Amana S-series Service & Troubleshooting Tools & Resources

Technical Training Module: TRV-10.1

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Heating & Air Conditioning
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Agenda

Tools

Resource

Maintenance

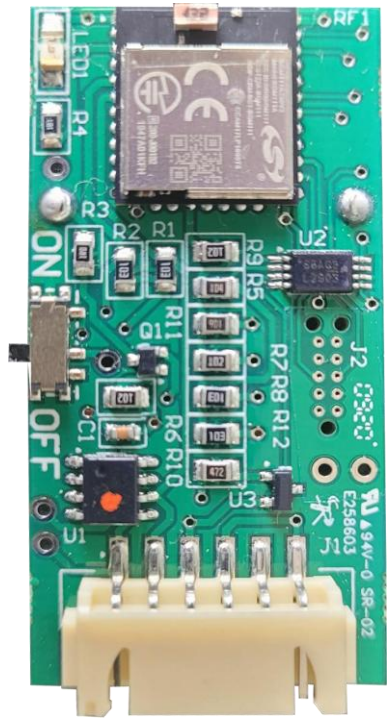
Tools

Needle Probes

True RMS Meter

Bluetooth D-checker 999187T

Bluetooth Shared Data Loader BTSDL01



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Tools

ECM Motor Tester UTT-01

Megger

Manometer & Static Pressure Probes

17.5mm Manual EEV Opener 99S0038

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Agenda

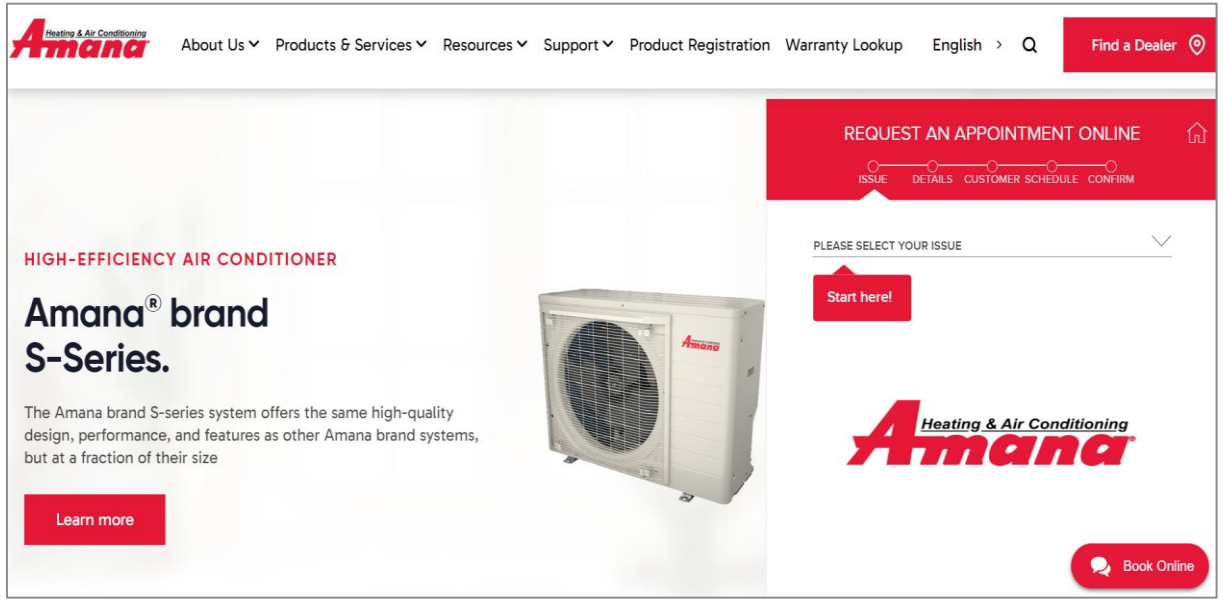
Tools

Resource

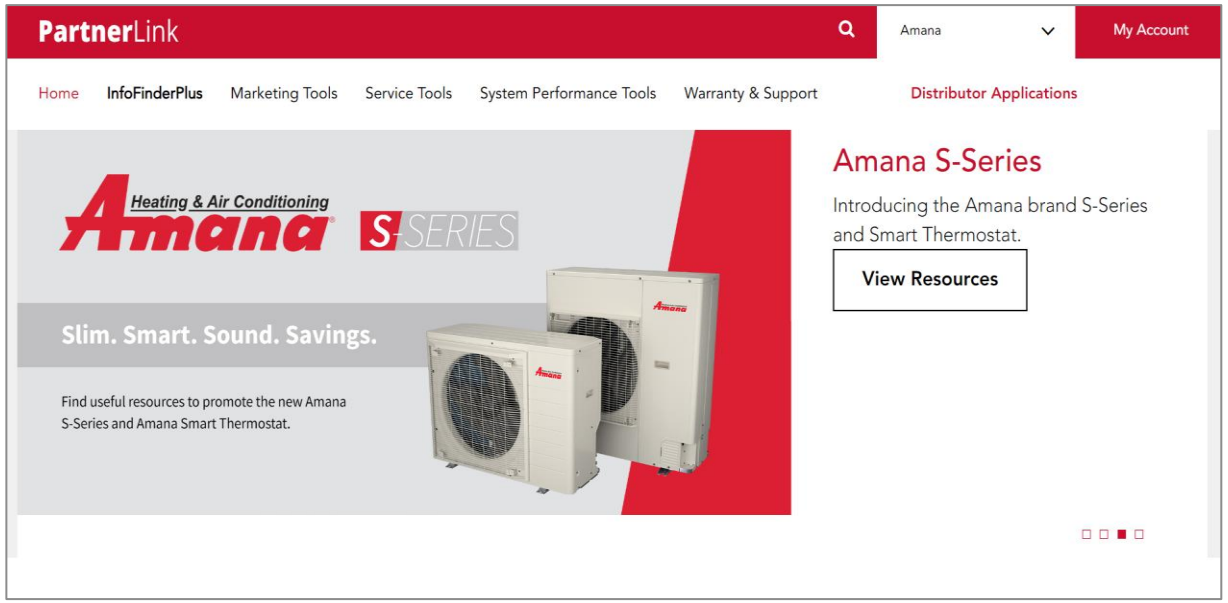
Maintenance

Website Resources

Amana HAC



Partnerlink



Activity

Quick easy, “on the go” access to:

- Daikin Technical & Service information directly in the fingertips
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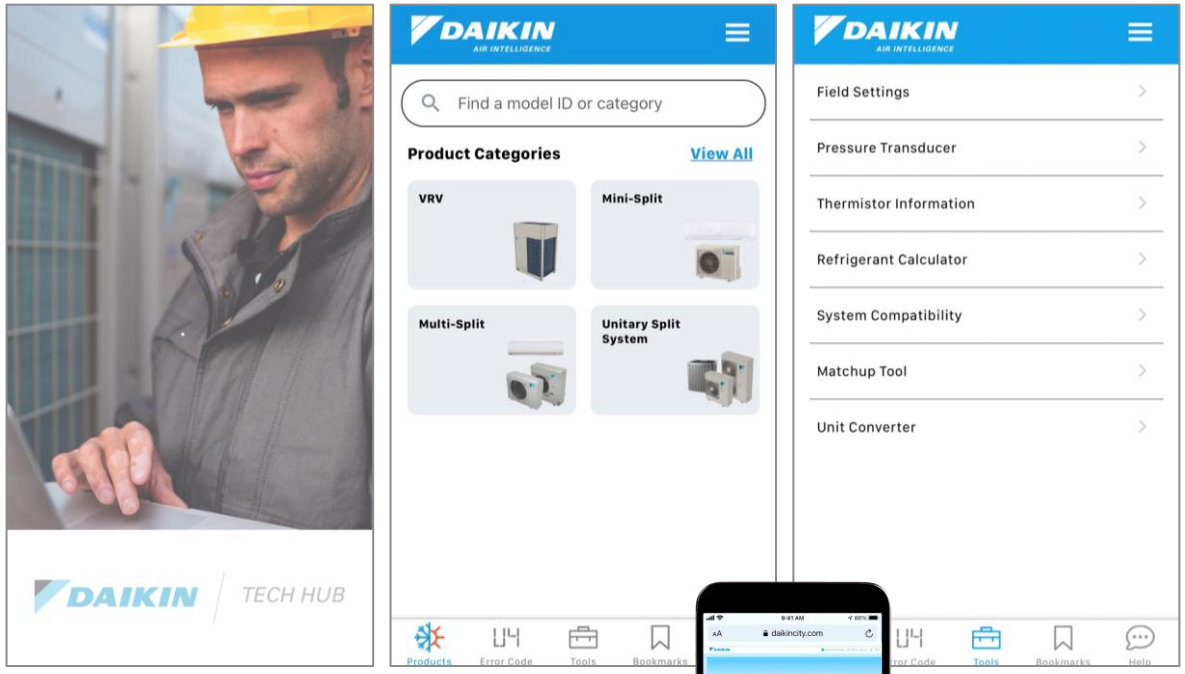

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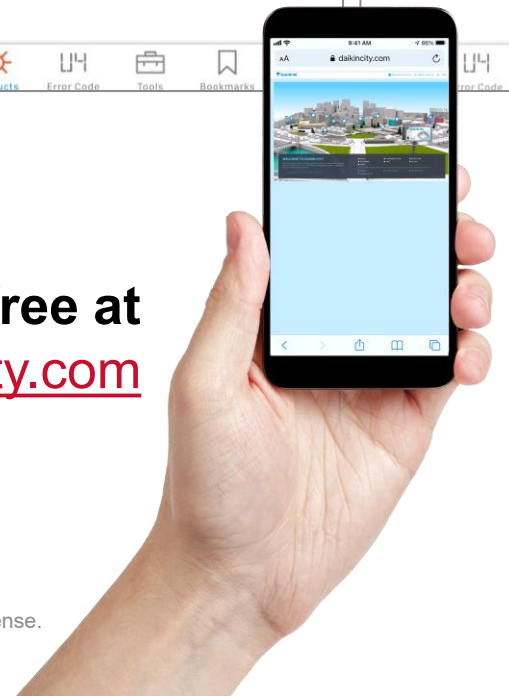

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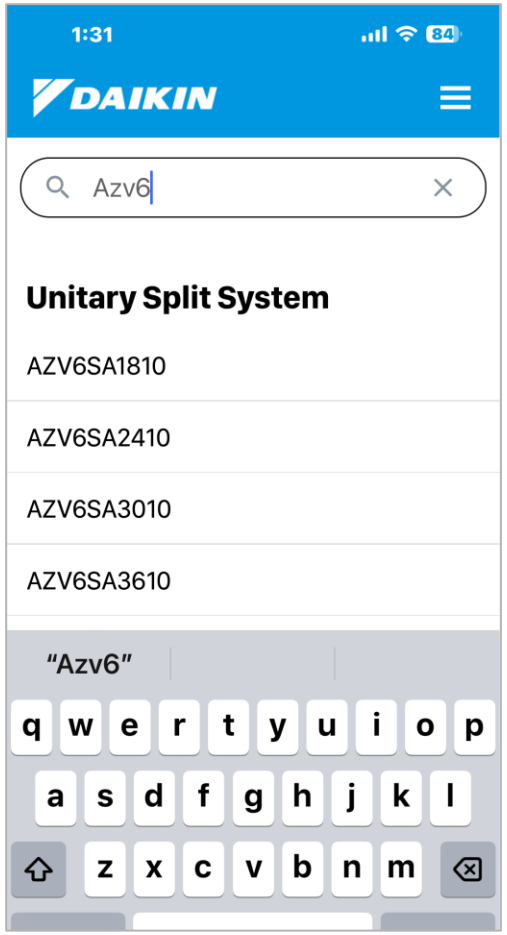
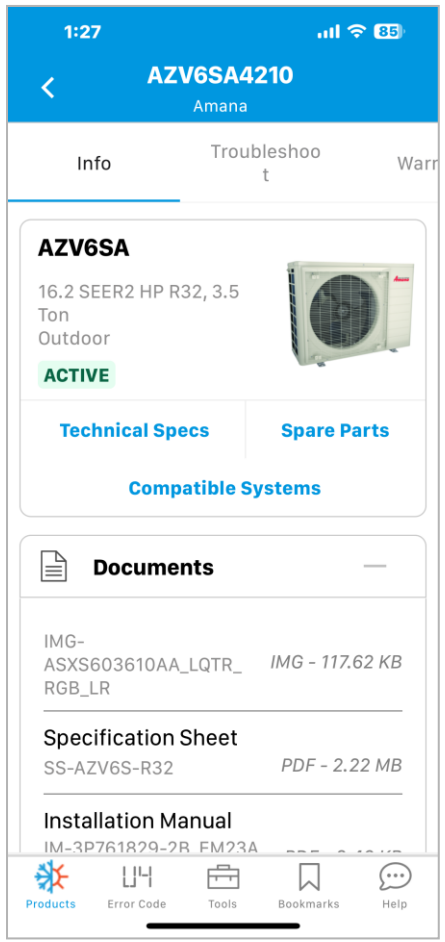
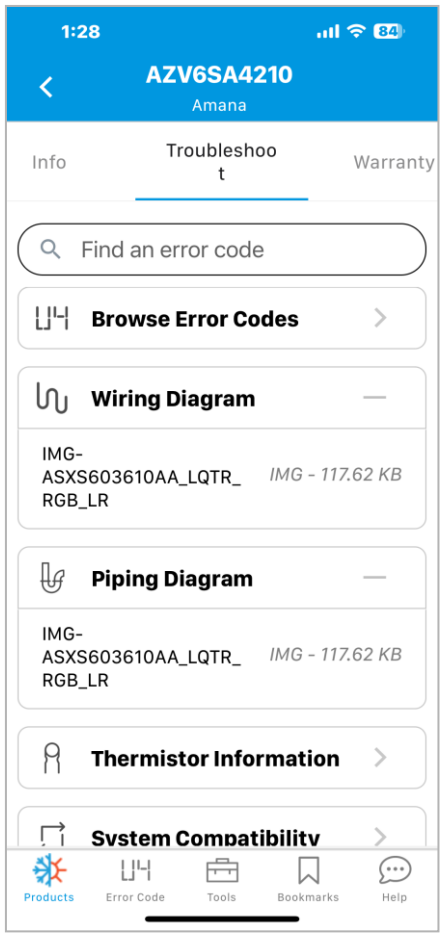
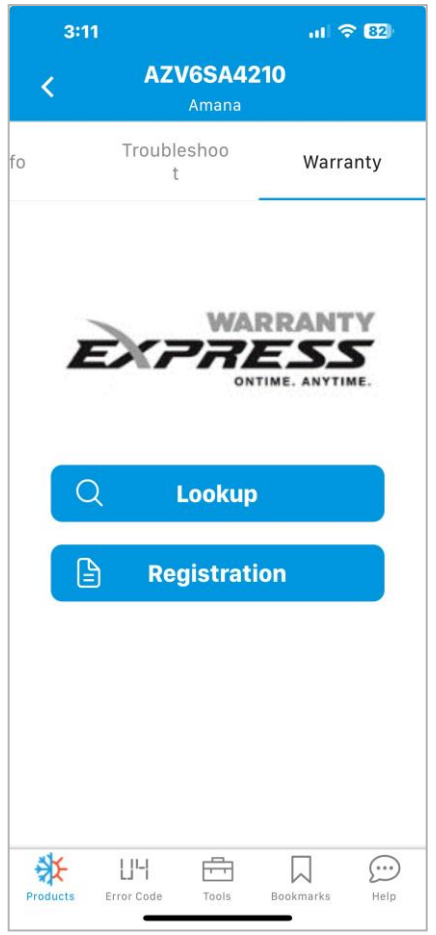
Activity









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DAIKIN

Service manual

- All wiring diagrams, piping diagrams, system operation, and fault code analysis can be found in the service manual for the equipment.
- When troubleshooting a specific piece of equipment, it is always best to download the service manual specific to that piece of equipment
- This can be done with a computer using Daikin city or with a mobile device using the Tech Hub app.

Heating & Air Conditioning
Amana

SiUS612413E

Service Instructions

AXV6S*1*A* / AXV9SA**1*A* / AZV6SA**1*A* / AZV7SA**1*A***
Inverter Outdoor Units,
AHVE EEV Air Handlers & CAPEA* / CHPEA* EEV Cased Coils**
with R32 Refrigerant

WARNING

ONLY PERSONNEL THAT HAVE BEEN TRAINED TO INSTALL, ADJUST, SERVICE, MAINTENANCE OR REPAIR (HEREINAFTER, "SERVICE") THE EQUIPMENT SPECIFIED IN THIS MANUAL SHOULD SERVICE THE EQUIPMENT.
THIS EQUIPMENT IS NOT INTENDED FOR USE BY PERSONS (INCLUDING CHILDREN) WITH REDUCED PHYSICAL, SENSORY OR MENTAL CAPABILITIES, OR LACK OF EXPERIENCE AND KNOWLEDGE, UNLESS THEY HAVE BEEN GIVEN SUPERVISION OR INSTRUCTION CONCERNING USE OF THE APPLIANCE BY A PERSON RESPONSIBLE FOR THEIR SAFETY.
CHILDREN SHOULD BE SUPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE EQUIPMENT.
THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR ANY INJURY OR PROPERTY DAMAGE ARISING FROM IMPROPER SUPERVISION, SERVICE OR SERVICE PROCEDURES. IF YOU SERVICE THIS UNIT, YOU ASSUME RESPONSIBILITY FOR ANY INJURY OR PROPERTY DAMAGE WHICH MAY RESULT. IN ADDITION, IN JURISDICTIONS THAT REQUIRE ONE OR MORE LICENSES TO SERVICE THE EQUIPMENT SPECIFIED IN THIS MANUAL, ONLY LICENSED PERSONNEL SHOULD SERVICE THE EQUIPMENT. IMPROPER SUPERVISION, INSTALLATION, ADJUSTMENT, SERVICING, MAINTENANCE OR REPAIR OF THE EQUIPMENT SPECIFIED IN THIS MANUAL, OR ATTEMPTING TO INSTALL, ADJUST, SERVICE OR REPAIR THE EQUIPMENT SPECIFIED IN THIS MANUAL WITHOUT PROPER SUPERVISION OR TRAINING MAY RESULT IN PRODUCT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

WARNING

DO NOT BYPASS SAFETY DEVICES

DAIKIN

Test data sheet

DAIKIN COMFORT TECHNOLOGIES NORTH AMERICA, INC.

DAIKIN Amana Goodman

Inverter Test Data Sheet FIT

HOMEOWNER'S INFORMATION

Today's Date: _____

Homeowner Name: _____

Address: _____

City: _____ State: _____ Zip: _____ Phone: _____

Home Sq. Ft.: _____ Single or Multi-Story _____ Year Home Built: _____

CONTRACTOR'S INFORMATION

Contractor's Name: _____ Tech's Name: _____

Address: _____

City: _____ State: _____ Zip: _____ Phone: _____

DISTRIBUTOR'S INFORMATION

Distributor: _____ Service Manager: _____

Address: _____

City: _____ State: _____ Zip: _____ Phone: _____

REASON FOR VISIT

EQUIPMENT INFORMATION

Outdoor Unit Model: _____ Serial: _____

Coil Model: _____ Serial: _____

Air Handler/Furnace Model: _____ Serial: _____

Heater Kit Model: _____

Thermostat DKN#: _____ Software Version: _____

Installation Date: _____ Filter (Type, Size, Number): _____

Previous Unit Installed: _____

Manual J: Yes ☐ NO ☐ Manual S: Yes ☐ NO ☐ Manual D: Yes ☐ NO ☐

Line Set Size: _____ Line Set Length: _____ # of Elbows: _____

Please contact Technical Services at techsupport@daikincomfort.com if you have any questions.

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713.861.2500 | www.DaikinComfort.com

DAIKIN COMFORT TECHNOLOGIES NORTH AMERICA, INC.

DAIKIN Amana Goodman

Inverter Test Data Sheet FIT

THERMOSTAT INFORMATION

Set Up	Bias Voltage (VDC)	Cool/Heat Airflow Trim %
Cool Airflow Profile: _____	ODU 1 to 2 = _____	Low: _____ / _____ %
Dehumidification Profile: A ☐ B ☐ C ☐ STD ☐ OFF ☐	Coil 1 to 2 = _____	Intermediate: _____ / _____ %
Dehumidification Set Point: _____%	Furnace 1 to 2 = _____	High: _____ / _____ %
Humidification Mode: On ☐ Off ☐	Thermostat 1 to 2 = _____	
Humidification Set Point: _____%		
Boost Mode: On ☐ Off ☐		

DAIKIN ONE STATUS SCREEN

Setpoint:	_____ °F	Compressor Runtime:	_____
Space Temperature:	_____ °F	Compressor Reduction Mode:	_____
Operation Mode:	_____	Outdoor Air Temp:	_____ °F
Current Critical Error:	_____	Outdoor Fan RPM:	_____
Current Minor Error #1:	_____	Outdoor Coil Temp:	_____
Current Minor Error #2:	_____	Liquid Temperature:	_____ °F
Current Minor Error #3:	_____	Displayed Room Temperature:	_____ °F
Current Minor Error #4:	_____	Discharge Temperature:	_____ °F
Requested Heat Demand:	_____ %	Outdoor Defrost Sensor Temp:	_____ °F
Requested Cool Demand:	_____ %	SuctionTemp:	_____ °F
Requested Indoor CFM:	_____	Suction Pressure:	_____ psi
Requested Indoor Fan Demand:	_____ %		
Requested Dehum Demand:	_____ %		

Daikin One registration email: _____

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Agenda

Tools

Resource

Maintenance

Amana S-series
Service & Troubleshooting
Basic Operation & Component Testing

Technical Training Module: TRV-10.2

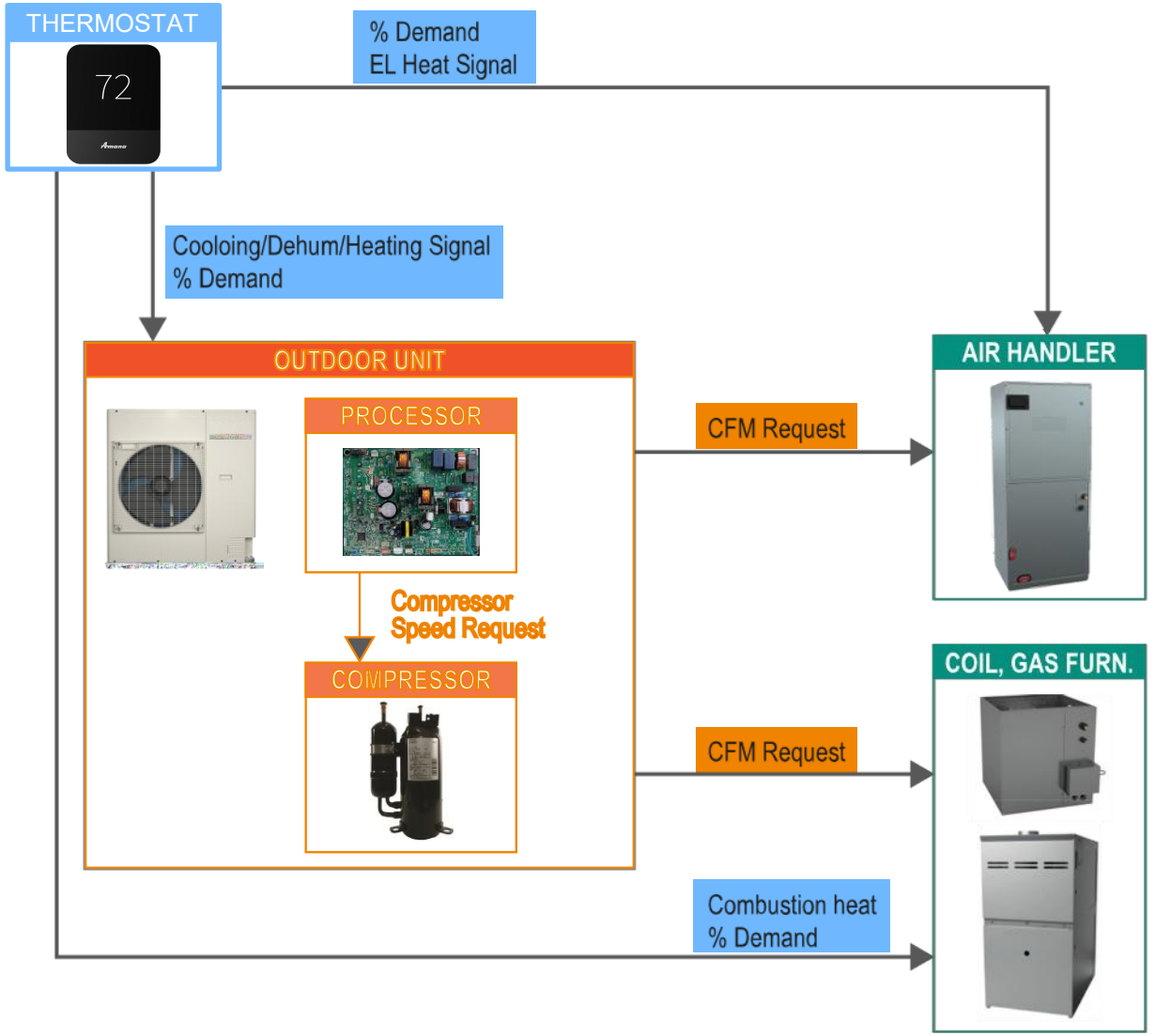
Rest assured.
It's an Amana® brand.

Agenda

- System Operation
- Component Operation & Testing
- Checking Duct Static
- Communication Testing & Troubleshooting
- Emergency Mode
- Replacing Inverter Board

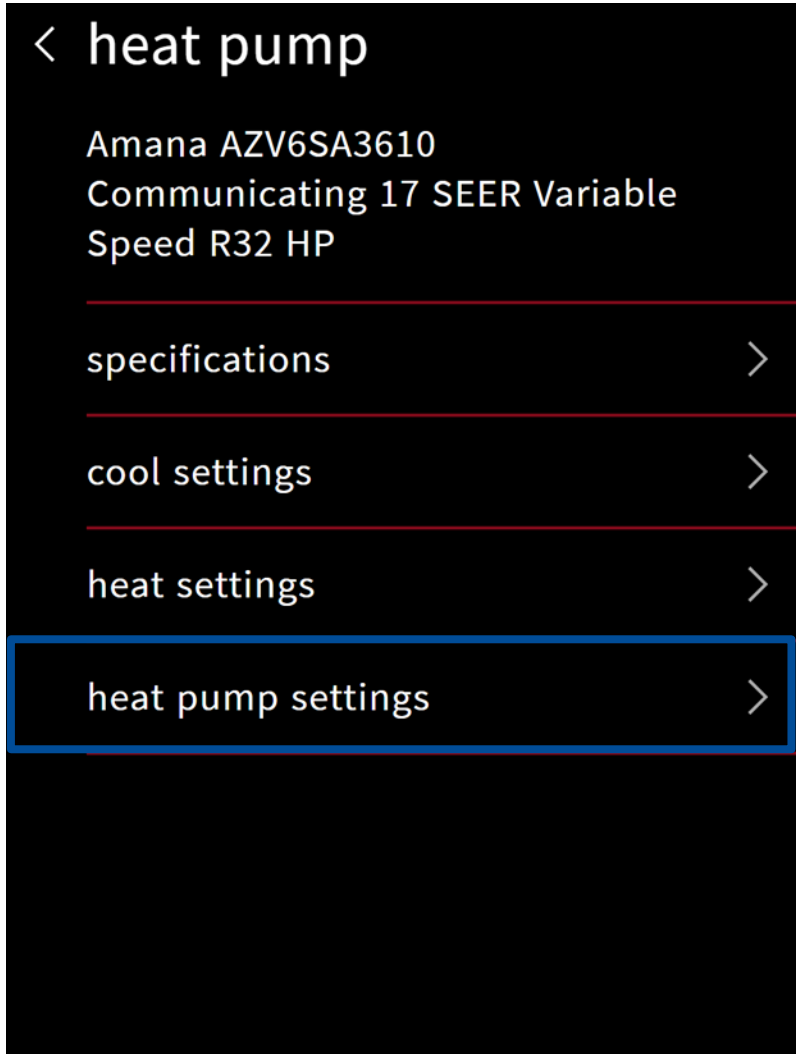
System Operation

- **Thermostat**
  - Controls operation mode
  - Sends compressor RPS demand to the ODU and IDU
- **Outdoor Unit**
  - Controls compressor speed
  - Sends CFM request to gas furnace/air handler
- **Air handler/EEV Coil/Gas furnace**
  - Controls CFM



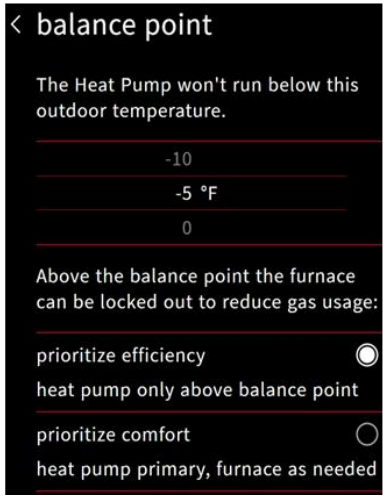
Auxiliary Heat Logic

- Aux (Electric Strip Heat) and backup gas heat can engage above lockout temperature in the following conditions:
  - The space temperature is approximately 4° lower than the set point.
  - There is a demand between 110% - 200% from the system.
- For Dual Fuel operation only, you can select to prioritize efficiency or comfort
  - Selecting prioritize efficiency, the selected balance point will be a hard lockout.
    - Heat pump operation above balance point.
    - Furnace operation below balance point.
  - Selecting prioritize comfort will cause the system to run with the logic listed above.



Electric Strip Heat

Dual Fuel

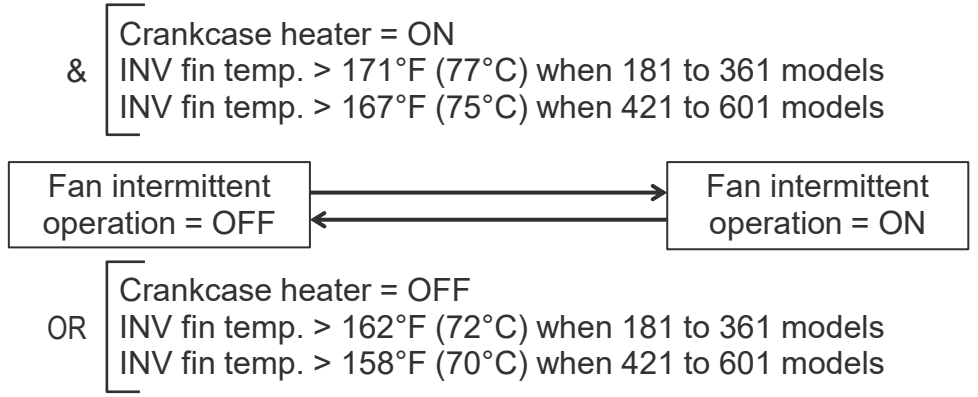


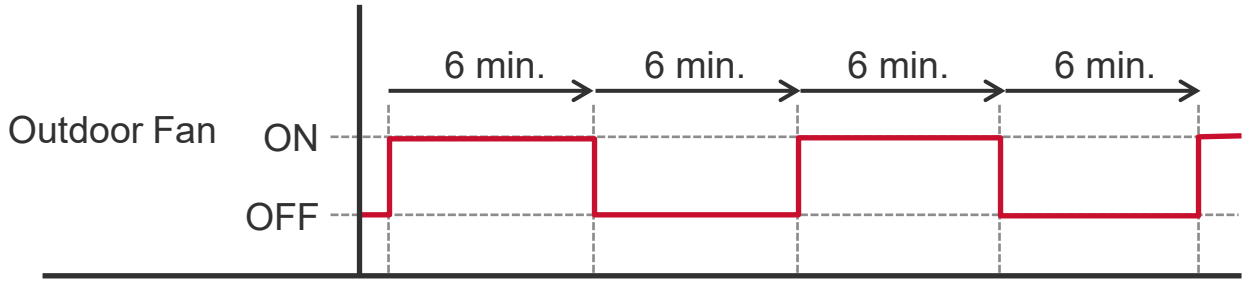
Outdoor Unit Fan Intermittent Operation

Outline

- When crank case heater is ON, the system draws amperes through the inverters (INV) PCB and the INV. fin temperature may rise.
  - To protect the INV., the outdoor unit fan will operate intermittently to cool down the INV.

Detail





Agenda

System Operation

Component Operation & Testing

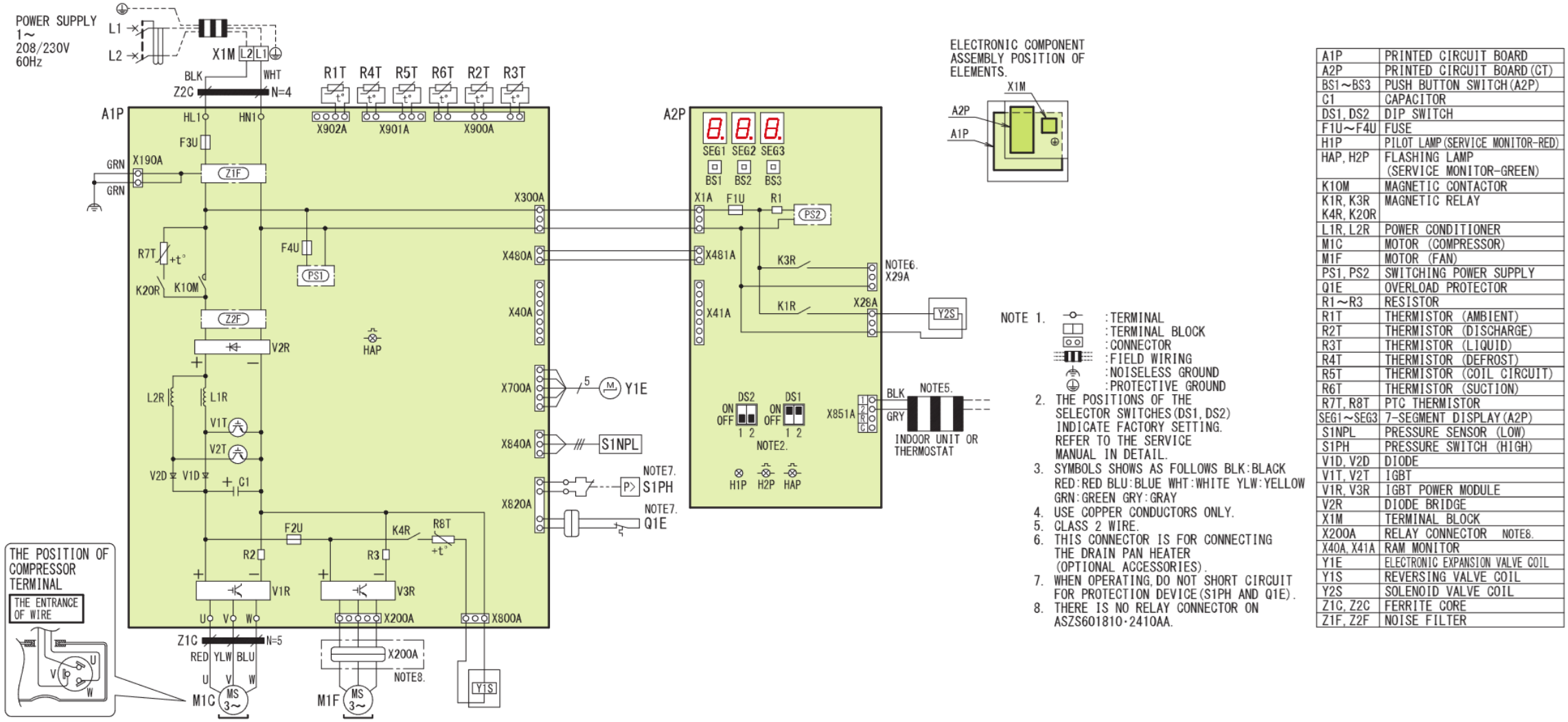
Checking Duct Static

Communication Testing & Troubleshooting

Emergency Mode

Replacing Inverter Board

Wiring Diagram: Small Chassis Heat Pump Single Fan Models (R-32 & R-410A)



NOTE 1. :TERMINAL
:TERMINAL BLOCK
:CONNECTOR
:FIELD WIRING
:NOISELESS GROUND
:PROTECTIVE GROUND

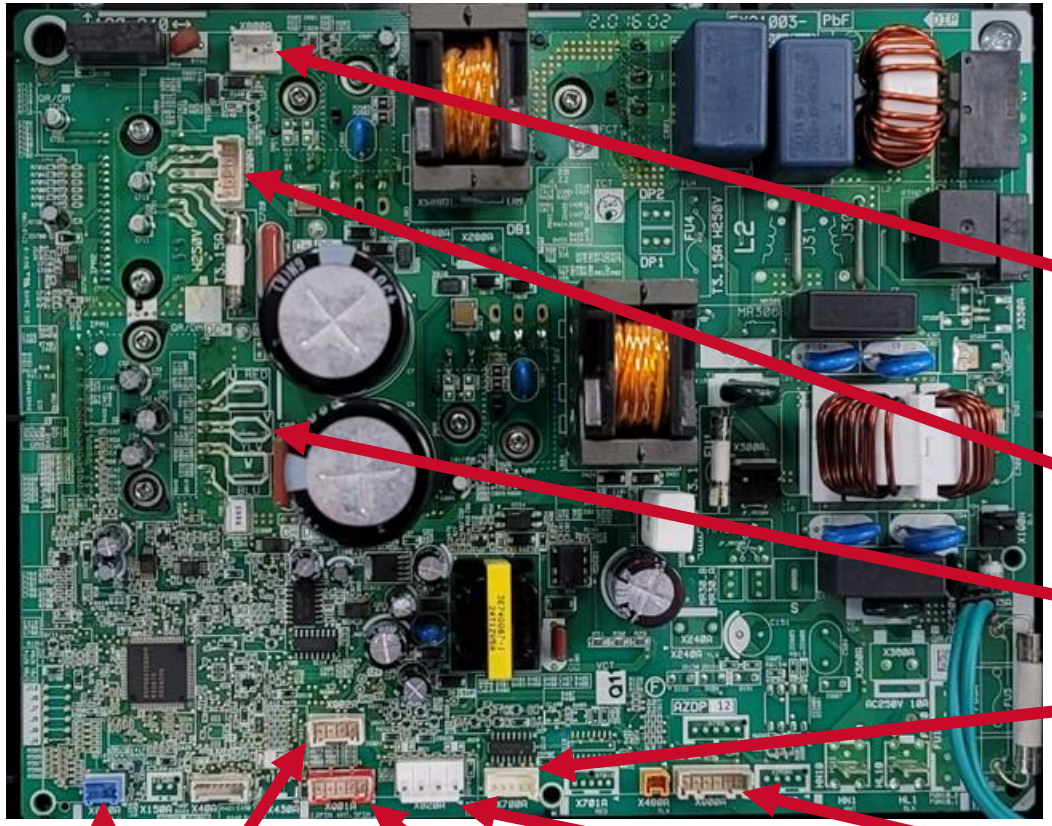
2. THE POSITIONS OF THE SELECTOR SWITCHES (DS1, DS2) INDICATE FACTORY SETTING. REFER TO THE SERVICE MANUAL IN DETAIL.
3. SYMBOLS SHOWS AS FOLLOWS BLK: BLACK RED: RED BLU: BLUE WHT: WHITE YLW: YELLOW GRN: GREEN GRY: GRAY
4. USE COPPER CONDUCTORS ONLY.
5. CLASS 2 WIRE.
6. THIS CONNECTOR IS FOR CONNECTING THE DRAIN PAN HEATER (OPTIONAL ACCESSORIES).
7. WHEN OPERATING, DO NOT SHORT CIRCUIT FOR PROTECTION DEVICE (S1PH AND Q1E).
8. THERE IS NO RELAY CONNECTOR ON ASZS601810·2410AA.

A1P	PRINTED CIRCUIT BOARD
A2P	PRINTED CIRCUIT BOARD (CT)
BS1~BS3	PUSH BUTTON SWITCH (A2P)
C1	CAPACITOR
DS1, DS2	DIP SWITCH
F1U~F4U	FUSE
H1P	PILOT LAMP (SERVICE MONITOR-RED)
HAP, H2P	FLASHING LAMP (SERVICE MONITOR-GREEN)
K1OM	MAGNETIC CONTACTOR
K1R, K3R K4R, K2OR	MAGNETIC RELAY
L1R, L2R	POWER CONDITIONER
M1C	MOTOR (COMPRESSOR)
M1F	MOTOR (FAN)
PS1, PS2	SWITCHING POWER SUPPLY
Q1E	OVERLOAD PROTECTOR
R1~R3	RESISTOR
R1T	THERMISTOR (AMBIENT)
R2T	THERMISTOR (DISCHARGE)
R3T	THERMISTOR (LIQUID)
R4T	THERMISTOR (DEFROST)
R5T	THERMISTOR (COIL CIRCUIT)
R6T	THERMISTOR (SUCTION)
R7T, R8T	PTC THERMISTOR
SEG1~SEG3	7-SEGMENT DISPLAY (A2P)
S1NPL	PRESSURE SENSOR (LOW)
S1PH	PRESSURE SWITCH (HIGH)
V1D, V2D	DIODE
V1T, V2T	IGBT
V1R, V3R	IGBT POWER MODULE
V2R	DIODE BRIDGE
X1M	TERMINAL BLOCK
X2OOA	RELAY CONNECTOR NOTE8.
X40A, X41A	RAM MONITOR
Y1E	ELECTRONIC EXPANSION VALVE COIL
Y1S	REVERSING VALVE COIL
Y2S	SOLENOID VALVE COIL
Z1C, Z2C	FERRITE CORE
Z1F, Z2F	NOISE FILTER

Wiring diagram for training purposes only.

PCB: Small Chassis Single Fan Models (R-32 & R-410A)

Main PCB



Reversing valve coil (Heat pump)

Condenser fan

Compressor (U,V,W)

OD EEV

Pressure sensor(low)

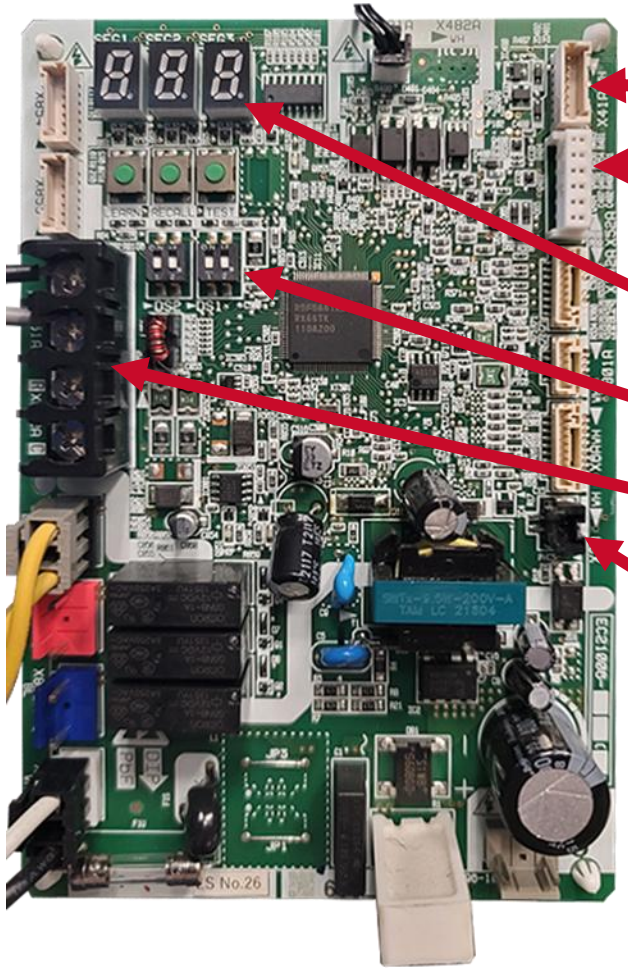
Ambient thermistor

Defrost and coil thermistor

Pressure switch(high)

Discharge, liquid, and suction thermistor

Service PCB



D-Checker port

Shared data port

7 Segment Display

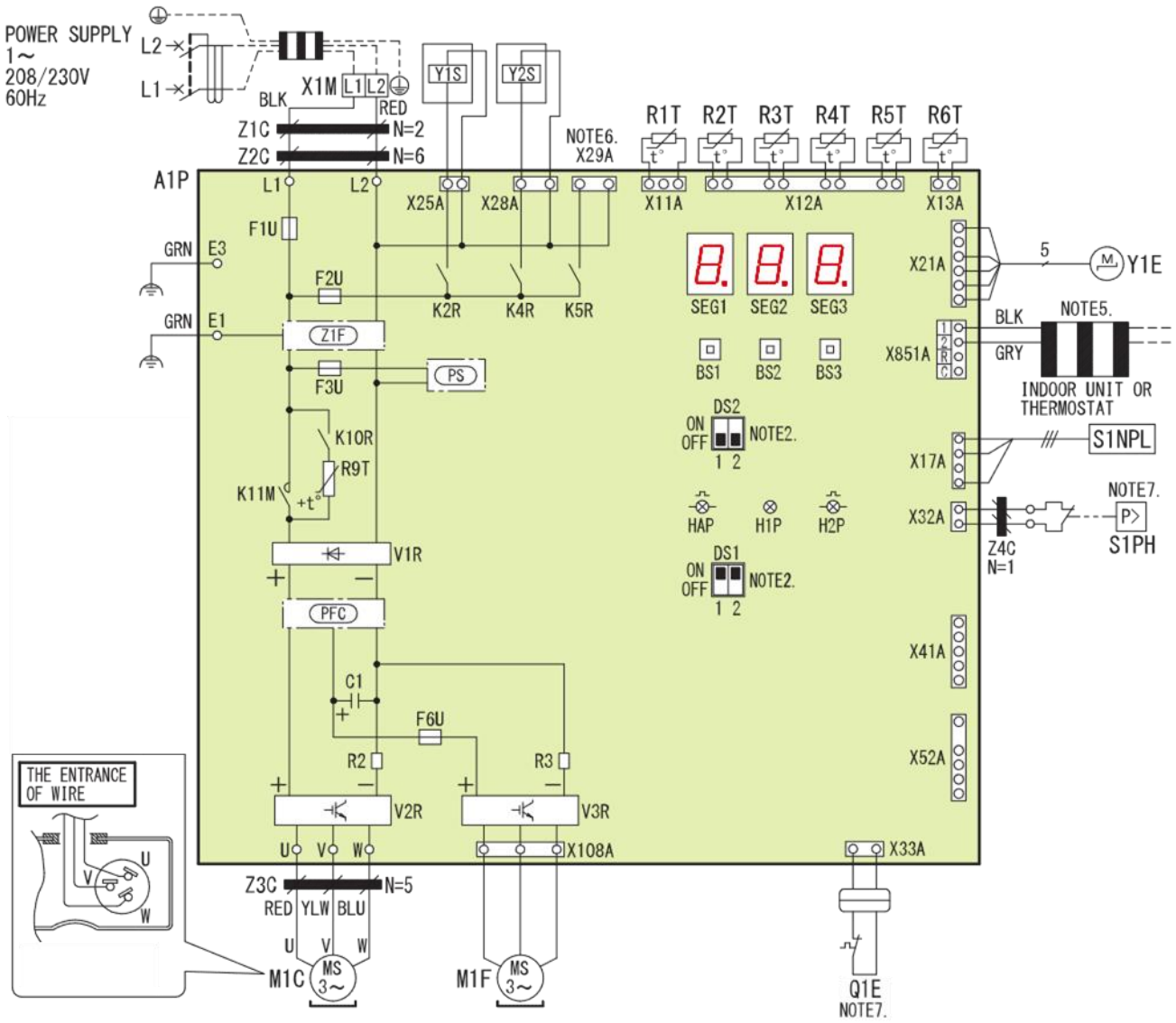
DS2/DS1

Data connection

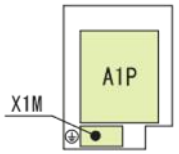
Solenoid valve

Smaller chassis models utilize a heat sink behind PCB.

Wiring Diagram: Large Chassis Heat Pump Single Fan Models (R-32 & R-410A)



ELECTRONIC COMPONENT ASSEMBLY POSITION OF ELEMENTS.



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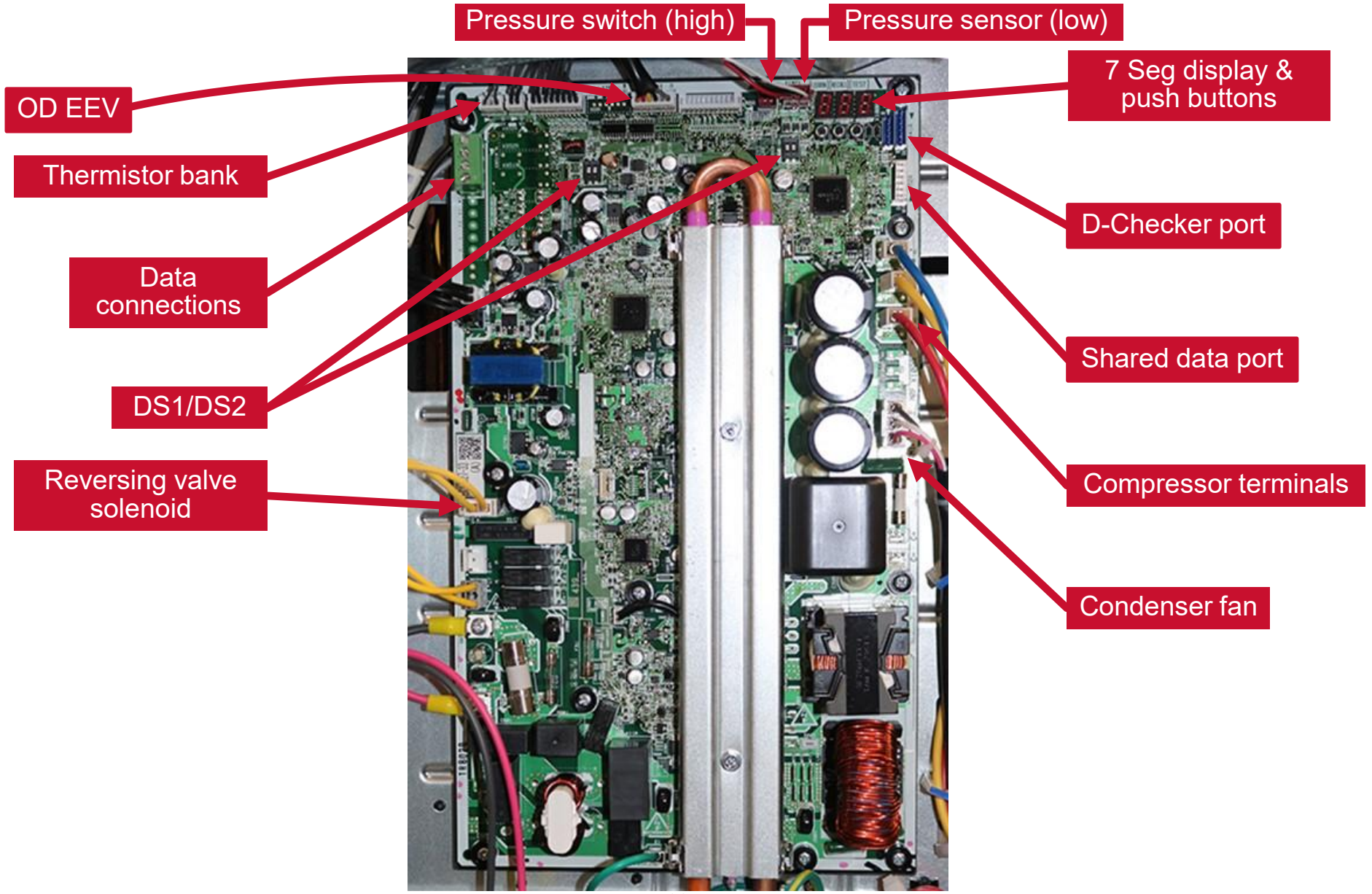
7. DURING OPERATION , DO NOT PUT SHORT CIRCUIT WIRE FOR PROTECTION DEVICE (S1PH AND Q1E).

A1P	PRINTED CIRCUIT BOARD
BS1~BS3	PUSH BUTTON SWITCH
C1	CAPACITOR
DS1, DS2	DIP SWITCH
F1U	FUSE
F2U	FUSE
F3U	FUSE
F6U	FUSE
H1P	PILOT LAMP (SERVICE MONITOR-RED)
HAP, H2P	FLASHING LAMP (SERVICE MONITOR-GREEN)
K11M	MAGNETIC CONTACTOR
K2R, K4R K5R, K10R	MAGNETIC RELAY
M1C	MOTOR (COMPRESSOR)
M1F	MOTOR (FAN)
PFC	POWER FACTOR CORRECTION
PS	SWITCHING POWER SUPPLY
Q1E	OVERLOAD PROTECTOR
R2, R3	RESISTOR
R1T	THERMISTOR (AMBIENT)
R2T	THERMISTOR (DISCHARGE)
R3T	THERMISTOR (LIQUID)
R4T	THERMISTOR (DEFROST)
R5T	THERMISTOR (COIL CIRCUIT)
R6T	THERMISTOR (SUCTION)
R9T	PTC THERMISTOR
SEG1~SEG3	7-SEGMENT DISPLAY
S1NPL	PRESSURE SENSOR (LOW)
S1PH	PRESSURE SWITCH (HIGH)
V1R	DIODE BRIDGE
V2R, V3R	IGBT POWER MODULE
X1M	TERMINAL BLOCK
X41A	RAM MONITOR
X52A	CONNECTOR (SHARE DATA)
Y1E	ELECTRONIC EXPANSION VALVE COIL
Y1S	REVERSING VALVE COIL
Y2S	SOLENOID VALVE COIL
Z1C~Z4C	FERRITE CORE
Z1F	NOISE FILTER

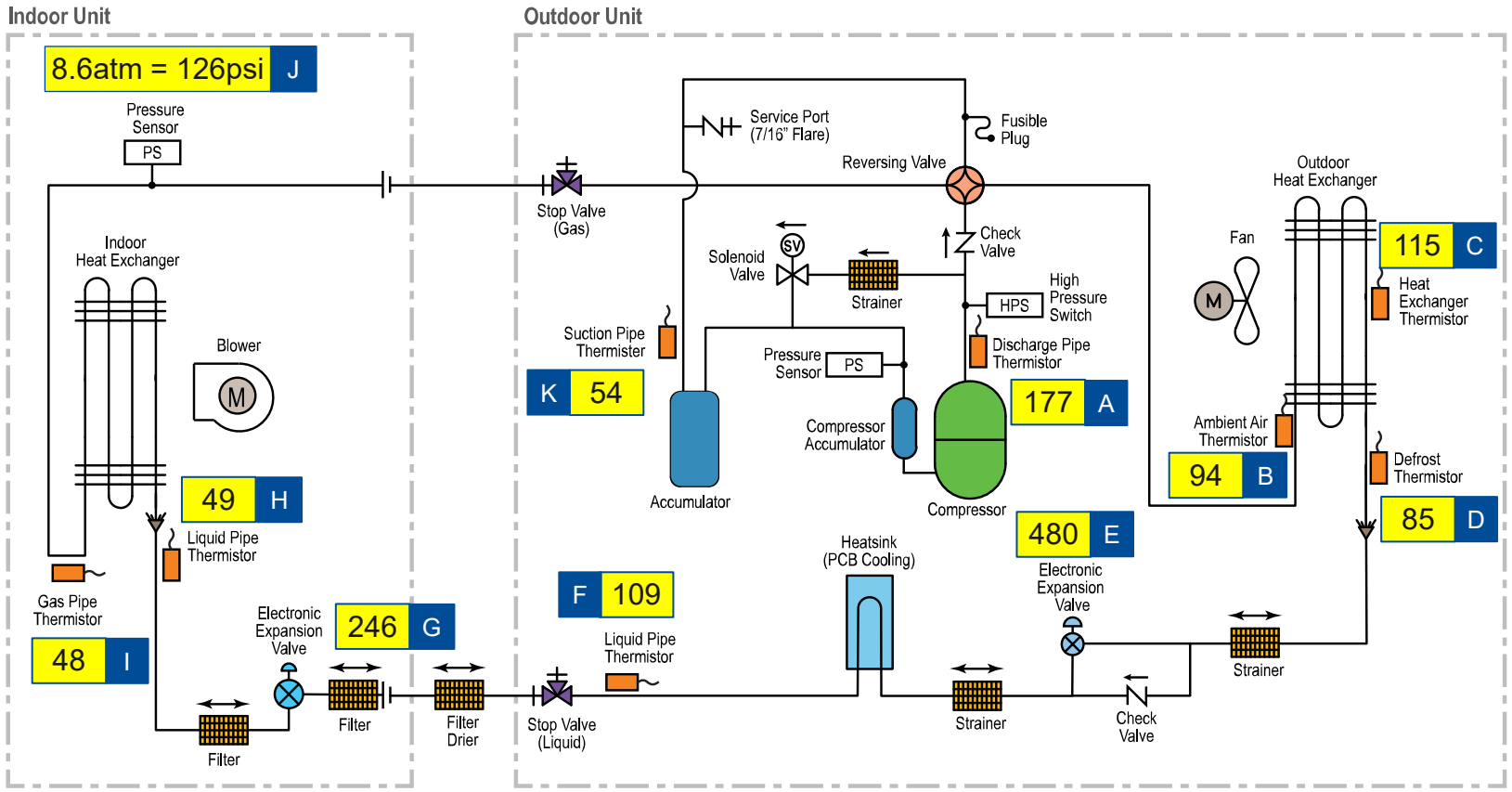
Wiring diagram for training purposes only.

PCB: Large Chassis Single Fan Models (R-32 & R-410A)



Piping Diagram

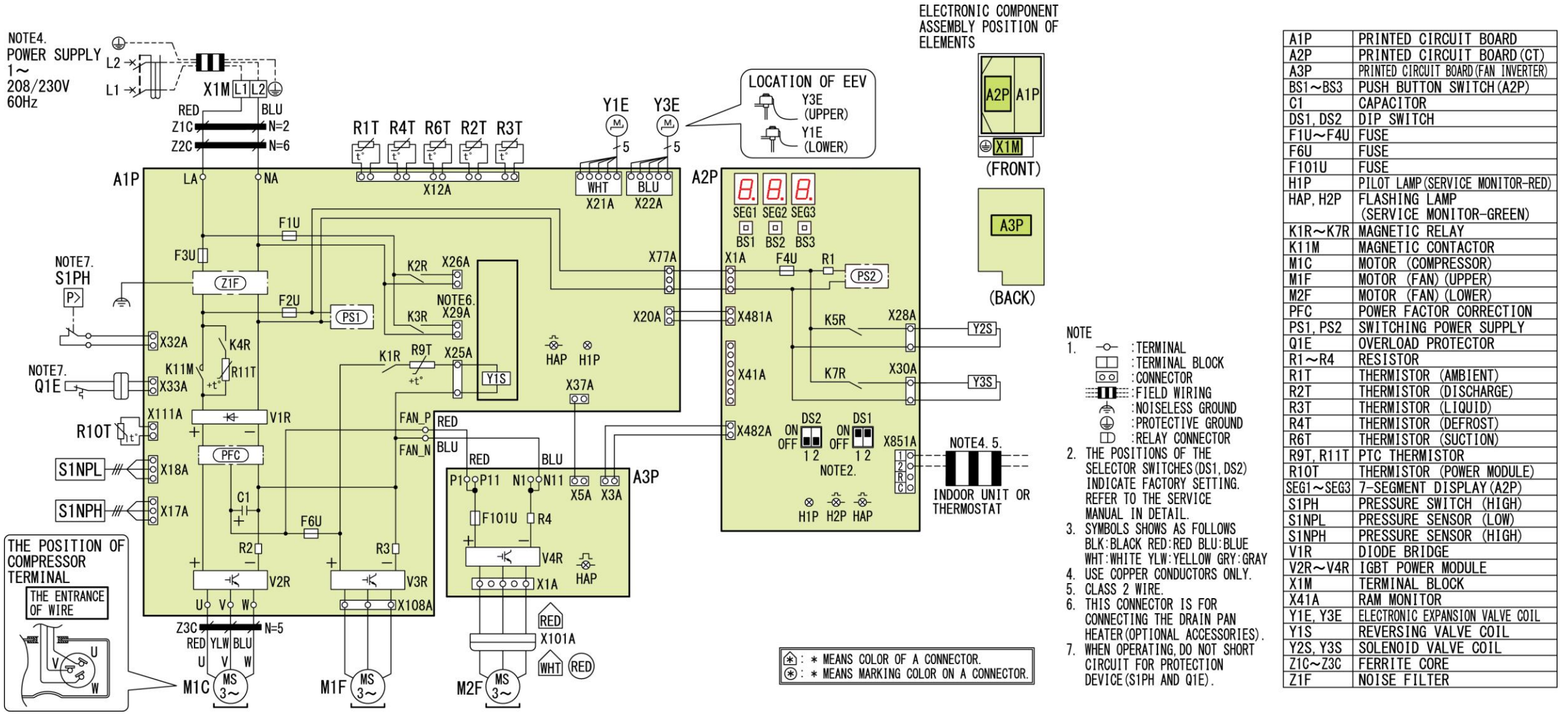
Large Chassis Single Fan (R-32 & R-410A)



D-Checker Labels

- **A** Discharge Pipe Thermistor
- **B** Ambient Air Thermistor
- **C** Heat Exchanger Thermistor
- **D** Defrost Thermistor (HP Only)
- **E** ODU EEV
- **F** Liquid Pipe Thermistor (TI)
- **G** IDU EEV
- **H** Liquid Pipe Thermistor (Ti)
- **I** Gas Pipe Thermistor
- **J** IDU Pressure Sensor
- **K** Suction Pipe Thermistor

Wiring Diagram: Double Fan HP Models (R-32 only)



NOTE

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   :RELAY CONNECTOR
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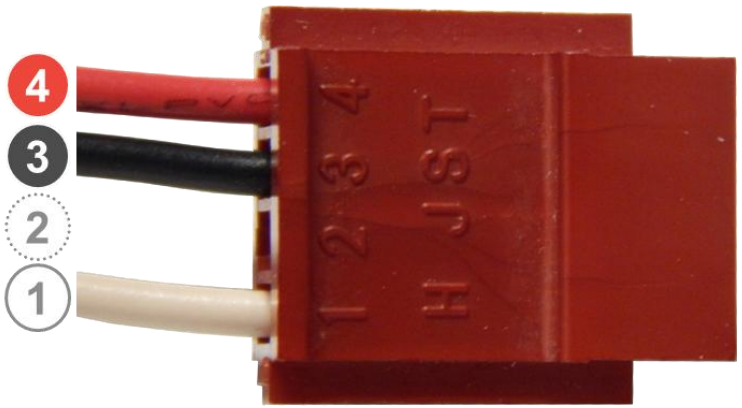
A1P	PRINTED CIRCUIT BOARD
A2P	PRINTED CIRCUIT BOARD (CT)
A3P	PRINTED CIRCUIT BOARD (FAN INVERTER)
BS1~BS3	PUSH BUTTON SWITCH (A2P)
C1	CAPACITOR
DS1, DS2	DIP SWITCH
F1U~F4U	FUSE
F6U	FUSE
F101U	FUSE
H1P	PILOT LAMP (SERVICE MONITOR-RED)
HAP, H2P	FLASHING LAMP (SERVICE MONITOR-GREEN)
K1R~K7R	MAGNETIC RELAY
K11M	MAGNETIC CONTACTOR
M1C	MOTOR (COMPRESSOR)
M1F	MOTOR (FAN) (UPPER)
M2F	MOTOR (FAN) (LOWER)
PFC	POWER FACTOR CORRECTION
PS1, PS2	SWITCHING POWER SUPPLY
Q1E	OVERLOAD PROTECTOR
R1~R4	RESISTOR
R1T	THERMISTOR (AMBIENT)
R2T	THERMISTOR (DISCHARGE)
R3T	THERMISTOR (LIQUID)
R4T	THERMISTOR (DEFROST)
R6T	THERMISTOR (SUCTION)
R9T, R11T	PTC THERMISTOR
R10T	THERMISTOR (POWER MODULE)
SEG1~SEG3	7-SEGMENT DISPLAY (A2P)
S1PH	PRESSURE SWITCH (HIGH)
S1NPL	PRESSURE SENSOR (LOW)
S1NPH	PRESSURE SENSOR (HIGH)
V1R	DIODE BRIDGE
V2R~V4R	IGBT POWER MODULE
X1M	TERMINAL BLOCK
X41A	RAM MONITOR
Y1E, Y3E	ELECTRONIC EXPANSION VALVE COIL
Y1S	REVERSING VALVE COIL
Y2S, Y3S	SOLENOID VALVE COIL
Z1C~Z3C	FERRITE CORE
Z1F	NOISE FILTER

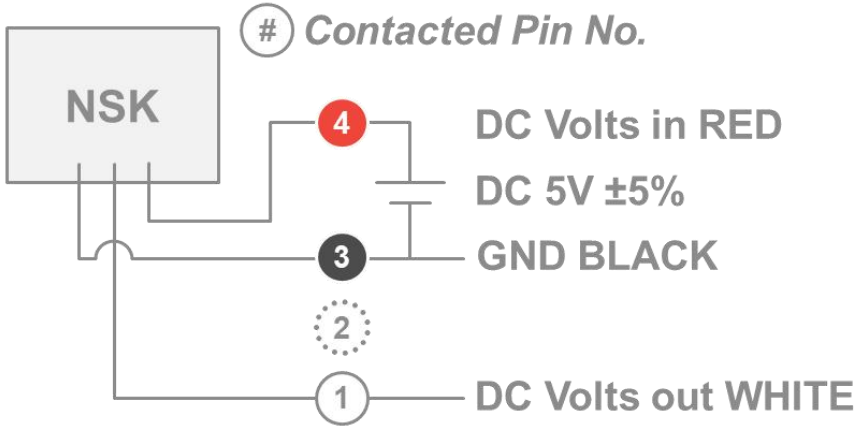
Wiring diagram for training purposes only.

Pressure Sensor

- The pressure sensor senses the pressure in the line.
- The plug has 3 colored wires installed in pins 1, 3, and 4.

Pin 1	Pin 2	Pin 3	Pin 4
The **white wire** is the signal voltage being fed from the sensor back to the board.	*Empty*	The **black wire** is the ground wire.	The **red wire** is the DC voltage that powers this sensor.





Pressure Sensor

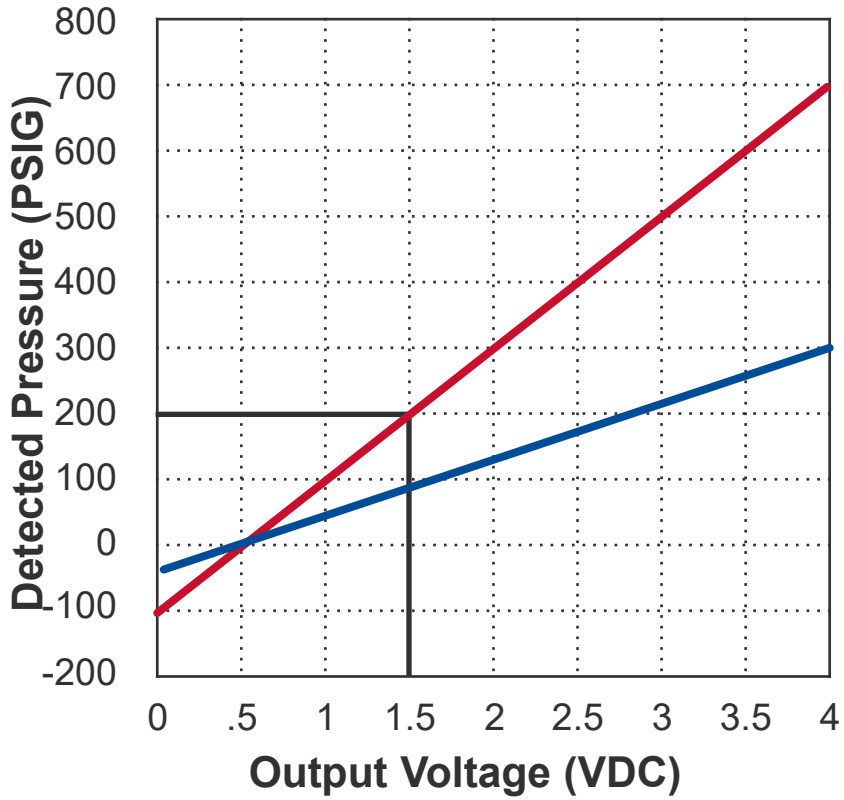
Troubleshooting Steps

Step 1: Measure the suction and discharge pressure with no call from the thermostat.

- Pressure should be measured on the suction service valve.

Step 2: Find this number on the left side of the chart labeled “Detected Pressure PSIG”

- Follow your pressure line horizontally to the right until it hits the diagonal line.
- The chart is used to verify the correct operation of the pressure sensor.
- Once you hit the diagonal line traveling horizontally, drop straight down to read the expected output/signal voltage that should be seen from the sensor back to the board.



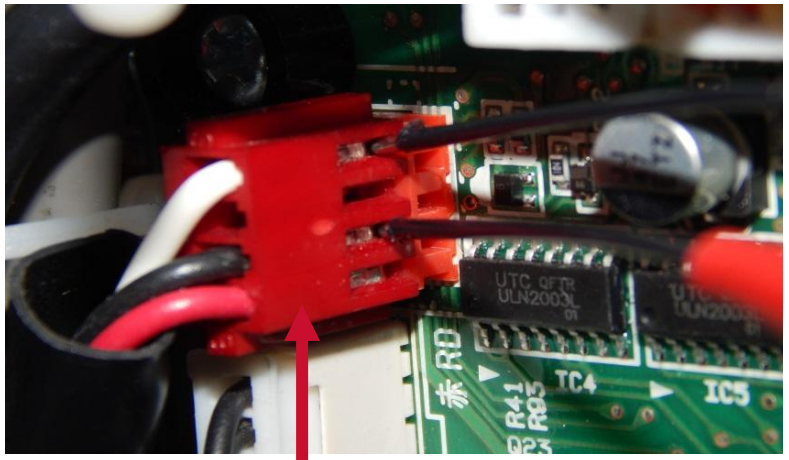
Outdoor Unit 1.5 - 3.0 Ton, 2.0 Ton Enhanced & Double Fan ODU low pressure sensor

Outdoor Unit 3.5 - 5.0 Ton, 3.0 – 4.0 Ton Enhanced, Double Fan ODU high pressure sensor & Indoor Unit

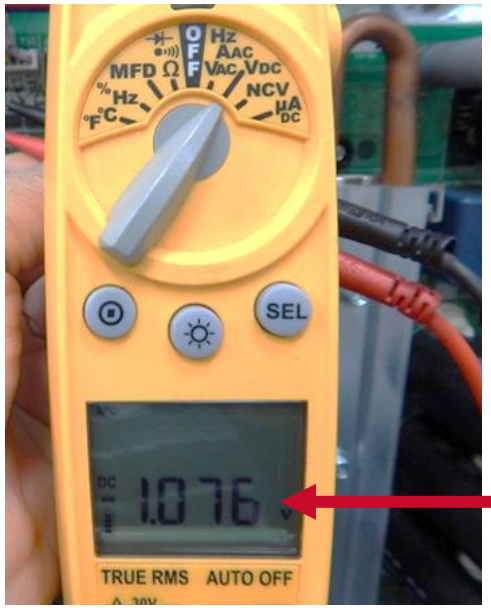
Pressure Sensor

Troubleshooting Steps

- Once this expected reading is known, set meter to DC volts, and measure the sensor output voltage at pins 1 and 3. (black and white)
- If the sensor output voltage doesn't match or come close to the voltage reading on the chart, replace the sensor.



Measure Sensor Output



Incorrect Sensor Output

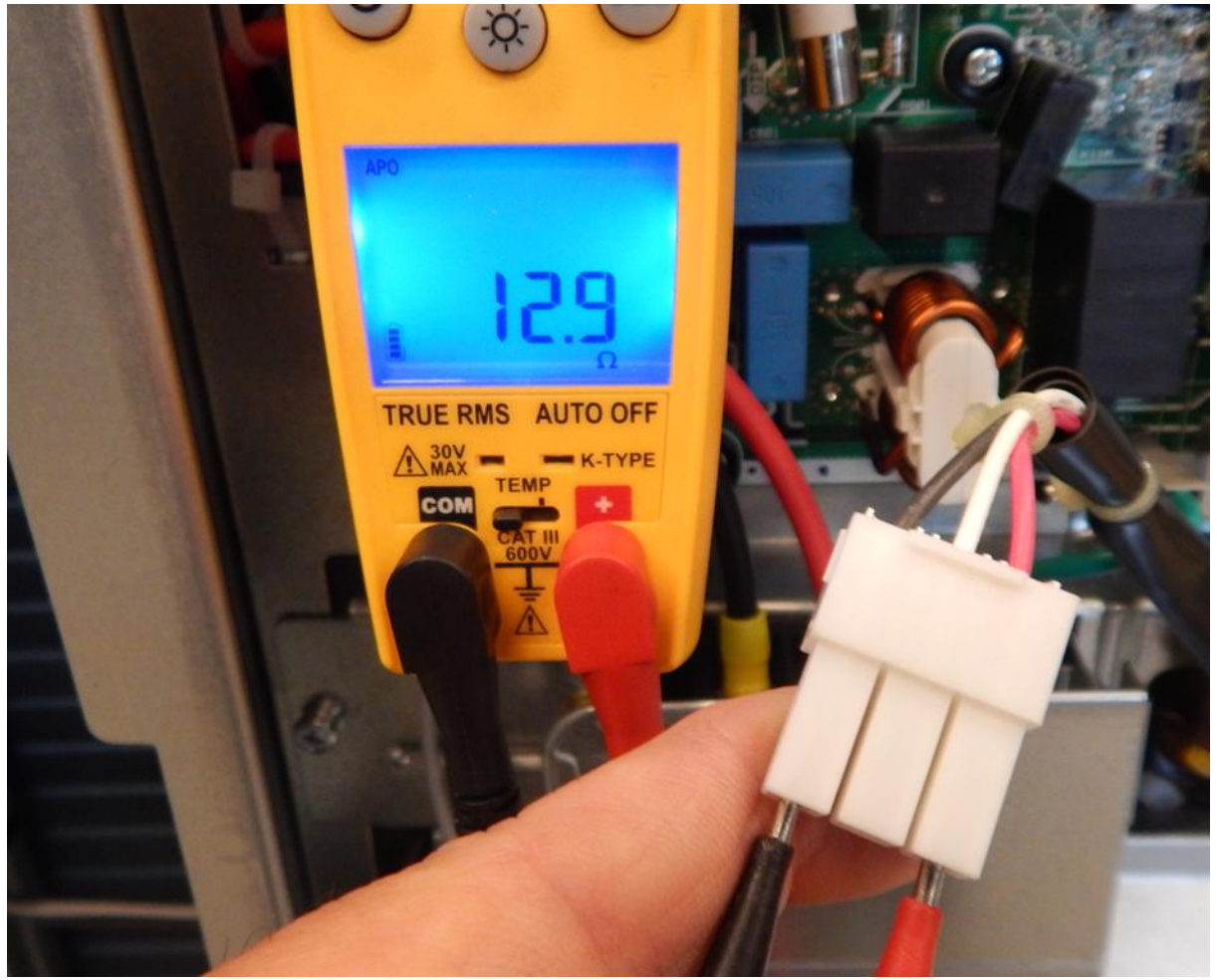
3 Phase Fan Motor

- The first step is to measure voltage being supplied by the inverter board at plug.
  - Set meter to AC volts.
  - Set the controls to cool mode and adjust the set point temperature until the outdoor unit begins operation.
  - Ground the black meter lead and check all three terminals for AC voltage.
  - If voltage is present, proceed to motor winding check.

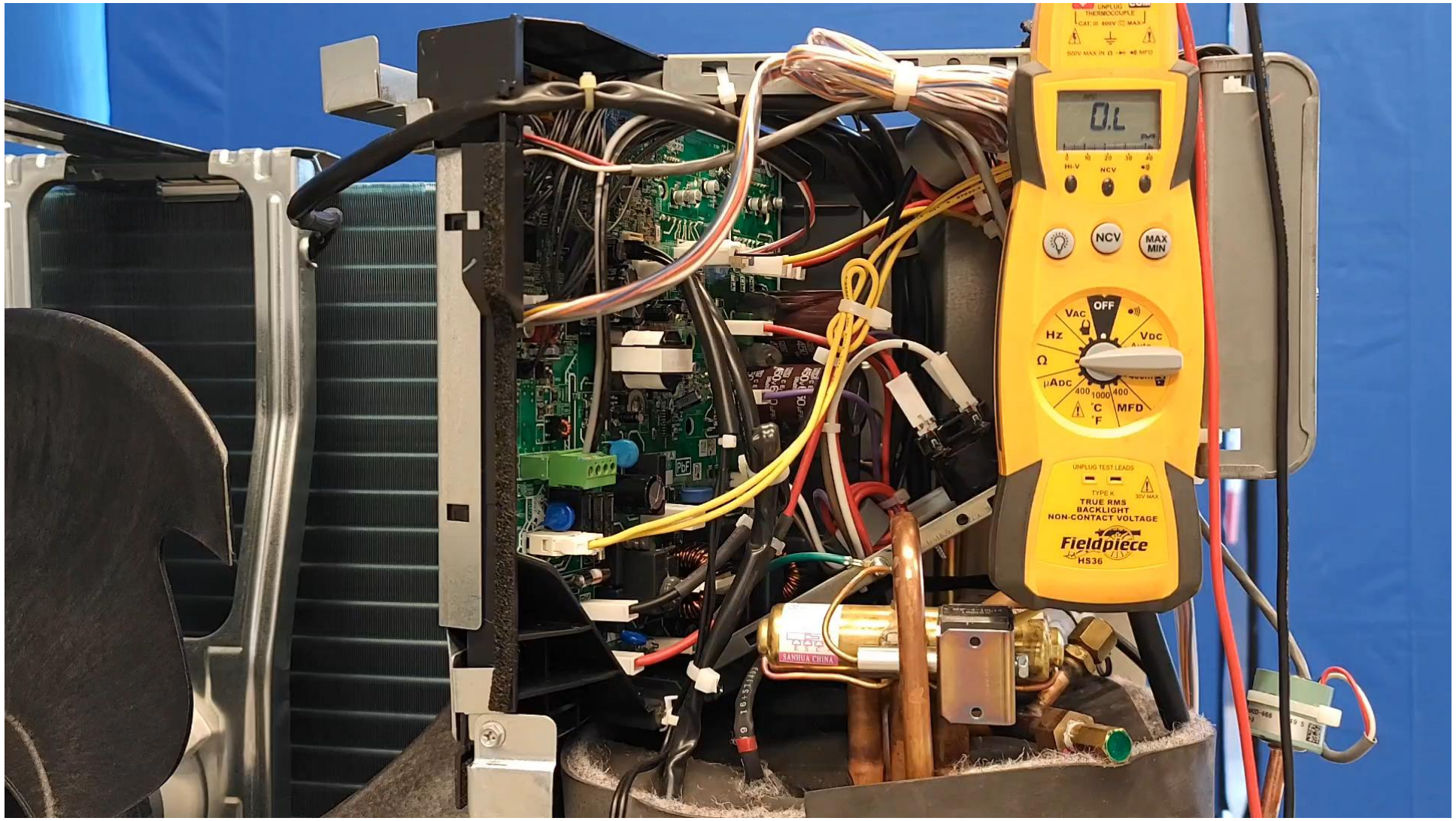
3 Phase Fan Motor

Motor Winding Check

- Remove fan plug from the inverter board.
- Set meter to ohms.
- Measure the resistance between terminals 1-2, 1-3 and 2-3.
  - Terminal 1-Black
  - Terminal 2-White
  - Terminal 3- Red
- Resistance should be equal between all windings ±10%.



3 Phase Fan Motor



R32 Sensor Testing

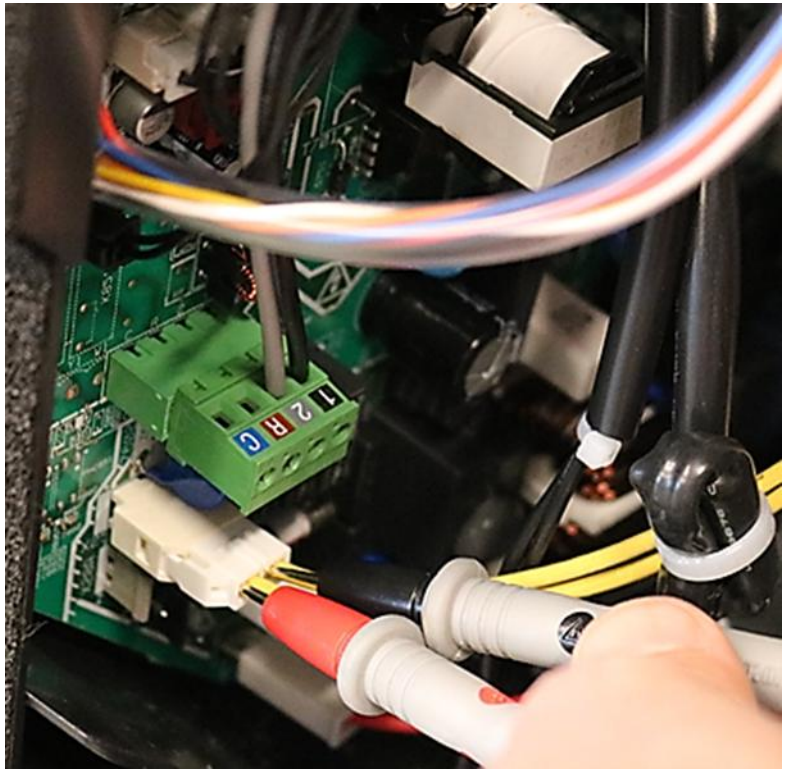
Voltages

- To ensure the sensor is operational, the technician can check between pins 1 and 4. You should read 5VDC.
- Once voltage is verified, mitigation mode can be tested utilizing the refrigerant leak test mode found in the communicating thermostat menus.

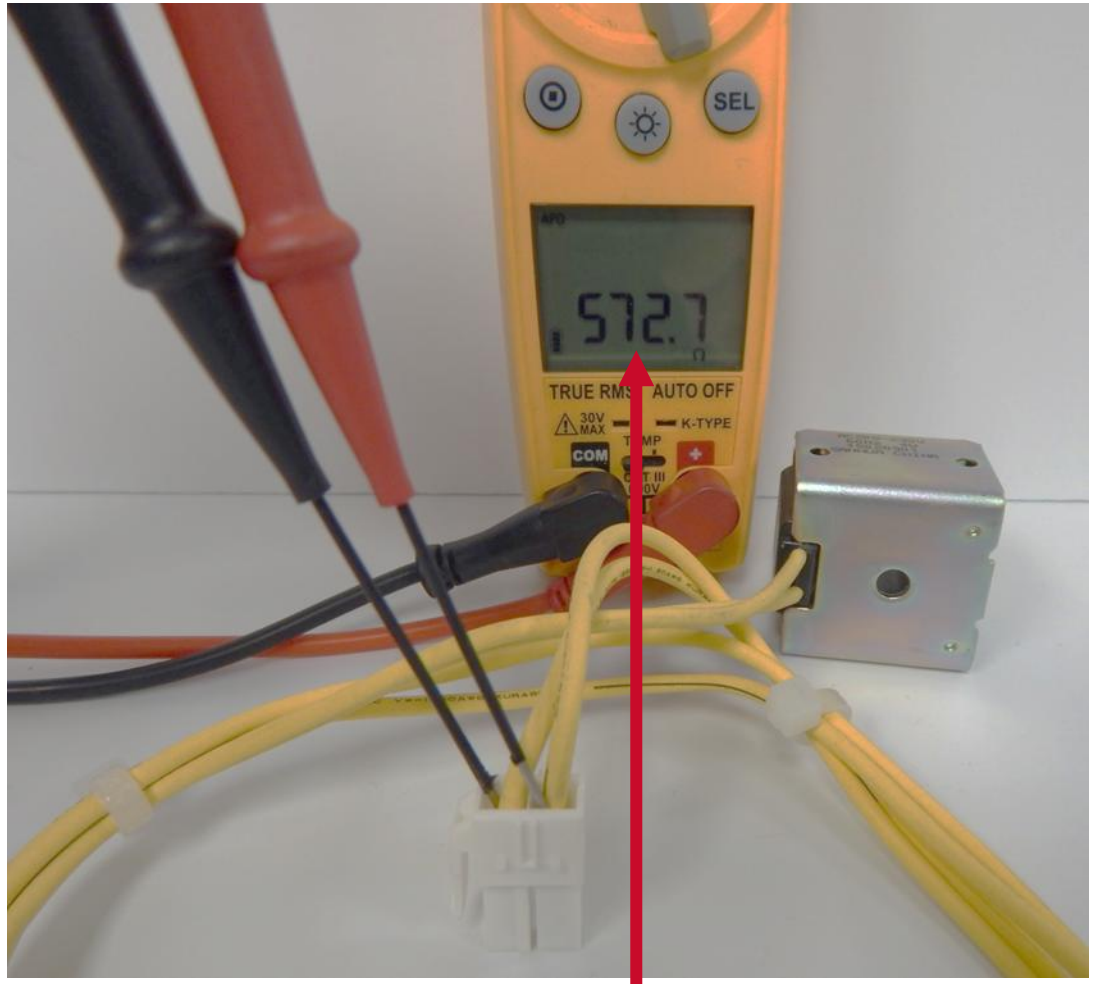
PIN ASSIGN			
PIN Number	Function	Wire Color	Customer PIN Label
1	Ground/Common	Black	C
2	Data+ (A)	White	1
3	Data-(B)	Green	2
4	V Supply	Red	5 V

Troubleshoot Reversing Valve Coil Small Chassis & Double Fan Models

- To gain access to the coil and wiring, remove the access door and front panel.
- Voltage will spike from 120-340 VDC+ during shift.
  - The reversing valve coil (RVC) is energized in the cooling mode.
- If 10-24 VDC is not measured at the plug during operation:
  - Troubleshoot power being supplied by inverter PCB (may be a board issue).



Troubleshoot Reversing Valve Coil Small Chassis & Double Fan Models

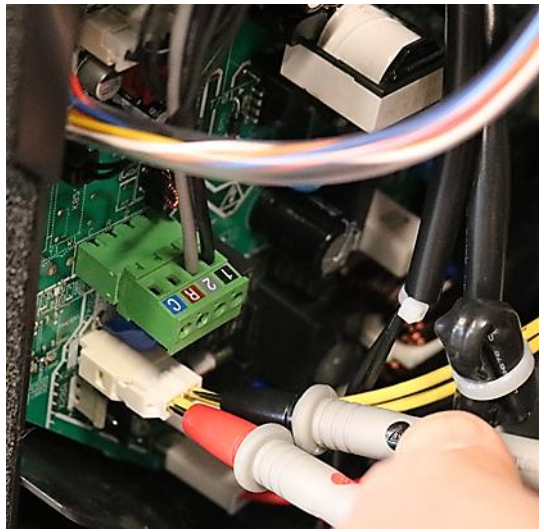


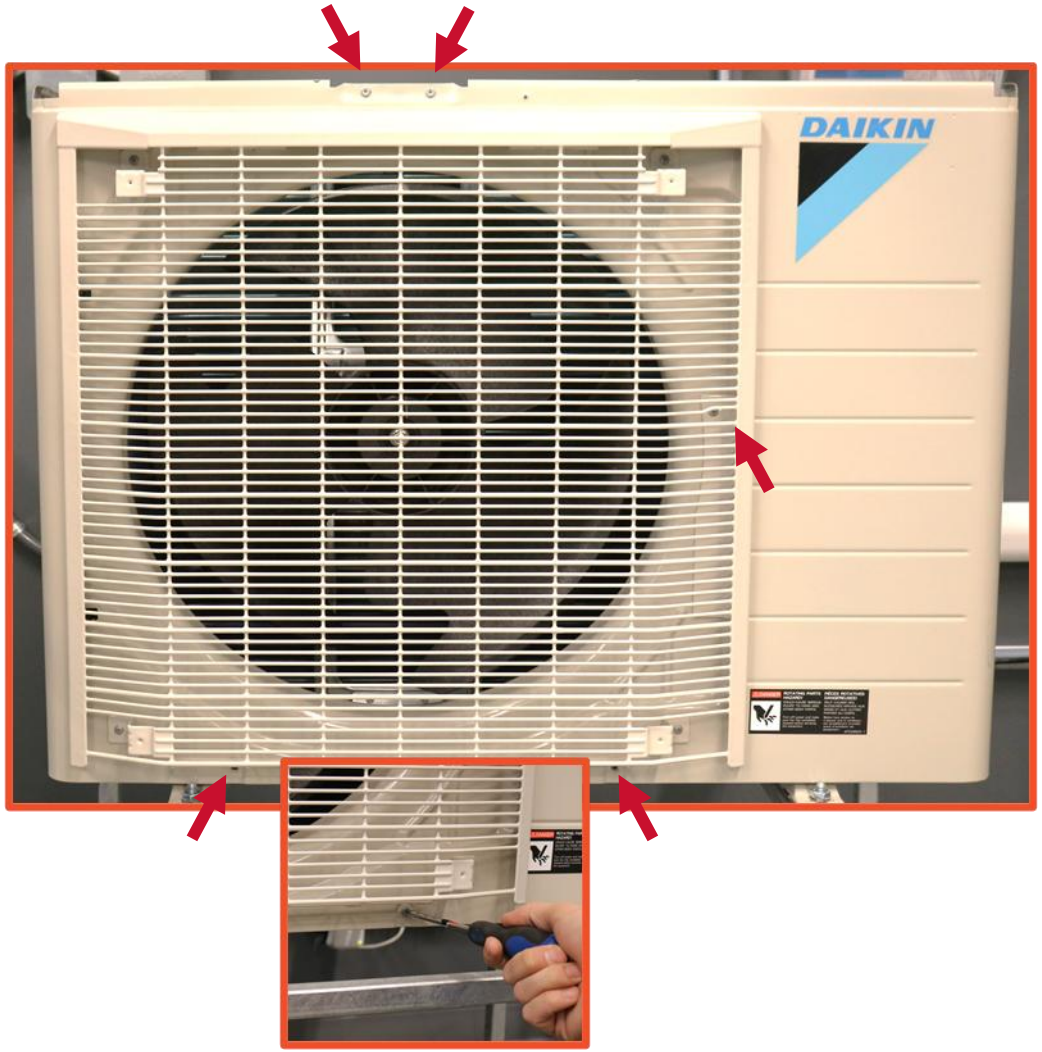
- If 10-24 VDC is present at the plug during operation and the reversing valve does not switch:
  - Inspect the wiring from the plug down to the reversing valve coil.
  - Turn off power. Verify voltage drop below 50VDC (C+/C-).
  - Remove plug from the PCB.
  - Set meter to ohms and test coil.
  - Resistance should read 585 ohms ± 5%.

Troubleshoot Reversing Valve Coil Large Chassis

Troubleshooting steps

- To gain access to the coil and wiring, remove the access door and front panel.
- If there is no 208/230 VAC at the plug:
  - Troubleshoot power being supplied by inverter PCB (may be a board issue).





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Troubleshoot Reversing Valve Coil Large Chassis

Troubleshooting Steps

Resistance: 1.5K - 2.0K ohms

- If 208/230 VAC is being sent to the coil during cooling operation, it should energize the reversing valve.
- If it doesn't energize it should be removed and tested.
  - Inspect the wiring from the plug down to the reversing valve coil.
  - Turn off power. Verify voltage drop below 50VDC (C+/C-).
  - Remove plug from the PCB.
  - Set meter to ohms and test coil.
  - Resistance should read between 1500-2000 ohms.

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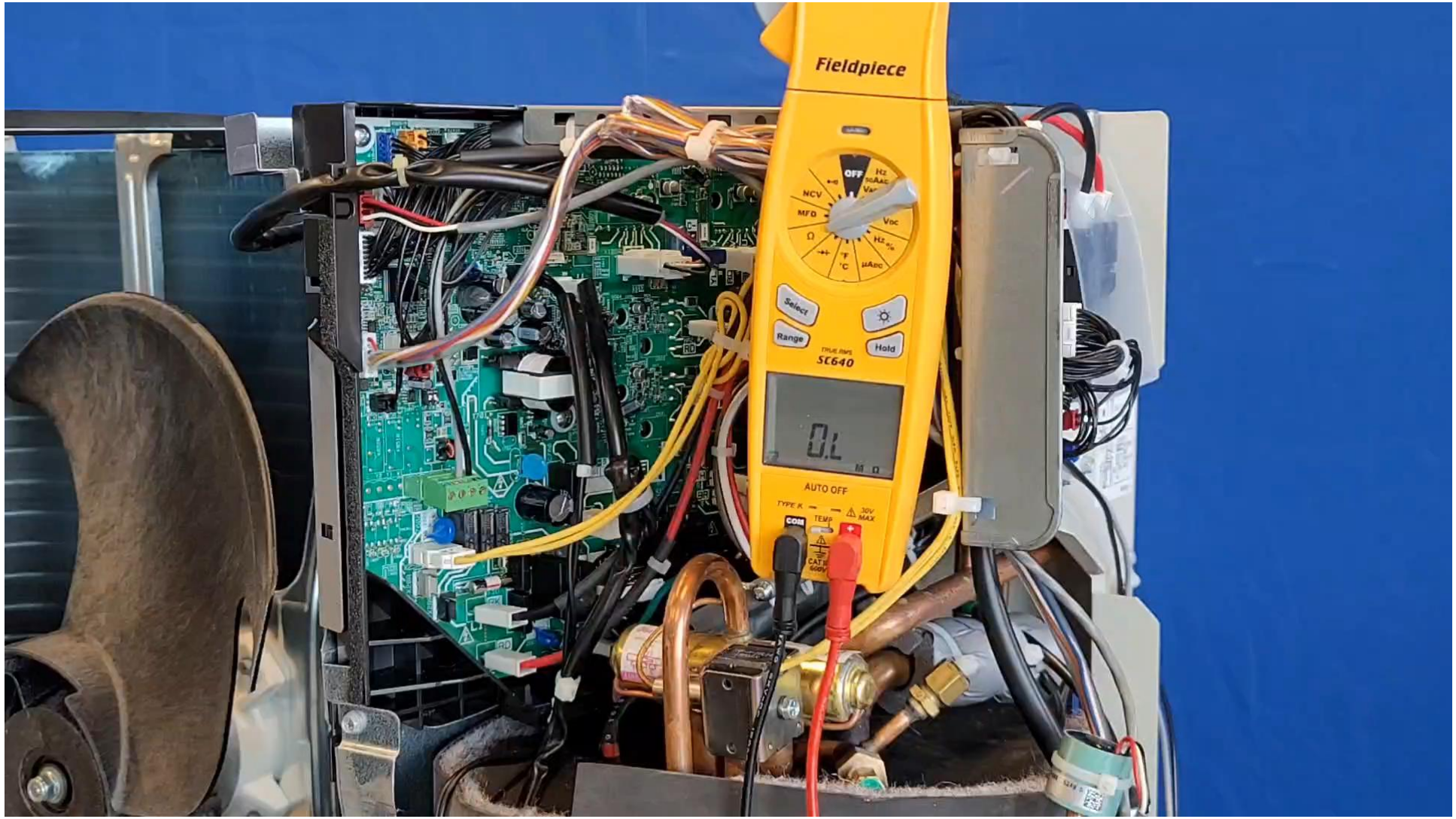
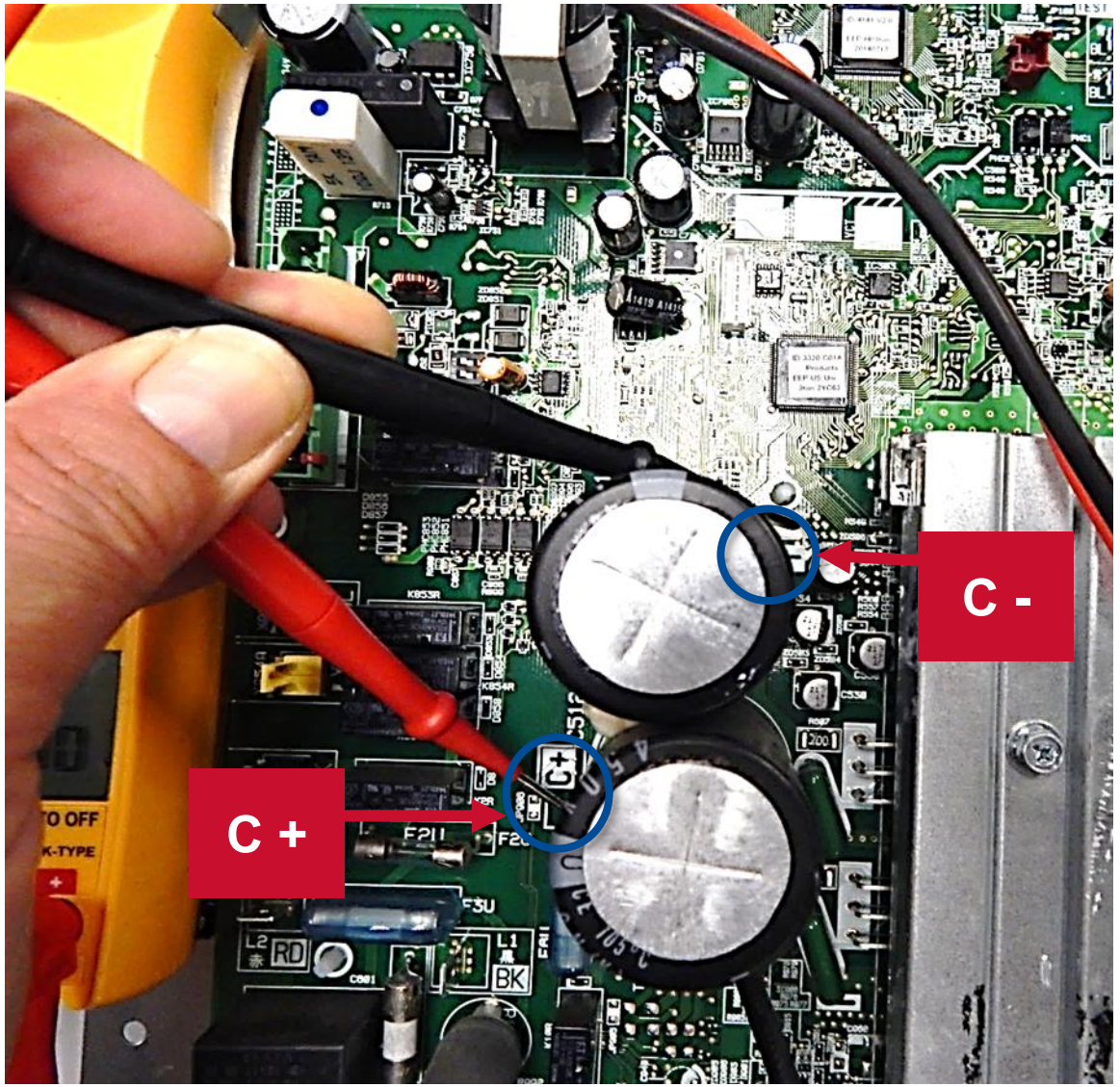
Troubleshoot Reversing Valve Coil



Discharging Inverter Board

- **WARNING!** Make sure to touch the earth ground terminal to release the static electricity from your body.
- Never contact the circuit board until it has been discharged.
- Generally, powering the system down for 10 minutes will allow the board to discharge naturally.
- Set meter to DC volts and place one lead on the solder pad for (C-) and one lead on the solder pad for (C+) to read the DC voltage.
- Once the residual DC voltage is 50 volts or less, the board is considered safe. (preferred voltage is 10 VDC or less)



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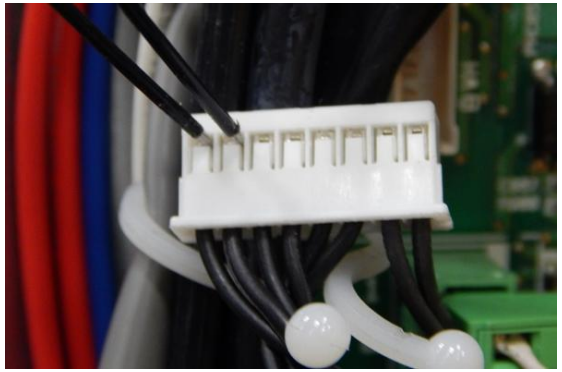
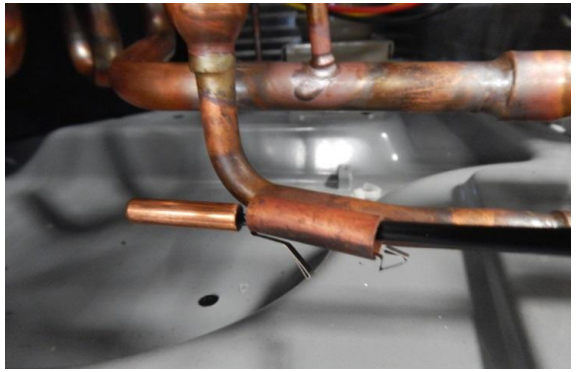
Testing Temperature Thermistors

- Measure pipe temperature at the thermistor.
- Set meter to ohms and read across the two wires from the thermistor to be tested.
- The resistance and temperature measured, should align with the readings shown in the chart.



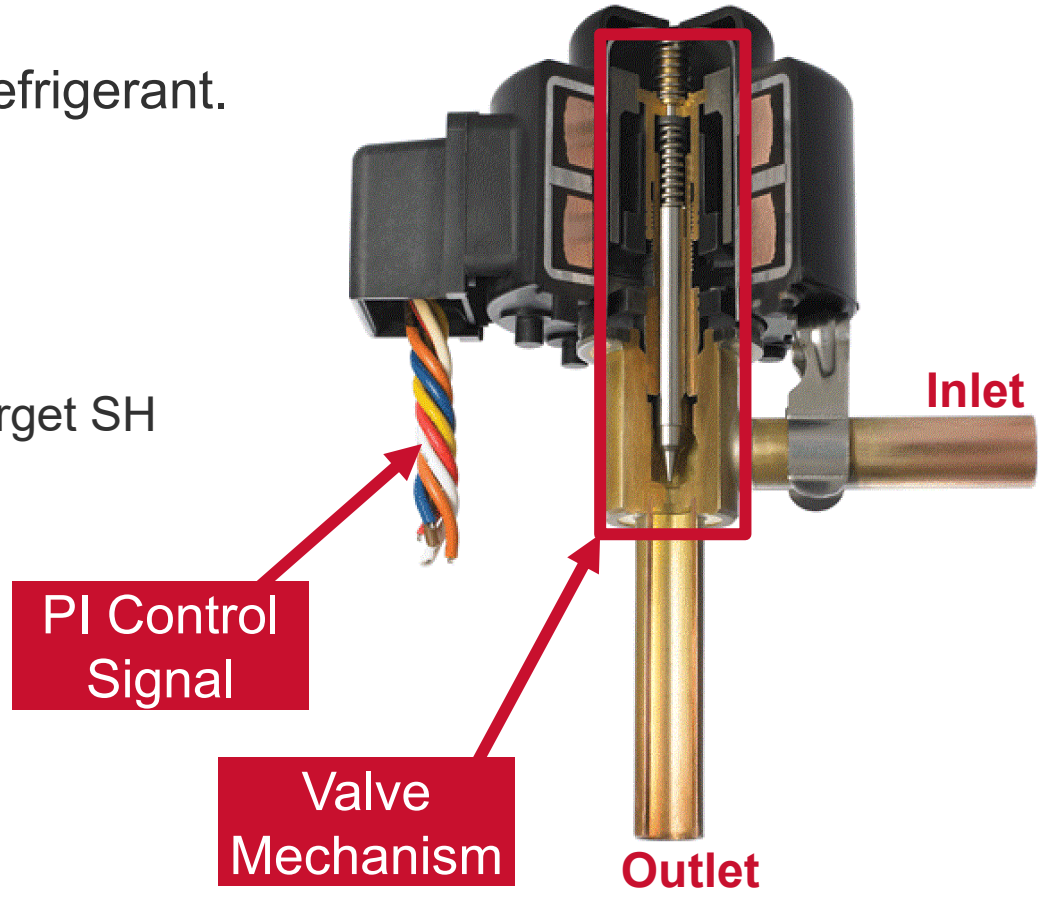


THERMISTOR RESISTANCE & TEMPERATURE CHARACTERISTICS

		Tm: coil Tl: Liquid Ts: Suction Tb: Defrost Tgi: Indoor Gas Tli: Indoor Liquid		Td: Discharge		Ta: Outdoor Air	
Temp.	Temp.	Therm. Resistance	Volts	Therm. Resistance	Volts	Therm. Resistance	Volts
(°F)	(°C)	R (kΩ)	DC (V)	R (kΩ)	DC (V)	R (kΩ)	DC (V)
-22	-30	364.43	4.58	4759.15	4.96	362.48	4.58
-13	-25	267.00	4.45	3454.24	4.94	265.99	4.45
-4	-20	197.81	4.29	2533.62	4.92	197.31	4.28
5	-15	148.10	4.09	1877.01	4.90	147.86	4.09
14	-10	111.99	3.86	1403.82	4.86	111.88	3.86
23	-5	85.49	3.61	1059.45	4.82	85.43	3.61
32	0	65.84	3.33	806.47	4.77	65.80	3.33
41	5	51.09	3.04	618.95	4.70	51.10	3.04
50	10	39.96	2.74	478.76	4.62	39.99	2.74
59	15	31.50	2.44	373.11	4.53	31.54	2.44
68	20	25.01	2.16	292.86	4.41	25.06	2.16
77	25	20.00	1.89	231.44	4.28	20.04	1.89
86	30	16.10	1.64	184.11	4.13	16.13	1.64
95	35	13.04	1.42	147.37	3.95	13.07	1.42
104	40	10.63	1.22	118.68	3.76	10.65	1.22
113	45	8.71	1.04	96.13	3.56	8.73	1.05
122	50	7.18	0.89	78.29	3.34	7.18	0.89
131	55	5.95	0.76	64.10	3.11	-	-
140	60	4.96	0.65	52.76	2.87	-	-
149	65	4.16	0.56	43.63	2.64	-	-
158	70	3.50	0.48	36.26	2.41	-	-

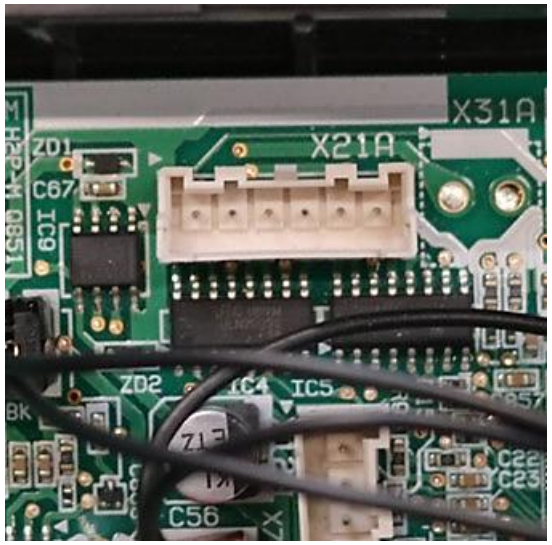
Electronic Expansion Valve

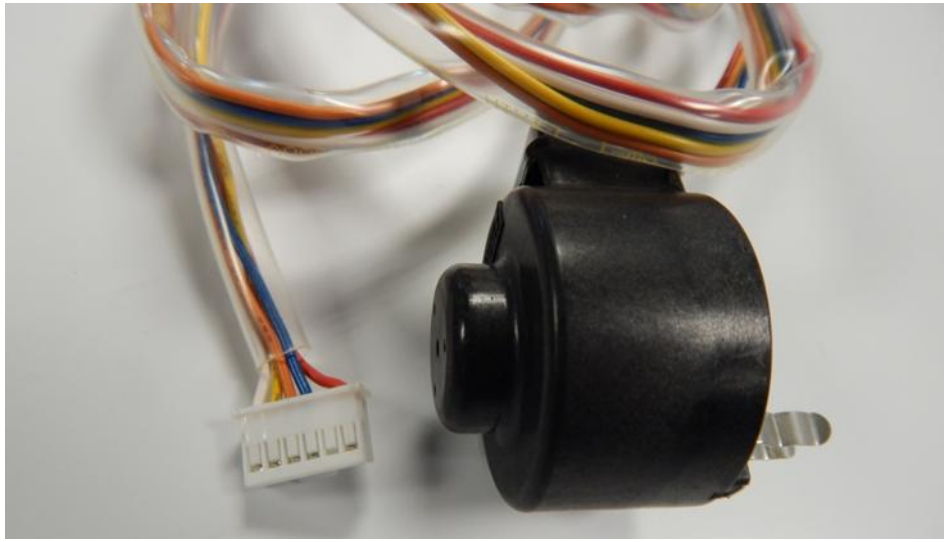
- Allows precision metering by responding instantly and continuously.
- Sensors input demand to open and close allowing the correct amount of refrigerant according to load requirement.
- EEV motor head can be replaced without recovering the refrigerant.
- Target superheat
  - **Single Fan models (R-32 & R-410A)**
    - Cooling: 9°F (5°C) - IDU EEV Target SH
      - When outdoor air temp is less than 70°F (21°C) Target SH is 14°F (8°C).
      - Heating: 7°F (4°C) - ODU EEV
  - **Double Fan model (R-32)**
    - Cooling: 5.4-18°F (3-10°C) - IDU EEV Target SH
    - Heating: 1.8-9°F (1-5°C) IDU SC Control Target



Electronic Expansion Valve

- Electronic expansion valves (EEV) are utilized in the CAPEA/ CHPEA indoor coils (IDC), AHVE/MBVK (Air handler) and the Outdoor unit.
- To check the resistance of the EEV coil, first disconnect power to the unit.
- Remove EEV Molex connector from the board and measure resistance between the different colored connector pins.
- Resistance readings should fall within the range listed in the service manual test procedures.



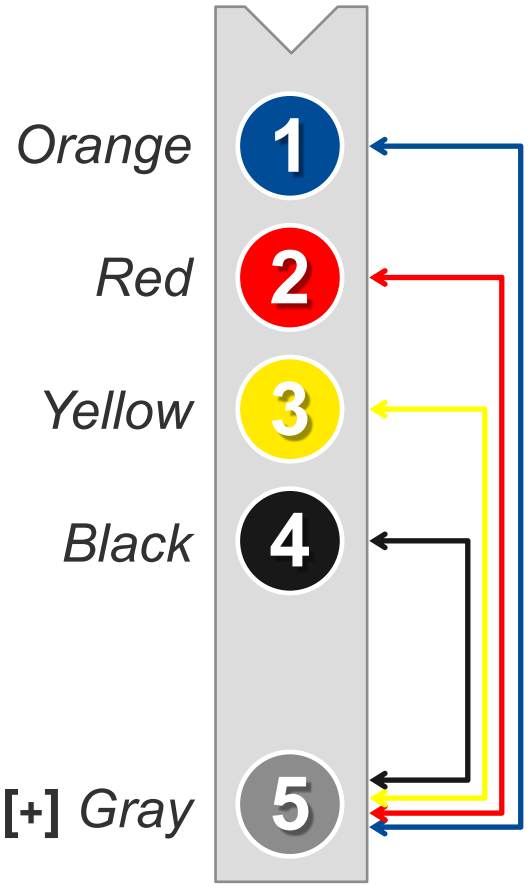


Electronic Expansion Valve

- Set meter to ohms, and measure resistance between all pins to common. (gray)

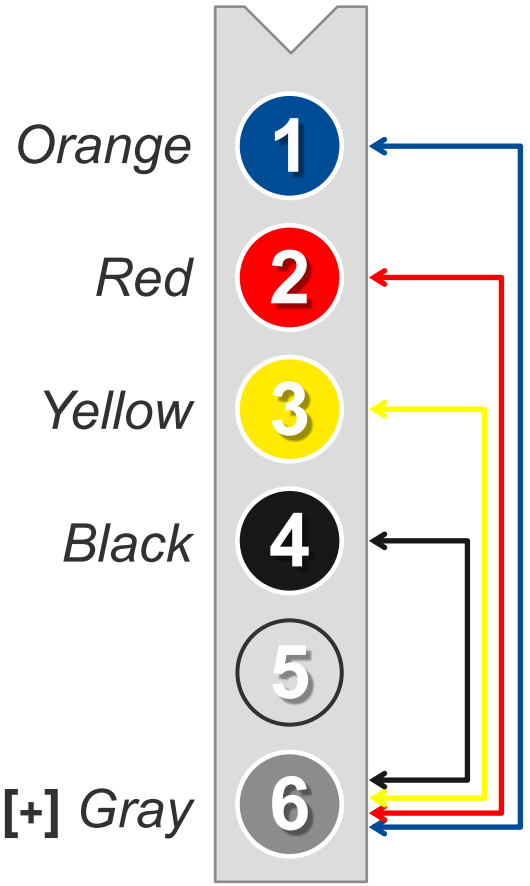
Small Chassis ODU & Double Fan ODU EEVs

Measuring Points	Judgement Criteria
1 – 5	40-50Ω
2 – 5	
3 – 5	
4 – 5	

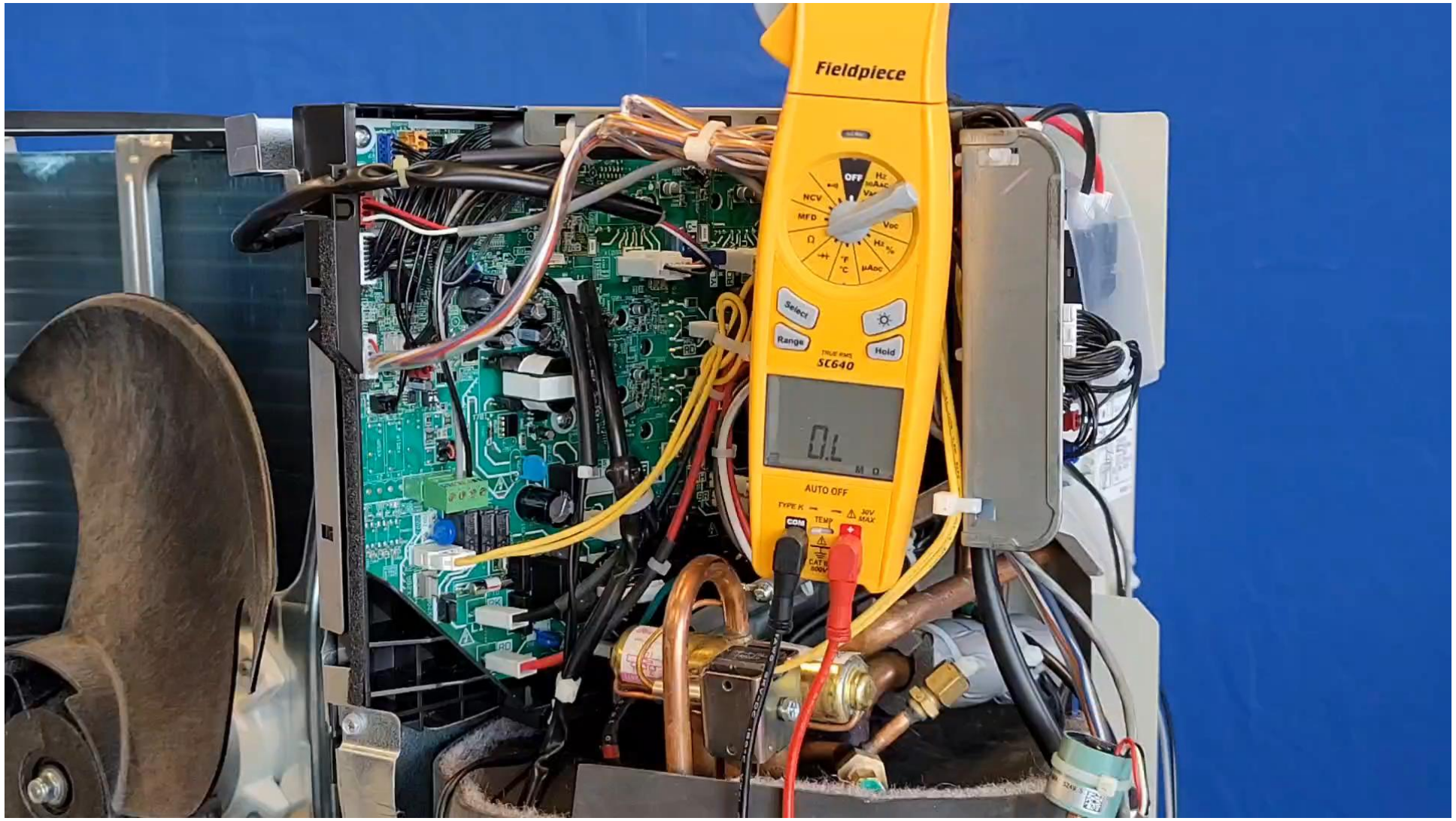


Large Chassis ODU, Coil & Indoor EEVs

Measuring Points	Judgement Criteria
1 – 6	40-50Ω
2 – 6	
3 – 6	
4 – 6	



Electronic Expansion Valve

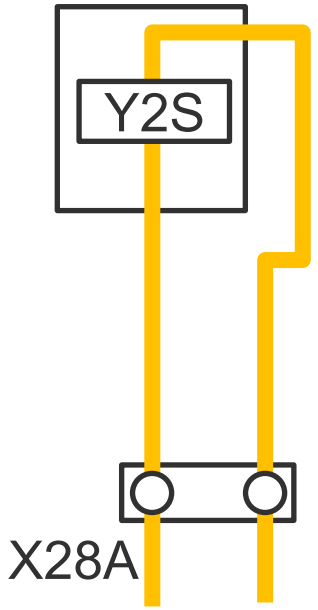


Troubleshoot Outdoor Solenoid Valve

Testing Solenoid Valve Coil Resistance

- If determined the solenoid valve coil is faulty it must be tested.
- Unplug solenoid valve from the PCB.
- Read resistance between the connector pins, and then make sure the resistance falls in the range of 1,480 to 1,820 Ω.
- If ohm/resistance is not within range, replace solenoid valve coil.

Resistance: 1.5k-1.8k ohms



Compressor Ground Test

- If a fuse, circuit breaker, or ground fault protective device has tripped, it's an indication that an electrical problem exists.
- Disconnect all power to the unit, and make sure all power legs are open.

Compressor

Compressor Ground Test

- Carefully remove the leads at the compressor terminals.
- Test for ground between compressor terminals and ground.
- If ground is indicated, replace the compressor.

Compressor

Insulation Resistance Test

- Carefully remove the leads at the compressor terminals.
- Set megohmmeter to 500V.
- Test for megaohms (MΩ) between each compressor terminal and ground.
- If less, then 30(MΩ) is indicated, replace the compressor.

Agenda

System Operation

Component Operation & Testing

Checking Duct Static

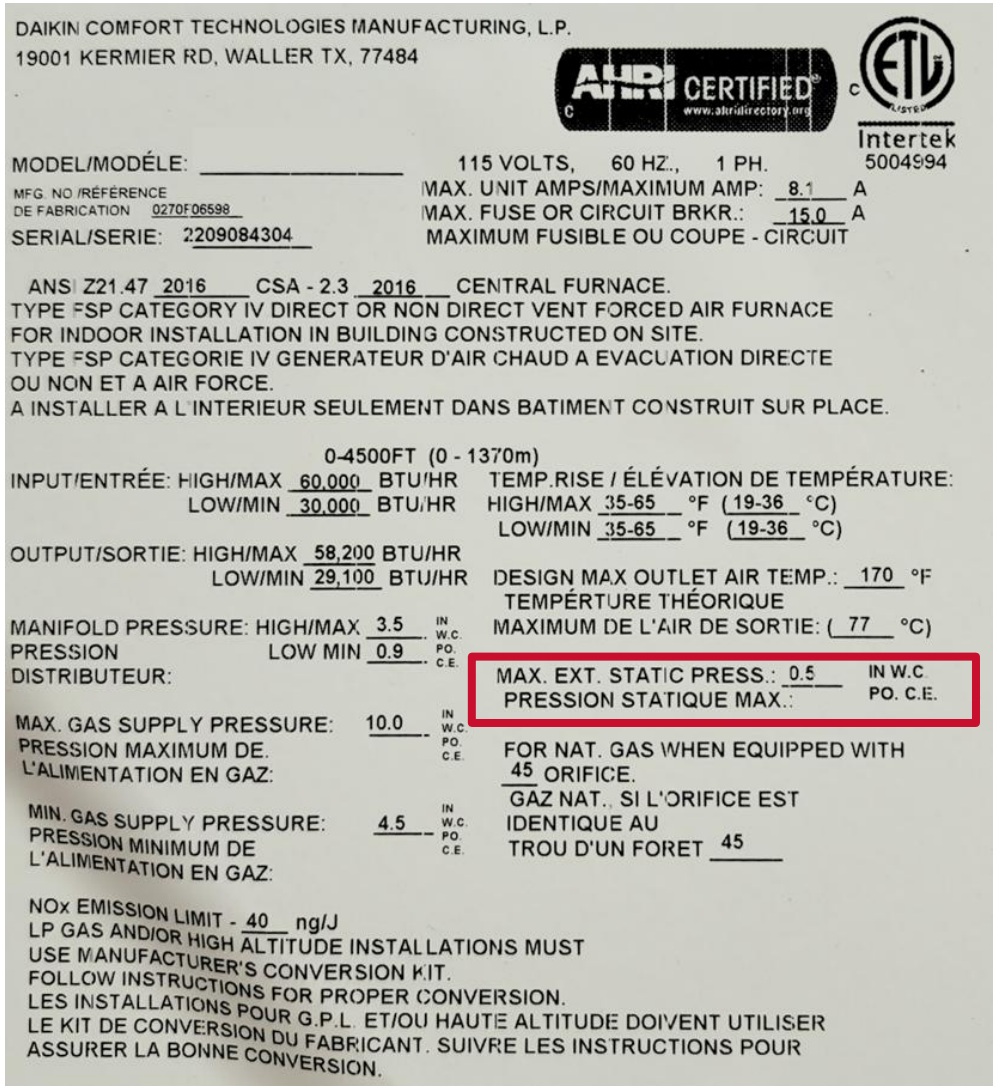
Communication Testing & Troubleshooting

Emergency

Replacing Inverter Board

Checking Duct Static

- HVAC equipment rely on the air flow inside of their system to properly intake and output air. The external static pressure (ESP) can verify the unit is performing as designed or can direct you to a problem within the system.
- Refer to your rating plate for the maximum ESP.
- Inspect duct sizing, duct insulation, filters, and zone damper positions.
- Incorrect external static pressure may cause
  - Excessive temperature rise
  - Motor stress
  - Duct stress
  - Reduced performance
  - Unwanted condensation
  - etc.



DAIKIN COMFORT TECHNOLOGIES MANUFACTURING, L.P.
19001 KERMIER RD, WALLER TX, 77484

AHRI CERTIFIED www.ahridirectory.org
Intertek 5004994

MODEL/MODÈLE: _____
MFG NO /RÉFÉRENCE DE FABRICATION 0270F06598
SERIAL/SERIE: 2209084304

115 VOLTS, 60 HZ., 1 PH.
MAX. UNIT AMPS/MAXIMUM AMP: 8.1 A
MAX. FUSE OR CIRCUIT BRKR.: 15.0 A
MAXIMUM FUSIBLE OU COUPE - CIRCUIT

ANSI Z21.47 2016 CSA - 2.3 2016 CENTRAL FURNACE.
TYPE FSP CATEGORY IV DIRECT OR NON DIRECT VENT FORCED AIR FURNACE FOR INDOOR INSTALLATION IN BUILDING CONSTRUCTED ON SITE.
TYPE FSP CATEGORIE IV GENERATEUR D'AIR CHAUD A EVACUATION DIRECTE OU NON ET A AIR FORCE.
A INSTALLER A L'INTERIEUR SEULEMENT DANS BATIMENT CONSTRUIT SUR PLACE.

0-4500FT (0 - 1370m)

INPUT/ENTRÉE: HIGH/MAX 60,000 BTU/HR
LOW/MIN 30,000 BTU/HR

TEMP.RISE / ÉLÉVATION DE TEMPÉRATURE:
HIGH/MAX 35-65 °F (19-36 °C)
LOW/MIN 35-65 °F (19-36 °C)

OUTPUT/SORTIE: HIGH/MAX 58,200 BTU/HR
LOW/MIN 29,100 BTU/HR

DESIGN MAX OUTLET AIR TEMP.: 170 °F
TEMPÉRTURE THÉORIQUE MAXIMUM DE L'AIR DE SORTIE: (77 °C)

MANIFOLD PRESSURE: HIGH/MAX 3.5 IN W.C.
PRESSION LOW MIN 0.9 PO. C.E.
DISTRIBUTEUR:

MAX. EXT. STATIC PRESS.: 0.5 IN W.C
PRESSION STATIQUE MAX.: PO. C.E.

MAX. GAS SUPPLY PRESSURE: 10.0 IN W.C. PO. C.E.
PRESSION MAXIMUM DE L'ALIMENTATION EN GAZ:

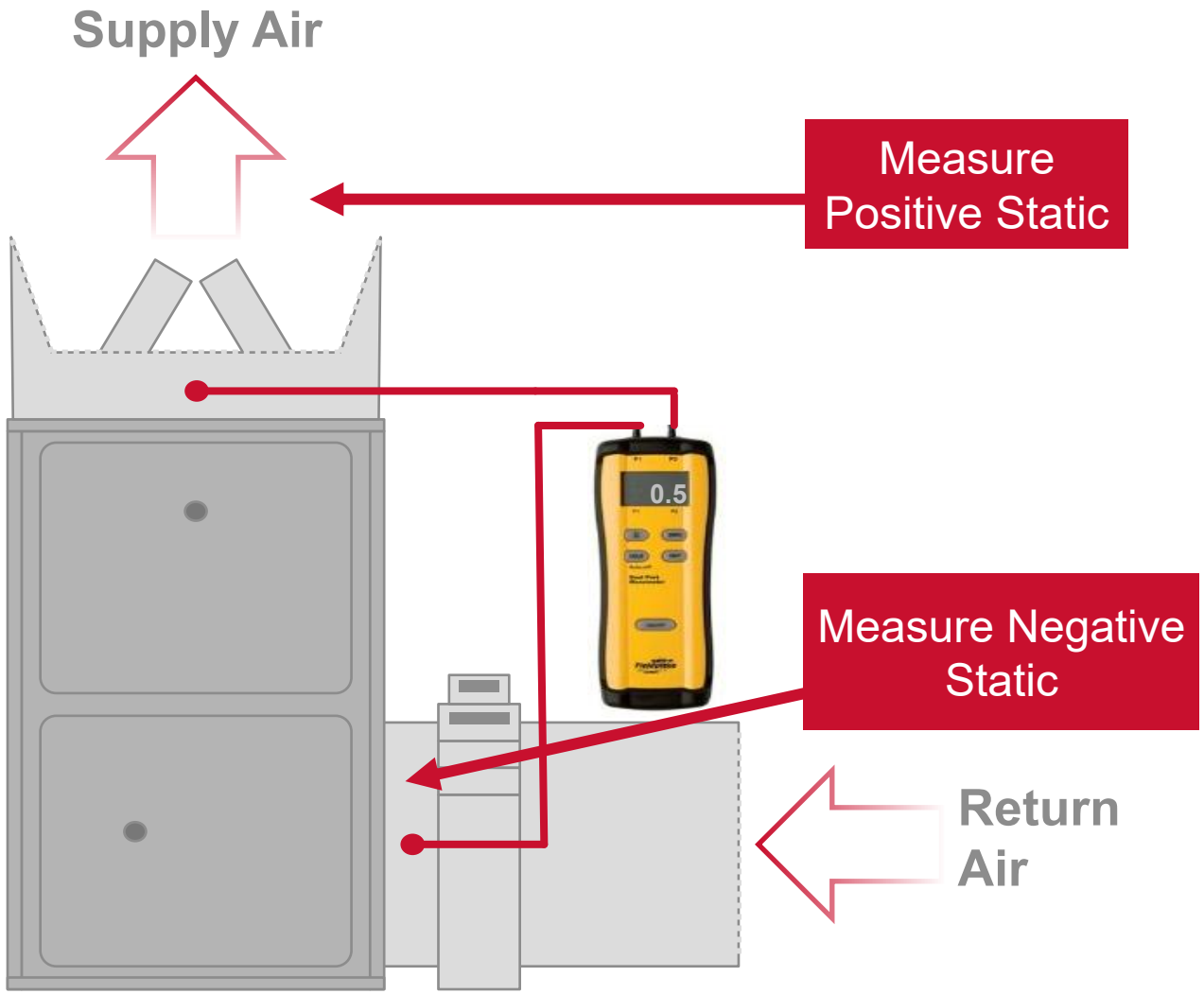
FOR NAT. GAS WHEN EQUIPPED WITH 45 ORIFICE.
GAZ NAT., SI L'ORIFICE EST IDENTIQUE AU TROU D'UN FORET 45

MIN. GAS SUPPLY PRESSURE: 4.5 IN W.C. PO. C.E.
PRESSION MINIMUM DE L'ALIMENTATION EN GAZ:

NOx EMISSION LIMIT - 40 ng/J
LP GAS AND/OR HIGH ALTITUDE INSTALLATIONS MUST USE MANUFACTURER'S CONVERSION KIT.
FOLLOW INSTRUCTIONS FOR PROPER CONVERSION.
LES INSTALLATIONS POUR G.P.L. ET/OU HAUTE ALTITUDE DOIVENT UTILISER LE KIT DE CONVERSION DU FABRICANT. SUIVRE LES INSTRUCTIONS POUR ASSURER LA BONNE CONVERSION.

Checking Duct Static

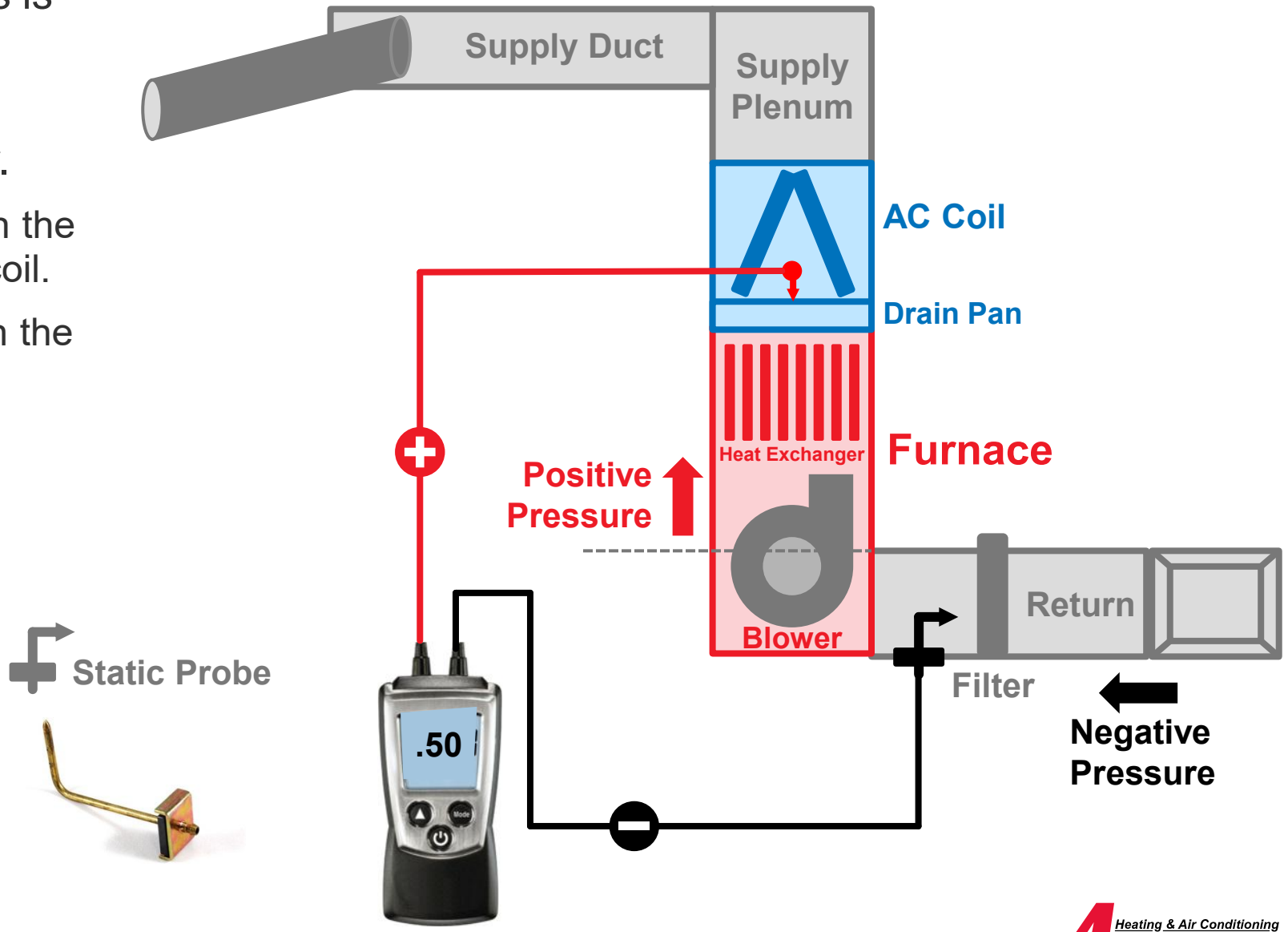
- The positive static is measured
  - **Furnace:**
    - At the supply outlet and must be read between the furnace and the cooling coil.
  - **Air handler/MBVK:**
    - At the supply outlet.
- The negative static is measured
  - **Furnace:**
    - At the return plenum and must be read between furnace the and filter.
  - **Air handler:**
    - At the return plenum and must be read between air hander and the filter.
  - **MBVK:**
    - Between the modular blower and the cased coil



Caution: Be careful to not damage components within unit.

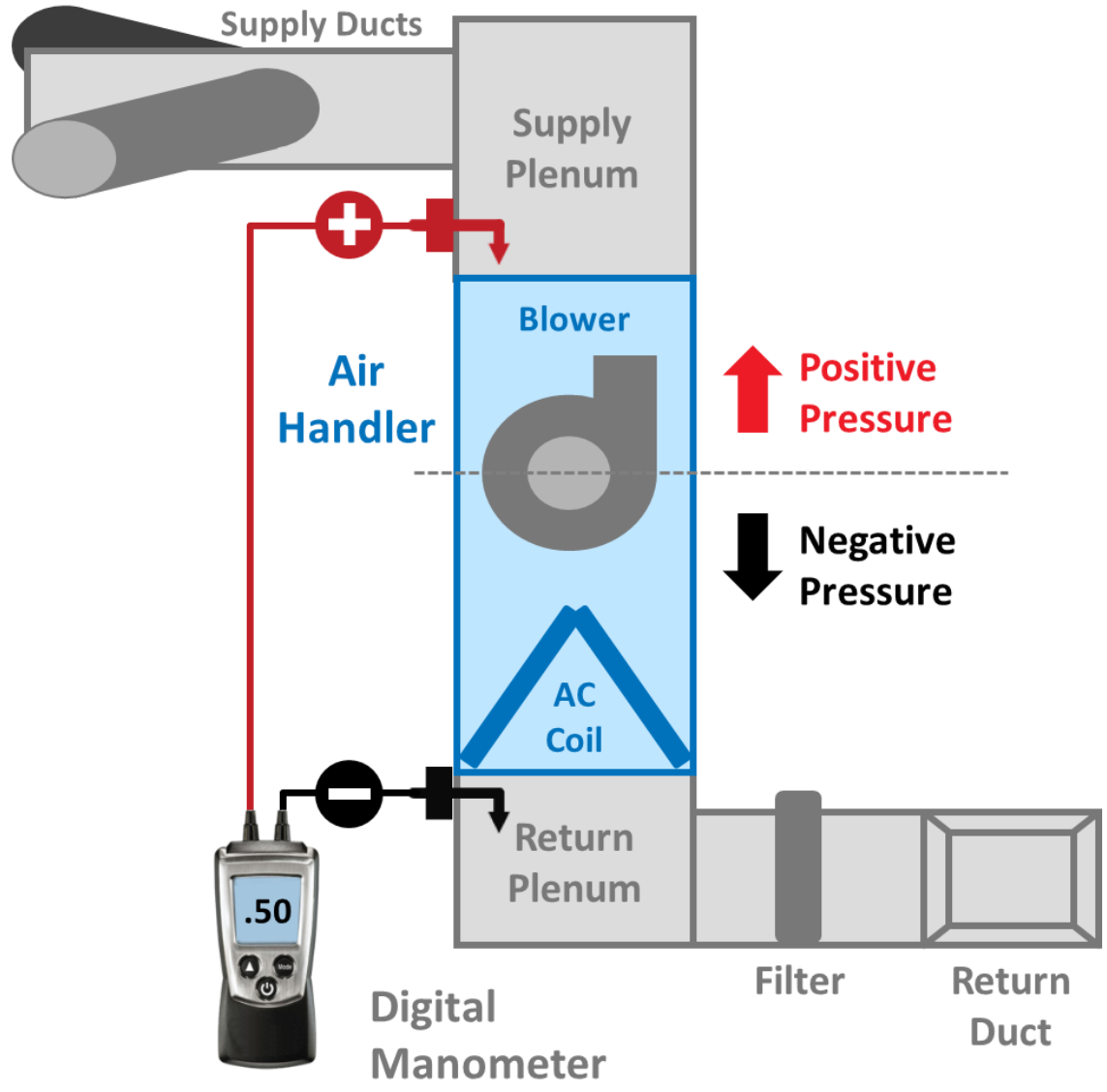
Static Pressure | Gas Furnace and AC Coil

- The design static of most furnaces is 0.5 inches water column.
- Use a manometer to measure the static pressure of the furnace only.
  - Supply side is measured between the heat exchanger and evaporator coil.
  - Return side is measured between the blower wheel and filter.



Static Pressure | Single Piece Air Handler

- On a single piece air handler, the evaporator coil has been installed at the factory and is already considered in static pressure calculation.
- Use a manometer to measure the static pressure of the air handler only.
  - Measure static pressure of the supply duct at the outlet of the air handler.
  - Measure the static pressure of the return duct at the inlet of the air handler.



Agenda

System Operation

Component Operation & Testing

Checking Duct Static

Communication Testing & Troubleshooting

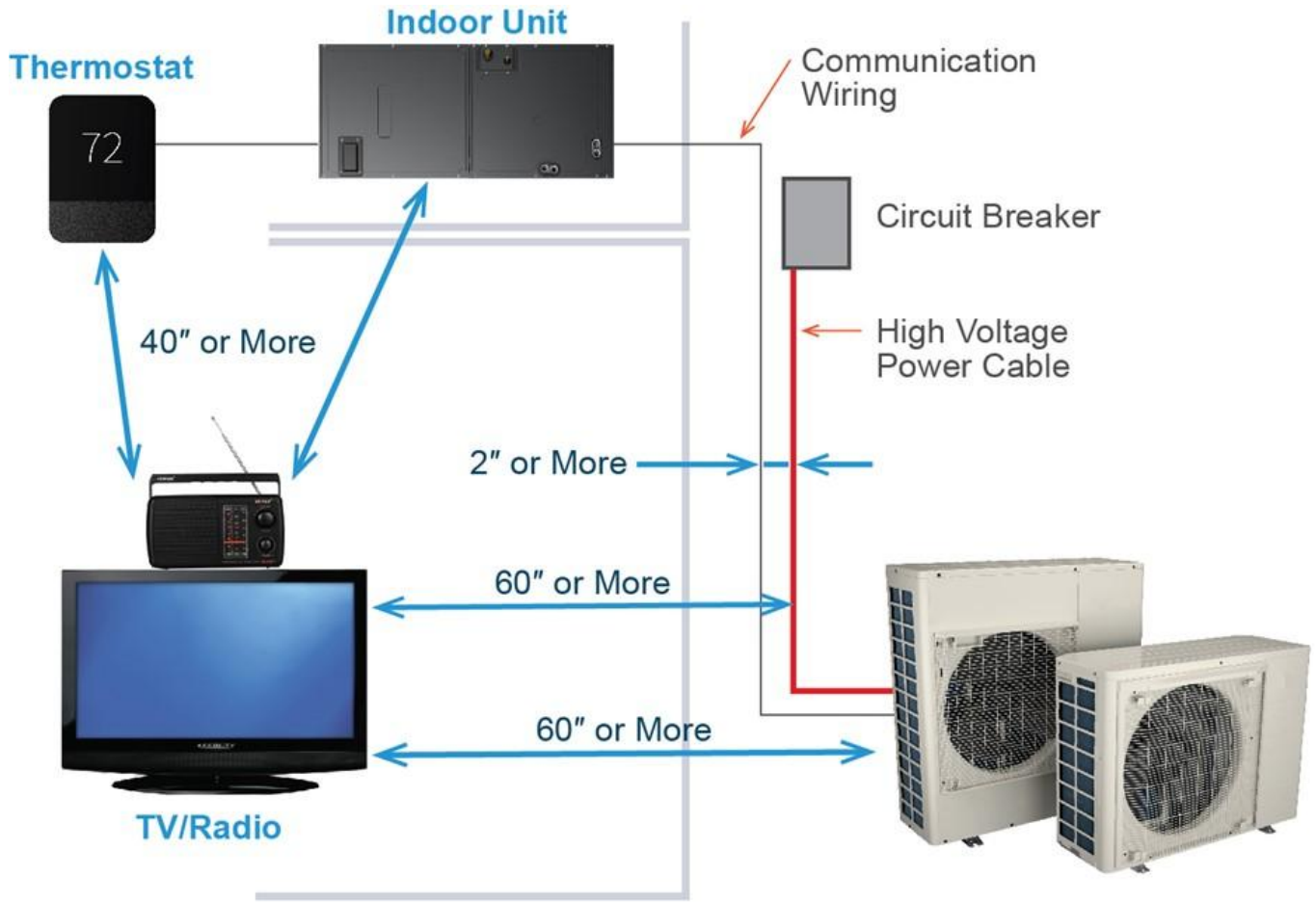
Emergency Mode

Replacing Inverter Board

Communication Considerations

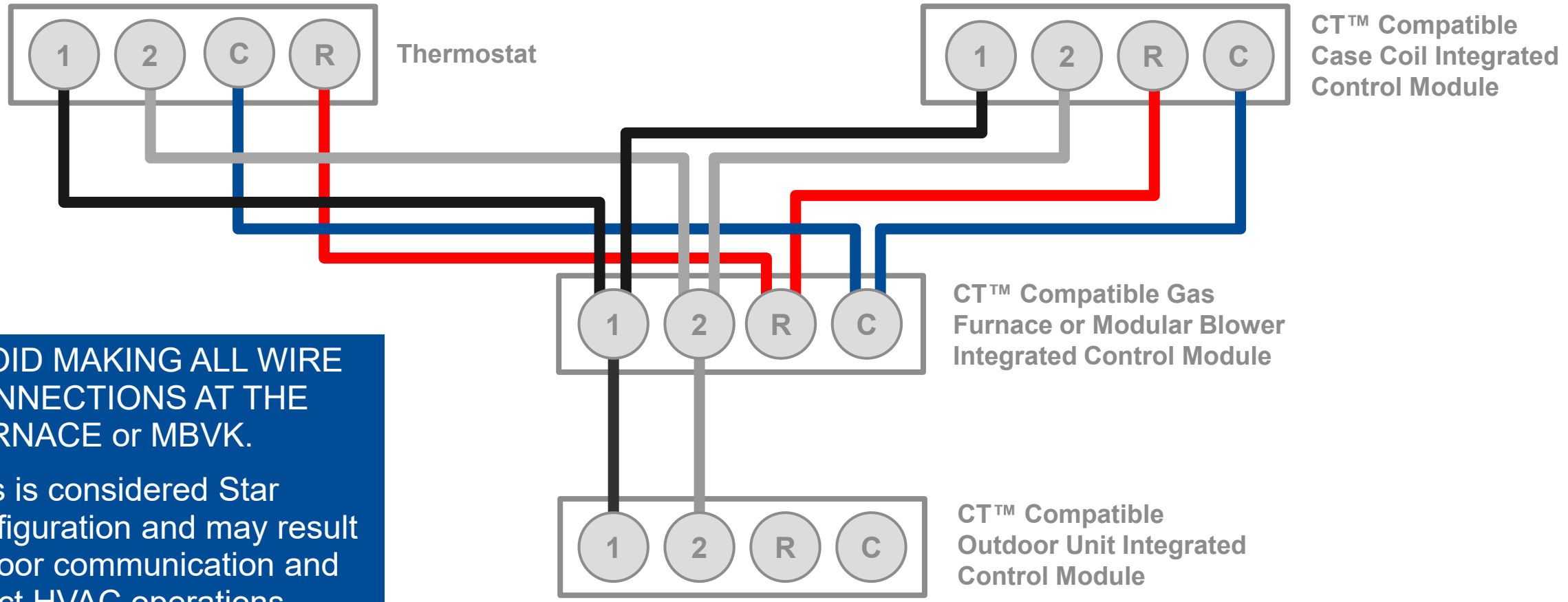
Electrical Noise

- The inverter units should be well grounded so that potential effects of electrical noise from the inverter to surrounding equipment is minimal.
- When selecting an install location, keep recommended distances from home stereos, personal computers, solar panel control boxes, whole home generators, cable modems and internet routers, etc.



Wiring

INCORRECT Low Voltage Wiring

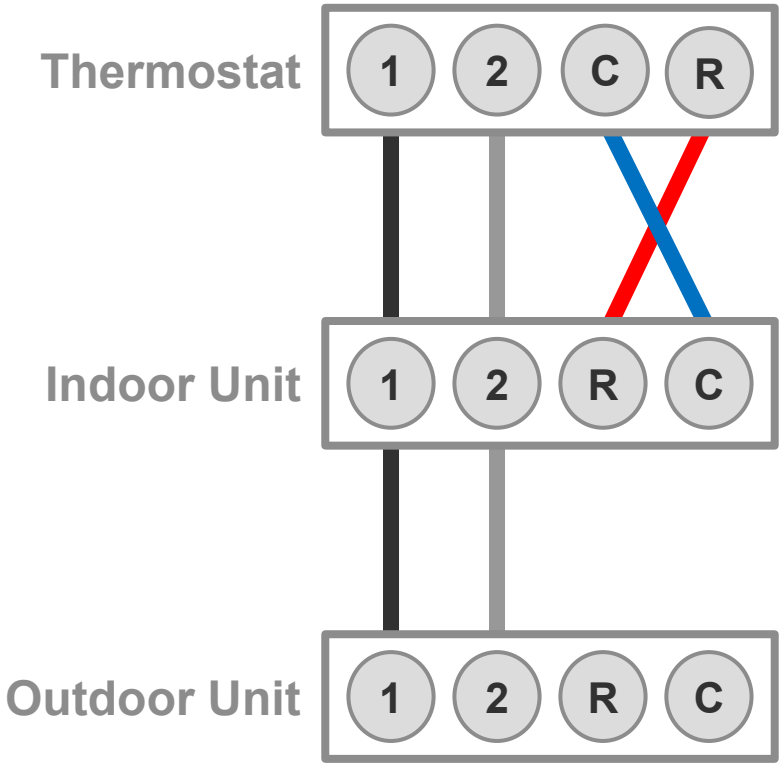


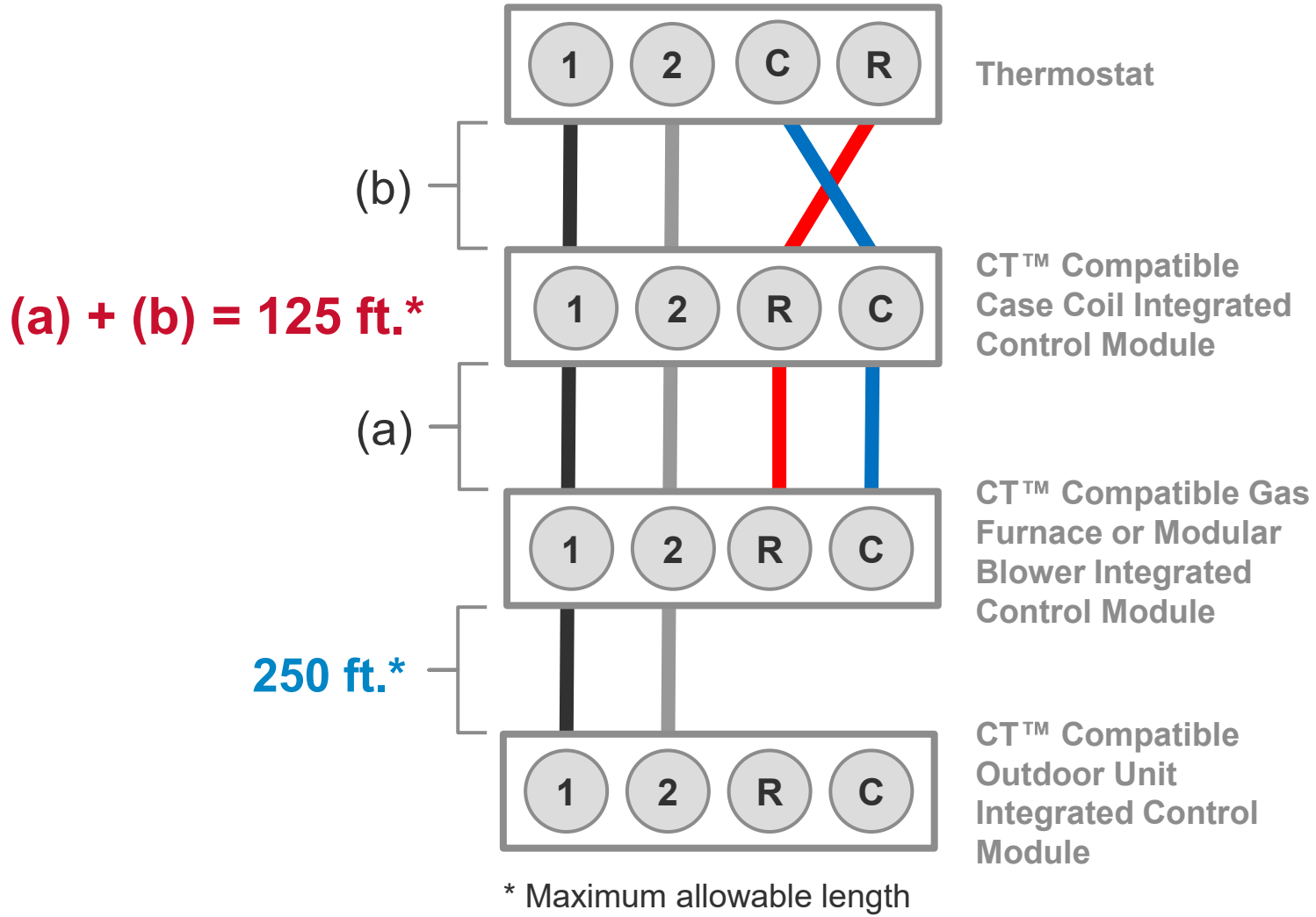
AVOID MAKING ALL WIRE CONNECTIONS AT THE FURNACE or MBVK.

This is considered Star configuration and may result in poor communication and affect HVAC operations.

Wiring

CORRECT Low Voltage Wiring



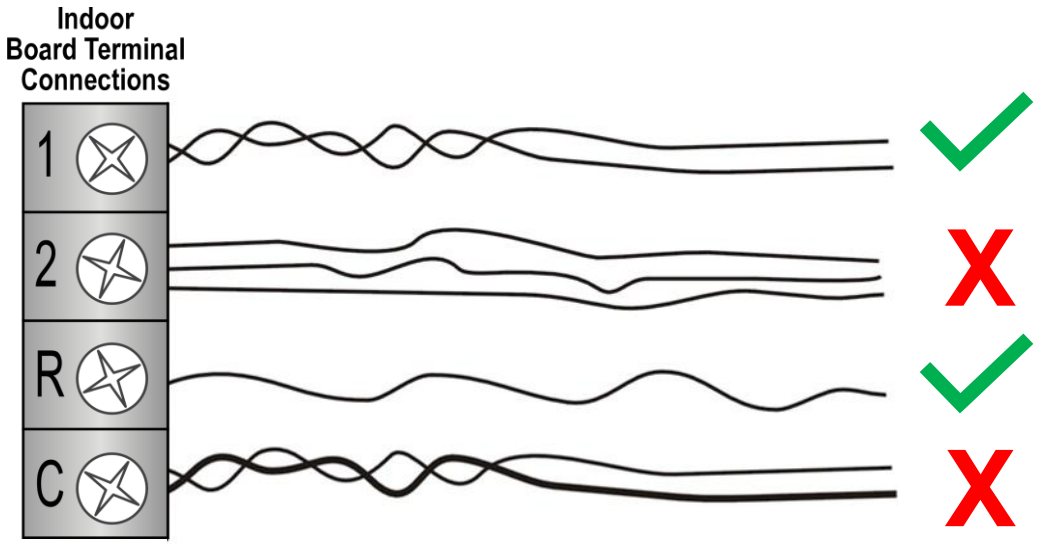


* Maximum allowable length

Wiring

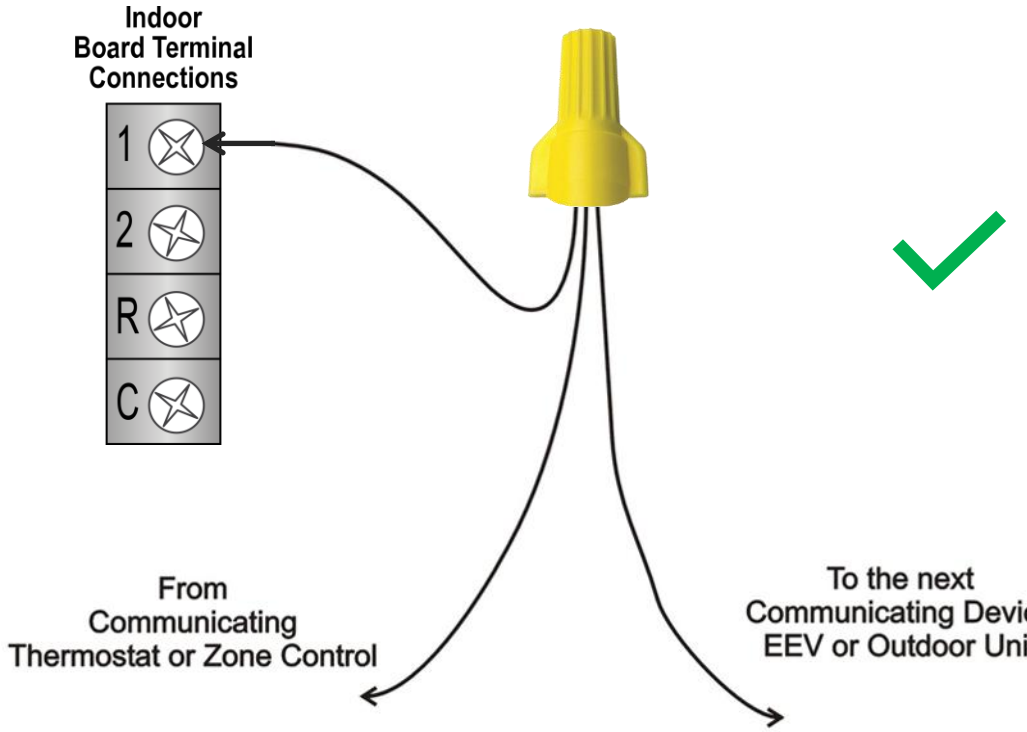
Multiple Conductors

- Twist wires together prior to insertion in top the terminal block.
- Avoid using different wire size and type.
- Avoid inserting more than two wires into a terminal connection.



Single Conductor

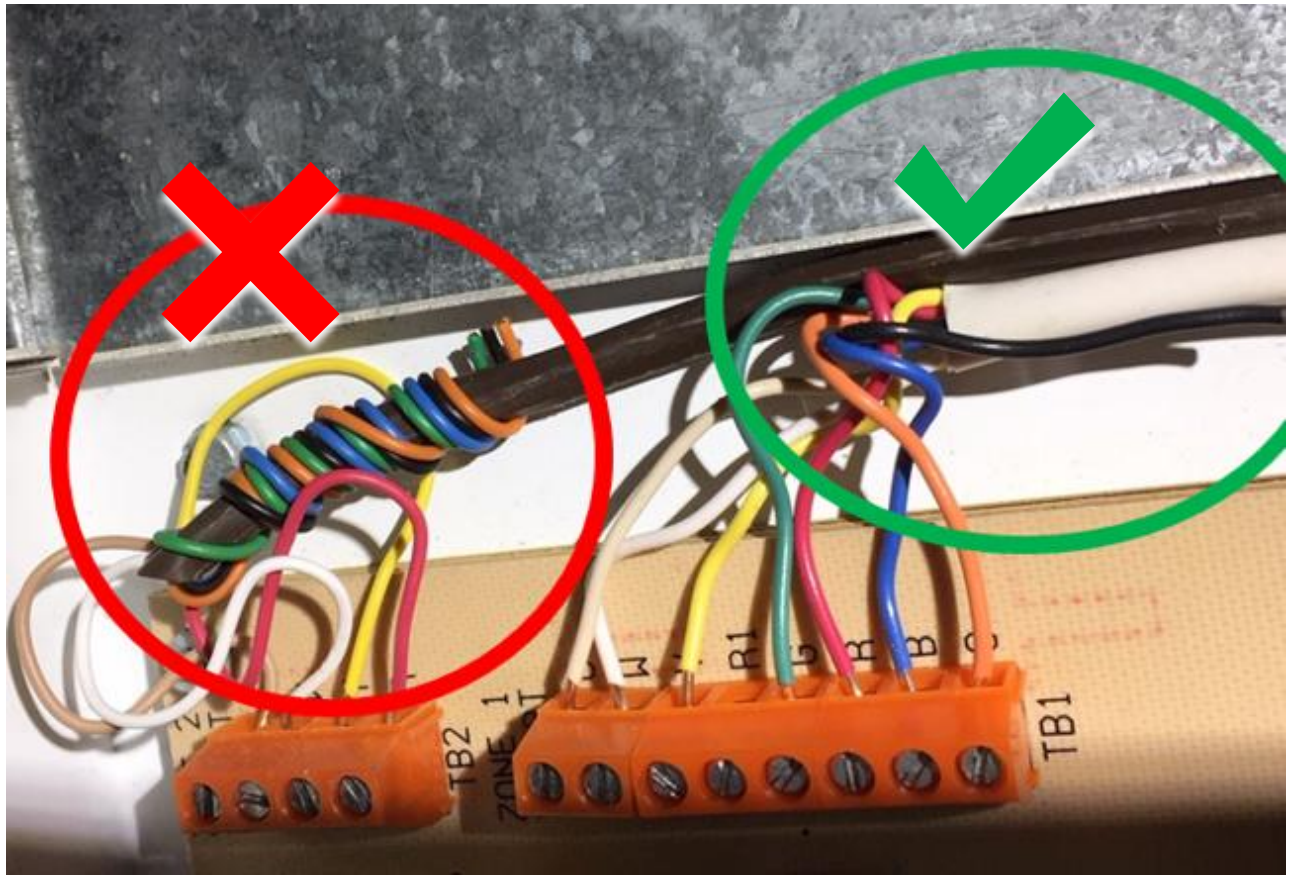
- Use a good quality wire nut to secure multiple wires and then make a single point connection to the terminal block.



Good Wiring Practice Insures Low Resistance Connections!

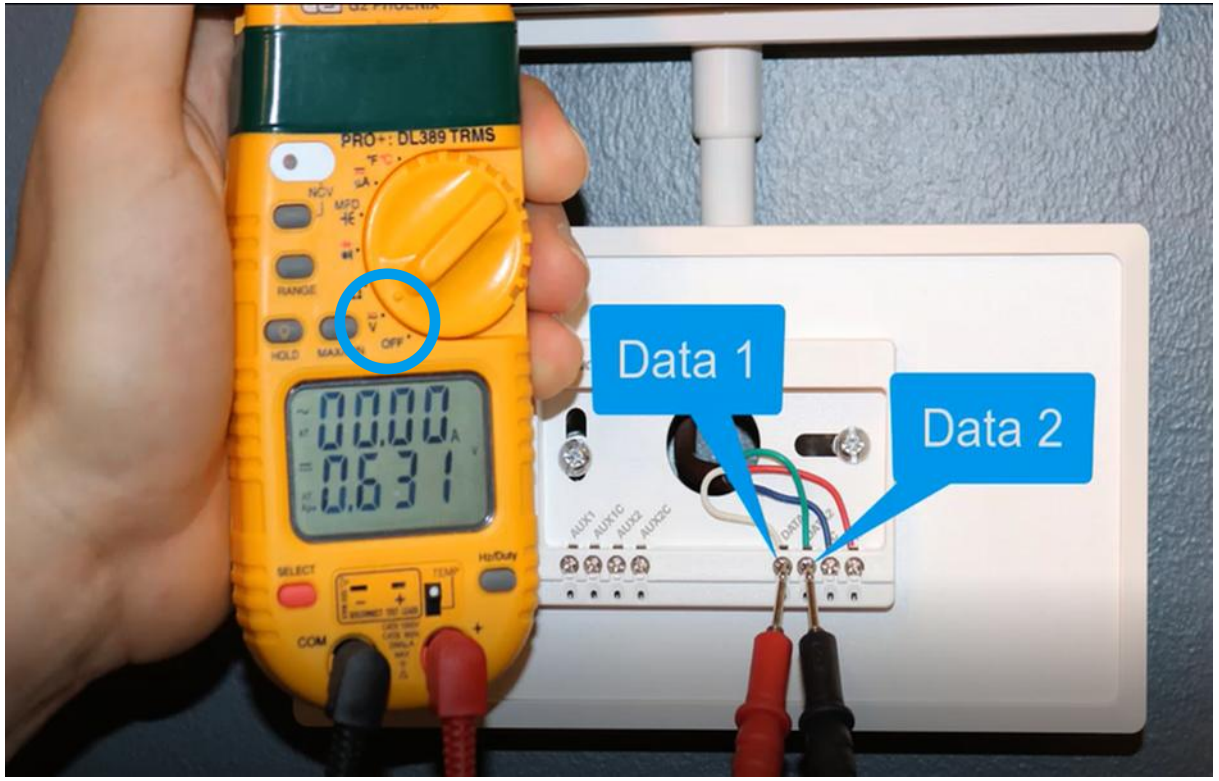
Solid Conductor Tips

- Do not wrap extra conductors around the wiring jacket
- Only ground the wire on one end.
  - The preferred spot to ground is at the indoor unit.
- Another option to improve communication reliability is to mechanically twist two of the extra conductors together and place two under the Data 1 Terminal and two under Data 2 Terminal.



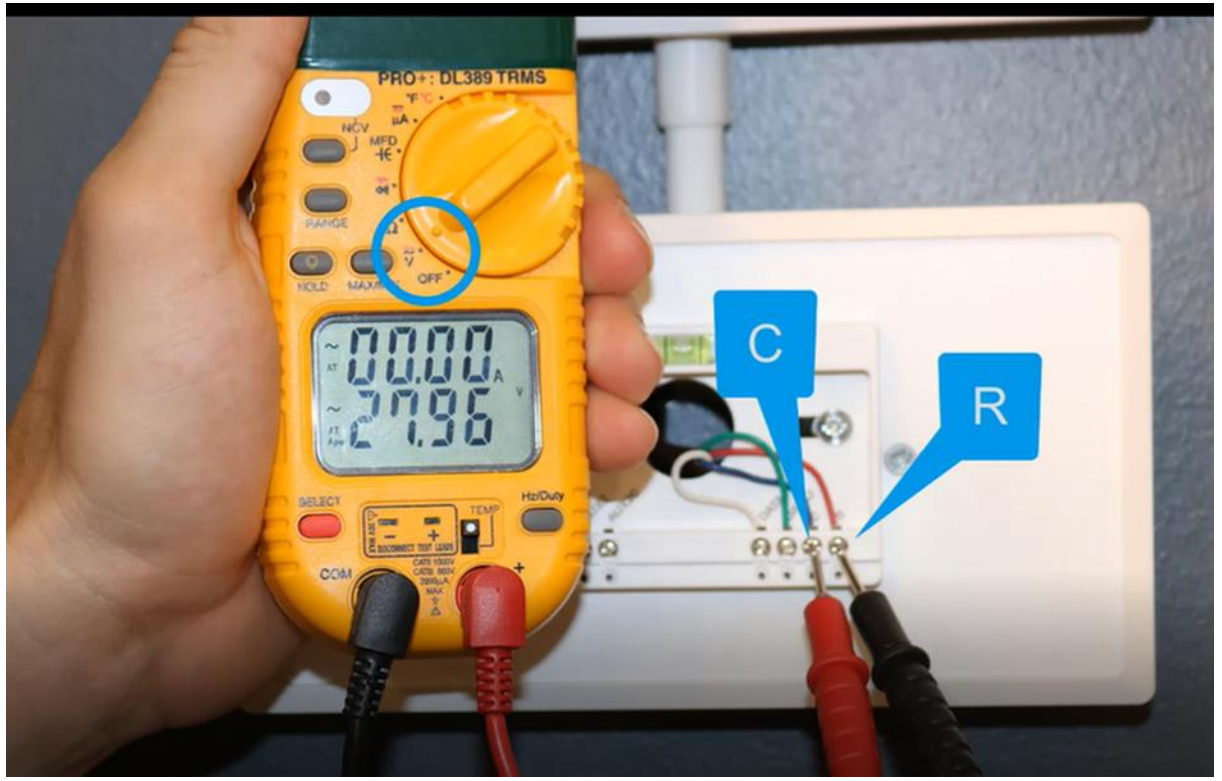
Low Voltage Readings

Data 1 & Data 2 (Communication)



Volts DC

R & C (Power)



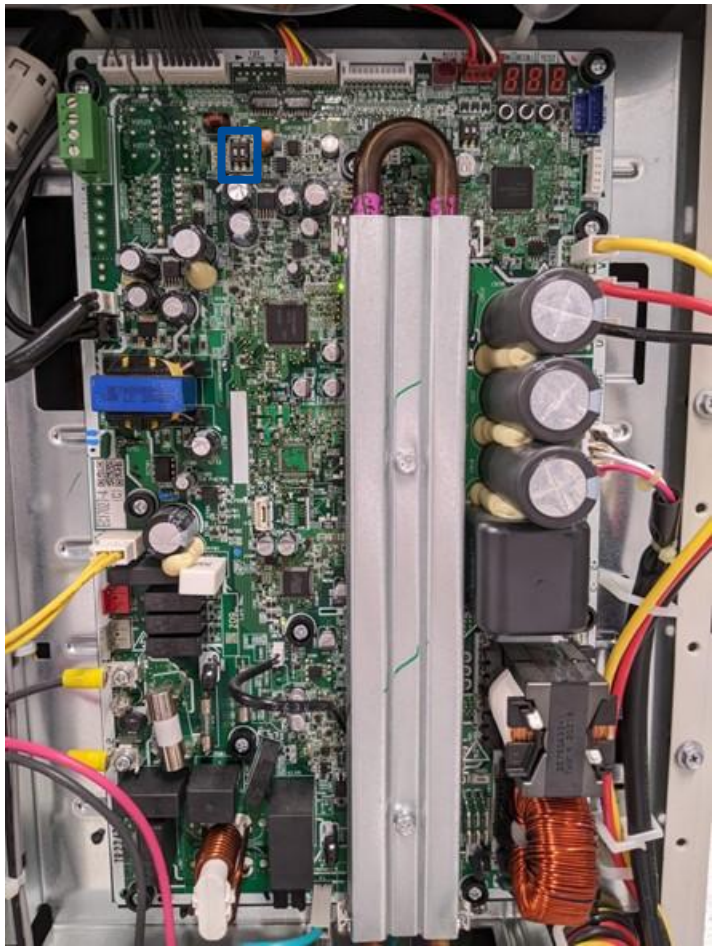
Volts AC

Communication Troubleshooting

- If receiving improper communication after verifying proper wiring and connections, powering down the system and turning DS1 dip switches to the down position can improve communication.
  - Data 1 & 2 should measure
    - Amana Smart Stat 0.6-0.9VDC
    - Daikin One Plus 0.6VDC
  - Wait a few minutes and then power back up by starting with the outdoor unit, then the Indoor equipment.
  - It will take approximately 3 - 5 minutes for the HVAC system and all thermostats to configure.
- Use the controller to access the outdoor and indoor equipment error history menu to clear faults.

Small Chassis

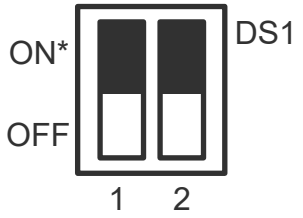
Large Chassis



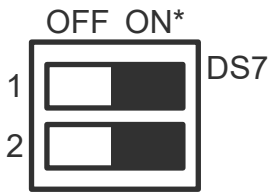
Communication Troubleshooting AHVE (R-32 only)

DS7 Network Troubleshooting Switches Explained

- If network errors have occurred, there is a combination of dip switch settings that can be utilized to improve communication.
  - DS7 dip switches are located on the indoor PCB
  - DS1 dip switches are located on the outdoor board.
  - There is a table in the installation manual that shows the possible combinations.



Outdoor unit DS1



Indoor unit DS7
(*) Default Factory Setting

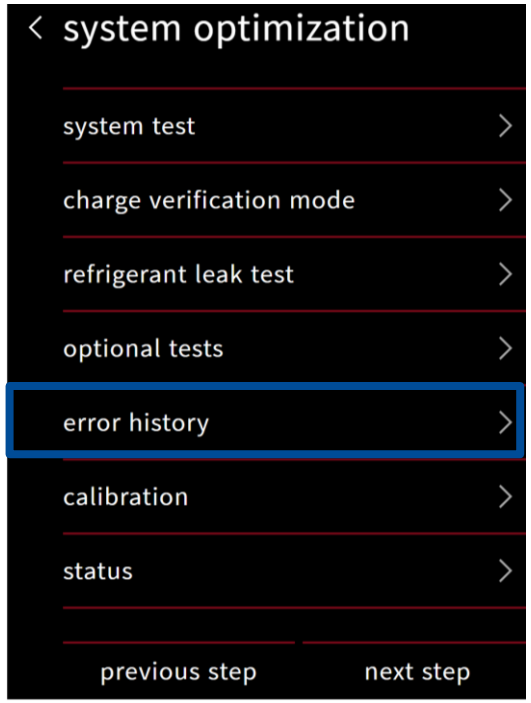
Dip Switch Setting Combinations

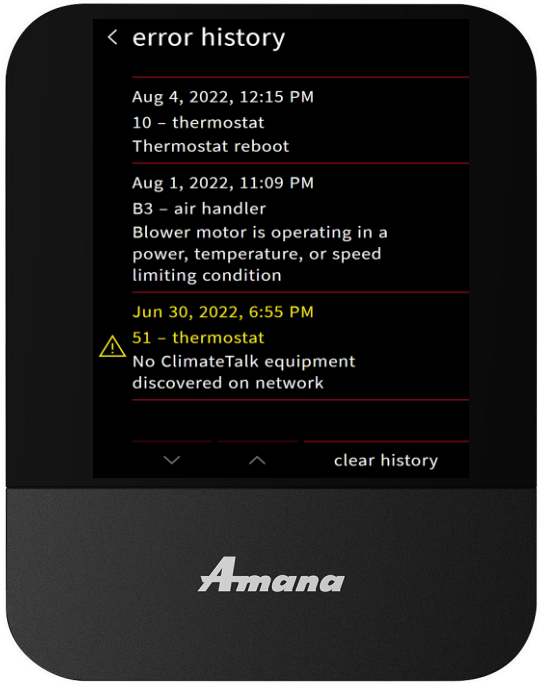
Setting Combinations	DS1 on the outdoor unit control board	DS7 on the indoor unit control board
1*	(both) ON	(both) ON
2	(both) OFF	(both) ON
3	(both) ON	(both) OFF
4	(both) OFF	(both) OFF

(*) Default factory settings

Error History

- The error history menu stores errors from most recent to least recent.
  - 10 thermostat and 10 equipment error codes can be stored.
  - Each error entry includes an error code, the equipment type which generated the error, a brief error description and a timestamp.





For detailed menu settings and resources

https://www.amana-hac.com/smart-thermostat

Agenda

System Operation

Component Operation & Testing

Checking Duct Static

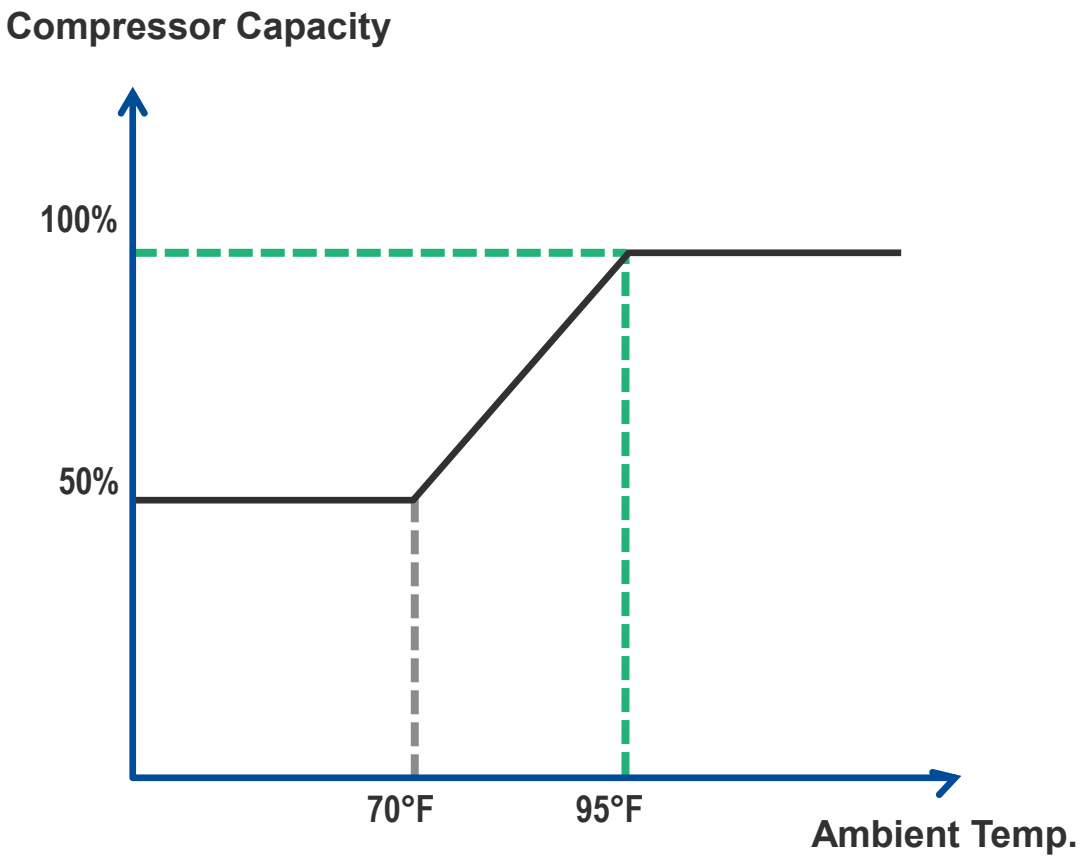
Communication Testing & Troubleshooting

Emergency Mode

Replacing Inverter Board

Cooling Emergency Mode

- Cooling emergency mode is to be used when communication between the indoor and outdoor units is not functioning properly and temporary cooling operation is required.
  - This mode enables the outdoor unit and indoor unit to run independently of each other.
- The compressor speed will automatically adjust based on the outdoor ambient temperature.
  - If ambient temperature is higher than 95°F, the outdoor unit can operate at 100% compressor speed. If ambient temperature is lower than 70°F, the unit will run at 50% compressor speed.
  - Between 95°F and 70°F, the compressor speed will adjust linearly as shown.



Cooling Emergency Mode

Steps to Initiate Emergency Cooling: Cased Coil (CAPE(A)*/CHPE(A)*/CAHEA

Control wiring: Remove The thermostat communication wirings (1,2, R and C) off all connected equipment (CAPE(A)*/CHPE(A)*/CAHEA, gas furnace/modular blower, outdoor unit and thermostat) from the communication terminals.

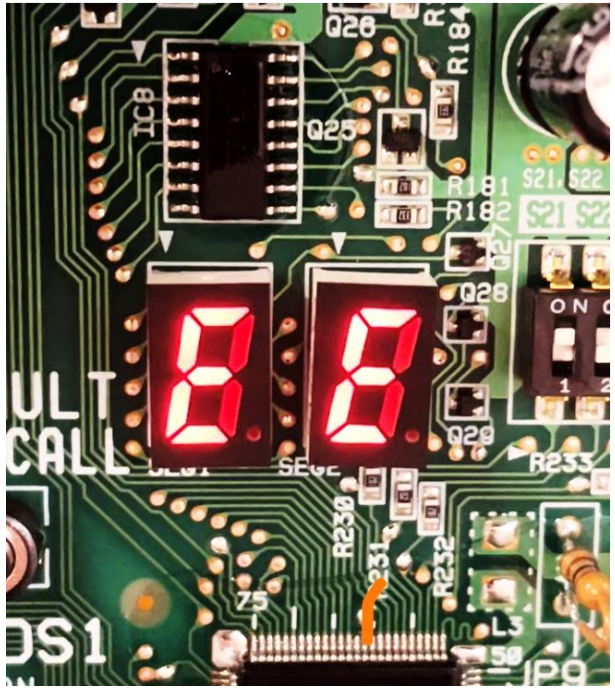
Indoor coil: DS-6 switch bank S-21 to ON, and S-22 to OFF.

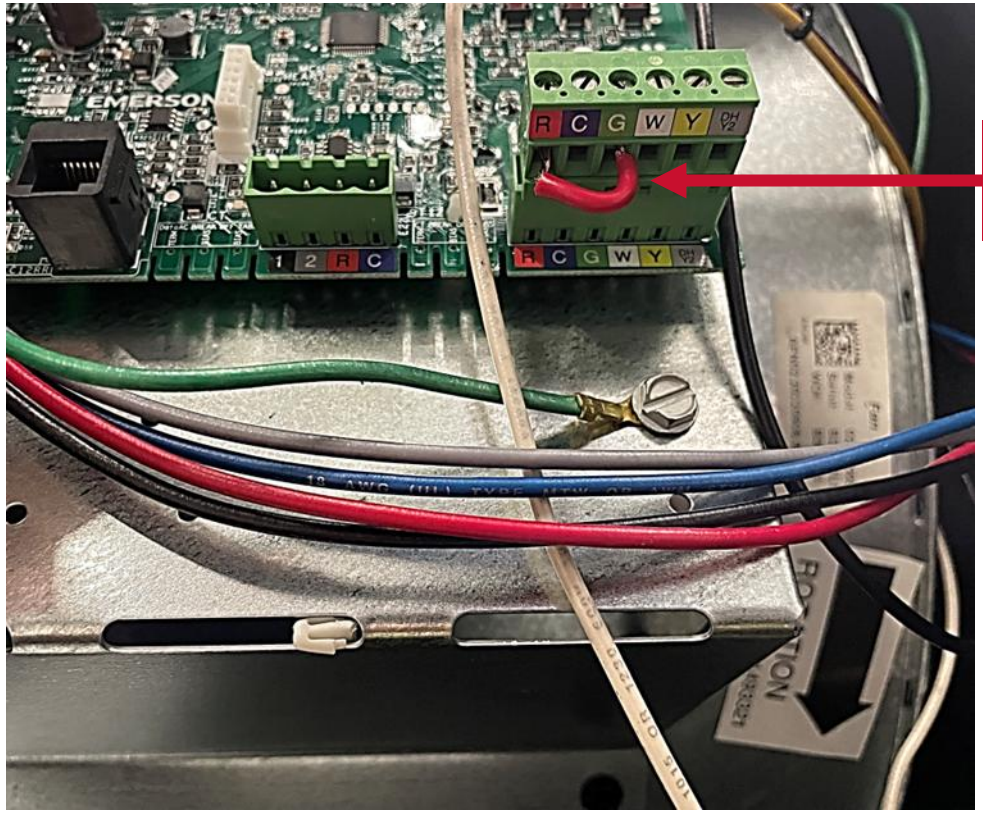
Switch Bank DS-6 Indoor (CAPE(A)*/CHPE(A)*/CAHEA Control Board Settings			
Function		S-21	S-22
Normal Operation		OFF*	OFF*
Emergency Mode	Cooling Emergency Mode	ON	OFF
	Heating Emergency Mode	OFF	ON

Cooling Emergency Mode

Steps to Initiate Emergency Cooling: Furnace

- Disconnect 4 pin plug and create a jumper to connect terminals R and G as shown in the image below.





Cooling Emergency Mode

- During operation, the indoor unit will provide constant airflow.
- The indoor unit will continue to operate the EEV for refrigerant superheat control, and the compressor will cycle at the interval selected by switch bank DS-2.
- The coil PCB with display EE while system is in emergency mode.

DS-2 Dip Switch Position (Outdoor Unit)		Function
S-1	S-2	
OFF	OFF	Normal Operation
ON	OFF	**Low** Cooling Emergency mode
OFF	ON	**Medium** Cooling Emergency mode
ON	ON	**High** Cooling Emergency mode

Operation	Cooling Off	Cooling On
Low Cool	Approx. 15 minutes	Approx. 7 minutes
Medium Cool	Approx. 8 minutes	Approx. 8 minutes
High Cool	Approx. 7 minutes	Approx. 15 minutes

Heating Emergency Mode

Steps to Initiate Emergency Heating: Cased Coil (CAPE(A)*/CHPE(A)*/CAHEA

Control Wiring: disconnect power to all units and remove thermostat wiring from the outdoor unit, furnace, and coil PCBs.

Thermostat: Install legacy thermostat to furnace PCB for temporary operation.

Indoor Coil: DS-6 Switch Bank S-21 to OFF, and S-22 to ON.

- The coil PCB will display EE while the system is in heating emergency mode.

Switch Bank DS-6 Indoor (CAPE(A)*/CHPE(A)*/CAHEAControl Board Settings			
Function		S-21	S-22
Normal Operation		OFF*	OFF*
Emergency Mode	Cooling Emergency Mode	ON	OFF
	Heating Emergency Mode	OFF	ON

Discharging Inverter Board

WARNING

Avoid contact with the charged area.

- **Never touch the charged area before confirming that the residual voltage is 50 volts or less.**

1. **Shut down the power and leave the control box for 10 minutes.**
2. **Make sure to touch the earth ground terminal to release the static electricity from your body (to prevent failure of the PC board).**
3. **Measure the residual voltage in the specified measurement position using a VOM while paying attention not to touch the charged area.**
4. **Immediately after measuring the residual voltage, disconnect the connectors of the outdoor unit's fan motor. (If the fan blade rotates by strong wind blowing against it, the capacitor will be charged, causing the danger of electrical shock.)**

Read all warning labels before performing any service!

DAIKIN

Heating & Air Conditioning Amana

Amana S-series
Service & Troubleshooting
Error Codes & Troubleshooting Scenarios

Technical Training Module: TRV-10.3

Rest assured.
It’s an Amana® brand.

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Agenda

Error Codes

Troubleshooting

Scenario #1

Scenario #2

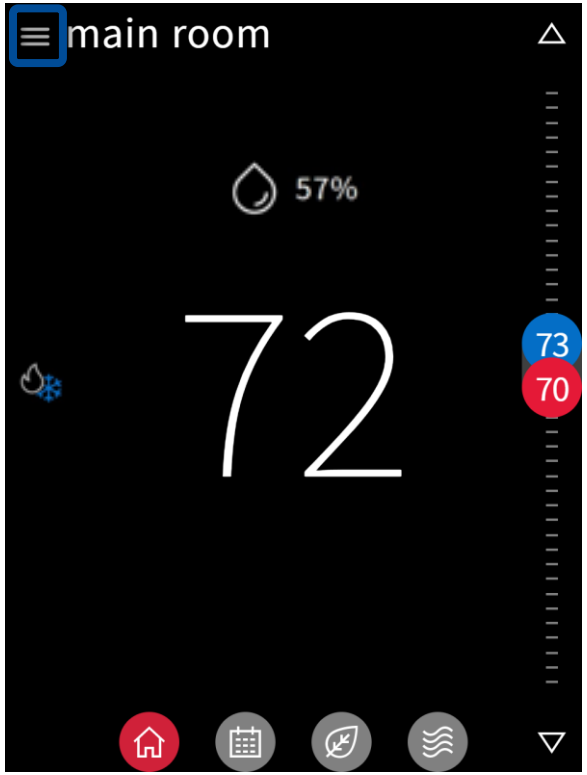
Scenario #3

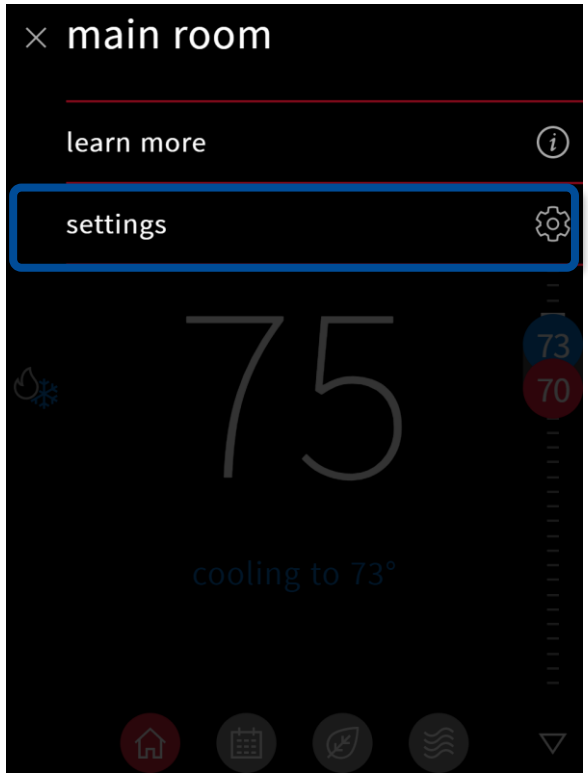
Scenario #4

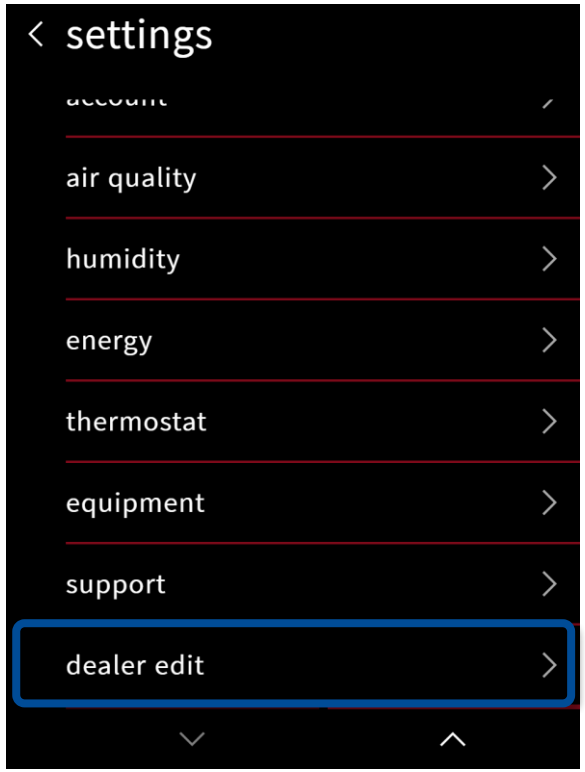
Dealer Navigation

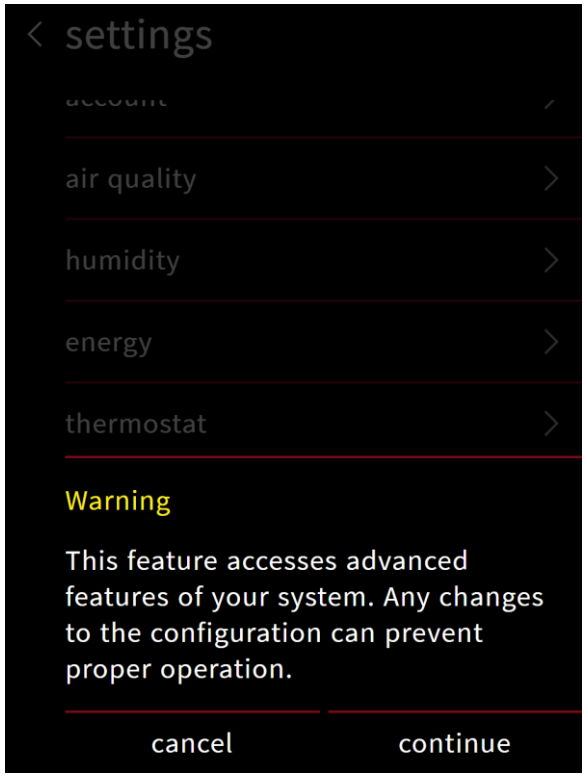
Dealer edit

- Navigating to dealer edit will allow you to access or revisit the installer set-up screen.
- Advanced adjustments to the thermostat will be made here.



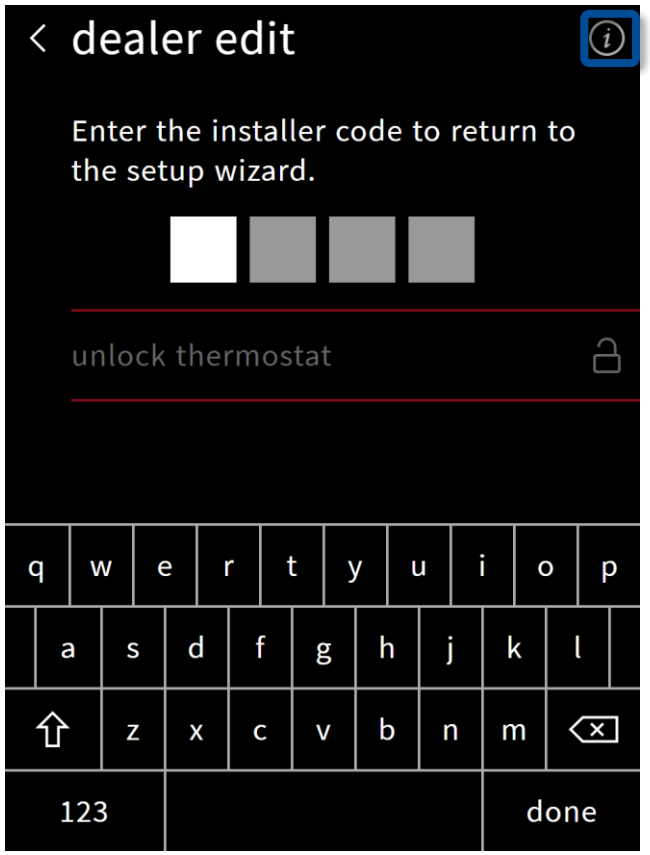






Dealer Navigation

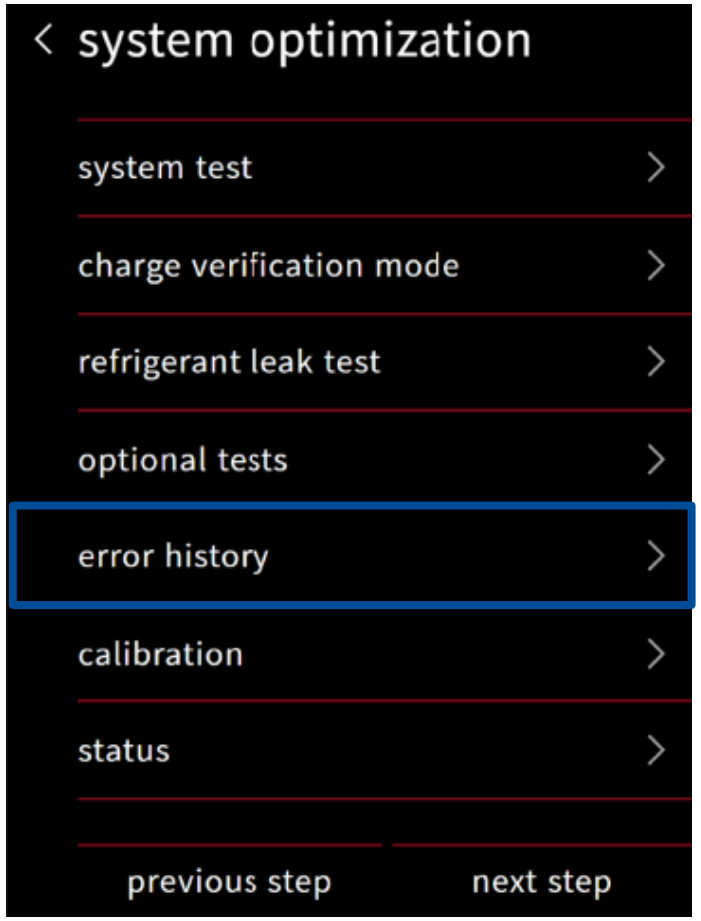
- Acknowledging the prompt enables you to tap the learn more icon.
- The icon displays the installer code, giving you access to the installer set-up screens.

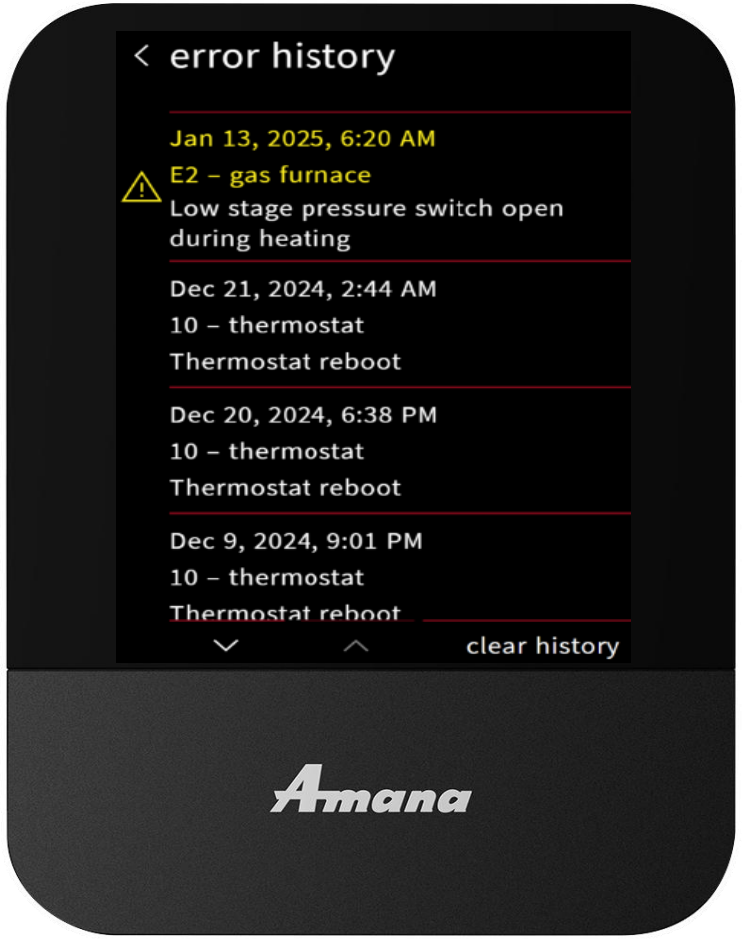


Error Codes

Thermostat

- The error history menu stores errors from most recent to least recent.
  - Each error entry includes an error code.
    - A timestamp along with the equipment type that generated the error, and a brief error description is displayed.





Error Codes

Outdoor unit

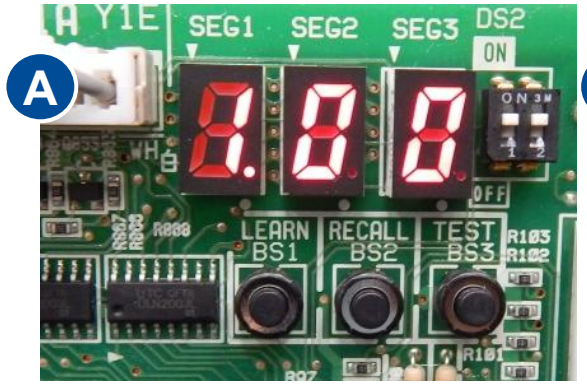
- Screen Zero: Current fault will be displayed on the screen.
- Screen One: Fault history. (the last 6 faults will be stored)
  - Hold the Recall button for 5 seconds.

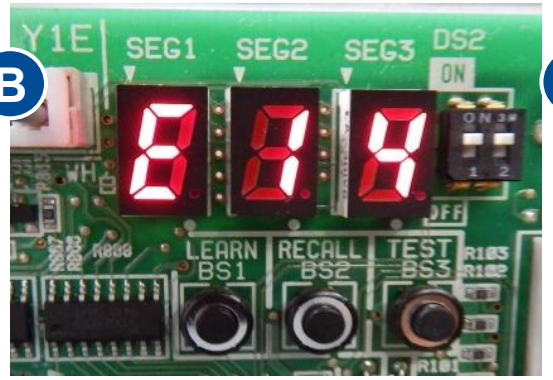
A The first screen that appears is: 1.00. (the first fault will appear next)

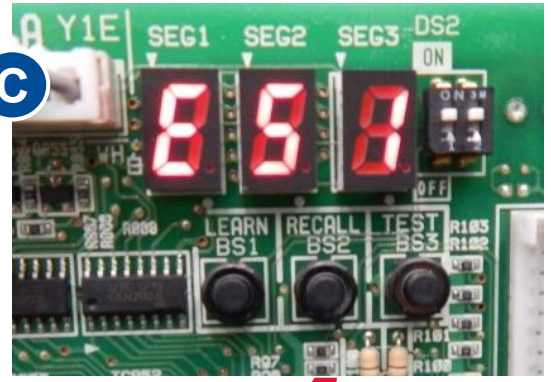
B Press Recall again (for one second) and the actual first fault will appear.

C Press Recall again and the 2nd fault will appear.

Mode	Function	Display Screen Number
Fault Code Display	Present fault (if any)	0 (Default)
Fault Code History	6 Recent faults stored	1
Monitoring Mode	*Monitors system values	2
Setting Mode 1	*Can change system settings	3
Setting Mode 2	*Can change system settings	4







How to Read the Flowchart in the Service Manual

1. Type of error code
2. Method of Error Detection
3. Conditions for confirming the malfunction
4. Supposed causes
5. Diagnosis steps/flowchart

TROUBLESHOOTING — *OUTDOOR UNIT FLOWCHART*

Error Code **E22** — **High discharge temperature error**

1 Applicable Models

Outdoor AC
Outdoor HP

2 Method of Error Detection

Detected by discharge temperature.

3 Error Decision Conditions

When discharge temperature became excessive high.

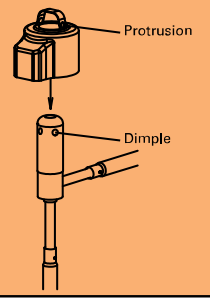
4 Supposed Causes

- Discharge thermistor inoperable or improperly connected
- Discharge thermistor is put in incorrect position or off
- OL sensor is put in incorrect position or off
- The compressor enclosure temperature is too high
- Low refrigerant charge
- Overcharge
- Faulty compressor

5. Troubleshooting

Diagnosis	Corrective Actions
Discharge temperature is higher than the criterion (120°C (248°F)). YES	Check refrigerant leak. Check compressor fault.
NO → Discharge thermistor is connected to PCB properly? NO	Connect properly.
YES → Discharge thermistor is connected to discharge pipe properly? NO	Connect properly.
YES → Characteristic of discharge thermistor is normal? NO	Replace thermistors.
YES → Indoor and outdoor EEV coils are connected to PCB properly? NO	Connect properly.
YES → Indoor and outdoor EEV coils are attached to EEV body properly? (*1) NO	Attach EEV coil properly.
YES → Coil resistance of EEV is normal? NO	Replace EEV coil.
YES	Replace PCB.

*1: Check if EEV coil is correctly secured to EEV body. Protrusion on EEV coil should be clicked into place on dimple of EEV body.



Agenda

Error Codes

Troubleshooting

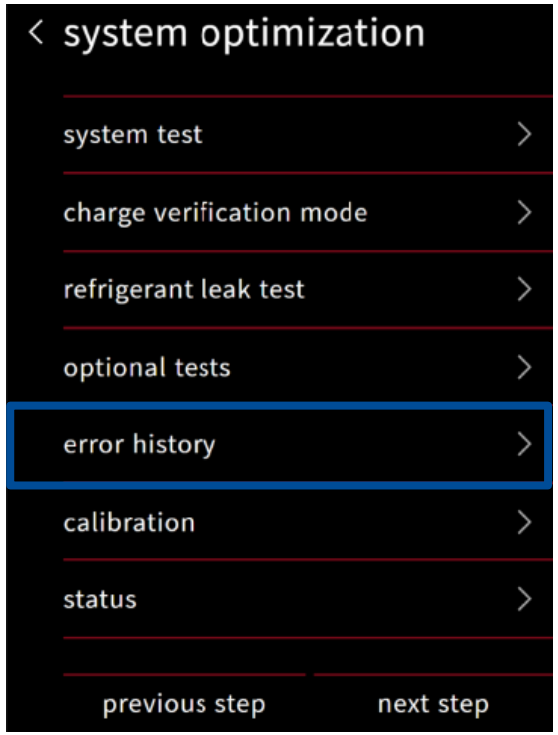
- Scenario #1
- Scenario #2
- Scenario #3
- Scenario #4

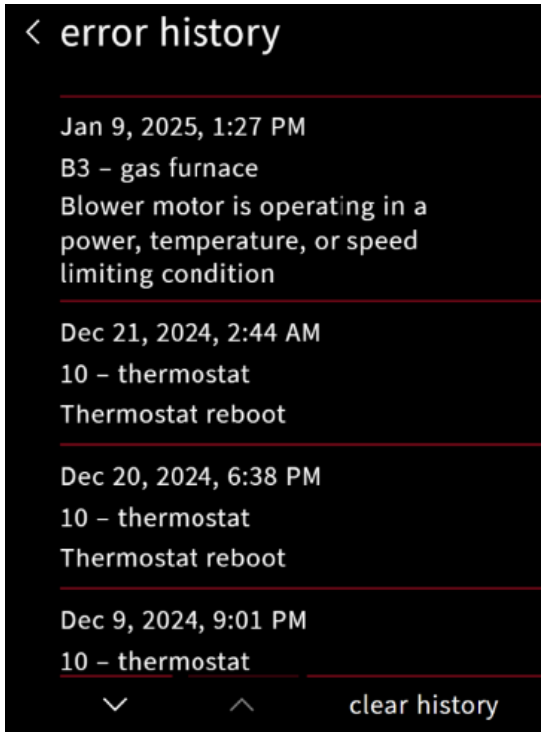
Scenario #1 Noisy System

- Homeowner states they are hearing loud noises from the registers that keeps them up at night.
- The system does not populate any errors codes on the home screen of the thermostat and the system maintains temperature, but the noise is bothersome.

Scenario #1

- Where do we start?
  - Look for any error history in the thermostat
- What do we see?
  - B3 minor error codes
- What do we need to do????





TROUBLESHOOTING — *OUTDOOR UNIT FLOWCHART*

Error Code **B3**	**Blower motor operating in power, Temp or speed limiting conditions**

1 Applicable Models

EEV Air handler

2 Method of Detection

According to the Control Status Flags of the Motor

3 Error Decision Conditions

When the motor starts Control Status Flags (bit3, bit4 or bit9)(*)

*)
bit3=Power limit
bit4=Temp limit
bit9=Over temp

4 Supposed Causes

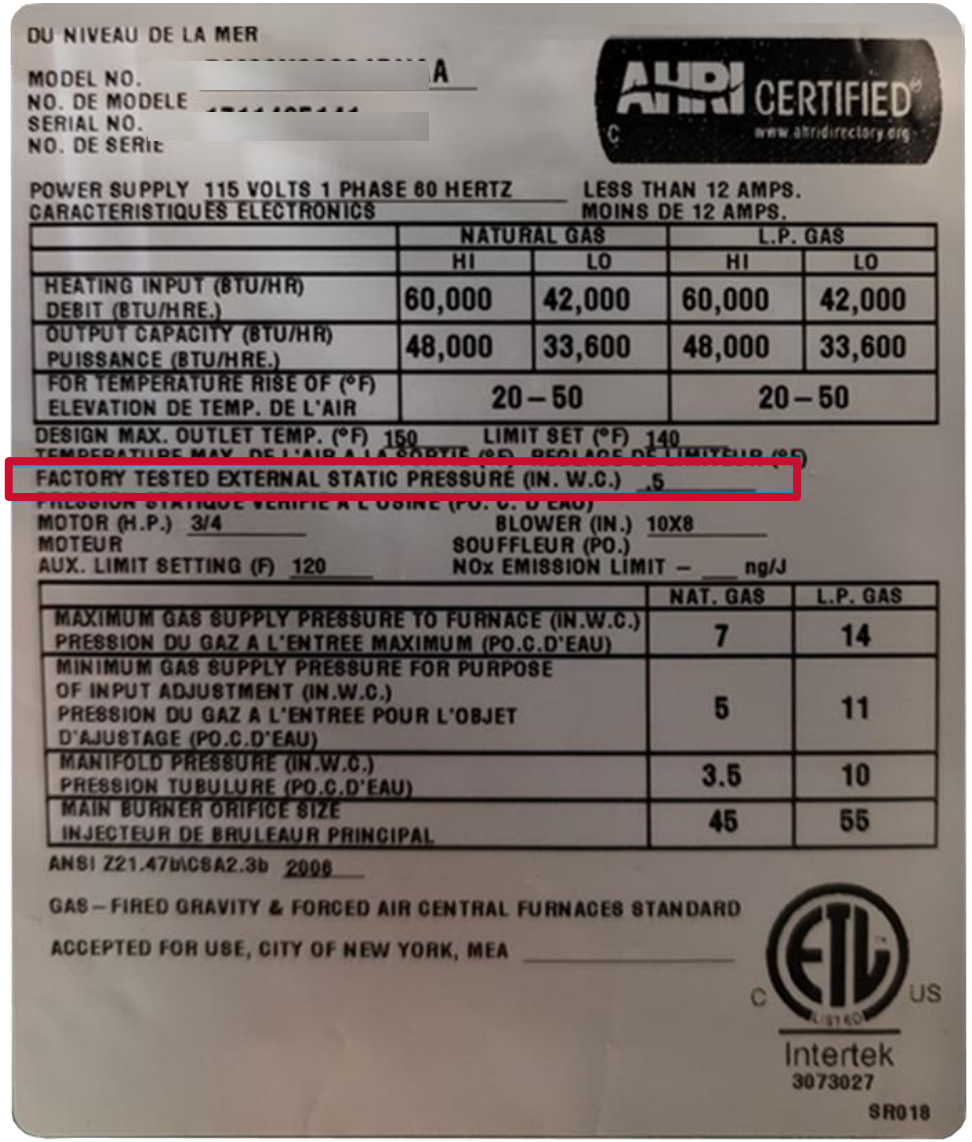
- Fan/motor obstruction or blocked filters
- Blockage in the airflow (duct work), or ducts are undersized (high external statis pressure)

5 Troubleshooting

Diagnosis	Corrective Actions
⚠ **Caution** Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.	
Obstacles are touching the blower/motor, or blocked filters? — YES	• Remove obstacles from a blower/motor or filters
NO	
Blockage in the airflow (duct work)? — YES	• Remove obstacles from the duct.
NO	
Ducts are undersized (External static pressure>0.5″w(124.4Pa))? — YES	• Duct redesign (External static pressure < 0.5″w (124.4Pa)
NO	• Replace control board or motor

Scenario #1

- We see the rated max External Static Pressure (ESP) is rated at .5”WC
- Incorrect external static pressure may cause:
  - Excessive temperature rise
  - Motor stress
  - Duct stress
  - Reduced performance
  - Unwanted condensation
  - etc.


DU NIVEAU DE LA MER

MODEL NO. [redacted]A

NO. DE MODELE

SERIAL NO. [redacted]

NO. DE SERIE

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POWER SUPPLY 115 VOLTS 1 PHASE 60 HERTZ — LESS THAN 12 AMPS.
CARACTERISTIQUES ELECTRONICS — MOINS DE 12 AMPS.

	NATURAL GAS		L.P. GAS	
	HI	LO	HI	LO
HEATING INPUT (BTU/HR) DEBIT (BTU/HRE.)	60,000	42,000	60,000	42,000
OUTPUT CAPACITY (BTU/HR) PUISSANCE (BTU/HRE.)	48,000	33,600	48,000	33,600
FOR TEMPERATURE RISE OF (°F) ELEVATION DE TEMP. DE L'AIR	20 – 50		20 – 50	

DESIGN MAX. OUTLET TEMP. (°F) 150 — LIMIT SET (°F) 140

FACTORY TESTED EXTERNAL STATIC PRESSURE (IN. W.C.) .5

MOTOR (H.P.) 3/4 — BLOWER (IN.) 10X8
MOTEUR — SOUFFLEUR (PO.)
AUX. LIMIT SETTING (F) 120 — NOx EMISSION LIMIT – ___ ng/J

	NAT. GAS	L.P. GAS
MAXIMUM GAS SUPPLY PRESSURE TO FURNACE (IN.W.C.) PRESSION DU GAZ A L'ENTREE MAXIMUM (PO.C.D'EAU)	7	14
MINIMUM GAS SUPPLY PRESSURE FOR PURPOSE OF INPUT ADJUSTMENT (IN.W.C.) PRESSION DU GAZ A L'ENTREE POUR L'OBJET D'AJUSTAGE (PO.C.D'EAU)	5	11
MANIFOLD PRESSURE (IN.W.C.) PRESSION TUBULURE (PO.C.D'EAU)	3.5	10
MAIN BURNER ORIFICE SIZE INJECTEUR DE BRULEAUR PRINCIPAL	45	55

ANSI Z21.47b\CSA2.3b 2006

GAS – FIRED GRAVITY & FORCED AIR CENTRAL FURNACES STANDARD

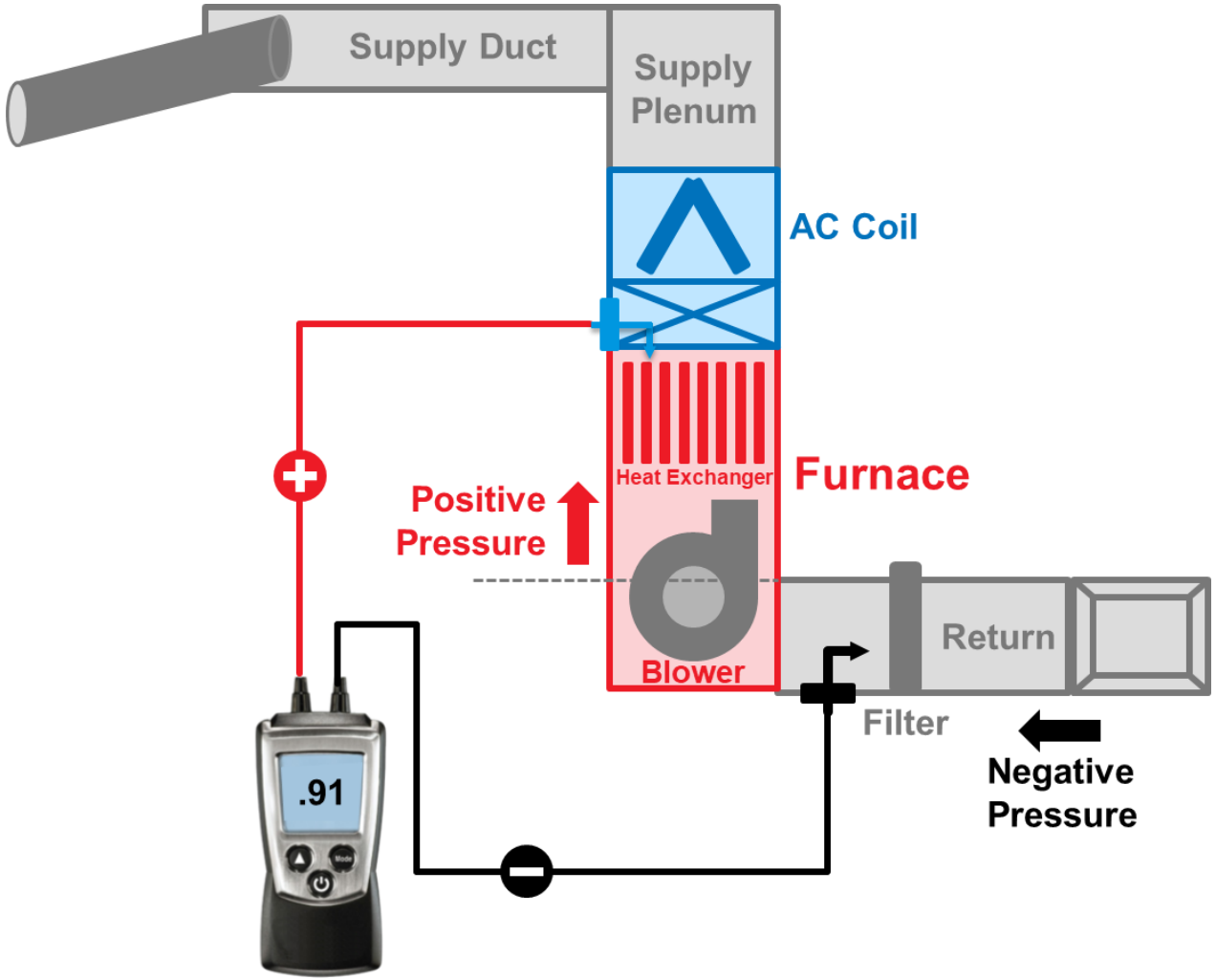
ACCEPTED FOR USE, CITY OF NEW YORK, MEA ___

ETL LISTED C US
Intertek
3073027

SR018

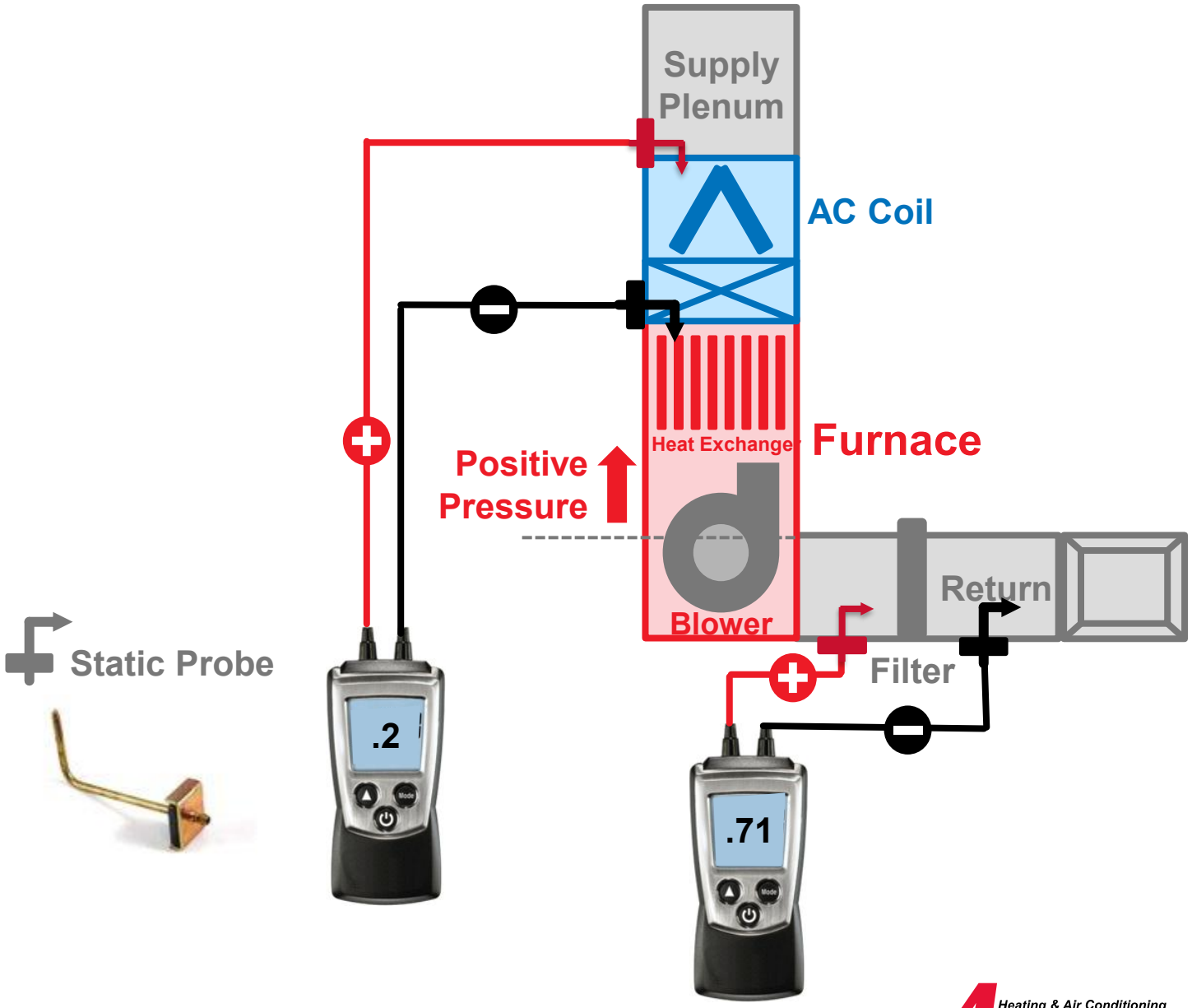
Scenario #1

- The design static of most furnaces is 0.5 inches water column.
- Use a manometer to measure the static pressure of the furnace only.
  - Supply side is measured between the heat exchanger and evaporator coil.
  - Return side is measured between the blower wheel and filter.
- Is total ESP within specification?
  - We check our static pressure and see we have a total ESP of .91”WC
  - No!



Scenario #1

- What do we need to do?
  - Check static pressure across the coil.
  - Check static pressure across the filter.
- What is the issue?
  - Restrictive filter!



Scenario #1

Conclusion

- It is important to ensure duct is sized correctly, the ductwork is installed correctly, filters are unrestricted, and zone dampers are positioned properly.
  - Airflow requirements for the system after repairs and installation can be difficult
- Temporary adjustments can be made by setting the heating fan tap in the furnace and the air flow trim for both the furnace and the heat pump.

Agenda

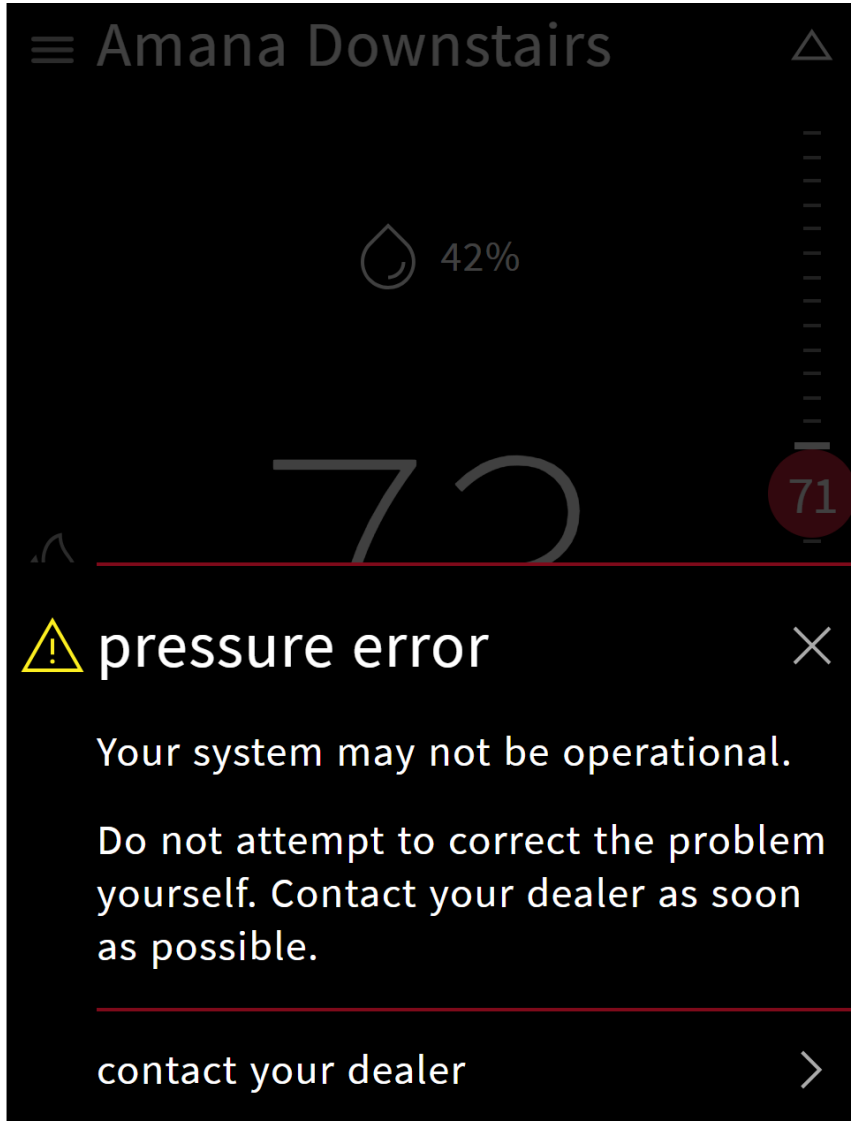
Error Codes

Troubleshooting

- Scenario #1
- Scenario #2
- Scenario #3
- Scenario #4

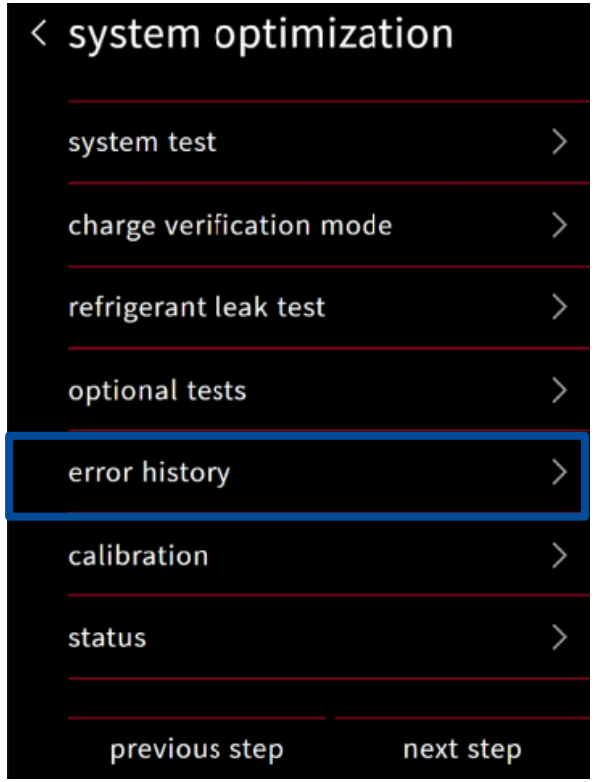
Scenario #2 Error code on Controller

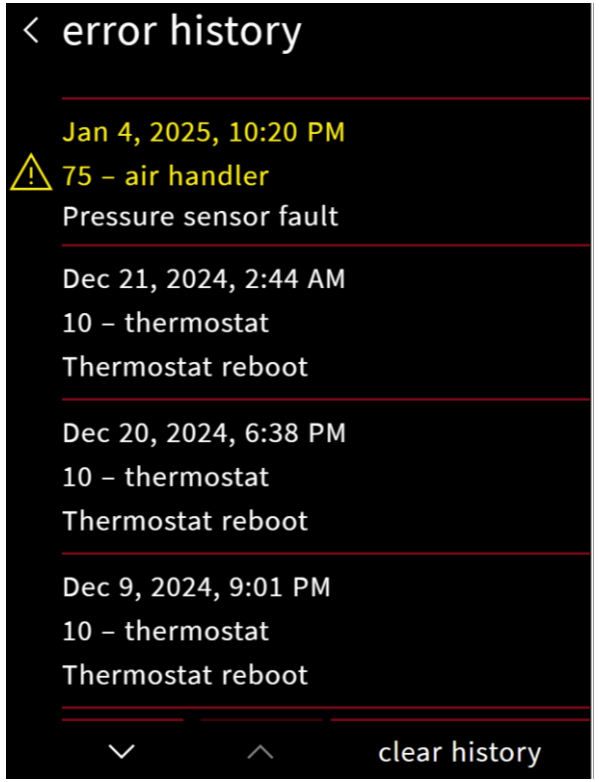
- Homeowner states there is an error notification on the controller and the unit is still operational.
- Where do we go from here?

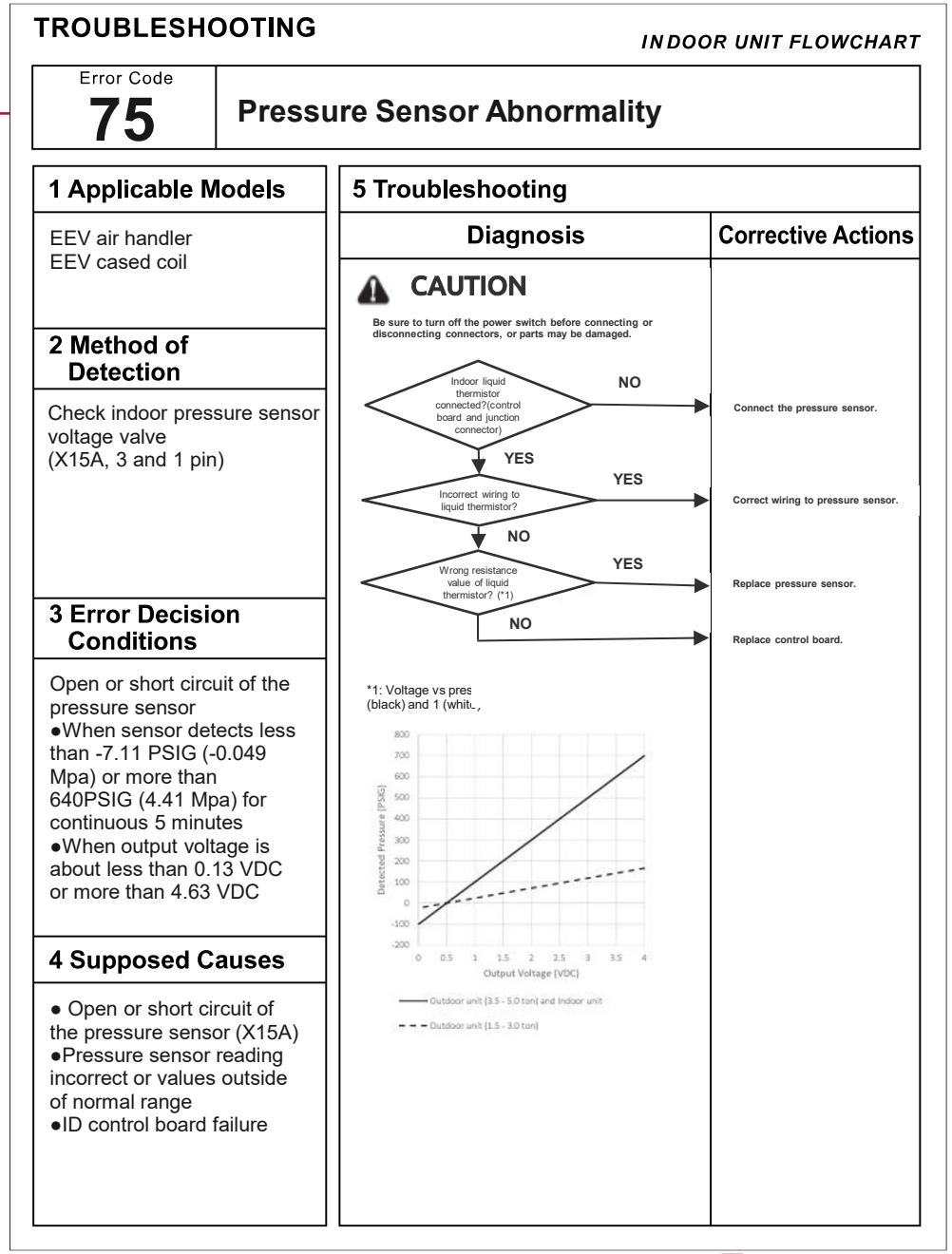


Scenario #2

- Look for any error history in the thermostat
- We see a 75-error code pressure sensor fault.
- What's the next step?

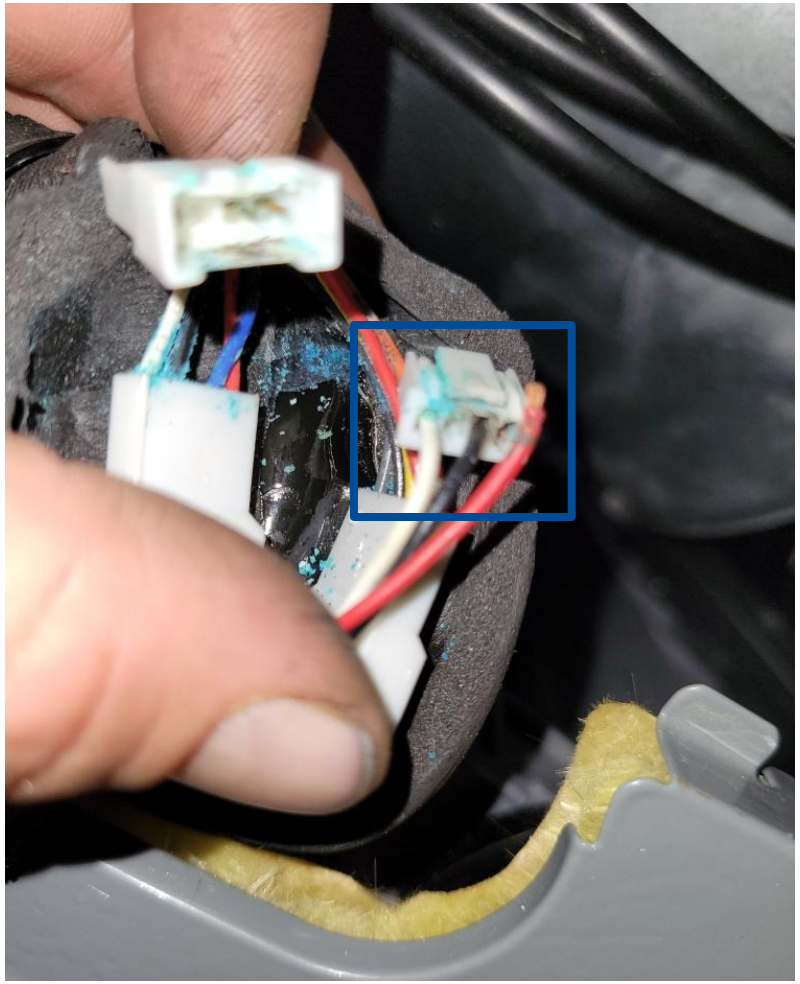


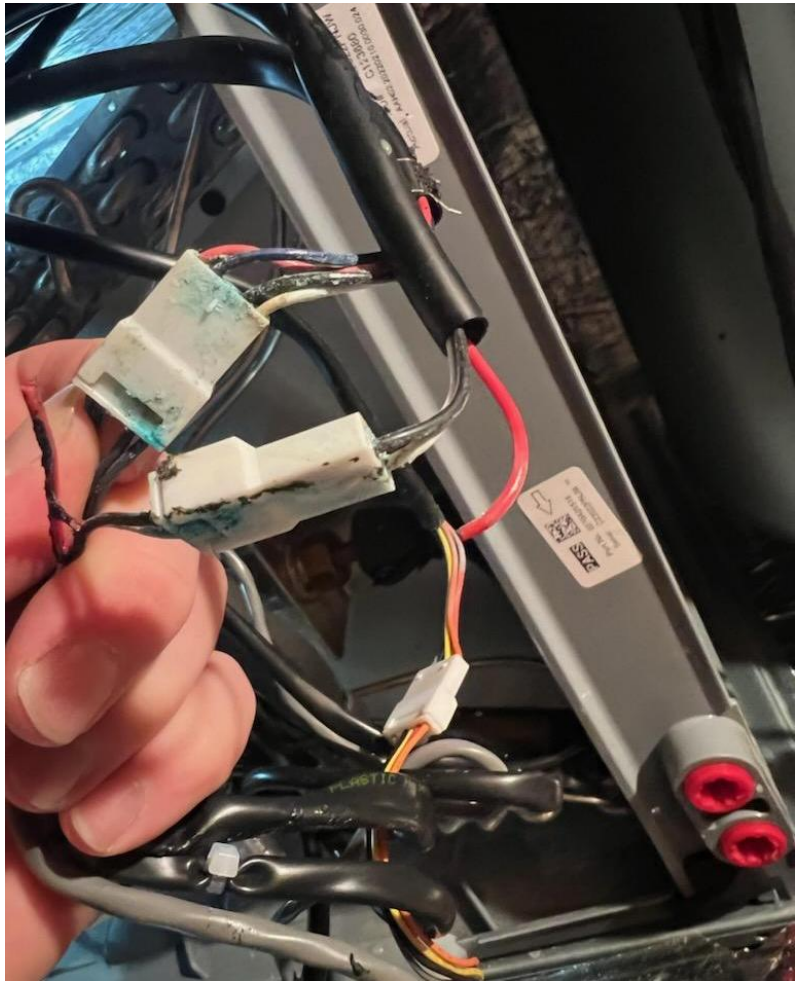




Scenario #2

- According to the flow chart we need to inspect the wiring and connections.
  - Technician proceeds to the air handler and removes doors to inspect/test the pressure transducer circuit and connections.
- What did you find?
  - After checking the wiring to the pressure transducer, we find the connector is corroded and wire has broken off the connector.
- Conclusion
  - Repair broken wire and confirm proper system operation.





Agenda

Error Codes

Troubleshooting

Scenario #1

Scenario #2

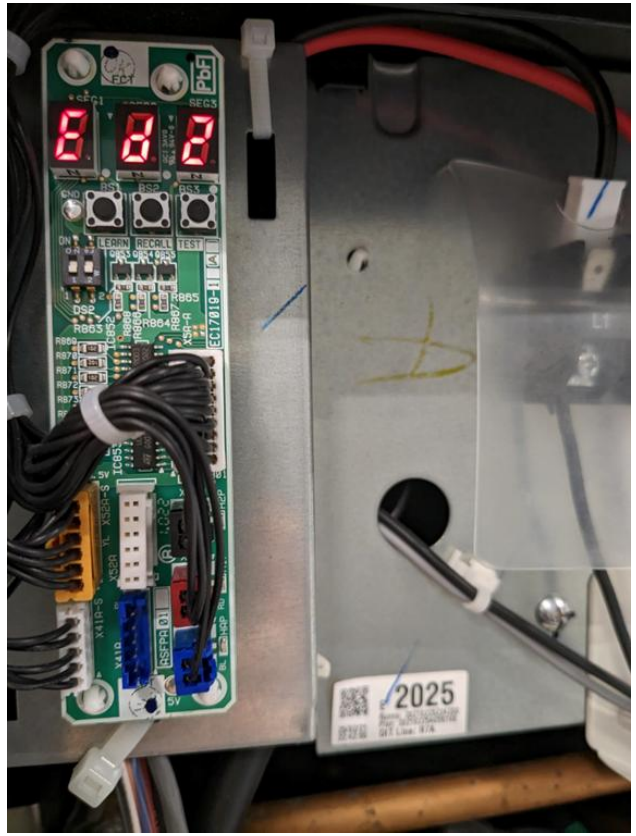
Scenario #3

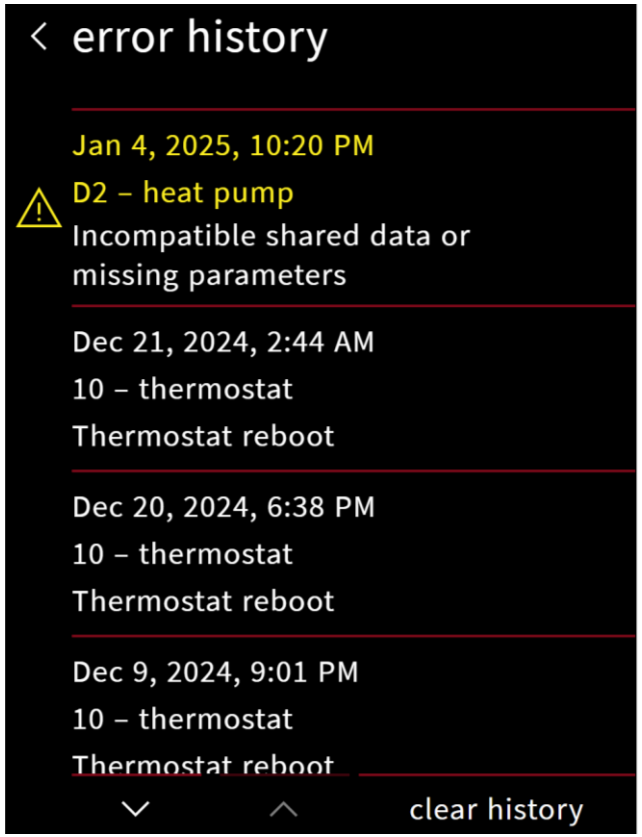
Scenario #4

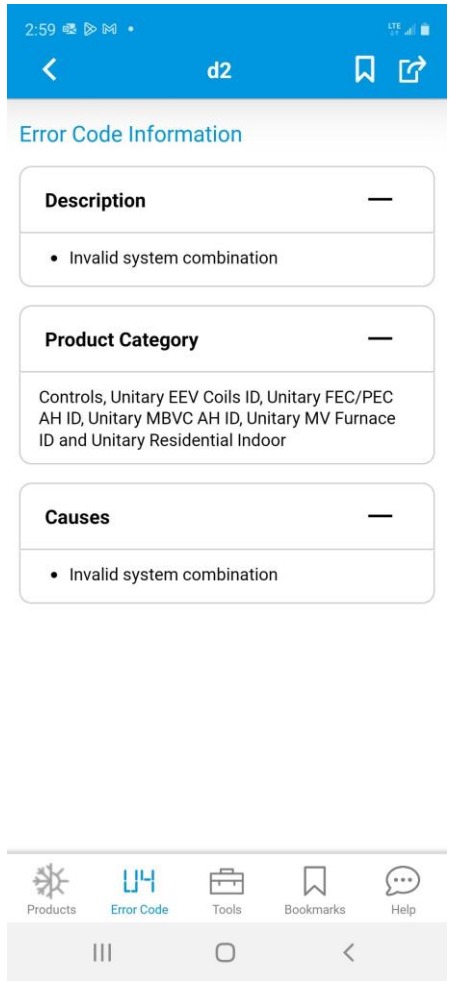
Scenario #3

D2 Error Code

- After the installation, the installer finds an Ed2 on the outdoor unit and a D2 error on the thermostat. Troubleshoot and find the problem.
- What is Ed2 or D2 error?

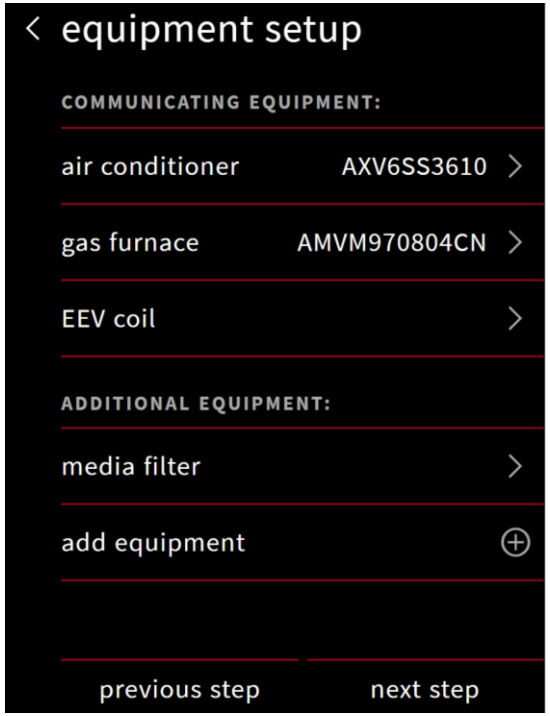


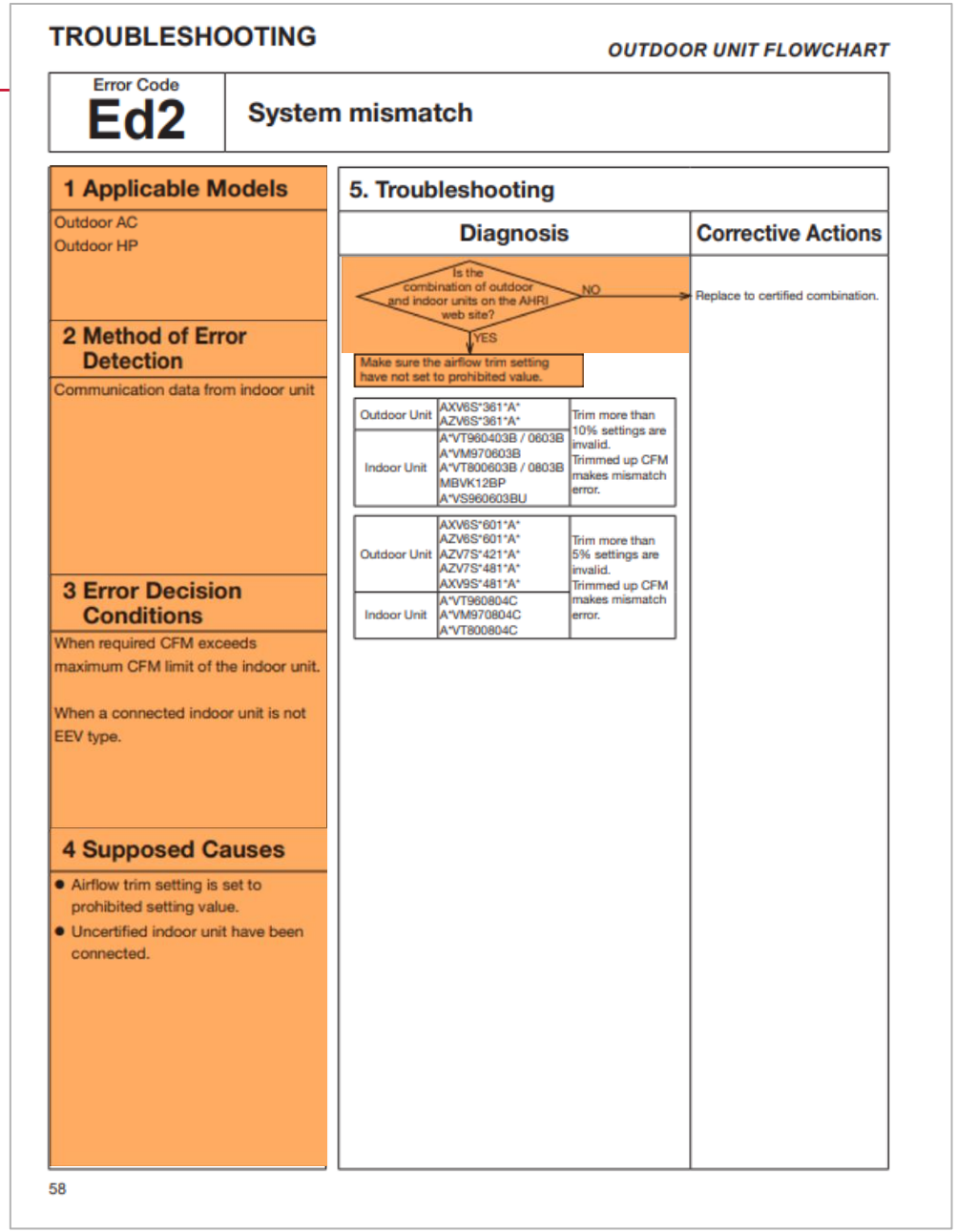




Scenario #3

- The system matchup was confirmed utilizing system configurator.
- Is the trim within specification range?
  - Yes!
- What could be the issue?
  - What equipment is the thermostat seeing?





TROUBLESHOOTING

OUTDOOR UNIT FLOWCHART

Error Code **Ed2** — **System mismatch**

1 Applicable Models

Outdoor AC
Outdoor HP

2 Method of Error Detection

Communication data from indoor unit

3 Error Decision Conditions

When required CFM exceeds maximum CFM limit of the indoor unit.

When a connected indoor unit is not EEV type.

4 Supposed Causes

- Airflow trim setting is set to prohibited setting value.
- Uncertified indoor unit have been connected.

5. Troubleshooting

Diagnosis	Corrective Actions
Is the combination of outdoor and indoor units on the AHRI web site? — NO	Replace to certified combination.
YES: Make sure the airflow trim setting have not set to prohibited value.	

Outdoor Unit	AXV6S*361*A* AZV6S*361*A*	Trim more than 10% settings are invalid. Trimmed up CFM makes mismatch error.
Indoor Unit	A*VT960403B / 0603B A*VM970603B A*VT800603B / 0803B MBVK12BP A*VS960603BU	
Outdoor Unit	AXV6S*601*A* AZV6S*601*A* AZV7S*421*A* AZV7S*481*A* AXV9S*481*A*	Trim more than 5% settings are invalid. Trimmed up CFM makes mismatch error.
Indoor Unit	A*VT960804C A*VM970804C A*VT800804C	

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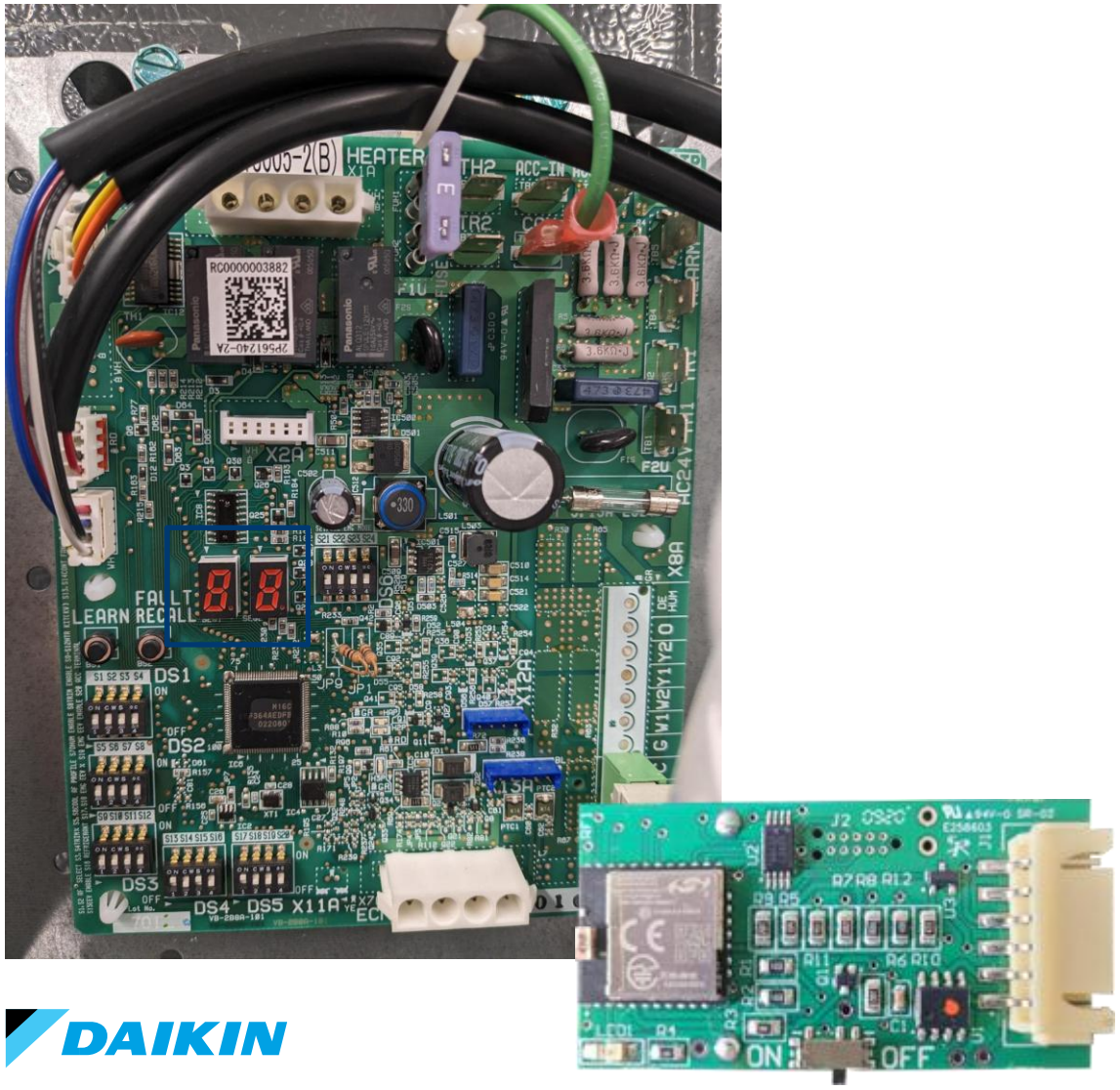
Scenario

Troubleshooting D2



- What do we check?
  - ✓ Power supply (24v)
  - ✓ Low voltage wiring or connections (voltage is within range and connections are secure)
  - × PCB (is not energized)
- What should we do?
  - ? Check the PCB fuse
  - ? Replace the PCB
- The PCB is replaced and a D0 occurs, why?
  - Did you populate the correct shared data on the new board utilizing the shared data loader?

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Scenario #3

Troubleshooting D2 Recap

- To recap, we replaced the EEV PCB, verified all wiring is correct, then populated new data onto the PCB via Bluetooth Shared Data Loader.
  - Verify the thermostat shows the correct model numbers for all equipment.
  - Verify system is operational

Agenda

Error Codes

Troubleshooting

Scenario #1

Scenario #2

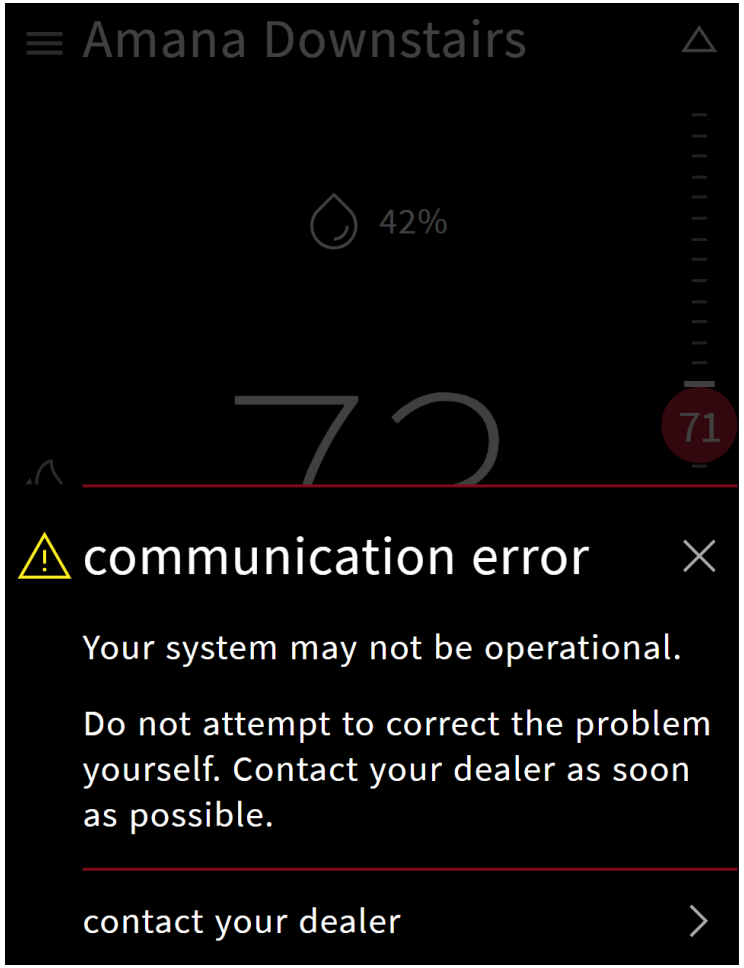
Scenario #3

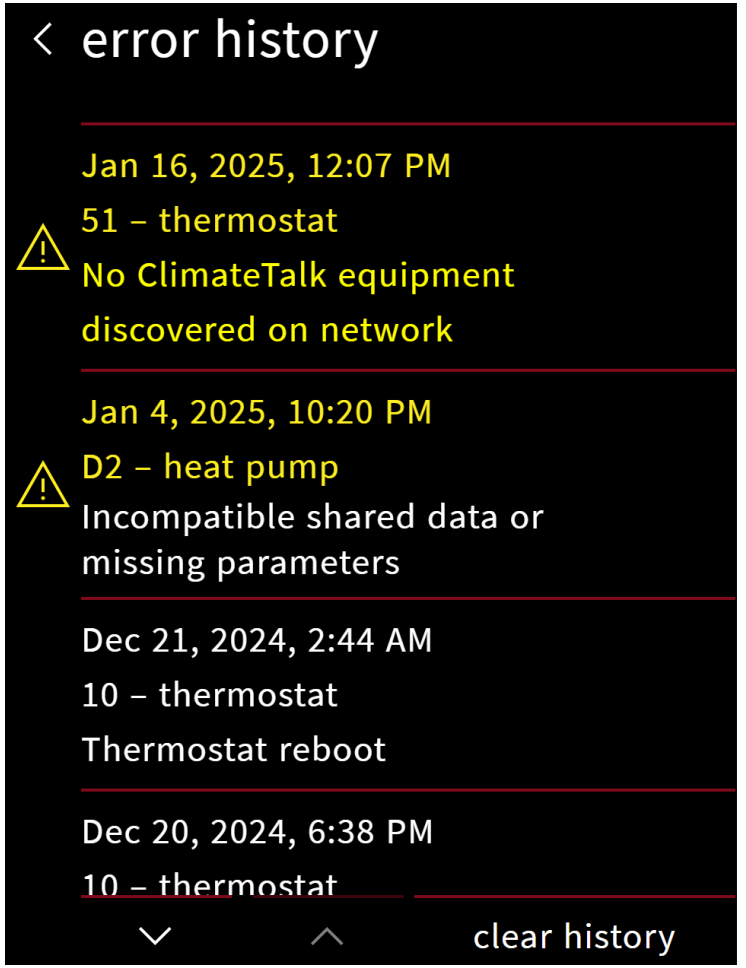
Scenario #4

Scenario #4

Communication Error at Start-up

- During start-up, the installer finds a communication error on the thermostat. Troubleshoot and find the problem

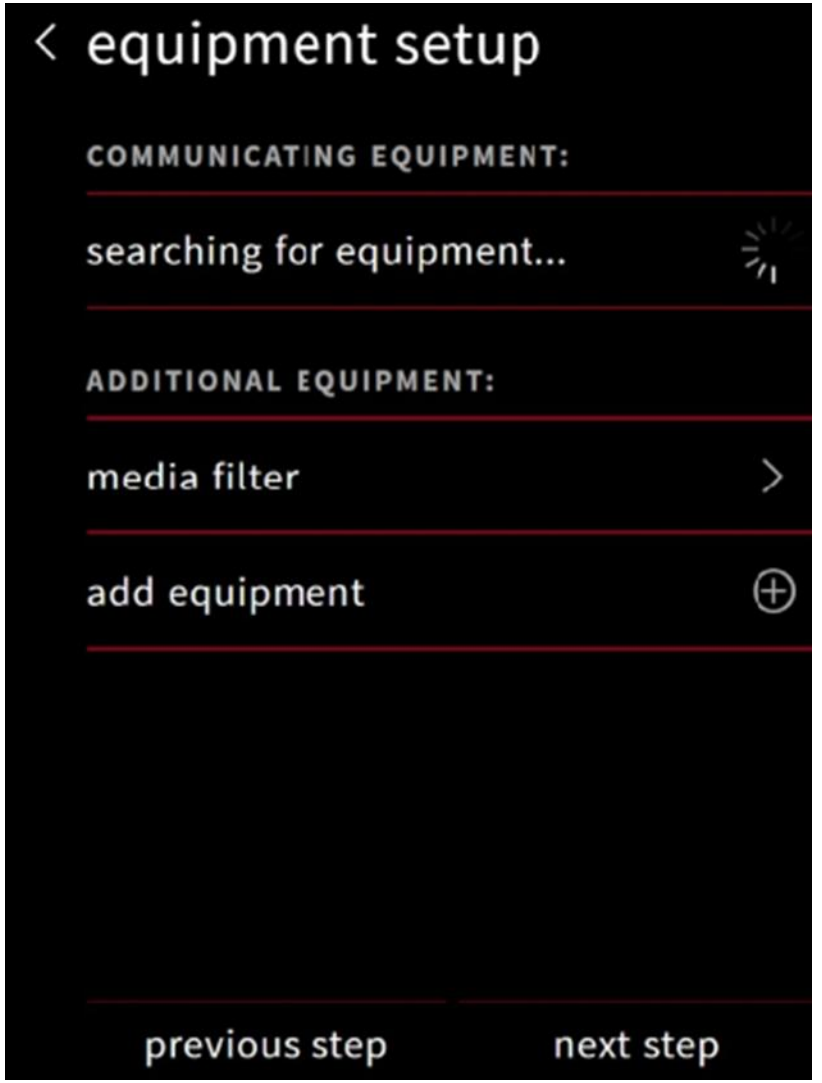




Scenario #4

Communication Error at Start-up

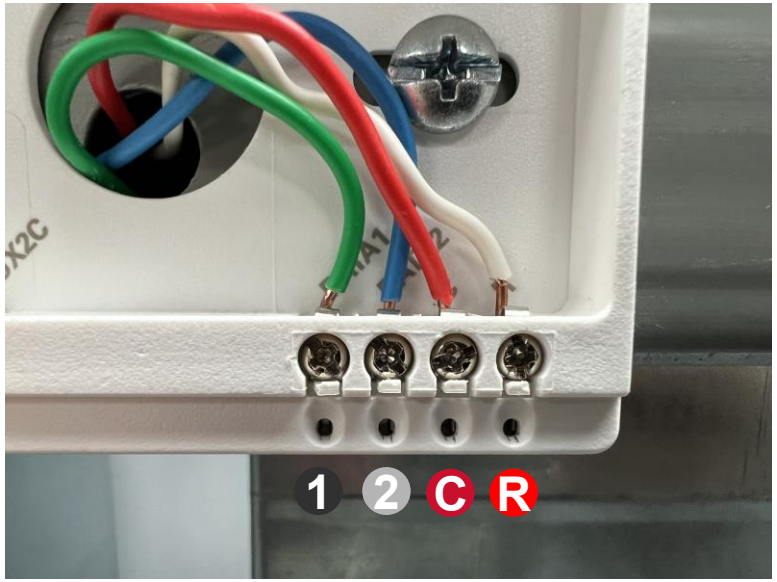
- Does the thermostat find the equipment?
  - No.
- What should we check first?
  - Check wiring voltages and connection

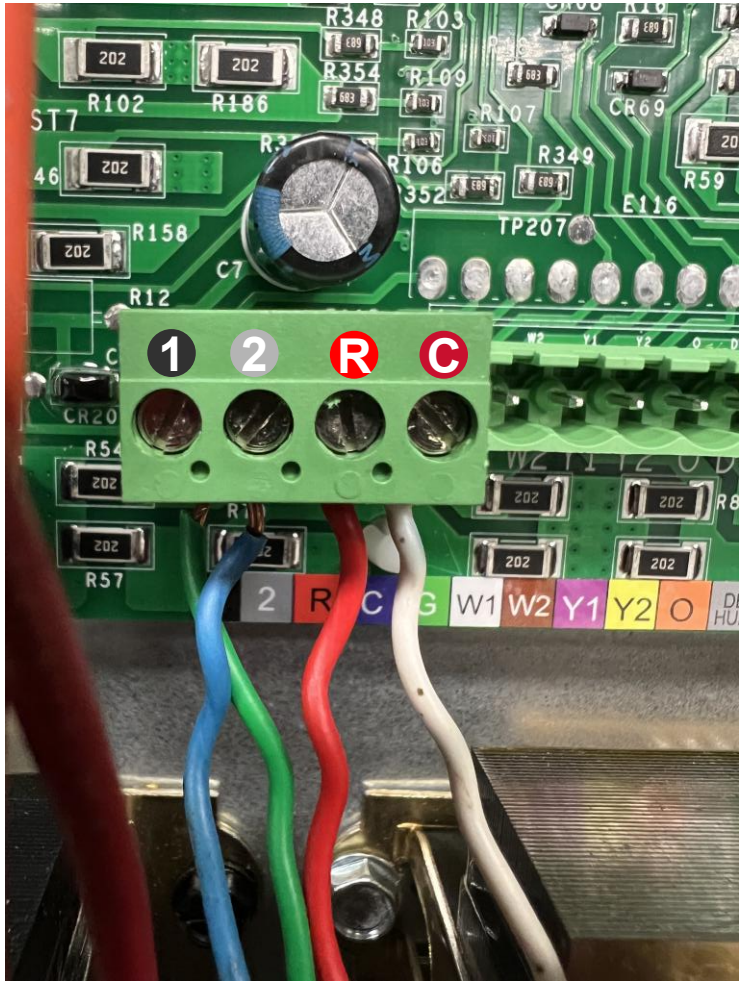


Scenario #4

Communication Error at Start-up

- Do we notice any issues with the wiring connection between the furnace and the thermostat?
- If so, what is the issue?



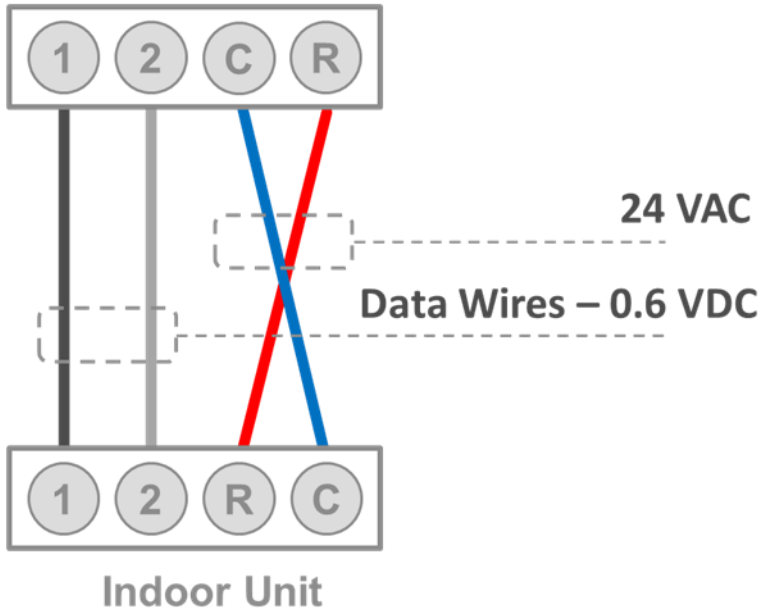


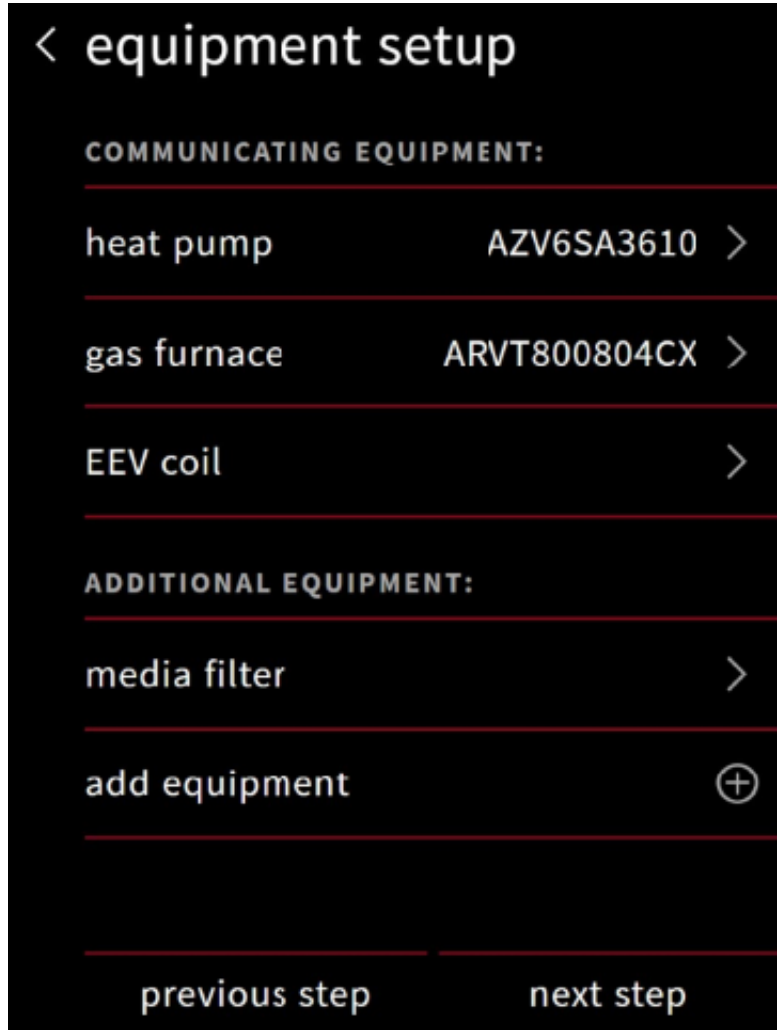
Scenario #4

Communication Error at Start-up

- CORRECT!! The wiring between the R and C terminals are crossed
- Fix the wiring connections and check that the thermostat can find the equipment

Amana Brand Smart Thermostat

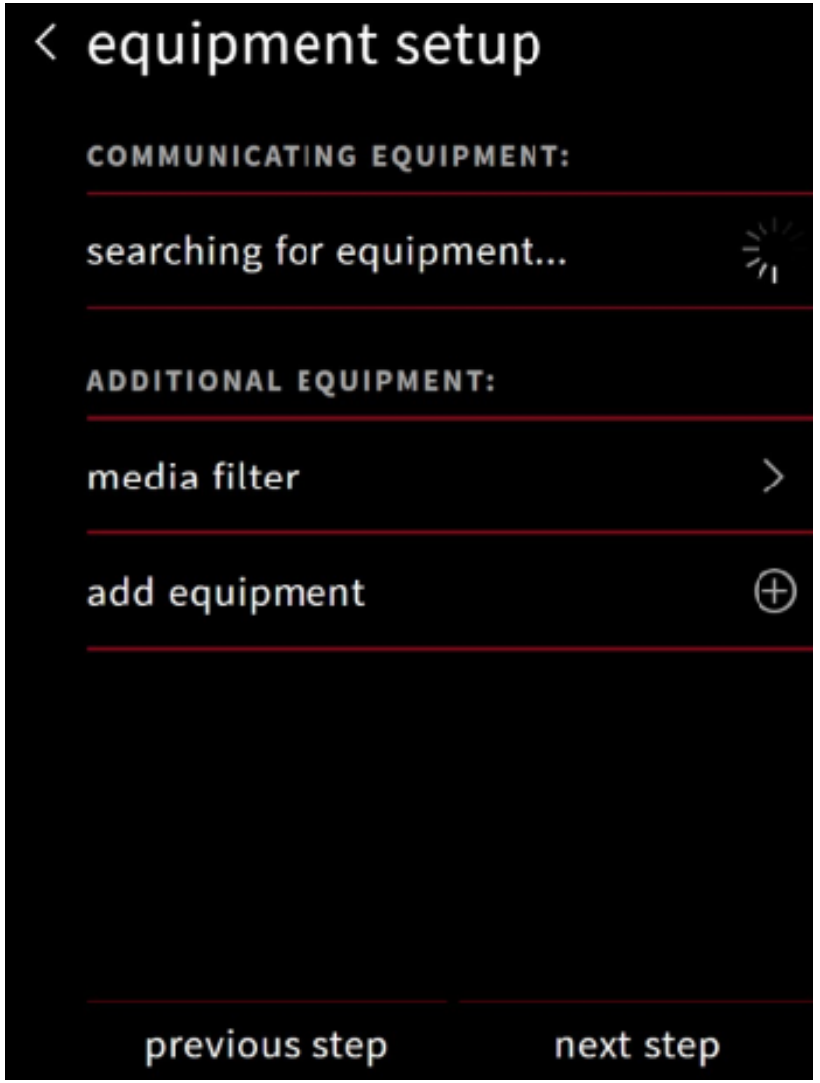




Scenario #4

Communication Error at Start-up

- What can prevent the thermostat from seeing the equipment?
  - Improper wiring voltages
  - Lose, disconnected, or broken wires
  - Improper shared data
  - Faulty PCB
- For more causes, refer to the service manual



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