

# INSTALLER'S GUIDE

Library	Service Literature
Product Section	Unitary
Product	Unitary Accessories
Model	Econ., Dmprs., Motors, Low Ambient
Literature Type	Installer's Guide
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ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES.

**Model:**  
**BAYENTH001A**

**Used With:**  
BAYECON054,55&73  
BAYECON086A,088A  
BAYECON101,102,103,104A  
BAYECON200,201,203,204A

## Enthalpy Sensor Control

**IMPORTANT --** This is customer property and is to remain with this unit. Please return to service information pack upon completion of work.



### General Information:

The solid state enthalpy sensor is used with a solid state economizer actuator motor.

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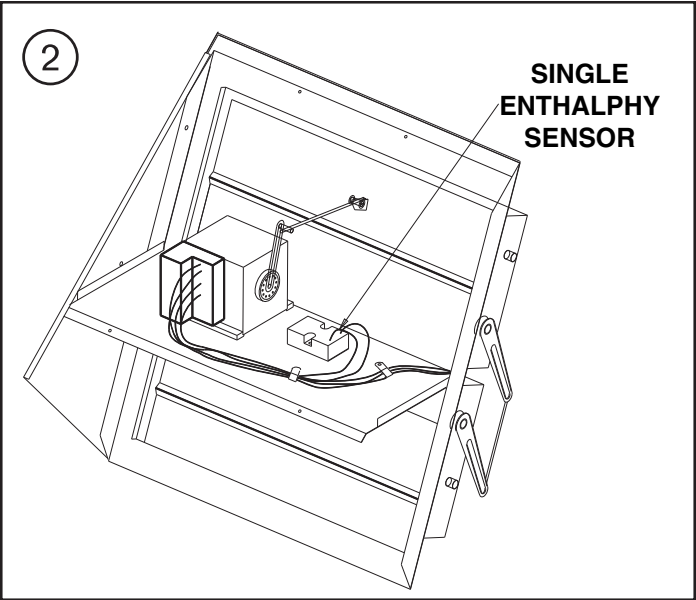
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### Installation For BAYECON054,055 Downflow Discharge Economizer:

**⚠ WARNING:** TO PREVENT INJURY OR DEATH DUE TO ELECTRICAL SHOCK OR CONTACT WITH MOVING PARTS. LOCK UNIT DISCONNECT SWITCH IN OPEN POSITION BEFORE SERVICING UNIT.

#### Single Enthalpy Sensor (Outdoor Air Only)

- Units with economizers already installed:** When installing the enthalpy sensor after the economizer has been installed remove the economizer/filter access panel located on the return side of the unit.
- Remove the two screws securing the disk type thermostat to the top of the motor deck.
- Next, disconnect the wires 56A and 50A(YL) from the thermostat.

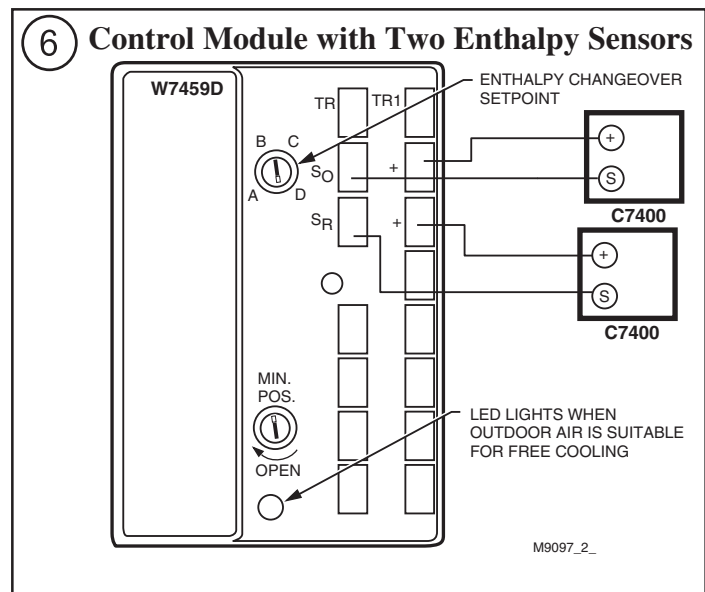
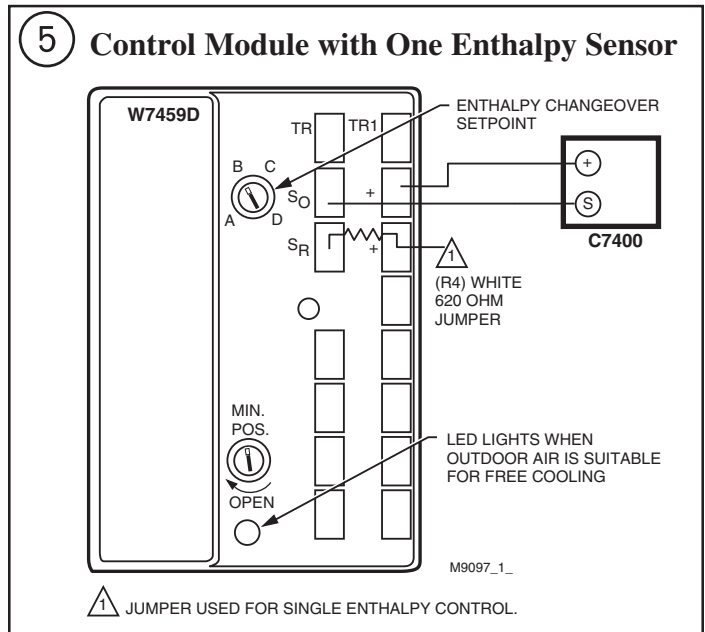
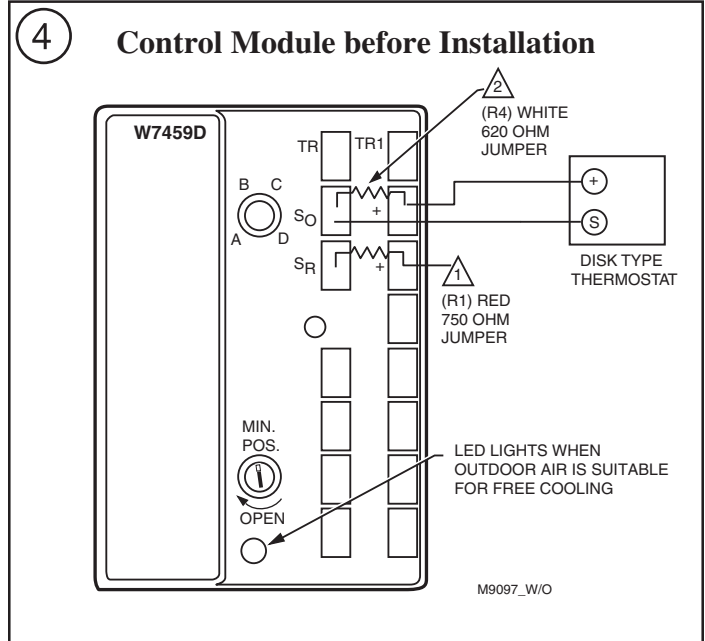
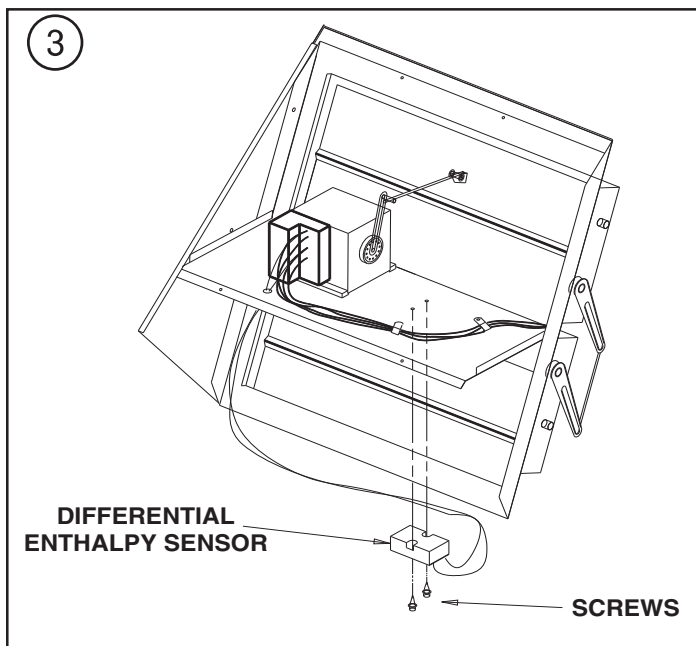


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4. Using the two screws removed in step 2, mount the Enthalpy sensor in the thermostat's previous location, see figure 2.
5. Connect wire 56A to S and 50A(YL) to + terminals on the Enthalpy Sensor.
6. On the Control Module (Solid State Economizer Logic Module) attached to the Economizer Motor, remove the red resistor from terminals  $S_R$  and + and discard. See figure 4.
7. Remove the white resistor from between the  $S_O$  terminal and wire 56A. Then install the white resistor across the  $S_R$  and + terminals
8. Install the terminal adaptor provided with the sensor on terminal  $S_O$  of the Control Module and connect wire 56A to it.
9. Replace the economizer/filter access panel.

## Installation for Differential Enthalpy Sensing (Outside Air & Return Air)

1. Complete the procedures for installing a single enthalpy sensor.
2. Mount the second enthalpy sensor on the bottom side of the motor deck, see figure 3.
3. Remove the knockout located below the Economizer Motor and insert a snap bushing.
4. Install field supplied wires through the snap bushing



**Installation for BAYECON073 Horizontal Discharge Economizer:****Single Enthalpy Sensor (Outdoor Air Only)**

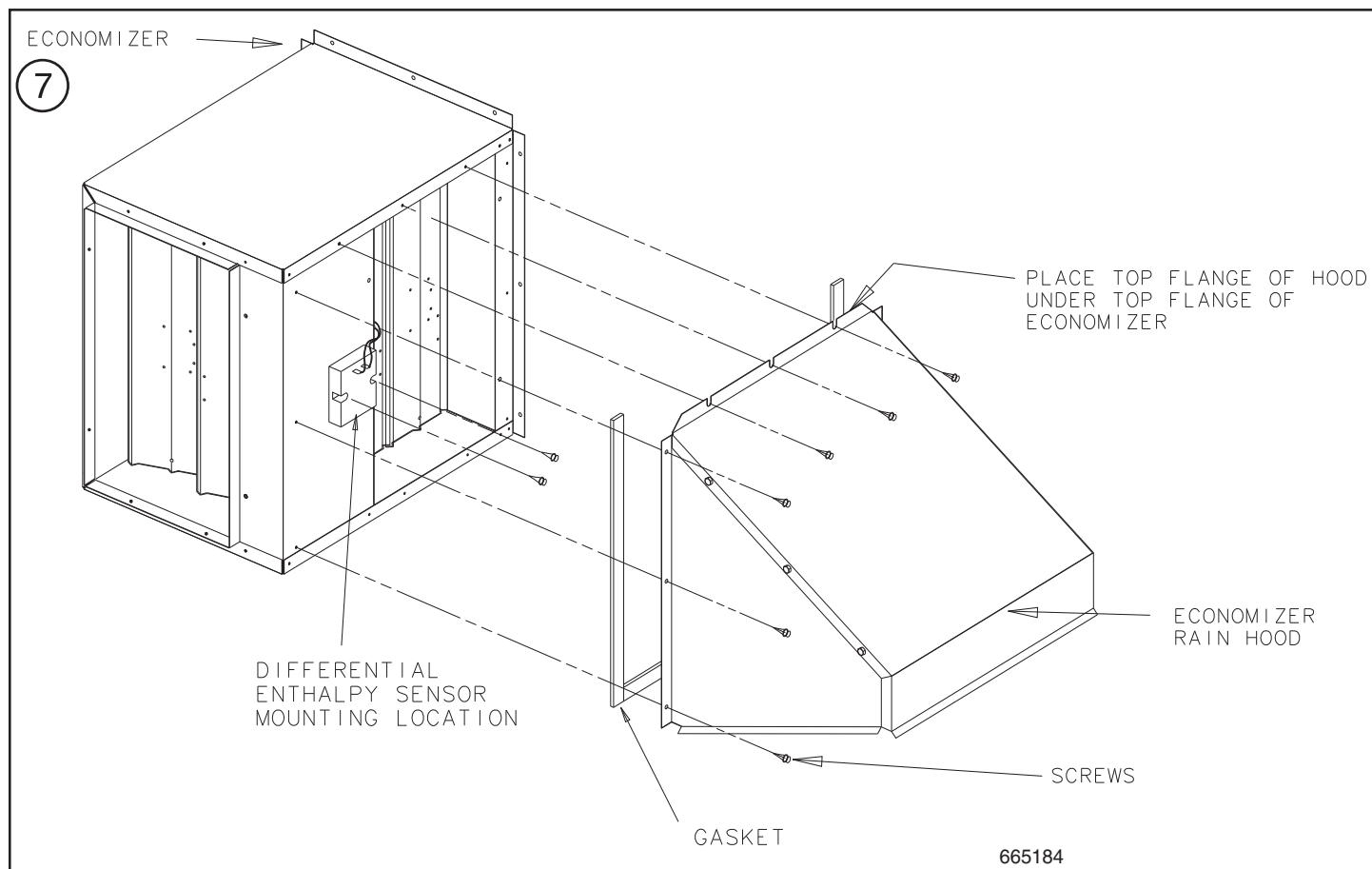
1. **Units with economizers already installed:** When installing the enthalpy sensor after the economizer has been installed remove the economizer rain hood.
2. Remove the two screws securing the disk type thermostat on the damper side of the economizer.
3. Next, disconnect the wires 56A and 50A(YL) from the thermostat.
4. Using the two screws removed in step 2, mount the Enthalpy sensor on the outside face of the economizer. See figure below.
5. Connect wire 56A to S and 50A(YL) to + terminal on the Enthalpy sensor.
6. Remove the filter access panel on the return side of the unit reach into the Control Module attached to the Economizer Motor, remove the red resistor from terminals  $S_R$  and + and discard. See figure 4.
7. Remove the white resistor from between the  $S_O$  terminal and wire 56A. Then install the white resistor across the  $S_R$  and + terminals

8. Install the terminal adaptor provided with the sensor on terminal  $S_O$  of the Control Module and connect wire 56A to it.

9. Reinstall the rain hood and filter access panel.

**Installation for Differential Enthalpy Sensing**

1. Complete the procedures for installing a single enthalpy sensor.
2. Mount the second enthalpy sensor in the return air stream. See figure below.
4. Install field supplied wires through from terminals S and + on the return enthalpy sensor to the  $S_R$  and + terminals on the Control Module.
6. On the Control Module (Solid State Economizer Logic Module) attached to the Economizer Motor, remove the white resistor from between the  $S_R$  terminal and the + terminal. Then connect the wire from S on the sensor to  $S_R$  on the Control Module and + on the sensor to + on the Control Module.



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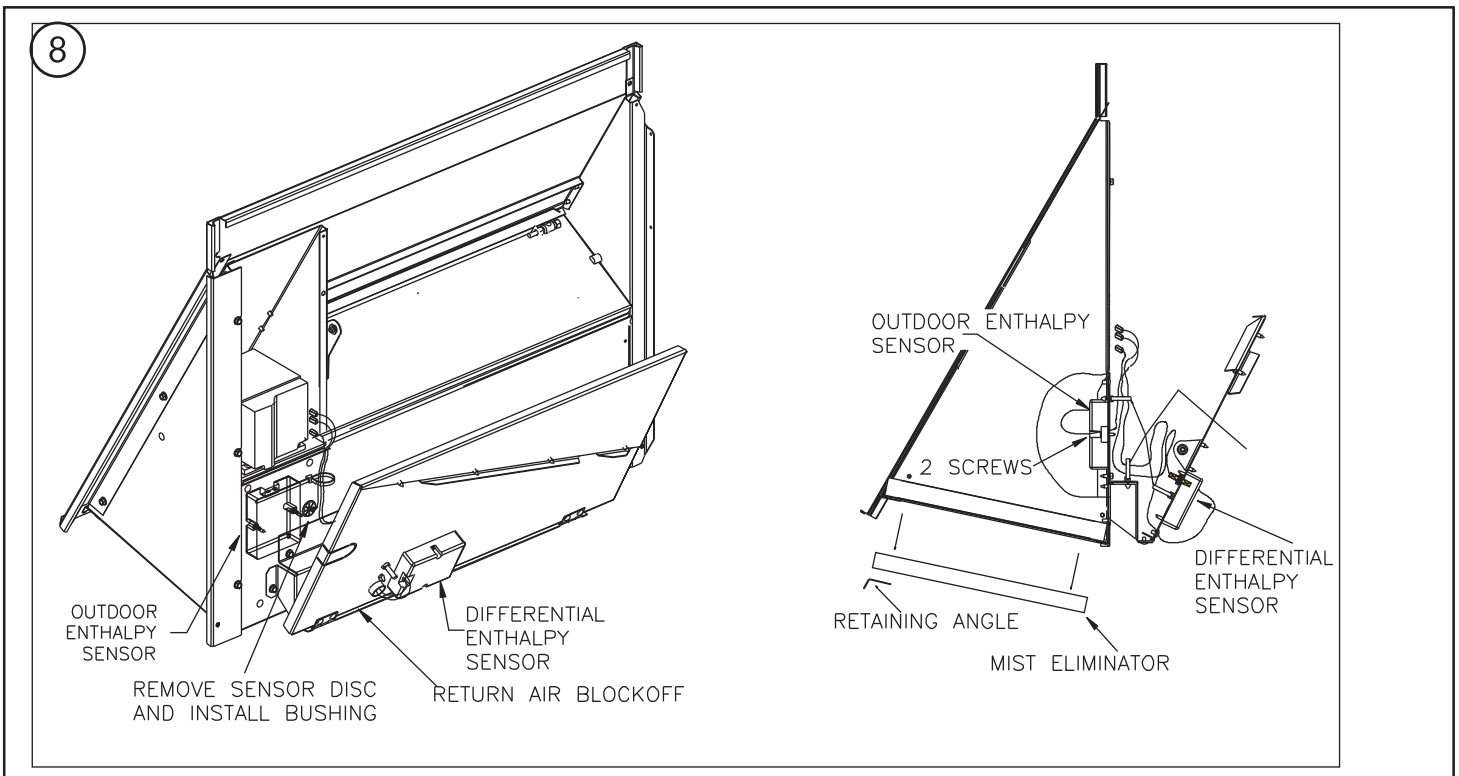
## Installation for BAYECON086A, BAYECON088A Downflow Discharge Single Enthalpy Sensor (Outdoor Air Only)

1. **Units with economizers already installed:** When installing the enthalpy sensor after the economizer has been installed remove the economizer/filter access panel located on the front side of the unit. Remove the mist eliminator and retaining angle from the economizer.
2. Remove the two screws securing the disk type thermostat to the rear panel.
3. Disconnect the wires 182A(YL) and 183A(YL) from the thermostat.
4. Locate bushing supplied with kit and pull wires 182A(YL) and 183A(YL) through bushing. Snap bushing into the hole where the thermostat was removed.
5. Connect wire 182A(YL) to S and 183A(YL) to + terminals on the Enthalpy Sensor.
6. Using the two screws removed in step 2, mount the Enthalpy sensor adjacent to thermostat's previous location. Engagement holes are provided.
7. On the Control Module (Solid State Economizer Logic Module) attached to the Economizer Motor, remove the red resistor from terminals SR and + and discard. See figure 4.

8. Remove the white resistor from between the SO terminal and wire 182A(YL). Then install the white resistor across the SR and + terminals
9. Install the terminal adaptor provided with the sensor on terminal SO of the Control Module and connect wire 182A(YL) to it.
10. Replace the economizer/filter access panel and mist eliminator.

## Installation for Differential Enthalpy Sensing (Two Sensors)

1. Complete the procedures for installing a single enthalpy sensor.
2. Mount the second enthalpy sensor on the bottom side of the Return Air Bolckoff.
3. Remove the knock-out located near the front side of the Return Air Bolckoff and insert a snap bushing.
4. Install field supplied wires through the snap bushing from terminals S and + on the return enthalpy sensor to the SR and + terminals on the Control Module.
5. On the Control Module attached to the Economizer Motor, remove the white resistor from between the SR terminal and the + terminal and discard. Then connect the wire from S on the sensor to SR on the Control Module and + on the sensor to + on the Control Module.



**Installation for BAYECON086A,  
BAYECON088A  
Horizontal Discharge  
Single Enthalpy Sensor (Outdoor Air  
Only)**

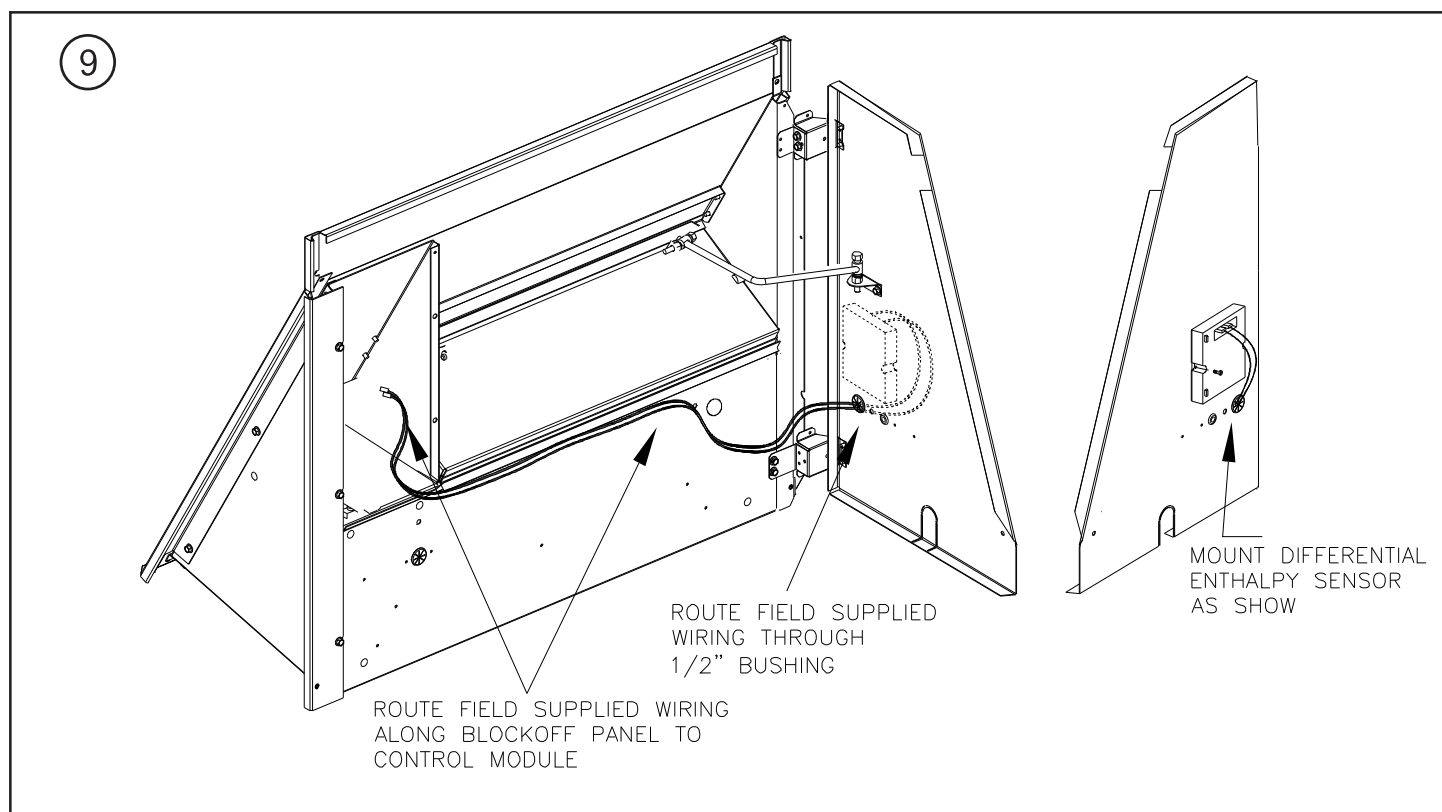
1. **Units with economizers already installed:**  
When installing the enthalpy sensor after the economizer has been installed remove the economizer/filter access panel located on the front side of the unit. Remove the mist eliminator and retaining angle from the economizer.
2. Remove the two screws securing the disk type thermostat to the rear panel.
3. Disconnect the wires 182A(YL) and 183A(YL) from the thermostat.
4. Locate bushing supplied with kit and pull wires 182A and 183A) through bushing. Snap bushing into the hole where the thermostat was removed.
5. Connect wire 182A to S and 183A to + terminals on the Enthalpy Sensor.
6. Using the two screws removed in step 2, mount the Enthalpy sensor adjacent to thermostat's previous location, Engagement holes are provided.
7. On the Control Module (Solid State Economizer Logic Module) attached to the Economizer Motor, remove the red resistor from terminals SR and +

and discard.

8. Remove the white resistor from between the SO terminal and wire 182A. Then install the white resistor across the SR and + terminals
9. Install the terminal adapter provided with the sensor on terminal SO of the Control Module and connect wire 182a to it.
10. Replace the economizer/filter access panel and mist eliminator.

**Installation for Differential Enthalpy Sensing (Two Sensors)**

1. Complete the procedures for installing a single enthalpy sensor.
2. Mount the second enthalpy sensor on the side of the return air hood
3. Remove the knock-out located near the front side of the Return Air Bolckoff and insert a snap bushing.
4. Install field supplied wires through the snap bushing from terminals S and + on the return enthalpy sensor to the SR and + terminals on the Control Module.
5. On the Control Module attached to the Economizer Motor, remove the white resistor from between the SR terminal and the + terminal and discard. Then connect the wire from S on the sensor to SR on the Control Module and + on the sensor to + on the Control Module.



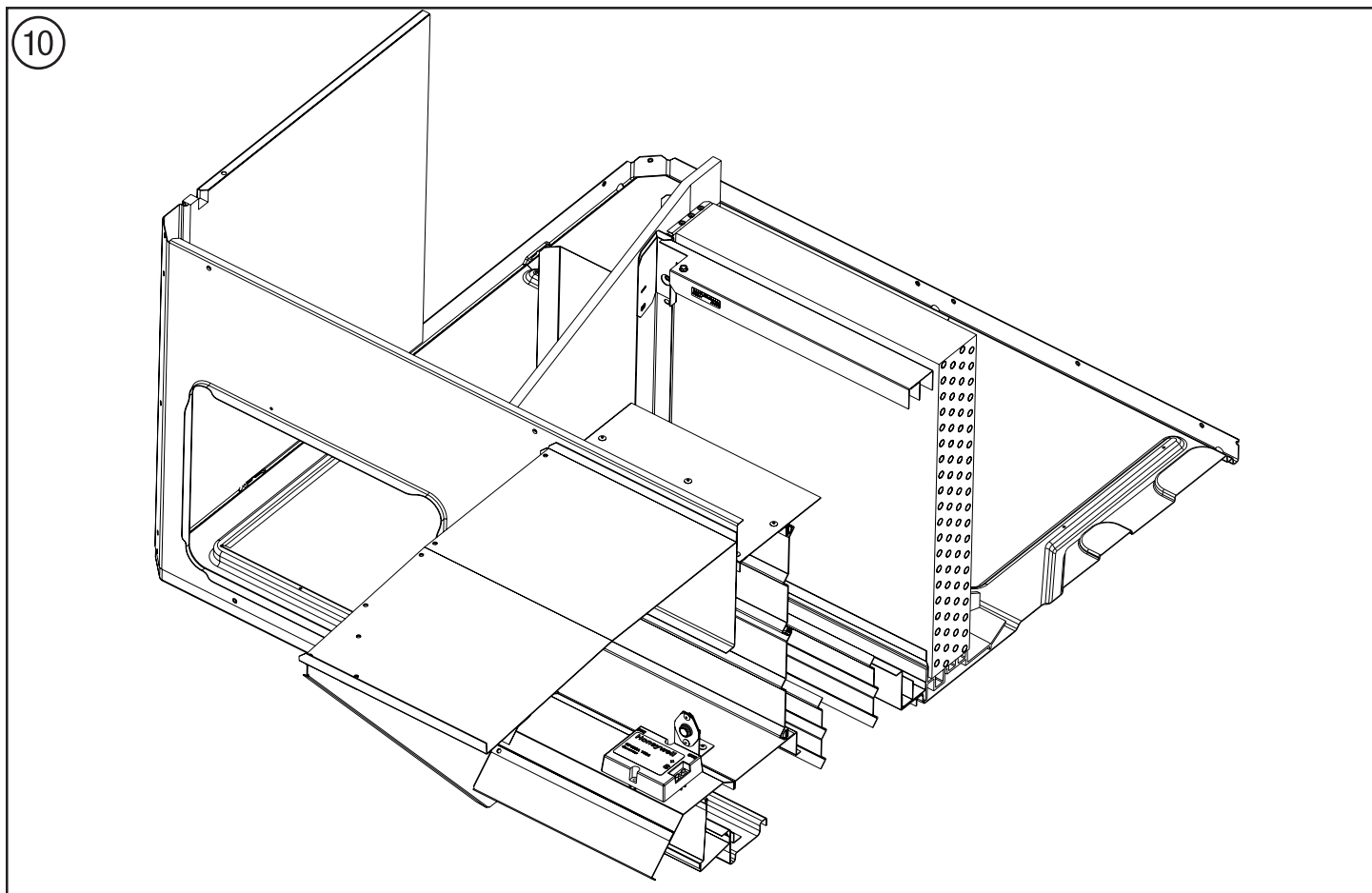
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## Installation for BAYECON101, BAYECON102, BAYECON103, BAYECON104A

### Down Discharge

#### Single Enthalpy Sensor Control (Outdoor Air Only)

1. **Units with economizers already installed:** When installing the Enthalpy Sensor Control (ESC) after the economizer has been installed remove the COIL ACCESS panel. Remove the mist eliminator.
2. Remove the two screws securing the outdoor air sensor (OAS) to the rear panel.
3. Disconnect the YL/BK and YL wires from the OAS.
4. Retain the screws for later use and discard the OAS removed in steps 2 & 3.
5. Using the two screws removed in step 2, mount the ESC adjacent to the previous location of the OAS. Engagement holes are provided.
6. Connect the YL/BK wire to S and the YL wire to + terminal on enthalpy sensor.
7. Reinstall the mist eliminator.
8. On the Control Module (Solid State Economizer Logic Module) attached to the Economizer Motor, remove the red resistor from terminals  $S_R$  and + and discard. See figure 4.
9. Remove the white resistor from between the  $S_o$  terminal and wire 56A. Then install the white resistor across the  $S_R$  and + terminals
10. Install the terminal adaptor provided with the sensor on terminal  $S_o$  of the Control Module and connect wire 56A to it.



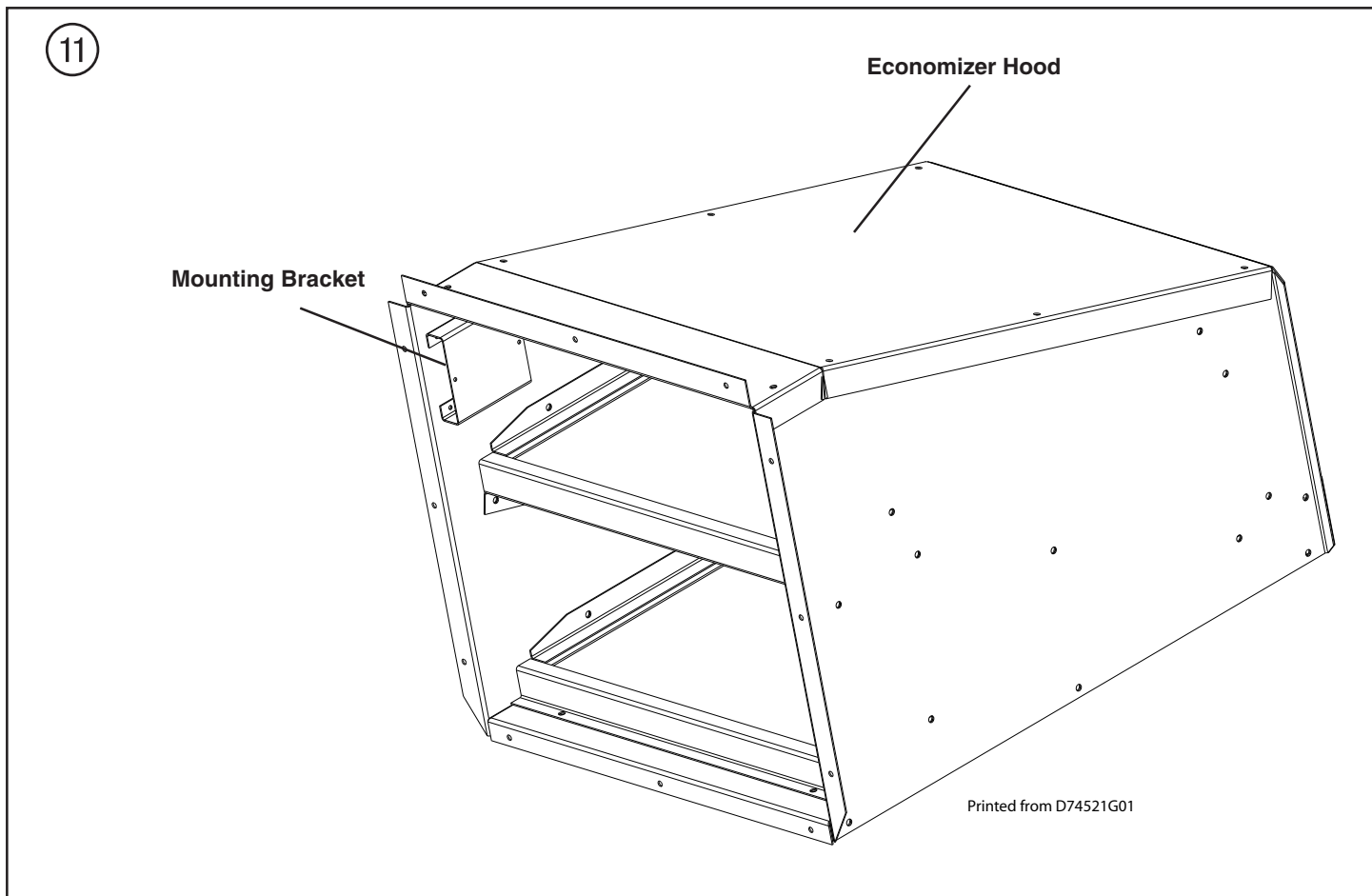


## Installation for BAYECON200, BAYECON201, BAYECON203, BAYECON204A

### Horizontal Discharge

#### Single Enthalpy Sensor (Outdoor Air Only)

1. Units with economizers already installed: Remove hood from economizer to access outdoor air sensor (OSA) and install Enthalpy Sensor Control (ESC). Remove COIL ACCESS panel to access Control Module (Solid State Economizer Logic Module).
2. Remove the two screws securing the OSA to the economizer.
3. Disconnect the YL/BK and YL wires from the OSA.
4. Retain the screws for later use and discard the OSA removed in steps 2 & 3.
5. Install ESC on mounting bracket located in the upper corner of the hood using the screws removed in step 2.
6. Re-install hood on economizer.
7. Remove top mist eliminator in hood and connect the YL/BK wire to S and the YL wire to + terminal on ESC.
8. Re-install mist eliminator into hood.
9. On the Control Module attached to the Economizer Motor, remove the red resistor from terminals S(R) and + and discard.
10. Remove the white resistor from between the S(O) terminal and wire 56A. Then install the white resistor across the S(R) and + terminals.
11. Install the terminal adaptor provided with the sensor on terminal S(O) of the Control Module and connect wire 56A to it.



## Operation (All Economizers)

### Controller Dial Setting

Control set point scale is located on the Control Module, see Figure 4 on page 2. Control points A, B, C, D are field selectable, and are used **for single enthalpy sensing**.

The Solid State Enthalpy Sensor is used with a solid state economizer control and damper actuator to proportion an outdoor air damper in a ventilation system.

**When using a single enthalpy control** setpoint A, B, C, or D combines temperature and humidity conditions resulting in the control curve shown on the psychrometric chart below.

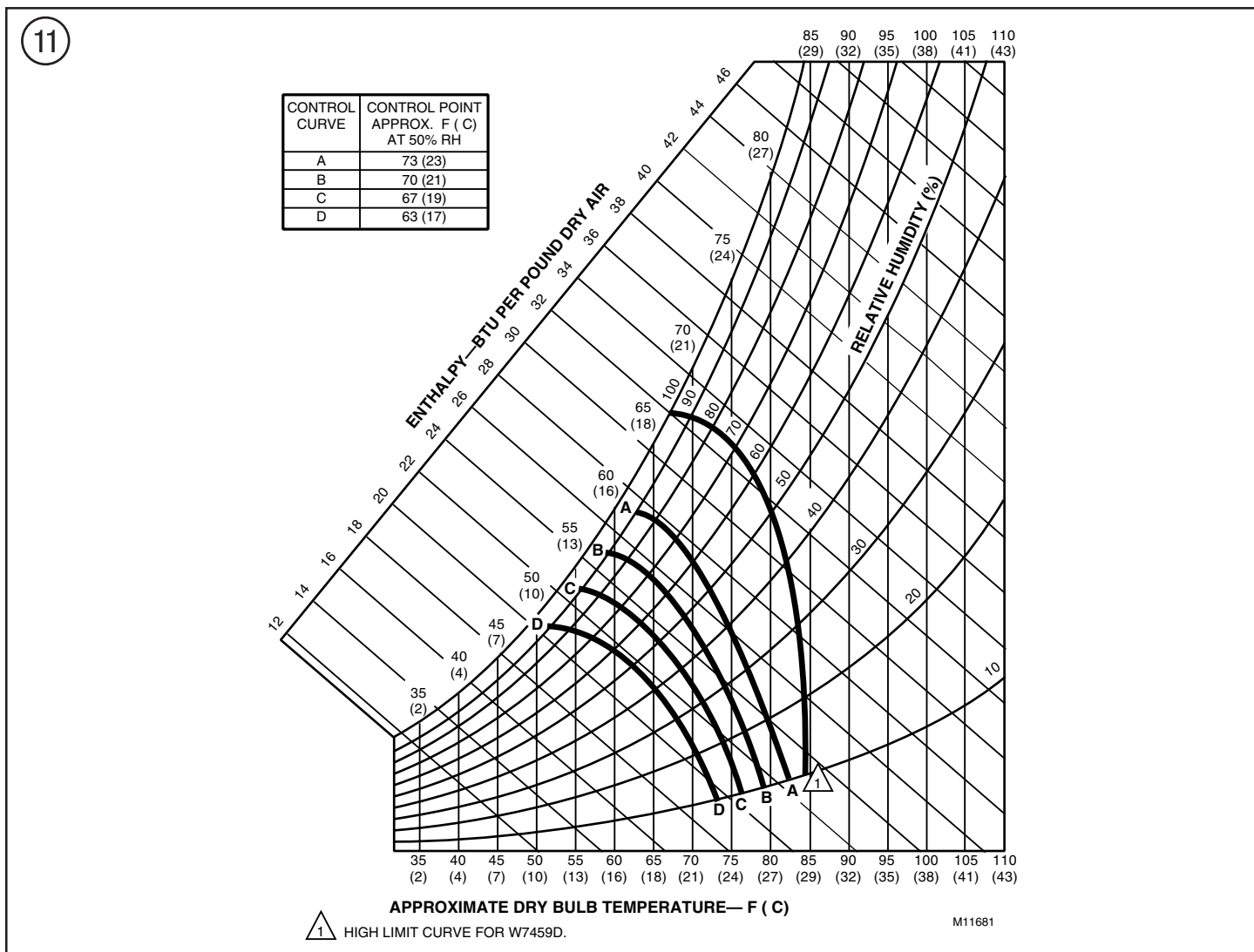
When the enthalpy of the outdoor air is below (left of) the appropriate curve, the outdoor air damper can proportion open on a call for cooling. If the outdoor air enthalpy rises above (right of) the control curve, the outdoor air damper will close to minimum position.

**For differential enthalpy**, you must turn the control set point past D (fully clockwise). Differential enthalpy is not available for 101,102,103,104 Economizers.

If the outdoor air enthalpy is lower than the return air enthalpy, the outdoor air damper will proportion open on a call for cooling.

If the outdoor air enthalpy is higher than the return air enthalpy, the outdoor air damper will close to minimum position.

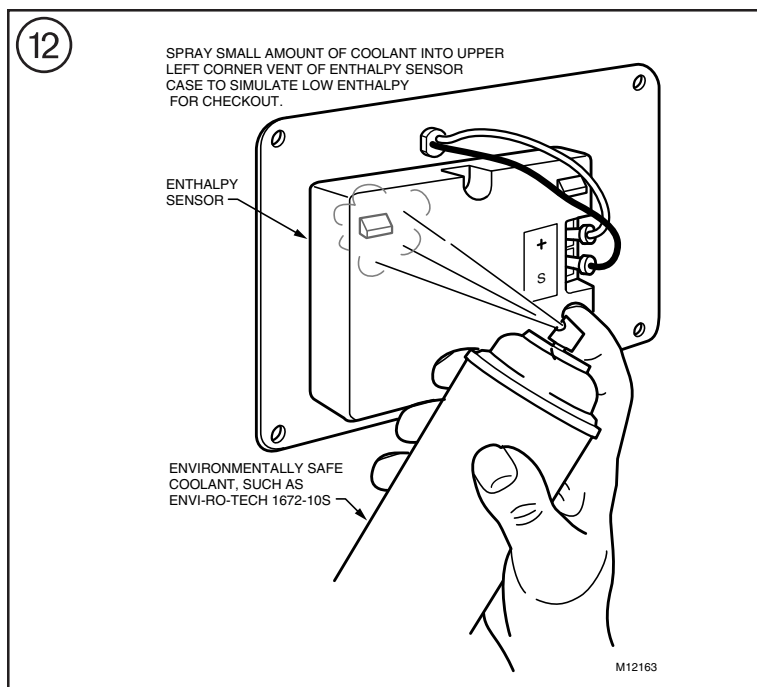
If the outdoor air enthalpy and return air enthalpy are equal, the outdoor air damper will proportion open on a call for cooling.





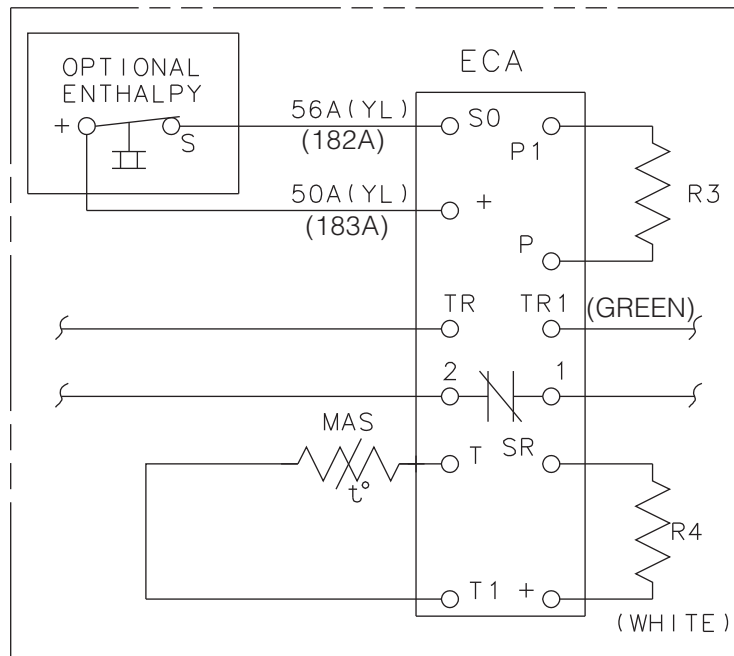
## Checkout and Troubleshooting

Checkout Procedure for Single Sensor	Response
A. Make sure enthalpy sensor is connected to SO and +. The white resistor must be placed on SR and +.	
1. Turn enthalpy set point on Economizer Logic Module to "A"	1) LED (light -emitting diode) turns on within a minute.
2. With power connected, spray a small amount of environmentally safe coolant in upper left vent of sensor to simulate low enthalpy conditions. (See figure 12)	2) Terminals 2, 3 closed. Terminals 1, 2 open
B. Disconnect power at TR and TR1.	Terminals 2, 3 open. Terminals 1, 2 closed.
<b>Checkout procedure for Differential Enthalpy</b> <b>(Second enthalpy sensor connected to terminals "SR" and "+")</b>	
A. 1. Turn enthalpy set point on Economizer Logic Module past "D" (full clockwise).	1) LED turns off.
2. With power connected, spray a small amount of environmentally safe coolant into upper left vent of sensor connected to SO and + to simulate low outdoor air enthalpy. (See figure 12).	2) Terminals 2, 3 closed. Terminals 1, 2 open.
B. Spray small amount of environmentally safe coolant in upper left vent of return air enthalpy sensor connected to SR and + to simulate low return air enthalpy.	1) LED turns off. 2) Terminals 2, 3 open. Terminals 1, 2 closed.



## Enthalpy Sensor Wiring When Used With BAYECON054,055 & 73 BAYECON086A,088A

ECONOMIZER W/OPTIONAL OUTDOOR ENTHALPY SENSOR



**Installer Note: Please Check Installed Option**

ECONOMIZER W/OPTIONAL DIFFERENTIAL ENTHALPY SENSORS

