

Livezi HVAC Systems



Technical Manual Part C Service and Troubleshooting

H-INV-7
H-INV-11
H-INV-15

H-DIG-18
H-DIG-22
H-DIG-26

H-VAV-7
H-VAV-11
H-VAV-15

H-RAD-18
H-RAD-22
H-RAD-26

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This Technical Manual describes the service and troubleshooting of Livezi Dual Inverter and Digital Inverter ducted split air conditioner.

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Proudly designed and manufactured in Australia by Livezi, an independent Australian-owned company.

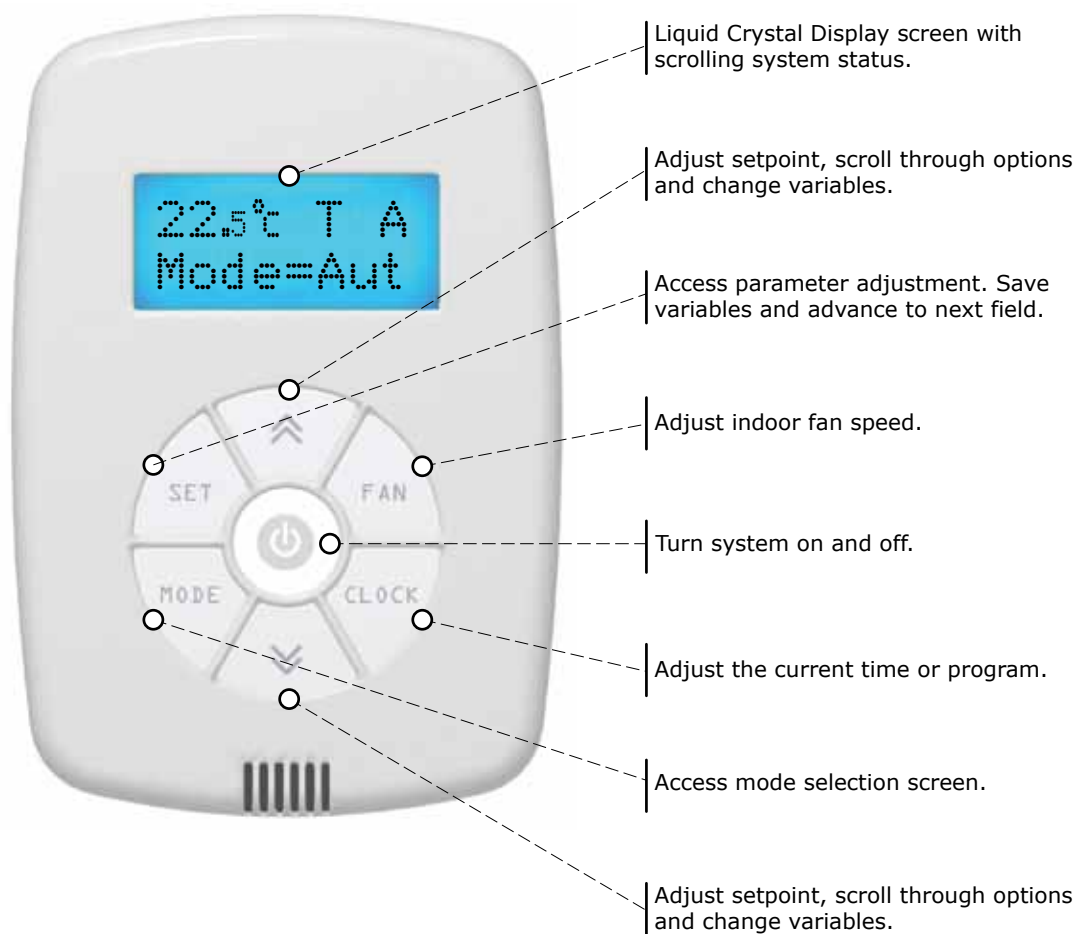
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3.1 CENTRAL LCD TOUCHPAD

The following pages detail the operation of the various control system types available for the Livezi ducted systems.

1.1 Touchpad layout




3.2 Z-PLUS LCD TOUCHSCREEN

Release Scheduled for October 2013

1.1 Touchscreen layout

3.3 CONNECT LCD TOUCHPAD

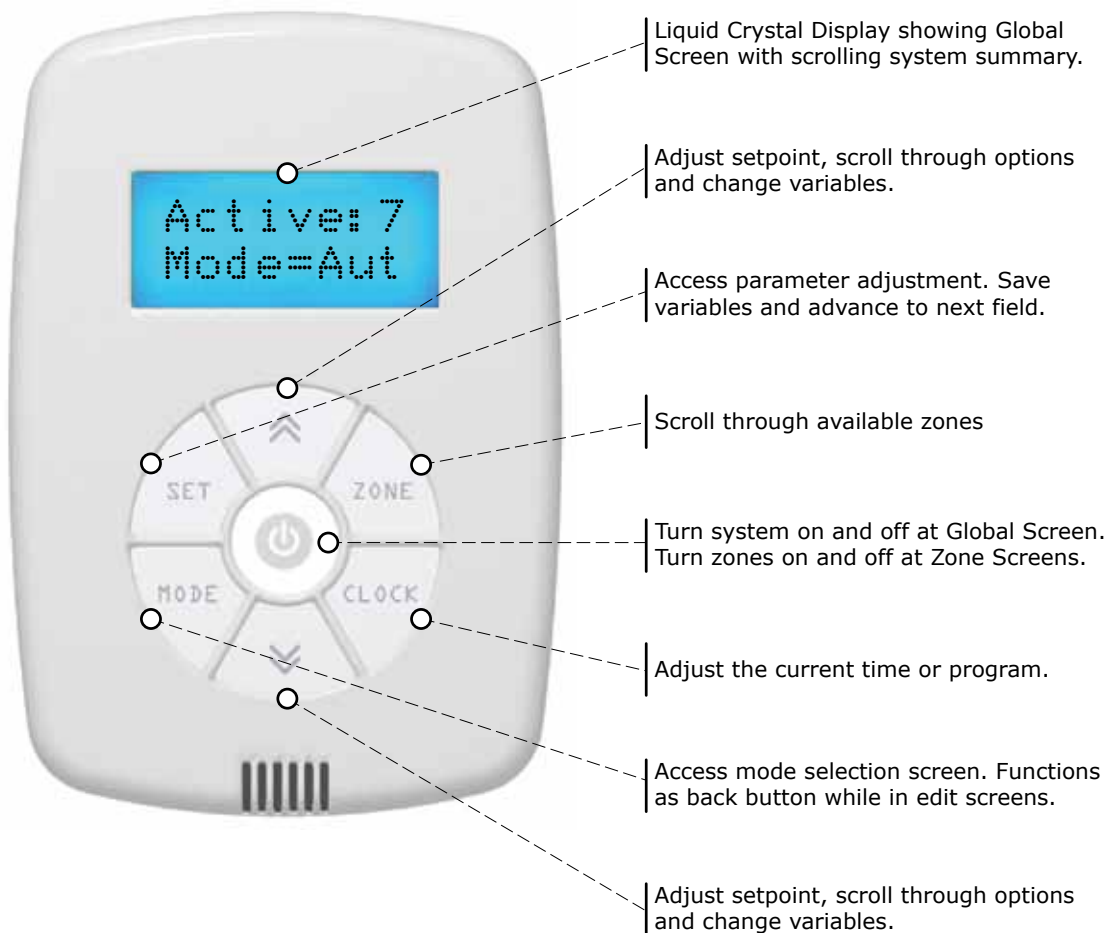
The Livezi Connect control system coordinates the operation of the Livezi indoor and outdoor units, and zone dampers to provide the finest indoor climate control solution currently available.

To turn on the system simply press  at any touchpad. In the default auto mode the system will begin heating or cooling as required. When all areas are off the conditioning system shuts down.

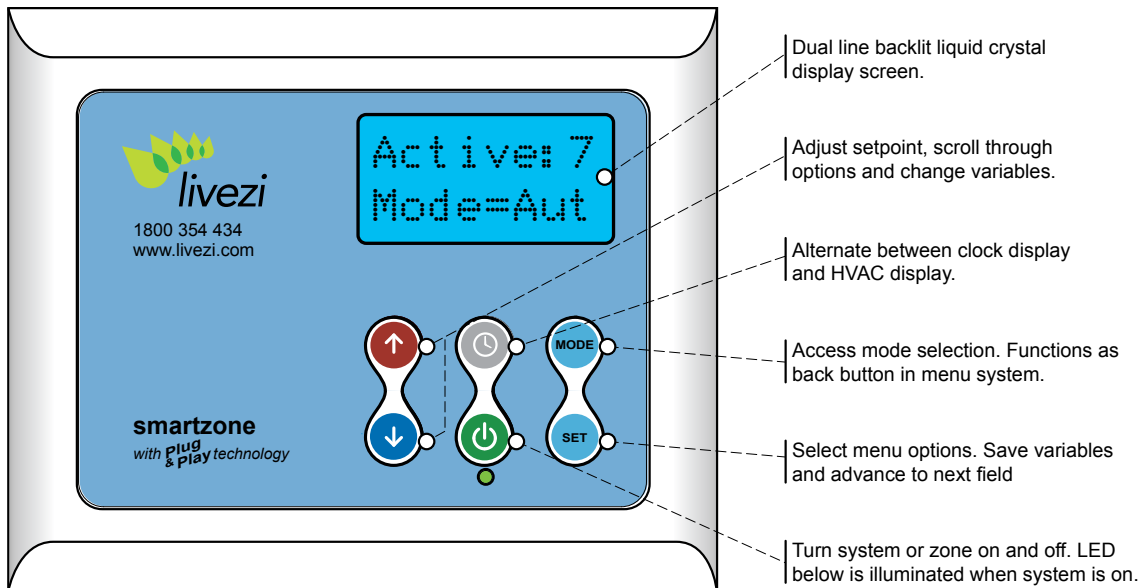
The LCD touchpad allows adjustment of various aspects of your indoor climate. By default access to all control functions is available from all LCD touchpads.

Access to some control functions may be limited via hardware settings during installation (Refer to section 3.2.3 - Zone Touchpads). In the following pages, functions which may be limited in this manner will be indicated with a ✕ in the heading.

3.3.1 Touchpad layout



3.3.2 Connect MPM Onboard Touchpad



3.3.3 Diagnostic Menu

Hold down the mode button for ≈ 10 seconds from the global screen to access the diagnostic menu.

```
DiagMenu
Exit
```

Use \wedge or \vee to select from the following options, then press **SET** to view the status:

CoilTemp

Line1: In=36.0°C (Indoor coil sensor)
Line2: Out=34.0°C (Outdoor coil sensor)

CompLoad

Line1: In=36.0°C (Indoor coil sensor)
Line2: LD=100% (Compressor load)

Defrost

Line1: Defrost=
Line2: Ok, or DeIce, or DeWater.

3 Phase

Line1(scrolls): L1=Ok L2=Down L3=Down (state can be Down or Ok, this example is single phase)
Line2(scrolls): Health= (either Bad/Not 3Phase, or Ok)

HP/LP/DI (DI=Discharge sensor)

Line1(scrolls): HP=Ok LP=Ok (either Ok or Fault)
Line2: Di=70.0°C

NOTE: Discharge sensor temperatures below 70.0 °C will be displayed as 70.0 °C.

4 FAULT CODES & DIAGNOSTICS

4.1 Connect Touchpad: Digital Inverter System Self Diagnostics

Livezi systems are able to detect a number of problems and display a fault message to aid in troubleshooting.

Fault D1 - 3 Phase error Digital Outdoor

Line 1 = Fault D1:

Line 2 scrolls one of the following:

3 Phase, L2 & L3 lost

3 Phase, L2 lost

3 Phase, L3 lost

3 Phase, rotate L2 & L3

Fault D2 - Coil Sensor Error (sensor nominated)

Line 1 = Fault D2:

Line 2 scrolls one of the following:

Outdoor coil sensor open circuit

Outdoor coil sensor short circuit

Indoor coil sensor open circuit

Indoor coil sensor short circuit

Fault D3 - High Pressure or Low pressure Fault

Line 2 scrolls one of the following:

HP compressor safety

LP compressor safety

HP/LP compressor safety

Fault D4 - Interconnect Indoor > Outdoor

Line 1 = Fault 4:

Line 2 scrolls one of the following:

AHU and Condenser Interconnect

Fault D5 - Contact Manufacturer

Line 1 = Fault 5:

Line 2 scrolls Contact Manufacturer

Fault D6 - Contact Manufacturer

Line 1 = Fault 6:

Line 2 scrolls Contact Manufacturer

Fault D7 - Zoning to Indoor Board Communications Lost

Line 1 = Fault D7:

Line 2 scrolls AHU and Zoning interconnect

Fault D8 - Contact Manufacturer

Line 1 = Contact Manufacturer

4 FAULT CODES & DIAGNOSTICS

4.2 Connect Touchpad: Dual Inverter System Self Diagnostics

Livezi systems are able to detect a number of problems and display a fault message to aid in troubleshooting.

Fault I1 - Indoor unit and outdoor unit not compatible

Line 1 = Fault I1:

Line 2 scrolls one of the following:

AHU and Condenser not compatible

Fault I2 - Coil Sensor Error (sensor nominated)

Line 1 = Fault I2:

Line 2 scrolls one of the following:

Outdoor coil sensor open circuit

Outdoor coil sensor short circuit

Indoor coil sensor open circuit

Indoor coil sensor short circuit

Fault I3 - Contact Manufacturer

Line 2 scrolls one of the following:

Contact Manufacturer

Fault I4 - Interconnect Indoor > Outdoor

Line 1 = Fault 4:

Line 2 scrolls one of the following:

AHU and Condenser Interconnect

Fault I5 - Contact Manufacturer

Line 1 = Fault 5:

Line 2 scrolls Contact Manufacturer

Fault I6 - Contact Manufacturer

Line 1 = Fault 6:

Line 2 scrolls Contact Manufacturer

Fault I7 - Zoning to Indoor Board Communications Lost

Line 1 = Fault D7:

Line 2 scrolls AHU and Zoning interconnect

Fault I8 - Contact Manufacturer

Line 1 = Contact Manufacturer

4.3 Digital Inverter System Self Diagnostics / Fault Detection

Livezi Digital systems are able to detect a number of problems and display a fault message to aid in troubleshooting. An on board sixteen character LCD display is inside the outdoor electrical panel.

Fault D1 - 3 Phase error Digital Outdoor

Line 1 = Fault D1:

Line 2 scrolls one of the following:

3 Phase, L2 & L3 lost
3 Phase, L2 lost
3 Phase, L3 lost
3 Phase, rotate L2 & L3

Fault D2 - Coil Sensor Error (sensor nominated)

Line 1 = Fault D2:

Line 2 scrolls one of the following:

Outdoor coil sensor open circuit
Outdoor coil sensor short circuit
Indoor coil sensor open circuit
Indoor coil sensor short circuit

Fault D3 - High Pressure or Low pressure Fault

Line 2 scrolls one of the following:

HP compressor safety
LP compressor safety
HP/LP compressor safety

Fault D4 - Interconnect Indoor > Outdoor

Line 1 = Fault 4:

Line 2 scrolls one of the following:

AHU and Condenser Interconnect

Fault D5 - Contact Manufacturer

Line 1 = Fault 5:

Line 2 scrolls Contact Manufacturer

Fault D6 - Contact Manufacturer

Line 1 = Fault 6:

Line 2 scrolls Contact Manufacturer

Fault D7 - Zoning to Indoor Board Communications Lost

Line 1 = Fault D7:

Line 2 scrolls AHU and Zoning interconnect

Fault D8 - Contact Manufacturer

Line 1 = Contact Manufacturer

INVERTER OUTDOOR MAIN BOARD 2 x 7 SEGMENT DISPLAY

4.4 Access by removing the lid of the outdoor unit.

Livezi Inverters transmit the majority of fault codes to the controller however if the communication cabling has broken down often checking the outdoor display can speed up troubleshooting.

Fault E0 - EEPROM

Fault E2 - Communication Error Indoor PCB > Outdoor PCB

Fault E3 - Communication Error Indoor PCB > DSP

Fault E4 - Sensor Error (short or open) T3 (compressor) or T4 (outdoor ambient)

Fault E5 - Voltage Error (compressor lockout)

Fault E6 - PFC Module Error

Fault E8 - Outdoor Fan Error (incorrect RPM reading)

Fault P0 - Compressor Over Temperature Error

Fault P1 - High Pressure Error

Fault P2 - Low Pressure Error

Fault P3 - Compressor over current Error

Fault P4 - Discharge Temperature Error

Fault P5 - Outdoor Coil Over Temperature Error

Fault P6 - Module Error

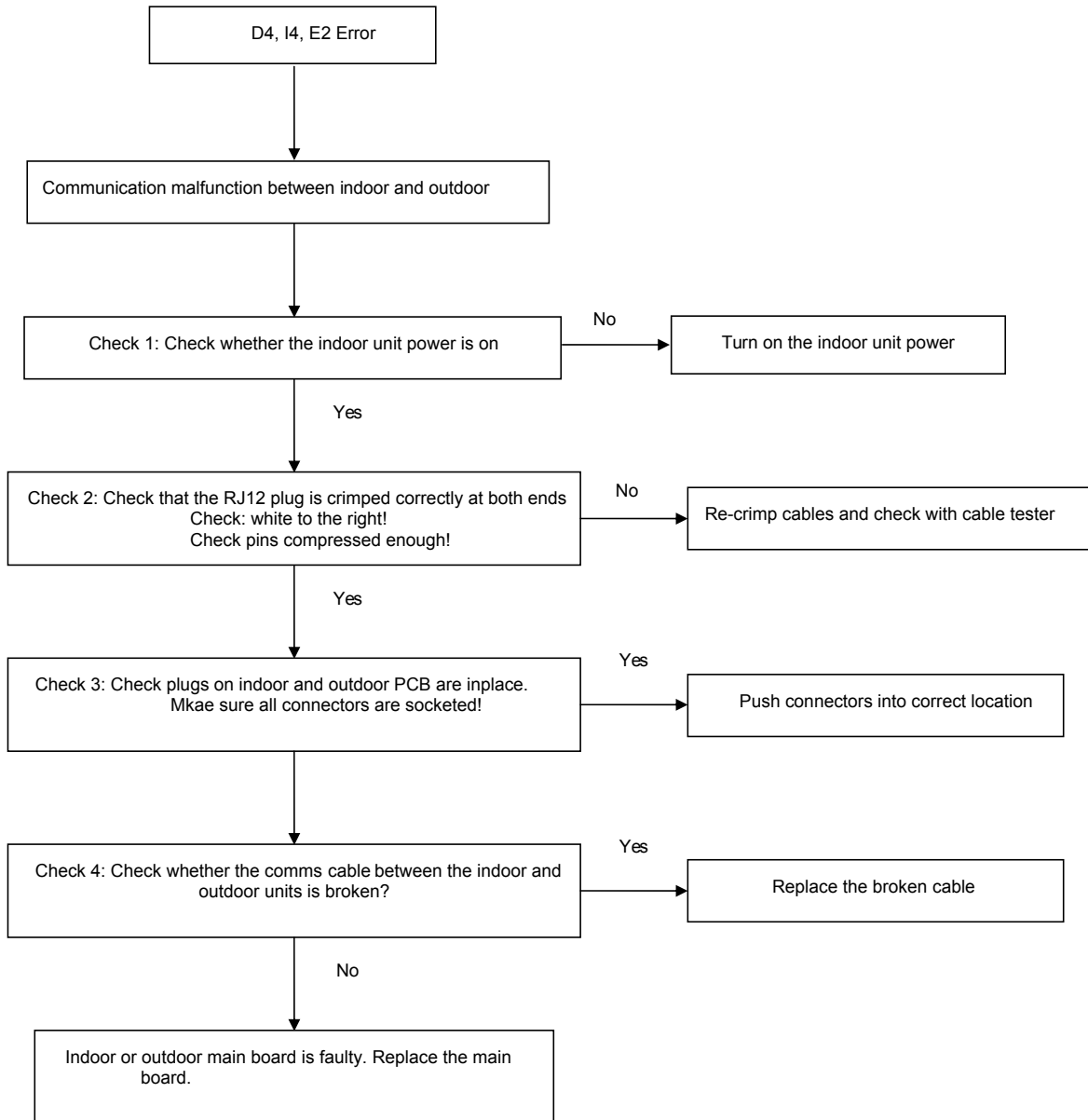
Fault P7 - Indoor Coil Over Temperature Error

Fault P0 - Contact Manufacturer

Fault D4, I4, E2 - Interconnect Indoor > Outdoor

Most common cause

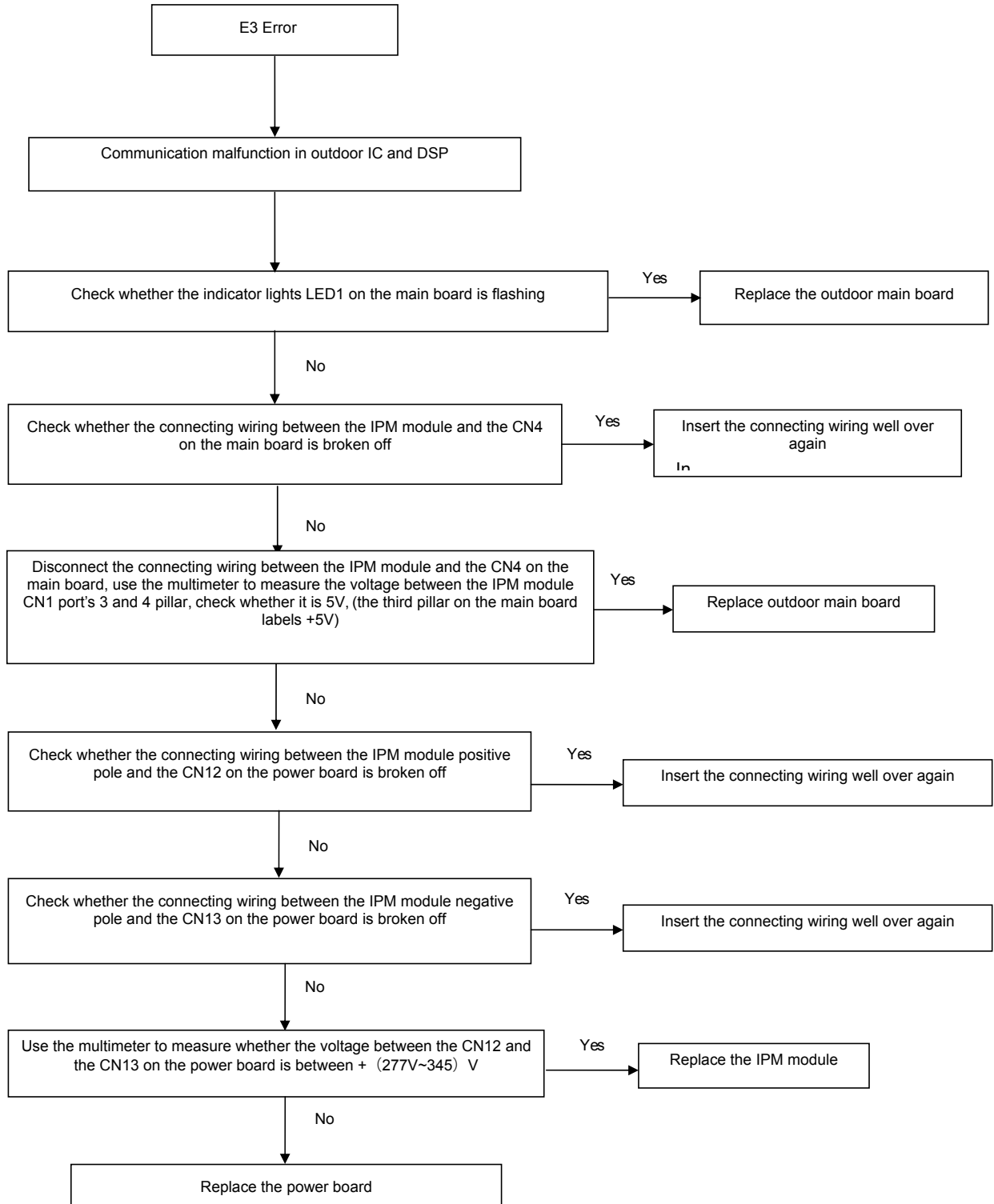
- 96.6% Crimping error on interconnect cable
- 1.1% conductor crossed inside cable
- .6% PCB fault
- 1.7% Other cause



Fault E3 - Interconnect Outdoor PCB > DSP - Troubleshoot Process A

Most common cause

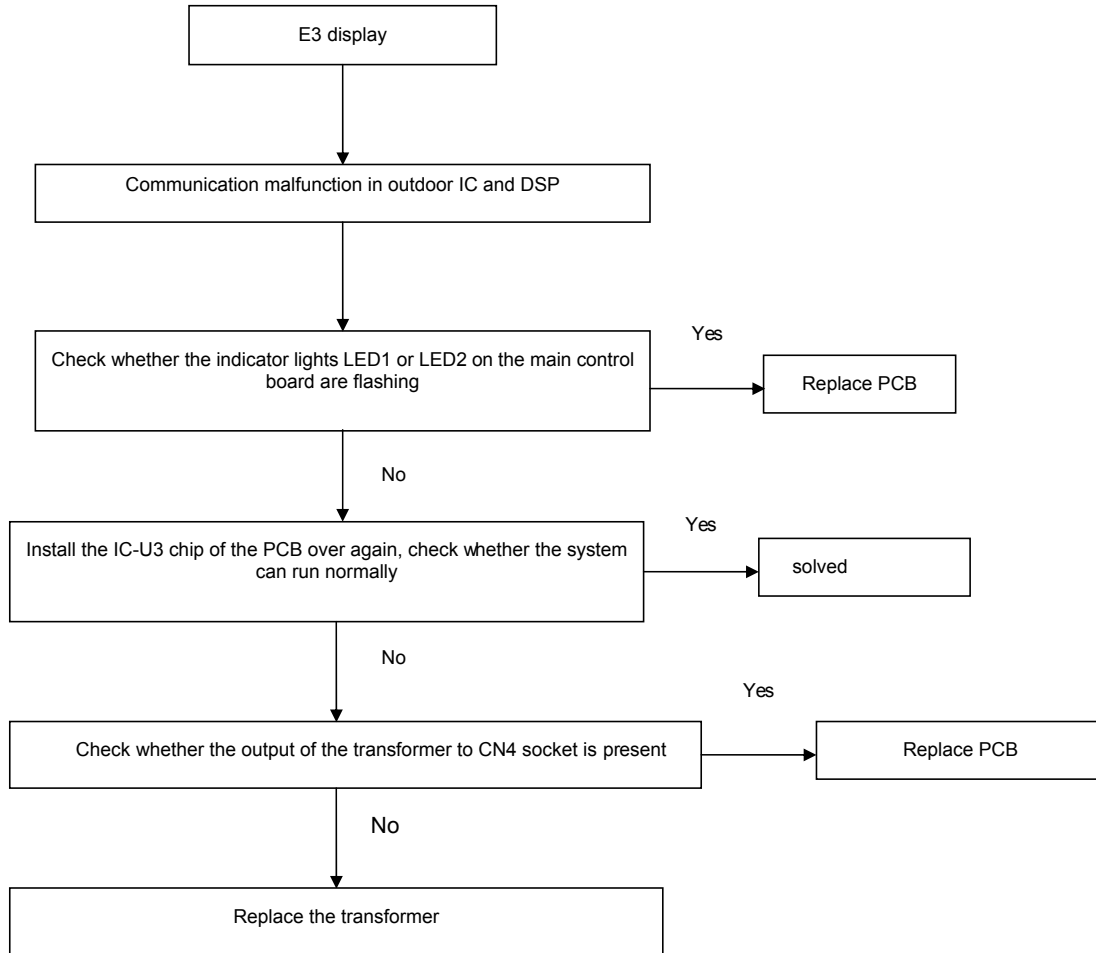
- Insufficient history



Fault E3 - Interconnect Outdoor PCB > DSP - Troubleshoot Process B

Most common cause

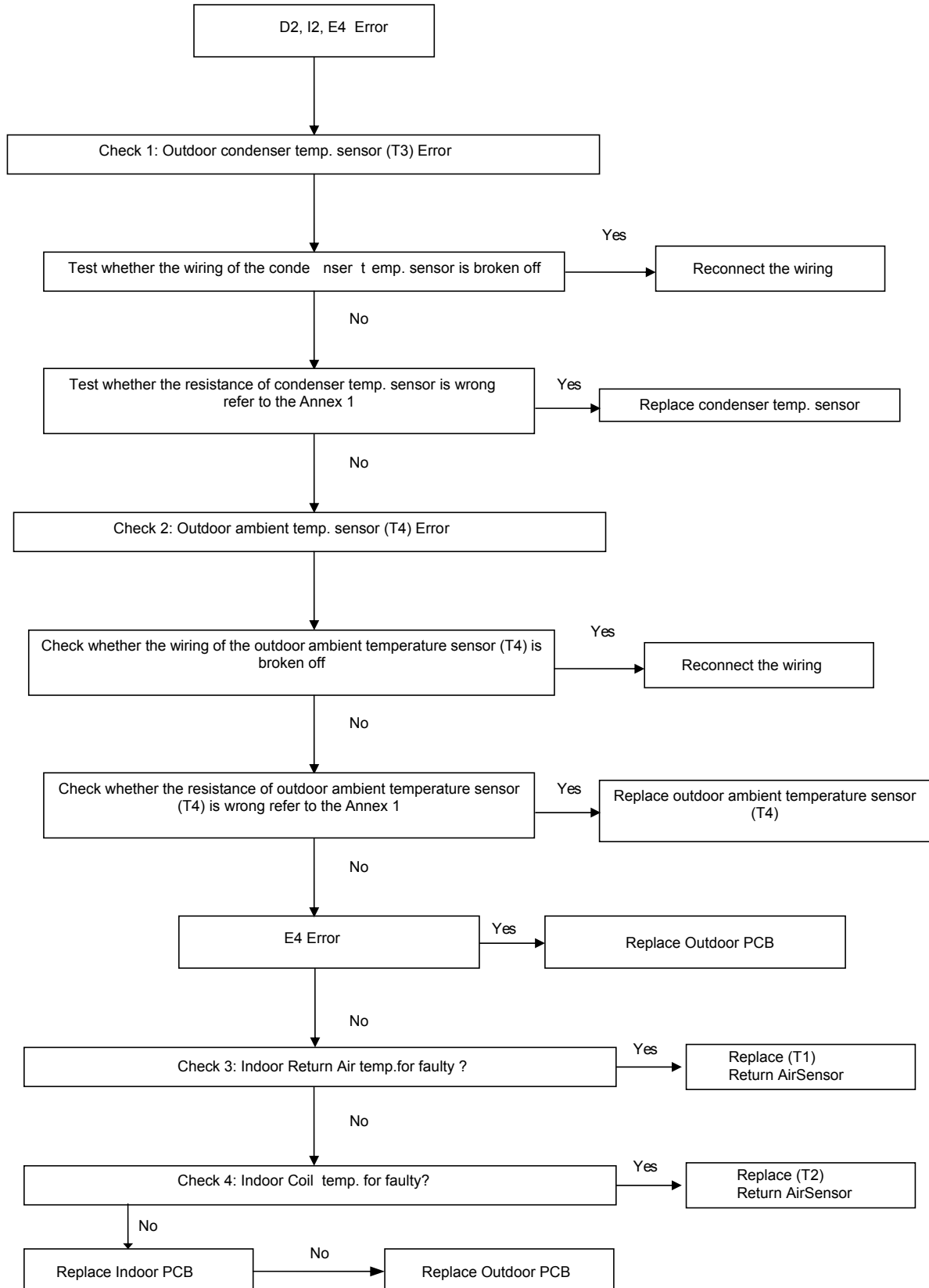
- Insufficient history



Fault D2, I2, E4 - Sensor Error

Most common cause

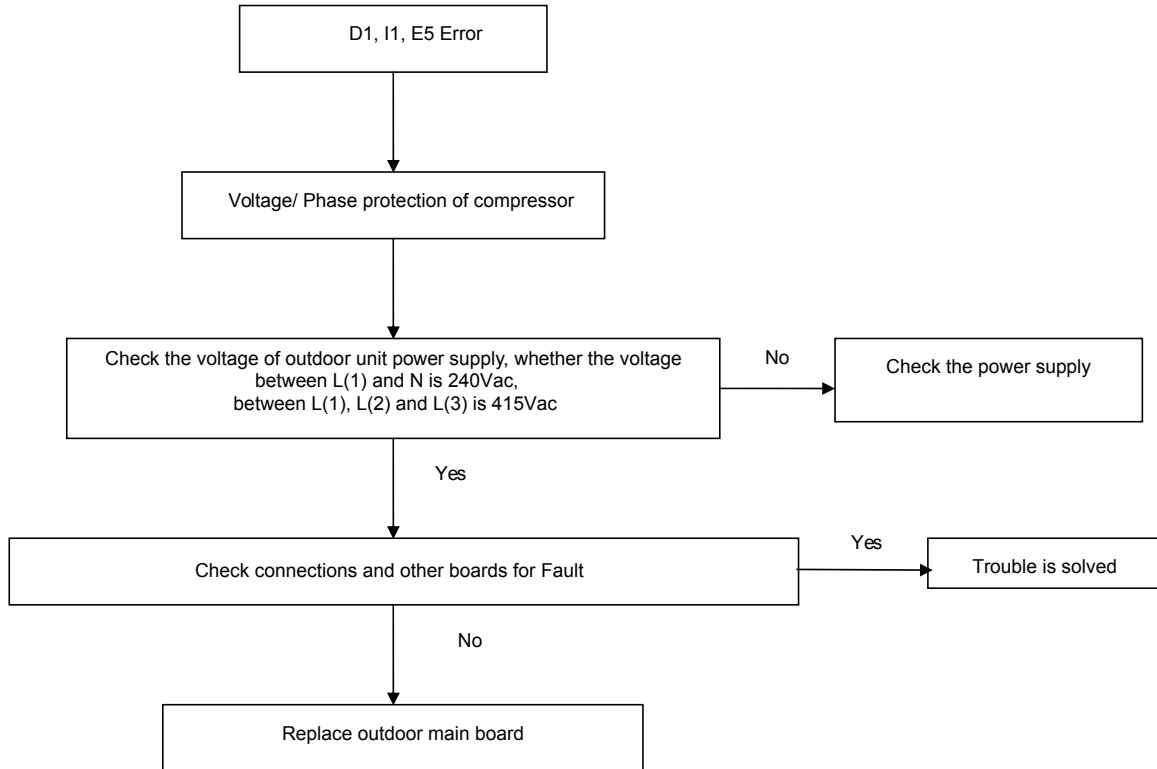
- 87% Incorrect reassembly of indoor unit after splitting
- 11% loose plug/ broken wire inside panel
- 2% other cause



Fault D1, I1, E5 - Voltage/ 3 Phase error Digital Outdoor

Most common cause

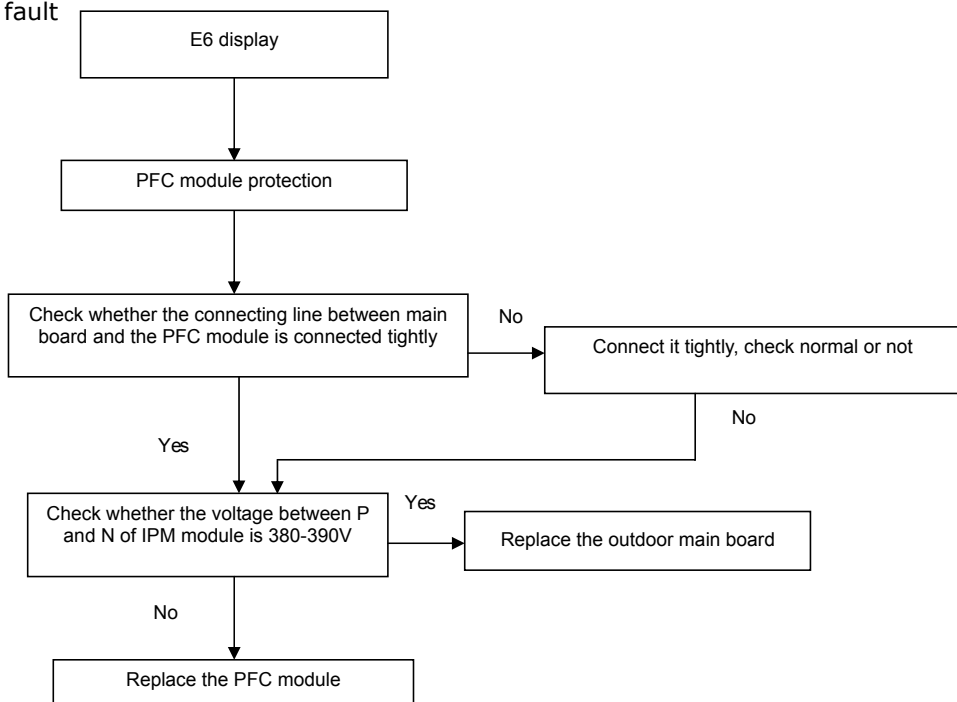
- 60% Phase rotation
- 15% PCB failure
- 12% Local power issues
- 3% other cause



Fault E6 - PFC module fault

Most common cause

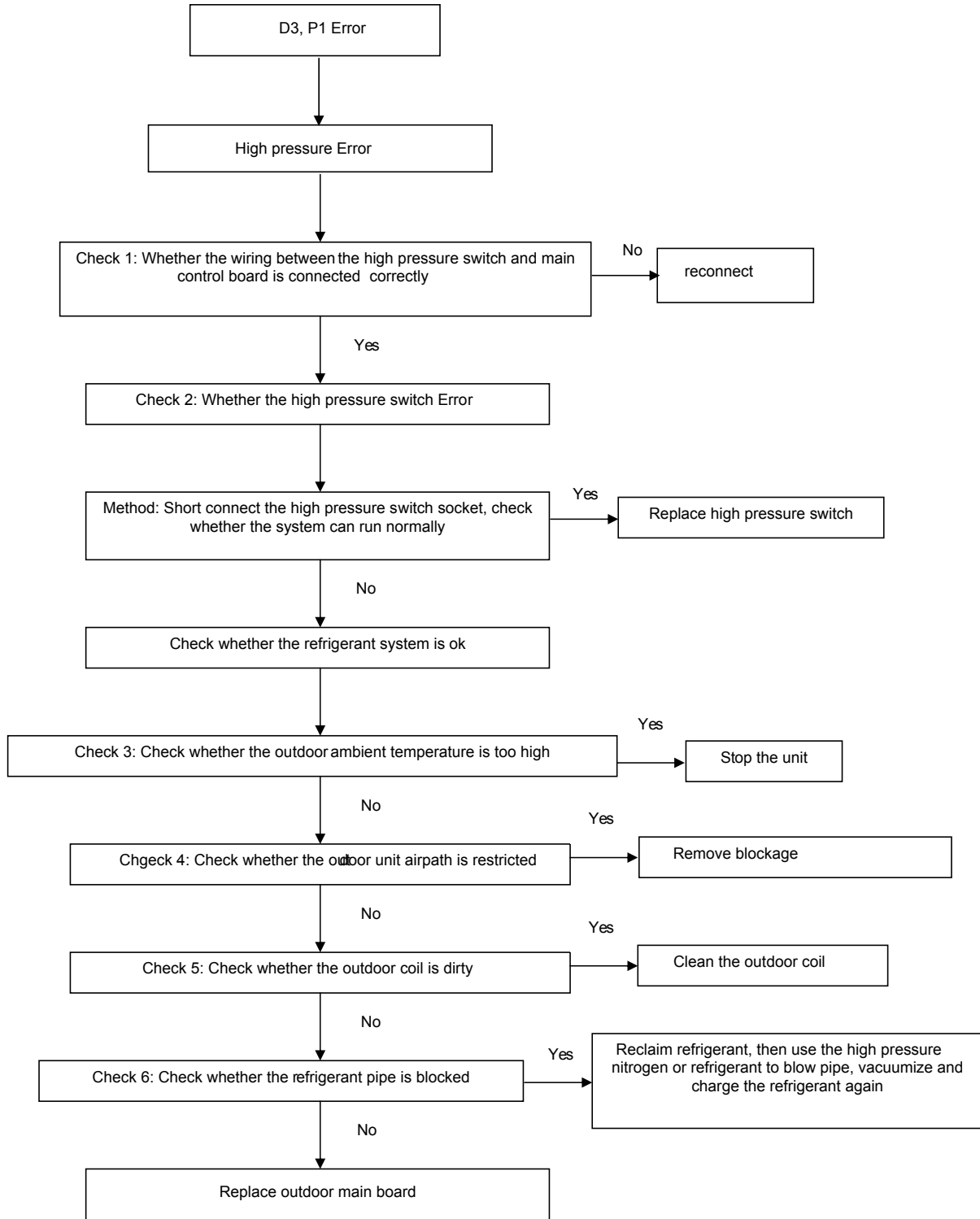
- 82% Module fault
- 18% other



Fault D3- High Pressure Fault, P1

Most common cause

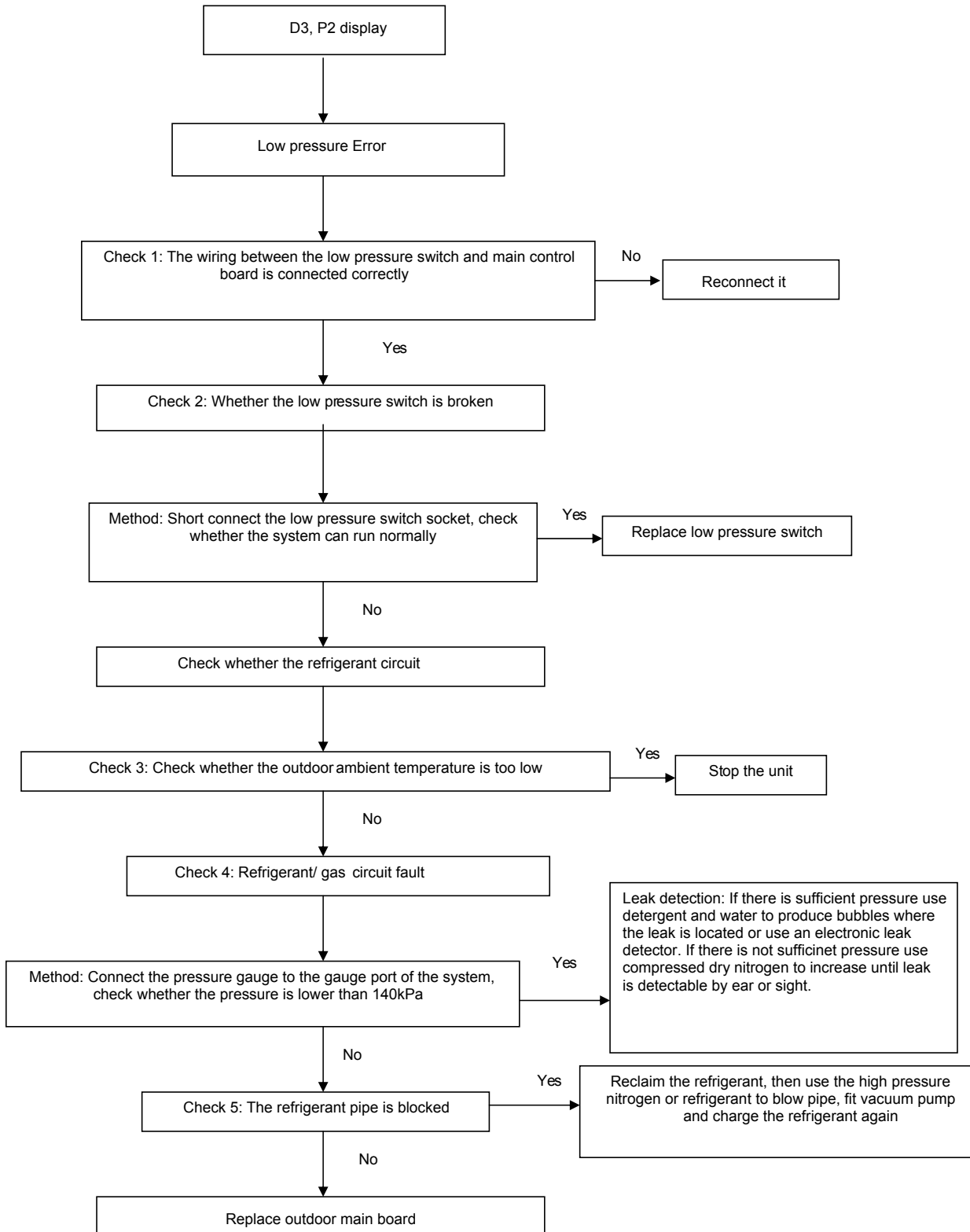
- 63% outdoor fan fault
- 13% Blocked or restricted outdoor coil
- 4% faulty pressure switch
- 20% other cause



Fault D3- Low pressure Fault, P2

Most common cause

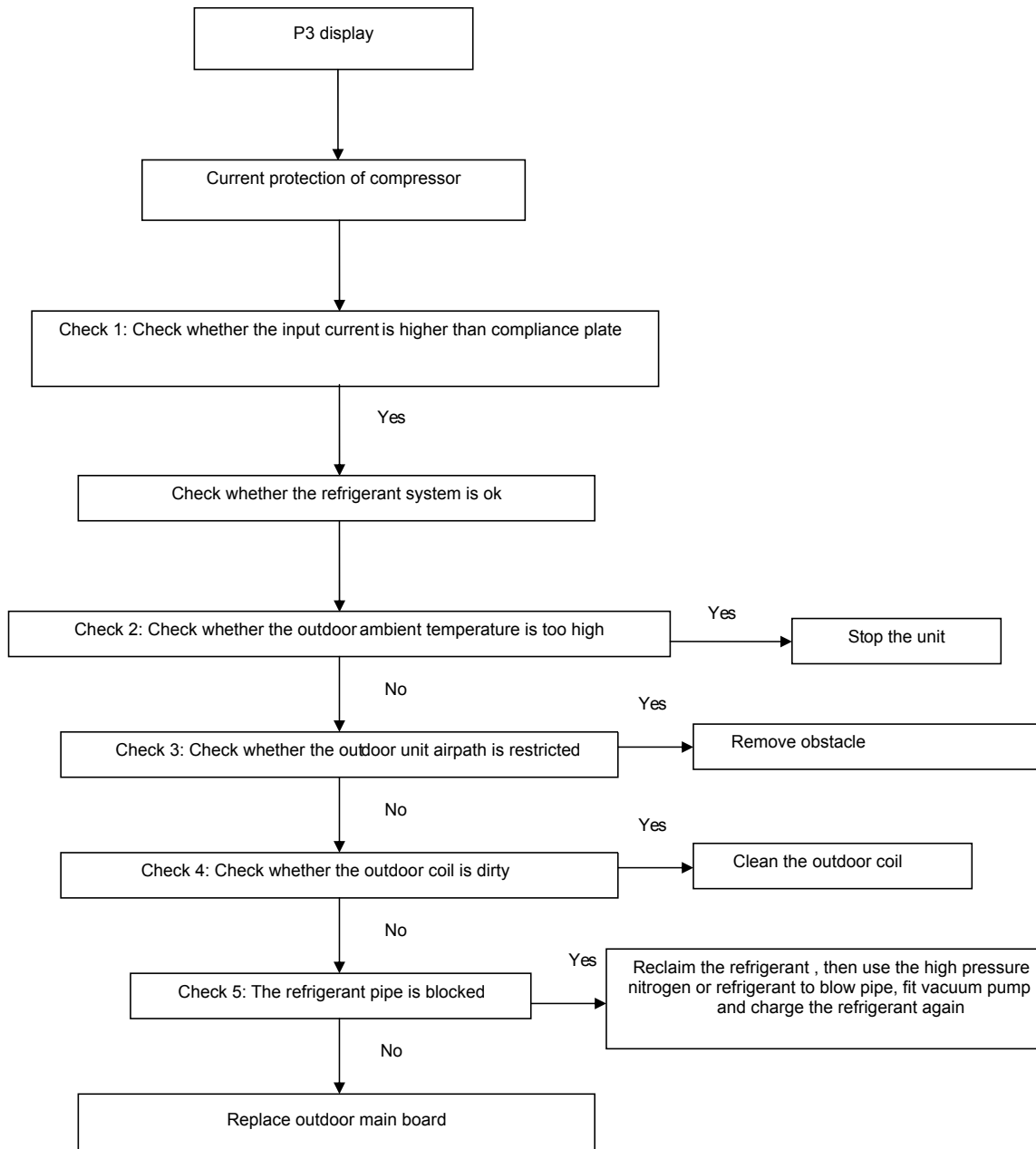
- 72% Refrigerant Leak
- 21% Indoor fan motor or board
- 4% Defrost or outdoor fan problem
- 3% other cause



Fault P3 - Compressor Over Current Fault

Most common cause

- Insufficient History

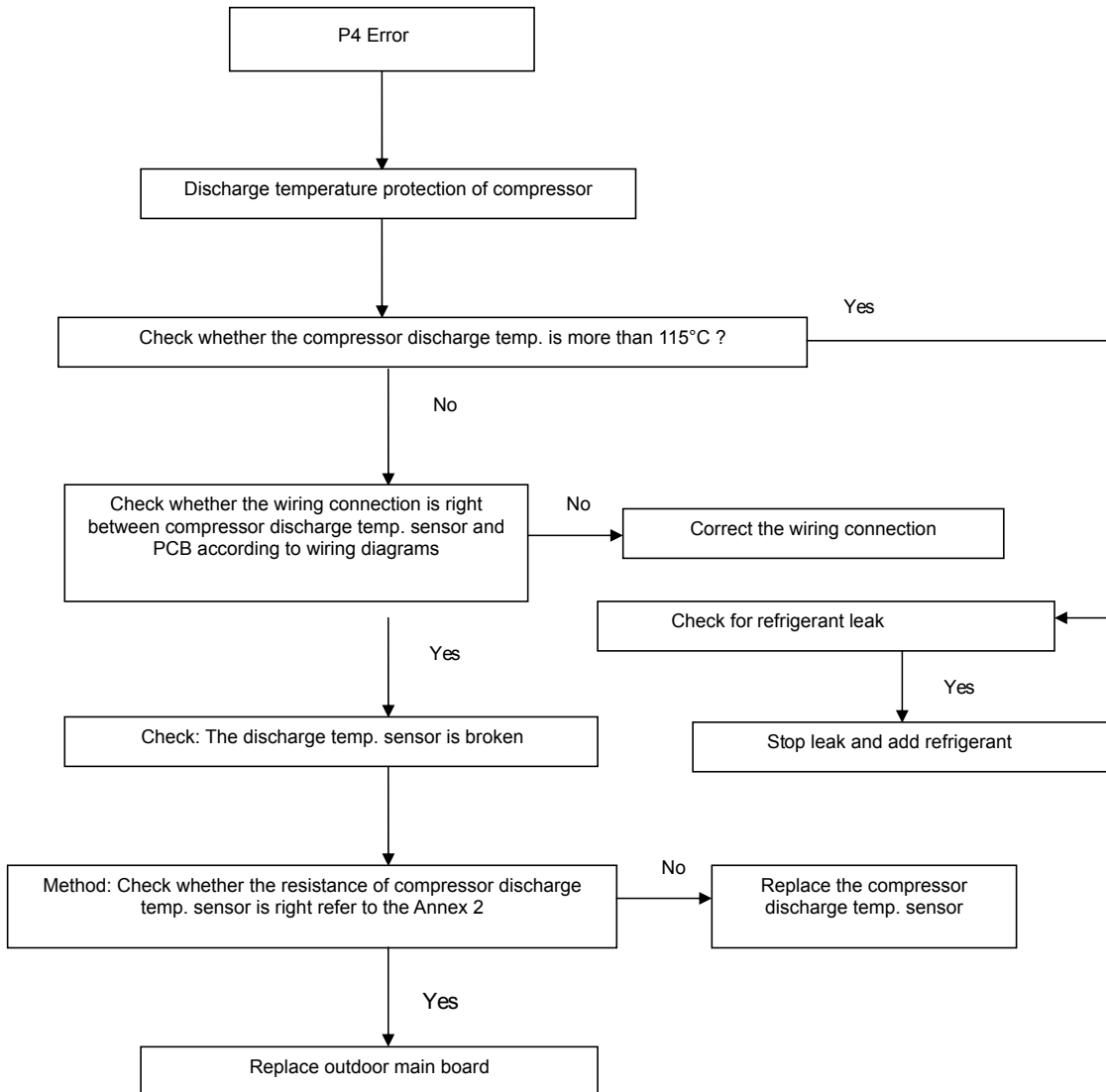


Fault P3 - Discharge Temperature Error

Most common cause

- Insufficient History

When compressor discharge temperature is higher than 115°C, the unit will stop, and unit runs again when compressor discharge temperature is lower than 90°C.

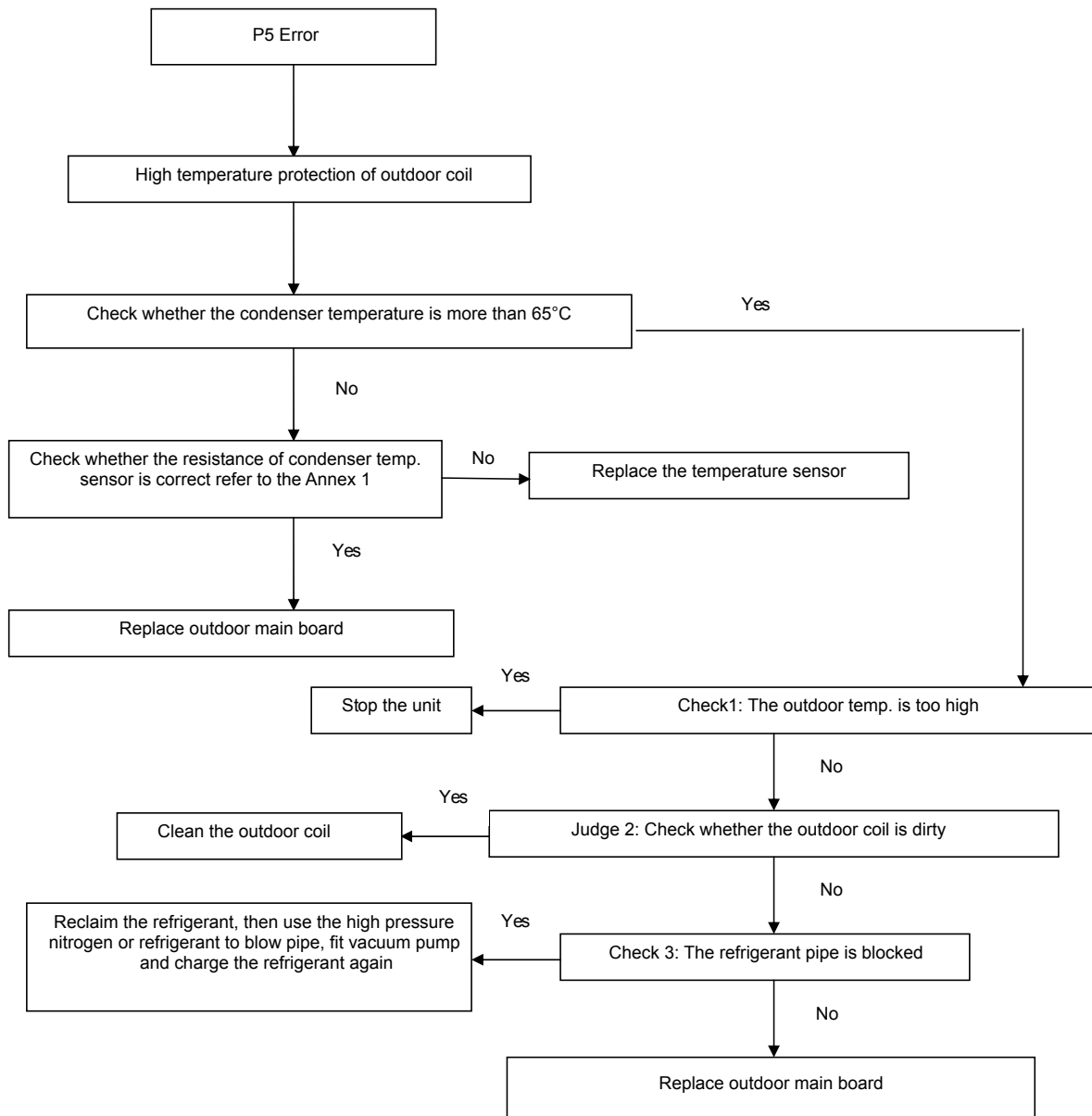


Fault P3 - Discharge Temperature Error

Most common cause

- Insufficient History

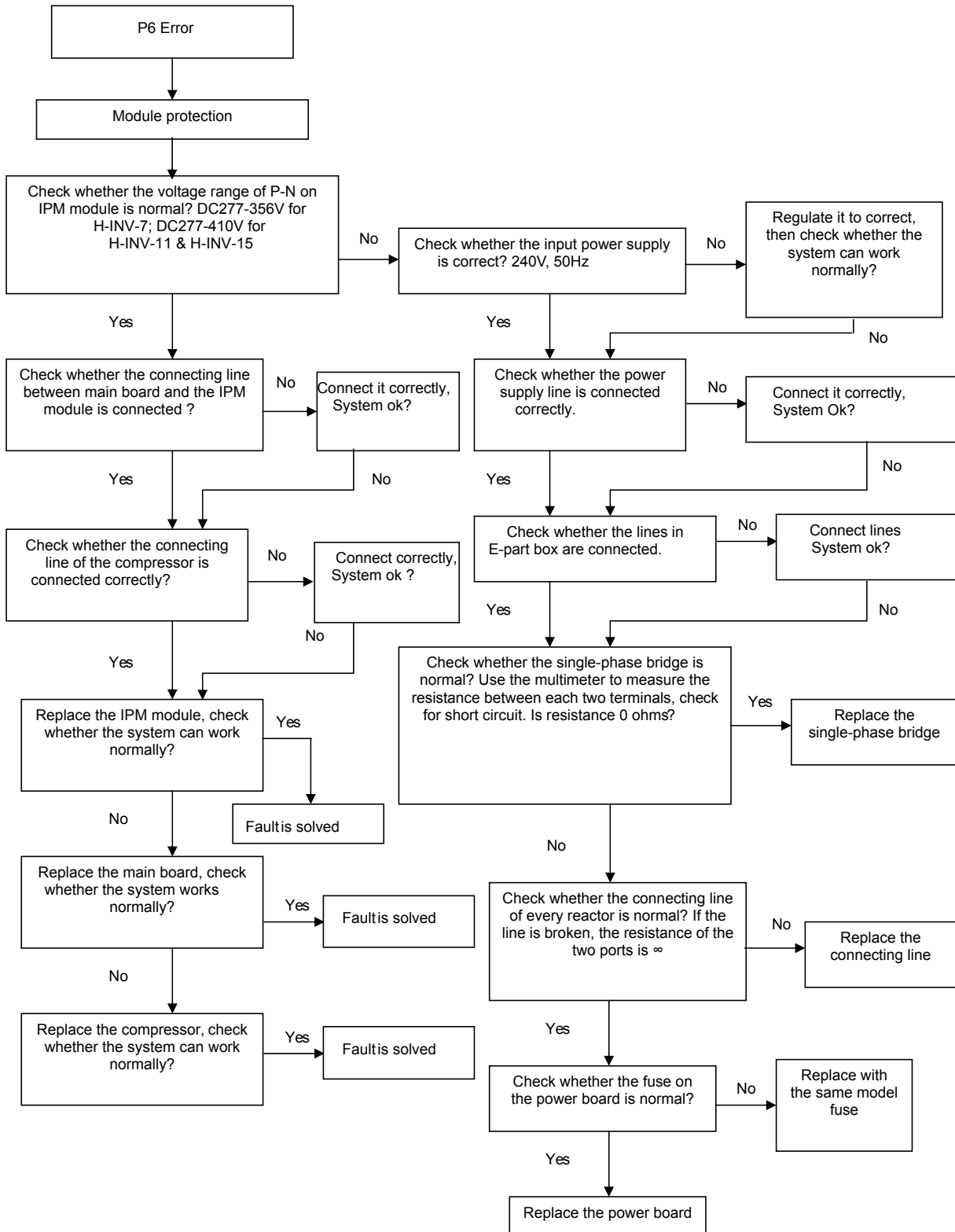
When condenser high temp. is more than 65°C, the unit will stop, and unit runs again when outdoor pipe temp. less than 52°C.



Fault P6 - Variable Speed Drive Error

Most common cause

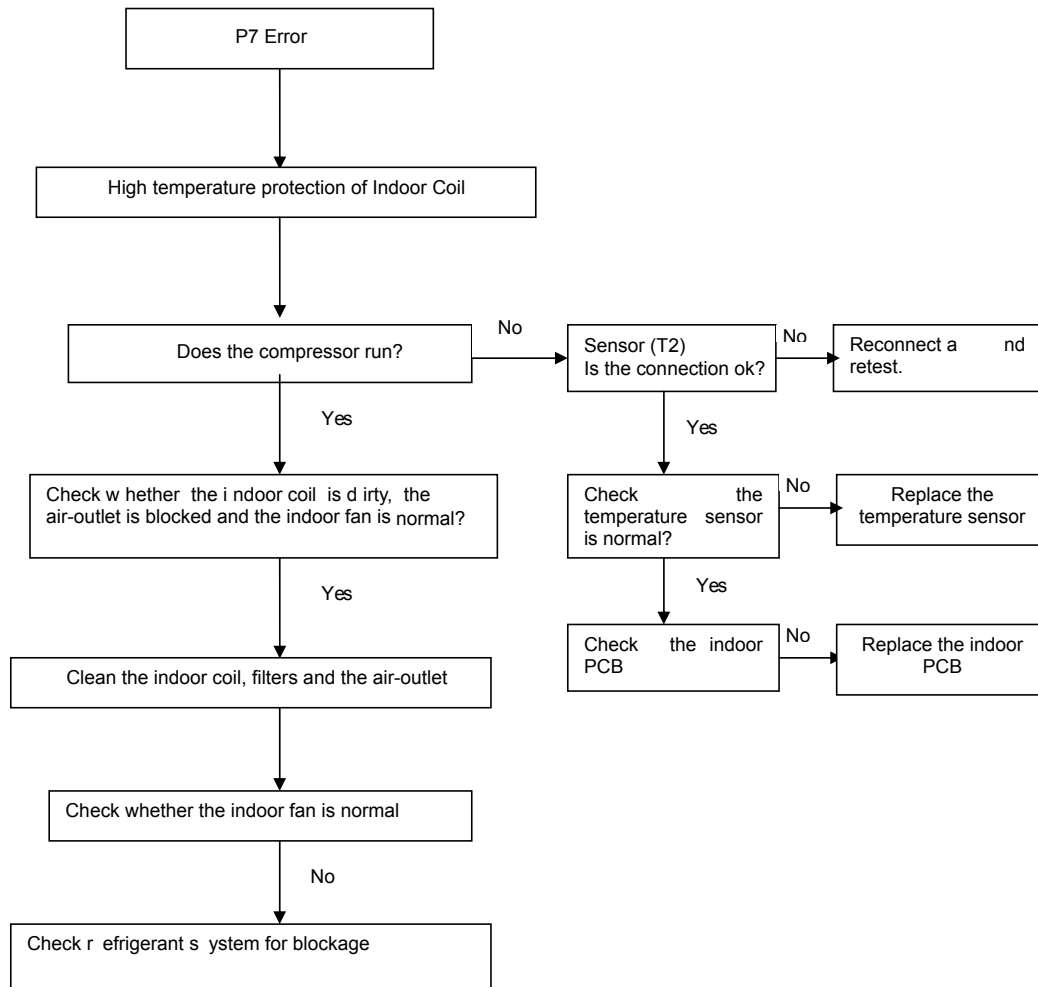
- 69% IPM module
- 16% Main Board
- 3% compressor
- 12% Other



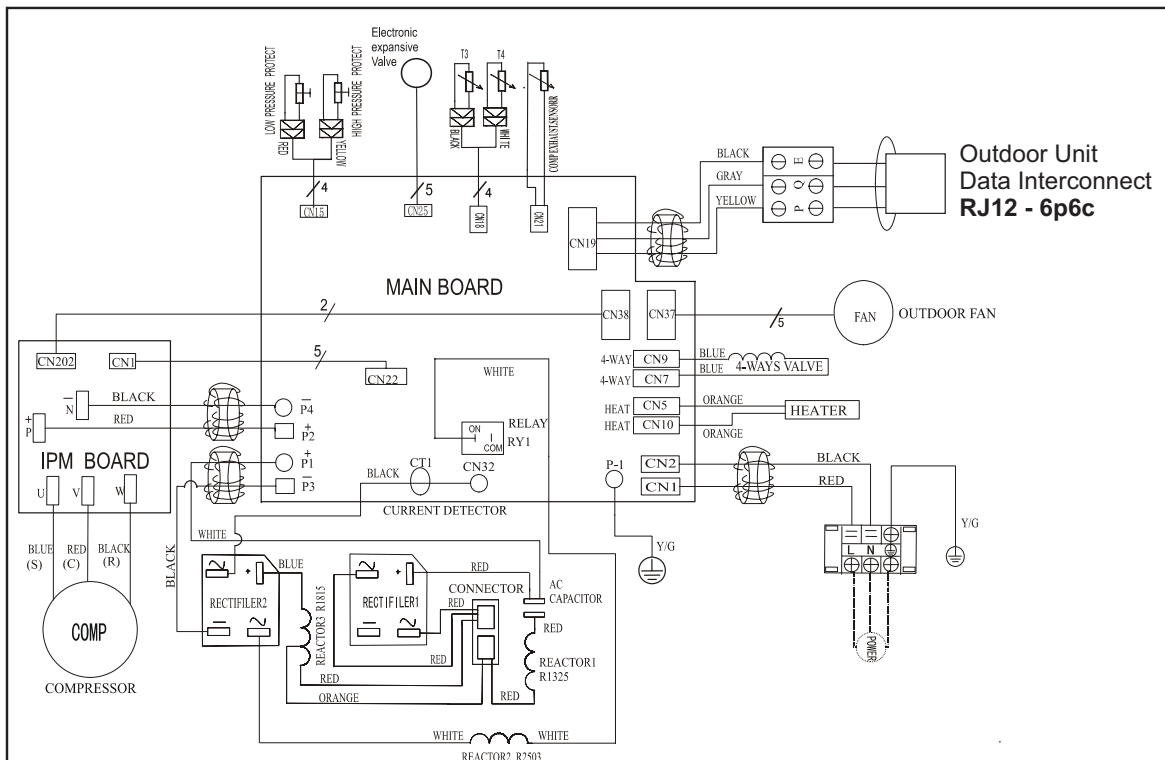
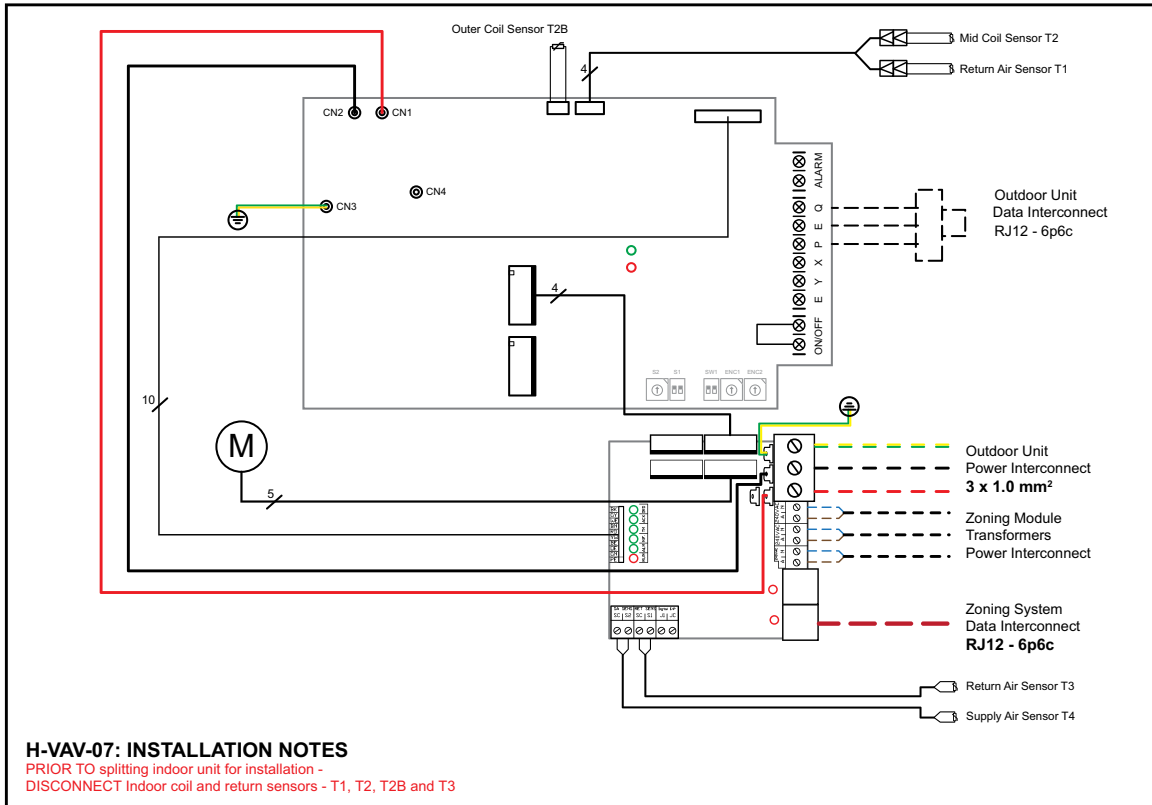
Fault P7 - Indoor Coil over temperature error

Most common cause

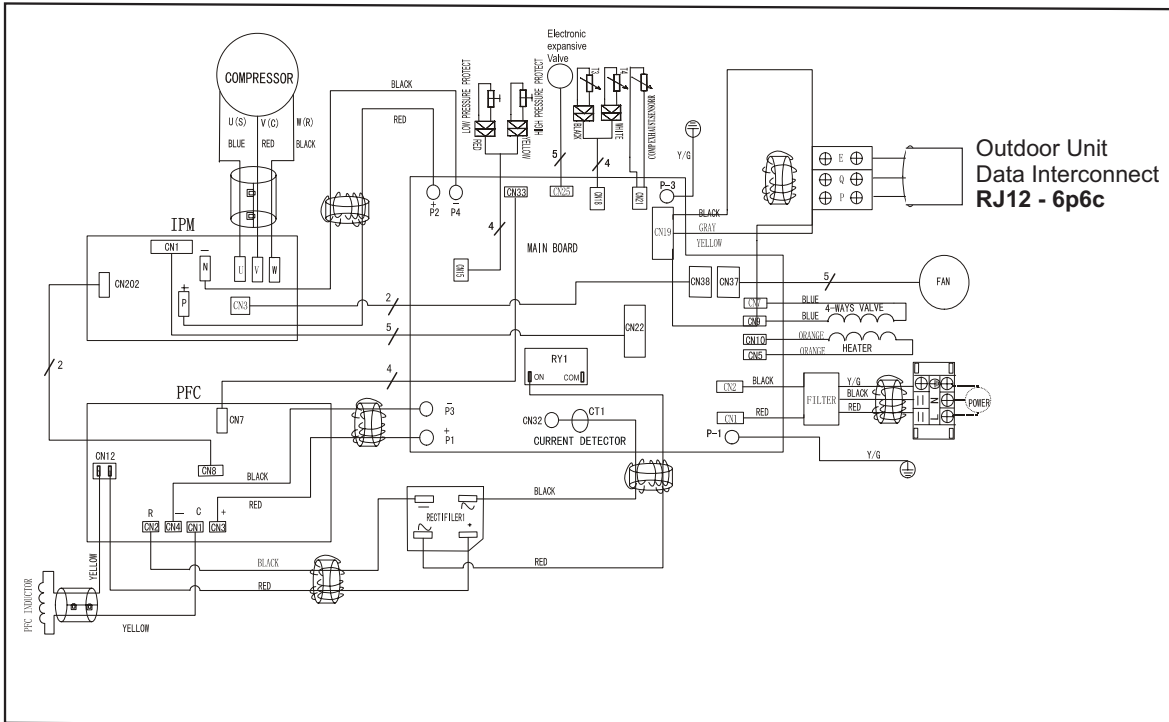
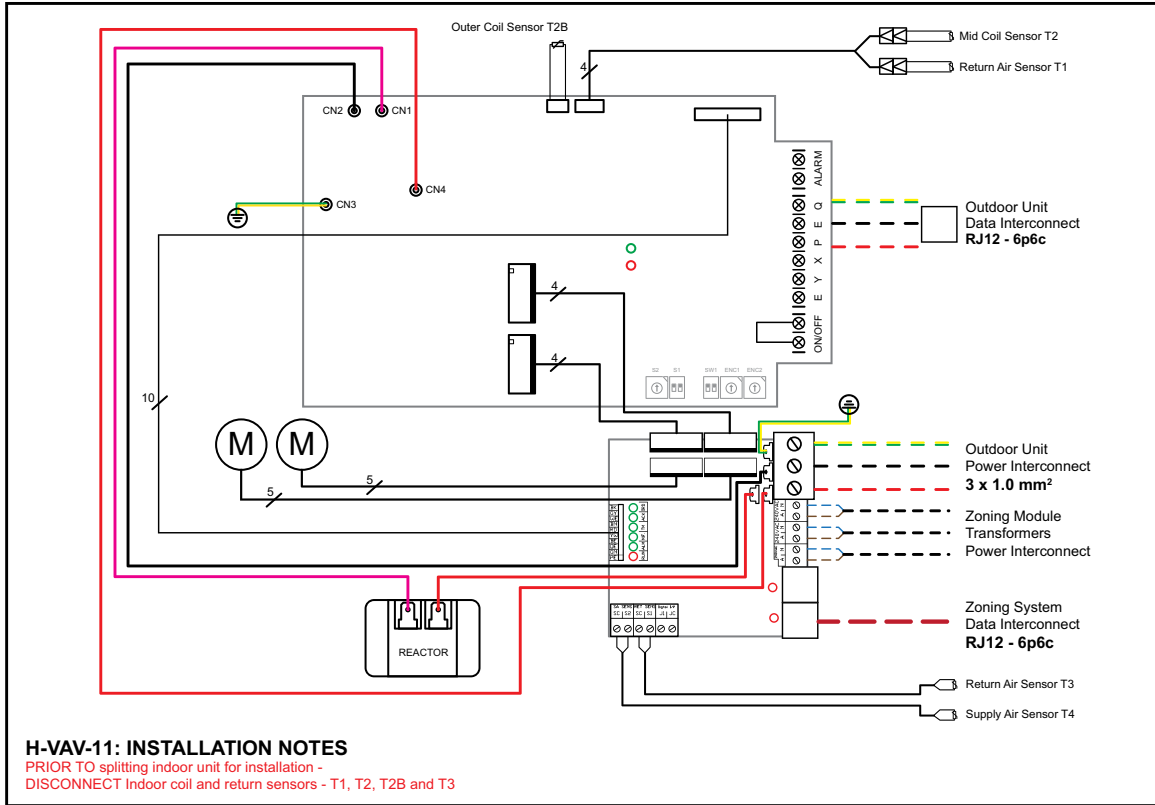
- Insufficient History



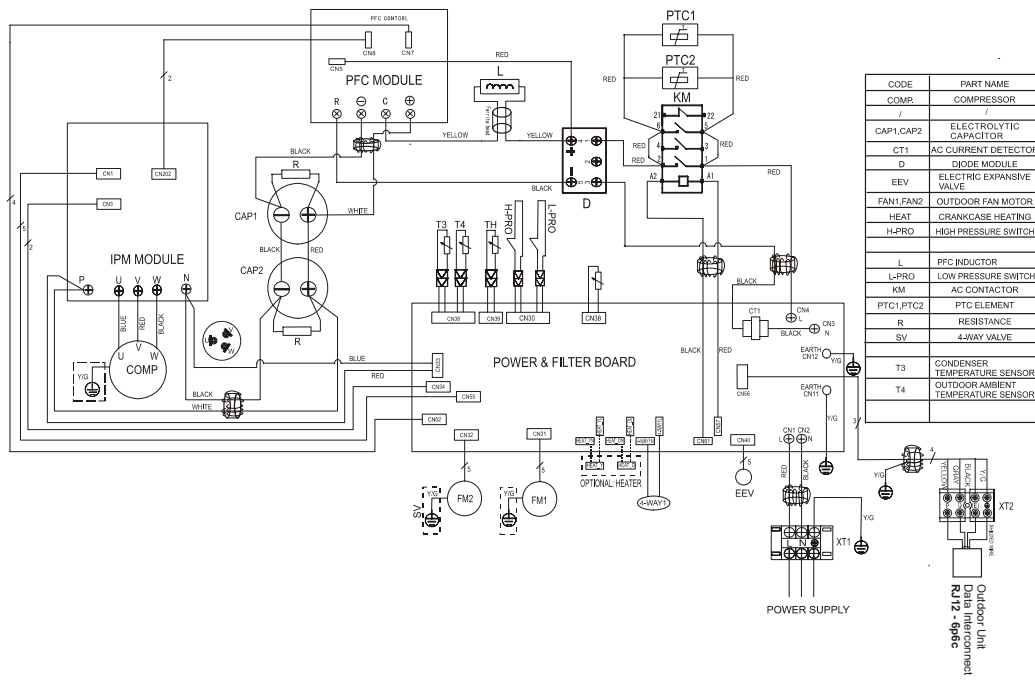
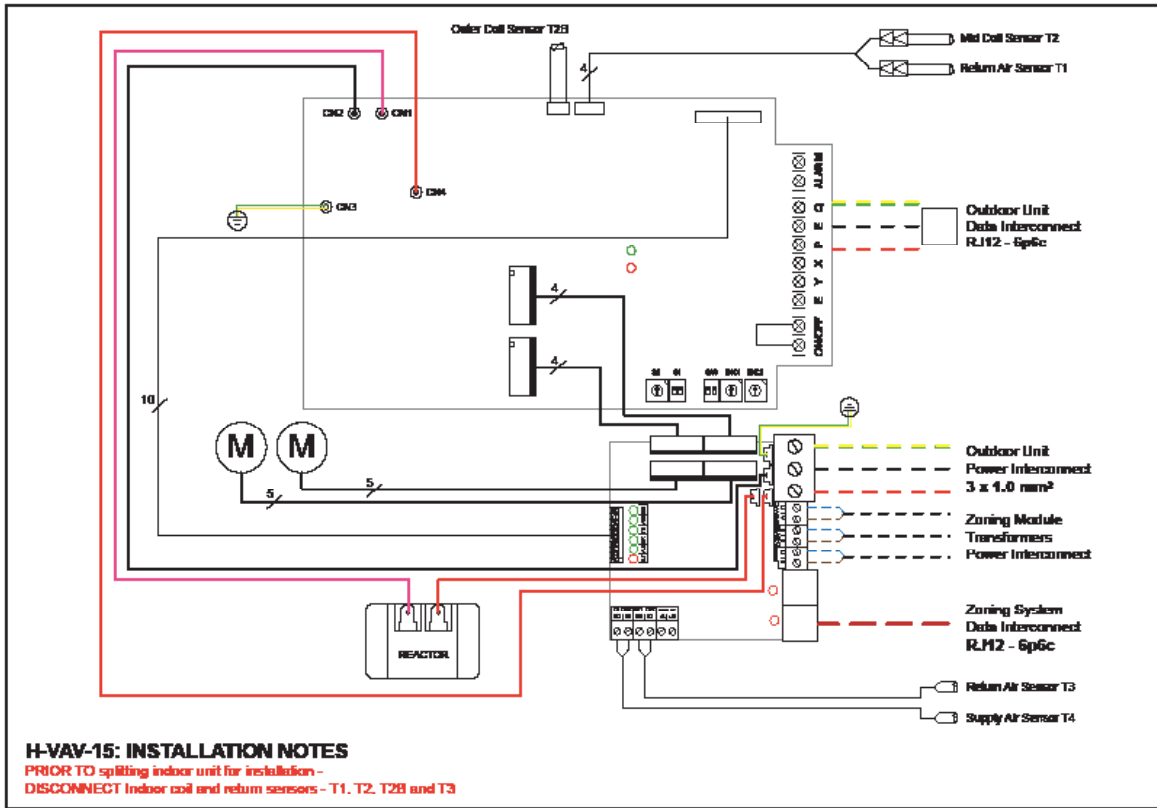
H-IV-7 Electrical Circuit



H-IV-11 Electrical Circuit



H-IV-15 Electrical Circuit

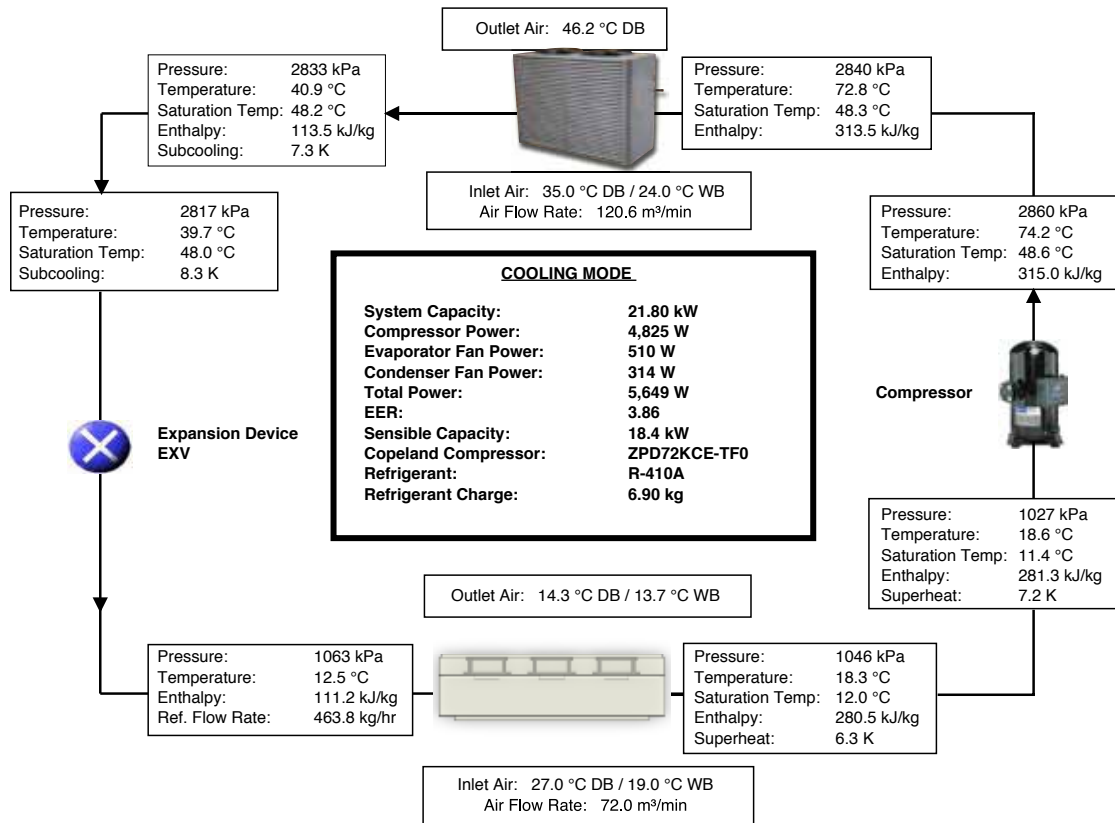


H-DV-18 Electrical Circuit

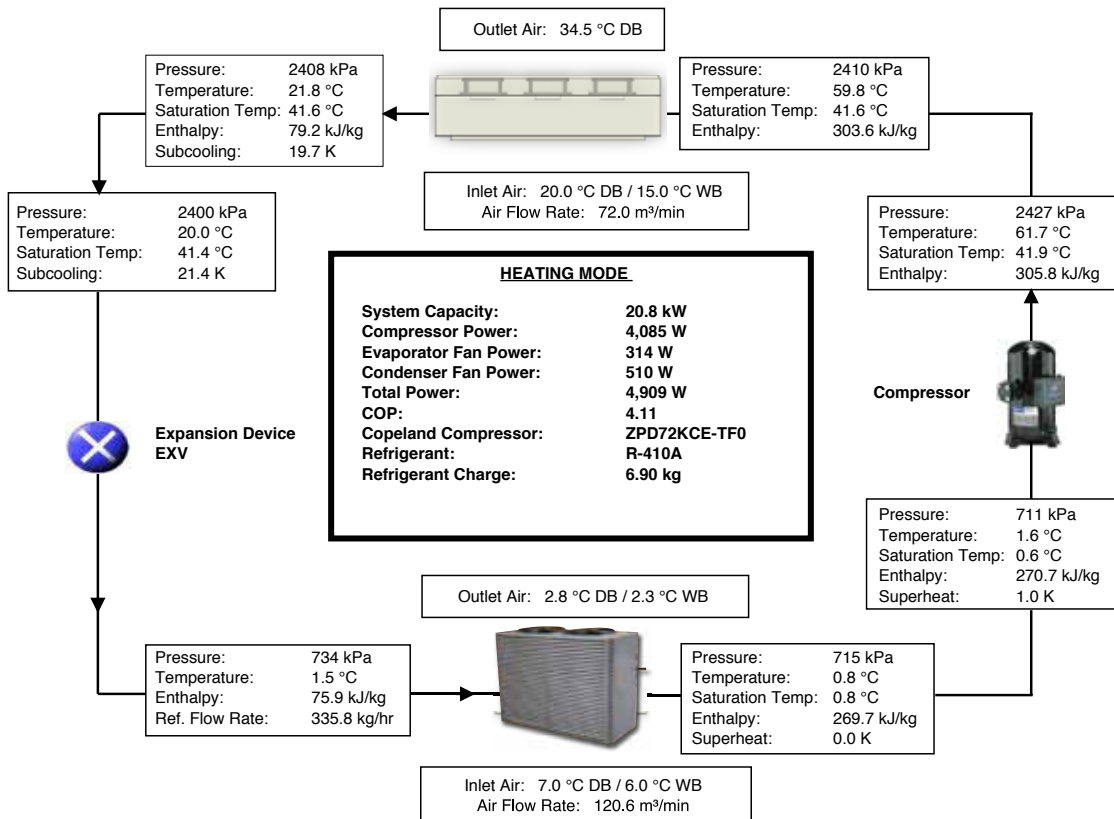
H-DV-22 Electrical Circuit

H-DV-26 Electrical Circuit

H-DR-22 : Tested Cooling Performance
H-DIG-22-N4 = 145-72-370-69 : H-RAD-22-N4 = 64-3N-120
 System Test Points

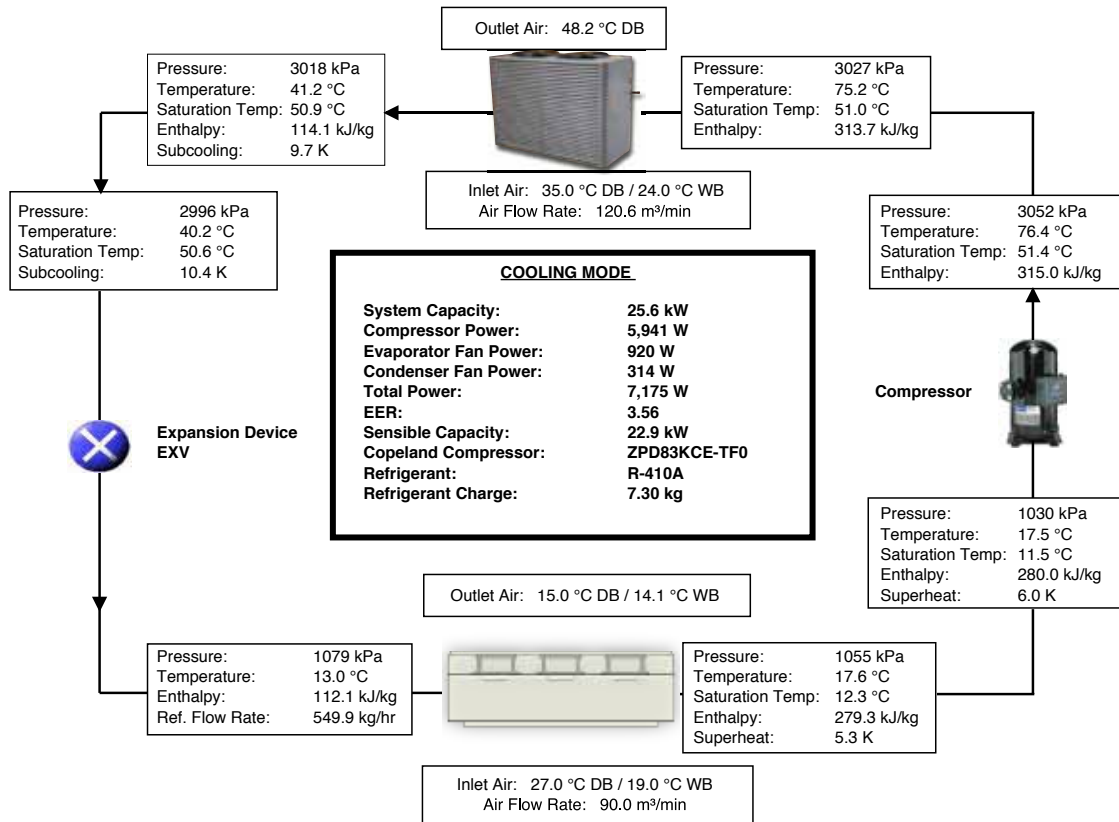


H-DR-22-N4 : Tested Heating Performance
H-DIG-22-N4 = 145-72-370-69 : H-RAD-22-N4 = 64-3N-120
 System Test Points

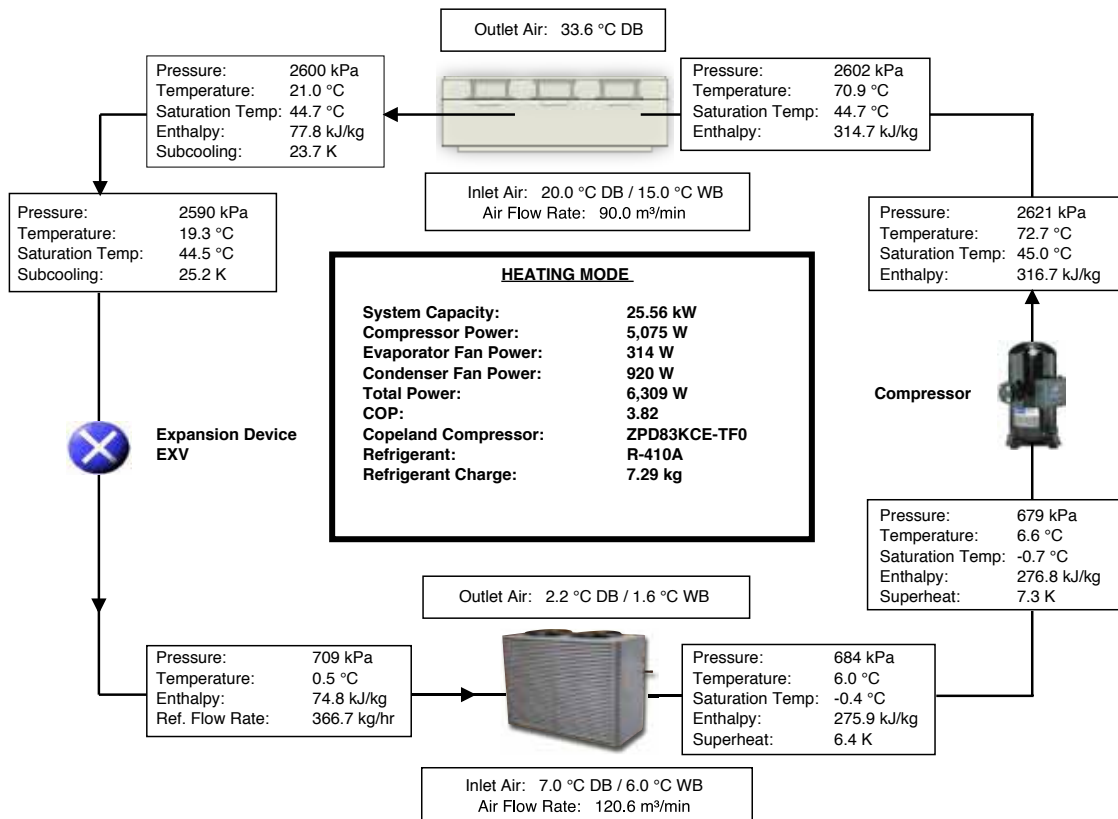


H-DR-26 System Test Points

H-DR-26 : Tested Cooling Performance H-DIG-26-N4 = 145-83-nnn-73 : H-RAD-26-N4 = 64-3N-150 System Test Points



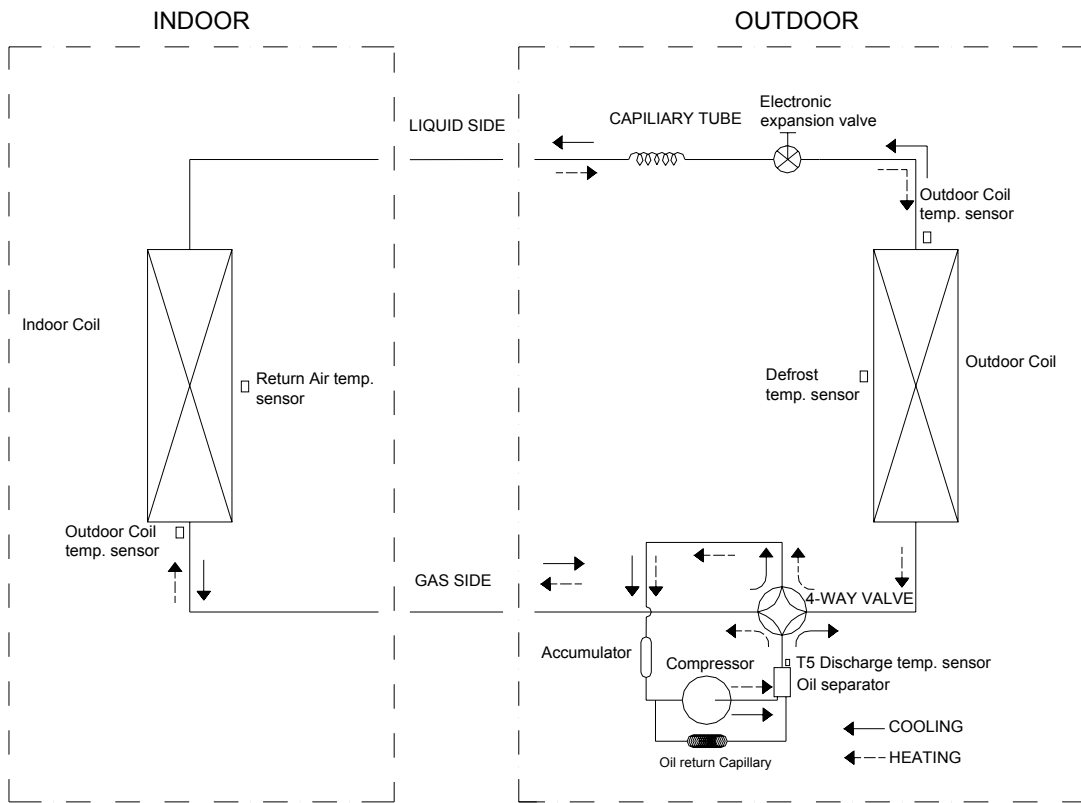
H-DR-26-N4 : Tested Heating Performance H-DIG-26-N4 = 145-83-nnn-73 : H-RAD-26-N4 = 64-3N-150 System Test Point



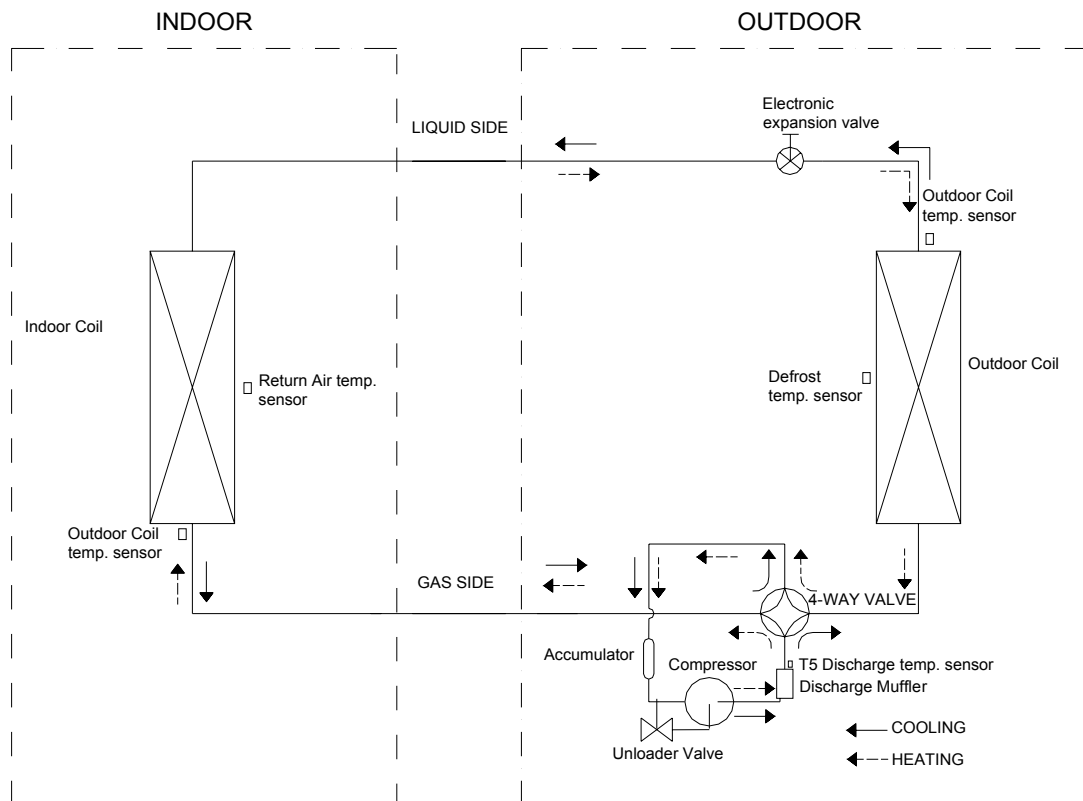




Refrigerant Circuit Diagram: Dual Inverter



Refrigerant Circuit Diagram: Digital Inverter







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