

# Fujitsu Trouble Shooting Guide

## Current Models

These pages cover the current Inverter product range.

They also cover the ARY60U, ARY54U Single and AOY19/24F/U Multi Systems.

### Models with Wireless Controllers Trouble Shooting from the Indoor Unit

#### Wall Mounted Single Systems ASY, ASYA & ASYB Includes AWYZ Nokria Models

| Red Light Operation | Green Light Timer | Current Models                     |
|---------------------|-------------------|------------------------------------|
| Off                 | 2 Flashes         | Reverse Comms Fail at Startup      |
| Off                 | 3 Flashes         | Reverse Comms Fail In Use          |
| Off                 | 4 Flashes         | Forward Comms Fail at Startup      |
| Off                 | 5 Flashes         | Forward Comms Fail In Use          |
| Off                 | 8 Flashes         | Wired Remote Control Failure       |
| 2 Flashes           | 2 Flashes         | Indoor Air Sensor Fail             |
| 2 Flashes           | 3 Flashes         | Indoor Pipe Sensor Fail            |
| 2 Flashes           | 4 Flashes         | Indoor heat exchanger sensor error |
| 2 Flashes           | 6 Flashes         | Float switch operated              |
| 3 Flashes           | 2 Flashes         | OD Disch Sensor Fail               |
| 3 Flashes           | 3 Flashes         | OD Pipe Sensor Fail                |
| 3 Flashes           | 4 Flashes         | OD Air Sensor Fail                 |
| 3 Flashes           | 7 Flashes         | Heatsink Sensor Error              |
| 3 Flashes           | 8 Flashes         | Compressor Temp Sensor Fail        |
| 4 Flashes           | 2 Flashes         | Forced Auto Switch Welded          |
| 4 Flashes           | 3 Flashes         | Main Relay Welded                  |
| 4 Flashes           | 4 Flashes         | Power Failure                      |
| 4 Flashes           | 7 Flashes         | VDD Permanent Stop Protection      |
| 4 Flashes           | 8 Flashes         | Reverse VDD Permanent Stop         |
| 5 Flashes           | 2 Flashes         | IPM Protection                     |
| 5 Flashes           | 3 Flashes         | CT Abnormal                        |
| 5 Flashes           | 5 Flashes         | Compressor Failure                 |
| 5 Flashes           | 6 Flashes         | Outdoor Fan Failure                |
| 6 Flashes           | 2 Flashes         | ID Fan Motor Locked                |
| 6 Flashes           | 3 Flashes         | ID Fan Motor Rotation Error        |
| 7 Flashes           | 2 Flashes         | High Discharge Temperature         |
| 7 Flashes           | 3 Flashes         | High Pressure                      |
| 7 Flashes           | 4 Flashes         | 4-Way valve abnormal               |
| 7 Flashes           | 5 Flashes         | Pressure Switch Fail               |
| 7 Flashes           | 6 Flashes         | Compressor Temperature error       |
| 8 Flashes           | 2 Flashes         | Active Filter AFM Fail 1st Time    |
| 8 Flashes           | 3 Flashes         | Active Filter AFM Fail 2nd Time    |
| 8 Flashes           | 4 Flashes         | PFC Circuit Error                  |
| Blinking            | Blinking          | PCB Failure                        |

#### All Other Wireless Indoor Units AUY, ABY & AWY Models. Including Multi Systems (Not J Series or VRF)

| Red Light Operation | Green Light Timer | Yellow Light Swing |                                   |
|---------------------|-------------------|--------------------|-----------------------------------|
| On                  |                   |                    | Normal                            |
| On                  | Slow Blink        | Slow Blink         | Test                              |
| Blinks              | Blinks            | Off                | ID PCB Fail                       |
| Blinks              | Blinks            | Blinks             | OD PCB Fail                       |
| Blinks              | 2 Pulses          | Off                | OD Power Connection Failure       |
| Blinks              | 3 Pulses          | Off                | OD Unit Pipe Sensor Fail          |
| Blinks              | 4 Pulses          | Off                | OD Unit Air Sensor Fail           |
| Blinks              | 4 Pulses          | Blinks             | OD Unit Air Sensor Short          |
| Blinks              | 5 Pulses          | Off                | OD Unit Disch Sensor Fail         |
| Blinks              | 5 Pulses          | Blinks             | OD Unit Disch Sensor Short        |
| Blinks              | 6 Pulses          | Off                | High Pressure                     |
| Blinks              | 7 Pulses          | Off                | High Discharge or Compressor Temp |
| Blinks              | 9 Pulses          | Off                | OD Unit Compressor Temp Sensor    |
| Blinks              | 10 Pulses         | Off                | IPM Error                         |
| Blinks              | 11 Pulses         | Off                | CT Error                          |
| Blinks              | 12 Pulses         | Off                | AFM Filter Error                  |
| Blinks              | 13 Pulses         | Off                | Compressor Error                  |
| Blinks              | 14 Pulses         | Off                | OD Fan Motor Fail                 |
| 2 Pulses            | Blinks            | Off                | Air Sensor Open                   |
| 2 Pulses            | Blinks            | Blinks             | Air Sensor Closed                 |
| 3 Pulses            | Blinks            | Off                | Pipe Sensor Open                  |
| 3 Pulses            | Blinks            | Blinks             | Pipe Sensor Closed                |
| 4 Pulses            | Blinks            | Off                | Drain Problem                     |
| 5 Pulses            | Blinks            | Off                | Communication Error               |
| 5 Pulses            | Blinks            | Blinks             | OD PCB or Wiring Error            |
| 6 Pulses            | Blinks            | Off                | Indoor Fan Failure                |

#### Wall Mounted Multi Models

| Initial Display |           |                    | Further Interrogation by Pressing Test Button on Infra Red RC |           |                             |
|-----------------|-----------|--------------------|---|-----------|-----------------------------|
| Red             | Green     | Meaning            | Red   | Green     | Meaning                     |
| 2 Flashes       | Blinks    | ID Sensor Failure  | Blinks  | 2 Flashes | ID Air Sensor               |
| 2 Flashes       | Blinks    | ID Sensor Failure  | Blinks  | 3 Flashes | ID Pipe Sensor              |
| 4 Flashes       | Blinks    | ID Control Error   | Blinks  | 2 Flashes | Manual Auto Button Error    |
| 4 Flashes       | Blinks    | ID Control Error   | Blinks  | 4 Flashes | Power Source Failure        |
| 5 Flashes       | Blinks    | Comms Failure      | Blinks  | 2 Flashes | Reverse Comms Failure       |
| 5 Flashes       | Blinks    | Comms Failure      | Blinks  | 3 Flashes | Forward Comms Failure       |
| 6 Flashes       | Blinks    | ID Fan Failure     | Blinks  | 2 Flashes | Motor locked                |
| 6 Flashes       | Blinks    | ID Fan Failure     | Blinks  | 3 Flashes | Motor RPM Incorrect         |
| Blinks          | 2 Flashes | OD Thermistor Fail | 2 Flashes   | Blinks    | OD Discharge Sensor Fail    |
| Blinks          | 2 Flashes | OD Thermistor Fail | 4 Flashes   | Blinks    | OD Pipe Sensor Fail         |
| Blinks          | 2 Flashes | OD Thermistor Fail | 6 Flashes   | Blinks    | OD Air Sensor Fail          |
| Blinks          | 2 Flashes | OD Thermistor Fail | 8 Flashes   | Blinks    | Compressor Temp Sensor Fail |
| Blinks          | 2 Flashes | OD Thermistor Fail | 9 Flashes   | Blinks    | 2 Way Valve Sensor Fail     |
| Blinks          | 2 Flashes | OD Thermistor Fail | 10 Flashes  | Blinks    | 3 Way Valve Sensor Fail     |
| Blinks          | 3 Flashes | Pressure Switch    | 2 Flashes   | Blinks    | Pressure Switch             |
| Blinks          | 4 Flashes | ID Units Incorrect | 2 Flashes   | Blinks    | Incorrect Indoor Unit Index |
| Blinks          | 5 Flashes | Inverter Failure   | 2 Flashes   | Blinks    | IPM Failure                 |
| Blinks          | 5 Flashes | Inverter Failure   | 5 Flashes   | Blinks    | Compressor Failure          |

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Current Models

## Wired Remote Control Models

Code Consists of Indoor Unit Address Followed by the Fault Code Below. No E denotes No Fault.

|    |   |
|----|---|
| OO | ID to RC Comms Fail                           |
| O1 | ID to OD Comms Fail                           |
| O2 | ID Air Sensor Open                            |
| O3 | ID Air Sensor Close                           |
| O4 | ID Pipe Sensor Open                           |
| O5 | ID Pipe Sensor Close                          |
| O6 | OD Pipe Sensor Fail                           |
| O8 | Power Source Connection Failure               |
| O9 | Drain Problem Float switch operated           |
| OA | OD Air Sensor Fail                            |
| OC | Discharge sensor Fail                         |
| OE | Outdoor High Pressure Heatsink error          |
| 11 | OD PCB Fail                                   |
| 12 | ID Fan Fail                                   |
| 13 | OD Signal Abnormal ID signal error            |
| 14 | OD EEPROM Fail                                |
| 15 | Compressor Temp Failure                       |
| 16 | Pressure Switch Error                         |
| 17 | IPM Error                                     |
| 18 | CT Error                                      |
| 19 | Active Filter Module Error                    |
| 1A | Compressor Failure                            |
| 1B | OD Fan Failure                                |
| 1C | Inverter to PCB Comms Fail                    |
| 1D | 2 Way Valve sensor Fail                       |
| 1E | Expansion Valve Error                         |
| 1F | Connection ID Unit Error                      |
| 20 | Indoor manual switch abnormal                 |
| 24 | Excessive high pressure protection on cooling |

|    |   |
|----|---|
| 25 | PFC circuit error                                 |
| 26 | Indoor signal error                               |
| 27 | Indoor signal error                               |
| 28 | Indoor heat exchanger temperature error           |
| 29 | Outdoor heat exchanger temperature (middle) error |
| 2A | Power supply frequency detection error            |
| 2B | Compressor temperature error                      |
| 2C | Four-way valve abnormal                           |

### To Interrogate

When E:EE is displayed switch unit off and press the temp up and temp down buttons simultaneously for 3 seconds.

### To Return to Normal Operation

Press Temp Up and Temp Down Buttons together for 3 seconds.

### To Initiate Test Operation

Switch Unit Off & Press Master & Fan Buttons together for 3 seconds. Press Start/Stop to Initiate.

### Changing the Sensor Position

The unit can sense the air temperature at the unit or controller  
Turn Unit Off

To change press THERMOSENSOR button for 5 seconds to unlock  
Toggle the THERMOSENSOR button & controller is displayed  
Set to desired setting (unit or controller)  
Press THERMOSENSOR button for 5 seconds to lock

### Two Handsets/1 Unit – set on RC DIP SWs

Single handset DIP SW1 is On & 2 is Off  
Dual Handset Master Both On & Slave both Off

### Group Control up to 16 Unit from 1 RC Handset

Set DIP SW3 on RC to ON  
Set Each ID Unit Rotary SW to Unit Address (0-15) in series

### Auto Restart on Power Failure

DIP SW2-3 on ID Unit. Off is autorestart (std)/On is Manual Restart

### Auto Changeover

DIP SW5 on RC. On is autochangeover (std)/Off is Manual

### Memory Retention on Power Failure

Dip SW6 on RC. On is Memory/Off is no memory

## Outdoor PCB Fault Codes

Inverter OD Unit PCBs (1 red LED)

| OD PCB LED | Models 9-30              | Models 36-54             |
|------------|--------------------------|--------------------------|
| Pulses     |                          |                          |
| 1          | Comms Failure            | Comms Failure            |
| 2          | Disch Sensor Fail        | Disch Sensor Fail        |
| 3          | Pipe Sensor Fail         | Pipe Sensor Fail         |
| 4          | Air Sensor Fail          | Air Sensor Fail          |
| 5          | 2 Way Valve Sensor       |                          |
| 6          | 3 Way Valve Sensor       |                          |
| 7          | Compressor Thermistor    | Compressor Thermistor    |
| 8          | Pressure Switch          | Heatsink Sensor Fail     |
| 9          | Indoor Comms Error       | Pressure Switch          |
| 10         | Current Trip             |                          |
| 11         | CT Fail                  |                          |
| 12         | Compressor Position Fail | IPM Error                |
| 13         | Compressor Start Fail    | Compressor Position Fail |
| 14         | Timer Failure            | Compressor Start Fail    |
| 15         |                          | OD Upper Fan Fail        |
| 16         |                          | OD Lower Fan Fail        |
| Slow Blink |                          | Protect Operation        |

Non Inverter OD PCBs (2 red LEDs)

| LED 1     | LED 2  | OD PCB Fail                 |
|-----------|--------|-----------------------------|
| Blinks    | Blinks |                             |
| 1 Pulse   | Lift   | Power Source Failure        |
| 2 Pulses  | Lift   | OD Disch Temp Sensor        |
| 3 Pulses  | Lit    | OD Pipe Sensor              |
| 4 Pulses  | Lit    | OD Air Sensor               |
| 5 Pulses  | Lit    | Comms Failure               |
| 6 Pulses  | Lit    | Indoor Unit Error           |
| 7 Pulses  | Lit    | High Discharge Temp         |
| 8 Pulses  | Lit    | High Pressure               |
| 9 Pulses  | Lit    | Compressor Temp Abnormal    |
| 10 Pulses | Lit    | Compressor Temp Sensor Fail |

Inverter Multi AOY30

This has 4 LEDs A, B, C & D to denote which circuit has the fault  
Up to 8 flashes - faults are identical to above 9-30 Single System

|    |                              |
|----|------------------------------|
| 9  | Pressure Switch A            |
| 10 | Pressure Switch B            |
| 11 | Indoor Unit Indexing Problem |
| 12 | IPM Fail                     |
| 13 | Compressor Position Fail     |
| 14 | Compressor Fail              |
| 15 | OD Fan Upper Fail            |
| 16 | OD Fan Lower Fail            |
| 17 | PCB Fail                     |

Interconnecting Wiring

This has 4 LEDs A, B, C & D to denote which circuit has the fault  
Up to 8 flashes - faults are identical to above 9-30 Single System

|            | Live   | Neutral | Comms |
|------------|--------|---------|-------|
| CO Multis  | 2      | 1       | 3     |
| HP Multis  | 1      | 2       | 3     |
| AOY90T     | 3      | 2       | 1     |
| ALL OTHERS | 1 or L | 2 or N  | 3     |

We recommend external pumps have their own power supply.  
Taking Power for a pump from the unit is a major source of Errors.

# Fujitsu Trouble Shooting Guide

## A General Guide

### Pipework

- Pipe sizes and lengths should be as the relevant Technical Guide
- Both lines should be insulated
- No line accessories or oil traps should be fitted
- In cooling mode both pipes should be between 0 and 10°C - the suction line should sweat, but not freeze
- In heating moded both pipes should be between 30 and 60°C
- Pipework should be refrigeration quality
- Refrigerant should be R22, unless stated on the outdoor unit
- Look for restrictions. They could cause compressor failures.

### Outdoor Unit

- Discharge temperature should be between 50 & 70°C
- Suction temperature should be between -3 & 4°C
- If fan switches off check for high discharge temperature
- Check Suction Line is sweating – problem if not!
- Hot Recip. Compressor = PROBLEM!
- Sweating/Frost on expansion line – undercharged



### Indoor Unit

- Is it level? Have we adequate drainage?
- Smells are always due to site conditions or drains
- Flashing lights? = Fault Diagnostics – see over
- When were the filters last cleaned?
- Is the unit too large/small (between 5/20 air circs / hr)
- Is it on Timer/Test Mode

### Controller

- EE:EE on LCD handset – fault diagnostics – see over
- Is the handset too far away?
- When were the batteries changed last?
- Heat Pump models 7-14 – NOT auto changeover
- Timer is one shot, unless it has 'repeat' mode
- With wired handset, check for interference. Cable should be screened
- Is it on Timer/Test Mode

### Wiring

- In general interconnecting wiring is 240 Volt, but see chart for details
- With LCD wired handset models, Terminal 3 is the Live Not Terminal 1 NEVER apply mains voltage to Terminal 1 on these models
- With LCD wired handset models wiring should be screened
- Check Voltage drops! Check it isn't down to Earth!
- Has it got a timeclock/BMS interface?
- Interconnecting cables MUST be circular crimped

### What the separate wires do in the interconnecting cables

Note – Wires are 240V Live except where marked neutral or Earth or signal.

Cables marked Signal are digital pulses and you should not attempt to measure these with a meter.

| Wire                             | E     | N       | L          | 1          | 2        | 3          | 4         | 5       | 6      |
|----------------------------------|-------|---------|------------|------------|----------|------------|-----------|---------|--------|
| ASY7-12A                         | Earth | Neutral | Comp+Fan   | Unused     | Unused   | Unused     | Unused    | Unused  | Unused |
| ASY7-12R                         | Earth | Neutral | Comp       | Unused     | Unused   | Rev Valve  | OD Fan    | Unused  | Unused |
| ASY13PS                          | Earth | Neutral | Line to OD | Unused     | Unused   | Signal     | Unused    | Unused  | Unused |
| ASY14A & ABY14-24A               | Earth | Unused  | Unused     | Neutral    | Comp+Fan | Unused     | Unused    | Unused  | Unused |
| ASY17-30A                        | Earth | Unused  | Unused     | Live to In | Neutral  | Comp+Fan   | Unused    | Unused  | Unused |
| ASY14-17R & ABY14R               | Earth | Unused  | Unused     | Neutral    | Comp     | Rev Valve  | OD Fan    | Unused  | Unused |
| ASY20-30R & ABY18-24R            | Earth | Unused  | Unused     | Neutral    | Comp     | Fan Hi     | Rev Valve | Fan Low | Unused |
| AUY12-18AG                       | Earth | Unused  | Unused     | Neutral    | Comp     | Fan Hi     | Fan Low   | Unused  | Unused |
| AUY12-18RG                       | Earth | Unused  | Unused     | Neutral    | Comp     | Fan Hi     | Rev Valve | Fan Low | Unused |
| AUY18-54A, ABY30-54A & ARY24-60A | Earth | Unused  | Unused     | Comp       | Neutral  | Live to In | Unused    | Unused  | Unused |
| AUY18-54R, ABY30-54R & ARY24-60R | Earth | Unused  | Unused     | Signal     | Neutral  | Live to In | Unused    | Unused  | Unused |

### Technical Support:

08705 218218

# Fujitsu Trouble Shooting Guide

Current Models

## Wired Controllers – Fault diagnostics

A Fault Condition is signalled by EE:EE appearing on the LCD panel. The unit should be interrogated by switching it off on the handset then pressing either the down arrows on the SET TIME and TEMP/DAY buttons together for 3 seconds for 7 day models or the ENERGY SAVE & ZONE CONTROL buttons for other models. The Failure code is in 2 parts – Fault and Address. The Fault Code is an E code. The second is the unit address for multi linked systems – with single units this is always 00. 7 day models have the fault code as shown in the table below above the address. Other models have the codes below, minus the 0, followed by the address – e.g. E9:00 denoting Float Switch on Unit 0.



## Outdoor Unit with

A fault condition is signified by flashing red LED's on the the outdoor PCB if it is equipped with one. Except for multisplits and 2 LED models, the diagnostics are shown in the table on the right. For 2 LED models flashing signifies sensor failure and constantly lit indicates high discharge temperature.

| Code | Fault                 | Diagnosis                                  |
|------|-----------------------|--|
| E:0  | I/U - R/C Comms       | Check R/C wiring. Interference?            |
| E:01 | I/U - O/U Comms       | Check intercon. wiring. Interference       |
| E:02 | Room Sensor Open      | Sensor Missing                             |
| E:03 | Room Sensor Short     | Sensor Faulty                              |
| E:04 | I/U Pipe Sensor Open  | Sensor Missing                             |
| E:05 | I/U Pipe Sensor Short | Sensor Faulty                              |
| E:06 | O/U Pipe Sensor Open  | Sensor Missing                             |
| E:07 | O/U Pipe Sensor Short | Sensor Faulty                              |
| E:08 | Power Source Error    | Incorrect Power Supply                     |
| E:09 | Float Switch          | Check Drains - High Water Level            |
| E:0A | O/U Air Sensor Open   | Sensor Missing                             |
| E:0C | Disch Sensor Open     | Sensor Missing                             |
| E:0D | Disch Sensor Short    | Sensor Faulty                              |
| E:0F | High Disch Temp       | Contamination In Pipework/<br>Gas Shortage |
| E:11 | Model Abnormal        | Check PCB compatability                    |
| E:12 | Indoor Fan Failure    | Check Fan and Motor                        |
| E:13 | O/D Signal Abnormal   | Communications?                            |
| E:14 | Outdoor PCB Fail      | PCB Failure                                |

| Fault                 | LED1  | LED2  | LED3  | LED4  | LED5  | LED6                      |
|-----------------------|-------|-------|-------|-------|-------|---------------------------|
| Signal Failure        |       |       |       | Flash |       |                           |
| Indoor Unit Failure   |       |       |       | Flash |       |                           |
| Discharge Sensor Fail |       |       |       |       |       | Flash                     |
| O/D Pipe Sensor Fail  |       |       |       |       | Flash | Flash                     |
| O/D Air Sensor Fail   |       |       | Flash |       | Flash |                           |
| Power Source Error    |       | Flash |       |       |       |                           |
| PCB                   |       | Flash | Flash | Flash | Flash | Flash                     |
| PCB Failure           |       |       |       |       |       | All Flashing Very Rapidly |
| High Pressure Trip    | Flash |       |       |       |       |                           |
| Discharge Temp Trip   |       | Flash |       |       |       |                           |

## Wireless Remote Control Models – Diagnostics

Models with wireless handsets have three LED's on the units which light up to show operational, or fault conditions. In general the codes are as right, but there are other codes available.

Model References are

A=ASY7A/R

B=ASY9/12A/R

C=ASY14/17A/R

D=ASY20/30A/R

ABY14-24A/R & AUY12/18AG/RG

E=ABY36/45A

F=ABY36/45R

G=AUY18/45A

| Unit  | Code Means:-           | Red               | Green             | Yellow      |
|-------|------------------------|-------------------|-------------------|-------------|
| All   | Power On               | On                | Off               | Off         |
| All   | Timer Mode             | On                | On                | Off         |
| All   | Louvre On              | On                | On or Off         | On          |
| All   | HP Defrost Cont.       | Long pulses       | Off               | Off         |
| All   | Test                   | Cont. Pulse       | Cont. Pulse       | Off         |
| D,E,F | Power Fail             | On                | Cont Long         | Pulses Off  |
| All   | PCB Failure            | Cont. Short Pulse | Cont. Short Pulse | Off         |
| G     | Room Sensor Fault      | 1 Short Pulse     | Rapid Pulse       | Off         |
| A,B,G | Sensor Fault           | 2 Short Pulses    | Rapid Pulse       | Off         |
| D,E,F | Room Sensor Open/Fail  | 2 Short Pulses    | Rapid Pulse       | Off         |
| E,F   | Room Sensor Short      | 2 Short Pulses    | Rapid Pulse       | Rapid Pulse |
| C     | Room Sensor Fault      | 3 Short Pulses    | Long Pulse        | Off         |
| D,E,F | Pipe Sensor Open       | 3 Short Pulses    | Rapid Pulse       | Off         |
| E,F   | Pipe Sensor Short      | 3 Short Pulses    | Rapid Pulse       | Rapid Pulse |
| D,E,F | High Water             | 4 Short Pulses    | Rapid Pulse       | Off         |
| F     | Comms Failure          | 5 Short Pulses    | Rapid Pulse       | Off         |
| G     | High Water             | 6 Short Pulses    | Rapid Pulse       | Off         |
| B,E,F | Fan Failure            | 6 Short Pulses    | Rapid Pulse       | Off         |
| F     | 3ph Reversal           | Rapid Pulse       | 2 Short Pulses    | Off         |
| C     | Pipe Sensor Fault      | Long Pulse        | 3 Short Pulses    | Off         |
| F OD  | Pipe Sensor Open       | Rapid Pulse       | 3 Short Pulses    | Off         |
| F OD  | Pipe Sensor Short      | Rapid Pulse       | 3 Short Pulses    | Rapid Pulse |
| F OD  | Temp Sensor Open       | Rapid Pulse       | 4 Short           | Pulses Off  |
| F OD  | Temp Sensor Short      | Rapid Pulse       | 4 Short Pulses    | Rapid Pulse |
| F     | Discharge Sensor Open  | Rapid Pulse       | 5 Short Pulses    | Off         |
| F     | Discharge Sensor Short | Rapid Pulse       | 5 Short Pulses    | Rapid Pulse |
| F     | High/Low Pressure      | Rapid Pulse       | 6 Short Pulses    | Off         |
| F     | High Discharge Temp    | Rapid Pulse 7     | Short Pulses      | Off         |

## Sensor Resistances – Use to Check Thermistors across the range

| Sensor                  | At 10°C   | At 20°C   | At 30°C   |
|-------------------------|-----------|-----------|-----------|
| Air Temperature Sensors | 20K Ohms  | 13K Ohms  | 8K Ohms   |
| Indoor Pipe Sensor      | 103K Ohms | 63K Ohms  | 40K Ohms  |
| Outdoor Pipe Sensor     | 10K Ohms  | 6K Ohms   | 4K Ohms   |
| Discharge Sensor        | 646K Ohms | 395K Ohms | 250K Ohms |