



Vertical Class 1A Leakage dampers, Siemens Climatix Controller, single dry bulb changeover for Carrier/Bryant 3 to 6 Ton & select 7.5 to 12.5 Ton units

(Class 1A per AMCA 511, <3cfm/1ft<sup>2</sup> @ 1 in. wg.)

## Safety Considerations:

All installation should be performed only by trained/qualified service technicians.

Make sure Lockout/Tagout processes are followed.

All standard PPE should be worn during installation (safety glasses, eye protection and ear protection to name a few).

All HVAC equipment warnings, labels and precautions should be followed.

## Economizer to unit cross reference (\*=Revision)

| CDI Economizer Part Number | Model Number(s)                       |
|----------------------------|---------------------------------------|
| ECV-4000-SCSAAD-*          | 48FC/48FE/50FC/50FCQ/50FE/50FEQ 04-07 |
|                            | 48GC/48GE/50GC/50GCQ/50GE/50GEQ 04-06 |
|                            | 582K/582L/559K/547K/547L 04-07        |
|                            | 581K/551K/549K 04-06                  |
|                            | RGV/RAV/RHV 036-072                   |
|                            | RGG/RAG/RGW/RAW/RHW 036-060           |

| CDI Economizer Part Number | Model Number(s)           |
|----------------------------|---------------------------|
| ECV-4009-SCSAAD-*          | 48FC/48FE/50FC/50FE/08-14 |
|                            | 50FCQ/50FEQ 08-12         |
|                            | 48GC/48GE/50GC/50GE 07-12 |
|                            | 50GCQ/50GEQ 07-09         |
|                            | 582K/582L/559K 08-14      |
|                            | 547K/547L 08-12           |
|                            | 581K/551K 07-12           |
|                            | 549K 0-09                 |
|                            | RAV/RGV 090-150           |
|                            | RHV 090-120               |

|  |                     |
|--|---------------------|
|  | RAW/RGW 072-120     |
|  | RGG/RAG/RHW 072-102 |

### Economizer package contains:

| ECONOMIZER P/N      | QTY   | DESCRIPTION                                                     |
|---------------------|-------|-----------------------------------------------------------------|
| ECV-4000- SCSAAD -* | 1     | Low Leak economizer, vertical, ACTS-1000 actuator               |
|                     | 1     | OA hood assembly, contains CDI-1010 filter                      |
|                     | 1     | CNTS-1000 Climatix controller,                                  |
|                     | 1     | WIRS-1001 Return/Actuator wiring harness                        |
|                     | 1     | WIRS-1000 wiring harness, Econo                                 |
|                     | 1     | SENS-1000 temperature sensor                                    |
|                     | 1     | SENS-1001 enthalpy sensor                                       |
|                     | 1     | WIRS-1002 Siemens 2 pin harness, QAR9530 temp sensor            |
|                     | 1     | WIRS-1003 Siemens 5 pin harness, QFR9530 humidity & temp sensor |
|                     | 1 bag | #10-16 x 3/4" TEK screws w/bonded washers (14 pcs)              |
|                     | 1 bag | #8 x 1/2" TEK screws (4 pcs) for temp sensors                   |
|                     | 1 bag | #8 x 1" TEK screws (2 pcs) for Climatix controller              |

| ECONOMIZER P/N      | QTY   | DESCRIPTION                                                     |
|---------------------|-------|-----------------------------------------------------------------|
| ECV-4009- SCSAAD -* | 1     | Low Leak economizer, vertical, ACTS-1000 actuator               |
|                     | 1     | OA hood assembly, contains CDI-1084 filter                      |
|                     | 1     | CNTS-1000 Climatix controller,                                  |
|                     | 1     | WIRS-1001 Return/Actuator wiring harness                        |
|                     | 1     | WIRS-1000 wiring harness, Econo                                 |
|                     | 1     | SENS-1000 temperature sensor                                    |
|                     | 1     | SENS-1001 enthalpy sensor                                       |
|                     | 1     | WIRS-1002 Siemens 2 pin harness, QAR9530 temp sensor            |
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|                     | 1 bag | #8 x 1" TEK screws (2 pcs) for Climatix controller              |

**For support, please email [econsupport@cdicurbs.com](mailto:econsupport@cdicurbs.com)**

**Include your name, company, phone number, brief description of the issue and economizer model number. (Ex. ECV-4000-SCSA-A)**

**NOTE: THIS IS NOT COMPATIBLE WITH THE CTB STLYE CONTROL BOARD.**

**YOU MUST ORDER CDI # WIRS-1009 FOR THE LEGACY HARNESS**

## Economizer Installation in the return

As stated above, ensure the power to the unit has been shut off and lock out/tagout process has been followed.

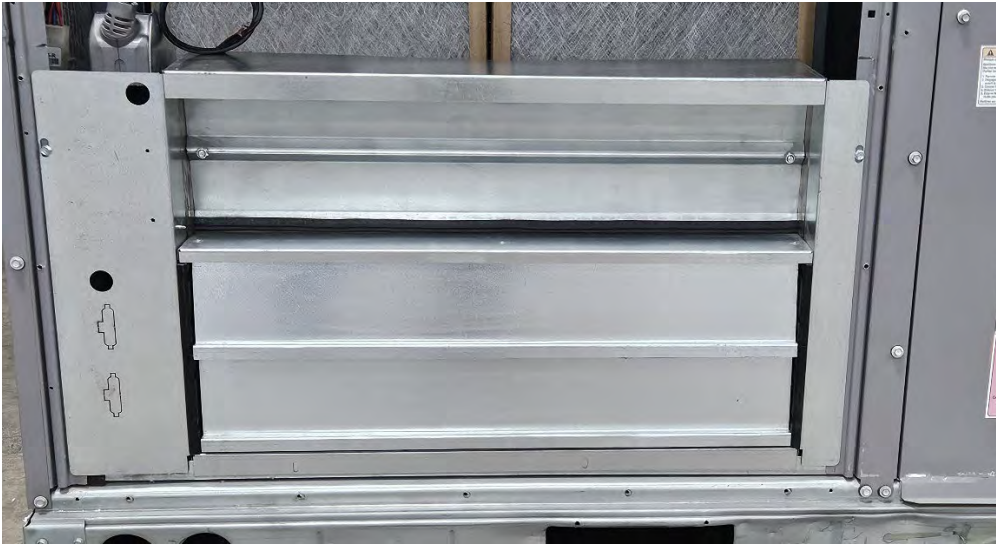
- 1) Remove Filter Access Panel (save) and the Indoor Coil Access Panel



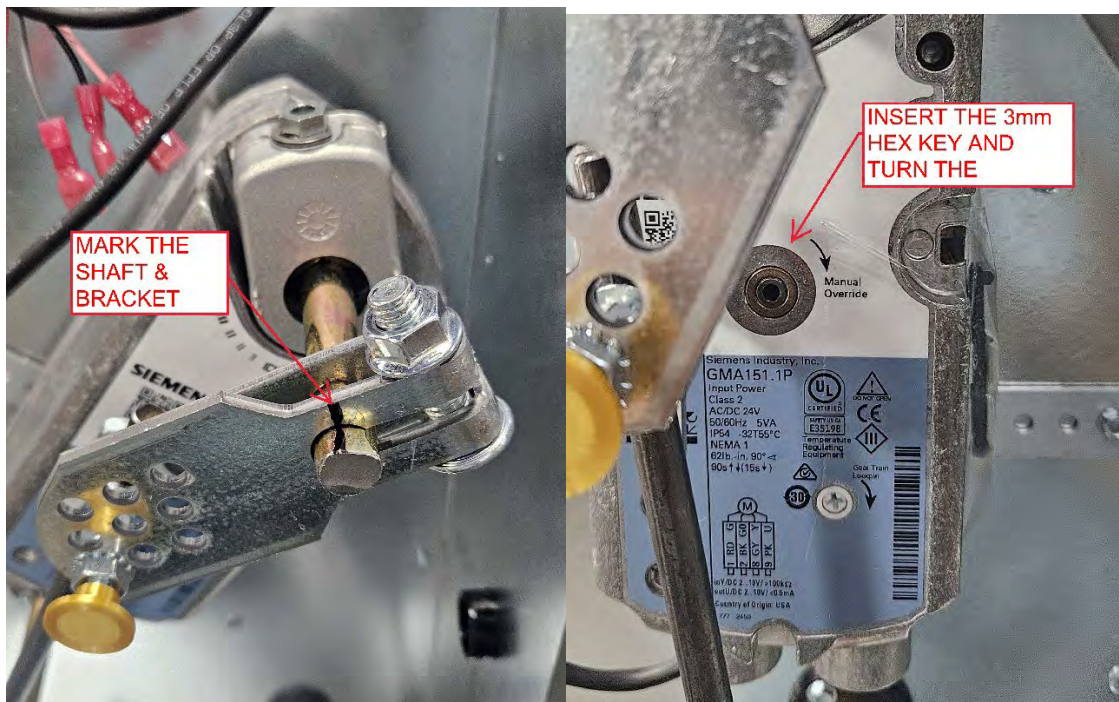
- 2) Once the panels have been removed, insert the Economizer housing into the Return section. Insert the actuator side in first making sure to clear the corner post then rotate the right side into place. Make sure the rear flange slides under the tabs on the floor of the RTU



- 3) Screw the Economizer housing to the RTU frame.



- 4) Check to make sure it is square and the damper blades do not bind. Mark the actuator position (shaft & bracket), loosen the bracket and push the dampers open/closed. Once they are freely moving, align your marks and tighten the actuator back down. You can also insert a 3mm hex key into the “Manual Override” and rotate the actuator to ensure the blades are moving freely.





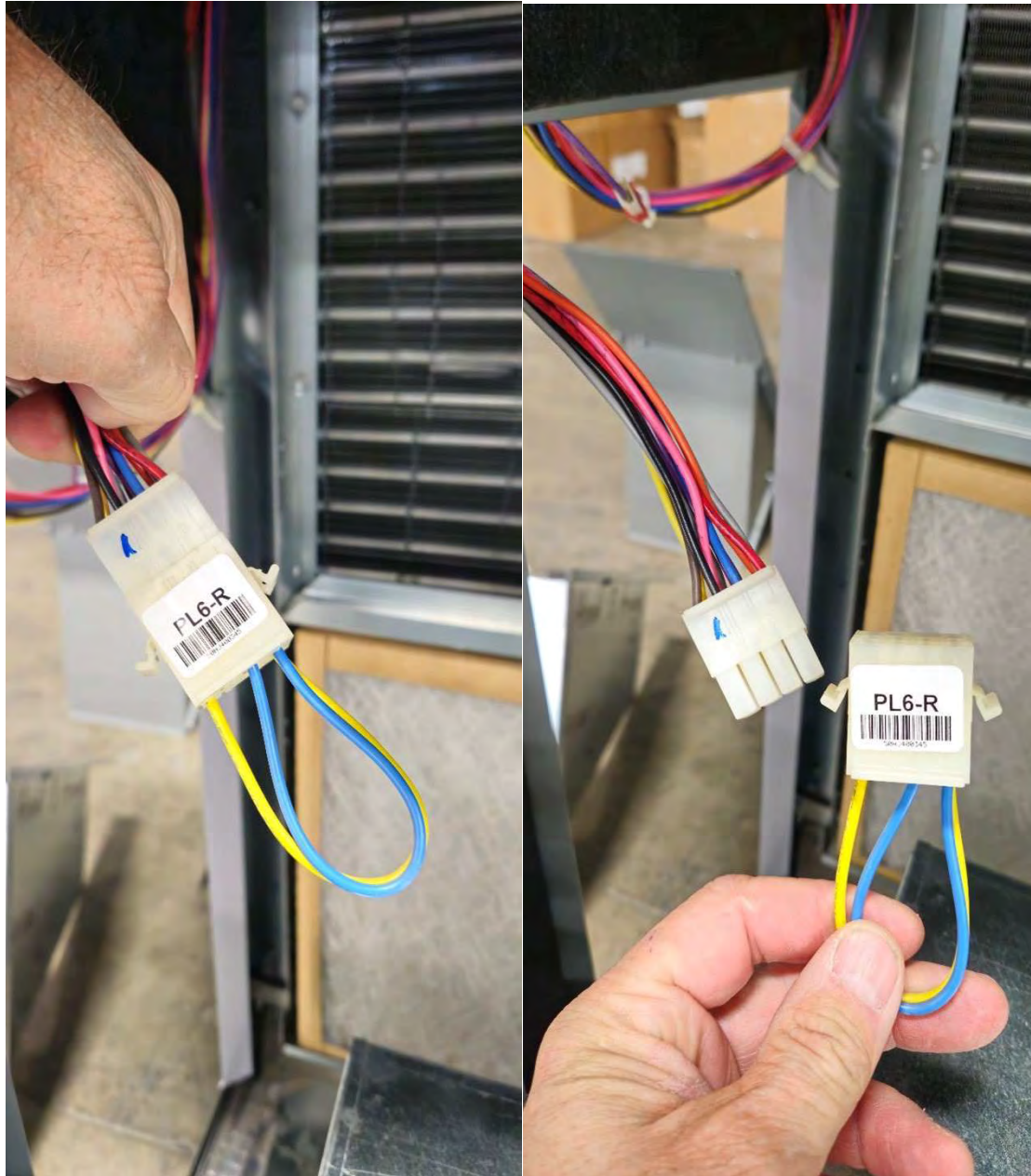
- 5) Install the OAT (outside air temperature) sensor to the front of the Economizer using the provided #8x3/4" self-drilling screws. Route the wires through the top black plug.



- 6) If the economizer will be using an enthalpy sensor (SENS-1001) in place of a temperature sensor, use the same screws and mount it to the front of the economizer in the same place. Refer to the wiring schematics on page 20 & 21 for wiring the sensor as either enthalpy or dry bulb.



- 7) In the Return Plenum, upper left corner, find & remove the 12 pin (square) jumper plug from the unit. Set this aside, do not throw away, if economizer is ever removed, this will be required.



- 8) Install the 12-pin connector from the wiring harness (WIRS-1001) and connect the sensor(s) and actuator to the harness. Refer to the wiring schematics on pages 15-25.



## Controller Installation in control panel/blower section

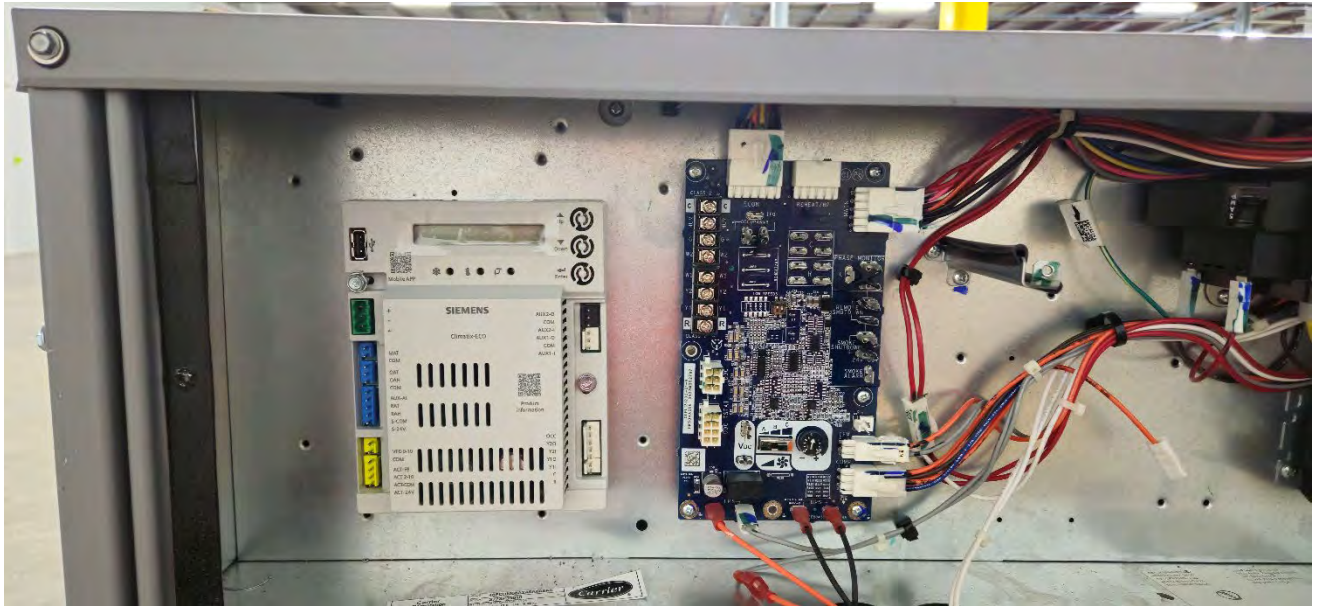
- 9) Remove the Indoor blower access panel, Control Box Panel and the internal UCB Panel



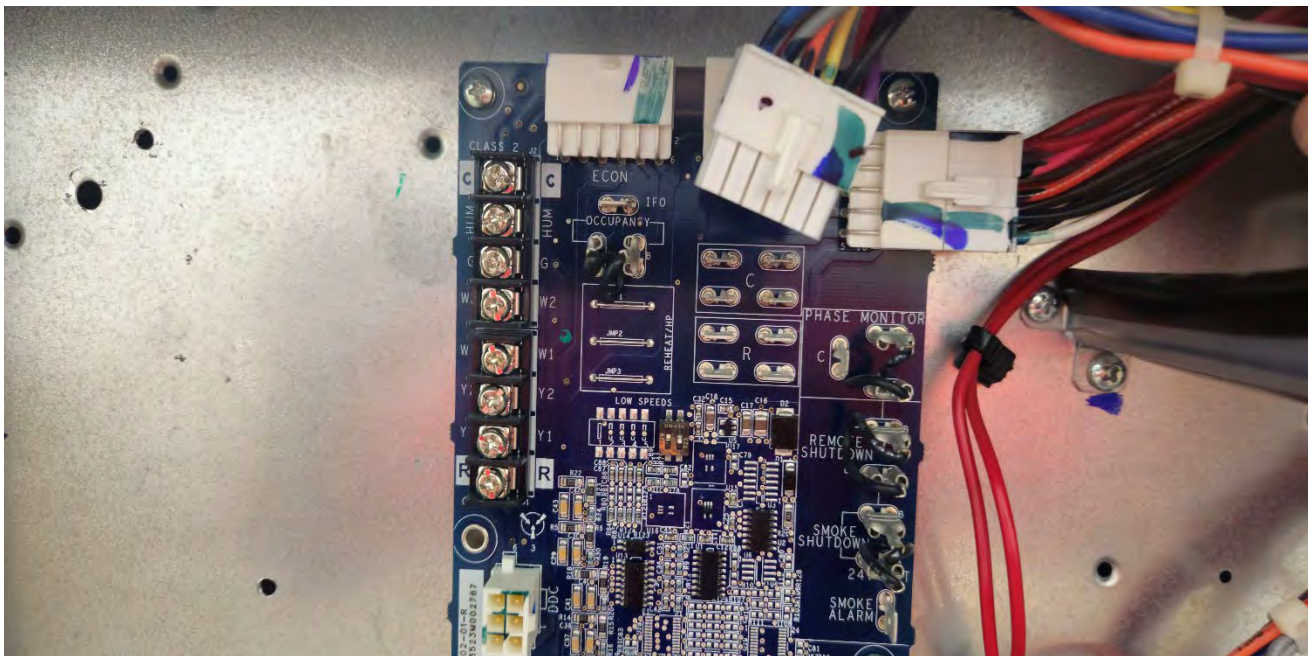
**If your unit is using System Vu controls, please skip to step 16**



- 10) In the Economizer packaging, remove the pre-wired Economizer Controller (CNTS-1000). Mount the controller to the left of UCB using the #8x1" screws and pre-punched holes (wiring harness not shown for clarity).



- 11) Unplug the 12-pin connector (female) that is connected to the UCB

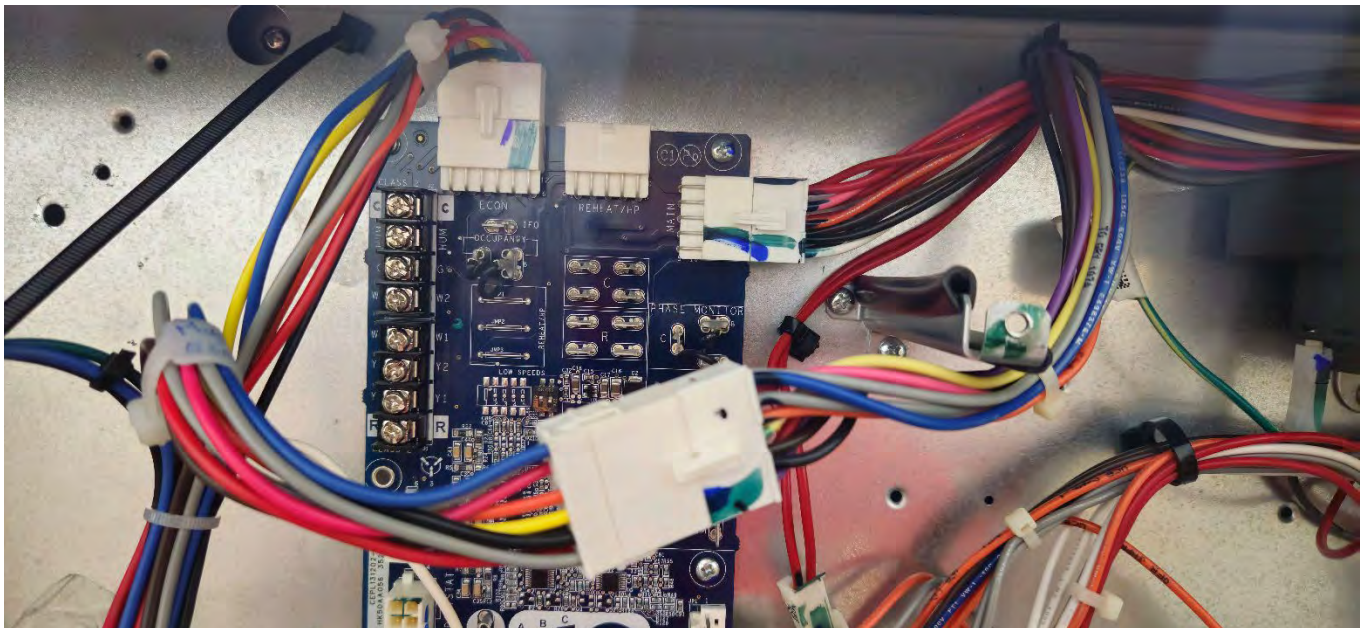




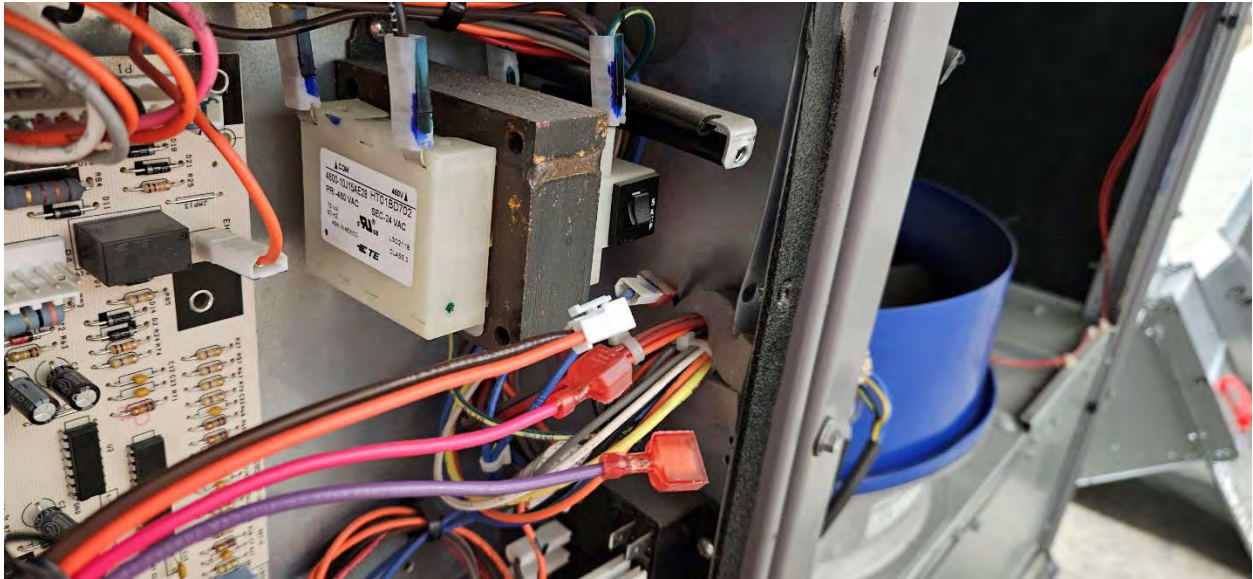
- 12) Install the 12-pin plug (female) from the provided Economizer wiring harness into the UCB board.



- 13) Insert the 12-pin connector you removed from the UCB and connect it to the 12-pin male connector on the supplied wiring harness.



- 14) Route the 4 wires for the OAT (pink/purple)/MAT (brown/orange) that are connected to the controller through the divider panel between the control box and into the indoor blower section. Exact location of hole may differ from what's shown.

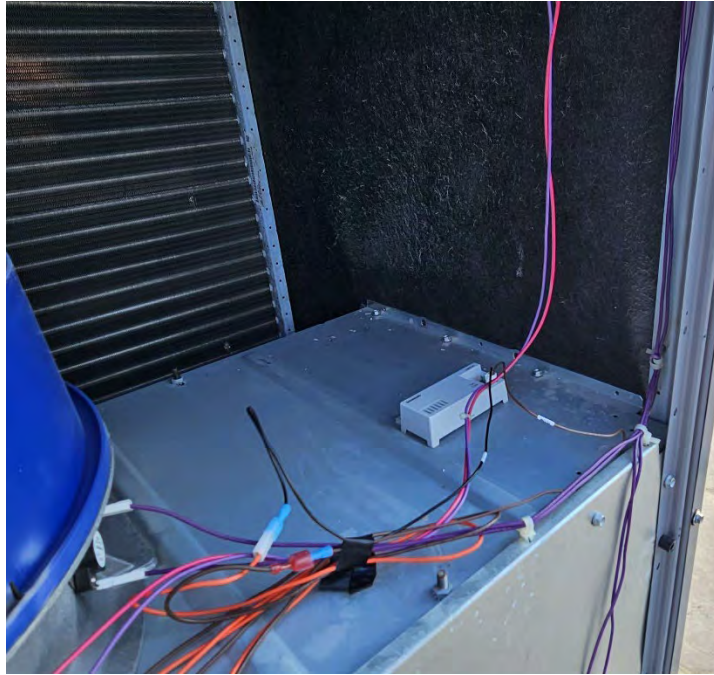


- 15) In the indoor blower section, connect the pink & violet wires to the wires bundled in the top right corner, this is the connection to the return plenum harness.





- 16) Next mount the MAT/SAT sensor to the fan deck using the using the provided #8x3/4" self-drilling screws through the pre punched holes (if available) and connect the orange and brown wires to the sensor whip. If using System Vu, please refer to your units' schematics for connections to the MAT/SAT.



- 17) Reinstall the indoor blower access panel removed in step 8.

- 18) For assembly of the OA hood, remove the shipping tape holding the center panel





- 19) Carefully rotated into place making sure not to scratch the hood, add the final 2 provided screws.



- 20) With the sensor(s) and actuator connected, the outside air hood can be installed on the unit using the provided screws and holes from the Indoor Coil Access Panel.
- 21) Once in place, the filter access panel can be reinstalled.
- 22) Install the filters by opening the clips on the inside of the OA hood and insert them into the bottom channel, rotate them into position and snap the clips shut.



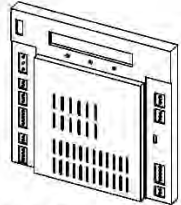
- 23) Once all the sensors, actuator and UCB connections have been made, program the POL 224 controller per the Siemens Climatix Economizer Guide. Scan QR code, follow link and under Economizer Instructions and Controller Manuals choose the Siemens file.



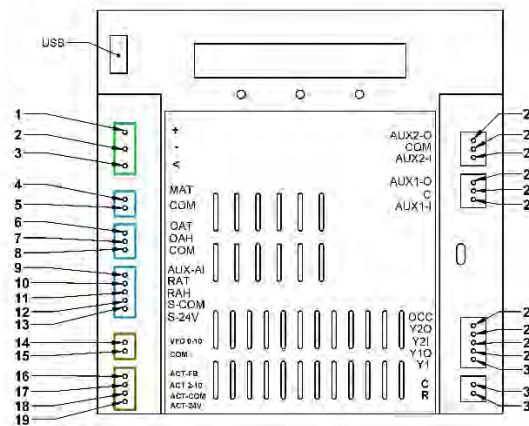
- 24) After the controller is setup and all settings have been entered & tested, you can now reinstall the UCB cover and Control Box Panel.

## WIRING SCHEMATICS

| ECON PLUG TABLE |                               |            |                                                                                                                                                                 |
|-----------------|-------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PIN             | TYPE                          | LABEL      | DESCRIPTION                                                                                                                                                     |
| 1               | RS485 Modbus A                | +          | Line A                                                                                                                                                          |
| 2               | RS485 Modbus B                | -          | Line B                                                                                                                                                          |
| 3               | GND_ISO                       | <          | Earth ground                                                                                                                                                    |
| 4               | Type II NTC 10K or 0-10 Vdc   | MAT        | Mixed or Discharge Air Temperature Sensor                                                                                                                       |
| 5               | COM                           | COM        | Mixed or Discharge Air Temperature Sensor Common                                                                                                                |
| 6               | Type II NTC 10K or 0-10 Vdc   | OAT        | Outside Air Temperature Sensor                                                                                                                                  |
| 7               | 0-10 Vdc or 4-20 mA           | DAH        | Outside Air Relative Humidity Sensor                                                                                                                            |
| 8               | COM                           | COM        | Outside Air Temperature Sensor or Outside Air Relative Humidity Sensor Common                                                                                   |
| 9               | 0-10 Vdc, 2-10 Vdc or 0-5 Vdc | AUX-AI     | Air Quality Sensor or Pressure Sensor                                                                                                                           |
| 10              | Type II NTC 10K or 0-10 Vdc   | RAT        | Return Air Temperature Sensor                                                                                                                                   |
| 11              | 0-10 Vdc or 4-20 mA           | RAH        | Return Air Relative Humidity Sensor                                                                                                                             |
| 12              | COM                           | S-COM      | 24 Vac Common                                                                                                                                                   |
| 13              | 24 Vac                        | S-24V      | 24 Vac Power out to sensors                                                                                                                                     |
| 14              | 0-10 Vdc                      | VFD 0-10   | Variable-Speed Supply Fan Output                                                                                                                                |
| 15              | COM                           | COM        | 24 Vac Common                                                                                                                                                   |
| 16              | ACT-FB                        | 2-10Vdc    | Damper Actuator Feedback                                                                                                                                        |
| 17              | ACT2-10                       | 2-10 Vdc   | Damper Actuator Output                                                                                                                                          |
| 18              | ACT-COM                       | COM        | Damper Actuator Output Common                                                                                                                                   |
| 19              | ACT-24V                       | 24 Vac     | 24 Vac Power out to Damper Actuator                                                                                                                             |
| 20              | AUX2-O                        | 24 Vac OUT | Configurable: • Cooling Stage 3 Output • Exhaust Fan (1 or 2) • VFD On/Off (Variable Speed Supply Fan Enable or Disable) • ERV • System Alarm output (Title 24) |
| 21              | COM                           | COM        | 24 Vac Common                                                                                                                                                   |
| 22              | AUX2-I                        | 24 Vac IN  | Configurable: • Cooling Stage 3 Input • Shut Down • Heat Conventional (W1) • Heat Pump Changeover (reversing valve O/B, HP(B)/HP(O)) • Preoccupancy             |
| 23              | AUX1-O                        | 24 Vac OUT | Configurable: • Cooling Stage 3 Output • Exhaust Fan (1 or 2) • VFD On/Off (Variable Speed Supply Fan Enable or Disable) • ERV • System Alarm output (Title 24) |
| 24              | COM                           | COM        | 24 Vac Common                                                                                                                                                   |
| 25              | AUX1-I                        | 24 Vac IN  | Configurable: • Cooling Stage 3 Input • Shut Down • Heat Conventional (W1) • Heat Pump Changeover (reversing valve O/B, HP(B)/HP(O)) • Preoccupancy             |
| 26              | OCC                           | 24 Vac IN  | Occupancy input • T-STAT • ALWAYS                                                                                                                               |
| 27              | Y2O                           | 24 Vac OUT | Cooling Stage 2 Output to stage 2 mechanical cooling                                                                                                            |
| 28              | Y2I                           | 24 Vac IN  | Cooling Stage 2 Input from commercial thermostat                                                                                                                |
| 29              | Y1O                           | 24 Vac OUT | Cooling Stage 1 Output to stage 1 mechanical cooling                                                                                                            |
| 30              | Y1I                           | 24 Vac IN  | Cooling Stage 1 Input from commercial thermostat                                                                                                                |
| 31              | C                             | COM        | 24 Vac Common                                                                                                                                                   |
| 32              | R                             | 24 Vac     | 24 Vac Power                                                                                                                                                    |



### SIEMENS ECON CONTROLLER



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APPROVALS: 1/14/2022 DATE: 1/14/2022

DESIGNED: 1/14/2022

DIMENSIONS ARE AS FOLLOWS: 1/8" to 24.40 mm

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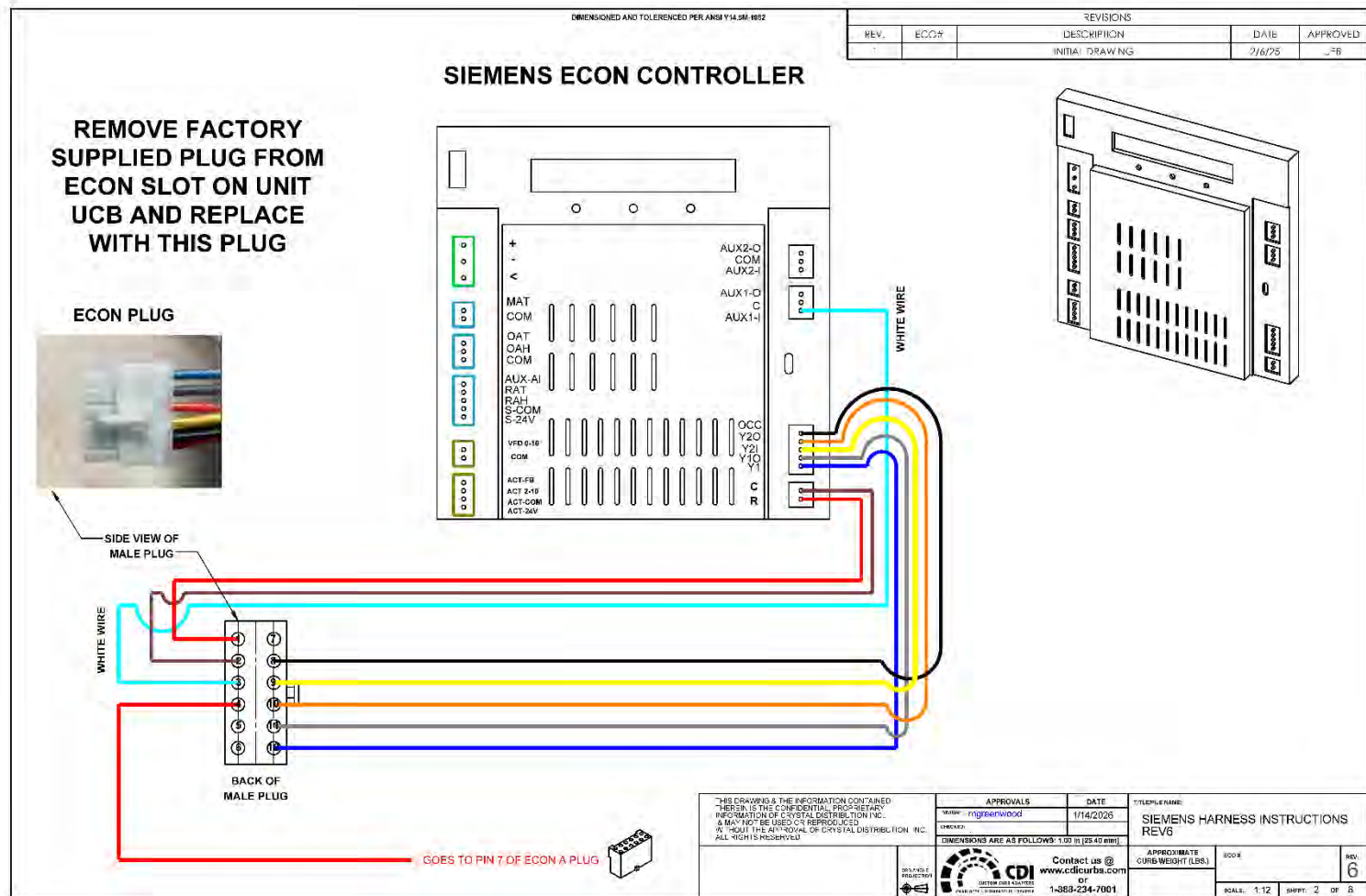
PROJECT NAME: SIEMENS HARNESS INSTRUCTIONS REV.6

APPROXIMATE CUBIC WEIGHT (LBS): 6

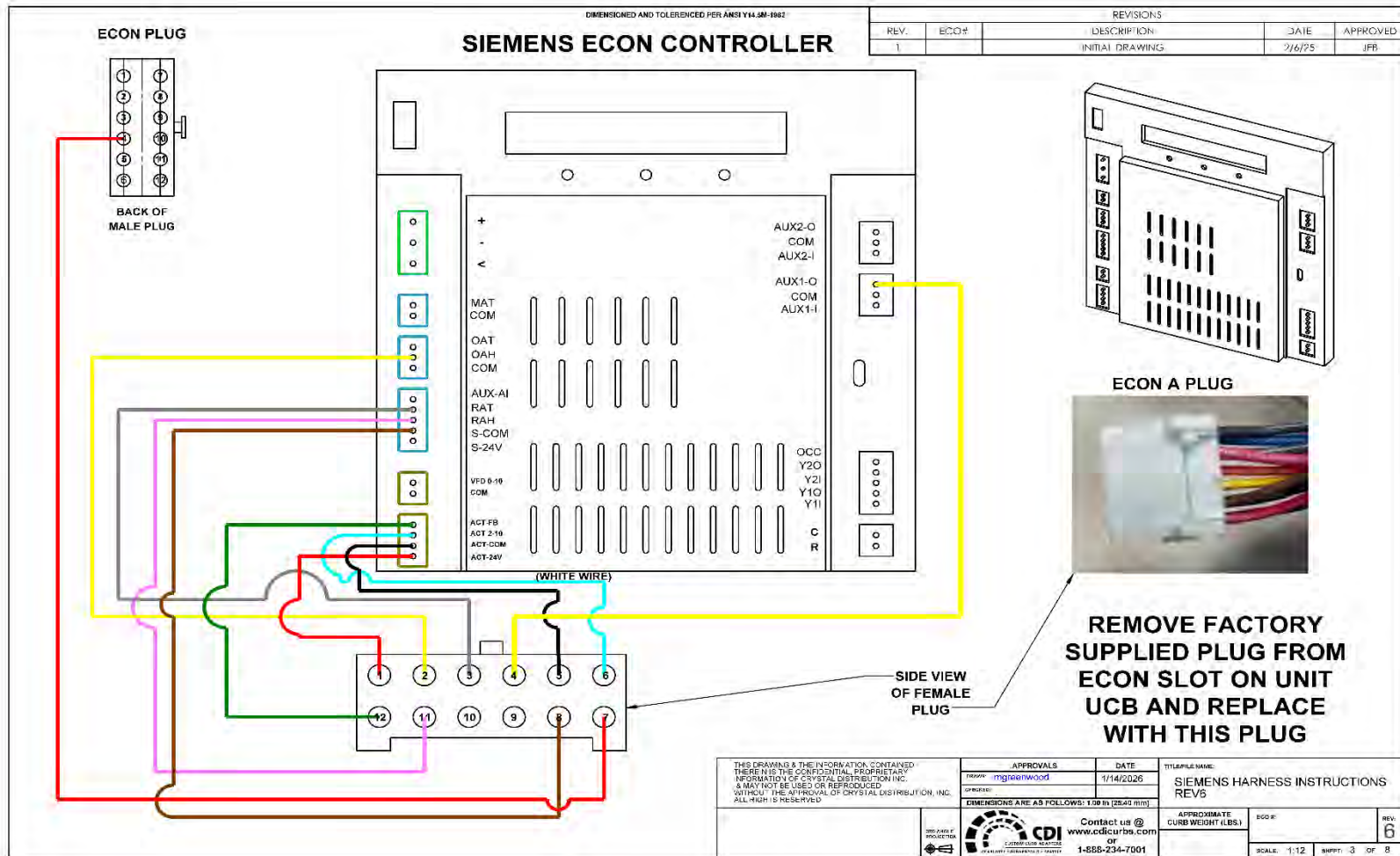
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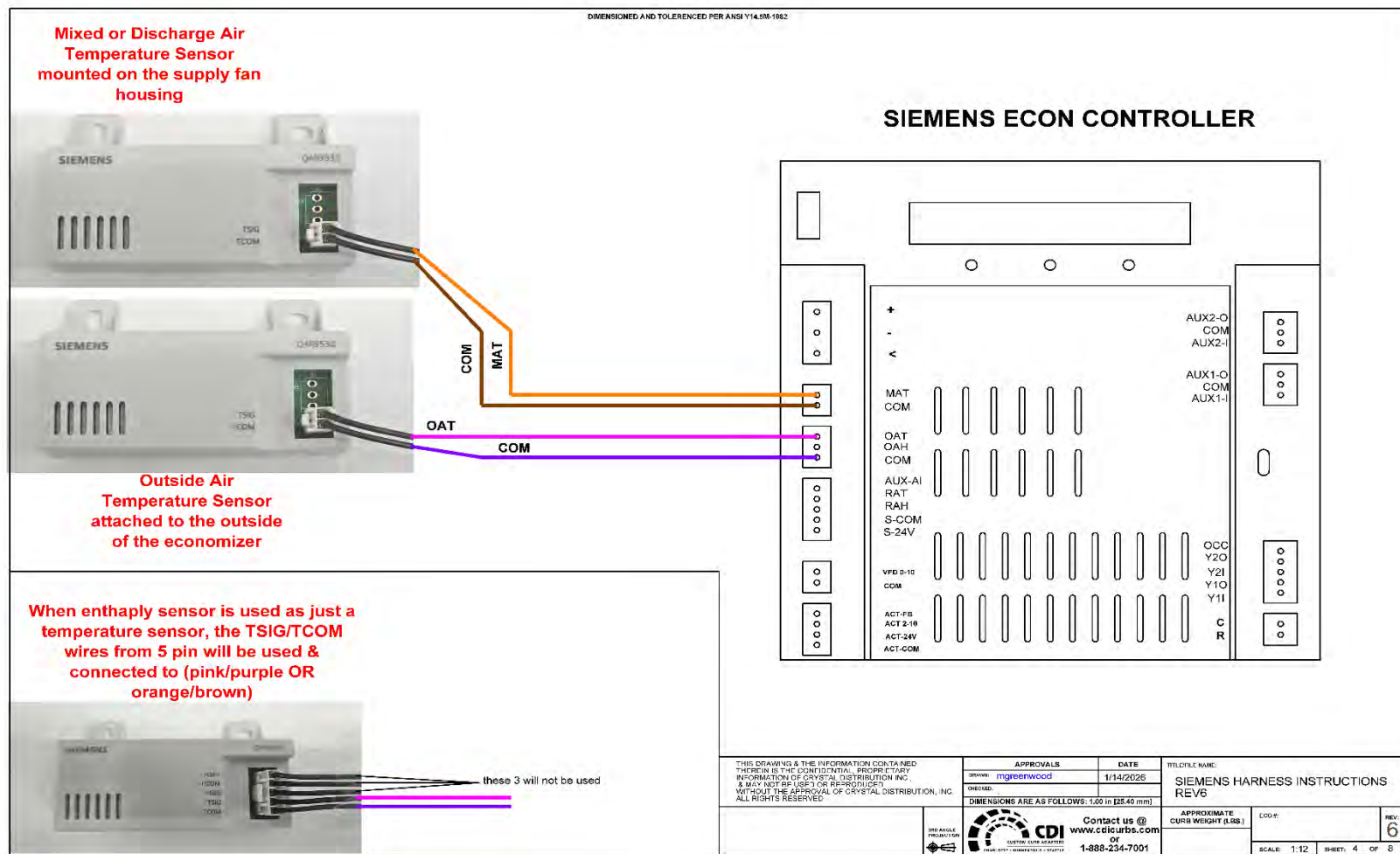




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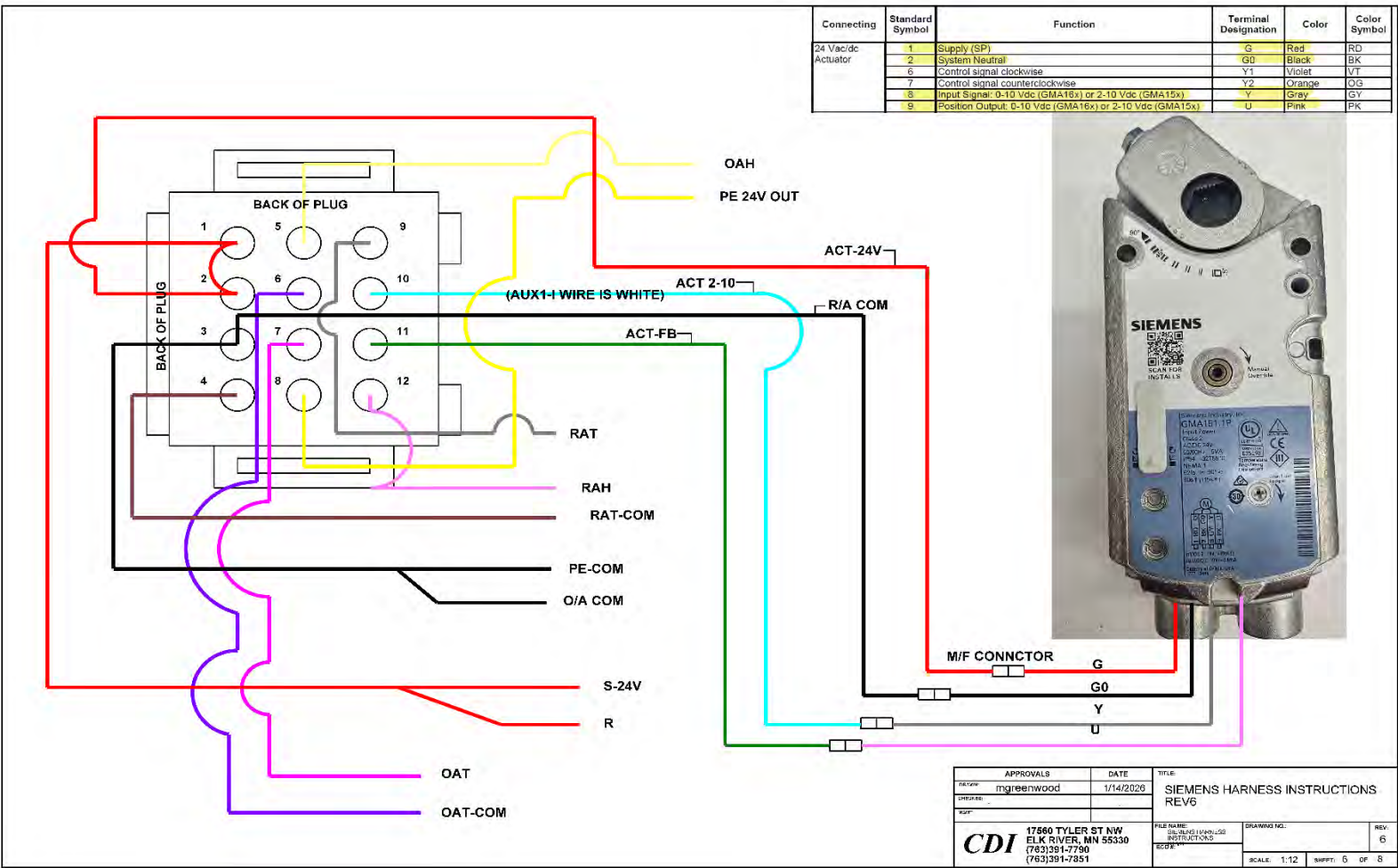


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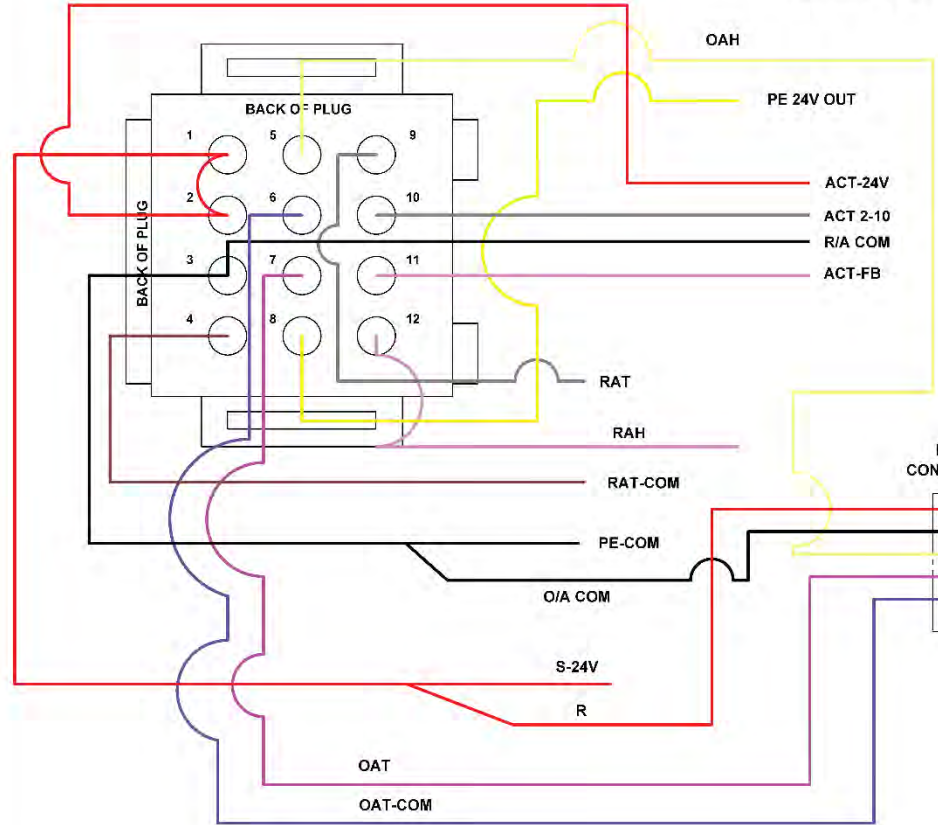




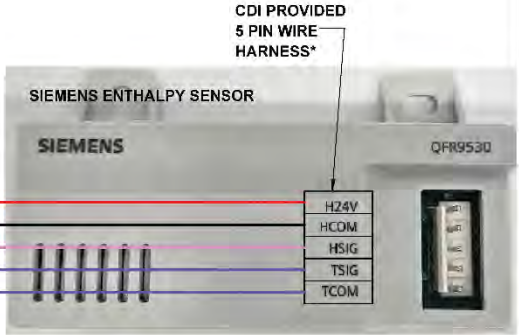


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# OAT ENTHALPY SENSOR WIRING



**\*NOTE, WHEN USING ENTHALPY  
SENSOR AS A TEMP SENSOR,  
ONLY TSIG & TCOM WIRES WILL  
BE CONNECTED IN THE 5 PIN  
HARNESS, CAP THE HSIG,  
HCOM & H24V WIRES**

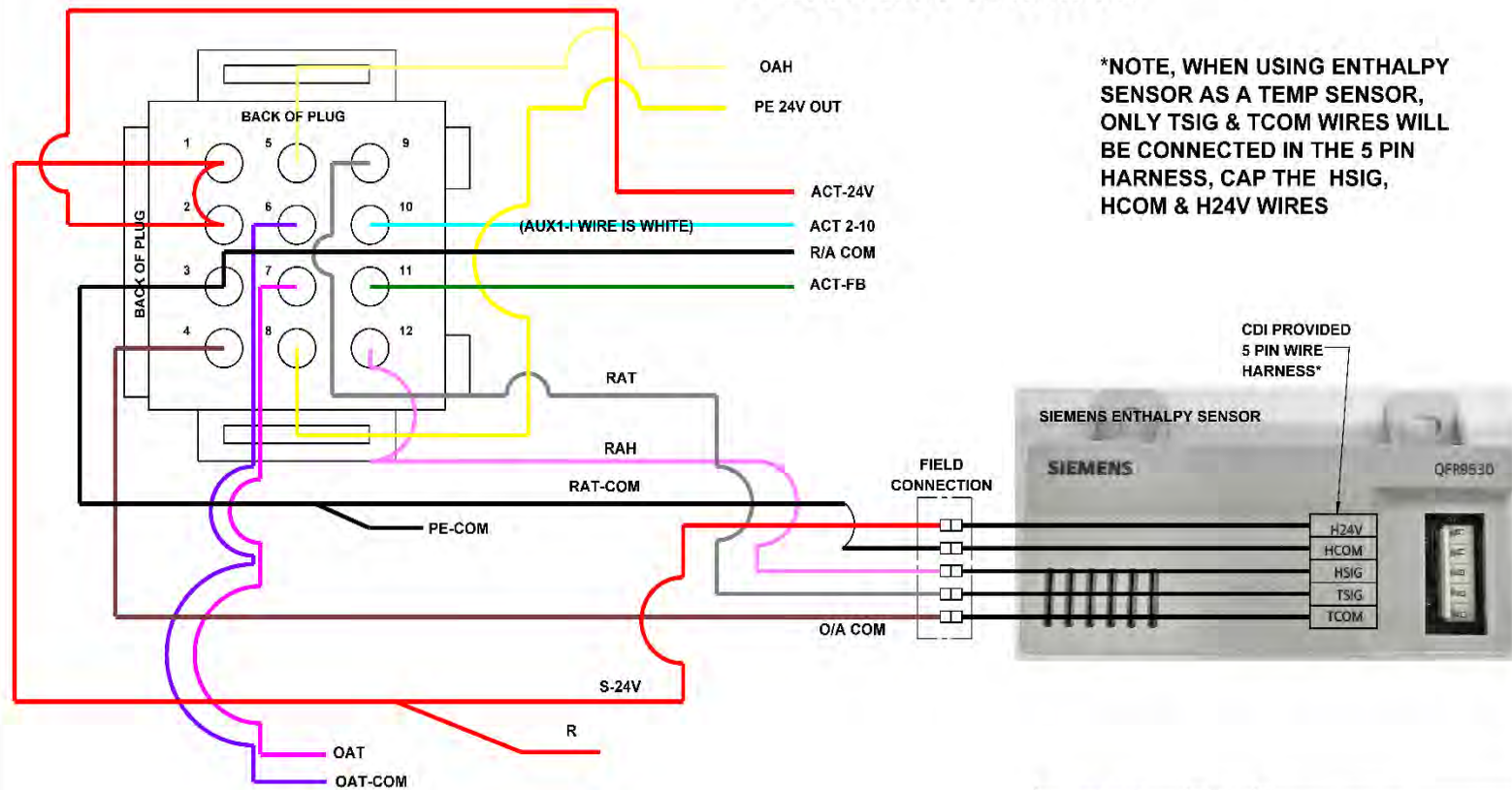


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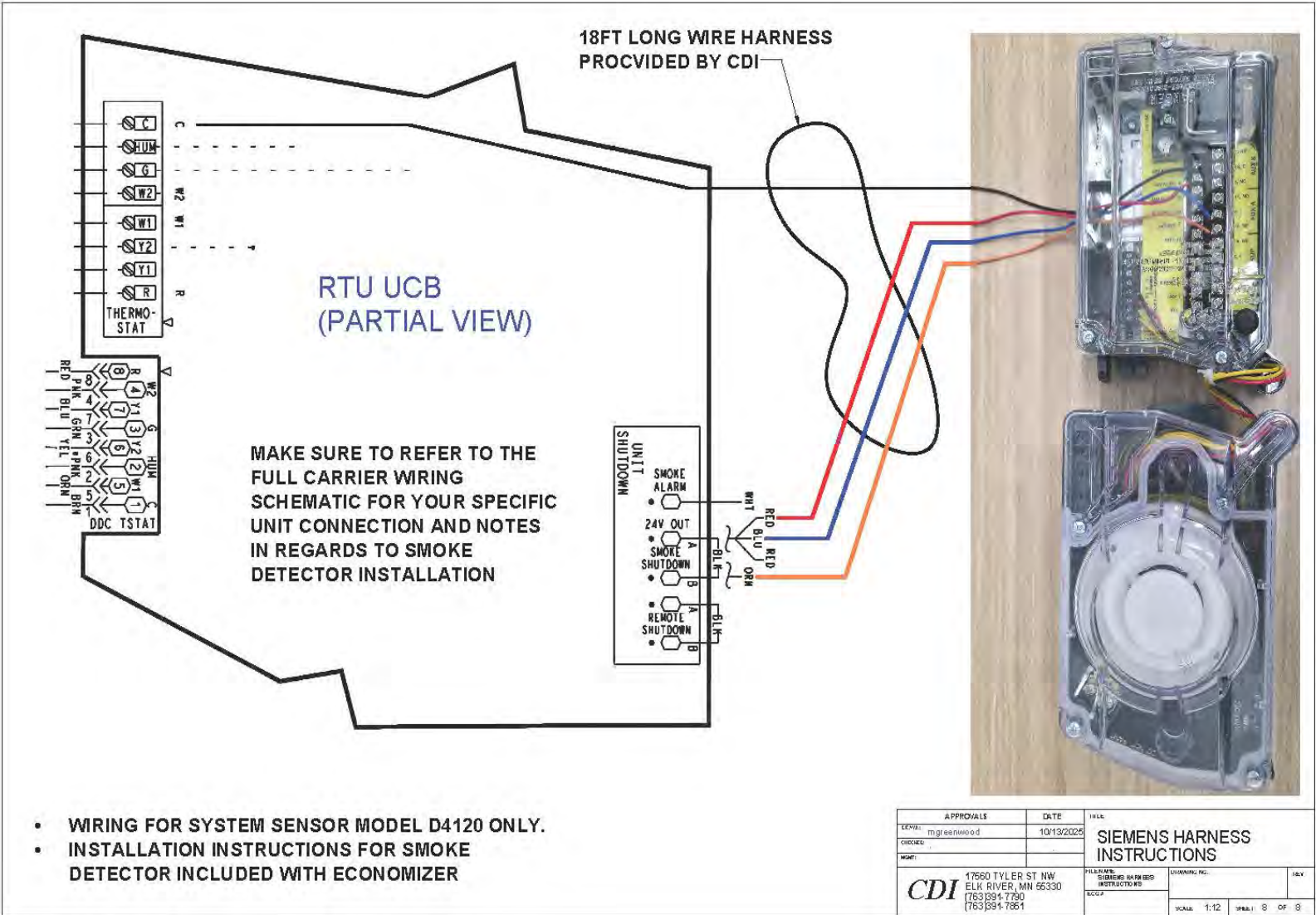


# RAT ENTHALPY SENSOR WIRING



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SENSOR AS A TEMP SENSOR,  
ONLY TSIG & TCOM WIRES WILL  
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