

Series HT-9000 Electronic Humidity Transmitter

Introduction

The Johnson Controls humidity transmitter is based on a new "state of the art" humidity sensing element. It measures humidity over the entire range of 0 to 100% RH (non condensing) and has a wide operating temperature range.

Its fast response, reliable long-term performance makes this transmitter well suited for refrigeration and HVAC installations.

This range also includes models with an integrated temperature sensing element.

It is recommended to use the humidity transmitter with Johnson Controls controllers such as the TC/SC/DC/DX-9100 series and System 27 Nova/MS series or with other systems having compatible input and output voltages.



HT-9000 Electronic Humidity Transmitter

Description

The basic principle of this new humidity transmitter is a polymer capacitance type element in which capacitance changes proportionally to a change in humidity. This well proven technology is now combined with the signal processing electronics onto a single chip.

The sensing element incorporates a protective coating which resists the effects of surface contamination.

Features and Benefits

| | |
|---|---|
| <input type="checkbox"/> All models with electronic board for universal supply voltage | Increase compatibility to a larger range of controllers within HVAC/R industry |
| <input type="checkbox"/> Duct models with longer rod and with flange for duct insertion adjustment | Permits localisation of the sensing element in the most representative point within the air stream in the duct or air handling unit |
| <input type="checkbox"/> Senses over the entire range of 0 to 100%RH (non condensing) | Increases compatibility within a wider range of applications |
| <input type="checkbox"/> Transmitter can resist many hostile environments | Suitable for a wide range of applications. |
| <input type="checkbox"/> Temperature measurement option | Eliminates the need for a separate temperature transmitter |
| <input type="checkbox"/> Polymer humidity sensing element is integrated onto a chip | Provides stability, repeatability and linear response |
| <input type="checkbox"/> Duct and room enclosures are available | Enhances compatibility with a wide range of equipment |

Ordering data

HT- 90 - U

Duct mounting

D1 = Rod length 153 mm

D2 = Rod length 230 mm (with flange for duct insertion adjustment HT-9000-8950)

Room

RW = Room White (RAL 9010)

Temperature Output

00 = No temperature Output

01 = 0 to 10 VDC (range 0 to 40°C)

02 = 0 to 10 VDC (range 0 to 60°C)

03 = NTC K2 (2252Ω)

05 = Pt 100

06 = Pt 1000

09 = A99

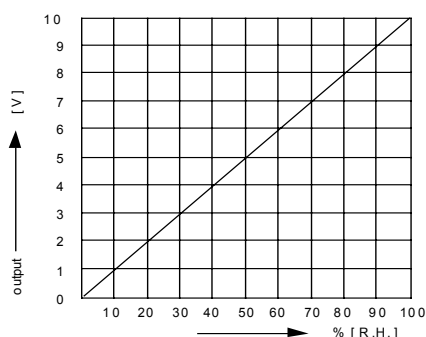
Accessories

HT-9000-8950 Flange for duct insertion adjustment.

Note

All HT Series humidity transmitters are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add devices or systems that protect against, or warn of control failure. To avoid damage to the HT-9000 humidity transmitter, do not mount the unit in a location where high concentrations of corrosive vapours are present.

Humidity output curve



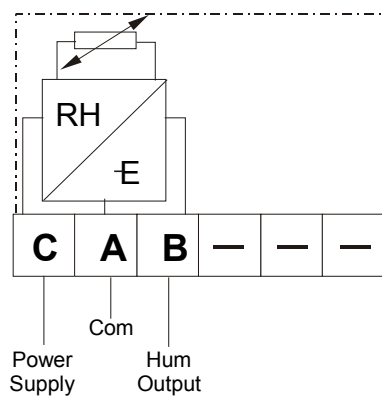
Humidity output voltage curve

Temp. versus resistance table

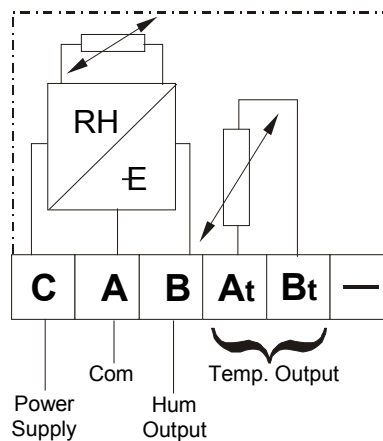
| Temp. (°C) | Resistance (Ω) | | | |
|---------------|----------------|-------|--------|--------|
| | A99 | Pt100 | Pt1000 | NTC K2 |
| 0 | 854 | 100.0 | 1000 | 7352.8 |
| 5 | 888 | 102.0 | 1020 | 5717.8 |
| 10 | 924 | 103.9 | 1039 | 4481.5 |
| 15 | 960 | 105.8 | 1058 | 3537.9 |
| 20 | 997 | 107.8 | 1078 | 2812.8 |
| 25 | 1035 | 109.7 | 1097 | 2252.0 |
| 30 | 1074 | 111.7 | 1117 | 1814.4 |
| 35 | 1113 | 113.6 | 1136 | 1470.6 |
| 40 | 1154 | 115.5 | 1155 | 1199.6 |
| 45 | 1195 | 117.5 | 1175 | - |
| 50 | 1238 | 119.4 | 1194 | - |
| 55 | 1281 | 121.3 | 1213 | - |
| 60 | 1325 | 123.2 | 1232 | - |

Wiring

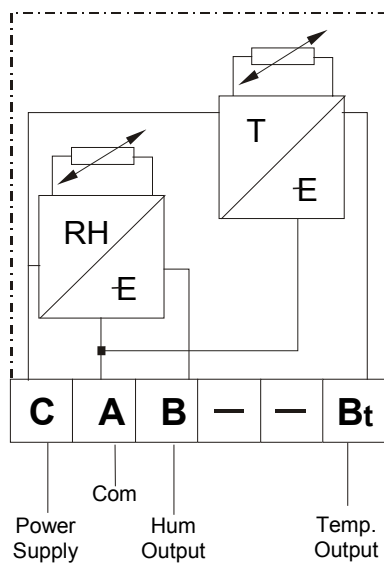
HT-90xx-URW (Room sensors)



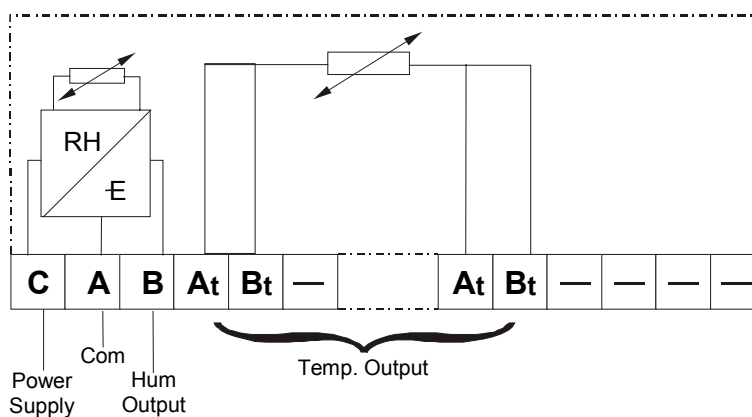
**No temperature output
HT-9000-URW**



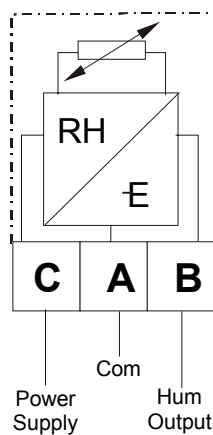
**NTC K2, A99, Pt 1000
temperature passive output
HT-9003-URW; HT-9006-URW; HT-9009-URW**



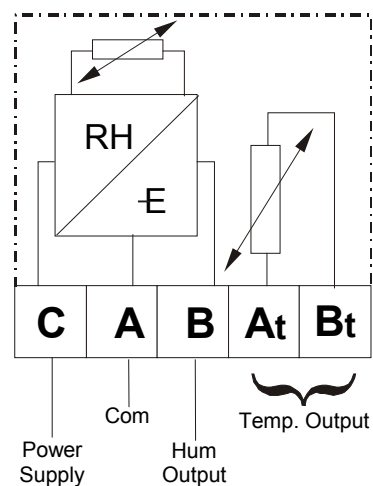
**0...10 VDC temperature output
HT-9001-URW (range 0...40°)
HT-9002-URW (range 0...60°)**



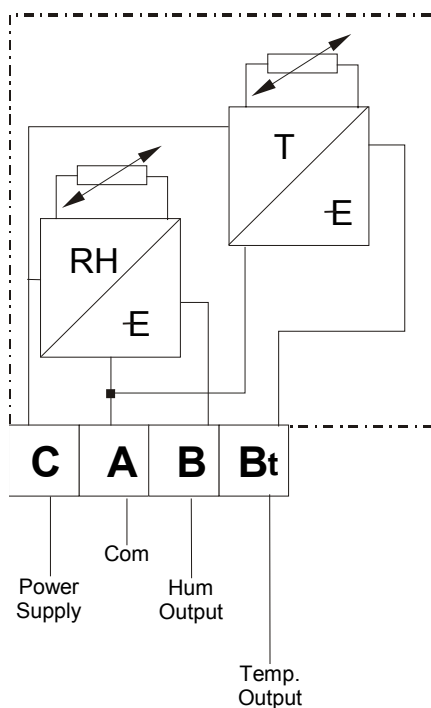
**Pt100 temperature passive output
HT-9005-URW**

HT-90xx-UDx*(Models for duct mounting)*

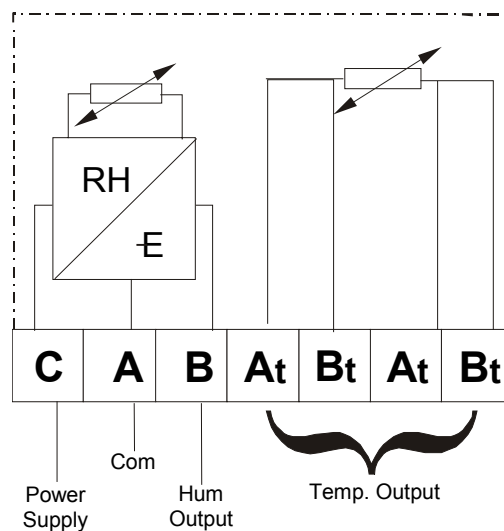
No temperature output
HT-9000-UDx



NTC K2, A99, Pt 1000
temperature passive output
HT-9003-UDx; HT-9006-UDx; HT-9009-UDx

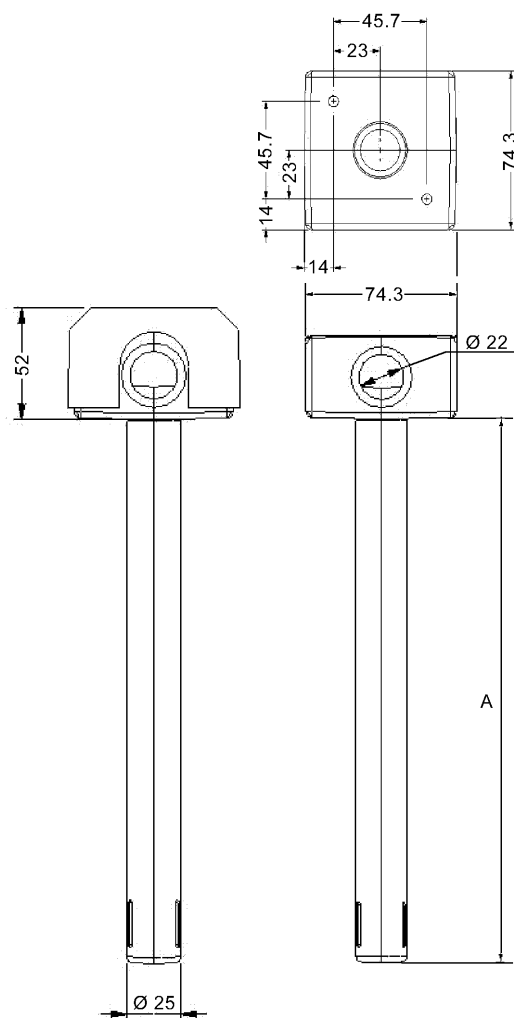


0...10 VDC temperature output
HT-9001-UDx (range 0...40°)
HT-9002-UDx (range 0...60°)

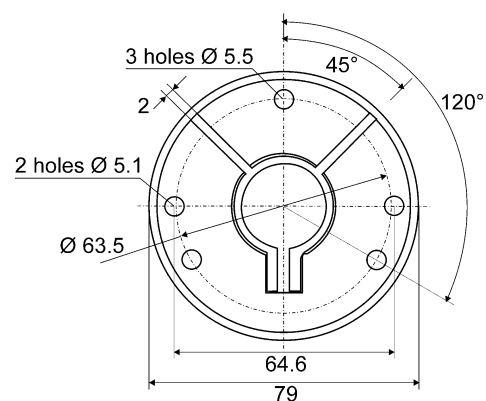


Pt100 temperature passive output
HT-9005-UDx

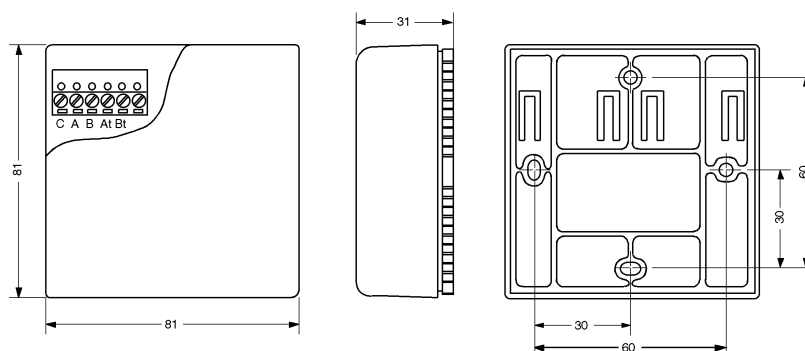
Dimensions (in mm)



HT-90xx-UD1 A = 153 mm
HT-90xx-UD2 A = 230 mm



HT9000-8950



HT-90xx-URW

Specifications

| | |
|--|---|
| Humidity range | 0 to 100% RH |
| Humidity output signal | 0 to 10 VDC linear |
| Supply voltage | 12 to 30 VDC 24 VAC $\pm 15\%$ |
| Accuracy | $\pm 4\%$ R.H. from 10 to 90% R.H. |
| Humidity Transmitter | $\pm 6\%$ R.H. from 0 to 10 % R.H. and 90 to 100% R.H. |
| Accuracy | A99 type: ± 0.5 K (between 0 and 60°C) |
| Temperature Sensor | NTC K2: ± 0.2 K (between 0 and 40°C) |
| | Pt 100/Pt 1000: As specified in IEC751 Class A |
| | 0 to 10 VDC: ± 0.7 K (between 0 and 40°C) |
| Power consumption at 24 VAC nominal (no load) | Only RH transmitter: 0.3 W With temp. Transmitter: 0.5 W |
| Output load | ≥ 5 k Ω |
| Humidity response time | Room enclosure: 40 sec. in still air Duct enclosure: 20 sec. in 3 m/s moving air |
| Ambient operating conditions | 0...60°C non condensing in any part of the sensor HT-90xx-1D1: minimum air flow 3 m/s |
| Protection | Room enclosure: IP30 (EN60529) Duct enclosure: IP30 (EN60529) |
| Materials | Room enclosure: self extinguishing ABS + PC Duct enclosure: self extinguishing PC/ABS blend Flange: self extinguishing PC/ABS blend |
| Weight | Room enclosure: 0.12 kg Duct enclosure (153 mm): 0.20 kg Duct enclosure (230 mm): 0.27 kg |
| Terminal blocks | Room models: plug in connectors accepting 1.5 mm ² wires Duct models: fixed connectors accepting 2.5 mm ² wires |
| CE Compliance | EMC (89/336 EEC) according to the standard EN 50081-1 and EN 50082-1 |

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office or representative. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.



Johnson Controls International, Inc.

Headquarters: Milwaukee, WI, USA

European Headquarters: Westendhof 8, 45143 Essen, Germany

European Factories: Lomagna (Italy), Leeuwarden (The Netherlands), Essen (Germany)

This document is subject to change without notice