W7459A,B,C,D Solid State Economizer™ Logic Module

APPLICATION

The W7459 Solid State Economizer™ Logic Module is used with C7400 Solid State Enthalpy Sensors or C7660 Solid State Dry Bulb Temperature Sensors and M7405, M7415 or M8405 Damper Actuators to proportion outdoor and return air dampers for economizer control in commercial HVAC equipment.

FEATURES

- Operates from cooling space thermostat to provide a totally integrated control system.
- Solid state control package provides improved accuracy, reliability and stability.
- Combines solid state enthalpy or dry bulb changeover control, minimum damper position potentiometer (W7459A,B,D) and compressor staging relay functions.
- Optional differential enthalpy control provides greater economizer savings than single enthalpy control by selecting the most economical air for cooling (return or outdoor air).
- Housed in high-impact, glass-fiber reinforced plastic case to match lines of M7405, M7415, and M8405 Damper Actuators.
- Enthalpy setpoint on W7459 Economizer sets combination of air temperature and humidity suitable for free cooling.
- W7459A, B and D models include a built-in adjustable potentiometer to set minimum position and minimum amount of outdoor air admitted to meet minimum ventilation requirements. Terminals included for connecting an optional remote minimum position potentiometer for remote damper control.
- LED on W7459 indicates free cooling is available.
- W7459A mounts on M7415 Proportioning Actuator. It accepts input from discharge air temperature sensors, mixed air temperature sensors, enthalpy (or dry bulb temperature) sensors, and an optional remote minimum position potentiometer.
- W7459B mounts on M7405 Proportioning Actuator. It accepts direct digital control signals from W7401/ W7411 Logic Panel, C7400 Solid State Enthalpy Sensors, or C7660 Solid State Dry Bulb Temperature Sensors and an optional remote minimum position potentiometer.
- W7459C mounts on M8405A Three-Position Actuator. It accepts input from a single-pole, single-throw (spst) mixed or discharge air control and C7400 Solid State Enthalpy Sensors or C7660 Solid State Dry Bulb Temperature Sensors.
- W7459D mounts on M7415 Proportioning Actuator. It accepts input from discharge air temperature sensors, mixed air temperature sensors, or enthalpy sensors and optional remote minimum damper position potentiometers. W7459D returns to mechanical cooling when outdoor air enthalpy reaches preset limits.
SPECIFICATIONS

Models: See Table 1.

Electrical Ratings (W7459/C7400):
Input Voltage: 24 Vac, 50/60 Hz.
Power Consumption: 5.5 VA.
Relay Contact Ratings at 24 Vac:
Run: 1.5A.
Inrush: 3.5A.

Temperature Ratings:
Operating Ambient: -25°F to 125°F (-32°C to +52°C).
Humidity: 5% to 95% RH.

Approvals:
Underwriters Laboratories Inc. Flammability Rating UL94V-5V.

W7459D Maximum Outdoor Enthalpy Switching: See Table 2.

Enthalpy Input Connection (C7400):
2-wire (18, 20, 22 AWG) connection.
Can be mounted up to 200 ft away.

Dry Bulb Temperature Input (C7660):
2-wire (18, 20, 22 AWG) connection.
Can be mounted up to 200 ft away.

Dimensions: See Fig. 1.

Minimum Position Potentiometer:
Resistance: 250 ohms.
Setting: 0 to 100% of motor stroke.

Accessories:
4074EJM 620 ohm Resistor, Jumper, and 1.2K ohm Checkout Resistor.
4074EJQ Board for panel mounting W7459A,D.
C7046A Discharge Air Temperature Sensor.
C7150B Mixed Air Temperature Sensor.
C7400 Solid State Enthalpy Sensor.
C7660 Solid State Dry Bulb Temperature Sensor.
T675, T6031 or T775 Remote Bulb Control for low ambient lockout.
S963B1128 Remote Minimum Position Potentiometer to provide remote control of damper position.
ST6008 Energy Management Timer for occupied/unoccupied control.

Table 1. W7459 Economizer Models.

<table>
<thead>
<tr>
<th>Model</th>
<th>For Use with Actuator</th>
<th>Discharge Air Temperature Input</th>
<th>Minimum Position Potentiometer Adjustment</th>
<th>Terminals for Remote Minimum Damper Position</th>
<th>Output Relays</th>
</tr>
</thead>
<tbody>
<tr>
<td>W7459A</td>
<td>M7415</td>
<td>C7150B or C7046A Sensor</td>
<td>Yes</td>
<td>Yes</td>
<td>2 spdt</td>
</tr>
<tr>
<td>W7459B</td>
<td>M7405A</td>
<td>Direct digital control W7401/W7411 Logic Panel</td>
<td>Yes</td>
<td>Yes</td>
<td>1 spdt</td>
</tr>
<tr>
<td>W7459C</td>
<td>M8405</td>
<td>Spst control</td>
<td>No. Minimum position adjustment is built into M8405 Actuator.</td>
<td>No</td>
<td>2 spdt</td>
</tr>
<tr>
<td>W7459Da</td>
<td>M7415</td>
<td>C7150B or C7046A Sensor</td>
<td>Yes</td>
<td>Yes</td>
<td>2 spdt</td>
</tr>
</tbody>
</table>

a W7459D has a high enthalpy limit and defaults to mechanical cooling when the outdoor enthalpy reaches the preset limit. Do not use a dry bulb sensor for a high temperature limit.

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 Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
   1885 Douglas Drive North
   Minneapolis, Minnesota 55422-4386
In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, 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.
INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage product or cause a hazardous condition.
2. Check ratings given in instructions and on product to make sure 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
Electrical Shock or Equipment Damage Hazard. Can shock individuals or short equipment circuitry. Disconnect power supply before installation.

Location And Mounting

W7459 Economizer Control Package
The W7459 Economizer mounts on the side of M7405, M7415, or M8405 Damper Actuator. When planning installation, allow enough clearance for maintenance and service. Install the W7459 Economizer Control Package where it is protected from rain and snow. Mount the actuator; then secure the W7459 to the actuator with one mounting screw (supplied). See Fig. 2.

C7400 Solid State Enthalpy Sensor

OUTDOOR AIR SENSING
1. Mount the C7400 Solid State Enthalpy Sensor where it is exposed to freely circulating air and protected from rain, snow, and direct sunlight. Mount using any orientation.
2. Connect sensor to the SO and + terminals of the W7459A,B,C or D.

Table 2. W7459D Free Cooling Mode Switching.

<table>
<thead>
<tr>
<th>Outdoor RH (percent)</th>
<th>ON (LED on) with Decreasing Outdoor Enthalpy</th>
<th>OFF (LED off) with Increasing Outdoor Enthalpy</th>
</tr>
</thead>
<tbody>
<tr>
<td>25  83°F</td>
<td>±0.5°F (28°C ±0.3°C)</td>
<td>85°F ±0.5°F (29°C ±0.3°C)</td>
</tr>
<tr>
<td>50  78°F</td>
<td>±0.5°F (26°C ±0.3°C)</td>
<td>80°F ±0.5°F (27°C ±0.3°C)</td>
</tr>
<tr>
<td>60  76°F</td>
<td>±0.5°F (24°C ±0.3°C)</td>
<td>78°F ±0.5°F (26°C ±0.3°C)</td>
</tr>
<tr>
<td>75  73°F</td>
<td>±0.5°F (23°C ±0.3°C)</td>
<td>75°F ±0.5°F (24°C ±0.3°C)</td>
</tr>
</tbody>
</table>

Fig. 1. W7459 dimensions in in. (mm).

Fig. 2. Mounting W7459 on Damper Actuator.
RETURN AIR SENSING
1. For differential enthalpy control, mount a second C7400 Solid State Enthalpy Sensor in the return air duct.
2. Connect sensor to the SR and + terminals of the W7459A,B,C or D.

C7660 Solid State Dry Bulb Temperature Sensor

IMPORTANT
Do not use a C7660 with the W7459D or in a differential dry bulb application. Differential applications should only use enthalpy sensors.

OUTDOOR AIR SENSING
1. Mount the C7660 Solid State Dry Bulb Sensor where it is exposed to freely circulating air and protected from rain, snow, and direct sunlight.

NOTE: Mount in any orientation to scoop the maximum amount of air into the device. Make sure the air flowing into the inlet ports is linear.

NOTE: See Fig. 3 for typical organization of a W7459 Economizer System.

WIRING

CAUTION
Electrical Shock or Equipment Damage Hazard. Can shock individuals or short equipment circuitry. Disconnect power supply before installation.

Refer to Fig. 4 through 10 for typical wiring diagrams:

Fig. 3. Location of C7400 Outdoor and Return Air Sensors, C7150 Mixed Air Sensor, and C7046 Discharge Air Sensor in a W7459 Economizer System.
Fig. 4. W7459A/C7400 or W7459D/C7400 used in one-stage cooling system with single enthalpy changeover, M7415 Actuator, and one-stage cooling thermostat.
Fig. 5. W7459A/C7400 or W7459D/C7400 used in two-stage cooling system with single enthalpy changeover, and M7415 Actuator.

W7459A,C,D SOLID STATE ECONOMIZER™ LOGIC MODULE
Fig. 6. W7459A/C7400 or W7459D/C7400 used in two-stage cooling system with single enthalpy changeover, M7415 Actuator, and T775 Thermostat.

- POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- MOTOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.
- ENSURE THAT EQUIPMENT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.
- 1S IS AN ELECTRONIC SWITCH, WHICH CLOSES WHEN POWERED BY A 24 VAC INPUT.
- RELAYS 1K AND 2K ACTUATE WHEN THE ENTHALPY SENSED BY THE C7400 IS HIGHER THAN THE ENTHALPY SETPOINT A-D.
- FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY IF A C7400 ENTHALPY SENSOR IS ADDED TO SR AND + FOR DIFFERENTIAL ENTHALPY.
- T775 REQUIRES A MINIMUM OF THREE RELAY OUTPUTS: TWO FOR COOLING AND ONE FOR FAN CONTROL. A MAXIMUM OF ONE STAGE OF HEATING IS POSSIBLE WHEN THE SYSTEM IS WIRED IN THIS FASHION.
Fig. 7. W7459A/C7400 or W7459D/C7400 used in one-stage cooling system with differential enthalpy changeover, and M7415 Actuator.
POWER SUPPLY: PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

MOTOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

ENSURE THAT EQUIPMENT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.

1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

RELAYS 1K AND 2K ACTUATE WHEN THE ENTHALPY SENSED BY THE C7400 IS HIGHER THAN THE ENTHALPY SETPOINT A-D.

USE R8222N WITH PILOT DUTY CONTACTS FOR 3K. CONTACTS 3K1, 3K2 MAKE WHEN ENTHALPY IS BELOW SETPOINT AND ECONOMIZER IS USED FOR FIRST STAGE OF COOLING.

FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO SR AND + FOR DIFFERENTIAL ENTHALPY.

Fig. 8. W7459A/C7400 or W7459D/C7400 used in T7400/W7400 System with M7415 Actuator.
Fig. 9. W7459B/C7400 used in two-stage cooling system with single enthalpy changeover, and M7405 Actuator.
Optional Applications

Remote Minimum Position Control
Remote control of outdoor air dampers is desirable when potential exists for temporary additional ventilation. The potentiometer in W7459 controls damper minimum position.

Adding S963B1128 Remote Manual Potentiometer allows occupants to open dampers beyond minimum position for additional ventilation. Connect potentiometer as shown in Fig. 11.
Adjusting Minimum Damper Position
Minimum position potentiometer keeps outdoor air damper from closing completely during system operation to provide ventilation.

Minimum Position Adjustment W7459A and W7459D
1. Disconnect mixed air sensor from terminals T and T1.
2. Make sure either factory-installed jumper is in place across terminals P and P1 or if remote damper positioner is required, that it is wired according to Fig. 11 and turned fully clockwise.
3. Connect 24 Vac across terminals TR and TR1.
4. Adjust potentiometer on face of W7459 with screwdriver to desired minimum position.

W7459B
1. Make sure either the factory-installed jumper is in place across terminals P and P1 or if remote damper positioner is required, that it is wired according to Fig. 11 and turned fully clockwise.
2. Connect jumper across terminals M1 and M3.

IMPORTANT
Do not contact or connect jumper to M2. If M2 is jumped to M1, the motor will not respond to the controller.
3. Connect 24 Vac across terminals TR and TR1.
4. Adjust potentiometer on face of W7459 with screwdriver to desired minimum position.

W7459C
1. Connect 24 Vac at terminals TR and X.

NOTE: Ensure that terminal D is not connected.
2. Adjust thumbwheel on motor for desired minimum position.

Outdoor Enthalpy Changeover Setpoint
The outdoor enthalpy changeover setpoint is used to return the outdoor air damper to minimum position when enthalpy rises above setpoint. Enthalpy setpoint scale markings, located on W7459, are A, B, C, and D; see Fig. 13 for corresponding control point. The factory-installed 620 ohm jumper must be in place across terminals SR and +.

Differential Enthalpy Changeover Setting
Differential enthalpy control uses two C7400 Solid State Enthalpy Sensors connected to one W7459 Economizer Control. The economizer compares outdoor air to the return air instead of to a set point (as with single enthalpy). Turn enthalpy setpoint potentiometer fully clockwise [cw arrow] to D setting. The economizer selects the lower enthalpy air (return or outdoor) for cooling; for example, when outdoor air has lower enthalpy than return air, the outdoor air damper opens to bring in outdoor air for free cooling.
High Enthalpy Limit

W7459D Economizer Logic Module has a high outdoor air enthalpy limit feature when used in differential enthalpy mode. The limit feature prevents using high enthalpy outdoor air when return air enthalpy is higher than outdoor air. See Table 2 in the Specifications section.

OPERATION

Integrated Economizer System Single (Outdoor) Enthalpy

The purpose of an economizer is to use outdoor air for cooling whenever possible, to reduce compressor operation. The W7459 Economizer System, when wired as shown in Fig. 4 through 10, responds to a signal from the cooling thermostat. This system uses the C7400 Solid State Enthalpy Changeover Sensor or the C7660 Solid State Dry Bulb Temperature Sensor. The C7400 responds to both dry bulb temperature and humidity, allowing use of outdoor air at higher temperatures for free cooling when humidity is low. The C7660 responds to only dry bulb temperature and should be used only in dry, arid climates and in single enthalpy applications.

The economizer functions as a true first stage of cooling and provides maximum fuel economy during the cooling cycle. The economizer is automatically locked out during heating. It holds the outdoor air damper at the minimum position setting.

On a call for cooling by the space thermostat, the system operates as follows:

OUTDOOR AIR ENTHALPY IS BELOW SETPOINT

1. The outdoor air damper is proportioned open (and the return air damper is proportioned closed) to maintain between 50°F and 56°F at the mixed/discharge air sensor.
2. During economizer operation, mechanical cooling is operated by the second stage of cooling on the space thermostat.

### Table: Approximate Dry Bulb Temperature

<table>
<thead>
<tr>
<th>CONTROL CURVE</th>
<th>CONTROL POINT</th>
<th>APPROX. °F (°C) AT 50% RH</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>73 (23)</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>70 (21)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>67 (19)</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>63 (17)</td>
<td></td>
</tr>
</tbody>
</table>

### Diagram: W7459/C7400 performance characteristics for enthalpy changeover settings.

**Fig. 13.** W7459/C7400 performance characteristics for enthalpy changeover settings.
OUTDOOR AIR ENTHALPY IS ABOVE SETPOINT

1. The outdoor air damper closes to its minimum position.
2. A call for cooling from the space thermostat brings on mechanical cooling.
3. During the unoccupied period, the actuator spring return moves the outdoor air damper to the fully closed position.

NOTE: See Fig. 3 for representative locations of economizer system devices.

CHECKOUT AND TROUBLESHOOTING

Check the W7459 for proper operation. Table 3 through 5 describe how to simulate various environmental conditions. Make necessary minor adjustments to the minimum position until desired operation is obtained.

If the economizer system does not operate properly, check individual components of the system according to the instructions provided with each device.

If the other components operate properly when disconnected from the W7459, but the system (as a whole) does not, replace the W7459.

CAUTION

Equipment Damage Hazard. Excessive force can damage controls. Use a small screwdriver when adjusting enthalpy changeover and minimum damper position controls.

To check motor, jumper T to T1 to bypass the mixed air sensor.

Table 3. Troubleshooting procedure for W7459A or W7459D Economizer Installed on M7415 Actuator.

<table>
<thead>
<tr>
<th>Checkout Procedure</th>
<th>Proper Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. a. Disconnect power at TR and TR1.</td>
<td>—</td>
</tr>
<tr>
<td>b. Disconnect Jumper P to P1.</td>
<td>—</td>
</tr>
<tr>
<td>c. Jumper TR to 1.</td>
<td>—</td>
</tr>
<tr>
<td>d. Jumper T1 to T.</td>
<td>—</td>
</tr>
<tr>
<td>e. If connected, remove C7400 Solid State Enthalpy Sensor from terminals S0 and +.</td>
<td>LED is off.</td>
</tr>
<tr>
<td>f. Apply power (24 Vac) to terminals TR and TR1.</td>
<td>Motor is in closed position.</td>
</tr>
<tr>
<td>2. a. Disconnect factory-installed 620 ohm resistor from terminals SR and +.</td>
<td>LED turns on (on A model only, for D model, go to step 3) Motor drives toward open.</td>
</tr>
<tr>
<td>3. a. To simulate high and low enthalpy (single enthalpy sensor), reconnect factory-installed 620 ohm resistor from terminals SR and +. Connect 1.2K ohm 4074EJM Checkout Resistor across terminals SO and +.</td>
<td>—</td>
</tr>
<tr>
<td>c. Turn enthalpy setpoint potentiometer to “D”.</td>
<td>LED turns off, indicating high enthalpy. Motor drives toward closed.</td>
</tr>
<tr>
<td>d. Disconnect the 1.2K ohm checkout resistor.</td>
<td>—</td>
</tr>
<tr>
<td>4. a. To verify sensor operation, reconnect the + lead of outdoor enthalpy sensor to the + terminal of W7459.</td>
<td>Milliammeter indication is between 3 and 25 mA if sensor is operating properly. If milliammeter indicates zero, the sensor may be wired backward.</td>
</tr>
<tr>
<td>b. Connect a DC milliammeter between terminal SO of the W7459A and terminal S of the enthalpy sensor. See Fig. 14 (positive meter lead to terminal S of the enthalpy sensor).</td>
<td>Milliammeter indication is between 3 and 25 mA if sensor is operating properly. If milliammeter indicates zero, the sensor may be wired backward.</td>
</tr>
<tr>
<td>c. When using differential enthalpy, check the return air enthalpy sensor by connecting a DC milliammeter between terminal SR of the W7459A and terminal S of the return air enthalpy sensor. (Positive meter lead to terminal S of the enthalpy sensor.)</td>
<td></td>
</tr>
</tbody>
</table>
Table 4. Troubleshooting procedure for W7459B Economizer installed on M7405 Actuator.

<table>
<thead>
<tr>
<th>Checkout Procedure</th>
<th>Proper Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. a. Disconnect power at TR and TR1.</td>
<td>—</td>
</tr>
<tr>
<td>b. Disconnect Jumper P to P1.</td>
<td>—</td>
</tr>
<tr>
<td>c. Jumper M1 to 3.</td>
<td>—</td>
</tr>
<tr>
<td>d. Jumper M2 to 2. M3 remains unconnected.</td>
<td>—</td>
</tr>
<tr>
<td>e. If connected, remove C7400 Solid State Enthalpy Sensor from terminals S_O and +.</td>
<td>LED is off.</td>
</tr>
<tr>
<td>f. Apply power (24 Vac) to terminals TR and TR1.</td>
<td>Motor is in closed position.</td>
</tr>
<tr>
<td>2. a. Disconnect factory-installed 620 ohm resistor from terminals S_R and +.</td>
<td>LED turns on.</td>
</tr>
<tr>
<td></td>
<td>Motor drives toward open.</td>
</tr>
<tr>
<td>3. a. To simulate high and low enthalpy (single enthalpy sensor),</td>
<td>—</td>
</tr>
<tr>
<td>reconnect factory-installed 620 ohm resistor from terminals S_R and +.</td>
<td>—</td>
</tr>
<tr>
<td>Connect 1.2K ohm 4074EJM Checkout Resistor across terminals S_O and +.</td>
<td>—</td>
</tr>
<tr>
<td>b. Turn enthalpy setpoint potentiometer to A.</td>
<td>LED turns on, indicating low enthalpy. Motor drives toward open.</td>
</tr>
<tr>
<td>c. Turn enthalpy setpoint potentiometer to D.</td>
<td>LED turns off, indicating high enthalpy. Motor drives toward closed.</td>
</tr>
<tr>
<td>d. Disconnect the 1.2K ohm checkout resistor.</td>
<td>—</td>
</tr>
<tr>
<td>4. a. To verify sensor operation, reconnect the + lead of outdoor enthalpy sensor</td>
<td>—</td>
</tr>
<tr>
<td>to the + terminal of W7459.</td>
<td>—</td>
</tr>
<tr>
<td>b. Connect a DC milliammeter between terminal S_O of the W7459B and terminal S of the enthalpy sensor. See Fig. 14 (positive lead to terminal S of the enthalpy sensor).</td>
<td>Milliammeter indication is between 3 and 25 mA if sensor is operating properly. If milliammeter indicates zero, the sensor may be wired backward.</td>
</tr>
<tr>
<td>c. When using differential enthalpy, check the return air enthalpy sensor by connecting a DC milliammeter between terminal S_R of the W7459B and terminal S of the return air enthalpy sensor. (Positive lead to terminal S of the enthalpy sensor.)</td>
<td>Milliammeter indication is between 3 and 25 mA if sensor is operating properly. If milliammeter indicates zero, the sensor may be wired backward.</td>
</tr>
</tbody>
</table>
### Table 5. Troubleshooting procedure for W7459C Economizer installed on M8405 Actuator.

<table>
<thead>
<tr>
<th>Checkout Procedure</th>
<th>Proper Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. a. Disconnect power at TR and TR1.</td>
<td>—</td>
</tr>
<tr>
<td>b. Disconnect wires from terminals 6, X and D.</td>
<td>—</td>
</tr>
<tr>
<td>c. Jumper TR1 to 1.</td>
<td>—</td>
</tr>
<tr>
<td>d. Jumper 6 to D.</td>
<td>—</td>
</tr>
<tr>
<td>e. If connected, remove C7400 Solid State Enthalpy Sensor from terminals S&lt;sub&gt;O&lt;/sub&gt; and +. Ensure factory-installed 620 ohm resistor is connected to terminals S&lt;sub&gt;R&lt;/sub&gt; and +.</td>
<td>LED is off.</td>
</tr>
<tr>
<td>f. Apply power (24 Vac) to terminals TR and TR1.</td>
<td>Motor is in closed position.</td>
</tr>
<tr>
<td>2. a. Disconnect factory-installed 620 ohm resistor from terminals S&lt;sub&gt;R&lt;/sub&gt; and +.</td>
<td>LED turns on. Motor drives toward open.</td>
</tr>
<tr>
<td>3. a. To simulate high and low enthalpy (single enthalpy sensor), reconnect factory-installed 620 ohm resistor from terminals S&lt;sub&gt;R&lt;/sub&gt; and +. Connect 1.2K ohm 4074EJM Checkout Resistor across terminals S&lt;sub&gt;O&lt;/sub&gt; and +.</td>
<td>—</td>
</tr>
<tr>
<td>b. Turn enthalpy setpoint potentiometer to A.</td>
<td>LED turns on, indicating low enthalpy. Motor drives toward open.</td>
</tr>
<tr>
<td>c. Turn enthalpy setpoint potentiometer to D.</td>
<td>LED turns off, indicating high enthalpy. Motor drives toward closed.</td>
</tr>
<tr>
<td>d. Disconnect the 1.2K ohm checkout resistor.</td>
<td>—</td>
</tr>
<tr>
<td>4. a. To verify sensor operation, reconnect the + lead of outdoor enthalpy sensor to the + terminal of W7459.</td>
<td>—</td>
</tr>
<tr>
<td>b. Connect a DC milliammeter between terminal S&lt;sub&gt;O&lt;/sub&gt; of the W7459C and terminal S of the enthalpy sensor. See Fig. 14 (positive meter lead to terminal S of the enthalpy sensor).</td>
<td>Milliammeter indication is between 3 and 25 mA if sensor is operating properly. If milliammeter indicates zero, the sensor may be wired backward.</td>
</tr>
<tr>
<td>c. When using differential enthalpy, check the return air enthalpy sensor by connecting a DC milliammeter between terminal S&lt;sub&gt;R&lt;/sub&gt; of the W7459C and terminal S of the return air enthalpy sensor (positive meter lead to terminal S of the enthalpy sensor).</td>
<td>Milliammeter indication is between 3 and 25 mA if sensor is operating properly. If milliammeter indicates zero, the sensor may be wired backward.</td>
</tr>
</tbody>
</table>

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