

Introduction

The HRC humidity transmitter uses a highly accurate and field-proven RH sensor in an attractive, low profile enclosure to monitor room relative humidity levels. Additional options include an occupancy override button, a communication jack, a fan speed switch, a slide-pot setpoint control, a resistive temperature sensor and a LED or LCD display. The RH output can be selected as a linear 4-20 mA, 0-5 or 0-10 Vdc signal.

Before Installation

Read these instructions carefully before installing and commissioning the device. Failure to follow these instructions may result in product damage. Do not use in an explosive or hazardous environment, with combustible or flammable gases, as a safety or emergency stop device or in any other application where failure of the product could result in personal injury. Take electrostatic discharge precautions during installation and do not exceed the device ratings.

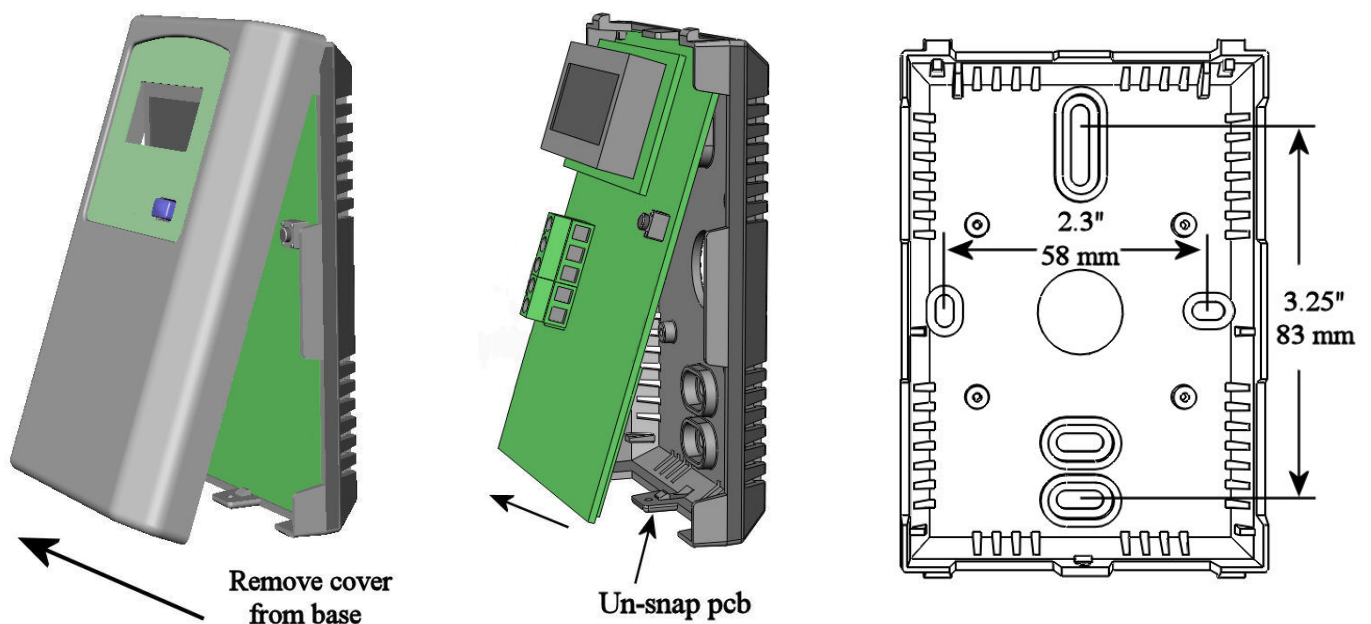
Mounting

The room type sensor installs directly on a standard electrical box or can be mounted directly to the wall. The backplate is configured to be compatible with many different types of electrical boxes. It should be mounted about five feet from the floor of the area to be controlled. Do not mount the sensor near doors, opening windows, supply air diffusers or other known air disturbances. Avoid areas where the sensor is exposed to vibrations or rapid temperature changes.

The cover is hooked to the base at the top edge and must be removed from the bottom edge first. Use a small screwdriver to carefully pry each bottom corner if necessary. If a security screw is installed on the bottom edge, then it may have to be loosened or removed also. Tip the cover away from the base and sit it aside.

The pcb must be removed from the base to access the mounting holes. Follow usual anti-static procedures when handling the pcb and be careful not to touch or bend the sensors. The pcb is removed by pressing the tab on the enclosure base to unsnap the latch near the bottom edge, then the pcb can be lifted out of the base. Sit the pcb aside until the base is mounted on the wall.

After the base is screwed to an electrical box or the wall using the appropriate holes, pull the wires through the wiring hole in the center of the pcb and then gently reinstall it in the enclosure base. Ensure the pcb is snapped into the base securely and correctly. The mounting hole locations are shown in the following drawing.



Wiring

Deactivate the 24 Vac/dc power supply until all connections are made to the device to prevent electrical shock or equipment damage. Follow proper electrostatic discharge (ESD) handling procedures when installing the device or equipment damage may occur.

Use 22 AWG shielded wiring for all connections and do not locate the device wires in the same conduit with wiring used to supply inductive loads such as motors. Connect the cable shield to ground at the controller only. Make all connections in accordance with national and local codes.

For 4-20 mA two-wire loop-powered operation, only the **POWER** and **OUTPUT** terminals are required if a DC power supply is used. The **COMMON** terminal is only used for AC power or for a voltage output signal type. If the signal type is set to voltage, or a 24 volt AC power supply is used, connect the positive dc voltage or the hot side of the ac voltage to the terminal marked **POWER** and the power supply common is connected to the terminal marked **COMMON**. The device is reverse voltage protected and will not operate if connected backwards.

For three-wire voltage output operation, connect either an AC or DC power supply to **POWER** and **COMMON** and the voltage output signal is available on the **OUTPUT** terminal with respect to **COMMON**.

Ensure the controller Analog Input (AI) matches the transmitter output signal type before power is applied and that the pcb switches are set correctly for the required signal type. The current signal has a maximum load that it will drive and the voltage signal has a minimum load rating. Follow the ratings in the Specification section or inaccurate readings may result.

This device has a half-wave power supply so the power supply common is the same as the signal common. Several devices may be connected to one power supply and the output signals all share the same common. Use caution when grounding the secondary of a transformer or when wiring multiple devices to ensure the ground point is the same on all devices and the controller.

The override switch output is a dry-contact and is available on the **SWITCH +** and **SWITCH –** terminals and typically connects to a low voltage digital input of the controller to indicate room occupancy or override when the button is activated. The five position fan speed output signal is configured with five different resistive values and is available on the **FAN +** and **FAN –** terminals. The LED input is typically powered by a 5 Vdc digital output from the controller and connects to the **LED +** and **LED -** terminals. The resistive slide-pot setpoint output signal is available on the **SETPNT +** and **SETPNT –** terminals and can be configured with various resistance values and the operation can be set for forward or reverse acting. The external jack is internally connected to a four-pin terminal block labeled 1, 2, 3 and 4 and accepts a four-pin header connector for remote communication with the controller. An optional resistive temperature sensor may also be included and is connected to the **TEMP +** and **TEMP -** terminals. Contact the factory to configure the options before ordering.

Start-up

Verify that the transmitter is properly wired, connections are tight and the **mA / Vdc** switch is in the correct position. For voltage output, also ensure the **5V / 10V** switch is set correctly for the required signal type. Apply power and note that the LCD will begin displaying the RH level (if installed). The output signal will also be available immediately after start-up.

Output Signal

The RH output is scaled such that 4-20 mA (or 0-5 or 0-10 Vdc) equals 0-100 %RH and is temperature compensated over the full 0-50 °C temperature range.

Specifications

RH Sensor Thermoset polymer based capacitive
Accuracy $\pm 2, 3$ or 5 %RH
Range 0-100 %RH, non-condensing
Hysteresis ± 3 %RH
Response Time 15 seconds typical
Stability ± 1.2 %RH typical @ 50 %RH in 5 years

Power Supply 24 Vac/dc $\pm 10\%$
Output Signal 4-20 mA current loop, 0-5 Vdc or 0-10 Vdc
Output Drive @ 24 Vdc 550 ohms max for current output, 10K ohms min for voltage output
Output Resolution 10 bit PWM
Internal Adjustments ZERO and SPAN pots
Protection Circuitry Reverse voltage protected and output limited
Operating Conditions 0-50 °C (32-122 °F), 0-95 %RH non-condensing
Wiring Connections Screw terminal block (14 to 22 AWG)
Enclosure 3.3"w x 4.7"h x 1.15"d (84 x 119 x 29 mm)

Optional Temperature Sensor . Various RTDs and thermistor, two-wire resistance output

Optional LCD Display 38.1 x 16.5 mm (1.5" w x 0.65" h), 3 digits 00.0 to 99.9 %RH

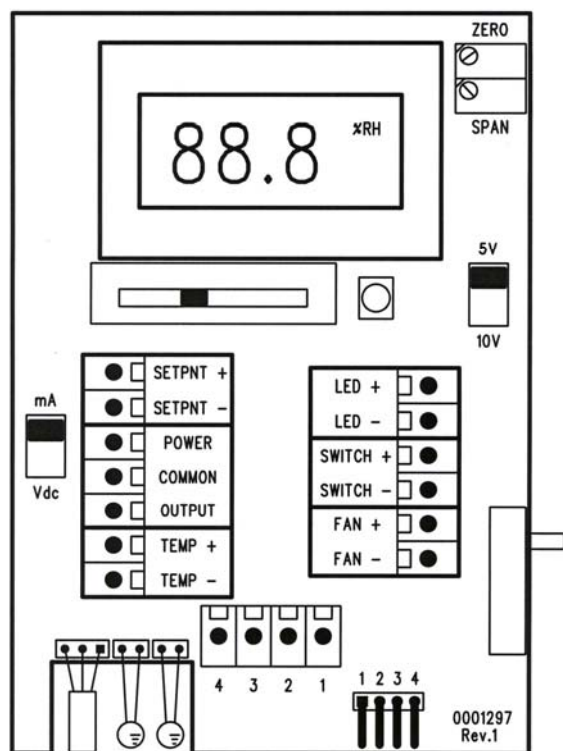
Optional Override Switch . . . Front panel push-button, 50 mA @ 12 Vdc, SPST-NO, two-wire output

Optional Slide Pot Front panel pot, two-wire resistive output, 0-10 K Ω standard

Optional Fan Speed Switch . . Off, Auto, Low, Medium, High (0, 2, 4, 6 and 8K standard), two-wire resistive output

Optional Comm. Jack 4-pin terminal block to pin-header connector

Optional LED Yellow, Red or Green (5 Vdc operation standard), two-wire digital input



Terminal	Function
POWER	From +24 Vac/dc of controller or power supply
COMMON	To GND or COMMON of controller (for 24 Vac power or voltage output signal only)
OUTPUT	RH output to analog input of controller 4-20 mA or 0-5/0-10 Vdc
SETPNT + SETPNT -	Slide-pot output to analog input of controller (resistive output)
TEMP + TEMP -	Temperature sensor output to analog input of controller (resistive output)
LED + LED -	Positive input to LED (anode) from digital output Negative input to LED (cathode), 5Vdc standard
SWITCH + SWITCH -	Override switch + to digital input of controller Override switch - to COMMON of controller
FAN + FAN -	Fan speed switch + to analog input of controller Fan speed switch - to COMMON of controller
1,2,3,4	External jack connections