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VAV Modular Assembly (VMA) 1600 Series Controllers

Description

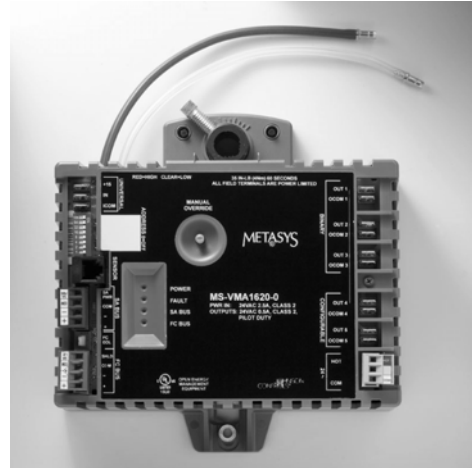
The VMA1600 Series controllers are programmable digital controllers that communicate via BACnet® Master-Slave/Token-Passing (MS/TP) Protocol. Both the VMA1610 and VMA1620 controllers have a pressure sensor and actuator in a pre-wired unit. The VMA1600 Series controllers connect easily to the NS Series Network Sensors for zone and discharge air temperature sensing.

The VMA1600 Series controllers can be configured for both single and dual duct Variable Air Volume (VAV) applications. The VMA1610 and VMA1620 controllers require an additional damper actuator and Differential Pressure Transducer (DPT) sensor for dual duct or supply/exhaust applications.

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

Features

- BACnet MS/TP protocol communication provides open system compatibility.
- Writable flash memory allows standard or customized applications to be downloaded from the Controller Configuration Tool (CCT).
- Integrated pressure sensor and actuator reduce installation time.
- The fast response actuator drives the damper from full open to full closed (90°) in 60 seconds to reduce commissioning time.
- Point capacity can be expanded by adding Input/Output Modules (IOMs) to the Sensor Actuator bus, providing further application flexibility.



VMA1600 Series Controller

- Continuous loop tuning through patented proportional adaptive control (P-Adaptive) and Pattern Recognition Adaptive Control (PRAC) technologies

Repair Information

If the VMA1600 Series controller fails to operate within its specifications, replace the unit. For a replacement controller, contact the nearest Johnson Controls® representative.

Selection Charts

VMA Point Type Counts per Model

Point Types	Signals Accepted	VMA1610	VMA1620
Universal Input (UI)	Analog Input, Voltage Mode, 0 - 10 VDC Analog Input, Resistive Mode, 0 - 2k ohm, RTD (1k NI [Johnson Controls], 1k PT, A99B SI), NTC (10k Type L, 2.225k Type 2) Binary Input, Dry Contact Maintained Mode	1	1
Binary Output (BO)	24 VAC Triac	0	3
Configurable Output (CO)	Analog Output, Voltage Mode, 0 - 10 VDC Binary Output Mode, 24 VAC Triac	0	2
Integrated Actuator	Internal	1	1
Integrated Flow Sensor	Internal	1	1
Zone Sensor Input	On Sensor-Actuator Bus (SA Bus)	up to 4 zone sensors	

Ordering Information

Product Code Number	Description
MS-VMA1610-0	Integrated VAV Controller/Actuator/Pressure Sensor (Cooling Only), FC Bus, and SA Bus
MS-VMA1610-0U	Integrated VAV Controller/Actuator/Pressure Sensor (Cooling Only), FC Bus, and SA Bus Note: This model is UL Listed, File S4977, UUKL 864 - 9th Edition, Smoke Control Equipment.
MS-VMA1620-0	Integrated VAV Controller/Actuator/Pressure Sensor (with Reheat and Fan Control), FC Bus, and SA Bus
MS-VMA1620-0U	Integrated VAV Controller/Actuator/Pressure Sensor (with Reheat and Fan Control), FC Bus, and SA Bus Note: This model is UL Listed, File S4977, UUKL 864 - 9th Edition, Smoke Control Equipment.

VAV Modular Assembly (VMA) 1600 Series Controllers (Continued)

Accessories

Product Code Number	Description
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-TBK1002-0	2-position Screw Terminal that Plugs onto Spade Lugs
AP-TBK1003-0	3-position Screw Terminal the Plugs onto Spade Lugs
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
MS-BTCVT-1	Wireless Commissioning Converter, with Bluetooth® technology

Technical Specifications

VMA1600 Series Controllers	
Product Code Numbers	MS-VMA1610-0: Cooling Only MS-VMA1620-0: Cooling with Reheat and Fan Control
Supply Voltage	20 - 30 VAC at 50 or 60 Hz, Class 2 or Safety Extra Low Voltage (SELV)
Power Consumption	10 VA typical, 14 VA maximum Power delivered to devices connected to the binary outputs (for example, valves, relays, and so on) is not included in this rating.
Ambient Conditions	Operating: 0 to 50°C (32 to 122°F) Storage: -40 to 70°C (-40 to 158°F)
Terminations	6.3 mm (1/4 in.) spade lugs except communications and 24 VAC power, which are screw terminal pluggable blocks
Controller Addressing	DIP switch set (4-127). Addresses 0-3, 128-255 are reserved.
Communications Bus	BACnet MS/TP; 3-wire FC Bus between the NAE/NCE and other devices. 4-wire SA Bus from the VMA to network sensors and other devices. ¹
Analog Input/Analog Output Resolution and Accuracy	Analog Input: 15-bit resolution Analog Output: 16-bit resolution and ±200 mV in 0-10 VDC applications
Mounting	Mounts to damper shaft using single set screw and to duct with single mounting screw.
Actuator Rating	4 N·m (35 lb-in) minimum shaft length = 44 mm (1-3/4 in.)
Compliance	<p>United States UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment; UL Listed, File S4977, UUKL 864 - 9th Edition, Smoke Control Equipment (MS-VMA1610-0U, MS-VMA1620-0U only); FCC Compliant to CFR47, Part 15, Subpart B, Class A</p> <p>Canada UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment; Industry Canada Compliant, ICES-003</p> <p>Europe CE Mark, EMC Directive 89/336/EEC, in accordance with EN 61000-6-3 (2001) Generic Emission Standard for Residential and Light Industry and EN 61000-6-2 (2001) Generic Immunity Standard for Heavy Industrial Equipment, and the Low Voltage Directive 73/23/EEC in accordance with EN 60730-1 (1999) Automatic electrical controls for household and similar use.</p> <p>Australia and New Zealand C-Tick Mark, Australia/NZ Emissions Compliant.</p> <p>BACnet International BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Application Specific Controller (B-ASC)</p>
Dimensions	(Height x Width x Depth): 182 x 182 x 64 mm (7-3/16 x 7-3/16 x 2-1/2 in.) Center of Output Hub to Center of Anti-rotation Slot: 160 mm (6-5/16 in.)
Weight	0.86 kg (1.9 lb)

1. For more information, refer to the *MS/TP Communications Bus Technical Bulletin (LIT-12011034)*.