



Variable Air Volume Controller

Solidyne’s M2V is the next generation Variable Air Volume and Temperature Controller. Plug-in modules are available for flow sensing, actuator and external relay control. These plug-in modules allow easy customization of the M2V for any type of VAV application. This peer-to-peer, stand alone or networkable VAV controller can control ANY type of variable air volume unit. Offering 100% compatibility with IZAC controllers, ICMS software and Tridium Niagara Framework™ via it’s BACnet MS/TP interface.

Specifications

Power Requirements

Input Voltage: 23 to 28 VAC 50/60 Hz
 Consumption: 1.7 VA (without optional plug-in modules)
 10.3 VA (all optional plug-in modules used)
 Input Voltage Fuse: Resettable fuse rated at 1.1A at 24VAC

Inputs/Outputs

Analog Inputs:

- Zone Temperature*
- Duct Temperature*
- Local Zone Temperature Setpoint Adjust (ZTS-A)
- 0-10vdc Main Damper Actuator Position
- 0-10vdc Auxiliary Damper Actuator Position

* Thermistor Inputs are 3k, 10k, 100kohm thermistor, Type 3.

Analog Outputs:

- Main Actuator Output 0-10vdc*
- Auxiliary Actuator Output 0-10vdc*

* Can drive down to 10Kohm loads at 10vdc

Specifications cont’d:

Digital Outputs:

Up to Eight (8) Digital Outputs*.

* Eight (8) digital outputs would require one (1) plug-in relay modules (M2-R4) and 2 plug-in floating actuator modules (M2V-FMD). In this configuration, the M2V would have four (4) relay outputs and four (4) triac outputs.

Operating Environment

Temperature: 40 to 140 F (4 to 60 C) *
 Humidity: 10-90% Relative, noncondensing **

* Storage Temperature: -10 to 150 F (-23 to 66 C)
 ** Storage Humidity: 0-95% Relative, noncondensing

Network Communication

Method: RS-485
 Cable: 3 conductor, 18 guage, shielded, up to 8000ft max.
 Baud Rate (selectable): 57.6k, 38.4k, 19.2k, 9600, 2400, 1200

Memory Backup

Battery: 7 year lithium

Physical Dimensions

Height: 70 mm (2.75 in)
 Width: 78 mm (3.0 in)
 Length: 160 mm (6.3 in)
 Mounting Holes: 148.5 mm (5.85 in) Center to Center
 Weight: 1.2 lb

Agency Approvals



Listed Device: UL Listed under E76576 24G9



Pending: BACnet Testing Laboratories (BTL)

BACnet Protocol Implementation Conformance Statement

Date: 12/01/2013
Vendor Name: Solidyne Corp.
Product Name: M2-V
Product Model Number: M2-Vxxx
Applications Software Version: V05.10 Firmware Revision: 2013/12/01 BACnet Protocol Revision: 1

Product Description:

The M2-V is a general purpose building automation controller for VAV and VVT systems with 3 temperature/resistive inputs, 2 0-10vdc analog inputs, 2 0-10vdc analog outputs with options for other I/O via it's plug-in modules

BACnet Standardized Device Profile (Annex L):

- BACnet Operator Workstation (B-OWS)
- BACnet Building Controller (B-BC)
- BACnet Advanced Application Controller (B-AAC)
- BACnet Application Specific Controller (B-ASC)
- BACnet Smart Sensor (B-SS)
- BACnet Smart Actuator (B-SA)

List all BACnet Interoperability Building Blocks Supported (Annex K):

- K.1.2 BIBB - Data Sharing-ReadProperty-B (DS-RP-B)
- K.1.8 BIBB - Data Sharing-WriteProperty-B (DS-WP-B)
- K.1.15 BIBB - Data Sharing-COV-Unsolicited-A (DS-COVU-A)
- K.1.16 BIBB - Data Sharing-COV-Unsolicited-B (DS-COVU-B)
- K.5.2 BIBB - Device Management-Dynamic Device Binding-B (DM-DDB-B)

Segmentation Capability:

Not Able to transmit segmented messages Window Size _____
Not Able to receive segmented messages Window Size _____

Standard Object Types Supported:

An object type is supported if it may be present in the device. For each standard Object Type supported provide the following data:

- 1) Whether objects of this type are dynamically creatable using the CreateObject service
- 2) Whether objects of this type are dynamically deletable using the DeleteObject service
- 3) List of the optional properties supported
- 4) List of all properties that are writable where not otherwise required by this standard
- 5) List of proprietary properties and for each its property identifier, datatype, and meaning
- 6) List of any property range restrictions

Note: For all the Object Types listed here, none are dynamically creatable, none are dynamically deletable and no optional properties are supported.

- Analog Input Objects, quantity 16.
- Analog Output Objects, quantity 8.
- Analog Value Objects, quantity 16.
- Binary Output Objects, quantity 8.
- Device Object, quantity 1.

Data Link Layer Options:

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ANSI/ATA 878.1, EIA-485 ARCNET (Clause 8), baud rate(s) _____
- MS/TP master (Clause 9), baud rate(s): **9600, 19200, 38400, 57600, 76800**
- MS/TP slave (Clause 9), baud rate(s): _____
- Point-To-Point, EIA 232 (Clause 10), baud rate(s): _____
- Point-To-Point, modem, (Clause 10), baud rate(s): _____
- LonTalk, (Clause 11), medium: _____
- Other: _____

Device Address Binding:

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) **NO**

Networking Options:

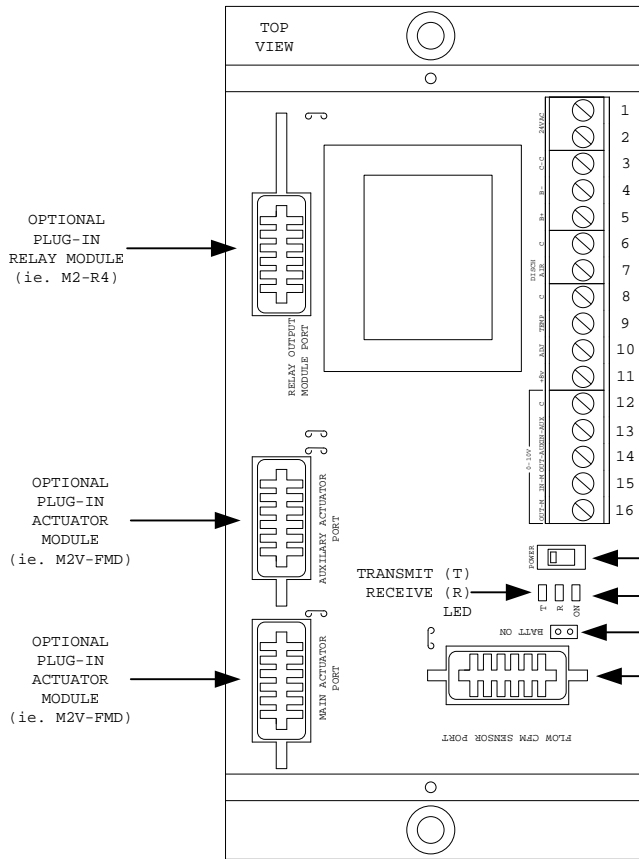
- Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
- Annex H, BACnet Tunneling Router over IP
- BACnet/IP Broadcast Management Device (BBMD)
Does the BBMD support registrations by Foreign Devices? Yes No

Character Sets Supported:

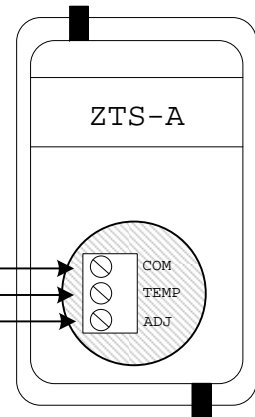
Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- ANSI X3.4 IBM™/Microsoft™ DBCS ISO 8859-1
- ISO 10646 (UCS-2) ISO 10646 (UCS-4) JIS C 6226

If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports: **This product is not a communication gateway.**



1	24VAC	24VAC HOT
2	24VAC	24VAC NEUTRAL
3	C_C	COMMON RS-485 LAN COMM CONNECTION
4	B-	B- RS-485 LAN COMM CONNECTION
5	B+	B+ RS-485 LAN COMM CONNECTION
6	C	COMMON
7	DISCH AIR	DISCH/SUPPLY TEMP COMMON
8	C	SENSOR COMMON
9	TEMP	ZONE TEMP 3/10/100K (INPUT #2)
10	ADJ	ZTS-A ADJUSTMENT POT (INPUT #3)
11	+8V	+8VDC TRANSDUCER POWER 25mA MAX
12	C	0-10 VDC INPUT/OUTPUT COMMON
13	IN-AUX	0-10 VDC INPUT (INPUT #8)
14	OUT-AUX	0-10 VDC OUTPUT (OUTPUT #3)
15	IN-M	0-10 VDC INPUT (INPUT #7)
16	OUT-M	0-10 VDC OUTPUT (OUTPUT #1)



INPUT TABLE

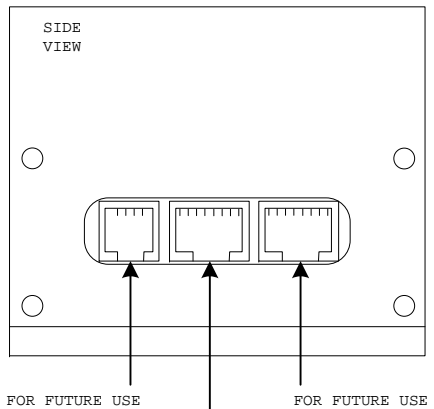
INPUT	NAME	TERM. BLOCK CHARACTER	FROM MODULE	INPUT TYPE
INPUT 1	ZONE TEMP	TEMP (9)	ON BOARD	3K, 10K, 100K
INPUT 2	DISCHARGE AIR TEMP	DISCH AIR (7)	ON BOARD	3K, 10K, 100K
INPUT 3	SETPOINT	ADJ (10)	ON BOARD	ZTS-A
INPUT 4	CFM		M2V-FS	FLOW
INPUT 5	MAIN DAMPER POSITION		M2V-FMD	0-10V
INPUT 6	AUX DAMPER POSITION		M2V-FMD	0-10V
INPUT 7	MAIN 0-10V	IN-M (15)	ON BOARD	0-10V
INPUT 8	AUXILIARY 0-10V	IN-AUX (13)	ON BOARD	0-10V

DIGITAL OUTPUT TABLE

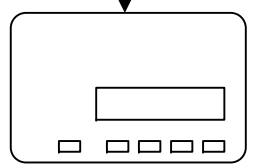
OUTPUT	DIGITAL OUTPUT	FROM MODULE
OUTPUT 1	MAIN ACTUATOR CW	M2V-FMD
OUTPUT 2	MAIN ACTUATOR CCW	M2V-FMD
OUTPUT 3	AUX ACTUATOR CW	M2V-FMD
OUTPUT 4	AUX ACTUATOR CCW	M2V-FMD
OUTPUT 5	RELAY OUTPUT	M2-R4
OUTPUT 6	RELAY OUTPUT	M2-R4
OUTPUT 7	RELAY OUTPUT	M2-R4
OUTPUT 8	RELAY OUTPUT	M2-R4

ANALOG OUTPUT TABLE

ANALOG OUTPUT	FROM MODULE
MAIN 0-10V (OUT-M)	ON BOARD (16)
AUXILIARY 0-10V (OUT-AUX)	ON BOARD (14)



DU-1 MUST HAVE 8 PIN RJ-45 CONNECTOR TO PROPERLY CONNECT TO M2V SIDE TERMINAL. DU-1 MUST ALSO HAVE BEEN PURCHASED AFTER NOV. 2004.



DU-1 HAS INTERNAL TEMPERATURE SENSOR THAT SHARES THE SAME CIRCUITRY AS TEMP SENSOR (INPUT #1). DU-1 AND TEMP SENSOR TERMINAL CANNOT BE USED SIMULTANEOUSLY.

M2V Installation Notes:

- Make sure that BATT JUMPER is in place before powering unit ON with on board POWER switch.
- When unit is powered, ON LED will flash 1 second on, 1 second off continuously when controller is operating properly. This flashing serves as a heartbeat indicator and that the unit is on. It will not flash or illuminate when unit is powered off.
- When inserting or removing plug-in modules or display units such as DU-1, M2V must be powered OFF or damage will occur.
- The OUT-M and OUT-AUX share the same output number assignment as MAIN ACTUATOR CW (output 1) and AUX ACTUATOR CW (output 3) outputs from the plug-in actuator cards yet they can be used simultaneously since the OUT-M and OUT-AUX are 0-10vdc type outputs and the MAIN ACTUATOR CW and AUX ACTUATOR CW are digital output types.
- M2V is internally protected from over current by a 1.1 amp self resetting fuse. This will protect the 24VAC transformer powering the M2V from being damaged due to the unit failing internally.
- The +8v output is used for future low power Solidyne transducers.