

For additional information, see the accompanying data sheet for this transducer.

### Ordering Information

PACKAGING	ACCURACY	OUTPUT
HU-224 (duct mount)	± 2%	<b>mA</b> 4 - 20 mA two-wire
HU-225 (wall mount)	± 3%	<b>VDC</b> 0 - 5 or 0 - 10 VDC (field selectable)

### Dimensions

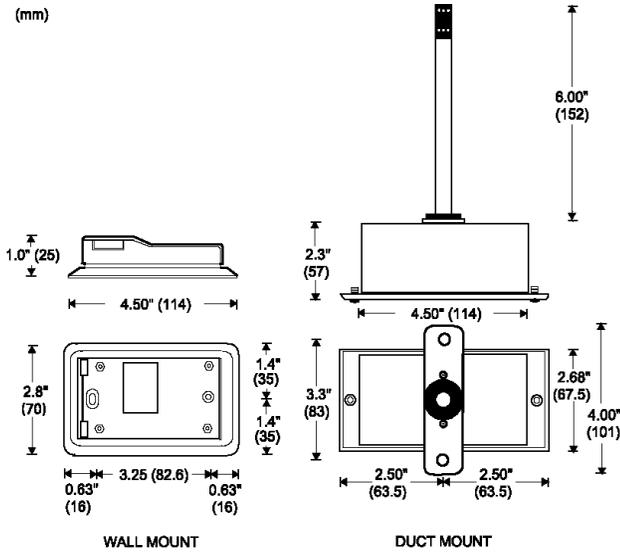


Figure 1. Humidity Transducer Dimensions

### Specifications

**Accuracy\*:** ± 2% / ± 3% RH

**Range:** 0 to 100% RH

**Hysteresis:** ± 1%

**Supply Voltage:** 12 to 40 VDC; 12 to 35 VAC  
(VDC output transducers only)

**Supply Current:** 10 mA maximum for VDC  
output transducers; 20 mA maximum  
for mA output transducers

**Enclosure:** 18 gage C. R. steel NEMA 4 (IP-  
65) or ABS plastic

**Finish:** Baked-on enamel PMS2GR88B or off-white

**Conformance:** EMC Standards EN50082-1(1992) EN55014(1993)/EN60730-  
1(1992)

**Compensated Temperature Range:**  
-30°F to 130°F (-35°C to 55°C)

**Environmental:** 10 to 90% RH non-  
condensing

**Termination:** Unpluggable screw terminal  
block

**Wire Size:** 12 Ga. maximum

**Load Impedance:** 3K ohms maximum at 40 VDC (mA output transducers); 1K  
ohms minimum (VDC output transducers)

**Weight:** Duct mount: 1.0 lb. (.45 kg); Wall mount: 0.5 lbs (.25 kg)

\* Includes nonlinearity and non-repeatability.

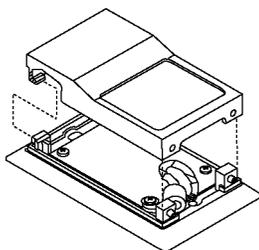


Figure 2. Wall Mount Transducer

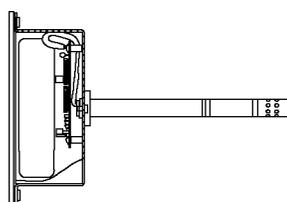


Figure 3. Duct Mount Transducer

### Installation

#### Inspection

Inspect the transducer packaging for signs of damage. If damaged, notify the carrier immediately.

#### Requirements

- Tools (not provided):
  - Digital volt-ohm meter (DVM)
  - Appropriate screwdriver for mounting screws
  - Appropriate drill and drill bit for mounting screws
- Appropriate accessories
- Two #8 self-tapping mounting screws (not provided)
- Training: Installer must be a qualified and experienced technician

#### CAUTION!

- Disconnect the power supply before installing the transducer. Failure to do so can result in electrical shock and equipment damage.
- Make all connections in accordance with the job wiring diagram and national and local electrical codes. Use only copper conductors.
- Use electrostatic discharge precautions such as wrist straps when installing and wiring the transducer.
- Avoid installing the transducer in locations where severe shock, vibration, excessive moisture, or corrosive fumes are present. NEMA 4 housings are primarily intended for outdoor use to provide a degree of protection against windblown dust, rain, and hose-directed water.
- Do not exceed ratings for the transducer.

#### Mounting

##### Wall mount humidity transducer:

1. Locate the two Allen screws on the underside of the transducer.
2. Turn the Allen screws CCW and remove the plastic cover.
3. Select a mounting location away from diffusers, lights, or any external influences.
4. Mount the transducer on a vertical surface with the two provided screws.
5. Pull the wires through the sub base hole and make the necessary connections (see the wiring diagrams in Figures 4 to 13).
6. Replace the plastic cover and turn the Allen screws CW.

##### Duct mount humidity transducer:

1. Drill 5/8" holes in the appropriate locations for the transducer.
2. Mount the transducer on a vertical surface with two #8 self-tapping screws (not provided).
3. Pull the wires through the knockout and make the necessary connections (see the wiring diagrams in Figures 4 to 13).
4. Replace the cover and tighten the Phillips screws.

#### Wiring for mA Output

The humidity transducer is a 4 - 20 mA output unit powered with a 12 - 40 VDC supply. Use maximum 12 AWG wire for wiring terminals. See the wiring diagrams in Figures 4 and 5.

1. Remove the blue terminal block by carefully pulling it off the circuit board.
2. Locate the [+] and [-] terminal markings on the board.
3. Attach the supply voltage to the [+] lead.
4. Connect the 4 - 20 mA output ([-] terminal) to the controller's input terminal.
5. Ensure that the power supply common is attached to the common bus of the controller.
6. Reinsert the terminal block to the circuit board and apply power to the transducer.
7. Check for the appropriate output signal by using a DVM set to DC milliamps connected in series to the [-] terminal.

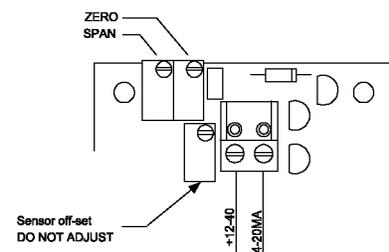


Figure 4. Wall Mount Wiring for mA Output

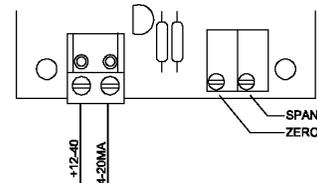


Figure 5. Duct Mount Wiring for mA Output

#### Wiring for VDC Output

The transducer is field selectable for 0 - 5 VDC or 0 - 10 VDC output and can be powered with either 12 - 40 VDC or 12 - 35 VAC.

1. Remove the blue terminal block by carefully pulling it off the circuit board.
2. Locate the [+], [-], and [0] terminal markings on the board.
3. Attach the power wires to the [+] and [-] terminals. The [-] terminal is also the negative output terminal.
4. Connect the [0] terminal, which is the positive VDC output terminal, to the controller's input.
5. Reinsert the terminal block to the circuit board and apply power to the transducer.
6. Check the appropriate VDC output by using a DVM set to DC volts connected to the [0] and [-] terminals.

#### CAUTION!

- If using grounded AC, ensure that the hot wire is on the [+] terminal. Also, if using a controller without built-in isolation, use an isolation transformer to supply the transducer.
- This transducer contains a half-wave rectifier power supply and must not be powered from transformers powering other devices with non-isolated full-wave rectifier power supplies.

- When multiple transducers are powered from the same transformer, damage will result unless all 24-gage power leads are connected to the same power lead on all transducers. Maintain the correct phasing when powering more than one transducer from a single transformer.

### Wiring the Wall Mount Humidity Transducer for VDC Output

Figures 6 and 7 illustrate proper VDC output wiring for the wall mount humidity transducer.

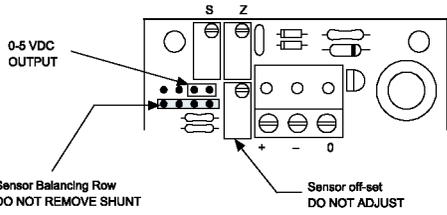


Figure 6. Wall Mount Wiring for 0 - 5 VDC Output

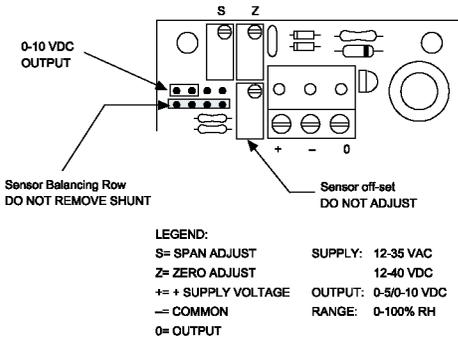


Figure 7. Wall Mount Wiring for 0 - 10 VDC Output

### Wiring the Duct Mount Humidity Transducer for VDC Output

Figures 8 and 9 illustrate proper VDC output wiring for the duct mount humidity transducer.

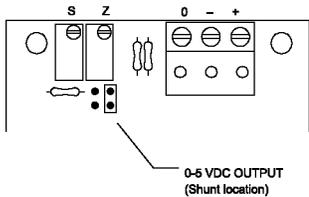


Figure 8. Duct Mount Wiring for 0 - 5 VDC Output

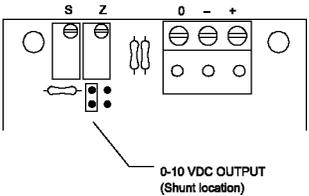


Figure 9. Duct Mount Wiring for 0 - 10 VDC Output

### Typical Applications (wiring diagrams)

Figures 10 and 11 illustrate typical wiring diagrams for the mA output humidity transducers.

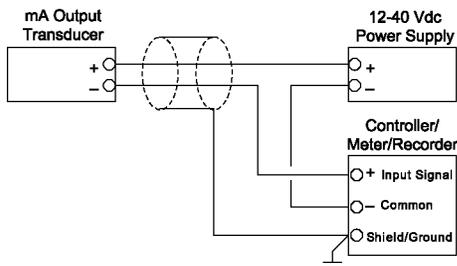


Figure 10. Wiring mA Output Transducers With an External DC Power Supply

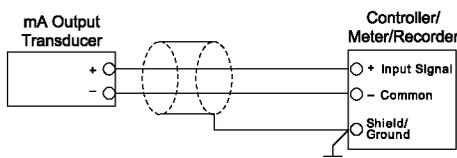


Figure 11. Wiring mA Output Transducers Where the Controller or Meter Has an Internal DC Power Supply

Figures 12 and 13 illustrate typical wiring diagrams for the VDC output humidity transducers.

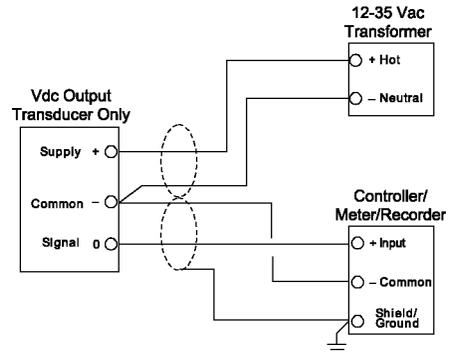


Figure 12. Wiring VDC Output Transducers With an External AC Power Supply

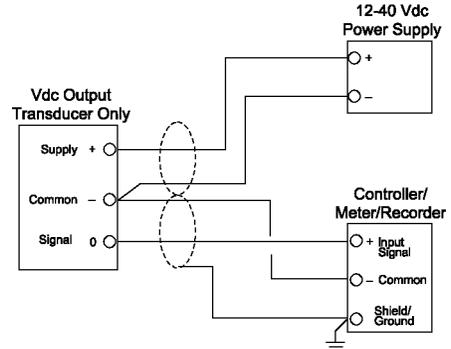
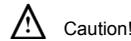


Figure 13. Wiring VDC Output Transducers With an External DC Power Supply

### Checkout

- Verify that the transducer is mounted in the correct position.
- Verify the appropriate input signal and supply voltage.
- Verify the appropriate configuration range.



Caution!

- Do not connect 120 VAC to the humidity transducers. AC voltage should never be supplied to a transducer intended for DC power.

### Transducer Operation

This humidity transducer is a highly accurate device. For applications requiring a high degree of accuracy, use laboratory quality meters and gages.

### Calibration

All transducers are factory calibrated to meet or exceed published specifications. If field adjustment is necessary, follow these instructions:

- Do not verify comparative RH with a sling psychrometer. Doing so can introduce errors into the calibration process. New humidity transducers are already calibrated.
- Recalibrate the humidity in a controlled environment only. Relative humidity must be held stable while making any adjustment.
- Verify the output from the transducer directly with calibrated instrumentation. Verify the RH with calibrated instrumentation, not a controller output. With the correct power applied and only a meter connected to the output of the transducer, ensure that the output is proportional to the true RH.
- Single-point Calibration
  - Select either option 1 or option 2:
    - Option 1: Select a controlled humidity environment between 10 to 40% RH. Ensure humidity is stable and adjust the zero trimmer [Z].
    - Option 2: Select a controlled humidity environment between 40 to 70% RH. Ensure humidity is stable and adjust the span trimmer [S].
  - Two-point Calibration
    - Select a controlled humidity environment between 10 and 40% RH. Ensure humidity is stable and adjust the zero trimmer [Z]. Then select a controlled humidity environment between 70 and 75% RH. Ensure humidity is stable and adjust the span trimmer [S].

### Maintenance

Perform regular maintenance on the total system to ensure the sustained optimum performance of the humidity transducer.

### Field Repair

Do not attempt to repair the humidity transducer. Replace the malfunctioning transducer with a functional transducer if necessary.

### Warranty

See the accompanying data sheet for additional information. For technical / application assistance, call your nearest office.

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