Honeywell

H1008A,D
Automatic Humidity Controls

PRODUCT DATA

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 ventilators or 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 setting of the frost factor dial. The frost factor setting is used to maintain a comfortable humidity level in the home while reducing moisture condensation on inside windows. The HumidiCalc+™ Software infers the outdoor temperature by monitoring the equipment cycles and eliminates the need for an outdoor sensor on the most common single-stage, gas or oil forced air equipment.

FEATUERS

• The H1008A,D provides automatic control for by-pass flow-through, powered flow-through, steam and drum humidifiers in central heating systems.

• The H1008D also provides automatic control for dehumidification using heat/energy recovery ventilators or dehumidifiers.

• Patented Honeywell HumidiCalc+™ Software eliminates the need for an outdoor sensor on the most common single-stage, gas or oil forced air equipment.

• Combination temperature and humidity sensor accurately determines the dewpoint at the control location.

• Equipment connection can eliminate the need for a current sensing relay on the blower.

• Simple duct mount requires only a 3/4 in. (19 mm) circular duct opening for sensors.

• With the use of the C7089H Outdoor Temperature Sensor, the H1008A,D also provide automatic humidity control in heat pump and multi-stage systems.

• Automatically adjusts humidity level based on the frost factor set by the homeowner.

• Frost factor input allows for variances in furnace oversizing, window insulation and average daily climate temperature.

• System status light indicates normal operation, test mode and fault indication.

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SPECIFICATIONS

IMPORTANT
The specifications given in this publication do not include normal manufacturing tolerances. Therefore, this unit may not exactly match the listed specifications. Also, this product is tested under closely controlled conditions and some minor differences in performance can be expected if those conditions are changed.

TRADELINE® Models:
H1008A,D Automatic Humidity Control with HumidiCalc+™ Software: Includes template and four mounting screws.

Electrical Ratings:
Power Supply: 18-30 Vac, 60 Hz.
Power Consumption: 2.5 VA at 27 Vac.

Relay Contacts:
Inductive: 2A full load, 10A locked rotor at 24 Vac.
Resistive: 2A

Thermostat/Furnace Load: 11 mA maximum at 24 Vac.

Temperature Ratings:
Operating Range: 45°F to 88°F (7°C to 31°C).
Storage Range: -40°F to 150°F (-40°C to 66°C).

Humidity Ratings:
Always dehumidifies at 58°F and above dewpoint.
Allows humidification/dehumidification at 50°F and below dewpoint.
Does not allow humidification when dewpoint is above 50°F.

Dimensions:
Refer to Fig. 1.

Accessories:
C7089H Outdoor Temperature Sensor.

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 and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

CAUTION
Voltage Hazard. Power supply can cause electrical shock. Disconnect power supply before beginning installation.

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Home and Building Control Sales Office (check white pages of your phone directory).
2. Home and Building Control Customer Relations
   Honeywell Inc., 1985 Douglas Drive North
   Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Scarborough, Ontario M1V 4Z9.
International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.
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 that the humidity and temperature sensor is exposed to the normal airflow (Fig. 2).

Locate the control at least 12 in. (305 mm) upstream from the humidifier (or dehumidification/ventilator supply air) in the return air duct where it can be exposed to the air stream of the return air. See Fig. 2.

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. 3.

2. Drill 3/4 in. (19 mm) circular opening for the projection on the back of the base. See Fig. 4. Place the device on the duct and mark the mounting holes, or screw in the self-tapping screws.

   NOTE: Be sure the sheet metal surface is flat after drilling and cutting holes.

3. Mount the base on the duct using the four mounting screws provided. Tighten the screws firmly so the space between the base and the duct is seated. See Fig. 4.

4. Run a low voltage wire from the humidifier and equipment to the control terminals. See Fig. 6-11. Use either straight in or wraparound wiring connections. See Fig. 5.

5. Snap the cover onto the base.

C7089H Outdoor Temperature Sensor

NOTE: The C7089H Outdoor Temperature Sensor is required only when using the H1008A control with heat pump, multi-stage equipment or multi-zone applications.

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 the holes in the clamp and fasten the sensor in place.
WIRING

**CAUTION**

Voltage Hazard.
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.
Stranded-tinned wire is recommended.

To wire the Automatic Humidity Control:

**IMPORTANT**

When installing a steam-powered humidifier, be sure to cut the factory-installed steam jumper wire for proper operation.

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. 6 through 11.
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. 6.
4. To Wire the C7089H Outdoor Temperature Sensor, wire the sensor to the two OUT terminals on the H1008A,D.

Fig. 6. Wiring for two-transformer system.

**IMPORTANT**

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

**NOTE:** Connect the humidistat to the furnace for two reasons:
- The control can determine the outdoor temperature.
- The control knows when the furnace blower is operating, eliminating the need for current sensing relays.

Fig. 7. Wiring for flow-through by-pass humidifiers.
Fig. 8. Wiring for fan-powered flow-through humidifiers.
Fig. 9. Wiring for steam humidifiers.

Fig. 10. Wiring for drum-style humidifiers.
H1008A,D AUTOMATIC HUMIDITY CONTROL

Fig. 11. Wiring for R7997, R8184, RA116 and RA11 Oil Systems.

SYSTEM STATUS

The control has a green indicator light that flashes at varying frequencies to indicate system status. See Table 2 for status descriptions.

<table>
<thead>
<tr>
<th>System Status</th>
<th>Flash Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error</td>
<td>1/8 second on, 1/8 second off.</td>
</tr>
<tr>
<td>Standby</td>
<td>1 second on, 1 second off.</td>
</tr>
<tr>
<td>Test</td>
<td>4 seconds on, 1 second off. Steady on with call for heat or fan.</td>
</tr>
<tr>
<td>Call for humidification/dehumidification</td>
<td>Steady on.</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

Error Status

To troubleshoot the system when fault 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-of-range. See Table 3.

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Error Indicated When...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor temperature</td>
<td>Temperature reads below 45°F or greater than 120°F.</td>
</tr>
<tr>
<td>RH sensor</td>
<td>RH reads 0 or 100%.</td>
</tr>
<tr>
<td>Outdoor temperature</td>
<td>Temperature reads less than -40°F or greater than 120°F.</td>
</tr>
<tr>
<td>OUT terminals</td>
<td>At powerup, if sensor is present and later opens or shorts. At powerup, if sensor terminals are jumped and later are open.</td>
</tr>
</tbody>
</table>

Table 1. Recommended Frost Factor Adjustment.

| Condensation on windows | Decrease the frost factor dial by one setting. |
| Insufficient humidity   | Increase the frost factor dial by one setting. |
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, allow 12 to 24 hours for the humidifier to start operating. This delay is 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 is to prevent 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 values 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:

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 set to Auto, move the temperature setpoint about 10°F (6°C) above the room temperature to call 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.

<table>
<thead>
<tr>
<th>Resistance (K ohm)</th>
<th>333</th>
<th>99.2</th>
<th>74.3</th>
<th>56.1</th>
<th>32.9</th>
<th>19.9</th>
<th>12.5</th>
<th>10.0</th>
<th>8.04</th>
<th>6.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (°F)</td>
<td>-40</td>
<td>-4</td>
<td>5</td>
<td>14</td>
<td>32</td>
<td>50</td>
<td>68</td>
<td>77</td>
<td>86</td>
<td>9.5</td>
</tr>
<tr>
<td>Temperature (°C)</td>
<td>-40</td>
<td>-20</td>
<td>-15</td>
<td>-10</td>
<td>0</td>
<td>10</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>3.5</td>
</tr>
</tbody>
</table>