TAC MicroNet™ 100, 150, & 200 Series Controllers

The TAC I/A Series MicroNet 100, 150, and 200 Controllers are interoperable controllers designed in accordance with LonMark® guidelines. When programmed using WorkPlace Tech Tool, or loaded with a pre-engineered application, these controllers provide control for packaged rooftops, heat pumps, fan coils, unit ventilators, and similar applications. Controllers feature Sensor Link (S-Link) support, LED indication, screw terminal blocks, as well as DIN rail or panel mounting ability. These controllers can function in either standalone mode or as part of a LonWorks® TP/FT-10 Free Topology communications network.

The 100, 150, and 200 series controllers use the same physical packaging, but differ in the onboard I/O points they provide.

The MN series controllers offer the advantages of standalone and networked control. Using a 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.

Table-1 Model Chart.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Inputs/Outputs</th>
<th>Profiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNL-10Rx</td>
<td>TAC I/A Series MicroNet 100 Series Controller</td>
<td>1 Digital Input (DI)</td>
<td>Heat Pump Fan Coil Package Rooftop Satellite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Universal Inputs (UI)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Digital Outputs (DO)</td>
<td></td>
</tr>
<tr>
<td>MNL-15Rx</td>
<td>TAC I/A Series MicroNet 150 Series Controller</td>
<td>3 Universal Inputs (UI)</td>
<td>Heat Pump Fan Coil Package Rooftop Satellite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Digital Outputs (DO)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Analog Outputs (AO)</td>
<td></td>
</tr>
<tr>
<td>MNL-20Rx</td>
<td>TAC I/A Series MicroNet 200 Series Controller</td>
<td>2 Digital Inputs (DI)</td>
<td>Heat Pump Fan Coil Package Rooftop Satellite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Universal Inputs (UI)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 Digital Outputs (DO)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Analog Outputs (AO)</td>
<td></td>
</tr>
</tbody>
</table>

xx denotes LONMARK profile and profile version /F=Fan Coil, H=Heat Pump, R=Rooftop, S=Satellite. Satellite profile is based on Rooftop profile.
Table-2 Inputs from MN-Sx TAC I/A Series MicroNet Sensor.

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

**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 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 a TAC I/A Series MicroNet Sensor is 200 ft (61 m).
# SPECIFICATIONS

**Dimensions**  
4-5/16 H x 4-3/8 W x 2 D in  
(109 x 111 x 51 mm).

**Enclosure**  
Conforms to NEMA-1 requirements.  
Meets UL94-5V flammability for plemum 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**  
15 VA @ 24 Vac, 50/60 Hz, excluding relay output power.

**Surge Immunity Compliance**  

**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

**Mounting**  
35 mm DIN rail or panel.

**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. Each terminal accepts one AWG #16 to #24 (1.31 to 0.205 mm² maximum) wire.

**DIGITAL INPUTS**  
(MN 100 and MN 200 only) Dry Contact. Detection of closed switch requires less than 300 ohm. Detection of open switch requires more than 100K ohm.

**DIGITAL OUTPUTS**  
Current Ratings  
24 VA at 24 Vac, pilot duty.

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

**1K ohm 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 ohm Thermistor w/ 11K ohm 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 ohm 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.

**Analog Outputs**  
(MN 150 and MN 200 only).

**Current**  
0 to 20 mA. (Output load from 80 to 550 ohms).
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.

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

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.

MicroNet Sensors can be connected to any MN controller.

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

When routers are used, 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 100, 150, and 200 Series Controller Connectivity.