Honeywell

H7012A Humidity and H7012B Humidity and Temperature Room Sensors

FEATURES

- **Pt 1000, NTC 20kΩ, or 0…10 V temperature sensing element**

- **Wide sensing range**

- **Capacitance-type sensing element for relative humidity**

- **Two-piece plug-in design. The wiring sub-base allows installation and wiring independent of the front element, which includes the electronics and plugs-into the wiring sub-base.**

- **The H7012BALCO500KIT (ordered separately) allows you to expand the H7012A1010 wall module with a BALCO 500 Ohm temperature sensor.**
The H7012BALCO500KIT contains five (5) BALCO 500 sensor elements plus adhesive strips.

GENERAL

The H7012A Room Humidity Sensor is a capacitance-type relative humidity sensor for wall mounting.

The H7012B Combined Room Humidity/Temperature Sensor incorporates a capacitance-type relative humidity sensor with a Pt 1000, NTC 20kΩ, or 0…10 V temperature sensor in one housing for the measurement of room temperature and relative humidity.

These sensors are used for control, indication, and alarm monitoring in air conditioning installations.

MODELS

OS-No.	temperature sensor type	sensing ranges
H7012A1010	-	5...95%rh
H7012B1008	Pt 1000	5...95%rh and 0...50 °C
H7012B1024	NTC 20kΩ	
H7012B1030	0....10 VDC output	
H7012BALCO500KIT	BALCO 500 exchange kit for H7012A1010	0...50 °C

CE

SPECIFICATION

Power supply	24 Vac, +20...-30%; 50/60Hz, 34 Vdc, +20...-30%
Current consumption	20 mA at 24 V

Ambient limits

Operating temperature	0...50 °C (32...122 °F)
Transport and storage temperature	-25...+70 °C (-13...+158 °F)
Humidity	5...95%rh, non-condensing
Dustiness	not suitable for dusty environments

Safety

Protection class	II in acc. with EN60730-1
Protection standard	IP30 in acc. with EN60529
Housing material	Flame retardant V0 as per UL94

Housing

Dimensions (H x W x D)	130 x 80 x 34 mm (5.12 x 3.15 x 1.34")
Weight	130 g
Mounting	Wall, surface, or European outlet box

Temperature Sensor

Nominal value

– Pt 1000	1000Ω at 0 °C
– BALCO 500	500Ω at 23.3 °C
– NTC 20kΩ	20kΩ at 25 °C

Accuracy

– Pt 1000	$\Delta T/K = \pm(0.3 + 0.005 \bullet |t|)$ [t in °C] as per DIN IEC 751 Class B
– BALCO 500	±0.4 K at 23.3 °C
– NTC 20kΩ	±0.2 K at 25 °C

Sensitivity

– Pt 1000	$\approx 3.85\Omega$ / K
– BALCO 500	2Ω / K
– NTC 20kΩ	non-linear characteristic
Characteristic	Response time at air velocity 0.02...0.07m/s
– $\tau_{0.5\ Pt\ 1000}$	$\approx$ 50 s
– $\tau_{0.5\ Balco\ 500}$	$\approx$140 s
– $\tau_{0.5\ NTC}$	$\approx$134 s
0…10 V active sensor	$\approx$ 0…50 °C

Relative Humidity Sensor

Output signal	0...10 Vdc $\approx$ 0...100%rh	
Output impedance	10 V range	274Ω
Outputs short-circuit protected		
Sensitivity	10 mV / %rh or 100 mV / %rh	
Accuracy	at 25 °C / 24 Vac	
	5...10%rh	$\pm$10%
	10...30%rh	$\pm$ 5%
	30...70%rh	$\pm$ 3%
	70...90%rh	$\pm$ 5%
	90...95%rh	$\pm$10%
Response time	$\tau_{0.5}$ = 20 s	
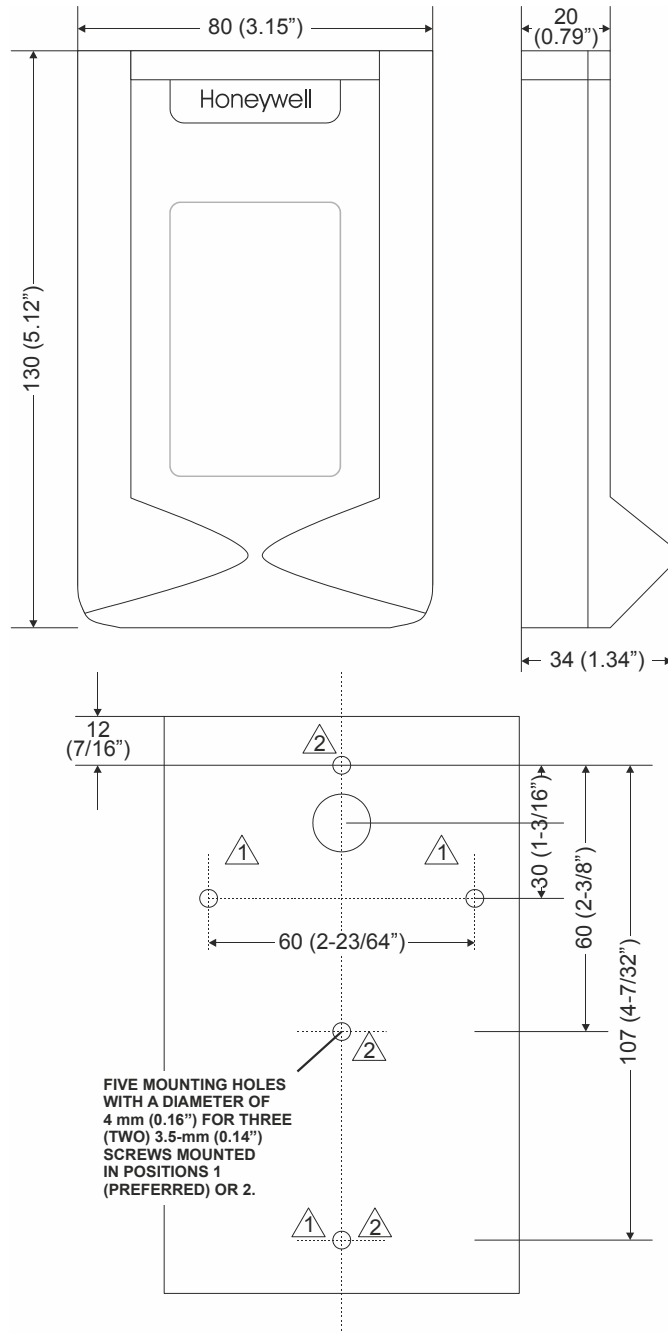
DIMENSIONS

Fig. 1. Dimensions (in mm and inches) and drilling template

FIVE MOUNTING HOLES
WITH A DIAMETER OF
4 mm (0.16") FOR THREE
(TWO) 3.5-mm (0.14")
SCREWS MOUNTED
IN POSITIONS 1
(PREFERRED) OR 2.
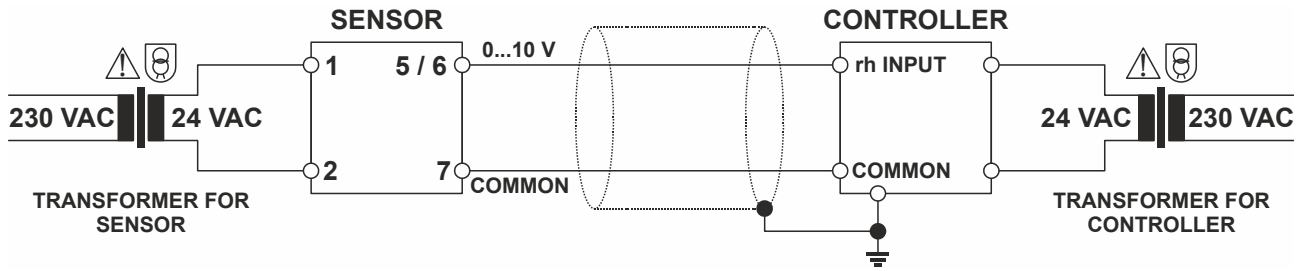
INSTALLATION

Fig. 2. Installation example

Mounting and Installation Advice

– Mount these units at the inside wall of the room to be heated or air conditioned, away from doors, windows and heat sources.

– It should be located approx. 1.5 m above the floor and at minimum 50 cm away from the next wall.

– Do not mount in niches, book shelves, behind cabinets or curtains or where it could be exposed to solar radiation.

– Seal the conduit opening to avoid false temperature measurement due to draught from the conduit.

– Provide sufficient air circulation.

Wiring

wiring run	max. length
sensor to controller	200 m (660 ft)

Offset due to wire resistance per 10 m distance from sensor to controller:

type of wire	temperature offset		
	Pt 1000	**BALCO 500**	**NTC**
0.5 mm² (AWG20)	0.18 K (0.324 °F)	0.3 K (0.54 °F)	
1.0 mm² (AWG17)	0.09 K (0.162 °F)	0.15 K (0.27 °F)	negligible
1.5 mm² (AWG15)	0.06 K (0.108 °F)	0.1 K (0.1 °F)	

NOTE: Use shielded wiring in areas with high EMI.
Keep 15 cm (5.9'') minimum distance between sensor lines and 230Vac power lines.
Use two transformers: one for sensors and actuators and one for the controller (see example).
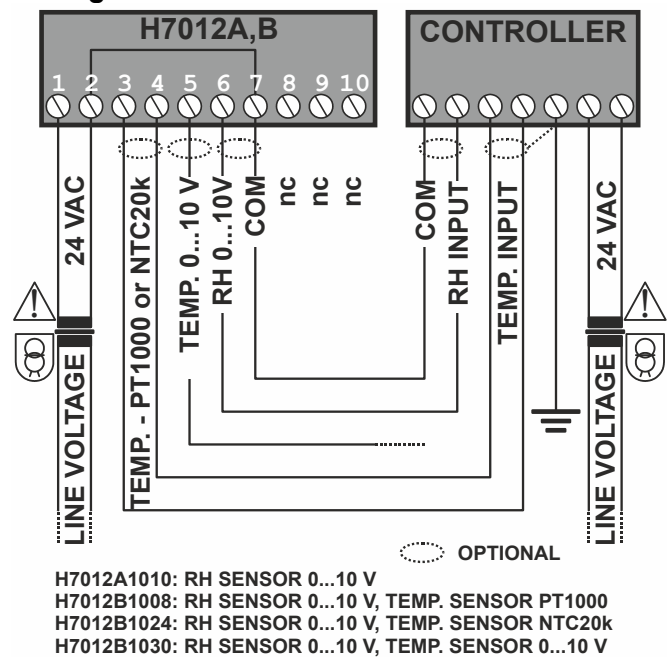
Wiring Connection

H7012A1010: RH SENSOR 0...10 V
H7012B1008: RH SENSOR 0...10 V, TEMP. SENSOR PT1000
H7012B1024: RH SENSOR 0...10 V, TEMP. SENSOR NTC20k
H7012B1030: RH SENSOR 0...10 V, TEMP. SENSOR 0...10 V

Fig. 3. Wiring connection

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