

## Overview

The I/A Series MicroNet VAV (Variable Air Volume) Controllers are interoperable controllers designed in accordance with LonMark® guidelines. When programmed using WorkPlace Tech Tool or loaded with a pre-engineered application, they provide a wide range of control strategies for pressure independent terminal boxes with, or without, reheat capabilities. Both models provide an integral actuator with manual override, an integral patented pressure transducer, one digital input, one universal input, Sensor Link (S-Link) support, LED indication, and over-the-shaft damper mounting. In addition, the MNL-V2RVx model provides one analog output and three digital outputs. These controllers can function either in a standalone mode or as part of a LonWorks® FTT-10 Free Topology communications network.

The VAV series controllers offer the advantages of standalone or networked control. Using a I/A Series MicroNet Sensor (MN-Sx series), the operator can monitor controller performance and edit operational values. The WorkPlace Tech Tool software is used to program the controllers or download applications from the application library.

## Communications

### LonWorks Networks

LonWorks communications network uses an FTT-10 Free Topology configuration. Controllers on a LonWorks network can communicate with each other in a peer-to-peer fashion. A LonWorks network has a communications speed of 78k baud, using unshielded, twisted-pair cabling, with connections that are not polarity sensitive.

### S-Link

The Sensor Link (S-Link) communications wiring provides power and a communication interface for an MN-Sx I/A Series MicroNet sensor. The various MN-Sx sensors can provide room temperature, room humidity, setpoint adjustment, and occupancy override. This connection uses two-wire, unshielded cable and is not polarity sensitive. Maximum wire length allowed between a controller and a I/A Series MicroNet Sensor is 200 ft (61 m). This connection uses two-wire, unshielded cable and is not polarity sensitive. Maximum S-Link bus length is 200 ft (61 m).

## Flow Balance Software

Provides flow balancing for networked and standalone VAV series controllers. Features include:

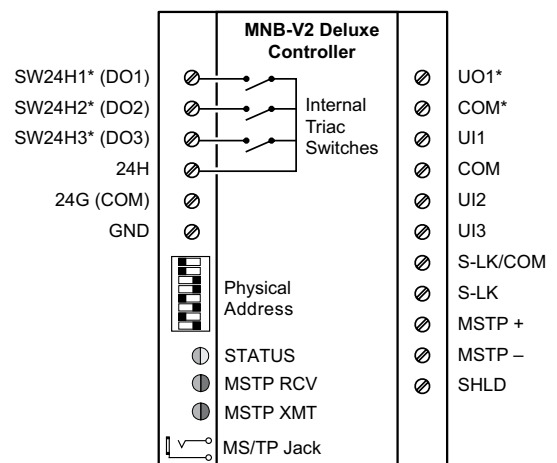
- » Local network control.
- » Damper and fan adjustment.
- » Setpoint monitoring and adjustment.
- » Flow validation and calibration.
- » Sequence, calibration, and control setpoint logs.

## Software Capabilities

- » Conforms to the LonMark guidelines.
- » WorkPlace Tech Tool is capable of reconfiguring and editing application configuration data to fit a wide range of variable air volume control requirements.
- » HVAC interoperability achieved through use of LonMark HVAC profiles.
- » Air balancing provided by the I/A Series MicroNet VAV Flow Balance software.



Designed for new or existing systems, the VAV series controllers may be applied to pressure independent terminal boxes with, or without, reheat capabilities.



\* Asterisks indicate terminals that apply to the MNB-V2 controller but not to the MNB-V1.

## Specifications

### Hardware Specifications

**Dimensions** - 7-3/4 H x 6-1/4 W x 2-1/2 D in (197 x 159 x 63 mm).

**Enclosure** - Conforms to NEMA-1. Meets UL 94-5V flammability ratings for plenum application use.

**Mounting** - Shaft mount.

**Power Supply Input** - 20.4 to 30 Vac, 50/60 Hz.

**Power Consumption** - 15 VA at 24 Vac plus DO loads.

### Agency Listings

**UL-916** - File #E9429 Category PAZX.

**Canadian** - UL Listed to Canadian Safety Standards (CAN/CSA 22.2).

**FCC** - Part 15 Class A.

**Australian** - Meets requirements to bear the C-Tick Mark.

**European Community – EMC Directive 89/336/EMC EN61326**

### Ambient Limits

**Operating Temperature** - 32 to 131 °F (0 to 55 °C).

**Shipping and Storage Temperature** - -40 to 160 °F (-40 to 71 °C).

**Humidity** - 5 to 95% non-condensing.

### Wiring Terminals

**Fixed Screw terminals** - single AWG #14 (2.08 mm<sup>2</sup>) wire or up to two AWG #18 (0.823 mm<sup>2</sup>) or smaller wires.

### Velocity Pressure Input

**Control Range** - 0.004 to 1.5 in. of W.C.

**Over Pressure Withstand** - ±20 in. of W.C.

**Accuracy** - ±5% at 1.00 in. of W.C. with laminar flow at 77 °F (25 °C) and suitable flow station.

**Sensor Type** - Self-calibrating flow sensor (differential pressure).

**Tubing Connections** - Barb fittings for 0.170 in. I.D. FRPE polyethylene tubing or 1/4" O.D./0.125" I.D. Tygon® tubing (high and low pressure taps).

**Tubing Length** - 5 ft. (1.52 m) maximum, each tube.

### Inputs from MN-Sx I/A Series MicroNet Sensor

**Space Temperature** - 32 to 122 °F (0 to 50 °C).

**Space Humidity** - 5 to 95% RH, non-condensing.

**Local Setpoint** - Adjustable within limits set by application programming tool.

**Override Pushbutton** - For standalone occupancy control.

**Fan Operation and Speed Mode** - On/off, speed (low/medium/high), or auto.

**System Mode** - Heat, cool, off, or auto.

**Emergency Heat** - Enable or disable.

### Universal Inputs

Universal Input characteristics are software-configured to respond to one of the following input types:

**10 k ohm Thermistor with 11 k ohm Shunt Resistor** - Sensor operating range -40 to 250 °F (-40 to 121 °C), model TSMN-5701 1-850, TS-5700-850 series, or equivalent.

**1 k ohm Balco** - -40 to 250 °F (-40 to 121 °C), TAC model TSMN-81011, TS-8000 series, or equivalent.

**1 k ohm Platinum** - -40 to 240 °F (-40 to 116 °C), TAC model TSMN-58011, TS-5800 series, or equivalent.

**1 k ohm Resistive** - 0 to 1500 ohms.

**10 k ohm Resistive** - 0 to 10.5 k ohms.

**Analog Voltage** - Range 0 to 5 Vdc.

**Analog Current** - Range 0 to 20 mA, requires external 250 W shunt resistor (AD-8969-202).

**Digital** - Dry switched contact; detection of closed switch requires less than 300 ohms resistance; detection of open switch requires more than 1.5 k ohms.

**Standard Pulse Input Minimum Rate** - 1 pulse per 4 minutes.

**Maximum Rate** - 1 pulse per second.

### Actuator Outputs

**Torque Rating** - 53 lb-in. (6 N-m).

**Stroke** - Fully adjustable from 0° to 90°.

**Timing** - Approximately 3 minutes at 60 Hz (3.6 minutes at 50 Hz) for 90° rotation at 24 Vac.

**Position Indication** - Provides a visual indication of position.

**Manual Override** - Pushbutton to allow manual positioning of the damper.

**Damper Linkage** - 1/2 in. (12.75 mm) or 3/8 in. (9.5 mm) diameter round shaft extending 7/8 in. (22.23 mm) minimum from terminal box. 3/8 in. (9.5 mm) diameter shaft requires AM-135 adapter kit.

### Digital Outputs – Triac

**D01 plus D02 Rating** - 24 VA total at 24 Vac, 50/60 Hz, high side switching.

**D03 Rating** - 12 VA at 24 Vac, 50/60 Hz, high side switching.

### Universal Output

**0 to 20 mA** - Output load from 80 to 550 ohms.

**0 to 10 V** - With external 500 ohms, 1/2 ohm, 1% resistor.

**Capable of Driving Functional Devices RIBUI1C Relay** - UO configured for 0 to 20 mAdc, no external