

MicroNet BACnet VAV Controllers



MicroNet BACnet VAV Controllers MNB-Vx

The TAC I/A Series™ MicroNet™ BACnet™ VAV (Variable Air Volume) Controllers are interoperable controllers with native BACnet MS/TP communications support. All models incorporate: an integral actuator with manual override; an integral, patented, pressure transducer; three universal inputs; Sensor Link (S-Link) support; LED status indication; and over-the-shaft damper mounting. See the model chart for optional features.

When programmed using WorkPlace Tech Tool, the controllers provide a wide range of control strategies for pressure-dependent and pressure-independent terminal boxes with or without reheat capabilities.

The MicroNet BACnet VAV controllers can function either in a standalone mode or as part of a BACnet building automation system (BAS) network.

SPECIFICATIONS

HARDWARE

Dimensions

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

Enclosure

Cover meets UL 94-5VA flammability ratings for plenum application use.

Optional enclosure for conduit applications, conforms to NEMA-1.

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

US

FCC Part 15, Class A.

UL 916, File #E71385 Category PAZX

UL 864, Category UUKL, File #S5381 Smoke-Control Equipment

Canadian

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

CUL Listed to Standards

ULC/ORD-C100-92 (Smoke Control System Equipment) and CAN-ULC-S527 (Control Units for Fire Alarm Systems)

Australian

Meets requirements to bear the C-Tick Mark.

BTL Listed

B-ASC

European Community

EMC Directive 89/336/EEC, 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 mm²) wire or up to two AWG #18 (0.823 mm²) 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).

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Tubing Length

5 ft. (1.52 m) maximum, each tube.

INPUTS FROM MN-SX 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 or occupancy override.

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 (3)

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-57011-850, TS-5700-850 series, or equivalent.

1 k ohm Balco

-40 to 250 °F (-40 to 121 °C), model TSMN-81011, TS-8000 series, or equivalent.

1 k ohm Platinum

-40 to 240 °F (-40 to 116 °C), 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 ohm 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 2.5 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

DO1 plus DO2 Rating

24 VA total at 24 Vac, 50/60 Hz, high side switching.

DO3 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 W, 1% resistor.

Capable of Driving Functional Devices RIBUI1C Relay

UO configured for 0 to 20 mAdc, no external resistor.

MODELS

Part Number	Description	Inputs and Outputs		
		UI	UO	DO (Triac)
MNB-V1	Cooling only	3	—	—
MNB-V2	Deluxe	3	1	3

FEATURES

- The MicroNet BACnet VAV controllers' sequence of operation and BACnet image are fully programmable using WorkPlace Tech Tool. The controllers can be applied to all common VAV configuration and reheat control strategies.
- Capability to function in standalone mode or as part of a BACnet building automation network.
- Air balancing performed via BACnet, using VAV Flow Balance software, through direct connection or over the network.
- Integral MS/TP jack for direct connection of PC with WorkPlace Tech Tool and Flow Balance tool.
- Integrated packaging with actuator, pressure transducer, and controller.
- Integral actuator features manual override and travel limit stops for easy set up and adjustment.
- Optional plenum-rated enclosure for use if wiring to flexible conduit is required.
- MS/TP DIP switch addressable.
- Isolated EIA-485 (formerly RS-485) transceiver for MS/TP communications.
- MS/TP baud rate selection from 9.6 up to 76.8 kbaud.
- LED indication of MS/TP communication activity and controller status.
- Firmware upgradeable over the network.
- Support for S-Link Sensor.
- Damper position feedback to the BACnet BAS via integral hall effect sensor.
- Stable flow control down to 0.004 in. W.C. differential pressure.
- Provides flow balancing for networked and standalone VAV controllers. Features include:
 - Local network control.
 - Damper and fan adjustment.
 - Setpoint monitoring and adjustment.
 - Flow validation and calibration (1, 2, or 3 point calibration).
 - Sequence, calibration, and control setpoint logs.

COMMUNICATIONS

BACnet Networks

The MicroNet BACnet VAV controllers incorporate an isolated EIA-485 (formerly RS-485) transceiver for BACnet MS/TP communications at 9.6 up to 76.8 kbaud using standard MS/TP wiring methods. Up to 128 MicroNet BACnet controllers can be connected to an MS/TP sub-net without repeaters.

S-Link

The Sensor Link (S-Link) communications wiring provides power and a communication interface for one MN-Sx TAC 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 S-Link bus length is 200 ft (61 m).

BACNET COMPLIANCE

BACnet Application Specific Controller (B-ASC).

OPTIONS

MNA-FLO-1

MicroNet Enclosure, used if wiring to flexible conduit is required

S-Link Sensors

Temperature and Humidity Wall Sensors with Digital Communication

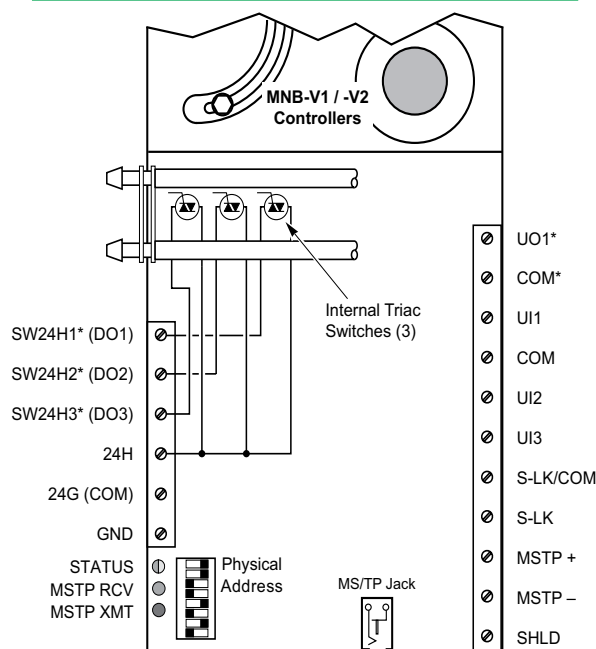
TSMN Series

Room Temperature Sensors



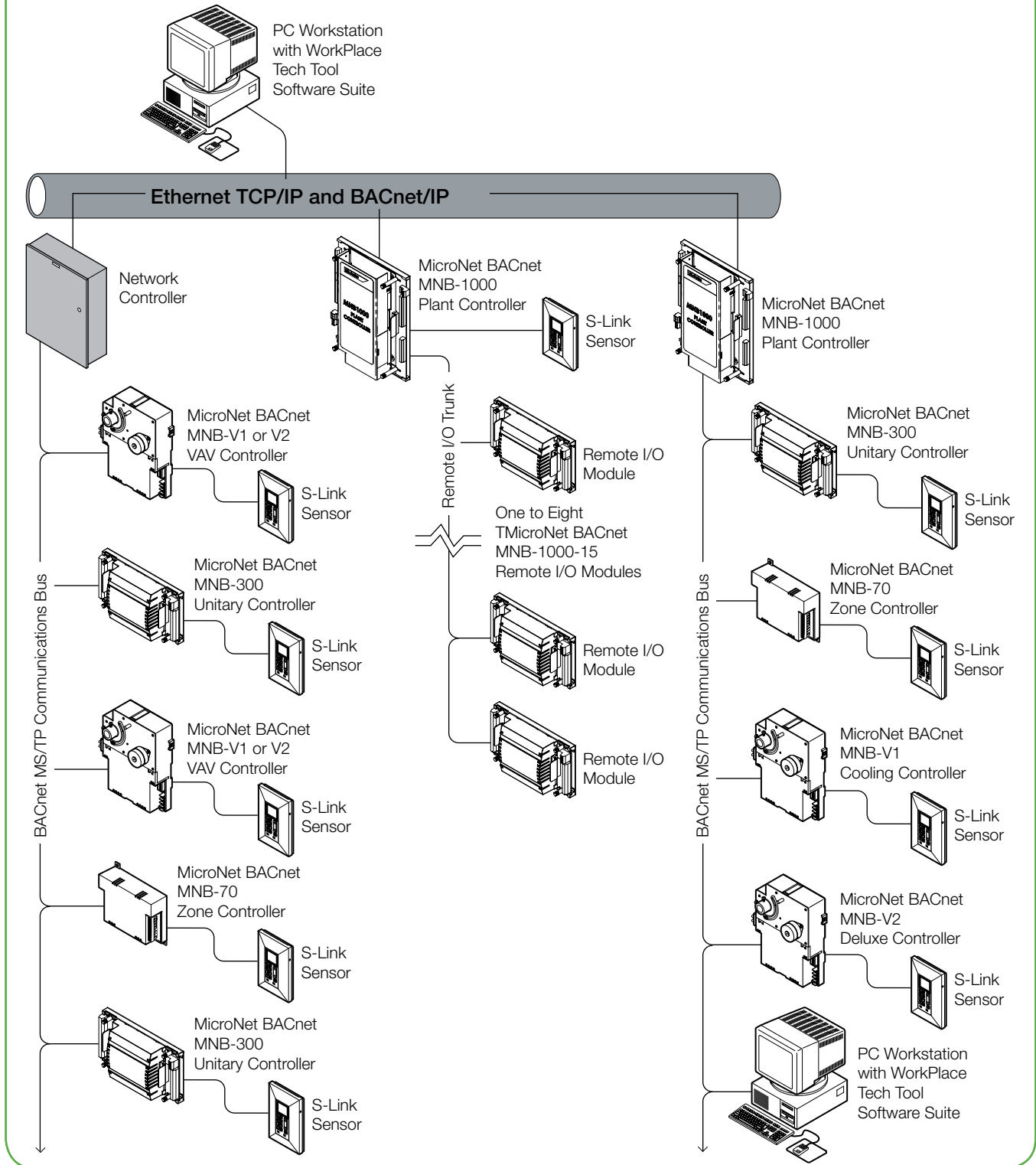
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VAV CONTROLLER TERMINALS



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

TAC I/A SERIES BACNET TOPOLOGY



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