RS Standard and RS Pro Technical Instructions

Introduction

The RS Standard and RS Pro are thermistor-based temperature sensors. The sensors are designed to be used with the ZN-Line, SE-Line and ME-Line controllers. An Rnet sensor network can have up to four RS Standards and one RS Pro.

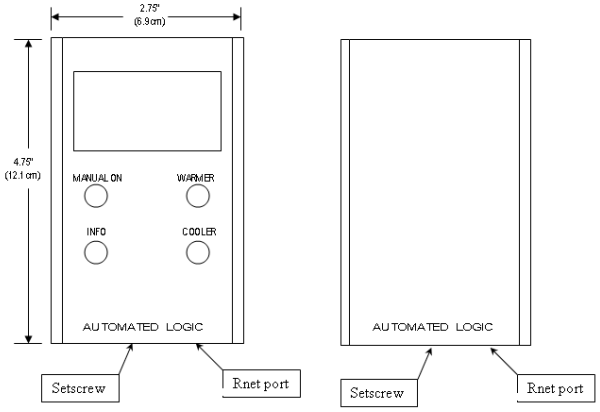

Figure 1. RS Pro and RS Standard

RS Standard

The default address of an RS Standard is set to 1. To change the address, unscrew the two circuit board screws behind the cover plate, then take off the cover plate. Set the address jumper to 2, 3, or 4, then screw the circuit board back onto the cover.

RS Pro

The RS Pro features provide the occupant with setpoint and override control within the limits established by the building management or the system operator. The RS Pro needs no addressing because only one resides on each Rnet.

The RS Pro has:

- a digital display for occupancy, zone temperature, and alarm bell icon
- a Manual On button
- Warmer and Cooler buttons
- an Info button to cycle through displays

Digital Display

The digital display shows Celsius values to the nearest 0.5 degree. The digital display shows Farenheit values to the nearest full degree.

`Occupied` displays when the zone is occupied, whether from a regular schedule or a manual override.

Manual On

The override time displays if you press the Manual On button. Press the button again if you want to increase the occupied time. You can cancel by pressing the button until 0 displays. After pressing the Manual On button, wait five seconds for the display to show the current zone temperature again.

Setpoint Adjustment

The Warmer and Cooler buttons give the occupant limited ability to change the zone's setpoint. When Warmer or Cooler is pressed, the average of the current heating and cooling setpoints displays. If Warmer or Cooler is pressed again, both setpoints are lowered or raised by an amount determined on the RS microblock's Properties page, displaying a new average setpoint.

For example, if the cooling setpoint is 76, the heating setpoint is 70, the current average setpoint is 73 and the setpoint adjustment is

set to 2, pressing Warmer twice raises both setpoints and the average, resulting in a cooling setpoint of 78, a heating setpoint of 72, and an average setpoint of 75.

Info

The info button cycles through:

- the zone temperature
- the outside air temperature, if enabled
- the override time in minutes
- the heating setpoint
- the cooling setpoint

Rnet Wiring

The Rnet communicates at a rate of 115 kbps, and uses a daisy-chain, star, or hybrid configuration.

Table 1. Rnet Wire Specifications

Wire gauge	18 AWG
Wire type	stranded copper
Wire insulation	0.009" low smoke PVC
UL temp rating	-40 °C to 75 °C
Jacket	0.0140" low smoke PVC 0.255" nominal O.D.
Shielding	foil, with drain wire
Capacitance	47pF/ft nominal
Resistance	6.9 ohms/1000 feet
Maximum length per segment	500 feet (152 meters)

Wiring Recommendations

Use the specified type of sensor cable for maximum signal integrity.

If bare communication wire comes in contact with the cable's foil shield, drain/shield wire, or a metal surface other than the connector, the sensor may not communicate. When connecting the wire, keep the following guidelines in mind:

- Partially cut, then bend and pull off the wire's outer jacket so that you do not nick the inner insulation. See Figure 2.

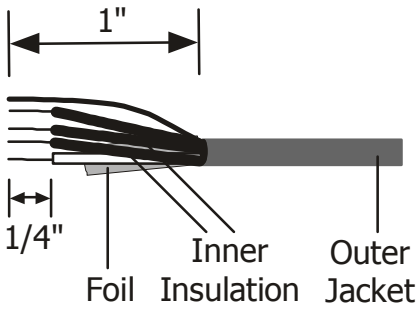

Figure 2. Stripping an Rnet wire

- Strip about 1/4 inch (6 mm) of the inner insulation from each wire. When you insert the wire into the connector, do not allow more than 1/8 inch (3 mm) bare communication wire to protrude. See Figure 3.
- Twist together the drain or shield wires from both pairs, then insert them into the connector with the black ground wire.

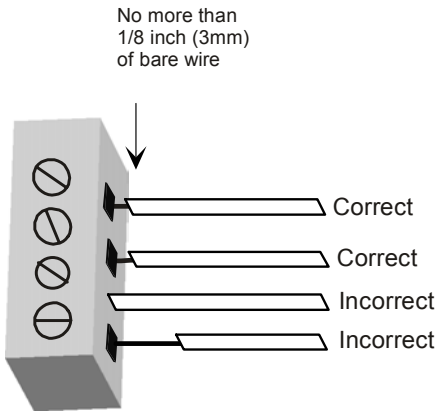

Figure 3. Connecting the screw terminal block

Mounting

After wiring, connect the terminal block, wires facing up, to the back of the sensor's circuit board. See Figure 4. Replace the sensor's cover. Turn the setscrew one full turn

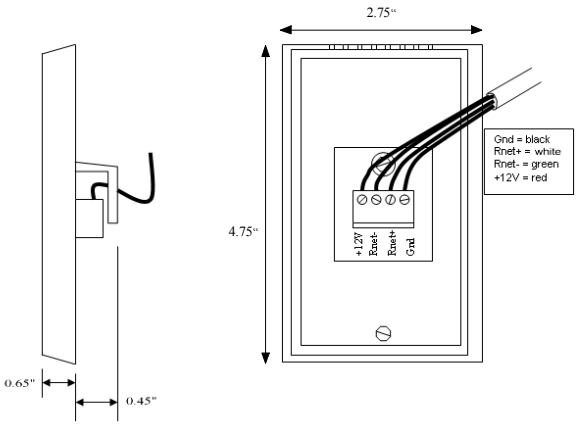

FIGURE 4. RS WIRING

counterclockwise so that the cover cannot be removed.

RNET PORT

The Rnet port on the RS Standard and RS Pro allows a laptop computer to be connected to the system so that test and balance procedures can be conducted. Refer to the *APT Technical Instructions* for information on using an APT. Refer to Connecting to RS sensors using an APT in WebCTRL Help to learn how to access a WebCTRL system through the Rnet port.

Connect the Rnet Access Cable to the sensor by first holding the cable end horizontally, prongs facing upwards, under the Rnet port. After the prongs are hinged into the front of the Rnet port, push the back of the cable end up into the Rnet port so that the cable is vertical. Click into place.

NOTE You must connect the Rnet Access Cable to an APT and its cables, then to the laptop.

TROUBLESHOOTING

	No power	Power, but not communicating	Correctly wired and communicating
RS Standard	LED on circuit board does not light	LED on circuit board blinks 1 times per second	LED on circuit board blinks 2.5 times per second
RS Pro	LCD display is blank	LCD displays all display elements	LCD displays only the temperature and current status

