

Hx-67x3 Series Outdoor Humidity Transmitter

Application Requirements

The Outdoor Relative Humidity (RH) Transmitters measure and transmit outdoor RH from 0 to 100%. The weather shield provides ventilation, blocks direct and reflected solar radiation, and blocks precipitation without affecting performance. The transmitter can be mounted outside on a pole or on a side of a building.

Installation

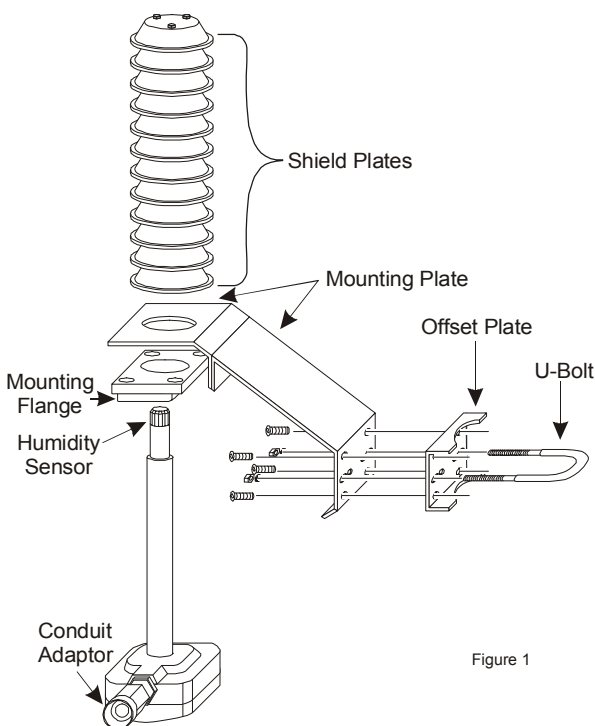


Figure 1: Component Breakdown

Parts Included

Parts included are:

- 1 RH transmitter
- 1 conduit adaptor
- 1 mounting flange
- 1 weather shield
- 1 U-bolt with washers and nuts
- 1 hexagon key

Note: The HE-67P3 and HT-67P3 models include a temperature transmitter.

Installing the Conduit Adaptor

To install the conduit adaptor:

1. Align the nut with the opening inside of the enclosure and hold it in place.
2. Insert the adaptor body into the transmitter conduit opening.
3. Manually tighten the adaptor into the nut, turning in a Clockwise (CW) direction (see Figure 2).
4. Tighten the adaptor onto the adaptor body turning in a CW direction.

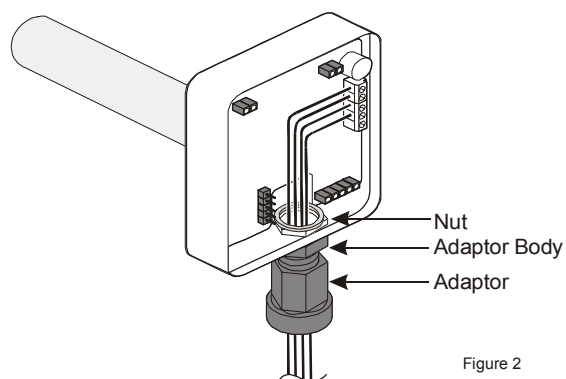


Figure 2

Figure 2: Inserting the Conduit Adaptor

IMPORTANT: Do not overtighten the conduit adaptor to prevent damage or displacement of the Printed Circuit Board (PCB). Do not support conduit from the adaptor.

Dimensions

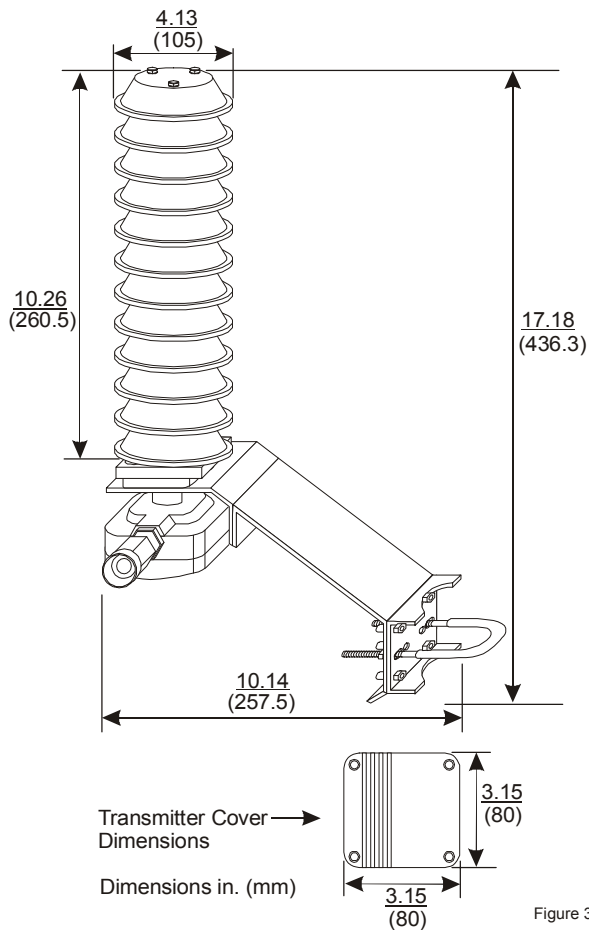


Figure 3

Figure 3: RH Transmitter Dimensions, in. (mm)

Mounting

The RH transmitter mounts directly to a wall surface or to a pole.

Location Considerations

The ideal mounting locations for the RH transmitters are out of direct sunlight, away from water sources, and away from cooling towers. The ambient operating conditions are -4 to 140°F (-20 to 60°C).

Wall Mounting

The transmitter does not come with bolts used for wall mounting. To wall mount the transmitter (refer to Figure 1 and Figure 4):

1. Attach the mounting flange with four screws to the bottom of the weather shield.
2. Remove the offset plate and U-bolt.
3. Bolt the unit to the wall using the appropriate hardware for the particular wall surface.

4. Insert the transmitter entirely into the mounting flange and shield.
5. Tighten the probe retention screw to lock the transmitter in place.

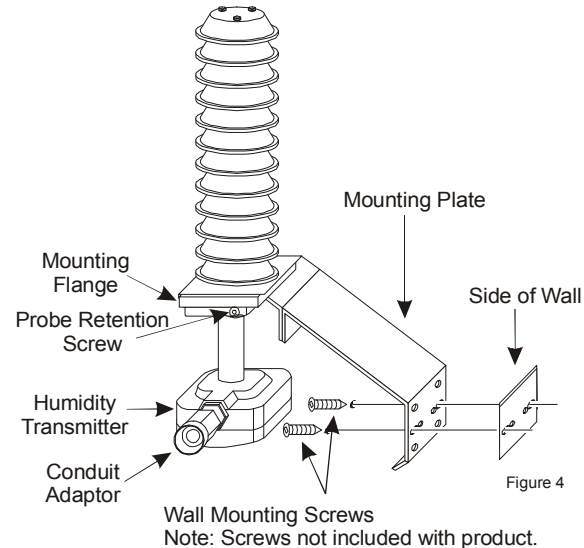


Figure 4

Figure 4: Wall Mounting the Transmitter

Pipe Mounting

Pipe mounting requires the offset plate and U-bolt. The U-bolt fits on 1-1/4 to 2-1/2 in (30 to 60 mm) diameter pipes. To mount the transmitter to a pipe (refer to Figure 1 and Figure 5):

1. Attach the mounting flange with four screws to the bottom of the weather shield.
2. Insert the transmitter entirely into the mounting flange and shield.
3. Tighten the probe retention screw to lock the transmitter in place.
4. Fit the U-bolt around the pipe where the unit is mounted.
5. Slide the U-bolt through both sets of screw holes.
6. Slide the flat washer and then the spring washer on both ends of the U-bolt.
7. Tighten the two nuts onto both ends of the U-bolt.

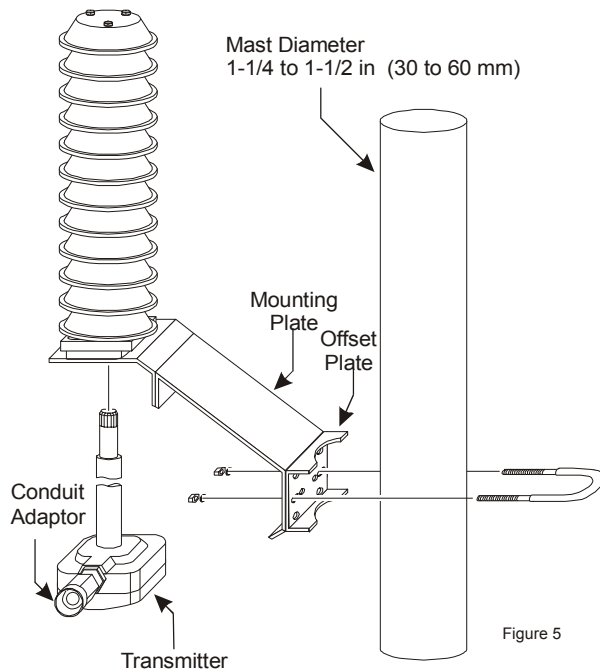


Figure 5: Pipe Mounting the Transmitter

Wiring

Power Supply Requirements

The HE-67x3 transmitter requires a 24 VAC/VDC, Class 2 power supply maintaining voltages of 18 to 30 VDC or 20 to 30 VAC. The HT-67x3 transmitter requires an 18 to 28 VDC power supply.

24 VAC Power Supply Connections (HE-67x3 Only)

When more than one transmitter is connected to one 24 VAC transformer, a common loop is formed at the controller and the risk of a short circuit increases.

All commons must be at the same potential.

Note: To avoid a short circuit, isolate the 24 V power supply by providing a separate transformer for each transmitter as shown in Figure 5.

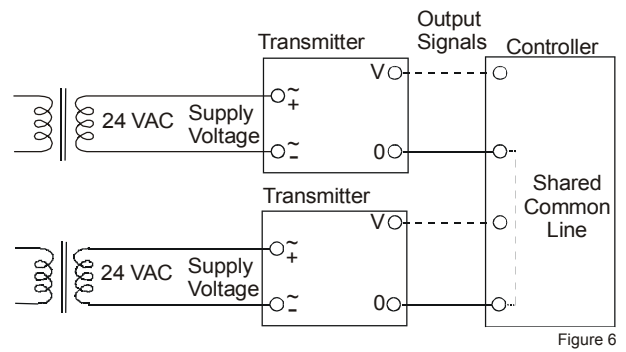


Figure 6: Connecting Separate AC Supplies (Recommended)

If several transmitters share one transformer, the phase (~) must always be the same at each transmitter to maintain polarity and avoid short circuit via shared common line as shown in Figure 6.

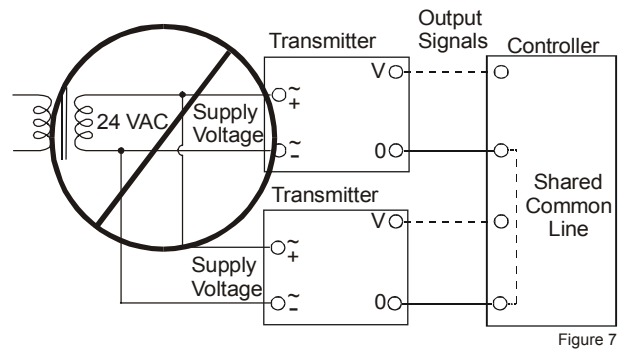


Figure 7: Connecting One AC Supply to Several Transmitters (Not Recommended)

Wiring the PCB

To wire the PCB's input and output connections:

1. Open the transmitter cover.
2. Insert the wire carefully through the conduit adaptor and then strip 1/4 in. (6.4 mm) of the wire insulation to prepare the wire for connection to the terminal block.
3. Connect the wires to the appropriate terminals as shown in Figure 8 through Figure 11 and as designated in Table 1 through Table 4 depending on the model.
4. Reinstall the cover.

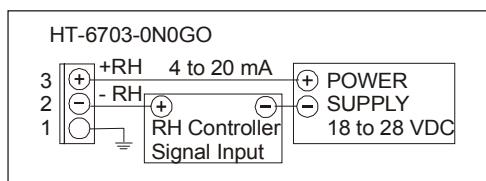


Figure 8

Figure 8: HT-6703 Wiring Diagram

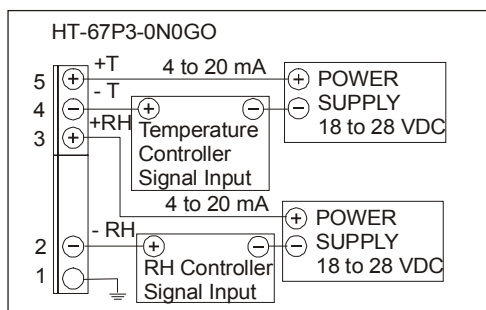


Figure 9

Figure 9: HT-67P3 Wiring Diagram

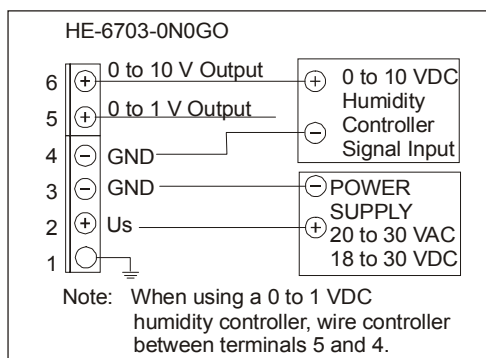


Figure 10

Figure 10: HE-6703 Wiring Diagram

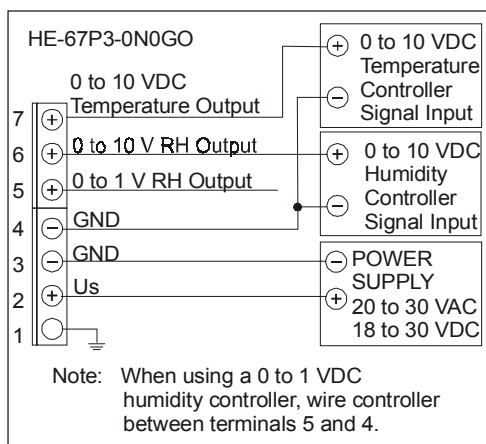


Figure 11

Figure 11: HE-67P3 Wiring Diagram

Table 1: HT-6703 Terminal Block Wiring

Terminal Number	Signal Designation
1	Earth Ground (optional)
2	RH Current Output -
3	RH Current Output +

Table 2: HT-67P3 Terminal Block Wiring

Terminal Number	Signal Designation
1	Earth Ground (optional)
2	RH Current Output -
3	RH Current Output +
4	Temperature Current Output -
5	Temperature Current Output +

Table 3: HE-6703 Terminal Block Wiring

Terminal Number	Signal Designation
1	Earth Ground (optional)
2	Supply + or ~
3	Supply - or ~
4	Output -
5	RH Output + (0 to 1 VDC)
6	RH Output + (0 to 10 VDC)

Table 4: HE-67P3 Terminal Block Wiring

Terminal Number	Signal Designation
1	Earth Ground (optional)
2	Supply + or ~
3	Supply - or ~
4	Output -
5	RH Output + (0 to 1 VDC)
6	RH Output + (0 to 10 VDC)
7	Temperature Output + (0 to 10 VDC)

Troubleshooting

In the event the unit is not functioning properly, use the following checklist to identify the symptoms and determine a solution.

1. Verify that the unit is mounted properly.
2. Verify that the unit is dry.
3. Verify that all wiring connections are correct.
4. Verify that the power supply voltage level in the HE-67x3 is 20 to 30 VAC or 18 to 30 VDC and in the HT-67x3 is 18 to 28 VDC.
5. Verify the output signal corresponds to the measured variable (temperature or RH) using an appropriate meter.

If the transmitter does not operate after completing these steps, replace the unit.

Repairs and Replacement

The Outdoor RH Transmitters have been designed for maintenance-free operation. Sturdy packaging, solid-state components, and high-quality element construction combine for a long-lasting, high performance humidity transmitter. These units have a 3-year warranty. Contact the nearest Johnson Controls representative with additional questions or to place an order.

Technical Data

Relative Humidity	Product	HE-6703, HT-6703, HE-67P3, and HT-67P3 Outdoor Humidity Transmitters
	Analog Output	HE-67x3: 0 to 10 VDC and 0 to 1 VDC for 0 to 100% RH HT-67x3: 4 to 20 mA (DC) for 0 to 100% RH
	Measuring Range	10 to 90% RH
	Accuracy at 68°F (20°C)	±3% RH
	Temperature Dependence	<±1.5% RH from 14 to 140°F (-10 to 60°C)
	Operating Temperature Range	-4 to 140°F (-20 to 60°C)
	Output Resolution	0.1% RH
Temperature (for HE-67P3 and HT-67P3 models only)	Sensor Type	Platinum 1000, IEC751, Class B
	Analog Output	HE-67P3: 0 to 10 VDC for -40 to 140°F (-40 to 60°C) HT-67P3: 4 to 20 mA (DC) for -40 to 140°F (-40 to 60°C)
	Measuring Range	14 to 140°F (-10 to 60°C)
	Operating Temperature Range	-40 to 140°F (-40 to 60°C)
	Accuracy at 77°F (25°C)	±0.55°F (±0.3°C)
	Linearity	Better than 0.1°C
	Temperature Dependence	0.01°C/°C
General	Output Resolution	0.1°C
	Stability	±2% RH over 2 years
	Storage Temperature Range	-40 to 140°F (-40 to 60°C)
	Humidity Range	0 to 100% RH (Non-condensing)
	Power Requirements	HE-67x3: 20 to 30 VAC, or 18 to 30 VDC, Class 2 HT-67x3: 18 to 28 VDC, Class 2
	Current Consumption	HE-67x3: 10 mA with DC Supply and 23 mA with AC Supply HT-67x3: 27 mA (DC) Maximum Per Output
	Maximum Output	HE-67x3: 13 VDC HT-67x3: 27 mA (DC) per Output
	Load Resistance	HE-67x3: > 20 k ohm HT-67x3: 50 ohms + [(Power Supply Voltage – 8)/0.02]
	Warm-up Time	Instantaneous
	Housing Material	ABS plastic
	Housing Classification	IP65 NEMA 4 Housing
	Shipping Weight	4.2 lb (1.9 kg)

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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