliance

## FCC Compliance

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

**1** This device may not cause harmful interference.

**2** This device must accept any interference received, including interference that may cause undesired operation.

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

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

## CE and UKCA Compliance

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

## Industry Canada Compliance

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

## BACnet Compliance

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

# Appendix - Module Status field descriptions

| Field | Description |
|---|---|
| Product Name | Identifies the Product Type |
| Version | The version of the driver |
| Date/Time | Date and time the Modstat was run |
| Product Serial Number | The serial number of the module set at the factory |
| Operating System Java Version Processor Architecture | Underlying hardware and software architecture of the device |
| Device Instance | A unique ID assigned to the device |
| Number of BACnet Objects | The number of BACnet objects that were created in the device and the number of those objects that are trends or events. |
| Model Name | Identifies the Product Type |
| Downloaded by | When and where the last download was performed |
| Memory | Total size of the device's memory and the amount being used for the application and short term memory. **Cleanup** indicates the rate of memory cleanup. |
| Reset Counters | The number of times each of the following events have occurred since the last time the device was commanded to clear the reset counters. See **NOTE** below this table. **Power failures**—Interruption of incoming power **Commanded boots**—Includes commands issued from the i-Vu® interface such as the zap manual command, plus commands issued during a memory download. **System errors**—Error in the device'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 device if it detects a severe problem with the device's operating system |
| Network Information | The various network addresses for the device. The **Current** and **Assigned** addresses will be the same unless there are configuration changes that have not been activated. |

Router (part no. TV-ISO-E2)
Installation and Start-up Guide

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55

| Field | Description |
|---|---|
| BBMD Configuration | Shows the following information for each active IP network:<br><br>**BBMD Active** shows whether the BACnet Broadcast Management Device is currently active (true) or inactive (false).<br><br>**BBMD Entries**—the number of entries in the BBMD table (500 maximum).<br><br>**FDT Entries**—the number of entries in the Foreign Device Table (500 maximum). |
| BACnet/SC Information | BACnet/SC connection status as of when the Modstat was run. Also shows the web addresses used to access the primary and/or failover hubs. |
| BACnet/SC Certificates | Lists the operational certificates and certificate authorities installed on the device, with expiration information. |
| Routing Information | BACnet networks that a device is currently routing traffic to. The list changes as BACnet devices are added or removed from the system. |
| Router statistics | **Dropped Packets**—Data packets that could not be delivered.<br><br>**Route Not Found**—Packets that could not be delivered because the requested network does not exist.<br><br>**Route Unreachable**—Routed packets whose destination network is either busy or offline.<br><br>**Router Sourced Packets**—Shows the number of packets initiated by the device that are not in response to a request from another device. |
| Device statistics | Shows the number of incoming and outgoing unicast and broadcast packets for each of the device's networks. **Dropped incoming** indicates the number of incoming packets that could not be delivered. |
| BACnet/IP Statistics | **Rx Unicasts**—BACnet/IP packets received from a single BACnet device.<br><br>**Tx Unicasts**—BACnet/IP packets transmitted to a single BACnet device.<br><br>**Rx Broadcasts**—BACnet/IP broadcast packets received by the TV-ISO-E2.<br><br>**Tx Broadcasts**—BACnet/IP broadcast packets transmitted by the TV-ISO-E2.<br><br>**Whitelist Rejections** (if BACnet Firewall is enabled)—Messages blocked by the BACnet Firewall because the IP address that sent the message was not in the whitelist. |
| Primary Port Statistics | **Rx packets**—All packets (including non-BACnet packets such as a ping) received by the TV-ISO-E2.<br><br>**Tx packets**—All packets (including non-BACnet packets such as a ping) transmitted by the TV-ISO-E2.<br><br>**Rx Error Count**—All errors related to received packets such as CRC errors, FIFO errors, frame errors, length errors, missed errors, and overrun errors.<br><br>**Tx Error Count**—All errors related to transmitted packets such as aborted errors, carrier errors, dropped errors, FIFO errors, heartbeat errors, and window errors.<br><br>**Dropped Packets**—Packets dropped by the TV-ISO-E2. |

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

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56

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| Field | Description |
|---|---|
| Base and Core board hardware | Gives the following information about the device's boards:<br>• Type and board numbers that are used internally by Carrier®.<br>• The manufacture date and serial number. |
| System status | Gives the current status of the device's operation. See LEDs for all possible conditions. |
| Network status | Gives the current status of the device's networks. See LEDs for all possible conditions. |
| Driver | The name, version, and date of the driver, as well as all the bundles and versions. |
| System error message history | High-severity errors since the last memory download. Shows the most recent 10 messages.<br>See **NOTE** below this table. |
| Warning message history | Low-severity errors and warning messages since the last memory download. Shows the most recent 10 messages.<br>See **NOTE** below this table. |
| Information message history | Information-only messages since the last memory download. Shows the most recent 10 messages.<br>See **NOTE** below this table. |

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

**Router (part no. TV-ISO-E2)**
**Installation and** Start-up Guide

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57

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## Document revision history

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

| Date | Topic | Change description | Code* |
|------|-------|--------------------|-------|
|      |       |                    |       |

\* For internal use only

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Installation and Start-up Guide

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58

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