Johnson Controls

TRUERH™ Series HT-670x Humidity Transmitters

Application Requirements

Configure the transmitter for the output signal required prior to installation. Proceed to the appropriate transmitter section to change the factory setting.

Installation

The humidity transmitter is available in both a wall mount or duct probe package to suit a variety of sensing application needs.

Parts Included

- mounting base for U.S. wallbox or surface mounting
- No. 6-32 x 7/8 in. oval-head screw (2)
- No. 4-40 x 1/4 in. hex-head cover screw (in the mounting base)
- drywall clip mounting kit (includes two each No. 6-20 x 1.25 in. pan-head tapping screws, spring clips, and spacers)

IMPORTANT: The HT-670x Series Humidity Transmitter is intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the HT-670x Series Humidity Transmitter 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 HT-670x Series Humidity Transmitter

IMPORTANT: Le HT-670x Series Humidity Transmitter est destiné à transmettre des données entrantes à un équipement dans des conditions normales de fonctionnement. Lorsqu'une défaillance ou un dysfonctionnement du HT-670x Series Humidity Transmitter 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 HT-670x Series Humidity Transmitter.

Accessories

Table 1: Accessories and Replacement Parts for Wall Mount Humidity Transmitters

Product Code Number	Description
ACC-DWCLIP-0	Drywall Clip Mounting Kit (10/bag)
ACC-INSL-0*	Wallbox Mounting Pad (10/bag)
ACC-INSL-1*	Surface Mounting Pad (10/bag)
GRD10A-608	Plastic Guard with Baseplate and Mounting Ring
T-4000-119	Allen-head Adjustment Tool (30/bag)
TE-67MB-600	Mounting Base Kit
TE-67D0-601**	Door Replacement Kit with Johnson Controls logo
TE-67D0-602**	Door Replacement Kit without logo

*   These foam pads help prevent drafts from entering the unit through the wall and make installation easier when mounting on an uneven surface.
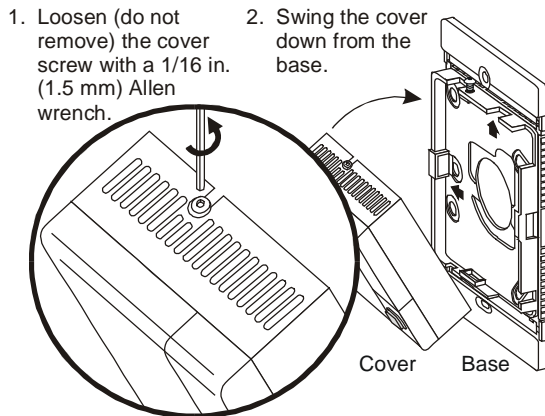
** Contains 10 original style and 10 new style doors.

Mounting

Location Considerations

IMPORTANT: To avoid damage to the circuit board and components, do not mount the unit in a location where high concentrations of corrosive vapors are present.

The HT-670x element comes with one mounting base for both surface and wallbox mounting. To mount the HT-670x, release the cover from the mounting base as described in Figure 1.

1. Loosen (do not remove) the cover screw with a 1/16 in. (1.5 mm) Allen wrench.
2. Swing the cover down from the base.

Cover   Base

Figure 1: Removing the Cover from the Base

Wallbox Mounting: Special Tools Needed

Use a 1/16 in. (1.5 mm) Allen wrench or T-4000-119 Allen-head adjustment tool for mounting.

### Wallbox Mounting: Location Considerations

Locate the humidity transmitter on an inside wall, free from drafts, and out of direct sunlight. The HT-670x is shock and vibration resistant; however, be careful not to drop or mount the unit where it could be exposed to excessive vibration. The following ambient operating conditions apply:

- Temperature: 32 to 122°F (0 to 50°C)

- Humidity: 0 to 100% Relative Humidity (RH), noncondensing; 85°F (29°C) maximum dew point

To mount the HT-670x to a wallbox:

1. Pull the cable or wiring through the wallbox and base.

2. Rotate the mounting base, so one of the arrows on the base points up.

3. Fasten the base to the wallbox with the No. 6 screws provided. (See Figure 2.)

Note: These instructions assume a standard 2 x 4 in. (52 x 104 mm) U.S. wallbox is used.

Cover Screw

No. 6 Screws
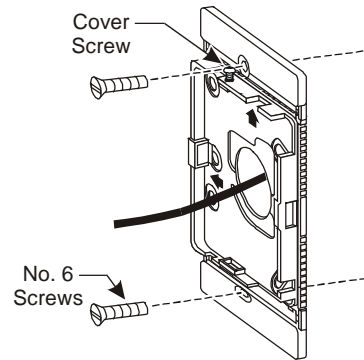
Figure 2: Wallbox Mounting Place the bottom edge of the cover against the bottom lip of the base, and rotate it up onto the base. (See Figure 3.)

5. Tighten the cover screw.

Cover Screw
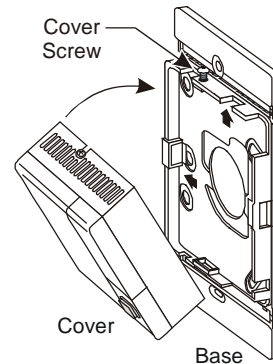
Cover

Base

Figure 3: Attaching the Cover to the Base

Once installed, the HT-670x cannot be removed from the wall unless the cover screw is loosened as described in Figure 1.

IMPORTANT: Seal the drilled hole or use an ACC-INSL-0 Foam Pad Kit to help reduce drafts entering the unit. (See Table 1.) Drafts could result in false humidity or temperature readings.

Surface Mounting: Special Tools Needed

- hole saw with 1-3/8 in. (35 mm) diameter blade

- 1/16 in. (1.5 mm) Allen wrench or T-4000-119 Allen-head adjustment tool

- drill with 1/8 in. (3 mm) drill bit

To mount the surface model to drywall, refer to Figure 5 and proceed as follows:

1. Bend the top and bottom edges of mounting base at the perforations until they break off. (See Figure 4.)

2. Drill a 1-3/8 in. (35 mm) hole in the surface where the unit is to be mounted, and pull the wiring through the drilled hole.

3. Mark the location of the two mounting screws, and drill the holes.

4. Insert the spring clips on each side of the drilled 1-3/8 in. (35 mm) hole, and use the spacers if needed as shown in Figure 5. Do not use the spacers for 5/8 in. (16 mm) drywall.

Note: For replacement spring clips, spacers, and screws, order the ACC-DWCLIP-0 Drywall Clip Mounting Kit. (See Table 1.)
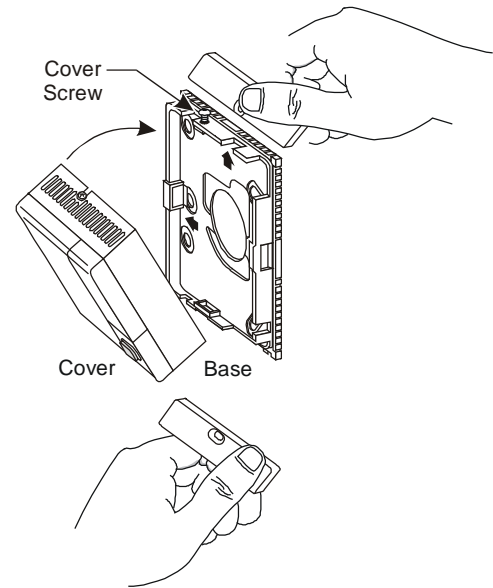

Figure 4: Removing the Breakaway Tabs

6. Pull the wiring through the base of the unit.

7. Center the two holes in the base over the two drilled holes, and fasten the base to the drywall using the No. 6 screws provided. (See Figure 5.)

8. Place the bottom edge of the cover against the bottom lip of the base, and rotate it up onto the base as shown in Figure 3.

9. Tighten the cover screw.

Once installed, the HT-670x cannot be removed from the wall unless the cover screw is loosened as described in Figure 1.

> **IMPORTANT:** To prevent drywall damage, do not overtighten the screws.
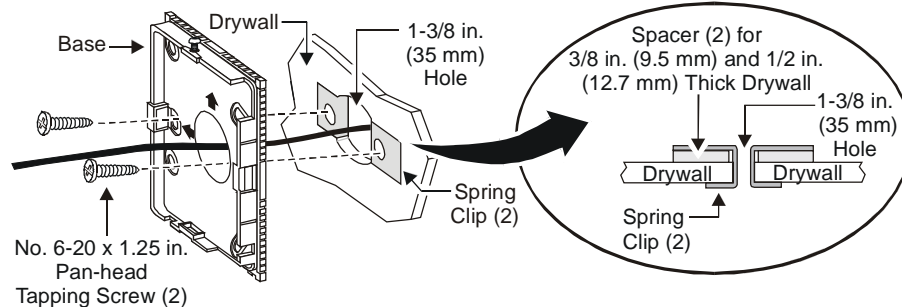
Figure 5: Surface Mounting to Drywall

Duct Probe Humidity Transmitter Parts Included

- HT-670x Series transmitter
- No 8 x 1 in. Phillips-head sheet metal screw (2)
- washer for use with conduit fitting

Note: Conduit fitting and nut are not provided.

Duct Probe Humidity Transmitter Special Tools Needed

- hole saw with 1 in. (25 mm) diameter blade
- drill with 1/8 in. (3 mm) drill bit

Duct Probe Humidity Transmitter Location Considerations

Place the duct probe humidity transmitter in a location that complies with the following:

- Position: Designed for duct mounting in any position, except with the probe tip pointed up.
- Duct Diameter: Recommended minimum diameter (round ducts) or width (square ducts) is 12 in. (305 mm).
- Air Stratification (when the unit is mounted on the discharge side of the fan): Recommended location is at least 8 ft (2.4 m) downstream from humidification equipment, where duct air and water vapor are sufficiently mixed. Avoid areas where the probe may be exposed to condensation.

To mount the duct probe humidity transmitter, refer to Figure 6, and proceed as follows:

1. Remove any excess insulation from the duct that prevents the probe from extending a minimum of 3 in. (76 mm) into the air stream.
2. Use the hole saw to make a 1 in. (25.4 mm) hole in the duct to insert the probe.
3. Pull the plastic cover off the housing.
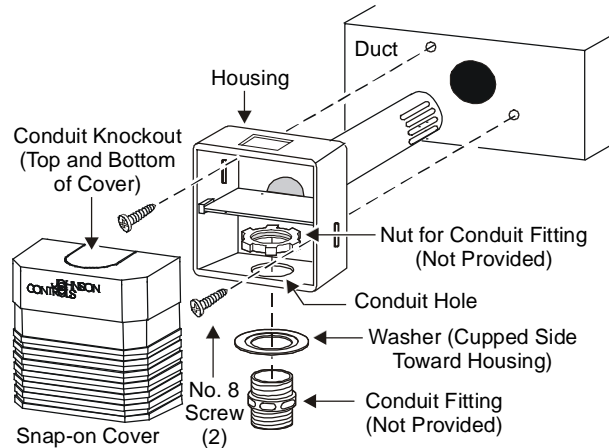
Figure 6: Mounting and Assembly

4. Insert the probe into the duct, and mark the location of the holes for the mounting screws.
5. Remove the unit, and drill a 1/8 in. (3 mm) hole for each mounting screw.

IMPORTANT: Remove the unit before drilling to prevent any metal remnants from falling onto the circuit board.

Seal any holes created during installation to help reduce drafts and produce more accurate humidity readings.

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6. Use a gasket, sealer, or other means to seal the area around the 1 in. (25.4 mm) hole between the unit and the duct.
7. Reinsert the probe, and secure the housing to the duct using the two No. 8 screws provided.

Wiring

⚠️ **CAUTION: Risk of Electric Shock.**
Disconnect the power supply before making electrical connections to avoid electric shock.

MISE EN GARDE: Risque de décharge électrique.
Débrancher l'alimentation avant de réaliser tout raccordement électrique afin d'éviter tout risque de décharge électrique.

When wiring the HT-670x, consider the following:

- Do not run low-voltage wiring in the same conduit as line-voltage wiring or other conductors that supply highly inductive loads.

- Make all wiring connections in accordance with the National Electrical Code and all local regulations.
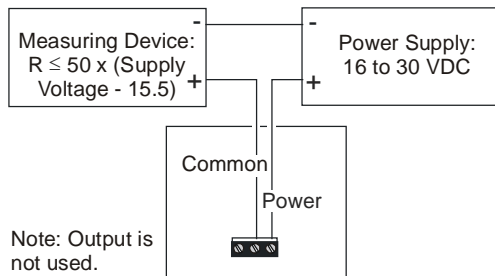
Wall Mount Humidity Transmitter

Depending on the application, refer to Figure 7 or Figure 8 to wire the wall mount model.

1. Proceed with the terminal connections.
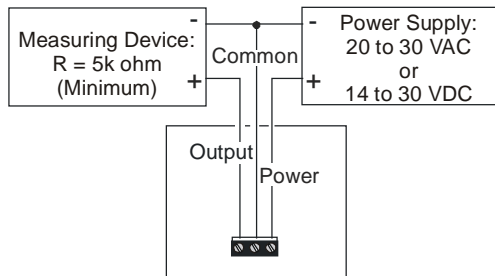
Figure 7: Wiring with Output Jumper Set for 0 to 10 VDC

Figure 8: Wiring with Output Jumper Set for 4 to 20 mA Once installed, the unit cannot be removed from the wall unless the cover screw is loosened as described in Figure 1.

Duct Probe Humidity Transmitter

Depending on the application, refer to Figure 10 or Figure 11 to wire the duct probe model.

1. Route the wires from the equipment to the unit through the conduit hole in the housing. (See Figure 6.)

2. Break out the appropriate knockout from the cover, shown in Figure 6, using pliers to accommodate the wiring or conduit.

IMPORTANT: If using a conduit fitting (not provided), a washer is provided to support the fitting in the housing. If the washer is not used, the fitting could stress the plastic housing.

3. Press the cover onto the base.

Setup and Adjustments
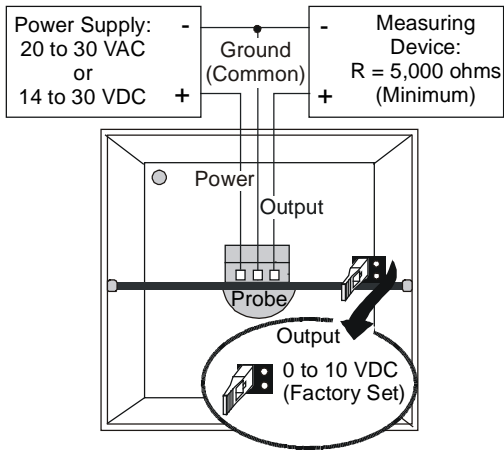
Wall Mount Humidity Transmitter

To set the output jumper, refer to Figure 9. Remove the circuit board, and position the output jumper to suit the application. Reinstall the circuit board.
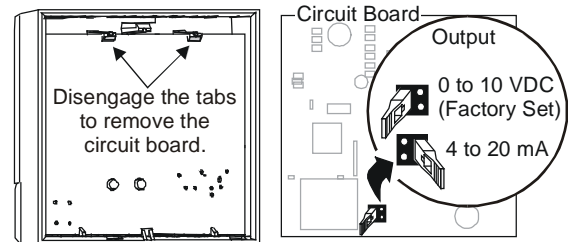
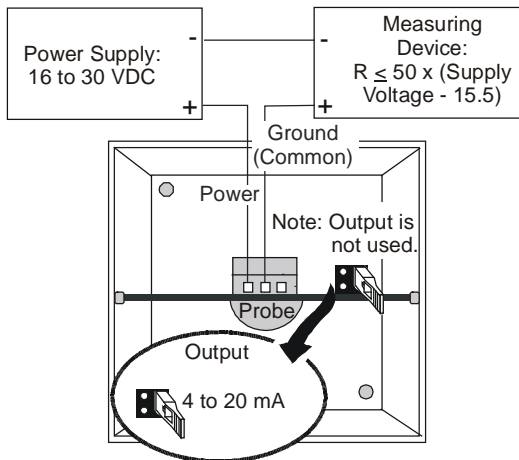**Figure 9: Setting the Output Jumper**

Duct Probe Humidity Transmitter

Refer to Figure 10 to set the output jumper for 0 to 10 VDC.

Figure 10: Output Jumper Set for 0 to 10 VDC

Refer to Figure 3 to set the output jumper for 4 to 20 mA.

Figure 11: Output Jumper Setting for 4 to 20 mA

Troubleshooting

If the humidity transmitter is not functioning properly:

1. Verify the unit is mounted in a location that is indicative of space humidity (away from drafts or sunlight, for example).

2. Check all supply voltage connections, and make sure the wiring is correct. (Refer to Figure 10 or Figure 11 for the duct probe transmitter and Figure 7 or Figure 8 for the wall mount transmitter.)

3. Verify the jumper positions. If the unit is not delivering an output, make sure the output jumper is selected for the appropriate application.

4. Replace the unit if the troubleshooting suggestions fail to remedy the problem.

Repairs and Replacement

The HE-67xx units are not field repairable. As with any electrical device, keep the air vents clean and free from dust or obstruction. The HT-670x controllers have been designed for maintenance-free operation. Sturdy packaging, solid-state components, and high-quality element construction combine for a long-lasting, high performance sensor. To order replacement parts, contact the nearest Johnson Controls representative.

Technical Specifications

Product	TRUERH Series HT-670x Humidity Transmitters

Power Requirements	If 0 to 10 VDC output jumper position is used:
	    20 to 30 VAC, 50/60 Hz at 15 mA
	    or 14 to 30 VDC at 6 mA, Class 2
	
	If 4 to 20 mA output jumper position is used:
	    16 to 30 VDC at 20 mA, Class 2

Output Range (Jumper Selectable)	0 to 10 VDC (5 k ohm minimum load impedance) or 4 to 20 mA DC (2-wire current loop) Maximum load impedance = 50 x (supply voltage—15.5)

Humidity Transmitter Accuracy	HT-67x2: ±2% RH for 20 to 80% RH at 77°F (25°C)
	              ±4% RH for 10 to 20% and 80 to 90% RH at 77°F (25°C)
	
	HT-67x3: ±3% RH for 20 to 80% RH at 77°F (25°C)
	              ±5% RH for 10 to 20% and 80 to 90% RH at 77°F (25°C)

Humidity Element	All-Polymer™ element
Temperature Coefficient	-0.1 to 0.05% RH/°C at 5°C (41°F) to -0.07 to -0.21% RH/°C at 65°C (149°F)
Electrical Connections	3-position screw terminal block
Ambient Operating Conditions	32 to 122°F (0 to 50°C) 0 to 100% RH, noncondensing; 85°F (29°C) maximum dew point
Survival Operating Conditions	-20 to 140°F (-29 to 60°C) 0 to 100% RH, noncondensing; 85°F (29°C) maximum dew point
Ambient Storage Conditions	-40 to 176°F (-40 to 80°C) 0 to 100% RH, noncondensing; 85°F (29°C) maximum dew point
Materials	Wall Mount: White plastic enclosure for surface or standard wallbox mounting, including hardware Duct Probe: White plastic cover with dark gray plastic housing and probe
Dimensions	Wall Mount (H x W x D): 3.20 x 3.20 x 1.34 in. (81 x 81 x 34 mm) Duct Probe (H x W x D): 3.25 x 3.25 x 8.27 in. (83 x 83 x 210 mm) Probe (L x D): 6.25 x 0.98 in. (159 x 25 mm)
Shipping Weight	0.7 lb (0.3 kg)
Agency Compliance	Duct probe material: 94-5 V flammability rated per UL 94

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, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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