TOTALINE®

INSTALLATION AND OPERATING INSTRUCTIONS

Residential Humidistat

Part Number P110-0009

IMPORTANT: Read entire instructions before starting the installation.

SAFETY CONSIDERATIONS

Read and follow manufacturer instructions carefully. Follow all local electrical codes during installation. All wiring must conform to local and national electrical codes. Improper wiring or installation may damage thermostat.

Recognize safety information. This is the safety alert symbol ⚠. When the safety alert symbol is present on equipment or in the instruction manual, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety alert symbol. DANGER identifies the most serious hazards which will result in severe personal injury or death. WARNING signifies a hazard which could result in personal injury or death. CAUTION is used to identify unsafe practices which would result in minor personal injury or property damage.

GENERAL

Totaline® humidistats are wall-mounted, low-voltage humidistats which maintain room humidity by controlling the operation of a humidifier. The configurable humidity set point allows the homeowner to control the amount for humidity in the home.

The humidistat has been designed to work with the INTELLIMIST™ humidifier with MICROPULSE™ technology. The humidistat can also be used with conventional humidifiers. The humidistat can be configured for gas heating (furnace) or heat pump equipment configurations. The humidistat comes factory configured for furnace operation.

INSTALLATION

Step 1 — Humidistat Location — The humidistat should be mounted:

- approximately 5 ft from the floor
- close to or in a frequently used room, preferably on an inside partitioning wall
- on a section of wall without pipes or ductwork
- where temperature operating limits are within 41 to 104 F (5 to 40 C)
- where humidity operating range is within 0 to 95% relative humidity, non-condensing

The humidistat should not be mounted:

- close to a window, on an outside wall, or next to a door leading to the outside
- close to or in direct airflow from supply registers or return air grilles
- in areas with poor air circulation (such as behind a door or in an alcove)

Step 2 — Install Humidistat

⚠ **WARNING**

Before installing humidistat, turn off all power to the furnace. There may be more than one power disconnect. Electrical shock can cause injury or death.

1. Turn off all power to furnace and home thermostat.
2. Remove humidistat cover.
3. Route humidistat wiring through large hole in mounting base. See Fig. 1. Remove outer sheath from wires for added flexibility. Standard solid or multi-conductor wire should be used from the humidistat to the furnace, humidifier, thermostat, and outdoor air sensor (if installed). Size and length considerations are as follows: for a maximum run length of 36 ft, use 22 AWG (American Wire Gage) wire; for a maximum run length of 100 ft, use 18 AWG wire.
4. Level mounting base against wall and mark wall through 2 mounting holes in base (three holes are provided).
5. Drill two $3/16$-in. mounting holes in wall where marked.

⚠ **CAUTION**

Be careful not to drill into wiring in wall. Electrical shock could result.

6. Secure mounting base to wall with 2 screws and anchors provided. Ensure all wires exit through hole in mounting base.
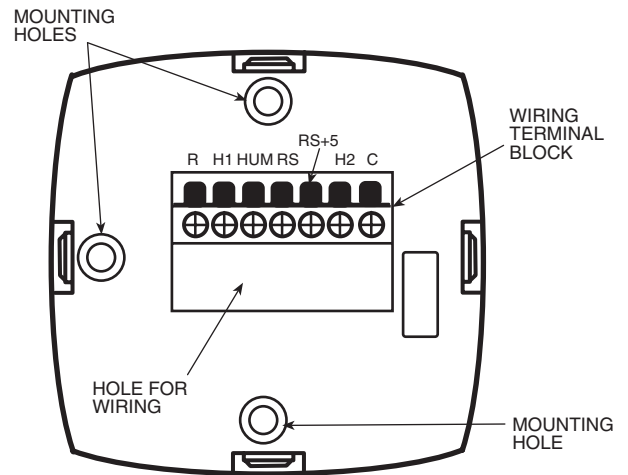

Fig. 1 — Humidstat Mounting and Wiring

7. Adjust wire length and routing to allow proper closure of the humidistat. Strip each wire at the end no more than $1/4$-in. to prevent adjacent wires from shorting together. Match and connect wires to terminals on the humidistat. See Fig. 2-5 and Table 1.

> **⚠ CAUTION**
>
> Improper wiring or installation may cause damage to the humidistat. Check to ensure wiring is correct.

8. Push excess wiring into wall. Seal hole in wall to prevent drafts.
9. Re-install humidistat cover.
10. Turn on power to furnace and thermostat. The humidistat will receive power from the furnace or thermostat, depending on how the humidistat was wired. The humidistat will be powered by 24 v, nominal (18 to 30 vac) through terminal R (+ 24 v) and terminal C (common). Power consumption is 5 va at 24 vac.
11. On power up the humidistat display shows the room humidity and the current humidity set point.
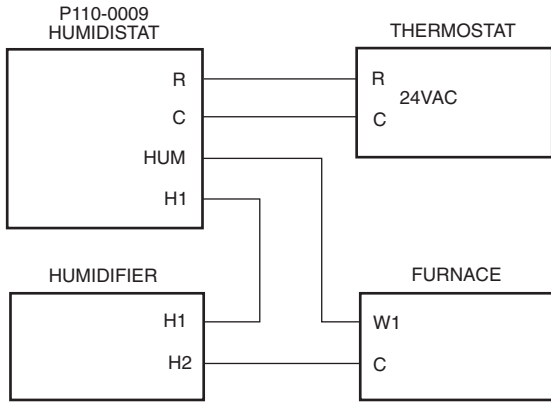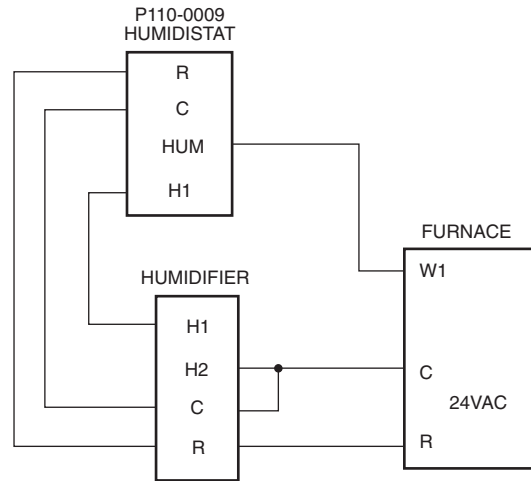

NOTE: If only one wire is available from the furnace to the humidistat, W1 may be obtained from the thermostat.

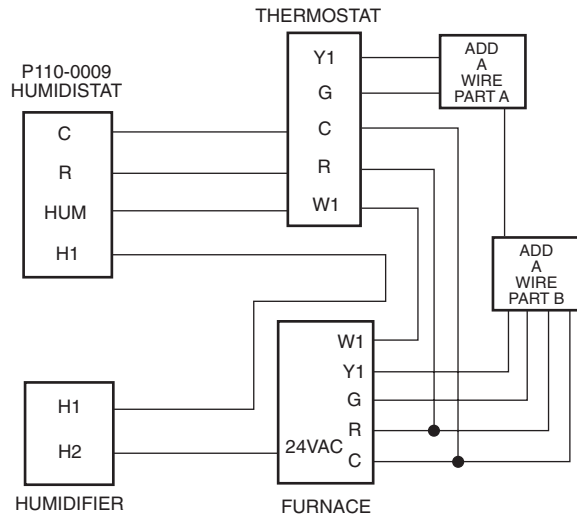**Fig. 2 — Humidistat Wiring
(Thermostat Wired to Humidistat)**
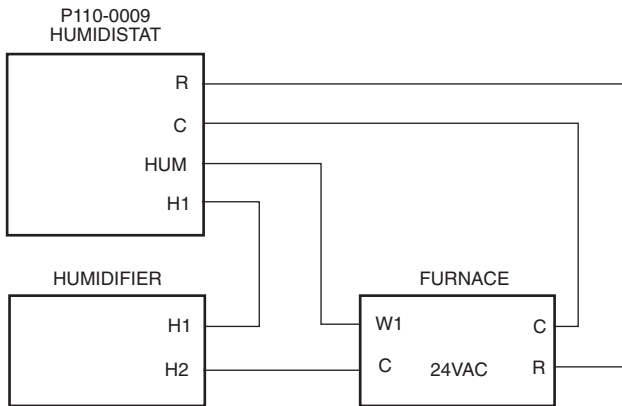
NOTE: A thermostat (not shown) is required to control furnace operation.

**Fig. 3 — Humidistat Wiring
(Thermostat Not Wired to Humidistat)**

NOTES:
1. The C and R terminals on the INTELLIMIST™ humidifier are not connected internally. They are provided for an easy 'tie-off point' when using one multi-conductor cable from the humidifier to the humidistat. In this case H2 would need a jumper to C.
2. A thermostat (not shown) is required to control furnace operation.

**Fig. 4 — Humidistat Wiring
(Thermostat Not Wired to Humidistat,
Terminals R and C on Humidifier are Used)**

NOTE: When only 5 wires are available to the thermostat and humidistat, a P474-0410 Add-A-Wire accessory may be used as shown.

**Fig. 5 — Humidistat Wiring with
Add-A-Wire™ Accessory**

Table 1 — Wiring Terminations

TERMINAL CONNECTION	FUNCTION
R	Power (24 v)
H1	Humidifier Control Power
HUM	Heating Circuit
RS	Remote Sensor
RS+5	Remote Sensor Power
H2	Humidifier Common
C	Common

Step 3 — Configure Advanced Setup — To enter into the advanced set up screens of the humidistat, press and hold down the On/Off button. See Fig. 6. While holding down the On/Off button, press the Flow button for 5 seconds. The Advanced Setup Step Number is shown in the top right corner of the screen. Use the On/Off button to advance through the steps. The Arrow buttons are used to change the configuration of the steps. There are 5 Advanced Setup steps. See Table 2. To exit Advanced Setup mode, press and hold down the On/Off button. While holding down the On/Off button, press the Flow button. The display will also return to normal after 30 seconds if no buttons are pressed.

MICROPULSE™ CONTROL (Step 1) — If the Humidistat is being used with an INTELLIMIST™ humidifier, the MICROPULSE Control configuration should be set to ON. If the Humidistat is being used with all other humidifiers, the MICROPULSE Control configuration must be set to OFF. Normal humidifiers will not run correctly if this configuration is set to ON. The default is ON.

NOTE: Setup Steps 2, 3, and 4 are only available if this configuration is set to ON. They are used with the MICROPULSE technology only.

CAPACITY (Step 2) — The Capacity (or tonnage) of the HVAC equipment is used to determine the amount of water released by the humidifier. This configuration is only shown if Step 1 is set to ON. The range is 1 to 7 tons. The default is 3 tons. When configuring the Capacity step, determine the tonnage of the HVAC equipment and then round down to the nearest whole number. For example, a furnace of 3.5 tons should be configured as 3.

HEAT PUMP (Step 3) — The Heat Pump configuration is used to configure the humidistat for heat pump or gas/electric HVAC equipment. This configuration is only shown if Step 1 is set to ON. The default is OFF. Change the configuration to ON if the humidistat is being used with a heat pump unit.

CONDENSATION CONTROL (Step 4) — The Condensation Control configuration is used to activate the Condensation Control function. This configuration is only shown if Step 1 is set to ON. When this func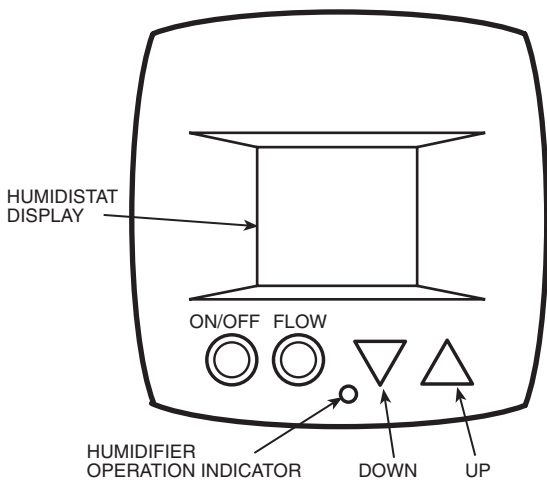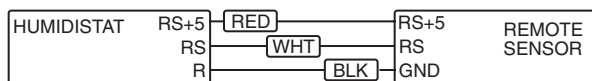tion is activated, the humidistat cuts back on the amount of humidity added to the air when the outside temperature drops below 50 F. A field-supplied and installed outdoor temperature sensor is required.

BACKLIGHT OPERATION (Step 5) — The backlight operation of the humidistat screen can be configured to be on continuously (configuration set to ON) or to light up only when buttons on the humidistat are being pressed (configuration set to OFF). The default is ON.

Table 2 — Advanced Setup Configuration

STEP	DESCRIPTION	RANGE	DEFAULT
1	MICROPULSE Control	OFF/ON	ON
2	Capacity	1-7	3
3	Heat Pump	OFF/ON	OFF
4	Condensation Control	OFF/ON	OFF
5	Backlight	OFF/ON	ON

Optional Outdoor Sensor Connection — The humidistat can accept an outdoor temperature sensor. This sensor is used to display outdoor temperature and, when used with an INTELLIMIST humidifier, provides input for Condensation Control. Totaline® sensors are recommended. The sensor may be wireless or hard-wired. See Fig. 7.

OPERATION

Current room humidity is always displayed. See Fig. 8. The humidistat will energize the humidifier when the humidity set point is greater than the current room humidity reading and the equipment fan is operating for at least 2 minutes. The red indicator light will glow to indicate a humidity demand. The MICROPULSE indicator will pulsate when used with an INTELLIMIST humidifier. The MICROPULSE indicator will remain on when used with conventional humidifiers.

Humidistat Lock — To prevent unauthorized use of the humidistat, the front panel buttons can be disabled. To disable or lock the humidistat, press and hold the On/Off button. While holding down the On/Off button, press and hold both Arrow buttons simultaneously. The humidistat buttons will be disabled and the LOCK icon will be displayed.

The humidistat is unlocked by the same procedure. Press and hold the On/Off button. While holding down the On/Off button, press and hold both Arrow buttons simultaneously. The humidistat buttons will be enabled and the LOCK icon will be removed from the display.
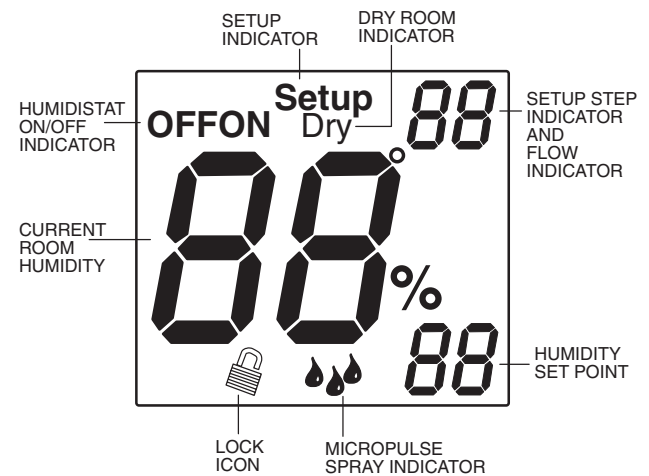

Fig. 6 — Humidistat Front Panel

Fig. 7 — Remote Temperature Sensor Wiring

Fig. 8 — Humidistat Display

On/Off Button Operation — The On/Off button is used to turn the humidistat on or off. When the humidistat is Off, the Off indicator will be displayed and the humidifier will not operate. When the humidistat is on, the current humidity set point is displayed and the humidifier will operate as required.

Humidity Set Point Buttons — The Up and Down Arrow buttons are used to configure the humidity set point. The humidity set point range is 0 to 99.

Flow Button Operation — The Flow button will increase or decrease the amount of moisture released into the air.

NOTE: This feature can only be used will INTELLIMIST™ humidifiers.

Press the Flow button once to increase the amount of moisture in the air. The HI indicator will be displayed. The increase will last for 2 hours and then the level will return to normal. The increased flow will also return to normal if the humidity demand is satisfied or if the humidistat is turned off.

Press the Flow button again to decrease the amount of moisture in the air. The LO indicator will be displayed. The decrease will last for 2 hours and then the level will return to normal.

Press the Flow button again to return to normal operation.

The HI and LO increase and decrease levels are factory preset and are not adjustable.

Dry Indicator — The Dry indicator is displayed whenever the room humidity is equal to or drops below 25%.

Display Outdoor-Air Temperature — Press the On/Off button for 5 seconds to display the outdoor-air temperature (the sensor wired to the humidistat at RS, RS+5, and R). The temperature is displayed in the lower right hand corner until any button is pressed. The display then returns to normal. If a sensor is not connected or the reading is out of range, then "--" is displayed.

The valid temperature range for the outdoor-air sensor is –40 to 140 F.

Condensation Control — When the Condensation Control feature is active, the humidistat checks the difference between the indoor and outdoor temperature. A field-supplied and installed outdoor temperature sensor is required. The humidistat will cut back on the amount of humidity released into the air which will lessen the amount of condensation present on the windows of the house.

MICROPULSE™ Technology — When used with an INTELLIMIST humidifier, the humidistat uses MICROPULSE technology to better control the amount of humidity released into the air. The humidistat takes into account the size of the HVAC equipment, the outdoor temperature, the type of equipment, the humidity in the room, and whether Condensation Control is required to determine the pulse rate of the INTELLIMIST humidifier. If any of these factors are not configured correctly, the humidifier will not work properly.

Low Humidity Levels — For homes that are located in very dry climates with low humidity levels (below 20% RH), it may take up to a week to notice an increase in humidity in the home. In low humidity areas, all the moisture has been evaporated from the wood, drywall, carpets, drapes, furniture, and other items. Until this moisture is replaced, these objects will absorb moisture from the air, causing very little relative humidity rise in the home.

As with any whole-house humidifier, the humidifier can only increase the moisture in the house when the fan is running. Therefore, in climates where little heating is required and the furnace and fan run only a few hours per day, the fan must operate during non-heating modes in order to increase the humidity in the home. This can be accomplished by running the furnace fan continuously. The humidifier will operate any time the humidity level is below the set point.

It may not be possible to increase the humidity to a high level (especially if the outside humidity is fairly low). For instance, when outdoor air at 40 F and 20% relative humidity is heated up to 72 F, the resulting humidity in the house is 8%. The amount of humidity that can be added to the air is limited by the airflow in the ductwork and the temperature of the air.

Calibrate Humidity Sensor — To calibrate the humidity sensor, perform the following procedure:

NOTE: It is recommended that the humidistat be installed in its final location and be powered up for at least 20 minutes before attempting to calibrate the sensor.

1. Press and hold the On/Off button.
2. While holding down the On/Off button, press and hold the Down Arrow button for 3 seconds. All the icons will appear on the screen.
3. Press the On/Off button. The humidity sensor calibration screen will be displayed.
4. Measure room humidity with an accurate psychrometer. Use the Up or Down Arrows to raise or lower the humidistat sensor reading to match the humidity reading of the psychrometer.
5. Press the On/Off button to return to normal operation. The humidistat will be in Off mode.

Restore Factory Settings — To restore the factory default settings, perform the following procedure:

1. Press and hold the On/Off button.
2. While holding down the On/Off button, press and hold the Down Arrow button for 3 seconds. All the icons will appear on the screen.
3. Press and hold down the Flow button for 3 seconds. A large Fd (factory defaults) will be displayed.
4. Press the On/Off button to restore the humidistat to factory default values. The humidity sensor calibration screen will be displayed. Do not press the Up or Down Arrows unless the sensor needs to be calibrated.
5. Press the On/Off button to return to normal operation. The humidistat will be in Off mode.

System Checkout — To check that the humidistat is working correctly, perform the following procedure:

1. Press and hold the On/Off and the Down Arrow buttons until all the icons on the screen appear.
2. Press the On/Off button again. The Test screen will be displayed.
3. Press the Flow button. The humidistat will check for proper operation between the humidistat and humidifier. The humidifier will be energized. The MICROPULSE™ indicator will be displayed and the red LED will energize.
4. Press the Flow button again. The humidistat and furnace test screen will be displayed. If the furnace is currently energized, the humidistat will display an H in the upper right corner. If the furnace is not energized, a dash will be displayed.
5. Press the On/Off button to exit the Test screen and enter the normal operation display.