Wireless Commissioning Converter Installation Instructions

MS-BTCVT-1

Part No. 24-10108-2, Rev. H
Issued November 13, 2013
Supersedes January 30, 2013

Refer to the QuickLIT website for the most up-to-date version of this document.

Applications

The Wireless Commissioning Converter is a communications converter that provides a temporary connection between the laptop running the Controller Configuration Tool (CCT) software and a field device to upload, download, and commission Metasys® system hardware controllers.

The Wireless Commissioning Converter provides communication from the Field Controller Bus (FC Bus) or the Sensor Actuator Bus (SA Bus) to a Bluetooth® wireless technology-enabled laptop computer. The Wireless Commissioning Converter converts BACnet® Master-Slave/Token-Passing (MS/TP) protocol communication to 2.4 GHz Bluetooth wireless communication and from Bluetooth wireless communication back to MS/TP communication.

A strap, provided with the Wireless Commissioning Converter, allows you to hang the Wireless Commissioning Converter from the network sensor or next to the field controller. The wireless connection allows you to be up to 10 m (33 ft) away while you commission the controller with a laptop computer and the CCT software. The Wireless Commissioning Converter is compatible with the following Metasys® system BACnet MS/TP protocol devices:

- Field Equipment Controller (FEC)
- Advanced Application Field Equipment Controllers (FAC)
- Variable Air Volume Modular Assembly (VMA)
- Input/Output Modules (IOM)
- Network Sensors

The Wireless Commissioning Converter uses Bluetooth wireless technology but has not been licensed by the Bluetooth Special Interest Group (SIG); therefore, only use the Wireless Commissioning Converter with the recommended wireless devices as indicated in the *Installing and Setting up Bluetooth Wireless Technology on Your Laptop Computer* section of this document.

The Wireless Commissioning Converter can be used in conjunction with the ZFR1800 Series Wireless Field Bus System; however, the wireless technologies of the Wireless Commissioning Converter and the ZFR1800 Series System do not directly interact.

Note: When the Wireless Commissioning Converter is connected on the hard-wired portion of an FC Bus, it can be used to commission and communicate with any field controller, whether it is hardwired to the FC Bus or wirelessly enabled through the ZFR1800 Series Wireless Field Bus System.

Note: When the Wireless Commissioning Converter is connected directly to a wirelessly enabled controller, it commissions and communicates with only that controller.

North American Emissions Compliance

United States

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 this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may to cause harmful interference, in which case the users will be required to correct the interference at their own expense.

RF Transmitters: Compliance Statement (Part 15.19)

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

Warning (Part 15.21)

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Johnson Controls

Canada

This Class (A) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe (A) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

RF Transmitters: Industry Canada Statement

The term **IC** before the certification/registration number only signifies that the Industry Canada technical specifications were met.

Le terme « IC » précédant le numéro d'accréditation/inscription signifie simplement que le produit est conforme aux spécifications techniques d'Industry Canada.

Installation

Observe the following guidelines and see the *Mounting* section in this document.

- Verify that all parts are shipped with the Wireless Commissioning Converter.
- The blue protective boot minimizes shock damage to the Wireless Commissioning Converter. If removed from the protective boot, the Wireless Commissioning Converter is prone to physical damage.

Parts Included

- one Wireless Commissioning Converter
- one 5 ft (1.5 m) retractable cable
- one set of Installation Instructions
- one hanging strap with internal magnet

Important: Magnetic fields can damage magnetic storage media, including hard disks, credit cards, and video tapes. Keep all magnets away from all types of magnetic media.

Special Tools Needed

The Wireless Commissioning Converter provides a wireless link to the MS/TP bus. To access the Wireless Commissioning Converter, you need the following:

- a Bluetooth wireless adapter (integral to computer or USB dongle)
- laptop computer running the Windows XP® operating system or later, with the wireless adapter installed
- CCT software

Dimensions

Figure 1: Features of the Wireless Commissioning Converter and Dimensions, mm (in.)

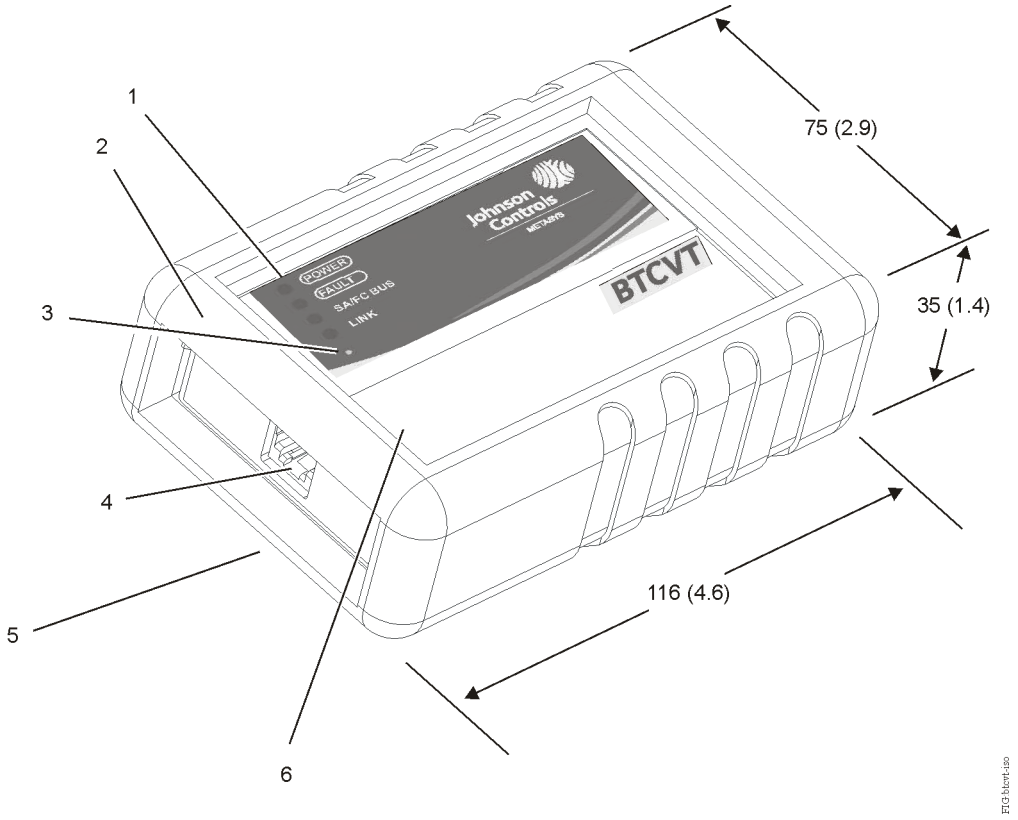


Table 1: Wireless Commissioning Converter Features

Callout	Description
1	Status LEDs (See *Table 4*)
2	Protective Polyvinyl Chloride (PVC) Boot
3	Upgrade Firmware Button (Not Currently Implemented); **Do Not Push**
4	SA/FC Bus (6-Pin RS-485 Port)
5	On Back: Fold-out Kickstand, Hanging Strap Attachment Point (not shown Hanging Strap)
6	Media Access Control (MAC) Address On Label

Accessories

Table 2: Products and Accessories (Order Separately)

Code Number	Description
MS-BTCVT-1	Wireless Commissioning Converter
MS-BTCVTCBL-700	Cable replacement set; includes one 5 ft (1.5 m) retractable cable
MS-ZFRCBL-0	Wire harness which allows an FEC1610 and VMA16 to be connected to an SA Bus Device (MS-BTCVT-1, DIS Display, and NS Series Network Sensor) when its SA Bus RJ-12 jack is occupied by an MS-ZFR1811-0 Router

Mounting

Location Considerations

Observe the following guidelines when mounting a Wireless Commissioning Converter:

- Always hang the Wireless Commissioning Converter using the strap provided.
  Note: Use the strap loop to hang the Wireless MS/TP Converter or attach the strap magnet to a metal object (such as a metal pipe).
- Mount the Converter in areas free of corrosive vapors and observe the environmental limitations listed in the *Technical Specifications* section of this document.
- Objects (including ductwork, cabinets, doors, and glass) can impede the wireless signal. Minimize the number of objects between the laptop computer and the Wireless MS/TP Converter. Use line of sight, if possible.

Wiring

Wiring Consideration and Guidelines

Observe the following guidelines when wiring the Wireless Commissioning Converter:

- Do not allow the Wireless Commissioning Converter to hang from the cable connection.
- Provide some slack in the cable between the Wireless Commissioning Converter and the controller.

Hard-Wired System Configurations

Figure 2, *Figure 3*, and *Figure 4* show the Wireless Commissioning Converter in common hard-wired system configurations.

Note: When the Wireless Commissioning Converter is connected at any of the points shown in *Figure 3* and *Figure 4*, you can commission any field controller on the trunk regardless of whether it is connected directly to the FC Bus or through the ZFR1800 Series System.

Figure 2: Converter Connected to NCE25

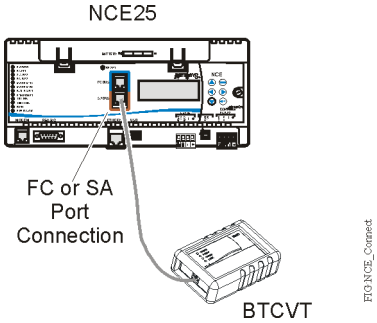


Figure 3: Converter Connected to FEC

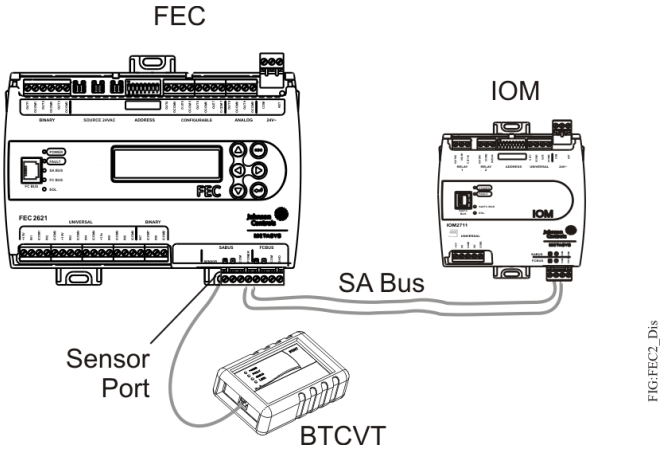
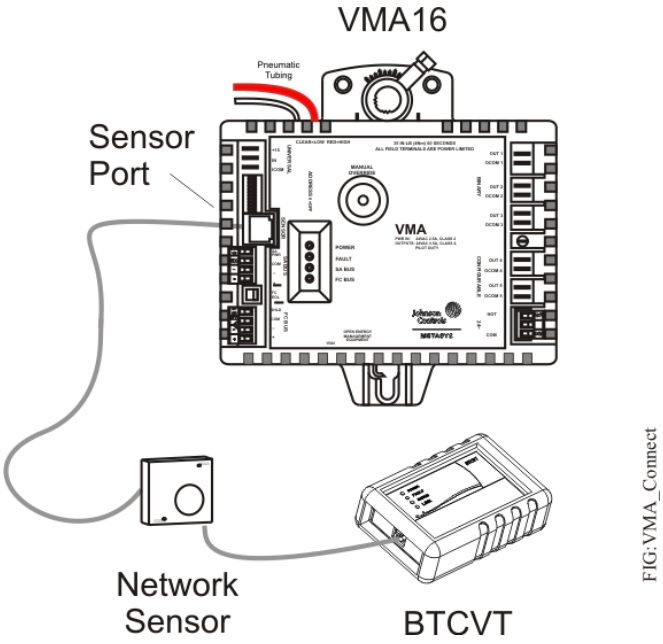


Figure 4: Converter Connected to SA Bus Device



Wireless System Configurations

The SA Bus and FC Bus on the VMA16 and FEC16x0 swap functionality when the controller is wirelessly enabled for use with the ZFR1800 Series Wireless Field Bus System (that is, when DIP switch 128 on the field controller is set to the ON position).

When in wireless mode, the VMA16 requires the use of the ZFRCBL wire harness to connect to the controller (*Figure 7*). On the FEC16x1 and FEC26, the MS-BTCVT-1 Wireless Commissioning Converter connects directly to the Sensor port per normal connection methods (*Figure 6*).

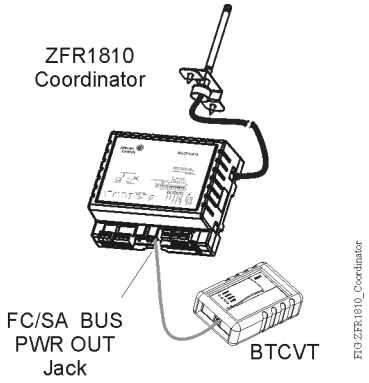
Be sure to make the following connections when using the Wireless Commissioning Converter and the ZFRCBL wire harness:

- Connect the blue FC Bus terminal block plug of the ZFRCBL wire harness to the FC Bus port on the MS/TP device.
- Connect the black SA Bus terminal block plug of the ZFRCBL wire harness to the SA Bus port on the MS/TP device.
- Connect the RJ-12 jack of the ZFRCBL to the SA/FC Bus Port of the Wireless Commissioning Converter using the cable assembly provided with the converter.

Figure 5, *Figure 6*, and *Figure 7* show the Wireless Commissioning Converter in common ZFR1800 Series Wireless Field Bus System configurations.

Note: When the Wireless Commissioning Converter is connected at any of the points shown in *Figure 6* and *Figure 7*, you can only commission the local field controller to which you are connected.

Figure 5: Converter Connected to ZFR1810 Coordinator



Note: Do not wire any other devices directly to the FC Bus terminal block (*Figure 6*).

Figure 6: Converter Connected to Wirelessly Enabled FEC

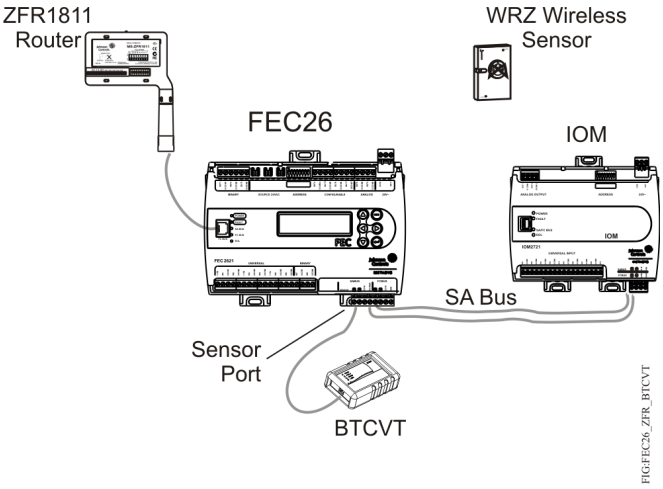
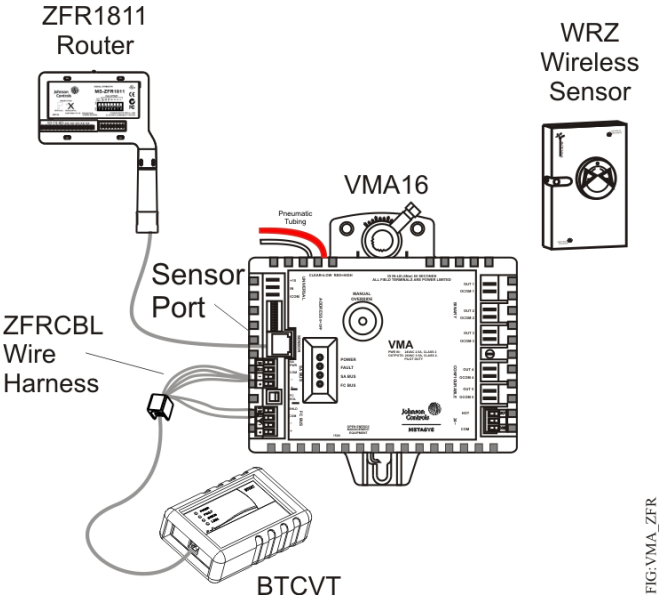


Figure 7: Converter Connected to Wirelessly Enabled VMA16



Power Supply, Network, and Communication Connections

See *Figure 1* for the location of the communications terminal on the Wireless Commissioning Converter.

SA/FC Bus Port

The SA/FC Bus Port on the Wireless Commissioning Converter is an RJ-12 6-pin connection designed to connect the Wireless Commissioning Converter to an accessible SA or FC port on an MS/TP device using the cable assembly provided. The cable is a straight through, one-to-one connection (not a crossover). The maximum allowable cable length is 100 ft (30.5 m).

Do not plug the SA/FC Port into a standard phone jack.

Table 3: SA/FC Port Pin Designations

Pin Number (Both Ends of Cable)	Signal Name
1	(FC or SA) +
2	(FC or SA) -
3	15 VDC Common
4	+15 VDC
5	No Connection
6	No Connection

Connecting the Wireless Commissioning Converter

Observe the following guidelines and procedures when connecting the Wireless Commissioning Converter:

1. After securely hanging the Wireless Commissioning Converter, connect one male end of the supplied cable to the Wireless Commissioning Converter.
2. Connect the other end of the cable to the controller or network sensor.

   For ZFR1800 Series Wireless Field Bus System configurations, you may need to connect the other end of the cable to the RJ-12 jack of the ZFRCBL wire harness. Use a 1-to-2 phone jack adapter to connect to two devices.

   See example configurations in the *Hard-Wired System Configurations* and *Wireless System Configurations* sections.

   Note: The Wireless Commissioning Converter has a dedicated MS/TP bus address of 01. Only one Wireless Commissioning Converter can be connected to a single MS/TP bus at a time.

Setup and Adjustments

The Wireless Commissioning Converter device itself requires no commissioning.

Installing and Setting up Bluetooth Wireless Technology on Your Laptop Computer

Before you can use the Wireless Commissioning Converter, you must install and set up a Bluetooth wireless technology device on your laptop computer. Refer to the *Metasys CCT Bluetooth Technology Communication Commissioning Guide (LIT-12011038)* for a list of supported Bluetooth wireless cards and processors and the instructions to set them up.

Operation

Downloading a Controller Using the Wireless Commissioning Converter

Once the Wireless Commissioning Converter is physically connected to the MS/TP network, you can connect to and download a controller using the CCT on your laptop. Refer to the *Controller Tool Help (LIT-12011147)*.

Troubleshooting

Status Indication Light-Emitting Diodes (LEDs)

The Converter has four LEDs (*Figure 1*) to indicate power and communication status. *Table 4* describes the LED functions.

For other troubleshooting, refer to the CCT *Help*.

LED Test Sequence at Startup

During startup, the Converter automatically initiates an LED test to verify the operational status of the LEDs. Immediately after connecting supply power, the following LED lighting sequence occurs:

1. All LEDs light up.
2. The Power LED remains lit while all other LEDs go to Normal operation as indicated in *Table 4*.

Repair Information

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

Do not remove the blue protective boot or open the Converter housing. The Converter has no user-serviceable parts inside.

The Wireless Commissioning Converter requires no periodic field maintenance.

Wireless Commissioning Converter LED Designations and Descriptions

Table 4: Converter LED Designations and Descriptions

Color	LED Name	Normal	Descriptions/Other Conditions
Green	**Power**	On Steady	On Steady = Power is Supplied by Primary Voltage Off = No Power
Red	**Fault**	Off	Off Steady = No Faults On Steady = Device Fault
Green	**SA/FC Bus**	Flicker	Flicker = MS/TP Bus Activity Off Steady = No MS/TP Bus Activity
Blue	**Link**	On When Connected	On Steady = Bluetooth communication link established Off Steady = Bluetooth communication link not established

Technical Specifications

Table 5: Wireless Commissioning Converter

Product Code	MS-BTCVT-1
Power Requirement	Nominal 15 VDC, provided through the SA/FC Bus Port
Power Consumption	1.35 watts maximum
Ambient Operating Temperature	0–50°C (32–122°F)
Ambient Operating Conditions	5–95% RH, Noncondensing, 30°C (86°F) Maximum Dewpoint
Ambient Storage Temperature	-40–85°C (-40–185°F)
Ambient Storage Conditions	5 to 95% RH, Noncondensing
Transmission Power	2.5 mW maximum
Transmission Speed	**Wireless Communication** 115.2k bits per second (bps) **Serial Communication (SA/FC Bus)** 9600, 19.2k, 38.4k, or 76.8k bps
Transmission Range (Typical)	**Wireless Communication** 10 m (33 ft) line-of-sight
Wireless Security	Security Mode 3 - Link Level Enforced Security
Network and Serial Interfaces	Bluetooth Wireless Technology One RS-485 Bus
Dimensions	116 x 75 x 35 mm (4.6 x 3.0 x 1.4 in.)

Table 5: Wireless Commissioning Converter

Housing	Black ABS Plastic Housing Blue Polyvinyl Chloride (PVC) Protective Boot
Weight	0.165 kg (0.365 lb) without hanging components
Compliance	**United States** UL 916 Energy Management; Plenum rated per UL1995 UL94-5VB Flammability Rating Transmitter Complies with FCC Part 15.247 Regulations for Low Power Unlicensed Transmitters (Transmitter FCC Identification: CB2-MS-BTCVT-0) Receiver Complies with FCC part 15.109 Regulations for Low Power Unlicensed Receivers (Transmitter FCC Identification: CB2-MS-BTCVT-0)
	Canada: Industry Canada (IC: 279A-MSBTCVT0)
CE	**Europe:** CE Mark – Johnson Controls, Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of the R&TTE Directive 1999/05/EC, EMC Directive 2004/108/EC.
	Japan: Telecommunications Certification - 003NY05068 0000

The performance specifications are nominal and conform to acceptable industry standard. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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Published in U.S.A.
www.johnsoncontrols.com