

## H7012A Humidity and H7012B Humidity and Temperature Room Sensors

### PRODUCT DATA



### FEATURES

- Pt 1000, NTC 20k $\Omega$ , 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 20k $\Omega$ , 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 20k $\Omega$	
H7012B1030	0...10 VDC output	
H7012BALCO500KIT	BALCO 500 exchange kit for H7012A1010	0...50 °C

## 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

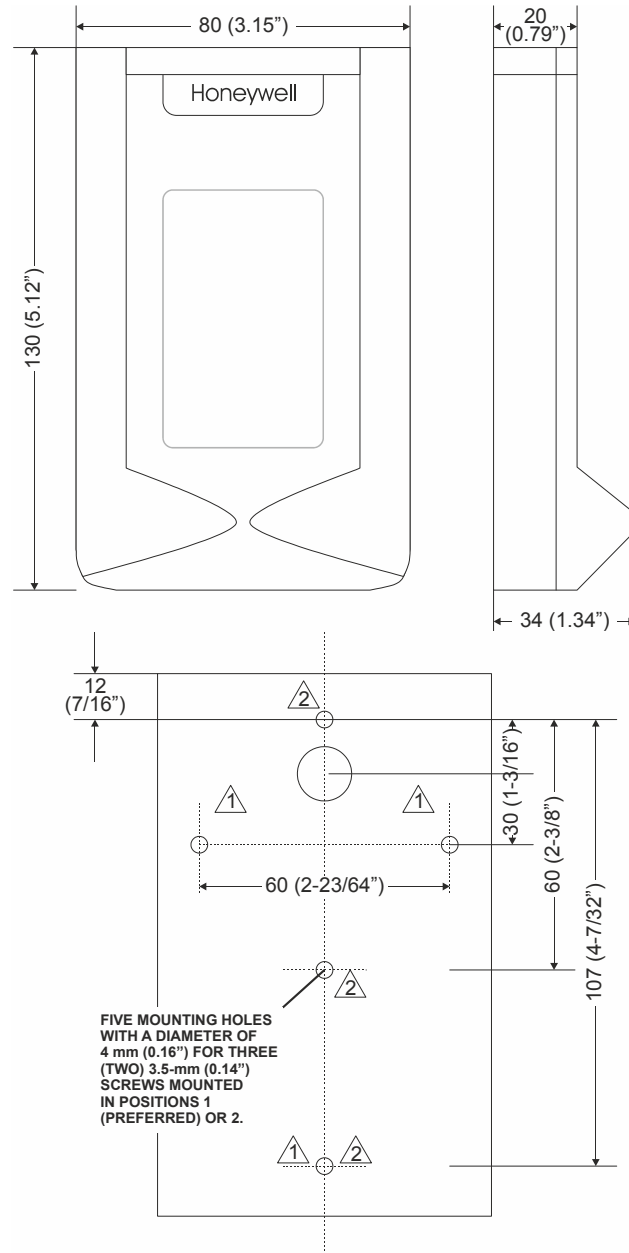
### Temperature Sensor

Nominal value	
- Pt 1000	1000Ω at 0 °C
- BALCO 500	500Ω at 23.3 °C
- NTC 20kΩ	20kΩ at 25 °C
Accuracy	
- Pt 1000	$\Delta T/K = \pm(0.3 + 0.005 \cdot  t )$ [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	≈ 3.85Ω / K
- BALCO 500	2Ω / K
- NTC 20kΩ	non-linear characteristic
Characteristic	Response time at air velocity 0.02...0.07m/s
- τ <sub>0,5</sub> Pt 1000	≈ 50 s
- τ <sub>0,5</sub> Balco 500	≈140 s
- τ <sub>0,5</sub> NTC	≈134 s
0...10 V active sensor	≈ 0...50 °C

### Relative Humidity Sensor

Output signal	0...10 Vdc ≈ 0...100%rh
Output impedance	10 V range 274Ω
Outputs short-circuit protected	
Sensitivity	100 mV / %rh
Accuracy	at 25 °C / 24 Vac
	5...10%rh ±10%
	10...30%rh ± 5%
	30...70%rh ± 3%
	70...90%rh ± 5%
	90...95%rh ±10%
Response time	τ <sub>0,5</sub> = 20 s

**DIMENSIONS**



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

## INSTALLATION

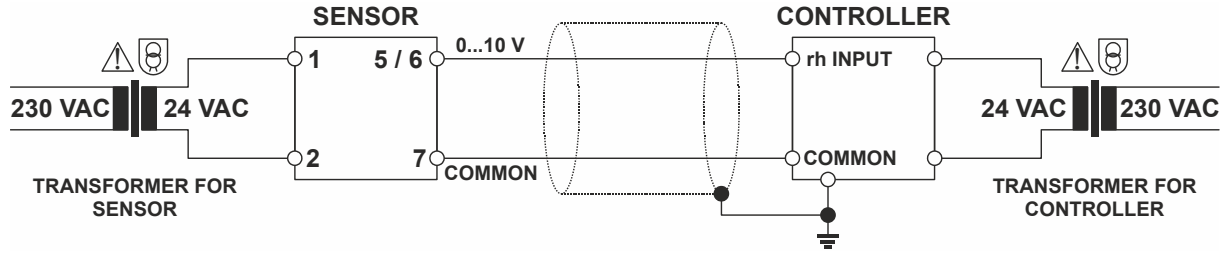


Fig. 2. Installation example

### 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 mm <sup>2</sup> (AWG20)	0.18 K (0.324 °F)	0.3 K (0.54 °F)	negligible
1.0 mm <sup>2</sup> (AWG17)	0.09 K (0.162 °F)	0.15 K (0.27 °F)	
1.5 mm <sup>2</sup> (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

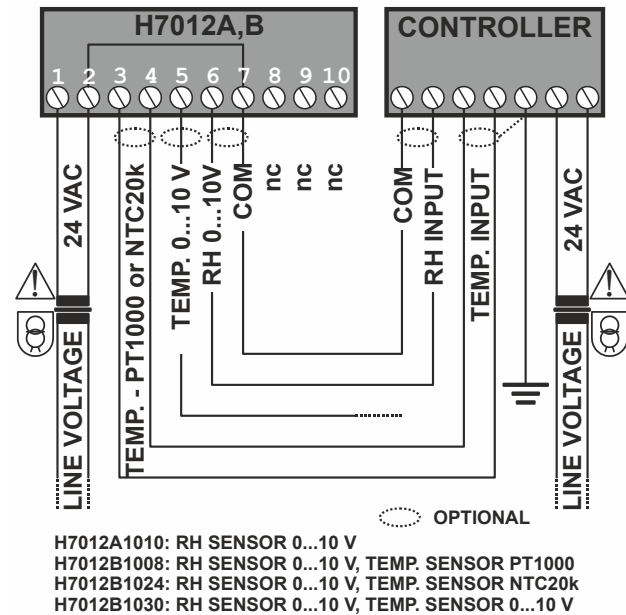


Fig. 3. Wiring connection

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