Input/Output Module (IOM) Series Controllers Catalog Page

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

The Input/Output Module (IOM) Series Controllers are BACnet® Application Specific Controllers (B-ASCs) with integral RS-485 Master-Slave/Token-Passing (MS/TP) communications. IOM controllers integrate into the web-based Metasys® system.

Note: At CCT Release 10.1, VMAs, FECs, and FACs can communicate by using either the BACnet or the N2 field bus networking protocol. The operation of the IOM Input/Output Module is not affected by the selection of the BACnet or the N2 protocol in the host controller.

IOMs can serve in one of two capacities, depending on where they are installed in the Metasys system. When installed on the Sensor/Actuator (SA) Bus of an Field Equipment Controller (FEC), Advanced Application Field Equipment Controller (FAC), or VMA controller, the IOMs expand the point count of these controllers. When installed on the Field Controller (FC) Bus, IOMs can be used as I/O point multiplexors to support monitoring and control from an Network Automation Engine (NAE) or Network Control Engine (NCE). The point multiplexor can also be useful for sharing points between other field controllers on the FC Bus using peer-to-peer connectivity.

A full range of FEC models combined with the IOM models can be applied to a wide variety of building applications ranging from simple fan coil or heat pump control to advanced central plant management.

Important:	You cannot purchase a similar third-party device and install it in a UL/ULC Listed smoke control system. Doing so voids the UL/ULC Smoke Control Listing. Third-party devices must be provided and labeled by the factory as described in the UL/ULC Smoke Control Listing.

Important:	Only those Johnson Controls products identified for use in smoke control applications have been tested and listed by UL for use in a Metasys System UL 864 9th Edition UUKL/ORD-C100-13 UUKLC Smoke Control System. Installation of a product that is not UL/ULC Listed and labeled for this application prevents the entire system from being UL/ULC Listed for smoke control.

Refer to the *Metasys® System Field Equipment Controllers and Related Products Product Bulletin (LIT-12011042)* for product application details.

Features

- 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.
- Bluetooth® Wireless Commissioning Interface - Provides an easy-to-use connection to the configuration and commissioning tool.
- Auto Tuned Control Loops - Reduce commissioning time, eliminate change-of-season re-commissioning, and reduce wear and tear on mechanical devices.
- Universal Inputs, Configurable Outputs, and Point Expansion Modules - Allow multiple signal options to provide input/output flexibility.
- Optional Local User Interface Display - Allows convenient monitoring and adjusting capabilities at the local device.
- BACnet Testing Laboratories™ (BTL) Listing - 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 support enables easy controller integration into Metasys BAS.
- Integral end-of-line (EOL) switch enables field controller as a terminating device on the communications bus.
- Pluggable communications bus and supply power terminal blocks expedite installation and troubleshooting.
- Wireless capabilities via a ZFR1800 Series Wireless Field Bus System enable wireless mesh connectivity to supervisory controllers, facilitating easy initial location and relocation.
- Ability to reside on the FC Bus or SA Bus provides application flexibility.

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

Figure 1: IOM4711

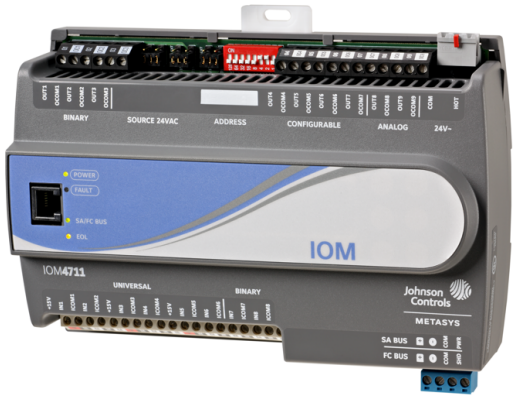

Table 1: IOM Series Point Type Counts Per Model

Point Types	Signals Accepted	IOM 1711	IOM 2711	IOM 2721	IOM 3711	IOM 3721	IOM 3731	IOM 4711
Universal Input (UI)	Analog Input, Voltage Mode, 0–10VDC Analog Input, Current Mode, 4–20mA Analog Input, Resistive Mode, 0–2kohm, RTD (1k NI [Johnson Controls], 1k PT, A99B SI), NTC (10k Type L, 2.252k Type 2) Binary Input, Dry Contact Maintained Mode		2	8	4			6
Binary Input (BI)	Dry Contact Maintained Mode Pulse Counter/Accumulator Mode (High Speed), 100 Hz	4				16	8	2
Analog Output (AO)	Analog Output, Voltage Mode, 0–10VDC Analog Output, Current Mode, 4–20mA			2				2
Binary Output (BO)[1]	24 VAC Triac						8	3
Universal Output (UO)	Analog Output, Voltage Mode, 0–10VDC Binary Output Mode, 24 VAC/DC FET Analog Output, Current Mode, 4–20mA		2		4			
Configurable Output (CO)	Analog Output, Voltage Mode, 0–10VDC Binary Output Mode, 24 VAC Triac							4
Relay Output (RO) (-0 models only)	120/240 VAC		2		4			
Relay Output (RO) (-1 models only)	24 VAC, SELV		2		4			
Relay Output (RO) (-2 models only)	240 VAC		2		4			

1 The BOs on the IOM3731-0A model require an external low-voltage power source.

Table 2: IOM Series Ordering Information

Product Code Number	Description
MS-IOM1711-0	4-Point IOM with 4 BI, FC Bus and SA Bus Support
MS-IOM2711-0[2]	6-Point IOM with 2 UI, 2 UO, 2 BO, FC Bus, and SA Bus Support. Relays are rated for 120/240 VAC.
MS-IOM2711-2[3]	6-Point IOM with 2 UI, 2 UO, 2 BO, FC Bus, and SA Bus Support. Relays are rated for 240 VAC.
MS-IOM2721-0	10-Point IOM with 8 UI, 2 AO, FC Bus, and SA Bus Support
MS-IOM3711-0[2]	12-Point IOM with 4 UI, 4 UO, 4 BO, FC Bus, and SA Bus Support. Relays are rated for 120/240 VAC.
MS-IOM3711-2[3]	12-Point IOM with 4 UI, 4 UO, 4 BO, FC Bus, and SA Bus Support. Relays are rated for 240 VAC
MS-IOM3721-0	16-Point IOM with 16 BI, FC Bus, and SA Bus Support
MS-IOM3731-0	16-Point IOM with 8 BI, 8 BO, FC Bus, and SA Bus Support
MS-IOM3731-0A[1]	16-Point IOM with 8 BI, 8 BO, FC Bus, and SA Bus Support **Note:** Binary Outputs (BOs) on MS-IOM3731-0A controllers do not supply power for the outputs; the BOs require external low-voltage (<30 VAC) power sources.
MS-IOM4711-0	17-Point IOM with 6 UI, 2 BI, 3 BO, 2 AO, 4 CO, FC and SA Bus Support

1 This model is currently available only in Asia. Contact your local Johnson Controls representative for more information.
2 UL Listed
3 CE Marked

Table 3: IOM Series for Smoke Control Ordering Information

Product Code Number[1], [2]	Description
MS-IOM1710-0U	4-Point IOM with 4 BI; 24 VAC; FC Bus and SA Bus Support
MS-IOM1711-0U	4-Point IOM with 4 BI; 24 VAC; FC Bus and SA Bus Support
MS-IOM2710-0U	6-Point IOM with 2 UI, 2 UO, 2 BO; 24 VAC; FC Bus and SA Bus Support
MS-IOM2711-0U	6-Point IOM with 2 UI, 2 UO, 2 BO; 24 VAC; FC Bus and SA Bus Support
MS-IOM3710-0U	12-Point IOM with 4 UI, 4 UO, 4 BO; 24 VAC; FC Bus and SA Bus Support
MS-IOM3711-0U	12-Point IOM with 4 UI, 4 UO, 4 BO; 24 VAC; FC Bus and SA Bus Support
MS-IOU4710-0U	17-Point IOM with 6 UI, 2 BI, 3 BO, 2 AO, 4 CO; 24 VAC; FC Bus and SA Bus Support with Mounting Base
MS-IOM4711-0U	17-Point IOM with 6 UI, 2 BI, 3 BO, 2 AO, 4 CO; 24 VAC; FC Bus and SA Bus Support with Mounting Base

1 These devices are UL/ULC 864 Listed, File S4977, 9th Edition UUKL/ORD-C100-13 UUKLC Smoke Control System.
2 All field controllers in a smoke control system must be mounted in Johnson Controls custom or standard UL 864 panels or in panels that are ordered from Johnson Controls. If these field controllers are used with panels that are not supplied by Johnson Controls, they are not compliant with the UL 864 9th Edition UUKL/ORD-C100-13 UUKLC Smoke Control System listing.

Accessories

Table 4: IOM Accessories

Product Code Number	Description
MS-BTCVT-1	Wireless Commissioning Converter with Bluetooth® Technology
TL-BRTRP-0	Portable BACnet IP to MS/TP Router
MS-ZFR1811-1	Wireless Field Bus Router, 10 mW Transmission Power. Functions with Metasys BACnet FECs, VMA16s, and WRZ Series Wireless Mesh Room Sensors
MS-BTCVTCBL-700	Cable Replacement Set for the MS-BTCVT-1 or the NS-ATV7003-0; Includes One 5 ft (1.5 m) Retractable Cable
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
Y65A13-0	Transformer, 120 VAC Primary to 24 VAC Secondary, 40 VA, Foot Mount (Y65AS), 8 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
Y65T31-0	Transformer, 120/208/240 VAC Primary to 24 VAC Secondary, 40 VA, Foot Mount (Y65AR+), 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
AP-TBK4FC-0	Replacement MS/TP FC Bus Terminal, 4-Position Connector, Blue, Bulk Pack
AP-TBK3PW-0	Replacement Power Terminal, 3-Position Connector, Gray, Bulk Pack
ZFR-USBHA-0	ZFR USB Dongle driver provides a wireless connection through CCT to allow wireless commissioning of the wirelessly enabled FEC, Advanced Application Field Equipment Controller (FAC), IOM, and VMA16 controllers. Also allows use of the ZFR Checkout Tool (ZCT) in CCT.

IOM Series Technical Specifications

Table 5: IOM Series

Product Code Numbers	**MS-IOM1711-0:** 4-Point IOM with 4 BI, FC Bus and SA Bus Support **MS-IOM2711-0:** 6-Point IOM with 2 UI, 2 UO, 2 BO, FC Bus, and SA Bus Support. Relays are rated for 120/240 VAC **MS-IOM2711-1:** 6-Point IOM with 2 UI, 2 UO, 2 BO, FC Bus, and SA Bus Support. Relays are rated for 24 VAC **MS-IOM2711-2:** 6-Point IOM with 2 UI, 2 UO, 2 BO, FC Bus, and SA Bus Support. Relays are rated for 240 VAC. **MS-IOM2721-0:** 10-Point IOM with 8 UI, 2 AO, FC Bus, and SA Bus Support **MS-IOM3711-0:** 12-Point IOM with 4 UI, 4 UO, 4 BO, FC Bus, and SA Bus Support. Relays are rated for 120/240 VAC **MS-IOM3711-1:** 12-Point IOM with 4 UI, 4 UO, 4 BO, FC Bus, and SA Bus Support. Relays are rated for 24 VAC **MS-IOM3711-2:** 12-Point IOM with 4 UI, 4 UO, 4 BO, FC Bus, and SA Bus Support. Relays are rated for 240 VAC **MS-IOM3721-0:** 16-Point IOM with 16 BI, FC Bus, and SA Bus Support **MS-IOM3731-0:** 16-Point IOM with 8 BI, 8 BO, FC Bus, and SA Bus Support **MS-IOM3731-0A**[1]**:** 16-Point IOM with 8 BI, 8 BO, FC Bus, and SA Bus Support **MS-IOM4711-0:** 17-Point IOM with 6 UI, 2 BI, 3 BO, 2 AO, 4 CO, FC and SA Bus Support **Smoke Control Models:** **MS-IOM1710-0U:** 4-Point IOM with 4 BI, FC Bus and SA Bus Support **MS-IOM1711-0U:** 4-Point IOM with 4 BI, FC Bus and SA Bus Support **MS-IOM2710-0U:** 6-Point IOM with 2 UI, 2 UO, 2 BO, FC Bus, and SA Bus Support **MS-IOM2711-0U:** 6-Point IOM with 2 UI, 2 UO, 2 BO, FC Bus, and SA Bus Support **MS-IOM3710-0U:** 12-Point IOM with 4 UI, 4 UO, 4 BO, FC Bus, and SA Bus Support **MS-IOM3711-0U:** 12-Point IOM with 4 UI, 4 UO, 4 BO, FC Bus, and SA Bus Support **MS-IOU4710-0U:** 17-Point IOM with 6 UI, 2 BI, 3 BO, 2 AO, 4 CO, FC Bus and SA Bus Support with Mounting **MS-IOM4711-0U:** 17-Point IOM with 6 UI, 2 BI, 3 BO, 2 AO, 4 CO, FC Bus and SA Bus Support with Mounting
Supply Voltage	24 VAC (nominal, 20 VAC minimum/30 VAC maximum), 50/60 Hz, Power Supply Class 2 (North America), Safety Extra-Low Voltage (SELV) Europe

Table 5: IOM Series

Power Consumption	14 VA maximum **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), depending on the IOM model.
Ambient Conditions	**Operating:** 0 to 50°C (32 to 122°F); 10 to 90% RH noncondensing **Storage:** -40 to 80°C (-40 to 176°F); 5 to 95% RH noncondensing
Addressing	DIP switch set; valid field controller device addresses 4–127 (Device addresses 0–3 and 128–255 are reserved and not valid IOM addresses).
Communications Bus[2]	BACnet MS/TP, RS-485 3-wire FC Bus between the supervisory controller and field devices 4-wire SA Bus between field controller, network sensors, and other sensor/actuator devices. Includes a lead source 15 VDC supply power (from field controller) to bus devices.
Processor	H8SX/166xR Renesas® 32-bit microcontroller
Memory	512 KB Flash Memory and 128 KB Random Access Memory (RAM)

Table 5: IOM Series

Input and Output Capabilities	**IOM1711:** 4 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/ Accumulator Mode
	IOM2711: 2 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact 2 - Universal Outputs: Analog Output: Voltage Mode, 0-10 VDC; Binary Output Mode: 24 VAC/DC FET; Analog Output: Current Mode, 4-20 mA 2 - Relay Outputs: (Single-Pole, Double-Throw); **UL 916** (-0 model only): 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** (-1 model only): 6 (4) A N.O. or N.C. only, 24 VAC, SELV **EN 60730** (-2 model only): 6 (4) A N.O. or N.C. only, 240 VAC
	IOM2721: 8 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact 2 - Analog Outputs: Defined as 0–10 VDC or 4–20 mA
	IOM3711: 4 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact 4 - Universal Outputs: Analog Output: Voltage Mode, 0-10 VDC; Binary Output Mode: 24 VAC/DC FET; Analog Output: Current Mode, 4-20 mA 4 - Relay Outputs: (Single-Pole, Double-Throw); **UL 916** (-0 model only): 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** (-1 model only): 6 (4) A N.O. or N.C. only, 24 VAC, SELV **EN 60730** (-2 model only): 6 (4) A N.O. or N.C. only, 240 VAC
	IOM3721: 16 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode
	IOM3731: 8 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode 8 - Binary Outputs: Defined as 24 VAC Triac (Require external low-voltage power source.) **Note:** Binary Outputs (BOs) on MS-IOM3731-0A controllers do not supply power for the outputs; the BOs require external low-voltage (< 30 VAC) power sources.
	IOM4711: 6 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact 2 - Binary Inputs: Defined as Dry Contact Maintained or Pulse/Counter Accumulator Mode 3 - Binary Outputs: Defined as 24 VAC Triac (selectable internal or external source power) 4 - Configurable Outputs: Defined as 0–10 VDC or 24 VAC Triac BO 2 - Analog Outputs: Defined as 0–10 VDC or 4–20 mA
Analog Input/Analog Output Resolution and Accuracy	**Analog Input:** 16-bit resolution **Analog Output:** 16-bit resolution and ±200 mV in 0–10 VDC applications
Terminations	Input/Output: Fixed Screw Terminal Blocks SA/FC Bus and Supply Power: 4-wire and 3-wire Pluggable Screw Terminal Blocks SA/FC 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, Plenum-rated protection class: IP20 (IEC529)

Table 5: IOM Series

Dimensions (Height x Width x Depth)	**IOM17 and IOM27 Family Models:** 150 x 120 x 53 mm (5-7/8 x 4-3/4 x 2-1/8 in.) including terminals and mounting clips **IOM2721, IOM3721, and IOM3731 Models:** 150 x 164 x 53 mm (5-7/8 x 6-7/16 x 2-1/8 in.) including terminals and mounting clips **IOM37 and IOM47 Family Models:** 150 x 190 x 53 mm (5-7/8 x 7-1/2 x 2-1/8 in.) including terminals and mounting clips **Note:** Mounting space for all field controllers requires an additional 50 mm (2 in.) space on top, bottom, and front face of controller for easy cover removal, ventilation, and wire terminations.
Weight	0.5 kg (1.1 lb) maximum
Compliance	**United States:** UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment; UL/ULC 864 Listed, File S4977, 9th Edition UUKL/ORD-C100-13 UUKLC Smoke Control System (models with **U** product code suffix only); FCC Compliant to CFR47, Part 15, Subpart B, Class A **Note:** Except IOM2711-2 and IOM3711-2
	Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment; UL/ULC 864 Listed, File S4977, 9th Edition UUKL/ORD-C100-13 UUKLC Smoke Control System (models with U product code suffix only); UL/ULC 864 Listed, File S4977, 9th Edition UUKL/ORD-C100-13 UUKLC Smoke Control System (models with U product code suffix only); Industry Canada Compliant, ICES-003 **Note:** Except IOM2711-2 and IOM3711-2
	Europe: CE Mark – Johnson Controls, Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC. Declared as Independently Mounted, Intended for Panel Mounting, Operating Control Type 1.B, 4kV rated impulse voltage, 100.7°C ball pressure test. **Note:** Except IOM2711-0 and IOM3711-0
	Australia and New Zealand: C-Tick Mark, Australia/NZ Emissions Compliant **Note:** Except IOM2711-0 and IOM3711-0
	BACnet International: BACnet Testing Laboratories (BTL) Protocol Revision 4 Listed BACnet Application Specific Controller (B-ASC)

1 This model is currently available only in Asia. Contact your local Johnson Controls representative for more information.
2 For more information, refer to the *MS/TP Communications Bus Technical Bulletin (LIT-12011034)*.

The performance specifications are nominal and conform to acceptable industry standards. 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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