Carrier Enterprise Mid South

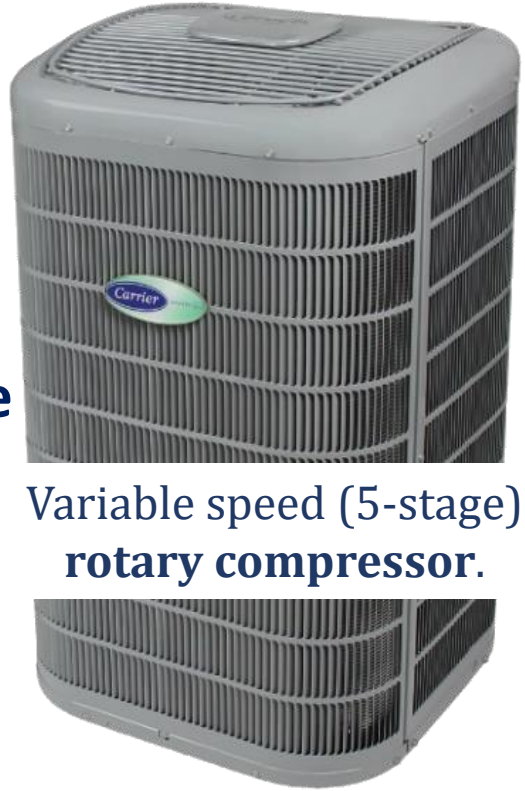
Infinity® Evolution®

Dealer Certification Training

Contents	Page

Variable speed

24VNA9 189BNV
25VNA8 288BNV



5-Stage

Variable speed (5-stage) **rotary compressor**.

24VNA0 180CNV
25VNA0 280ANV
GREENSPEED EXTREME

True variable speed **scroll compressor**.

Rotary or variable speed **scroll compressor**.

24VNA6 186CNV
25VNA4 284ANV

24-26 SEER

Variable speed

GREENSPEED EXTREME

24-26 SEER

5-Stage

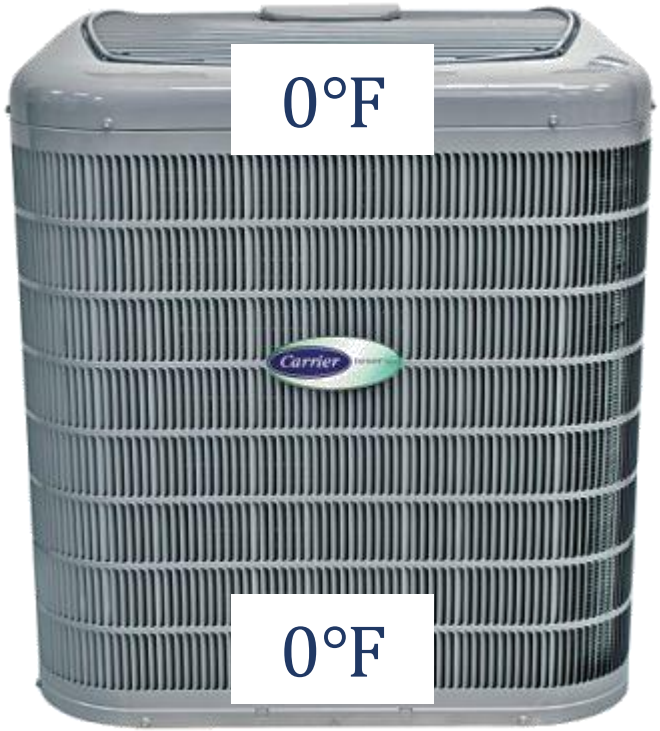
Smaller footprint
Lighter weight
Less refrigerant
100’ max line set

Variable speed

Low Ambient Cooling

5-Stage

GREENSPEED EXTREME



24-26 SEER

Variable speed

Minimum Cooling Capacity

5-Stage

GREENSPEED EXTREME

24-26 SEER

Variable speed

5-Stage

Compatible with
Non-communicating.

GREENSPEED EXTREME

Compatible with
Non-communicating.

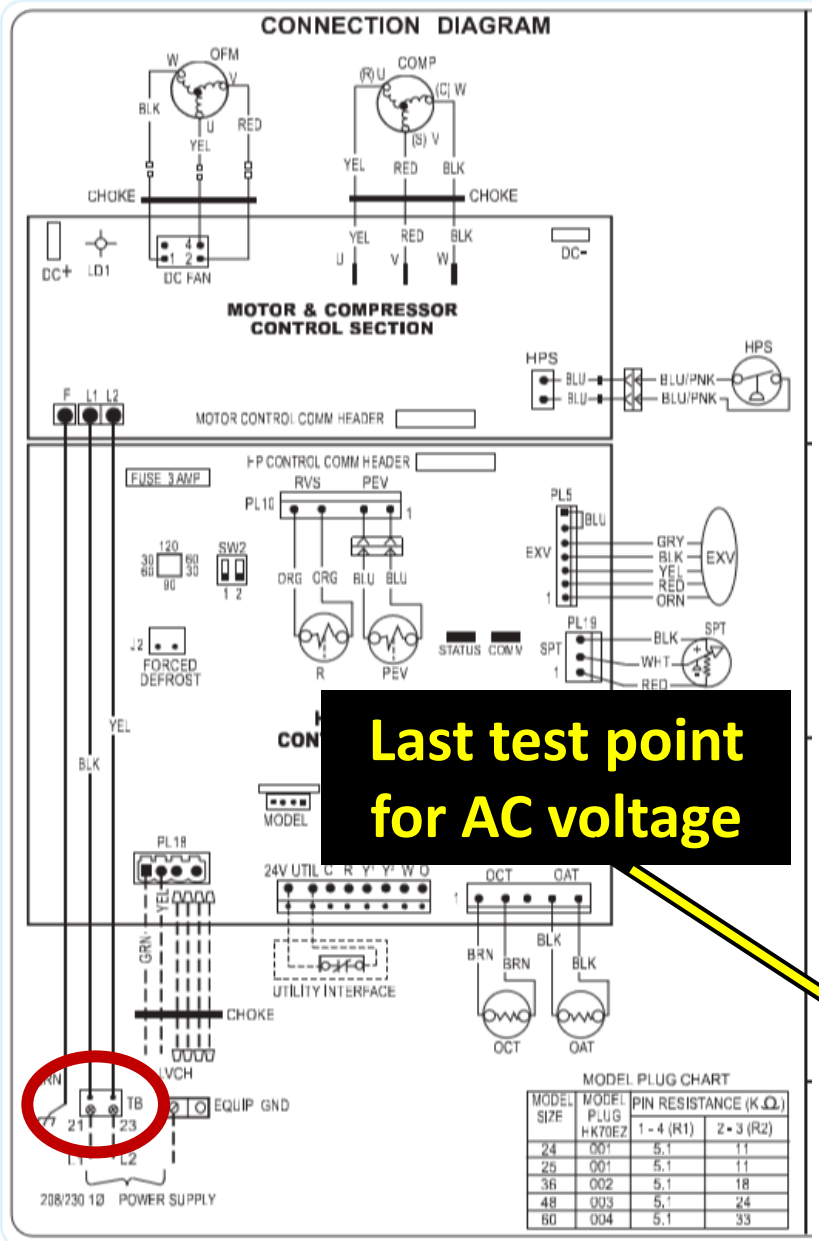
Compatible ONLY
with communicating.

24-26 SEER

5-Stage Variable Speed

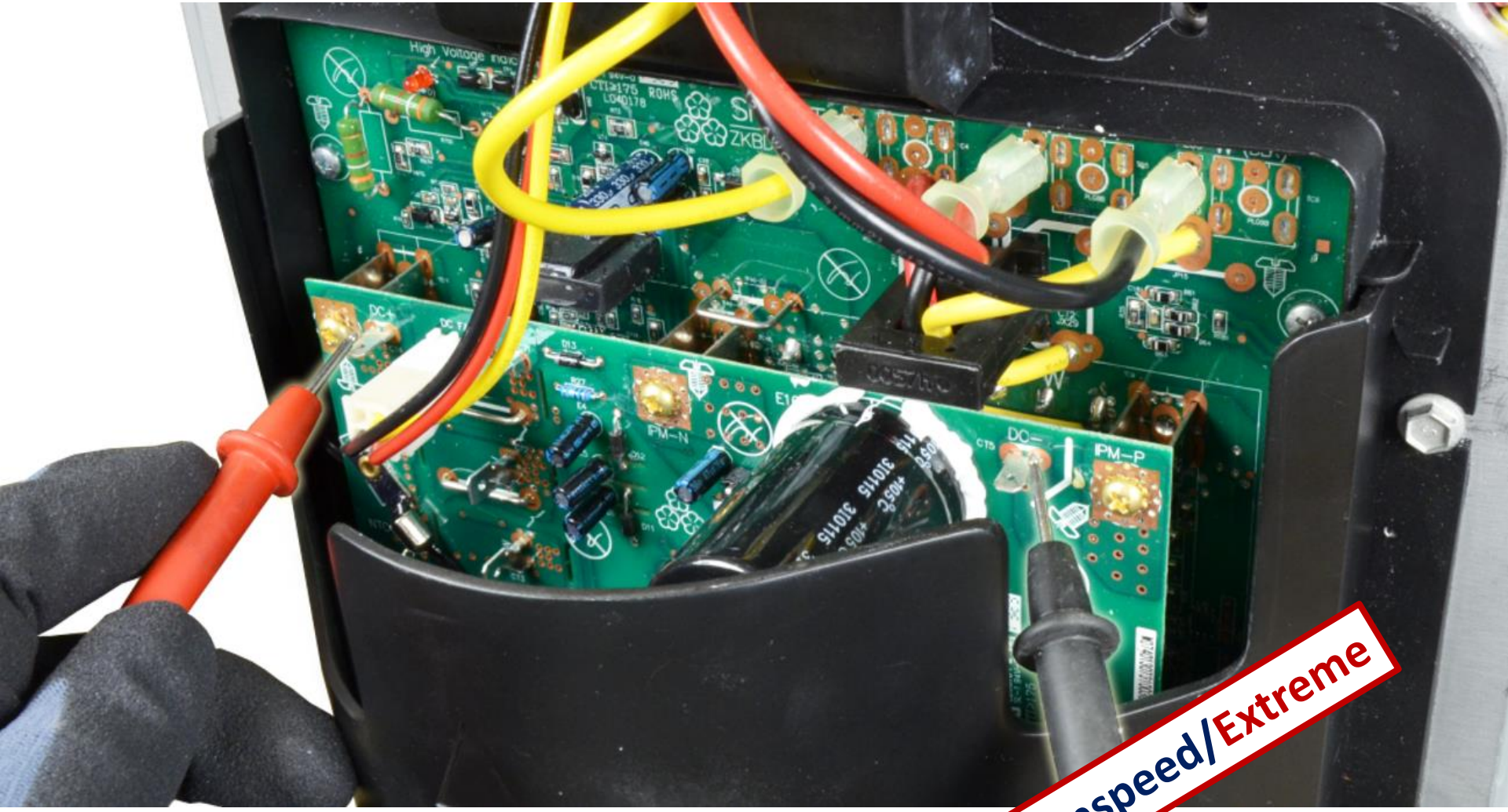
5-Stage Variable Speed

5-Stage Variable Speed



MODEL SIZE	MODEL PLUG HK70EZ	PIN RESISTANCE (KΩ) 1 - 4 (R1)	2 - 3 (R2)
24	001	5.1	11
25	001	5.1	11
36	002	5.1	18
48	003	5.1	24
60	004	5.1	33

5-Stage Variable Speed

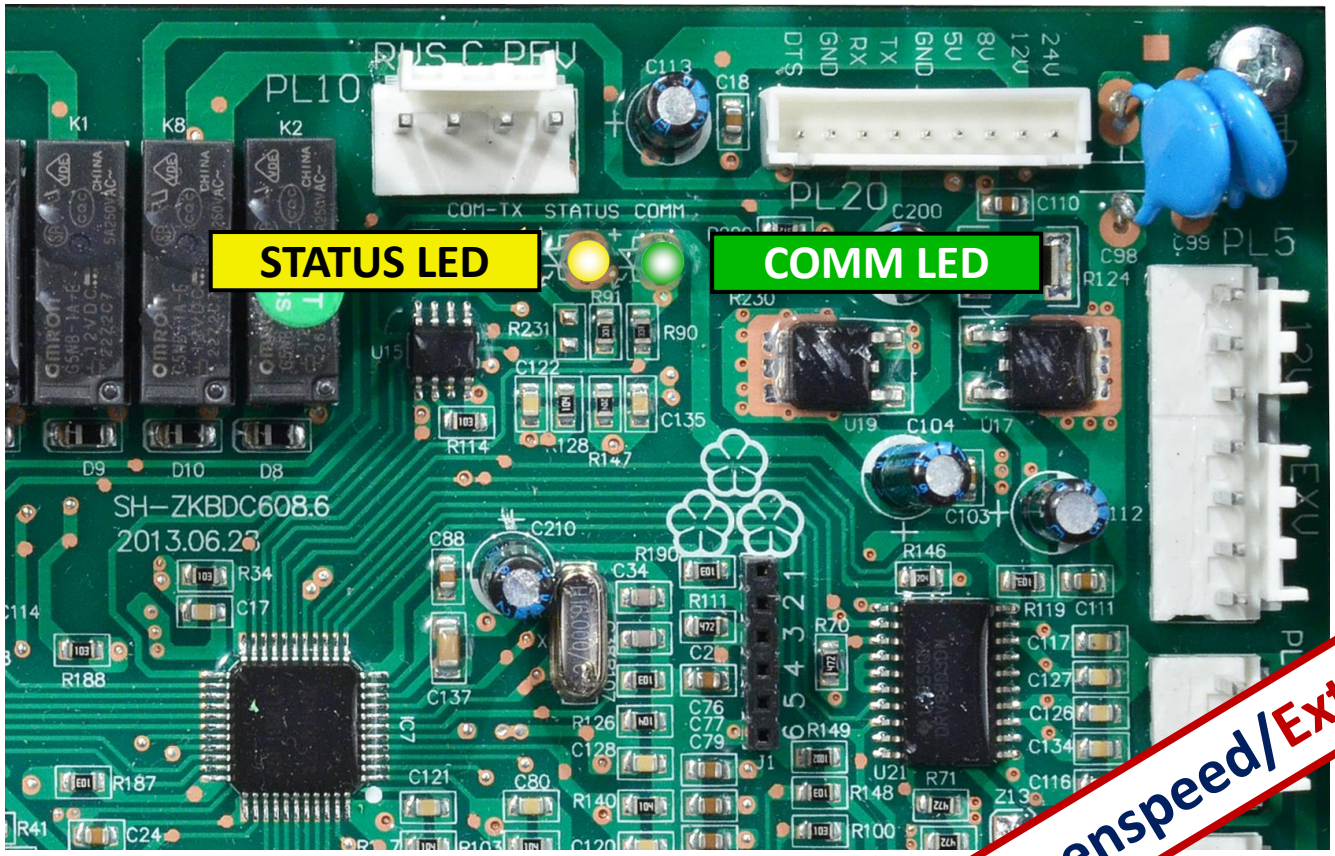


Approximately 1.4 x AC voltage

240 x 1.4 = 336 Vdc

5-Stage Variable Speed

AOC (control board)

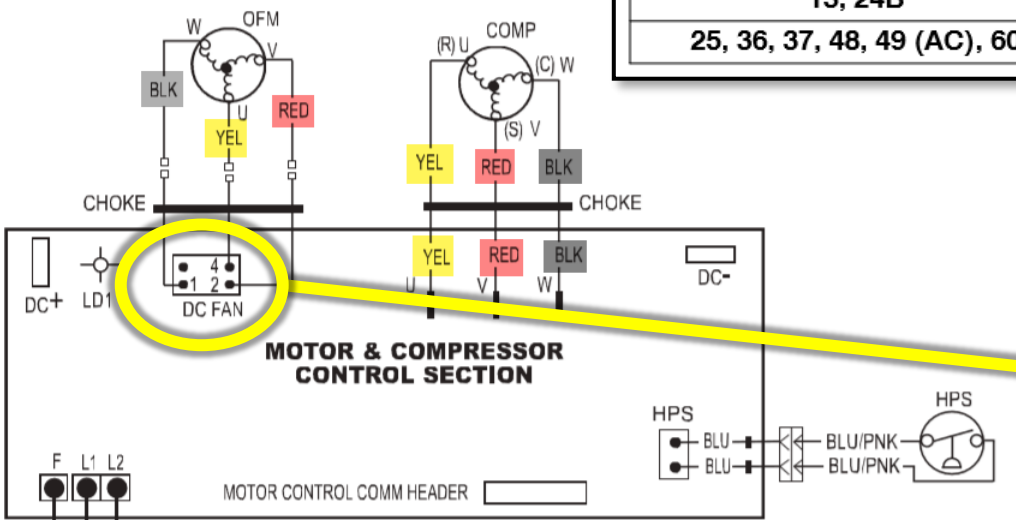


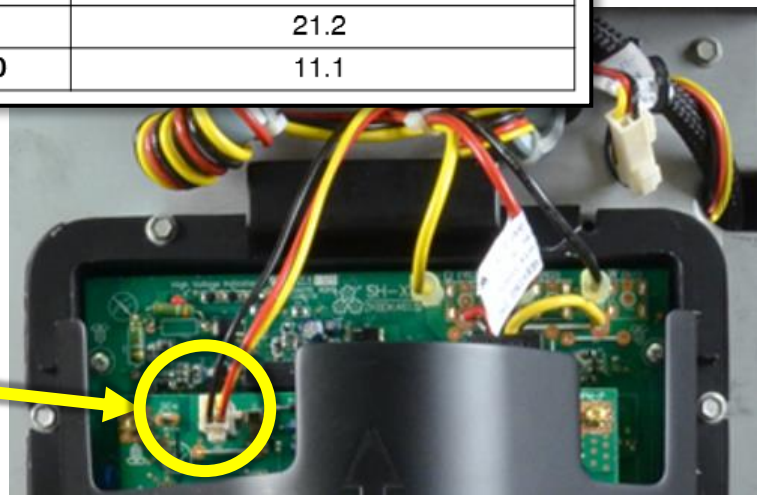
5-Stage Variable Speed

Condensing Fan Motor

1. Turn off power and wait 5 minutes.
2. Disconnect fan plug from inverter.
3. Check resistance on all pairs, compare to chart.
4. Check resistance to ground.

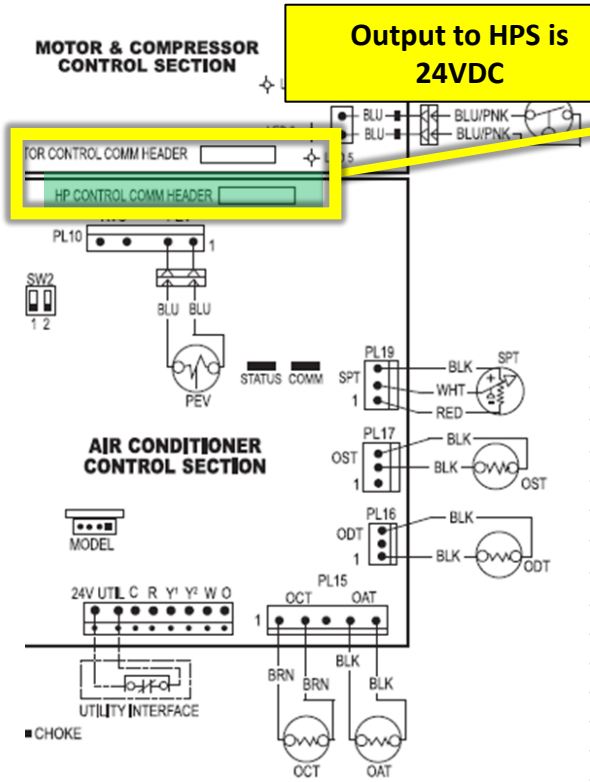
Fan Motor Resistance	
Unit Size	**Resistance (Ohms)**
13, 24B	21.2
25, 36, 37, 48, 49 (AC), 60	11.1





5-Stage Variable Speed

AOC (control board)



Power is supplied by the MOC to AOC via PL20.

Do not disconnect PL20 to test voltage.

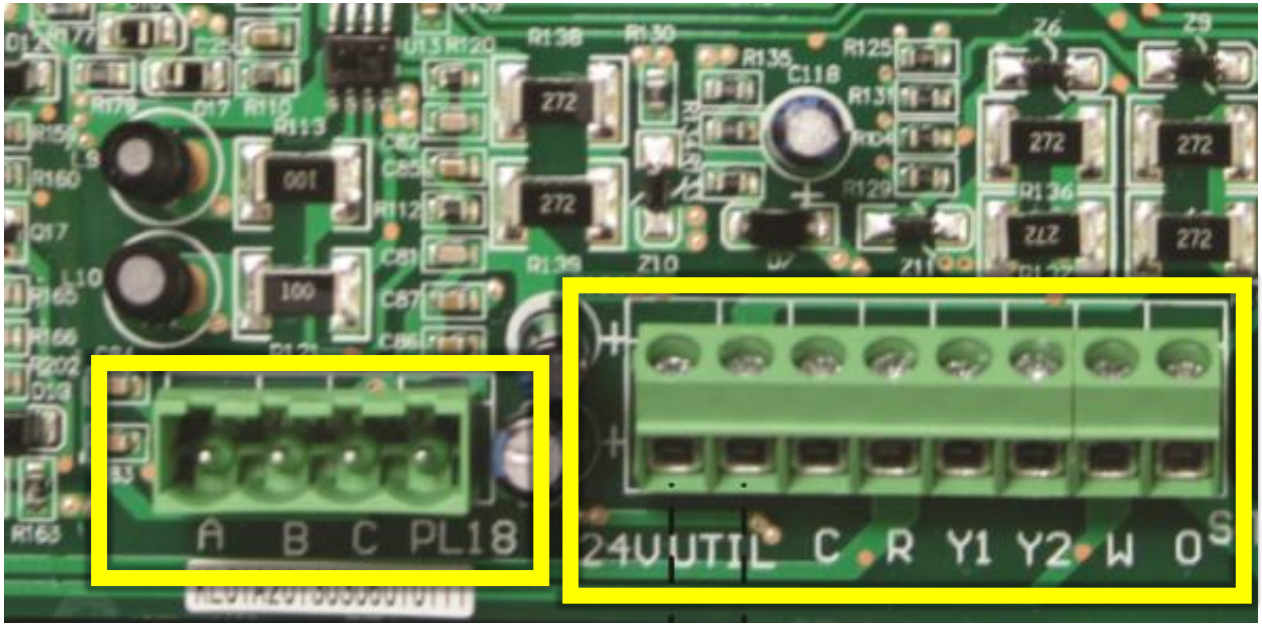
AOC DC Voltage Measurements								
ODT			OST			OCT		
Pin #	Pin #	Voltage	Pin #	Pin #	Voltage	Pin #	Pin #	Voltage
1	3	12Vdc	2	3	5Vdc	1	2	5Vdc
1	GND	0	2	GND	5Vdc	1	GND	0
3	GND	12Vdc	3	GND	0	2	GND	5Vdc
OAT			PEV			RVS		
Pin #	Pin #	Voltage	Pin #	Pin #	Voltage	Pin #	Pin #	Voltage
4	5	5Vdc	1	2	24Vdc	3	4	24Vdc
4	GND	0	1	GND	24Vdc	3	GND	0
5	GND	5Vdc	2	GND	0	4	GND	24Vdc
EXV			SPT					
Pin #	Pin #	Voltage	Pin #	Pin #	Voltage			
1	GND	12Vdc	1	2	5Vdc			
2	GND	12Vdc	1	3	5Vdc			
3	GND	12Vdc	2	3	0			
4	GND	12Vdc	1	GND	5Vdc			
5	GND	12Vdc	2	GND	0			
6	GND	12Vdc	3	GND	0			
7	GND	12Vdc						

Note: All voltages were measured when the unit was powered up and may or may not be running. The voltages are measured at the connectors of the AOC board with no sensors or PEV/RVS/EXV connected to the board.

5-Stage Variable Speed

AOC (control board)

Wiring Connections



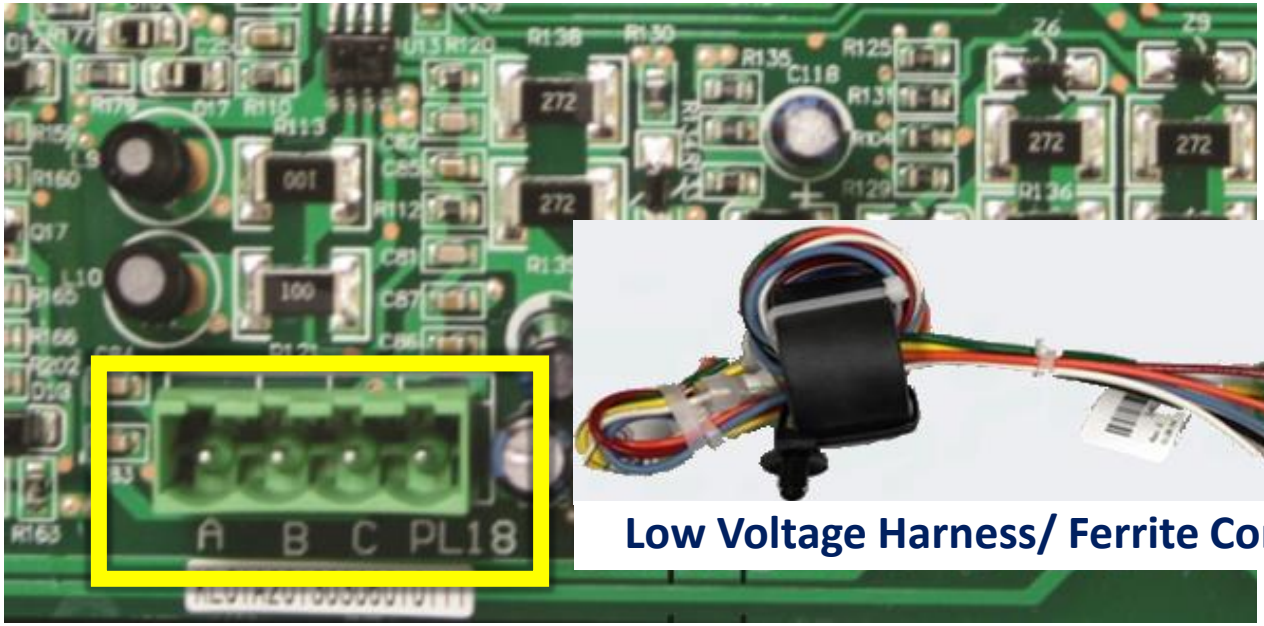
Communicating **Conventional**

✓ Greenspeed/Extreme

5-Stage Variable Speed

AOC (control board)

Wiring Connections



Low Voltage Harness/ Ferrite Core

Communicating

✓ All Variable Speed Units

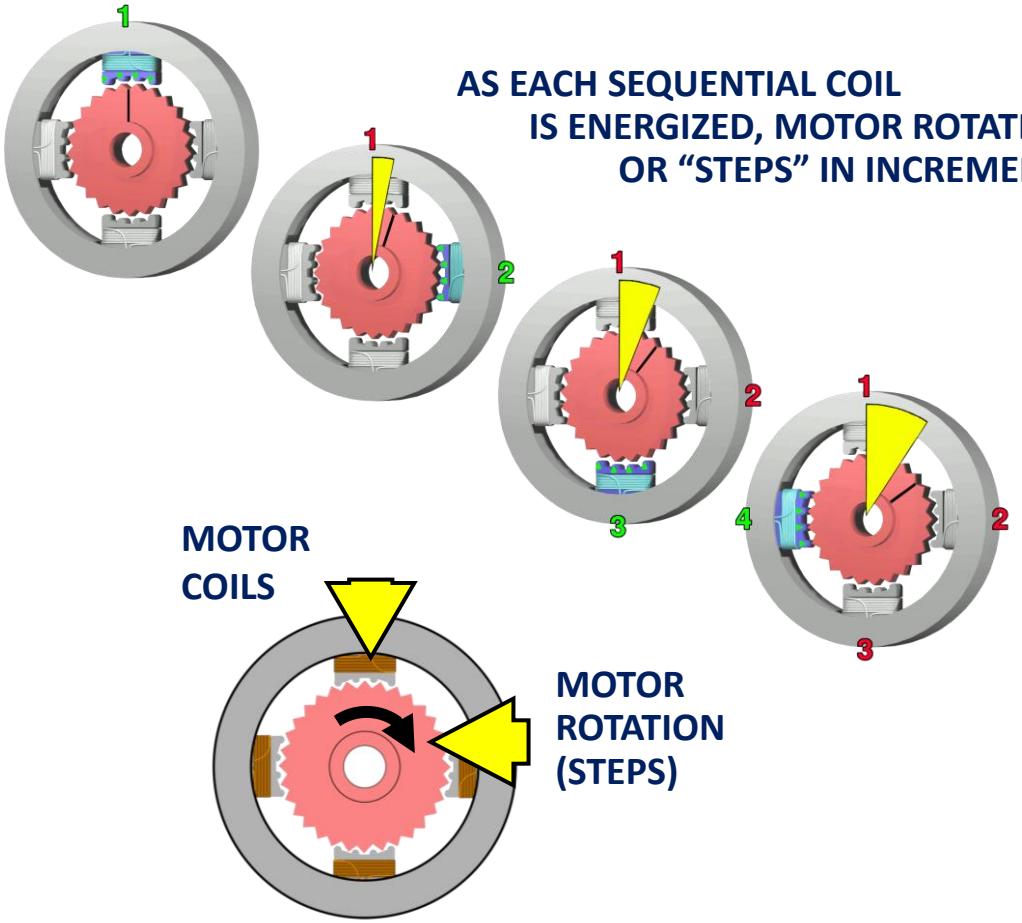
5-Stage Variable Speed

Electronic Expansion Valve (EXV)

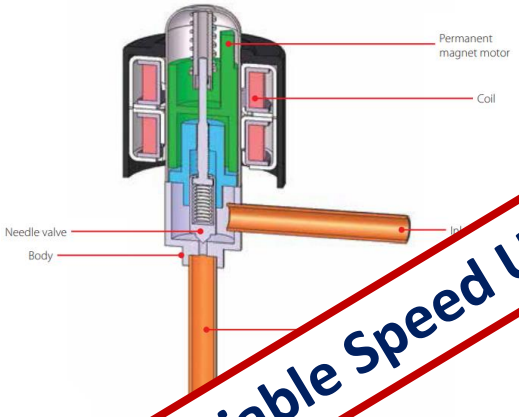
EXV is used for refrigerant metering in the heating mode.
EXV position based on mode and conditions. (100% in cooling)
UI Service mode allows for manual opening and closing of the EXV for Troubleshooting, evacuation, and pump down.

5-Stage Variable Speed

Electronic Expansion Valve (EXV)



AS EACH SEQUENTIAL COIL IS ENERGIZED, MOTOR ROTATES OR "STEPS" IN INCREMENTS

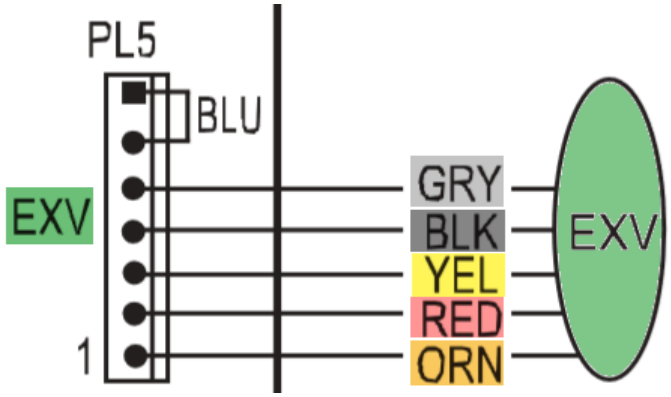


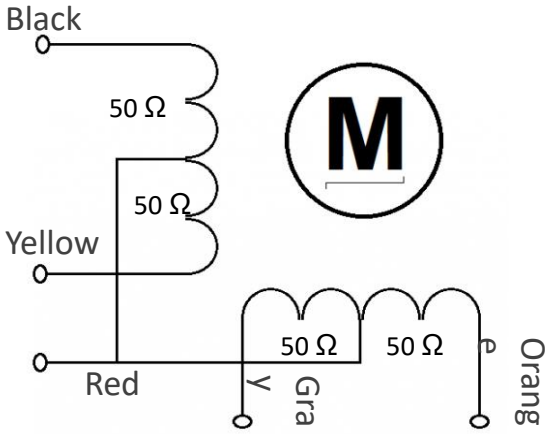
✓ All Variable Speed Units

5-Stage Variable Speed

Electronic Expansion Valve (EXV)

EXV		
Pin #	Pin #	Voltage
1	GND	12Vdc
2	GND	12Vdc
3	GND	12Vdc
4	GND	12Vdc
5	GND	12Vdc
6	GND	12Vdc
7	GND	12Vdc



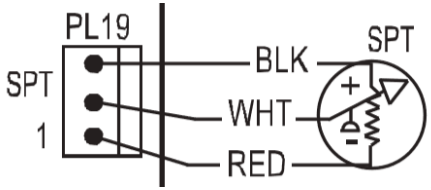


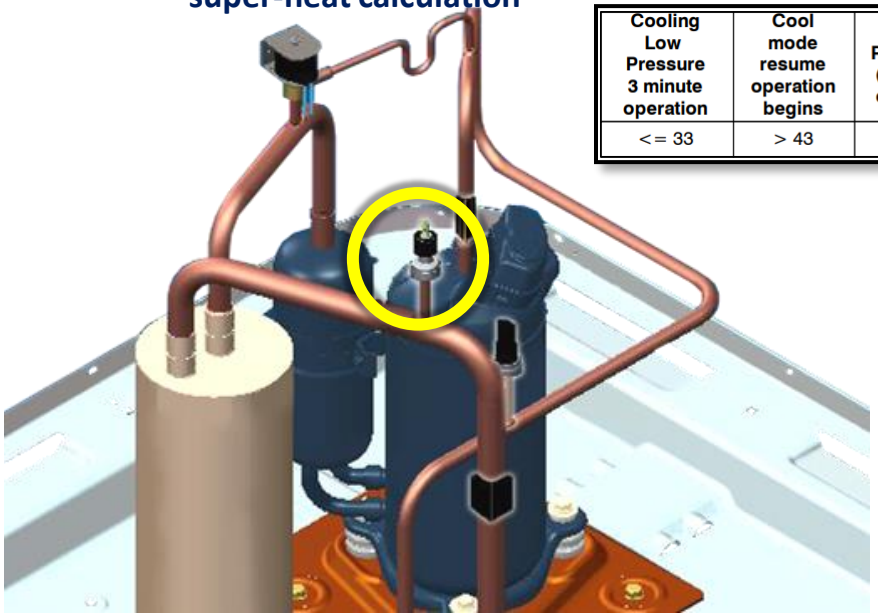
5-Stage Variable Speed

Suction Pressure Transducer (SPT)

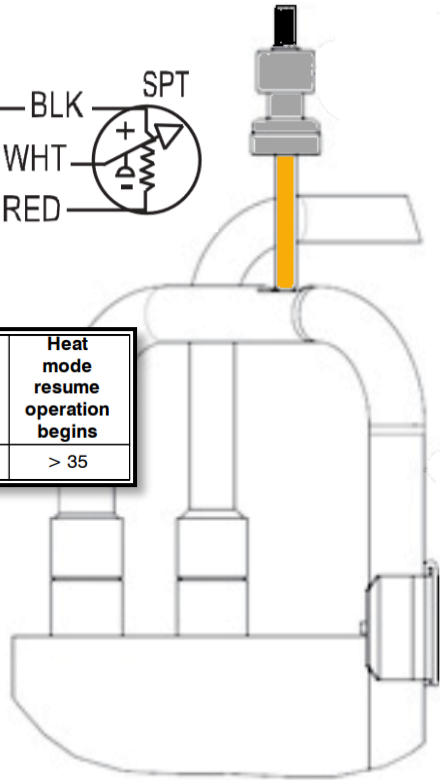
Operates on 5 Vdc.
0 to 200 psig range.
Functions: low pressure cut-out
loss of charge
compressor protection
EXV control
super-heat calculation

SPT		
Pin #	Pin #	Voltage
1	2	5Vdc
1	3	5Vdc
2	3	0
1	GND	5Vdc
2	GND	0
3	GND	0





Cooling Low Pressure 3 minute operation	Cool mode resume operation begins	Low Pressure (No Op-eration)	Heating Low Pressure 5 minute operation	Heat mode resume operation begins
<= 33	> 43	<= 15	<= 33	> 35

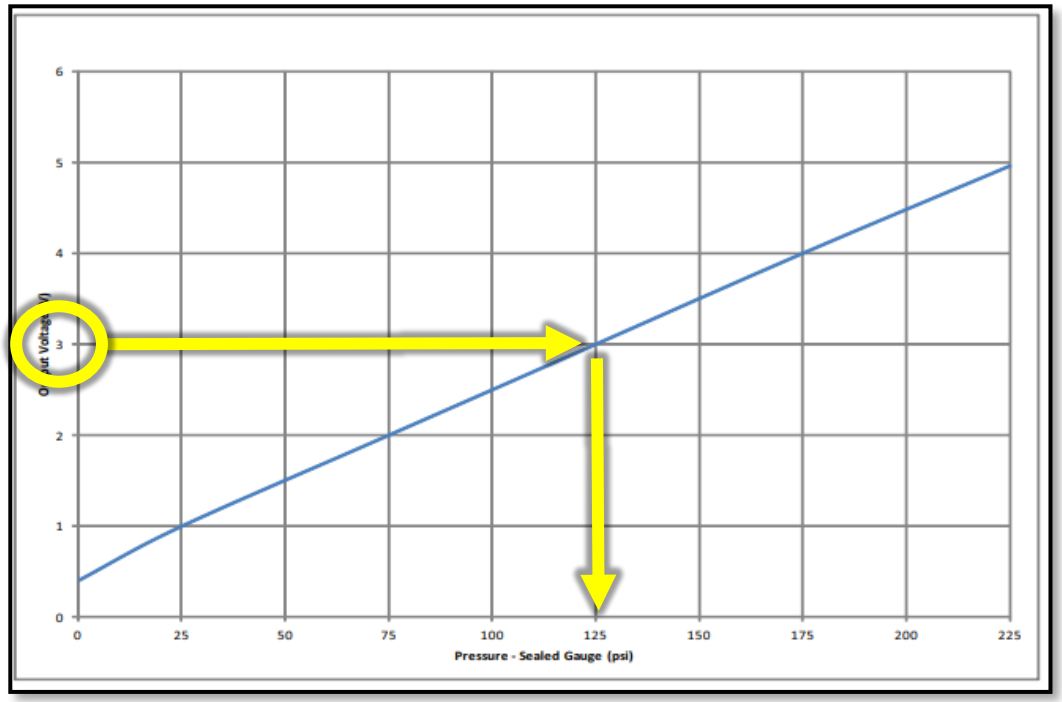


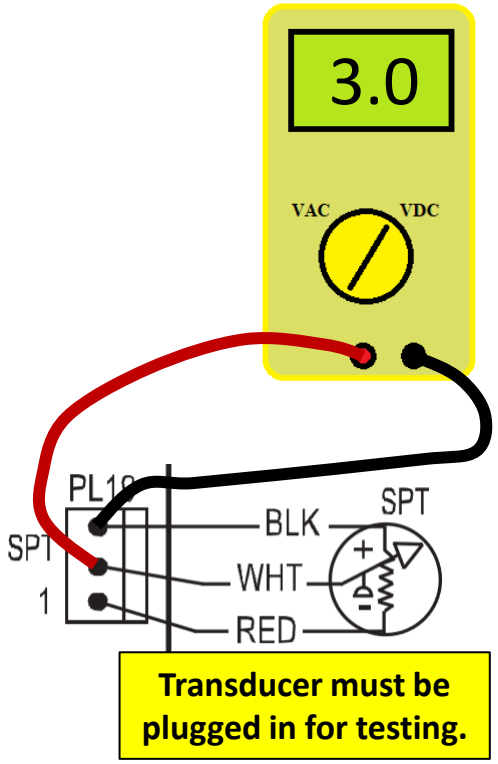
5-Stage Variable Speed

Suction Pressure Transducer (SPT)

Calculating suction pressure from transducer voltage.

Measure SPT output voltage, (white to black).
Subtract 0.5 from the reading and multiply by 50.
Example: if the measured voltage is 3.0 VDC:
3 - .5 = 2.5 x 50 = 125 psig





Transducer must be plugged in for testing.

✓ **Greenspeed/Extreme**

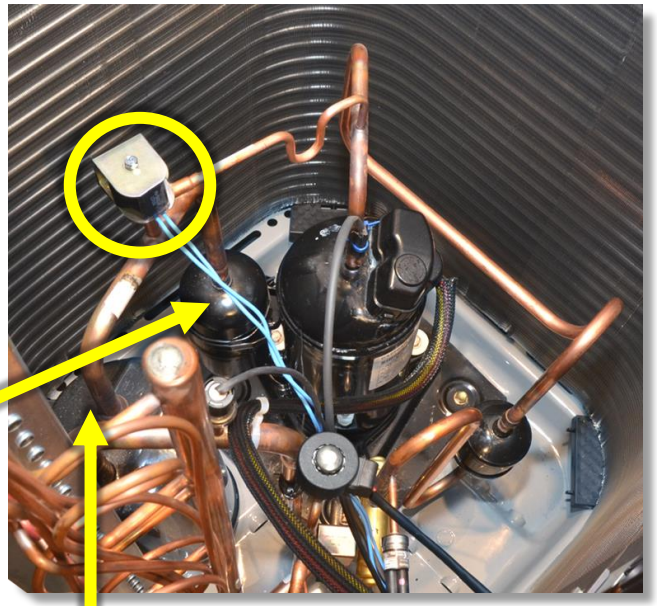
5-Stage Variable Speed

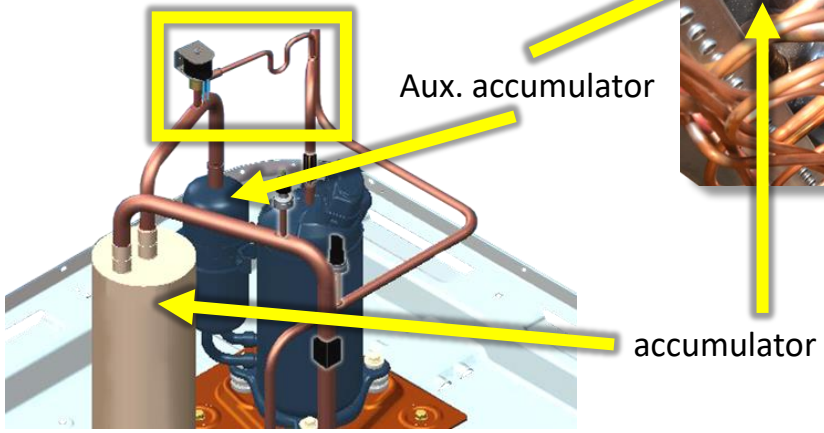
Pressure Equalization Valve (PEV)

The PEV is located on the suction line between accumulators.

It is piped into the suction line and discharge of the compressor.

The function is to prevent the compressor from starting with a high-pressure differential.



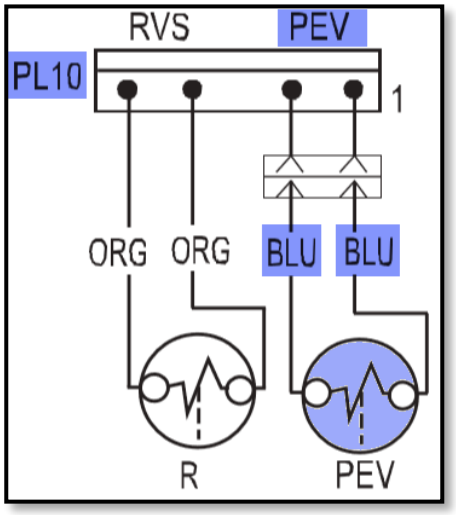


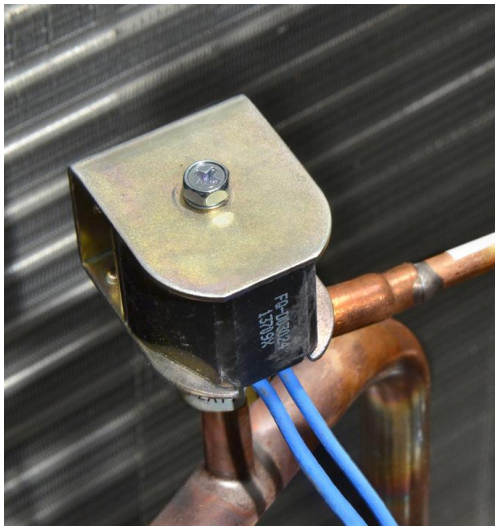
Pressure Equalization Valve

At the end of every compressor operation (after the 3.5 minute Time Guard period), the equalizer valve opens for 150 seconds plus an additional 15 seconds of protection before allowing the compressor to start ramping up.

NOTE: A hissing sound may be heard during the equalization process. This is normal.

PEV		
Pin #	**Pin #**	**Voltage**
1	2	24Vdc
1	GND	24Vdc
2	GND	0





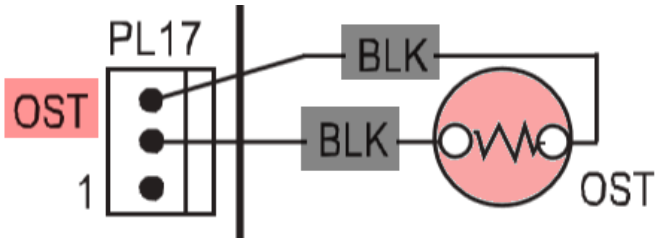
5-Stage Variable Speed

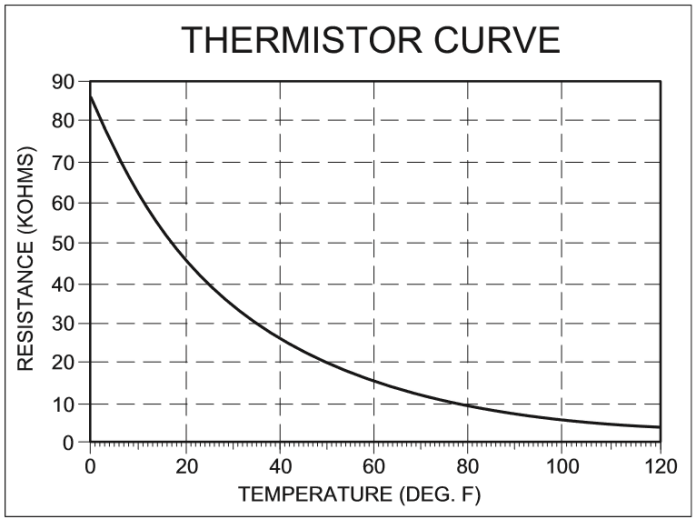
Suction Thermistor (OST)

✓ Greenspeed/Extreme

OST		
In #	Pin #	Voltage
2	3	5Vdc
2	GND	5Vdc
3	GND	0

10Kohm (°F)	
TEMPERATURE	RESISTANCE
(77.0)	10.0 (Kohms)
(32.0)	32.6 (Kohms)
(-18.4)	85.5 (Kohms)

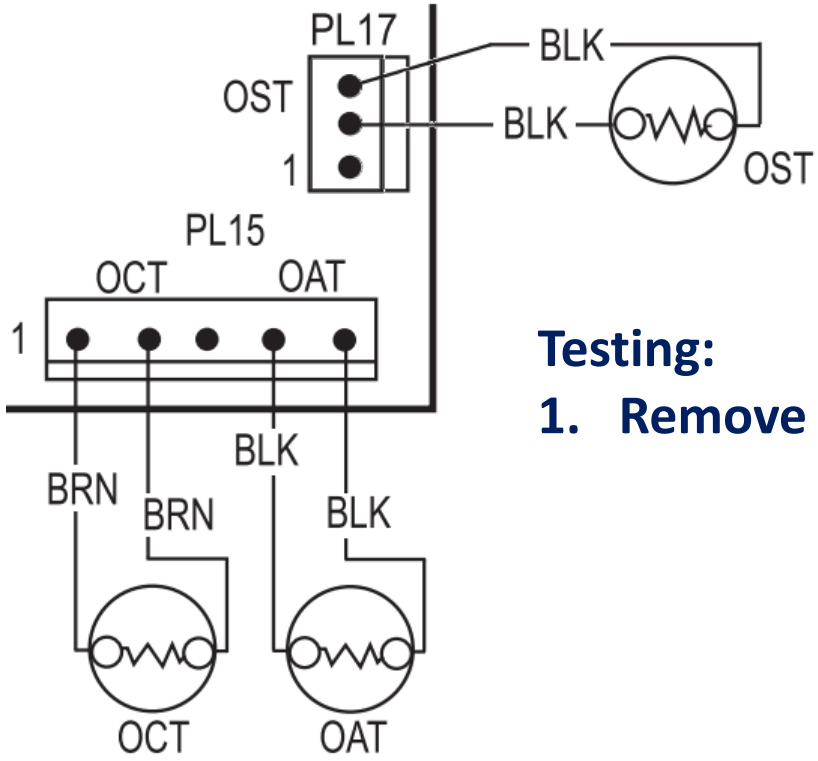




5-Stage Variable Speed

Thermistors (OST)(OAT)(OCT)

All 10 K ohm thermistors
All utilize 5 Vdc



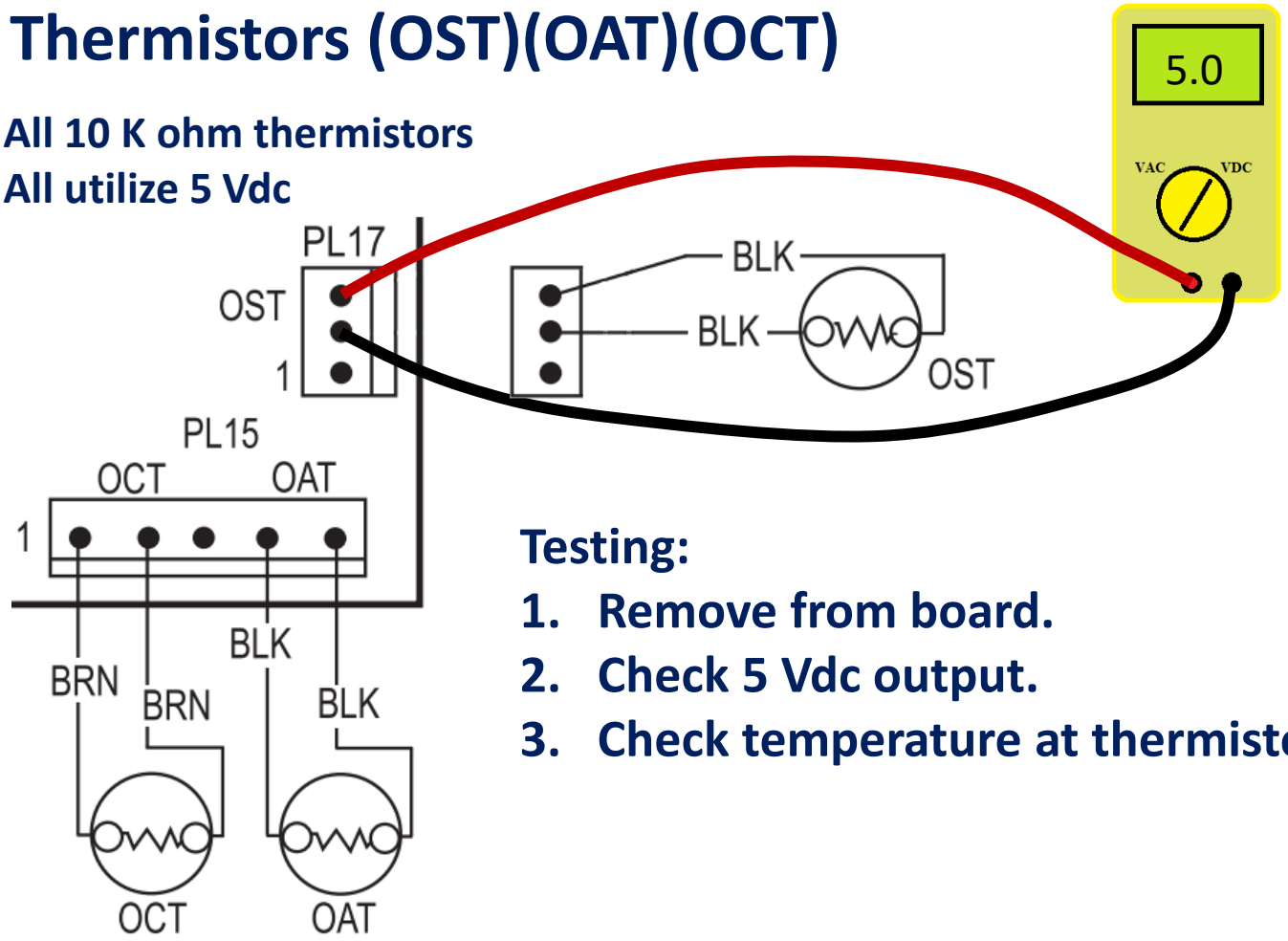
Testing:

1. **Remove from board.**

5-Stage Variable Speed

Thermistors (OST)(OAT)(OCT)

All 10 K ohm thermistors
All utilize 5 Vdc



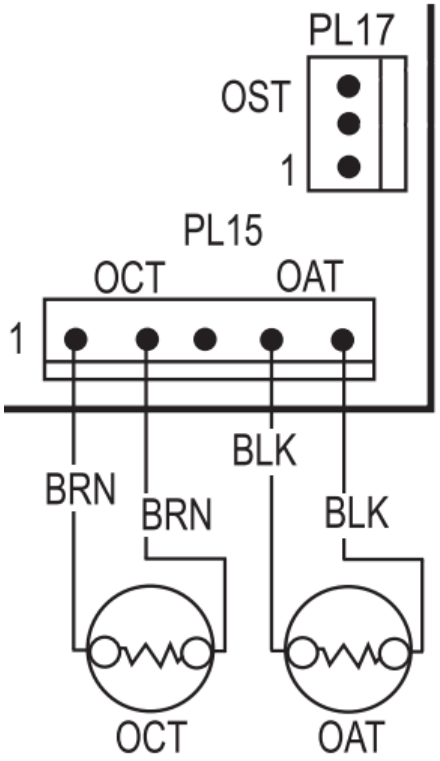
Testing:

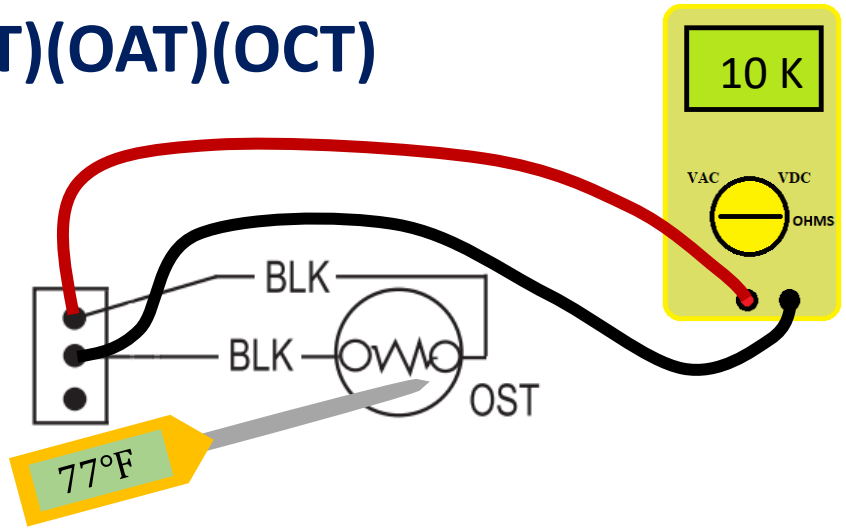
1. **Remove from board.**
2. **Check 5 Vdc output.**
3. **Check temperature at thermistor.**

5-Stage Variable Speed

Thermistors (OST)(OAT)(OCT)

All 10 K ohm thermistors
All utilize 5 Vdc





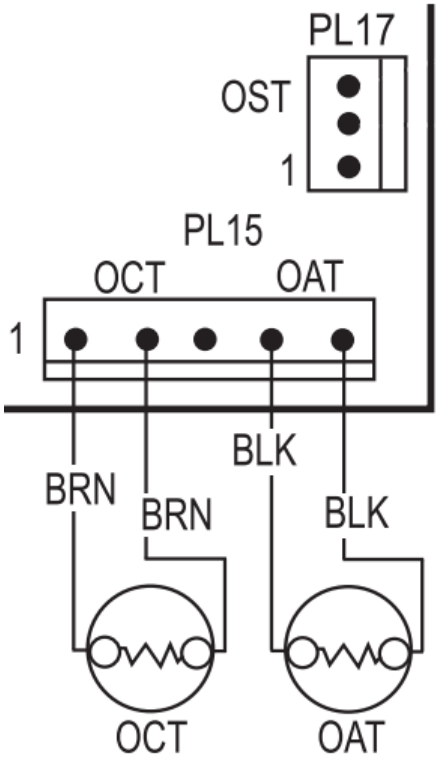
Testing:

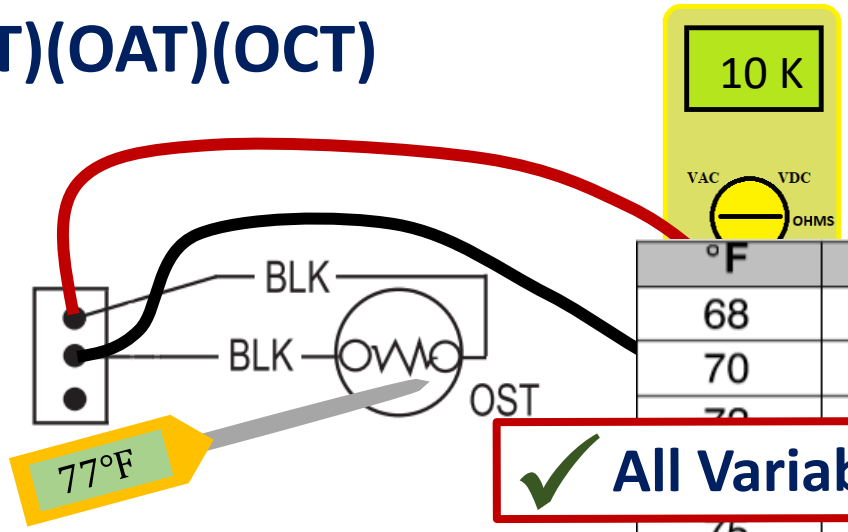
1. **Remove from board.**
2. **Check 5 Vdc output.**
3. **Check temperature at thermistor.**
4. **Check resistance of thermistor.**
5. **Compare readings to 10 K ohm thermistor chart.**

5-Stage Variable Speed

Thermistors (OST)(OAT)(OCT)

All 10 K ohm thermistors
All utilize 5 Vdc





°F	K Ohm
68	12.6431
70	12.0561
75	10.4736
77	10
79	9.55074
81	9.12445

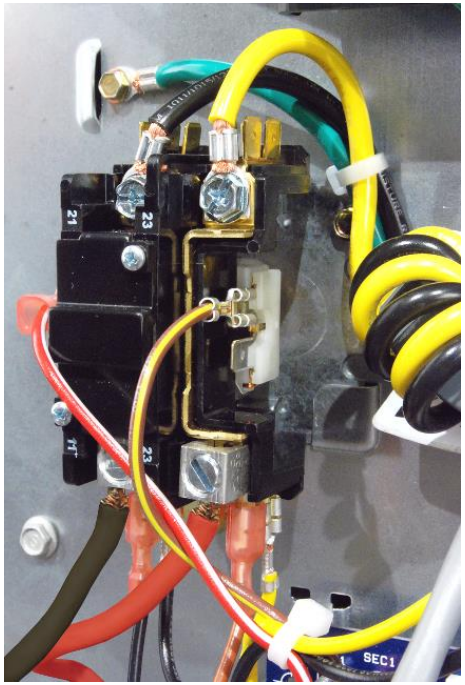
✓ **All Variable Speed Units**

Testing:

1. **Remove from board.**
2. **Check 5 Vdc output.**
3. **Check temperature at thermistor.**
4. **Check resistance of thermistor.**
5. **Compare readings to 10 K ohm thermistor chart.**

Greenspeed / Extreme

Greenspeed / Extreme



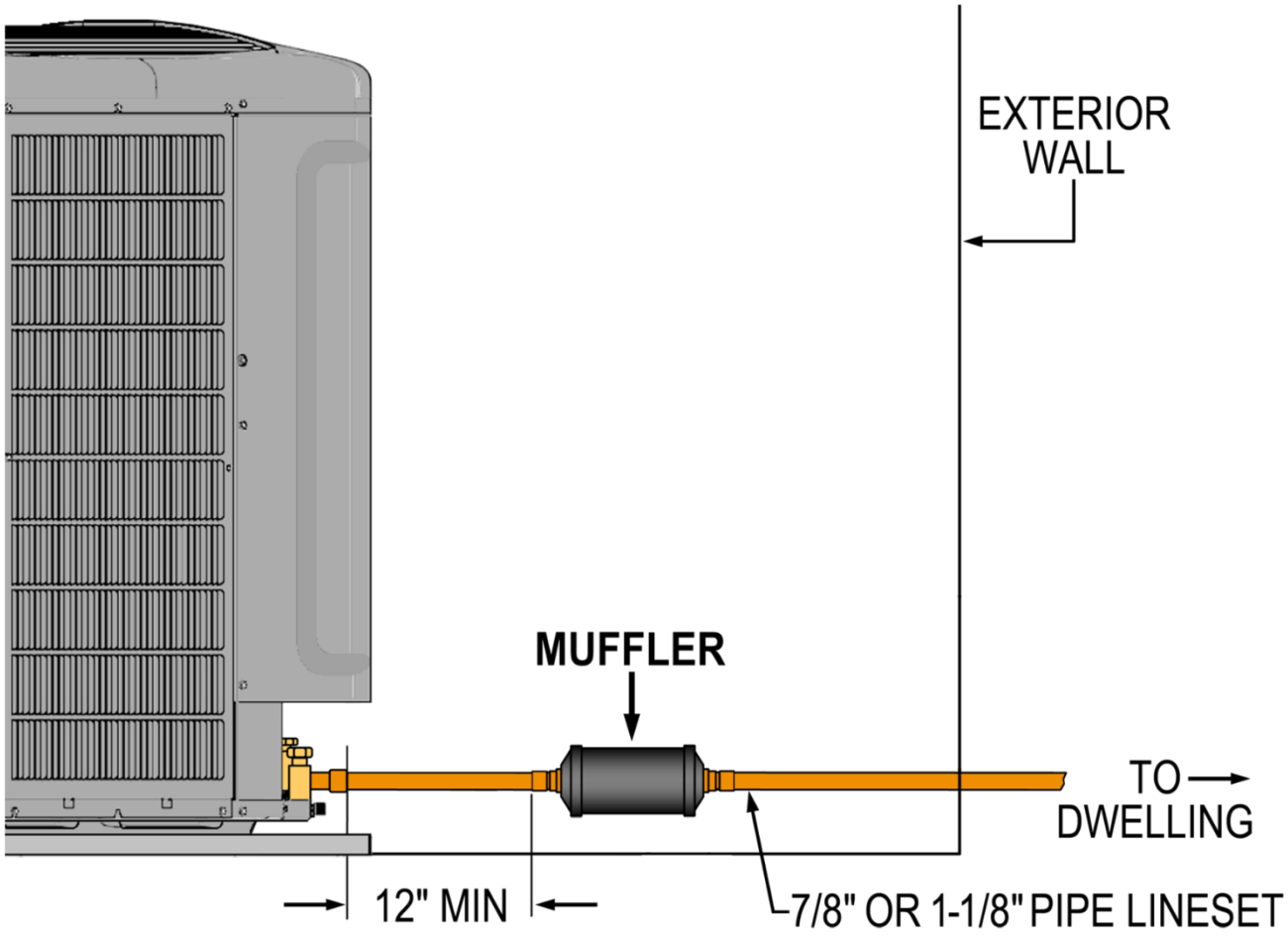
Vapor Line Muffler

Part Number: LM10KK003

Standard part with all Greenspeed/Extreme Units. Can be ordered and installed on any unit to help with transient noise.

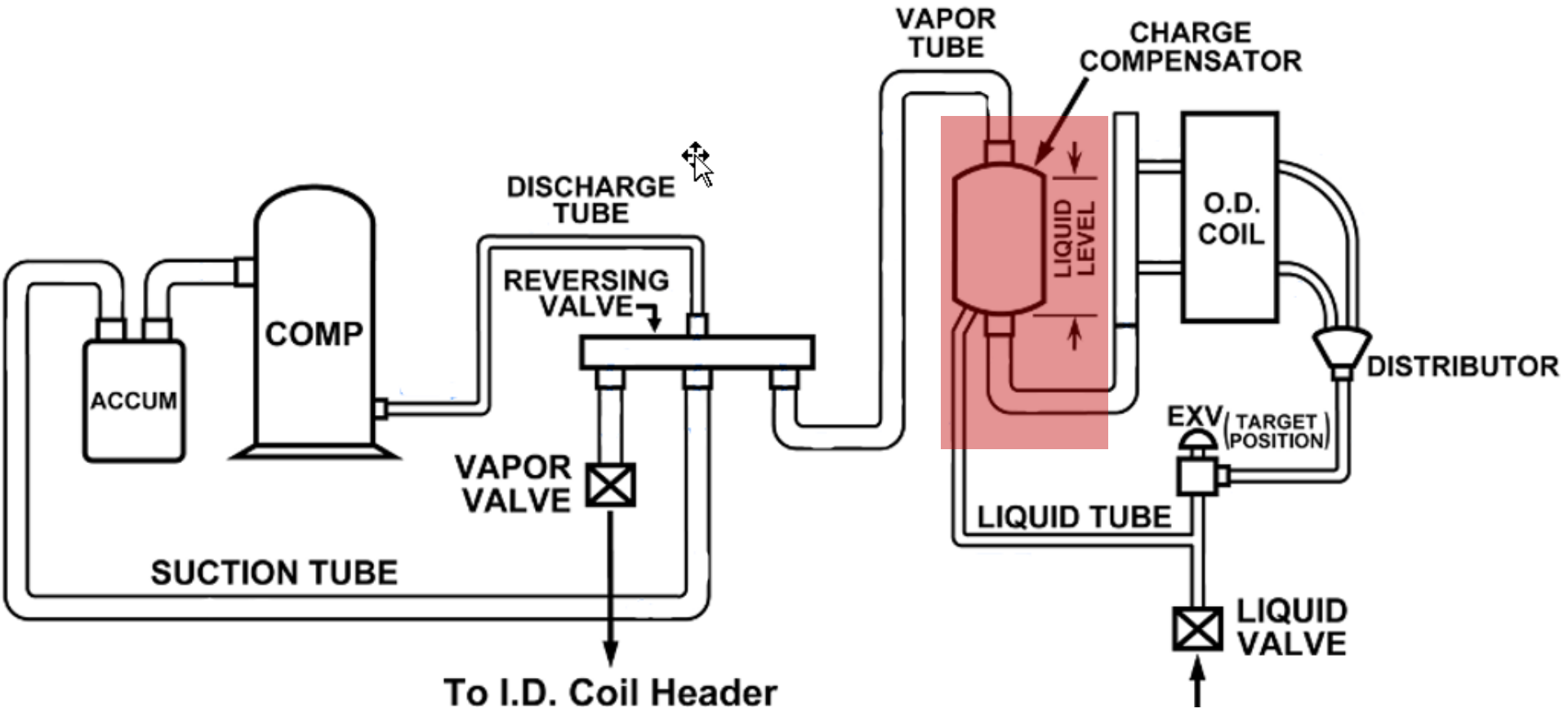
Greenspeed / Extreme

Vapor Line Muffler



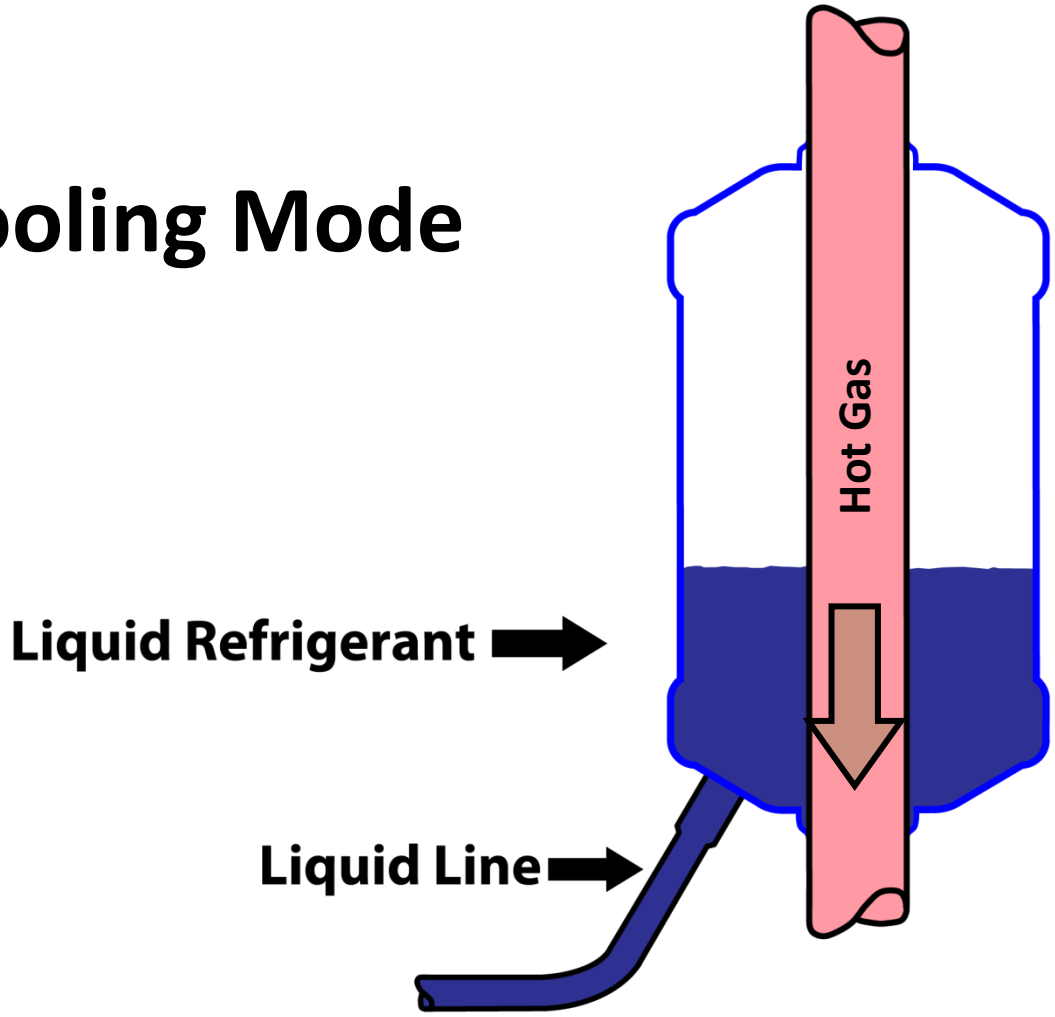
Greenspeed / Extreme

Charge Compensator



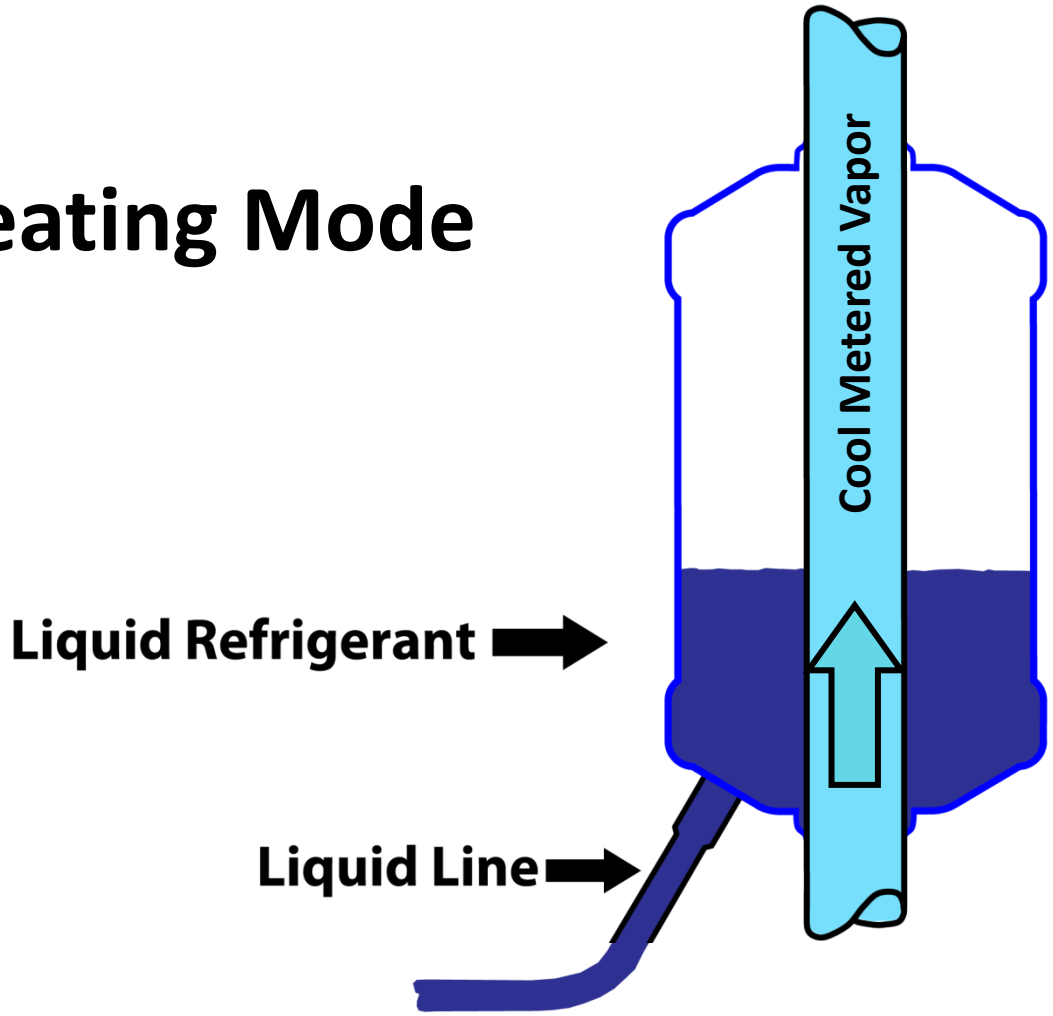
Charge Compensator

Cooling Mode



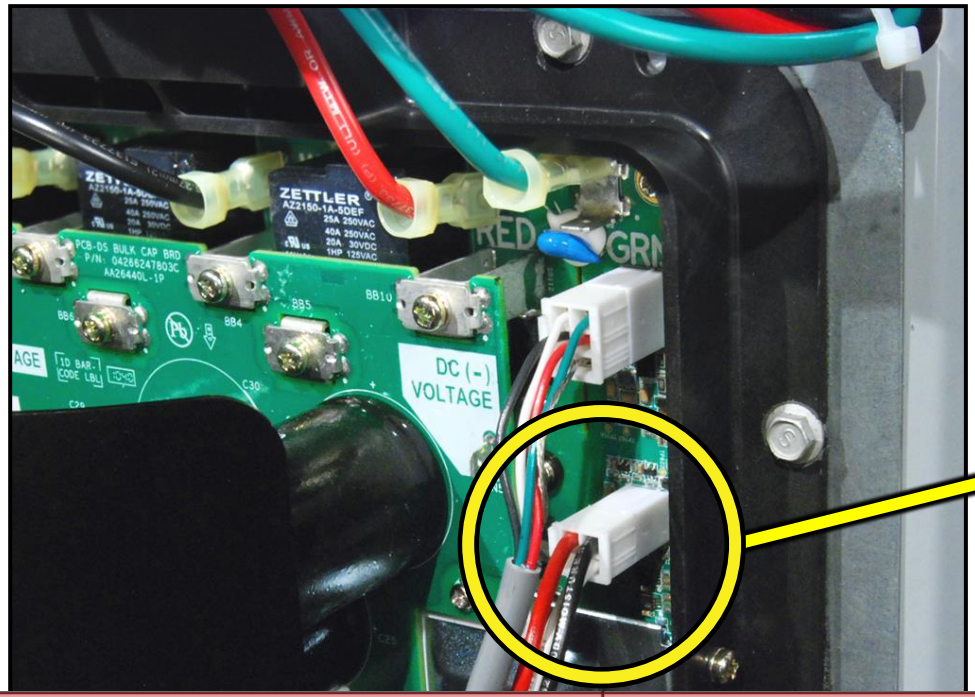
Charge Compensator

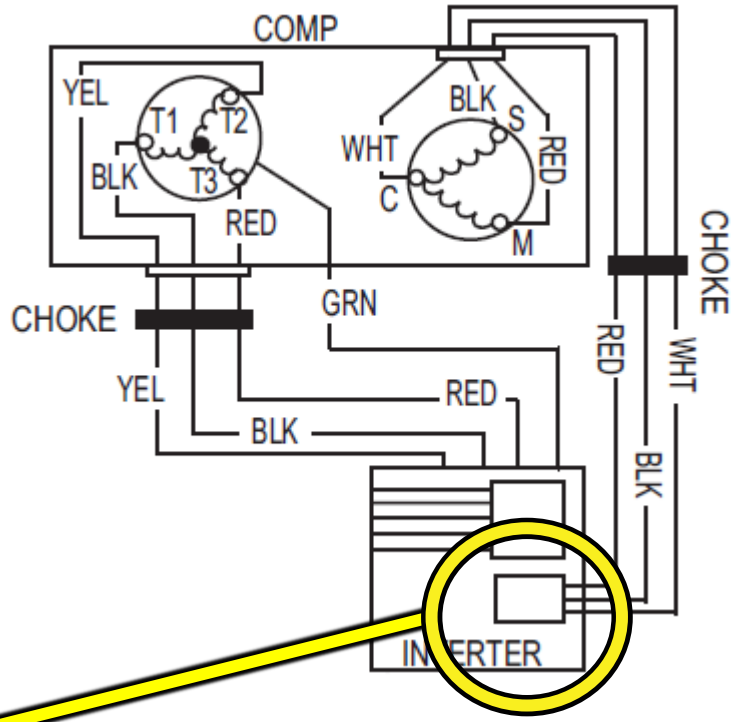
Heating Mode



Greenspeed / Extreme

3-Pin Scroll and Motor NTC Thermistor Plug

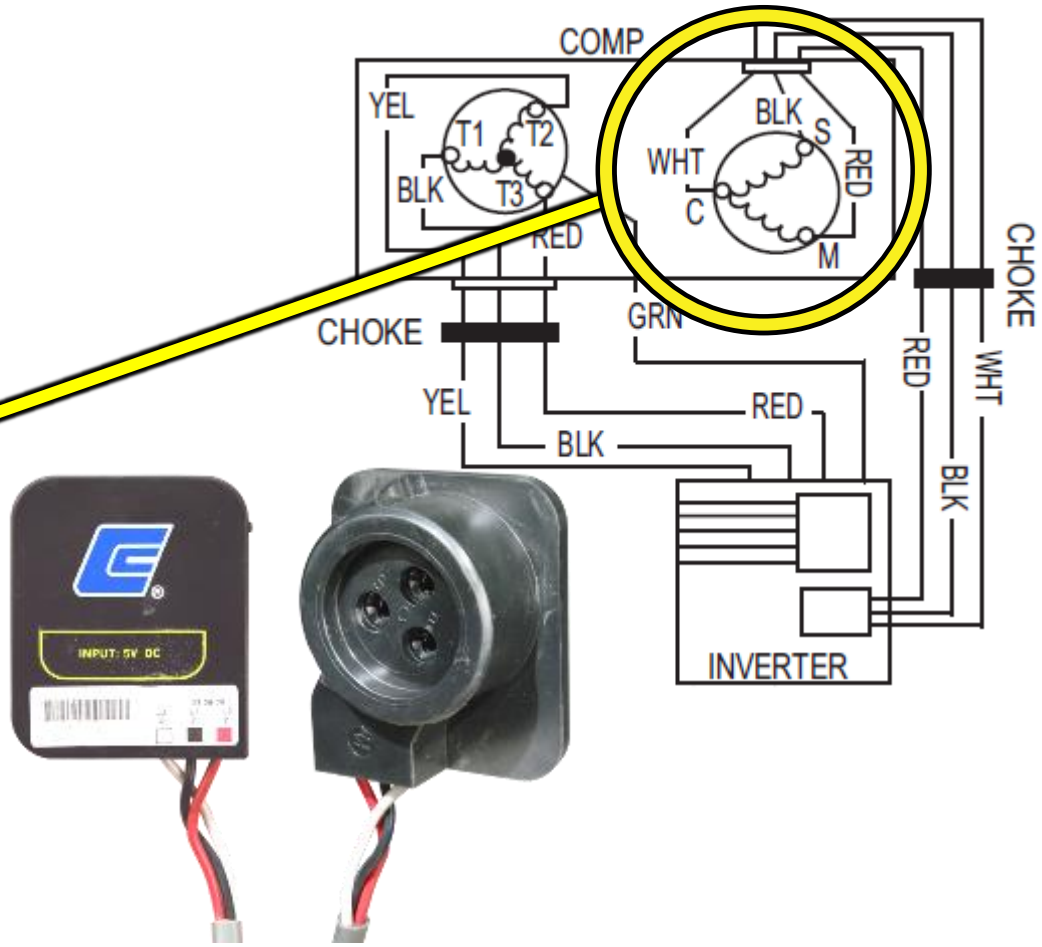




Compressor Scroll Temp Out of Range Event	59	15
Compressor No Start	62	15
Compressor Sump Heater Active	68	N/A
Inverter Internal Fault	69	15
Compressor Motor Temp Out of Range Event	71	5
Suction Over Temp Event	72	15

Greenspeed / Extreme

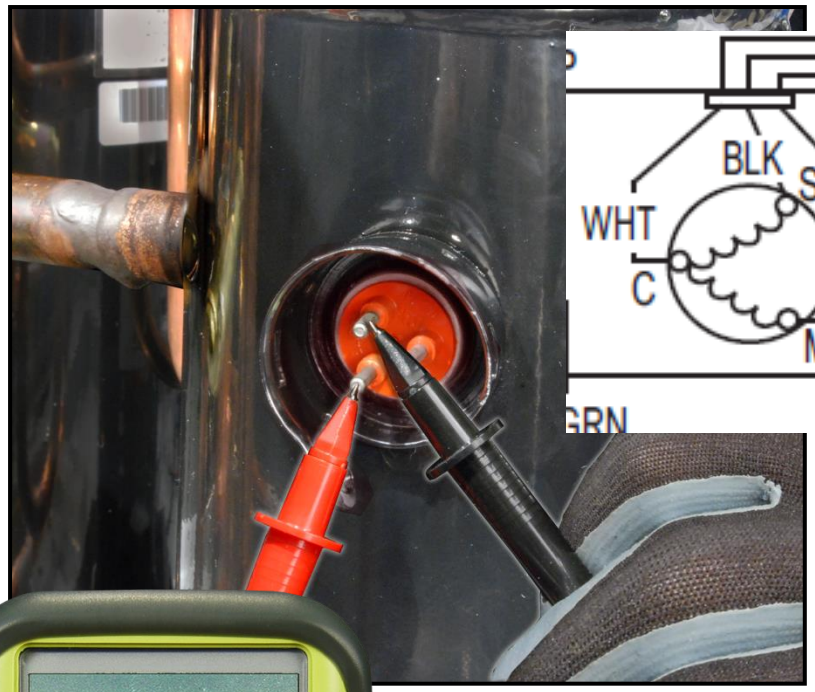
3-Pin Scroll and Motor NTC Thermistor Plug

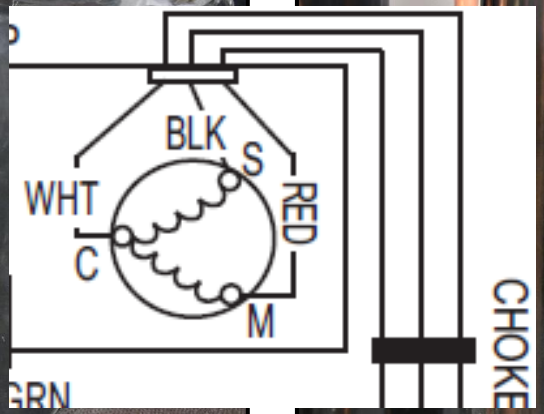


Compressor Scroll Temp Out of Range Event	59	15
Compressor No Start	62	15
Compressor Sump Heater Active	68	N/A
Inverter Internal Fault	69	15
Compressor Motor Temp Out of Range Event	71	5
Suction Over Temp Event	72	15

Greenspeed / Extreme

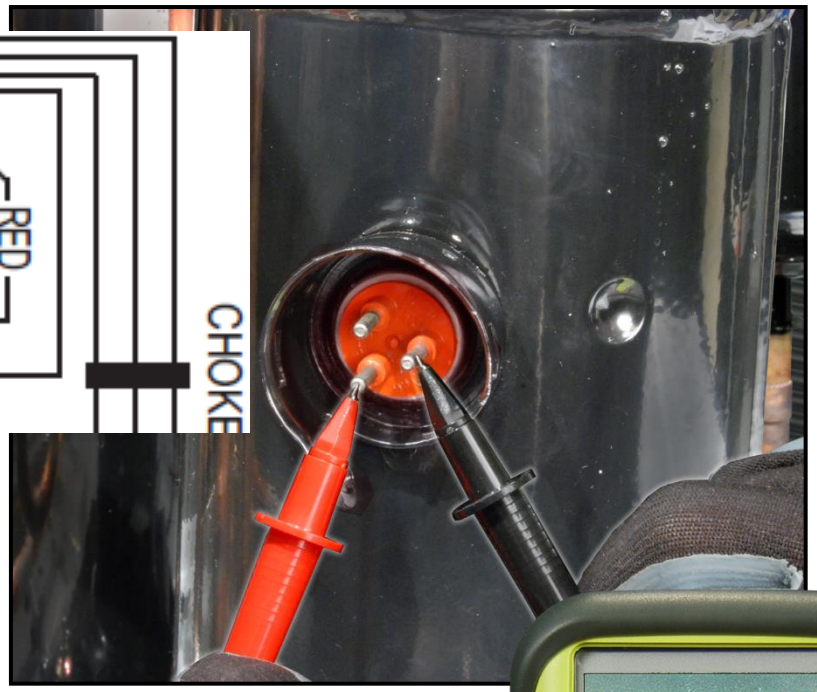
Measuring Scroll NTC Resistance





10 K

Measuring Motor NTC Resistance



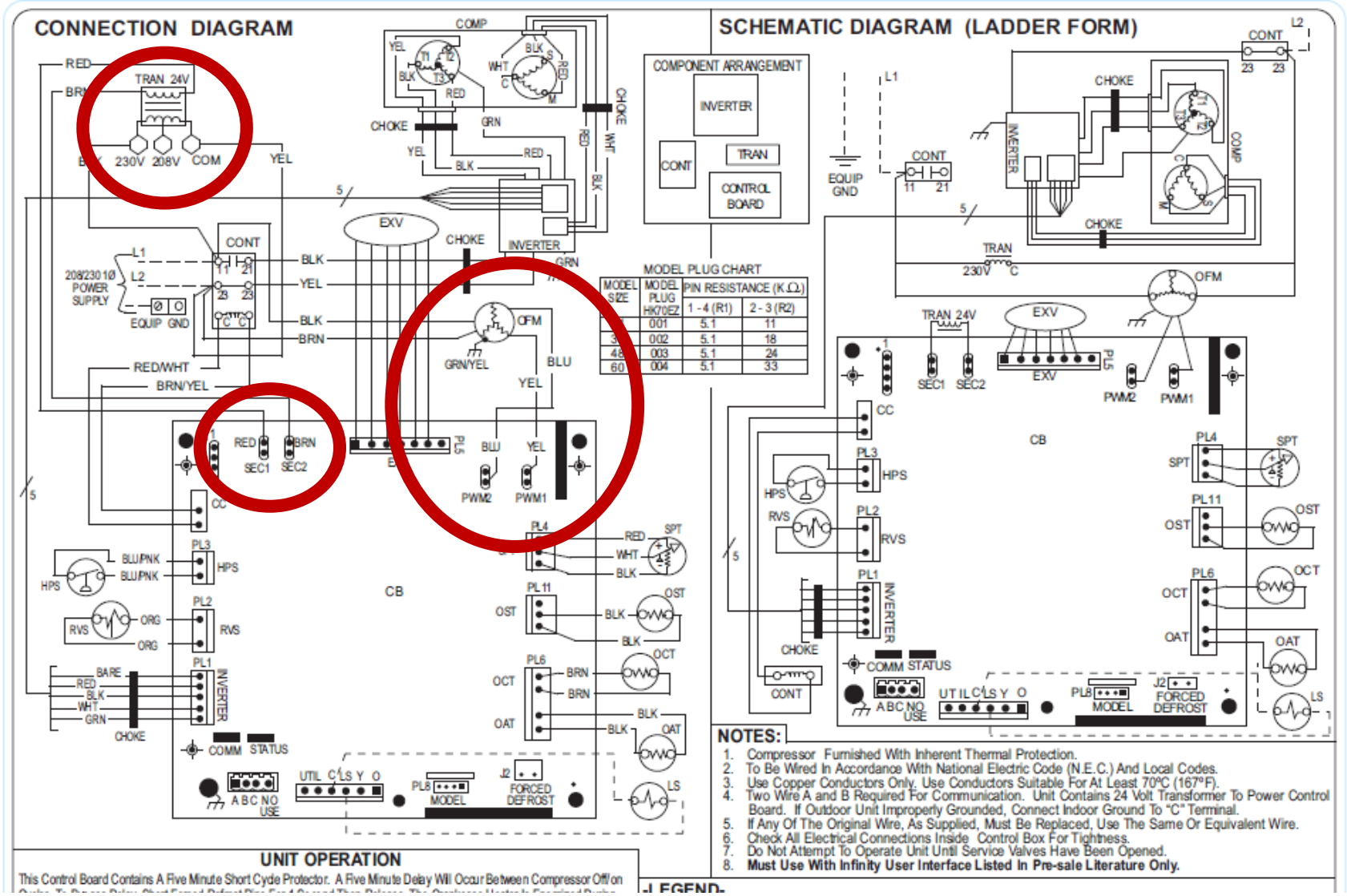
5 K

@

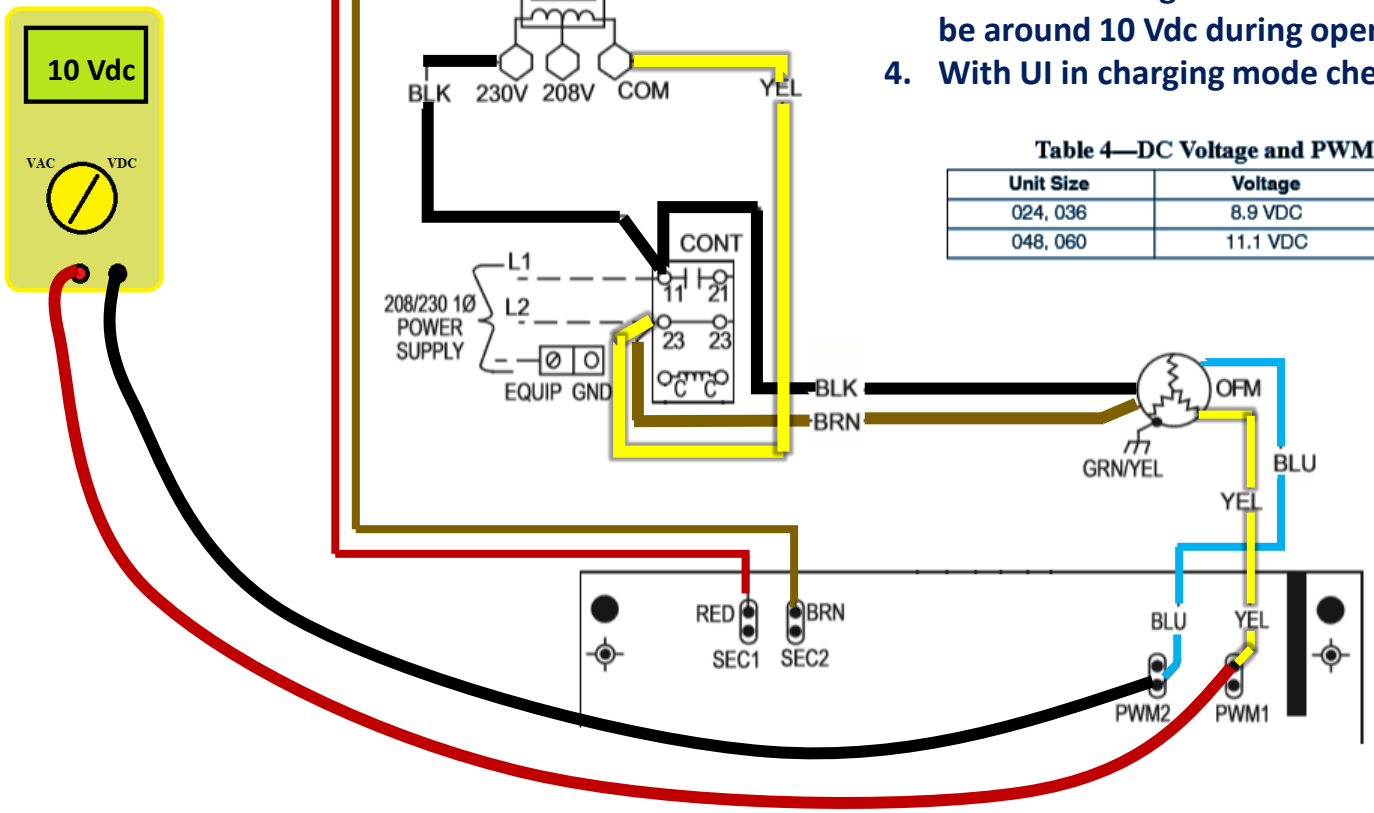
77°F

Checking Circuit for Grounded Condition

Greenspeed / Extreme



Greenspeed / Extreme



1. Verify high voltage to transformer.
2. Verify 24 Vac to board. (SEC1 / SEC2)
3. Check DC voltage between PWM1 and PWM2. (should be around 10 Vdc during operation)
4. With UI in charging mode check chart for values.

Table 4—DC Voltage and PWM Measurement

Unit Size	Voltage	PWM
024, 036	8.9 VDC	52
048, 060	11.1 VDC	84

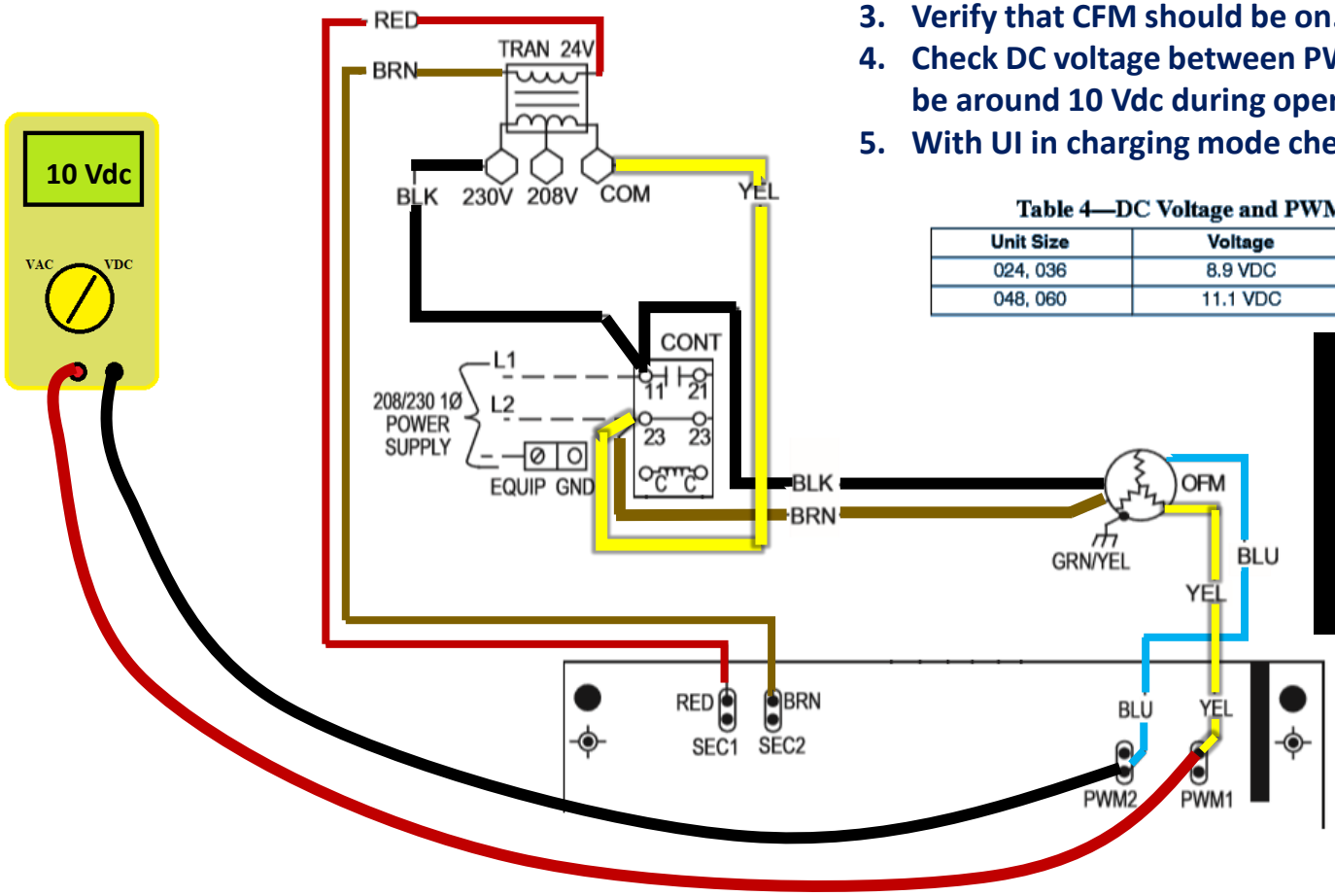
Greenspeed / Extreme

1. Verify high voltage to transformer.
2. Verify 24 Vac to board. (SEC1 / SEC2)
3. Verify that CFM should be on.
4. Check DC voltage between PWM1 and PWM2. (should be around 10 Vdc during operation)
5. With UI in charging mode check chart for values.

Table 4—DC Voltage and PWM Measurement

Unit Size	Voltage	PWM
024, 036	8.9 VDC	52
048, 060	11.1 VDC	84

If voltage is abnormal, then remove wires and recheck before replacing board.



24/26 SEER

SYSTXCCITC01-B

Infinity® System Control

4.05 current version

SYSTXBBITC01-C

Infinity® System Control

24/26 SEER

25VNA4
INFINITY®
VARIABLE SPEED HEAT PUMP
WITH GREENSPEED™ INTELLIGENCE
2 TO 5 NOMINAL TONS

Carrier
Turn to the experts

PRODUCT DATA

Industry leading Features / Benefits

Energy Efficiency
- Up to 24 SEER, 15 EER, 13 HSPF
- Microtube Technology™ refrigeration system
- Indoor air quality accessories available

Sound
- Sound level as low as 51 dBA in low speed .

Comfort
- Variable speed compressor with capacity range from 25-100%
- Air cooled inverter variable speed drive
  - System requires Infinity Control with Greenspeed capability
  - Energy Tracking capability with the Infinity Control Wall Control w/latest software version

- Non-ozone depleting Puron® refrigerant
- Front-seating service valves
- Greenspeed Intelligence actively monitors critical system parameters

Always check most recent literature for accurate data.

Variable Speed Compressors

All the compressors operate using VDC provided by the inverter. These compressors can only be operated by the specific inverter supplied with the unit.

25VNA4: PRODUCT DATA

Physical Data

UNIT SIZE SERIES	24-30	36-30	48-30	60-30
COMPRESSOR TYPE	Variable Speed rotary			Variable Speed Scroll
REFRIGERANT	Puron® (R-410A)			
Control	TXV (Puron® Hard Shutoff)			
Charge lb (kg)	8.9 (4.05)	14.1 (6.4)	14.15 (6.42)	16.25 (7.37)
Outdoor Htg Exp. Device	EXV	EXV	EXV	EXV
COND FAN	Forward Swept Propeller Type, Direct Drive			

24/26 SEER

SPECIAL WARRANTY

RESIDENTIAL APPLICATIONS
This warranty is to the original purchasing owner and subsequent owners only to the extent and as stated in the Warranty Conditions and below. The limited warranty period in years, depending on the part and the claimant, is as shown in the table below.

Unit Replacement limited warranty – Available to original purchaser in owner-occupied single family residential applications only, and is not available to subsequent homeowners. If the compressor fails due to defect during the applicable Unit Replacement limited warranty time period, a one-time replacement with a comparable Carrier unit will be provided. This unit replacement warranty is in addition to the standard parts warranty. Proof of purchase and installation date will be required. The unit replacement limited warranty replacements are subject to review and verification by a Carrier representative. The remaining balance of the original unit's standard warranty will be transferred to the replacement unit. This limited warranty is subject to all provisions, conditions, limitations and exclusions listed below and on the reverse of this document.

		Limited Warranty (Years)	
Product	Item	Original Owner	Subsequent Owners
Air Conditioner or Heat Pump Condensing Unit Models 25VNA4 and 24VNA6	Parts	10* (or 5)	5
	Compressor	10* (or 5)	5
	Unit Replacement**	10* (or 5)	N/A

* If properly registered within 90 days of original installation, otherwise 5 years (except in California and Quebec and other jurisdictions that prohibit warranty benefits conditioned on registration). See Warranty Conditions below.
** See warranty condition #9 below.

OTHER APPLICATIONS
The warranty period is five (5) years on the compressor, and one (1) year on all other parts. The warranty is to the original owner only and is not available for subsequent owners.

Coverage Details
Original Homeowner Only
Covered Failures: Compressor
Labor Allowance: $300
One Time Replacement
New Unit will get remainder of original warranty

Unit replacement warranty on compressor failures only.
There is a qualification process which needs to be followed to get approval for the replacement. Contact technical support 800-264-2512 opt 3 then 1.

24/26 SEER

Old Design

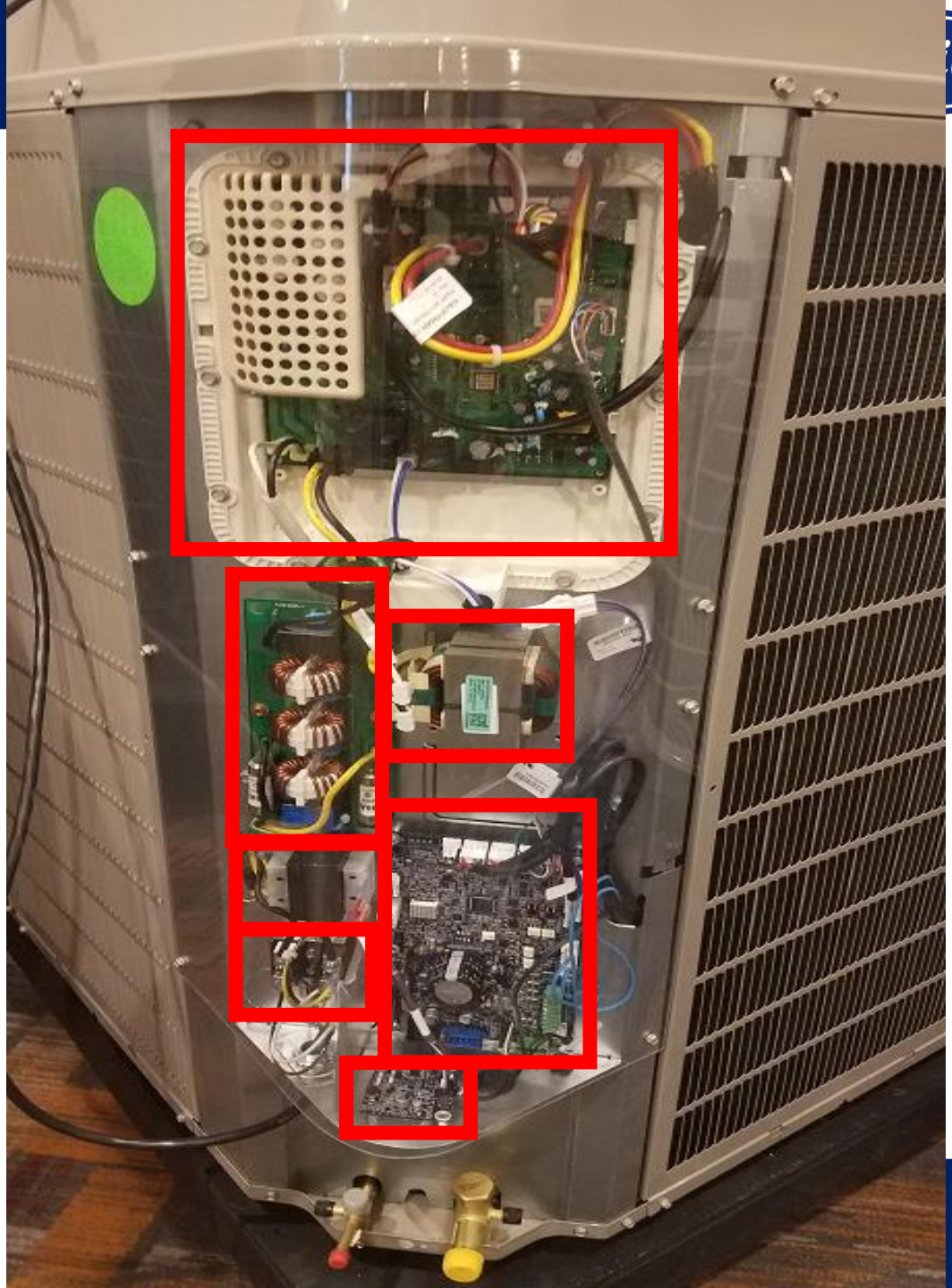
New Design

EMI Filter Board

Transformer

Terminal Block

Blue Tooth Module



VFD

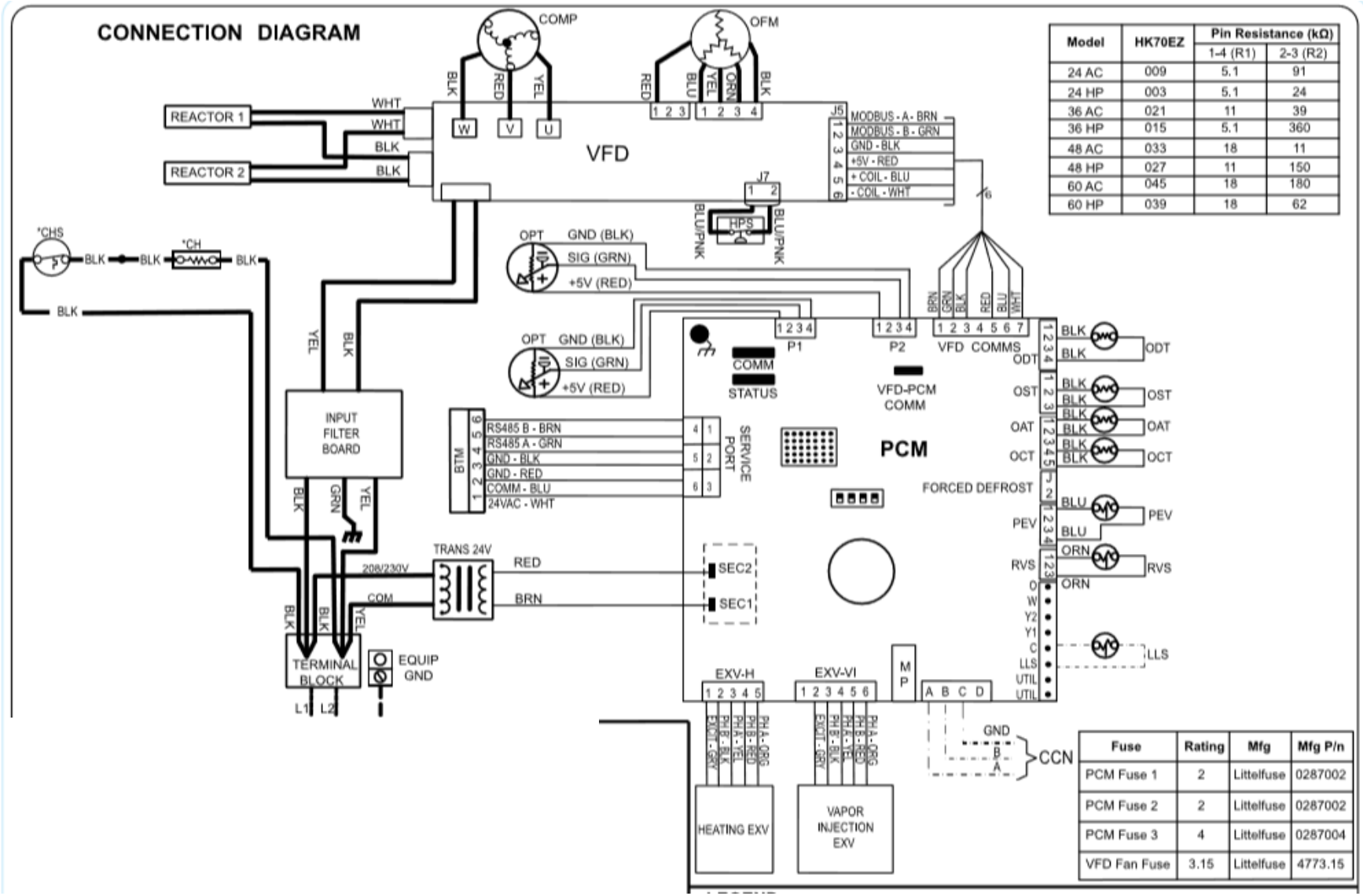
Variable Frequency Drive

Line Reactor

PCM

Power Control Module

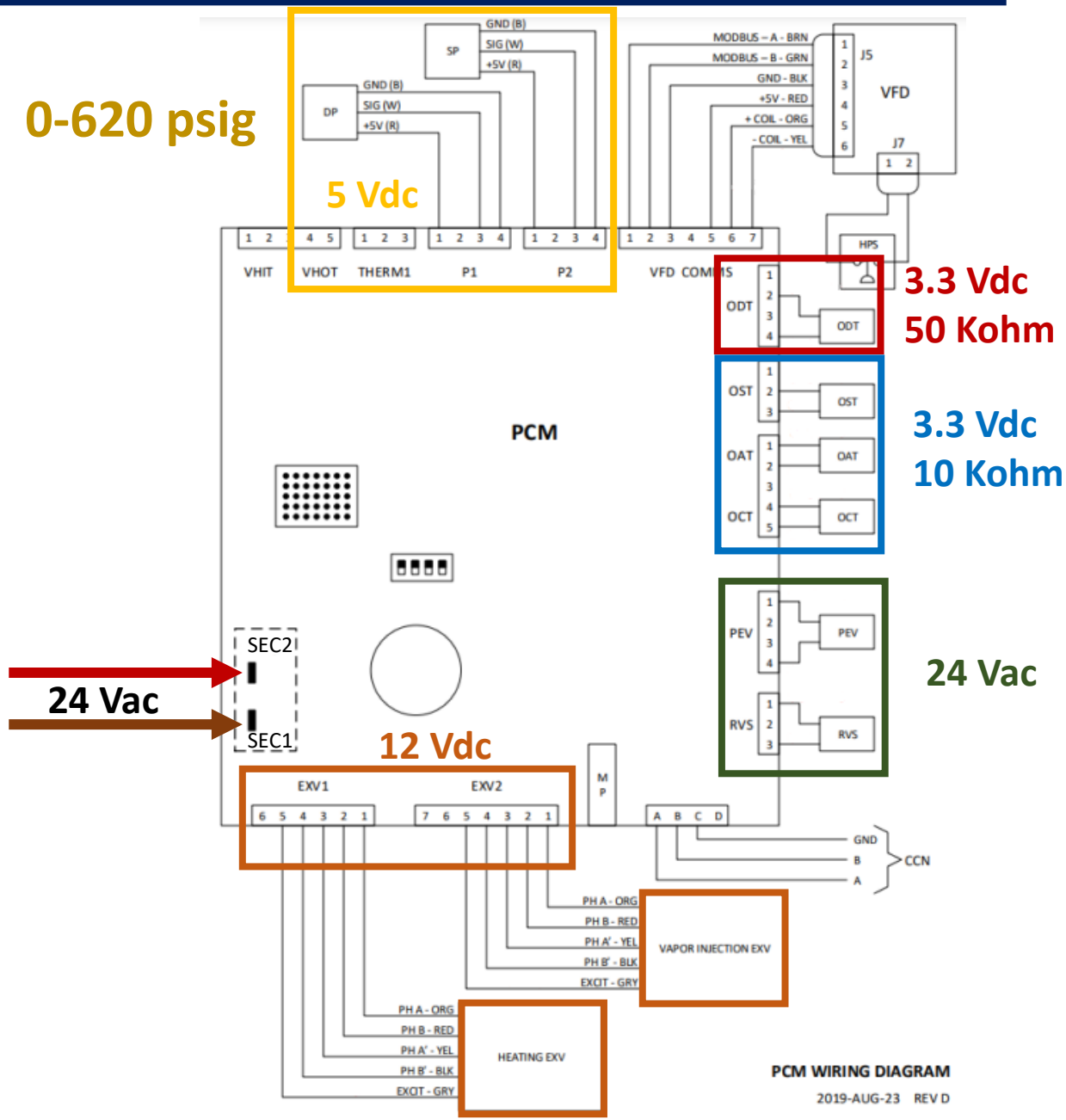
24/26 SEER



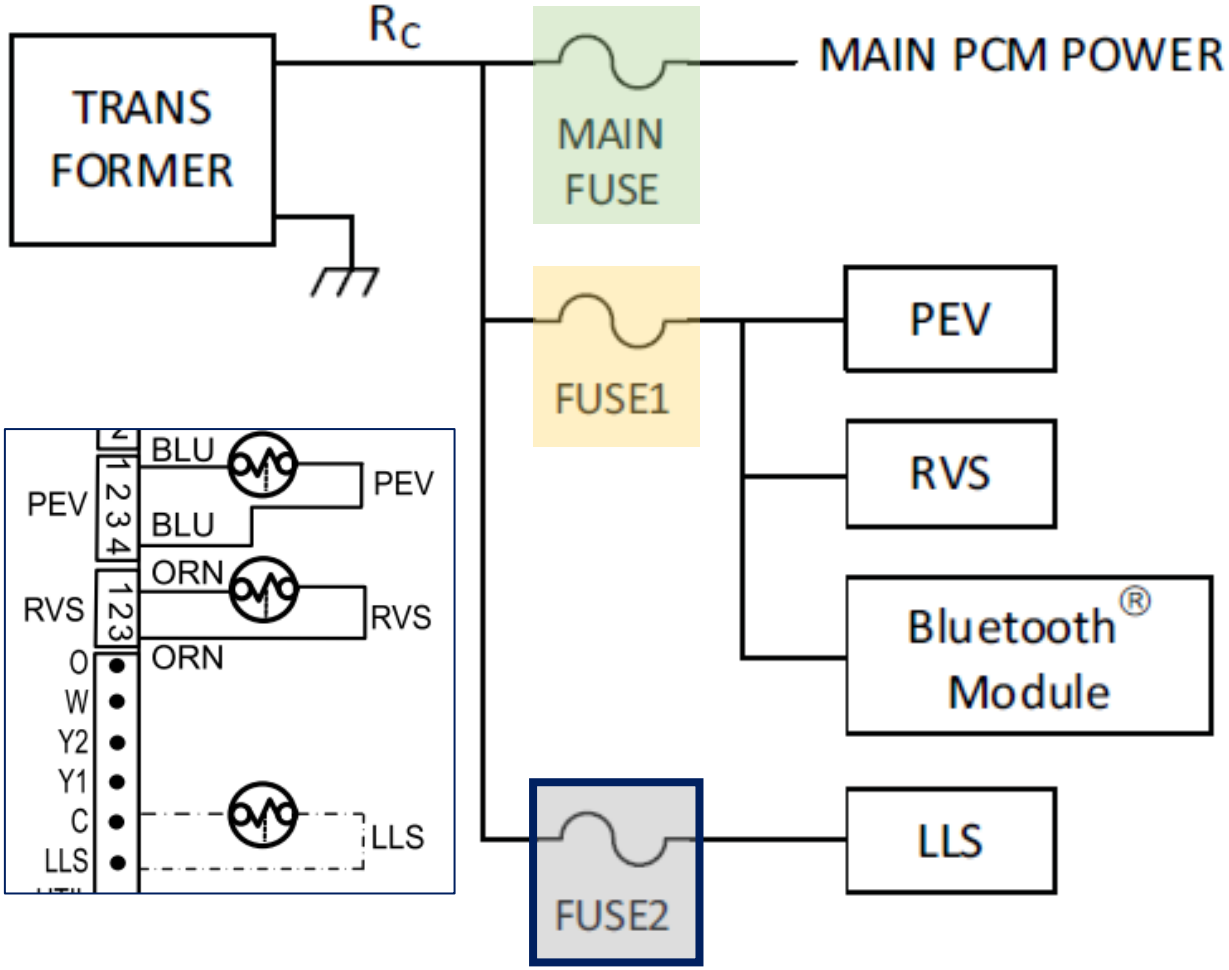
Model	HK70EZ	Pin Resistance (kΩ)	
		1-4 (R1)	2-3 (R2)
24 AC	009	5.1	91
24 HP	003	5.1	24
36 AC	021	11	39
36 HP	015	5.1	360
48 AC	033	18	11
48 HP	027	11	150
60 AC	045	18	180
60 HP	039	18	62

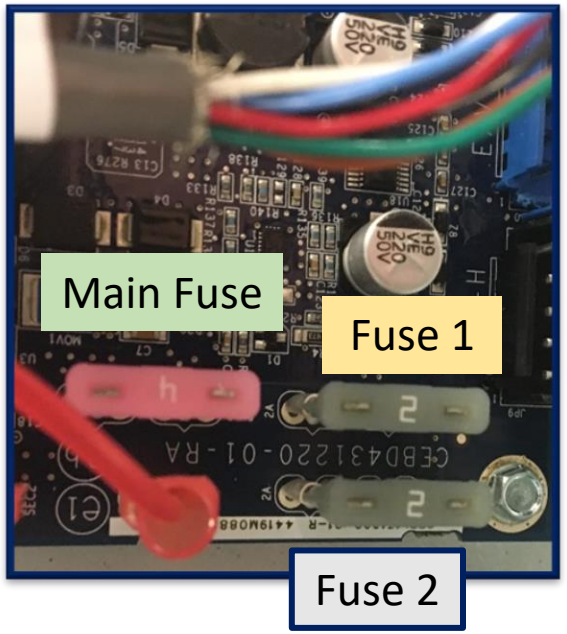
Fuse	Rating	Mfg	Mfg P/n
PCM Fuse 1	2	Littelfuse	0287002
PCM Fuse 2	2	Littelfuse	0287002
PCM Fuse 3	4	Littelfuse	0287004
VFD Fan Fuse	3.15	Littelfuse	4773.15

24/26 SEER


0-620 psig
5 Vdc
SP
DP
GND (B)
SIG (W)
+5V (R)
MODBUS – A - BRN
MODBUS – B - GRN
GND - BLK
+5V - RED
+ COIL - ORG
- COIL - YEL
J5
VFD
J7
VHIT
VHOT
THERM1
P1
P2
VFD COMMS
HPS
ODT
3.3 Vdc
50 Kohm
OST
OAT
OCT
3.3 Vdc
10 Kohm
PCM
PEV
RVS
24 Vac
SEC2
24 Vac
SEC1
12 Vdc
EXV1
EXV2
M
P
A B C D
GND
B
A
CCN
PH A - ORG
PH B - RED
PH A' - YEL
PH B' - BLK
EXCIT - GRY
VAPOR INJECTION EXV
HEATING EXV
PCM WIRING DIAGRAM
2019-AUG-23 REV D

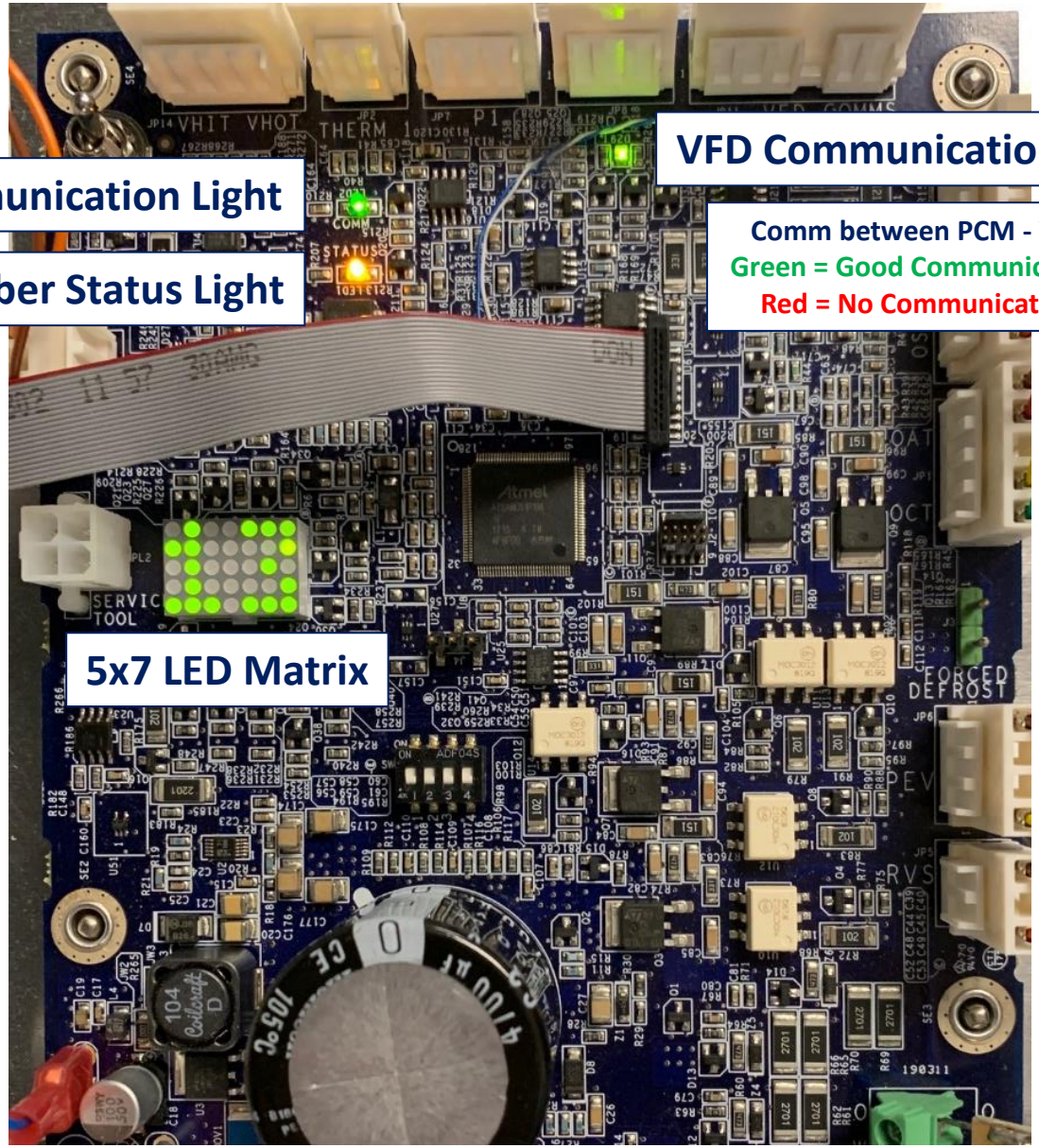
24/26 SEER



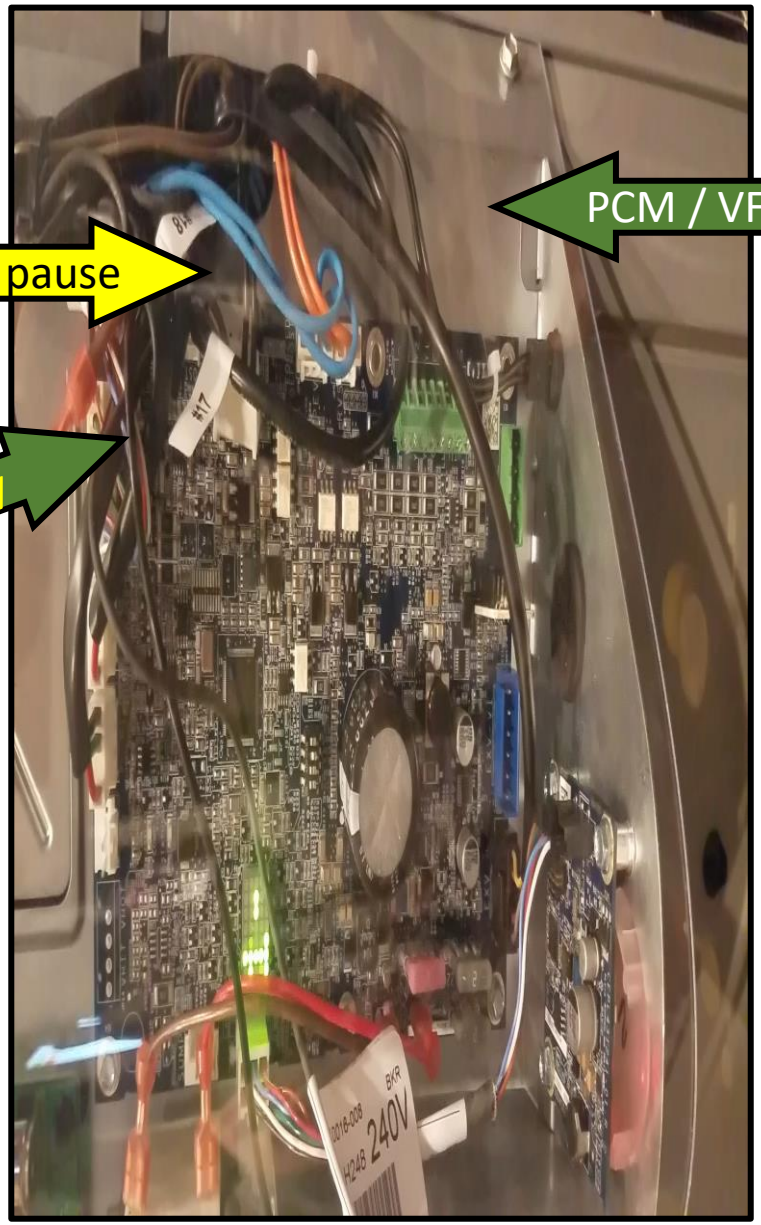


Fuse	Rating	Mfg	Mfg P/n
PCM Fuse 1	2	Littelfuse	0287002
PCM Fuse 2	2	Littelfuse	0287002
PCM Fuse 3	4	Littelfuse	0287004

24/26 SEER



PCM
Power Control Module



Code 51 OAT
Code 52-01 OCT Open

52

24/26 SEER

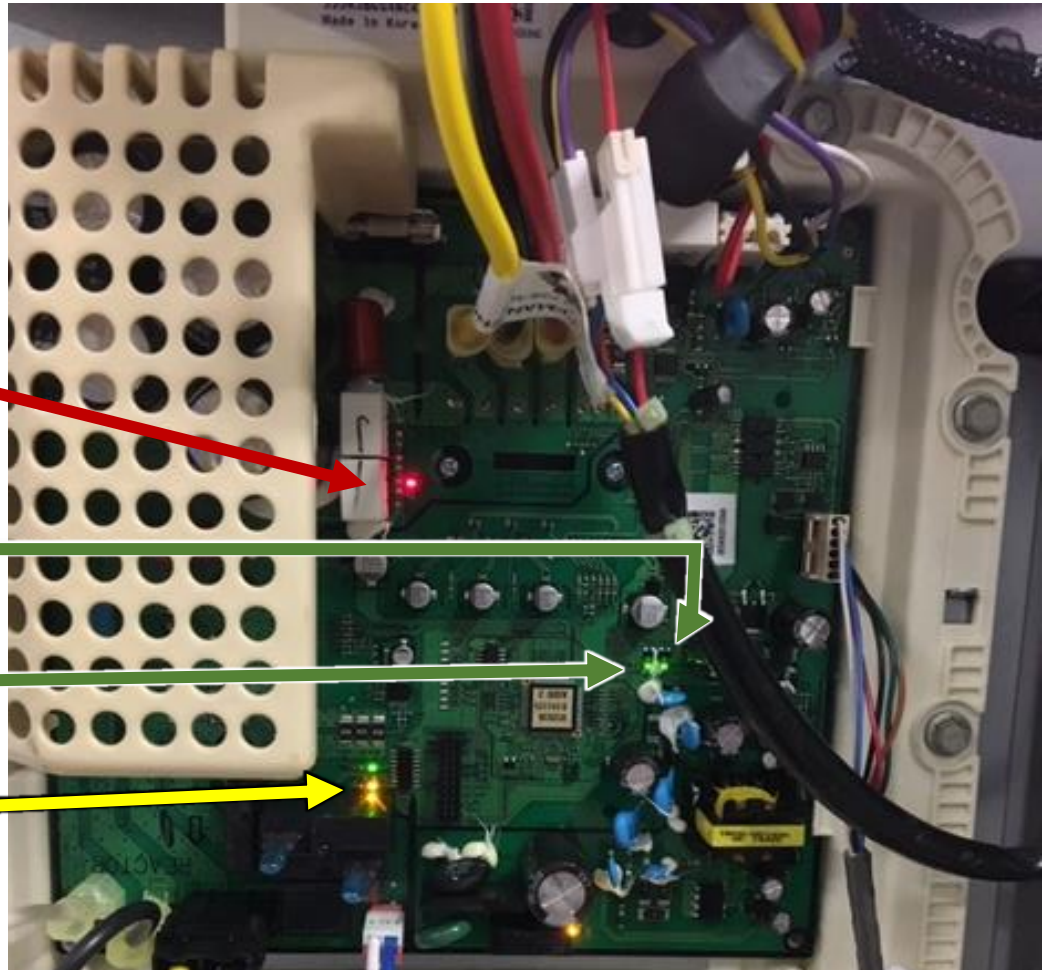
VFD
Variable Frequency Drive

R1: ON = Vdc > 40V

G1: Blinks when VFD receives a signal from PCM

G2: ON = Normal OFF = Fault

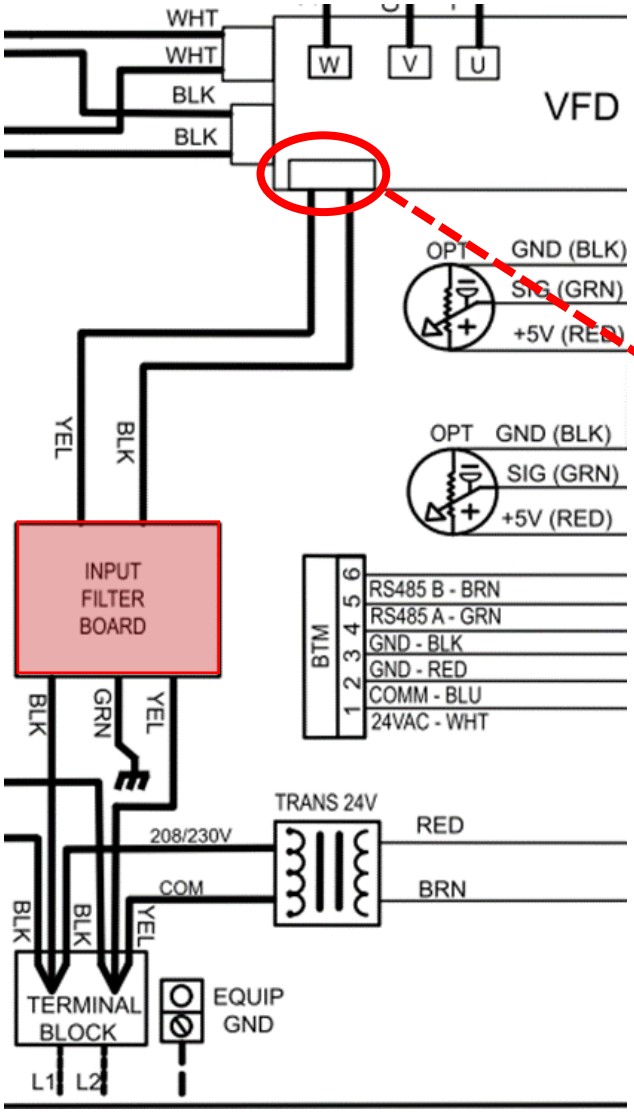
G2: ON = Normal / OFF = Fault

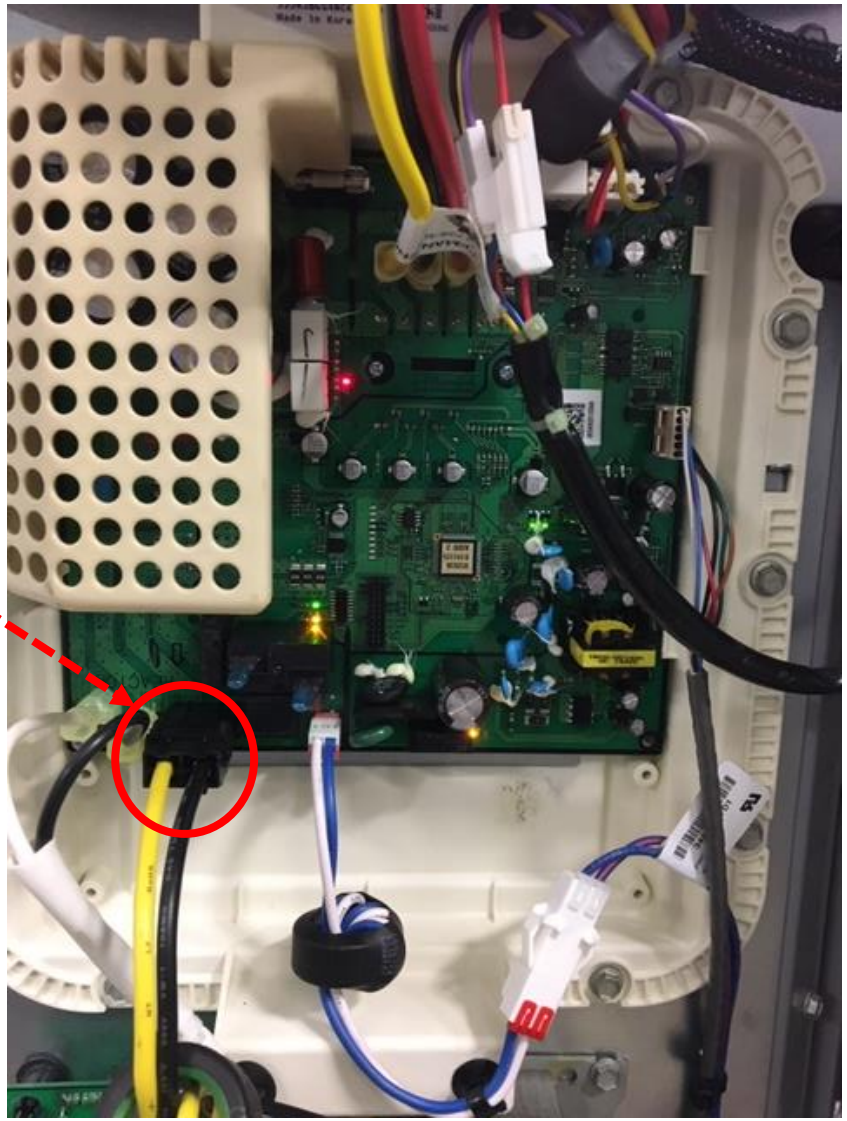


Lights and locations are different on all models, consult service manual for specifics.

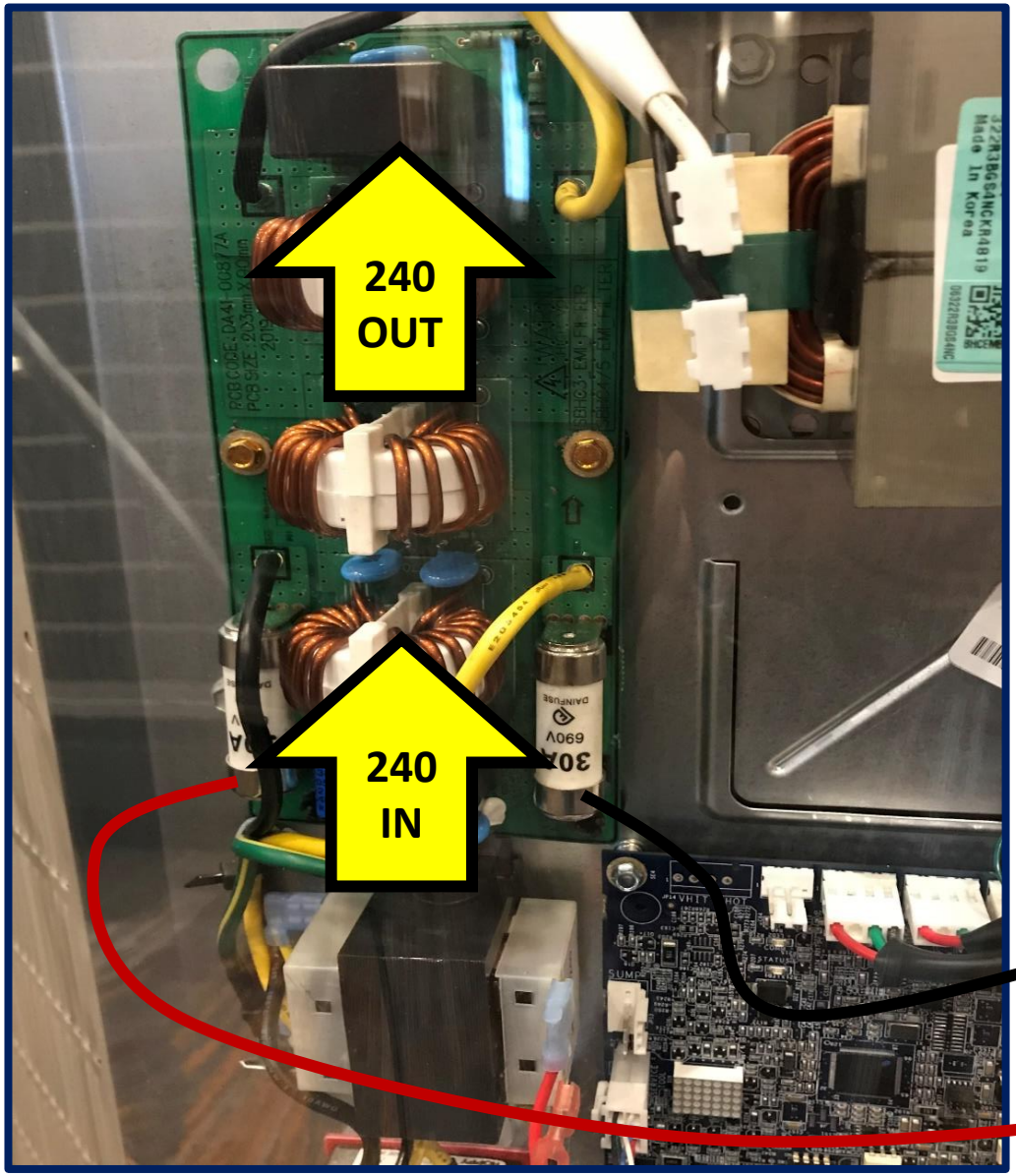
24/26 SEER

VFD Power Supply

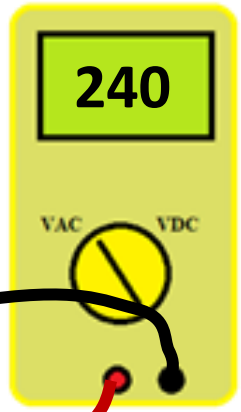




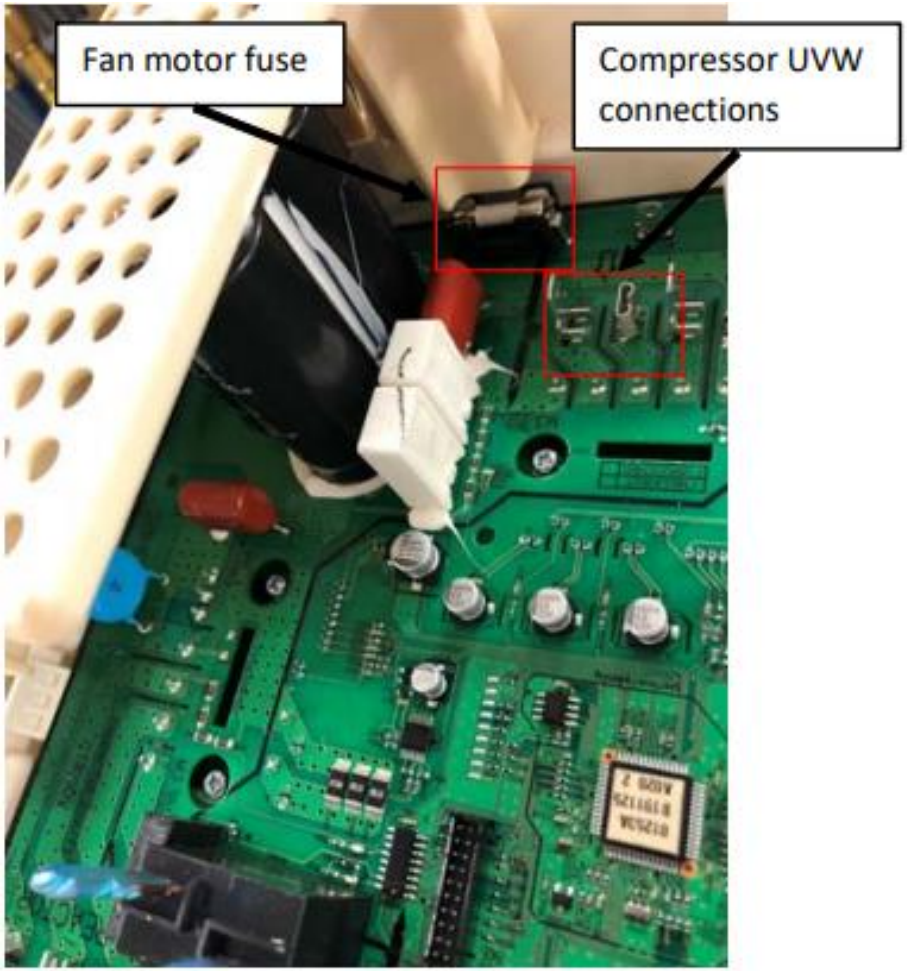
24/26 SEER



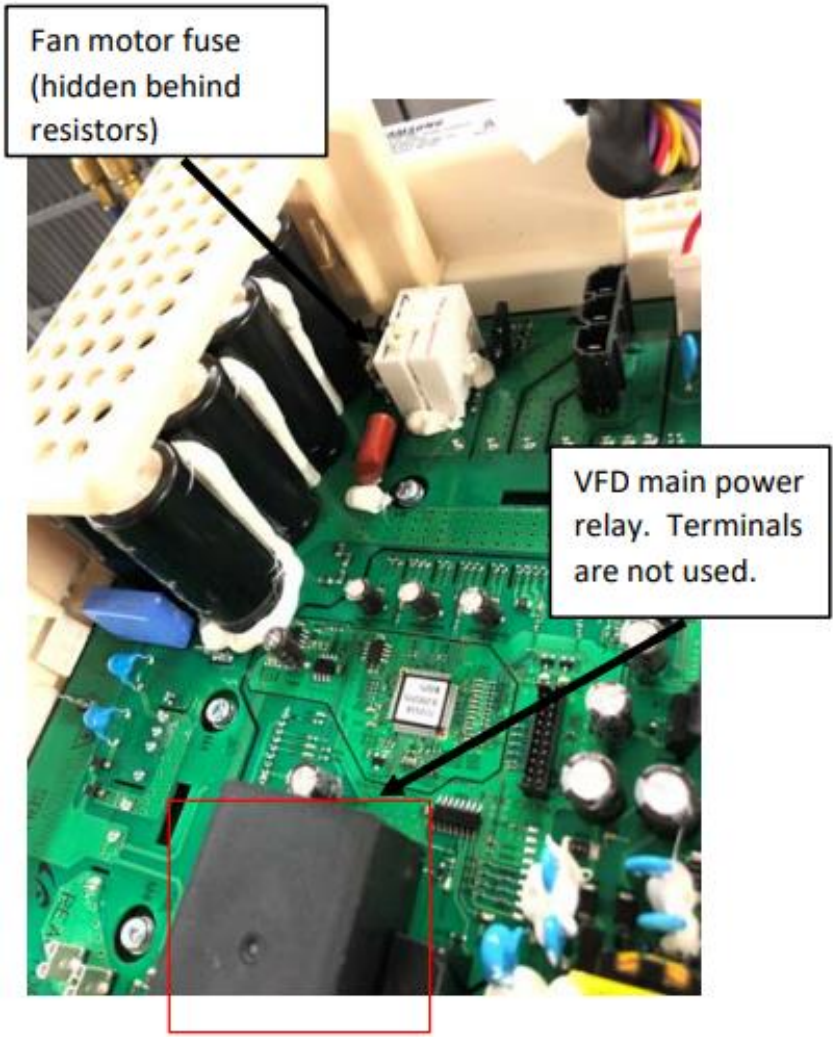
Filter Board



Condensing Fan Motor



2 and 3 TON



4 and 5 TON

24/26 SEER

Condensing Fan Motor

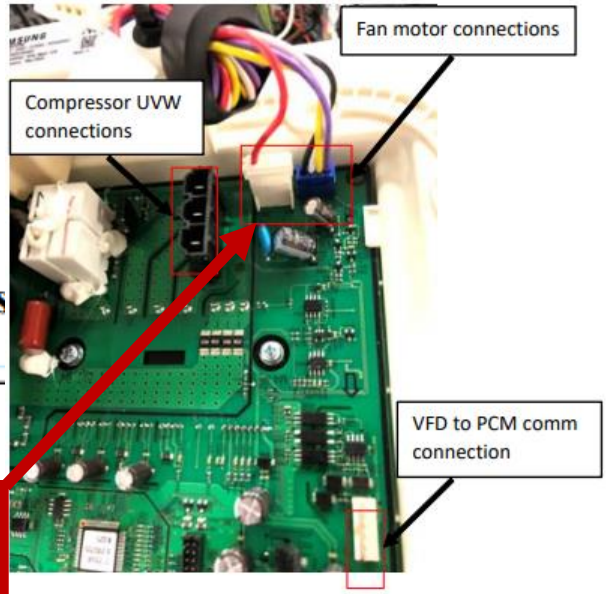
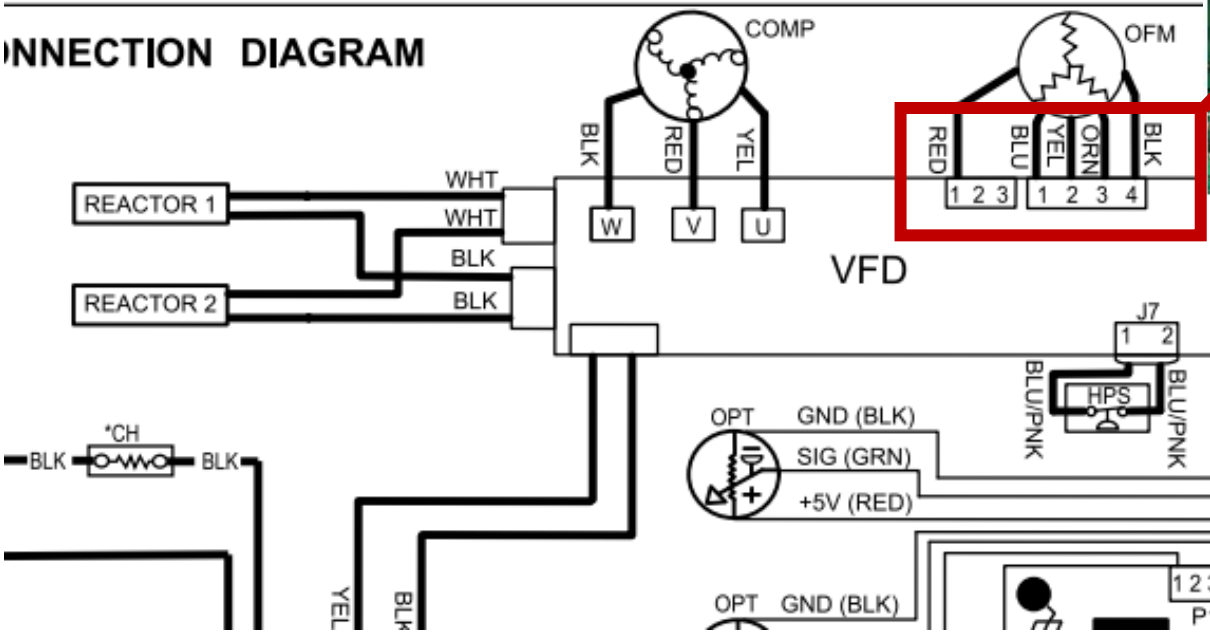


Fig. 2 – Compressor / Fan Sub-Sys

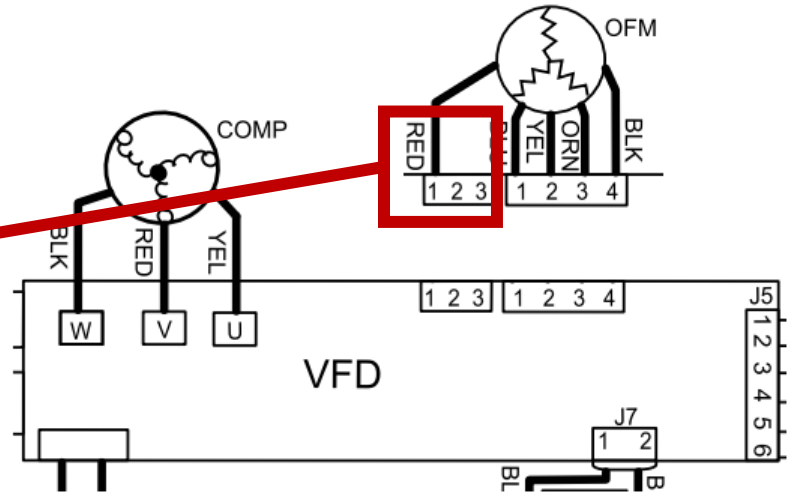


Testing Condensing Fan Motor

1. Remove fan harness from VFD.
2. Check resistance values as listed in Table 5.

Table 5 – DC Voltage and PWM Measurement

Vdc-GND	Vcc-GND	Vsp-GND	FG-GND
Pin 1 (3 pin) & Pin 1 (4 pin)	Pin 2 (4 pin) & Pin 1 (4 pin)	Pin 3(4 pin) & Pin 1 (4 pin)	Pin 4 (4 pin) & Pin 1 (4 pin)
1.36 meg OHM	45.4 meg OHM	115k OHM	Open

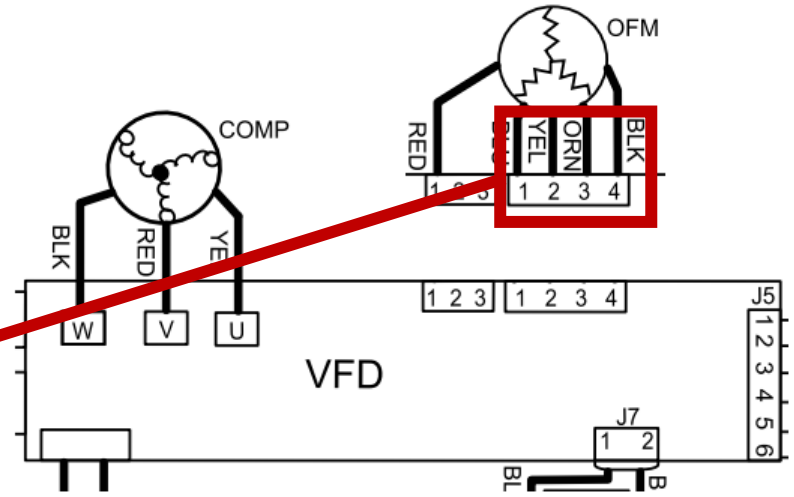


Testing Condensing Fan Motor

1. Remove fan harness from VFD.
2. Check resistance values as listed in Table 5.

Table 5 – DC Voltage and PWM Measurement

Vdc-GND	Vcc-GND	Vsp-GND	FG-GND
Pin 1 (3 pin) & Pin 1 (4 pin)	Pin 2 (4 pin) & Pin 1 (4 pin)	Pin 3(4 pin) & Pin 1 (4 pin)	Pin [illegible] (4 pin) & Pin 1 (4 pin)
1.36 meg OHM	45.4 meg OHM	115k OHM	Open



Testing Condensing Fan Motor

1. Remove fan harness from VFD.
2. Check resistance values as listed in Table 5.
3. Pin 1 (4-pin plug) is common to all tests.

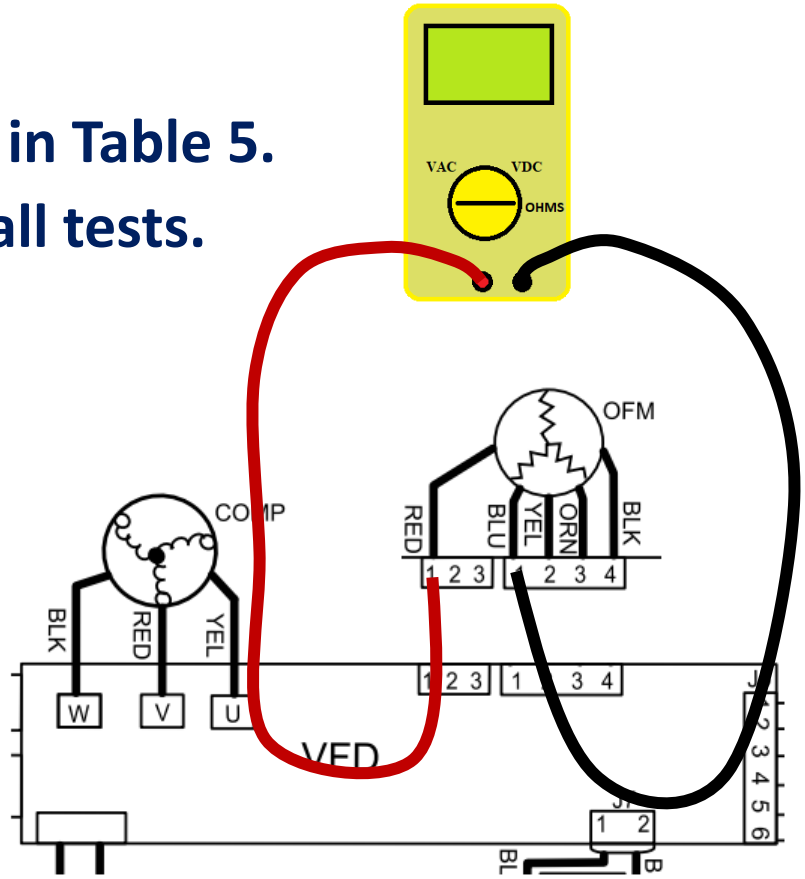
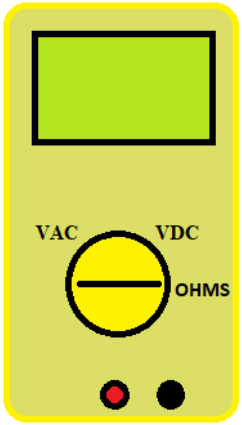


Table 5 – DC Voltage and PWM Measurement

Vdc-GND	Vcc-GND	Vsp-GND	FG-GND
Pin 1 (3 pin) & Pin 1 (4 pin)	Pin 2 (4 pin) & Pin 1 (4 pin)	Pin 3(4 pin) & Pin 1 (4 pin)	Pin 4 (4 pin) & Pin 1 (4 pin)
1.36 meg OHM	45.4 meg OHM	115k OHM	Open

Testing Compressor

1. Turn power off. (red light on VFD is off)
2. Remove U,V,W wires from VFD
3. Check resistance values as listed in Table 4.
4. If resistance does not match given values, then recheck at compressor terminals.



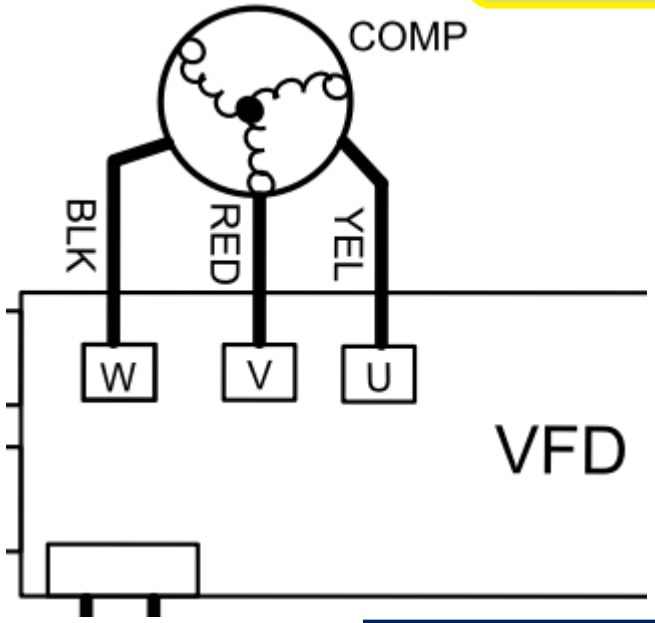


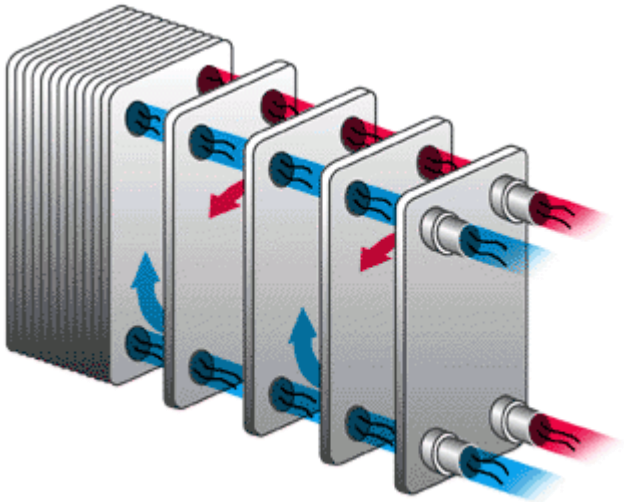
Table 4 – Variable Speed Compressor Resistances (ohm)
(winding resistance at 68°F /20°C)

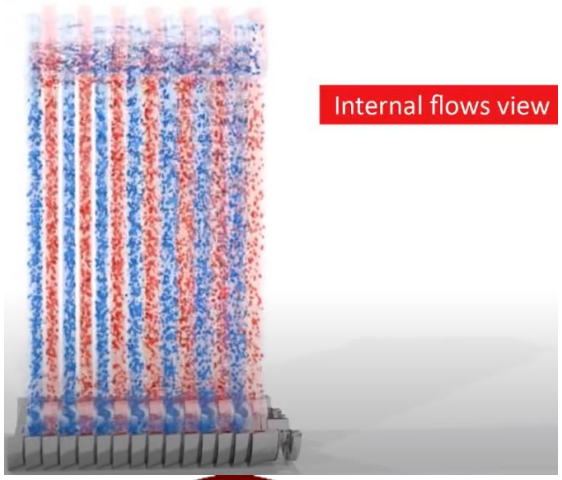
WINDING	24	36	48	60
Between terminals T1, T2, and T3 (U,V,W)	.74	0.453	0.424	0.424
Between terminal & ground	>1 mega OHM			

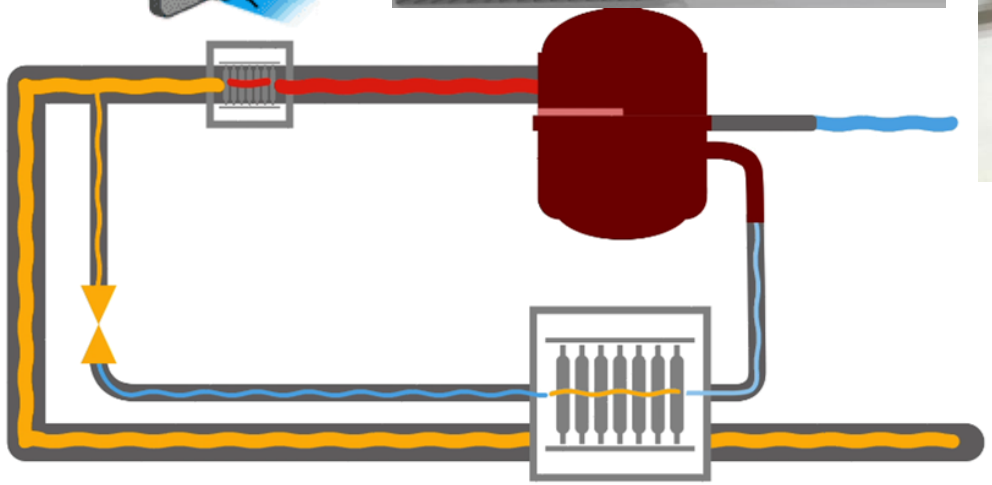
24/26 SEER

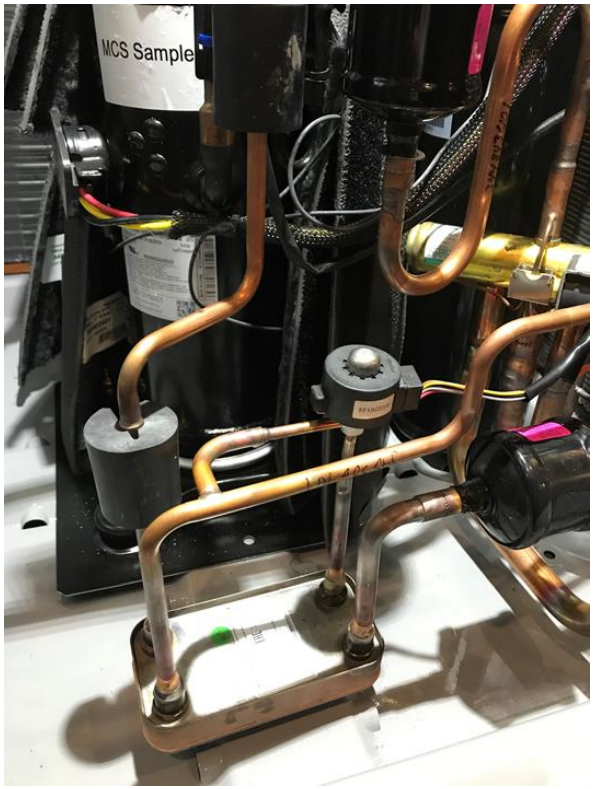
Vapor Injection Process

- 5-Ton Units Only
- High Ambient Cooling, or
- Low Ambient Heating Only

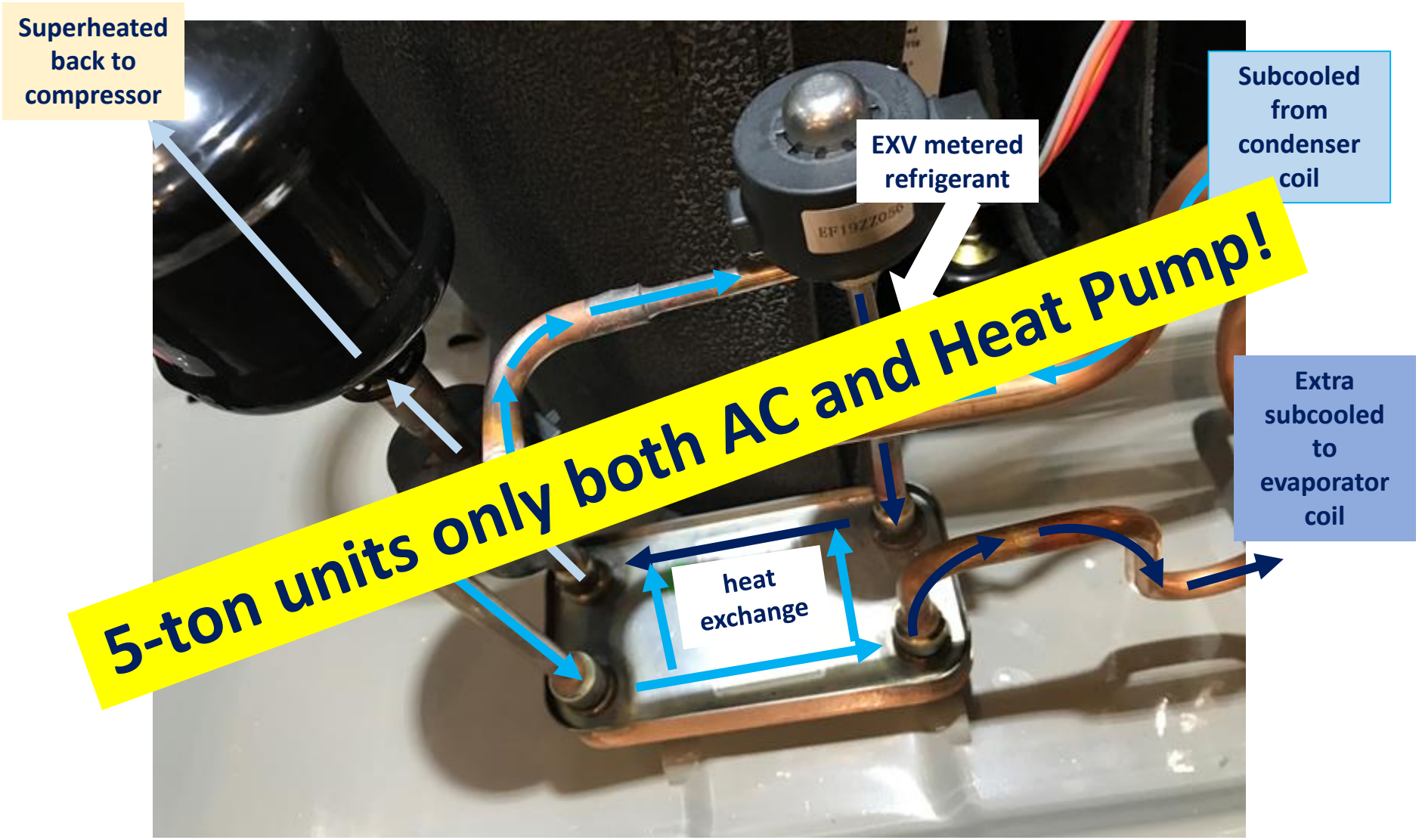




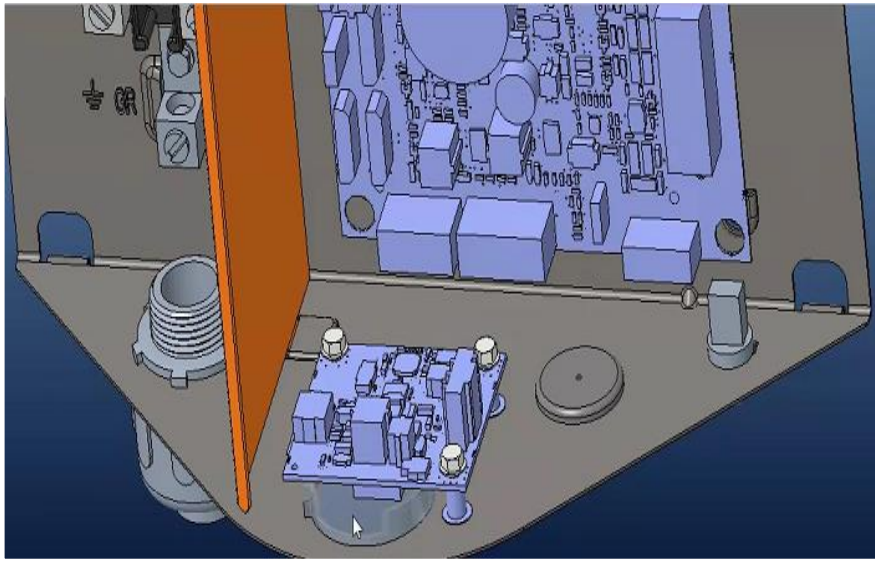




24/26 SEER


Superheated back to compressor
EXV metered refrigerant
Subcooled from condenser coil
5-ton units only both AC and Heat Pump!
heat exchange
Extra subcooled to evaporator coil

24/26 SEER



Bluetooth Module

Bluetooth® Module Activation

Turn to the experts

Quick Start Guide

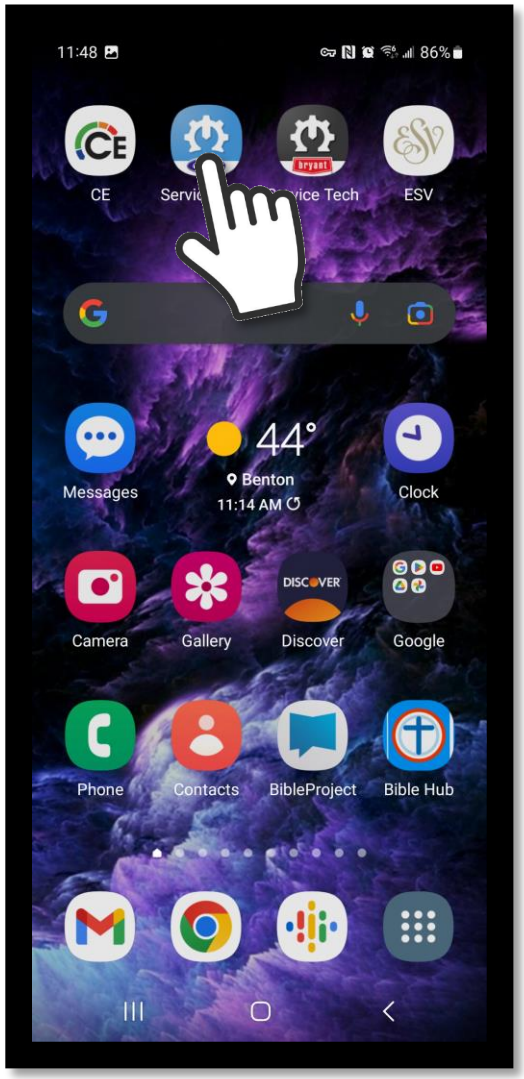
NOTE: A qualified installer or agency is required for proper installation. This guide is for reference only and it is not intended to replace the product Installation Instructions.

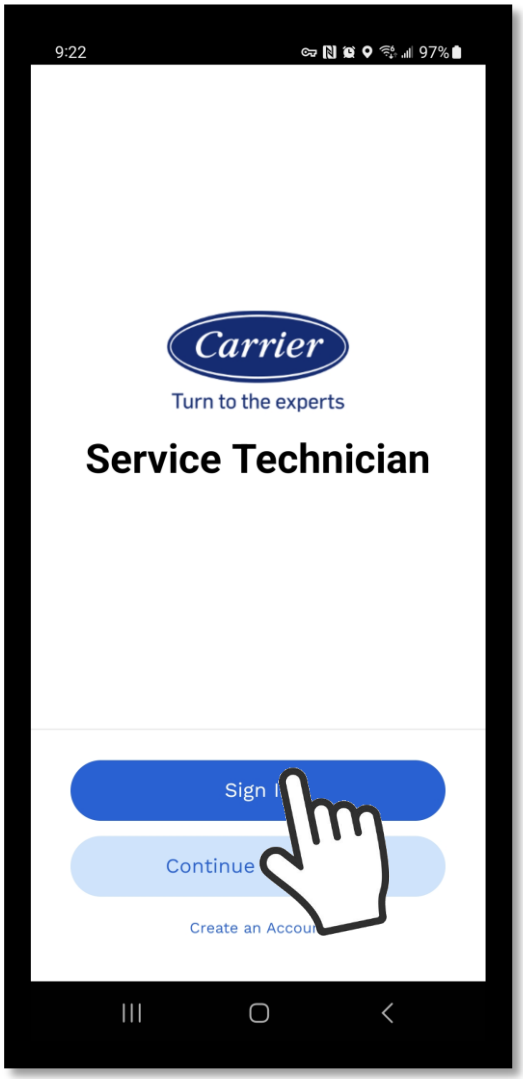
Bluetooth® Module Activation

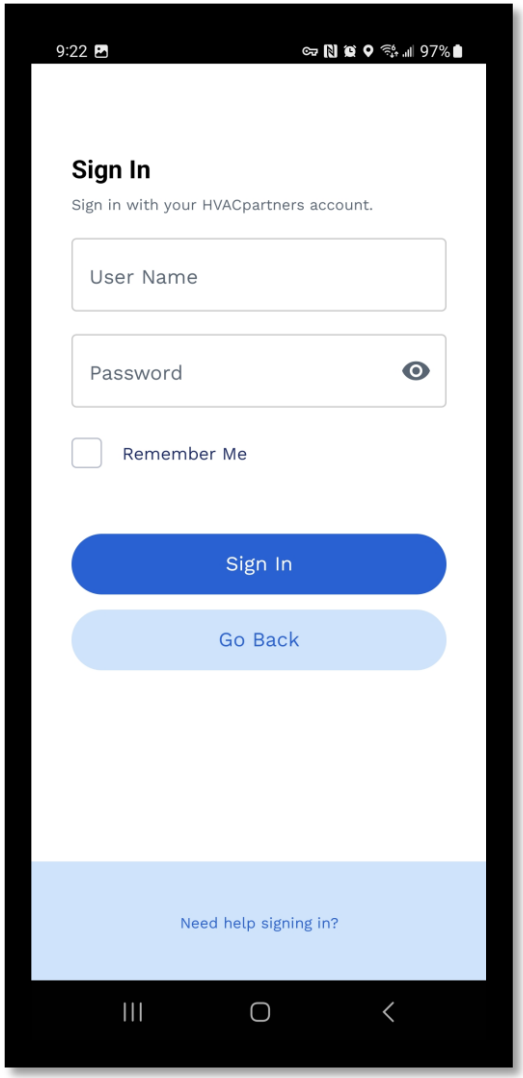
Heating & Cooling Systems

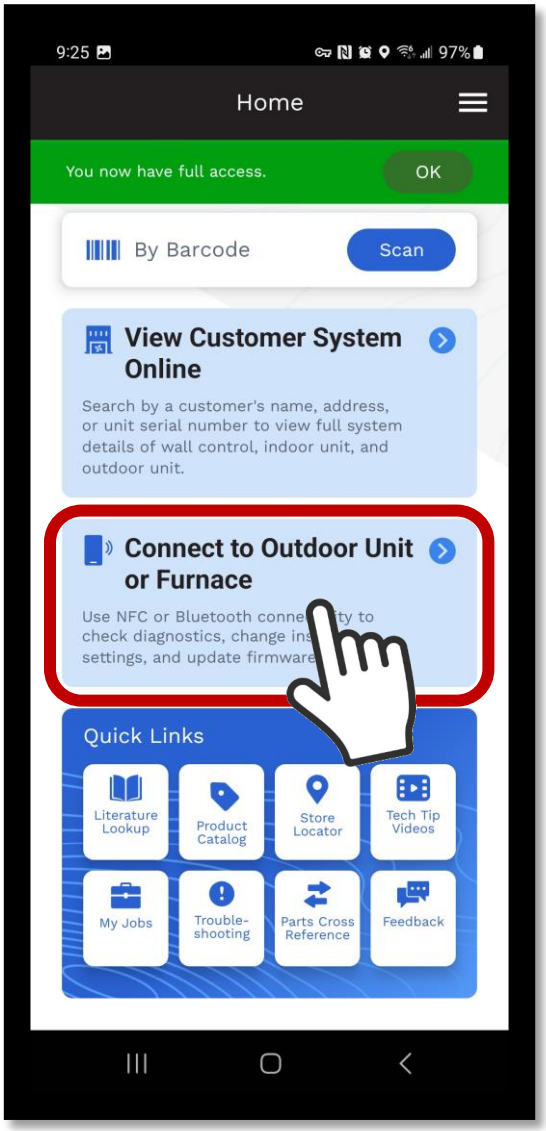
Quick Start Guide

NOTE: A qualified installer or agency is required for proper installation. This guide is for reference only and it is not intended to replace the product Installation Instructions.

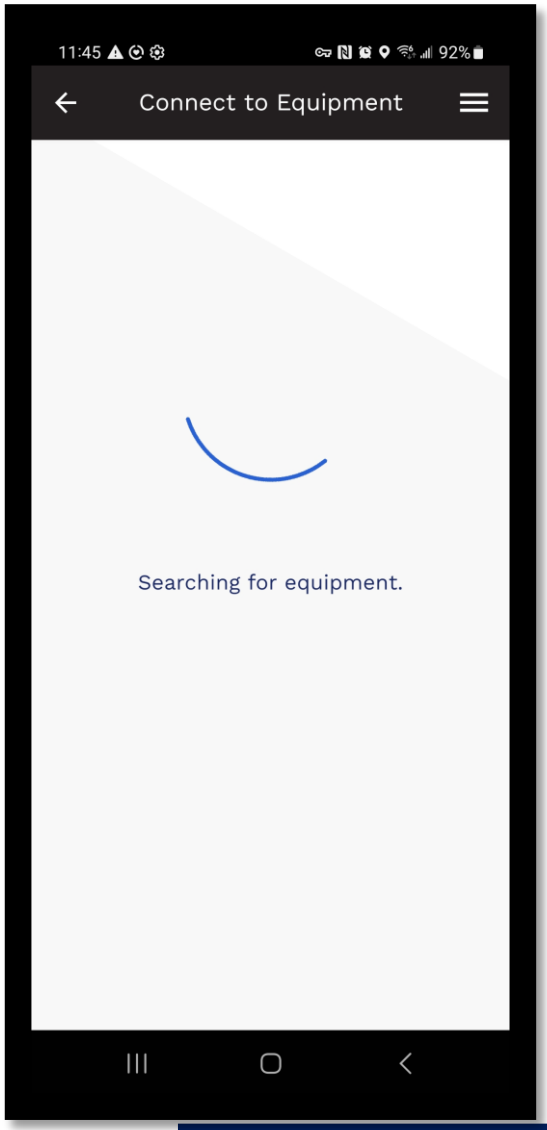

11:48
86%
CE
Service Tech
ESV
Messages
44°
Benton
11:14 AM
Clock
Camera
Gallery
Discover
Google
Phone
Contacts
BibleProject
Bible Hub

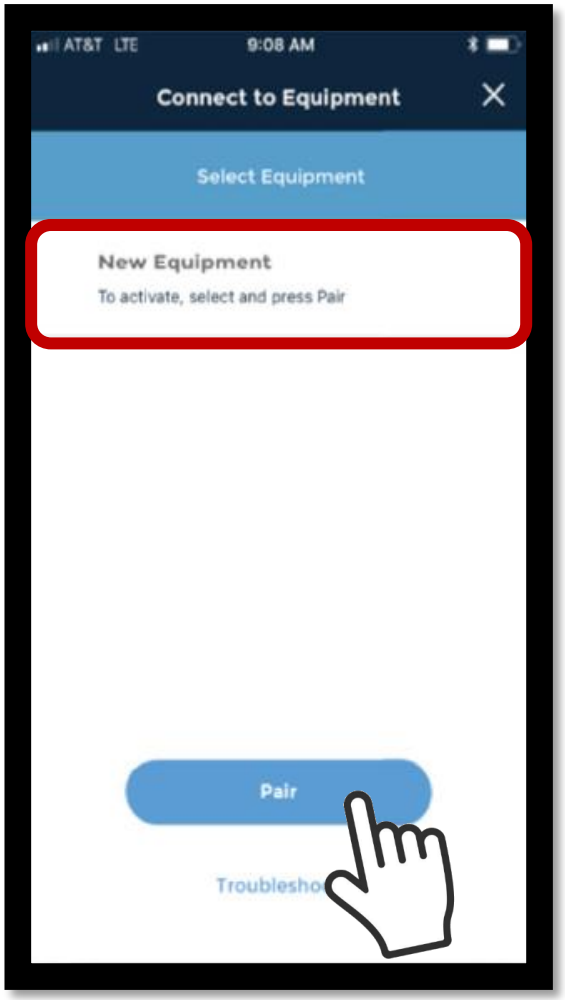

9:22
97%
Carrier
Turn to the experts
Service Technician
Continue

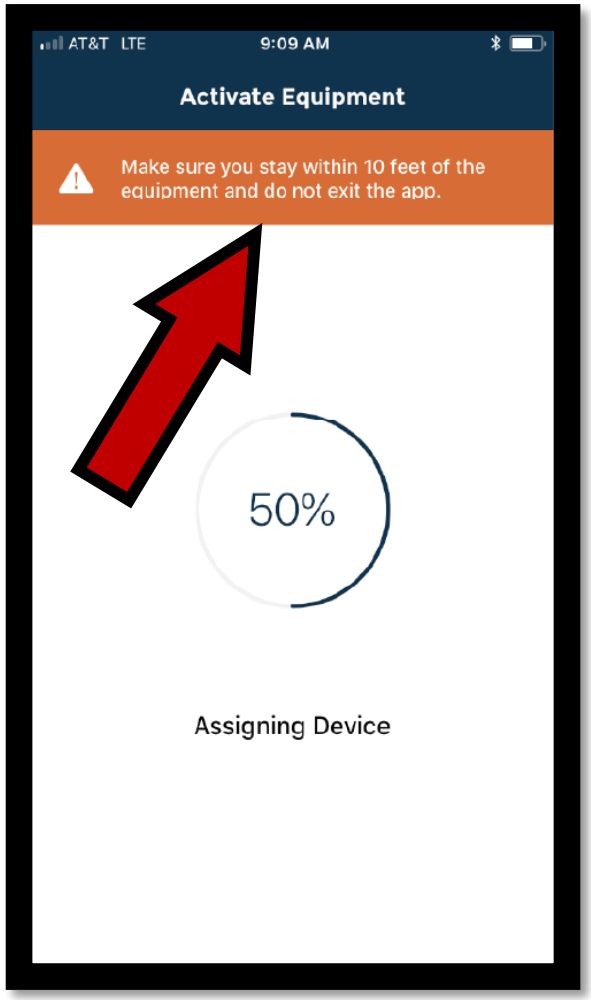

9:22
97%
Sign In
Sign in with your HVACpartners account.
User Name
Password
Remember Me
Sign In
Go Back
Need help signing in?

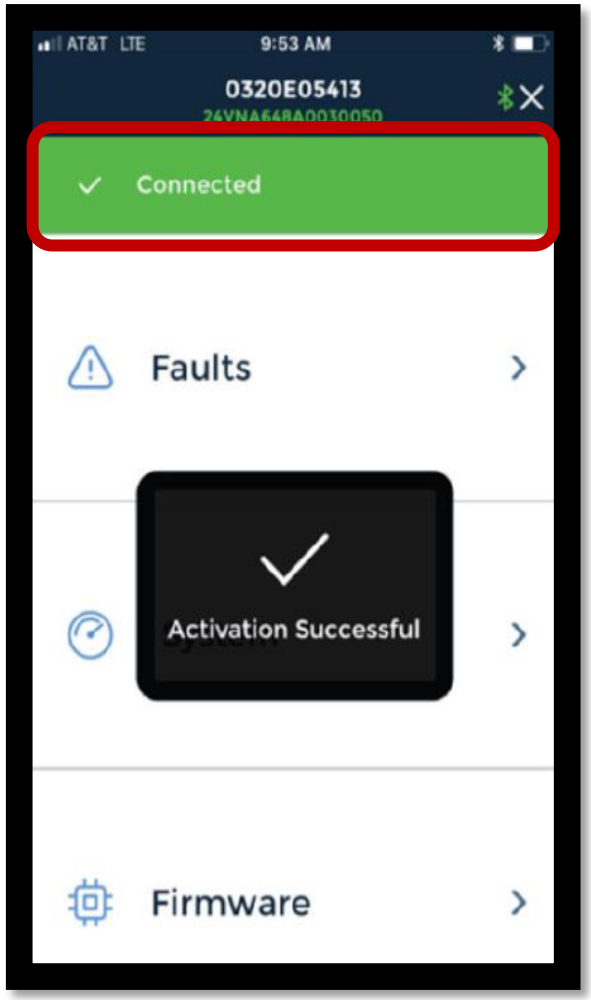

9:25
97%
Home
You now have full access.
OK
By Barcode
Scan
View Customer System Online
Search by a customer's name, address, or unit serial number to view full system details of wall control, indoor unit, and outdoor unit.
Connect to Outdoor Unit or Furnace
Use NFC or Bluetooth
check diagnostics, change
settings, and update firmware
Quick Links
Literature Lookup
Product Catalog
Store Locator
Tech Tip Videos
My Jobs
Trouble-shooting
Parts Cross Reference
Feedback

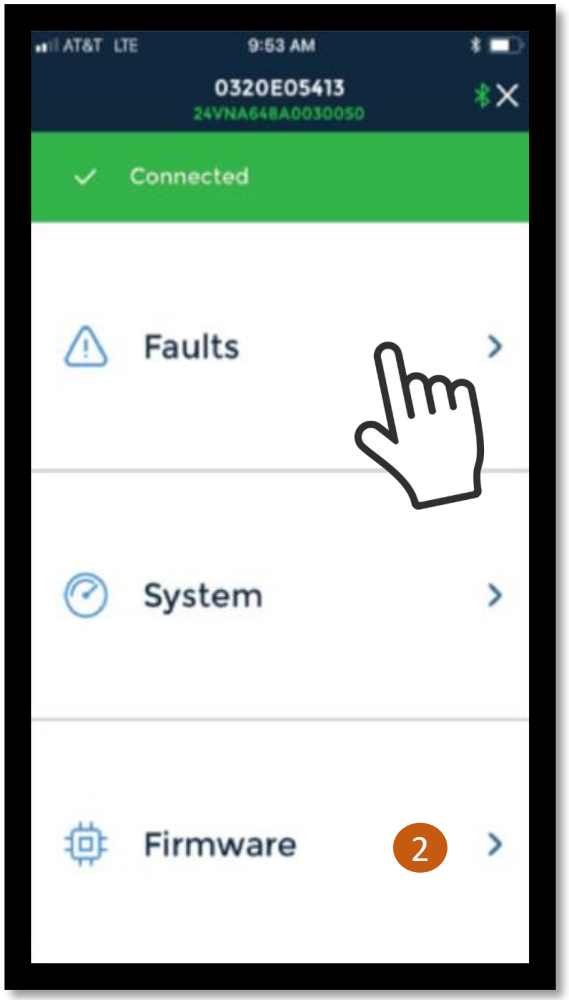

9:26
97%
Connect to Equipment
Outdoor Unit (Bluetooth)
Furnace (NFC)

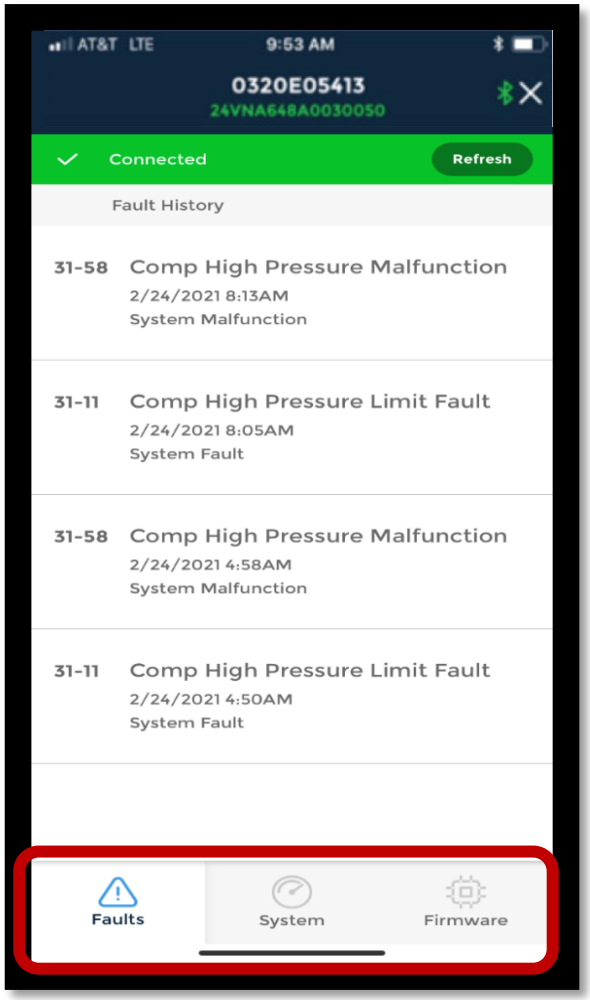

11:45
92%
Connect to Equipment
Searching for equipment.

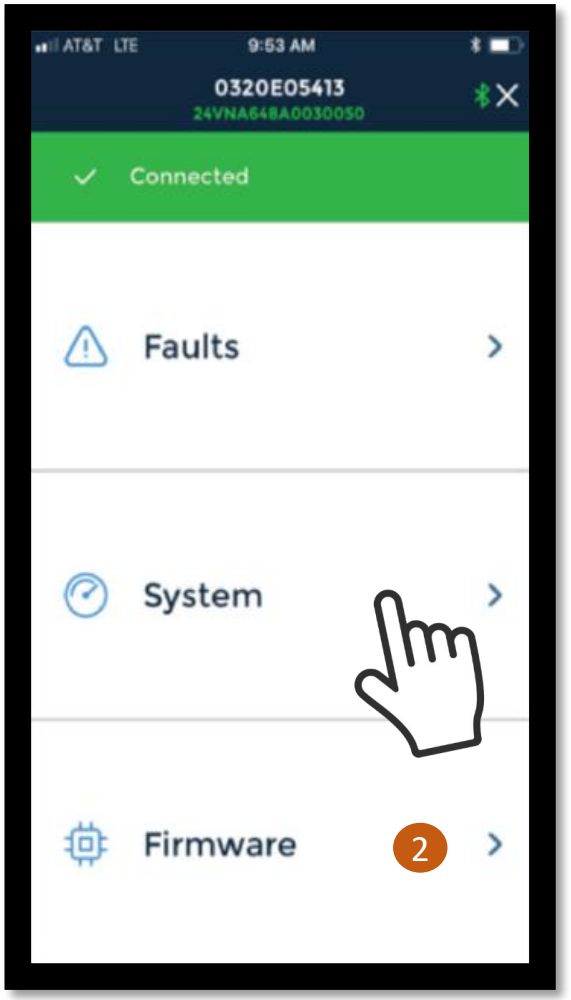

AT&T LTE
9:08 AM
Connect to Equipment
Select Equipment
New Equipment
To activate, select and press Pair
Pair

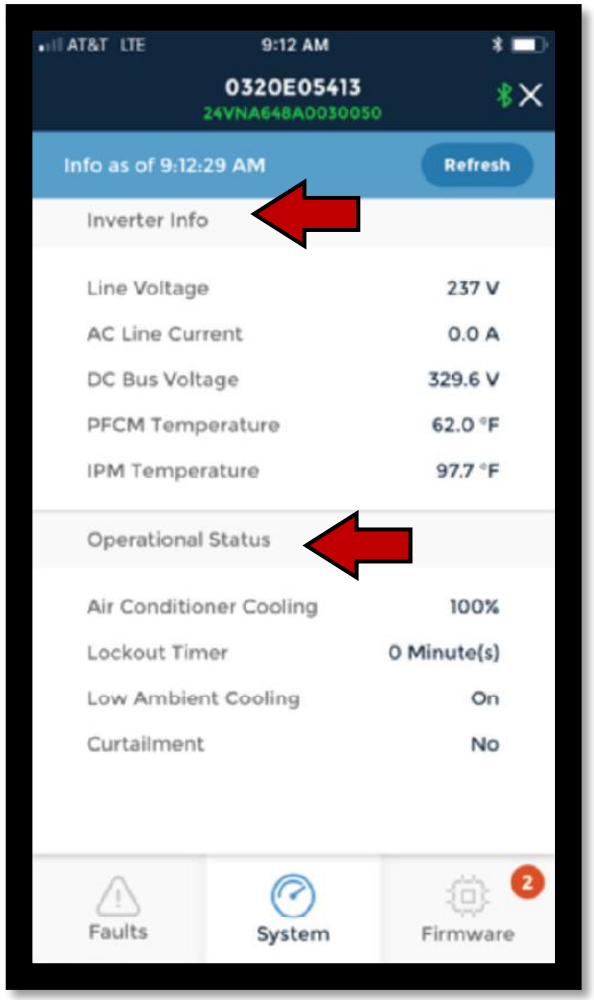

AT&T LTE
9:09 AM
Activate Equipment
Make sure you stay within 10 feet of the equipment and do not exit the app.
50%
Assigning Device

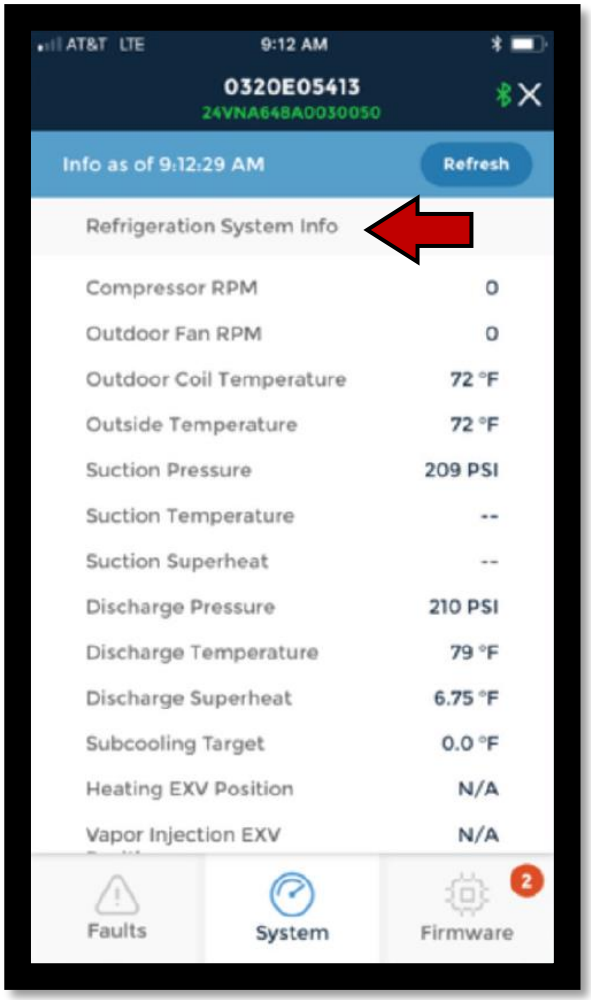

AT&T LTE
9:53 AM
0320E05413
Connected
Faults
Activation Successful
Firmware

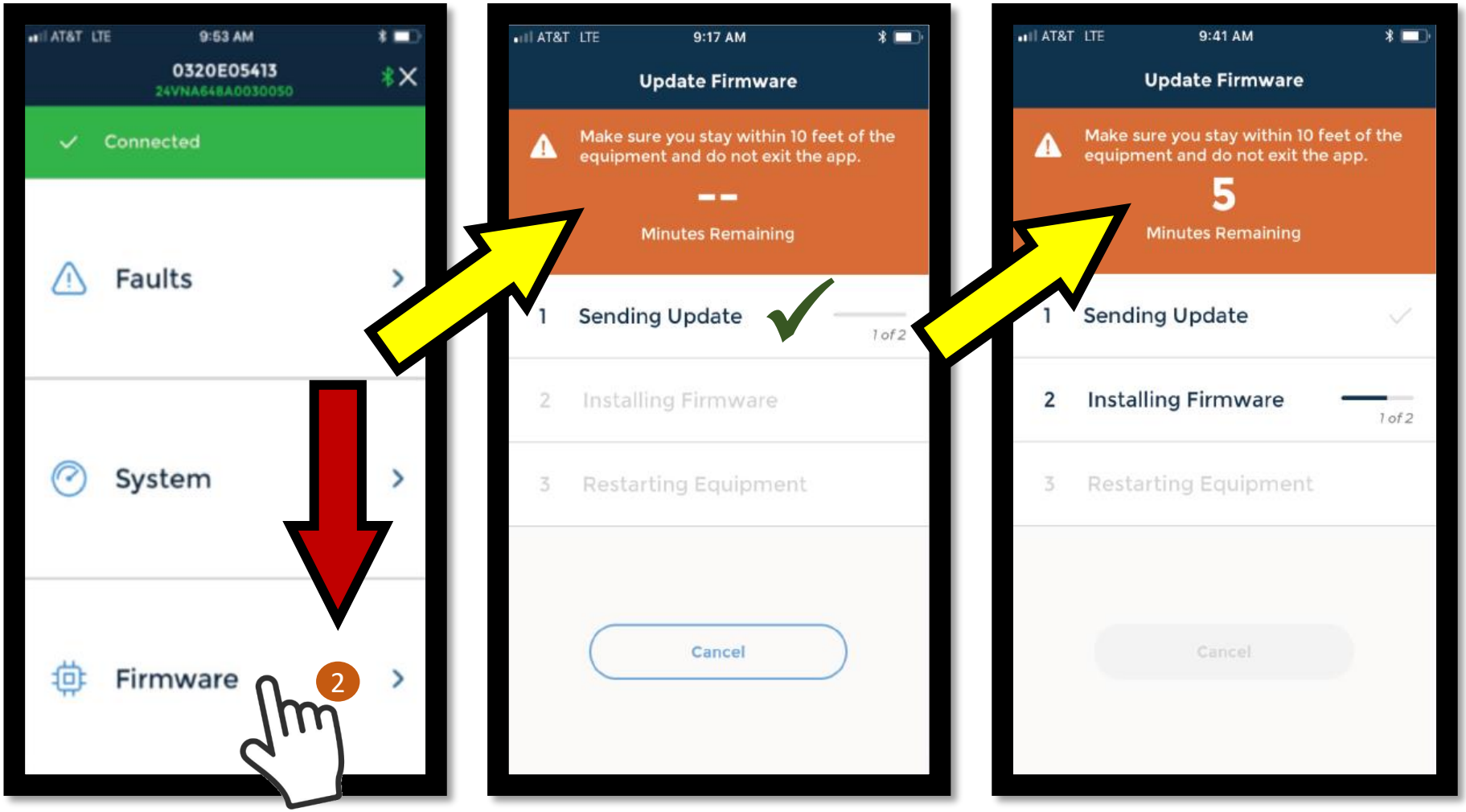

AT&T LTE
9:53 AM
0320E05413
24VNA648A0030050
Connected
Faults
System
Firmware
2


AT&T LTE
9:53 AM
0320E05413
24VNA648A0030050
Connected
Refresh
Fault History
31-58 Comp High Pressure Malfunction
2/24/2021 8:13AM
System Malfunction
31-11 Comp High Pressure Limit Fault
2/24/2021 8:05AM
System Fault
31-58 Comp High Pressure Malfunction
2/24/2021 4:58AM
System Malfunction
31-11 Comp High Pressure Limit Fault
2/24/2021 4:50AM
System Fault
Faults
System
Firmware


AT&T LTE
9:53 AM
0320E05413
24VNA648A0030050
Connected
Faults
System
Firmware
2

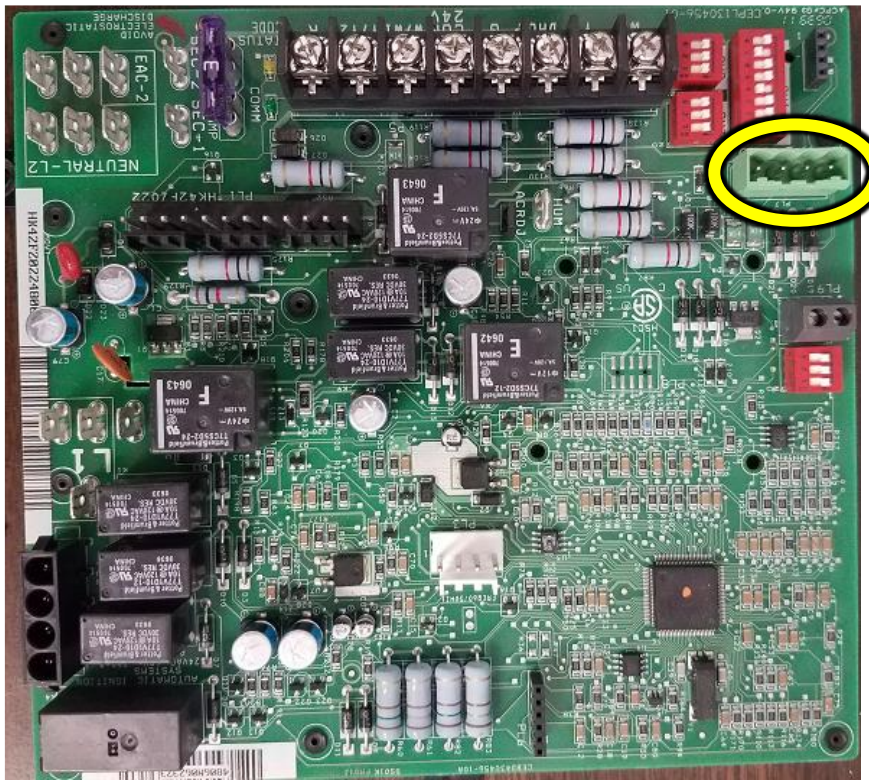

AT&T LTE
9:12 AM
0320E05413
24VNA648A0030050
Info as of 9:12:29 AM
Refresh
Inverter Info
Line Voltage 237 V
AC Line Current 0.0 A
DC Bus Voltage 329.6 V
PFCM Temperature 62.0 °F
IPM Temperature 97.7 °F
Operational Status
Air Conditioner Cooling 100%
Lockout Timer 0 Minute(s)
Low Ambient Cooling On
Curtailment No
Faults
System
Firmware
2

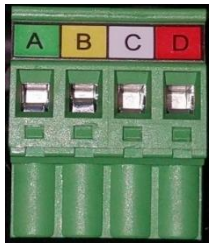

AT&T LTE
9:12 AM
0320E05413
24VNA648A0030050
Info as of 9:12:29 AM
Refresh
Refrigeration System Info
Compressor RPM 0
Outdoor Fan RPM 0
Outdoor Coil Temperature 72 °F
Outside Temperature 72 °F
Suction Pressure 209 PSI
Suction Temperature --
Suction Superheat --
Discharge Pressure 210 PSI
Discharge Temperature 79 °F
Discharge Superheat 6.75 °F
Subcooling Target 0.0 °F
Heating EXV Position N/A
Vapor Injection EXV N/A
Faults
System
Firmware
2


AT&T LTE 9:53 AM
0320E05413
24VNA648A0030050
Connected
Faults
System
Firmware
2
AT&T LTE 9:17 AM
Update Firmware
Make sure you stay within 10 feet of the equipment and do not exit the app.
--
Minutes Remaining
1 Sending Update
1 of 2
2 Installing Firmware
3 Restarting Equipment
Cancel
AT&T LTE 9:41 AM
Update Firmware
Make sure you stay within 10 feet of the equipment and do not exit the app.
5
Minutes Remaining
1 Sending Update
2 Installing Firmware
1 of 2
3 Restarting Equipment
Cancel

Communicating Furnace

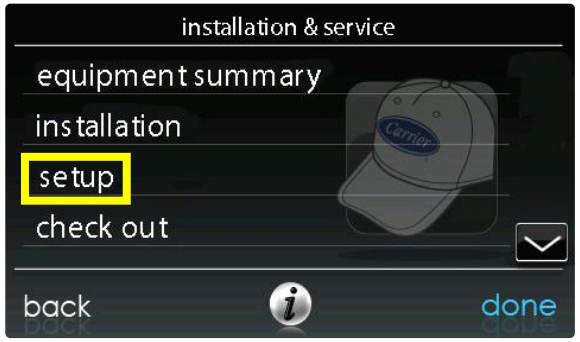
NOTE: The presence of an ABCD plug does not mean the equipment can communicate.





Many non-communicating boards have this plug.

Communicating Furnace



Communicating Furnace

Furnace Airflow heating airflow

Furnace Air Flow: Comfort or Efficiency.

EFFICIENCY: higher airflow to meet specified ratings.

COMFORT: is a decreased airflow for increased comfort. Default

Low Heat Rise: On or Off. Default = Off

ON: increases low heat airflow.

FE4A Fan Coil

Fan Coil Airflow

Cooling Airflow
Heating Airflow
Dehumidify Airflow

Quiet: (cooling only) lowest available airflow (300 cfm/ton) [1]
Comfort: System will vary by humidity and temperature demand. [2]
EFF325 or EFF1: (325 cfm/ton) [3]
EFF350 or EFF2: (350 cfm/ton) [3]
Max: (400 cfm/ton) [3]

1: Duct sweating is likely at minimum airflows in unconditioned space.
2: Default setting. Full dehumidify/comfort capabilities.
3: No airflow reduction for dehumidification.

FE4A Fan Coil

Fan Coil Airflow

Cooling Airflow

Heating Airflow

Dehumidify Airflow

Normal: (Default Setting) System is allowed to operate at minimum airflow to satisfy dehumidification call.

High: Minimum airflow for dehumidification is increased. Usually adjusted to reduce duct and register sweating. Minimum cooling airflow is also increased.

Dehumidification Options

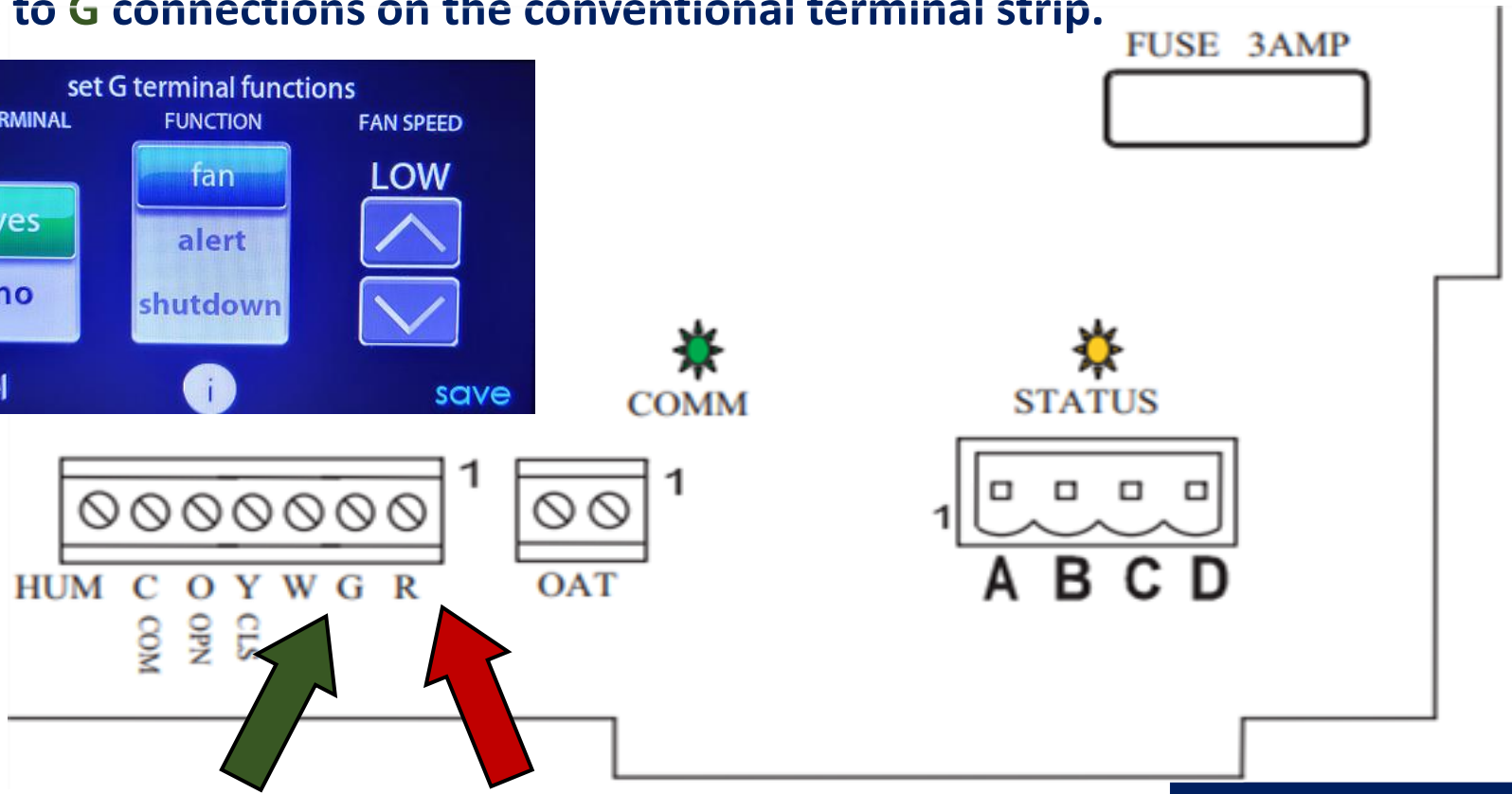
Dehum Drain Time Turns off continuous fan if a call for dehumidification exists. Adjustable from 5 – 60 mins. or off. Default = 15 minutes.

Electric Reheat Yes or No Default is No. Allows electric heat only during cool-to-dehumidify. Greatly improves humidity control.

Note: When turned on the system will allow a 3-degree overcool for dehumidification. Will never overcool-to-dehumidify below 70-degrees.

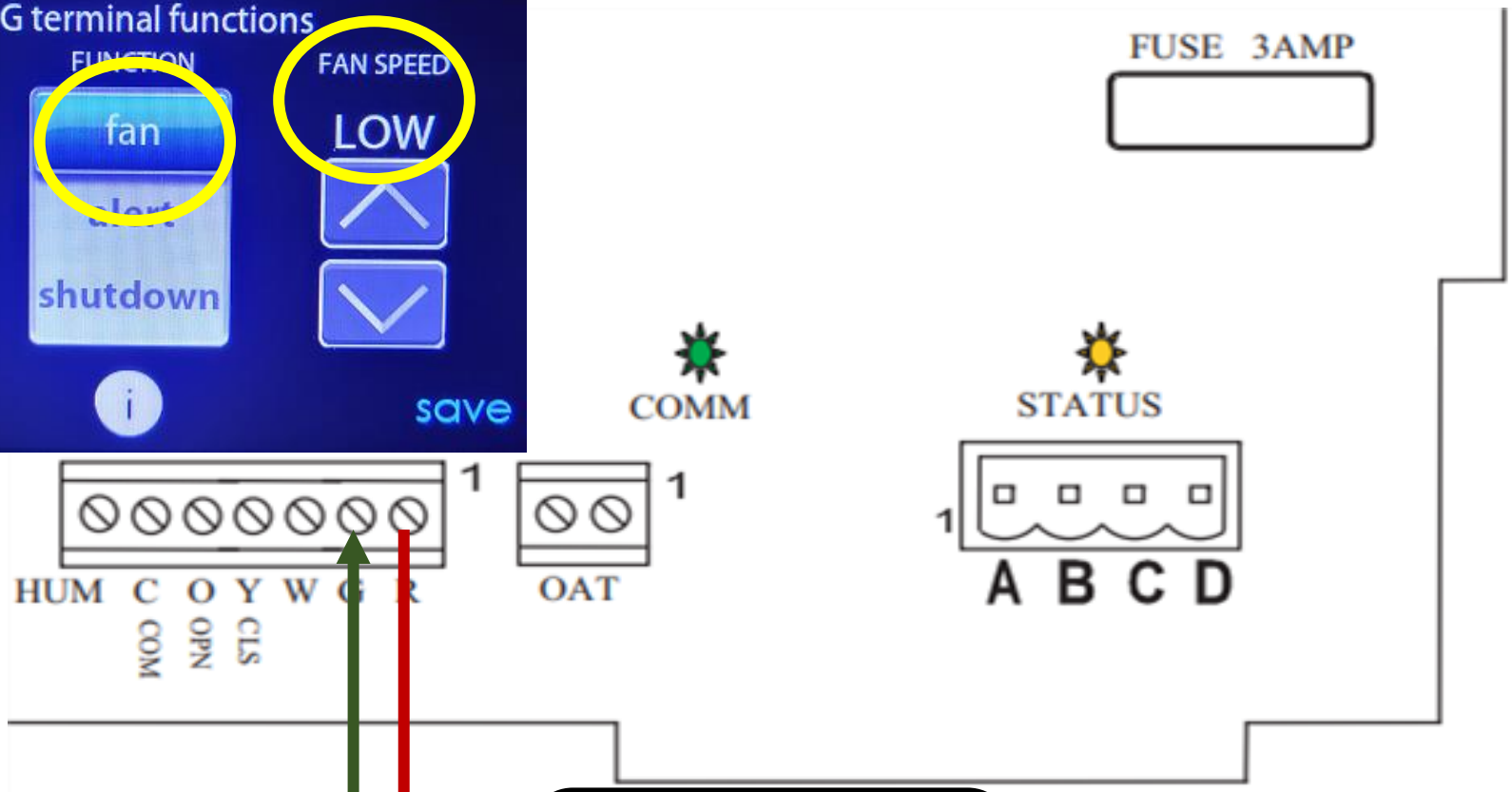
G-Terminal Input

Defaulted OFF. When turned ON the UI opens three different options for R to G connections on the conventional terminal strip.



FE4A Fan Coil

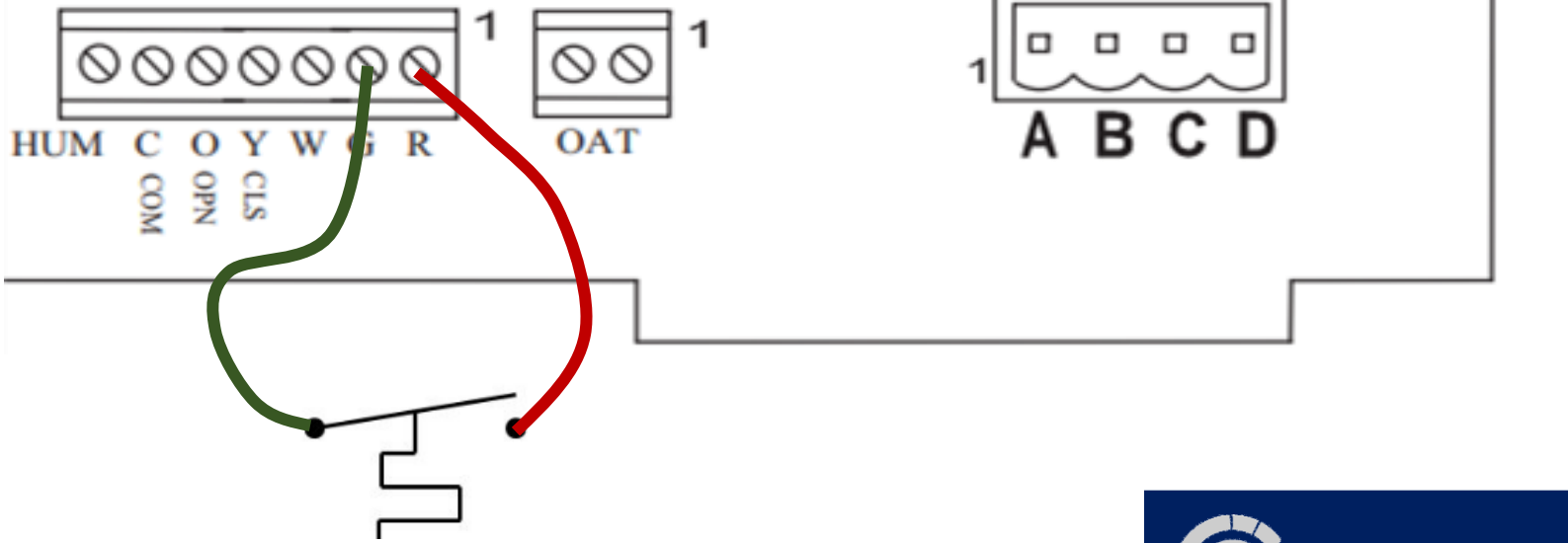
G-Terminal Input



24 Vac to G-terminal will bring the blower on at set speed.

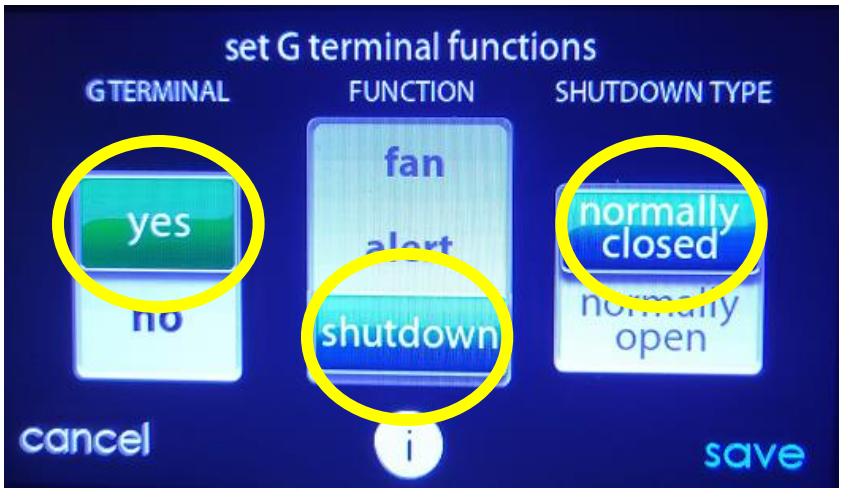
FE4A Fan Coil

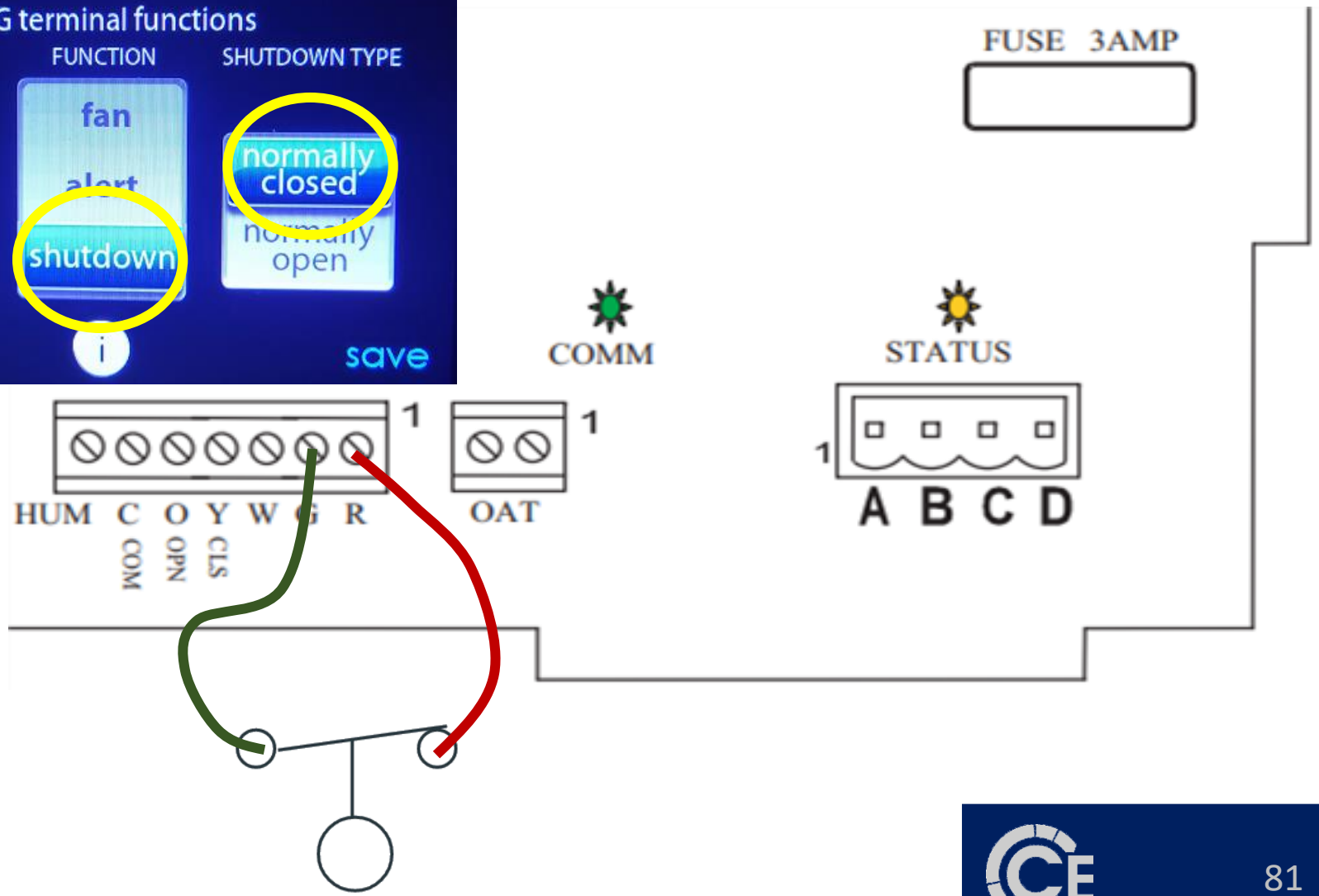
G-Terminal Input



FE4A Fan Coil

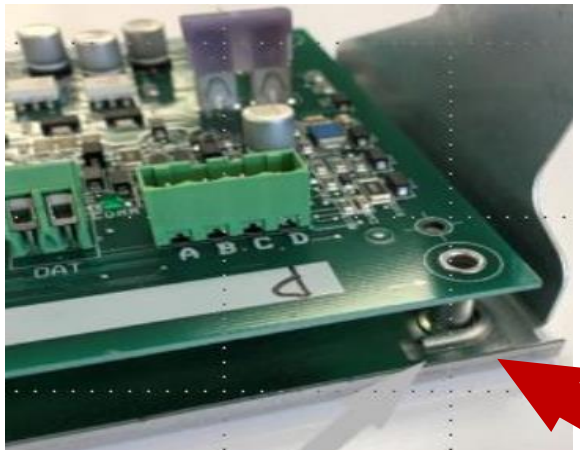
G-Terminal Input



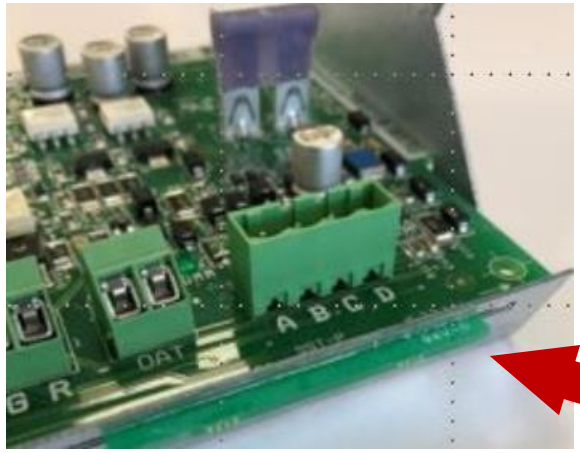


FE4A Fan Coil

Control Board



New Style



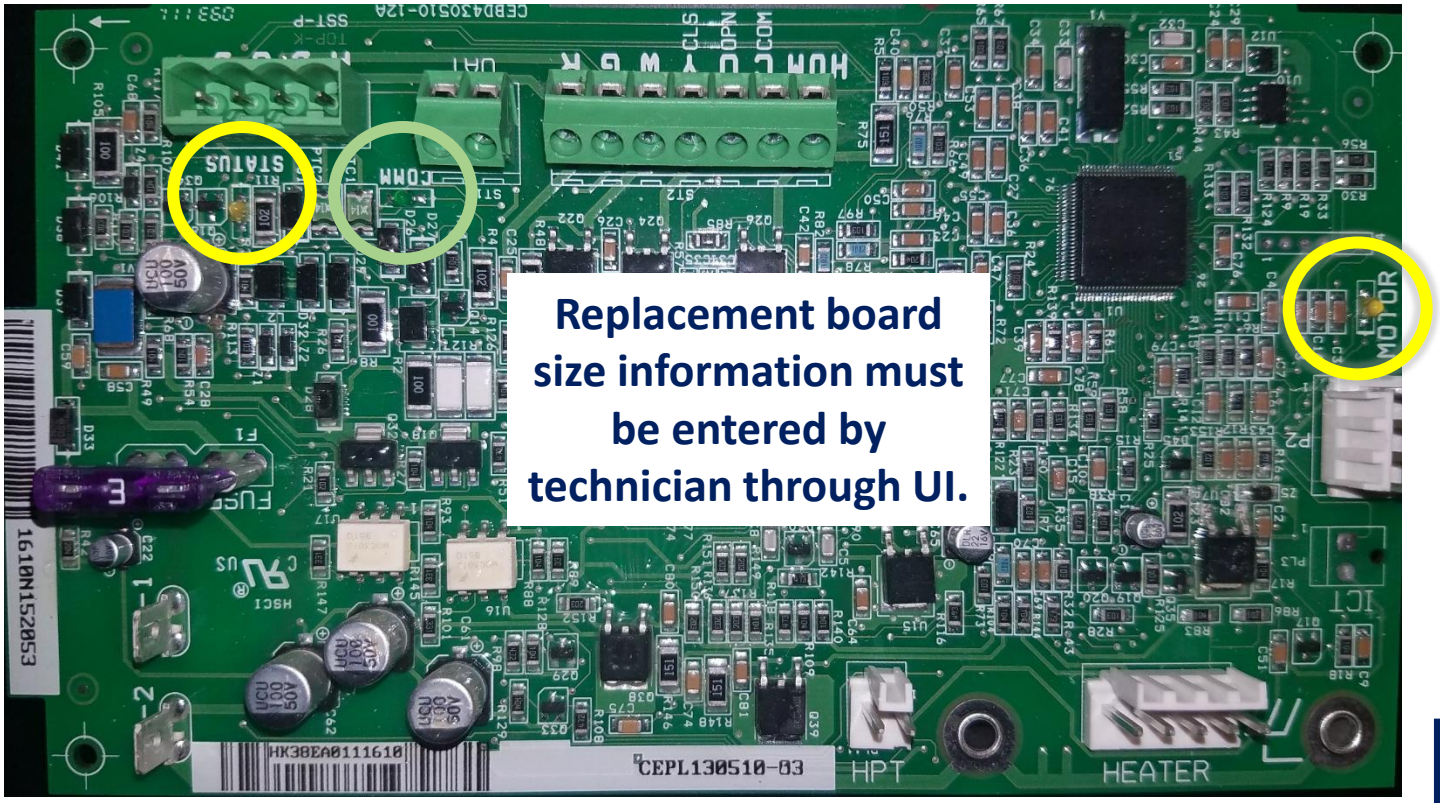
Old Style

New bracket with replacement board.

FE4A Fan Coil

Control Board

Amber Status Light Green Comm Light Amber Motor Light



Replacement board size information must be entered by technician through UI.

No Model Plug

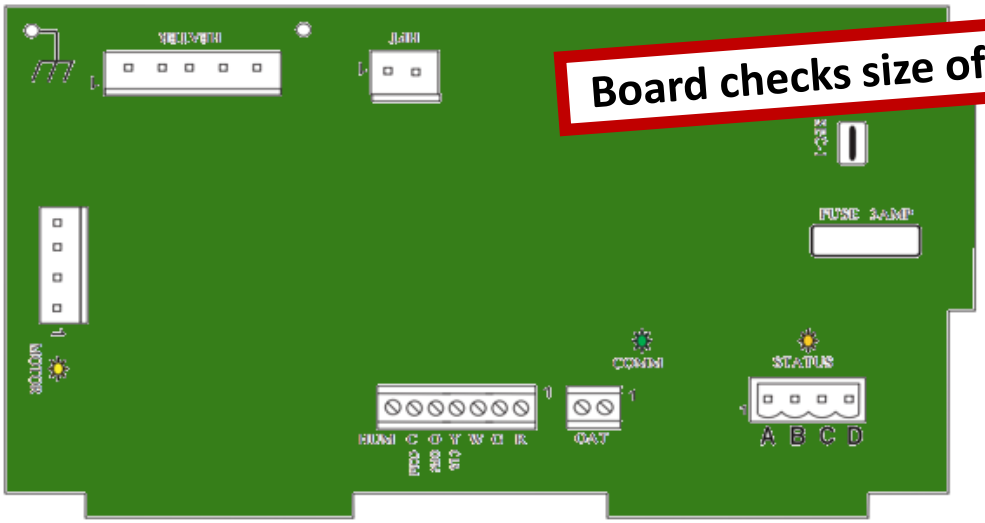
Board has size information programmed from the factory.

FE4A Fan Coil

STATUS CODE 25: INVALID MOTOR / MODEL SELECTION:

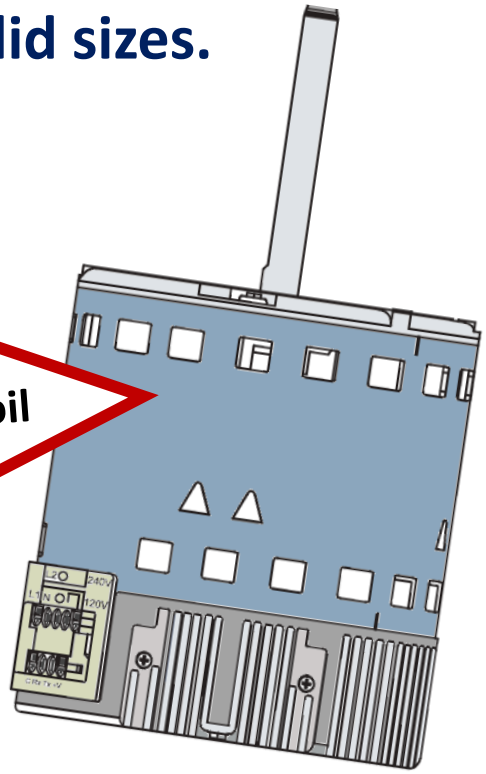
Initial power up or reboot:

UI will prompt for correct model from a list of valid sizes.



Board checks size of motor and fan coil

IF ≠



FE4A Fan Coil

FAN COILS, and ACCESSORY ELECTRIC HEATERS

WIRING DIAGRAMS

FAN COIL WITH COOLING ONLY CONTROL

FIG.	MODEL	SIZE	LABEL
Fig. 13	FV4C	002-006	326014-101
Fig. 14	FE4A / FE5A	002-006	333107-101
Fig. 15	FY5B / PF4MNA	18-60	328964-101
Fig. 15	FH4C	001-004	328964-101
Fig. 16	FB4C / FX4D / PF4MNP (RBC)	18-61	336228-101
Fig. 16	PF4MNA/B	19,25,31,37,43,49,61	336228-101
Fig. 17	FB4C / FX4D / PF4MNP (BOM)	18-61	337519-101
Fig. 33	FZ4A	24-61	342415-101

FE4A Fan Coil

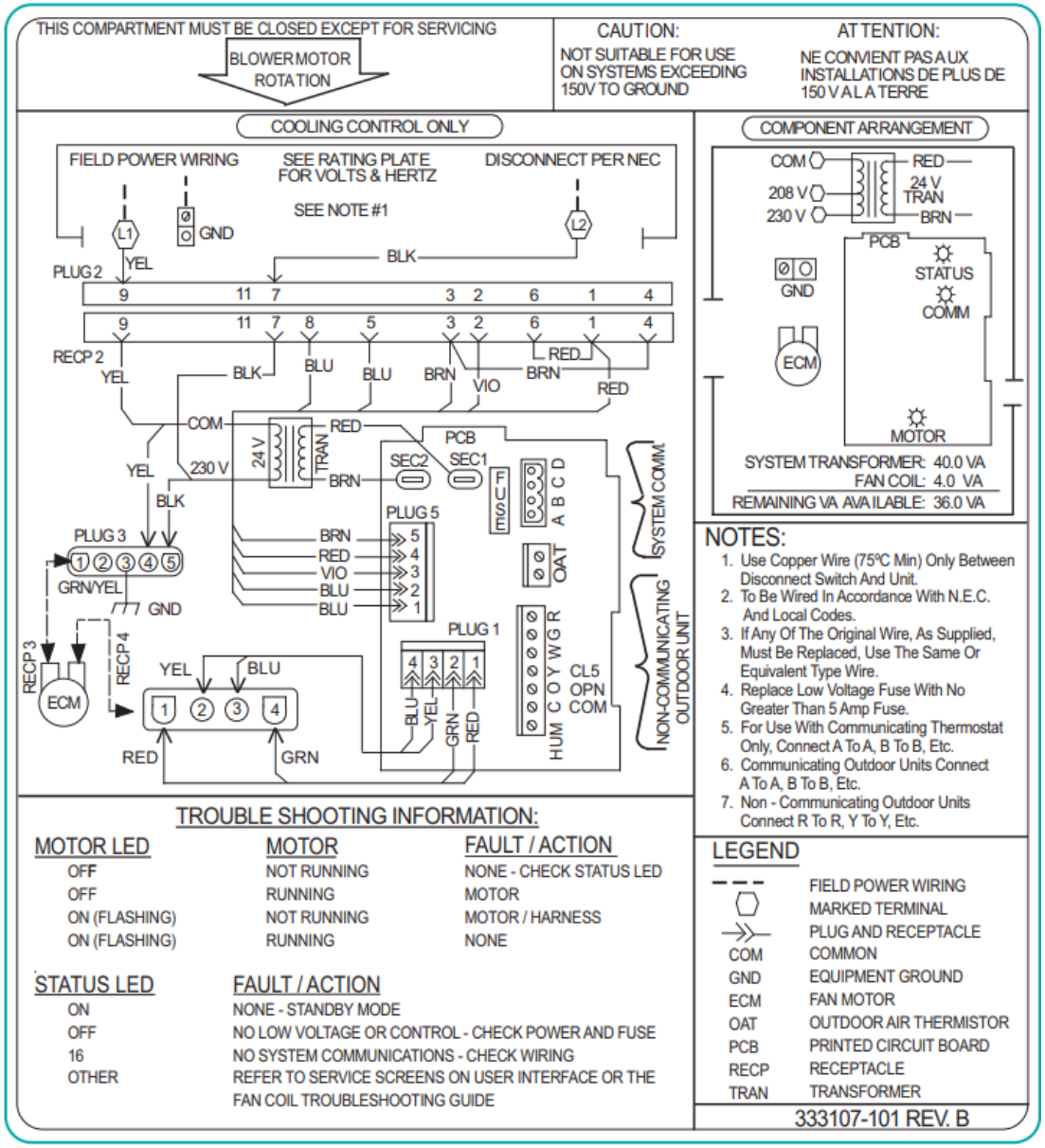


Fig. 14 – FE4A / FE5A with Cooling Only Control

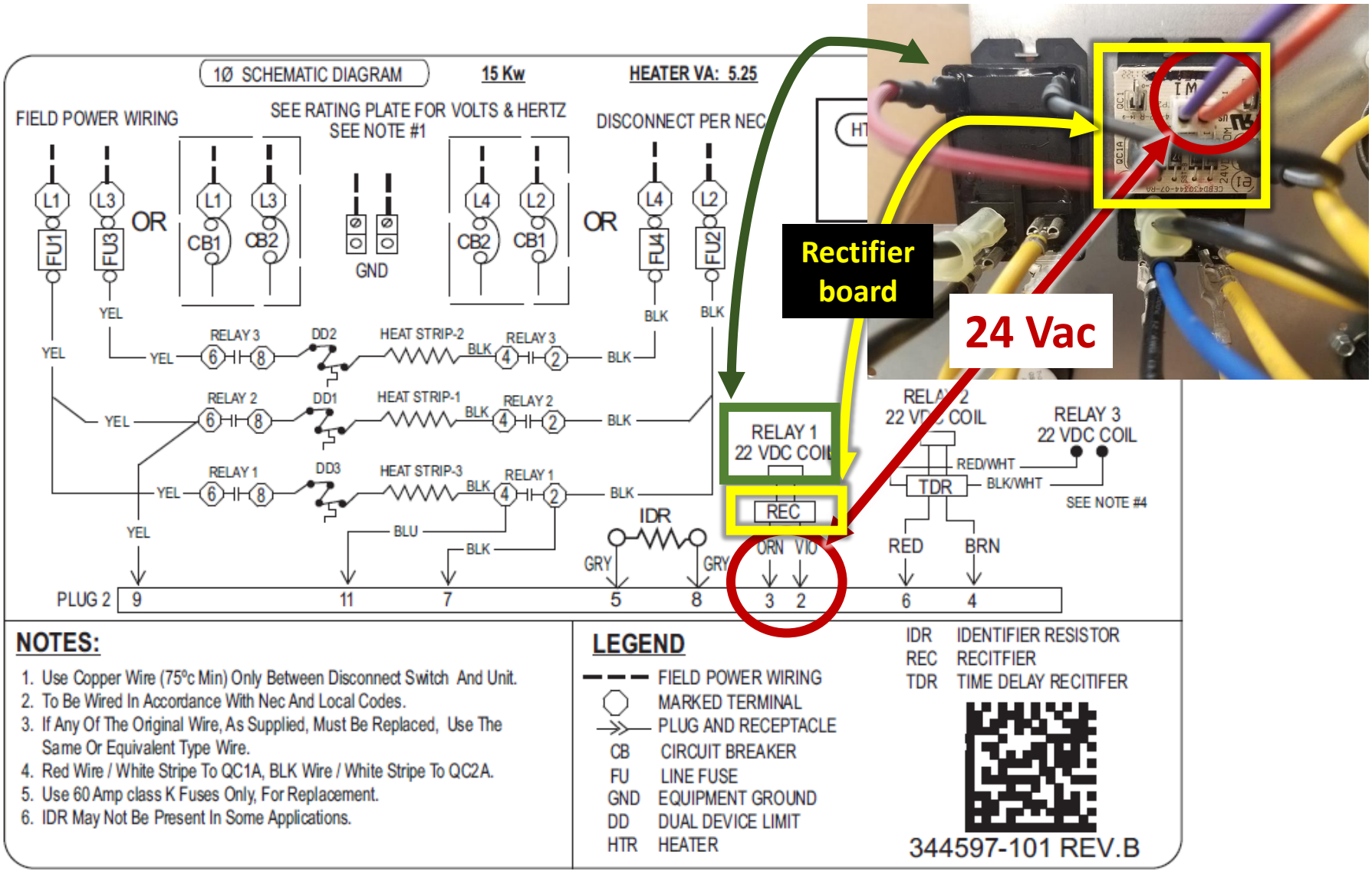
FE4A Fan Coil

FAN COILS, and ACCESSORY ELECTRIC HEATERS

WIRING DIAGRAMS

FIG.	FIELD-INSTALLED HEATER MODEL	FB4C/ PF4MNP	FE4A/ FE5A	FH4C	FV4C	FX4D	FY5B	FZ4A	PF4MA	PF4MB	LABEL
Fig. 1	KFCEH0401N03B	18,24	x	001	x	19,25	18,24	24	18,19,24,25	x	344631-101
Fig. 1	KFCEH0501N05B	18-60	002-006	001-002	002-006	19-61	18-60	24-61	18-61	19-61	344631-101
Fig. 2	KFCEH0801N08B	18-60	002-006	001-003	002-006	19-61	18-60	24-61	18-61	19-61	344599-101
Fig. 2	KFCEH0901N10B	18-60	002-006	001-004	002-006	19-61	18-60	24-61	18-61	19-61	344599-101
Fig. 6	KFCEH1601315B	42-60	002-006	001-004	002-006	43-61	18-60	48-61	18-61	19-61	344635-101
Fig. 7	KFCEH2001318B	42-60	003-006	001-004	002-006	43-61	42-60	48-61	42-61	37-61	344654-101
Fig. 1	KFCEH2401C05B	18-60	002-006	001-002	002-006	19-61	18-60	24-61	18-61	19-61	344631-101
Fig. 2	KFCEH2501C08B	18-60	002-006	001-003	002-006	19-61	18-60	24-61	18-61	19-61	344599-101
Fig. 2	KFCEH2601C10B	18-60	002-006	001-004	002-006	19-61	18-60	24-61	18-61	19-61	344599-101
Fig. 3	KFCEH2901N09B	36-60	002-006	003-004	002-006	37-61	36-60	36-61	36-60	31-61	344634-101
Fig. 4	KFCEH3001F15B	24-60	002-006	001-004	002-006	25-61	24-60	24-61	24-61	19-61	344597-101
Fig. 4	KFCEH3101C15B	24-60	002-006	001-004	002-006	25-61	24-60	24-61	24-61	19-61	344597-101
Fig. 5	KFCEH3201F20B	30-60	002-006	002-004	002-006	31-61	30-60	36-61	30-61	19-61	345611-101
Fig. 5	KFCEH3301C20B	30-60	002-006	002-004	002-006	31-61	30-60	36-61	30-61	19-61	345611-101
Fig. 8 Fig. 9	KFCEH3401F24B	48,60	004-006	003-004	005-006	49-61	48-60	48-61	48-61	49-61	345655-101 345656-101
Fig. 8 Fig. 9	KFCEH3501F30B	48,60	004-006	003-004	005-006	49-61	48-60	48-61	48-61	49-61	345655-101 345656-101

FE4A Fan Coil



NOTES:

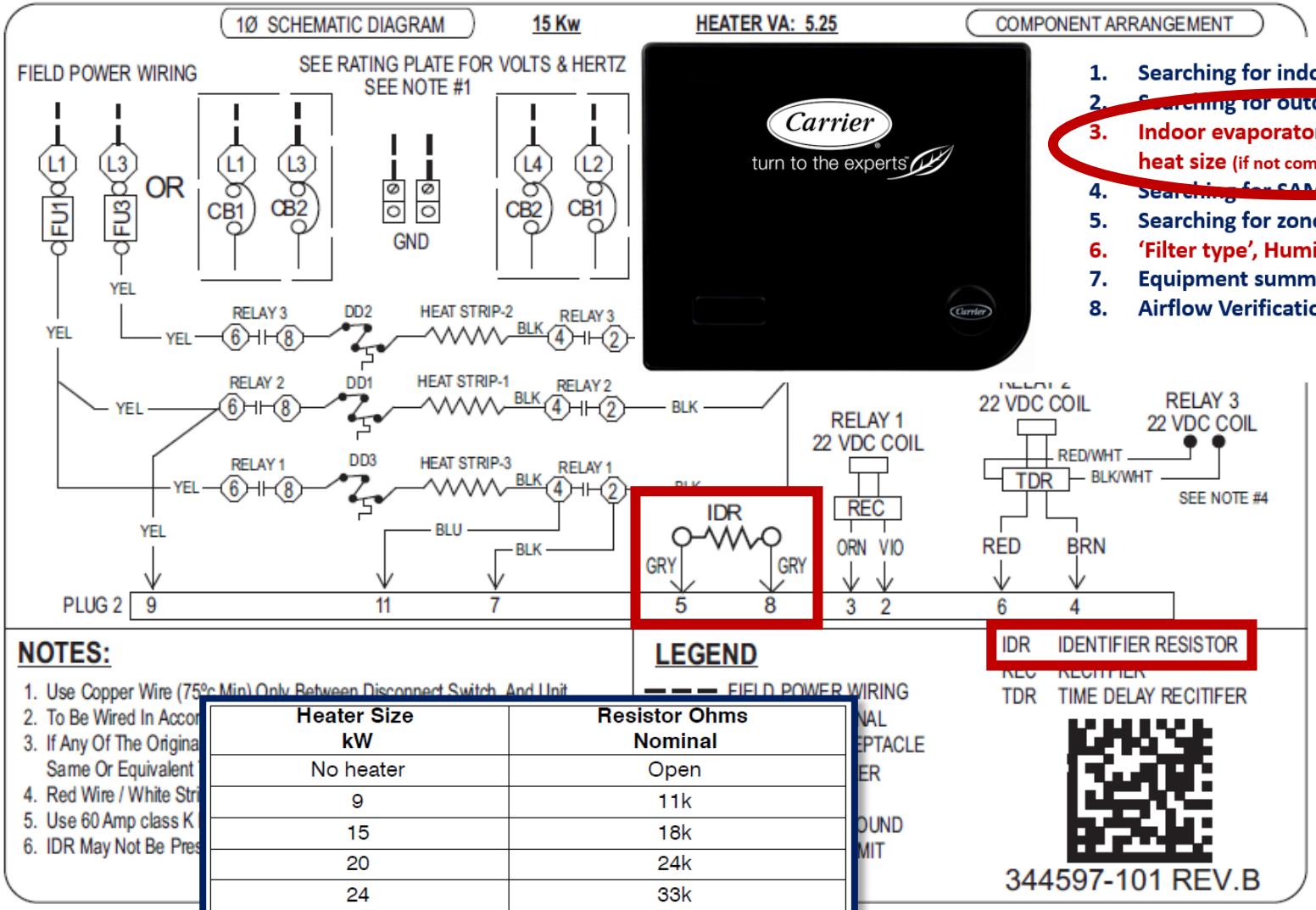
1. Use Copper Wire (75°c Min) Only Between Disconnect Switch And Unit.
2. To Be Wired In Accordance With Nec And Local Codes.
3. If Any Of The Original Wire, As Supplied, Must Be Replaced, Use The Same Or Equivalent Type Wire.
4. Red Wire / White Stripe To QC1A, BLK Wire / White Stripe To QC2A.
5. Use 60 Amp class K Fuses Only, For Replacement.
6. IDR May Not Be Present In Some Applications.

LEGEND

- - -	FIELD POWER WIRING
⬡	MARKED TERMINAL
⟫	PLUG AND RECEPTACLE
CB	CIRCUIT BREAKER
FU	LINE FUSE
GND	EQUIPMENT GROUND
DD	DUAL DEVICE LIMIT
HTR	HEATER
IDR	IDENTIFIER RESISTOR
REC	RECITFIER
TDR	TIME DELAY RECITIFER

344597-101 REV.B

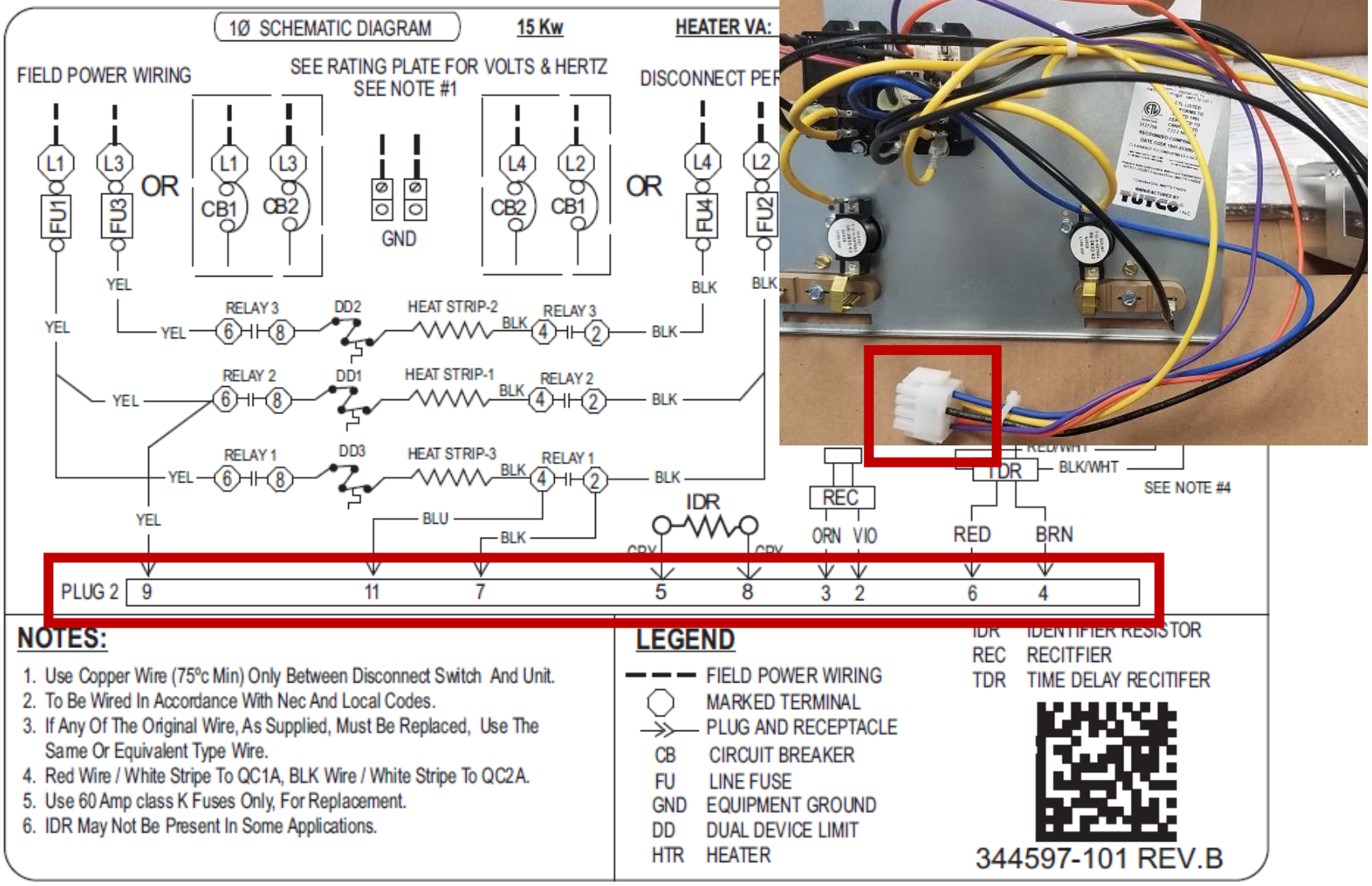
FE4A Fan Coil



Heater Size kW	Resistor Ohms Nominal
No heater	Open
9	11k
15	18k
20	24k
24	33k
30	39k
Hydronic Heat	270k

1. Searching for indoor equipment...
2. Searching for outdoor equipment...
3. Indoor evaporator selection or Electric heat size (if not communicating)
4. Searching for SAM...
5. Searching for zones...
6. 'Filter type', Humidifier, UV light.
7. Equipment summary.
8. Airflow Verification.

FE4A Fan Coil



NOTES:

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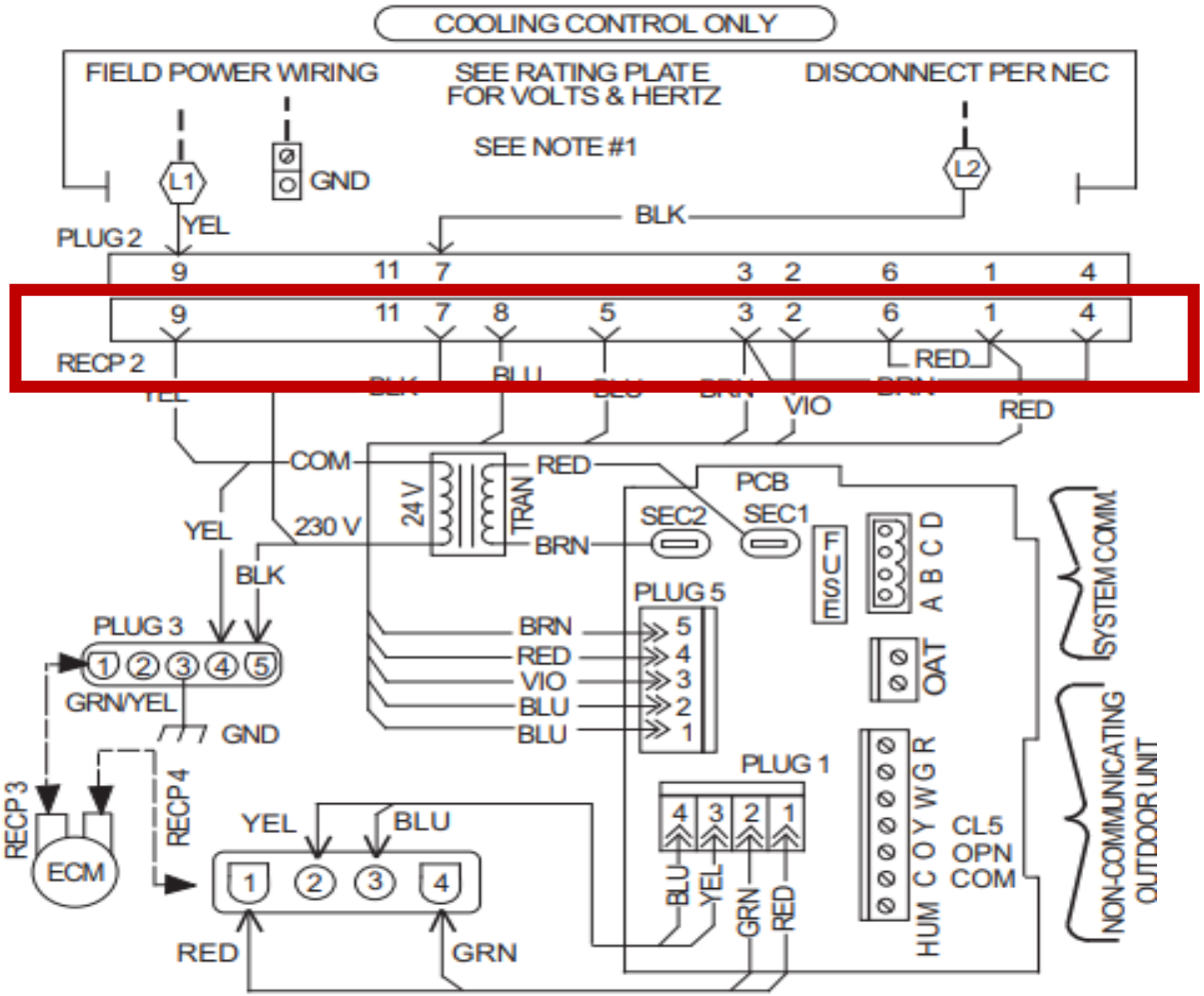
LEGEND

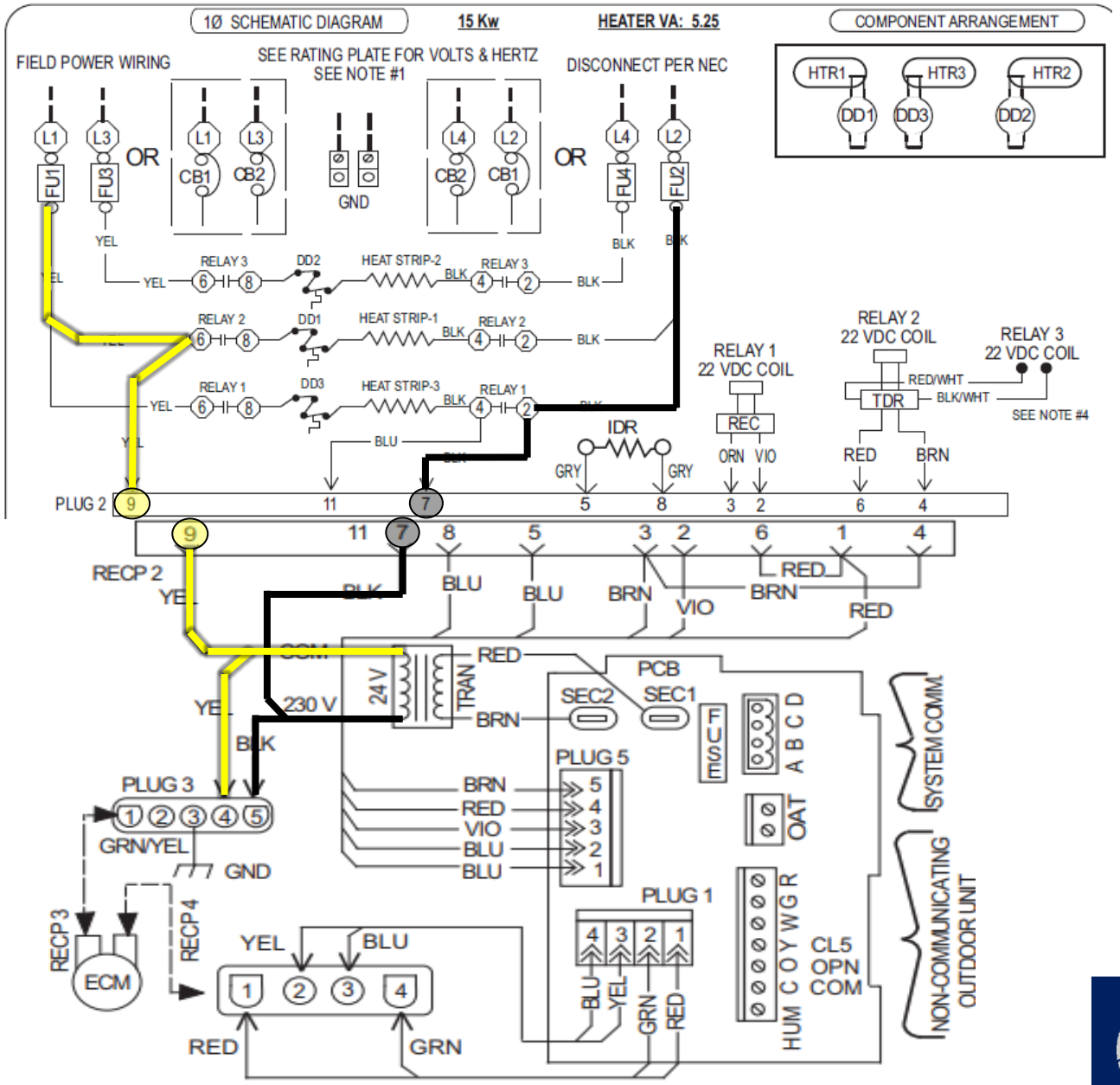
FIELD POWER WIRING	
MARKED TERMINAL	
PLUG AND RECEPTACLE	
CB	CIRCUIT BREAKER
FU	LINE FUSE
GND	EQUIPMENT GROUND
DD	DUAL DEVICE LIMIT
HTR	HEATER
IDR	IDENTIFIER RESISTOR
REC	RECITFIER
TDR	TIME DELAY RECITIFER

344597-101 REV.B

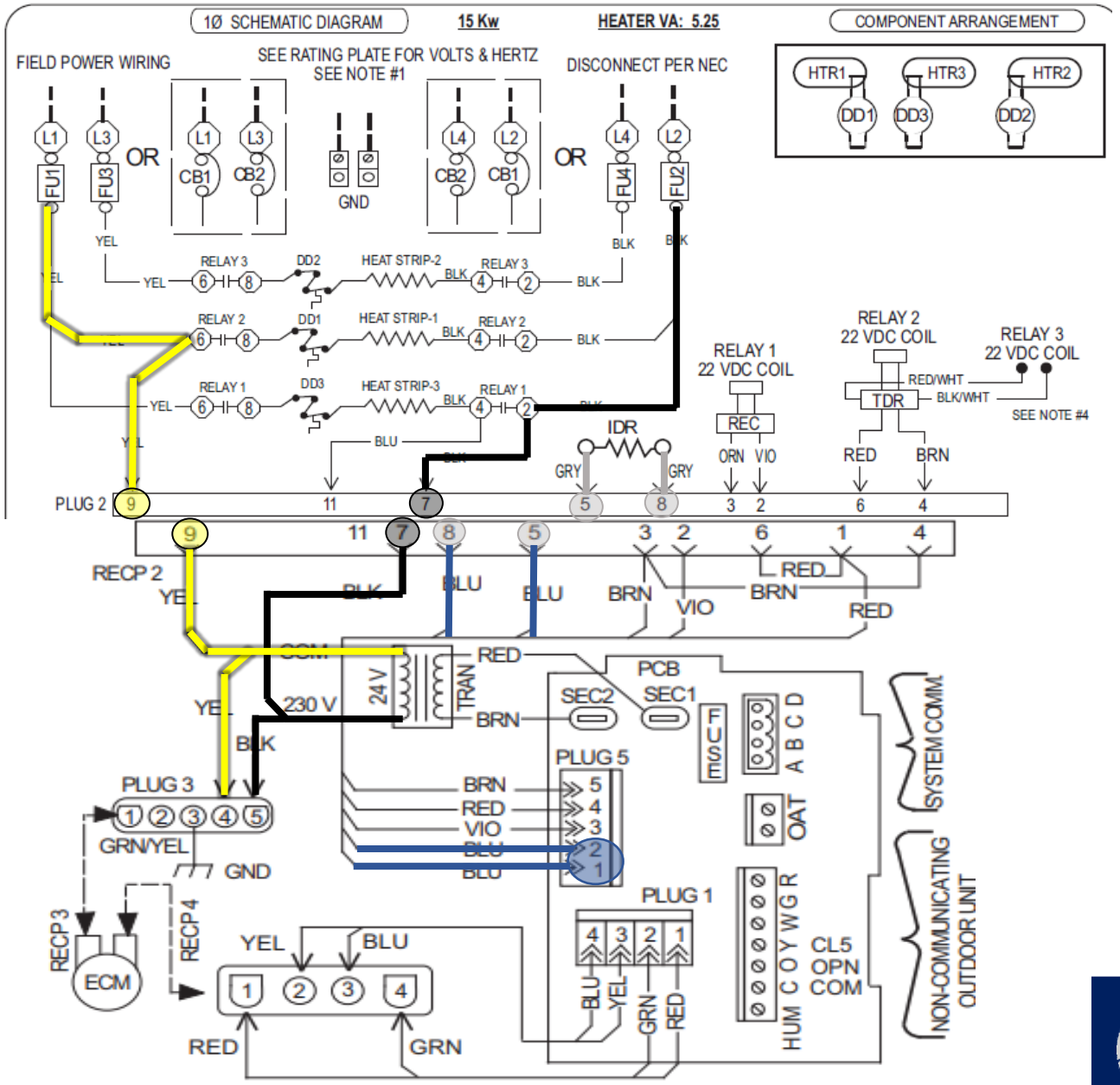
FE4A Fan Coil



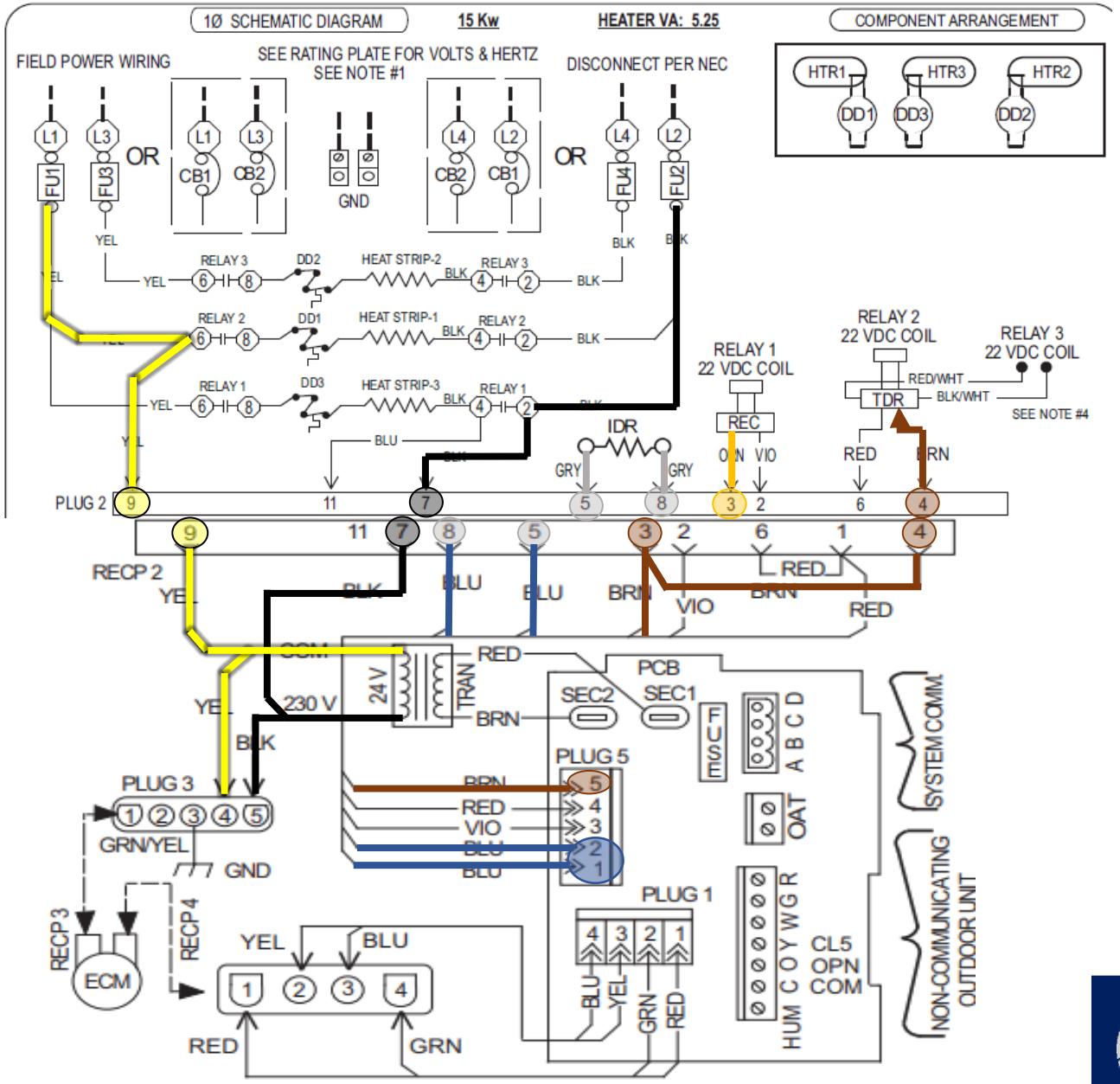
FE4A Fan Coil



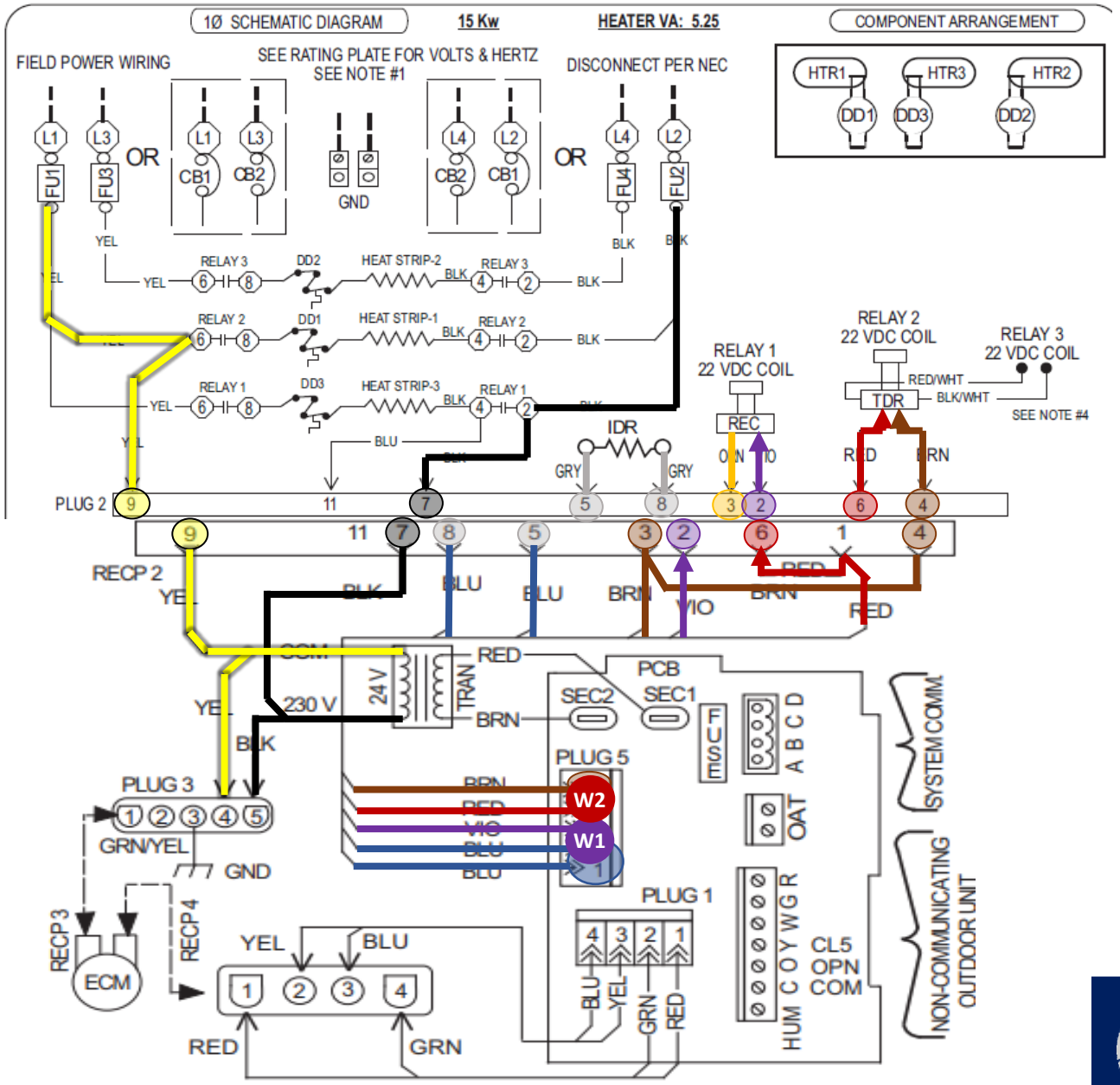
FE4A Fan Coil



FE4A Fan Coil



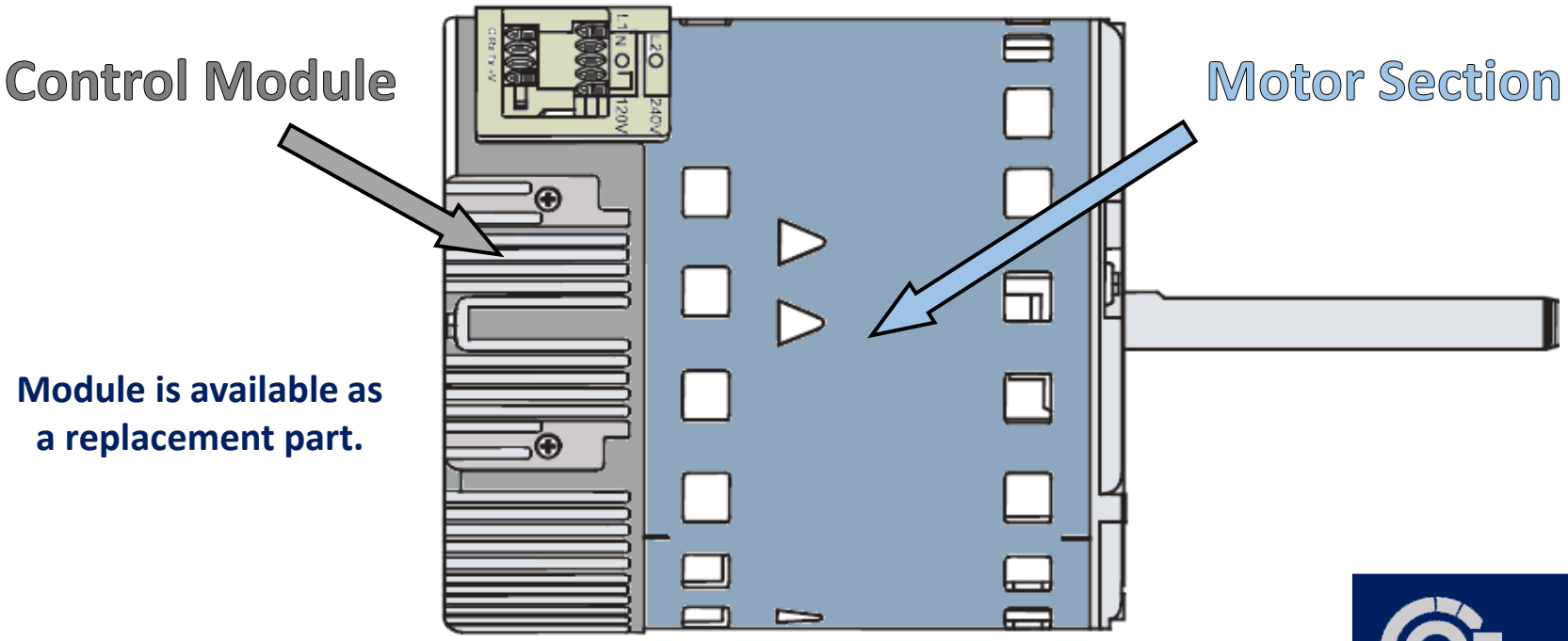
FE4A Fan Coil



Communicating ECM Troubleshooting

If the motor will not start don't assume it is defective.

Follow the troubleshooting steps before replacing the board, control module, or ECM.



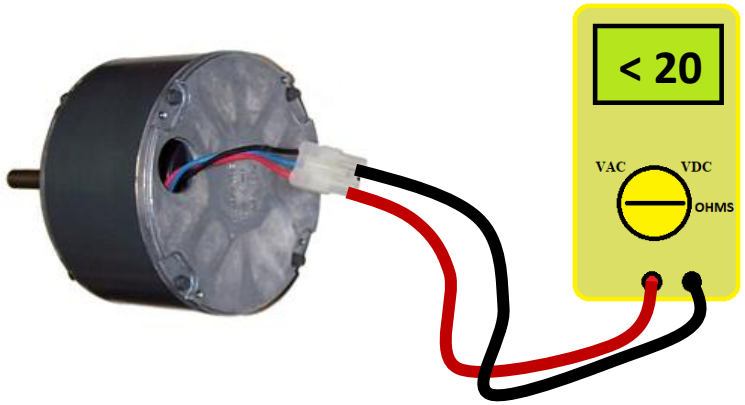
Module is available as a replacement part.

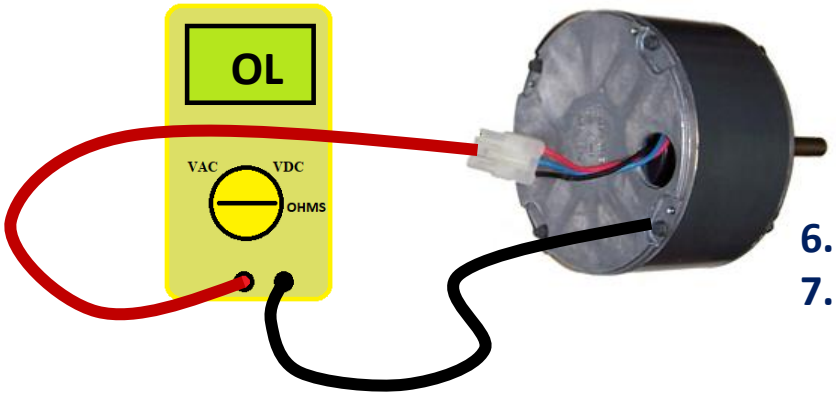
Communicating ECM

Motor Test: should always be performed prior to replacing module only.

1. Separate and unplug the module from motor section.
2. Make sure the shaft will turn freely.
3. Check motor winding resistance on all wire pairs.
4. Each resistance value should be less than 20 ohms.
5. All readings should be within 10% of each other.

Black to Blue / Black to Red / Red to Blue





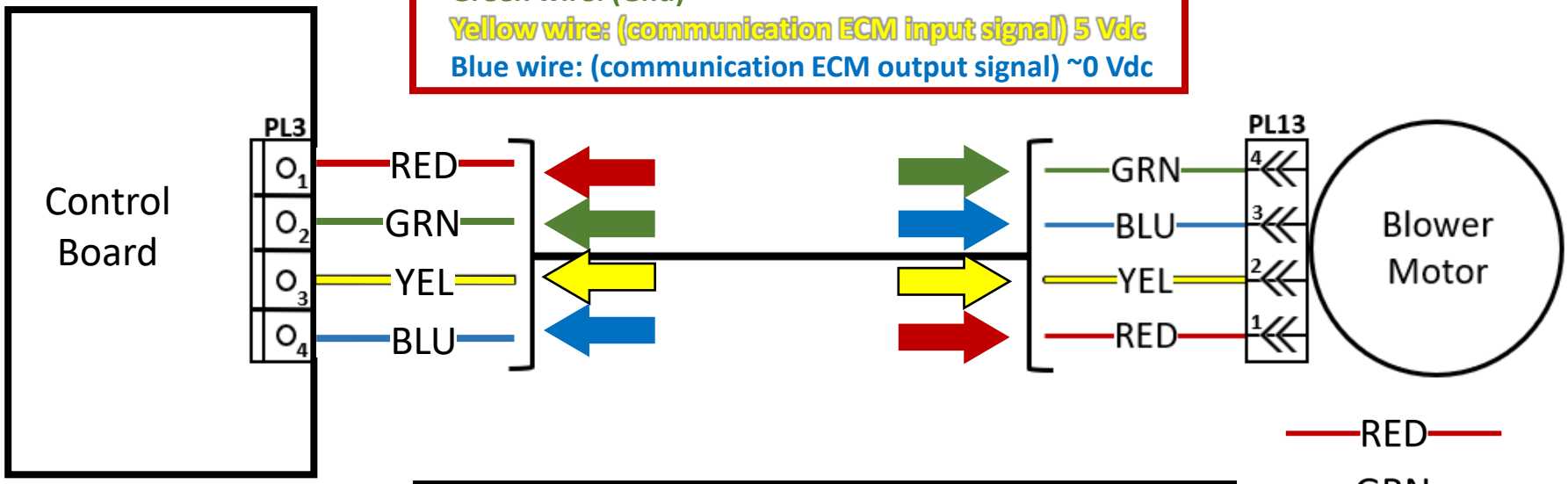
6. Check each leg to ground, (metal surface of motor).
7. Resistance should be greater than 100K ohms.

Note: failed test indicates that motor and module must be replaced.

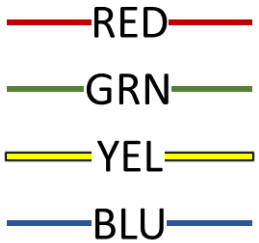
Communicating ECM

Gas Furnace:

Red wire: (Power) 12 Vdc
Green wire: (Gnd)
Yellow wire: (communication ECM input signal) 5 Vdc
Blue wire: (communication ECM output signal) ~0 Vdc



Warning: pins are easily damaged! Be careful when connecting and disconnecting plugs.



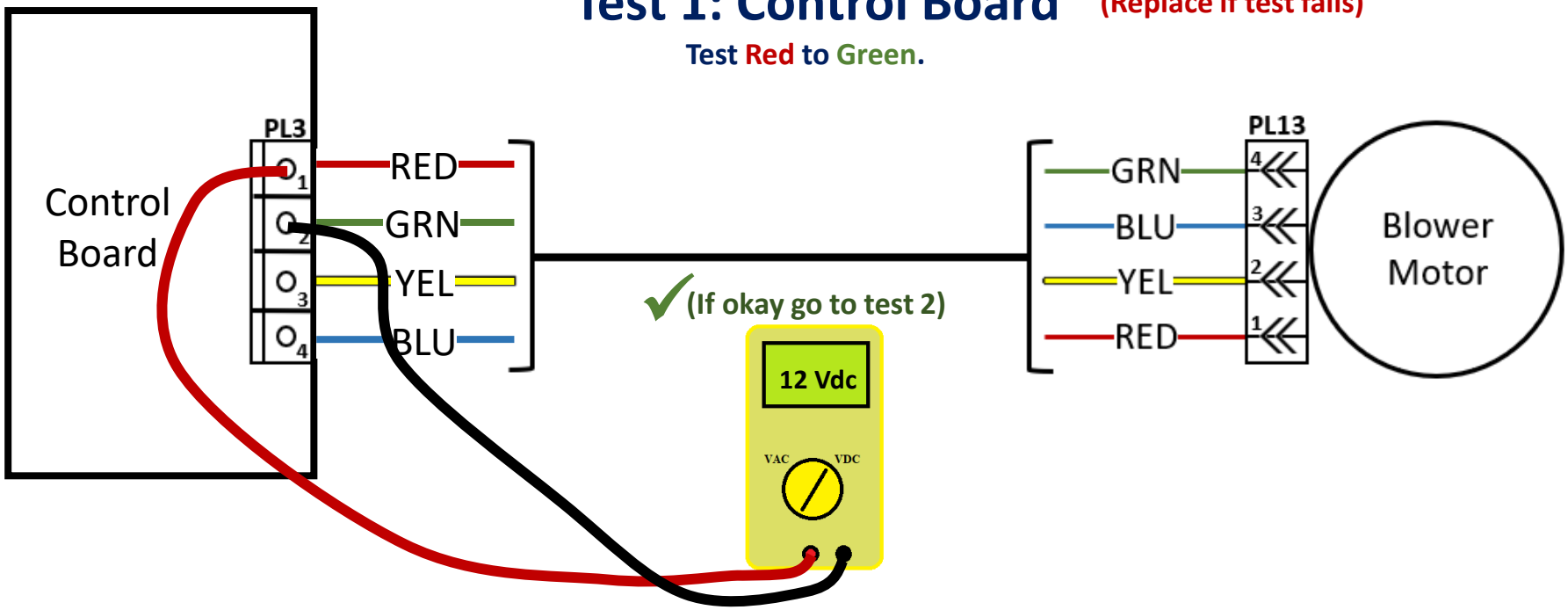
Communicating ECM

Gas Furnace:

12 Vdc power supply voltage

Test 1: Control Board (Replace if test fails)

Test Red to Green.



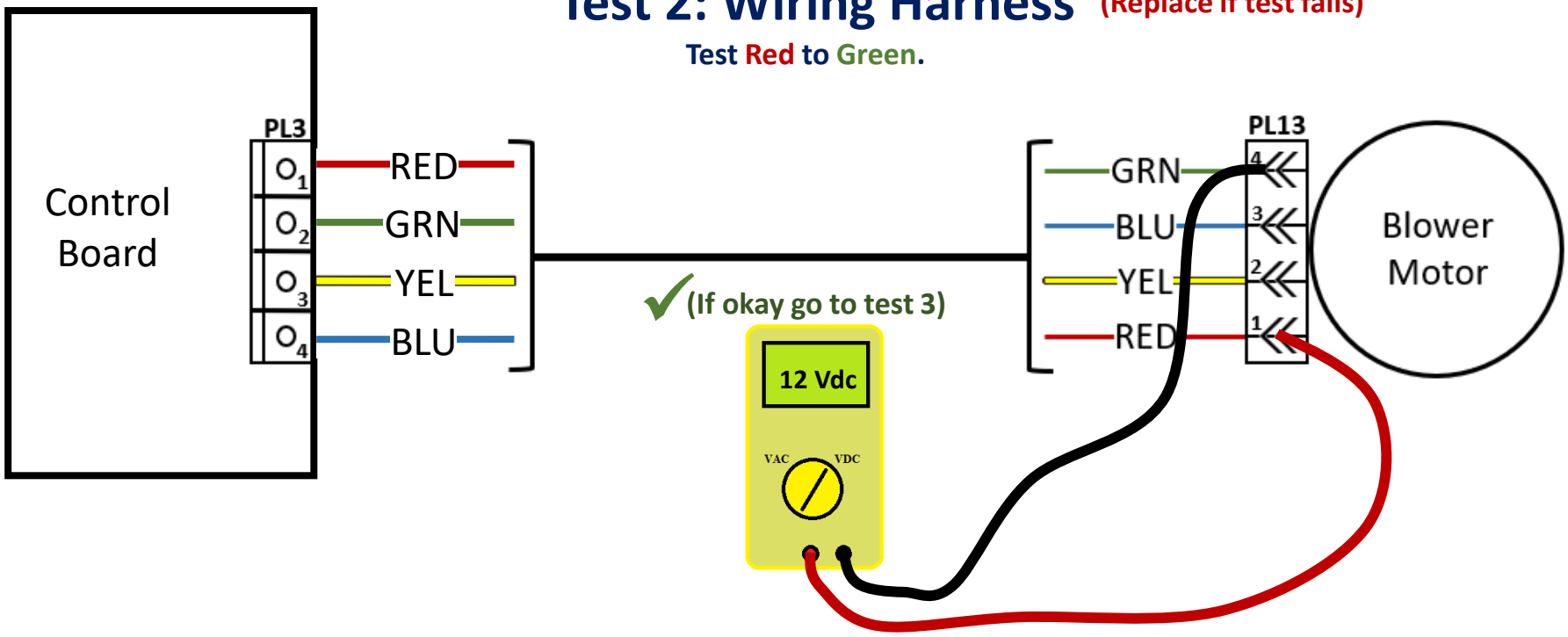
Communicating ECM

Gas Furnace:

12 Vdc power supply voltage

Test 2: Wiring Harness (Replace if test fails)

Test Red to Green.



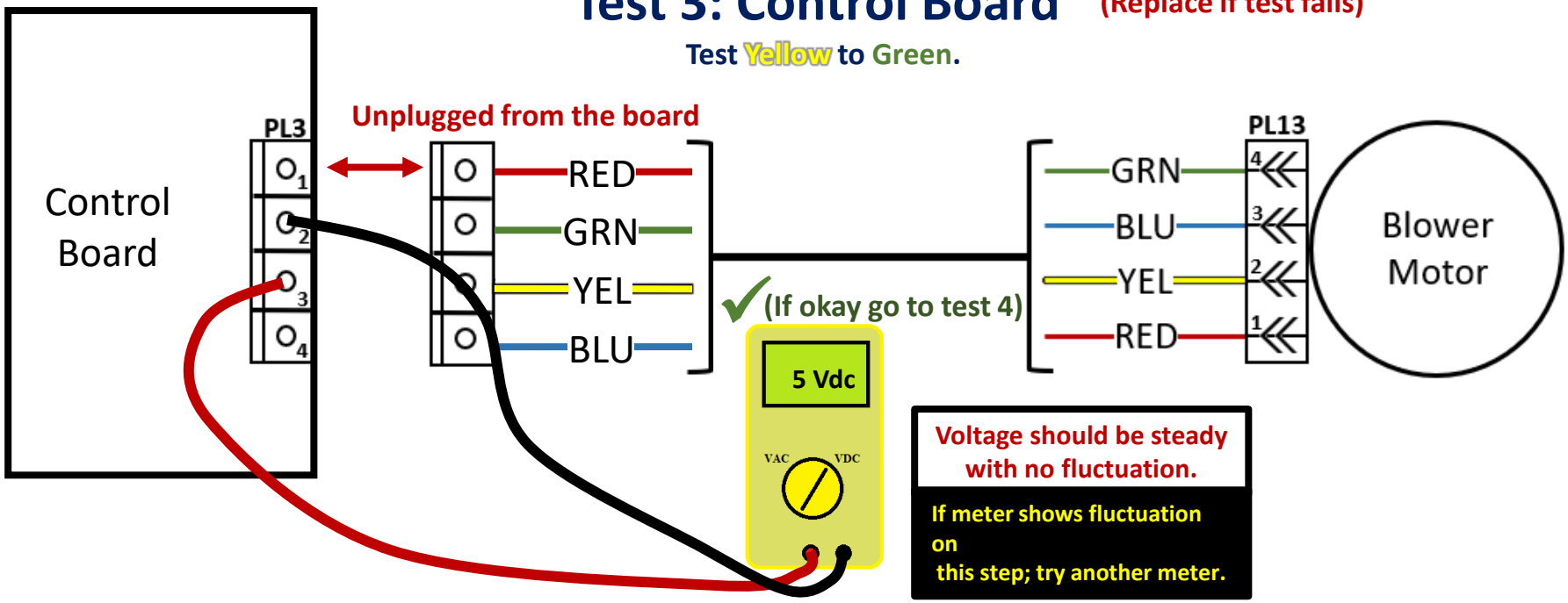
Communicating ECM

Gas Furnace:

5 Vdc ECM serial input signal

Test 3: Control Board (Replace if test fails)

Test Yellow to Green.



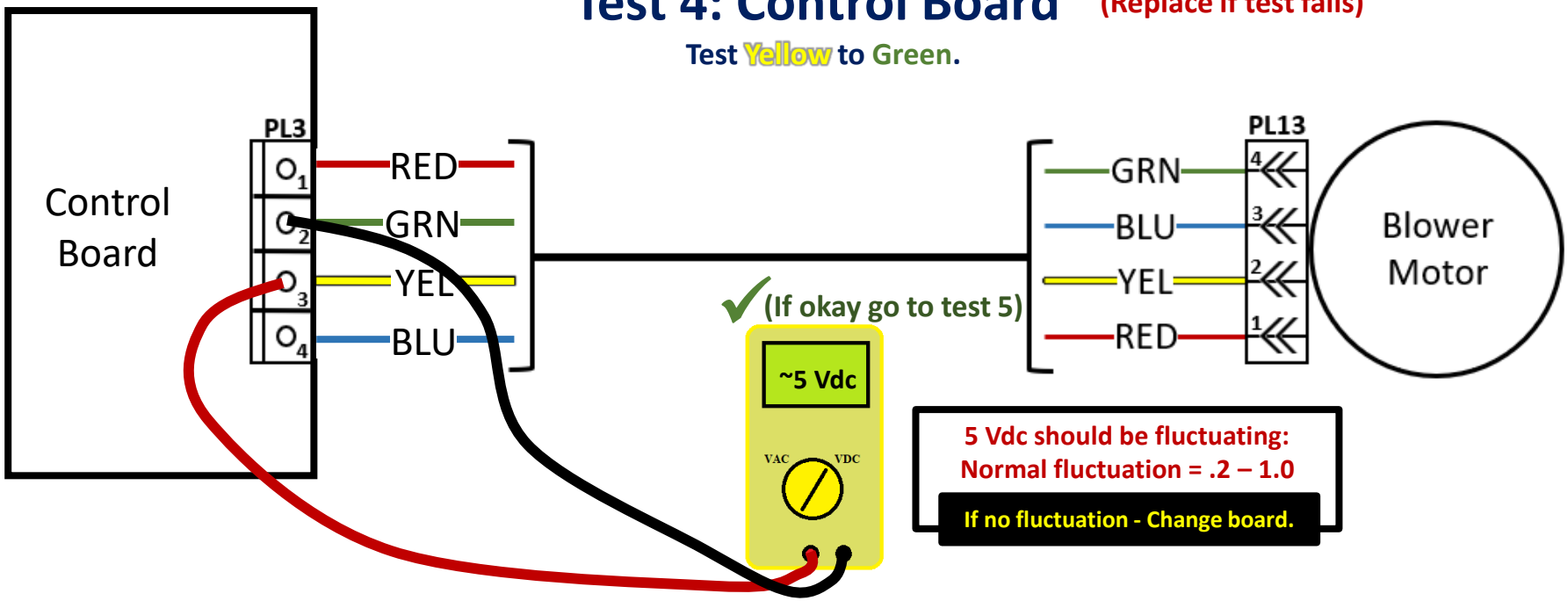
Communicating ECM

Gas Furnace:

5 Vdc ECM serial input signal

Test 4: Control Board (Replace if test fails)

Test Yellow to Green.



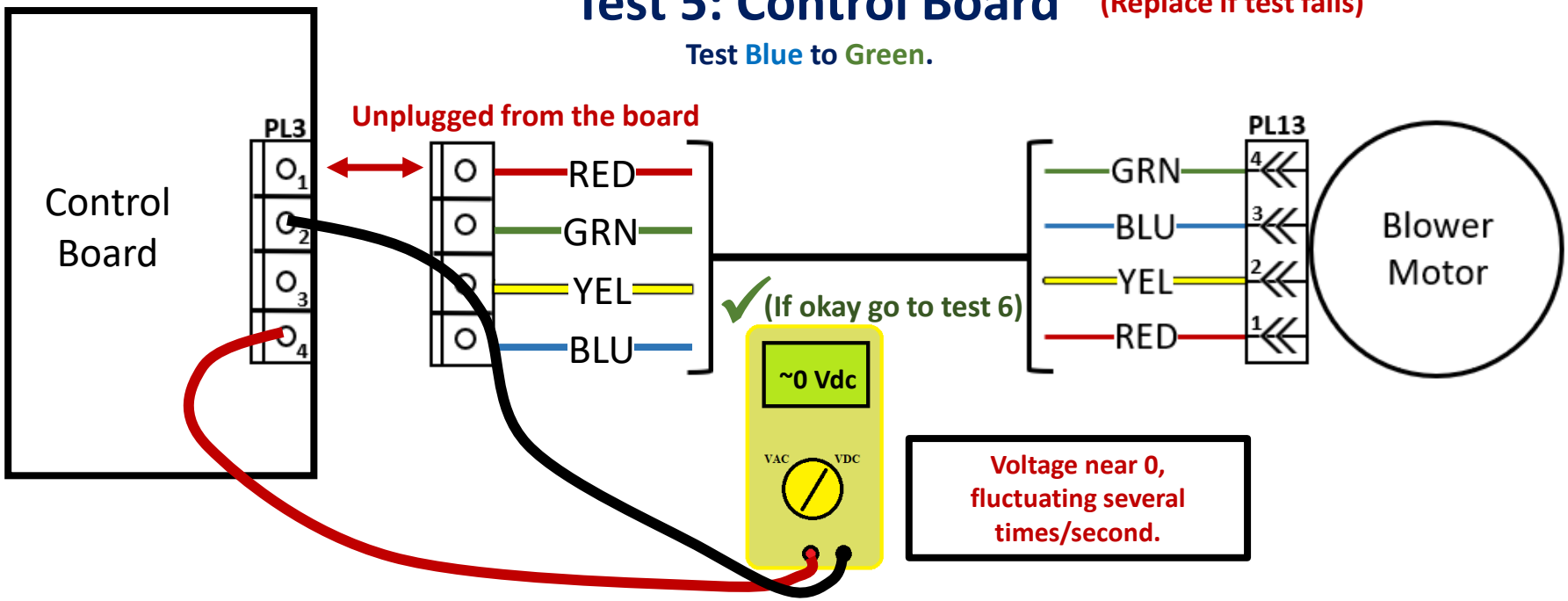
Communicating ECM

Gas Furnace:

5 Vdc ECM serial output signal

Test 5: Control Board (Replace if test fails)

Test Blue to Green.



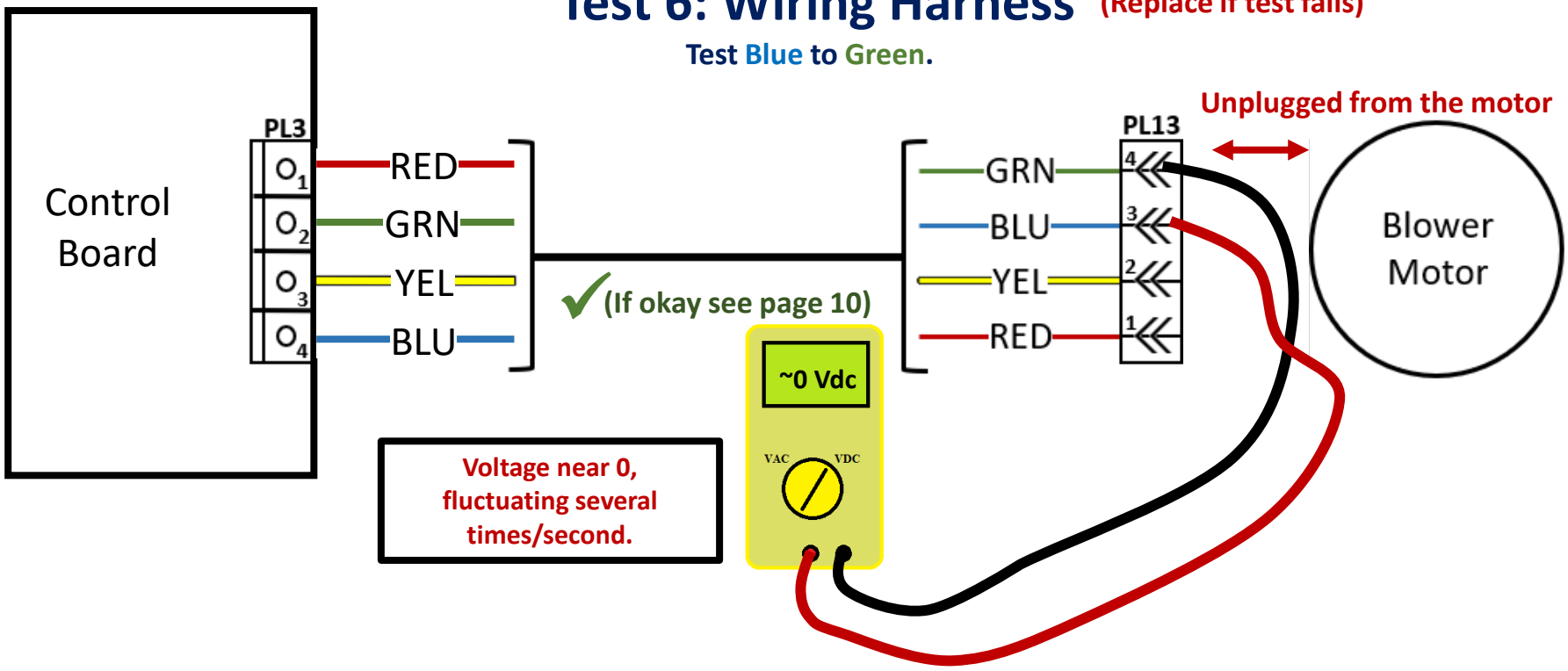
Communicating ECM

Gas Furnace:

5 Vdc ECM serial output signal

Test 6: Wiring Harness (Replace if test fails)

Test Blue to Green.



Communicating ECM

If the unit passes all six tests and the motor will not run, replace the ECM module.

Note: test the motor section before replacing module only.

12 Vdc power supply voltage

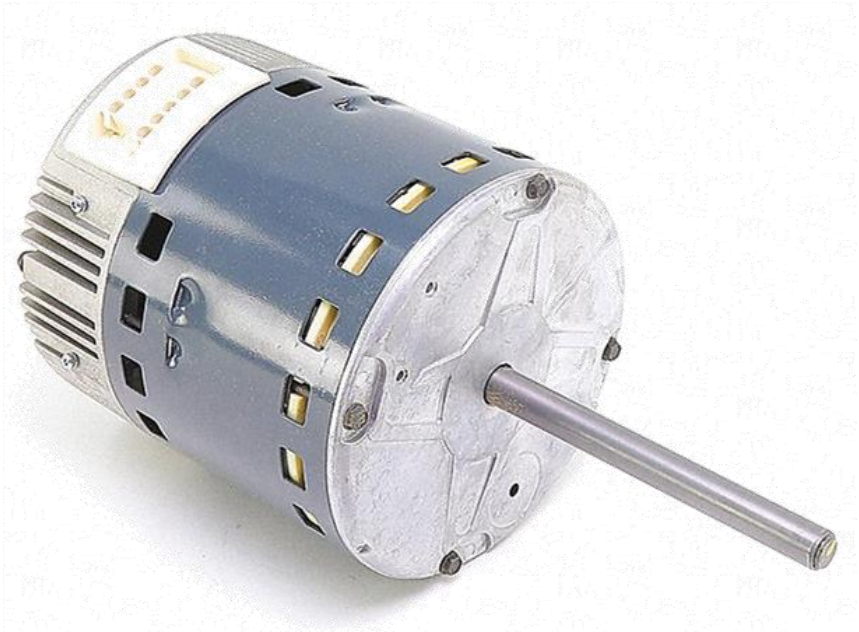
- Test 1: Control Board ✓
- Test 2: Wiring Harness ✓

5 Vdc ECM serial input signal

- Test 3: Control Board ✓
- Test 4: Control Board ✓

5 Vdc ECM serial output signal

- Test 5: Control Board ✓
- Test 6: Wiring Harness ✓

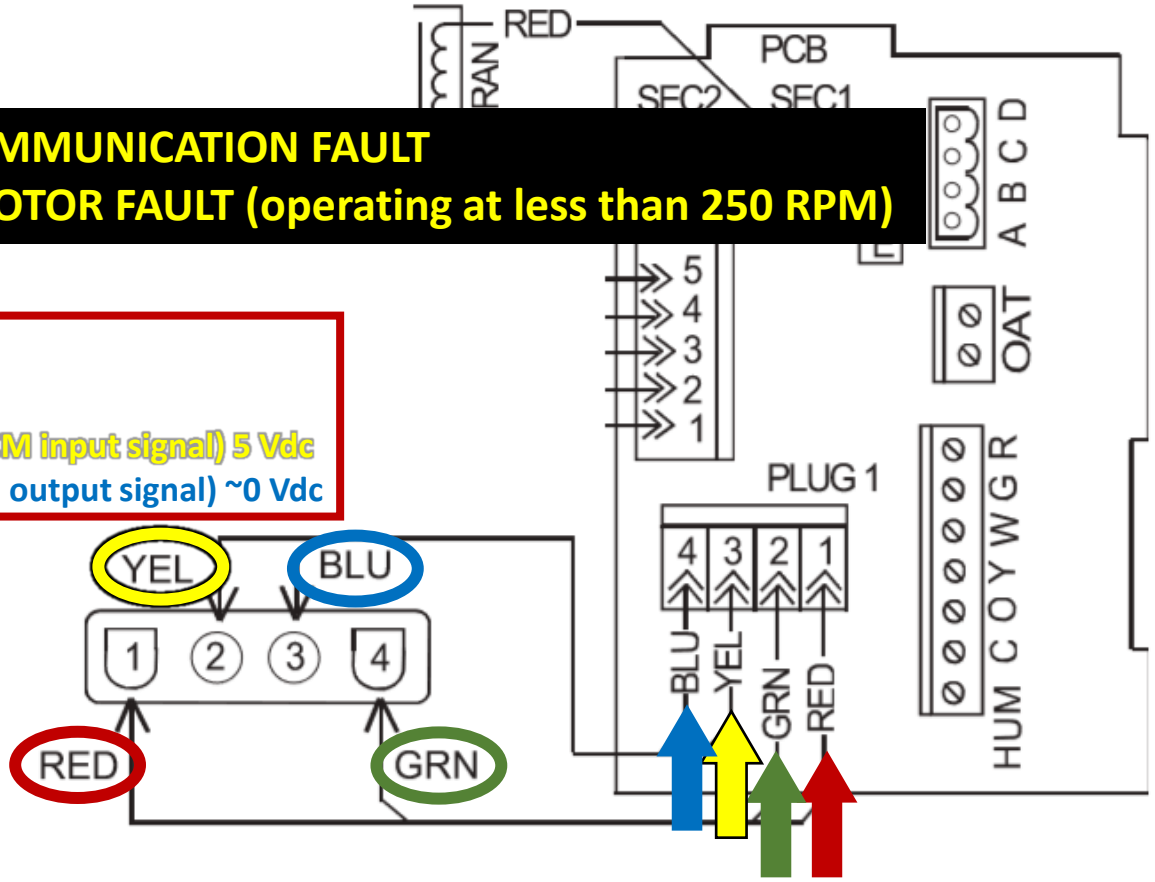


Communicating ECM

FE4A:

STATUS CODE 44: MOTOR COMMUNICATION FAULT
STATUS CODE 41: BLOWER MOTOR FAULT (operating at less than 250 RPM)

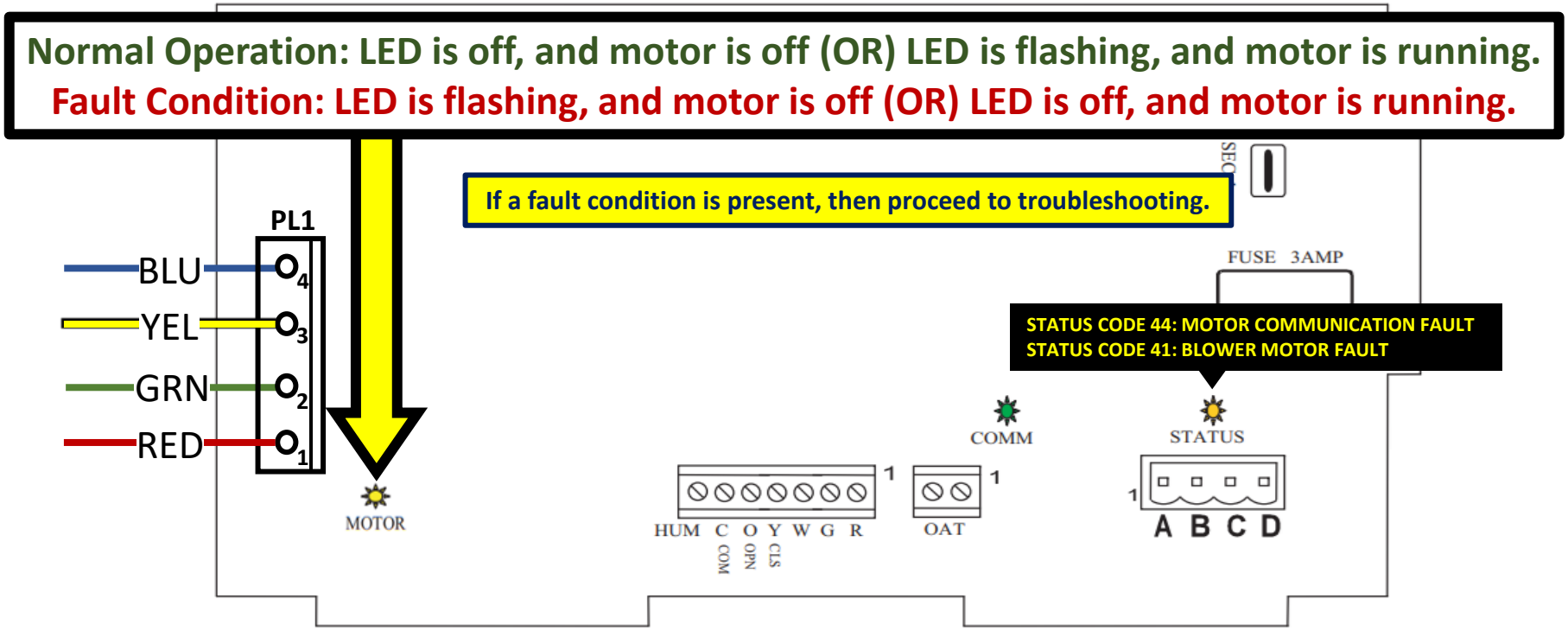
Red wire: (Power) 12 Vdc
Green wire: (Gnd)
Yellow wire: (communication ECM input signal) 5 Vdc
Blue wire: (communication ECM output signal) ~0 Vdc



Communicating ECM

FE4A:

The MOTOR LED is connected to blower motor communications. This LED will flash each time instructions are sent from the board to the motor. When the motor is commanded to stop, the MOTOR LED will be turned off.



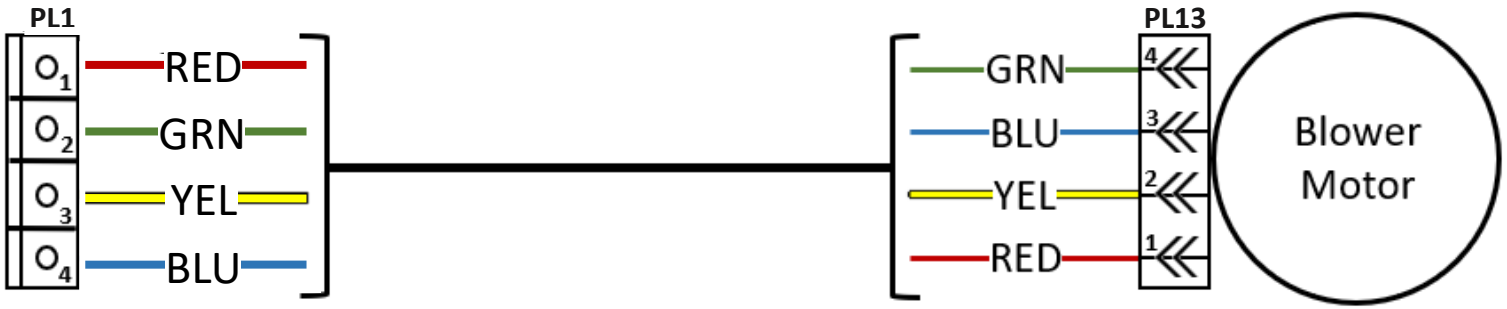
Communicating ECM

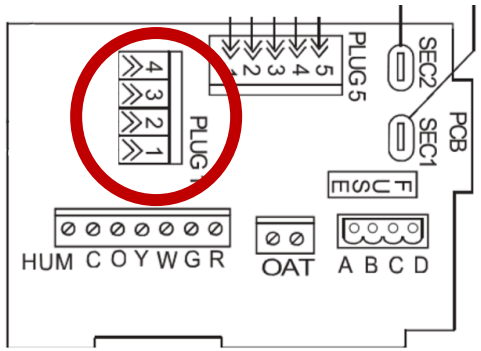
FE4A: CODE 41

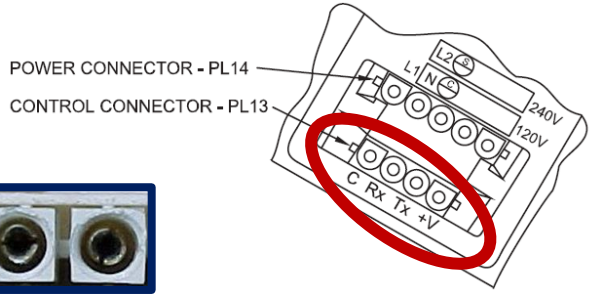
MOTOR LED is flashing, and motor does not run:

Step 1: Examine wires, pins, and plugs on harness, board, and motor.

If everything is okay, then advance to step 2.







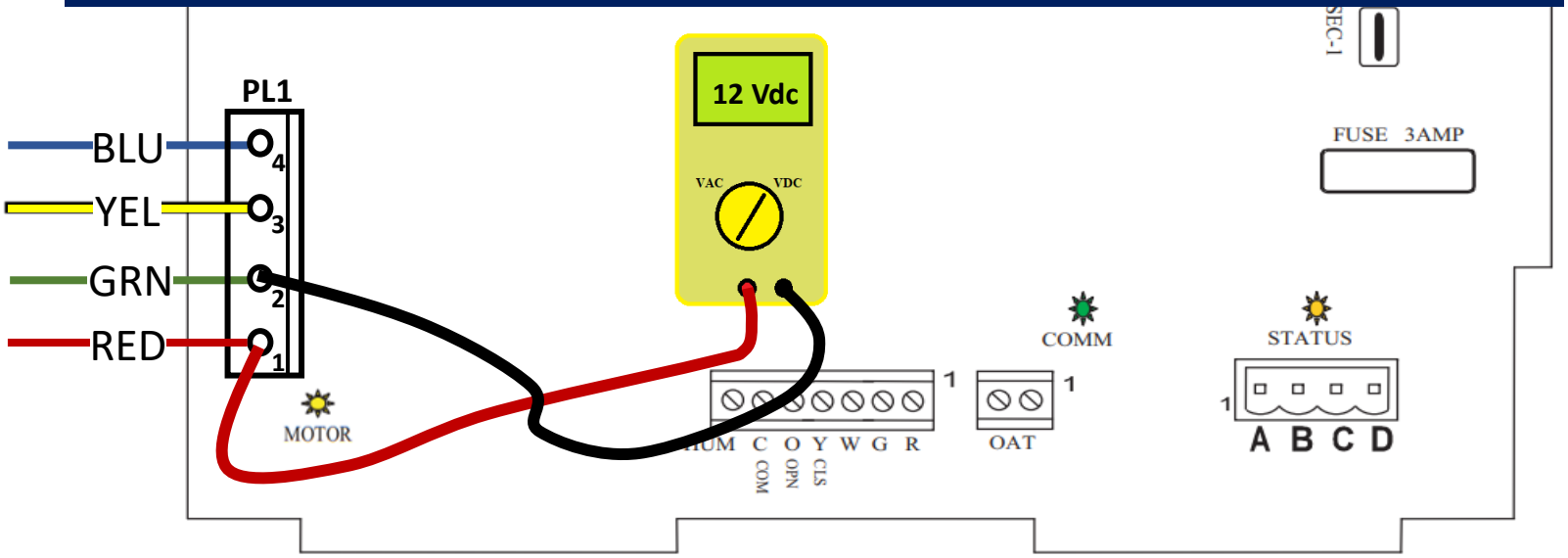
FE4A: CODE 41

MOTOR LED is flashing, and motor does not run:

Step 2: Check 12 Vdc output from board. (Red to Green)

If voltage is acceptable, then replace control module. Perform motor winding test.

In some cases, the board has passed this test but had to be replaced.
Recommend bringing a board in case motor/module does not fix the problem.



For a more precise diagnosis, perform the six tests shown previously.

Communicating ECM

12 Vdc power supply voltage

Test 1: Control Board ✓

Test 2: Wiring Harness ✓

5 Vdc ECM serial input signal

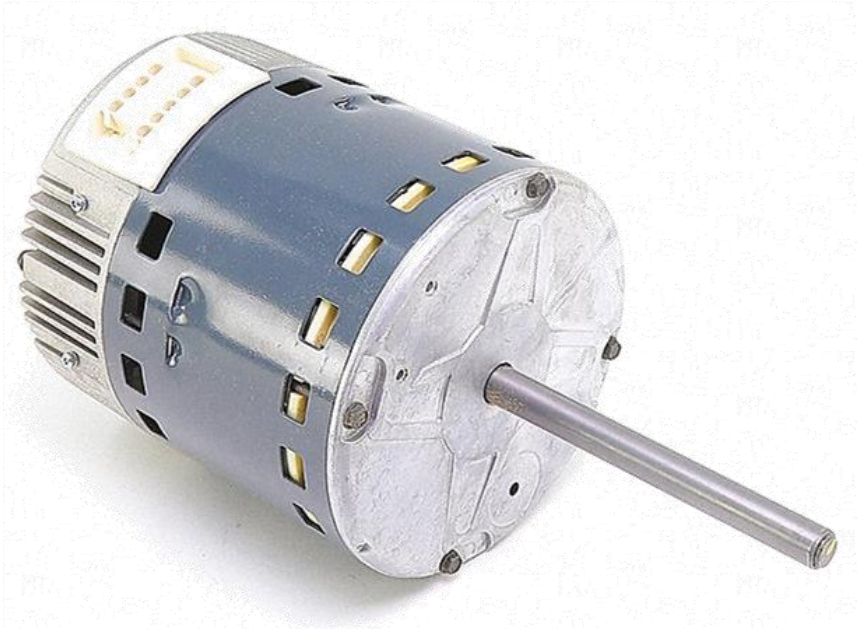
Test 3: Control Board ✓

Test 4: Control Board ✓

5 Vdc ECM serial output signal

Test 5: Control Board ✓

Test 6: Wiring Harness ✓



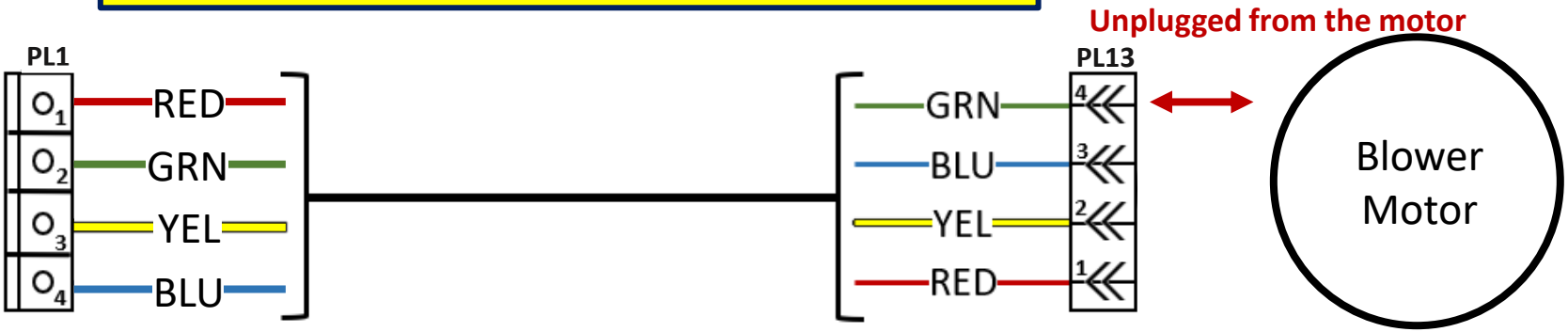
Communicating ECM

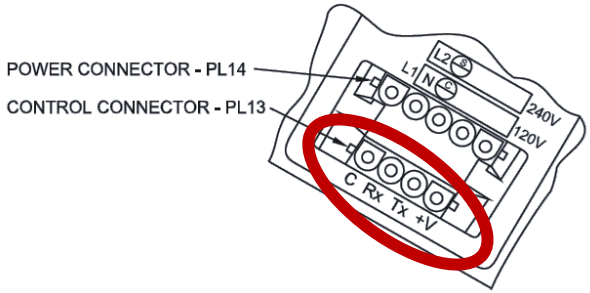
FE4A: CODE 41

MOTOR LED is off, and motor is running:

Step 1: Power off, remove PL13 from the motor, Power on.

If motor continues to run, replace module.





Communicating ECM

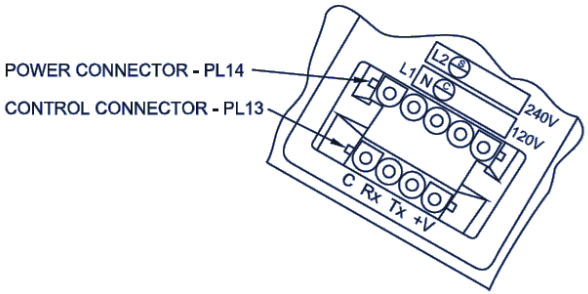
FE4A: CODE 41

MOTOR LED is off, and motor is running:

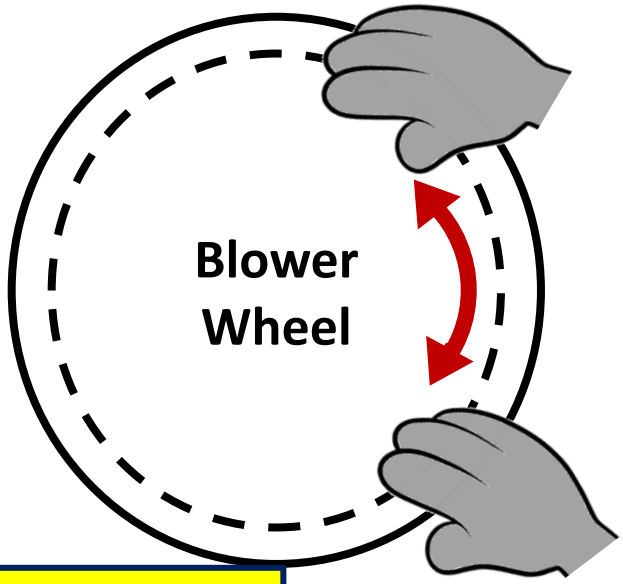
Usually indicates that the board and harness are okay.

Step 1: Power off

Step 2: Remove both plugs from the ECM (PL13 and PL14)



Step 3: Rotate blower wheel by hand to ensure no obstructions.



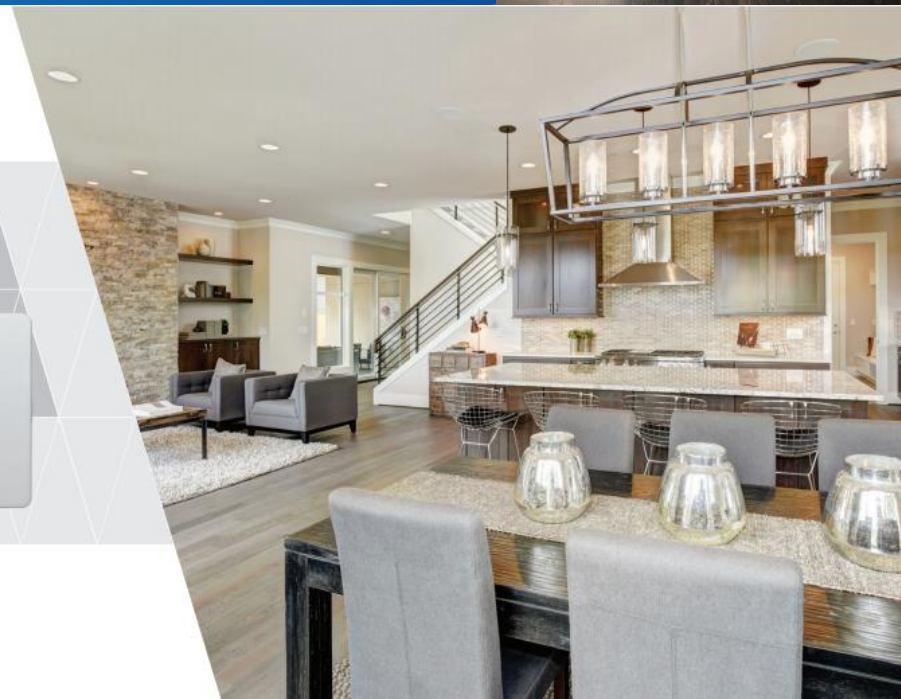
If motor spins normally, then check motor windings.
If those checks are normal, then replace the module only.

Carrier

Turn to the experts

INFINITY® ZONING SYSTEM

Zoned comfort with the Infinity System Control*



bryant

Heating & Cooling Systems

EVOLUTION™ ZONING SYSTEM

Infinity / Evolution Zoning

Infinity® System Zoning Design Guide

Carrier
turn to the experts

Design Guide

INTRODUCTION

The Infinity® Zoning System provides the ability to control 2, 4, or 8 zones in a residential or light commercial application. Each constructed zone should support the minimum airflow of the equipment selected. Consult the Infinity® System HVAC Equipment Product Guide to determine minimum airflow requirements.

The Infinity® Zoning System can only be used with compatible Infinity® System indoor equipment. See the equipment Product Data Sheets for details. To achieve the best operating and comfort it is recommended that the Infinity® System compatible variable-speed and multi-stage compressor units be selected in the design of the zoning system. See the Infinity® System equipment Product Data sheets for more information. The multiple stage, and especially modulating Infinity® System HVAC equipment, provide some leeway in the system minimum airflow requirements, allowing more effective zoning operation.

Infinity® Zoning incorporates cutting edge technology that sets it apart from any other zoning system on the market today, making it the easiest system on the market to install and use with confidence:

- It does not require a bypass damper or leaving air temperature sensor, yet the HVAC equipment is always protected from limit trips and coil freezing.
- It does not require a separate field installed power transformer.
- System can handle up to five dampers per zone.
- Infinity® Zoning automatically identifies all communicating installed equipment.
- Patented Automatic Duct Assessment ensures that Infinity® Zoning delivers superior and quiet comfort with any reasonable duct system.

114

Infinity / Evolution Zoning

REQUIRED!

Touch Wall Control

Smart Sensor

OR

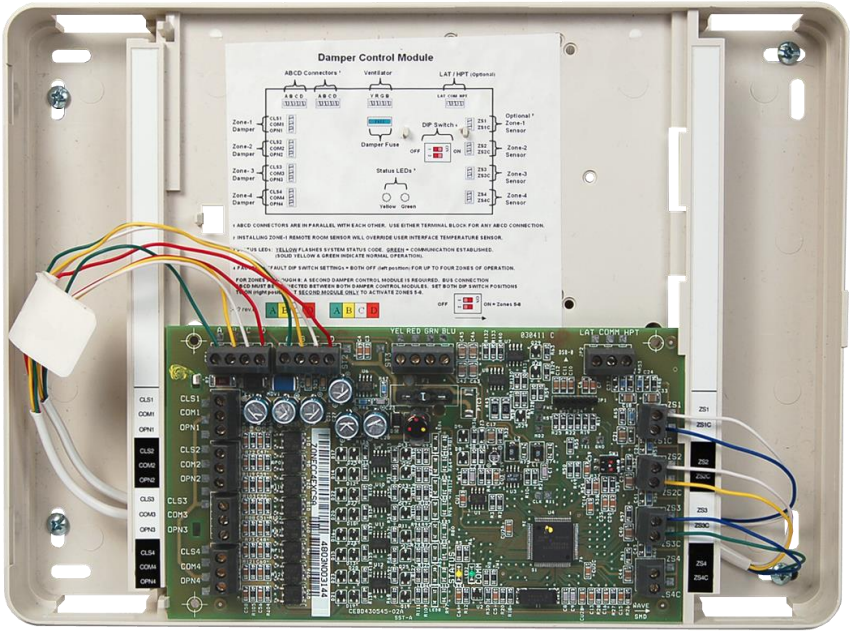
Remote Room Sensor

115

Infinity / Evolution Zoning

REQUIRED!

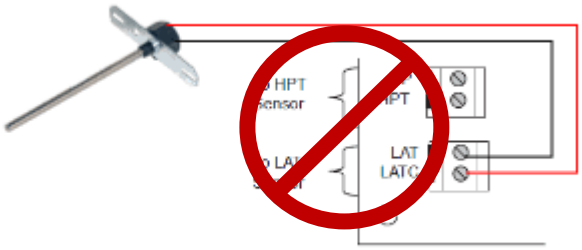
Damper Control Module



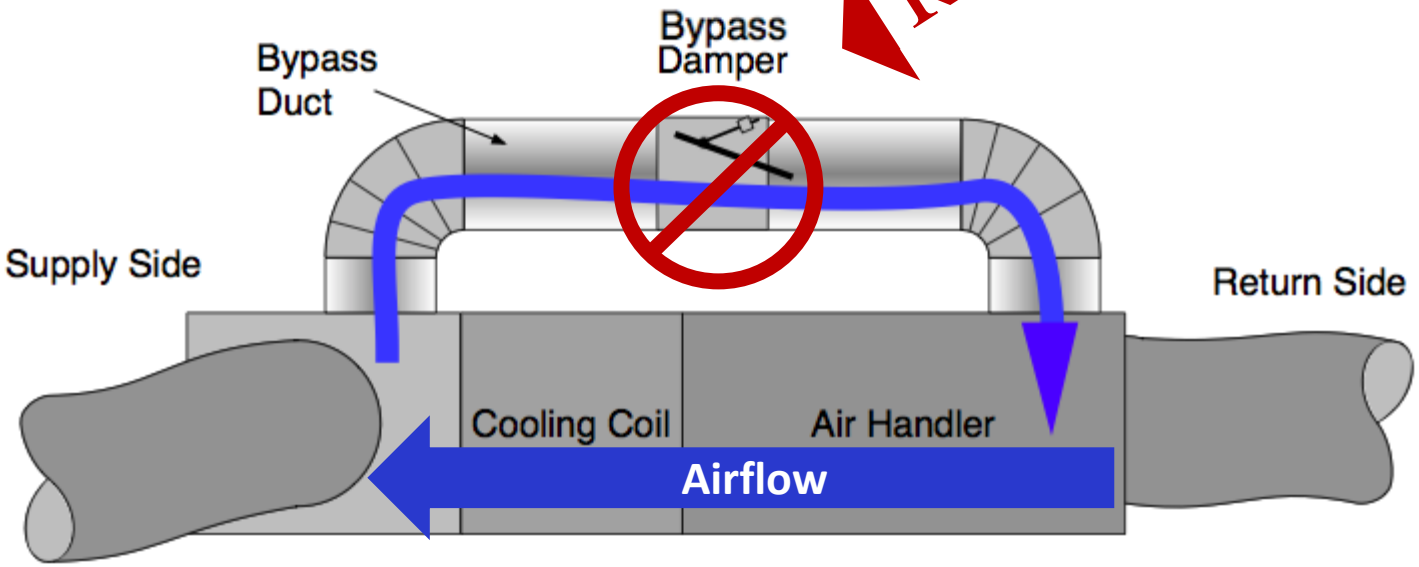
Modulating Dampers

116

Infinity / Evolution Zoning

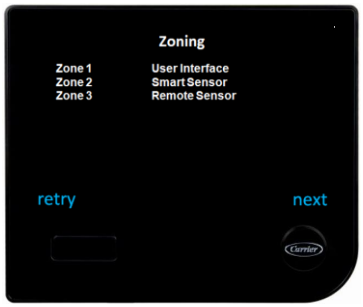


REQUIREMENT!

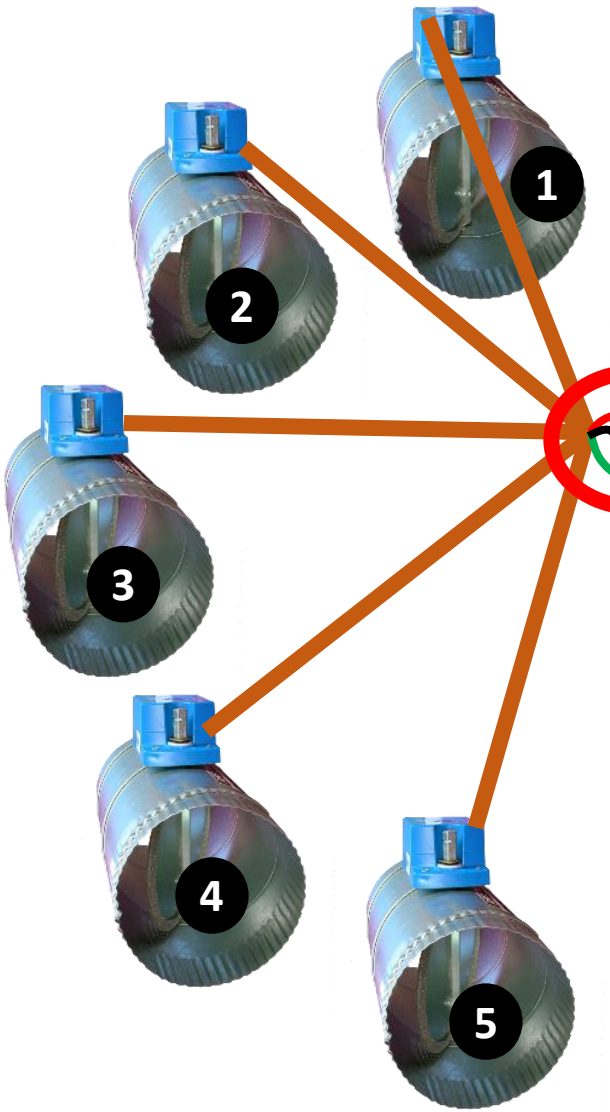


Infinity / Evolution Zoning

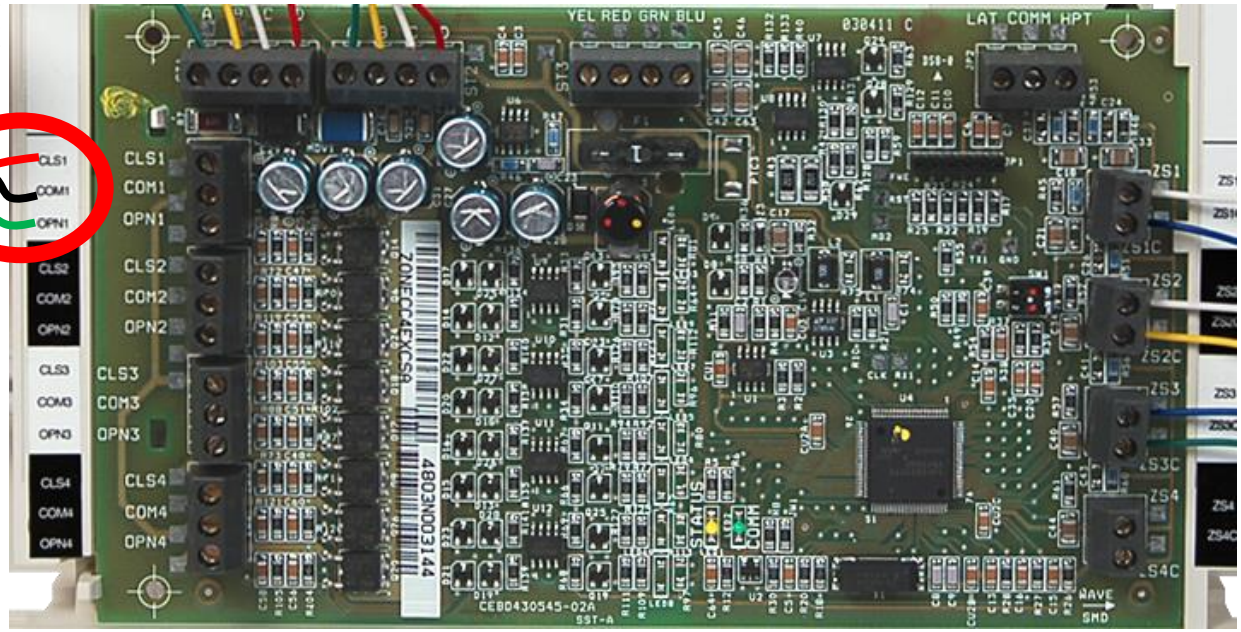
Automatic identification of all communicating equipment



Infinity / Evolution Zoning



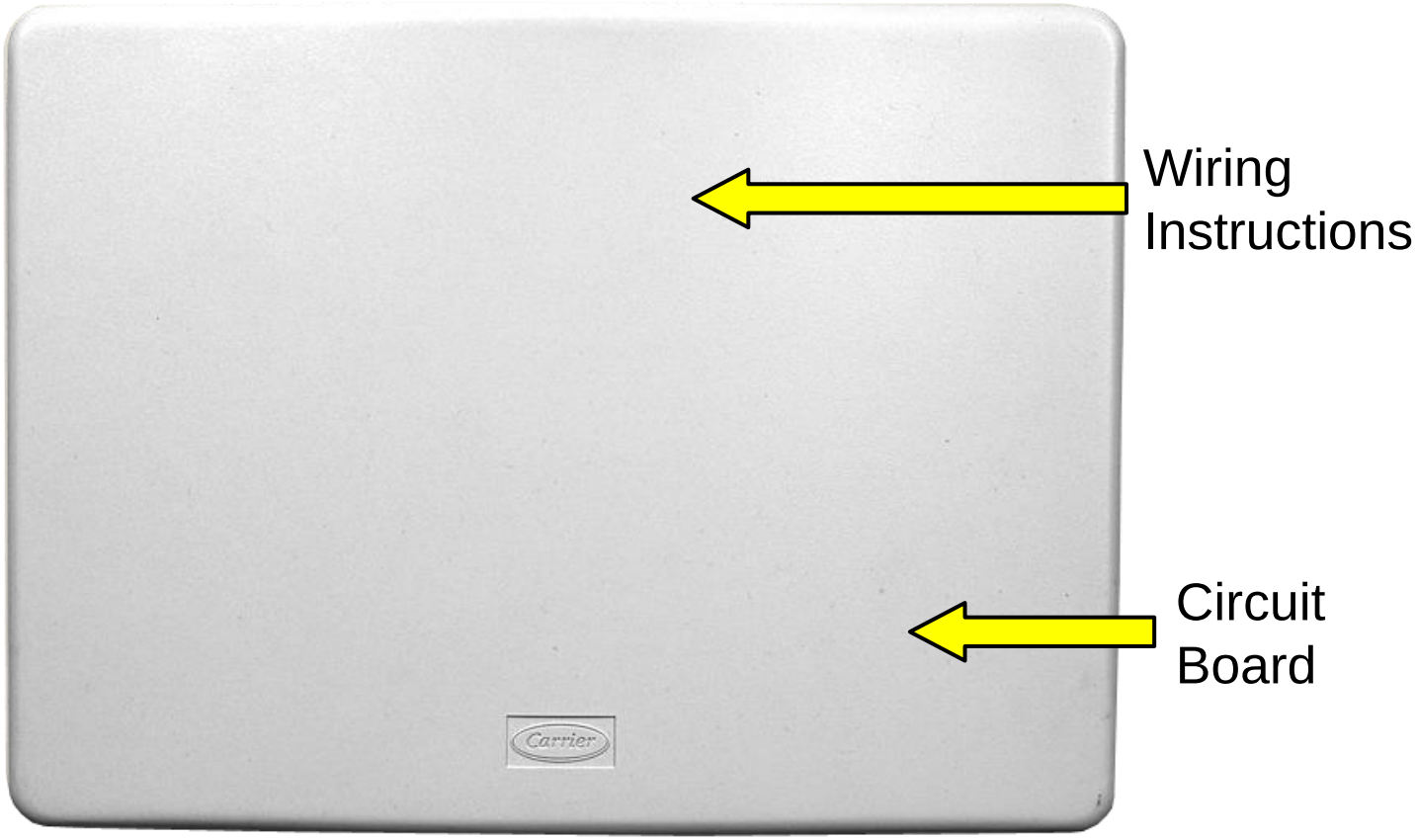
Up to 5 Dampers per zone



No additional transformer needed

Infinity / Evolution Zoning

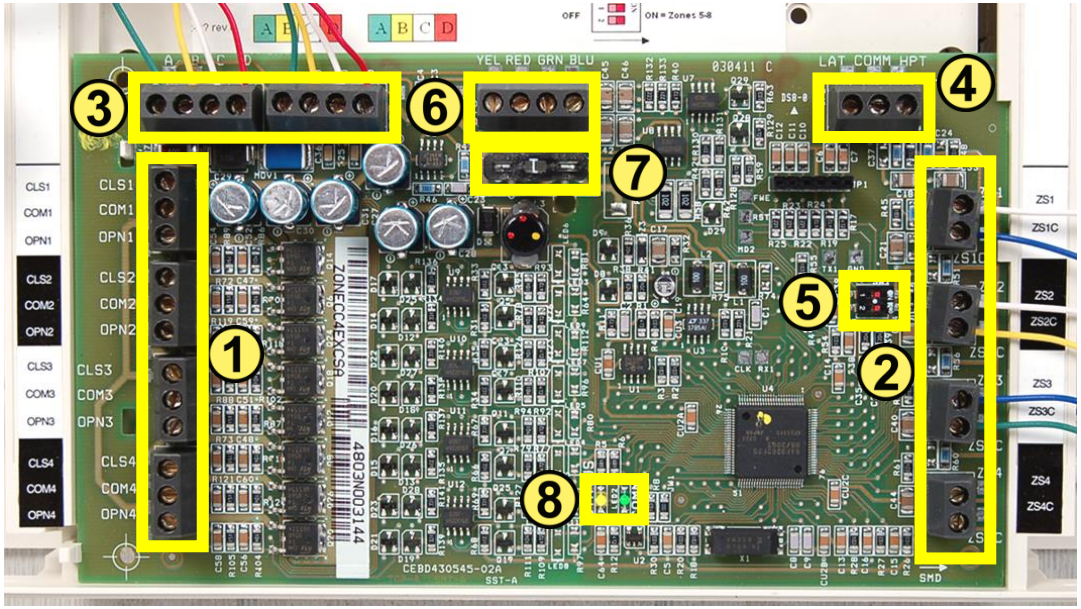
- Zone damper module cover removed
- Note wiring instructions and circuit board



Infinity / Evolution Zoning

1. Four, zone damper outputs (CLS, COM, OPN, 1-4).
2. Four “remote room sensor” connections.
3. Two, four-wire communication buses, (ABCD)
4. LAT and HPT sensor connections, (not required)
5. Dip-switches, (only used when a second ZDM is needed, 5 or more zones).
6. ERV connections built in to board, (eliminates the need for NIM module).
7. 1-amp fuse
8. Yellow and green LEDs

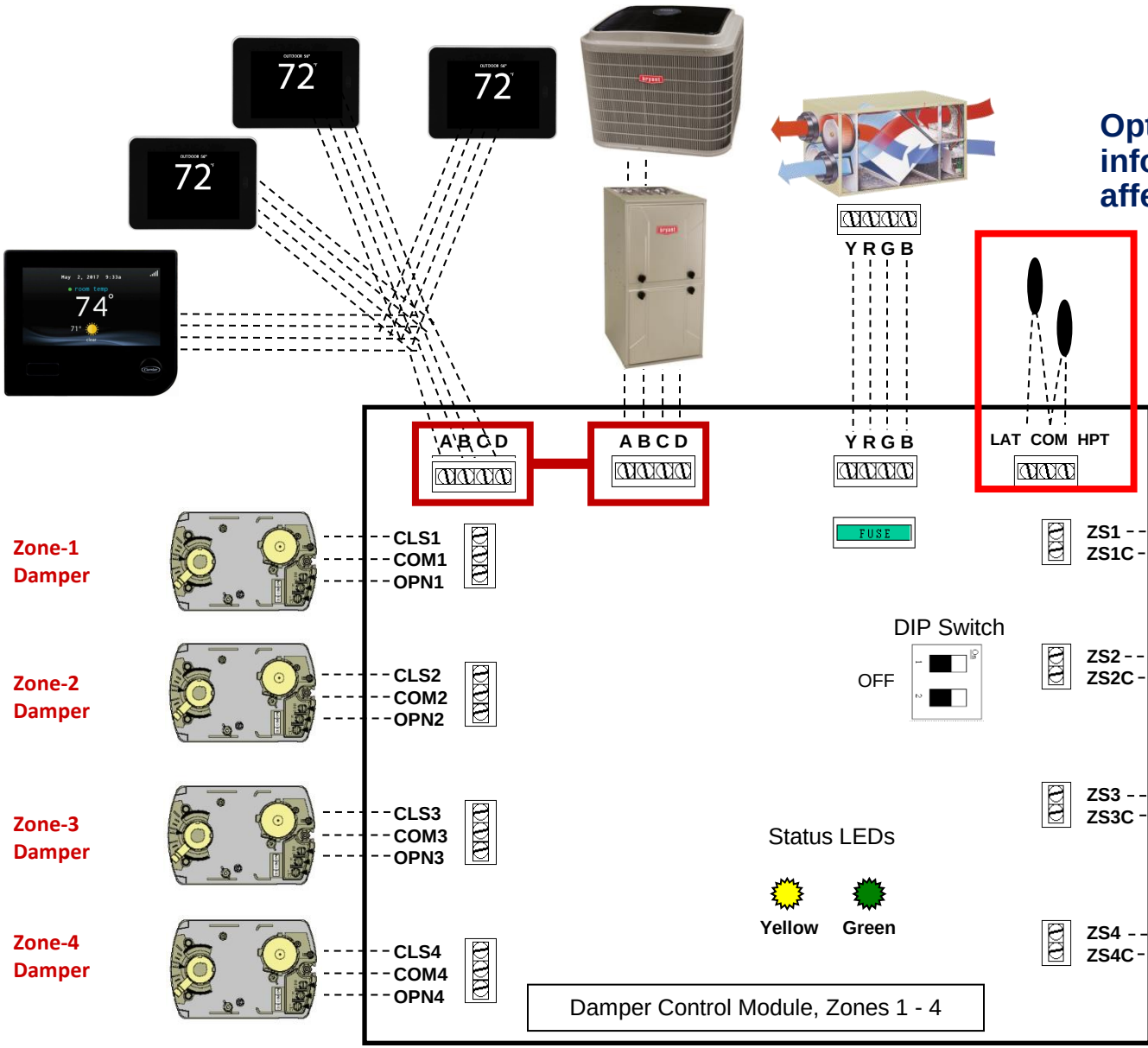
Zone Damper Module



Remote Room Sensor

121

Infinity / Evolution Zoning

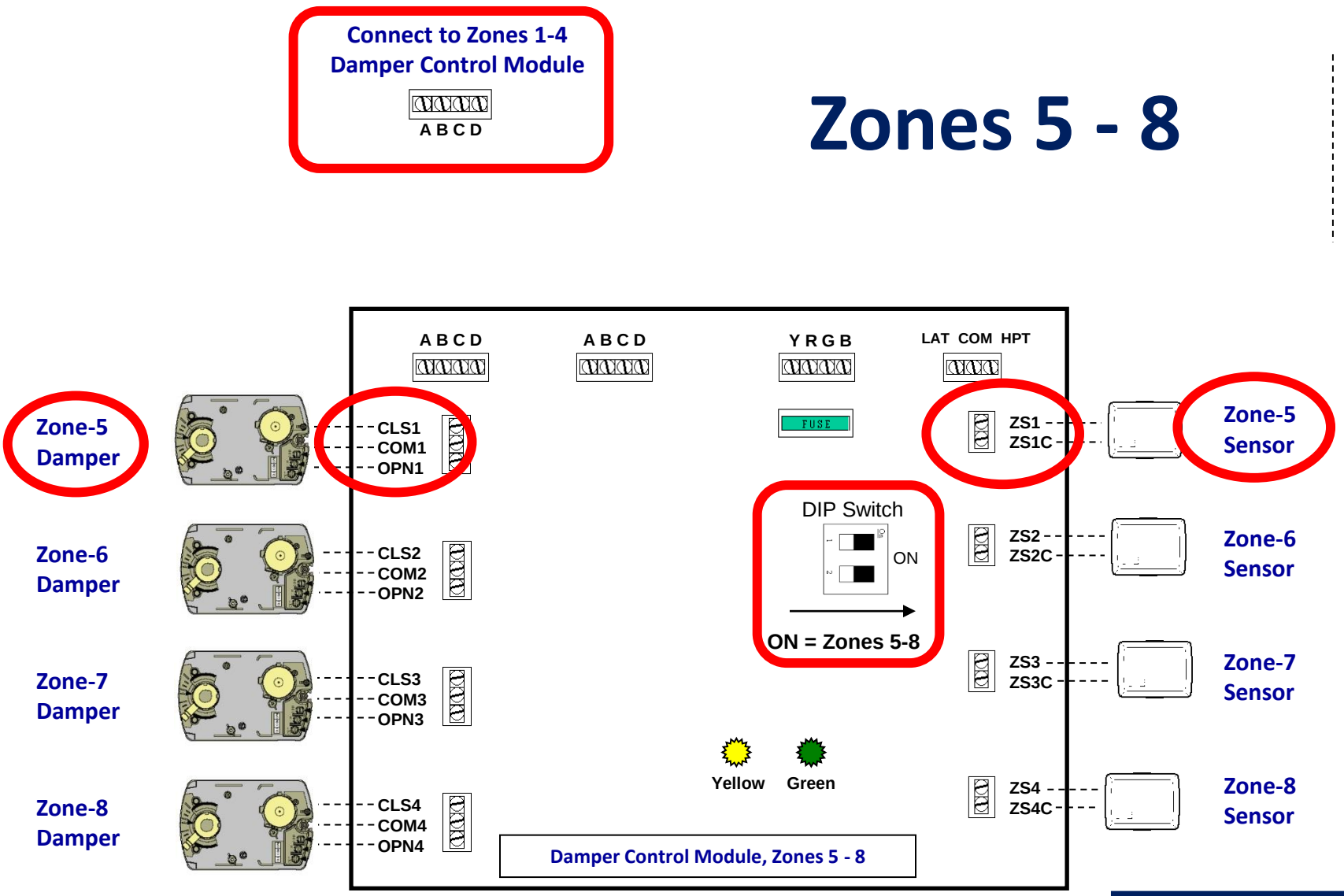


Optional – Sensors are for information only and do not affect operation of the system

furnace status	
gas heat	off
indoor airflow CFM	0
blower RPM	0
static pressure	0.00 in
inducer RPM	0
leaving air temperature	71
lockout time left	---

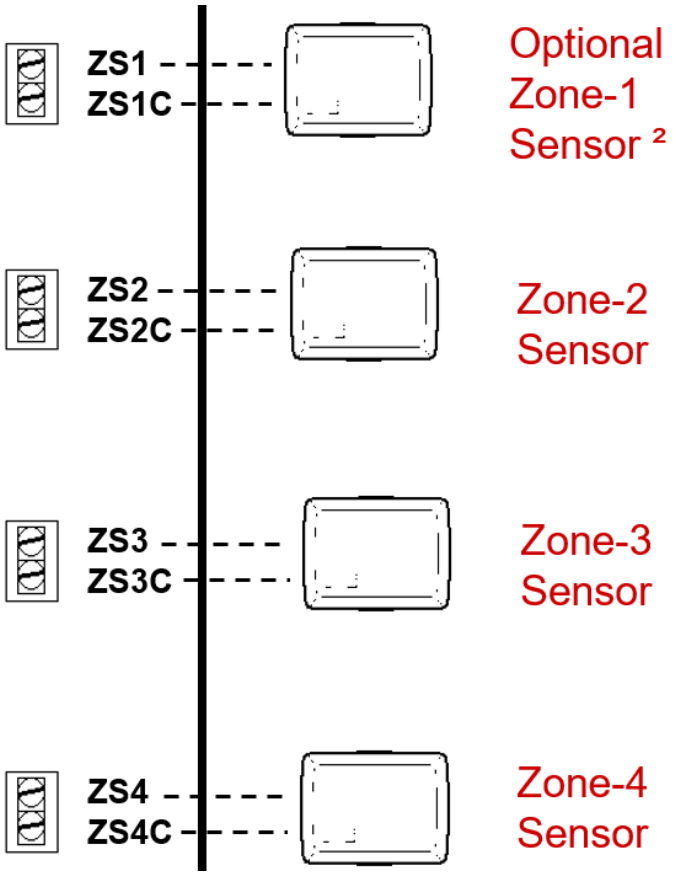
Infinity / Evolution Zoning

Zones 5 - 8



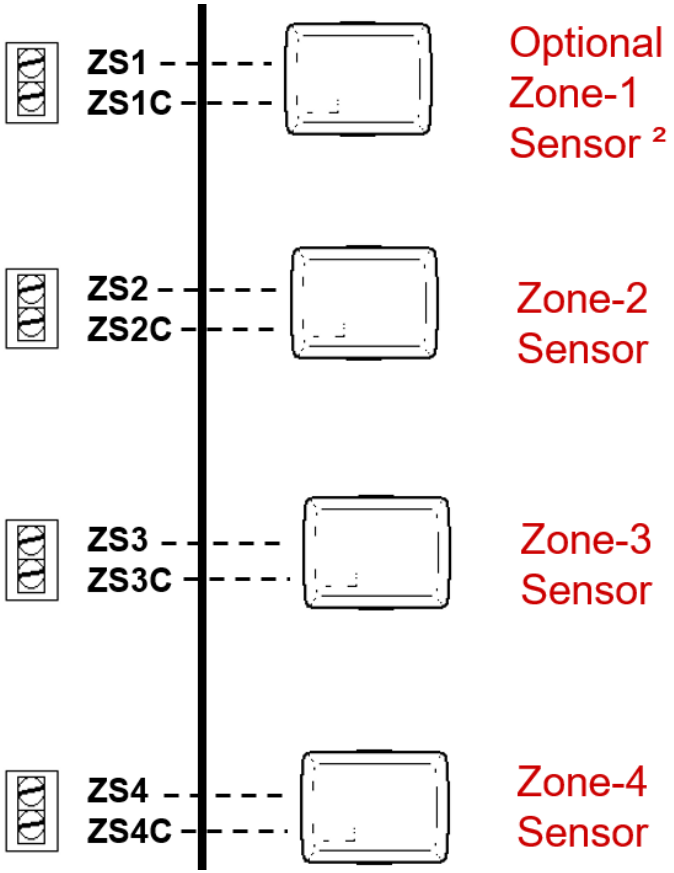
Infinity / Evolution Zoning

All programming, temperature selections, and displays are done through the UI



124

Infinity / Evolution Zoning



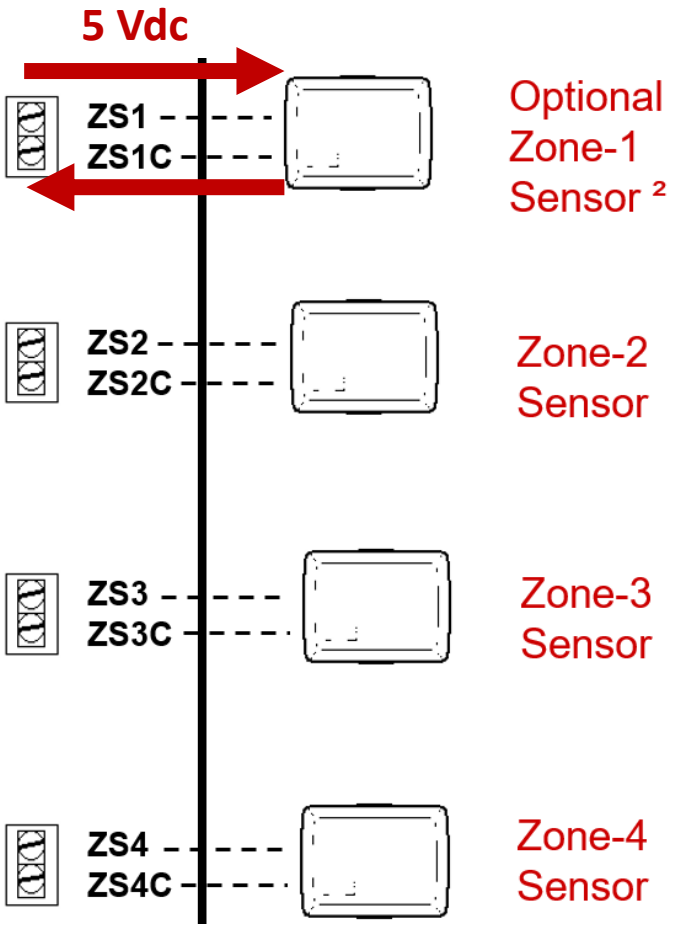
125

Infinity / Evolution Zoning

Thermistor
(Room Sensor)
10 kOhm

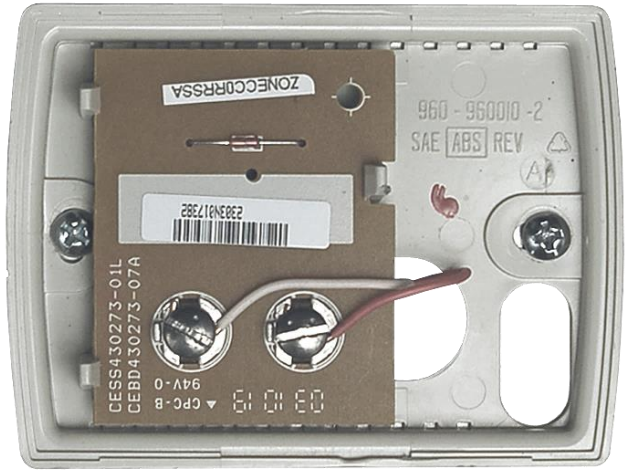
Wires to ZDM or UI

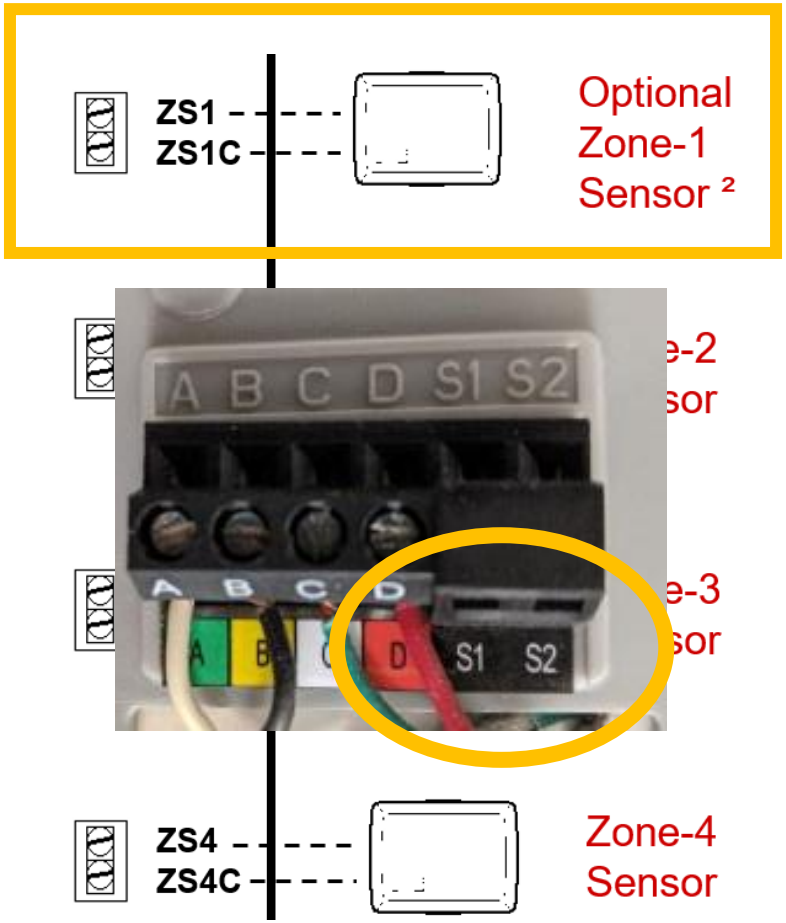
Does not communicate!



126

Infinity / Evolution Zoning





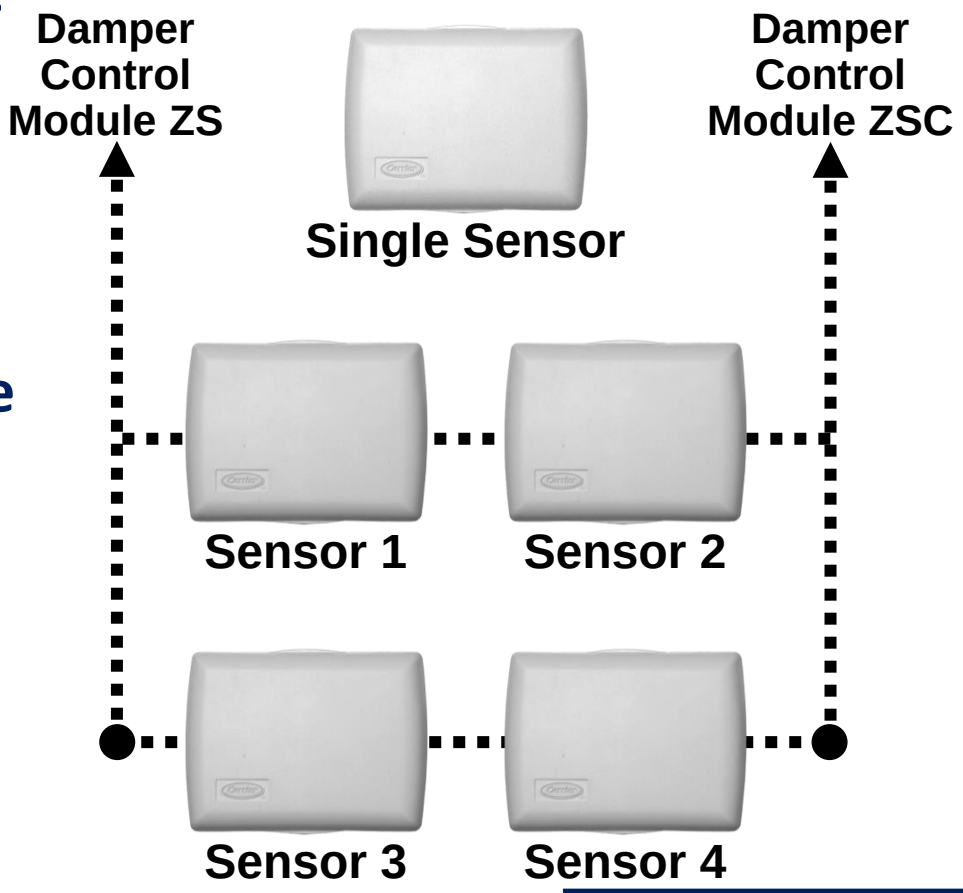
If sensor is wired to ZS1 on the damper control module or S1/S2 on the UI, then this will override the temperature sensed by the UI.

Note: Humidity only sensed through the UI.

127

Infinity / Evolution Zoning

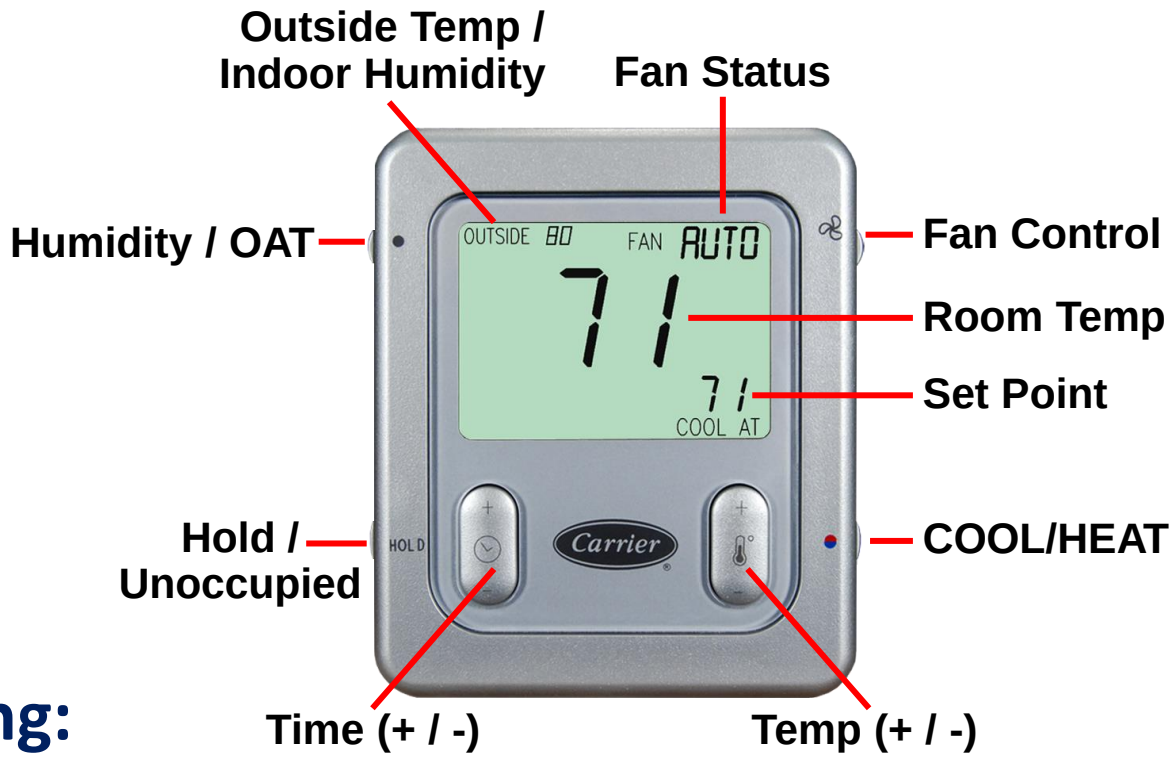
- Used in any zone
  - Wire to Zone Damper Module
- For use with remote location of User Interface
  - Wire to S1 and S2 on user interface back plate
- User Interface automatically detects remote sensor presence
- Remote sensor is temperature sensor only
- Must use 4 sensors together for zone temperature averaging



128

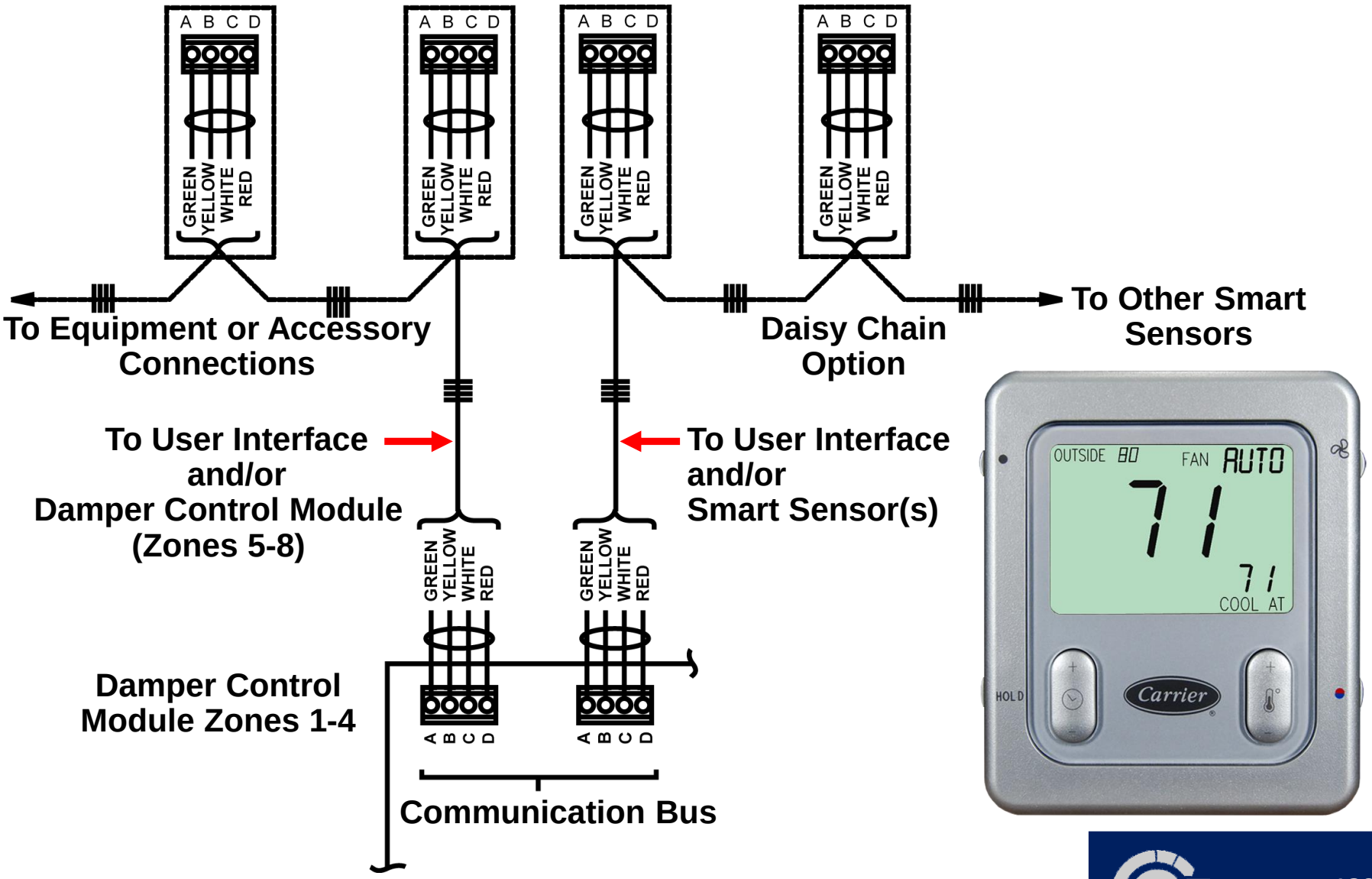
Infinity / Evolution Zoning

- **Communicating**
- **Used in any zone**
- **Displays:**
  - Zone temperature
  - Indoor fan setting
  - Outdoor air temperature
  - Indoor humidity
  - Vacation mode
  - Timed override status
  - System off when it is off
- **Buttons for adjusting:**
  - Zone cool/heat set point temperatures
  - Timed override
  - Humidity or OAT display



129

Infinity / Evolution Zoning

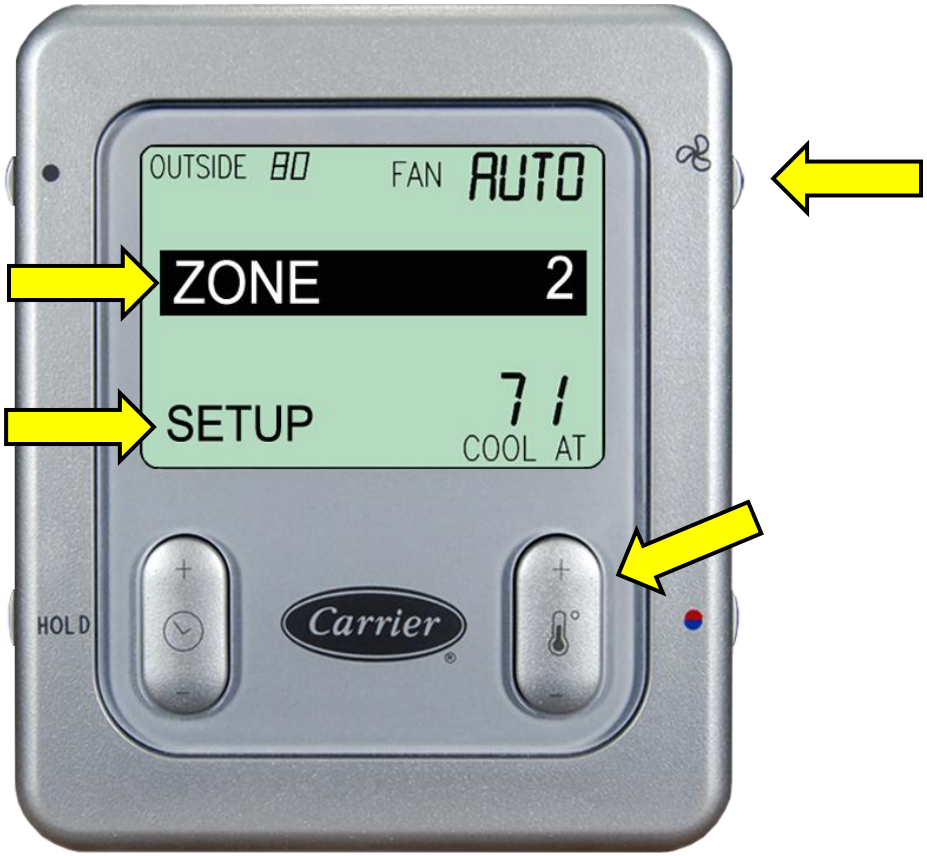


130

Infinity / Evolution Zoning

ZONE ADDRESS

- During power-up, ZONE 2 is displayed, and SETUP also shows in lower left.
- Use TEMP +/- button to change the address (1-8).
- Press “FAN” button to store address and exit setup.
- After exiting setup mode, holding “FAN” down for 10 seconds, ZONE number appears and allows change.



131

Infinity / Evolution Zoning

New Infinity® Smart Sensor

Infinity / Evolution Zoning

OBSOLETE

This is the only Smart Sensor available. It will be used for all warranty replacements.

Infinity / Evolution Zoning

Backlighting adjustments.

Keypad lockout.

Individual constant fan control.

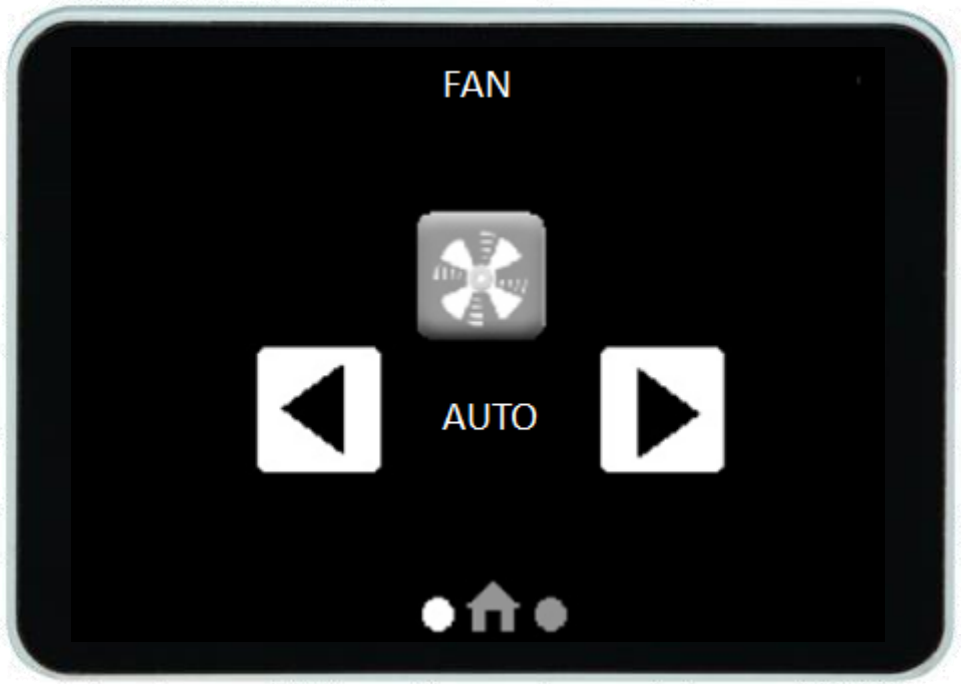
This is the only Smart Sensor available. It will be used for all warranty replacements.

134

Infinity / Evolution Zoning

135

Infinity / Evolution Zoning

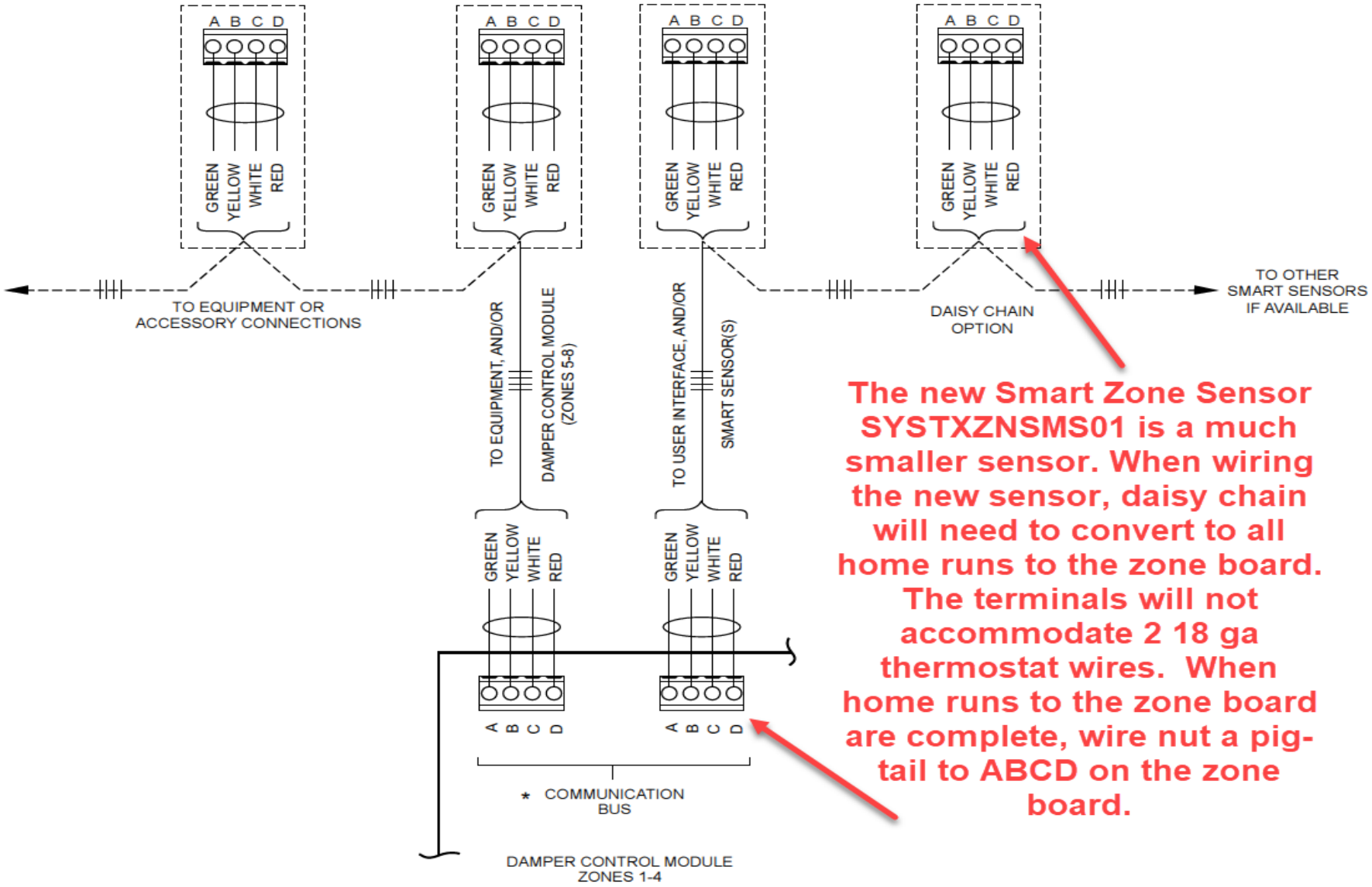


Fan settings: Auto, Low, Medium, and High.

Note: Dampers will modulate to provide different CF airflow to different zones as requested.

136

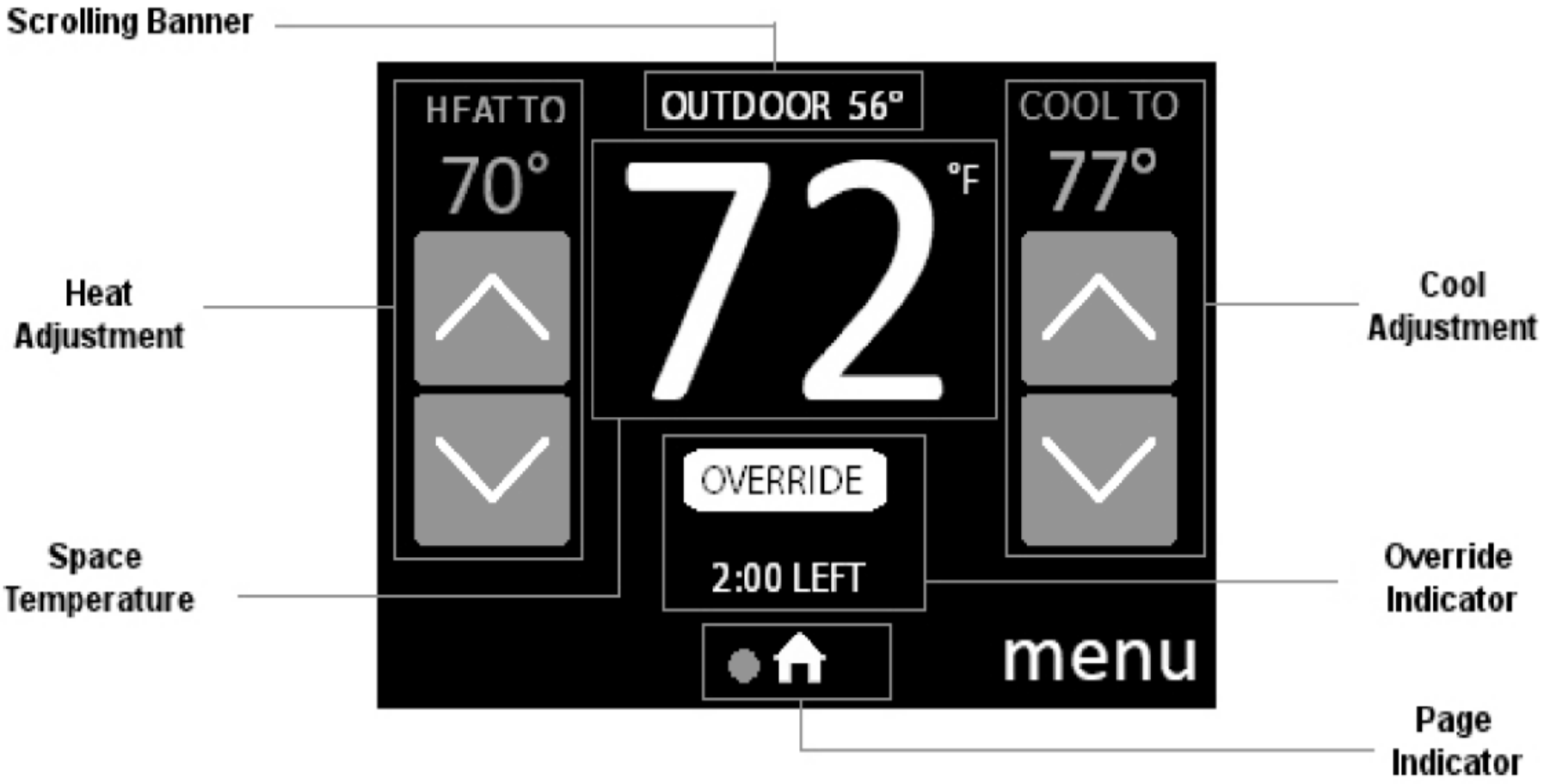
Infinity / Evolution Zoning



The new Smart Zone Sensor SYSTXZNSMS01 is a much smaller sensor. When wiring the new sensor, daisy chain will need to convert to all home runs to the zone board. The terminals will not accommodate 2 18 ga thermostat wires. When home runs to the zone board are complete, wire nut a pig-tail to ABCD on the zone board.

137

Infinity / Evolution Zoning



138

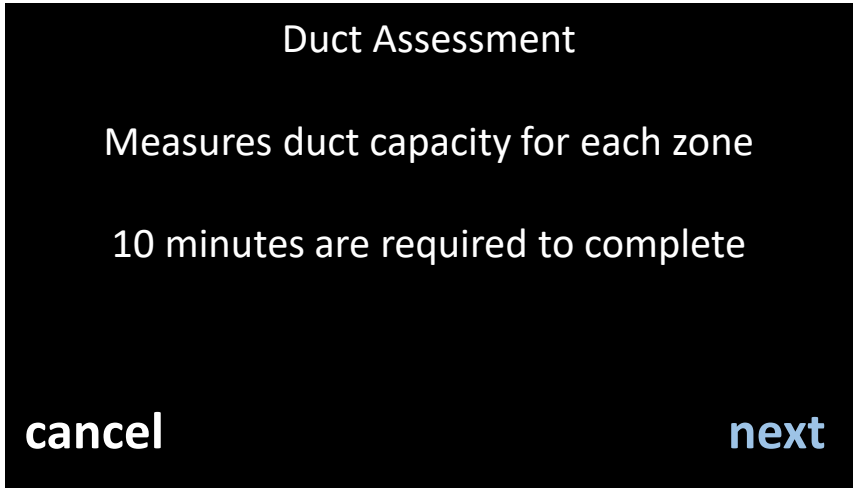
Infinity / Evolution Zoning

- Know the address of each zone prior to system power up.
- On power up the smart sensors, for zones 3-8, will need to be addressed correctly.
- When replacing a smart sensor, set the address upon power up.
- Select save after any changes or to exit setup.

139

Infinity / Evolution Zoning

Duct assessment (patented automatic duct assessment)



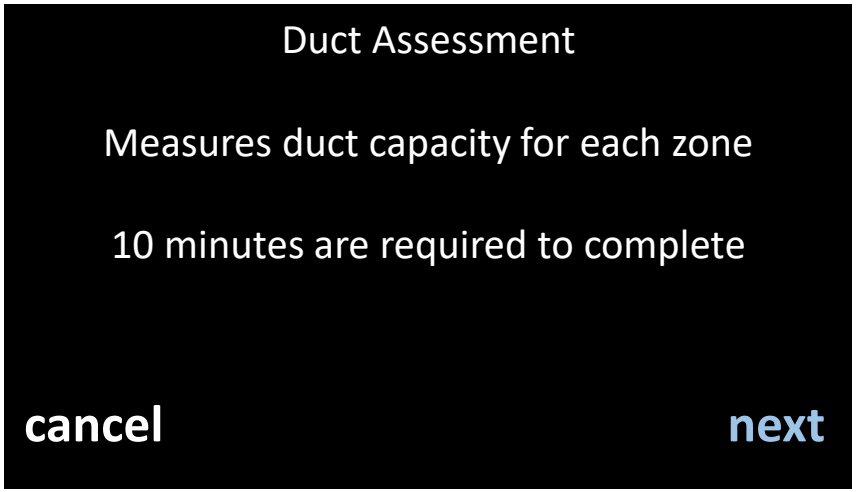
Will occur on initial power up during the commissioning process.

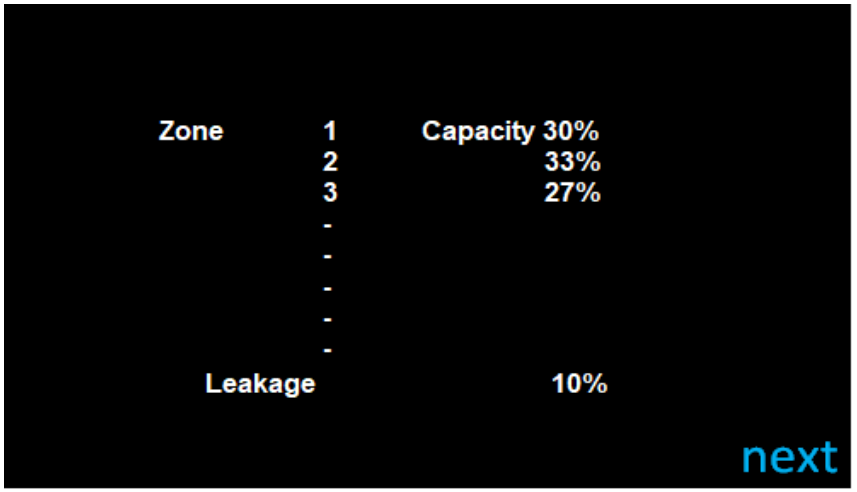
Will automatically repeat at a set time each day. (default 1 pm)

Infinity / Evolution Zoning

- **The UI will calculate and display each zone's capacity as a percentage of total airflow.**

- **Look for potential issues such as; excessive leakage or undersized ductwork.**





141

Infinity / Evolution Zoning

Zone Offsets allows adjustment of zone temperature sensors +/- 5 degrees.

Airflow limits can be adjusted to curb excessive noise.

Duct assessment time can be adjusted to any time of day. (default 1 pm)

NOTE: Let the homeowner decide!

Infinity / Evolution Zoning

- From the main screen touch Menu, then the down arrow.
- Touch “Zone Names”

- Touch the zone in which you wish to change the name.
- Select between “Common Name” or “Custom Name”
- A keyboard will appear where the custom name can be input, touch save when complete.

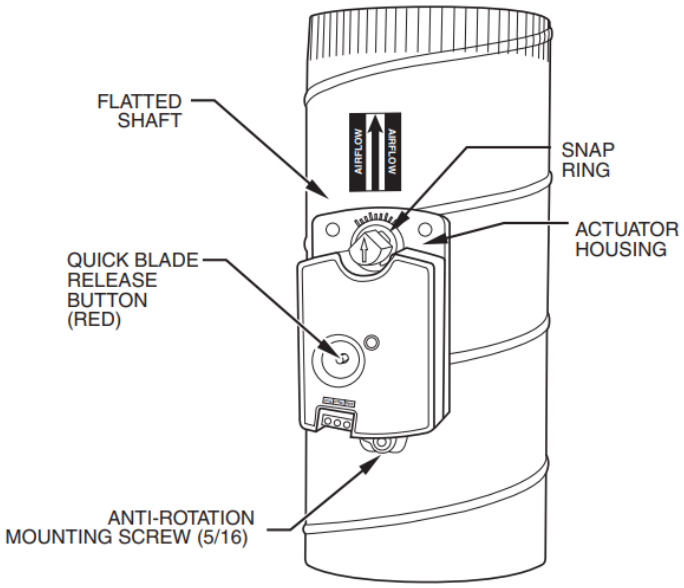
Infinity / Evolution Zoning

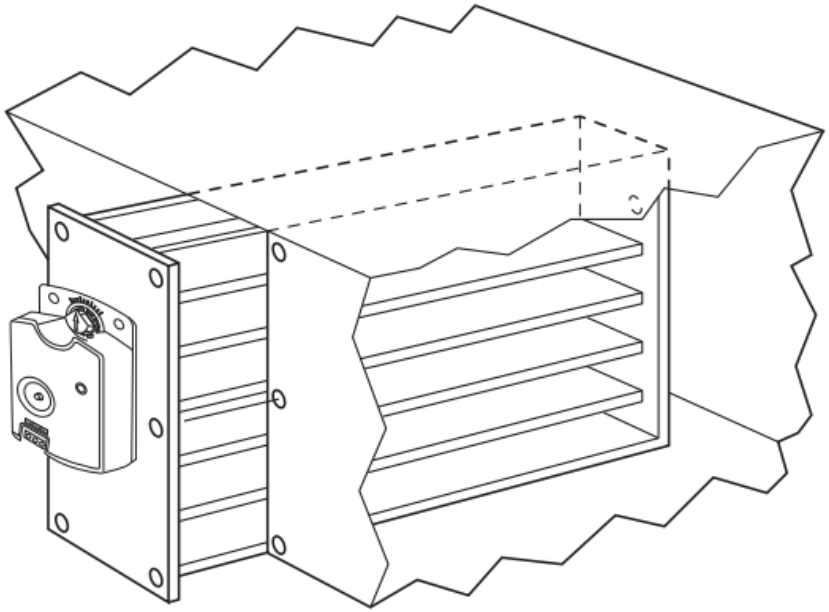
Round Dampers

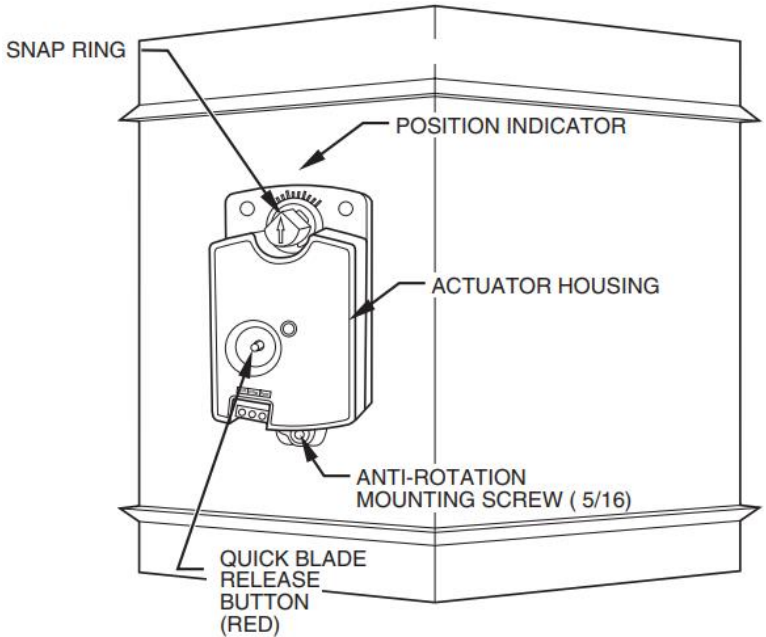
Slide-In Dampers

144

Infinity / Evolution Zoning



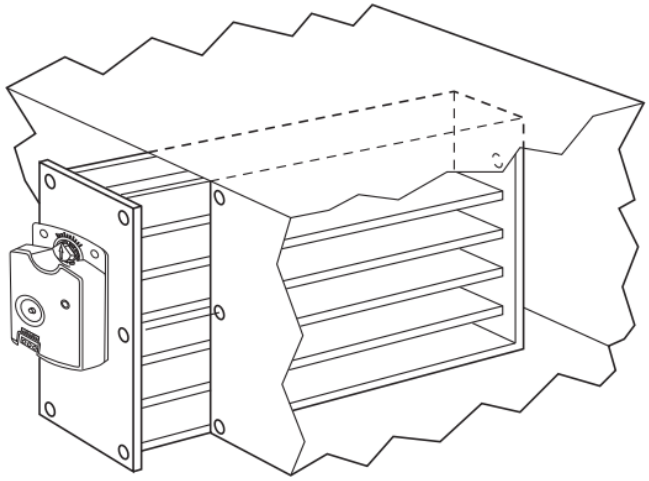


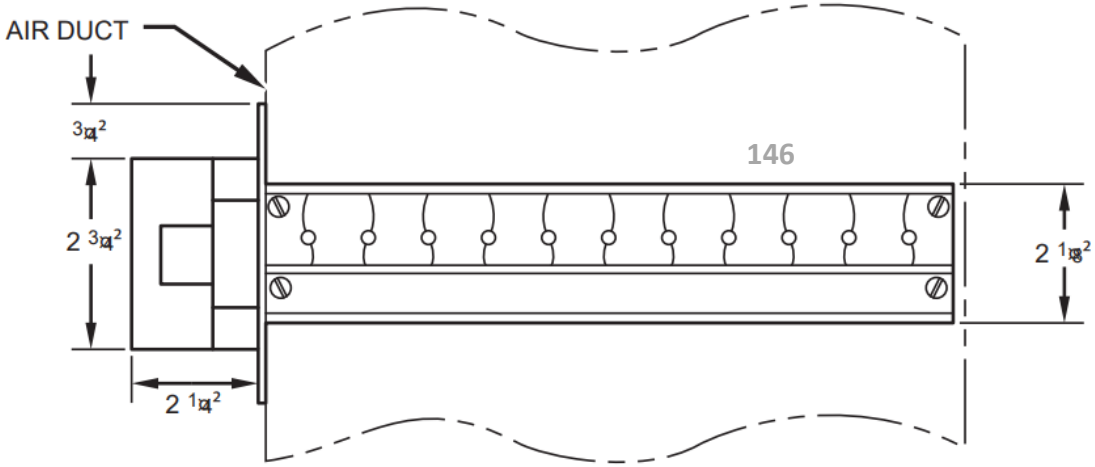


145

Infinity / Evolution Zoning

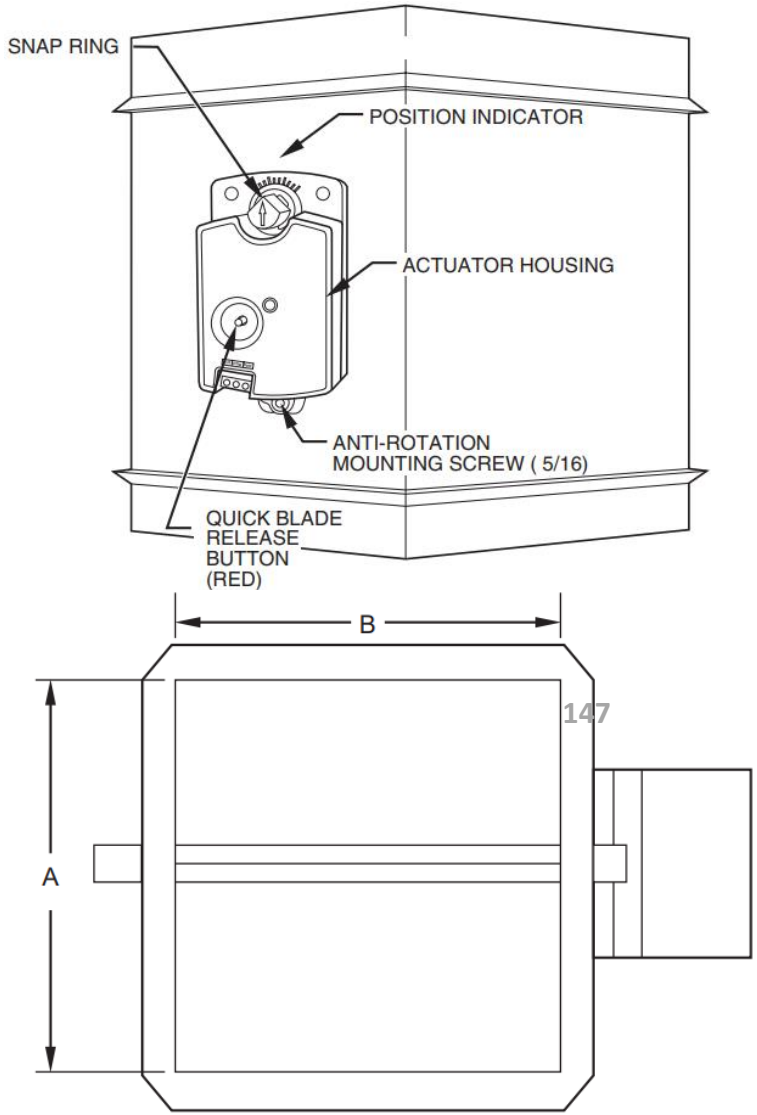
- Slip-in dampers can accommodate up to 24” duct and use a 90º actuator
- Rated @ 400, 600, & 800 FPM
- Pressure drops range from 0.02” – 0.08” (consult your damper product data)
- Actuator rotation is 6º per second one-way operation in 15 seconds





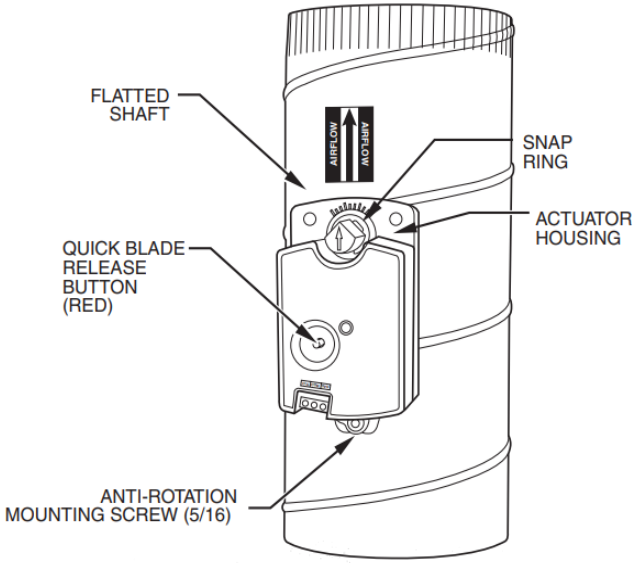
Infinity / Evolution Zoning

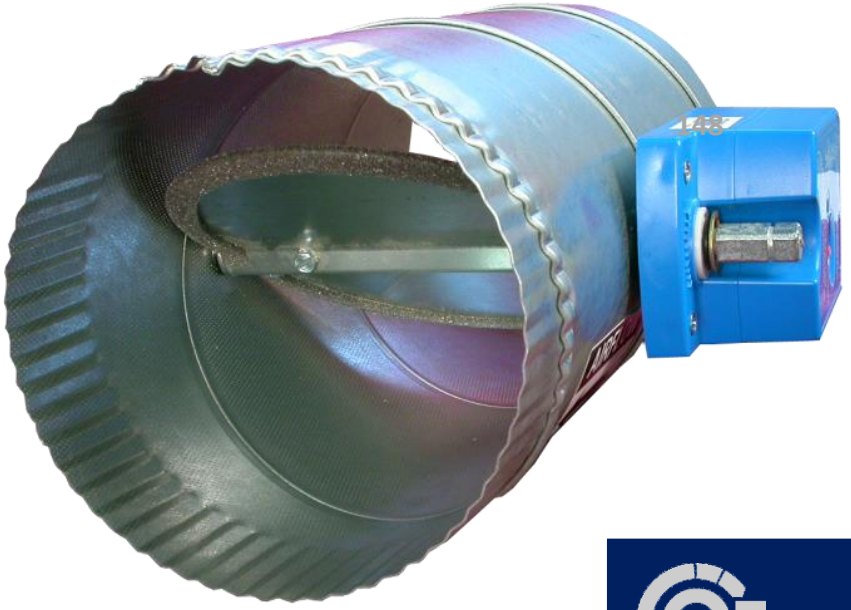
- Rectangular dampers range in size from 8x10” – 10x24” with a 90º actuator
- Rated @ 400, 600, & 800 FPM
- Pressure drops range from 0.02” – 0.04” (consult your damper product data)
- Actuator rotation is 6º per second



Infinity / Evolution Zoning

- Round dampers range in size from 6” – 16” with a 45º actuator
- Rated @ 400, 600, & 800 FPM
- Pressure drops range from 0.02” – 0.06” (consult your damper product data)
- Actuator rotation is 3º per second





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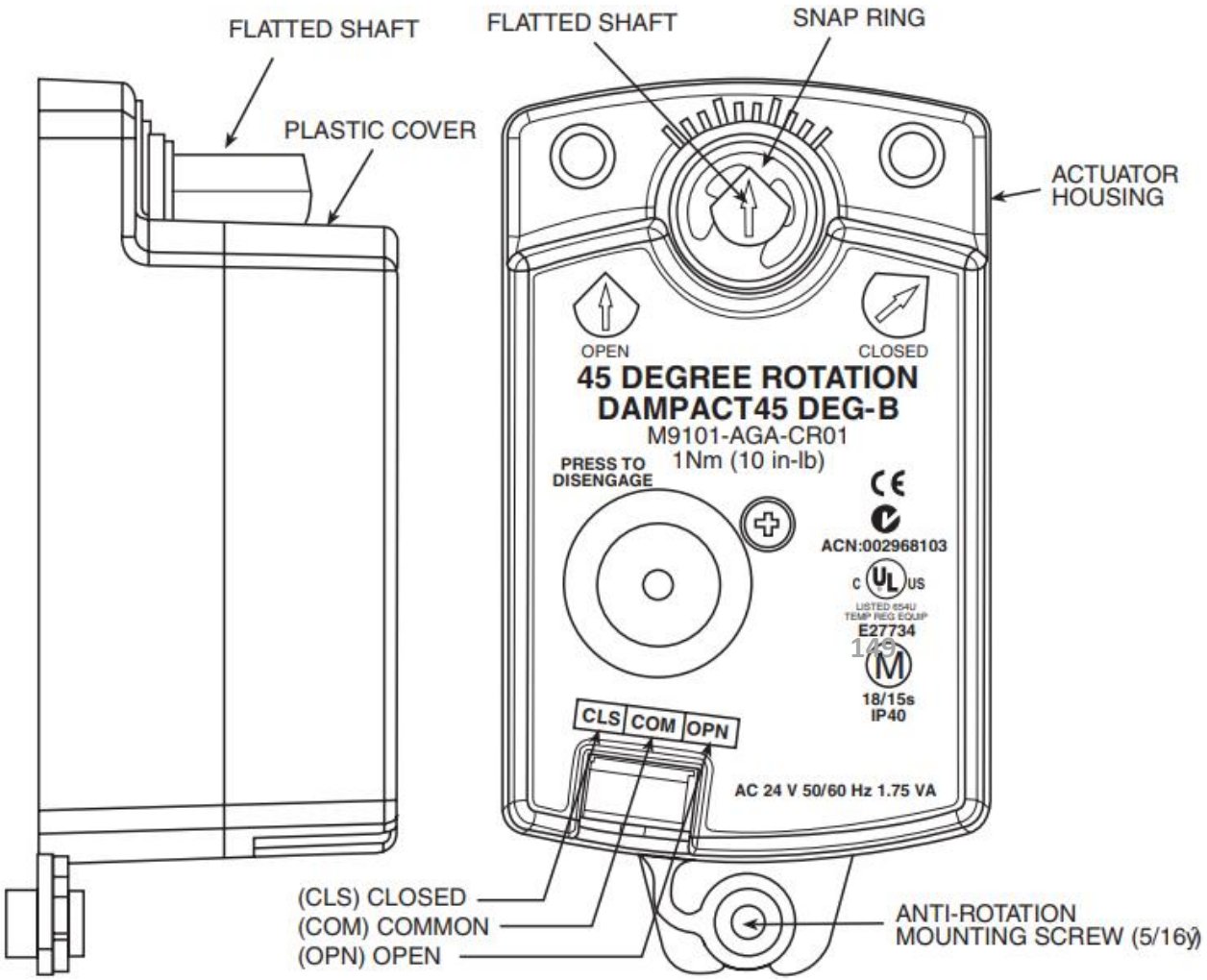
- All dampers use a 24 Vac signal. Power Open / Power Close.
- All dampers are rated at <2 VA.
- All dampers have a 15 sec travel time.



Infinity / Evolution Zoning

Infinity® System Zoning Design Guide

Carrier
turn to the experts

Design Guide

INTRODUCTION

The Infinity® Zoning System provides the ability to control 2, 4, or 8 zones in a residential or light commercial application. Each constructed zone should support the minimum airflow of the equipment selected. Consult the Infinity® System HVAC Equipment Product Guide to determine minimum airflow requirements.

The Infinity® Zoning System can only be used with compatible Infinity® System indoor equipment. See the equipment Product Data Sheets for details. To achieve the best operating and comfort it is recommended that the Infinity® System compatible variable-speed and multi-stage compressor units be selected in the design of the zoning system. See the Infinity® System equipment Product Data sheets for more information. The multiple stage, and especially modulating Infinity® System HVAC equipment, provide some leeway in the system minimum airflow requirements, allowing more effective zoning operation.

Infinity® Zoning incorporates cutting edge technology that sets it apart from any other zoning system on the market today, making it the easiest system on the market to install and use with confidence:

- It does not require a bypass damper or leaving air temperature sensor, yet the HVAC equipment is always protected from limit trips and coil freezing.
- It does not require a separate field installed power transformer.
- System can handle up to five dampers per zone.
- Infinity® Zoning automatically identifies all communicating installed equipment.
- Patented Automatic Duct Assessment ensures that Infinity® Zoning delivers superior and quiet comfort with any reasonable duct system.

150