Identification and Overview

Room Temperature Sensor without Display, Optional Setpoint, Override, Comm Jack and Test & Balance Switch

- Optional Setpoint, Override and Comm. Jack
- Available Pressure Pickup Port
- Limited Lifetime Warranty

Enclosure Style

The Delta Style units without display are available with optional slider setpoint adjustment and override.

Setpoint

Setpoint is available as a slidepot in various ranges.

Override

Optional discreet momentary signal that can be configured to be compatible with any controller.

Communication Jack

Available with a 3.5mm phono plug style jack.

Pressure Pickup Port

Pressure Pickup Ports are available for Delta Style enclosures without setpoint or override.

Part #s: **N1-10K-2-R-BW-A**

N1-10K-2-R-FOAM-BW-A

Specifications

Sensing Element:

Thermistor or RTD

(See Sensors Section for Specifications.)

Wiring: 16 to 22 AWG

Environmental Operation Range:

Temperature: 32 to 122F (0 to 50C)

Humidity: 0 to 95%, non-condensing

Enclosure Material:

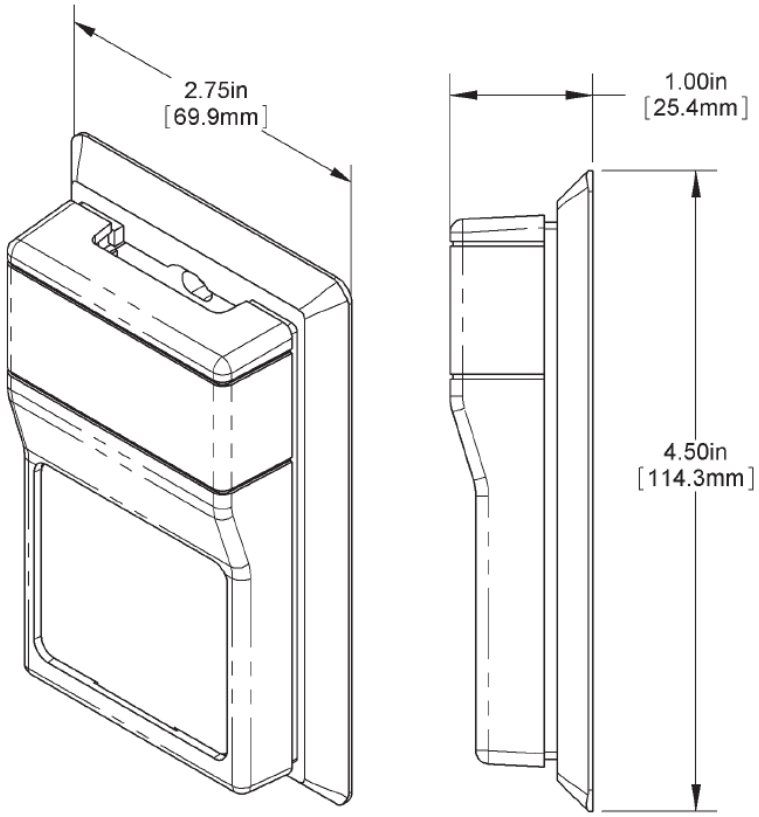
ABS Plastic, UL94 V-0

Mounting:

Standard 2”x4” junction box, European junction box or drywall mount (screws provided)

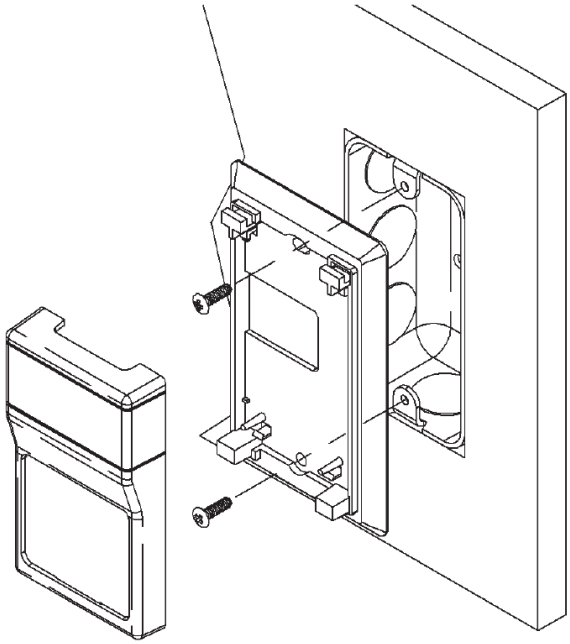
Agency: CE EN 61000-6-2 EMC, RoHS

Dimensional Drawing



Mounting

Mounting hardware is provided for both junction box (J-box) and drywall installation.



Junction Box Instructions

1. Pull the wire through the wall and out of the junction box, leaving about six inches free.
2. Pull the wire through the hole in the base plate.
3. Secure the base to the box using the # 6-32 x 3/4 inch mounting screw provided.
4. Terminate the unit according to the guidelines in Termination on page 2.
5. Attach Cover by latching it to the top of the base, rotating the cover down and snapping it into place.
6. Secure the cover by backing out the lock-down screws using a 1/16” Allen wrench until they are flush with the bottom of the cover.

Drywall Mounting Instructions

1. Place the base plate against the wall where you want to mount the sensor.
2. Using a pencil mark out the two mounting holes and the area where the wires will come through the wall.
3. Drill two 3/16” holes in the center of each marked mounting hole. Insert a drywall anchor into each hole.
4. Drill one 1/2” hole in the middle of the marked wiring area.
5. Pull the wire through the wall and out of the 1/2” hole, leaving about six inches free.
6. Pull the wire through the hole in the base plate.
7. Secure the base to the drywall anchors using the #6 x 1 inch mounting screws provided.
8. Terminate the unit according to the guidelines in Termination on page 2.
9. Attach Cover by latching it to the top of the base, rotating the cover down and snapping it into place. Secure the cover by backing out the lock-down screws using a 1/16” Allen wrench until they are flush with the bottom of the cover.

Caution	In a wall-mount application, the wall temperature and the temperature of the air within the wall cavity can cause erroneous readings. The mixing of room air and air from within the wall cavity can lead to condensation, erroneous readings and premature failure of the sensor. To prevent these conditions, seal the conduit leading to the junction box and seal the hole in the drywall by using an adhesive backed, foam insulating pad.

Termination

All wiring must comply with the National Electric Code (NEC) and local codes.

Warning	Wire the product with power disconnected. Proper supply voltage, polarity, and wiring connections are important to a successful installation. Not observing these recommendations may damage the product and will void the warranty.

Caution	Do NOT run this device's wiring in the same conduit as AC power wiring of NEC class, NEC class 2, NEC class 3 or with wiring used to supply highly inductive loads such as motors, contactors and relays Tests show that fluctuating and inaccurate signal levels are possible when AC power wiring is present in the same conduit as the signal lines. If you are experiencing any of these difficulties, please contact your representative.

Tip	We recommend using twisted pair of at least 22AWG and sealant filled connectors for all wire connections. Larger gauge wire may be required for long runs

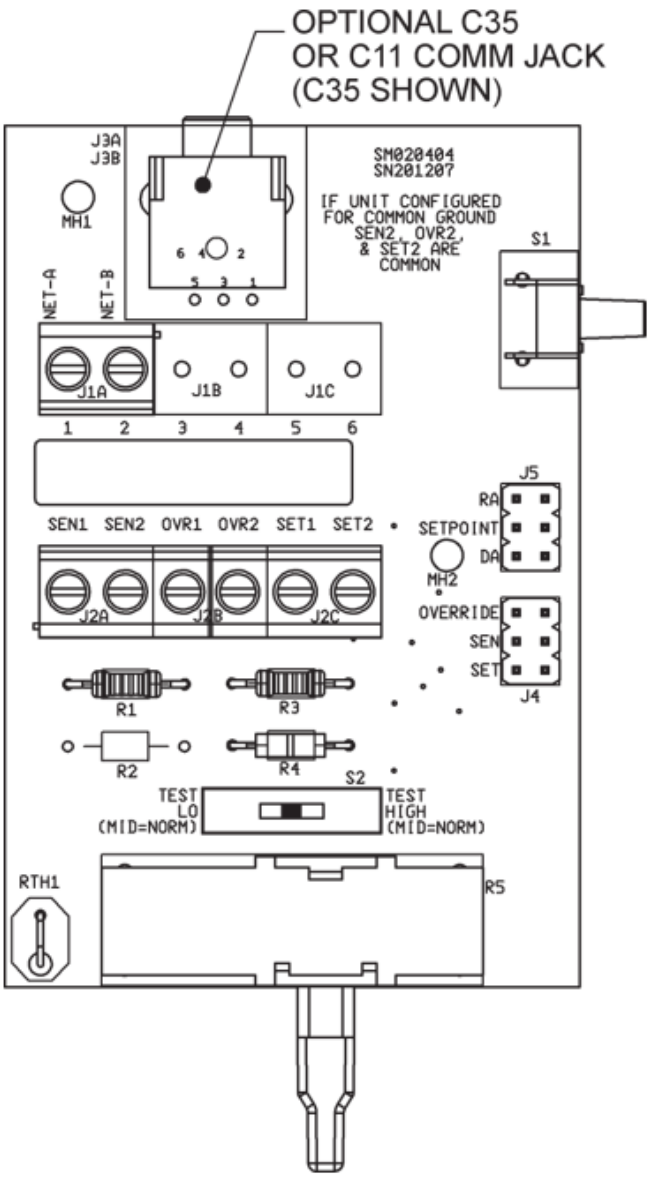


Figure 1: Circuit Board Layout #1

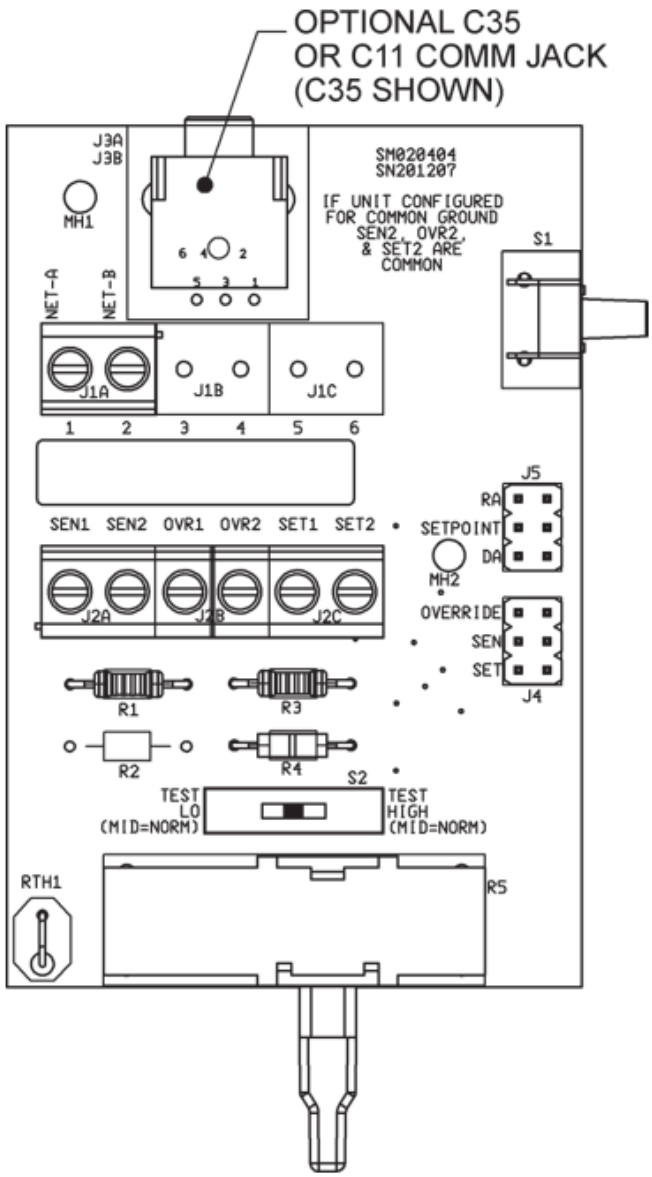


Figure 2: Circuit Board Layout #2

Common Wiring

SEN1 ..... Temperature Resistive Output, To analog input of controller

SEN2 ..... Temperature Resistive Output, To analog input of controller*

OVR1 ..... Dry Switch Contact Output, To digital input of controller

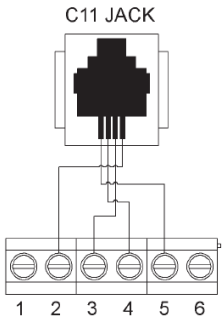
OVR2 ..... Dry Switch Contact Output, To digital input of controller*

SET1 ..... Setpoint Resistive Output, To analog input of controller

SET2 ..... Setpoint Resistive Output, To analog input of controller*

Note: *If unit is configured for common ground, then SET2, OVR2 and SEN2 are connected together.

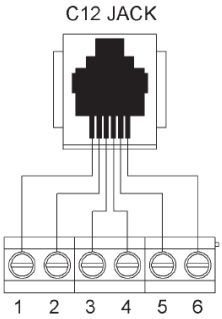
Communication Jack Termination



C11 Wiring

1.... Not Connected
2.... Internally Connected to C11 Pin 2
3.... Internally Connected to C11 Pin 3
4.... Internally Connected to C11 Pin 4
5.... Internally Connected to C11 Pin 5
6.... Not Connected

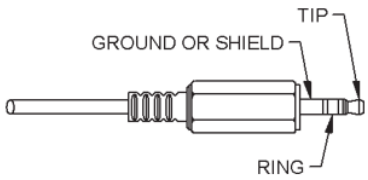
Figure 3: C11 Comm Jack and Circuit Board Terminal Block



C12 Wiring

1..... Internally Connected to C12 Pin 1
2..... Internally Connected to C12 Pin 2
3..... Internally Connected to C12 Pin 3
4..... Internally Connected to C12 Pin 4
5..... Internally Connected to C12 Pin 5
6..... Internally Connected to C12 Pin 6

Figure 5: C12 Comm Jack and Circuit Board Terminal Block



Note: Male Jack shown for clarity

C35 Wiring	
	Terminal #
Ground	Net A
Tip	Net B
Ring	Not Connected

Figure 4: C35 Comm Jack

Jumper Settings

J5 Options

Setpoint Reverse Acting (RA):

Setpoint Direct Acting (DA):

J4 Differential Ground

Override in parallel with setpoint:

Override in parallel with sensor:

Override as a separate input:

J4 Common Ground

Override in parallel with setpoint:

Override in parallel with sensor:

Override as a separate input:

Test and Balance Switch

Test and Balance Switch (S2)

TEST HI: Sets the sensor value to HIGH temperature

NORM: Thermistor/RTD will operate normally

TEST LO: Sets the sensor value to LOW temperature

Sensor Type	Low Temp (40° F) Resistance Value	High Temp (105° F) Resistance Value
1KΩ RTD	1.02KΩ (41.2°F)	1.15KΩ (101.5°F)
3KΩ Thermistor	7.87KΩ (39.5°F)	1.5KΩ (106.8°F)
10K-2 Thermistor	30.1KΩ (39.2°F)	4.75KΩ (105.8°F)
10K-3 Thermistor	26.7KΩ (35.9°F)	5.11KΩ (108.4°F)
10K-3(11K) Thermistor	7.32KΩ (43.7°F)	3.65KΩ (105.2°F)

Diagnostics

Possible Problems:	Possible Solutions:
Controller reports higher or lower than the actual temperature	Confirm the input is set up correctly in the front end software Verify that the wires are not physically shorted Check wiring for proper termination Verify the “Sensor” resistive output is correct across terminals SEN1 and SEN2. To do this, measure the temperature at the temperature sensor’s location using an accurate temperature standard. Disconnect the temperature sensor wires and measure the temperature sensor’s resistance with an ohmmeter. Compare the temperature sensor’s resistance to the appropriate temperature sensor table. Determine if the sensor is exposed to an external source different from room environment such as conduit draft. If it is conduit draft, fill box with fiberglass, polyester fill or plug the conduit. Label the terminals that the interconnecting wires are connected to at the sensor end and the controller end. Disconnect the interconnecting wires from the controller and the sensor. With the interconnecting wires separated at both ends measure the resistance from wire-to-wire with a multimeter. The meter should read greater than 10 Meg-ohms, open or OL depending on the meter you have. Short the interconnecting wires together at one end. Go to the other end and measure the resistance from wire-to- wire with a multimeter. The meter should read less than 10 ohms (22 gauge or larger, 250 feet or less). If either test fails, replace the wire.
Setpoint is not working correctly	Verify the proper “Setpoint” resistance output across terminals SET1 and SET2 as the setpoint slider is moved. Verify that jumpers “J4” and “J5” are set up correctly Check wiring for proper termination
Override is not working correctly	Verify that the resistance across terminals OVR1 and OVR2 is less than 50 ohms when the override button (S1) is pressed Check wiring for proper termination

Appendix – Symbols Key

 **Warning**	Potential for death, serious injury, or permanent damage to a system.

 **Caution**	Potential for injury, damage to a system, or system failure.

 **Tip**	Useful information not related to injury or system damage.