## Introduction

The HT-69 Series Duct Probe Relative Humidity (RH) Transmitters use a highly accurate and reliable thermoset polymer-based capacitance humidity sensor and state-of-the-art digital linearization and temperature-compensated circuitry to monitor humidity levels in a duct. The humidity sensor is encapsulated in a 60 micron HDPE filter at the end of a 9 in. (230 mm) stainless steel (S/S) probe and a compact enclosure.

> ⚠ **WARNING**
>
> Read these instructions carefully before you install and commission the humidity transmitter. Failure to follow these instructions may result in product damage. Do not use in an explosive or hazardous environment, with combustible or flammable gases, as a safety or emergency stop device, or in any other application where failure of the product could result in personal injury. Take electrostatic discharge precautions during installation and do not exceed the device ratings.

Figure 1: HT-69 Duct Probe RH Transmitter
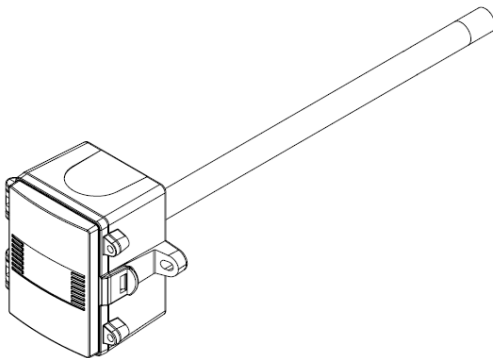
Dimensions

Figure 2: Dimensions of the HT-69 Duct Probe RH Transmitter
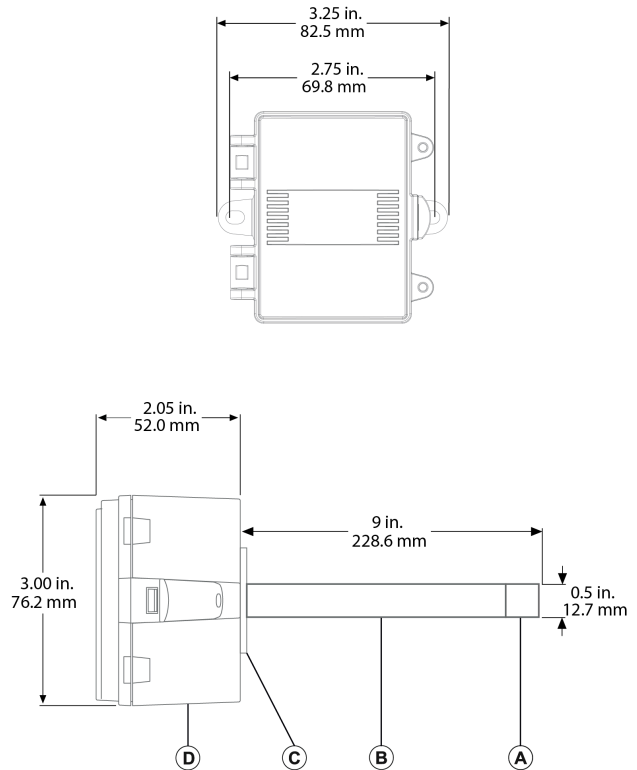
Callout	Description
A	60 micron HDPE filter
B	304 series S/S probe
C	Foam gasket
D	0.5 in. (12.7 mm) NPT

Mounting

The transmitter installs directly into any air duct with a minimum width or diameter of 10 in. (25.5 cm).

- Select a suitable installation area in the middle of the duct wall.
- To achieve the best reading, do not place in an area where air stratification may be present.
- Mount the sensor at least 5 ft. (1.5 m) in either direction from elbows, dampers, filters, or other duct restrictions.
- Avoid areas that expose the transmitter to vibrations or rapid temperature changes.

To install the transmitter, complete the following steps:

1. When you select a suitable spot, drill a 0.6 in. (15 mm) to 0.75 in. (20 mm) hole for the probe.
2. Slide the probe into the drilled hole until the enclosure is flush against the duct. The airflow direction is not important.
3. Secure the enclosure to the duct with two No. 10 x 1 in. (25 mm) self-tapping screws (not provided).
4. Tighten the screws until the enclosure is tight against the duct so that there is no movement of the enclosure. A foam gasket on the back of the enclosure provides a tight seal against any air leaks. See Step 1 in Figure 3.
5. The enclosure includes a hinged cover with a latch. To open the cover, pull slightly on the latch on the right side of the enclosure. At the same time, pull on the cover as shown in Step 2 of Figure 3.
6. A 0.5 in. NPT threaded connection hole is in the bottom of the enclosure. Screw the EMT or cable gland connector into the threaded connection hole until tight. See Step 3 in Figure 3.

   ⓘ **Note:** Preferably use weatherproof EMT or cable gland fittings. The E-style enclosure includes 0.5 in. NPT to M16 thread adaptor and cable gland fitting.

7. Make wire connections as shown in the wire diagram in Wiring.
8. Swing the door closed until it securely latches. For added security, install the two provided screws in the integrated screw tabs. See Step 4 of Figure 3.
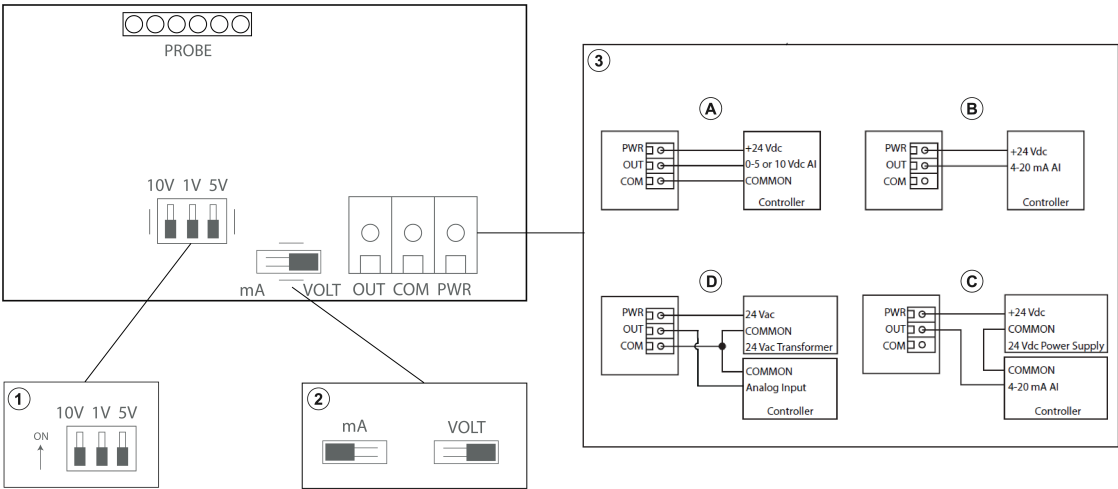
Wiring

- Deactivate the 24 VAC/DC power supply before you make all connections to the device to prevent electrical shock or equipment damage.
- Use 14 AWG to 22 AWG shielded wiring for all connections and do not locate the device wires in the same conduit with wiring that supplies inductive loads such as motors. Make all connections in accordance with national and local codes.
- Pull at least 6 in. (15 cm) of wire into the enclosure, then complete the wiring connection according to the wire diagram for the applicable power supply and output signal type. See Figure 4.
- Place the output switch in the required position to select the required signal output type (mA or VDC), as shown in Step 2 of Figure 4. The factory default setting is 4 mA to 20 mA.
- If you select mA, no further output set up is required. If you select VOLT output as shown in Figure 5, place the voltage output switch to the required span position, that is 10 VDC = 0 VDC to 10 VDC. The factory default setting is 0 VDC to 10 VDC. See Step 1 of Figure 4.
- Connect the DC positive or the AC voltage hot side to the PWR terminal. For voltage output or AC power, connect the supply common to the COM terminal. The device is reverse voltage-protected and does not operate if you connect it backwards. The device contains a half-wave power supply so the supply common is the same as the signal common. See Step 3 of Figure 4.
- The analog output is available on the OUT terminal. Check the controller Analog Input to determine the correct connection before you apply power as shown in Step 3 of Figure 4.

Figure 3: Mounting the HT-69 Duct Probe RH Transmitter
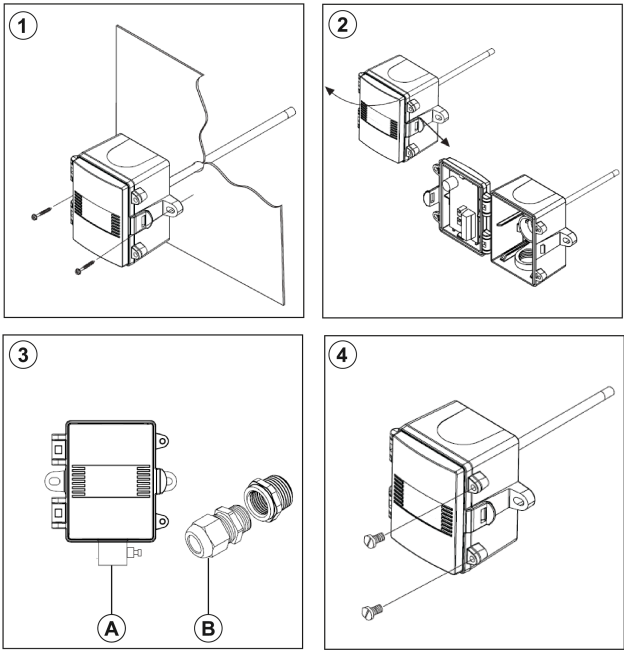
Callout	Description
A	EMT connector
B	Thread adapter and cable gland fitting

Figure 4: Wiring of the HT-60 Duct Probe Transmitter

Callout	Description
A	Wiring for output signal and 24 VDC power from controller
B	Wiring for 4 mA to 20 mA loop-powered output and external 24 VDC power from controller
C	Wiring for 4 mA to 20 mA loop-powered output and external 24 VDC external power supply
D	Wiring for all output signals and external 24 VAC power transformer

Technical specifications

Table 1: HT-69020NP-0, HT-69030NP-0 Duct Probe RH Transmitter technical specifications

Specification	Description
Sensor type	Thermoset polymer based capacitive
Accuracy	±2% RH, 3% RH, or 5% RH from 5% RH to 95% RH
Measurement range	0% RH to 100% RH, noncondensing
Resolution	±0.01% RH
Hysteresis	±0.8% RH @ 25°C (77°F)
Response time	8 s
Stability	<0.25% RH/year
Power supply	24 VAC/DC ±10%; 28 VAC/DC maximum
Consumption at 24 VDC	22 mA maximum
Input voltage effect	Negligible over specified operating range
Output signal	4 mA to 20 mA current loop, 0 VDC to 5 VDC, or 0 VDC to 10 VDC, switch-selectable
Output drive at 24 VDC	Current: 550 ohm maximum Voltage: 10K ohm minimum
Internal adjustments	ZERO and SPAN pot
Protection circuitry	Reverse voltage-protected and output limited
Ambient operating range	-40°F (-40°C) to 122°F (50°C)
Operating humidity	5% RH to 95% RH, noncondensing
Storage temperature	-22°F (-30°C) to 158°F (70°C)
Enclosure	ABS, UL94-V0, IP65 (NEMA 4X)
Dimensions (H x W x D)	3.00 in. x 3.24 in. x 2.05 in. (76.2 mm x 82.5 mm x 52.0 mm)
Probe (L x D)	9 in. x 0.5 in. (230 mm x 12.7 mm), 304 S/S with porous filter
Wiring connections	Screw terminal block, 14 AWG to 22 AWG

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.

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable end-user license, open-source software information, and other terms set forth at www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

Patents

Patents: https://jcipat.com

Single point of contact

APAC	EU	UK	NA/SA
JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA	JOHNSON CONTROLS VOLTAWEG 20 6101 XK ECHT THE NETHERLANDS	JOHNSON CONTROLS TYCO PARK GRIMSHAW LANE MANCHESTER M40 2WL UNITED KINGDOM	JOHNSON CONTROLS 5757 N GREEN BAY AVE. GLENDALE, WI 53209 USA

Contact information

Contact your local branch office: www.johnsoncontrols.com/locations
Contact Johnson Controls: www.johnsoncontrols.com/contact-us