

### WIRING AND COMMISSIONING INFORMATION FOR SATCHWELL MICRONET SENSOR

#### APPLICATION

Order Types:

- MN-S1-100 - Sensor Only
- MN-S2-100 - Sensor with Override
- MN-S3-100 - MN-S2 Features, plus Liquid-Crystal Display, Comfort Setpoint Adjustment and Viewing of Alarms/Diagnostics
- MN-S4-100 - MN-S3 Features, plus Mode Key, Fan Key and Setpoints Key
- MN-S4-FCS - MN-S3 Features, without Override Key, but with Three Fan Speed Keys and Fan On/Off/Auto key
- MN-S5-100 - MN-S4 Features, plus Emergency Heat Key/Indication (not supported for UNIFACT<sup>PRO</sup> controllers)

Satchwell MicroNet MN-Sx Sensors are wall-mounted digital temperature sensors for use with Controllers (MN50, MN100, MN150, MN200, MN350 and VAV) and UNIFACT<sup>PRO</sup> controllers (from build 2).

The MN-Sx sensors feature Sensor Link (S-LK) communication protocol, which provides a simple two-wire interface for power and communications.

Available in six models, the MN-Sx Sensors provide integral analogue-to-digital conversion for elimination of electrical interference between sensor and controller.

Optionally, an MN-Sx sensor can be wired to a MicroNet LONWORKS<sup>®</sup> network. This enables WorkPlace Tech Tool, VisiSat<sup>™</sup>, the MicroNet VAV Flow Balance software and third-party network management tools to connect to the LONWORKS network using the MN-Sx's built-in 'LON<sup>®</sup> Jack' located on the left side of the sensor.

A single MN-S1, MN-S2, MN-S3 or MN-S4-FCS sensor can be shared with up to four UNIFACT<sup>PRO</sup> controllers. This allows a single sensor to supply the sensor temperature, comfort setpoint, fan speed and controller mode to all connected controllers. In addition, any MN-Sx sensor that has an LCD can be used to configure the Quick Setup parameters of a UNIFACT<sup>PRO</sup> controller. For further details of using an MN-Sx sensor with UNIFACT<sup>PRO</sup> controllers, refer to the UNIFACT<sup>PRO</sup> *Engineering Data Sheet* (DS 10.130A).

MN-Sx sensors are suitable for direct-wall, 2 x 4 electrical box, 1/4 DIN electrical box, or surface box mounting.

#### SPECIFICATION

Order Type	Description	Keypad	Display
MN-S1-100	Sensor Only	None	None
MN-S2-100	Sensor with Override	One-key	LED Override Status Indicator
MN-S3-100	MN-S2 Features, plus Liquid-Crystal Display, Comfort Setpoint Adjustment and Viewing of Alarms/Diagnostics	Two-key	LED Override Status Indicator and Digital LCD <sup>a</sup>
MN-S4-100	MN-S3 Features, plus Mode Key, Fan Key and Setpoints Key	Five-key	LED Override Status Indicator and Digital LCD <sup>b</sup>
MN-S4-FCS	MN-S3 Features, Excluding the Override Key, but with Three Fan Speed Keys and Fan On/Off/Auto key	Five-key	LED Status Indicator and Digital LCD
MN-S5-100	MN-S4 Features, plus Emergency Heat Key/Indication	Six-key	LED Override Status Indicator, Digital LCD and LED Emergency Heat Status Indicator

a LCD displays current temperature, setpoint, alarms and diagnostic information

b LCD displays same information as MN-S3, plus controller mode functions.



**Data Sheets**  
DS 10.000 - MN Sx  
DS 13.303A - UNIFACT<sup>PRO</sup>  
**Multi-Lingual Instructions**  
MLI 10.000 - Installation Instructions



## INSTALLATION

The MicroNet Sensor is packaged disassembled in one container and consists of three major parts:

- A pre-wirable base plate for wiring to the controller S-LK and MicroNet LONWORKS network connections.
- An electronic assembly containing the sensor and associated circuitry.
- A removable cover.

## Inspection

Inspect carton for damage. If damaged, notify carrier immediately. Inspect sensors for damage. Return damaged products.

## Requirements

(These items are not provided)

- Installer must be a qualified technician
- Job wiring diagrams
- Tools:
  - Drill and bits for mounting screws
  - Level
  - Static protection wrist strap
- Two mounting screws
- Dry-wall anchors for direct-wall mount
- Accessories (if required)
  - AT-1104 Cast aluminium guard with steel base plate
  - AT-1155 Clear plastic guard with solid and ring base, tumbler type key lock
  - AT-1163 Wire guard with steel base plate
  - MNA-STAT-1 Replacement covers (qty. 12)
  - MNA-STAT-2 Designer inserts for MN-S1 model (qty. 25)

## Precautions



**WARNING - ELECTRICAL SHOCK HAZARD.  
SOME CONTROLLERS CAN CONTAIN MAINS  
VOLTAGES. REMOVE ALL POWER FROM  
BOTH THE CONTROLLER AND ITS DIGITAL  
OUTPUTS BEFORE MAKING CONNECTIONS.**

### General

- Follow Static precautions when installing this equipment.
- Use copper conductors that are suitable for 75°C (167°F).
- Make all connections according to electrical wiring diagram, national and local electrical codes.

### Static Precautions

Static charges damage electronic components. The microprocessor and associated circuitry are extremely sensitive to static discharge. Use the following precautions when installing, servicing, or operating the system.

- Work in a static-free area.
- Discharge static electricity by touching a known, securely grounded object.
- Use a wrist strap connected to earth ground when handling the sensor's printed circuit board.

### European Community Directives

This equipment meets all requirements of European Community Directives for Low Voltage (72/23/EEC), General Safety (92/59/EEC), and Electromagnetic Compatibility (89/336/EEC).

### Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### Canadian Department of Communications (DOC)

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

## Location

MN-Sx MicroNet Sensors are suitable for indoor use only. When selecting a mounting location, make certain the following conditions are met:

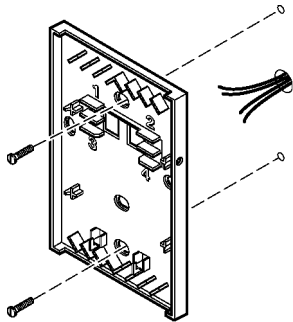
- Do not install where excessive moisture, corrosive fumes, vibration, or explosive vapours are present.
- Do not install near large contactors, electrical machinery, or welding equipment.
- Allow 150mm (6") clearance from contactors, switches, and associated cabling.

Locate where ambient temperatures do not exceed 50°C (120°F) or fall below 0°C (32°F) and relative humidity does not exceed 95% or fall below 5%, non-condensing.

Locate the MicroNet Sensor on an inside wall where the sensor is exposed to at least 9m (30ft.) per minute of unrestricted air circulation. The location should represent the average temperature in the room or space. Make certain sensor is located out of direct sunlight, away from sources of heat or cold, and away from concealed ducts or pipes.

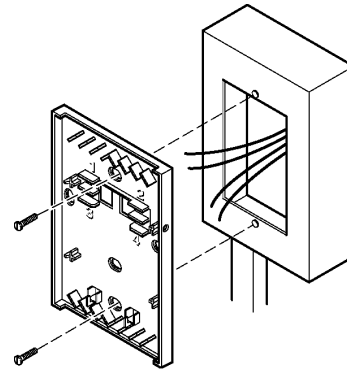
## Direct Wall Mounting

1. Use mounting dimensions shown on back page.
2. Feed S-LK wires through base plate.
3. If required, feed LONWORKS wires through base plate.
4. Using two appropriate screws (use drywall anchors as necessary), mount base plate to wall.



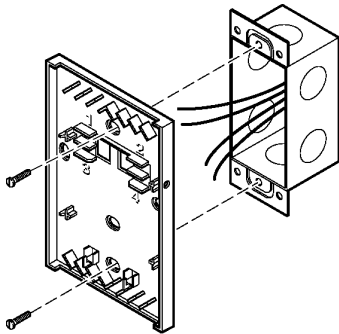
## Surface Box Mounting

1. Use mounting dimensions shown on back page.
2. Feed S-LK wires from electrical box through base plate.
3. If required, feed LONWORKS wires through base plate.
4. Using two 6-32 x 5/8" flat head screws (not provided), mount base plate to surface box.



## 2 x 4 Electrical Box Mounting

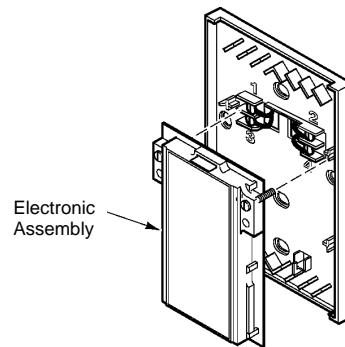
1. Use mounting dimensions shown on back page.
2. Feed S-LK wires from electrical box through base plate.
3. If required, feed LONWORKS wires through base plate.
4. Using two 6-32 x 5/8" flat head screws (not provided), mount base plate to electrical box.



## Electronic Assembly and Cover Installation

After wiring is complete (see Page 4), install the electronic assembly and cover as follows.

1. Set electronic assembly onto bottom hooks of base plate.
2. Secure electronic assembly to base plate by tightening two screws at top of assembly.
3. Insert bottom tabs of cover and then snap top into place.



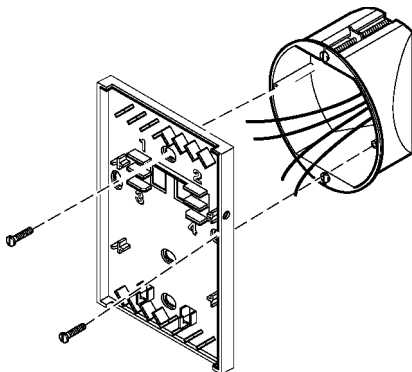
## 1/4 DIN Electrical Box Mounting

1. Use mounting dimensions shown on back page.
2. Feed S-LK wires from electrical box through base plate.
3. If required, feed LONWORKS wires through base plate.

### Caution

**Failure to use vertical mounting holes as shown below may cause a short on the LONWORKS connections.**

4. Using two appropriate screws (not provided), mount base plate to electrical box using vertical mounting holes indicated in the figure below.



## Removing the Sensor Cover

To remove sensor cover, place thumb in middle of sensor, grasp top edge of cover with fingers and pull firmly.

## Wiring



**WARNING - ELECTRICAL SHOCK HAZARD. SOME CONTROLLERS CAN CONTAIN MAINS VOLTAGES. REMOVE ALL POWER FROM BOTH THE CONTROLLER AND ITS DIGITAL OUTPUTS BEFORE MAKING CONNECTIONS.**

### Introduction

Wiring includes an S-LK connection between the controller and sensor, and an optional connection between the sensor and the MicroNet LONWORKS network.

The following table shows cable types that can be routed together.

	UI	DI	AO	DO	Power	Triac	S-Link	Network (LON)
S-Link	✓	✓	✓	*	*	*	✓	✓
Network (LON)	✓ <sup>a</sup>	✓ <sup>b</sup>	✓	*	*	*	✓	✓

a Allowed if UI is screened.

b Allowed if DI is screened.

Network wire pairs must be dedicated to S-LK and MicroNet network communications. They cannot be part of an active, bundled telephone trunk. S-LK and network wiring should be in separate cables (two-pair cable is not recommended).

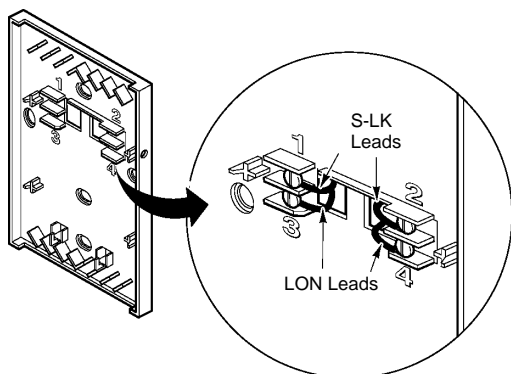
If cable is installed in areas of high RFI/EMI, the cable must be in conduit.

### Sensor Link (S-LK) Wiring

S-LK wiring powers and provides communications between the controller and sensor.

The S-LK needs at least 24 gauge (0.51mm), twisted pair, voice grade telephone wire. The capacitance between conductors cannot be more than 32pF per foot (0.3m). If shielded cable is used, the capacitance between any one conductor and the others, connected to the shield, cannot be more than 60pF per foot (0.3m). Maximum wire length is 61m (200ft.)

1. Strip 6mm (1/4") of insulation from S-LK wires.
2. Connect wires to screw terminals 1 and 2. The S-LK terminals are polarity insensitive. Refer to the controller engineering data sheet for controller connections.
3. Push excess wire back through the base plate to minimise air flow restriction.



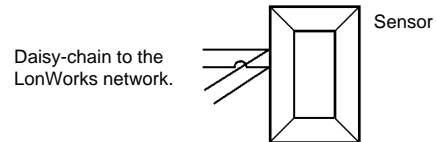
### LONWORKS Wiring

Connection to a LONWORKS FTT-10 network is optional. Connecting the sensor to a LONWORKS network enables WorkPlace Tech Tool, VisiSat, the MicroNet VAV Flow Balance software and third-party network management tools to connect to the LONWORKS network using the MN-Sx's built-in 'LON Jack' located on the left side of the sensor.

Recommended cable for most FTT LONWORKS networks is Level 4 plenum-rated 0.65mm (22AWG), as defined by the National Electrical Manufacturers Association (NEMA), but read the following note.

Screened cable is optional, depending on electrical noise levels. If screened cable is used, it must be grounded (through a 470kΩ resistor and a 0.1μF capacitor connected in parallel) **at one end only**.

The sensor can be used in either free or bus topology wiring segments, but to prevent antenna effects, the connection to the LONWORKS network must not be a spur; the sensor must be daisy-chained to the LONWORKS network. This means that there must always be four wires connecting to the LONWORKS terminals at the sensor (two wires at each terminal).



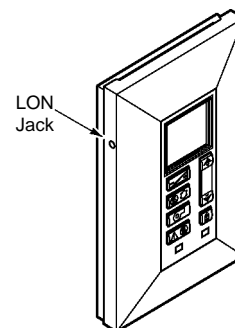
An MN-Sx sensor does not count as a 'node', however, all LONWORKS network wiring to the sensor becomes part of the wiring segment.

Note: Further information is provided in the *MicroNet System Engineering Guide*, including recommended topologies and approved cable types. It is also important to refer to the LONWORKS Wiring Guidelines ([www.echelon.com/Products/technical/bulletins.asp](http://www.echelon.com/Products/technical/bulletins.asp)) for the very latest information about LONWORKS cable types, lengths, etc.

1. Strip 6mm (1/4") of insulation from LON wires.
2. Connect wires to screw terminals 3 and 4. The LONWORKS terminals are polarity insensitive.
3. Push excess wire back through the baseplate to minimise air flow restriction.

### LON Jack

A LON Jack is located on the left side of each sensor model, as shown below. The mating plug for the LON Jack is a 1.3mm DC power plug.



### CHECKOUT

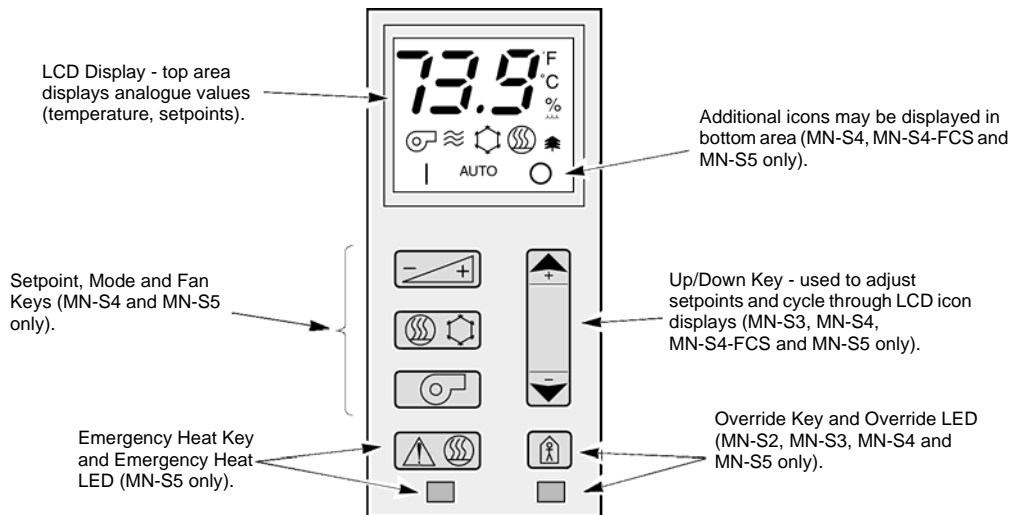
Verify wiring between MicroNet Sensor base plate and the MicroNet Controller is installed according to job wiring diagram, national and local wiring codes.

## FEATURES

MicroNet Sensor Model	Description	Features							
		Zone Temp Sensing	Override Key and LED	Setpoint Adjustment	Fan Operation and Speed	Mode (Heat/Cool/Auto/Off)	Emergency Heat Key and LED	LON Jack	Display Screen
MN-S1	The MN-S1 has no display or keypad. Its primary functions is to provide zone temperature to the controller.	✓						✓	
MN-S2	The MN-S2 provides zone temperature to the controller via the S-LK and features an Override Key, with LED indicator, to allow timed override of unoccupied to occupied mode of operation.	✓	✓					✓	
MN-S3	The MN-S3 provides the same functionality and features as the MN-S2. In addition, the MN-S3 has a digital liquid crystal display and allows controller setpoint adjustment. The MN-S3 offers one setpoint and one default display screen and allows viewing of alarms and diagnostics.	✓	✓	✓				✓	✓
MN-S4	The MN-S4 provides the same functionality and features as the MN-S3. In addition, the MN-S4 includes a Mode key for Heat/Cool/Auto/Off mode selection, a Fan key to control fan operation or speed and a Setpoint key to select four different setpoints.	✓	✓	✓	✓	✓		✓	✓
MN-S4-FCS	The MN-S4-FCS provides the same functionality and features as the MN-S3, without an Override key, but instead has three Fan Speed keys for Low, Medium, High adjustment, and a Fan On/Off/Auto key.	✓		✓	✓			✓	✓
MN-S5	The MN-S5 provides the same functionality and features as the MN-S4. In addition, the MN-S5 features an Emergency Heat Key and LED for use in heat pump applications. The MN-S5 offers four setpoints and four display screens.	✓	✓	✓	✓	✓	✓	✓	✓

## SENSOR DISPLAY AND KEYS

The following shows an example of an MN-Sx sensor (MN-S5).

















The meaning of each sensor key is as follows.

	Setpoint (MN-S4, MN-S5)		Mode (MN-S4, MN-S5)		Fan On/Off or Speed (MN-S4, MN-S5)
	Emergency Heat (MN-S5)		Up (MN-S3, MN-S4, MN-S4-FCS, MN-S5)		Down (MN-S3, MN-S4, MN-S4-FCS, MN-S5)
	Override (MN-S2, MN-S3, MN-S4, MN-S5)		Max Fan Speed (MN-S4-FCS)		Medium Fan Speed (MN-S4-FCS)
	Low Fan Speed (MN-S4-FCS)		Fan On/Off/Auto (MN-S4-FCS)		

## LCD ICON DESCRIPTIONS

### MICRONET SENSOR LCD ICON DESCRIPTIONS<sup>a</sup>

Icon	Name	Description	Icon	Name	Description
°F	Degrees Fahrenheit	Units are displayed in °F.		Heat	The Heat Icon indicates that the controller is in heat mode, or the heating setpoint is being displayed.
°C	Degrees Celsius	Units are displayed in °C.		Cool	The Cool Icon indicates that the controller is in cool mode, or the cooling setpoint is being displayed.
% 	Relative Humidity	Units are displayed in% of relative humidity.		Fan	The Fan Icon, along with the appropriate Fan Speed Icon, indicates that the fan is on.
	Outdoor Air	The Outdoor Air Icon indicates that outdoor air temperature is displayed.		Fan Speed (1-Speed Fan)	The Fan Speed Icons indicate the speed of the fan. If the fan has one speed, the appearance of three wavy lines indicates that the fan is on.
	Unoccupied	The Unoccupied Icon indicates that the unoccupied mode is active, or unoccupied setpoints are displayed. This icon is not displayed in the occupied mode.	 	Fan Speed (2-Speed Fan)	The Fan Speed Icons indicate the speed of the fan. If the fan has a two speed selection, the appearance of three wavy lines indicates high speed. The bottom wavy line indicates low speed.
AUTO	Auto	The Auto Icon indicates that the controller is in the auto mode.			
	Off	The Off Icon indicates OFF for a mode or fan selection.	  	Fan Speed (3-Speed Fan)	The Fan Speed Icons indicate the speed of the fan. If the fan has a three speed selection, the appearance of three wavy lines indicates high speed. The middle and lower wavy lines indicates medium speed, and the bottom wavy line indicates low speed.
	On	The On Icon indicates ON. For example, the On Icon may indicate that a connected device is operating manually or that room lights are on. The On Icon may represent auxiliary heat during normal heat pump operation or a possible selection in the fan selection list.			

<sup>a</sup> LCD icons and icon definition vary depending on connected MicroNet Controller and its application. Refer to application documentation for more information.

## SENSOR OPERATION

### Display Screen Functions

The MN-S3 model has one display screen slot. The MN-S4 and MN-S5 models have four display screen slots. The connected controller's application defines what is visible in each slot. The first display screen slot always shows the sensor's default display.

#### To scroll through display screens (MN-S4 & MN-S5):

1. Press either end of Up/Down Key to change from first display screen slot to second display screen slot. Before the second display screen slot appears, '-2-' will appear to indicate you are about to view the second slot.
2. Press either end of Up/Down Key to scroll through the four slots. Before the third display screen slot appears, '-3-' will appear to indicate you are about to view the third slot. Before the fourth display screen slot appears, '-4-' will appear to indicate you are about to view the fourth slot.

### Emergency Heat Functions

The Emergency Heat Key activates emergency heat in heat pump applications equipped with this feature. To activate, press Emergency Heat Key. The LED indicator is lit when Emergency Heat is activated. (Applies only to the MN-S5).

### Fan Functions

#### To display and adjust the fan:

1. Press the Fan Key to change from the current display to first fan slot. The sensor displays the first fan, corresponding speed icon and '-1-'.

Note: There are two fan slots. The fan assigned to each slot depends on the controller application and sensor configuration.

Note: If the sensor displays three dashes when pressing the Fan Key, all fan slots are unassigned or not active.

2. Continue to press Fan Key to scroll through fan slots. Before the second fan appears, '-2-' will appear to indicate you are about to view the second fan.
3. Press Up/Down Key as necessary to change fan setting.
4. To enter new selection, press any key besides the Up/Down Key or wait for five seconds.

#### To activate fan speed:

If the controller is equipped for multiple fan speeds, the Up/Down Key activates one of three selected fan speeds. Multiple speed fans are indicated by wavy lines next to fan icon in LCD (To see fan speed icons, refer to table under LCD Icon Descriptions on page 6).

#### To display and adjust the fan (MN-S4-FCS):

1. Press the On/Off/Auto Key to select On, Off, or Automatic fan control. (For MicroNet LonMark® controllers, Auto is optional and must be activated using WP Tech.)
2. Press the low, medium, or high key to adjust fan speed. (Speed indicated by 1, 2, or 3 wavy lines on key.)

### General Functions

#### Sensor time-out

The MicroNet Sensor times out and returns to the default display if left idle for 15 seconds. If sensor is in diagnostics mode, then time out is 30 seconds.

#### To enter a selection:

Press any key besides the Up/Down Key after making your selection. The selection will be automatically entered after a 5 second time-out.

#### To fast scroll toggle for increasing or decreasing values:

Press and hold either end of the Up/Down Key and tap and release Override Key. To terminate fast scroll, release Up/Down Key.

### Mode Functions

#### To display and adjust modes (MN-S4 & MN-S5):

1. Press Mode Key to change from current display to first mode slot. The sensor displays the first mode, corresponding icon and '-1-'.

Note: There are two mode slots. The mode assigned to each slot depends on the controller application and sensor configuration.

Note: If the sensor displays three dashes when you press the Mode Key, all mode slots are unassigned or not active.

2. Continue to press Mode Key to scroll through mode slots. Before the second mode appears, '-2-' will appear to indicate you are about to view the second mode.
3. Press Up/Down Key as necessary to change mode.
4. To enter new mode selection, press any key besides the Up/Down Key or wait for five seconds.

### Override Functions

The Override Key (available on sensors except MN-S1 and MN-S4-FCS) allows override of unoccupied mode setting within the controller. If used in conjunction with the UNIFACT<sup>PRO</sup> controller, see the UNIFACT<sup>PRO</sup> Data Sheet.

- The override LED indicator is lit if the MicroNet controller is overridden to the occupied mode from the unoccupied mode.
- The override LED indicator flashes when timed override has less than 5 minutes remaining.
- If the override time is left to expire, the controller returns to the unoccupied mode.

#### To override the unoccupied mode:

Press (for not more than four seconds) and release Override Key. The controller goes into the occupied mode for override time specified by controller.

#### To reset override time:

If override time has not expired, press (for less than four seconds) and release Override key. Override time resets to override time specified by controller.

#### To cancel override:

Press and hold Override Key for four seconds. Override is cancelled and controller returns to unoccupied mode.

### Service Pin

#### To command controller to send controller service pin to the LON:

(MicroNet LONMARK controllers only.) Press and hold Override key (On/Off/Auto Key on MN-S4-FCS) for eight seconds. The service pin of connected controller is sent out on the LON.

### Setpoint Functions

#### To display and adjust setpoints (MN-S3, -S4, -S4-FCS & -S5):

(MicroNet LONMARK controllers only.)

1. Press Setpoint Key to change from current display value to first setpoint slot. (Press Up/Down key on MN-S3 and MN-S4-FCS. Key must be released and pressed again to change setpoint.) The sensor displays first setpoint and corresponding icon (heat, cool, unoccupied heat, or unoccupied cool). MN-S3 will not display icon.

Note: The MN-S3 and MN-S4-FCS models have one setpoint slot, and the MN-S4 and MN-S5 models have four setpoint slots. The setpoint assigned to each slot depends on controller application and sensor's configuration.

Note: If sensor displays three dashes when you press the Setpoint Key, all setpoints slots are unassigned or not active.

2. Continue to press Setpoint Key to scroll through the four setpoint slots. Before the next setpoint appears, '-2-' will appear to indicate you are about to view the second setpoint. ('-3-' indicates the third setpoint, '-4-' indicates the fourth setpoint)
3. Press Up/Down Key as necessary to adjust any setpoint. (On MN-S3 and MN-S4-FCS, Key must be released and pressed again to change setpoint.)
4. To enter new setpoint, press any key besides Up/Down Key or wait 15 seconds. (On MN-S4-FCS do not press any keys. Simply wait 5 seconds and the setpoint will be entered.)

### Diagnostics

Note: The following applies to an MN-S4, MN-S4-FCS or MN-S5 sensor connected to an MN50, MN100, MN150, MN200 and VAV controllers.

In the Diagnostics Mode, the sensor times out and returns to the default screen if left idle for thirty seconds. Subnet Address, Node Address, Alarms, and Errors are view only frames. Values displayed in the Temperature Offset and Relative Humidity Offset frames are adjustable.

The MicroNet MN-S4, MN-S4-FCS and MN-S5 Sensors provide the following types of diagnostic data.

- Subnet Address
- Node Address
- Errors
- Alarms
- Temperature Offset
- Relative Humidity Offset

#### To access view-only diagnostics:

View the Subnet Address, Node Address, Errors, and Alarms in this mode.

1. Press and hold both ends of Up/Down Key for five seconds. The Subnet Address frame appears.
2. Press Up/Down Key to scroll through Node Address frame, Errors frame, and Alarms frame.

**To access adjustable diagnostic data:**

Access Temperature Offset frame and Relative Humidity Offset frame in this mode. Skip step (1.) if you are already in the Diagnostics Mode.

1. Press and hold Up/Down Key for five seconds. The Subnet Address frame appears.
2. Press Override Key (Press On/Off/Auto key on MN-S4-FCS). The Temperature Offset frame appears.
3. Use Up/Down Key to adjust value.
4. To access Relative Humidity Offset frame, press Override Key (On/Off/Auto key on MN-S4-FCS) again and use Up/Down Key to adjust value.
5. To return to the Subnet Address frame, Node Address frame, Errors frame, and Alarms frame, press Override Key (On/Off/Auto key on MN-S4-FCS).

**Subnet Address and Node Address:** Subnet Address frames and Node Address frames display subnet and node addresses of the connected controller. The LCD alternates between Subnet Address frame, numerical value of subnet address, Node Address frame, and numerical value of node address.

**Errors:** The Error frames display a value of 1, 2, 4, 8, 16, 32, or a combination of any of these values. The value may indicate one or more errors as described in the table below. For example, an Error frame display value of 17 indicates two errors (1 = EEPROM write or read error and 16 = Analogue output writing error) since 1 + 16 = 17. The LCD alternates between the Error frame and the numerical error value.

Error Code	Controller	
	MNL-10RXX MNL-15RXX MNL-20RXX	MNL-V1RVX MNL-V2RVX MNL-V3RVX
1	EEPROM write or read error	
2	Out of range universal input (UI1)	
4	Out of range universal input (UI2)	High velocity pressure
8	Out of range universal input (UI3)	Low velocity pressure
16	Analogue output writing error	
32	Calibration data checksum error or unit is uncalibrated	

**Alarms:** The Alarm frames display the last four alarms of the connected MicroNet Controller. The LCD alternates between Alarm frame and numerical alarm value. If the controller is sending more than one alarm, the numerical alarm value will update every four to five seconds. Alarms are defined by controller application. For information regarding specific alarm definitions, consult appropriate application documentation.

**Temperature Offset:** The Temperature Offset frame displays the connected MicroNet Controller's offset value. Adjust value using the Up/Down Key.

## SERVICE

Components within MicroNet Sensors can not be field repaired. If there is a problem with a sensor, follow the steps below before contacting your local sales office.

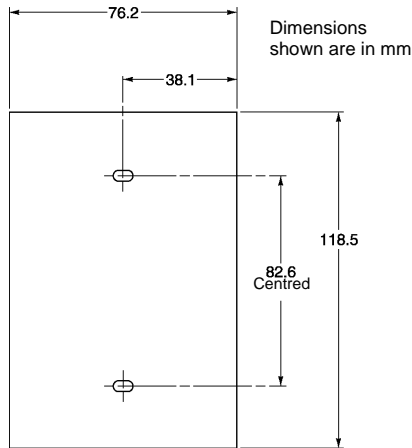
Sensor Condition	Corrective Action
LCD remains blank.	Check sensor and controller wiring and correct, if necessary. If wiring is okay, check to see if power is being applied to the sensor by pushing the Override Key (or the Fan On/Off/Auto Key on an MN-S4-FCS) for less than four seconds. If the LED lights up, the sensor is powered. If the LED does not light up, the sensor may not be receiving power. Check controller power to verify presence. If the above measures do not address the problem, download a new application to the controller.
Sensor displays 'Abn' indefinitely.	Check the documentation to make sure the sensor mode is compatible with the controller application and then choose one of the following options. If the sensor and application are compatible, download a new application to the controller. If the sensor and application are incompatible, download an application that is compatible with the sensor. Or, install a sensor that is compatible with the controller application.
All LCD icons lights up and remain lit.	Check to see if the controller is constantly resetting and correct, if necessary. Check sensor and controller wiring and correct, if necessary. If reset and wiring are okay, download an new application to the controller. If the above measures do not address the problem, the controller may need to be configured. For configuration instructions, consult documentation associated with the network management tool.

If you need to contact your local sales office, record the precise hardware setup indicating the following:

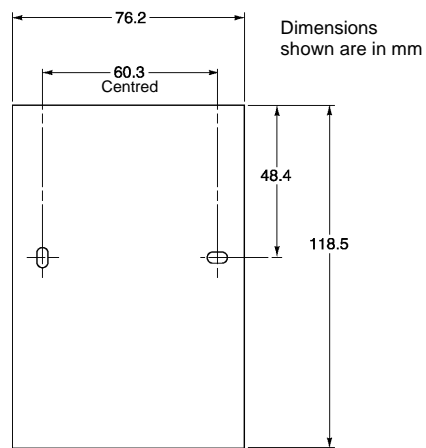
- Version numbers of applications software.
- Controller firmware version number.
- Information regarding the Version number of the configuration tool you are using (e.g. VisiSat™ or WorkPlace Tech Tool).
- A complete description of difficulties encountered.

## DIMENSION DRAWING

### MOUNTING DIMENSIONS FOR DIRECT-WALL, 2 X 4 ELECTRICAL BOX AND SURFACE BOX MOUNTING



### MOUNTING DIMENSIONS FOR 1/4 DIN ELECTRIC BOX MOUNTING



#### WARNING -

**ELECTRICAL SHOCK HAZARD. REMOVE ALL POWER FROM BOTH THE CONTROLLER AND DIGITAL OUTPUTS BEFORE MAKING TERMINATIONS OR CHANGING CONFIGURATION INPUT JUMPERS.**

- Do not apply any voltages until a qualified technician has checked the system and the commissioning procedures have been completed.
- If any equipment covers have to be removed during the installation of this equipment, ensure that they are refitted after installation to comply with UL and CE safety requirements.
- Do not exceed the maximum ambient temperature.
- Interference with parts under sealed covers invalidates guarantee.
- The design and performance of TAC Satchwell equipment is subject to improvement and therefore liable to alteration without notice.
- Information is given for guidance only and TAC Satchwell does not accept responsibility for the selection or installation of its products unless information is given by the Company in writing relating to a specific application.
- A periodic system and tuning check of the control system is recommended.

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