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COMFORT SENSOR KIT

INSTALLATION INSTRUCTIONS FOR COMFORT SENSOR USED WITH L CONNECTION® NETWORK

Shipping and Packing List

Package 1 of 1 contains:

- 1- Comfort Sensor (CS)
- 3- Screws
- 3- Plastic anchors
- 1- Wiring diagram

Check panel for shipping damage. Receiving party should contact last carrier immediately if shipping damage is found.

These instructions are intended as a general guide and do not supersede local codes in any way. Authorities having jurisdiction should be consulted before installation.

Cable Requirements

THERMOSTAT WIRE

Standard thermostat wire (one pair 20 AWG minimum) may be used to wire the zone controller to the optional wall plug 24V transformer 18M13 or other field-provided 2VA, 24VAC output transformer.

COMMUNICATION WIRE

Use one of the following communication wire types depending on the application.

SysBus - Standard or plenum, yellow, Lennox part no.-

- 27M19 (500-ft. roll)
- 94L63 (1000-ft. roll)
- 68M25 (2500-ft. roll)

ZoneBus - Standard or plenum, purple, Lennox part no.-

- 23W99 500 Ft. roll
- 24W00 1000 Ft. roll
- 24W01 2500 Ft. roll

Application

Comfort Sensors are used to read zone temperature for the L Connection Network in single zone applications. In addition to reading temperature, sensors are available with the options shown in table 1.

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a qualified installer or service agency.

Table 1. Available Comfort Sensors

Options	Cat. No.	Part No.
Temperature, RH, CO2, *	18W65	100939-09
Temperature, RH *	18W66	100939-10
Temperature, CO2, *	18W67	100939-11
Temperature *	18W68	100939-12
Temperature, RH	18W69	100939-13
Temperature, CO2	18W70	100939-14
Temperature, RH, CO2	18W71	100939-15
Temperature	18W72	100939-16

*Sensor has LCD display and adjustment buttons.

Installation

⚠ IMPORTANT

Integrated board is extremely sensitive to static electricity. Care must be taken in handling. Hold subbase by the edges and avoid touching any components.

Locate sensor in conditioned zone approximately 5 feet (1-1/2m.) above the floor in an area with good air circulation at average temperature. Avoid locating the sensor where it might be affected by:

- drafts or dead spots behind doors and in corners
- hot or cold air from ducts
- radiant heat from sun or appliances
- concealed pipes and chimneys

Install sensor on a standard handy box or directly on wall as follows:

1. Cut a small opening for wires in the wall approximately 5 feet above the floor in the appropriate zone.
2. Press the tab at the bottom of the sensor to remove the cover from the baseplate.
3. Center the opening in the baseplate over the opening in the wall. Mark and drill three holes for screws (see figure 1).
4. Insert wall anchors in holes and secure baseplate to the wall with provided screws.
5. Route twisted pair cable through the opening in the wall. Route thermostat wire from optional zone damper actuator, fan powered zone box, averaging sensors, etc., to the opening.
6. Pull all cables through the opening in the baseplate. Connect cables as shown in figure 3.



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7. Caulk opening around cable to protect sensor from drafts.
8. Affix wiring diagram to inside unit panel near other diagrams.

sensors may be used in averaging sensor applications. Use Lennox part numbers 94L61 or 56L80. Sensors are not polarity sensitive.

OCCUPANCY SENSOR INPUT

Wire an optional, isolated, 24VAC input to CS terminals 1 and 2. See figures 1 and 3.

EXTERNAL SENSORS

Wire external sensors as shown in figure 2. Up to four

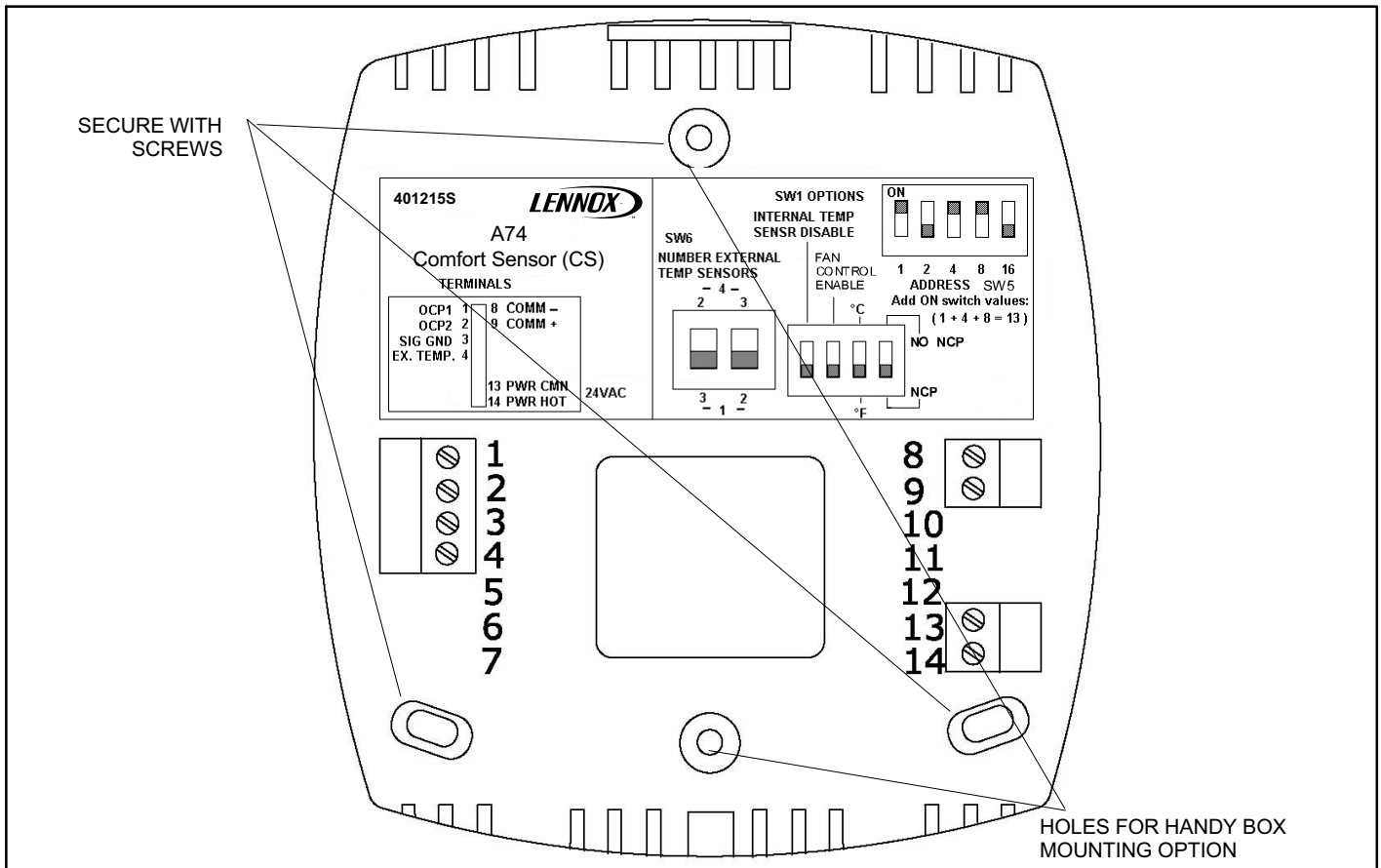


Figure 1. Comfort Sensor (CS)

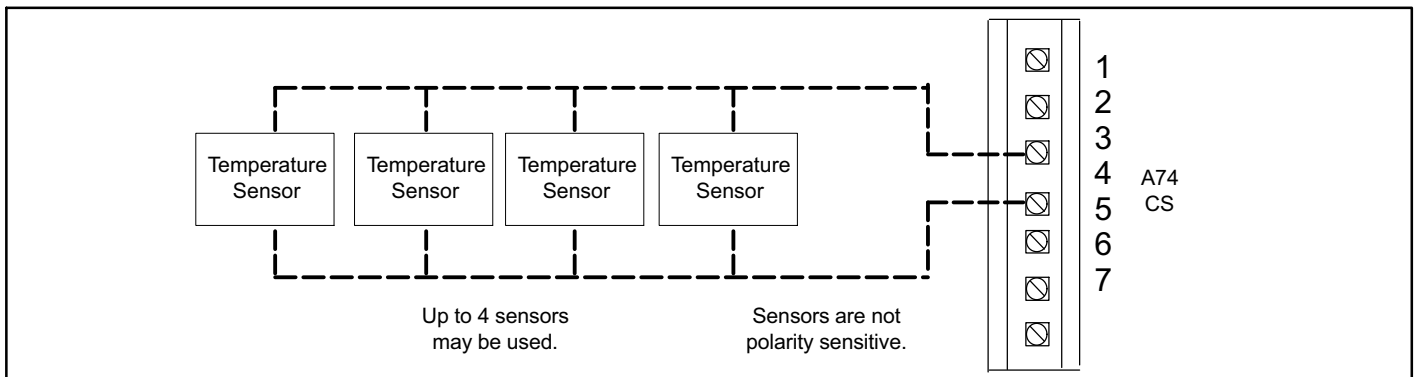


Figure 2. External Sensor Wiring

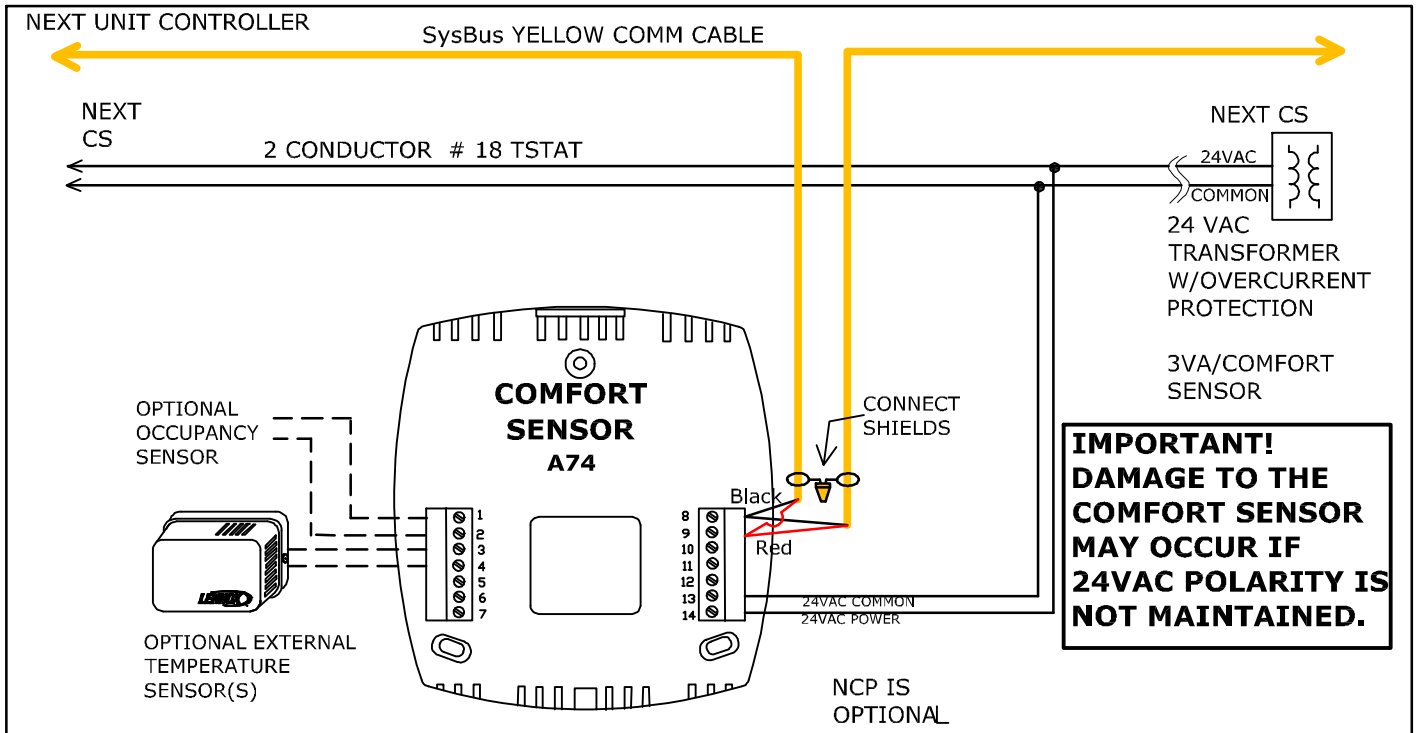


Figure 3. Comfort Sensor (RTU) Control Wiring

DIP Switch Settings

See figure 4 for location of DIP switches on inside of cover. Set the SW5 address switch to match the unit address as shown in figure 5. Adjust SW1 and SW6 option switches as shown in figure 6 and 7 when option applies.

- SW5 Device address Figure 5
- SW1 Option Figure 6
- SW6 External Sensor Figure 7

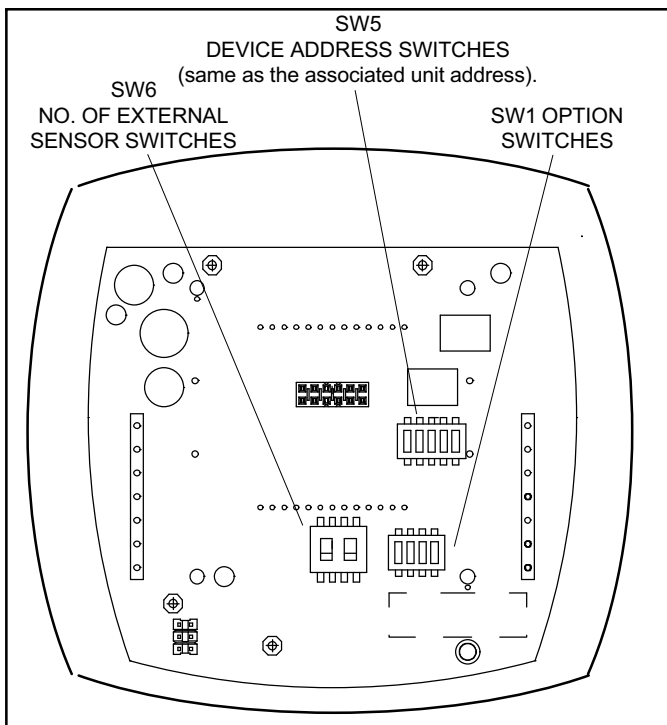


Figure 4. DIP Switches

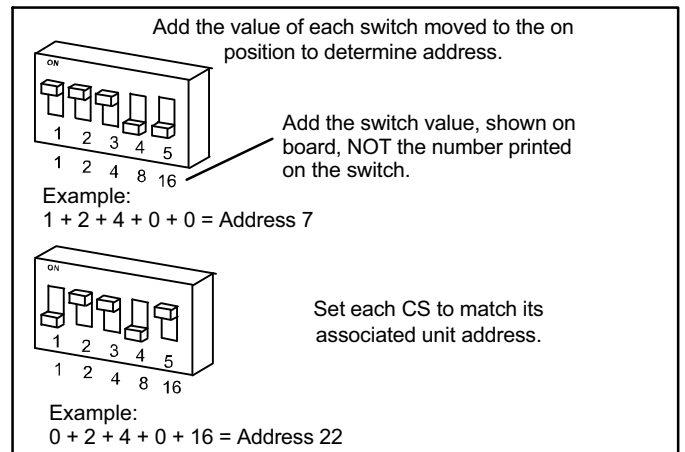


Figure 5. SW5 Device Address Switches

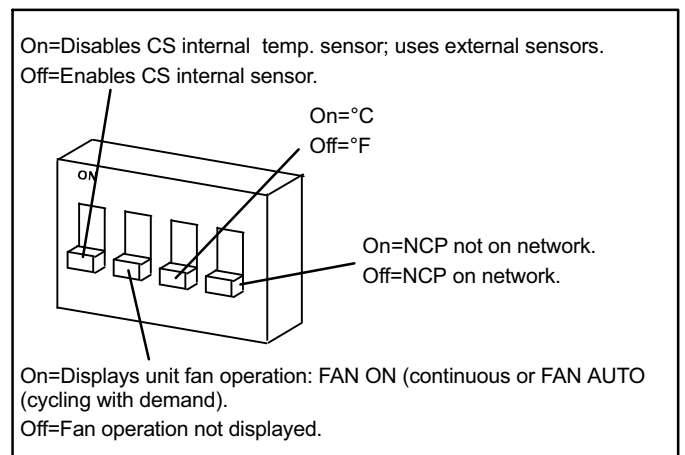


Figure 6. Control SW1 Option Switches (Shown in Default or Off Position)

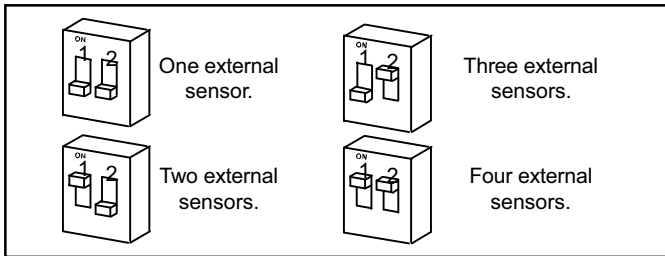


Figure 7. SW6 Optional External Sensors

Comfort Sensor Configuration

The following optional settings (M2 ECTOs and M3 Parameters) can be adjusted using Unit Controller software, a PC using first generation UC software, and L Connection PC converter. See figure 8 and table 2. Settings do not have to be adjusted for zoned system operation; default parameters will be used.

Connect the L Connection PC Converter phone cable to the Network Control Panel (NCP) to configure all of the CS. When the converter is connected to the CS, only the Controllers on that Zone Bus can be adjusted.

MAIN SCREEN DISPLAY OPTIONS

- Setpoint High Resolution
- Zone Temperature High Resolution
- CO2 Display
- Outdoor Temperature
- Temperature Setpoints
- RH
- Damper Position
- Momentary Backlight - Display backlight intensity within 5 seconds of button being pressed.
- Continuous Backlight - Display backlight intensity all of the time.

SETPOINT RANGE AND SENSOR CALIBRATION

Setpoint adjustment range except when zone is in manual mode.

- Internal temperature offset calibration.
- External temperature offset calibration.
- RH offset calibration.

M1/M2 or M3 Unit Controller or NTC Setup

All units on the network will have either an Prodigy Unit Controller or a Network Thermostat Controller (NTC).

The following options (M1/M2 ECTOs and M3 Parameters) must be set when the Comfort Sensor is used. The options can be set using the Unit Controller (UC) software.

UNITS EQUIPPED WITH AN M1 OR M2 UNIT CONTROLLER:

ECTO 6.01 - Set to 1, 2, or 3. Tells the M1/M2 unit controller what control mode and back-up setpoints to use.

- 1=Zone sensor mode with no backup.
- 2=Zone sensor mode with local thermostat backup.
- 3=Zone sensor mode with return air sensor backup.

ECTO 5.27 - Set to 2, 3, 10, or 11, depending on the options available on the CS. Zone temperature reading is standard on all CSs. Setting tells the M1/M2 unit controller where to get zone temperature, CO2, and indoor RH input.

- 2=Zone temperature (A2)
- 3=Zone temperature and IAQ (A63)
- 10=Zone temperature and indoor RH (A91)
- 11=Zone temperature, IAQ, and indoor RH

UNITS EQUIPPED WITH AN NTC :

ECTO A4.07 - Set to 1. Enables remote sensor mode in the NTC.

UNITS EQUIPPED WITH AN M3 UNIT CONTROLLER:

To **enable** the M3 Unit Controller to use Comfort Sensors, use the following procedure:

1. Go to **SETUP** and select **NETWORK INTEGRATION**.
 2. Use the **Adjust and set values** arrows to display **L-CONNECTION** and press the **SAVE** button to continue.
 3. Adjust the **L-CONNECTION ADDRESS** if required and press **SAVE** button to continue.
- NOTE: Both the L-Connection address setting and Comfort Sense address setting needs to be exactly the same. In addition, the Comfort Sense should be configured with NO NCP option.*
4. **CONTROL MODE** will need to be set to **ROOM SENSOR**. Press the **SAVE** button to continue.
 5. **NETWORK SENSOR > CO2** needs to be set to **YES** if needed. Press the **SAVE** button to continue.
 6. **NETWORK SENSOR > RELATIVE HUMIDITY** needs be set to **YES** if needed. Press the **SAVE** button to continue.
 7. **NETWORK SENSOR > TEMPERATURE** will need to be set to **YES** (mandatory).

NOTE: Additional settings will be required to complete after completing step 7. Once the above steps are completed the Comfort Sensor output will be accepted by the system.

NOTE: If Comfort Sensor input is still not working, cycle power to the M3 Unit Controller.

Table 2. Comfort Sensor Parameters

Control Parameter	Control Value			Units	Description
	Name	Min.	Default		
DISPLAY_OPT	Default display is zone temperature only.			Option	Data display option for main screen. The following options may be selected. (Comfort Sensor equipped with optional display only). Setpoint High Resolution Zone Temperature High Resolution CO2 Display Outdoor Temperature Setpoints RH Damper Position Exceptions: 1-Cannot display Heating Setpoint and RH at the same time. 2-Cannot display Cooling Setpoint and Damper Position at the same time. 3-Cannot display OAT and CO ₂ at the same time.
Momentary Backlight	0	6	15	Brightness	Sets the display backlight brightness 5 after the button is pressed. (Comfort Sensor equipped with optional display only).
Continuous Backlight	0	2	15		Sets the display backlight brightness continuously. (Comfort Sensor equipped with optional display only).
SP_ADJ_RANGE	0	2	10	DegF	Setpoint adjustment range except when zone is in manual mode.
INT_CAL	-5	0	+5	DegF	Internal temperature sensor calibration offset.
EXT_CAL	-5	0	+5	DegF	Internal temperature sensor calibration offset.
RH_CAL	-5	0	+5	%RH	RH sensor calibration offset.
CO2_CAL	-200	0	+200	PPM	CO ₂ sensor calibration offset.

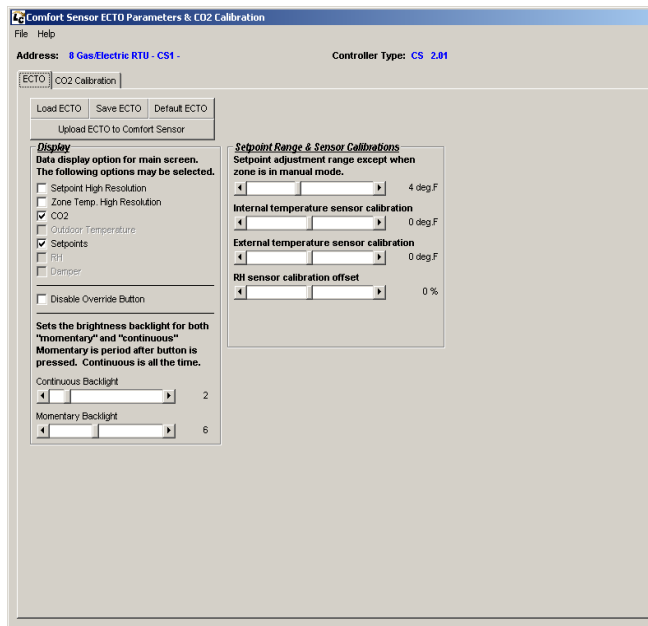


Figure 8. Unit Controller Software Configuration Screen (First Generation UC Software)

Troubleshooting

NETWORKS USING AN NCP:

Make sure the CS is displayed on the NCP network list. If the CS is not displayed:

1. Make sure 24VAC is supplied to the CS.
2. Make sure the CS address switch setting matches the associated Prodigy Unit Controller or NTC.
3. Check communication cable wiring: the red or + lead should be connected to CS terminal 9. The black or - lead should be connected to CS terminal 8.
4. Repoll the network at the NCP (see NCP user's manual).

Verify that the sensor data from the CS display matches the NCP zone data screen.

NO NCP ON THE NETWORK:

1. Make sure 24VAC is supplied to the CS.
2. Make sure the CS address switch setting matches the M1/M2 unit controller address. *(Note: an NCP is required when using an NTC.)*
3. Check communication cable wiring: The red or + lead should be connected to CS terminal 9. The black or - lead should be connected to CS terminal 8.
4. Verify that the sensor data from the CS display matches the Prodigy Unit Controller display.
 - For the M1 unit controller (IMC), use the IMC MODE TEMP switch to display the data.
 - For the M2 unit controller use the **DATA > SENSORS** menu to display the data.
 - For the M3 Unit Controller use the **DATA > IN/OUTPUT > SENSORS > LOCAL**

