

ADVANCE Split Ducted Unit

Troubleshooting Guide



Model shown is R-410A

Model Numbers

R-410A

CRV140S
CRV160S
CRV180S
CRV160T
CRV180T
CRV210T
CRV240T

R-32

CRV13AS
CRV15AS
CRV17AS
CRV13AT
CRV15AT
CRV17AT

IMPORTANT NOTE:

Please read this manual carefully before installing or operating your air conditioning unit.

That's better. That's Actron.



Table of Contents

| | |
|---|-----------|
| 01. General Troubleshooting | 3 |
| 02. EC Fan Troubleshooting | 4 |
| 03. Indoor Fan PWM and RPM Limits Table..... | 6 |
| 03.01. Advance R-410A (UNO Board)..... | 6 |
| 03.02. Advance R-32 (UNO-Pro Board) | 6 |
| 04. Component Troubleshooting..... | 7 |
| 04.01. Testing Indoor Board..... | 7 |
| 04.02. Expected Control Voltage On Communication Line - InZone Board (R-410A / R-32) .. | 8 |
| 04.03. Expected Control Voltage On Communication Line - UNO Board Series (R-410A) | 8 |
| 04.04. Expected Voltage - InZone PCB To Indoor Fan..... | 10 |
| 04.05. Compressor Winding Resistance..... | 11 |
| 04.06. Condenser Fan Winding Resistance | 12 |
| 04.07. Other Component Coil Resistances | 13 |
| 04.08. EEV Resistance | 13 |
| 04.09. Temperature-Resistance Table For Sensors | 13 |
| 04.10. Pressure-Voltage Table For Pressure Transducers | 17 |
| 05. Fault and Status Codes | 21 |
| 05.01. Status Codes..... | 21 |
| 05.02. Fault Codes..... | 21 |
| 05.03. Fault Code Troubleshooting..... | 21 |

01. General Troubleshooting

| Fault | Possible Causes | Remedies |
|--|---|---|
| The system does not start. | Built-in safety timers have been activated. | Allow up to 5 minutes for the system to start from when it is turned on. |
| | A circuit breaker may have tripped. | Check circuit breakers. |
| | The thermostat setpoint is incorrect. | Lower the set point on cooling or raise it on heating modes. |
| | The master wall control timer is set. | Check the wall control timer settings. |
| No airflow from the outlets. | During heating operation, the hot start function may have been activated. | During heating operation, the indoor fan is delayed for 30 seconds or until the indoor coil reaches 25°C (whichever occur first). This is to prevent cold drafts. |
| | The system may be operating in a defrost cycle during the heating cycle. (LR7 will display DEFROST . NEO will display Defrosting .) | This is normal operation during the defrost cycle to prevent cold air being blown into rooms. |
| Cooling/Heating is not sufficient. | The return air filter may be dirty. | Clean the return air filter. |
| | The outdoor unit may have an obstruction on the air inlet or outlet. | Ensure the air inlet and air outlet on the outdoor unit is not blocked. Check that the area around the outdoor unit is free from obstructions that may cause the airflow to recirculate. |
| | The airflow across the indoor coil may be outside of the operating range. | Reduce the total static pressure of the ductwork. For example increase duct sizes, reduce tight duct work bends or increase return air grille size. |
| | The heat load is greater than the installation design. | Perform a heat load analysis on the conditioned space. Turn any unused zones to the off position. |
| | Windows or doors are open. | Close windows and doors in conditioned areas. |
| | The outside temperature is beyond the air conditioner design conditions. | When the ambient temperature is expected to exceed the maximum design operating temperature, turn the system on as early as possible. |
| | The indoor fan setting may be set too low. | Change the fan speed to a higher setting. This will increase system capacity. |
| Steam emitted from outdoor unit. | The outdoor unit is going through a defrost cycle during the heating cycle. | This is normal during the defrost operation in cold ambient conditions. |
| | Condensation of water on the outdoor coil during heating operation. | This is normal during heating operation. Optional drip trays can be purchased to drain the excess water. |
| Set temperature cannot be adjusted. | The wall control set temperature limits are being exceeded. | Check the upper and lower temperature limits are set correctly. |
| Occasional hissing noise can be heard during the heating cycle. | This is the sound of the gas changing direction as the system goes through a defrost cycle. | This is a normal function of an air conditioner. |
| The compressor is operating but the system is not cooling. | You are in heating mode. | Check the temperature settings. |
| | The reversing valve has not switched between heating and cooling. | Test reversing valve. |

| Fault | Possible Causes | Remedies |
|--|---|---|
| The outdoor coil keeps freezing over. | Faulty outdoor coil sensor | Check the sensor resistance. |
| | Jammed reversing valve. | Test the reversing valve operation. |
| | Obstruction on the outdoor unit. | Remove obstructions. |
| There is only one condenser fan working. | Faulty fan motor. | Test the fan motor resistance. |
| | Faulty capacitor. | Test the capacitor microfarad reading. |
| | Faulty Outdoor PCB. | Test the PCB output voltage. |
| Compressor won't operate at 100% capacity. | <p>You can adjust your wall control temperature so you have a large differential. This will operate the system at 100% until the temperature gets to within 4°C of the setpoint.</p> <p>Note: If the system operates under Anti Freeze or Overheat Protection the system will not operate at 100% capacity</p> | Adjust the set point less then or greater than 4°C of the indoor temperature depending on mode of operation. |
| Odour in the conditioned space when the A/C is turned on. | Indoor unit has absorbed the conditioned space smells eg. cigarette, cooking, etc. | If this happens, we recommend you have the indoor unit washed by a technician. Consult the installer from whom you purchased the air conditioner. |
| | No P-Trap installed. | Re-pipe drain with a P-Trap. |
| | Dry P-Trap. | Contact the installer to carry out a general service and fill the P-Trap. |

02. EC Fan Troubleshooting

| Fault | Sequence of Events | Possible Causes | Remedies |
|--|---|--|---|
| 1. Auto Mode is not available. | When scrolling through fan speeds, Auto Mode is not selectable. | During commissioning, Self-Learn mode was not activated. | Carry out self learn mode. Refer LR7/LC7/NEO controller operation manual. |
| | | Self learn mode failed during commissioning. | Ensure that the air is balanced correctly (static may be too high). Refer to Installation and Commissioning Guide-Indoor. |
| 2. Airflow hunting during Auto and Self Learn Mode. | Indoor fan will intermittently "huff". | Excessive static in ductwork. Duct static has changed since performing a self-learn. Ducts deteriorate, dirty filter, change in duct layout. | Reduce static where possible. See installation guidelines on duct installation. Clean filter and re-perform self-learn. |
| 3. Too much airflow when minimum zones are on. | Air is blowing too much when set to minimum zones. | Fan not set to Auto Mode. | Change fan setting to Auto Mode |
| | | Poor air balance. | Carry out air balance and install manual dampers as required. |
| | | Minimum duct and outlet sizes requirements not followed. | Check Installation and Commissioning Guide-Indoor and adjust / change if necessary. |

| Fault | Sequence of Events | Possible Causes | Remedies |
|---|---|---|--|
| 4. Low airflow during AUTO Mode. | System produces reduced airflow on Auto mode when all or minimum zones are on. | System capacity has been designed to heat/cool only selected areas of the conditions space at any one time. | Operate indoor fan on Low/ Med/High speed to achieve more airflow. |
| | | Excessive static in ductwork. | Reduce static where possible. Review duct design with reference to Installation and Commissioning Guide-Indoor. |
| 5. Indoor fan not changing speeds when in Auto Mode | When zones are switched on or off, airflow to active zones doesn't increase or decrease. | There is excessive static within the duct design of the active zones. | Review duct design with reference to Installation and Commissioning Guide-Indoor. |
| | | The indoor PCB is not changing the fan PWM to adjust the fan speed. | Check the output PWM from indoor PCB. An increase in fan speed should result in a increase in the fan % PWM (duty cycle). Refer to table below test points expected voltages. To determine if the system may be suffering from excessive or insufficient static, check PWM & RPM values through the indoor unit dashboard on the Master Wall Controller: <ul style="list-style-type: none"> • If the RPM is at its maximum value, and the PWM has not reached its requested value, this indicates a high static. (Please refer to RPM Limits in Section 0.3) • When switching off zones, and there is little or no change in the RPM value, this indicates insufficient static within remaining active zones duct work. |
| 6. HiS is displayed on the wall controller after a Self-Learn has been preformed (L Series Controller only). | System produces low airflow when AUTO mode is selected regardless of how many zones are open. | HiS is displayed on the wall control as a indication of very high static in the connected return and supply duct which can further effect the supply air quantity during the auto mode. If there is too much static during self-learn, then the controller will automatically decrease the indoor fan speed until an acceptable static is achieved and the self-learn can be completed with reduced airflow. | Reduce static where possible. Review duct design with reference to Installation and Commissioning Guide - Indoor . Once static has been reduced perform Self-Learn again. |

03. Indoor Fan PWM and RPM Limits Table

03.01. Advance R-410A (UNO Board)

| Unit Model | PWM % (Approx) | | |
|------------|----------------|--------|------|
| | Low | Medium | High |
| EVV140S | 35 | 47 | 60 |
| EVV160S | 42 | 58 | 77 |
| EVV180S | 50 | 69 | 99 |
| EVV210S | 43 | 61 | 82 |
| EVV240S | 44 | 62 | 84 |

| Unit Model | RPM Limits | | |
|------------|------------|--------|------|
| | Low | Medium | High |
| EVV140S | 1150 | 1290 | 1390 |
| EVV160S | 1150 | 1290 | 1390 |
| EVV180S | 1150 | 1290 | 1390 |
| EVV210S | 1150 | 1350 | 1500 |
| EVV240S | 1150 | 1350 | 1500 |

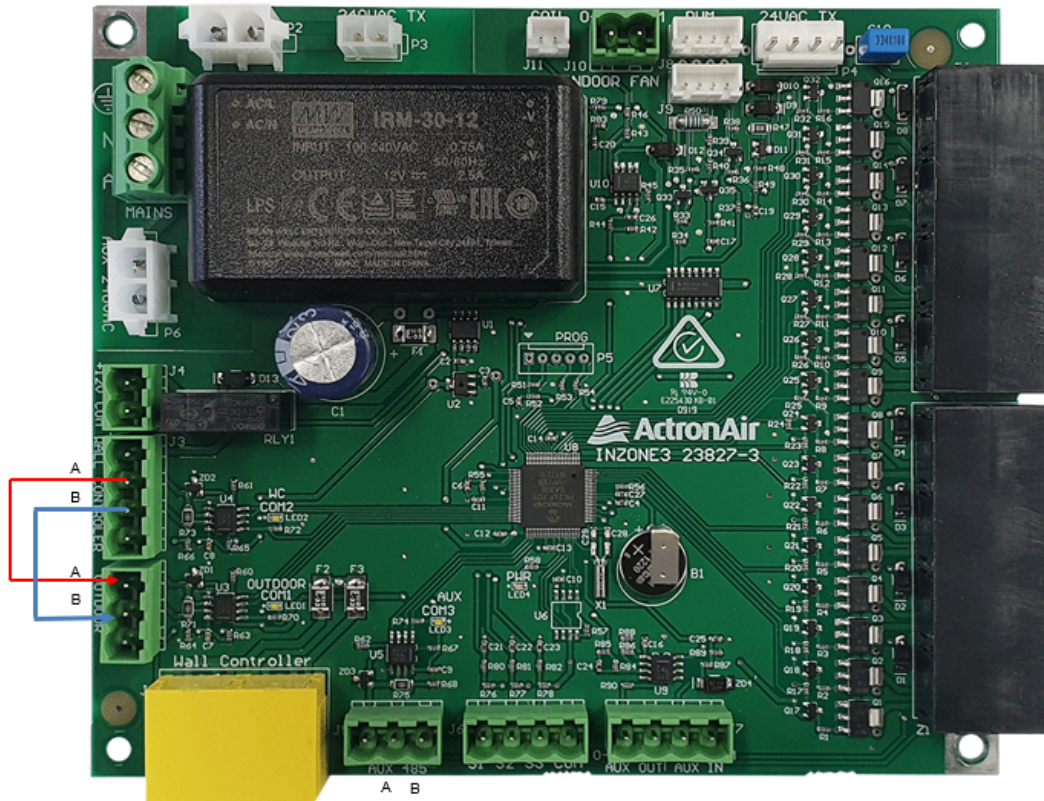
03.02. Advance R-32 (UNO-Pro Board)

| Unit Model | PWM % (Approx) | | |
|------------|----------------|--------|------|
| | Low | Medium | High |
| EVV13AS | 40 | 50 | 64 |
| EVV15AS | 52 | 64 | 73 |
| EVV17AS | 57 | 73 | 99 |

| Unit Model | RPM Limits | | |
|------------|------------|--------|------|
| | Low | Medium | High |
| EVV13AS | 1380 | 1380 | 1380 |
| EVV15AS | 1380 | 1380 | 1380 |
| EVV17AS | 1380 | 1380 | 1380 |

04. Component Troubleshooting

04.01. Testing Indoor Board

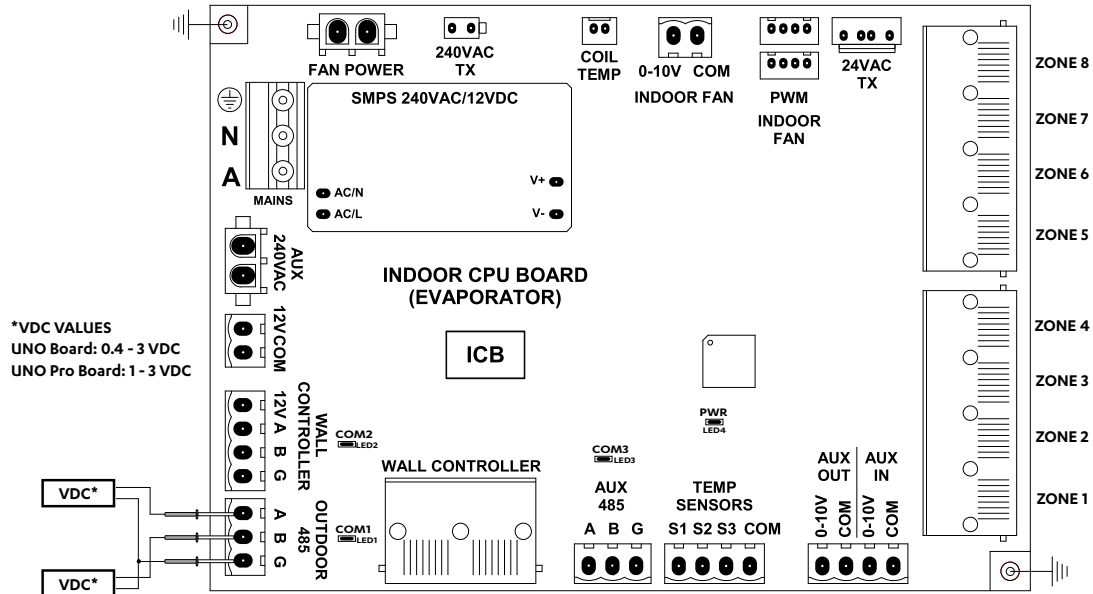


1. Disconnect wires from the Wall Control Communication and Outdoor Communication plugs into indoor board
2. Loop the "A" terminal from the Wall Control communication plug to the "A" terminal on the Outdoor Communication Plug
3. Loop the "B" Terminal from the Wall Control communication plug to the "B" terminal on the Outdoor Communication Plug
4. Power the board and if the WCCOM2 LED flashes and the OUTDOORCOM1 flashes then the indoor board is communicating.

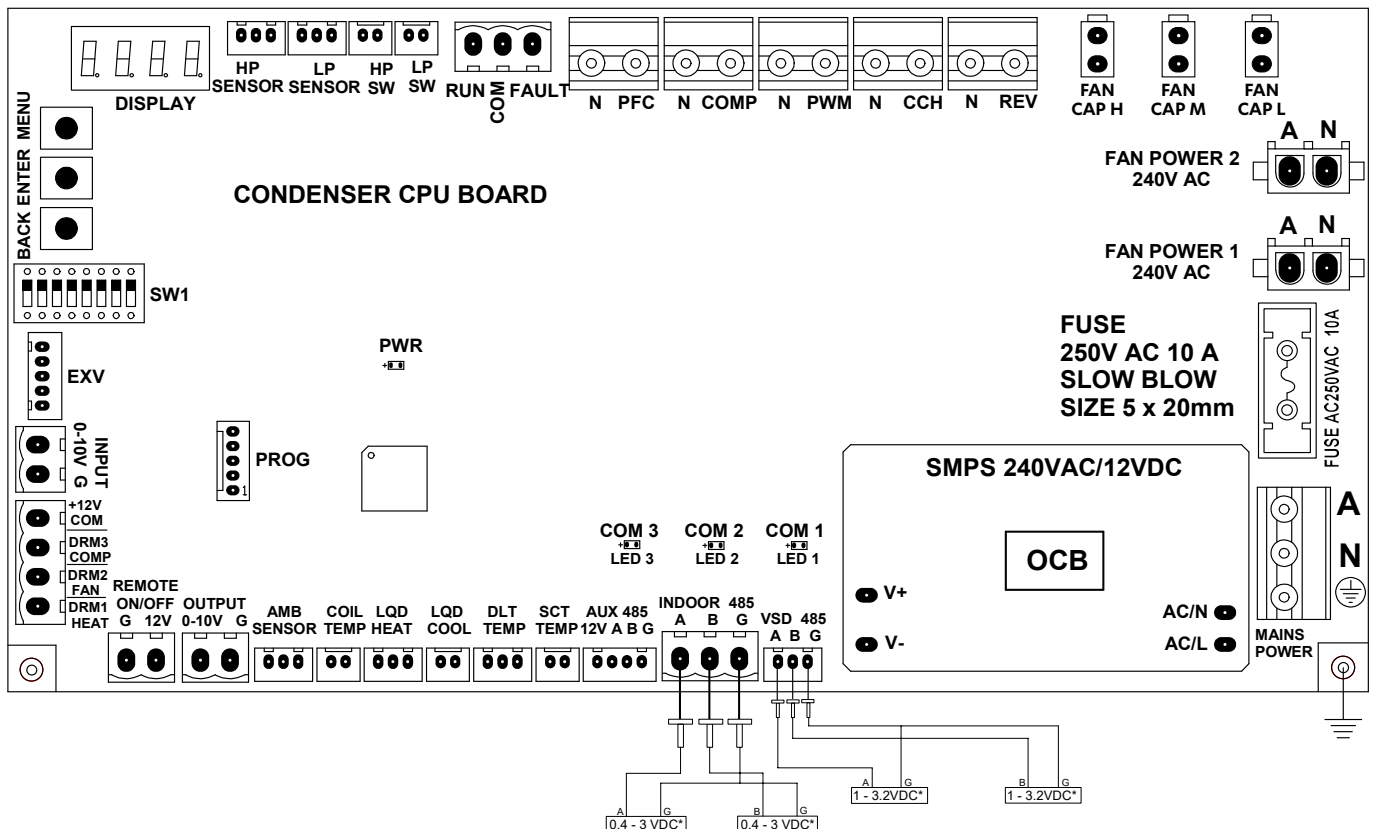
04.02. Expected Control Voltage On Communication Line - InZone Board (R-410A / R-32)

NOTES

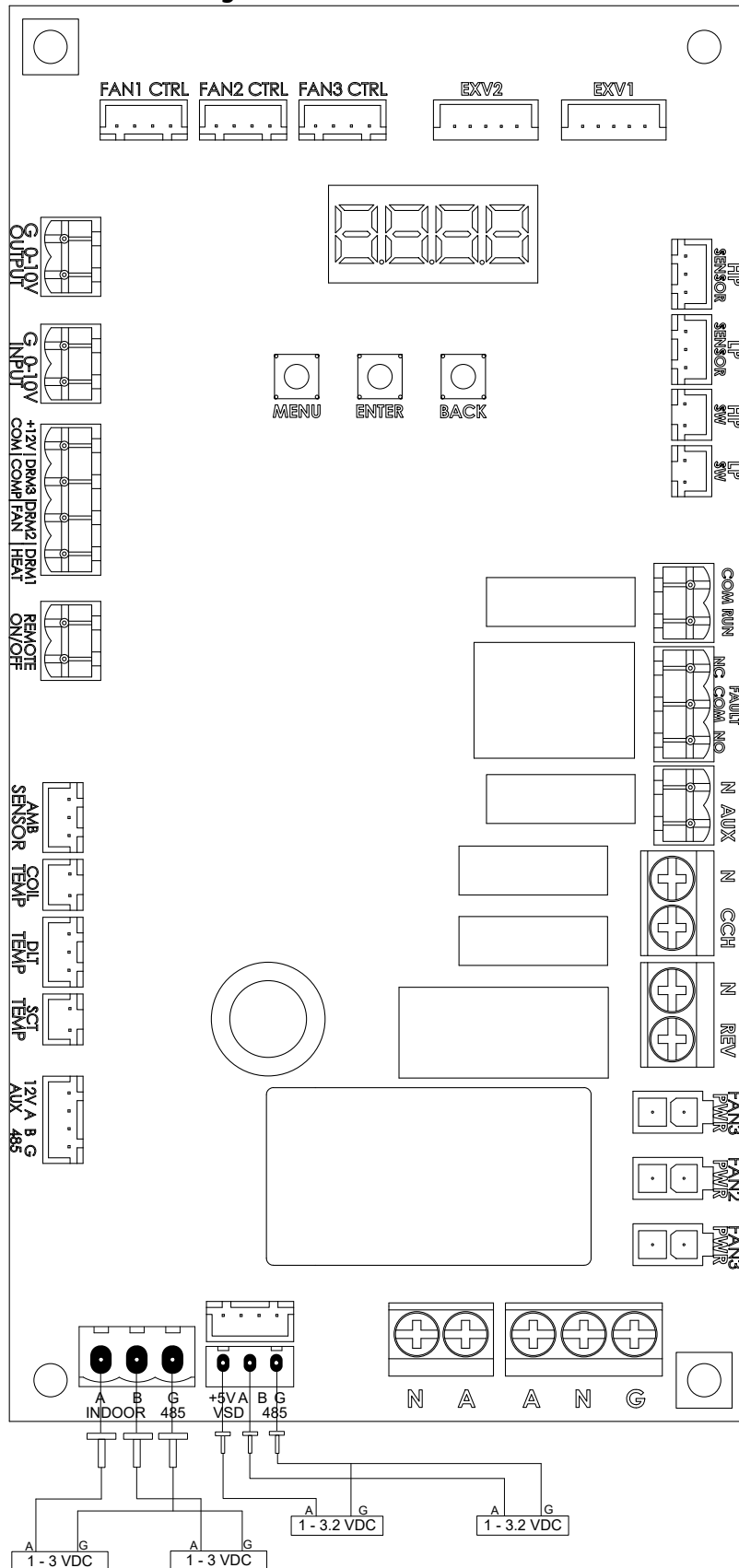
- If COM1 (LED1) and COM2 (LED2) are blinking, communication is occurring.
- * Voltage sending between A-G and B-G are fluctuating, this means communication is occurring.
- Prior to measuring the control voltage ensure communication wires are properly connected to the CPU board.



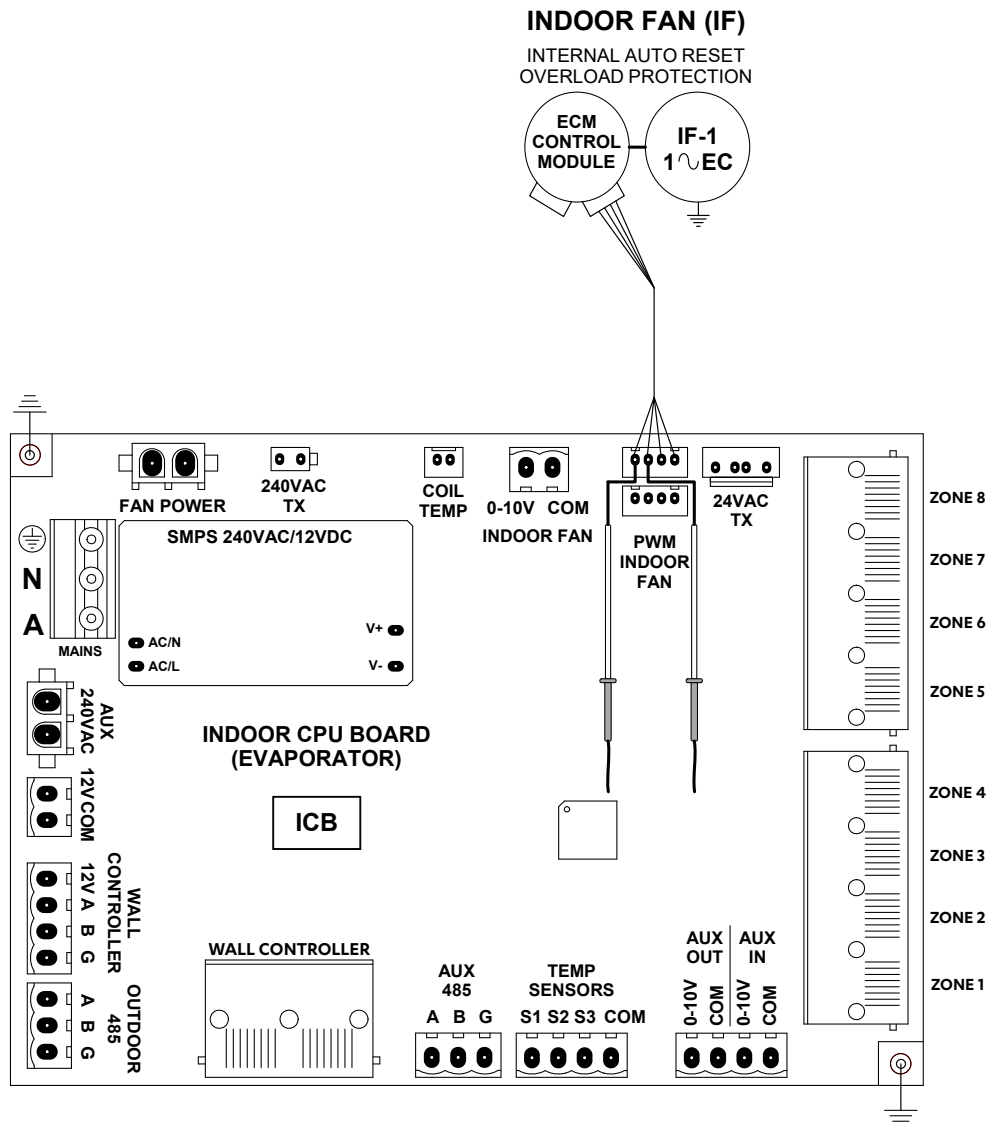
04.03. Expected Control Voltage On Communication Line - UNO Board Series (R-410A)



04.03.0.01. Expected Control Voltage On Communication Line - UNO Pro Board (R-32)



04.04. Expected Voltage - InZone PCB To Indoor Fan



Step 1.

1. Measure the Indoor Fan on/off signal.
On signal = 12VDC signal between Pin 1 and 3 (red and blue wires).
Off signal = +0VDC signal between Pin 1 and 3.

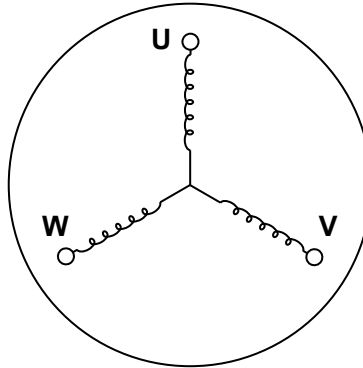
Step 2.

1. Set the tester to measure duty cycle \square .
2. Set the indoor fan to a fixed speed eg High & turn all zones on.
3. Measure the reading between Pin 3 and 4 (blue and yellow wires).
4. Change fan speed and check for any changes in readings.
5. Compare the duty cycle output to the expected PWM for each model.

NOTE

Duty cycle cannot be tested in voltage. A voltage on the PWM line indicates a Duty Cycle is present.

04.05. Compressor Winding Resistance



COMPRESSOR WINDINGS
SINGLE PHASE

| | Unit Model | Compressor Part Number/Model | Rating Of Compressor Windings (Ω)* | | |
|---------------|------------|------------------------------|---|-------|-------|
| | | | U - V | V - W | U - W |
| R-410A | CRV140S | 1560-476 | 0.338 | 0.338 | 0.338 |
| | CRV160S | | | | |
| | CRV180S | | | | |
| | CRV160T | 1560-474 | 0.521 | 0.521 | 0.521 |
| | CRV180T | | | | |
| | CRV210T | 1560-475 | 0.610 | 0.610 | 0.610 |
| CRV240T | | | | | |
| R-32 | CRV13AS | 1560-477 | 0.345 | 0.345 | 0.345 |
| | CRV15AS | | | | |
| | CRV17AS | | | | |
| | CRV13AT | 1560-478 | 0.658 | 0.658 | 0.658 |
| | CRV15AT | | | | |
| | CRV17AT | | | | |

*Resistance value at 25 °C ambient Temperature

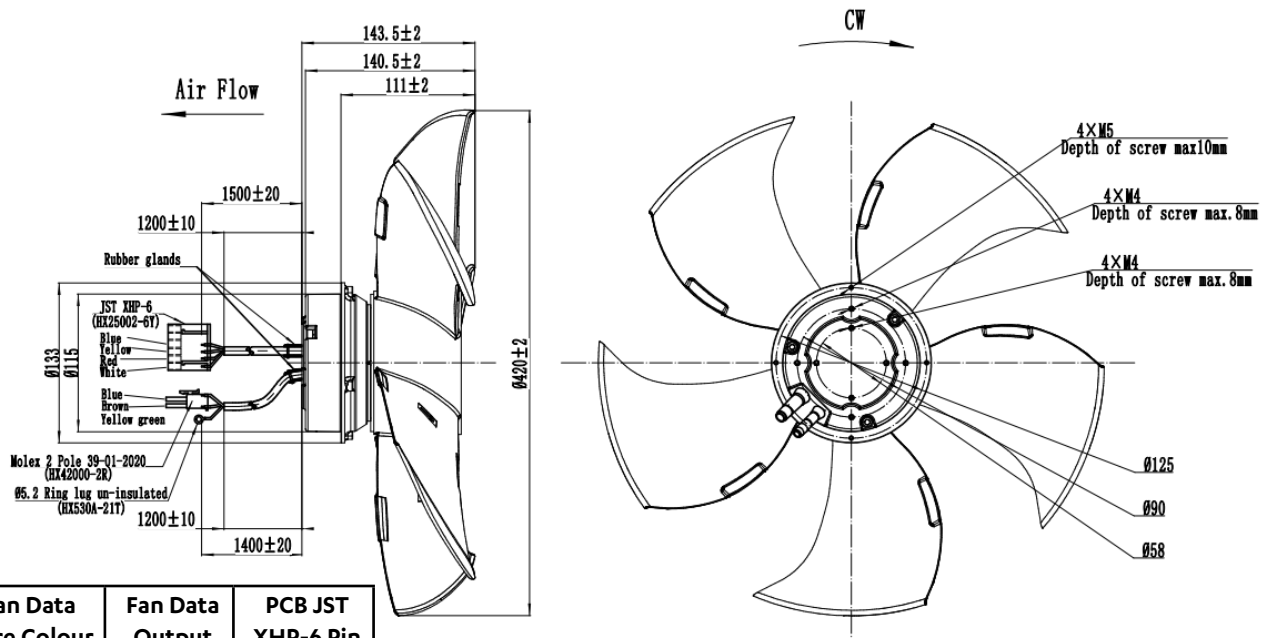
04.06. Condenser Fan Winding Resistance

04.06.01. R-410A Models

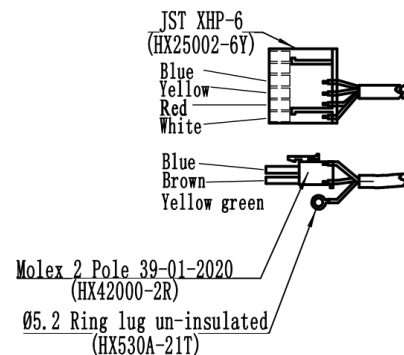
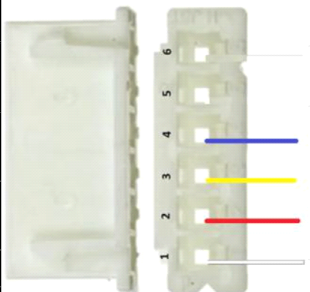
| Unit Model | Fan Part Number | Rating Of Fan Windings (Ω)* | |
|---|-----------------|--------------------------------------|--------------|
| CRV140S CRV160S CRV180S CRV160T CRV180T | 2505-141 | Black and Blue | 97 |
| | | Blue and Brown | 143 |
| | | Black and Brown | 240 |
| | | Any colour and earth | Open circuit |
| CRV210T CRV240T | 2505-130 | Brown and Black | 68.2 |
| | | Brown and Blue | 38.6 |
| | | Black and Blue | 30.1 |
| | | Any colour and earth | Open circuit |
| | | Any colour and either Gray | Open circuit |

*Resistance value at 25 °C ambient Temperature

04.06.02. R-32 Models



| Control Voltage | Fan Data Wire Colour | Fan Data Output | PCB JST XHP-6 Pin |
|-----------------|----------------------|-----------------|-------------------|
| - | White | Fan Feedback | 1 |
| - | Red | +10VDC Supply | 2 |
| 2 - 10 VDC | Yellow | 0 - 10 VDC | 3 |
| 2 - 10 VDC | Blue | 0V Ground | 4 |
| - | - | - | 5 |
| - | - | - | 6 |
| 1.5 - 10 VDC | Yellow - Blue | UNO Pro to Fan | |



04.07. Other Component Coil Resistances

| Component Name | Resistance Value (KΩ)* |
|------------------|------------------------|
| Reversing valve | 2.03 |
| Crankcase Heater | 1.56 |

*Resistance value at 25 °C Ambient Temperature

04.08. EEV Resistance

| Resistance Between Wires | Resistance Value (Ω)* |
|--------------------------|-----------------------|
| Orange – Grey | 46 ± 3 Ω |
| Red – Grey | 46 ± 3 Ω |
| Yellow – Grey | 46 ± 3 Ω |
| Black – Grey | 46 ± 3 Ω |

*Resistance value at 20°C Ambient Temperature

04.09. Temperature-Resistance Table For Sensors

| Temp (°C) | Ambient/Outdoor Coil/ Indoor Coil/Suction Temperature Sensor | Discharge Line Temperature Sensor |
|-----------|--|--------------------------------------|
| | Resistance (KΩ) | Resistance (KΩ) |
| -20 | 77.5 | 1053.9 |
| -19 | 73.5 | 992.1 |
| -18 | 69.7 | 933.0 |
| -17 | 66.1 | 878.0 |
| -16 | 62.8 | 827.0 |
| -15 | 59.6 | 779.6 |
| -14 | 56.6 | 734.7 |
| -13 | 53.8 | 693.2 |
| -12 | 51.2 | 654.0 |
| -11 | 48.7 | 617.1 |
| -10 | 46.3 | 582.5 |
| -9 | 44.1 | 550.6 |
| -8 | 42.0 | 520.2 |
| -7 | 40.0 | 491.8 |
| -6 | 38.1 | 465.2 |
| -5 | 36.3 | 440.4 |
| -4 | 34.6 | 416.9 |
| -3 | 33.0 | 394.8 |
| -2 | 31.5 | 374.1 |

| | Ambient/Outdoor Coil/ Indoor Coil/Suction Temperature Sensor | Discharge Line Temperature Sensor |
|--------------|--|--------------------------------------|
| Temp (°C) | Resistance (KΩ) | Resistance (KΩ) |
| -1 | 30.1 | 354.7 |
| 0 | 28.7 | 336.4 |
| 1 | 27.4 | 319.0 |
| 2 | 26.2 | 302.7 |
| 3 | 25.0 | 287.3 |
| 4 | 23.9 | 273.0 |
| 5 | 22.9 | 259.2 |
| 6 | 21.9 | 246.4 |
| 7 | 21.0 | 234.3 |
| 8 | 20.1 | 222.8 |
| 9 | 19.2 | 212.0 |
| 10 | 18.4 | 201.8 |
| 11 | 17.6 | 192.1 |
| 12 | 16.9 | 183.0 |
| 13 | 16.2 | 174.3 |
| 14 | 15.5 | 166.1 |
| 15 | 14.9 | 158.4 |
| 16 | 14.3 | 151.1 |
| 17 | 13.7 | 144.1 |
| 18 | 13.2 | 137.5 |
| 19 | 12.7 | 131.3 |
| 20 | 12.2 | 125.4 |
| 21 | 11.7 | 119.7 |
| 22 | 11.2 | 114.4 |
| 23 | 10.8 | 109.4 |
| 24 | 10.4 | 104.6 |
| 25 | 10.0 | 100.0 |
| 26 | 9.6 | 95.7 |
| 27 | 9.3 | 91.6 |
| 28 | 8.9 | 87.6 |
| 29 | 8.6 | 83.9 |
| 30 | 8.3 | 80.4 |
| 31 | 8.0 | 77.0 |
| 32 | 7.7 | 73.8 |
| 33 | 7.4 | 70.7 |
| 34 | 7.1 | 67.8 |
| 35 | 6.9 | 65.1 |

| | Ambient/Outdoor Coil/ Indoor Coil/Suction Temperature Sensor | Discharge Line Temperature Sensor |
|--------------|--|--------------------------------------|
| Temp (°C) | Resistance (KΩ) | Resistance (KΩ) |
| 36 | 6.6 | 62.4 |
| 37 | 6.4 | 59.9 |
| 38 | 6.2 | 57.5 |
| 39 | 6.0 | 55.2 |
| 40 | 5.8 | 53.0 |
| 41 | 5.6 | 50.9 |
| 42 | 5.4 | 48.9 |
| 43 | 5.2 | 47.0 |
| 44 | 5.0 | 45.2 |
| 45 | 4.8 | 43.5 |
| 46 | 4.7 | 41.8 |
| 47 | 4.5 | 40.2 |
| 48 | 4.4 | 38.7 |
| 49 | 4.2 | 37.3 |
| 50 | 4.1 | 35.9 |
| 51 | 4.0 | 34.6 |
| 52 | 3.8 | 33.3 |
| 53 | 3.7 | 32.1 |
| 54 | 3.6 | 30.9 |
| 55 | 3.5 | 29.8 |
| 56 | 3.4 | 28.7 |
| 57 | 3.3 | 27.7 |
| 58 | 3.2 | 26.7 |
| 59 | 3.1 | 25.8 |
| 60 | 3.0 | 24.9 |
| 61 | 2.9 | 24.0 |
| 62 | 2.8 | 23.2 |
| 63 | 2.7 | 22.4 |
| 64 | 2.6 | 21.6 |
| 65 | 2.6 | 20.9 |
| 66 | 2.5 | 20.2 |
| 67 | 2.4 | 19.5 |
| 68 | 2.3 | 18.8 |
| 69 | 2.3 | 18.2 |
| 70 | 2.2 | 17.6 |
| 71 | 2.1 | 17.0 |
| 72 | 2.1 | 16.5 |
| 73 | 2.0 | 15.9 |
| 74 | 2.0 | 15.4 |
| 75 | 1.9 | 14.9 |
| 76 | 1.9 | 14.4 |

| | Ambient/Outdoor Coil/ Indoor Coil/Suction Temperature Sensor | Discharge Line Temperature Sensor |
|--------------|--|--------------------------------------|
| Temp (°C) | Resistance (KΩ) | Resistance (KΩ) |
| 77 | 1.8 | 14.0 |
| 78 | 1.8 | 13.5 |
| 79 | 1.7 | 13.1 |
| 80 | 1.7 | 12.7 |
| 81 | 1.6 | 12.3 |
| 82 | 1.6 | 11.9 |
| 83 | 1.5 | 11.6 |
| 84 | 1.5 | 11.2 |
| 85 | 1.5 | 10.9 |
| 86 | 1.4 | 10.5 |
| 87 | 1.4 | 10.2 |
| 88 | 1.3 | 9.9 |
| 89 | 1.3 | 9.6 |
| 90 | 1.3 | 9.3 |
| 91 | 1.2 | 9.1 |
| 92 | 1.2 | 8.8 |
| 93 | 1.2 | 8.5 |
| 94 | 1.1 | 8.3 |
| 95 | 1.1 | 8.1 |
| 96 | 1.1 | 7.8 |
| 97 | 1.1 | 7.6 |
| 98 | 1.0 | 7.4 |
| 99 | 1.0 | 7.2 |
| 100 | 1.0 | 7.0 |
| 101 | 1.0 | 6.8 |
| 102 | 0.9 | 6.6 |
| 103 | 0.9 | 6.4 |
| 104 | 0.9 | 6.2 |
| 105 | 0.9 | 6.1 |
| 106 | 0.9 | 5.9 |
| 107 | 0.8 | 5.7 |
| 108 | 0.8 | 5.6 |
| 109 | 0.8 | 5.4 |
| 110 | 0.8 | 5.3 |
| 111 | 0.8 | 5.2 |
| 112 | 0.7 | 5.0 |
| 113 | 0.7 | 4.9 |
| 114 | 0.7 | 4.8 |
| 115 | 0.7 | 4.6 |
| 116 | 0.7 | 4.5 |
| 117 | 0.7 | 4.4 |

| | Ambient/Outdoor Coil/ Indoor Coil/Suction Temperature Sensor | Discharge Line Temperature Sensor |
|--------------|--|--------------------------------------|
| Temp (°C) | Resistance (KΩ) | Resistance (KΩ) |
| 118 | 0.6 | 4.3 |
| 119 | 0.6 | 4.2 |
| 120 | 0.6 | 4.1 |

04.10. Pressure-Voltage Table For Pressure Transducers

| LR7-1 / LC7-2 | Outdoor Unit CPU | Category | Function / Fault |
|----------------------|------------------------|----------|---|
| - | Boot | Status | Unit is starting up |
| - | oFF | Status | Unit Off or Unit Turning Off (flashing) |
| COOL | Cool | Status | Unit Cooling Mode or Start Cooling (flashing) |
| HEAT | HEAt | Status | Unit Heating Mode or Start Heating (flashing) |
| Defrost Status | dEF | Status | Heating Mode - Defrost |
| Defrost Status | dEF3 | Status | 3 min to Defrost |
| Defrost Status | dEF2 | Status | 2 min to Defrost |
| Defrost Status | dEF1 | Status | 1 min to Defrost |
| HEAT | HEAt | Status | Heating Mode - Indoor coil pre-heat after defrost |
| - | oiLr | Status | Oil Return Operation |
| Energy Saving | dr-1 | Status | Demand Response Management 1 |
| Energy Saving | dr-2 | Status | Demand Response Management 2 |
| Energy Saving | dr-3 | Status | Demand Response Management 3 |
| - | ohP | Status | Unit derating - Overheat Protection Mode |
| - | dtP | Status | Unit derating - Discharge Temperature Protection Mode |
| - | cPP | Status | Unit derating - Condenser Pressure Protection Mode |
| - | hSP | Status | Unit derating - High Suction Pressure Protection Mode |
| COOL & LOW blink 30s | Cool | Error | Anti Freeze Protection Mode |

NOTE

When unit is powered up, "boot" will show in 7 segment display of outdoor board for 30 seconds, followed by normal CPU status codes.

| NEO Wall Controller | LR7-1 /LC7-2 Wall Controller | Outdoor Unit CPU | Category / Source | Function / Fault |
|---------------------|------------------------------|------------------|-------------------|--|
| E01 | E01 | E01 | IDU | Indoor Fan RPM Feedback Error |
| E03 | E03 | E03 | IDU | Indoor Room Temp. Sensor Error (Open or short circuit) |
| E04 | E04 | E04 | IDU | Indoor Coil IN Temp. Sensor Error (open or short circuit) |
| E06 | E06 | E06 | IDU | High Discharge Temp. (Discharge Temp exceeded 120°C) |
| E07 | E07 | E07 | ODU | Outdoor Coil Temp. Sensor Error (Open or short circuit) |
| E08 | E08 | E08 | ODU | Discharge Temp. Sensor Error (Open or short circuit) |
| E09 | E09 | E09 | ODU | LP Switch Tripped |
| E10 | E10 | E10 | ODU | LP Sensor Error (Open/short circuit) |
| E11 | E11 | E11 | ODU | HP Switch Tripped |
| E12 | E12 | E12 | ODU | HP Sensor Error (Open/short circuit) |
| E13* | E13* | E13* | ODU | VSD HSP Connector (Jumper Pin Missing) |
| | | | | VSD Fault Signal |
| E15 | E15 | E15 | ODU / VSD | Communication Error Between ODU to VSD |
| E18 | E18 | E18 | ODU | Suction Temp. Sensor Error (Open/short circuit) |
| E22 | E22 | E22 | ODU | Ambient Temp. Sensor Error (Open/short circuit) |
| E26 | E26 | E26 | VSD | VSD Supply Over Current |
| E27 | E27 | E27 | VSD | VSD Supply Over Voltage |
| E28 | E28 | E28 | VSD | VSD Temperature High |
| E29 | E29 | E29 | VSD | VSD Low Supply Voltage |
| E30 | E30 | E30 | VSD | VSD Trip Lock |
| E41 | E41 | E41 | VSD | VSD DC Link Voltage Low |
| E42 | E42 | E42 | ODU | Envelope Protection Error (Extreme Low Evaporating Pressure) |
| E43 | E43 | E43 | ODU | Envelope Protection Error (High compression ratio) |
| E44 | E44 | E44 | ODU | Envelope Protection Error (High condensing pressure) |
| E45 | E45 | E45 | ODU | Envelope Protection Error (Low compression ratio) |
| E47 | E47 | E47 | ODU | Compressor Torque Limit Error |
| E50 | E50 | E50 | ODU | Outdoor Board Configuration Error |
| E51 | E51 | E51 | IDU / ODU | Communication Error Between Outdoor to Indoor Unit |
| E52 | E52 | E52 | CMI / ODU | Communication Error Between Indoor Unit to Wall controller |
| E55 | E55 | E55 | ODU | Communication Error Between BMS to ODU |
| E56 | E56 | E56 | VSD | No Master Wall Controller Detected |
| E60 | E60 | E60 | VSD | VSD Compressor Phase Over Current |
| E61 | E61 | E61 | VSD | VSD Compressor Loss of Phase |
| E62 | E62 | E62 | VSD | VSD DC Bus Over Voltage |

* Applicable only for Advance R-410A (Uno Board), ** Applicable only for Advance R-32 (Uno Pro Board)

| NEO Wall Controller | LR7-1 /LC7-2 Wall Controller | Outdoor Unit CPU | Category / Source | Function / Fault |
|---------------------|------------------------------|------------------|-------------------|---|
| E63 | E63 | E63 | VSD | VSD DC Bus Under Voltage |
| E64 | E64 | E64 | VSD | VSD Compressor Loss of Rotor |
| E65 | E65 | E65 | VSD | VSD Compressor U Phase Current Sensor Fault |
| E66* | E66* | E66* | VSD | VSD AC Voltage Imbalance / AC Input Loss of Phase |
| E66* | E66* | E66* | VSD | VSD Inverter De-saturation |
| E68 | E68 | E68 | VSD | VSD Compressor V Phase Current Sensor Fault |
| E69 | E69 | E69 | VSD | VSD PFC-IGBT Over Temp |
| E70 | E70 | E70 | VSD | VSD Lost Rotor Position |
| E71 | E71 | E71 | VSD | VSD Motor Temp Sensor Error |
| E72 | E72 | E72 | VSD | VSD Precharge Relay Open |
| E73 | E73 | E73 | VSD | VSD Compressor W Phase Current Sensor Fault |
| E74 | E74 | E74 | VSD | VSD IGBT Over Current |
| E75 | E75 | E75 | VSD | VSD Compressor Phase Current Fold Back Timeout |
| E76 | E76 | E76 | VSD | VSD Power Module Temp. Fold Back Timeout |
| E77 | E77 | E77 | VSD | VSD AC Input Current Fold Back Timeout |
| E78 | E78 | E78 | VSD | VSD PFC-IGBT Temp. Low |
| E79 | E79 | E79 | VSD | VSD IPM Desat Protection/Compressor HW Over Current |
| E80 | E80 | E80 | VSD | VSD Motor Temp High |
| E81 | E81 | E81 | VSD | VSD Board Temp High |
| E82 | E82 | E82 | VSD | VSD Power Module Temp High |
| E83 | E83 | E83 | VSD | VSD PFC-IGBT Temp High |
| E84 | E84 | E84 | VSD | Communication Error in VSD Between DSP to PFC |
| E85 | E85 | E85 | VSD | Communication Error in VSD Between Comms to DSP |
| E86 | E86 | E86 | VSD | Compressor Phase Current Imbalance |
| E87 | E87 | E87 | VSD | VSD 3 Phase PFC Current Imbalance |
| E88 | E88 | E88 | VSD | VSD Micro Electronic or EEPROM Error |
| E89 | E89 | E89 | VSD | VSD Motor Over Speed |
| E90 | E90 | E90 | VSD | VSD Compressor Model Configuration Error |
| E91 | E91 | E91 | VSD | VSD Inverter Temp Imbalance |
| E92 | E92 | E92 | VSD | VSD PFC Temp Imbalance |
| E93 | E93 | E93 | VSD | VSD Motor Temp Low |
| E94 | E94 | E94 | VSD | VSD Board Temp Low |
| E95 | E95 | E95 | VSD | VSD Power Module Temp Low or Sensor (Open or short circuit) |
| E96 | E96 | E96 | VSD | VSD PFC-IGBT Temp Low |
| E97 | E97 | E97 | VSD | VSD Comms ADC Failure |

* Applicable only for Advance R-410A (Uno Board), ** Applicable only for Advance R-32 (Uno Pro Board)

| NEO Wall Controller | LR7-1 /LC7-2 Wall Controller | Outdoor Unit CPU | Category / Source | Function / Fault |
|---------------------|------------------------------|------------------|-------------------|--|
| E98 | E98 | E98 | VSD | VSD PFC / Input Current Sensor Fault |
| E99 | E99 | E99 | VSD | VSD Compressor Overload |
| E100 | E100 | E100 | VSD | VSD PFC Hardware Over Current |
| E101 | E101 | E101 | VSD | VSD PFC Software Over Current |
| E102 | E102 | E102 | VSD | VSD PFC Over Voltage |
| E103** | E103** | E103** | VSD | VSD Power Module Temp Low or Sensor Open fault |
| E104** | E104** | E104** | VSD | VSD Fault Limit Lockout |

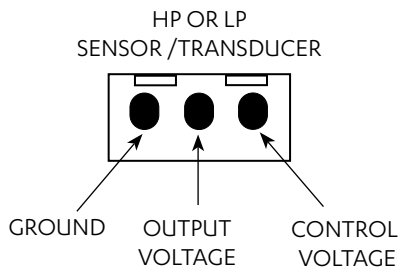
* Applicable only for Advance R-410A (Uno Board), ** Applicable only for Advance R-32 (Uno Pro Board)

PFC: Power Factor Correction

IGBT: Insulated-Gate Bipolar Transistor

DSP: Digital Signal Processor

ADC: Analog to Digital Converter



| | |
|-----------------|----------------|
| Control Voltage | 5.0 ± 0.2 VDC |
| Output Voltage | 0.5 TO 4.5 VDC |

| High Pressure Transducer | | Low Pressure Transducer | |
|--------------------------|----------------------|-------------------------|----------------------|
| Pressure (Kpa) | Output Voltage (VDC) | Pressure (Kpa) | Output Voltage (VDC) |
| 0 | 0.5 | 0 | 0.5 |
| 125 | 0.6 | 50 | 0.6 |
| 375 | 0.8 | 150 | 0.8 |
| 625 | 1 | 250 | 1 |
| 875 | 1.2 | 350 | 1.2 |
| 1125 | 1.4 | 450 | 1.4 |
| 1375 | 1.6 | 550 | 1.6 |
| 1625 | 1.8 | 650 | 1.8 |
| 1875 | 2 | 750 | 2 |
| 2125 | 2.2 | 850 | 2.2 |
| 2375 | 2.4 | 950 | 2.4 |
| 2625 | 2.6 | 1050 | 2.6 |
| 2875 | 2.8 | 1150 | 2.8 |
| 3125 | 3 | 1250 | 3 |
| 3375 | 3.2 | 1350 | 3.2 |
| 3625 | 3.4 | 1450 | 3.4 |
| 3875 | 3.6 | 1550 | 3.6 |

| High Pressure Transducer | | Low Pressure Transducer | |
|--------------------------|----------------------|-------------------------|----------------------|
| Pressure (Kpa) | Output Voltage (VDC) | Pressure (Kpa) | Output Voltage (VDC) |
| 4125 | 3.8 | 1650 | 3.8 |
| 4375 | 4 | 1750 | 4 |
| 4625 | 4.2 | 1850 | 4.2 |
| 4875 | 4.4 | 1950 | 4.4 |
| 5125 | 4.6 | 2050 | 4.6 |
| 5375 | 4.8 | 2150 | 4.8 |
| 5625 | 5 | 2250 | 5 |

05. Fault and Status Codes

05.01. Status Codes

05.02. Fault Codes

05.03. Fault Code Troubleshooting

| Fault Code | Description | Possible Causes | Remedies |
|--|--|--|---|
| E03 Indoor Room Temp. Sensor Error | E03 will be displayed on all connected wall controls every time the unit is switched on. | Faulty wall sensor or cable | Replace faulty sensor or cable |
| E04 Indoor Coil In Temp. Sensor Error | No preheat on start up (heating mode only), indoor fan will come on straight away. | Indoor coil sensor is open or short circuit. | Replace indoor sensor |
| | After de-ice, indoor fan will start after 30 seconds. | | |
| | E04 will be displayed every time it is switched on. | | |
| E06 High Discharge Temperature | The compressor discharge temperature (Cdt) has exceeded 138 °C and the system has been stopped. When the temperature has normalised to 80 °C or 8 minutes delay has been finished, the controller will attempt to return to normal conditions. | Under charged with refrigerant. | Check for refrigerant leaks and repair. |
| E07 Outdoor Coil Temp. Sensor Error | Outdoor fans will operate on high speed only (while unit is running). | Outdoor coil sensor is open or short circuit. | Replace outdoor coil sensor |
| | E07 will be displayed every time the system is switched on. | Faulty sensor. | Check the sensor resistance. |
| E08 Discharge Temp. Sensor Error | The reading of the discharge temperature sensor (Cdt) is not within the specified sensor range of -60 °C to +200°C. | Discharge temperature sensor is open or short circuit. | Replace discharge temperature sensor. |
| | | Faulty sensor. | Check the sensor resistance. |

| Fault Code | Description | Possible Causes | Remedies |
|---|---|---|--|
| E09 LP Switch Tripped | Low Pressure Control will cut out the system (i.e. stop the compressor and fans) if a pressure less than 165kPa is detected. Compressor stops for 5 minutes for the 1st and 2nd trip. If the low pressure switch trips out three times in a row, then the unit will remain off for 15 minutes before attempting to re-start. For the system to restart after a Low Pressure cut out, the pressure switch needs to detect a pressure greater than 330kPa. | Insufficient airflow over indoor coil during cooling operation | Check indoor fan operation to ensure sufficient airflow is flowing across the indoor coil. |
| | | Undercharged with refrigerant | Check for refrigerant leaks and repair. |
| | | Insufficient airflow over outdoor coil during heating operation | Check for dirty outdoor coil and inspect outdoor fan operation. |
| | | Blockage in refrigeration system | Remove blockage from refrigeration system. |
| | | Dirty filter | Clean Filter. |
| E10 LP Sensor Error (open/short circuit) | The reading of the suction pressure transducer is not within the specified sensor range. | Faulty wiring or defective transducer. | Replace the transducer. Correct the wiring. |
| E11 HP Switch Tripped | High Pressure Control will cut out the system (i.e. stop the compressor and fans) if a pressure greater than 4502kPa is detected. Compressor stops for 5 minutes for the 1st and 2nd trip. If the high pressure switch trips out three times in a row, then the unit will remain off for 15 minutes before attempting to re-start. For the system to restart after a High Pressure cut out, the pressure switch needs to detect a pressure less than 3509kPa. | Insufficient airflow over indoor coil during heating operation | Check indoor fan operation to ensure sufficient airflow is flowing across the indoor coil |
| | | Overcharged with refrigerant | Check for refrigerant leaks and repair. |
| | | Insufficient airflow over outdoor coil during cooling operation | Check for dirty outdoor coil and inspect outdoor fan operation |
| | | Blockage in refrigeration system | Remove blockage from refrigeration system |
| | | Dirty filter | Clean Filter |
| E12 HP Sensor Error (open/short) | The reading of the condenser pressure transmitter is not within the specified sensor range. | Faulty wiring or defective transducer. | Replace the transducer. Correct the wiring |
| E13 VSD Fault Signal | E13 will be displayed on the ODB when the VSD sends a fault signal to the ODB. | VSD overheating. | Ensure proper airflow/cooling over the drives heat-sink. |
| | | Incorrect supply voltage | Ensure line voltage is > 187 VAC. Check system for loose connections or hot joints. |
| | | VSD HP loop open circuit | Ensure that the drives HP bypass is connected. |
| E15 Communication Error Between ODU to VSD | No communication data received for 20 seconds. | Check modbus communication cable connection. | Make the communication cable connection correct. |
| | | Power cycle the drive. | |

| Fault Code | Description | Possible Causes | Remedies |
|--|---|--|--|
| E18 Suction Temp. Sensor Error (Open/short circuit) | The reading of the suction temperature sensor (Sst) is not within the specified sensor range. | Suction temperature sensor is open or short circuit. | Replace suction temperature sensor. |
| | | Faulty sensor. | Check the sensor resistance. |
| E22 Ambient Temp. Sensor Error (Open/short circuit) | The reading of the ambient temperature sensor is not within the specified sensor range. | Ambient temperature sensor is open or short circuit. | Replace ambient temperature sensor. |
| | | Faulty sensor. | Check the sensor resistance. |
| E26 VSD Supply Over Current | The drive has encountered an over current event and has stopped operation. | An over current can be triggered by low voltage. | Rectify low voltage power supply. |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits. |
| | | Faulty drive. | Replace drive if the problem still persists. |
| E27 VSD Supply Over Voltage | The drive has encountered an over voltage event. | Measure the input voltage to the drive. It should not be more than 575VAC. | Input voltage should be rated value range. |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits. |
| E28 VSD Temperature High | The drive has encountered an over temperature condition and has stopped operation. | Verify proper airflow over the heat-sink of the drive. | Remove any obstructions. |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits. |
| | | Check the mounting screws on the drive, If the problem, still persists replace the drive. | Make sure they are tight. |
| E29 VSD Low Supply Voltage | The drive has encountered an under-voltage event. | Measure the input voltage to the drive. It should not drop below 295VAC. | Input voltage should be rated value range. |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits. |
| E30 VSD Trip Lock | Certain faults have a trip limit | VCD Drive trips lock because of multi errors. Refer to Outdoor Board history to diagnose more for related error code | Reset the power supply |
| E41 VSD DC Link Voltage Low | The drive has encountered an DC bus voltage low. | Check the AC power supply. | Make correct supply voltage. |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits or restart the drive again. |

| Fault Code | Description | Possible Causes | Remedies |
|--|---|--|---|
| E42 and E45 Envelope Protection Error | <p>As the compressor starts, it will wait until the compressor envelope control start delay has expired. Once the delay has expired, only then will the compressor start to track the floating point which is defined by HP/LP saturation temperature with respect to the selected compressor envelope (the compressor envelope has been divided in to the four parts – Extreme low evaporating pressure, High compression ratio, High condensing pressure, Low compression ratio.</p> <p>In the case of when the compressor operates outside the envelope boundaries, there is an allowable time of which the compressor may continue to operate – these time restrictions are tabulated below.</p> <p>The compressor will turn off if the allowable time-out expires. After 180 seconds, the UNO controller will auto reset according to the respective error code and start again to user define mode.</p> <p>System can trip on any of the four envelope protection error code:</p> | | |
| | E42: Unit will trip on this error code if compressor is running outside the envelope boundary on extremely low evaporating pressure side for 20sec. | Same as E09 | Same as E09 |
| | E43: Unit will trip on this error code if compressor is running outside the envelope boundary on high compression ratio side for 3sec. | Insufficient airflow over indoor coil during heating operation Under or overcharged with refrigerant | Check indoor fan operation to ensure sufficient airflow is flowing across the indoor coil Amend gas charge until charge is correct |
| | E44: Unit will trip on this error code if compressor is running outside the envelope boundary on high condensing pressure side for 3sec. | Same as E11 | Same as E11 |
| | E45: Unit will trip on this error code if compressor is running outside the envelope boundary on low compression ratio side for 90sec. | System may be running outside the operating limits. Outdoor fan relay might be stuck on the high speed. | Make sure system should not be operated outside the operating range. Replace the outdoor board. |
| E47 Compressor Torque Limit Error | Motor torque has exceeded its limits | Compressor running outside the operating limits. Overcharged with refrigerant. | Airflow across the indoor or outdoor coil is not proper. Amend gas charge until charge is correct |

| Fault Code | Description | Possible Causes | Remedies |
|---|---|--|--|
| E50 Outdoor Board Configuration Error | UNO Board has not been configured. | Outdoor board is not configured | Configured the outdoor board correctly |
| E51 Communication Error Between ODU to VSD | Communication between outdoor and indoor board. Outdoor board has not been configured correctly. | Faulty outdoor and indoor board or cable. Outdoor board is not configured. | Replace the faulty board. Configured the outdoor board correctly. |
| E52 Fault IDU - Wall Control Communication Error | Communication error between wall control and indoor board. | Faulty wall controller or cable | Replace faulty wall controller or cable |
| | | Conflicting address with controller assignment or two controls have the same assignment number | Re-assign controllers correctly |
| E55 Communication Error Between BMS to ODU | ICUNO-MOD to Outdoor Board Communication Fault. | Faulty ICUNO-MOD | Replace faulty ICUNO-MOD |
| | | Incorrect Control Mode set on Outdoor Board | Ensure correct control mode is set |
| E56 No Master Wall Control Detected | No Master Wall Control (C-1) is detected. System will lock out until a C-1 assignment is detected. | Master Controller (C-1) Faulty | If an additional Wall Control (C-2 or C-3) is available, remove the faulty Master controller and re-assign one of the available controllers to C-1 |
| | | Connected controller/s have not been assigned as C-1 | Re-assign a connected controller to C-1 |
| E60 VSD Compressor Phase Over Current | Compressor Phase Over Current | Check the U/V/W connections on drive side. | Make them correct. |
| | | Check the compressor motor windings | |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits. |
| | | Sensor on Drive not reading properly | Replace Drive |
| E62 VSD DC Bus Over Voltage | DC Bus Over Voltage | Check the DC bus voltage if it is > 800VDC. | Find the root cause for not operating the compressor in the specified limits. |
| | | Check if the compressor is operating within specified pressure limits. | |
| E63 VSD DC Bus Under Voltage | DC Bus Under Voltage | Check the DC bus voltage if it is < 300VDC. | Find the root cause for not operating the compressor in the specified limits. |
| | | Check if the compressor is operating within specified pressure limits. | |

| Fault Code | Description | Possible Causes | Remedies |
|--|--|---|---|
| E70 VSD Lost Rotor Position | Lost Rotor Position | Check the U/V/W connections on drive side. | Make them correct. |
| | | Check the compressor motor windings | |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits. |
| | | System over charge | Make it correct. |
| E71 VSD Motor Temp Sensor Error | AC Input Current Fold Back Timeout | Check if the line voltage if it is < 187VAC | |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits. |
| | | Faulty drive | Replace drive. |
| E76 VSD Power Module Temp. Fold Back Timeout | Power Module Temp. Fold Back Timeout | Verify proper airflow over the heat-sink of the drive. | Remove any obstructions. |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits. |
| | | Check the mounting screws on the drive, If the problem, still persists replace the drive. | Make sure they are tight. |
| E78 VSD Auto Config Communication Timeout | Auto Config Communication Fault Timeout. Baud rate or Parity of the system controller not matching with drive. | Drive is not configured. | Replace the drive |
| E82 VSD Power Module Temp High | Power Module Temp. High | Verify proper airflow over the heat-sink of the drive. | Remove any obstructions. |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits. |
| | | Check the mounting screws on the drive, If the problem, still persists replace the drive. | Make sure they are tight. |
| E85 Communication Error in VSD Between Comms to DSP | COM MCU and DSP Communication Lost | Check mod-bus communication cable connections. | Refer wiring diagram & correct it. |
| | | Faulty drive | Replace the drive. |
| E86 Compressor Phase Current Imbalance | Compressor Phase Current Imbalance | Check the U/V/W connections on drive side. | Make them correct. |
| | | Check the compressor motor windings | |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits. |
| | | System over charge | Make it correct. |

| Fault Code | Description | Possible Causes | Remedies |
|--|---|---|---|
| E88 VSD Micro Electronic or EEPROM Error | Microelectronic Fault / EEPROM fault. DSP self-check error. | Drive configure issue. | Restart the drive and fault should go away. |
| | | Faulty drive. | Replace the drive. |
| E90 VSD Compressor Model Configuration Error | Compressor Model Configuration Error | Drive configuration issue. | Replace the drive. |
| E95 VSD Power Module Temp Low or Sensor (Open or short circuit) | Power Module Temp. Low or Sensor Open fault | Verify proper airflow over the heat-sink of the drive. | Remove any obstructions. |
| | | Check if the compressor is operating within specified pressure limits. | Find the root cause for not operating the compressor in the specified limits. |
| | | Check the mounting screws on the drive, If the problem, still persists replace the drive. | Make sure they are tight. |



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