CWCVT Wireless MS/TP Converter User Guide

Contents

Introduction

The Connected Workflow Wireless MS/TP Converter (CWCVT) is a communications converter that provides a temporary wireless connection between a laptop that runs Johnson Controls BAS Tools and BACnet MS/TP controllers wired to an MS/TP bus. For example, you can connect the CWCVT to the System Configuration Tool (SCT) or a mobile device that runs the Connected Workflow Application (CWa) mobile application.

The CWCVT supports the following wireless connection modes:

- Bluetooth low energy mode (BLE Router)
- Wi-Fi access point mode (Wi-Fi AP Router)

You can discover devices connected to the MS/TP bus, download applications, and commission the equipment with both wireless modes.

Overview

Figure 1: CWCVT overview
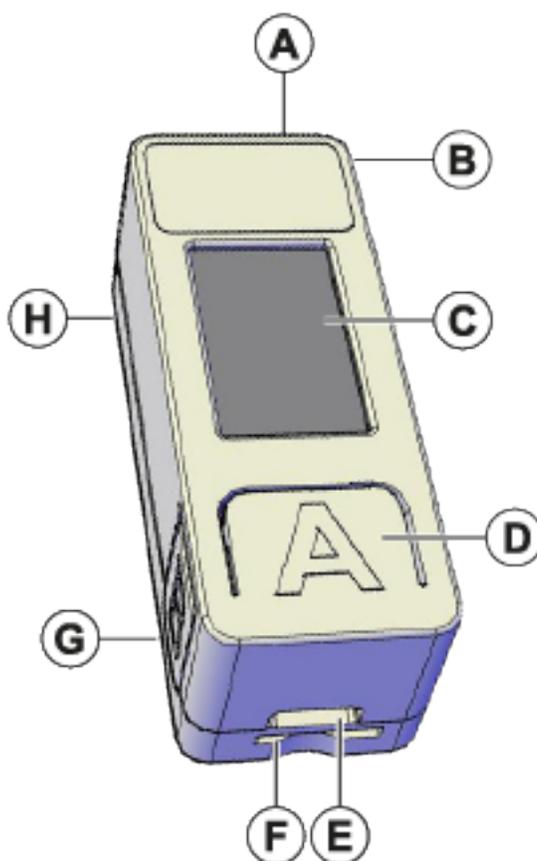
Callout	Description
A	RJ12 connector. Provides power and MS/TP communications when connected to the SA bus or the FC bus of a Johnson Controls equipment controller.
B	Lanyard connector
C	Color graphic display

Callout	Description
D	The A button, for display scrolling
E	USB-C port
F	Micro SD card slot
G	The B button, for mode selecting
H	End-of-line switch (bottom side)

Screen layout

The general screen layout consists of the current wireless mode, the heartbeat, end-of-line switch, and SD card system icons, page information that is specific to that page, and status of the wireless and MS/TP connections.

Figure 2: CWCVT screen
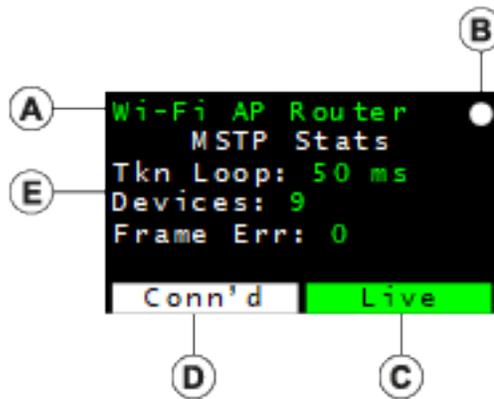
Callout	Description
A	Current wireless mode
B	System icons
C	MS/TP connection status
D	Wireless connection status
E	Page title and information

Display rotation

The display can rotate 180 degrees to make the CWCVT easier to use for both right- and left-handed users.

About this task:
To rotate the display, complete the following steps:

1. Press and hold the **A** button to rotate the display to the opposite orientation.
2. Release the button to lock the display into that view.

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CWCVT pages

The CWCVT contains several pages of information that you can navigate with the A button. The CWCVT remembers the last page viewed and re-displays that page on a power cycle.

At-a-glance page

The at-a-glance page displays large colored blocks that indicate the connection status of the wireless and MS/TP connections. This page makes it easier to view the connection status when you work on a ladder or at a distance of the controller that the CWCVT is plugged into.

The Wireless Status indicates the following states:

Table 1: Wireless Status states

State	Display background color	Description
No Conn	Black	No connection. The CWCVT is not wirelessly connected to a device.
BLE Conn'd	Blue	Connected. The CWCVT is wirelessly connected to a mobile device or computer in BLE Router mode. ⓘ **Note:** The CWCVT supports only one bluetooth connection at a time.
Wi-Fi Conn'd	White	Connected. The CWCVT is currently connected to one or more devices in Wi-Fi AP Router mode. ⓘ **Note:** The CWCVT supports up to four Wi-Fi connections simultaneously.

The MS/TP Status indicates the following states:

Table 2: MS/TP Status states

State	Display background color	Description
Auto	Black	The CWCVT is in an Auto-baud state. The CWCVT listens to the MS/TP bus and joins the token ring if activity is detected.
Sole	Yellow	The CWCVT is the sole Manager device and does not detect any other MS/TP Manager controllers on the bus.
Live	Green	The CWCVT is actively participating in the MS/TP token loop and one or more MS/TP Manager controllers are on the bus.

Overview page

The Overview page displays the following general information about the wireless and MS/TP connections:

- Wireless connection status
- MS/TP connection status
- Active MS/TP Baud Rate
- The active MS/TP device address being used by the CWCVT

Connect Info and Pairing Info page

When you connect the CWCVT wirelessly for the first time, you can view the Connect Info or Pairing Info page to see the CWCVT's name and the PIN or Password that you need to enter on the host mobile device or computer to authorize the wireless connection. When the CWCVT is in BLE mode, the page is named Pairing Info and when the CWCVT is in Wi-Fi mode, the page is named Connect Info.

When a connection is made to the CWCVT, both the CWCVT and the host device will remember the connection and security information. You can connect the host device to the CWCVT later without the need to re-enter the PIN or Password.

System Info page

The System Info page displays the elapsed Uptime since the CWCVT is turned on, the current Firmware Version, and the build type that runs on the CWCVT.

MS/TP Stats page

The MS/TP Stats page displays information about the MS/TP connection. You can use the data as a simple overview of the health of the active MS/TP network.

The following data is displayed:

- Token Loop Time: This should be consistent and less than 1000 ms depending on the number of MS/TP devices connected to the network. A consistent loop time close to 5,000 ms may indicate possible bus failures.
- Device Count: This is a count of the number of MS/TP Manager devices currently active on the network. This count does not include the CWCVT itself. If plugged into the SA bus of a controller, the number of devices on the FC bus side of the controller are not included.
- Framing Errors: This indicates the number of byte errors seen on the MS/TP network. A high or increasing value could indicate a wiring error, duplicate MS/TP address, or a poorly behaving MS/TP device.

ⓘ **Note:** See the *Correcting physical Bus problems* section of the *Communications Bus Technical Bulletin, LIT-12011034* for ways to fix installation issues.

Detailed procedures

The following section outlines how to use the CWCVT in different modes, how to view configuration and diagnostic information, and how to work with Johnson Controls BAS Tools and with CWa.

Connecting to a Johnson Controls controller

1. Connect one end of the RJ12 cable to the CWCVT.
2. Connect the other end of the RJ12 cable to either the SA bus or FC bus jack in any Johnson Controls compatible field controller. The RJ12 connection supplies both power and MS/TP communication to the CWCVT.

    ⓘ **Note:** If the controller is connected to a ZFR18x0 wireless router or if the controller is an IP controller, use the SA bus only.

Result
The CWCVT is active in approximately 2 seconds after it is connected to a powered field controller.

Mode selection

About this task:

After you powered the CWCVT, you must select a wireless mode of operation that is compatible with the host application or tool being used. Use the B button to change the mode of operation of the CWCVT.

The CWCVT supports the following modes of operation:
- BLE Router Mode: For use with CWa App (default)
- Wi-Fi AP Router Mode: For use with Johnson Controls BAS Tools and to view configuration settings. The Wi-Fi AP Router mode is a replacement for the MAP mode or a wired BACnet IP to MS/TP Router.

To change the mode, complete the following steps:

1. Press and hold the **B** button until the required mode displays.
2. Release the button and the new mode begins to flash.
3. Press the **B** button while the selected mode flashes to confirm the mode.
4. The CWCVT resets and starts in the selected mode.
   The CWCVT remembers the last selected mode and restores that mode when turned on. However, if the wireless connection is lost, you may need to re-connect.

Working with Johnson Controls BAS Tools

You can use the CWCVT with Johnson Controls BAS Tools when the CWCVT is in Wi-Fi AP Router mode.

Connecting a computer to the CWCVT in Wi-Fi AP Router Mode

1. Select **Wi-Fi AP Router Mode** on the CWCVT. See Mode selection for information about how to select the mode.
2. From the **Show Available Networks** function on your Windows computer, search for the CWCVT-xx:xx:xx SSID and select it.
3. Enter the Passcode if requested.

   ⓘ **Note:** You can find the Passcode on the Connect Info page of the CWCVT. Use the **A** button on the CWCVT to navigate to the Connect Info page.

   ⓘ **Note:** The Passcode does not show on the CWCVT display if it was manually changed.

   ⓘ **Note:** The connection process can take several seconds to complete.

   ⓘ **Note:** Your PC loses connection to the Internet if is it currently connected over Wi-Fi.

   ⓘ **Note:** Ignore warnings on the PC that the internet connection has been lost or is not secure. The CWCVT forms a local network that cannot be accessed from the Internet.

   ⓘ **Note:** Johnson Controls laptops require the Wi-Fi connection to be defined as private (Secure).

4. On the CWCVT display, verify the connection. If the connection is successful the CWCVT Connect Status bar indicates Conn'd and turns white.

Using Wi-Fi AP Router mode with Johnson Controls BAS Tools (SCT example)

About this task:
From SCT, complete the following steps:

1. Click **Tools** > **Ethernet Adapter** and verify your Wi-Fi adapter is the active connection.
2. Click **Tools** > **Trunk Utilities**

3. In the new window, select the Action Type. You can choose any of the available action types.
4. Select **MAP 4.2+/BACnet Router** as the Connection Type and verify your selected devices.
5. Verify the connection parameters. The default parameters are as follows:
   a. IP address: 192.168.142.1
   b. UDP Port: 47808
   c. Network Number: 65001
6. Click **Finish**.

Working with CWa

You can use the CWCVT with the CWa mobile application when the CWCVT is in the BLE Router mode.

Connecting the CWa to the CWCVT

1. Select **BLE Router Mode** on the CWCVT. See Mode selection for information about how to select the mode.
2. From the CWa app, identify an MS/TP trunk, tap the **menu** button, then tap **CWCVT settings**, and then select the CWCVT-XX:XX:XX device.
   a. Connect to the device.
   b. Enter the PIN code. You can find the PIN code on the Pairing Info page of the CWCVT. Use the **A** button on the CWCVT to navigate to the Pairing Info page.
3. On the CWCVT display, verify the connection.
4. Use the CWa app to discover and commission the controllers on the MS/TP bus.

Using the CWCVT from the CWa

Refer to the *Connected Workflow Applications User Guide, LIT-12014106* for details about how to use the CWCVT from the CWa and to connect to devices on an MS/TP network.

Working with third-party MS/TP devices

If you want to monitor an MS/TP device that does not support the FC or SA bus RJ12 connector, for example a third-party device, you can make up your own cable and power the CWCVT through a USB-C cable connected to a USB battery pack or from a USB port on your PC.

Figure 3: Connecting the CWCVT through a USB cable
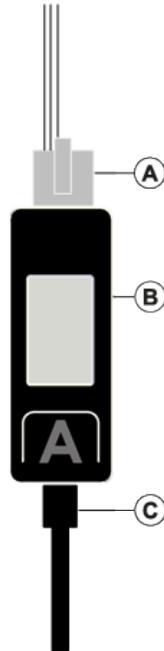
Callout	Description
A	RJ12 cable, connect to MS/TP device. See Figure 4 for the RJ12 pinout diagram.
B	CWCVT
C	USB-C cable, connect to 5 V, 500 mA, USB power source

Figure 4: RJ12 pinout
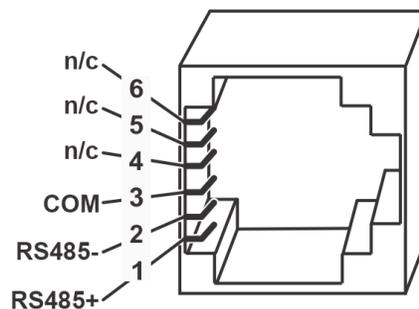
Configuration Settings and Diagnostics

You can view the CWCVT's configuration settings and diagnostic information from either the CWa or from a web browser such as Google® Chrome or Microsoft Edge®.

ⓘ   **Note:** This is an advanced procedure and is not required to be used by the typical user.

ⓘ   **Note:** Make changes to these settings only if you fully understand how they affect the operation of the CWCVT and the MS/TP network you are attaching to.

Viewing settings and diagnostics from a browser

About this task:
To view settings from a browser, complete the following steps:

1. Set the CWCVT into Wi-Fi AP Router mode. See Mode selection for information about how to select the mode.
2. Connect the host device to the CWCVT SSID. See Step 2 in Connecting a computer to the CWCVT in Wi-Fi AP Router Mode for information about how to connect to the CWCVT.
3. Launch a browser on the host device.
4. Enter the IP address as shown on the Connect Info page of the CWCVT. The default is: http:\\192.168.142.1.

   ⓘ **Note:** The CWCVT uses an HTTP connection and WPA2 to encrypt over-the-air traffic. The CWCVT forms an isolated network and has no access to the Internet making HTTPS unnecessary.

   ⓘ **Note:** Laptop security needs to allow port 80 to function for HTTP access. Johnson Controls laptops require a private connection to this device.

Result
When the browser page is displayed, you can select one of several pages from the left menu bar. Refer to the following tables for details of items displayed on each page.

BACnet settings

Table 3: BACnet settings

Value	Access	Range	Default	Description
Devices	Read			List of MS/TP device addresses currently seen on the MS/TP bus. ⓘ **Note:** If plugged into the SA bus of a controller, the number of devices on the FC bus side of the controller are not included.
Active baud rate	Read			The automatically determined baud rate of the MS/TP bus.
Bus-start baud rate	Write	9600 19200 38400 76800	38400	The baud rate that will be used to start the MS/TP bus. Typically, no need to change.

Table 3: BACnet settings

Value	Access	Range	Default	Description
Device object identifier	Write	0-4,194,303	Decimal value of the last two octets of the Wi-Fi MAC Address. Example: 52,390 where: MAC=AC:0B:FB:6C:**CC:A6**	Uniquely identifies the CWCVT when connected to a BACnet network. Typically, no need to change.
MS/TP MAC	Write	0-127	2	The MS/TP address that the CWCVT uses to participate in the token ring. The address may need to change if it conflicts with an existing device address. Typically, no need to change.
MS/TP network number	Write	1-65534	65001	Used to route BACnet messages to the MS/TP bus. Typically, no need to change.
BACnet IP port	Write	1-65534	47808	The Ethernet port used to send and receive BACnet IP messages. Typically, no need to change.
BACnet IP network number	Write	1-65534	10001	Used to route BACnet messages to the BACnet IP (Wi-Fi) bus. Typically, no need to change.
BLE network number	Write	1-65534	555	Used to route BACnet messages to the BLE bus. Typically, no need to change.

ⓘ **Note:** For more details about MS/TP communications bus see the *MS/TP Communications Bus Technical Bulletin, LIT-12011034.*

BLE settings

Table 4: BLE settings

Value	Access	Range	Default	Description
Advertised name	Write	3 to 32 printable characters	CWCVT-xx:xx:xx Where xx:xx:xx is the last three values of the Bluetooth MAC Address.	The name that is visible from a host Bluetooth device (mobile or PC) when you attempt to pair it with the CWCVT. Typically, no need to change. You may want to change this to make it easier to identify in a long list of discoverable Bluetooth devices. Name rules: • Minimum three characters • Maximum 32 characters • Any printable character

ⓘ **Note:** Printable characters include: a-z, A-Z, 0-9, and ~`!@#$%^&*()_-+=<>,.

Wi-Fi settings

Table 5: Wi-Fi settings

Value	Access	Range	Default	Description
Access point name	Write	8 to 32 printable characters	CWCVT - xx:xx:xx Where xx:xx:xx is the last three values of the Wi-Fi MAC Address.	The Access Point name (also SSID) that is visible from a host device you attempt to pair with the CWCVT over its Wi-Fi Access Point. Typically, no need to change. You may want to change this to make it easier to identify in a long list of available Wi-Fi access points. Name rules: • Minimum eight characters • Maximum 32 characters • Any printable character
Access point password	Write	10 to 64 printable characters	Random	A user configurable access point password. Typically, no need to change. You may want to change this to increase the security or make it easier to remember. Password rules: • Minimum ten characters • Maximum 64 characters • Any printable character
Configured channel	Write	1-11	1	The Wi-Fi channel used by the CWCVT Access Point. Typically, no need to change. If you change the channel, chose one of the standard channels 1, 6, or 11. Choosing other channels may cause interference with other wireless networks.
Current Channel	Read			The current channel that is used by the Wi-Fi connection.
Max Tx Power	Read			The transmit power in dBm that the Wi-Fi connection uses. This may be different based on the region where Wi-Fi is used.

ⓘ **Note:** Printable characters include: a-z, A-Z, 0-9, and ~`!@#$%^&*()_-+=<>,.

MS/TP diagnostics

Table 6: MS/TP diagnostics

Parameter	Description
Device Count	The number of MS/TP devices detected on the MS/TP bus. The count does not include the CWCVT.
Devices	A list of the MS/TP device addresses seen on the MS/TP bus.
Framing Errors	A running count of the number of byte framing errors seen on the MS/TP bus.
MS/TP Rx Bytes	A running count of the number of received bytes on the MS/TP bus.
APDU Rate	Running count of all BACnet messages seen per minute from any MS/TP device on the wired side.
Broadcast Rate	Running count of the number of BACnet broadcast messages received per minute from any MS/TP device on the wired side.
MS/TP → Wireless APDU Rate	Running count of BACnet messages seen per minute from any MS/TP device on the wired side to the host device on the wireless side of the CWCVT.
MS/TP ← Wireless APDU Rate	Running count of BACnet messages seen per minute from the host device on the wireless side to any MS/TP device on the wired side of the CWCVT.
Token Loop Time (ms)	The amount of time in milliseconds for the MS/TP token to make it around the token loop.
Dropped Tokens	A running count of the number of times the CWCVT detects that any device on the MS/TP bus fails to use and pass the token causing the token to be recovered.
MS/TP Tx Failures	A running counter of the number of times that an attempt to transmit an MS/TP frame fails.
BIP Tx Failures	A running counter of the number of times that an attempt to transmit a BACnet frame over Wi-Fi fails.

ⓘ **Note:** The values in this table do not update automatically. The values are updated when the table is first viewed and when the Refresh button at the bottom of the table is pressed. These values reset to 0 on every power cycle or when the Reset MS/TP Diagnostics button is pressed.

Device diagnostics

Table 7: Device diagnostics

Parameter	Description
Firmware Version	Current firmware version that runs on the CWCVT.
Mode	The current operating mode of the CWCVT.
Memory Utilization	The current percent of internal memory that the CWCVT uses.
Boot Count	A running count of the number of times the CWCVT has reset.
Last Reboot Reason	The reason the CWCVT last restarted.
Uptime	The running amount of time that the CWCVT is running since its last reboot.
Hardware Type	The hardware version of the CWCVT.

Table 7: Device diagnostics

Parameter	Description
Release Mode	Indicates the release.
Security Version	A number associated with a new firmware image. The CWa uses this number to indicate whether a Firmware Update is required.
Model	An internal code number the CWa uses to determine the correct firmware image to use to update the CWCVT.

ⓘ **Note:** The values in this table do not update automatically. The values are updated when the table is first viewed and when the Refresh button at the bottom of the table is pressed.

Wi-Fi diagnostics

Table 8: Wi-Fi diagnostics

Parameter	Description
RSSI	The Receive Signal Strength Indication of the Wi-Fi signal. Values less than -80 may lead to a poor connection.
Channel	The current channel that the Wi-Fi connection uses.
Max Tx Power	The maximum Tx power in dBm that the CWCVT transmits data.
Station Count	A count of the number of Wi-Fi Stations (Clients) connected to the CWCVT's access point.
Station List	A list of the MAC addresses of the Wi-Fi Station devices connected to the CWCVT's access point.
Station Disconnects	A running count of the number of times a Wi-Fi client disconnects and then reconnects to the access point. Could be an indication of poor Wi-Fi signal.

ⓘ **Note:** The values in this table do not update automatically. The values are updated when the table is first viewed and when the Refresh button at the bottom of the table is pressed. These values reset to 0 on every power cycle.

ⓘ **Note:** These values do not update when connected to the CWCVT in BLE Router mode.

BLE diagnostics

Table 9: BLE diagnostics

Parameter	Description
RSSI	The Receive Signal Strength Indication of the Bluetooth signal. Values less than -80 may lead to a poor connection.
Connection Count	A running count of the number of times a BLE Host controller connected and re-connected to the CWCVT.
Connection Interval	The amount of time between two BLE connection events in units of 1.25 ms. Smaller numbers improve performance, but increases power consumption.
Tx Packet Count	A running count of the number of message packets sent to the BLE Host controller.
Rx Packet Count	A running count of the number of message packets received from the BLE Host controller.

Table 9: BLE diagnostics

Parameter	Description
BLE Tx Power	The maximum Tx power in dBm that the CWCVT transmits data in BLE mode.
MTU Size	The negotiated transmit packet size to send data between two BLE devices. 512 bytes is typical. Smaller numbers result in slower transfers.
Tx Failures	A running count of the number of Tx packet failures to the BLE Host controller.
Pairing Failures	A running count of the number of times a BLE Host controller failed to pair with the CWCVT.

ⓘ **Note:** The values in this table do not update automatically. The values are updated when the table is first viewed and when the Refresh button at the bottom of the table is pressed. These values reset to 0 on every power cycle or when the Reset BLE Diagnostics button is pressed.

ⓘ **Note:** These values do not update when connected to the CWCVT in Wi-Fi AP Router mode.

MS/TP to SD Card Capture

About this task:
The CWCVT features a micro SD card slot that you can use to capture MS/TP bus traffic for diagnostic purposes. The CWCVT supports 32 GB, FAT32 formatted micro SD cards. A unique .pcap MS/TP capture file is created each time you enable or disable the MS/TP Capture feature. You can view the capture files in Wireshark.

ⓘ **Note:** MS/TP to SD Card Capture is an advanced feature. Ensure you are familiar with the MS/TP protocol and how to use Wireshark, or send the capture files to someone who is.

To capture MS/TP bus traffic, complete the following steps:

1. Insert a FAT32 formatted micro SD card into the micro SD card slot of the CWCVT.
2. From the **Diagnostics** tab in the browser, scroll to the Log MS/TP to SD table, then select **Enabled** and click **Save**.

   ⓘ **Note:** See Viewing settings and diagnostics from a browser for details about how to access the CWCVT on a browser.

3. After the logging period ended, a problem on the MS/TP bus is detected, or a problem with an MS/TP device on the bus is observed, change Log To SD card to **Disabled** and click **Save**.

   ⓘ **Note:** A single capture file is limited to 10 million frames, approximately 1 GB of SD storage, or 24 hours of capture. The capture stops when the limit is reached.

4. Remove the micro SD card from the CWCVT and insert it into your PC. The capture file is saved in a folder named `mstp_captures`. Up to 100 capture files are supported. Each capture filename's name will be incremented, for example `mstp_capture_x.pcap` where x is 1 to 100.

   ⓘ **Note:** The capture log is limited to valid frames and invalid packets are dropped.

5. Open the `mstp_capture_x.pcap` file in Wireshark to analyze the trace.

   ⓘ **Note:** The CWCVT does not feature a real-time clock, so the time stamps are relative to the start of the capture. You can use Wireshark's Time Shift feature to set an approximate time to when the capture was started.

Factory reset

About this task:
A factory reset deletes all passwords, user entered settings, connection and security information, and diagnostic data, and resets the CWCVT to a factory state. A factory reset may be necessary if a user forgets a custom Wi-Fi password. The connection and security information resets in the CWCVT, but it does not reset in any host device that previously used the CWCVT.

ⓘ   **Note:** You might need to go to the host device's Wi-Fi or Bluetooth settings and forget the CWCVT to be able to make a new connection.

ⓘ   **Note:** The Wi-Fi AP Router and BLE Router passwords or PINs change on a factory reset.

ⓘ   **Note:** The firmware version of the CWCVT is not affected by a factory reset and remains unchanged.

To perform a factory reset, complete the following steps:

1. Press and hold the **A** and **B** buttons simultaneously for about 3 seconds. Release the buttons when the Factory Reset page appears.
    a. To confirm the reset, press the **B** button.
    b. To cancel the reset, do not press any button until the CWCVT returns to its previous screen.

Firmware updates

The CWCVT firmware updates automatically when the CWCVT is connected to the CWa mobile application. The CWa detects when the connected CWCVT's firmware is out-of-date and updates the device. Refer to the *Connected Workflow Application User Guide (LIT-12014106)* for more details.

Hardware specifications

Table 10: Wireless range

CWCVT mode	Transmit power	Range (Line of sight)
BLE Router	9 dBM	9.1 m (30 ft)
Wi-Fi AP Router	19 dBM	9.1 m (30 ft)

End-Of-Line Switch

You can turn on the End-Of-Line (EOL) switch, located on the bottom of the CWCVT, to provide a temporary 220 ohm termination to the MS/TP bus. When ON, an icon appears in the System ICON area.

If the MS/TP Status page does not show all the MS/TP Manager devices or shows long token loop times or framing errors, turning the EOL switch on may clear the errors. If it does, that could mean that the MS/TP bus is not correctly terminated and you must check the controllers for correct setup.

See the *MS/TP Communications Bus Technical Bulletin, LIT-12011034* for more details and rules on correct network installation and end-of-line settings.

Troubleshooting

Table 11: Troubleshooting

Problem	Solution
Unable to pair a new host device to the CWCVT.	The CWCVT reached its connection limit. Perform a factory reset.
The CWCVT is failing to connect after a factory reset.	The CWCVT deletes its pairing information on a factory reset. You must also forget or delete the CWCVT from your Bluetooth or Wi-Fi settings on your host computer or mobile device and then rediscover and pair again using the new password or PIN.
CCT or SCT was working with the CWCVT and now it gives a connection error.	1. Verify that the CWCVT is in Wi-Fi AP Router mode. 2. Verify that your computer is in wireless range of the CWCVT. 3. Verify the computer's Wi-Fi is turned on from the **Settings** > **Network & Internet** > **Wi-Fi**. 4. Verify the CWCVT is visible and selected in **Show Available Networks** page. Then forget the CWCVT and reconnect.
The CWa was working with the CWCVT and now it gives an error.	1. Verify that the CWCVT is in BLE Router mode. 2. Verify that your mobile device is in wireless range of the CWCVT. 3. Verify the mobile device's Bluetooth is turned on. 4. If the CWCVT was factory reset, forget the CWCVT in your mobile settings and reconnect.
Lost Internet connection on the computer or mobile device when using the CWCVT.	This is expected behavior when you use the CWCVT in Wi-Fi AP Router mode. When you disconnect from the CWCVT's Wi-Fi Access Point, the Internet connection returns. • Use a hard-wired Ethernet connection to the Internet on a computer. Most mobile devices cannot support an alternate connection to the Internet. ⓘ **Note:** Johnson Controls BAS Tools do not work well on Johnson Controls laptops when multiple network adapters are enabled. Manually disable all other adapters on the laptop in order to isolate the Wi-Fi or Ethernet adapter for use with CCT and SCT.
The CWCVT screen is blank.	• The CWCVT is connected to a field controller that is not powered. If connected to a third-party controller, external power may not be applied. • The CWCVT is connected to an invalid RJ12 port. • The RJ12 cable is defective. • The CWCVT is defective.

Frequently asked questions

Table 12: Frequently asked questions about the CWa

Question	Answer
Do I need to install an application on my mobile device to use the CWa?	Yes, to download CWa, visit the Google Play Store or the Apple App Store and search for the Connected Workflow Application.

Table 13: Frequently asked questions about the CWCVT Wireless MS/TP Converter

Question	Answer
Does the CWCVT have its own touch screen display?	No, the CWCVT features a small display to provide connection and configuration information, but physical buttons on the device enable selection of various functions.
How many users can the CWCVT support in BLE Router mode?	CWCVT in BLE Router mode can be paired with three different mobile devices in BLE Router mode, however, it can connect only to one mobile device at a time.
Do I need to install an application on my mobile device to use the CWCVT?	Yes. While the CWCVT uses standard Bluetooth Low Energy (BLE) functionality, the CWa mobile application is required to utilize the BLE Router mode.
How is the CWCVT powered?	The CWCVT gets power from the controller it is connected to. When you connect to a third-party controller, you need external power to power the CWCVT. You can power the CWCVT from a USB battery pack or laptop through the CWCVT's USB-C port.
Does the CWCVT have a battery?	No, the CWCVT loses power when disconnected from the controller. However, the CWCVT does retain its configuration settings.
Where do I plug in the CWCVT?	The CWCVT ships with a 6 pin RJ12-RJ12 phone cord that plugs into any one of three locations: • Sensor Actuator (SA) bus on the Smart Equipment control board, Johnson Controls field controller, or Johnson Controls VAV Box controller. • Bottom SA bus jack of any NS series sensor. • Field Controller (FC) bus of the Smart Equipment control board or MS/TP field controller. ⓘ **Note:** If the controller is connected to a ZFR18x0 wireless router or if the controller is an IP controller, use the SA bus only.
Can I access all MS/TP controllers with the CWCVT from a single location?	Yes, the CWCVT can access all controllers on a FC bus trunk or network from any of the three CWCVT connection points - SA bus, sensor, or FC bus. ⓘ **Note:** If connected into the SA bus of an IP controller, then that controller only can be accessed by the CWa.

Repair information

If the CWCVT fails to operate within its specifications, replace the unit. For a replacement, contact the nearest Johnson Controls representative.

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Patents

Patents: https://jcipat.com

Single point of contact

APAC	EU	UK	NA/SA
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Contact information

Contact your local branch office: www.johnsoncontrols.com/locations

Contact Johnson Controls: www.johnsoncontrols.com/contact-us