MicroNet Sensors

Com-Trol MCS-4000

The TAC I/A Series MicroNet™ Sensors (MN-Sxxx series) are a family of digital wall temperature and humidity sensors for use with TAC I/A Series MicroNet controllers. These sensors feature a Sensor Link (S-Link) communication protocol which provides a simple two-wire interface for power and exchange of sensor and subbase information. Subbase information includes selecting occupancy override, fan speed, operating mode, or emergency heat.

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SPECIFICATIONS

TEMPERATURE SENSOR

Type
Precision thermistor.

Range
32 to 122 °F (0 to 50 °C).

HUMIDITY SENSOR

Element
Type: . . . . Thermoset polymer capacitive sensor.
Accuracy:. . . . .±2% RH at 77 °F (25 °C).

Range
5 to 95%, non-condensing.

Hysteresis
±1.2% RH maximum.

Immersion
Extended exposure to equal to or greater than 90% RH causes a reversible 3% shift. Sensor will recover from short term exposure to liquid water or condensation. Repeated exposure will degrade the performance of the sensor.

Dimensions
4-21/32 H x 3 W x 1 D in (118.5 x 76.2 x 24 mm).

Enclosure
Conforms to NEMA-1 requirements.

Surge Immunity Compliance
IEEE C62.41 (IEEE-587, Category A & B).

AGENCY LISTINGS

FCC
Class B.

UL Listed
UL-916 (File # E71385 Category PAZX).

UL Listed to Canadian Safety Standards (CAN/CSA C22.2).

European Community – EMC Directive 89/336/EEC
Emissions and Immunity EN61326

AMBIENT LIMITS

Operating Temperature
32 to 122 °F (0 to 50 °C).

Shipping and Storage Temperature
-40 to 160 °F

Humidity
5 to 95% RH, non-condensing.

HARDWARE

Wiring Terminals
Four (4) screw terminals. AWG #18 to #24 (0.823 mm2 maximum) wire.

Display
Setpoints, input spans, and units vary with the controller application.

Range
-99 to 999 or -9.9 to 99.9.

Units
°F, °C, or %.
Command Options (S4xx and S5xx Models)
Varies with the controller application.

System Mode
Heat/Cool/Off/Auto (except MN-S4xx-FCS).

Fan Mode
Off/On/Speed (Low, Medium, High)/Auto.

Override
Occupied/Unoccupied (except MN-S4xx-FCS).

Emergency Heat
Enable/Disable (MN-S5xx models only).

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Available in twelve models, MN-Sxxx series sensors provide an integral analog-to-digital conversion for elimination of sensor-to-controller noise effects and wire resistance offset.

Using the digital wall sensor, the operator can monitor performance and edit operational settings. MN-Sxxx series sensors are suitable for direct-wall, 2 x 4 electrical box, 1/4 DIN electrical box, or surface box mounting.

The MN-Sxxx series sensor measures room conditions and transmits the information to the controller via the S-Link. A single sensor is connected directly to an application specific TAC I/A Series MicroNet controller via low-cost, unshielded, twisted-pair cable. The connection between the sensor and controller is not polarity-sensitive.

A convenient connection to either a MicroNet LonWorks® or MicroNet BACnet network is provided as an option with each sensor in the series. If the LonWorks network wiring is connected to the sensor, a PC running WorkPlace Tech Tool or a third party Network Management Tool can be connected to the network at the sensor. This feature allows convenient access to the MicroNet LonWorks network.

SOFTWARE SPECIFICATIONS

DIGITAL DISPLAY (MN-S3XX, MN-S4XX AND MN-S5XX MODELS ONLY)

Custom field-configurable sensor displays.

Auto-ranging of displayed values.

Occupant command capabilities.

Adjustable minimum/maximum limit setpoint values.

Controller driven, automatically configured, customized display/command values.

FEATURES

- Contemporary, low-profile packaging.
- Digital zone temperature indication (selectable for 0.1 or 1 degree display resolution of °F or °C).
- Self-compensating temperature conversions remove the need to calibrate over time.
- Digital zone humidity indication (selectable for 0.1 or 1% RH display resolution).
- Long-life humidity sensing element with excellent resistance to contamination and condensation.
- Pushbutton override capabilities allow occupants to switch to timed occupied mode for after hours operation.
- Displays selected system values such as setpoints, outdoor air temperature, and operating mode.
- Provides the ability to change operating modes.
- Directly connects to selected TAC I/A Series MicroNet controllers via low-cost, unshielded, twisted-pair cable, which provides both power and communication.
- Separate wiring subbase and electronics.
- LonWorks network jack for convenient network access.
- S-Link jack for Pocket I/A access to the connected controller.

TYPICAL MN-S3XX, -S4XX, OR -S5XX DISPLAY/CHANGE VALUES.

Model Family	Value	Display	Change
S3xx, S4xx, S5xx	Zone Temperature	Yes	No
S4xx, S5xx	Outdoor Air Temperature	Yes	No
S4xx, S5xx	Percent Humidity	Yes	No
S3xx[a], S4xx[a], S5xx	Heating Setpoint, Cooling Setpoint, Unoccupied Heat, Unoccupied Cool	Yes	Yes
S4xx, S5xx	Mode Heating/Cooling/Auto/Off	Yes	Yes[b]
S4xx, S5xx	Fan (On/Speed (Low/Medium/High), Auto	Yes	Yes

a S3xx and S4xx-FCS models have a single setpoint.
b S4xx-FCS models do not allow mode changes.

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COMMUNICATIONS

S-Link

Sensor Link (S-Link) communications wiring provides power and communication interface to the TAC I/A Series MicroNet sensor (MN-Sxxx series). It uses two-wire, unshielded cable and is not polarity sensitive. From some sensor models, the user can view and adjust application parameters. Maximum wire length allowed between a controller and the TAC I/A Series MicroNet sensor is 200 ft. (61 m).

BACnet or LonWorks Network

The BACnet or LonWorks network wiring can be connected to the second set of terminals in the sensor base. This optional connection allows convenient access to the LonWorks network at the sensor.
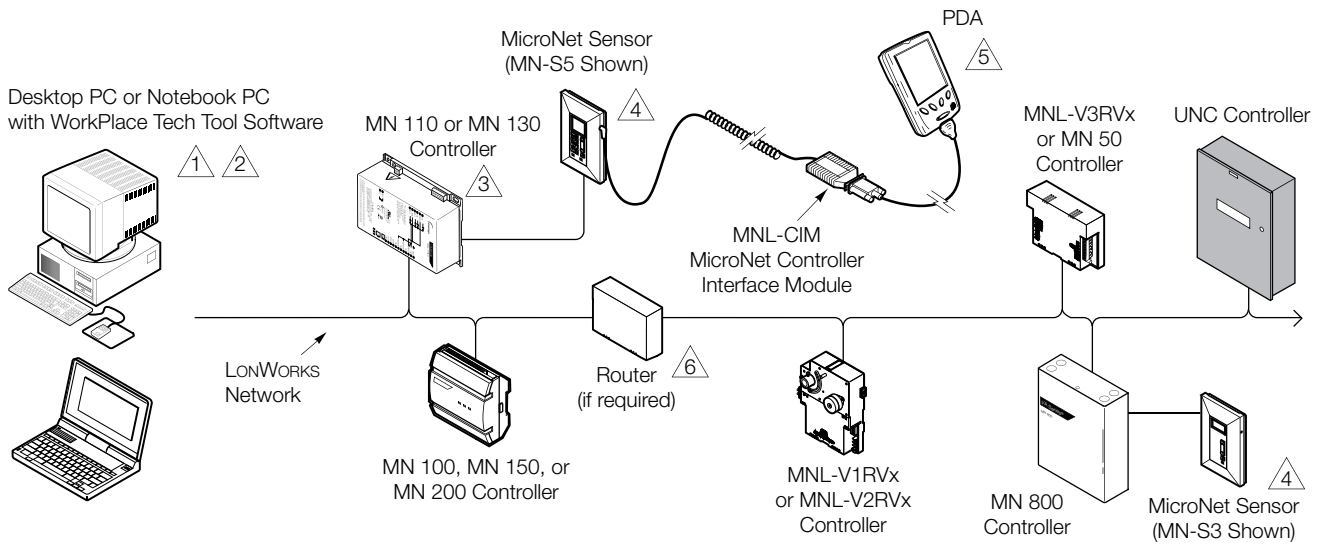
MODELS

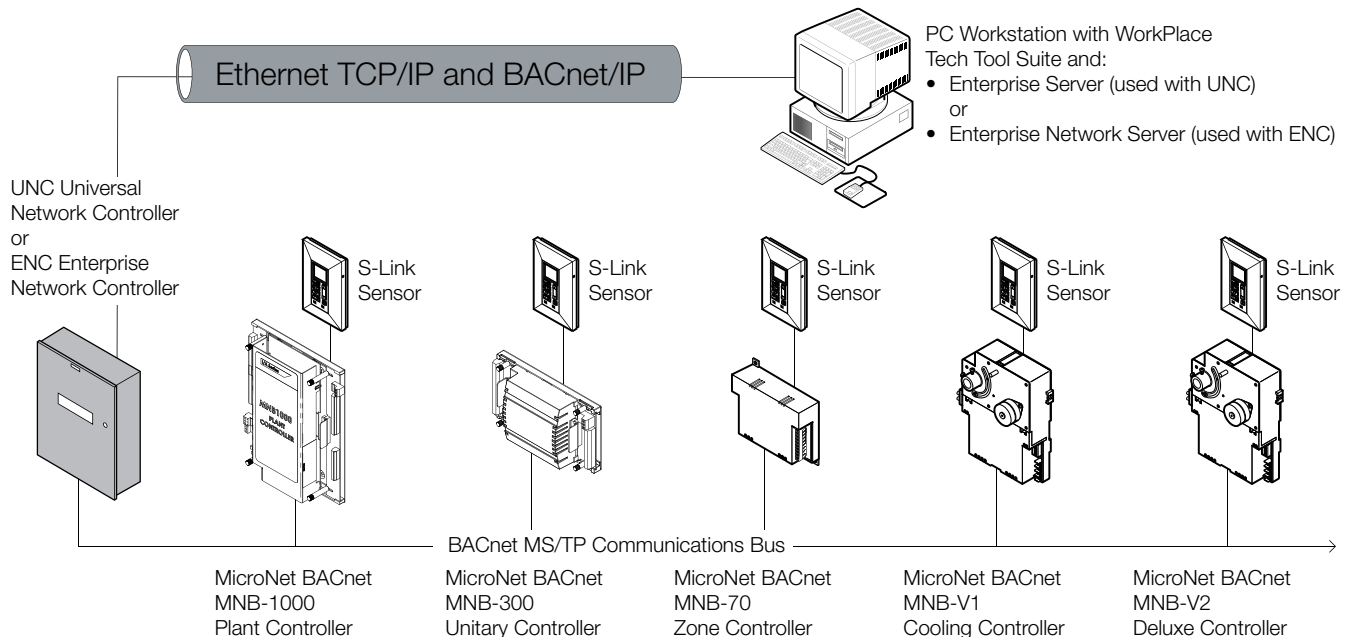| Model		Description	Keypad	Display
Temperature Sensor	Temperature and Humidity Sensor			
MN-S1	MN-S1HT	Sensor only	None	None
MN-S2	MN-S2HT	Sensor with override	One button	LED Override Status Indication
MN-S3[b]	MN-S3HT[b]	Sensor with setpoint adjustment and override	Three button	Digital LCD[a] and LED Override Status Indication
MN-S4[b]	MN-S4HT[b]	Sensor with setpoint, override, and controller mode functions	Six-button	Digital LCD[c] and LED Override Status Indication
MN-S4-FCS[b]	MN-S4HT-FCS[b]	Sensor with setpoint, On/Off and Fan speed functions	Six button	Digital LCD[c] and LED Fan Status Indication
MN-S5[b]	MN-S5HT[b]	Sensor with setpoint, override, controller mode functions, and emergency heat key/indication	Seven button	Digital LCD[c] and LED Override and Emergency Heat Indication

a LCD displays value and setpoint.
b Allows viewing of alarms and diagnostics.
c LCD displays values, setpoints, and controller mode functions.

ARCHITECTURE

PDA ⑤

MicroNet Sensor
(MN-S5 Shown) ④

MNL-V3RVx
or MN 50
Controller

UNC Controller

Desktop PC or Notebook PC
with WorkPlace Tech Tool Software ① ②

MN 110 or MN 130
Controller ③

MNL-CIM
MicroNet Controller
Interface Module

LONWORKS
Network

Router
(if required) ⑥

MN 100, MN 150, or
MN 200 Controller

MNL-V1RVx
or MNL-V2RVx
Controller

MN 800
Controller

MicroNet Sensor
(MN-S3 Shown) ④

① A PC can be connected to the LONWORKS TP/FT-10 Network, either directly or through the LONWORKS® network jack of a LONWORKS controller or MN-Sxxx Wall Sensor. The PC must have an Echelon® LONTALK® adapter card.

② Programming any of the TAC I/A Series controllers, or the TAC I/A Series MN 800 controller, requires WorkPlace Tech Tool.

⚡ ③ This controller is not suitable for exposed mounting on a wall or panel, or in any other easily accessible place due to the possibility of personal contact with the high-voltage terminals. It must be mounted inside a suitable grounded metal enclosure.

④ MicroNet Sensors can be connected to any MN controller.

⑤ A PDA running the Pocket I/A interface software may be used to communicate with TAC MicroNet I/A Series controllers.

⑥ When routers are used, WorkPlace Tech is able to communicate through them to any of the TAC I/A Series devices on the network.

Ethernet TCP/IP and BACnet/IP

PC Workstation with WorkPlace
Tech Tool Suite and:
• Enterprise Server (used with UNC)
  or
• Enterprise Network Server (used with ENC)

UNC Universal
Network Controller
or
ENC Enterprise
Network Controller

S-Link
Sensor

S-Link
Sensor

S-Link
Sensor

S-Link
Sensor

S-Link
Sensor

BACnet MS/TP Communications Bus

MicroNet BACnet
MNB-1000
Plant Controller

MicroNet BACnet
MNB-300
Unitary Controller

MicroNet BACnet
MNB-70
Zone Controller

MicroNet BACnet
MNB-V1
Cooling Controller

MicroNet BACnet
MNB-V2
Deluxe Controller