The Relative Humidity (RH) and Temperature
transmitters are designed for continuous
monitoring of relative humidity (RH) or relative
humidity and temperature (RHT). They provide
accurate and reliable measurement for building
automation and environmental control systems.
The units feature very low profile sensor
enclosures that are virtually unnoticeable in most
installations.

The RH and RHT transmitters are available
with ±2%, ±3%, and ±5% RH accuracy (20% to 95% RH). For monitoring and controlling in
critical environments, the units can be precision
calibrated to 1% accuracy within a specified RH
range.

The RH and RHT transmitters provide a linear
output of 4-20 mA corresponding to 0 to 100%RH.
The RHT transmitter also provides a 4-20 mA
signal corresponding to any of the selected
standard temperature ranges specified.

**Features**
- Space, Duct, and Outside Air Configurations
- Durable Industrial Enclosures
- Low Profile
- Compact
- Replaceable, Plug-in Bulk Polymer Resistance
  RH Sensor
- Resistant to Contamination
- Temperature Compensation

Amphenol
Advanced Sensors
Sensor Enclosure

The relative humidity and temperature sensors are housed in heavy duty, compact, locking enclosures. Enclosures may be removed and painted, which further helps blend them into any environment.

Sensor

The RH sensor incorporates a bulk polymer resistive element. The polymer is impervious to most contaminants and, since it is a bulk resistance device, surface contamination such as dust will not alter the accuracy of the readings. Imbedded in the polymer is an interdigitated grid which senses resistance change as the polymer absorbs or emits molecules of water.

Transmitter

The electronics are contained in a rugged pressure-cast aluminum weatherproof housing designed for maximum protection. Continuous temperature compensation adjusts for temperature-induced change in the RH sensor output. The compensation provides high measurement accuracy over the entire operating range of the instrument.
RH/RHT Series Specifications

Dimensions and Mounting
Wiring Guidelines

**Outputs: Relative Humidity**

**4·20 mA Current Output**
The 4-20 mA transmitters will provide a linear proportional signal with 4 mA corresponding to 0% RH and 20 mA to 100% RH. These are loop powered devices; therefore, only two wires are required.

**0-5 Volt Voltage Output**
The 0 to 5 volt transmitters provide a linear proportional output at terminal "O" with 0 volts equivalent to 0% RH and 5 volts to 100% RH.

The voltage output transmitters can be wired as a three wire transmitter or as a four wire transmitter to eliminate the effects of wire length. The output voltage is with respect to Terminals "N" (power supply return) and/or "G" (signal ground) which are common at the transmitter.

**Output: Temperature (Optional)**

The temperature option (if ordered) is a separate circuit board but mounted in the same housing along with the relative humidity transmitter.

The 4·20 mA transmitters output is linear and proportional to the range specified when the transmitter was ordered. The low range temperature (4 mA) is marked on the ZERO pot and the high range temperature (20 mA) is marked on the SPAN pot. Standard range is - 20° to 140°F (this range is supplied when no range is specified at time of ordering).

The temperature transmitters are entirely separate circuits from the RH transmitters. Transmitters are loop powered devices. Therefore, only two wires are required. One wire may be common with the RH transmitter.

**Wiring**
Wiring for the transmitter should be twisted pair(s) 16-22 AWG approximately 2 turns per inch. In installations near electric motors or sensitive electronic equipment, use shielded cable. Wiring should be run through conduit using the 1/2” EMT compression fitting supplied on the unit.
RH/RHT Series Wiring

Wiring Diagram Current Unit

Wiring Diagram Voltage Unit
RH/RHT Series Specifications

Humidity

Sensing Element
Resistance change of bulk polymer sensor

Performance

Accuracy at 77°F (25°C)
±2% RH, 20-95% RH
±3% RH, 20-95% RH
±5% RH, 20-95% RH
including hysteresis, linearity and repeatability

Mechanical: Case Material
Space: ABS Flame Retardant
Duct: Galvanized Steel
Outside Air: Pressure Cast Aluminum and Galvanized Steel

Mounting Configurations
Space, Duct, Outside Air

Temperature Effect
Less than 0.06% per °F (0.11% per °C)

Sensitivity
0.1% RH

Repeatability
0.5% RH

Linearity
See Accuracy

Hysteresis
Less than 1%

Sensor Interchangeability
±3% nominal

Operating Range
RH Sensor: 0%-99%, RH, non-condensing.
-40°F to +170°F (-40°C to +76°C)
Electronics: 0%-95% RH, non-condensing.
-40°F to +130°F (-40°C to +54°C)

Max. Air Velocity
10,000 ft/min

Output Range
2-wire, isolated loop, powered 4-20 mA, 0-100% RH (standard)

Adjustment
Zero: ±20%, non-interactive
Span: ±10%, non-interactive
Long Term Stability: Less than 1% drift/year typical

Power

Supply Voltage
12-36 VDC

Max Load
\[
\Omega = \text{Supply} \cdot 10 \text{ VDC} \quad 0.02 \text{ A}
\]

Storage Temperature
-85°F to +158°F (-65°C to +70°C)
RH/RHT Series Specifications

Temperature

Sensing Element
Platinum RTD, 4 wire measurement

Performance

Accuracy at 77°F (25°C)
±0.5°F (±0.3°C)

Temperature Effect
Less than 0.01% per °F (0.02% per°C)

Sensitivity
0.1% RH

Repeatability:
0.1% RH

Linearity
Better than 0.1 %

Hysteresis
Less than 0.01%

Sensor Interchangeability
±0.5°F (±0.03°C)

Output Ranges
4-20 mA
-20°F to +140°F (-29°C to +60°C)

Optional
0°F to +150°F (-18°C to +66°C)
0°F to +100°F (-18°C to +38°C)
+32°F to +132°F (0°C to +55°C)
+50°F to +130°F (+7°C to +54°C)
-40°F to +140°F (-40°C to +60°C)
Custom range

Adjustment
Zero: ±10%. non-interactive
Span: ±10%. non-interactive
Long Term Stability: Less than 1% drift per year, typical

Humidity affects you and your operations. Our local representative is ready to help in your application. Call to discuss the proper selection of a humidity device from the world's largest selection.

Specifications are subject to change without notice.
Ordering Information

Example 1: To specify an RH transmitter, order: RH-2-I-S.
Example 2: To specify an RH transmitter with optional temperature sensor with standard range (-20°F to +140°F), order: RHT-2-I-S.

Options

Special calibration to ± 1% accuracy (20% RH span in 20% - 95% RH range)