# TAC MicroNet LonMark
## MN 110 Controller

- High-current relay output capable of directly powering typical 240 Vac, 3 A motors.
- LonMark-compliant, using the LonMark Fan Coil Profile 8020 for interoperability.
- Capability to function in standalone mode or as part of a LonWorks FTT-10 Free Topology communications network.
- Onboard LED indication without cover removal.
- Compact size allows mounting in confined spaces.
- Four 24 Vac Triac outputs.
- Can be directly mounted on a wall, or on a DIN rail, within a suitable grounded metal enclosure.
- Built-in LON jack, for connection to a LON network.

**Software Capabilities**

- LonMark-compatible.

The TAC I/A Series MNL-11RF2 Controller (MN 110) is an interoperable LonMark® controller. When programmed using TAC WorkPlace Tech Tool, this controller provides control for fan coil applications. This controller features: screw terminal blocks; three universal inputs; one high-voltage relay output; four 24 Vac Triac (digital) outputs; and an S-Link interface for connection to an optional MN-Sx TAC I/A Series MicroNet Sensor. The MN 110 controller conforms to the LonMark Fan Coil Unit functional profile (8020), for open communication and interoperability with third party LonMark devices, providing greater freedom in system design. These controllers can function in standalone mode or as part of a LonWorks FTT-10 Free Topology network.

Especially suitable for new or existing system installations, the MN 110 controller provides control for fan coil units with direct connection to a high-speed fan motor control at up to 240 Vac at 3 A.

MN 110 controllers offer the advantages of either standalone or network control via the high performance 78k baud FTT-10 Free Topology Transceiver. Additionally, support is provided for an optional MN-Sx TAC I/A Series MicroNet Sensor (see the table, "Inputs from TAC I/A Series MicroNet Sensor," on page 2, for features). Through the LON jack on either the controller or the MN-Sx sensor, a third-party network management tool may be used to configure the MN 110 controller.

The TAC WorkPlace Tech Tool 3.2, or higher, may be used to program the MN 110 controller through the LON jack on either the controller or a connected MN-Sx sensor.

Table-1   Model Chart.

| Model | Description | Communications |
|---|---|---|
| MNL-11RF2 | TAC I/A Series MicroNet LonMark MN 110 Controller | LonTalk |

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 FTT-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**

A 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 61 m (200 ft).

# SPECIFICATIONS

## HARDWARE SPECIFICATIONS

**Dimensions**
107 mm high x 154.9 mm wide x 50 mm deep (4.2″ x 6.1″ x 2″).

**Enclosure**
Molded ABS plastic case. Fire resistant to UL94VO.

**Power Supply Input**
24 Vac +25/-15%, 50/60 Hz.

**Maximum Power Consumption**
18.1 VA @ 24 Vac, 50/60 Hz (8.5 VA plus maximum DO1-DO4 total load of 0.4 A or 9.6 VA).

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

**Mounting**
Wall or 35 mm DIN rail, within a suitable grounded metal enclosure.

## AGENCY LISTINGS

**FCC**
Class B.

**UL**
UL-873 (File #E9429) Recognized Component.

UL Recognized Canadian Component.

**Australian**
Meets requirements to bear the C-Tick Mark.

**European Community – EMC Directive 89/336/EEC**
EN61326.

**Low-Voltage Directive – 73/23/EEC**
EN60730-1.

**Mounting**
Wall or 35 mm DIN rail, within a suitable grounded metal enclosure.

## AMBIENT LIMITS

**Operating Temperature**
-40 to 55 °C (-40 to 131 °F).

**Shipping and Storage Temperature**
-40 to 71 °C (-40 to 160 °F).

**Humidity**
0 to 95% RH, non-condensing.

**Wiring Terminals**
Screw terminal blocks. Low voltage screw terminals (all except DO5 and C5) accept one 0.823 mm2 (AWG #18) or smaller wire.

## UNIVERSAL INPUTS (3)

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

**10K Thermistor with 11K Shunt Resistor**
Sensor operating range 4 to 60 °C (40 to 140 °F), TAC model TSMN-57011-850 series or equivalent (for sensing space temperature).

**Resistive**
1K ohm (130 to 950 ohm setpoint adjuster).

**Analog Voltage**
Range 0 to 5 Vdc.

**Analog Current**
Range 4 to 20 mA.

**Digital**
Dry switched contact (for occupancy state).

## MAINS-RATED RELAY OUTPUT (1)

3 A maximum at 240 Vac, cos Ø = 0.4. Form A (SPST — normally open).

## TRIAC OUTPUTS (4)

Digital outputs for switching 24 Vac (0.4 A or 9.6 VA maximum total load for DO1-DO4 @ 24 Vac).

## WARNING:

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 mains terminals. It must be mounted inside a suitable grounded metal enclosure.
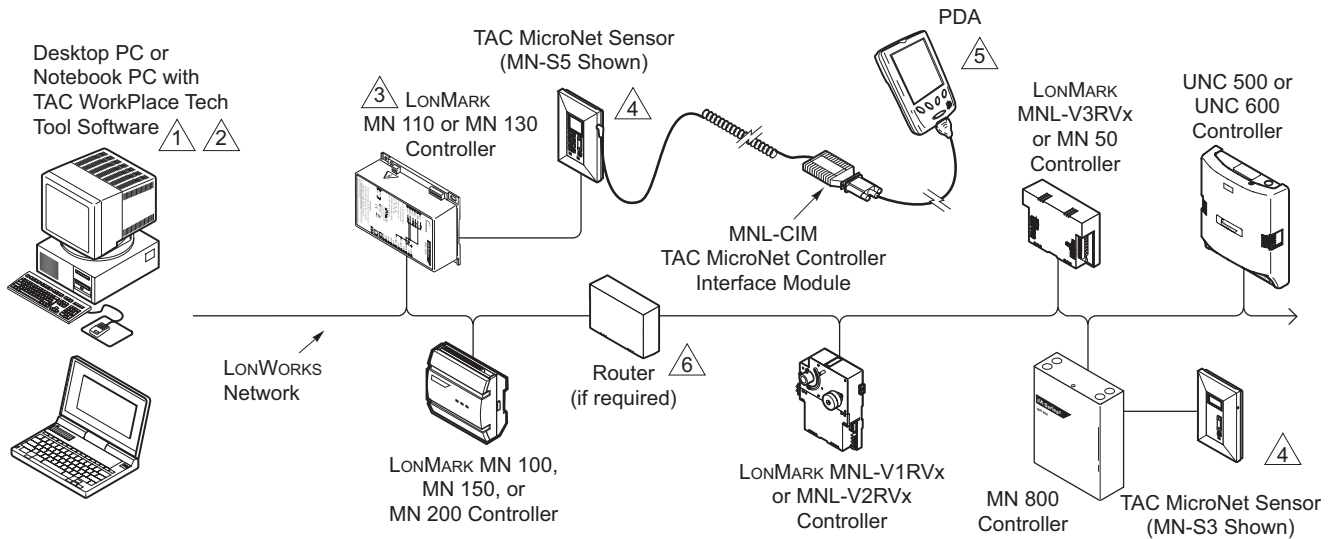
1. A PC can be connected to the LONWORKS FTT-10 Network, either directly or through the LON jack of a LONWORKS controller or MN-Sxxx Wall Sensor. The PC must have an Echelon LONTALK adapter card.

2. Programming any of the TAC I/A Series LONMARK controllers, or the TAC I/A Series LONWORKS MN 800 controller, requires TAC WorkPlace Tech Tool. Version 3.2 or higher is required for the MN 110 controller, and Version 3.2 Service Pack 1 or higher is required for the MN 130 controller.

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 controllers. This requires the Windows® Pocket PC 2002® operating system.

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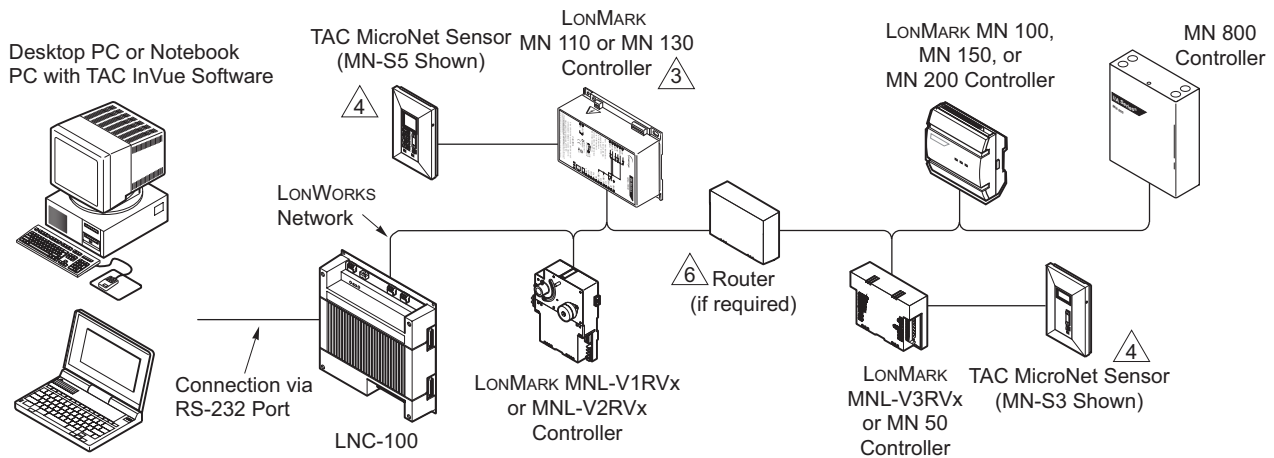


Figure-1  TAC I/A Series MicroNet MN 110 Controller Connectivity.

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