

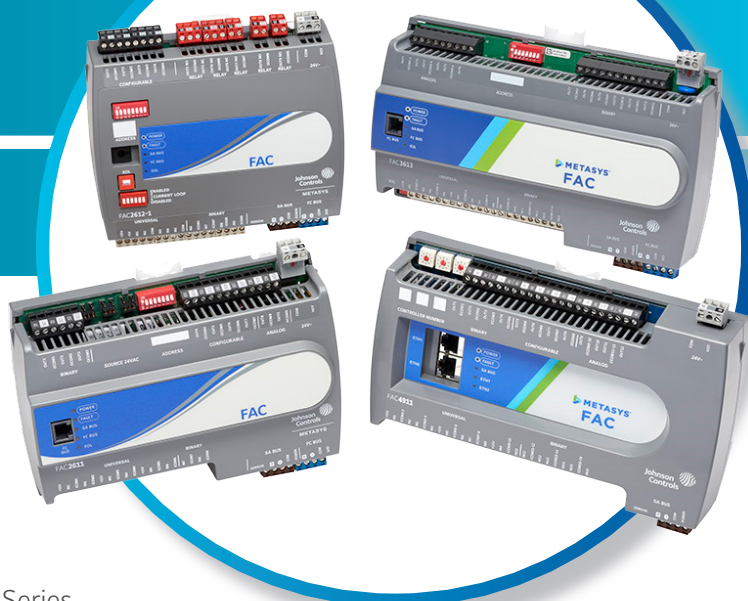
BUILDING AUTOMATION PRODUCTS

PROGRAMMABLE CONTROLLERS

METASYS® CONTROLLERS

FAC

FIELD ADVANCED CONTROLLERS



The Advanced Application Field Equipment Controller (FAC) Series Controllers are programmable controllers that can communicate using BACnet/IP, MS/TP, or N2 communications protocols, depending on the model. The FAC4911 is a BACnet Advanced Application Controller (B-AAC) that communicates using BACnet/IP communications protocol. All other FAC Series controllers can be switched between MS/TP and N2 communication protocols. FAC controllers used as MS/TP devices are B-AACs with integral RS-485 MS/TP communications.

FAC Series Controllers feature an integral real-time clock. FACs support time-based tasks and maintain time-based control, which enables these field controllers to monitor and control schedules, calendars, alarms, and trends. FACs can continue time-based control and monitoring when offline for extended periods of time from a *Metasys* system network.

FAC Series Controllers can also operate as stand-alone controllers in applications that do not require a networked supervisory device or for network applications where it is preferred to have the scheduling, alarming, and/or trending performed locally in the field controllers.

The FAC4911 controllers operate on BACnet/IP networks and integrate into Johnson Controls® and third-party systems.

The FAC3611 and FAC3613 models include a fast persistence feature that allows data values to be held at a configurable value, up to once per second. Persistence refers to how often samples of data are stored locally. In the event of a problem, such as a loss of power, data can be retrieved up to the rate that the data is persisted, minimizing the potential loss of data. When power is restored, previously persisted data, up to the rate of persistence, remains available and accessible.

For example, if persistence is configured for once per second, you only risk losing one second of data. Persisting data may be essential for situations that require greater data accuracy, including certain methods of utility data collection and billing.

The FAC2612 controller features line-voltage relay outputs, which makes this controller well-suited for use in terminal units.

The FAC2612-2 model uses a line-voltage power supply, which eliminates the need for a 24 VAC transformer in line-voltage applications.

The FAC2611, FAC2612, FAC3611, and FAC3613 controllers using the MS/TP protocol support wireless communications using the ZFR or ZFR Pro Series accessories and the WRZ-7860 One-to-One Receiver.



FEATURES

- **Switchable Communications Protocols** – Provides flexibility with a choice between BACnet MS/TP and N2 communication.
- **Standard BACnet Protocol** – Provides interoperability with other Building Automation System (BAS) products that use the widely accepted BACnet standard.
- **Standard Hardware and Software Platform** – Uses a common hardware design throughout the family line to support standardized wiring practices and installation workflows; also uses a common software design to support use of a single tool for control applications, commissioning, and troubleshooting to minimize technical training.
- **ZFR Wireless FC or SA Bus Interface** – Both the ZFR1800 Series Wireless and WNC1800/ZFR182x Pro Series Wireless Field Bus (ZFR Pro) provide a wireless alternative to hard-wired *Metasys* system counterparts, offering application flexibility and mobility with minimal disruption to building occupants.
- **Bluetooth® Wireless Commissioning** – Provides an easy-to-use connection to the configuration and commissioning tool.
- **Auto-Tuned Control Loops** – Reduce commissioning time, eliminate change-of-season recommissioning, and reduce wear and tear on mechanical devices.
- **Universal Inputs and Configurable Outputs** – Allows multiple signal options to provide input/output flexibility.
- **BACnet Testing Laboratories (BTL) Listed and Certified** – Ensures interoperability with other BTL-listed devices. BTL is a third-party agency, which validates that BAS vendor products meet the BACnet industry-standard protocol.
- **32-bit Microprocessor** – Ensures optimum performance and meets industry specifications.
- **BACnet Automatic Discovery** – Supports easy controller integration into a *Metasys* BAS.
- **End-of-Line (EOL) Switch in MS/TP Field Controllers** – Enables field controllers to be terminating devices on the communications bus.
- **Pluggable Communications Bus and Supply Power Terminal Blocks** – Expedites installation and troubleshooting.
- **Writable Flash Memory** – Allows standard or customized applications to be downloaded from the CCT and enables persistent application data.
- **DIS17 Remote Display and the MAP Gateway Support** – Enable monitoring and commanding of I/O and configuration parameters



ORDERING INFORMATION

MODEL INFORMATION (INCLUDING POINT TYPE COUNTS)

		FAC2513	FAC2611	FAC2612	FAC3611	FAC3613	FAC4911
Communication Protocol		BACnet MS/TP	BACnet MS/TP, N2				BACnet/IP
Engines Supported		All Model types. Some NIE models support MS/TP and N2 devices. Refer to the Network Engines Product Bulletin (LIT-12012138) for details.					NAE55, NAE85, ODS at R9.0 or later
Modular Jacks		6-pin SA Bus Modular Port supports one communicating sensor. Or you can wire up to four communicating sensors to the SA Bus Terminal Block. They cannot be used at the same time.					
		6-pin FC Bus for tool support					
Point Types	Signals Accepted						
Universal Input (UI)	Analog Input, Voltage Mode, 0-10 VDC Analog Input, Current Mode, 4- 20 mA Analog Input, Resistive Mode, 0-2k ohm, RTD (1k NI [Johnson Controls], 1k PT, A99B SI), NTC (10k Type L, 2.252k Type 2) Binary Input, Dry Contact Maintained Mode	4 Current Mode not supported	6	5	8	8	10
Binary Input (BI)	Dry Contact Maintained Mode Pulse Counter/Accumulator Mode (High Speed), 100 Hz	6	2	4	6	6	6
Analog Output (AO)	Analog Output, Voltage Mode, 0-10 VDC Analog Current Mode, 4-20 mA	2 Current Mode not supported	2	6	6	4	
Binary Output (BO)	24 VAC Triac	2 External Power only	3	6	6	4	
Configurable Output (CO)	Analog Output, Voltage Mode, 0-10 VDC Binary Output Mode, 24 VAC Triac	2	4	4	4		
Relay Output (RO)	RO: Single-Pole, Double-Throw (SPDT) RO: Single-Pole, Single-Throw (SPST)			2 - SPDT and 3 -SPST linevoltage relays, 1/4 hp 120 VAC, 1/2 hp 240 VAC			



ORDERING INFORMATION

CODES	DESCRIPTION
MS-FAC2513-0	16-Point Advanced Application Field Equipment Controller with 4 UI, 6 BI, 2 CO, 2 BO, and 2 AO; 24 VAC; SA Bus; FC Bus; Integral Real-time Clock Note: This model is only available in certain regions. Contact your local Johnson Controls representative for more information.
MS-FAC2611-0	17-Point Advanced Application Field Equipment Controller with 6 UI, 2 BI, 4 CO, 3 BO, and 2 AO; 24 VAC; SA Bus; FC Bus; Integral Real-time Clock
MS-FAC2612-1	18-Point Advanced Application Field Equipment Controller with 5 UI, 4 BI, 4 CO, 2 SPDT and 3 SPST Line-Voltage ROs 1/4 hp 120 VAC, 1/2 hp 240 VAC; 24 VAC; SA Bus; FC Bus; Integral Real-time Clock;
MS-FAC2612-2	18-Point Advanced Application Field Equipment Controller with 5 UI, 4 BI, 4 CO, 2 SPDT and 3 SPST Line-Voltage ROs, 1/4 hp 120 VAC, 1/2 hp 240 VAC; 100-240 VAC; SA Bus; FC Bus; Integral Real-time Clock
MS-FAC3611-0	26-Point Advanced Application Field Equipment Controller with 8 UI, 6 BI, 6 BO, and 6 AO; 24 VAC; SA Bus; FC Bus; Integral Real-time Clock; Fast Persistence
MS-FAC3613-0	26-Point Advanced Application Field Equipment Controller with 8 UI, 6 BI, 6 BO, and 6 AO; 24 VAC; SA Bus; FC Bus; Integral Real-time Clock; Fast Persistence
MS-FAC4911-0	28-Point Advanced Application Field Equipment Controller with 10 UI, 6 BI, 4 BO, 4 AO, and 4 CO; 24 VAC; SA Sensor Port; Integral Real-time Clock; 2 Ethernet Ports for BACnet/IP Communications

ACCESSORIES

FAC ACCESSORIES (PART 1/2)

CODES	DESCRIPTION
IOM Series	Refer to the Metasys® System Field Equipment Controllers and Related Products Product Bulletin (LIT-12011042) for a complete list of available IOM Series Controllers.
TL-CCT-0	Metasys Controller Configuration Tool (CCT) software
MS-FCP-0	Metasys Field Controller Firmware Package Files for CCT
Mobile Access Portal (MAP) Gateway	Refer to the Mobile Access Portal Gateway Catalog Page (LIT-1900869) to identify the appropriate product for your region. Note: The MAP Gateway serves as a replacement for the the BTCVT, which is no longer available for purchase, but continues to be supported.
NS Series Network Sensors	Refer to the NS Series Network Sensors Product Bulletin (LIT-12011574) for specific sensor model descriptions.
WRZ Series Wireless Room Sensors	Refer to the WRZ Series Wireless Room Sensors Product Bulletin (LIT-12011653) for specific sensor model descriptions.
MS-DIS1710-0	Local Controller Display: Refer to Local Controller Display Product Bulletin (LIT-12011273) for more information.
WRZ-7860-0	Receiver for One-to-One Wireless Room Sensing Systems - functions with WRZ Series Sensors room sensors
WRZ-SST-120	Wireless System Survey Tool
ZFR1800 Series Wireless Field Bus System	This system is used for installations that only support BACnet MS/TP. Refer to the WNC1800/ZFR182x Pro Series Wireless Field Bus System Product Bulletin (LIT-12012320) for a list of available products.

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ORDERING INFORMATION

ACCESSORIES

FAC ACCESSORIES (PART 2/2)

CODES	DESCRIPTION
ZFR-USBHA-0	USB Dongle with ZFR Driver provides a wireless connection through CCT to allow wireless commissioning of the wirelessly enabled FEC, FAC, IOM, and VMA16 controllers. Also allows use of the ZFR Checkout Tool (ZCT) in CCT. Note: The ZFR-USBHA-0 replaces the IA OEM DAUBI_2400 ZFR USB dongle. For additional information about the ZFR-USBHA-0 ZFR dongle, refer to the <i>ZFR1800 Series Wireless Field Bus System Technical Bulletin (LIT-12011295)</i> or <i>ZFR1800 Series Wireless Field Bus System Quick Reference Guide (LIT-12011630)</i> .
Y64T15-0	Transformer, 120/208/240 VAC Primary to 24 VAC Secondary, 92 VA, Foot Mount, 30 in. Primary Leads and 30 in. Secondary Leads, Class 2
Y65T42-0	Transformer, 120/208/240 VAC Primary to 24 VAC Secondary, 40 VA, Hub Mount (Y65SP+), 8 in. Primary Leads and Secondary Screw Terminals, Class 2
AP-TBK4SA-0	Replacement MS/TP SA Bus Terminal, 4-Position Connector, Brown (Bulk Pack of 10)
AP-TBK4FC-0	Replacement MS/TP FC Bus Terminal, 4-Position Connector (Bulk Pack of 10)
AP-TBK3PW-0	Replacement Power Terminal, 3-Position Connector, Gray (Bulk Pack of 10)
AS-CBLTSTAT-0	Cable adapter for connection to 8-pin TE-6700 Series sensors
MS-TBKLV03-0	Terminal Block Kit - FAC Line Voltage AC Power - 3 Pieces
MS-TBKRO02-0	Terminal Block Kit - FAC 2-Position Relay Output - 9 Pieces
MS-TBKRO03-0	Terminal Block Kit - FAC 3-Position Relay Output - 6 Pieces
MS-TBKCO04-0	Terminal Block Kit - FAC 4-Position Configurable Output - 6 Pieces
MS-TBKUI04-0	Terminal Block Kit - FAC 4-Position Universal Input - 3 Pieces
MS-TBKUI05-0	Terminal Block Kit - FAC 5-Position Universal Input - 3 Pieces
TL-BRTRP-0	Portable BACnet/IP to MS/TP Router



TECHNICAL SPECIFICATIONS (PART 1/4)

Codes	<p><i>MS-FAC2513-0</i> 16-Point FAC with Integral Real-Time Clock and 24 VAC Supply Power</p> <p><i>MS-FAC2611-0</i> 17-Point FAC with Integral Real-Time Clock and 24 VAC Supply Power</p> <p><i>MS-FAC2612-1</i> 18-Point FAC with Integral Real-Time Clock and 24 VAC Supply Power</p> <p><i>MS-FAC2612-2</i> 18-Point FAC with Integral Real-Time Clock and 100–240 VAC Supply Power</p> <p><i>MS-FAC3611-0</i> 26-Point FAC with Integral Real-Time Clock and 24 VAC Supply Power with Fast Persistence</p> <p><i>MS-FAC3613-0</i> 26-Point FAC with Integral Real-Time Clock and 24 VAC Supply Power with Fast Persistence</p> <p><i>MS-FAC4911-0</i> 28-Point FAC with Integral Real-Time Clock and 24 VAC Supply Power; Communicates over BACnet/IP network</p>
Communications Protocol	<p><i>MS-FAC2513-0, MS-FAC2611-0, MS-FAC2612-1, MS-FAC2612-2, MS-FAC3611-0, MS-FAC3613-0</i> BACnet MS/TP, N2</p> <p><i>MS-FAC4911-0</i> BACnet/IP</p>
Engines Supported	<p><i>MS-FAC2513-0, MS-FAC2611-0, MS-FAC2612-1, MS-FAC2612-2, MS-FAC3611-0, MS-FAC3613-0</i> All Model types. Some NIE models support MS/TP and N2 devices. Refer to the Network Engines Product Bulletin (LIT-12012138) for details.</p> <p><i>MS-FAC4911-0</i> NAE55, NAE85, ODS (FAC4911 supports R9.0 or later versions of these engines.)</p>
Power Requirement	<p><i>MS-FAC2513-0, MS-FAC2611-0, MS-FAC2612-1, MS-FAC3611-0, MS-FAC3613-0, MS-FAC4911-0</i> 24 VAC (nominal, 20 VAC minimum/30 VAC maximum), 50/60Hz, SELV</p> <p><i>MS-FAC2612-2</i> 100–240 VAC 50/60 Hz</p>
Power Consumption	<p><i>MS-FAC2513-0, MS-FAC2611-0, MS-FAC3611-0, MS-FAC3613-0, MS-FAC4911-0</i> 14 VA maximum</p> <p><i>MS-FAC2612-1</i> 30 VA maximum</p> <p><i>MS-FAC2612-2</i> 40 VA maximum</p> <p>Note: VA ratings do not include any power supplied to the peripheral devices connected to Binary Outputs (BOs) or Configurable Outputs (COs), which can consume up to 12 VA for each BO or CO, for a possible total consumption of an additional 84 VA (maximum).</p>
Ambient Conditions	<p><i>Operating</i> 0 to 50°C, 10 to 90% RH noncondensing; Pollution Degree 2</p> <p><i>Storage</i> -40 to 80°C, 5 to 95% RH noncondensing</p>
Addressing	<p><i>For BACnet MS/TP-configured controllers</i> DIP switch set; valid field controller device addresses 4–127 (device addresses 0–3 and 128–255 are reserved and not valid controller addresses.)</p> <p><i>For BACnet/IP controllers</i> 3 rotary switches to assign unique number for each controller on the subnet to identify it in the Controller Tool for uploading, downloading, and commissioning</p> <p><i>For N2-configured controllers</i> DIP switch set; valid controller device addresses 1–254</p>

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TECHNICAL SPECIFICATIONS (PART 2/4)

<p>Communications Bus</p> <p><i>RS-485, field selectable between BACnet MS/TP and N2 communications on certain models</i></p>	<ul style="list-style-type: none"> • 3-wire FC Bus between the supervisory controller and field controllers • 4-wire SA Bus between field controller, network sensors, and other sensor/actuator devices, includes a lead to source 15 VDC supply power (from field controller) to bus devices.
<p><i>MS-FAC4911-0</i></p>	<ul style="list-style-type: none"> • BACnet/IP over Ethernet cable • 4-wire SA Bus between field controller, network sensors, and other sensor/actuator devices, includes a lead to source 15 VDC supply power (from field controller) to bus devices.
<p>Processor</p>	
<p><i>MS-FAC2611-0, MS-FAC2612-1, MS-FAC2612-2</i></p>	H8SX/166xR Renesas® microcontroller
<p><i>MS-FAC3611-0</i></p>	RX630 32-Bit Renesas microcontroller
<p><i>MS-FAC2513-0, MS-FAC3613-0</i></p>	RX631 32-Bit Renesas microcontroller
<p><i>MS-FAC4911-0</i></p>	RX63N 32-Bit Renesas microcontroller
<p>Memory</p>	
<p><i>MS-FAC2611-0, MS-FAC2612-1, MS-FAC2612-2, MS-FAC3611-0</i></p>	4 MB Flash Memory and 1 MB RAM
<p><i>MS-FAC2513-0, MS-FAC3613-0</i></p>	16 MB Flash Memory and 8 MB SDRAM
<p><i>MS-FAC4911-0</i></p>	16 MB Flash Memory and 8 MB RAM
<p>Input and Output Capabilities</p>	
<p><i>MS-FAC2513-0</i></p>	<p>4 - Universal Inputs: Defined as 0-10 VDC, 0-600k ohm, or Binary Dry Contact</p> <p>6 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode</p> <p>2 - Analog Outputs: Defined as 0-10 VDC 2 - Binary Outputs: Defined as 24 VAC Triac (external power source only)</p> <p>2 - Configurable Outputs: Defined as 0-10 VDC or 24 VAC Triac BO</p>
<p><i>MS-FAC2611-0</i></p>	<p>6 - Universal Inputs: Defined as 0-10 VDC, 4-20 mA, 0-600k ohm, or Binary Dry Contact</p> <p>2 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode</p> <p>2 - Analog Outputs: Defined as 0-10 VDC or 4-20 mA</p> <p>3 - Binary Outputs: Defined as 24 VAC Triac (selectable internal or external source power)</p> <p>4 - Configurable Outputs: Defined as 0-10 VDC or 24 VAC Triac BO</p>
<p><i>MS-FAC2612-1, MS-FAC2612-2</i></p>	<p>5 - Universal Inputs: Defined as 0-10 VDC, 4-20 mA, 0-600k ohm, or Binary Dry Contact</p> <p>4 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode</p> <p>4 - Configurable Outputs: Defined as 0-10 VDC or 24 VAC Triac BO</p> <p>2 - Relay Outputs (Single-Pole, Double-Throw): UL 916: 1/4 hp 120 VAC, 1/2 hp 240 VAC; 360 VA Pilot Duty at 120/240 VAC (B300); 3 A Non-inductive 24-240 VAC; EN 60730: 6 (4) A N.O. or N.C. only</p> <p>3 - Relay Outputs (Single-Pole, Single-Throw): UL 916: 1/4 hp 120 VAC, 1/2 hp 240 VAC; 360 VA Pilot Duty at 120/240 VAC (B300); 3 A Non-inductive 24-240 VAC; EN 60730: 6 (4) A N.O. or N.C. only</p>
<p><i>MS-FAC3611-0, MS-FAC3613-0</i></p>	<p>8 - Universal Inputs: Defined as 0-10 VDC, 4-20 mA, 0-600k ohms, or Binary Dry Contact</p> <p>6 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode</p> <p>6 - Binary Outputs: Defined as 24 VAC Triac (external power source only)</p> <p>6 - Analog Outputs: Defined as 0-10 VDC or 4-20 mA</p>
<p><i>MS-FAC4911-0</i></p>	<p>10 - Universal Inputs: Defined as 0-10 VDC, 0-600k ohms, or Binary Dry Contact</p> <p>6 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode</p> <p>4 - Binary Outputs: Defined as 24 VAC Triac (external power source only)</p> <p>4 - Analog Outputs: Defined as 0-10 VDC or 4-20 mA</p> <p>4 - Configurable Outputs: Defined as AO mode , 0-10 VDC or BO mode, 24 VAC Triac</p>

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TECHNICAL SPECIFICATIONS (PART 3/4)

Analog Input (AI)/Analog Output (AO) Resolution and Accuracy	
<i>Analog Input</i>	15-bit resolution
<i>Analog Output</i>	15-bit resolution, +/- 200 mV accuracy in 0–10 VDC applications
Terminations	
<i>MS-FAC2513-0</i>	Input/Output: Fixed Screw Terminal Blocks FC Bus, SA Bus and Supply Power: 3-wire and 4-wire Pluggable Screw Terminal Blocks SA Bus Port: RJ-12 6-pin Modular Jacks
<i>MS-FAC2611-0, MS-FAC3611-0, and MS-FAC3613-0</i>	Input/Output: Fixed Screw Terminal Blocks FC Bus, SA Bus and Supply Power: 3-wire and 4-wire Pluggable Screw Terminal Blocks FC Bus and SA Bus Port: RJ-12 6-pin Modular Jacks
<i>MS-FAC2612-1 and MS-FAC2612-2</i>	Input/Output: Pluggable Screw Terminal Blocks FC Bus, SA Bus and Supply Power: 3-wire and 4-wire Pluggable Screw Terminal Blocks FC Bus and SA Bus Port: RJ-12 6-pin Modular Jacks
<i>MS-FAC4911-0</i>	Input/Output: Fixed Screw Terminal Blocks SA Bus and Supply Power: 3-wire and 4-wire Pluggable Screw Terminal Blocks SA Bus Port: RJ-12 6-pin Modular Jacks
Mounting	Horizontal on single 35 mm DIN rail mount (preferred), or screw mount on flat surface with three integral mounting clips on controller
Housing	Enclosure material: ABS and polycarbonate UL94 5VB, self-extinguishing; Plenumrated Protection Class: IP20 (IEC529) (except the FAC2612 controller)
Dimensions (Height x Width x Depth)	
<i>MS-FAC2513-0</i>	150 x 164 x 48 mm including terminals and mounting clips
<i>MS-FAC2611-0</i>	150 x 190 x 53 mm including terminals and mounting clips
<i>MS-FAC2612-x</i>	150 x 164 x 53 mm including terminals and mounting clips
<i>MS-FAC3611-0, MS-FAC3613-0, MS-FAC4911-0</i>	150 x 220 x 57.5 mm including terminals and mounting clips
	Note: Mounting space for FAC models requires an additional 50 mm space on top, bottom, and front face of controller for easy cover removal, ventilation, and wire terminations.
Weight	0.5 kg
CE Compliance	Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and RoHS Directive. Johnson Controls, declares that the FAC2612-2 models are also in compliance with the essential requirements and other relevant provisions of the Low Voltage Directive. Declared as Independently Mounted, Intended for Panel Mounting, Operating Control Type 1.B, 4kV rated impulse voltage, 100°C ball pressure test.
BACnet International	
<i>MS-FAC261x-x</i>	BACnet® Testing Laboratories (BTL) Protocol Revision 7 Listed BACnet Advanced Application Controller (B-AAC)
<i>MS-FAC3611-0</i>	BACnet® Testing Laboratories (BTL) Protocol Revision 9 Listed BACnet Advanced Application Controller (B-AAC)
<i>MS-FAC2513-0, MS-FAC3613-0, MS-FAC4911-0</i>	BACnet® Testing Laboratories (BTL) Protocol Revision 15 Listed and Certified BACnet Advanced Application Controller (B-AAC)

Note

The MS-FAC2513-0 model is only available in certain regions. Contact your local Johnson Controls representative for more information.