Enthalpy Sensor and Differential Enthalpy Sensor Accessories for Rooftop Units with EconoMi$er® IV Controller 3 to 27.5 Tons

Installation Instructions

Part No. HH57AC078 and CRENTDIF004A00

IMPORTANT: Read entire instructions before installing the accessory.

SAFETY CONSIDERATIONS

Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment.

Untrained personnel can perform basic maintenance functions of cleaning coils and filters and replacing filters. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, observe precautions in the literature, tags and labels attached to the unit, and other safety precautions that may apply.

Follow all safety codes, including ANSI (American National Standards Institute) Z223.1. Wear safety glasses and work gloves. Use quenching cloth for unbrazing operations. Have fire extinguisher available for all brazing operations.

It is important to recognize safety information. This is the safety-alert symbol ⚠. When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION, and NOTE. 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 hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

⚠WARNING

Electrical shock can cause personal injury and death. Shut off all power to this equipment during installation. There may be more than one disconnect switch. Tag all disconnect locations to alert others not to restore power until work is completed.

PACKAGE CONTENTS

PART NO.	CONTENTS	QTY
HH57AC078	Enthalpy Sensor	1
CRENTDIF004A00	Enthalpy Sensor	1
	6 – 20, 3/4 in. Sheet Metal Screw	2
	Grommet	1
	Black Wire	1
	Red Wire	1

The HH57AC078 and CRENTDIF004A00 enthalpy sensors are used with the EconoMi$er IV controller and are used on units shown in Tables 1-3. Economizer part numbers are listed below:

- CRECOMZR008C00
- CRECOMZR020A02
- CRECOMZR021A03
- CRECOMZR024A02
- CRECOMZR025A02
- CRECOMZR038A00
- CRECOMZR039A00
- CRECOMZR040A00
- CRECOMZR041A00
- CRECOMZR042A00
- CRECOMZR046A00
- CRECOMZR047A00
- CRECOMZR052A00
- CRECOMZR053A00
- CRECOMZR062A00
- CRECOMZR064A00

Table 1 — Enthalpy Sensor Usage for Carrier Units

UNIT	SIZES
48FC	04-30
48GC	04-06
48HC	04-28
48KC	04-06
48TC	07-30
50FC	04-30
50GC	04-06
50HC	04-28
50HCQ	04-12
50KC	04-06
50KCQ	04-06
50TC	07-30
50TCQ	04-24

Table 2 — Enthalpy Sensor Usage for Bryant Units

UNIT	SIZES
547J	04-06
548J	04-24
549J	04-12
551J	04-28
551K	04-06
558J	07-30
559J	04-06
559K	04-30
580J	07-30
581J	04-28
581K	04-06
582J	04-06
582K	04-30

Table 3 — Enthalpy Sensor Usage for ICP Units

UNIT	SIZES
RAH	036-303
RAS	072-336
RAV	036-336
RAW	036-060
RAX	036-060
RGH	036-303
RGS	072-336
RGV	036-336
RGW	036-060
RGX	036-060
RHH	036-120
RHS	072-243
RHX	036-060

The accessory enthalpy sensor can be used on all rooftop units with a factory-installed or accessory EconoMi$er IV controller.

GENERAL

All units except 48/50KC04-06, 50KCQ04-06, 547J04-06, 559J04-06, 582J04-06, RAX/RHX/RGX036-060 have a choice of dry-bulb or enthalpy sensor with the factory-installed EconoMi$er IV controller. These units come with the dry-bulb sensor as standard with the factory-installed economizer.

For units equipped with dry-bulb enthalpy sensors, accessory HH57AC078 can be used to reconfigure the economizer for outdoor enthalpy changeover control.

Accessories HH57AC078 and CRENTDIF004A00 can both be added for differential enthalpy control and the sensor is used for outdoor temperature control. See Table 4.

Outdoor Enthalpy Changeover Control

For enthalpy control, accessory enthalpy sensor (part number HH57AC078) is required. When the outdoor air enthalpy rises above the outdoor enthalpy changeover set point, the outdoor-air damper moves to its minimum position.

Differential Enthalpy Control

For differential enthalpy control, the EconoMi$er IV controller uses two enthalpy sensors (HH57AC078 and CRENTDIF004A00), one in the outside air and one in the return airstream. The economizer controller compares the outdoor air enthalpy to the return air enthalpy to determine economizer use. The controller selects the lower enthalpy air (return or outdoor) for cooling. For example, when the outdoor air has a lower enthalpy than the return air and is below the set point, the economizer damper opens to bring in outdoor air for free cooling.

Table 4 — EconoMi$er IV Sensor Usage — EconoMi$er IV with Outdoor Air Dry Bulb Sensor

APPLICATION	ACCESSORIES REQUIRED		
Outdoor Air Dry Bulb	None. The outdoor air dry bulb sensory is factory-installed.		
Differential Dry Bulb	CRTEMPSN002A00*		
Single Enthalpy	HH57AC078		
Differential Enthalpy	HH57AC078 and CRENTDIF004A00*		
CO_2 for DCV Control Using a Wall-Mounted CO_2 Sensor	33ZCSENCO2 or CGCDXSEN004A00†		
CO_2 for DCV Control Using a Duct-Mounted CO_2 Sensor	33ZCSENCO2 or CGCDXSEN004A00† and 33ZCASPCO2 or CGCDXASP001A00**	OR	CRCBDIOX005A00††

*CRENTDIF004A00 and CRTEMPSN002A00 accessories are used on many different base units. As such, these kits may contain parts that will not be needed for installation.
†33ZCSENCO2 and CGCDXSEN004A00 are accessory CO_2 sensors.
**33ZCASPCO2 and CGCDXASP001A00 are accessory aspirator boxes required for duct-mounted applications.
††CRCBDIOX005A00 is an accessory that contains both 33ZCSENCO2 and 33ZCASPCO2 accessories.

NOTE: All units except 48/50KC04-06, 50KCQ04-06, 547J04-06, 559J04-06, 582J-04-06, RAX/RHX/RGX036-060 may have factory-installed enthalpy sensor.

INSTALLATION

NOTE: All units except 48/50KC04-06, 50KCQ04-06, 547J04-06, 559J04-06, 582J04-06, RAX/RHX/RGX036-060 have a choice of dry-bulb or enthalpy sensor with the factory-installed EconoMi$er IV option.

Single Outdoor Air Enthalpy Sensor Installation

SINGLE OUTDOOR AIR ENTHALPY SENSOR:
ALL UNITS

NOTE: This section assumes you are starting with an EconoMi$er IV installed in the rooftop and equipped with a dry bulb temperature sensor (P/N HH57AC074). If your economizer is already equipped with a single enthalpy sensor (p/n HH57AC078), STOP. You do not need to continue with this section.

1. Turn off power to unit and install Lockout Tag.
2. For units with standard panels, remove the economizer hood from the base unit and save the screws for Step 9. For units with factory-installed hinged panels, open the hinged panel and secure it. (Since the panel is hinged, do not remove it from the unit.)
3. Disconnect the black and red wires from the pre-existing temperature sensor (P/N HH57AC074) and let them hang. Remove the air temperature sensor and save screws (no. 8) for use in Step 4. The wires will be used later to connect to the enthalpy sensor.
4. Use the 2 sheet metal screws (no. 8) from Step 3 to mount the enthalpy sensor on the front left of the economizer frame. (See Fig. 1.) Use the 2 screw holes in the economizer frame.
5. Ensure the black and red wires are connected on the economizer controller correctly. The red wire should be connected to the "SO" terminal and the black wire to the "SO+" terminal. (See Fig. 2.) If they are not connected this way, make the connections as described. If you are using CRENTDIF004A00, the kit contains an extra red and black wire.
6. Pick up the black and red wires left hanging from Step 3 and connect them to the enthalpy sensor. Connect the red wire to the sensor's "S" terminal and the black wire to the sensor's "+" terminal. See Fig. 3 for details.
7. If installation of the accessory differential enthalpy sensor is also planned, skip to Step 3 of the Differential Enthalpy Sensor installation section of this instruction.
8. Restore power to the unit and configure the EconoMi$er IV controller per the Configuration section of this manual.
9. For units with standard panels, re-install the economizer hood. Secure the panel using the screws saved from Step 1. For units with factory-installed hinged panels, close the hinged panel and latch it.

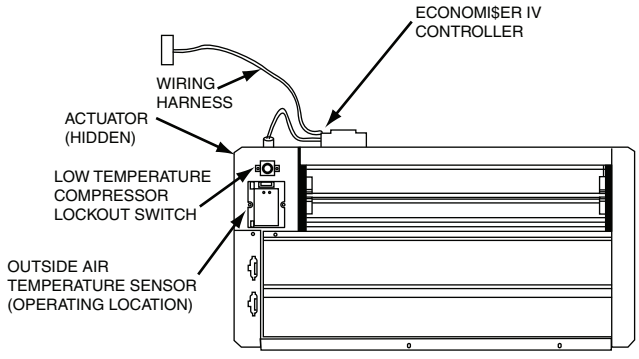


Fig. 1 — EconoMi$er IV Component Locations

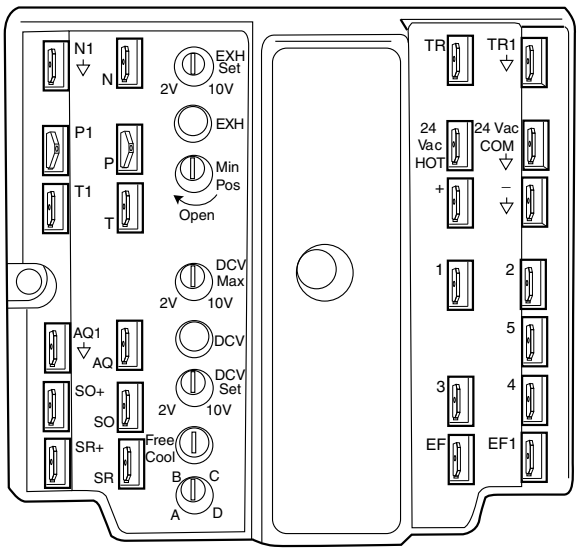
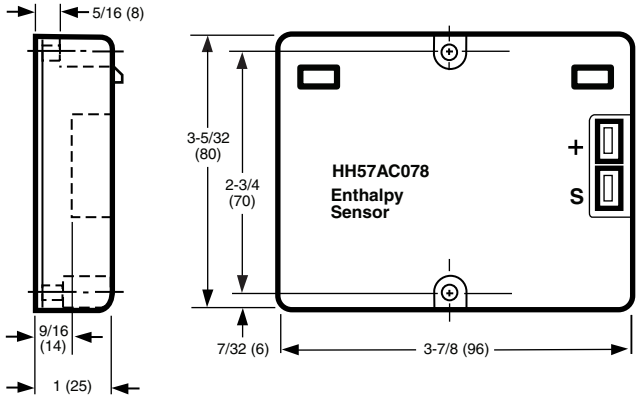


Fig. 2 — EconoMi$er IV Controller (Honeywell W7212)



NOTE: Dimensions in inches (mm).

Fig. 3 — Enthalpy Sensor Specifications

Differential Enthalpy Sensor Installation

If installing the differential enthalpy sensor on an EconoMi$er IV accessory, it is easier to install the differential enthalpy sensor before installing the economizer. If installing the sensor on a factory-installed economizer, it is easier to install the differential enthalpy sensor before installing the economizer hoods.

A single enthalpy sensor (HH57AC078) must be installed in addition to the differential enthalpy sensor (CRENTDIF004A00) to achieve differential enthalpy economizer control.

For horizontal applications, it is easiest to install the differential enthalpy sensor before making duct connections.

DIFFERENTIAL ENTHALPY SENSOR: ALL UNITS

NOTE: This section assumes you are starting with an economizer installed in the rooftop and equipped with a single enthalpy sensor (P/N HH57AC078) installed, regardless of whether the economizer came that way or you have completed the installation of an accessory sensor. If you do not already have a single enthalpy sensor installed, first install the single enthalpy sensor as described earlier in this instruction.

1. Turn off power to unit and install Lockout Tag.
2. For units with standard panels, remove the economizer hood from the base unit and save the screws for Step 9. For units with factory-installed hinged panels, open the

hinged panel and secure it. (Since the panel is hinged, do not remove it from the unit.)

3. Using the screws provided in the CRENTDIF004A00 kit, mount the differential enthalpy sensor in the return air duct as shown in Fig. 4.
4. Remove the 620-ohm resistor that connects "SR+" and the "SR" terminals on the economizer controller.
5. Route the red and black wires (provided in the CRENTDIF004A00 kit) between the economizer controller and the installed location of the differential enthalpy sensor.
6. Connect the red wire to the "S" terminal and the black wire to the "+" terminal on the sensor. (See Fig. 3.)
7. Connect the red wire to the "SR" terminal and the black wire to the "SR+" terminal on the economizer controller. (See Fig. 2.)
8. Restore power to the unit and configure the economizer controller per the Configuration section of this manual.
9. For units with standard panels, re-install the economizer hood. Secure the panel using the screws saved from Step 2. For units with factory-installed hinged panels, close the hinged panel and latch it.

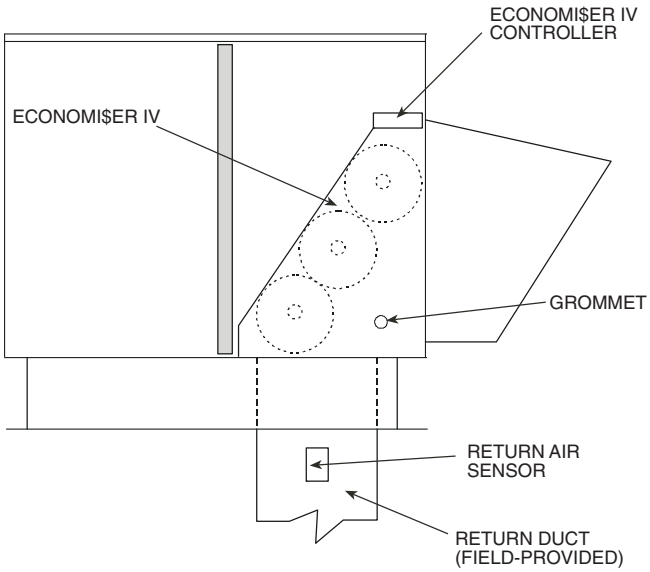


Fig. 4 — Return Air Enthalpy Sensor Mounting Location

CONFIGURATION

Outdoor Enthalpy Changeover Control

When the outdoor air enthalpy rises above the adjustable free cooling/enthalpy changeover set point, the outdoor-air damper moves to its minimum position. The free cooling/enthalpy changeover set point is set with the free cooling/enthalpy changeover set point potentiometer on the EconoMi$er IV controller. The set points are A, B, C, and D. (See Fig. 5 and 6.) The factory-installed 620 ohm jumper must be in place across terminals SR and SR+ on the economizer controller. (See Fig. 2.) Figure 7 shows economizer wiring.

Differential Enthalpy Control

The EconoMi$er IV controller compares the outdoor air enthalpy to the return air enthalpy to determine whether to select the lower enthalpy air (return or outdoor) for cooling purposes. For example, when the outdoor air has a lower enthalpy than the return air and is below the set point, the economizer brings in outdoor air for free cooling.

When using this mode of changeover control, turn the free cooling/enthalpy changeover set point potentiometer fully clockwise to the D setting.

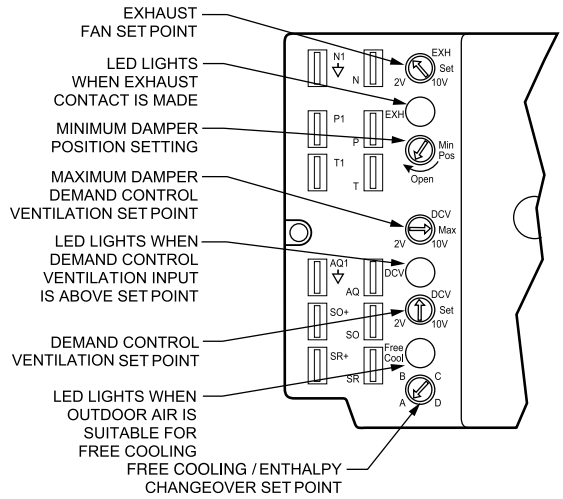


Fig. 5 — EconoMi$er IV Controller Potentiometer and LED Locations

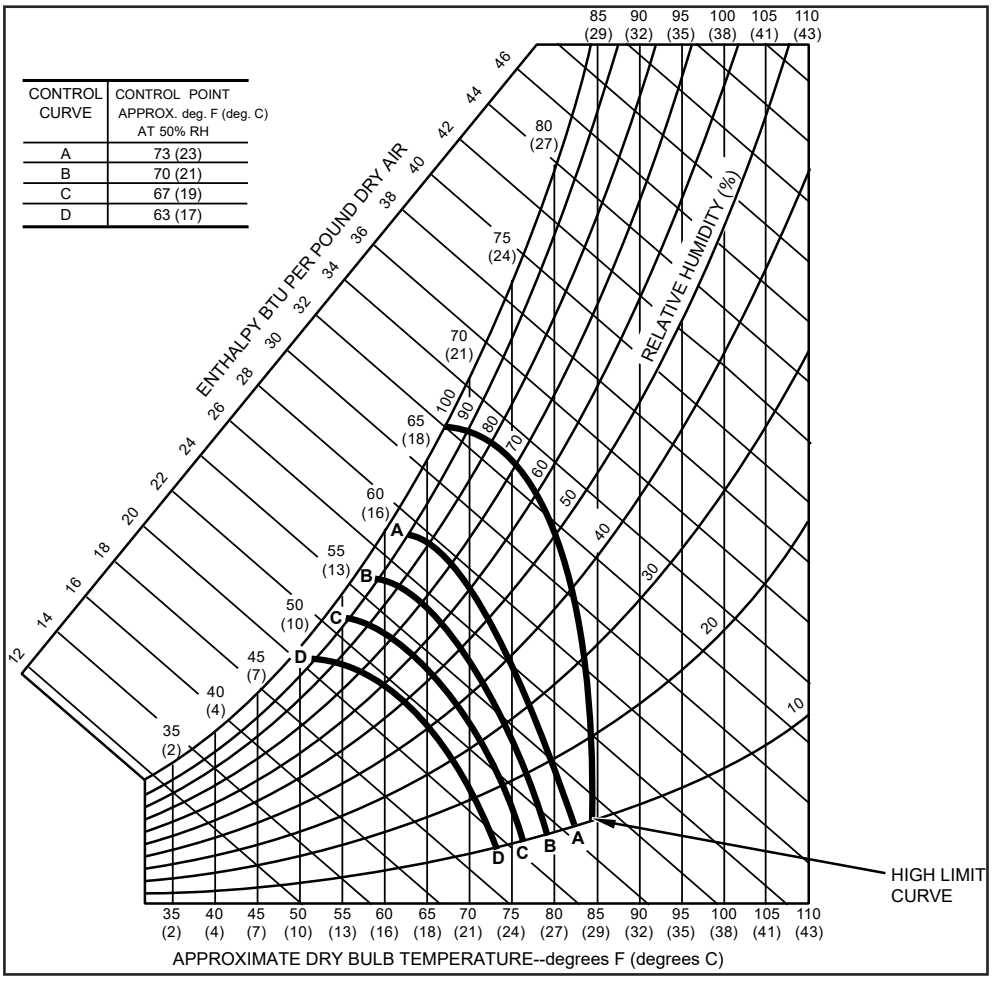


Fig. 6 — Enthalpy Changeover Set Points

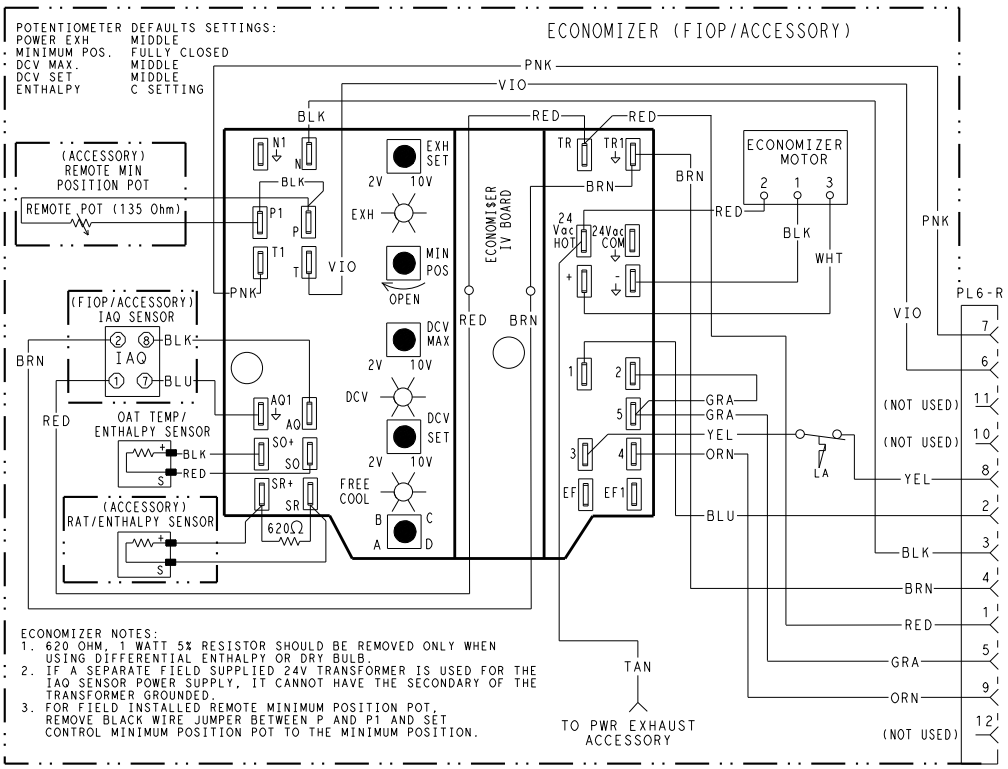


Fig. 7 — EconoMi$er IV Wiring

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

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