



24- 11025- 5, Rev. -  
(barcode for factory use only)

# HE-69xx Surface-Mount Duct Humidity/Temperature Sensors

## Installation Instructions

Part No. 24-11025-5, Rev. —  
Issued May 2017

Refer to the [QuickLIT website](#) for the most up-to-date version of this document.

### Installation

**IMPORTANT:** The HE-69xx Series Surface-Mount Duct Humidity/Temperature Sensor is intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the humidity/temperature sensor could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the humidity/temperature sensor.

**IMPORTANT :** Le HE-69xx Series Surface-Mount Duct Humidity/Temperature Sensor est destiné à transmettre des données entrantes à un équipement dans des conditions normales de fonctionnement. Lorsqu'une défaillance ou un dysfonctionnement du humidity/temperature sensor risque de provoquer des blessures ou d'endommager l'équipement contrôlé ou un autre équipement, la conception du système de contrôle doit intégrer des dispositifs de protection supplémentaires. Veiller dans ce cas à intégrer de façon permanente d'autres dispositifs, tels que des systèmes de supervision ou d'alarme, ou des dispositifs de sécurité ou de limitation, ayant une fonction d'avertissement ou de protection en cas de défaillance ou de dysfonctionnement du humidity/temperature sensor.

#### **Part Included**

- HE-6900 sensor

#### **Tools Needed**

- drill with 1/8 in. (3.2 mm) drill bit
- 1/4 in. (6.4 mm) nut driver

#### **Location Considerations**

- The sensor must be mounted inside a duct or economizer rooftop system.
- **Orientation:** The sensor must be mounted on a flat surface in a vertical, upright position.
- **Placement:** Mount the unit at least eight feet downstream from sources of heat or humidity and away from areas with no airflow.
- **Temperature Requirements:** -20 to 140°F (-29 to 60°C)

**IMPORTANT:** To avoid damage to the sensor, do not mount the HE-69xx in a location that is exposed to rain, snow, or direct sunlight, or in a location where high concentrations of corrosive vapors are present.

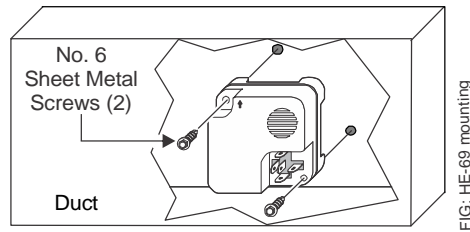
## Mounting

To mount the HE-69xx:

1. Using the sensor as a template, mark the location of the two screws.
2. Use a drill with a 1/8 in. (3.2 mm) bit to drill two holes in the duct.
3. Attach the sensor to the duct using a 1/4 in. (6.4 mm) nut driver and two No. 6 sheet metal screws (not provided) as shown in Figure 1.

**Note:** Mount the sensor in an upright position.

**Figure 1: HE-6900 Mounting**



## Wiring

### **⚠ WARNING**

#### **Risk of Electric Shock.**

Disconnect the power supply before making electrical connections. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

### **⚠ ADVERTISSEMENT**

#### **Risque de décharge électrique.**

Débrancher l'alimentation avant de réaliser tout branchement électrique. Tout contact avec des composants conducteurs de tensions dangereuses risque d'entraîner une décharge électrique et de provoquer des blessures graves, voire mortelles.

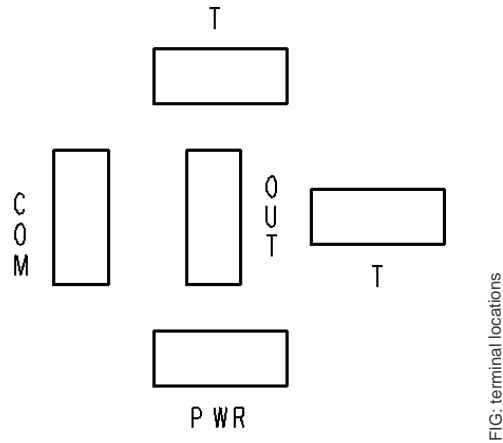
**IMPORTANT:** All wiring connections must be made in accordance with the National Electrical Code and all local regulations.

To wire the HE-69xx:

1. Route the wires from the controller to the HE-69xx. Use No. 18 AWG (1.0 mm diameter) wire.

- Connect the wires to the appropriate terminals of the wiring block. (See Figure 2 and Table 1, and refer to the appropriate controller documentation.)

**Figure 2: Terminal Locations**



**Table 1: HE-6900 Terminal Designations**

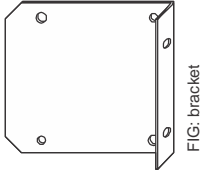
Sensor Terminal	Signal Designation
T	Temperature
T	Temperature
OUT	Relative Humidity Output
COM	Common
PWR	Power: 14 to 30 VDC or 20 to 30 VAC at 50/60 Hz

### Checkout

After installation and wiring are complete, apply power and make an operational check as shown in the appropriate controller documentation.


See Table 2 for accessories available and contact the nearest Johnson Controls® representative to place an order.

**Table 2: Accessories**

Product Code Number	Description
ACC-BRKT-100	Mounting bracket for mounting the sensor perpendicular to the duct; 3.25 H x 3.62 W x 0.75 in. D (83 x 92 x 19 mm) <div style="text-align: right; margin-top: 10px;">  </div>
ACC-CBL-100	Wiring harness, 53 in. (1.3 m)

## Technical Specifications

### HE-69xx Surface-Mount Duct Humidity/Temperature Sensors

<b>Power Requirements</b>		14 to 30 VDC or 20 to 30 VAC at 50/60 Hz, Class 2	
<b>Current Draw</b>		3 mA with no load; 25 mA maximum	
<b>Output Signal</b>	HE-69xx0NS	0 to 10 VDC, into 1k ohm minimum load	
	HE-69xx5NS	0 to 5 VDC, into 1k ohm minimum load	
<b>Humidity Element at 77°F (25°C)</b>		Accuracy:	±3% RH for 20 to 80% RH ±5% RH for 10 to 20% and 80 to 90% RH
		Temperature Coefficient:	±0.03% RH/C
<b>Temperature Sensor</b>	Nickel (HE-691xxNS)	Sensor type	1.0k ohm thin-film nickel
		Reference resistance	1.0k ohms at 70°F (21°C)
		Accuracy	±0.34°F at 70°F (±0.18°C at 21°C)
	2.252k ohm NTC Thermistor (HE-694xxNS)	Sensor type	2.252k ohm NTC thermistor
		Reference resistance	2.252k ohms at 77°F (25°C)
		Accuracy	±0.36°F at 77°F (±0.2°C at 25°C)
	Platinum (HE-695xxNS)	Sensor type	1.0k ohm thin-film platinum, Class F0.15 IEC60751 (Class A)
		Reference resistance	1.0k ohms at 32°F (0°C)
		Accuracy	±0.35°F at 70°F (±0.19°C at 21°C)
	10k ohm NTC Thermistor, Johnson Controls Type II (HE-696xxNS)	Sensor type	10k ohm NTC thermistor, Johnson Controls Type II
		Reference resistance	10k ohms at 77°F (25°C)
		Accuracy	±0.9°F at 70°F (±0.5°C at 25°C)
10k ohm NTC Thermistor, Johnson Controls Type III (HE-69YxxNS)	Sensor type	10k ohm NTC thermistor, Johnson Controls Type III	
	Reference resistance	10k ohms at 77°F (25°C)	
	Accuracy	±0.36°F at 77°F (±0.2°C at 25°C)	
<b>Ambient Operating Conditions</b>		32 to 140°F (0 to 60°C) 0 to 100% RH, 85°F (29.4°C) maximum dew point	
<b>Survival Operating Conditions</b>		-20 to 140°F (-29 to 60°C) 0 to 100% RH, 85°F (29.4°C) maximum dew point	
<b>Ambient Storage Conditions</b>		-40 to 140°F (-40 to 60°C) 0 to 100% RH, 85°F (29.4°C) maximum dew point	
<b>Terminal Connections</b>		1/4 in. (6.4 mm) external spade	
<b>Acceptable Wire Gauge</b>		16 to 24 AWG (1.3 to 0.5 mm diameter) wire (18 AWG [1.0 mm diameter] wire recommended)	
<b>Dimensions (H x W x L)</b>		3 x 3 x 1-1/4 in. (76 x 76 x 31 mm)	
<b>Shipping Weight</b>		0.50 lb (0.23 kg)	
	United States	UL Listed, CCN XAPX, File E27734; to UL 60730-1; and IEC 60730-2-13. Plenum Rated (UL 2043)	
	Canada	cUL Listed, CCN XAPX7, File E27734; to CAN/CSA E60730-1; and CAN/CSA-E60730-2-13	
	Europe	CE Mark - Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.	
	Australia and New Zealand	RCM Mark, Australia/NZ Emissions Compliant	

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

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