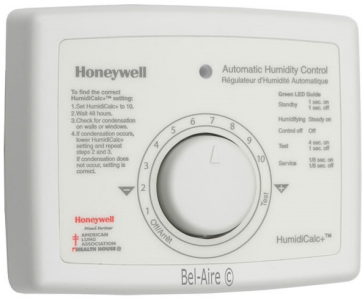

Honeywell H1008A,D Automatic Humidity Control Installation Guide

Honeywell

H1008A,D
Automatic Humidity Control

This is a legacy product document supported by Resideo. It is no longer manufactured

Contents

INSTALLATION INSTRUCTIONS

APPLICATION

The H1008A, D Automatic Humidity Controls with HumidiCalc+™ Software are duct mounted and provide automatic, low voltage, electronic control of by-pass flow-through, powered flow-through, steam, and drum humidifiers in central heating systems. The H1008D also controls heat/energy recovery units and dehumidifiers.
The H1008A, D are designed to automatically adjust the humidity level based on indoor temperature and humidity, inferred or measured outdoor temperature, and the frost factor dial setting. The frost factor setting is used to maintain a comfortable humidity level in the home while reducing moisture condensation inside windows. The

HumidiCalc+™ Software infers the outdoor temperature by monitoring equipment cycles and eliminating the need for an outdoor temperature sensor when used with gas or oil furnaces. Using the C7089H Outdoor Temperature Sensor (purchased separately), the H1008A, D also provides automatic humidity control for heat pump systems.

INSTALLATION

When Installing this Product…

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions to make sure the product is suitable for your application.
3. The installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

   Use the following specifications for this installation:

Electrical Ratings:
Power Supply: 24 Vac, 60 Hz.
Humidifier Control Relay Contacts:
Inductive: 2A full load, 10A locked rotor.
Resistive: 2A.
Thermostat/Furnace Load: 11 mA maximum at 24 Vac.

CAUTION
Voltage Hazard.
Power supply can cause electrical shock.
Disconnect power supply before beginning installation.
Location and Mounting
H1008A,D Automatic Humidity Control

 **IMPORTANT**
Do not install H1008 on supply air. Temperatures in excess of 120°F cause the control to go into error mode.
If mounting near an elbow area, keep the control 6 in. (152 mm) upstream from the elbow so the humidity and temperature sensor is exposed to the normal airflow (Fig.1).
Locate the control at least 12 in. (305 mm) upstream from the humidifier (or dehumidifier/ventilator supply air) in the return air duct where it can be exposed to the air stream of the return air. See Fig. 1.

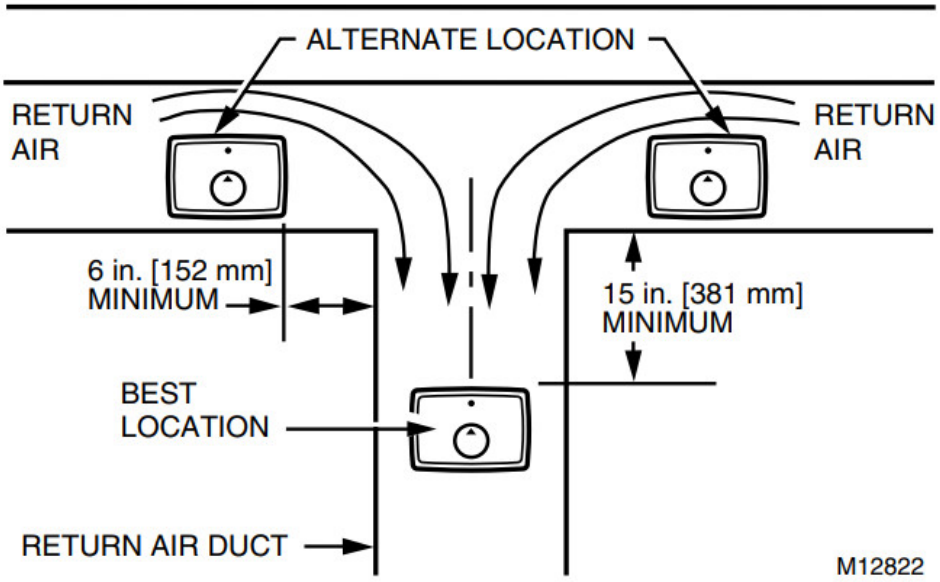

Fig. 1. Select duct location for control.

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Use the following procedure to mount the H1008A,D in the return air duct:

1. Remove the cover by placing your thumb in the bottom notch between the cover and the base and pulling out and up. See Fig. 2.

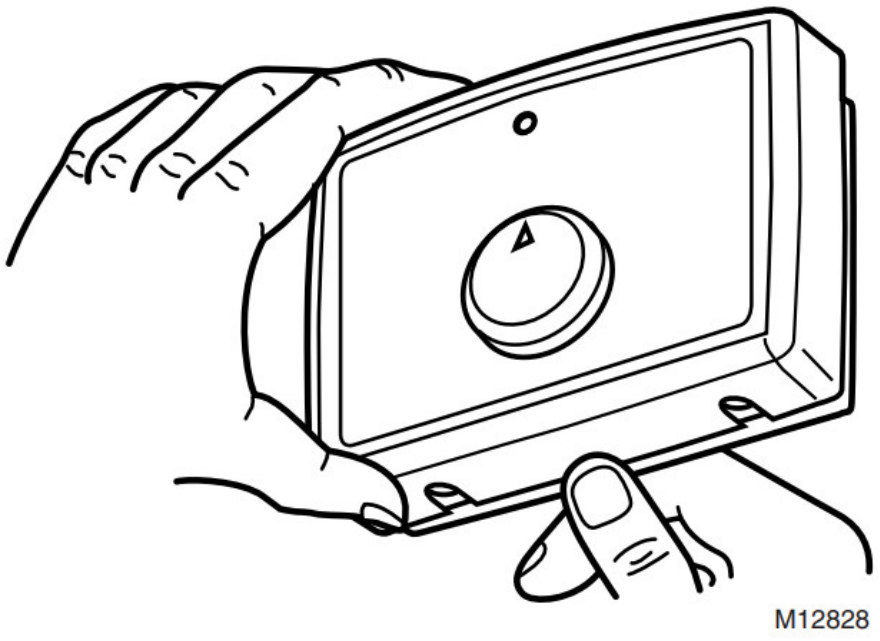

Fig. 2. Remove cover from base.

2. Drill 3/4 in. (19 mm) circular opening for the projection on the back of the base. See Fig. 3. Place the device on the duct and mark
   the mounting holes, orscrew in self-tapping screws.
   NOTE: Be sure the sheet metal surface is flat after drilling and cutting holes.

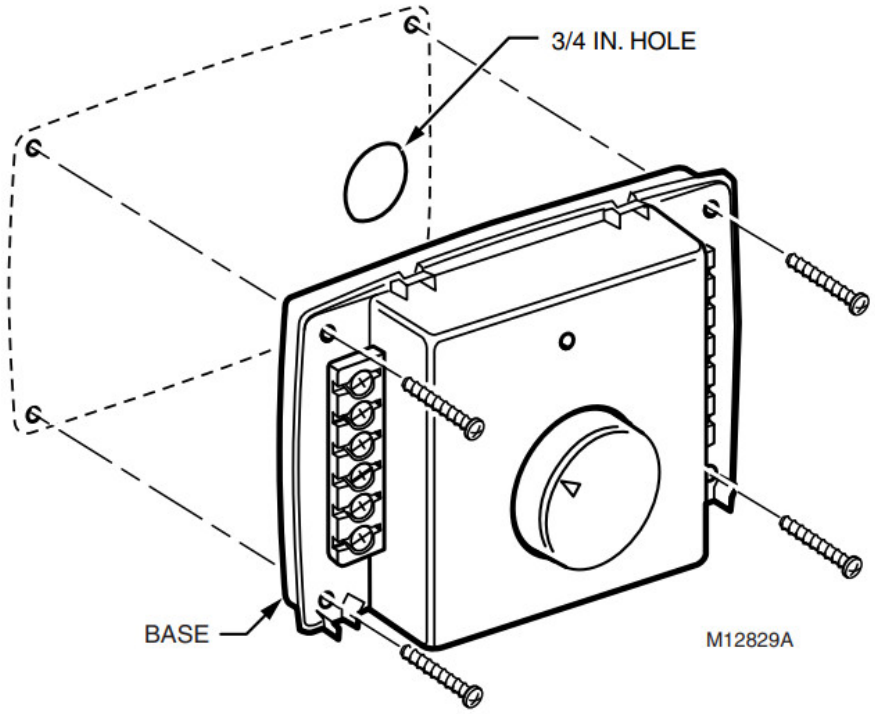

Fig. 3. Mount control on return air duct.

3. Mount the base on the duct using the four mounting screws provided. Tighten the screws until fully seated with no space between the base and the duct. See Fig. 3.
4. Run a low voltage wire from the humidifier (and dehumidifier or ventilator for H1008D) and equipment to the control terminals.
   See Fig. 5-9.
   Use either straight-in or wraparound wiring connections. Seelig. 4.
5. Snap the cover onto the base.

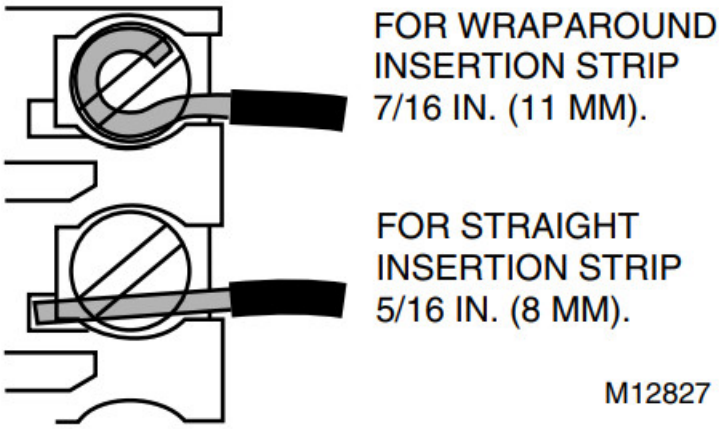

Fig. 4. Correct wiring technique.

C7089H Outdoor Temperature Sensor
NOTE: The C7089H Outdoor Temperature Sensor is recommended when using the control with heat pump.
Mount the sensor (purchased separately):
— out of direct sunlight on the North side of the house.
— at least three feet from dryer vents or other vents.
— above the expected snow line where ice and debris cannot cover it.
Use the following procedure for mounting:

1. Place the sensor in the clamp provided.
2. Insert the screw provided through both of the holes in the clamp and fasten the sensor in place.

WIRING

CAUTION
Voltage Hazard.
The power supply can cause electrical shock and injury.
Disconnect power supply before installation or servicing.
All wiring must comply with applicable local codes, ordinances, and regulations.

IMPORTANT
Use 18- to 22-gauge insulated wire for proper wiring. The stranded-tinned wire is recommended.
Connect the humidistat to the furnace for the following two reasons:

1. The control can determine the outdoor temperature.
2. The control knows when the furnace blower is operating, eliminating the need for current sensing relays.

IMPORTANT
When installing a steam-powered humidifier, be sure to cut steam jumper-wire for correct operation.
To wire the Automatic Humidity Control:

1. **Connect 24 Vac power to the 24 Vac HOT and COM terminals on the H1008A,D.**
2. Connect the humidifier to the two HUM terminals on the H1008A,D as shown in Fig. 5 through 8.
3. In furnace systems with two transformers, connect CG to the cooling system transformer common and connect

CW to the heating transformer common.

Be sure G and W connect to the R terminals of both transformers. (If only one transformer is used, leave the jumper on CG and CW. See Fig. 10.)

4. To wire the C7089H Outdoor Temperature Sensor, connect it to two OUT terminals on the H1008A,D.

IMPORTANT

For correct wiring, use 18- to 22-gauge insulated wire. Stranded-tinned wire with a maximum length of 300 ft (91m) is recommended.

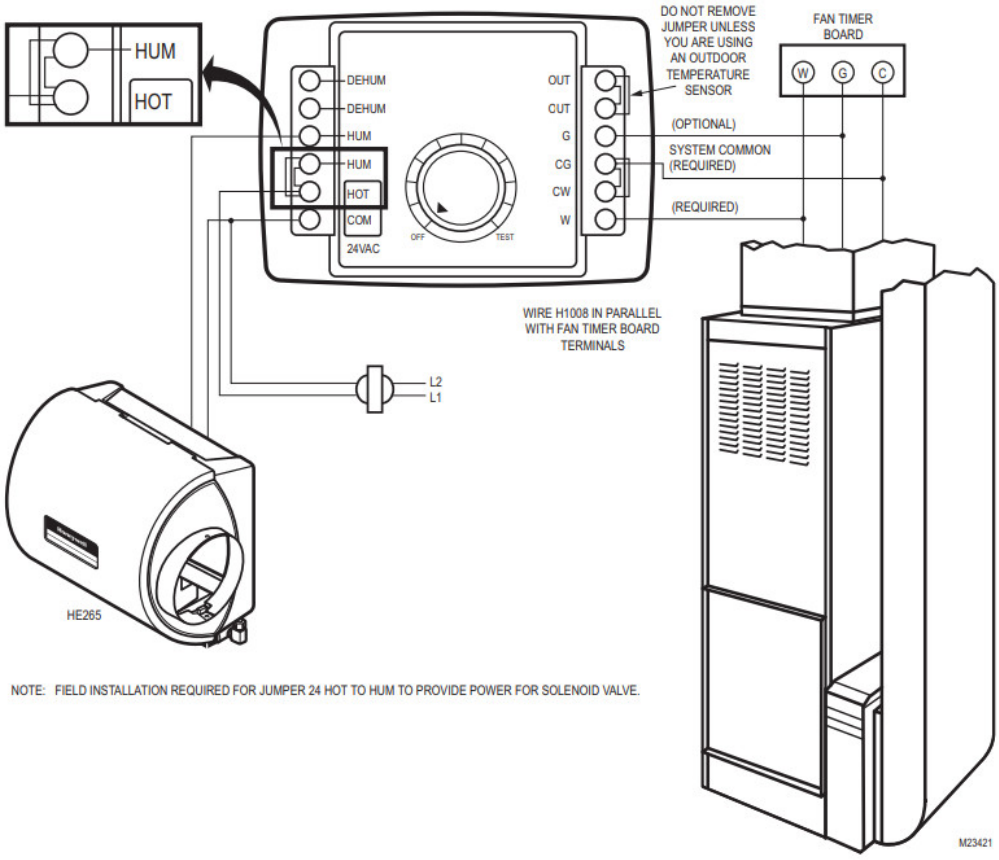

Fig. 5. Wiring for flow-through by-pass humidifiers.

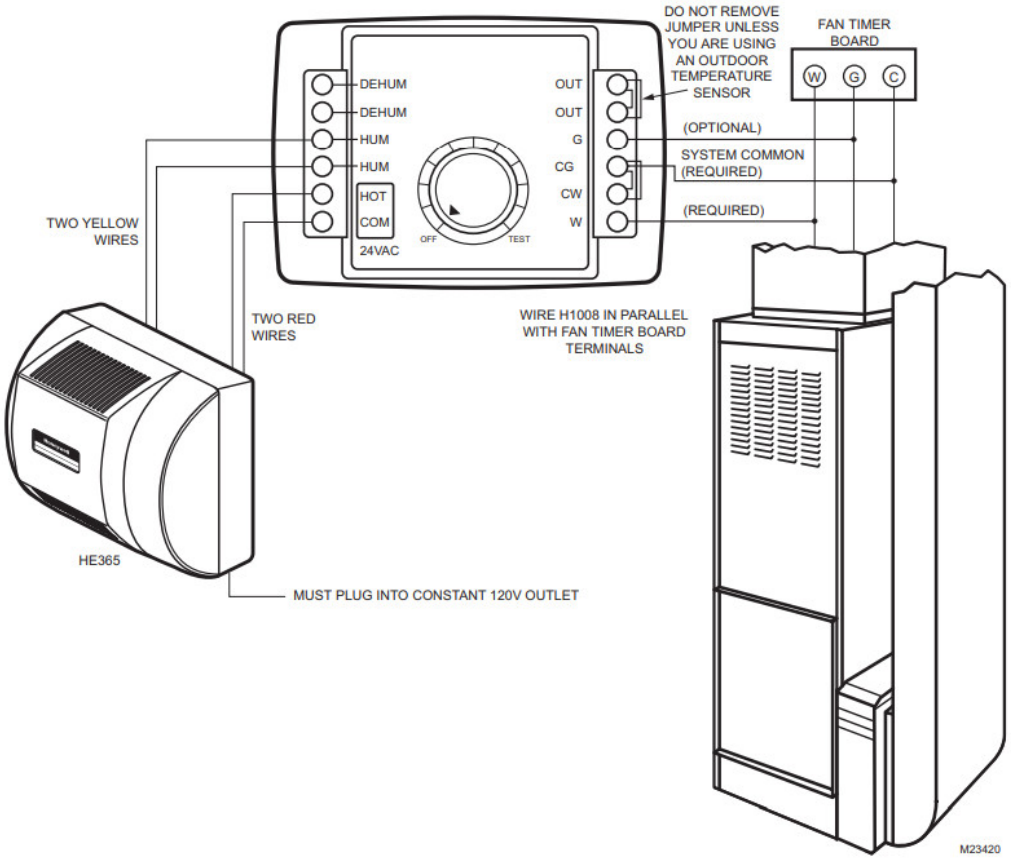

Fig. 6. Wiring for fan powered flow-through humidifiers.

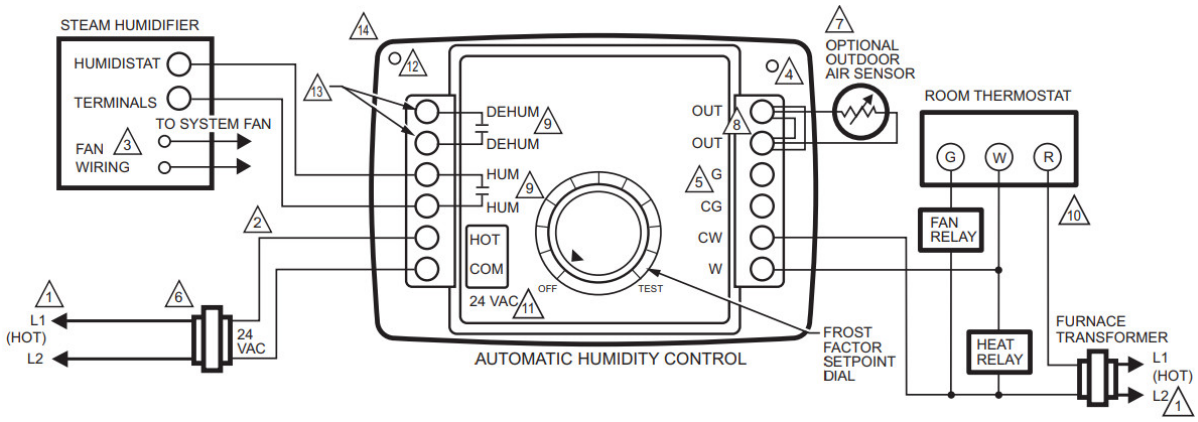

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Fig. 7. Wiring for steam humidifiers.

1. POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
2. 24V WIRING.
3. REFER TO THE STEAM HUMIDIFIER INSTALLATION INSTRUCTIONS TO WIRE THE SYSTEM FAN.
4. CUT JUMPER FOR STEAM HUMIDIFIER CONTROL.
5. FAN TERMINALS G AND CG ARE NOT USED IN THIS APPLICATION.
6. EXTERNAL TRANSFORMERS WERE NOT PROVIDED.
7. IF AN OUTDOOR TEMPERATURE SENSOR IS NOT USED, WIRE HEAT TERMINALS W AND CW TO THE FURNACE.
8. IF USING AN OUTDOOR TEMPERATURE SENSOR, REMOVE FACTORY-INSTALLED JUMPER.
9. ISOLATED RELAY CONTACTS.
10. HEAT ONLY APPLICATION SHOWN. SIMILAR WIRING IS REQUIRED IN A HEAT AND COOL SYSTEM

WITH ONE OR TWO TRANSFORMERS. WHEN HEAT AND FAN OPERATE SIMULTANEOUSLY WITH ONE RELAY, JUMP W TO G AND JUMP CG TO CW.

11. POWER SHOULD BE APPLIED TO THIS CONTROL AT ALL TIMES. DO NOT USE FAN BOARD HUMIDISTAT CONTACTS OR CURRENT SENSING RELAY.
12. CUT JUMPER FOR DEHUMIDIFIER APPLICATION. (DO NOT CUT FOR VENTILATION SYSTEM.)
13. DEUM TERMINALS SWITCH LOW VOLTAGE DEHUMIDIFIERS, HEAT/ENERGY RECOVERY UNITS OR EXTERNAL CONTACTORS THAT SWITCH HIGH VOLTAGE DEHUMIDIFIERS.
14. JUMPER AND DEHUM TERMINALS ARE NOT PRESENT ON H1008A MODEL.

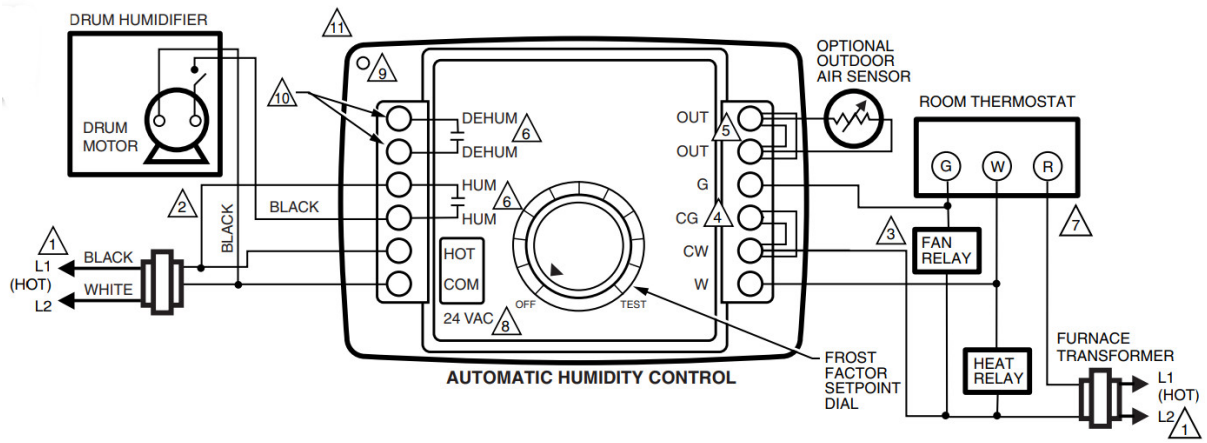

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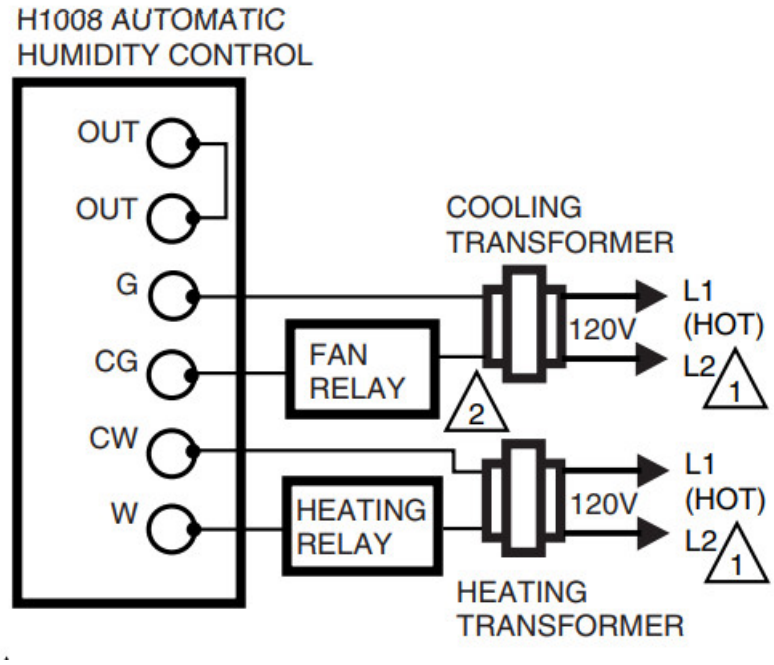
Fig. 8. Wiring for drum-style humidifiers.

1. POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
2. 24V WIRING.
3. TO PROVIDE HUMIDITY IN FAN MODE, CONNECT G AND CG TERMINALS TO THE FAN RELAY.
4. IN TWO TRANSFORMER SYSTEMS, REMOVE CW/CG FACTORY INSTALLED JUMPER.
5. IF USING AN OUTDOOR TEMPERATURE SENSOR, REMOVE THE FACTORY-INSTALLED JUMPER.
6. ISOLATED RELAY CONTACTS.
7. HEAT ONLY APPLICATION SHOWN. SIMILAR WIRING IS REQUIRED IN HEAT AND A COOL SYSTEM WITH ONE OR TWO TRANSFORMERS. WHEN HEAT AND FAN OPERATE SIMULTANEOUSLY WITH ONE RELAY, JUMP W TO G AND JUMP CG TO CW.
8. POWER SHOULD BE APPLIED TO THIS CONTROL AT ALL TIMES. DO NOT USE FAN BOARD HUMIDISTAT CONTACTS OR CURRENT SENSING RELAY.
9. CUT JUMPER FOR DEHUMIDIFIER APPLICATION. (DO NOT CUT FOR VENTILATION SYSTEM.)
10. DEUM TERMINALS SWITCH LOW VOLTAGE DEHUMIDIFIERS, HEAT/ENERGY RECOVERY UNITS OR EXTERNAL CONTACTORS THAT SWITCH HIGH VOLTAGE DEHUMIDIFIERS.
11. JUMPER AND DEHUM TERMINALS ARE NOT PRESENT ON H1008A MODEL.



M13307

Fig. 9. Wiring for a two-transformer system.

1. POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
2. IN SINGLE TRANSFORMER SYSTEMS, JUMPER CG AND CW.

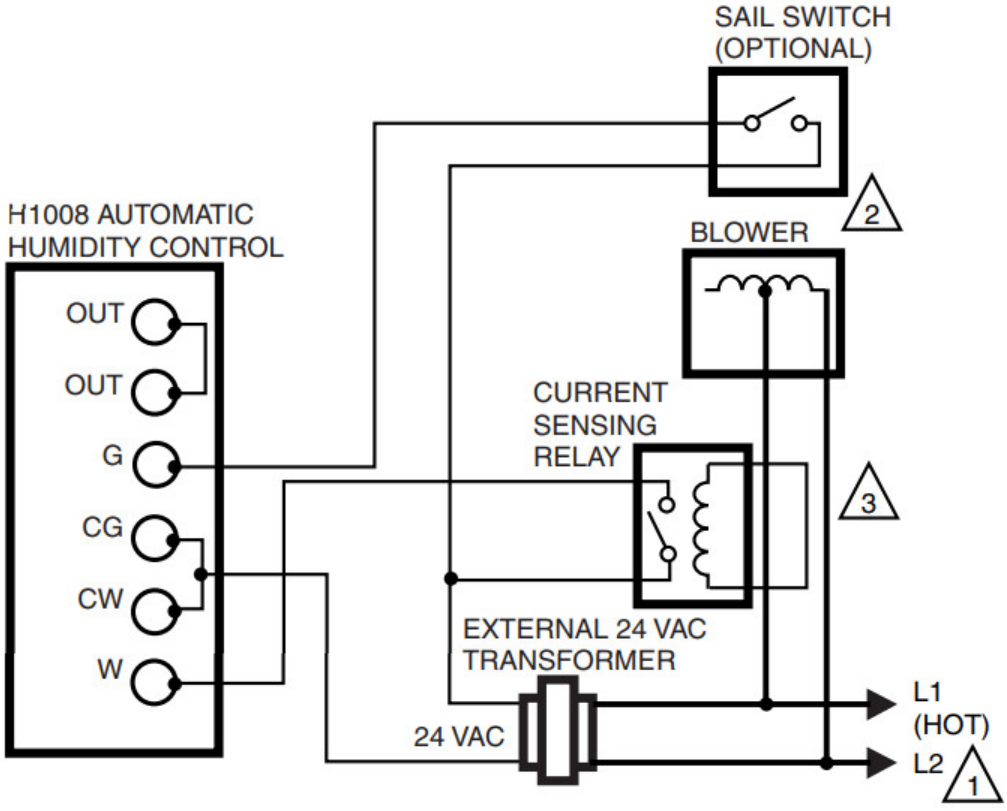


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Fig. 10. Wiring for R7997, R8184, RA116 and RA117 oil systems.

1. POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
2. OPTIONAL SAIL SWITCH IS MONITORING THE OUTPUT AIR OF THE BLOWER.
3. THE CURRENT SENSING RELAY IS MONITORING THE FURNACE BLOWER MOTOR.

SETTINGS

Adjustment

To adjust the frost factor:

- Set the frost factor dial to 10 and use Table 1 to adjust the frost factor—only one setting at a time.
- Increase the dial setting for more humidity, or
- Decrease the setting if moisture starts to build upon the inside of your windows.
- For more precise humidity adjustments, set the frost factor between the dial settings.
- Allow two days for the humidity level to subside before making further adjustments.
- Once the frost factor is set, no further adjustment is needed.

Table 1. Recommended Frost Factor Adjustment.

Humidity Level	Recommended Adjustment
Condensation on windows.	Decrease the frost factor dial by one setting.
Insufficient humidity.	Increase the frost factor dial by one setting.

The H1008A,D Automatic Humidity Control with HumidiCalc+™ Software is designed to provide an optimal 50°F (10°C) dewpoint. It automatically adjusts the humidity level to prevent window frost or condensation.
The H1008D activates a ventilator or dehumidifier to lower the indoor humidity level when the house dew-point rises above 58°F. Outdoor temperature is inferred (without the need for an outdoor sensor), or measured (with optional outdoor sensor) by the HumidiCalc+™ Software.
Indoor humidity and temperature information is measured by sensors located on the back of the control. The frost factor—set by using the frost factor dial—allows for variables in furnace oversizing, window insulation, and average daily outdoor temperature. The Automatic
Humidity Control with HumidiCalc+™ Software requires an initial adjustment period.

SYSTEM STATUS

The control has a green indicator light that flashes to indicate system status. Flash frequency represents system status. See Table 2 for status descriptions.

Table 2. System Status.

System Status	Flash Frequency
Error	1/8 second on, 1/8 second off.
Standby	1 second on, 1 second off.
Test	4 seconds on, 1 second off. Steady on with call for heat or fan.
Call for humidification/ dehumidification	Steady on.
Off	Off

ERROR STATUS

To troubleshoot the system where error status is indicated:

- If an outdoor temperature sensor is not used:
  — First check to ensure that the OUT terminals are properly shorted together.
  — Then cycle power to the device. If the control continues to flash in the error mode, replace the humidity control.
- If an outdoor temperature sensor is used, disconnect it, short the OUT terminals together and cycle power. If the error status remains, replace the humidity control.
  If the error status is eliminated, replace the outdoor temperature sensor. Control enters the error mode if any sensor reads out-ofrange. See Table 3.

Table 3. Error Modes.

Sensor	Error Indicated When . ..
Indoor temperature	The temperature reads below 45°F or greater than 120°F
RH sensor	RH reads 0 or 100%.
Outdoor temperature	The temperature reads less than -40°F or greater than 120°F
OUT terminals	At powerup, if the sensor is present and later opens or shorts. At powerup, if sensor terminals are jumped and later are open.

CHECKOUT

NOTE: The furnace blower must be on for the humidifier to operate (does not apply to steam humidifier applications).

IMPORTANT

— When an outdoor sensor is not installed, there may be a delay in humidification, caused by the method used to determine outdoor temperature conditions.

— If the furnace is off for more than 24 hours or the outdoor temperature sensor reads greater than 63°F, the control enters an auto off mode where it does not allow humidification until the furnace cycles or the outdoor temperature drops below 60°F.

— This auto-off mode prevents the humidifier and air conditioner from running simultaneously.

— The control may enter dehumidification mode if the house dewpoint rises above 58°F.

Outdoor Temperature Sensor Checkout

Check the thermistor sensor by comparing its resistance to the temperature as measured by an accurate thermometer. The resistance of the thermistor sensor increases as its temperature drops. Table 4 shows approximate sensor resistance values at various temperatures.

Test Mode

Use the following procedure to place the control in the test mode and call for humidification/dehumidification:

1. Turn the frost factor setpoint dial to the Test position.
2. Do one of the following:

   a. At the thermostat, with the system switch set to Heat and the fan switch to Auto, move the temperature setpoint about 10°F (6°C)

   above the room temperature to all for heat, or b. Set the System switch to Off and the Fan switch to On for continuous fan operation.
3. Verify humidifier and/or dehumidifier/ventilation unit is activated.

In the test mode, the indicator light remains on continuously with a call for heat or fan; otherwise, it remains lit for four seconds and turns off for one second.

This flashing sequence continues until the control is taken out of the test mode. After thirty minutes, the control automatically resets to the maximum frost factor setting. If system checkout is not completed within thirty minutes, the test mode can be extended by turning the dial back to one of the dial settings and then returning it to the test mode. After the system has checked out, return the control to the desired frost factor setting. See the Adjustment section.

Table 4. Sensor Resistance at Various Temperatures.

Resistance (K oh m)	333	99.	74.	56.	33.	20.	13.	10.0	8.	7.
Temperature (°F)	-40	-4	5	14	32	50	68	77	86	10.
Temperature (°C)	-40	-20	-15	-10	0	10	20	25	30	4.

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H1008A,D AUTOMATIC HUMIDITY CONTROL

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69-1185EF—05 M.S. Rev. 05-09

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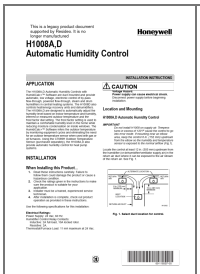	Honeywell H1008A,D Automatic Humidity Control [pdf] Installation Guide H1008A D, Automatic Humidity Control