

## Series HT-9000 Electronic Humidity Transmitter

### **I**ntrouction

*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**

### **D**escription

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

## Ordering data

HT-90  - U

<div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div>	<b>Duct mounting</b>
	<b>D1</b> = Rod length 153 mm <b>D2</b> = Rod length 230 mm (with flange for duct insertion adjustment HT-9000-8950)
	<b>Room</b>
	<b>RW</b> = Room White (RAL 9010)
<div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div>	<b>Temperature Output</b>
	<b>00</b> = No temperature Output
	<b>01</b> = 0 to 10 VDC (range 0 to 40°C)
	<b>02</b> = 0 to 10 VDC (range 0 to 60°C)
	<b>03</b> = NTC K2 (2252Ω)
	<b>05</b> = Pt 100
	<b>06</b> = Pt 1000
<b>09</b> = A99	

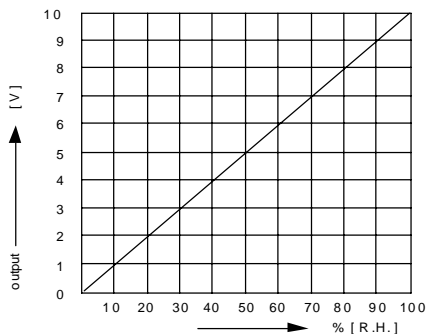
## Accessories

**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



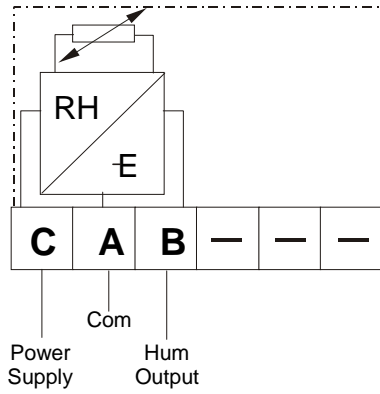
Humidity output voltage curve

## Temp. versus resistance table

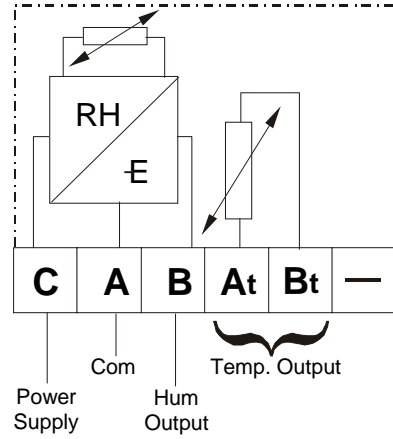
Temp. (°C)	Resistance (Ω)			
	A99	Pt100	Pt1000	NTC K2
0	854	100.0	1000	7352.8
5	888	102.0	1020	5717.8
10	924	103.9	1039	4481.5
15	960	105.8	1058	3537.9
20	997	107.8	1078	2812.8
25	1035	109.7	1097	2252.0
30	1074	111.7	1117	1814.4
35	1113	113.6	1136	1470.6
40	1154	115.5	1155	1199.6
45	1195	117.5	1175	-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

# Wiring

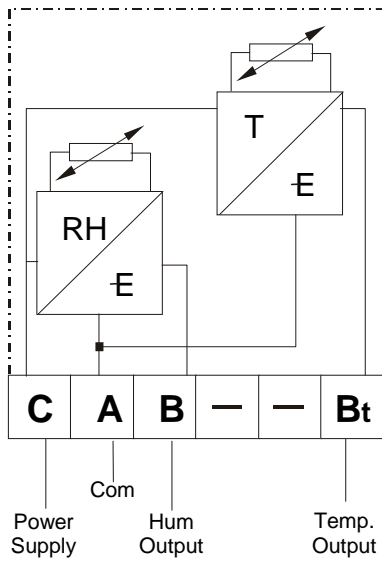
## HT-90xx-URW (Room sensors)



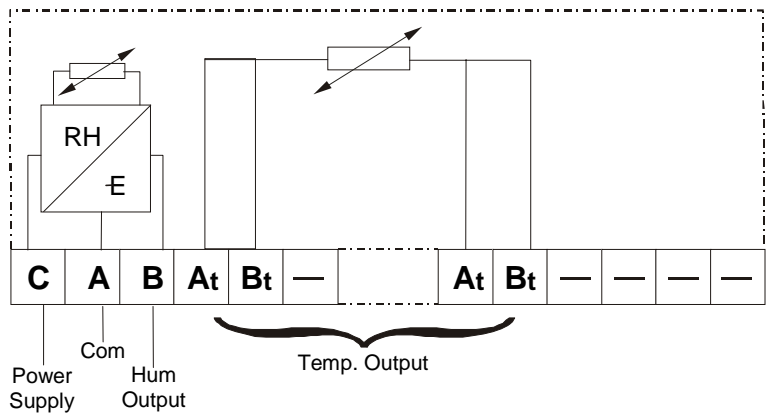
**No temperature output  
HT-9000-URW**



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

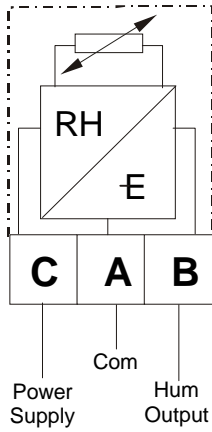


**0...10 VDC temperature output  
HT-9001-URW (range 0...40°)  
HT-9002-URW (range 0...60°)**

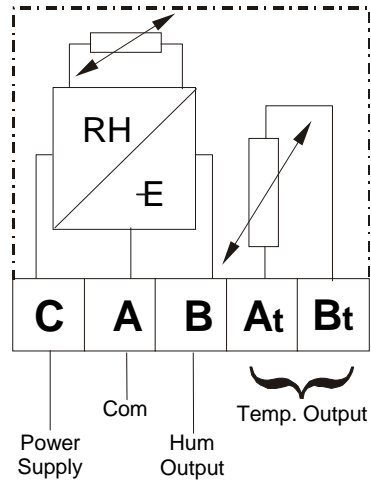


**Pt100 temperature passive output  
HT-9005-URW**

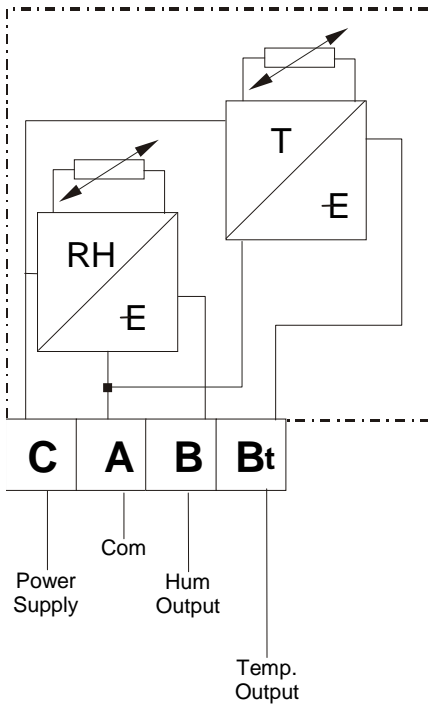
**HT-90xx-UDx**  
*(Models for duct mounting)*



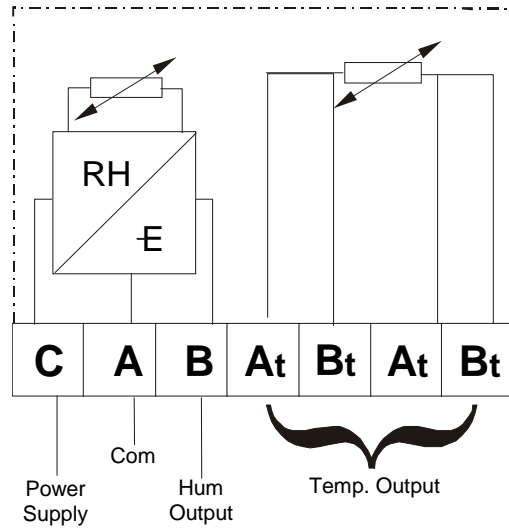
**No temperature output**  
**HT-9000-UDx**



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

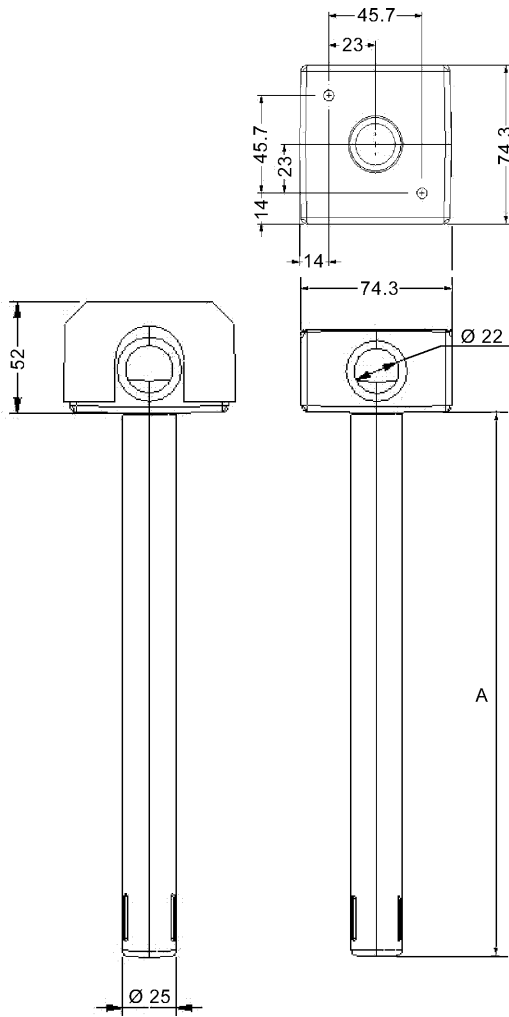


**0...10 VDC temperature output**  
**HT-9001-UDx (range 0...40°)**  
**HT-9002-UDx (range 0...60°)**

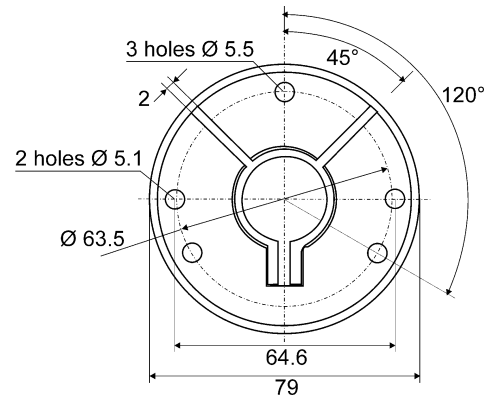


**Pt100 temperature passive output**  
**HT-9005-UDx**

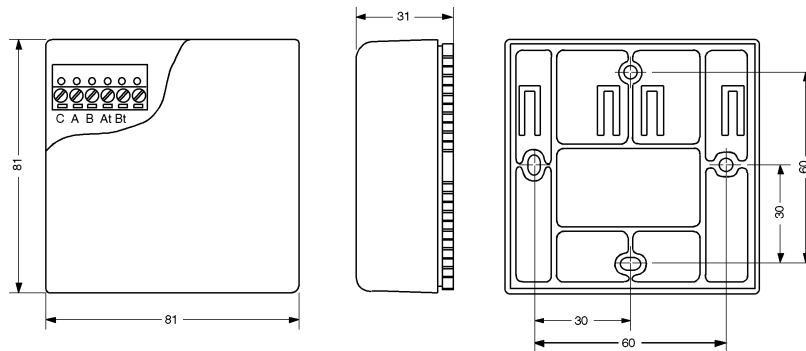
**D**imensions (in mm)



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



HT9000-8950



HT-90xx-URW

## Specifications

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