# Split-Ducted Classic 2

## Troubleshooting Guide



**IMPORTANT NOTE:**
Please read this manual carefully before installing or operating your air conditioning unit.

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# Table of Contents

01. Fault Finding Guide ..... 3
02. Expected Communication Voltage ..... 6
03. To check Output PWM and RPM in Indoor PCB ..... 8
04. Compressor Winding ..... 9
05. Fault and Status Codes ..... 9

# 01. Fault Finding Guide

| FAULT | POSSIBLE CAUSES | REMEDIES |
|---|---|---|
| **The system does not start.** | Built-in safety timers have been activated. | Ensure that 5 minutes has passed from turn on time. |
| | A breaker has turned OFF or a fuse has blown. | Check breakers and fuses. |
| | The thermostat set point is incorrect. | Check the wall control settings are correct. Check that the thermostat set point is set low enough for cooling or high enough for heating. |
| | The master wall controller timer setting is incorrect. | Check the master wall controller timer settings. See Operating Instructions section. |
| **Air does not flow (Indoor unit).** | Zones might be switched off. | Check zones are switched on. |
| | During heating operation, the hot start function may have been activated. | During heating operation, the indoor fan is delayed for 46 seconds or until the indoor coil reaches 24°C (whichever occur first). This is to prevent cold drafts. Wait for 46 seconds and the air will start flowing. |
| | During defrost of the outdoor coil in heating operation; the indoor fan will not operate for several minutes (Defrost operation is indicated by the **DEFROST** LED). | This is normal operation during the defrost cycle to prevent cold air from being blown into the rooms. |
| **Cooling/Heating is not sufficient.** | The cooling/heating function may not work effectively when the return air filter is clogged with dust and dirt. | Clean the return air filter. |
| | The cooling/heating function may not work effectively if the air inlet and air outlet on the outdoor unit are blocked. | Make sure 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 not be enough and lead to anti-freeze or over heat protection safety operation, which limits the amount of compressor operation. | Reduce the total static pressure on the indoor fan to increase airflow. For example increase duct sizes, reduce tight duct work bends or increase return air grille size. |
| | The cool/heat load is too great for the air conditioner. | Perform a heat load analysis on the conditioned space. You may need to consider upgrading your air conditioner with a larger system. |
| | Open windows or doors will cause inefficient operation. | Close windows and doors in conditioned areas. |
| | Appropriate zones not turned on. | Turn on appropriate zones (if applicable). |
| | The outside temperature is beyond the air conditioner design conditions. | If you know an extreme day is coming turn the air conditioner on a few hours before ambient temperatures reach extreme. This should help on those few extreme days. |

| FAULT | POSSIBLE CAUSES | REMEDIES |
|---|---|---|
| **Steam emitted from outdoor unit.** | This is caused by the defrosting operation of the outdoor units heat exchanger in heating operation in cold ambient conditions. | 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. You can purchase drip trays to contain then drain this 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. See service manual for details on setting upper and lower temperature limits. |
| **Occasional hissing noise can be heard on heating cycle.** | This is the sound of the gas changing direction as de-ice cycle begins. | This is a normal function of an air conditioner. The unit is removing any ice on the outdoor unit. |
| **The compressor is running but the system is not cooling.** | You are in heating mode. | Check the temperature settings. |
| | The reversing valve has jammed between heating and cooling. | Replace reversing valve. |
| **The outdoor coil keeps freezing over.** | Outdoor coil sensor might be faulty. See sensor (temperature/resistance) table and check resistance value. (See page 5) | Replace faulty sensor. |
| | May have obstruction in outdoor coil. | Remove obstructions. |
| **There is only one condenser fan working.** | The fan is faulty. Test the fan motor for correct voltage, check motor winding resistance, open circuit, check capacitor, etc. | Replace faulty fan. If the fan motor needs to be replaced and there isn't one available immediately, then just disconnect the fan electrically and cover the faulty motors fan guard. This way the unit can still operate at reduced capacity using 1 fan until you get a replacement fan motor. |
| **The system is short on gas. You have fixed the leak and want the system to operate at 100%, so gas charge can be corrected. What can you do to ensure 100% compressor operation?** | You can adjust your wall controller temperature so you have a large differential. This will operate at the system at 100% till the temperature gets to within 0.5°C of the set point. | Select Cooling or heating mode. If cooling adjust set-points more than 1°C lower than room temp. If Heating adjust set-points more than 1°C higher than room temp. Complete charging procedure until finished. |
| **The indoor unit gives out odour** | This happens when smell of the room, furniture, or cigarettes are absorbed into the unit and discharged with the airflow. | If this happens, we recommend you to run the air conditioner on cooling for a period of time with the doors and windows open or have the indoor unit washed by a technician. Consult the installer from whom you bought the air conditioner. |
| | Check the drain is not piped into the sewerage drain line. | Re-pipe drain with a P-Trap and connect into household drainage or storm water drain. |

# OPERATION DETAILS

**Temperature versus Resistance Chart for Indoor / Outdoor Coil Sensor (R25 = 10.000 kΩ)**

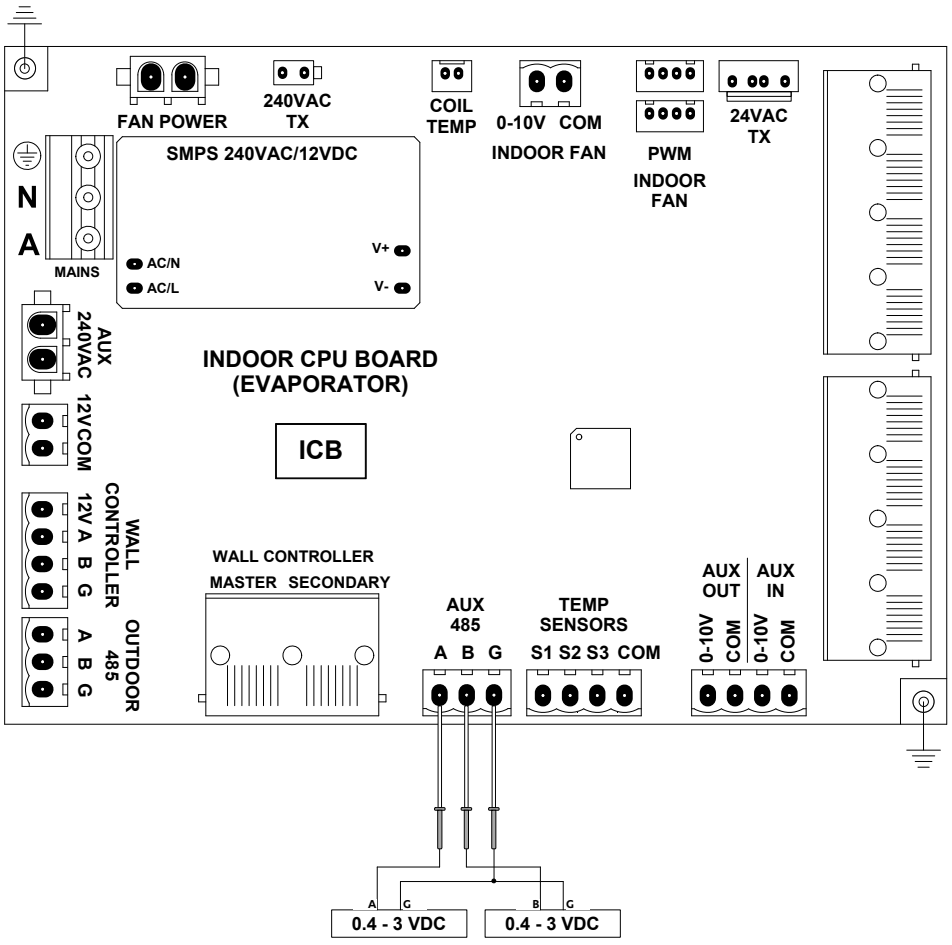
| TX (°C) | R (kΩ) | TX (°C) | R (kΩ) | TX (°C) | R (kΩ) | TX (°C) | R (kΩ) | TX (°C) | R (kΩ) |
|---|---|---|---|---|---|---|---|---|---|
| –50 | 329.2 | –16 | 55.95 | 18 | 13.06 | 52 | 3.897 | 86 | 1.412 |
| –49 | 310.7 | –15 | 53.39 | 19 | 12.56 | 53 | 3.772 | 87 | 1.374 |
| –48 | 293.3 | –14 | 50.95 | 20 | 12.09 | 54 | 3.652 | 88 | 1.337 |
| –47 | 277.0 | –13 | 48.66 | 21 | 11.63 | 55 | 3.537 | 89 | 1.301 |
| –46 | 261.3 | –12 | 46.48 | 22 | 11.20 | 56 | 3.426 | 90 | 1.266 |
| –45 | 247.5 | –11 | 44.44 | 23 | 10.78 | 57 | 3.319 | 91 | 1.233 |
| –44 | 234.1 | –10 | 42.45 | 24 | 10.38 | 58 | 3.216 | 92 | 1.200 |
| –43 | 221.6 | –9 | 40.56 | 25 | 10.00 | 59 | 3.116 | 93 | 1.169 |
| –42 | 209.8 | –8 | 38.76 | 26 | 9.632 | 60 | 3.021 | 94 | 1.138 |
| –41 | 198.7 | –7 | 37.05 | 27 | 9.281 | 61 | 2.928 | 95 | 1.108 |
| –40 | 188.4 | –6 | 35.43 | 28 | 8.944 | 62 | 2.838 | 96 | 1.080 |
| –39 | 178.3 | –5 | 33.89 | 29 | 8.622 | 63 | 2.752 | 97 | 1.052 |
| –38 | 168.9 | –4 | 32.43 | 30 | 8.313 | 64 | 2.669 | 98 | 1.025 |
| –37 | 160.1 | –3 | 31.04 | 31 | 8.015 | 65 | 2.589 | 99 | 0.9988 |
| –36 | 151.8 | –2 | 29.72 | 32 | 7.725 | 66 | 2.512 | 100 | 0.9735 |
| –35 | 144.0 | –1 | 28.47 | 33 | 7.455 | 67 | 2.437 | 101 | 0.9449 |
| –34 | 136.6 | 0 | 27.28 | 34 | 7.192 | 68 | 2.365 | 102 | 0.9250 |
| –33 | 129.7 | 1 | 26.13 | 35 | 6.941 | 69 | 2.296 | 103 | 0.9018 |
| –32 | 123.2 | 2 | 25.03 | 36 | 6.699 | 70 | 2.229 | 104 | 0.8793 |
| –31 | 117.1 | 3 | 23.99 | 37 | 6.468 | 71 | 2.163 | 105 | 0.8575 |
| –30 | 111.3 | 4 | 22.99 | 38 | 6.246 | 72 | 2.101 | 106 | 0.8364 |
| –29 | 105.7 | 5 | 22.05 | 39 | 6.033 | 73 | 2.040 | 107 | 0.8158 |
| –28 | 100.4 | 6 | 21.15 | 40 | 5.829 | 74 | 1.981 | 108 | 0.7960 |
| –27 | 95.47 | 7 | 20.30 | 41 | 5.630 | 75 | 1.924 | 109 | 0.7766 |
| –26 | 90.80 | 8 | 19.48 | 42 | 5.439 | 76 | 1.870 | 110 | 0.7579 |
| –25 | 86.39 | 9 | 18.70 | 43 | 5.256 | 77 | 1.817 | 111 | 0.7396 |
| –24 | 82.22 | 10 | 17.96 | 44 | 5.080 | 78 | 1.766 | 112 | 0.7219 |
| –23 | 78.29 | 11 | 17.24 | 45 | 4.912 | 79 | 1.716 | 113 | 0.7047 |
| –22 | 74.58 | 12 | 16.55 | 46 | 4.749 | 80 | 1.669 | 114 | 0.6880 |
| –21 | 71.07 | 13 | 15.90 | 47 | 4.594 | 81 | 1.622 | 115 | 0.6718 |
| –20 | 67.74 | 14 | 15.28 | 48 | 4.444 | 82 | 1.577 | 116 | 0.6560 |
| –19 | 64.54 | 15 | 14.68 | 49 | 4.300 | 83 | 1.534 | 117 | 0.6407 |
| –18 | 61.52 | 16 | 14.12 | 50 | 4.161 | 84 | 1.492 | 118 | 0.6258 |
| –17 | 58.65 | 17 | 13.57 | 51 | 4.026 | 85 | 1.451 | 119 | 0.6113 |
| | | | | | | | | 120 | 0.5972 |

# 02. Expected Communication Voltage

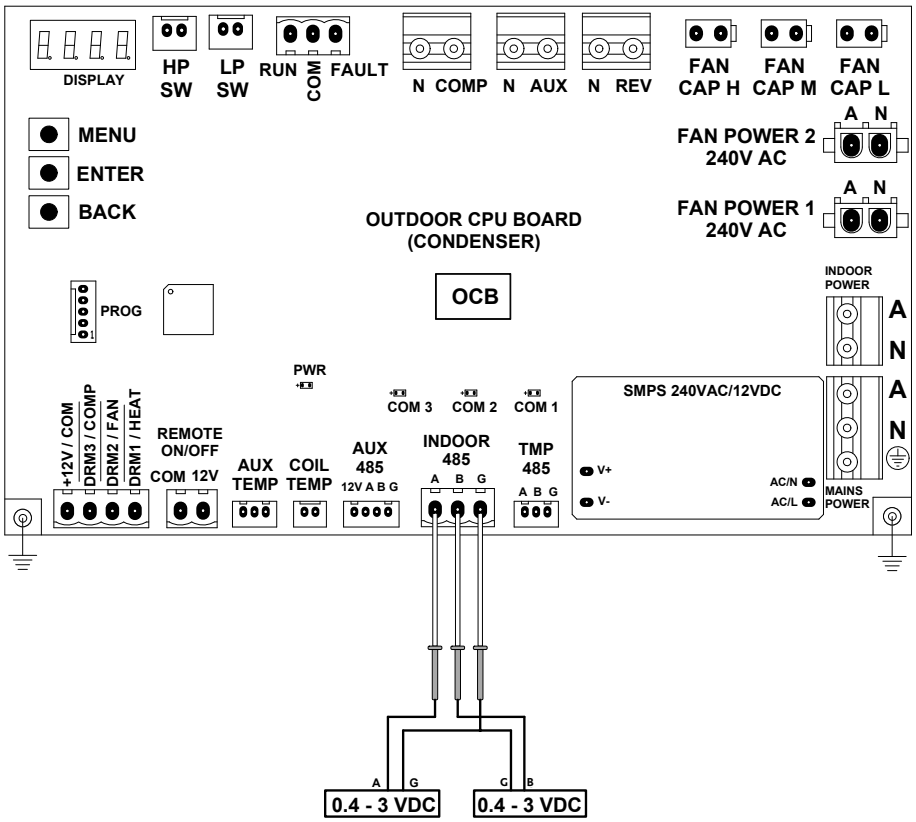
**NOTES**

- If COM1 (LED1) and COM2 (LED2) are blinking, indoor board to outdoor board communication is present.
- If voltage between A-G and B-G is fluctuating, communication is present.

## 02.01. Indoor Board (InZone Board)

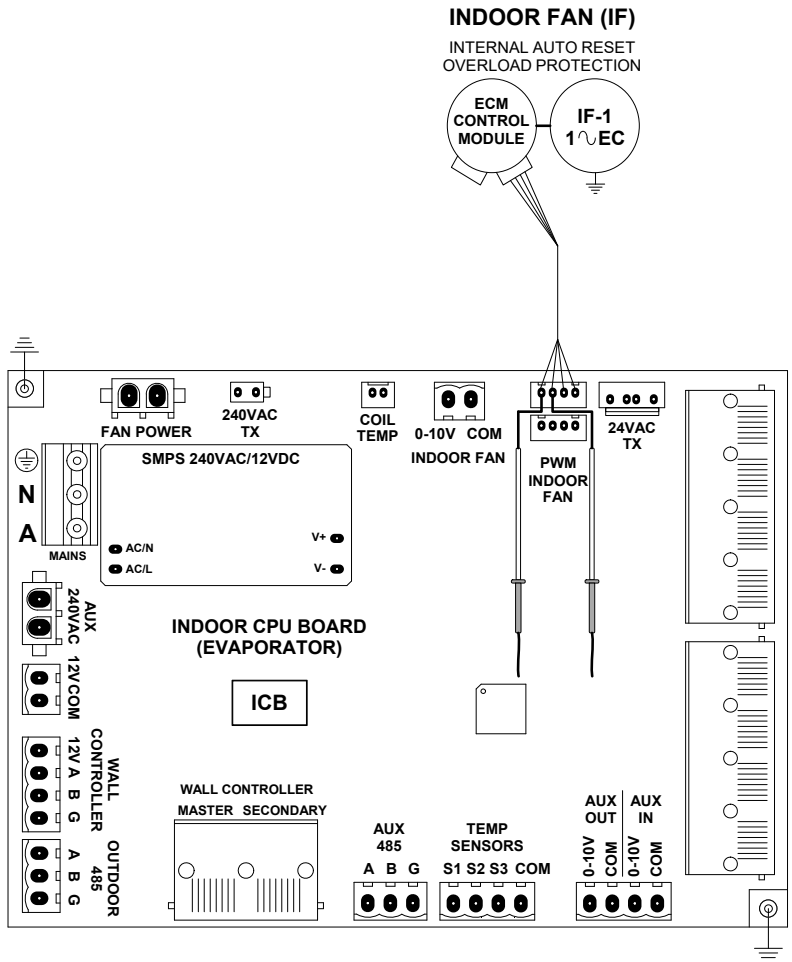


## 02.02. Outdoor Board (UNO Jr. Board)



# 03. To check Output PWM and RPM in Indoor PCB

| Unit Model | High Fan PWM % | Med Fan PWM % | Low Fan PWM % | High Fan RPM | Med Fan RPM | Low Fan RPM |
|---|---|---|---|---|---|---|
| EVA100S | 72 | 43 | 39 | 1290 | n/a | n/a |
| EVA130S/EFA130S | 80 | 60 | 50 | 1290 | n/a | n/a |
| EVA150S/EFA150S | 99 | 75 | 60 | 1290 | n/a | n/a |
| EVA170S/EFA170S | 99 | 90 | 73 | 1290 | n/a | n/a |
| EVA200S/EFA200S | 90 | 67 | 53 | 1290 | n/a | n/a |
| EVA230S/EFA230S | 95 | 77 | 64 | 1290 | n/a | n/a |



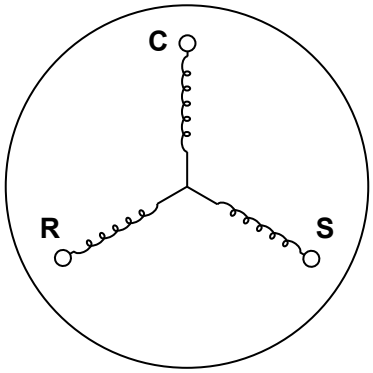

**Step-1:**

1. Measure the Indoor Fan on/off signal.
   On signal = 12 to 18V DC signal on Pin 1 and 3 (red and blue wires) .
   Off signal= +0V DC signal on Pin 1 & 3.

**Step-2:**

1. Set the tester to measure duty cycle.
2. Measure the reading across PIN 3 and 4 (blue and yellow wires).
3. Change fan speed and check for any changes in readings.
4. Compare the duty cycle output to the expected PWM for each model.

## 04. Compressor Resistances




**COMPRESSOR WINDINGS**
**SINGLE PHASE**

| | | | RATING OF COMPRESSOR WINDINGS (OHMS) (+/- 7%) | | |
|---|---|---|---|---|---|
| **UNIT MODEL** | | **COMPRESSOR MODEL** | **C-S** | **C-R** | **S-R** |
| CRA100S | --- | ZP36KSE-PFZ | 0.90 | 0.70 | 1.6 |
| CRA130S | CCA130S | ZP42KSE-PFZ | 0.90 | 0.49 | 1.39 |
| CRA150S | CCA150S | ZP54KSE-PFZ | 0.90 | 0.49 | 1.39 |
| CRA170S | CCA170S | ZP61KCE-PFZ | 1.54 | 0.39 | 1.93 |
| CRA130T | --- | ZP42KSE-TFM | 4.17 | 4.17 | 4.17 |
| CRA150T | --- | ZP54KSE-TFM | 4.17 | 4.17 | 4.17 |
| CRA170T | CCA170T | ZP61KCE-TF0 | 2.39 | 2.39 | 2.39 |
| CRA200T | CCA200T | ZP72KCE-TF0 | 2.39 | 2.39 | 2.39 |
| CRA230T | CCA230T | ZP83KCE-TF0 | 1.96 | 1.96 | 1.96 |

## 05. Fault and Status Codes

| FAULT / FUNCTION CODES | | | |
|---|---|---|---|
| **OUTDOOR CPU** | **LR7 WALL CONTROLLER (Part # LR7-1W / LR7-1G)** | **CATEGORY** | **FUNCTION / FAULT** |
| oFF | - | Status | Off or Unit Turning Off (flashing) |
| COOL | - | Status | Cooling Mode or Start Cooling (flashing) |
| | COOL & LOW blink 30s | Error | Anti-Freeze Protection Mode |
| HEAt | - | Status | Heating Mode or Start Heating (flashing) |
| - | HEAT & HIGH blink 30s | Error | Overheat Protection Mode |
| dEF | - | Status | Defrost Mode |
| dEF3 | - | Status | 3 min to Defrost |
| dEF2 | - | Status | 2 min to Defrost |
| dEF1 | - | Status | 1 min to Defrost |
| dr-1 | - | Status | Demand Response Management 1 |
| dr-2 | - | Status | Demand Response Management 2 |
| dr-3 | - | Status | Demand Response Management 2 |

| OUTDOOR CPU | LR7 WALL CONTROLLER (Part # LR7-1W / LR7-1G) | CATEGORY | FUNCTION / FAULT |
|---|---|---|---|
| E3 | E3 | Error | Room Temperature Error |
| - | E4 | Error | Indoor Coil Sensor Error |
| E7 | E7 | Error | Outdoor Coil Sensor Error |
| E9 | E9 | Error | LP Switch Tripped |
| E11 | E11 | Error | HP Switch Tripped |
| E51 | E51 | Error | IDU - ODU Communication Error |
| E52 | E52 | Error | IDU - Wall Controller Communication Error |
| E55 | E55 | Error | BMS - ODU Communication Error |
| E56 | E56 | Error | No Master Wall Controller Detected |
| **NOTE:** E9 and E11 fault codes may not be displayed on the wall control until the fault occurs several times. | | | |

| CLASSIC SERIES 2 ERRORS | | | |
|---|---|---|---|
| **FAULT CODE** | **DESCRIPTION** | **POSSIBLE CAUSES** | **REMEDIES** |
| E3 Fault room sensor(s) | E3 will be displayed on all connected wall controllers every time the unit is switched on. | Faulty wall sensor or cable | Replace faulty sensor or cable |
| E4 Fault indoor coil sensor | 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. | | |
| | E4 will be displayed everytime it is switched on. | | |
| E7 Fault outdoor coil sensor | Outdoor fans will operate on high speed only (while unit is running). | Outdoor coil sensor is open or short circuit | Replace outdoor coil sensor |
| | Defrost will occur every 23 minutes when on heating. | Loose sensor wiring on outdoor PCB | Check wiring |
| | E7 will be displayed every time the system is switched on. | | |
| E9 Fault Low Gas Pressure | 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 |
| | | Under or overcharged with refrigerant | Amend gas charge until charge is correct |
| | | Insufficient airflow over outdoor coil during heating operation | Check for dirty outdoor coil & inspect outdoor fan operation |
| | | Blockage in refrigeration system | Remove blockage from refrigeration system |
| | | Dirty filter | Clean Filter |

| FAULT CODE | DESCRIPTION | POSSIBLE CAUSES | REMEDIES |
|---|---|---|---|
| E11 Fault High Gas Pressure | 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 |
| | | Under or overcharged with refrigerant | Amend gas charge until charge is correct |
| | | Insufficient airflow over outdoor coil during cooling operation | Check for dirty outdoor coil & inspect outdoor fan operation |
| | | Blockage in refrigeration system | Remove blockage from refrigeration system |
| | | Dirty filter | Clean Filter |
| E52 Fault IDU - Wall Controller Communication Error | Communication error between wall controller and indoor board. | Faulty wall controller or cable | Replace faulty wall controller or cable |
| | | Conflicting address with controller assignment | Re-assign controllers correctly |
| E55 Fault BMS - ODU Communication Error | 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 Fault No Master Wall Controller Detected | No Master Wall Controller (C-1) is detected. System will lock out until a C-1 assignment is detected. | Master Controller (C-1) Faulty | If an additional Wall Controller (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 |

| SINGLE PHASE SOFT STARTER (SS9)<br>FAULT / STATUS CODES | |
|---|---|
| **OPERATION / FAULT MODE** | **ON-BOARD LED INDICATION** |
| Random power up delay | LED - On between 2-3 minutes (before start is allowed) |
| Ready to start | LED - Off |
| Compressor running | LED - On |
| Anti-cycle protection delay | LED - On for 2 mins 50 secs (after compressor stopped) |
| Start to start protection delay | LED - On for a minimum of 5 mins 50 secs |
| High running current trip | LED - 1 blink - resets after 5 mins 50 secs |
| Low running current trip | LED - 2 blinks - resets after 5 mins 50 secs |
| Locked start capacitor fault (lock out)** | LED - 3 blinks - resets after 5 mins 50 secs* |
| Locked rotor detected (lock out) | LED - 4 blinks - resets after 5 mins 50 secs* |
| Low mains voltage | LED - 5 blinks - until voltage is rectified |
| External run capacitor fault (lockout) | LED - 6 blinks - resets after 5 mins 50 secs* |
| **NOTE:**<br>* Five lock errors in a row will cause the soft starter to lock out - cycle mains to reset.<br>** 3 blink lock out - cycle mains to reset. If compressor starts operating, check for signs of low operating pressures. | |

| THREE PHASE SOFT STARTER (3PS5)<br>FAULT / STATUS CODES (OPTIONAL) | |
|---|---|
| **OPERATION / FAULT MODE** | **ON-BOARD LED INDICATION** |
| Random power up delay | 1 blink per second for 10 seconds |
| Ready to start | LED - Off |
| Compressor running | LED remains Off |
| Anti-cycle protection delay after the compressor cycles off | 1 blink per second for 50 seconds, then LED Off, ready to start |
| Phase L1 Missing | No lights, no operation |
| Compressor Failed to Start | 2 blinks (in bursts), for 4 minutes |
| Phase Rotation, Missing or Low | 3 blinks (in bursts), compressor won't try to start |
| Compressor Winding Open | 4 blinks for 50 secs, then tries to start again |
| Compressor Windings Swapped | LED Off, compressor operation will be noisier than usual |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