

48/50HC04 – 28
 48/50LC04 – 06
 Single – Package Rooftop Units
 with *ComfortLink* Controls
 Economizer Controller (ECB) Accessory



Installation Instructions

PART NUMBERS: CRSRTECB001A00 AND CRM RTECB001A00


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SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause personal injury or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with kits or accessories when installing.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements.

Recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instruction manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION. 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.

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.

IMPORTANT: Do not adjust the damper assembly. The motor and damper have been pre-set and adjusted for proper operation.

GENERAL

The accessory Economizer Control Board (ECB) package is required in addition to the Economizer damper accessory kit for complete economizer operation on *ComfortLink* Rooftop Units. Refer to Tables 1 and 2 for specific package contents and usage.

The accessory Economizer Control Board (ECB) package uses microprocessor based controls in conjunction with the *ComfortLink* Main Base Board (MBB) to sequence mechanical cooling with cool outdoor air (free cooling) to satisfy the cooling load and minimize energy consumption. Free cooling can be used alone or in conjunction with mechanical cooling. The control also provides outdoor air for space ventilation. Minimum damper position is configurable for this purpose. Additional accessories may be added for demand controlled ventilation (DCV), indoor air quality (IAQ) override control, or outdoor air quality (OAQ) lockout.

The economizer's ring style outdoor-air temperature (OAT) sensor is not used; *ComfortLink* has a probe style OAT factory installed below the control box. When the outdoor-air temperature is between two configurable ambient temperatures, the economizer is allowed to cool. These temperature configurations are the Economizer High Temperature Lockout (ECL.H) and the Economizer Low Temperature Lockout (ECL.L). The economizer will provide cooling when the outdoor temperature is suitable as defined above by the lockout settings and if there is a cooling demand. In addition, if an outdoor enthalpy sensor accessory has been installed, then the enthalpy reading must also be "low" before economizer cooling can occur.

When free cooling is available, the economizer sequences free cooling with up to three stages of mechanical cooling to maintain comfort in the space. When free cooling is not available, the economizer modulates to an adjustable minimum position to maintain a supply of fresh air entering the building. Proper minimum positions must be set per job site requirements.

The barometric relief dampers provide natural building pressurization control. An optional power exhaust system is available for jobs requiring greater relief.

ACCESSORIES

The economizer has several field-installed accessory sensors available to optimize performance. Refer to Table 3 for field-installed accessories.

Table 1 – Package Contents

PACKAGE NO.	QTY	CONTENTS
CRSRTECB001A00	1	Control Board Assembly – includes Control Board mounted in sheet metal enclosure with wire harness
	4	Self Tap Screws
	1	Harness Extension
CRMRTTECB001A00	1	Control Board
	5	Screws

Table 2 – Economizer Usage

UNIT	DESCRIPTION	ECONOMIZER ACCESSORY	CONTROLLER ACCESSORY
48/50HC04-06 48/50LC04-06	Standard Vertical	CRECOMZR022B00	CRSRTECB001A00
	Standard Horizontal	CRECOMZR026B00	
	Ultra Low Leak Vertical	CRECOMZR066A00	
48/50HC07-12	Standard Vertical	CRECOMZR023B00	
	Standard Horizontal	CRECOMZR027B00	
	Ultra Low Leak Vertical	CRECOMZR068A00	
48/50HC14	Standard Vertical	CRECOMZR063B00	
	Standard Horizontal	CRECOMZR065B00	
	Ultra Low Leak Vertical	CRECOMZR070A00	
48/50HC17-20	Standard Vert/Horiz	CRECOMZR054B00	CRMRTTECB001A00
	Ultra Low Leak Vert/Horiz	CRECOMZR072A00	
48/50HC24-28	Standard Vert/Horiz	CRECOMZR055B00	
	Ultra Low Leak Vert/Horiz	CRECOMZR073A00	

Table 3 – Accessory Sensors Used with Economizers

FUNCTION	ACCESSORY SENSOR	DESCRIPTION
Dry Bulb Sensors	33ZCSENOAT	Outdoor Air Sensor – Bell Box Enclosure
	33ZCSENSAT	Duct Supply/Return Air Temperature Sensor
	33ZCSENPAT	Primary Air (Duct) Temperature Sensor probe w/conduit box
Indoor Air Quality (IAQ)	33ZCSPTCO2LCD-01	Space Sensor with LCD and built in CO ₂ Sensor
	33ZCSPTCO2-01	Space Sensor with Built in CO ₂ Sensor
	33ZCASPCO2	Duct Mount Aspirator Box for CO ₂ Sensor
	CRCBDIOX005A00	CO ₂ Sensor with Aspirator Box for duct mount
	33ZCT55CO2	Space Sensor with built in CO ₂ Sensor
	33ZCT56CO2	Space Sensor with Setpoint and built in CO ₂ Sensor
Enthalpy	33CSENTHSW	Single Enthalpy Logic Switch with built in Sensor
	33CSENTSEN	Return Air Sensor used with 33CSENTHSW
	--HH--57AC-077	Single Enthalpy Logic Switch with built in Sensor
	--HH-57AC-078	Return Air Sensor used with --HH--57AC-078
	CRENTDIF004A00	Return Air Sensor used with --HH--57AC-078

CRSRTECB / CRMRTTECB

INSTALLATION

CRSRTECB001A00 with Vertical Economizer – 48/50LC 04-06 and 48/50HC 04-14 Units

⚠ WARNING

ELECTRICAL OPERATION HAZARD

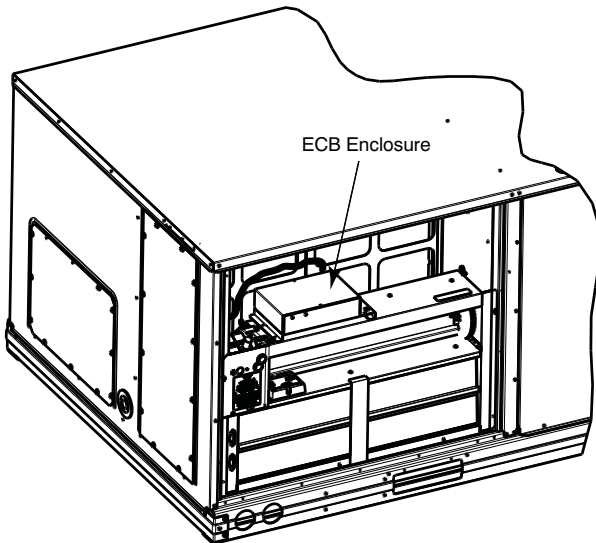
Failure to follow this warning could result in personal injury or death.

Before installing or servicing unit, always turn off all power to unit. There may be more than 1 disconnect switch.

Inspect package for correct parts and perform the following steps for installing the economizer control board.

1. Turn off the unit's power supply and apply lockout tag.
2. Install economizer damper accessory first. Refer to those specific instructions when installing it.
3. Remove or unlatch and open the unit filter access panel.
4. Use the included self tapping screws to mount the ECB Box Enclosure to the top of the economizer damper assembly. See Fig. 1 for mounting location and orientation.

IMPORTANT: Be sure there is enough slack in the wire harness to connect to the unit harness and bundle with a wire tie.



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Fig. 1 - ECB Box Enclosure Mounting

5. Locate and identify the unit side wiring plugs marked "PL7" and "PL20". These are part of the standard unit wiring harness and should be hanging on the left side of the return air section.
6. Locate and identify the economizer plug marked "PL6", the power exhaust wires (TAN and GRAY), and the optional Enthalpy wire (GRAY). These are part of the economizer assembly harness.
7. Connect the plugs identified in previous steps to the ECB harness. See Fig. 2. The plugs are mate and lock and can only be plugged in one direction, be sure the locking tabs click into place. Be sure the quick connects make proper connection.
8. Secure wires with wire ties as needed. Be sure the wires will not interfere with the moving parts of the economizer.

9. Inspect the unit to make sure all panels are properly replaced and secured to the unit.
10. Power can now safely be restored to the unit.
11. The control must be configured to use the economizer accessory. Go to the Configuring the *ComfortLink* Control section in these installation instructions.
12. Once configured, follow normal start up procedure to verify proper operation.

CRSRTECB001A00 with Horizontal Economizer – 48/50LC 04-06 and 48/50HC 04-14 Units

⚠ WARNING

ELECTRICAL OPERATION HAZARD

Failure to follow this warning could result in personal injury or death.

Before installing or servicing unit, always turn off all power to unit. There may be more than 1 disconnect switch.

Inspect package for correct parts and perform the following steps for installing the economizer control board.

1. Turn off the unit's power supply and apply lockout tag.
2. Install economizer damper accessory first. Refer to those specific instructions when installing it.
3. Remove the unit filter access panel.
4. Review Fig. 3 and Fig. 4 for ECB box mounting location.
5. Remove one vertical duct opening cover screw and use it to secure the ECB Box Enclosure to the base pan of the unit per Fig. 3 and Fig. 4.
6. Locate and identify the unit side wiring plugs marked "PL7" and "PL20". These are part of the standard unit wiring harness and should be resting on top of the economizer assembly.
7. Locate and identify the economizer plug marked "PL6", the power exhaust wires (TAN and GRAY), and the optional Enthalpy wire (GRAY). These are part of the economizer assembly harness and should also be on top of the economizer assembly.
8. Connect the plugs identified in previous steps to the ECB extension harness. See Fig. 2. The plugs are mate and lock and can only be plugged in one direction, be sure the locking tabs click into place. Be sure the quick connects make proper connection.
9. Route extension harness along the top of the unit (use the wire trough if unit is equipped with smoke detectors) and down the right side of the return air section.
10. Connect the extension harness plugs to the ECB harness. See Fig. 2. The plugs are mate and lock and can only be plugged in one direction, be sure the locking tabs click into place. Be sure the quick connects make proper connection.
11. Secure wires with wire ties as needed. Be sure the wires will not interfere with the moving parts of the economizer.
12. Inspect the unit to make sure all panels are properly replaced and secured to the unit.
13. Power can now safely be restored to the unit.
14. The control must be configured to use the economizer accessory. Go to the Configuring the *ComfortLink* Control section in these installation instructions.
15. Once configured, follow normal start up procedure to verify proper operation.

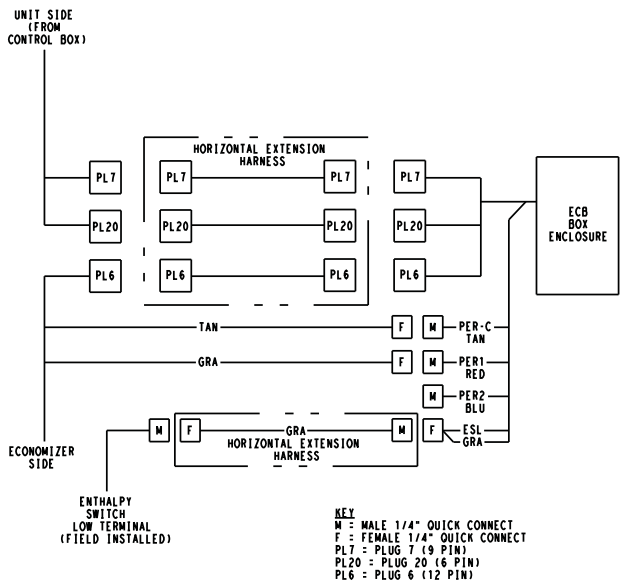


Fig. 2 - Wire Connection Detail

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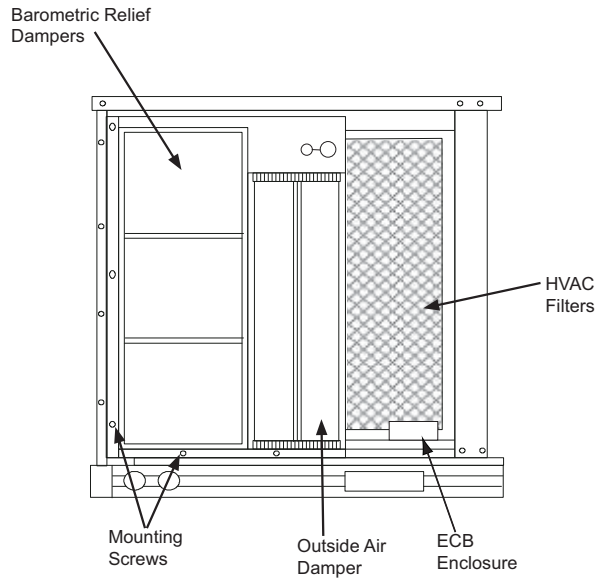


Fig. 4 - EconoMiSer2 and Controller Installed In Unit

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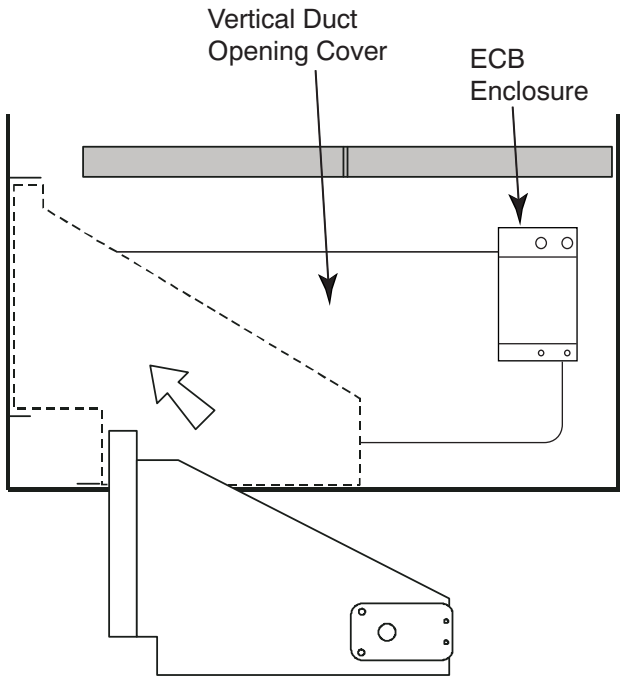


Fig. 3 - Top View of EconoMiSer2 and Controller Installation

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CRMRTCEB001A00 - 48/50HC 17-28 Units

⚠ WARNING

ELECTRICAL OPERATION HAZARD

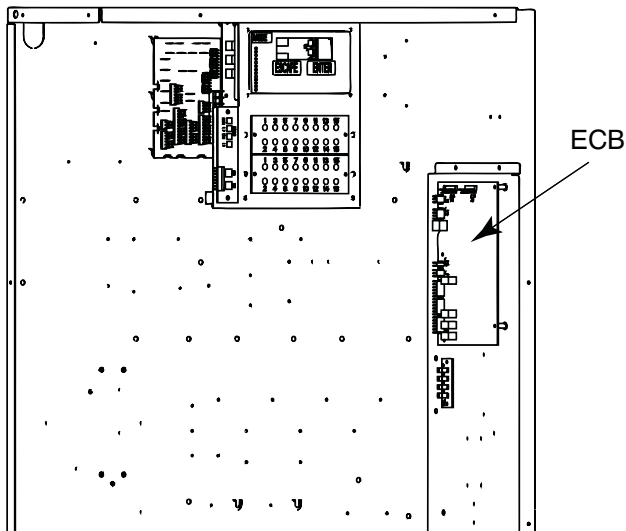
Failure to follow this warning could result in personal injury or death.

Before installing or servicing unit, always turn off all power to unit. There may be more than 1 disconnect switch.

Inspect package for correct parts and perform the following steps for installing the economizer control board.

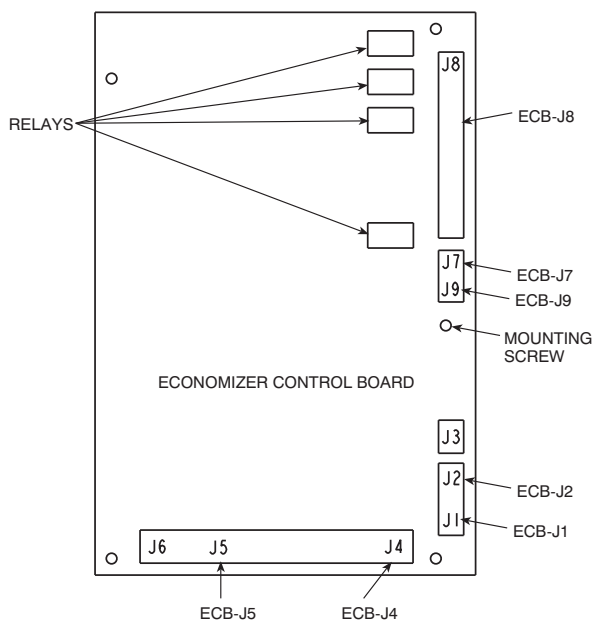
1. Turn off the unit's power supply and apply lockout tag.
2. Unscrew and remove or unlatch and open the unit control box panel.
3. Unscrew and remove the inter control box cover (high-voltage cover).
4. Install the economizer board into the control box using the supplied 5 screws. See Fig. 5. It is important that the screw be in place and tight to ground the board. Damage to the board could result if it is not properly grounded.
5. Locate and identify the economizer plugs marked "ECB-J1," "ECB-J2," "ECB-J4," "ECB-J5," "ECB-J7," "ECB-J8," and "ECB-J9" in the control box. These are part of the standard unit wiring harness and should be hanging in around where they would plug into the ECB.
6. Connect the plugs identified in previous step to the economizer control board plugs J1, J2, J4, J5, J7, J8, and J9. Be sure to connect the plugs with the proper orientation. The locking tabs should capture the plug. See Fig. 6.
7. Install the high-voltage cover with screw removed in step 3.
8. Power can now safely be restored to the unit.

9. The control must be configured to use the economizer accessory. Go to the Configuring the *ComfortLink* Control section in these installation instructions.
10. Once configured, follow normal start up procedure to verify proper operation.
11. Inspect the unit to make sure all panels are properly replaced and secured to the unit.



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Fig. 5 - ECB Mounting Location



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Fig. 6 - Economizer Control Board (ECB)

CONFIGURING THE *COMFORTLINK* CONTROL

The *ComfortLink* control must be configured for economizer operation. The default values are for no economizer and IAQ accessories installed. These configurations are changed through the Scrolling Marquee display or a Carrier network device. The configuration parameters and factory default values for economizer configuration and indoor air quality configuration are shown in Tables 3.

NOTE: Consult the Controls, Start-Up, Operation, Service and Troubleshooting Instructions for in-depth instructions on using and configuring the *ComfortLink* control. The following instructions are for the Scrolling Marquee display or Navigator™ accessory.

1. The *ComfortLink* control must be configured to use the economizer accessory. A password may be required to edit the configurations depending on previous settings configured in the unit. Default password is “1111.”
2. To configure the *ComfortLink* control, use the arrow keys to scroll the red LED on the display to the “*Configuration*” position and press **ENTER**.
3. Use the arrow keys to scroll down until the display shows “*ECON.*” This is the Economizer Configuration sub-mode. Press **ENTER**.
4. The control will display the Economizer Installed (*EC.EN*) setting. Press **ENTER** once to select the *EC.EN* setting for configuration. Press **ENTER** again for “NO” to begin flashing.
5. Use the arrow keys to change the configuration from “NO” to “YES,” then press **ENTER** and **ESCAPE** to save the setting.
6. If additional economizer control accessories have been added or other configuration parameters are to be changed from the factory defaults, then repeat the following steps:
 - a. Use the arrow keys to scroll up or down to the parameter to change. Press **ENTER** once to select the setting for configuration.
 - b. Press **ENTER** again. The configuration value will flash.
 - c. Use the arrow keys to change the configuration value.
 - d. Press **ENTER** and **ESCAPE** to save the setting.
7. Configuration of the *ComfortLink* control is now complete. Pressing **ESCAPE** multiple times will return the display to the auto-scrolling setting.
8. Close and secure all access doors.

TROUBLESHOOTING

Refer to the Controls, Start-Up, Operation, Service and Troubleshooting Instructions for more information on the following topics: Service Test, Diagnostic Alarm Codes and Possible Causes, Economizer Troubleshooting, and Economizer Adjustment. See Table 4 for general economizer service analysis.

CRSRTECB / CRRMTECB

Table 4 – Economizer Service Analysis

PROBLEM	POSSIBLE CAUSE	REMEDY
Damper Does Not Move.	Indoor Fan is off.	Check for proper thermostat connection.
		Unit is not configured for continuous fan operation and the thermostat is not calling for heating or cooling.
		Unit is in Unoccupied mode and there is no call for heating or cooling.
		Blown fuse (FU1, FU2).
		Tripped circuit breaker (CB1, CB2, CB3).
		No power to the unit.
		Unit is off via CCN command.
	Actuator is unplugged at motor or at economizer board.	Check wiring connections.
	Unit is not configured for economizer.	Configure unit for economizer per the instructions.
	Outdoor-air temperature is above economizer high temperature lockout.	Adjust the high temperature lockout setting if it is incorrect, otherwise, economizer is operating correctly.
Outdoor-air temperature is below economizer low temperature lockout.	Adjust the low temperature lockout setting if it is incorrect, otherwise, economizer is operating correctly.	
Communication loss to economizer board.	Check wiring connections.	
Damper is jammed.	Identify the obstruction and safely remove.	
Economizer Operation is Limited to Minimum Position.	Minimum position is set incorrectly.	Adjust minimum position setting.
	Outdoor-air temperature is above economizer high temperature lockout.	Adjust the high temperature lockout setting if it is incorrect, otherwise, economizer is operating correctly.
	Outdoor-air temperature is below economizer low temperature lockout.	Adjust the low temperature lockout setting if it is incorrect, otherwise, economizer is operating correctly.
	Outdoor-air thermistor is faulty.	Replace outdoor-air thermistor.
	Low suction pressure problem with a compressor.	Economizer is operating correctly, identify compressor problem.
Economizer Position is Less Than Minimum Position.	IAQ is controlling minimum damper position.	Adjust the IAQ settings if incorrect, otherwise, economizer is operating correctly.
	Unit is in Unoccupied mode.	Adjust unit occupied schedule if incorrect, otherwise, economizer is operating correctly.
Economizer Does Not Return to Minimum Position.	Unit is operating under free cooling.	Economizer is operating correctly.
Outdoor Damper Not Fully Closed at 0% Commanded Position or Not Fully Open at 100%.	Economizer actuator is out of calibration.	Enter Service Test mode and run the Calibrate Economizer (Service Test → INDP → E.CAL) procedure.
Damper Does Not Close on Power Loss.	Damper is jammed.	Identify the obstruction and safely remove.

LEGEND

CCN – Carrier Comfort Network®
 IAQ — Indoor Air Quality

CRSRTECB / CRMRTECB