

## 2-10 V Wall & Duct Humidity Sensor Installation Instructions

This document covers the operation and installation instructions for the following Nortec Digital Humidistats:

Part #:	Description:
1509858	2-10 V Wall Humidity Sensor
1509857	2-10 V Duct Humidity Sensor

### 1509858 – Wall Humidity Sensor Installation

#### Location

1. The wall humidistat should not be installed on an outside wall.
2. The sensor should be installed away from any heat source and away from direct sunlight.
3. The wall surface should be flat and clean.
4. Any draft originating from the wall interior should be prevented from interacting with the humidity sensor. A vapor barrier should be installed.
5. Nortec recommends using a sealed, single-gang electrical mounting box (recessed in wall) to mount the wall humidity sensor.

#### Installation

1. Pull cables 6" (15cm) out of the wall
2. To remove the front face with the digital display, loosen the retaining screw at the bottom of the case. Pull firmly but gently on the bottom of the front face to unplug the face from the backboard. The front face will unhinge from the top retaining clips.
3. Connect the control wires to the terminals according to the wiring diagram(s). Table 1 outlines the terminal layout of the digital humidistat.
4. Secure the metal bracket to the mounting box using 2 screws. Make sure the screw heads do not stand out more than 1/5" (5mm) from the mounting surface.
5. Mount the front face onto the metal bracket. Ensure the top clips engage the grooves on the top of the metal bracket. Carefully lower the front face until the interconnector reaches the mounting plate. Ensure the connector pins are aligned with the plug on the back plate. While inserting the connectors, a slight resistance will be felt. Continue pressing gently until the front face is fully seated and tighten the retaining screw to secure the face.

### 1509857 – Duct Sensor Installation

#### Location

1. The duct sensor should be installed directly on the duct in an area where the air is well mixed with uniform flow.
2. The supply air sensor should be mounted downstream of the steam distributor at a distance 1.5 times the absorption distance (typically 10-12 ft or 3-3.7 m).
3. If a return air humidity sensor is used it should be mounted close to the air inlet but downstream from a return fan if one is present.

#### Installation




1. Open the housing by removing the 4 screws securing the housing together.
2. Push the probe through the center hole and tighten the 2 mounting screws.
3. Drill a 1/2" (13mm) hole in the duct and insert the probe into the air stream.
4. Secure the sensor to the duct using 2 sheet-metal screws.
5. Connect the signal wires to the sensor terminal strip. Table 1 outlines the terminal layout of the digital humidistat.
6. Connect the plug from the temperature probe to the PCB board into the plug marked 'PROBE'.
7. Close the cover and secure using the 4 Screws removed in step 1.

**Table 1: Sensor Terminal Connections**

	Wall Sensor - (Part # 1509858)	Duct Sensor - (Part # 1509857)
Ground	1	2
24 VAC	2	1
Humidity Output	6	3

## Wall Sensor Display

Legend for Figure 1.

1. Display of current humidity value.
2. Buttons for operating the humidistat:
  -  POWER button: No function.
  -  UP/DOWN buttons: Adjusts calibration value.
  -  OPTION button: Used for accessing the sensor calibration routine.

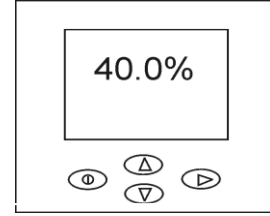


Figure 1: Wall Sensor LCD Display

## Sensor Calibration

1. The humidity sensor is factory calibrated, however, it can be field recalibrated. The calibration routine can be accessed by pressing and holding down the option button for five seconds. A new screen will appear with the calibration adjustments.
2. Press the up or down buttons until the text *calH* appears on the LCD screen. To adjust the calibration, press the Option button. The screen should load to display the current calibration trim. The calibration trim can be adjusted by pressing the up or down buttons to the desired level and then pressing the option button to confirm the settings. Press the Power button to return to the normal display.

## Specifications

Table 2: Specifications

Power Supply	Operating Voltage	24 V AC 50/60 Hz $\pm$ 10%
	Power Consumption	Max 3 VA
	Electrical Connection	Terminal Connectors
Humidity Input Signal Outputs	Internal rectification	Half Wave Rectified
	Type	Capacitive
	Range	0...100 % RH
	Accuracy	$\pm$ 3.0% at 25 °C
	Hysteresis	$\pm$ 3%
	Repeatability	$\pm$ 0.5%
	Stability	$\pm$ 0.5% / year if used within 0 - 50 °C
	Analog Outputs	AO1
	Output Signal	DC 2-10V
	Resolution	9.76 mV, 0.019 mA
Accuracy	$\pm$ 1%	
Maximum Load	20 mA, 500 $\Omega$	
Display (LCD)	Humidity Values	3 digits
	Resolution	0.5
	Setpoint Values	2 digits
Environment	Operation: Temperature	0...50 °C
	Humidity	<95% r.h.
Housing	Materials:	
	Cover, back Mounting Plate	ABS plastic Galvanized Steel

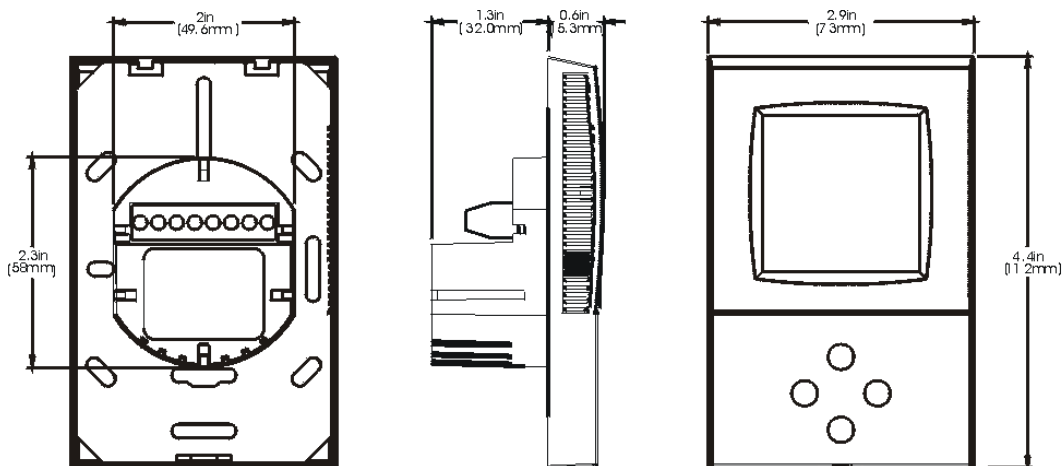


Figure 2: Wall Sensor Dimensions

**Dimensions mm(inch)**

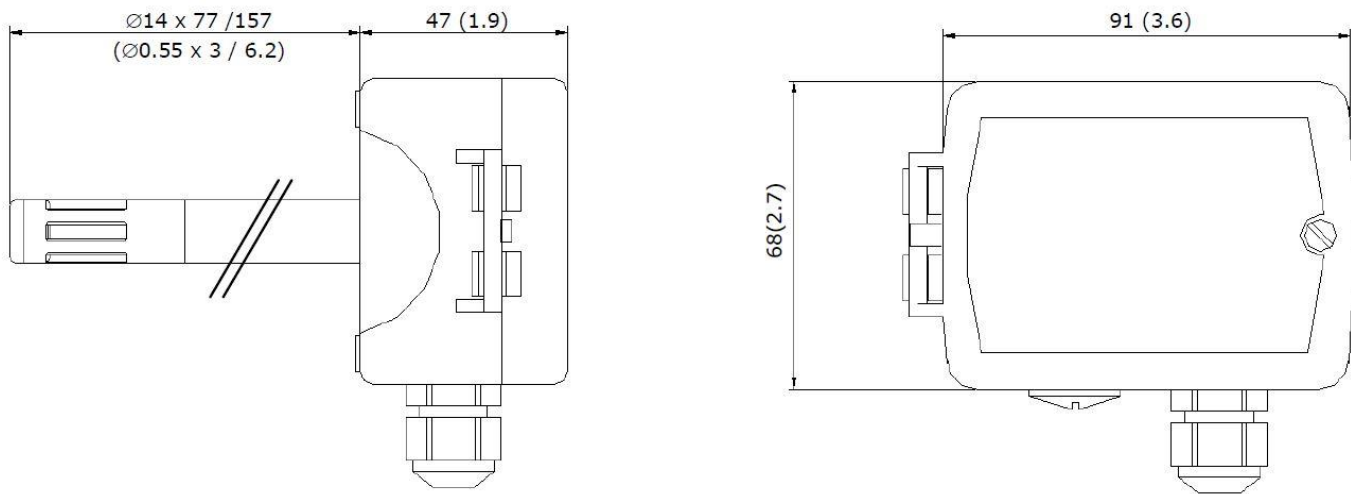


Figure 3: Duct Sensor Dimensions

Table 3: Troubleshooting

Display	Cause	Symptoms	Corrective Action
<b>ALA3</b>	The sensor will initiate this alarm if a relative humidity below 6% is reported.	The LCD screen will report the message ALA3. The sensor will provide 10volts or 100% output until a relative humidity above 6% is report from the sensor.	Normal operation resumes once the sensed humidity is above 6% RH. The message will remain on the LCD screen until remove by pressing the option button on the sensor display panel. If this error persists verify that the wiring is correct. Also verify that the sensor is mounted in an area that accurately represents the controlled humidity level.
<b>ALA4</b>	The sensor will initiate this alarm if a relative humidity above 95% is reported.	The LCD screen will report the message ALA4. The sensor will provide 10volts or 100% output until a relative humidity below 95% is report by the sensor.	Normal operation resumes once the sensed humidity is below 95% RH. The message will remain on the LCD screen until removed by pressing the option button on the control panel. If this error persists verify that the wiring is correct. Also verify that the sensor is mounted in an area that accurately represents the controlled humidity level.

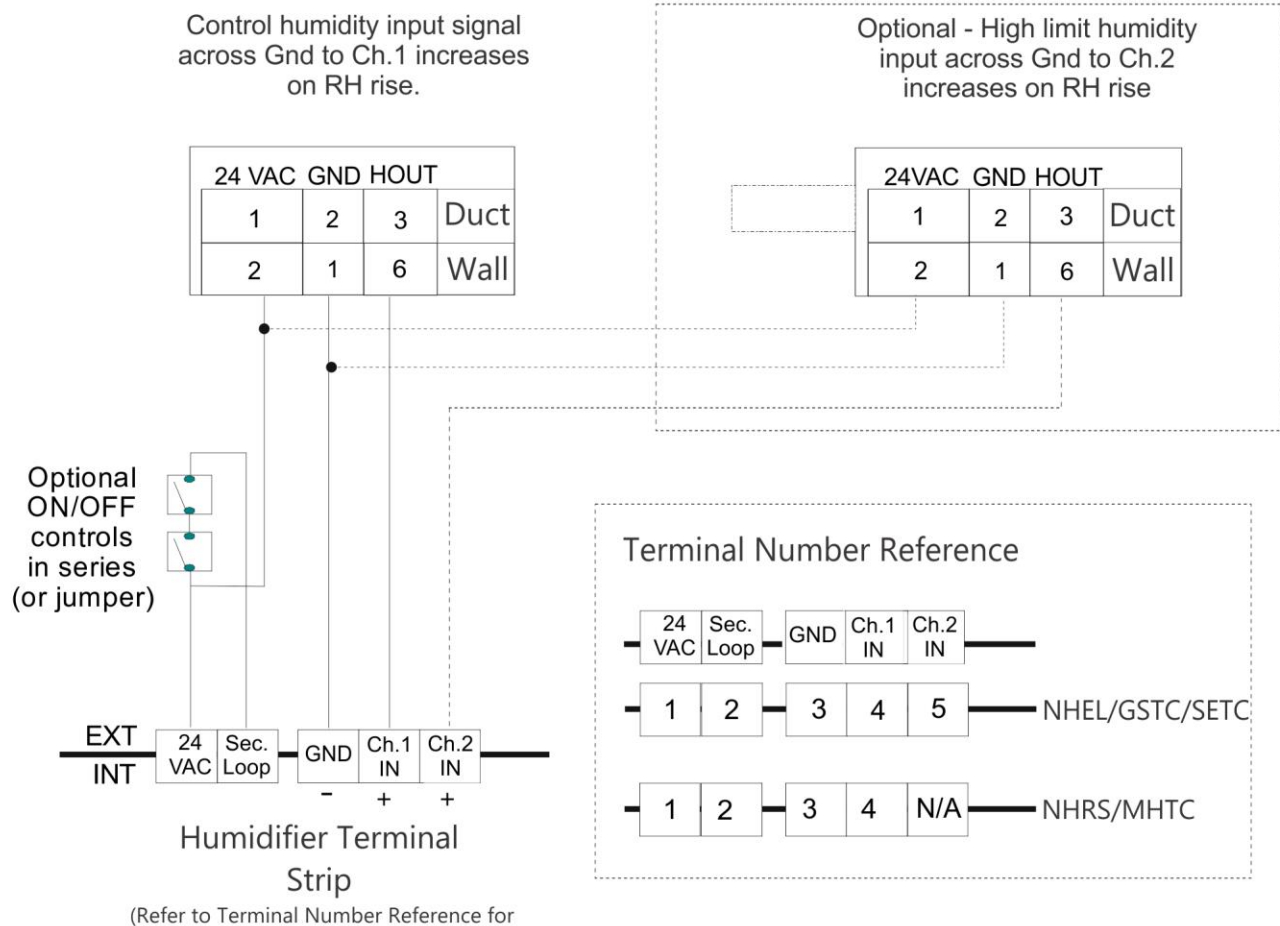
**Note:** If at any time this troubleshooting guide fails to provide the information needed Nortec's Technical Support Department can be reached at 1-866-NORTEC-1 to provide assistance.

# NORTEC 2-10V HUMIDITY SENSOR WIRING DIAGRAM

Use for NH-EL, GSTC, SETC and MHTC with:

Part #	Description
1509858	2-10V Wall Humidity Sensor
1509857	2-10V Duct Humidity Sensor

Warning: Failure to wire the humidity transducer in accordance with wiring diagram could permanently damage the electronics. Such errors will void the warranty. Cabling between transducers and unit should be shielded 18 AWG



NOTE 1: Nortec recommends using the Network Staged Modulation option when controlling multiple humidifiers with a single set of controls.