MicroMetl

Since 1965

Economizer ECD-SRTSA-DW
Install Guide

MicroMetl

Since 1965

Table of Contents

MicroMetl

Small Rooftop Products
Select 2 to 15 Tons
Vertical Economizer Accessory
with W7212 Electro-Mechanical Controls

Installation Instructions

ECD-SRT**SA Series Economizer with W7212 Controller

Read these instructions completely before attempting to install the Vertical economizer Accessory.

CONTENTS

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 the basic maintenance functions of 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. Wear safety glasses and work gloves.

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, and 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 a hazard 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 HAZARD

Failure to follow this warning could cause personal injury or death. Before performing service or maintenance operations on the unit, always turn off main power switch(es) to unit and install lockout tag(s). Unit may have more than one power switch.

⚠ CAUTION

CUT HAZARD

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing, safety glasses and gloves when handling parts and servicing roof top units.

GENERAL

The economizer system utilizes the latest technology available for integrating the use of free cooling with mechanical cooling for packaged rooftop units. The solid-state control system optimizes energy consumption, zone comfort, and equipment cycling by operating the compressors when the outdoor-air is too warm (and/or humid), integrating the compressor with outdoor air when free cooling is available, and locking out the compressor when outdoor-air is unacceptable. Demand control ventilation is supported.

The economizer system utilizes gear-drive technology with a direct-mount spring return actuator that will close upon loss of power. The economizer system comes standard with an outdoor air sensor, supply (sometimes called a mixed or discharge) air temperature sensor, and low temperature compressor lockout switch. ECD-SRT**SA-DWZS models also include a differential enthalpy for field installation in return duct. Outdoor enthalpy, indoor enthalpy, and CO2 sensors are available for field installation. See Table 3 for sensor usage.

Standard barometric relief dampers provide natural building pressurization control. An optional power exhaust system is available for applications requiring even greater exhaust capabilities. The power exhaust set point is adjustable at the economizer controller.

See Table 1 for package usage. See Table 2 for package contents. See Table 3 for sensor usage.

Table 1 - Package Usage

Vertical Economizers with W7212 Controller and Siemens Actuator

Chassis Size	Economizer PN	Outside Air and Differential Sensors
Chassis 1-2	ECD-SRT12SA-DWFS	Fixed OA Dry Bulb Sensor
	ECD-SRT12SA-DWDS	Adjustable OA Dry Bulb Sensor
	ECD-SRT12SA-DWES	Enthalpy OA Sensor
	ECD-SRT12SA-DWZS	Enthalpy OA and Differential Sensor
Chassis 3-4	ECD-SRT34SA-DWFS	Fixed OA Dry Bulb Sensor
	ECD-SRT34SA-DWDS	Adjustable OA Dry Bulb Sensor
	ECD-SRT34SA-DWES	Enthalpy OA Sensor
	ECD-SRT34SA-DWZS	Enthalpy OA and Differential Sensor
Chassis 5	ECD-SRT05SA-DWFS	Fixed OA Dry Bulb Sensor
	ECD-SRT05SA-DWDS	Adjustable OA Dry Bulb Sensor
	ECD-SRT05SA-DWES	Enthalpy OA Sensor
	ECD-SRT05SA-DWZS	Enthalpy OA and Differential Sensor

Table 2 - Package Contents

PACKAGE NO.	QTY	CONTENTS
ECD-SRT12SA ECD-SRT34SA	1 1 1 18 1 1	Hood Top and Sides Hood Divider Aluminum Filter Screws Damper Assembly Supply Air Temperature Sensor
ECD-SRT05SA	1 1 1 2 1 1 1	Hood Top and Sides Hood Divider Hood Filter Divider Aluminum Filters Hardware Bag Damper Assembly Supply Air Temp Sensor

Note: ECD-SRT**-DWZS models also include a differential enthalpy in hardware bag for field installation in return duct.

Table 3 - Economizer Sensor Usage

APPLICATION	
Outdoor Air Dry Bulb	ECD-SRT**SA-DWFS includes (MM PN 9901-0183) fixed dry bulb sensor. ECD-SRT**SA-DWDS includes (MM PN 9901-2251) C7660 adjustable dry bulb sensor
Single Enthalpy	ECD-SRT**SA-DWES includes (MM PN 9901-0018) C7400 OA enthalpy sensor
Differential Enthalpy	ECD-SRT**SA-DWZS includes a (MM PN 9901-0018) C7400 OA enthalpy and (MM PN 9901-0018) C7400 differential RA enthalpy
CO_2 for DCV Control Using a Wall-Mounted CO_2 Sensor	8002-WMDM
CO_2 for DCV Control Using a Duct-Mounted CO_2 Sensor	8002-XVDM

ACCESSORIES LIST

The economizer has several field-installed accessories available to optimize performance. Refer to Table 4 for authorized parts and power exhaust descriptions

INSTALLATION

1. Turn off unit power supply(s) and install lockout tag.

Table 4 - Economizer Field-Installed Propeller Power Exhausts and CO2

DESCRIPTION	PART NUMBER
ECD-SRT12SA Prop. Power Exhaust 208-230 v 1Ph	PPD-SRT12TA-D-1VC
ECD-SRT12SA Power Exhaust 460 v 3 Ph	PPD-SRT12TA-D-4VC
ECD-SRT34SA Power Exhaust 208-230 v 1 Ph	PPD-SRT34TA-D-1VD
ECD-SRT34SA Power Exhaust 460 v 3 Ph	PPD-SRT34TA-D-4VD
ECD-SRT05SA Power Exhaust 208-230 v 1 Ph	PPD-SRT05TA-D-1VD
ECD-SRT05SA Power Exhaust 460 v 3 Ph	PPD-SRT05TA-D-4VD
Return Air CO_2 Sensor (4 to 20 mA)	8002-XVDM
CO_2 Room Sensor (4 to 20 mA)	8002-WMDM

2. Remove the existing unit filter access panel. Raise the panel and swing the bottom outward. The panel is now disengaged from the track and can be removed. (See Fig. 2.)
3. Remove the indoor coil access panel and discard. (See Fig. 2.)

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

Disconnect power supply and install lockout tag before attempting to install accessory.

4. The economizer hood components are shipped with the economizer. Remove hood from packaging. The hood top and sides are shipped factory assembled.

NOTE: If the power exhaust accessory is to be installed on the unit, the hood shipped with the economizer will not be used and may be discarded. Save the aluminum filter for use in the power exhaust hood assembly.

5. Insert the hood divider between the hood sides. (See Fig. 3) Secure hood divider with 2 screws (provided) on each hood side. Screws should go through the hood sides into the divider. The hood divider is also used as the bottom filter rack for the aluminum filter. On hood for ECD-SRT05SA economizer install filter divider. (See Fig. 4A.)
6. Set the economizer upright. (See Fig. 5.)
7. Slide the damper assembly into the rooftop unit. (See Fig. 5). On ECD-SRT12SA and ECD-SRT34SA be sure to engage the rear economizer flange under the tabs in the return-air opening of the unit base. (See Fig. 6)
8. Secure the economizer to unit along side and bottom flanges using the screws provided.
9. Remove the tape securing the relief dampers in place.
10. Remove and save the 12-pin jumper plug from the unit wiring harness (located in the upper left corner of the unit). Insert the economizer plug into the unit wiring harness. Refer to Fig. 7 for wiring diagram.

NOTE: The 12-pin jumper plug should be saved for future use, in the event that the economizer is removed from the unit. The jumper plug is not needed as long as the economizer is installed.

11. The outside air sensor may be taped to the front economizer divider plate for shipping purposes. Relocate sensor to operating position as shown in Fig. 1.
12. Remove the indoor fan motor access panel. (See Fig. 8.)
13. The supply air temperature sensor looks like an eyelet terminal or probe with wires running to it. The sensor is located on the "crimp end" and is sealed from moisture. Mount the supply air temperature sensor (provided) to the lower left section of the indoor fan blower housing. (See Fig. 9.) Use the screw provided and use existing hole. Connect the violet and pink wires to the supply air temperature sensor. (See Fig. 7.)

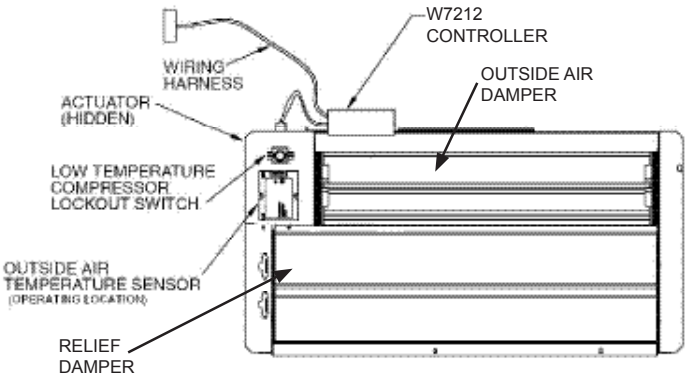


Fig. 1 - Economizer Component Locations — (ECD- SRT12SA-DWDS Shown)

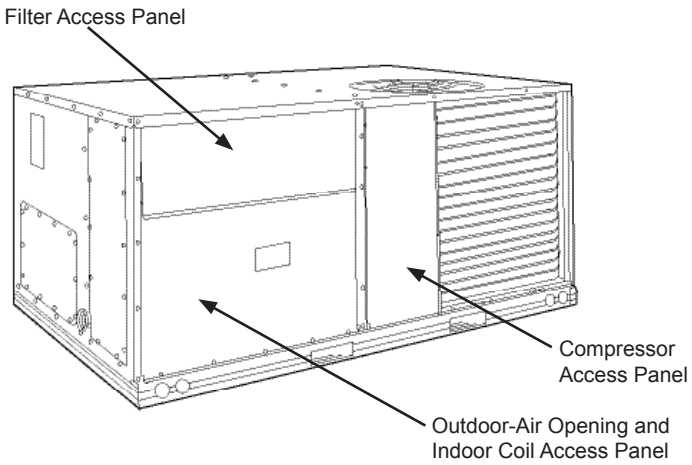


Fig. 2 - Typical Outdoor-Air Section Access Panel Locations

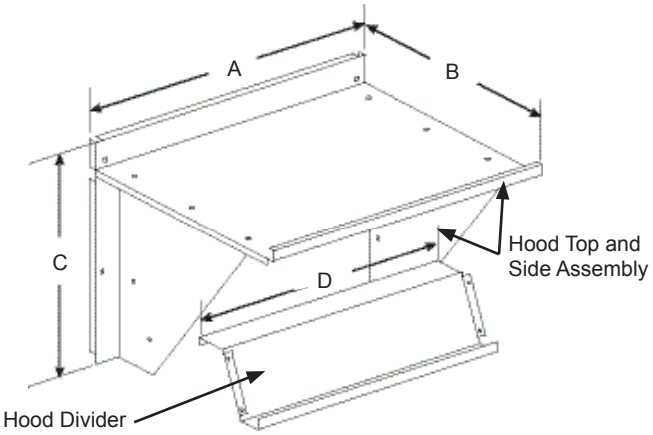


Fig. 3 - Hood Assembly

ECONOMIZER P/N	A	B	C	D	SHIP WT.
ECD-SRT12SA	33.37”	17.43”	19.05”	29.5”	55 lb
ECD-SRT34SA	40.37”	22.28”	24.48”	36.27”	80lb
ECD-SRT05SA	52.92”	27.03”	33.41”	49.92”	98lb

NOTE: The ECD-SRT05SA hood has 2 aluminum filters and a hood filter divider that installs between the filters. (See Fig. 4A.)

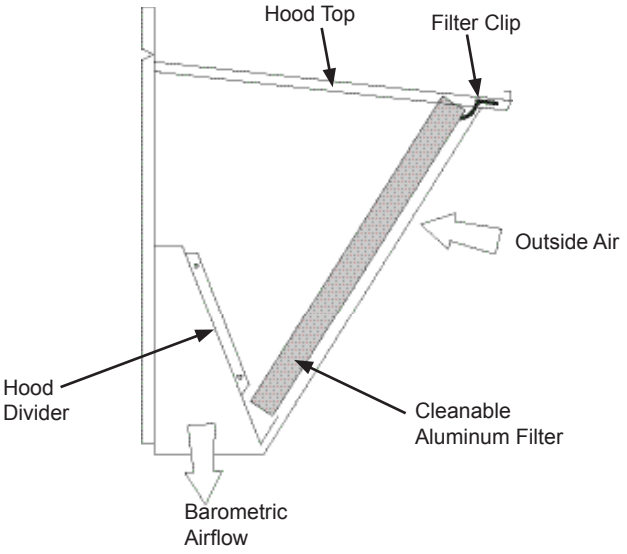


Fig. 4 - Filter Installation

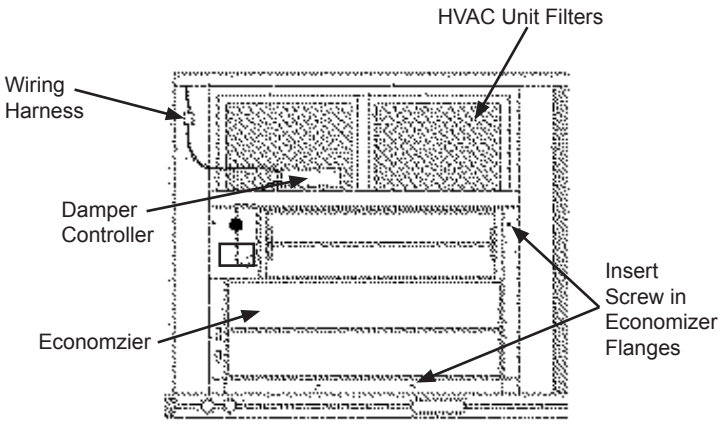


Fig. 5 - Economizer Installed in HVAC Unit (ECD-SRT12SA Shown)

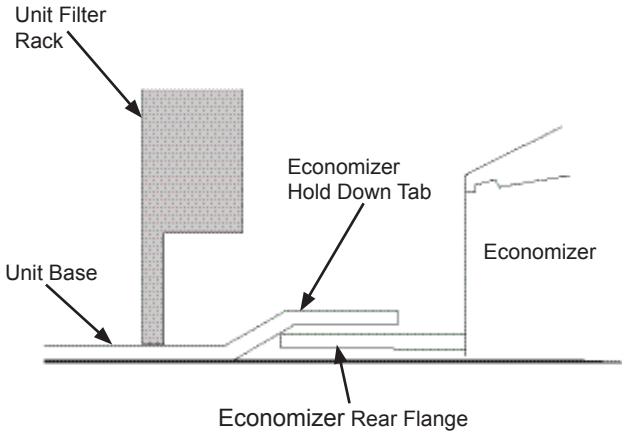


Fig. 6 - Rear Economizer Flange Installation (ECD-SRT12SA and ECD-SRT34SA Only)

14. While unit and economizer are open install and wire any other accessories and/or sensors as applicable and convenient, per their installation instructions and/or the Configuration section of this instruction. This includes the differential return enthalpy shipped with the ECD-SRT**SA-DWZS models, see figure 13 for details. Some accessories require that unit ducting already be installed.

NOTE: If also installing a power exhaust accessory, skip step 15 and follow the power exhaust instructions instead.

15. Install the economizer hood over the economizer. Use screws provided. (See Fig. 10.)

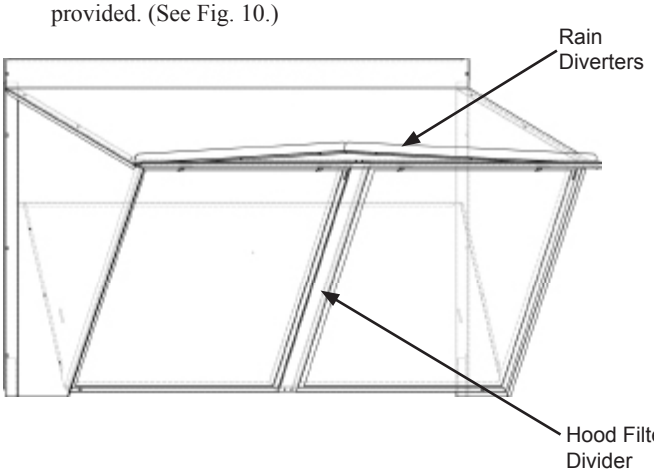


Fig. 4A - Hood for ECD-SRT05SA Economizers

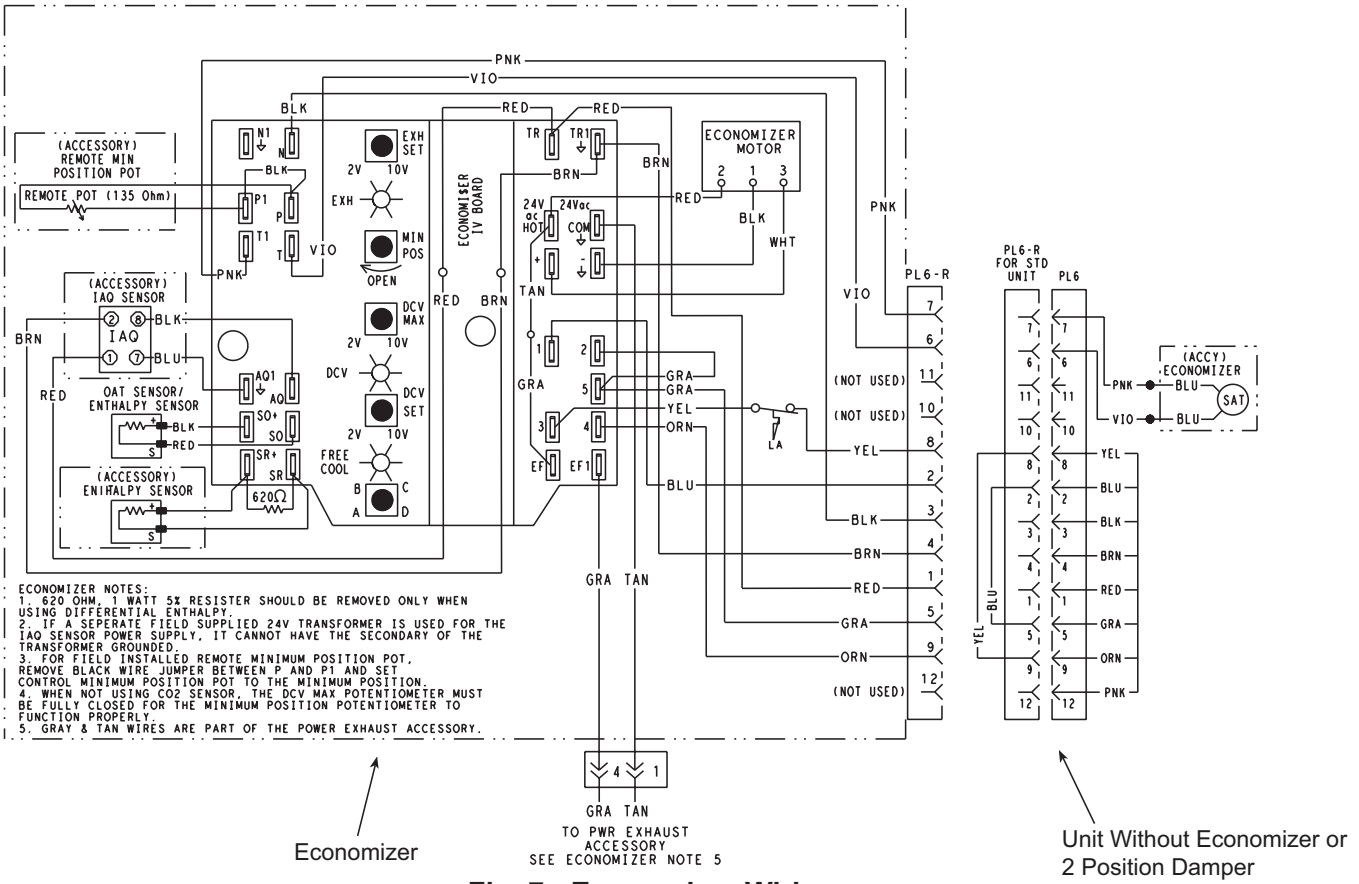


Fig. 7 - Economizer Wiring

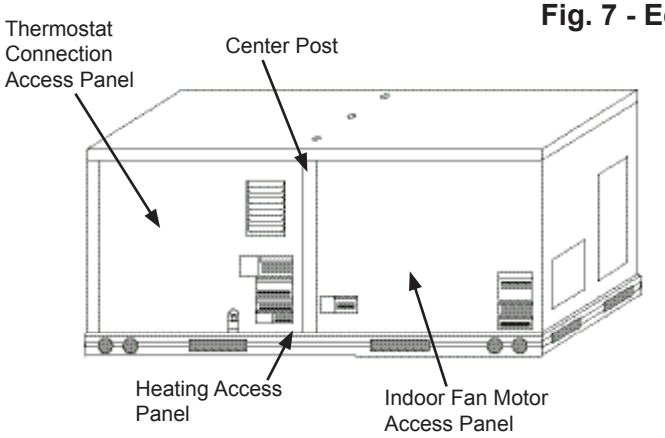


Fig. 8 - Typical Indoor Fan Motor Access Panel Locations

16. Review the controller setting options in the Configuration section.
    a. On -DWFS economizers with fixed dry bulb, the outside air temperature will allow free-cooling below 70 degrees F.
    On -DWDS economizers the outside air temperature allowed for free-cooling is adjustable on the C7660 sensor. See figure 12 for details.
    On -DWES and -DWZS economizers with a C7400 OA enthalpy sensor, the temperature / humidity allowed for free-cooling is adjustable with the ABCD potentiometer on the W7212 controller. See figure 14 for details.
    The -DWZS economizer also includes a field installed differential return enthalpy to be mounted in return duct. See figure 13.
    b. The low temperature compressor lockout switch setting is fixed at 38° or 42°F.
    c. The supply air temperature sensor maintains a 55 degree F temperature.

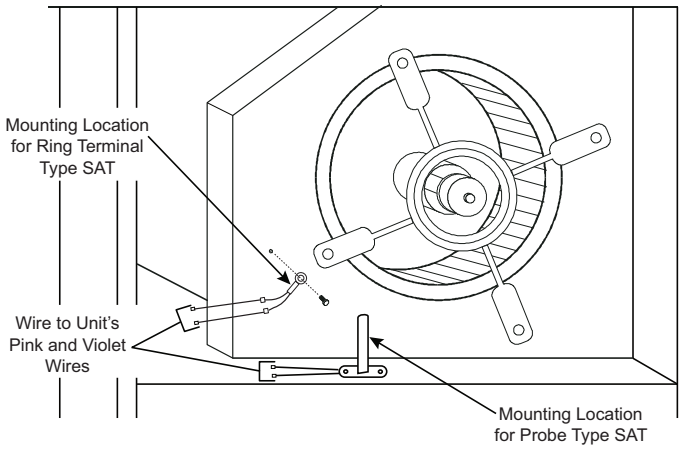


Fig. 9 - Supply Air Temperature (SAT) Mounting Location (Probe or Ring Type)

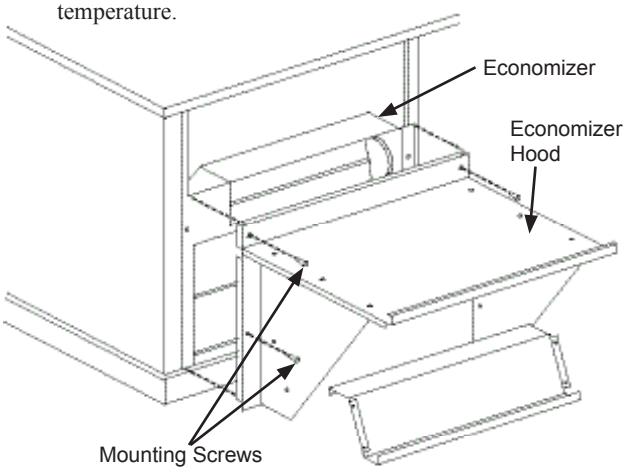


Fig. 10 - Economizer Hood Installation

d. The minimum position for the outdoor damper can be configured at the controller. When not using CO2 sensors, set the DCV Max potentiometer to completely closed (CCW) to insure that the Minimum Position potentiometer functions correctly. When using a remote minimum position potentiometer, the Min Pos Pot on the controller must be fully CW. See Fig. 11.

e. Settings on the, power exhaust and CO2 sensor can be configured at the controller. See Fig. 11.

17. Check all wiring for safety then reapply power to the unit. Verify correct operation and setting of the accessory(s) per the Configuration and Operations sections of the instruction.
18. Replace the indoor fan motor access panel.
19. Replace the filter access panel. Slide top of panel into track and lift. Push bottom of panel into place.
20. Install the economizer hood filter(s) by opening the filter clips which are located underneath the hood top. Insert the aluminum filter(s) into the bottom filter rack (hood divider). Push the filter into position past the open filter clips. Close the filter clips to lock the filter into place. (See Fig. 4.)

CONFIGURATION

ECONOMIZER CONTROL MODES — Determine the economizer control mode before set up of the control. Some modes of operation may require different sensors (See Table 3). The economizer kits for field installation are supplied from the factory with supply air temperature sensors, low temperature compressor lockout switches, and outdoor air sensors.

Table 5 - Supply Air Sensor Temperature/ Resistance Values

TEMPERATURE (F)	RESISTANCE (ohms)
-58	200,250
-40	100,680
-22	53,010
-4	29,091
14	16,590
32	9,795
50	5,970
68	3,747
77	3,000
86	2,416
104	1,597
122	1,080
140	746
158	525
176	376
185	321
194	274
212	203
230	153
248	116
257	102
266	89
284	70
302	55

THERMOSTATS — The economizer control works with conventional thermostats that have a Y1 (cool stage 1), Y2 (cool stage 2), W1 (heat stage 1), W2 (heat stage 2), and G (fan). The economizer control does not support space temperature sensors. Connections are made at the thermostat section of the central terminal board located in the main unit control box.

NOTE: When using differential enthalpy control and "integrated economizer operation" is desired, a 2-stage cooling thermostat is required even on 1-stage cooling units (e.g. 2-6 ton rooftop units). A thermostat lead must be made between Y2-output on thermostat and Y2-input on rooftop unit's Central Terminal Board (CTB). Internal wiring between Y2-input on the unit CTB and the economizer controller's Y2 input already exists in unit wiring harness and the economizer plug, so no field modifications are required.

OCCUPANCY CONTROL (R22 MODELS) — The factory default configuration for the economizer control is occupied mode. Occupied status is provided by the black wire from Pin 3. When unoccupied mode is desired, install a field supplied timeclock function interrupting the black wire to the N terminal. (See Fig. 7) When the timeclock contacts are closed, the economizer control will be in occupied mode. When the timeclock contacts are open (removing the 24-v signal from terminal N), the economizer will be in unoccupied mode.

OCCUPANCY CONTROL (R410A MODELS) — The factory default configuration for the economizer control is occupied mode. Occupied status is provided by installing a field-supplied timeclock function on the OCCUPANCY terminals on the CTB (Central Terminal Board) in the unit's main control box and cutting the "CUT FOR OCCUPANCY" jumper on the CTB (See Fig. 17). When the timeclock contacts are closed, the economizer control will be in occupied mode. When the timeclock contacts are open removing the 24v signal from terminal N, the economizer will be in unoccupied mode.

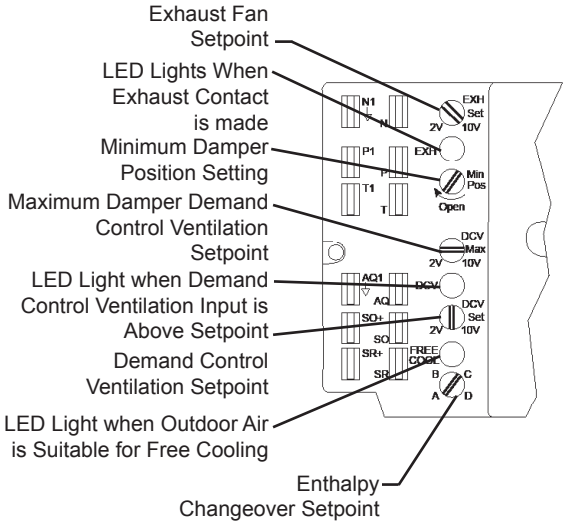


Fig. 11 - Economizer Controller Potentiometer and LED Locations

SUPPLY / MIXED AIR TEMPERATURE (SAT) SENSOR — The supply air temperature sensor is a 3 K thermistor located at the inlet of the indoor fan. (See Fig. 9) This sensor is field installed. The operating range of temperature measurement is 0° to 158° F. See Table 5 for sensor temperature/resistance values. The temperature sensor looks like an eyelet terminal with wires running to it. The sensor is located in the "crimp end" and is sealed from moisture.

LOW TEMPERATURE COMPRESSOR LOCKOUT SWITCH — The economizer is equipped with a low ambient temperature lockout switch located in the outdoor airstream which is used to lock out the compressors below a 38° or 42° F ambient temperature. (See Fig. 1)

FIXED DRY BULB OUTDOOR AIR TEMPERATURE SENSOR (-DWFS Models) — For this control mode the, the outside air temperature is compared to the fixed temperature on the OA sensor, which is 70 degrees.

If the outside air temperature is above 70 degrees F, the economizer will adjust the outdoor dampers to minimum position. If the outdoor air temperature is below 70 degrees, the position of the outside air damper will be controlled to provide free-cooling using outside air.

When in the free-cooling mode, the Free Cooling LED next to the enthalpy potentiometer will be on. The ABCD potentiometer on the controller should be adjusted to the "D" position.

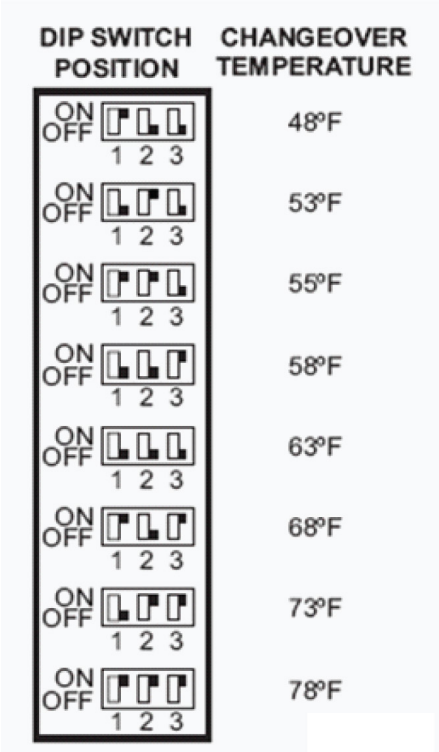


Fig. 12 - Outdoor Air Temperature Changeover Set Points

ADJUSTABLE OUTDOOR DRY BULB CHANGEOVER (-DWDS Models) — For this control mode, the outdoor temperature is compared to a selectable set point on the OAT sensor. If the outdoor air temperature is above the set point, the economizer will adjust the outdoor air dampers to minimum position. If the outdoor air temperature is below the set point, the position of the outdoor air dampers will be controlled to provide free cooling using outdoor air. When in this mode, the Free Cool LED next to the outdoor enthalpy set point (ABCD) potentiometer will be on. The changeover temperature set point is controlled by the dip switches on the sensor. See Fig. 12 for the switch positions corresponding to the temperature changeover values. The ABCD potentiometer on the controller should be turned fully clockwise (CW) to the "D" position.

OUTDOOR ENTHALPY CHANGEOVER (-DWES Models) — When the outdoor air enthalpy rises above the outdoor enthalpy changeover set point, the outdoor-air damper moves to its minimum position The outdoor enthalpy changeover set point is set with the outdoor enthalpy set point (ABCD) potentiometer on the economizer controller. The set points are A, B, C, and D (See Figs. 11, 14 and 15). The factory-installed 620-ohm jumper must be in place across terminals SR and SR+ on economizer controller. (See Fig. 7). When not using CO2 sensors, set the DCV Max potentiometer to completely closed (CCW) to insure that the Minimum Position potentiometer functions correctly.

DIFFERENTIAL ENTHALPY CONTROL (-DWZS Models) — For differential enthalpy control, the economizer controller uses two enthalpy sensors, 9901-0018 in the outside air and 9901-0018 in the return airstream. The economizer controller compares the outdoor air enthalpy to the return air enthalpy to determine economizer damper position. 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, the economizer opens to bring in outdoor air for free cooling. Mount the return air enthalpy sensor in the return air duct. (See Fig. 7 and 13) When using this mode of changeover control, turn the outdoor enthalpy set point (ABCD) potentiometer fully clockwise to the D setting.

POWER EXHAUST SET POINT ADJUSTMENT—If the optional power exhaust accessory is installed, the exhaust set point will determine when the power exhaust fan runs based on damper position. The set point is modified with the Exhaust Fan Set Point (EXH SET) potentiometer. (See Fig. 11) The set point represents the damper position above which the exhaust fans will be turned on. When there is a call for exhaust, the economizer controller provides a 45 ± 15 second delay before exhaust fan activation to allow the dampers to open. This delay allows the damper to reach the appropriate position to avoid unnecessary fan overload.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in damage to equipment.

If a separate field-supplied transformer is used to power the IAQ sensor, the sensor must not be grounded or the economizer control board will be damaged.

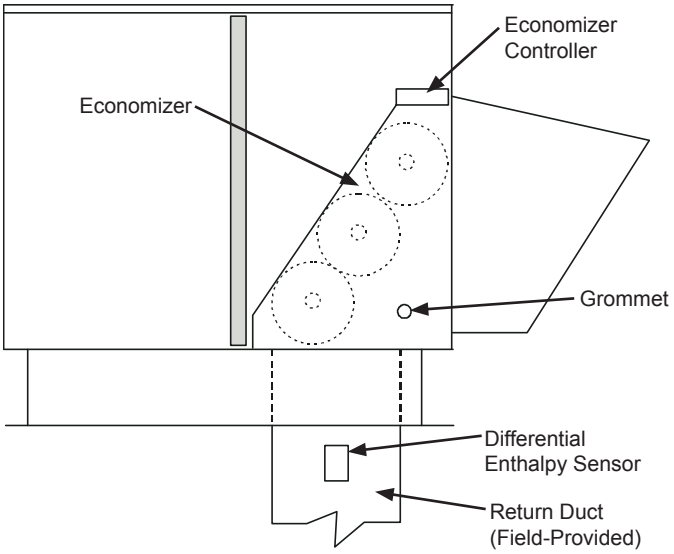


Fig. 13 - Differential Return Air Enthalpy Sensor Mounting Location

CONTROL CURVE	CONTROL POINT APPROX. °F (°C) AT 50% RH
A	73 (23)
B	70 (21)
C	67 (19)
D	63 (17)

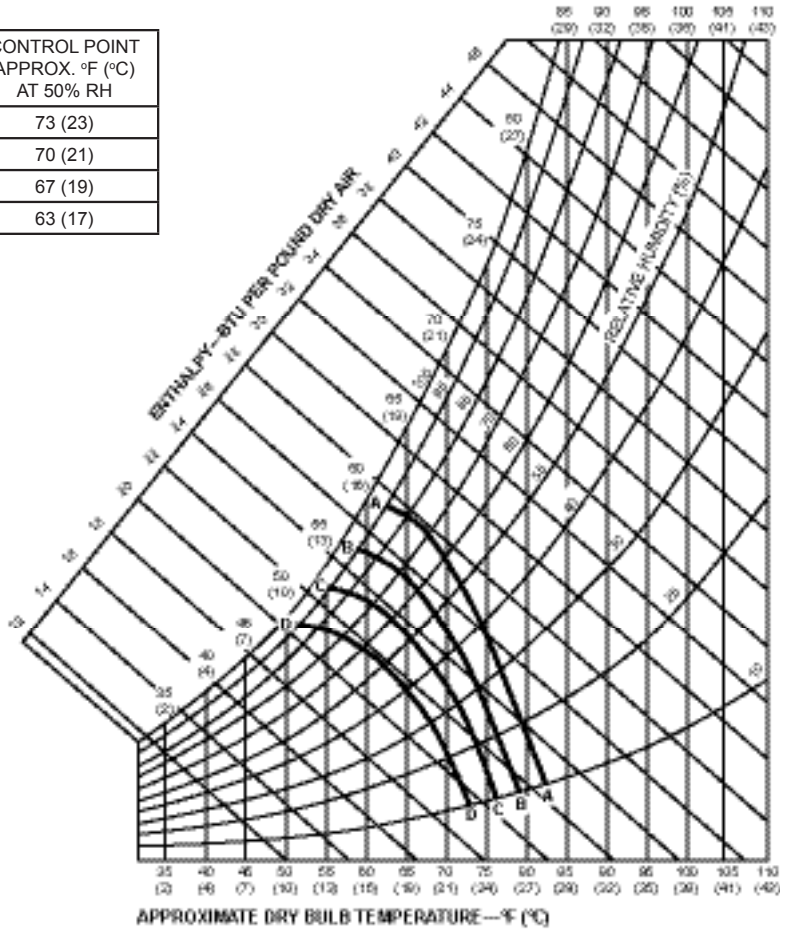


Fig. 14 - Enthalpy Changeover Setpoints

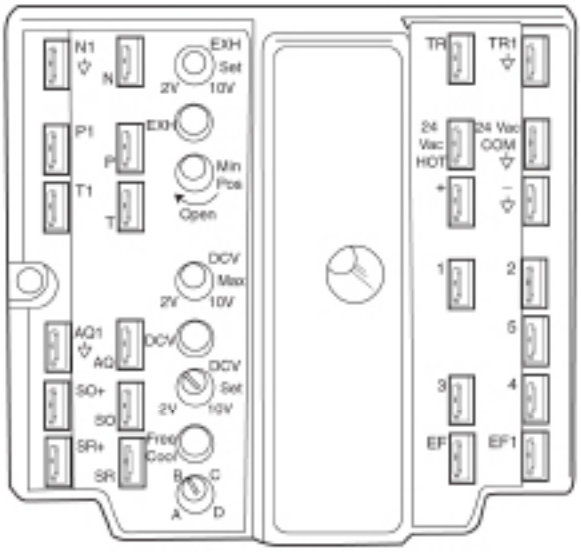


Fig. 15 - W7212 Controller

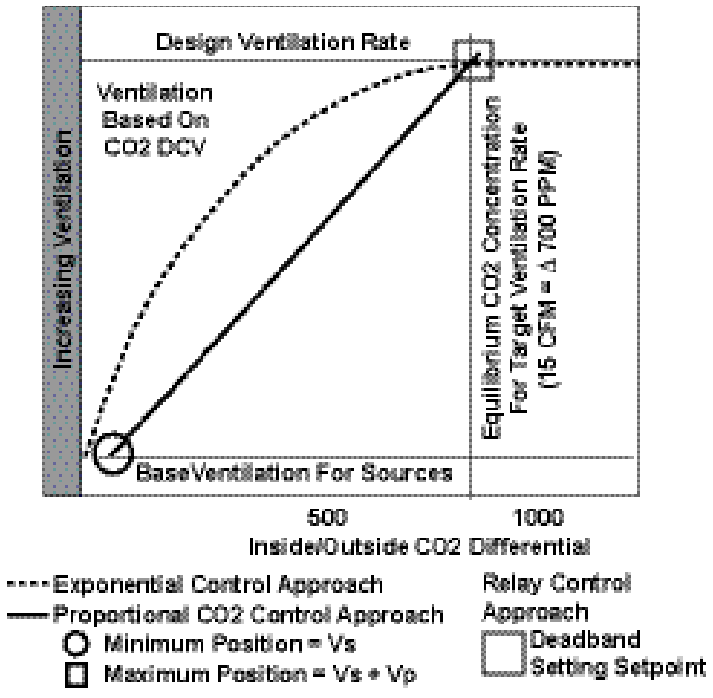


Fig. 16 - Proportional and Exponential Control

MINIMUM DAMPER POSITION CONTROL —There is a minimum damper position potentiometer on the W7212 controller. (See Fig. 11). Adjust the Min Pos potentiometer to allow the minimum or base amount of outdoor air, as required by local codes, to enter the building. Make minimum position adjustments with at least 10°F temperature difference between the outdoor and return-air temperatures. The minimum damper position maintains the minimum airflow for full occupancy into the building during the occupied period when demand control ventilation is not being used).

When the control is operating in Demand Control Ventilation (DCV) mode (see separate section following), the minimum damper position sets the minimum ventilation position for VOC (volatile organic compound) contaminant removal during lightly occupied periods. In this mode the DCV Max potentiometer is used for fully occupied ventilation.

NOTE: When DCV is not being used, set the DCV Max potentiometer to completely closed (CCW) to insure that the Minimum Position potentiometer functions correctly. If the DCV Max is set more open than Min Pos and <1 Vdc is detected across the CO2 sensor terminals, then DCV Max will override and become the actual lower limit on damper position.

To determine the minimum position setting, perform the following procedure:

1. Calculate the appropriate mixed air temperature using the following formula:

   (TO x OA/100) + (TR x RA/100) = TM
   TO = Outdoor-Air Temperature
   OA = Percent of Outdoor Air
   TR = Return-Air Temperature
   RA = Percent of Return Air
   TM = Mixed-Air Temperature

As an example, if DCV is not being used and local codes require 10% outdoor air during occupied conditions, outdoor-air temperature is 60°F, and return-air temperature is 75°F.
(60 x 0.10) + (75 x 0.90) = 73.5°F

2. Disconnect the supply air sensor from terminals T and T1 (See Fig. 14) and jumper them together. This fools the controller into believing the mixed air temperature is 55 °F so it does not modulate the damper.
3. Ensure that the factory-installed jumper is in place across terminals P and P1 (for remote control of damper position see the paragraph following.)
4. Connect 24 Vac across terminals TR and TR1(factory wiring should ensure this if the 12-pin plug is connected. Carefully adjust the Min Pos potentiometer until the measured mixed-air temperature matches the calculated value. Measurement must be done with a separate thermometer or sensor accurate to ± 0.5 °F because you have fooled the unit controls in step 2 above.
5. If you are going to set the DCV maximum ventilation position with the DCV Max potentiometer, do it now while you have 24Vac across terminal TR & TR1. See the DEMAND CONTROLLED VENTILATION section following.
6. Remove the jumper and reconnect the supply air sensor to terminals T and T1.

REMOTE CONTROL OF DAMPER POSITION - Remote control of the economizer damper is desirable when additional temporary ventilation may be required. If a field-supplied remote potentiometer (such as Honeywell part number 9901-0101) is wired to the W7212 controller, the minimum position of the damper can be controlled from a remote location. If remote damper positioning is being used, use the same steps 1 & 2 above and then follow these additional steps to determine the remote position setting for the desired percent airflow.

3. Remove the factory installed black jumper connecting terminals P & P1(See Fig. 7)
4. Turn the economizer Min Pos potentiometer fully clockwise.
5. Connect the remote minimum position potentiometer across terminals P & P1.
6. Connect 24 Vac across terminals TR and TR1.
7. Carefully adjust the remote minimum position potentiometer until the measured mixed-air temperature matches the calculated value.
8. Reconnect the supply air sensor to terminals T and T1.

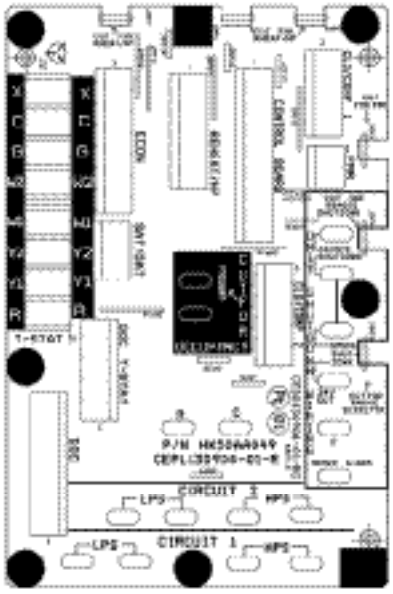


Fig. 17 - Central Terminal Board

DAMPER MOVEMENT — Damper movement from full open to full close (or vice versa) takes 3 minutes.

DEMAND CONTROLLED VENTILATION (DCV)—Demand controlled ventilation uses an optional accessory carbon dioxide (CO2) sensor to measure the amount of CO2 in indoor air. The controller uses this input to adjust outside air ventilation to maintain indoor air quality (IAQ) based on a user configurable maximum CO2 level. This typically reduces outside air intake requirements and therefore energy consumption.

When using the economizer for demand controlled ventilation, you will need to adjust three controller potentiometers to set:

- the minimum damper position to ventilate the lightly occupied building
- the triggering CO2 level to begin opening the damper
- the maximum damper position to provide fresh air to for a fully occupied building.

The damper settings (in terms of % fresh air flow) and the CO2 level in term of parts per million (ppm) should be provided to you by the consulting engineer(s) on the job, calculated based on building codes and/or ASHRAE Standard 62.1. Examples in this instruction use typical numbers.

To set up DCV:

1. Disconnect the CO2 sensor if already connected.
2. Determine and set the minimum damper position per the MINIMUM DAMPER POSITION CONTROL section above, noting that the definition of minimum ventilation changes for DCV. Make sure that DCV Max potentiometer is set to completely closed (CCW) during this procedure.
3. Determine and set the DCV maximum damper position using the same procedure from MINIMUM DAMPER POSITION CONTROL section above except:
   - Adjust the DCV Max potentiometer instead of MIN POS.
4. Determine and set the minimum CO2 value where the damper should start to open by adjusting the DCV Set potentiometer. See also the CO2 SENSOR CONFIGURATION section following. Background CO2 level is around 400 ppm and a typical starting ventilation threshold is 600 ppm above background for a total value of 1000 ppm. The factory default setting on factory-supplied sensors is a measuring range of 0 -2000 ppm with a 0-10 Vdc proportional (linear) output. This means 1000 ppm would result in ~5V output. The DCV Set potentiometer comes from the factory set at 50%, but it is 50% of 2-10Vdc which is 6 Vdc, not 5. To set the DCV Set potentiometer correctly to activate DCV at 1000ppm of CO2 you must do one of the following:
   - Provide a 5 Vdc signal (3 fresh batteries in series would give you ≥4.5 Vdc, probably closer to 4.8 Vdc) and adjust the potentiometer until the DCV LED just lights, or
   - Estimate setting by adjusting pot 3/8 turn clockwise for 5 Vdc setting.
   - Don't touch the pot at all. Instead adjust the voltage output range on the CO2 sensor from 0-10 Vdc default to 2-10 Vdc so it matches the pot. See also the CO2 SENSOR CONFIGURATION section following.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in damage to equipment

If a separate field-supplied transformer is used to power the IAQ sensor, the sensor must not be grounded or the W7212 control board will be damaged.

CO2 / INDOOR AIR QUALITY (IAQ) SENSOR - Mount the accessory IAQ sensor according to manufacturer specifications in the space or return air duct. The IAQ sensor should be wired to the AQ and AQ1 terminals of the controller.

CO2 SENSOR CONFIGURATION — Set up the CO2 sensor according to the manufacturer's instructions that come with the unit. The default setting on factory-supplied sensors is a measuring range of 0 - 2000 ppm CO2 concentration with a 0 - 10 Vdc proportional (linear) output. If you followed the instructions above these settings should be fine as is.

NOTE: The W7212 control assumes the presence of a correctly functioning CO2 sensor if the voltage across the AQ – AQ1 terminals ≥ 1 Vdc, because it assumes the sensors are set up for 2 – 10 Vdc output. Otherwise it will not operate in DCV mode and instead opens the dampers to the more open of the MIN POS and DCV Max set points. factory-supplied sensors' default settings are 0 – 10 Vdc, but because there is always CO2 in the air, you should still read at least 2 Vdc under normal circumstances. However if you reprogram the factory-supplied sensors (to increase the range, change the output voltage, etc.) it is possible to lower the sensor voltage output to where you might have problems. Therefore, if you reprogram a factory-supplied CO2 sensor, you should also adjust the minimum voltage output up from 0 to 2 Vdc to avoid this issue.

Factory-supplied sensors offer the option of changing to an exponential anticipatory response (see Fig. 16) which generates higher output voltages at midrange sensor readings to make the controller introduce more outside ventilation air at lower CO2 concentrations. Continuing the example from step 3 of the DEMAND CONTROLLED VENTILATION section, if after DCV Set adjustment you changed the CO2 sensor from proportional to exponential, the sensor voltage output would reach 5 Vdc at a CO2 concentration below 1000 ppm, fooling the controller into opening sooner to anticipate ventilation demands. Exponential anticipatory response would be appropriate for zones with:

- large air volumes such as gyms or theaters where higher CO2 levels might take a while to build up or reach the sensor.
- widely varying occupancy levels
- HVAC equipment that cannot exceed the required ventilation rate at design conditions. Exceeding the required ventilation rate means the equipment can condition air at a maximum ventilation rate that is greater than the required ventilation rate for maximum occupancy.

NOTE: The exponential anticipatory response setting only actually works like it should if the W7212 control DCV Set potentiometer is adjusted based on the original linear output. If you adjust it using the actual value of exponential voltage output from the sensor, it will not respond any faster.

DEHUMIDIFICATION OF FRESH AIR WITH DCV CONTROL—Information from ASHRAE indicates that the largest humidity load on any zone is the fresh air introduced. For some applications, an energy recovery unit can be added to reduce the moisture content of the fresh air being brought into the building when the enthalpy is high. In most cases, the normal heating and cooling processes are more than adequate to remove the humidity loads for most commercial applications. If normal rooftop heating and cooling operation is not adequate for the outdoor humidity level, an energy recovery unit and/or a dehumidification option should be considered.

OPERATION

When outside air temperatures are below return air temperatures the possibility exists for "free cooling," similar to opening a window instead of turning on your air conditioner. The economizer opens outdoor air dampers to admit cool outside air to the inlet of the supply air fan instead of activating the unit's compressor(s). This opening is controlled by a variety of standard and optional control strategies based on temperature, enthalpy and/or CO2 content of indoor and/or outdoor air. Relief dampers dump relatively hotter return air outdoors at the same time, optionally assisted by the power exhaust accessory. See Table 6 for a summary of controller logic.

SEQUENCE OF OPERATION—For economizer operation, there must be a thermostat call for the fan (G). This will move the damper to its minimum position (as controlled by the MIN POS potentiometer) during the occupied mode. When outside air conditions are such that free cooling is not available, the compressor will be controlled by the thermostat. If free cooling can be used, as determined from the appropriate sensors (dry bulb temperature, enthalpy, or differential enthalpy) and changeover control schedule, a call for cooling (Y1 closes at the thermostat) will cause the economizer control to provide a 50° to 55°F supply-air into the zone. As the supply air temperature (SAT) fluctuates above 55°F concurrent with Compressor 1 operation, the low ambient lockout thermostat will block compressor operation with economizer operation below 42°F outside-air temperature.

If a field-installed accessory CO2 sensor is connected to the economizer control, a demand controlled ventilation strategy will begin to operate in parallel with the free cooling strategy. As the CO2 level in the zone increases above the CO2 set point position (as controlled by the DCV set potentiometer), the position of the damper will be increased proportionally to the DCV Max position (as controlled by the DCV Max potentiometer). As the CO2 level decreases because of the increase in fresh air, the outdoor-air damper will be proportionally closed back down to the minimum open position. Damper position will follow the higher demand condition from the DCV mode or free cooling mode.

Performance Data — Refer to Fig. 18 for barometric relief capacity. Refer to Fig. 19 for return air pressure drop.

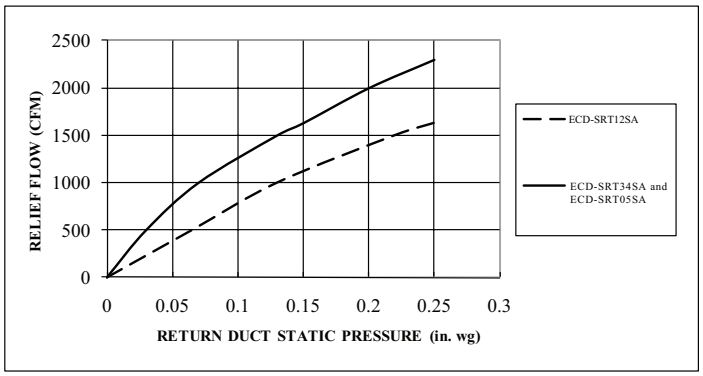


Fig. 18 - Barometric Relief Flow Capacity

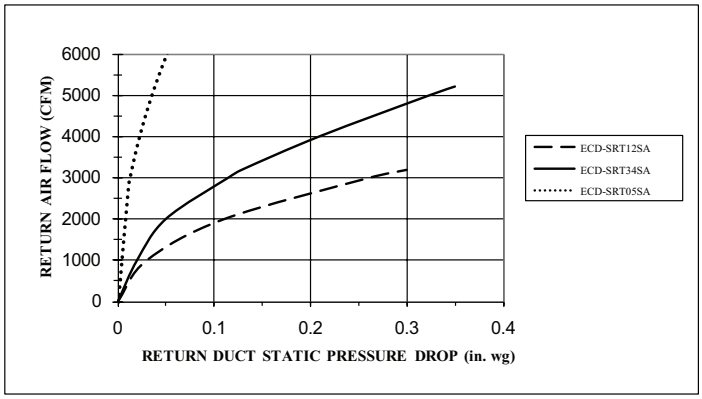


Fig. 19 - Return Air Pressure Drop

Table 6 - Economizer Input/Output Logic

INPUTS					OUTPUTS			
Demand Control Ventilation (DCV)	Enthalpy[a]		Y1	Y2	Compressor		N Terminal[b]	
	Outdoor	Return			Stage 1	Stage 2	Occupied[b]	Unoccupied[b]
							Damper	
Below set (DCV LED Off)	High (Free Cooling LED Off)	Low	On	On	On	On	Minimum position	Closed
			On	Off	On	Off		
			Off	Off	Off	Off		
	Low (Free Cooling LED On)	High	On	On	On	Off	Modulating[c] (between min. position and full-open)	Modulating[c] (between closed and full-open
			On	Off	Off	Off		
			Off	Off	Off	Off	Minimum position	Closed
Above set (DCV LED On)	High (Free Cooling LED Off)	Low	On	On	On	On	Modulating[d] (between min. position and DCV maximum)††	Modulating[d,g] (between closed and DCV maximum)††
			On	Off	On	Off		
			Off	Off	Off	Off		
	Low (Free Cooling LED On)	High	On	On	On	Off	Modulating[e]	Modulating[f]
			On	Off	Off	Off		
			Off	Off	Off	Off		

[a] For single enthalpy control, the module compares outdoor enthalpy to the ABCD set point.
[b] Power at N terminal determines Occupied/Unoccupied setting:
- W7212: 24 vac (Occupied), no power (Unoccupied).

[c] Modulating is based on the supply-air temperature sensor signal.
[d] Modulation is based on the DCV signal. If the CO2 sensor input (AQ-AQ1) terminals is < 1Vdc or the sensor has failed, the motor will drive to MIN POS or DCV MAX which ever is highest.
[e] Modulation is based on the greater of DCV and mixed air sensor signals, between minimum position and either maximum position (DCV) or fully open (mixed air signal).
[f] Modulating is based on the greater of DCV and mixed air sensor signals, between closed and either maximum position (DCV) or fully open (mixed air signal).
[g] Modulation is based on the DCV signal, if the CO2 sensor input (AQ-AQ1) terminals is < 1Vdc or the sensor has failed, the motor will drive DCV MAX in occupied mode. When power is cut to the economizer (fan is off) then the damper will spring return closed.

CHECKOUT AND TROUBLESHOOTING

Checkout requires a 9V battery, 620 ohm, 1.2K ohm, 5.6K ohm, and 6.8K ohm resistors. Use table 7 and Fig. 20 for checkout.

CAUTION

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

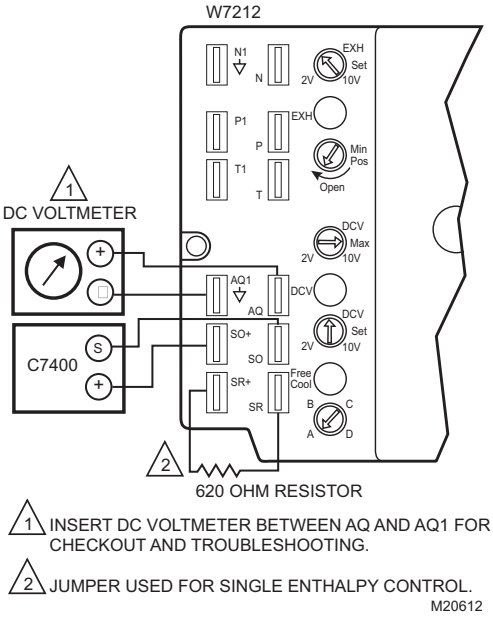


Fig. 20 - Meter Location for Checkout and Troubleshooting

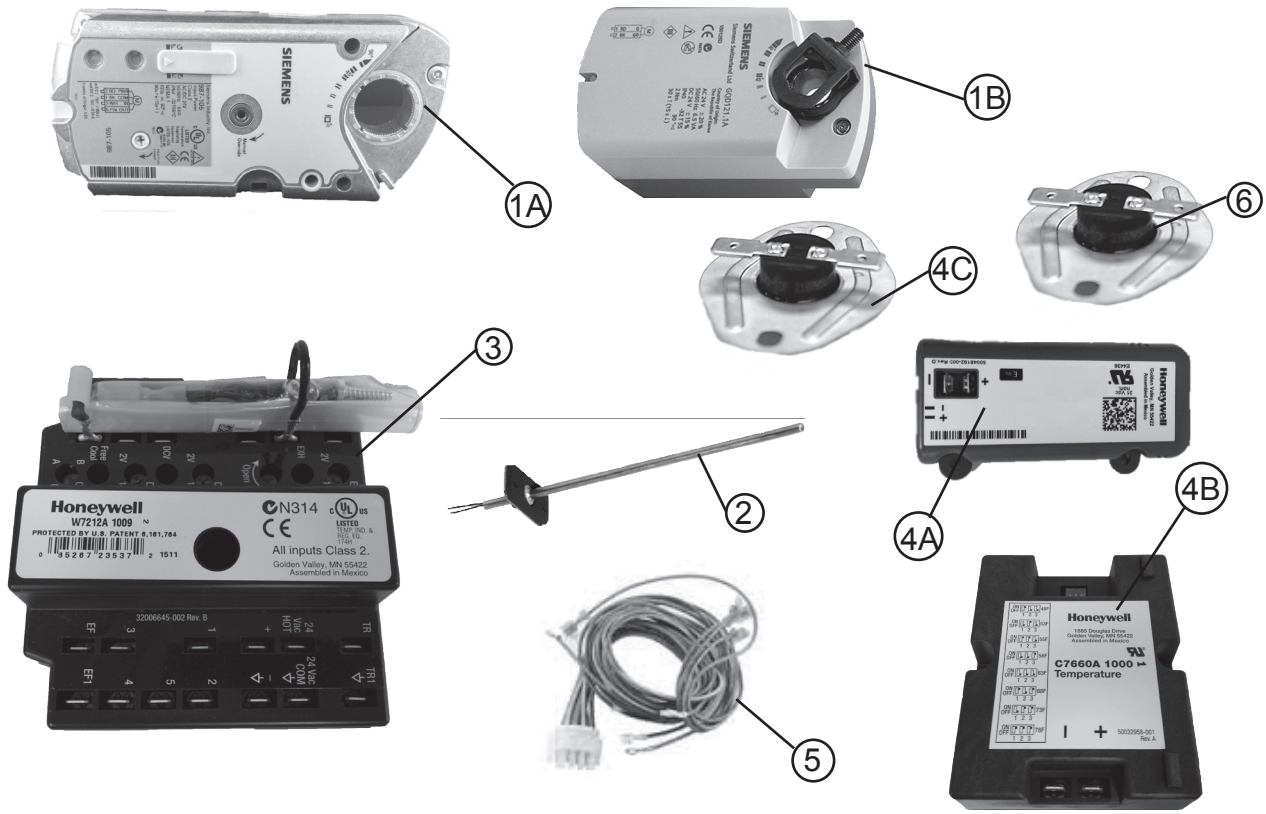
Table 7. Checkout for Economizer

Step	Checkout Procedure	Proper Response
1.	CHECKOUT PREPARATION FOR ECONOMIZING ONLY	
	Disconnect power at TR and TR1.	All LED are off; Exhaust Fan contacts are open.
	Disconnect devices at P and P1	
	Jumper P to P1 (defaults to on board MIN POS potentiometer).	
	Place 5.6K ohm resistor across T and T1 (Blue sleeve- provides input to economizer that the MAT is between 50-55F)	
	Jumper TR to 1 (call for cooling from the thermostat).	
	W7212 only jumper TR to N (places economizer in occupied mode).	
	If connected, remove C7400 Enthalpy Sensor from terminals S_O and +.	
	Connect 1.2K ohm, from 4074EJM Checkout Resistor kit, (purple sleeve) across terminals S_O and + (makes OA enthalpy high).	
	Place 620 ohm resistor (white sleeve) across S_R and + (makes return enthalpy lower than OA).	
	Set MIN POS and DCV MAX potentiometers fully CCW.	
	Turn DCV setpoint potentiometer mid position (this sets the DCV ventilation at approximately 1000 ppm)	
	Turn exhaust potentiometer to mid position (motor will be apporximately 50% open when the exhaust fan contacts make).	
	Set enthalpy potentiometer to D.	
	Apply power (24 Vac) to terminals TR and TR1.	

Table 7. Checkout for Economizer (Continued)

Step	Checkout Procedure	Proper Response
2.	DIFFERENTIAL ENTHALPY	
	Execure step one, Checkout Preparation.	—
	Turn DCV MAX to mid position.	
	Place 620 ohm resistor across S_O and + (white sleeve resistor makes OA enthalpy low).	—
	Place 1.2K ohm resistor across S_R and + (purple sleeve resistor makes RA enthalpy high).	Free cool LED turns on; motor drives to approximately 45 degrees (half) open.
	Remove 620 ohm resistor from S_O and +.	Free cool LED turns off; motor drives closed.
3.	SINGLE ENTHALPY	
	Execure step one, Checkout Preparation.	—
	Turn DCV MAX to mid position.	
	Set enthalpy potentiometer to A (fully CCW).	Free cool LED turns on; motor drives to approximately 45 degrees (half) open.
	Set enthalpy potentiometer to D (fully CW).	Free cool LED turns off; motor drives closed.
4.	DCV AND EXHAUST	
	Execure step one, Checkout Preparation.	—
	LED for both DCV and Exhaust should be off.	
	Turn DCV MAX to mid position.	Motor drives to mid position, 45 degrees open.
	Turn MIN POS fully CW.	Motor drives fully open.
	Turn MIN POS and DCV MAX to fully CCW.	Motor will drive closed
	Turn DCV MAX to mid position. Connect 9V battery positive to AQ and negative to AQ1.	LED for both DCV and Exhaust turn on Actuator drives to 45 degrees open
	Remove jumper from N terminal (economizer goes into not occupied mode).	Motor remains at 45 degrees open
	Adjust DCV MAX towards CW	Motor will move to position set by DCV MAX pot.
	Adjust DCV MAX to fully CCW.	Motor will drive closed
	Reconnect jumper to N terminal.	
	Adjust DCV MAX and MIN POS pots.	Motor will drive to the most open position of the pots.
	Adjust DCV MAX and MIN POS pots to fully CCW.	
	Remove power from N terminal adjust MIN POS towards CW.	Motor should not move.
	Adjust DCV MAX towards CW.	Motor will move to position set by DCV MAX pot.
5.	MINIMUM AND MAXIMUM POSITION	
	Execure step one, Checkout Preparation.	—
	Connect 9V battery positive to AQ and negative to AQ1. Adjust DCV MAX potentiometer to mid position.	DCV LED turns on. Actuator drives to 45 degrees open.
	Turn DCV maximum position potentiometer to fully CCW.	Actuator drives fully closed.
	Turn minimum position potentiometer to midpoint.	Actuator drives to 45 degrees open.
	Turn minimum position potentiometer fully CW.	Actuator drives fully open.
	Turn MIN POS to fully CCW.	Actuator drives fully closed.
	W7212: Remove jumper from TR and N.	Actuator drives fully closed.
6.	MIXED AIR INPUT	
	Execure step one, Checkout Preparation.	—
	Turn DCV MAX to mid position; set enthalpy potentiometer to A.	Free cool LED turns on Actuator drives to 45 degrees open.
	Remove 5.6K ohm resistor (green sleeve) and place jumper from T and T1.	Actuator drives to 45 degrees open.
	Remove jumper from T and T1 and leave open.	Actuator drives fully closed.

Component Description



1A. Siemens actuator ...9901-2497 provides 24v modulating control of economizer damper, 20 in. lb. of torque,

1B. Siemens actuator ...9901-2498 provides 24v modulating control of economizer damper, 35 in. lb. of torque.

2. Discharge sensor ...9901-0001 provides a signal (3000 Ohms at 25^{O} C or 77^{O} F) to the actuator during free cooling or economizer mode. The signal opens the economizer damper until the discharge temperature drops below 55^{O}. At this time the signal causes the motor to modulate the damper and mix outside air with return air to maintain a 50^{O} F to 56^{O} F discharge temperature.

3. Economizer logic ...9901-1805 accepts input from discharge sensor and outside air sensor. Analyzes input to control actuator modulation and economizer switching. Logic also houses minimum position adjustment, enthalpy or adjustable dry bulb adjustment, power exhaust control, and CO2 demand control ventilation adjustment. When used with optional differential sensor in the return air, the logic is capable of selecting the most economical air available for cooling. (Honeywell W7212A 1009)

4A. Entahlpy sensor ...9901-0018 senses and combines temperature and humidity of outdoor air. And also provides the signal to the economizer logic. (Honeywell C7400A used on 1008-0100)

4B. Adjustable dry bulb ...9901-2251 senses temperature of outside air and provides signal to the economizer logic. (Honeywell C7660A-1001 used on 1009-0100)

4C. Fixed dry bulb ...9901-0183 senses temperature of outside air. If below 70^{O} setpoint, allows for free cooling.

5. Wire harness color coded and pre-wired to actuator and economizer logic.

6. Compressor lockout ...9901-0252 locks out compressor when temperature falls below 35^{O} F (+/- 5^{O} F). Shipped with economizer, but must be field wired, if desired.

Vertical Chassis 1- 2 Economizer		
Old Product Line	**New Product Number**	**Description**
0685-0102-00930	N/A	N/A
0685-0102-27930	ECD-SRT12SA-DWES	Siemens Non-Communicating Actuator, Enthalpy, W7212 Controller
0685-0102-9I930	ECD-SRT12SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
0685-0102-B0930	ECD-SRT12SA-D00B	Belimo Non-Communicating Actuator only, No Controls
0688-0101-54920	ECD-SRT12SA-DWES	Siemens Non-Communicating Actuator, Enthalpy, W7212 Controller
0688-0101-9A920	ECD-SRT12SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
0688-0101-9J920	ECD-SRT12SA-DWFS	Siemens Non-Communicating Actuator, Fixed Dry Bulb, W7212 Controller
0688-0101-9J920-A	ECD-SRT12SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
0688-0101-B0920	ECD-SRT12SA-D00B	Belimo Non-Communicating Actuator only, No Controls
0688-0101-BEL	ECD-SRT12SA-D00B	Belimo Non-Communicating Actuator only, No Controls
0688-0101-DA920	ECD-SRT12SA-DWXS	Siemens Non-Communicating Actuator, Differential Adjustable Dry Bulb, W7212 Controller
0688-0101-DE920	ECD-SRT12SA-DWZS	Siemens Non-Communicating Actuator, Differential Enthalpy, W7212 Controller
0688-0101-HNY	ECD-SRT12SA-D00H	Honeywell Non-Communicating Actuator only, No Controls
0688-0101-JC2-549*0	ECD-SRT12SA-D2DH	Honeywell Commuicating Actuator, Adjustable Dry Bulb, W7220 JADE Controller
0688-0101-JC2-9A9*0	ECD-SRT12SA-D2EH	Honeywell Commuicating Actuator, Enthalpy, W7220 JADE Controller
0688-0101-JC2-DA9*0	ECD-SRT12SA-D2XH	Honeywell Commuicating Actuator, Differential Adjustable Dry Bulb, W7220 JADE Controller
0688-0101-JC2-DE9*0	ECD-SRT12SA-D2ZH	Honeywell Commuicating Actuator, Differential Enthalpy, W7220 JADE Controller
N/A	ECD-SRT12SA-D00S	Siemens Non-Communicating Actuator only, No Controls
N/A	ECD-SRT12SA-D00B-X	Belimo MFT Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU
N/A	ECD-SRT12SA-D00S-4	Siemens Non-Communicating Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU
N/A	ECD-SRT12SA-DWXS	Siemens Non-Communicating Actuator, Differential Adjustable Dry Bulb, W7212 Controller
N/A	ECD-SRT12SA-DWZS	Siemens Non-Communicating Actuator, Differential Fixed Dry Bulb, W7212 Controller

Horizontal Chassis 1- 2 Economizer

Old Product Line	New Product Number	Description
0849-0101-54920	ECH-SRT12SA-DWES	Siemens Non-Communicating Actuator, Enthalpy, W7212 Controller
0849-0101-9A920	ECH-SRT12SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
0849-0101-9J920	ECH-SRT12SA-DWFS	Siemens Non-Communicating Actuator, Fixed Dry Bulb, W7212 Controller
0849-0101-9J920-A	ECH-SRT12SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
0849-0101-B0920	ECH-SRT12SA-D00B	Belimo Non-Communicating Actuator only, No Controls
0849-0101-BEL	ECH-SRT12SA-D00B	Belimo Non-Communicating Actuator only, No Controls
0849-0101-HNY	ECH-SRT12SA-D00H	Honeywell Non-Communicating Actuator only, No Controls
0849-0101-JC2-549*0	ECH-SRT12SA-D2EH	Honeywell Commuicating Actuator, Enthalpy, W7220 JADE Controller
0849-0101-JC2-9A9*0	ECH-SRT12SA-D2DH	Honeywell Commuicating Actuator, Adjustable Dry Bulb, W7220 JADE Controller
0849-0101-JC2-DA9*0	ECH-SRT12SA-D2XH	Honeywell Commuicating Actuator, Differential Adjustable Dry Bulb, W7220 JADE Controller
0849-0101-JC2-DE9*0	ECH-SRT12SA-D2ZH	Honeywell Commuicating Actuator, Differential Enthalpy, W7220 JADE Controller
N/A	ECH-SRT12SA-D00S	Siemens Non-Communicating Actuator only, No Controls
N/A	ECH-SRT12SA-D00B-X	Belimo MFT Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU
N/A	ECH-SRT12SA-D00S-4	Siemens Non-Communicating Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU
N/A	ECH-SRT12SA-DWXS	Siemens Non-Communicating Actuator, Differential Adjustable Dry Bulb, W7212 Controller
N/A	ECH-SRT12SA-DWZS	Siemens Non-Communicating Actuator, Differential Fixed Dry Bulb, W7212 Controller

Convertible Chassis 1- 2 Economizer

Old Product Line	New Product Number	Description
0699-0101-54920	N/A	Convertible Economizer Not Available - Please Choose Dedicated Horizontal or Vertical Economizer
0699-0101-9A9*0	N/A	Convertible Economizer Not Available - Please Choose Dedicated Horizontal or Vertical Economizer
0699-0101-9J920	N/A	Convertible Economizer Not Available - Please Choose Dedicated Horizontal or Vertical Economizer
0699-0101-B0920	N/A	Convertible Economizer Not Available - Please Choose Dedicated Horizontal or Vertical Economizer

Customer Specific Chassis 1- 2 Economizer

Old Product Line	New Product Number	Description
0688HJ36DBEC	ECD-SRT12SA-DWFS	Vertical Economizer - Siemens Non-Communicating Actuator With Fixed Dry Bulb & W7212 Controller
0688HJ36DENTEC	ECD-SRT12SA-DWES	Vertical Economizer - Siemens Non-Communicating Actuator With Enthalpy & W7212 Controller
0849HJ36DBHEC	ECH-SRT12SA-DWFS	Horizontal Economizer - Siemens Non-Communicating Actuator With Fixed Dry Bulb & W7212 Controller
0849HJ36DENTHEC	ECH-SRT12SA-DWES	Horizontal Economizer - Siemens Non-Communicating Actuator With Enthalpy & W7212 Controller

Vertical Chassis 3- 4 Economizer

Old Product Line	New Product Number	Description
0685-0202-27930	ECD-SRT34SA-DWES	Siemens Non-Communicating Actuator, Enthalpy, W7212 Controller
0685-0202-9I930	ECD-SRT34SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
0685-0202-9J930	ECD-SRT34SA-DWFS	Siemens Non-Communicating Actuator, Fixed Dry Bulb, W7212 Controller
0685-0202-B0930	ECD-SRT34SA-D00B	Belimo Non-Communicating Actuator only, No Controls
0688-0201-54920	ECD-SRT34SA-DWES	Siemens Non-Communicating Actuator, Enthalpy, W7212 Controller
0688-0201-9A920	ECD-SRT34SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
0688-0201-9J920	ECD-SRT34SA-DWFS	Siemens Non-Communicating Actuator, Fixed Dry Bulb, W7212 Controller
0688-0201-9J920-A	ECD-SRT34SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
0688-0201-B0920	ECD-SRT34SA-D00B	Belimo Non-Communicating Actuator only, No Controls
0688-0201-HNY	ECD-SRT34SA-D00H	Honeywell Non-Communicating Actuator only, No Controls
0688-0201-JC2-549*0	ECD-SRT34SA-D2DH	Honeywell Commuicating Actuator, Adjustable Dry Bulb, W7220 JADE Controller
0688-0201-JC2-9A9*0	ECD-SRT34SA-D2EH	Honeywell Commuicating Actuator, Enthalpy, W7220 JADE Controller
0688-0201-JC2-DA9*0	ECD-SRT34SA-D2XH	Honeywell Commuicating Actuator, Differential Adjustable Dry Bulb, W7220 JADE Controller
0688-0201-JC2-DE9*0	ECD-SRT34SA-D2ZH	Honeywell Commuicating Actuator, Differential Enthalpy, W7220 JADE Controller
N/A	ECD-SRT34SA-D00S	Siemens Non-Communicating Actuator only, No Controls
N/A	ECD-SRT34SA-D00B-X	Belimo MFT Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU
N/A	ECD-SRT34SA-D00S-4	Siemens Non-Communicating Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU
N/A	ECD-SRT34SA-DWXS	Siemens Non-Communicating Actuator, Differential Adjustable Dry Bulb, W7212 Controller
N/A	ECD-SRT34SA-DWZS	Siemens Non-Communicating Actuator, Differential Fixed Dry Bulb, W7212 Controller

Horizontal Chassis 3- 4 Economizer

Old Product Line	New Product Number	Description
0849-0201-54920	ECH-SRT34SA-DWES	Siemens Non-Communicating Actuator, Enthalpy, W7212 Controller
0849-0201-9A920	ECH-SRT34SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
0849-0201-9J920	ECH-SRT34SA-DWFS	Siemens Non-Communicating Actuator, Fixed Dry Bulb, W7212 Controller
0849-0201-9J920-A	ECH-SRT34SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
0849-0201-B0920	ECH-SRT34SA-D00B	Belimo Non-Communicating Actuator only, No Controls
0849-0201-HNY	ECH-SRT34SA-D00H	Honeywell Non-Communicating Actuator only, No Controls
0849-0201-JC2-54930	ECH-SRT34SA-D2EH	Honeywell Commuicating Actuator, Enthalpy, W7220 JADE Controller
0849-0201-JC2-9A930	ECH-SRT34SA-D2DH	Honeywell Commuicating Actuator, Adjustable Dry Bulb, W7220 JADE Controller
849-0201-JC2-DA920	ECH-SRT34SA-D2XH	Honeywell Commuicating Actuator, Differential Adjustable Dry Bulb, W7220 JADE Controller
849-0201-JC2-DE920	ECH-SRT34SA-D2ZH	Honeywell Commuicating Actuator, Differential Enthalpy, W7220 JADE Controller
N/A	ECH-SRT34SA-D00B-X	Belimo MFT Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU
N/A	ECH-SRT34SA-D00S-4	Siemens Non-Communicating Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU
N/A	ECH-SRT34SA-DWXS	Siemens Non-Communicating Actuator, Differential Adjustable Dry Bulb, W7212 Controller
N/A	ECH-SRT34SA-DWZS	Siemens Non-Communicating Actuator, Differential Fixed Dry Bulb, W7212 Controller
N/A	ECH-SRT34SA-D00S	Siemens Non-Communicating Actuator only, No Controls

Convertible Chassis 3- 4 Economizer

Old Product Line	New Product Number	Description
0699-0201-54920	N/A	Convertible Economizer Not Available - Please Choose Dedicated Horizontal or Vertical Economizer
0699-0201-9A920	N/A	Convertible Economizer Not Available - Please Choose Dedicated Horizontal or Vertical Economizer
0699-0201-9A930	N/A	Convertible Economizer Not Available - Please Choose Dedicated Horizontal or Vertical Economizer
0699-0201-9J920	N/A	Convertible Economizer Not Available - Please Choose Dedicated Horizontal or Vertical Economizer
0699-0201-B0920	N/A	Convertible Economizer Not Available - Please Choose Dedicated Horizontal or Vertical Economizer

Customer Specific Chassis 3- 4 Economizer

Old Product Line	New Product Number	Description
0688HJ712DBEC	ECD-SRT34SA-DWFS	Vertical Economizer - Siemens Non-Communicating Actuator With Fixed Dry Bulb & W7212 Controller
0688HJ712DENTEC	ECD-SRT34SA-DWES	Vertical Economizer - Siemens Non-Communicating Actuator With Enthalpy & W7212 Controller
0849HJ712DBHEC	ECH-SRT34SA-DWFS	Horizontal Economizer - Siemens Non-Communicating Actuator With Fixed Dry Bulb & W7212 Controller
0849HJ712DENTHEC	ECH-SRT34SA-DWES	Horizontal Economizer - Siemens Non-Communicating Actuator With Enthalpy & W7212 Controller

Vertical Chassis 5 Economizer

Old Product Line	New Product Number	Description
ECD-HE2S-ADB-CD	ECD-SRT05SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
ECD-HE2S-BEL	ECD-SRT05SA-D00B	Belimo Non-Communicating Actuator only, No Controls
ECD-HE2S-DADB-CD	ECD-SRT05SA-DWXS	Siemens Non-Communicating Actuator, Differential Adjustable Dry Bulb, W7212 Controller
ECD-HE2S-DENT-CD	ECD-SRT05SA-DWZS	Siemens Non-Communicating Actuator, Differential Fixed Dry Bulb, W7212 Controller
ECD-HE2S-ENT-CD	ECD-SRT05SA-DWES	Siemens Non-Communicating Actuator, Enthalpy, W7212 Controller
ECD-HE2S-HNY	ECD-SRT05SA-D00H	Honeywell Non-Communicating Actuator only, No Controls
ECD-HE2S-JC2-ADB	ECD-SRT05SA-D2DH	Honeywell Commuicating Actuator, Adjustable Dry Bulb, W7220 JADE Controller
ECD-HE2S-JC2-DADB	ECD-SRT05SA-D2XH	Honeywell Commuicating Actuator, Differential Adjustable Dry Bulb, W7220 JADE Controller
ECD-HE2S-JC2-DENT	ECD-SRT05SA-D2ZH	Honeywell Commuicating Actuator, Differential Enthalpy, W7220 JADE Controller
ECD-HE2S-JC2-ENT	ECD-SRT05SA-D2EH	Honeywell Commuicating Actuator, Enthalpy, W7220 JADE Controller
N/A	ECD-SRT05SA-DWFS	Siemens Non-Communicating Actuator, Fixed Dry Bulb, W7212 Controller
N/A	ECD-SRT05SA-D00S	Siemens Non-Communicating Actuator only, No Controls
N/A	ECD-SRT05SA-D00B-X	Belimo MFT Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU
N/A	ECD-SRT05SA-D00S-4	Siemens Non-Communicating Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU

Horizontal Chassis 5 Economizer

Old Product Line	New Product Number	Description
ECH-HE2S-ADB-CD	ECH-SRT05SA-DWDS	Siemens Non-Communicating Actuator, Adjustable Dry Bulb, W7212 Controller
ECH-HE2S-BEL	ECH-SRT05SA-D00B	Belimo Non-Communicating Actuator only, No Controls
ECH-HE2S-DENT-CD	ECH-SRT05SA-DWXS	Siemens Non-Communicating Actuator, Differential Adjustable Dry Bulb, W7212 Controller
ECH-HE2S-ENT-CD	ECH-SRT05SA-DWES	Siemens Non-Communicating Actuator, Enthalpy, W7212 Controller
ECH-HE2S-HNY	ECH-SRT05SA-D00H	Honeywell Non-Communicating Actuator only, No Controls
ECH-HE2S-JC2-ADB	ECH-SRT05SA-D2DH	Honeywell Commuicating Actuator, Adjustable Dry Bulb, W7220 JADE Controller
ECH-HE2S-JC2-DADB	ECH-SRT05SA-D2XH	Honeywell Commuicating Actuator, Differential Adjustable Dry Bulb, W7220 JADE Controller
ECH-HE2S-JC2-DENT	ECH-SRT05SA-D2ZH	Honeywell Commuicating Actuator, Differential Enthalpy, W7220 JADE Controller
ECH-HE2S-JC2-ENT	ECH-SRT05SA-D2EH	Honeywell Commuicating Actuator, Enthalpy, W7220 JADE Controller
N/A	ECH-SRT05SA-DWFS	Siemens Non-Communicating Actuator, Fixed Dry Bulb, W7212 Controller
N/A	ECH-SRT05SA-D00S	Siemens Non-Communicating Actuator only, No Controls
N/A	ECH-SRT05SA-D00B-X	Belimo MFT Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU
N/A	ECH-SRT05SA-D00S-4	Siemens Non-Communicating Actuator, No Controls, Wiring For PremierLink, RTU Open, SystemVU
N/A	ECH-SRT05SA-DWZS	Siemens Non-Communicating Actuator, Differential Fixed Dry Bulb, W7212 Controller