TAC MicroNet™
50 Series Controller

Designed for new or existing system installations, the MN 50 controllers provide control for:

- Unit Ventilators.
- Heat Pumps.
- Fan Coils.
- Packaged Rooftops.

- Field programmable using WorkPlace Tech Tool.
- Uses LonMark HVAC profiles for interoperability.
- Capability to function in standalone mode or as part of a LonWorks TP/FT-10 Free Topology communications network.
- Multiple controllers on a LonWorks FTT network creates a complex network of controllers for virtually any building control need.
- The satellite profile allows the controller to be used in a broad range of applications, providing solutions for your building control needs.
- Proportional (P), Proportional Plus Integral (PI), and Proportional Plus Integral and Derivative (PID) control for cooling and heating.
- Plenum-rated enclosure allows direct mounting in plenum.
- Onboard LED indication without cover removal.

The TAC I/A Series MicroNet 50 Controller is an interoperable controller designed in accordance with LonMark® guidelines. When programmed using WorkPlace Tech Tool (WP Tech), or loaded with a pre-engineered application, these controllers provide control for packaged rooftops, heat pumps, fan coils, unit ventilators, and similar applications. These controllers feature Sensor Link (S-Link) support, LED indication, one digital input, one universal input, and three digital outputs. These controllers can function in either standalone mode or as part of a LonWorks® TP/FT-10 Free Topology communications network.

The MN 50 series controller offers the advantages of standalone or networked control. Using an TAC 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 pre-engineered applications..

Table-1   Model Chart

Model	Description	Inputs/Outputs	Profiles
MNL-5Rxx[a]	TAC I/A Series MicroNet 50 Series Controller	1 Digital Input (DI)	Heat Pump Fan Coil Rooftop Satellite
		1 Universal Input (UI)	
		3 Digital Outputs (DO)	

[a] xx denotes LONMARK profile and profile version (F=Fan Coil, H=Heat Pump, R=Rooftop, S=Satellite). Satellite profile is based on the Rooftop profile.

Table-2 Inputs from MN-Sx TAC I/A Series MicroNet Sensor.

Inputs	Description	MN-Sx Sensor
Space Temperature	32 to 122 °F (0 to 50 °C)	MN-S1, MN-S1HT, MN-S2, MN-S2HT, MN-S3, MN-S3HT, MN-S4, MN-S4HT, MN-S4-FCS, MN-S4HT-FCS, MN-S5 and MN-S5HT
Space Humidity	5 to 95% RH, Non-condensing	MN-S1HT, MN-S2HT, MN-S3HT, MN-S4HT, MN-S4HT-FCS, and MN-S5HT
Adjustable Setpoint	40 to 95 °F (4 to 35°C)	MN-S3, MN-S3HT, MN-S4, MN-S4HT, MN-S4-FCS, MN-S4HT-FCS, MN-S5, and MN-S5HT
Override Pushbutton	For standalone occupancy control or remote status monitoring of local status condition.	MN-S2, MN-S2HT, MN-S3, MN-S3HT, MN-S4, MN-S4HT, MN-S5, and MN-S5HT
Fan Operation and Speed	Fan mode selection: On, Speed (Low/Medium/High), or Auto.	MN-S4, MN-S4HT, MN-S4-FCS, MN-S4HT-FCS, MN-S5, and MN-S5HT
System Mode	System mode selection: Heat, Cool, Off, or Auto.	MN-S4, MN-S4HT, MN-S5, and MN-S5HT
Emergency Heat	Emergency heat mode selection: Enable or Disable	MN-S5 and MN-S5HT

Communications

LonWorks Networks

A LonWorks communications network uses an TP/FT-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 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 wire length allowed between a controller and an TAC I/A Series MicroNet Sensor is 200 ft (61 m).

SPECIFICATIONS

HARDWARE SPECIFICATIONS

Dimensions
4-1/2 H x 5 W x 1-5/8 D in.
(112 x 127 x 41 mm).

Enclosure
Conforms to NEMA-1 requirements.

Meets UL94-5V flammability for plenum application use.

Conduit Knockouts
Not applicable. Order optional MicroNet enclosure, MNA-FLO-1, if wiring to flexible conduit is desired.

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

Maximum Power Consumption
84 VA (12 VA plus DO loads @24 VA each).

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

AGENCY LISTINGS

FCC
Class B.

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

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

European Community – EMC Directive 89/336/EEC
EN61326

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% RH, non-condensing.

Wiring Terminals
Screw terminals. Single AWG #14 (2.08 mm^2) wire. Up to two AWG #18 (0.823 mm^2) or smaller wires.

DIGITAL OUTPUTS

Relay Outputs
SW24H1, SW24H2, and SW24H3 Current Ratings
24 VA each at 24 Vac, 50/60 Hz. Form A, Single-Pole, Single-Throw (SPST), Normally-open. 300K cycles at 24 Vac, 24 VA (0.4 power factor).

Digital Input
Dry Contact. Detection of closed switch requires less than 300 ohms. Detection of open switch requires more than 100K ohms.

UNIVERSAL INPUT

1K ohms Balco Input
-40 to 250 °F (-40 to 121 °C) range.

TSMN-81011, TS-8000 Series or equivalent.

1K ohms Platinum Input
-40 to 240 °F (-40 to 116 °C) range.
TSMN-58011, TS-5800 Series or equivalent.

1K Resistance
0 to 1.5K ohms.

10K ohms Thermistor w/ 11K ohms Shunt Resistor
-40 to 250 °F (-40 to 121 °C) range.
TSMN-57011-850, TS-5700-850 Series or equivalent.

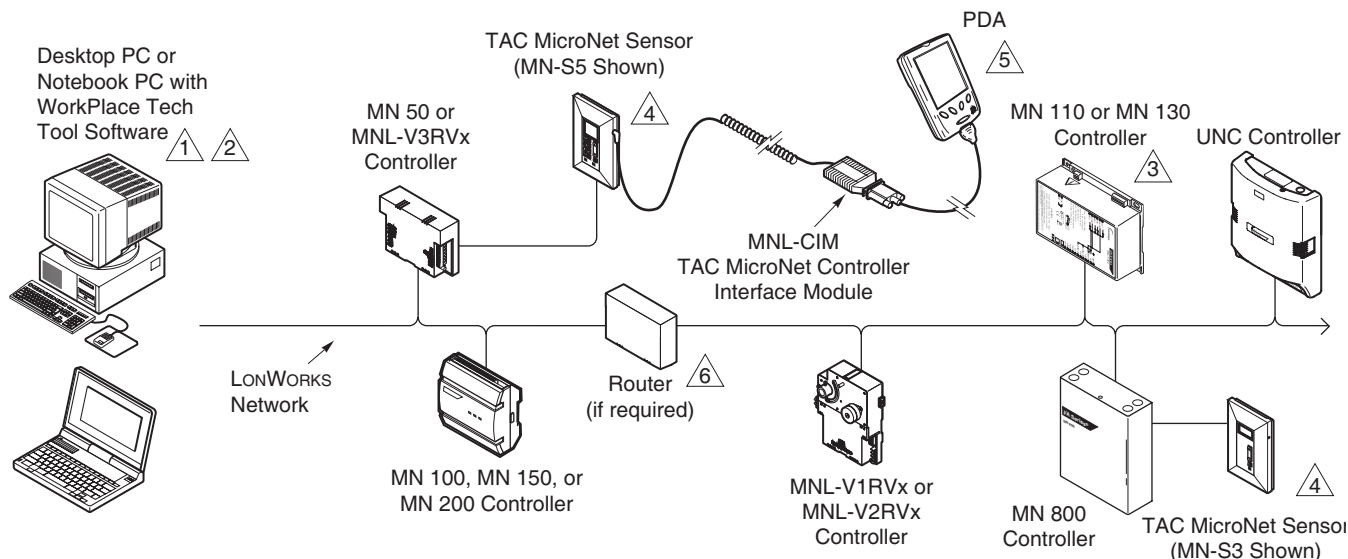**10K Resistance**
0 to 10.5K ohms.
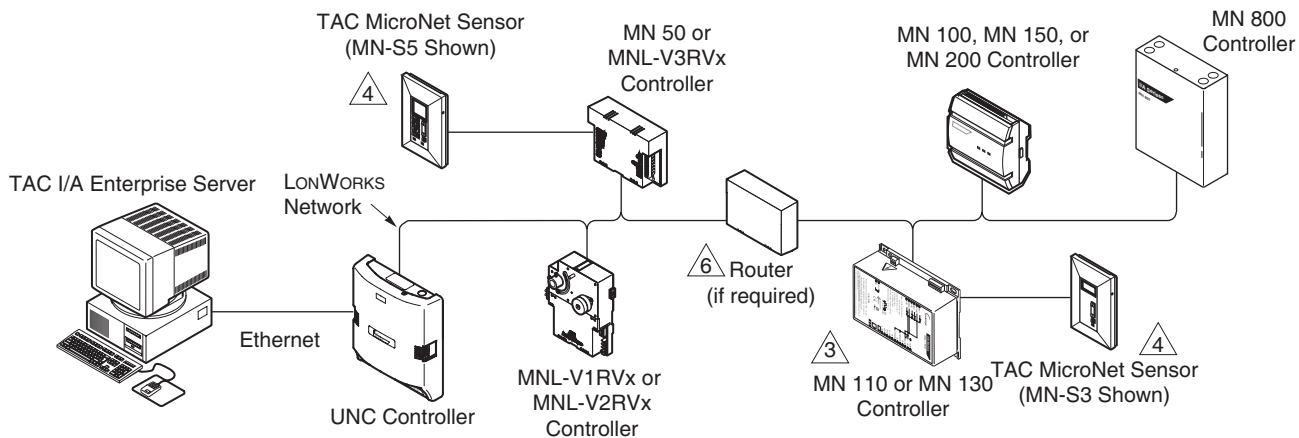
Voltage
0 to 5 Vdc.

Current
0 to 20 mA requires an external 250 ohms shunt resistor.

Digital Input
Dry Contact. Detection of closed switch requires less than 300 ohms. Detection of open switch requires more than 1.5K ohms.

Desktop PC or Notebook PC with WorkPlace Tech Tool Software ①②

MN 50 or MNL-V3RVx Controller

TAC MicroNet Sensor (MN-S5 Shown) ④

PDA ⑤

MN 110 or MN 130 Controller ③

UNC Controller

MNL-CIM TAC 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

TAC 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 TAC MicroNet Sensors can be connected to any MN controller.

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

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

TAC MicroNet Sensor (MN-S5 Shown) ④

MN 50 or MNL-V3RVx Controller

MN 100, MN 150, or MN 200 Controller

MN 800 Controller

TAC I/A Enterprise Server

LONWORKS Network

Ethernet

UNC Controller

MNL-V1RVx or MNL-V2RVx Controller

Router (if required) ⑥

MN 110 or MN 130 Controller ③

TAC MicroNet Sensor (MN-S3 Shown) ④

a company of Schneider Electric