

I/A Series®

MicroNet™ 50 Series Controller

The 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.

Applications

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

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

Connectivity

The MN 50 series controller offers the advantages of standalone or networked control. Using an 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.



LONWORKS®

Features —

- 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.

Invensys®

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Model Chart

Model	Description	Inputs/Outputs	Profiles
MNL-5Rxx ^a	I/A Series MicroNet 50 Series Controller	1 Digital Input (DI)	<ul style="list-style-type: none"> • 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.

Hardware Specifications

Dimensions 4. 1/2" high x 5" wide x 1 5/8" deep
(112 mm x 127 mm 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 mm²) wire. Up to two AWG #18 (0.823 mm²) or smaller wires.

Inputs from MN-Sx 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

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 Ω . Detection of open switch requires more than 100K Ω .

Universal Input

1K Ω Balco Input -40 to 250 °F (-40 to 121 °C) range. TSMN-81011, TS-8000 Series or equivalent.

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

1K Resistance 0 to 1.5K Ω .

10K Ω Thermistor w/ 11K Ω 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 Ω .

Voltage 0 to 5 Vdc.

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

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

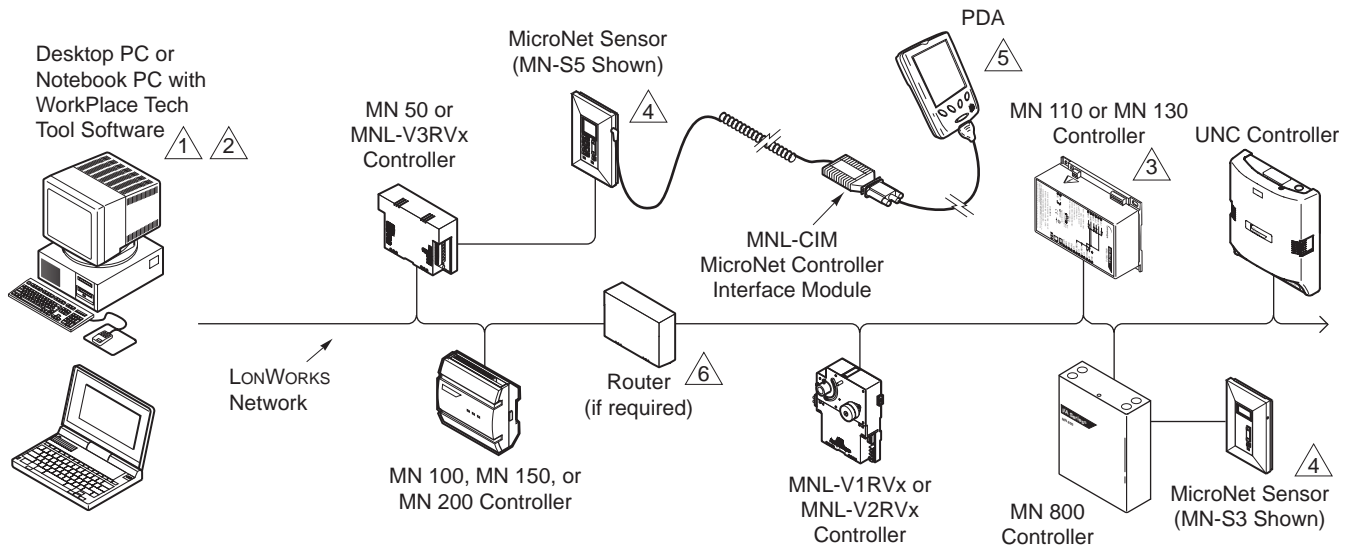
Software Capabilities

- Allows design of a complete custom application for each controller.
- Conforms to the LONMARK guidelines.
- WorkPlace Tech Tool is capable of reconfiguring and editing application configuration data.
- HVAC interoperability achieved through use of LONMARK HVAC profiles.
- All controllers are field programmable, but controllers with satellite profiles are especially suited for a broad range of applications, providing solutions for your building control needs.

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 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 I/A Series MicroNet Sensor is 200 ft (61 m).



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

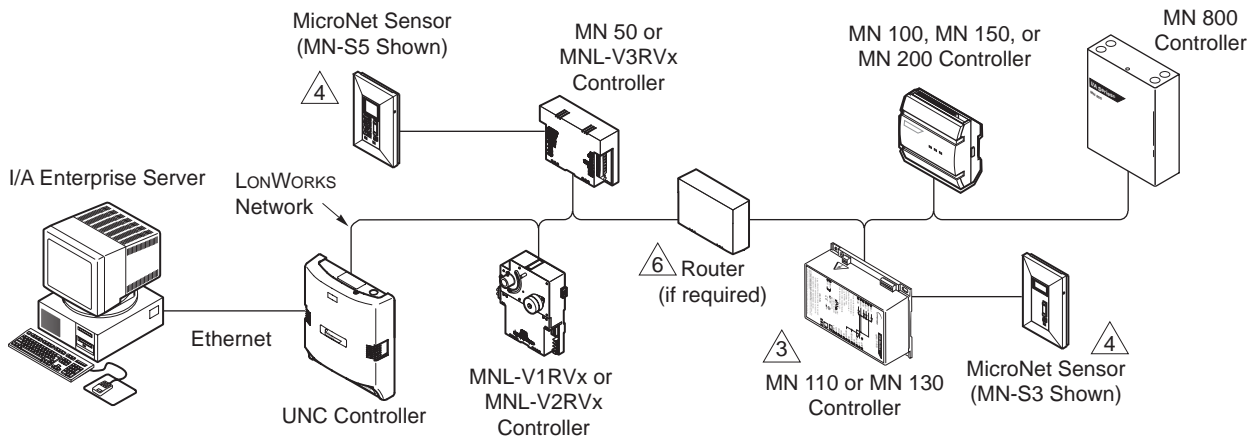


Figure-1 I/A Series MicroNet MN 50 Series Controller Connectivity.

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