

# MicroNet BACnet Plant Controller



## SPECIFICATIONS

### HARDWARE

#### Dimensions

10-15/16 H x 8-3/8 W x 2-9/32 D in. (278 x 213 x 58 mm).

#### Enclosure

Optional rugged sheet metal enclosure conforms to NEMA-1.

#### Mounting

Panel mount.

#### Power Supply Input

20.4 to 30 Vac, 50/60 Hz.

#### Power Consumption

50 VA at 24 Vac.

### 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.

#### European Community

EMC Directive 89/336/EEC  
EN61326

### MicroNet BACnet Plant Controller MNB-1000

The TAC I/A Series™ MicroNet™ BACnet™ Plant Controller is an interoperable controller with native BACnet/IP, BACnet Ethernet, and MS/TP communications support and routing functionality between physical networks. The controller features: Sensor Link (S-Link) support; remote I/O support; LED status and output indication; two Ethernet ports; screw terminal blocks; and a panel-mount subbase with a removable electronics module.

The Plant Controller's sequence of operation and BACnet image are fully programmable using WorkPlace Tech Tool, and can be applied to a wide range of mechanical equipment. Typical applications include central station air handlers, VAV air handlers, and cooling towers.

The MicroNet BACnet Plant Controller can function either in a standalone mode or as part of a BACnet building automation system (BAS) network. The MNB-1000 is BACnet Testing Laboratories (BTL) listed as a BACnet Application Specific Controller (B-ASC).

### AMBIENT LIMITS

#### Operating Temperature

-40 to 140 °F (-40 to 60 °C).

#### Shipping and Storage Temperature

-40 to 160 °F (-40 to 71 °C).

#### Humidity

5 to 95% non-condensing.

### WIRING TERMINALS

#### Remote I/O (IO+, IO-, SLD)

Removable 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.

#### MS/TP (MS+, MS-, SLD)

Removable 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.

#### I/O Points

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.

#### Power

Removable screw terminals; up to two AWG #14 (2.08 mm<sup>2</sup>) or smaller wires.

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**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.

**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 (12)**

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

**10k ohm Thermistor with 11k ohm Shunt Resistor**  
Sensor operating range -40 to 250 °F (-40 to 121 °C), model TSMN-57011-850, TS-5700-850 series, or equivalent.

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

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

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

**10k ohm Resistive**  
0 to 10.5k 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 2.5k ohms.

**DIGITAL INPUTS (4)**

**MODEL**

Part Number	Inputs and Outputs <sup>a</sup>			
	UI	DI	UO	DO (Triac)
MNB-1000	12	4	8	8

a. The I/O point count can be greatly expanded with the addition of one to eight Remote I/O Modules, each of which adds 15 I/O points. Refer to the MNB-1000-15 Remote I/O Module sales data sheet, F-27487.

**Dry Switched Contact**

Detection of closed switch requires less than 300 ohms resistance; detection of open switch requires more than 2.5k ohms.

**FAST PULSE INPUT (DIGITAL INPUT ONLY)**

**Minimum Rate**  
1 pulse per 4 minutes.

**Maximum Rate**  
10 pulses per second.

**DIGITAL OUTPUTS – TRIAC (8)**

12 VA at 24 Vac, 50/60 Hz, each output individually isolated.

**UNIVERSAL OUTPUTS (8)**

**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 RIBU1C Relay**  
UO configured for 0 to 20 mAdc, no external resistor.

**20 VDC OUTPUT**  
20 Vdc ±10% at 100 mA.

**OPTIONS**

**MNB-1000-ENC**  
Wall-mount enclosure

**MNB-BASE-1000**  
Controller Base assembly only

**MNB-CNTRLR-1000**  
Controller assembly only

**MNB-15**  
Remote I/O Module

**S-Link Sensors**  
Temperature and humidity Wall Sensors with digital communication

**TSMN Series**  
Room Temperature Sensors

## FEATURES

- The MicroNet BACnet Plant Controller's sequence of operation and BACnet image are fully programmable using WorkPlace Tech Tool.
- Capability to function in standalone mode or as part of a TAC I/A Series building automation network.
- Removable electronics module mates with panel-mounted subbase.
- Removable terminals for power and communications, to facilitate commissioning.
- Integral MS/TP jack for direct connection of PC with WorkPlace Tech Tool Suite.
- Optional rugged, NEMA 1 sheet metal enclosure.
- MS/TP DIP switch addressable.
- Service pin button for BACnet "I am" message broadcast.
- 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 and Ethernet IP communication activity, controller status, DO state, and UO state.
- Application-programmable LED provides on/off indication of a user-defined application parameter.
- Firmware upgradeable over the network.
- 72 hour, battery-backed real time clock.
- BBMD, remote connectivity across subnets.
- Support for Remote I/O Modules and S-Link Sensor.
- IP/Ethernet bridge.
- BACnet router functionality.

## COMMUNICATIONS

### BACnet Networks

The MicroNet BACnet Plant Controller incorporates a fully functional BACnet router between its 3 fully configurable communications ports.

### MS/TP

Isolated EIA-485 (formerly RS-485) transceiver, providing support for up to 128 MS/TP devices communicating at 9.6 up to 76.8 kbaud, using standard MS/TP wiring methods.

### Ethernet/IP

Dual 10/100 Ethernet ports with modular RJ-45 jacks. Both ports are set to be an Ethernet Bridge, saving on network wiring.

### BACnet Ethernet

Standard BACnet Ethernet communications.

### BACnet/IP

Communications choices are Standard BACnet/IP, BBMD, or Foreign Device.

### S-Link

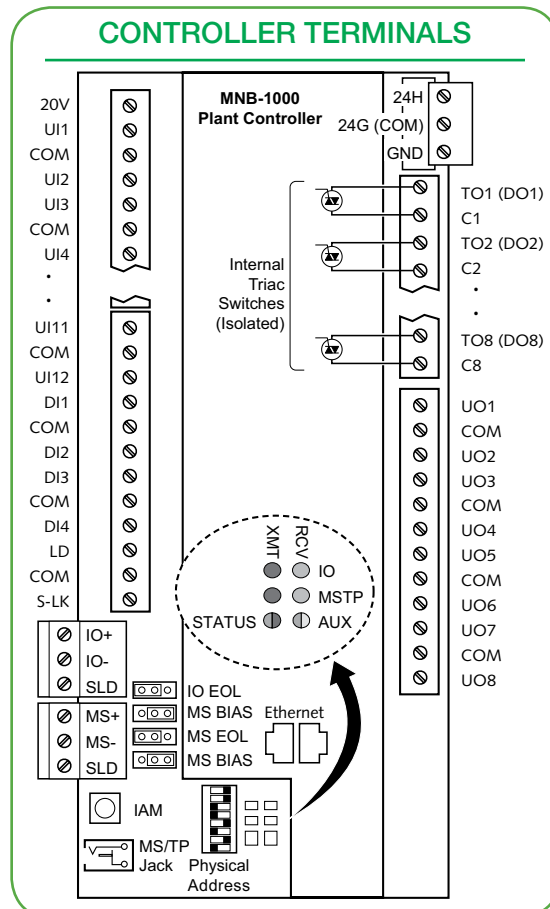
The Sensor Link (S-Link) communications wiring provides power and a communication interface for one MN-Sx TAC I/A Series MicroNet sensor. The various MN-Sx sensors can provide room temperature, room humidity, setpoint adjustment, and occupancy override. This connection uses two-wire, unshielded cable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

### Remote I/O

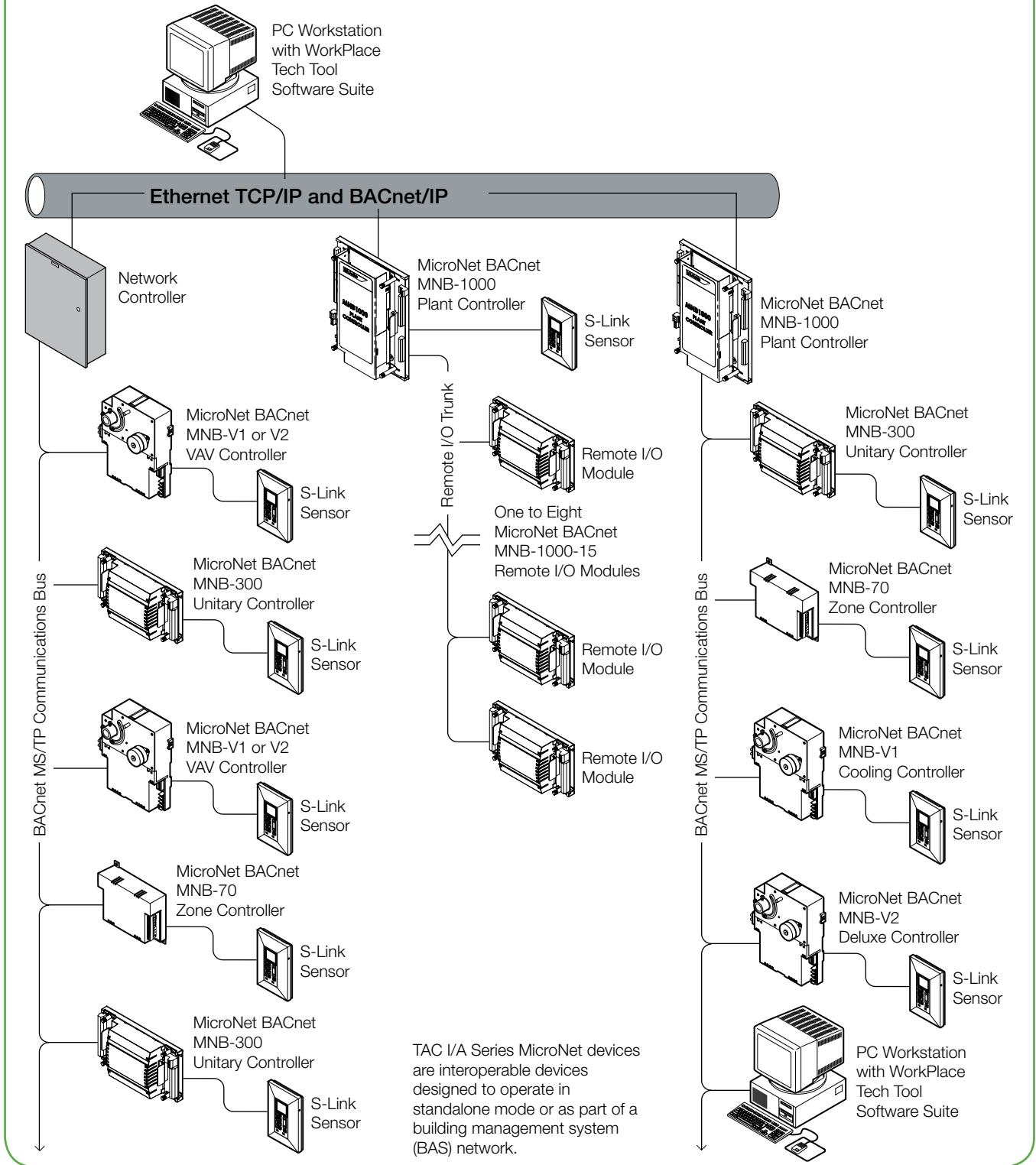
The remote I/O communications wiring provides an interface for one to eight optional MNB-1000-15 Remote I/O Modules, which can be used to expand upon the Plant Controller's onboard I/O.



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**TAC I/A SERIES BACnet TOPOLOGY**



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