Crossover Solutions

Overview

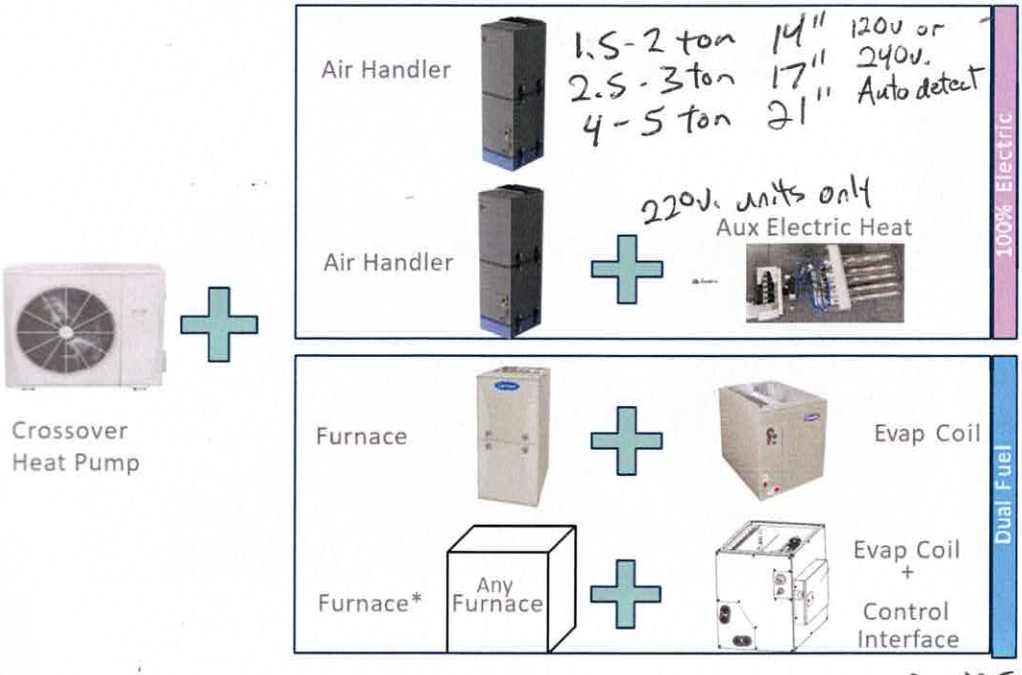
- Inverter driven compressor
- Energy efficient
- Quiet operation
- Small footprint
- Conventional line-set sizes

Conventional DLS ODU Heat Pump

- Uses a conventional DLS ODU
- A 24V interface is required for communication
- Expansion valve must be removed from the IDU, and a piping adaptor needs to be installed
- Both suction and liquid lines must be insulated

DLS ODU Heat Pump for Crossover

- Designed specifically to meet the Crossover requirements
- ODU has a 24V interface built-in
- No additional accessories are required
- Only the suction line needs to be insulated
- Uses conventional unitary line-set sizes



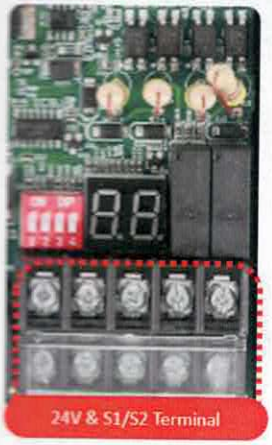
- *Variable speed compressor (inverter)*
- *Smaller footprint,*
- *Horizontal discharge*
- *Light weight, quieter*

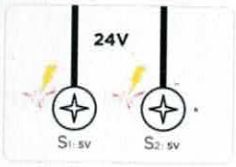
- *Conventional refrigerant line-set (insulation on suction line only)*
- *Separate powering of IDU and ODU*
- *Built-in 24V Interface in both IDU/ODU*
- *Pairs with Fan Coil/Furnace*

Carrier 45MULA Coil only
Tempstar D5FULA

Updates

Previous Connections on the Board
(24V and S1/S2 terminal put together)

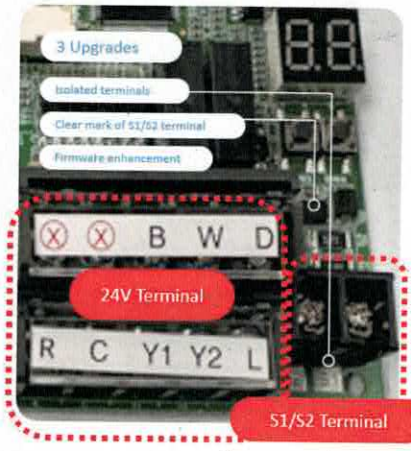


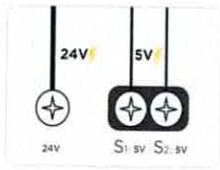


Misconnection & Burnout Risk

The 24V & s1/s2 terminal are put together in the traditional connection board, so it's quite often that the installers connect the 24v wires to the wrong terminals.
Due to the 24V current is overloading for the s1/s2 terminal, the misconnection might cause burning out of the board.

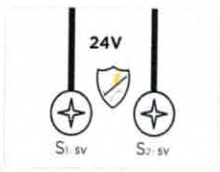
New Connections on the Board
(24V and S1/S2 terminal put separately)





Easy connection

The 24V & s1/s2 terminal are put separately in the new connection board, so it's easier for the installers to find the right terminals.



No burnout when misconnection

The firmware is also upgraded for the new board, so the board will not burn out even when the communication wires are misconnected.

Easy to Switch between 24V & 485 Communication

Configuration Characteristics

- There are 3 Scenarios that we can configure
  - Scenario 1: Outdoor to Indoor communication with S1/S2 and 24V 3rd-party Stat (1401 wallcontrol)
  - Scenario 2: Full communication with S1/S2 and HA/HB
  - Scenario 3: Full 24V communication ← All indoor Sensors are Lost capabilities

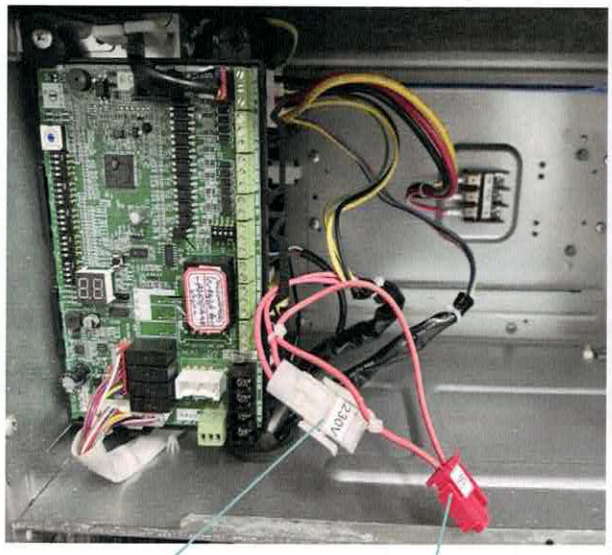
- *S1/S2 connections allow for full communication*
- *24-volt connection has no means of communication*
- *Scenario connection S1/S2* Prefered
- *24-volt connections are reserved for cross-over solutions*

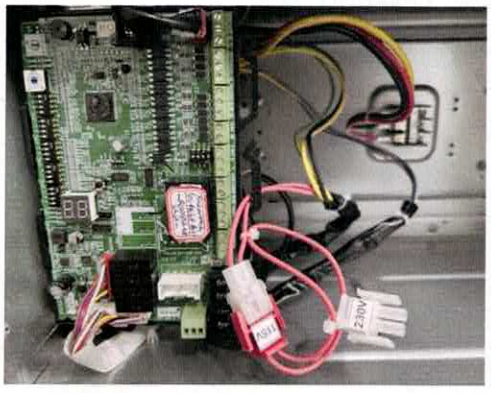
115V Power Supply

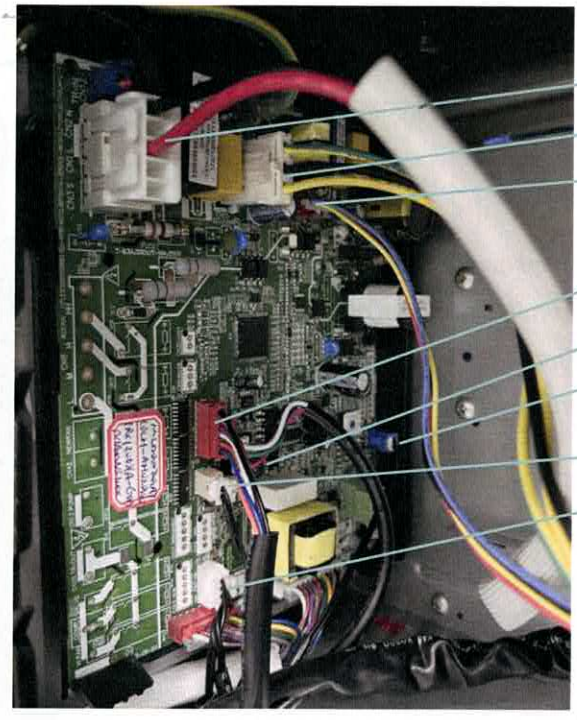
NOTE: Electric Heat cannot be used with 115 volt applications. All control wiring methods referring to electric heat as well as airflow settings for electric heat in this manual should not be considered for 115 volt applications.

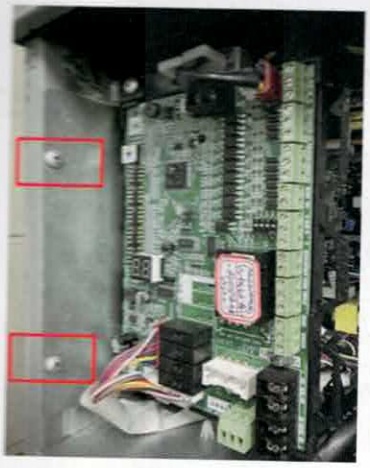
	MOTOR	TRANSFORMER
230V	White Connector	Red Cable
115V	Red Connector	White Cable

***Default Setting:* 230V connector (white) is connected to the fan motor wire.**

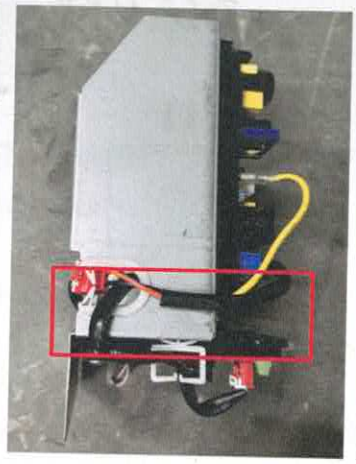






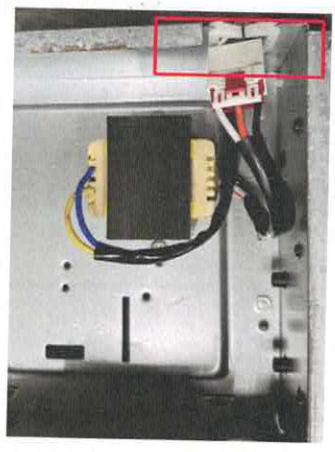


24V Transformer

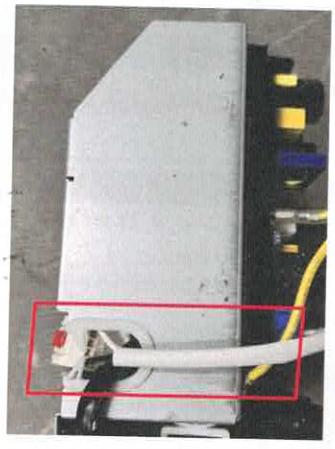


Connection wire with red connector

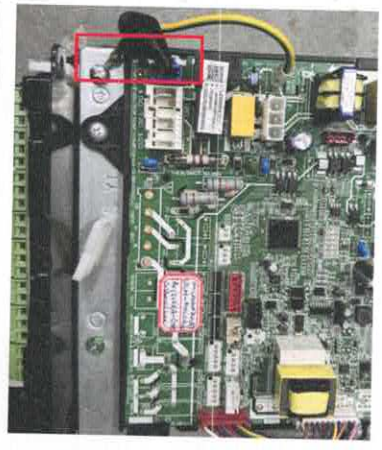
CN12 port on main control board



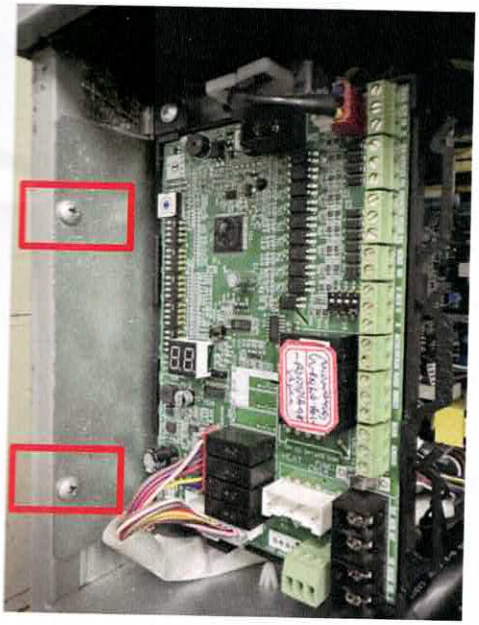
24V Transformer



Connection wire with white connector

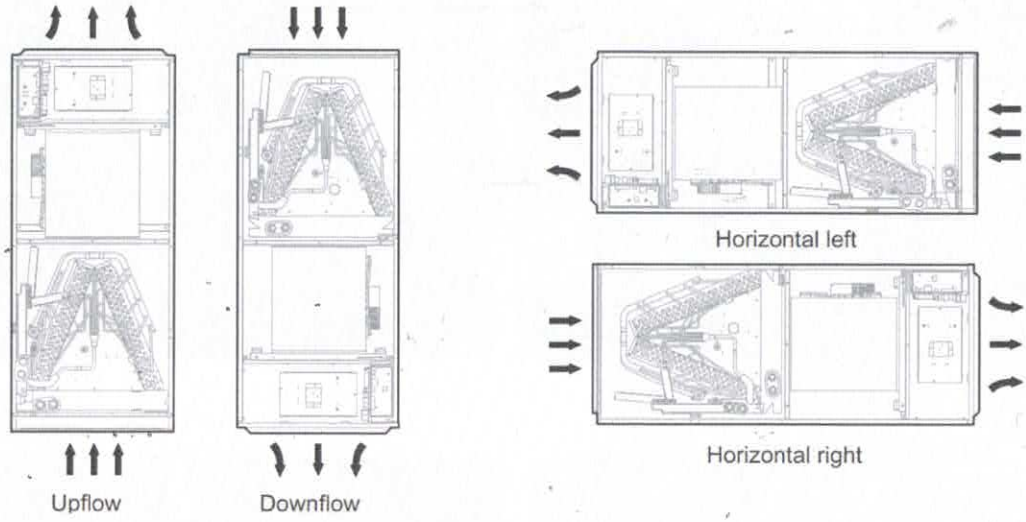


CN12 port on main control board

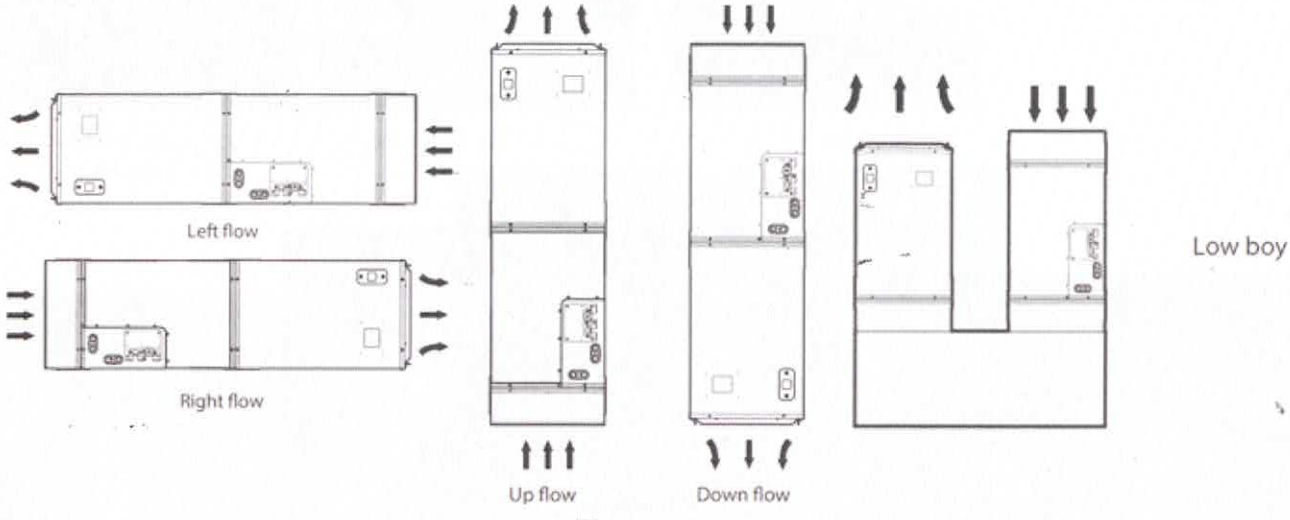


CN11 (Power wire)
CN15 (Fan Motor)
CN34 (Fan Motor)
CN22 (EEV)
CN26 (Refrigerant Sensor)
CN46 (T1 Sensor)
CN47 (T2 Sensor)
CN7 (T2A & T2B Sensor)

D5FURA



NOTE: ***Vertical up and horizontal left installation does not need to change the direction of evaporator.***



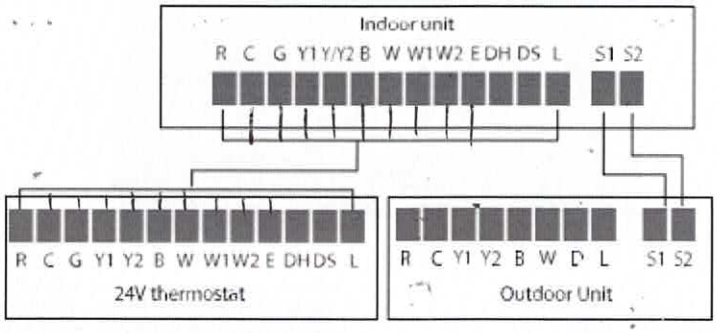
NOTE: ***Vertical up and horizontal left installation does not need to change the direction of evaporator.***

Scenario 1

Stranded/shielded wire

- RS485 Communication + 24v Heat-Pump Thermostat
  - System operation with **RS485** (***S1/S2***) and third-party heat pump thermostat
- Wire thermostat according to preference
  - Can handle up to 4 heat / 2 cool – configure for Heat Pump operation (***B** Terminal for Heat)*
  - Emergency heat no longer requires a SPDT relay
  - **Y1** and **Y2** outputs are available to adjust capacity control algorithm Not step control
  - **W** terminal allows for conventional thermostat use

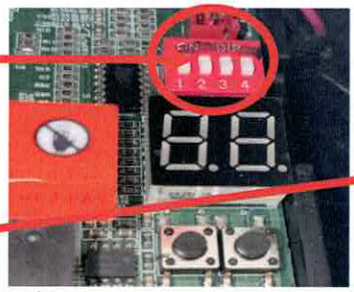
3 Heat
2 cool
Ion
Grey

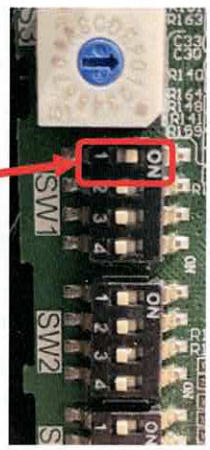


- Outdoor Unit (**ODU**)
  - Dip switches should be in the Off position
    - *Factory default* RS485
- Indoor Unit (***IDU***)
  - Turn Sw1 bit 1 to the ON position
    - *Factory default* **OFF**

Look for 24v to The wall control

Looks for RS485 ***NOTE: Auto detection is available***

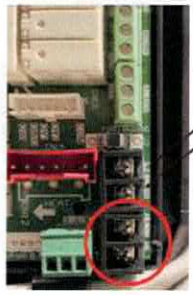




- **RS485** communication terminals **S1/S2** utilized on all communicating systems

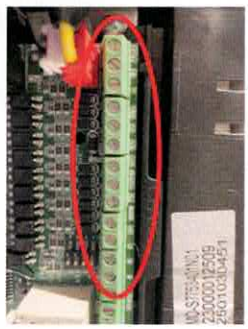
ODU

IDU



Wall control HA HB

- **24V** communication terminals at the indoor unit



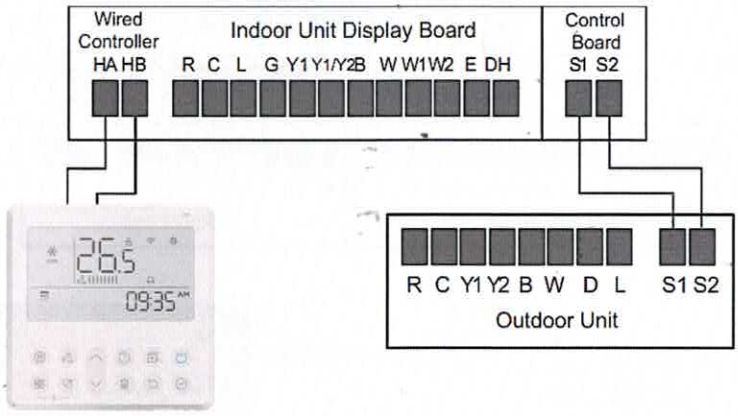
24v connections

R
C
L

DSFURA
DSFUHA Not for Gas Furnace
Perfect Ductless matchup

Scenario 2

- RS 485 Communication
  - System operation with **RS485** (***S1/S2***) and **HA/HB**
- System operation with KSACN1401AAA Controller
  - Fully native communicating system using RS485
  - Turbo/Dry Modes/Follow Me/Low-Medium-High Fan Operation
  - Emergency heat mode available
  - Service modes and functions are set via KSACN1401AAA ←
  - Wall controller must be ordered as an accessory

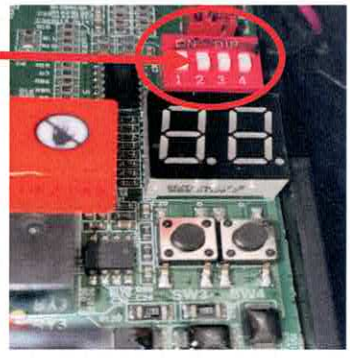


✳ ***DO NOT CONNECT 24 VOLT WIRING!***

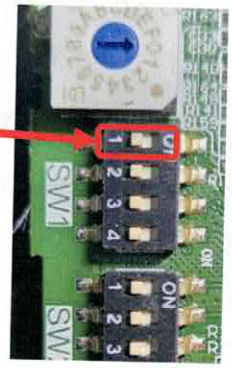
The controls will fight each other - only one style at a time (Scenario)

- ***None of the 24-volt connections are active in this scenario***
- ***The system will operate with the native controller as a traditional ductless system***
- ***Wiring the wired controller and the 24-volt thermostat could cause communication issues and damage the communication board***

- Outdoor Unit (**ODU**)
  - Dip switches should be in the off position
    - ➢ *Factory default*

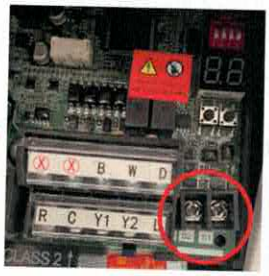


- Indoor Unit *(IDU)*
  - Verify Sw1 bit-1 to the OFF position
    - *Factory default* ***OFF***

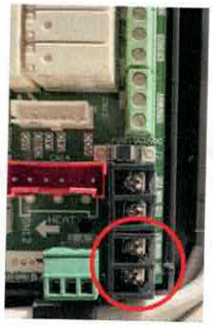


*NOTE: *Auto detection is available*

- **RS485** communication terminals **S1/S2** Utilized on all communicating systems



ODU



IDU

- Wall controller wiring
  - KSACN1401AAA utilizes 2 Conductors
  - 16 Awg landed on **HA/HB**

- Indoor unit connections
  - **HA/HB**

- **Forced Auto/Cooling/Defrost**
- Only Available When KSACN1001AAA Wired Controller is Used
- Use Black Button on Communication Board for Operation
  - Press Once for Forced Auto
  - Press Twice for Forced Cooling
  - After 2 Presses Hold down Button for Forced Defrost

Gas Furnace Application

Scenario 3

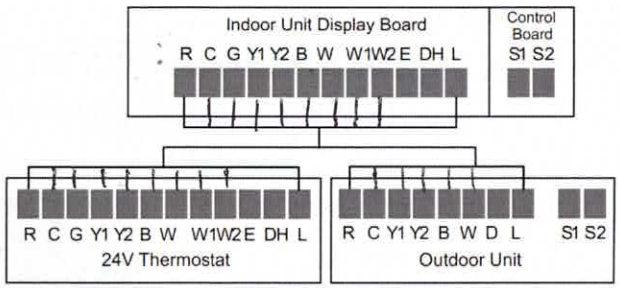


- 24v. from outdoor to indoor and 24v. Heat-Pump Thermostat
  - System operation with 24V and third-party heat pump thermostat

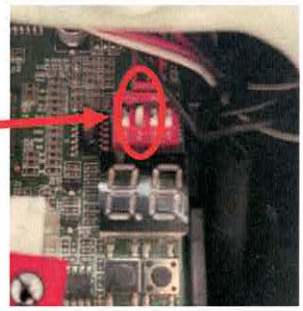
- Full 24V control
  - Ideal for retrofits with existing thermostat wire
  - Need a minimum 5 conductors, 18-gauge thermostat wire at the outdoor unit
  - Capable of handling up to 4 heat/2 cool heat pump thermostat configuration (b terminal for heat)
  - Available option of "D" output at outdoor unit to be wired to air handler for electric heat during defrost Not Gas Heat!

AHU only *

- System operation with a 24-volt control
  - Recommend to connect **Y1/Y2** along with **W1/W2** for this scenario for full range of communication
    - ➢ *If staged supplementary heat is used*
  - Wire **D** terminal from ODU to **E** terminal at IDU
  - Configure thermostat for heat pump with emergency heat
    - ➢ *Use **E/Aux** at thermostat*

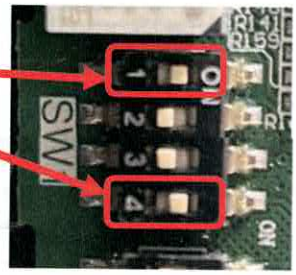


- Outdoor Unit (***ODU***)
  - Set dip switch Bank 1 ~~2~~ to the ON position
    - ➢ *Enables 24V control input*
  - Top row is designated for **X**/X/**B**/**W**/**D** connections
  - Bottom row is designated for **R**/**C**/**Y1**/**Y2**/**L**
  - An available option for H/P heat is W with a Conventional Thermostat (without O/B on the T'stat)
    - ➢ *If this is used emergency heat will not be available*
  - When D is used-during defrost, 24-volts will be sent from this terminal to E at the A.V Handler
  - **L** terminal will have 24-volts applied when there is an error code
    - ➢ *For thermostats with an **L** fault light indicator*



- Indoor Unit (***IDU***)
  - Set Sw 1 bit-1 and bit-4 to the ON position
    - *Gives us ability to fully control with 24V (both the control and the ODU)*

    ***NOTE:** Auto detection is available*

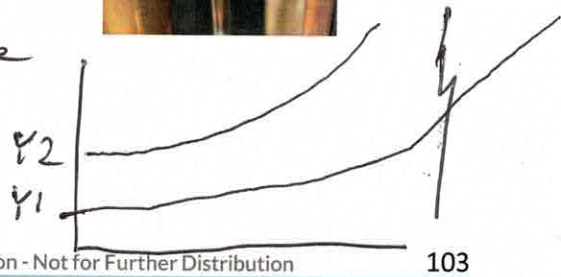


- **D** is energized during defrost
- 24-volts applied to **E** terminal at air handler from **D** output
- Air handler will switch to Mode 12 = emergency Heat

- **L** terminal only active during error
- 24-volt output from **L** terminal in outdoor to **L** at air handler and thermostat
  - *If available*
- Error code will display on outdoor LED

- Outdoor pressure transducer
- Combined with suction sensor used to calculate demand
- When the demand is removed the values are used for the next demand
  - Y1 = Low demand → lower compressor speed
  - Y2 = High demand → higher compressor speed

*This is The ONLY ductless unit with The pressure Transducer. one Suction sensor



Dip Switch Functions - ODU

- All dipswitches are defaulted off
- **SW2** changes the method of communication
- **SW3** increases compressor speed to reduce runtime
- **SW4** enhanced defrosting

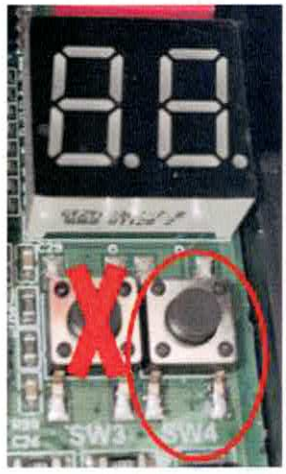
No.	Dial Code	Features	ON	OFF
1	SW-1	Function to be defined	N/A	N/A
2	SW-2	Communication method code	24V communication (scenario 3 only)	RS 485 communication (scenarios 1 and 2 only)
3	SW-3	Recovery time enhancement (scenario 3 only)	Increases compressor frequency for quicker recovery to set point	Default settings for scenarios 1 and 2
4	SW-4	Enhanced defrosting function (all 3 scenarios)	Enhanced defrosting	Default setting (standard defrost algorithm)

Lake effect

checks every 40 minutes
2 requirements need to be MET

- **SW3 – Not active**
- **SW4 – Button Function**
  - SW4 button should be used for point check inquiry and forced defrost
- **Forced Defrost**
  - Press the SW4 button 10S for force defrosting when operating

2 min minimum run time when started

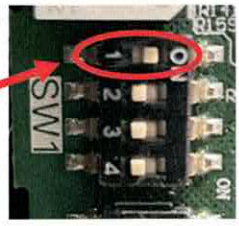


***NOTE:* Forced defrost should only be used to test defrost. All defrost termination conditions affect the length of time forced defrost is active.**

NO	DIAL CODE	CONTROL SCENARIO	FUNCTION	ON	OFF	NOTE
1	SW1-2	1, 2, 3	Anti-cold blow protection option	NO	[Default] YES	
2	SW1-3	1, 2, 3	Single cooling / heating and cooling options	Cooling	[Default] Cooling & Heating	
3	SW2-1	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressorand W1
4	SW2-1	2	Temperature differential to activate first stage auxiliary heat (the GAP of T1 and Ts), Wire controller demand with heat pump + electric heat working together	2°F (1°C)	[Default] 4°F (2°C)	
5	SW2-2	2	Electric heat on delay	YES	[Default] NO	
6	SW2-3	2	Electric auxiliary heating delay to start time	30 minutes	[Default] 15 minutes	Based on SW2-2 is ON
7	SW2-4	1	Compressor Heat Pump Lockout	The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited.The system makes judgments according to the following rules: 1) The compressor can be operated when the outdoor temperature is ≥S3 DIP switch temperature +2 °C. 2) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch temperature.	[Default] The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited. The system makes judgments based on the following rules: 1) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch. 2) The compressor can be operated when the outdoor temperature is ≥S3 DIP switch temperature +2 °C.	SW2-4 and S3 need to working together
8	SW2-4	2	Compressor/Auxiliary heat out-door ambient lockout	The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited.The system makes judgments according to the following rules: 1) The compressor can be operated when the outdoor temperature is ≥S3 DIP switch temperature +2 °C. 2) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch temperature.	[Default] Only one heat pump or auxiliary heat can be operated.The system makes judgments according to the following rules: 1) When the outdoor temperature is lower than the S3 DIP switch temperature, the compressor is not allowed to operated, but auxiliary heat is allowed to operated; 2) When the outdoor temperature is ≥S3 DIP switch temperature +2(°C), the compressor can be operated, but auxiliary heat cannot be operated.	
9	Rotary Switch S3	1, 2	Set outdoor temperature Limitation (for auxiliary heating or compressor)	Table A		
10	SW3-1	1	Maximum continuous runtime allowed before system automatically stages up capacity to satisfy set point. This adds 1 to 5°F to the user set point in the calculated control point to increase capacity and satisfy user setpoint.	30 minutes	[Default] 90 minutes	
11	SW3-2	1	Cooling and heating Y/Y2 temperature differential adjustment.	Compressor slower speed	[Default] Faster Compressor	Only affects compressor
12	SW3-3	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressor and W2
13	SW3-3	2	Temperature differential to activate second stage auxiliary heating (the GAP of T1 and Ts) Wire controller demand with heat pump + Electric heat working together	4°F (2°C)	[Default] 6°F (3°C)	
14	SW3-4	1, 3	Fan speed of cooling mode when 24V Thermostat is applied for.	Turbo	High	
15	SW4-1,2,3	1, 2, 3	Electric heat nominal CFM adjustment	Available settings are 000/001/010/011. Each digit corresponds an individual switch position. For example [SW4-1 OFF, SW4-2 ON, SW4 -3 OFF] = 010		
16	SW4-4	2	Temperature differential to activate third stage auxiliary heating (the GAP of T1 and Ts) Wire controller demand with heat pump + electric heat working together	6°F (3°C)	[Default] 8°F (4°C)	Only valid for product which has three stage auxiliary heating.
17	S4-4	1, 3	Default ON	[Default] For single stage supplemental heat, W1 and W2 are connected	For dual stage supplemental heat, W1 and W2 are controlled independently.	
18	S4-2	1, 3	DH function selection	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat	
19	SW5-3	1, 2, 3	L or Alarm relay selection	L output 24V or alarm relay close only when refrigerant sensor fault or R454B refrigerant leak detected	[default] L output 24V or alarm relay close when any fault detected	
20	SW5-4	1, 2, 3	R output selection	R stop output 24V when refrigerant sen-sor fault or R454B refrigerant leak detected	[default] R keep output 24V even when refrigerant sensor fault or R454B refrigerant leak detected	

CONTROL SCENARIO		
	24V Tstat, S1 + S2	1
	Wired Controller S1 + S2	2
	Full 24V	3

Dip Switch Functions - IDU

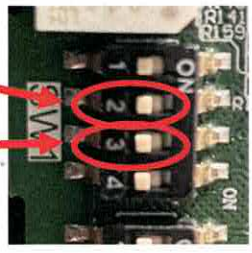


Indoor to wall control

- **SW1-1: *Communication w/ IDU***
  - **OFF** = RS485 Communication
  - **ON** = 24v Connection
- **SW1-4: *Communication w/ ODU***
  - **OFF** = RS485 Communication
  - **ON** = 24v Connection

Sw1-2 / Sw1-3 defaulted to off

- **SW1-2: *Anti-Cold Blow Protection***
  - **OFF** = Activated
  - **ON** = Disabled
- **SW1-3: *Cooling only / Heat & Cool***
  - **OFF** = Heating & Cooling
  - **ON** = Cooling only

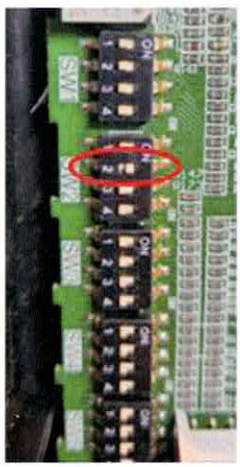


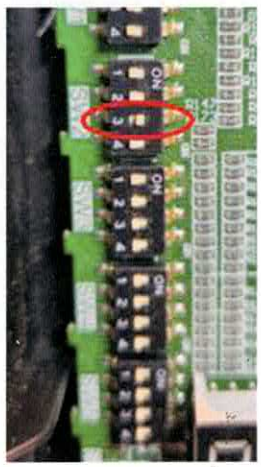
Sw1-2 / Sw1-3 defaulted to off

- **SW2-1:**
- **Scenario 1** *(third party thermostat/RS485 communication between indoor and outdoor units)*:
  - **OFF** = faster compressor speed with W1 AUX Heat
  - **ON** = slower compressor speed with W1 AUX Heat
- **Scenario 2** *(1401 wired controller)*:
  - **OFF** = 4°F *(T1-Ts)* gap for 1st-stage AUX Heat
  - **ON** = 2°F *(T1-Ts)* gap for 1st-stage AUX Heat

Sw2-1 available for only Scenario 1 and 2

- **SW2-2** enables AUX Heat delay for **SW2-3**
  - **OFF** = **SW2-3** is not active
  - **ON** = **SW2-3** is active
- **SW2-3** sets AUX Heat delay start time
  - **OFF** = 15 minutes
  - **ON** = 30 minutes





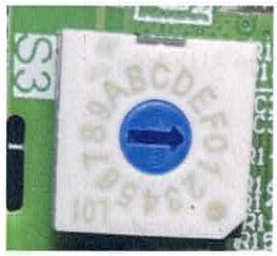
Note: *when **SW2-2** is on, **SW3-3** is not active*
Wired controller only!

Sw2-2 and Sw2-3 available only for Scenario 2

- **SW2-4** sets the mode for the rotary dial temperature limit — Lock out of electric heat or compressor
  - **OFF** = electric heater during aux heat will not operate above temperature set by S3 dial
  - **ON** = compressor during aux heat will not operate below temperature set by S3 dial
- **S3** dial is the temperature limit for electric heater or compressor
  - **0** = OFF
  - **F** = 46°F

Note: *Wired controller only!*

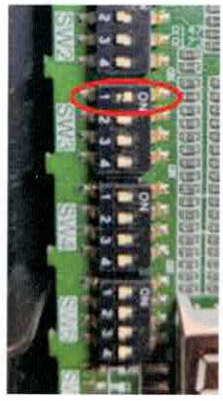
SW 2-4 *and* rotary Dial S3 *available only for* Scenario 2



S3	S3 (°F)	S3 (°C)
0	OFF	OFF
1	-22	-30
2	-18	-28
3	-15	-26
4	-11	-24
5	-8	-22
6	-4	-20
7	3	-16
8	10	-12
9	18	-8
A	25	-4
B	32	0
C	36	2
D	39	4
E	43	6
F	46	8

- **SW3-1** changes compressor recovery time
- Uses an Add Factor of 1-5°F to stage up the compressor
  - **OFF** = 90 minutes
  - **ON** = 30 minutes

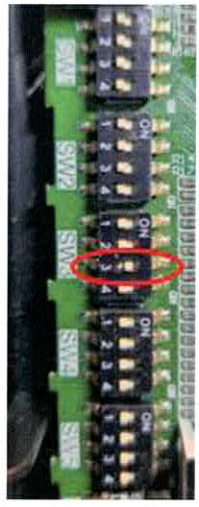
SW3-1 *available only for* Scenario 1



- **SW3-2** adjusts the temperature differential between **Y1** and **Y2**
- The differential will affect heating and cooling
  - **OFF** = Faster Compressor
  - **ON** = Slower Compressor

SW3-2 *available only for* Scenario 1

- **SW3-3:**
- **Scenario 1** *(third party thermostat/RS485 communication between indoor and outdoor units)*:
  - **OFF** = increases compressor speed with W2 AUX Heat
  - **ON** = delays compressor speed with W2 AUX Heat
- **Scenario 2** *(1401 wired controller)*:
  - **OFF** = 6°F (T1-Ts) gap for 2nd stage AUX Heat
  - **ON** = 4°F (T1-Ts) gap for 2nd stage AUX Heat



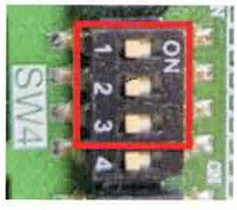
Note: *If **SW2-2** is on, **SW3-3** is not active*

Sw3-3 *available only for* Scenario 1 *and* 2

- **SW4-4**:
- **Scenario 1 or 3** *(third party thermostat)*:
  - **OFF** = High fan speed
  - **ON** = Turbo fan speed

Sw3-4 *available only for* Scenario 1 *and* 3

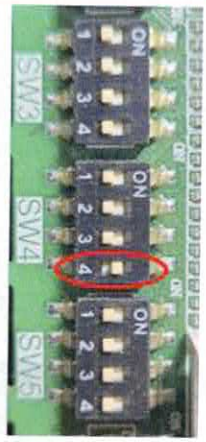
- **SW4-1** through **SW4-3** adjust fan speed for electric heat
  - 000 = **SW4-1, 2, 3 = OFF** *(default)*
  - 001 = **SW4-1, 2, 3 = OFF / OFF / ON**
  - 010 = **SW4-1, 2, 3 = OFF / ON / OFF**
  - 011 = **SW4-1, 2, 3 = OFF / ON / ON**



Capacity	External Static Pressure Range	Fan speed	Electric auxiliary heat module	24V thermostat		Wired controller		Airflow volume (CFM)
				DIP Switch	24V terminal engaged	DIP Switch	Mode	
18K(1.5 Ton)	0 - 1.0 in.wc.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	618
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	576
		Cooling Medium	—	—	Y1	—	Cool	529
		Cooling Low	—	—	—	—	Cool	488
		Heat Pump Turbo	—	—	—	—	Heat	565
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	541
		Heat Pump Medium	—	—	B+Y1	—	Heat	435
		Heat Pump Low	—	—	—	—	Heat	400
		Electric auxiliary heat module 0(Default)	10kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	882
		Electric auxiliary heat module 1	10kW, 8kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	624
		Electric auxiliary heat module 2	8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	594
		Electric auxiliary heat module 3	5kW, 3kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	565

	ON	OFF
2-1	2°	4°
3-3	4°	6°
4-4	6°	8°

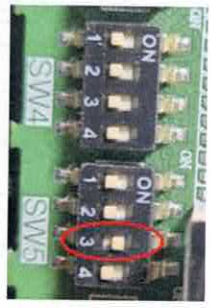
- **SW4-4:**
- **Scenario 2** *(1401 wired controller)*:
  - **OFF** = 8°F (T1-Ts) gap for 3rd stage AUX Heat
  - **ON** = 6°F (T1-Ts) gap for 3rd stage AUX Heat



Note: Only valid for product which has three stage auxiliary heating.

SW4-4 *available only for* Scenario 2

- ***SW5-3**: L or Alarm relay selection*
  - ***OFF** = L output 24V or alarm relay close when any fault detected*
  - ***ON** = L output 24V or alarm relay close only when refrigerant sensor fault or R454B refrigerant leak detected*

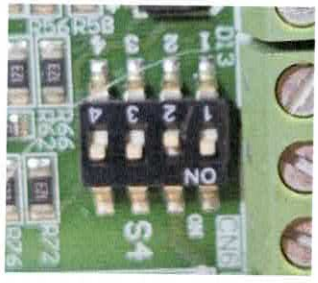


SW5-3 *available only for* All Scenarios 1,2,3

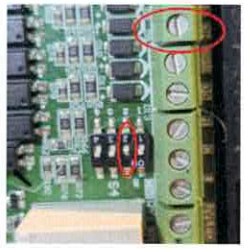
- ***SW5-4**: R output selection*
  - ***OFF** = R keep output 24V even when refrigerant sensor fault or R454B refrigerant leak detected*
  - ***ON** = R stop output 24V when refrigerant sensor fault or R454B refrigerant leak detected*

SW5-4 *available only for* Scenario 1,2,3

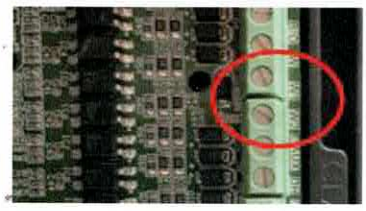
- Dehumidification Terminal
  - S4-2 is default ON
    - *Set to* OFF *for dehumidification*
  - If using ecobee thermostat
    - *Set the relay state to open*
  - A demand for cooling is required ***(Y1** or **Y2)***
  - With **DH** demand from thermostat indoor fan will drop to Low Speed
  - **Y1 DH** *(04 mode)* will drop compressor to low turndown
  - **Y2 DH** *(05 mode)* will drop compressor to medium turndown

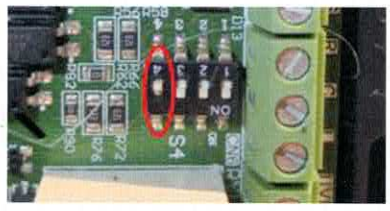


- Set dipswitch **S4-2** to **OFF**
- With ecobee thermostat, wire one accessory output to air handler **DH** terminal



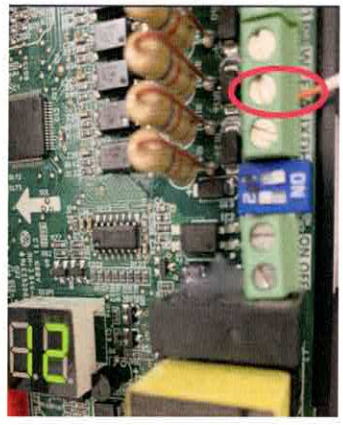
- Staging for W1/W2
  - Adjust control point for supplementary heat staging
  - Dipswitch S4-4 is default ON
    - ➢ *Single stage supplementary heat*
  - Set to Off for independent control of W1 and W2 with a third-party thermostat





Resistance Heat

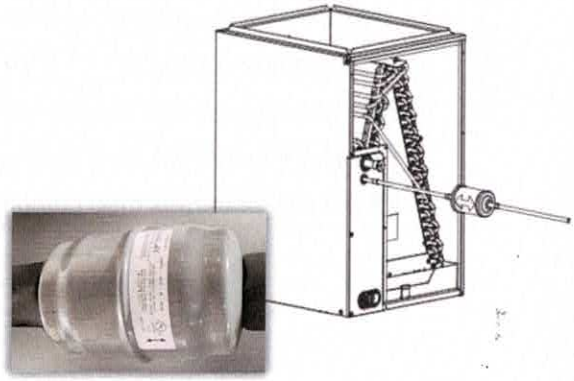
- Electric heaters For additional Heat When running compressor or Lockout on O.A. Temp.
  - Yes, or No?
- Defrost Cycle The fan indoors Turns off during defrost mode in a communicating system



- Emergency heat will operate in the event of an outdoor failure or communication failure *(unless related to indoor failure)*
- Heat pump thermostat needs to have emergency heat enabled
- Emergency output from thermostat should be wired to **E** terminal in air handler
- Electric heater and indoor fan will engage automatically
- No relay required
- **D** terminal not recommended for Dual-fuel applications

Liquid Line Filter Drier

- Optional but Not Mandatory
- On new system with new piping does not require a drier
- Install one to protect indoor metering EEV
- Retrofit/crossover using existing piping
  - Filter drier is recommended Bi-flow



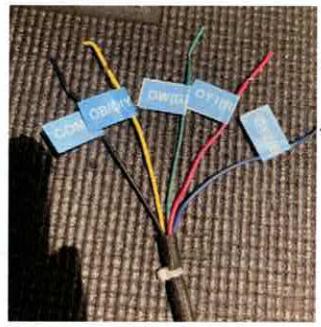
Bi-flow Liquid Line Drier

24 Volt Wiring

Between Crossover ODU and IDU

Never Throw away This cable

Connections To Thermostat



Mode	Priority	24V input terminal G	Y1	Y/Y2	B	W	W1	W2	E/AUX	DH	Fan speed	Display
OFF	/	0	0	0	0	0	0	0	0	*	OFF	00
FAN	7	1	0	0	*	0	0	0	0	*	Low	01
Cooling stage 1	6	*	1	0	0	0	0	0	0	1	Mid	02
Cooling stage 2		*	*	1	0	0	0	0	0	1	High	03
Dehumidification 1		*	1	0	0	0	0	0	0	0	Low	04
Dehumidification 2		*	*	1	0	0	0	0	0	0	Low	05
Heat pump stage 1	5	*	1	0	1	0	0	0	0	1	Mid	06
Heat pump stage 2		*	*	1	1	0	0	0	0	1	High	07
Heat pump stage 2		*	*	*	*	1	0	0	0	1	High	
Electric heater kit 1	3	*	0	0	*	0	1	0	0	*	Turbo	08
Electric heater kit 2		*	0	0	*	0	0	1	0	*	Turbo	
Electric heater kit 1 and kit 2		*	0	0	*	0	1	1	0	*	Turbo	09
Heat pump stage 1 + Electric heater kit 1	4	*	1	0	1	0	1	0	0	1	Turbo	10
Heat pump stage 1 + Electric heater kit 2		*	1	0	1	0	0	1	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 1		*	*	1	1	0	1	0	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 1		*	*	*	*	1	1	0	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 2		*	*	1	1	0	0	1	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 2		*	*	*	*	1	0	1	0	1	Turbo	
Heat pump stage 1 + Electric heater kit 1 and kit 2		*	1	0	1	0	1	1	0	1	Turbo	11
Heat pump stage 2 + Electric heater kit 1 and kit 2		*	*	1	1	0	1	1	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 1 and kit 2		*	*	*	*	1	1	1	0	1	Turbo	
Emergency heat	1	*	*	*	*	*	*	*	1	*	Turbo	12

Note:

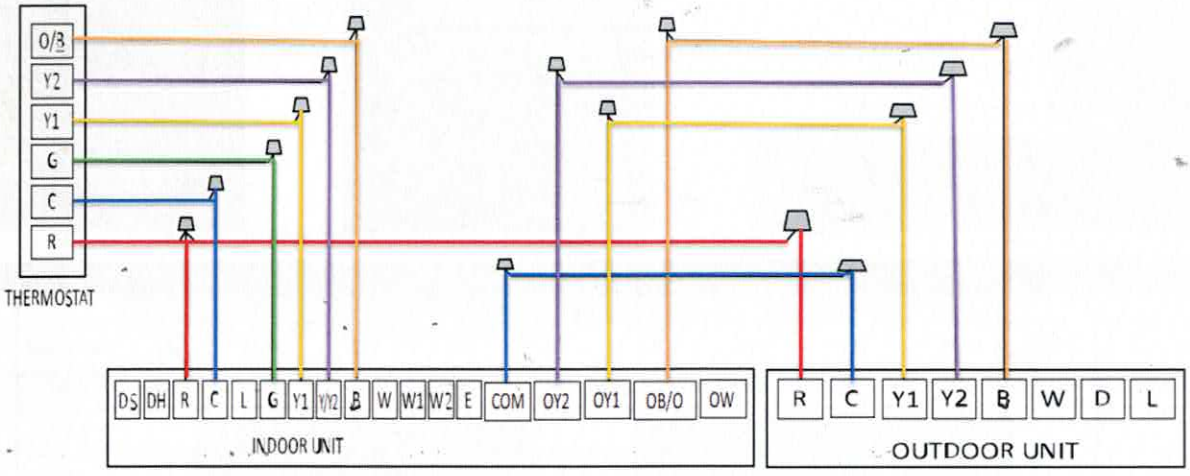
1: 24V signal

0: No 24V signal

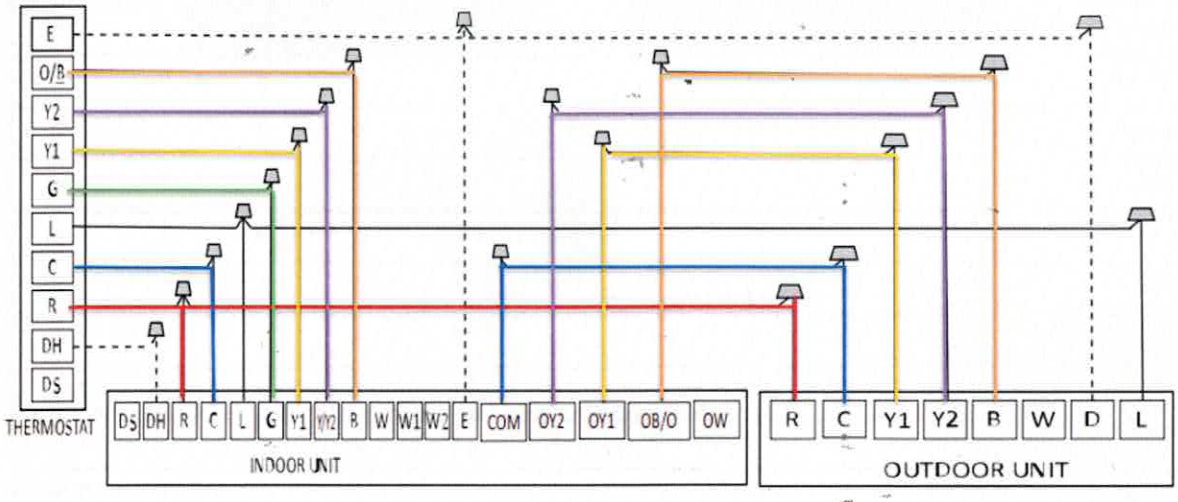
*: 1 or 0.

The AHU will turn off if the 24V input cannot meet the table.

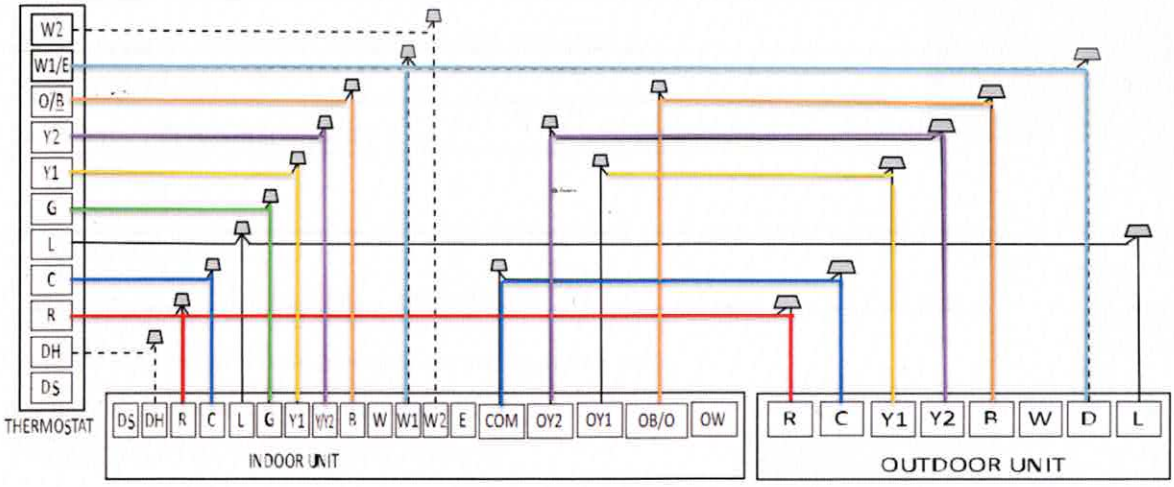
R-4546



2 Heat 2 Cool

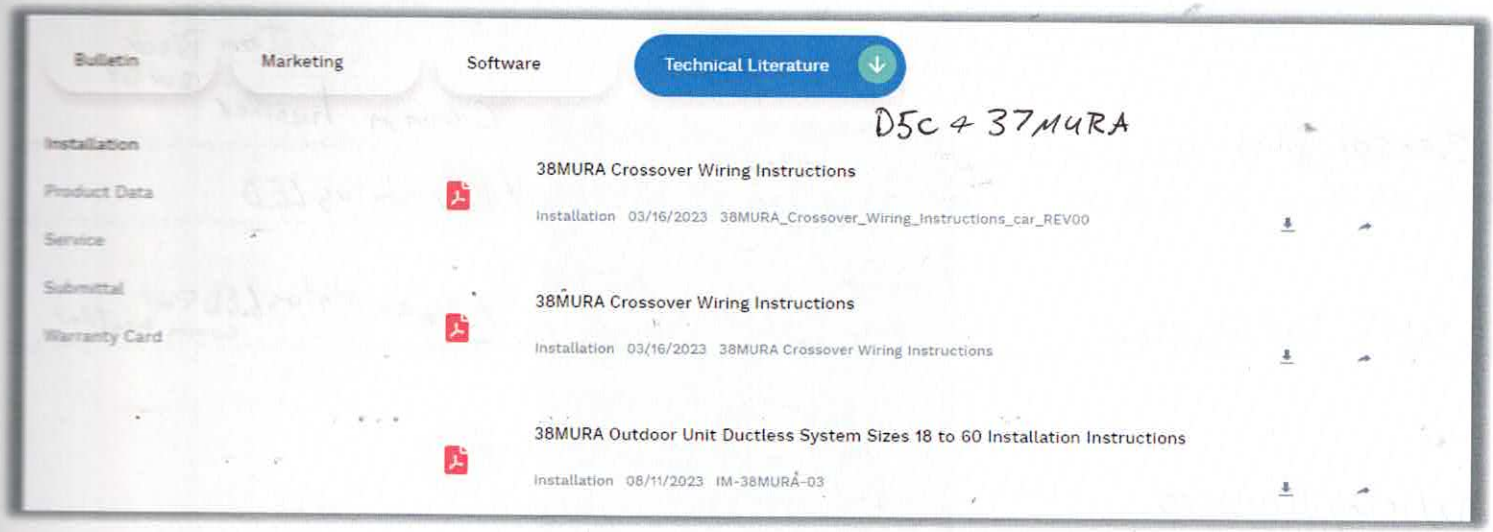


3 Heat 2 Cool

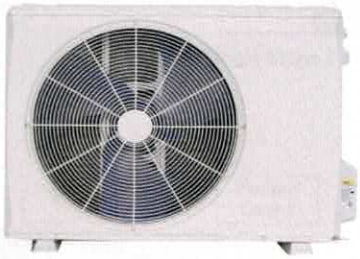


4 Heat 2 Cool

Instructions



Dissipation System

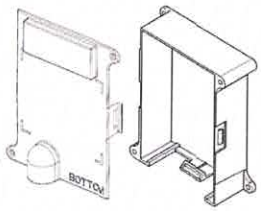


37MURA

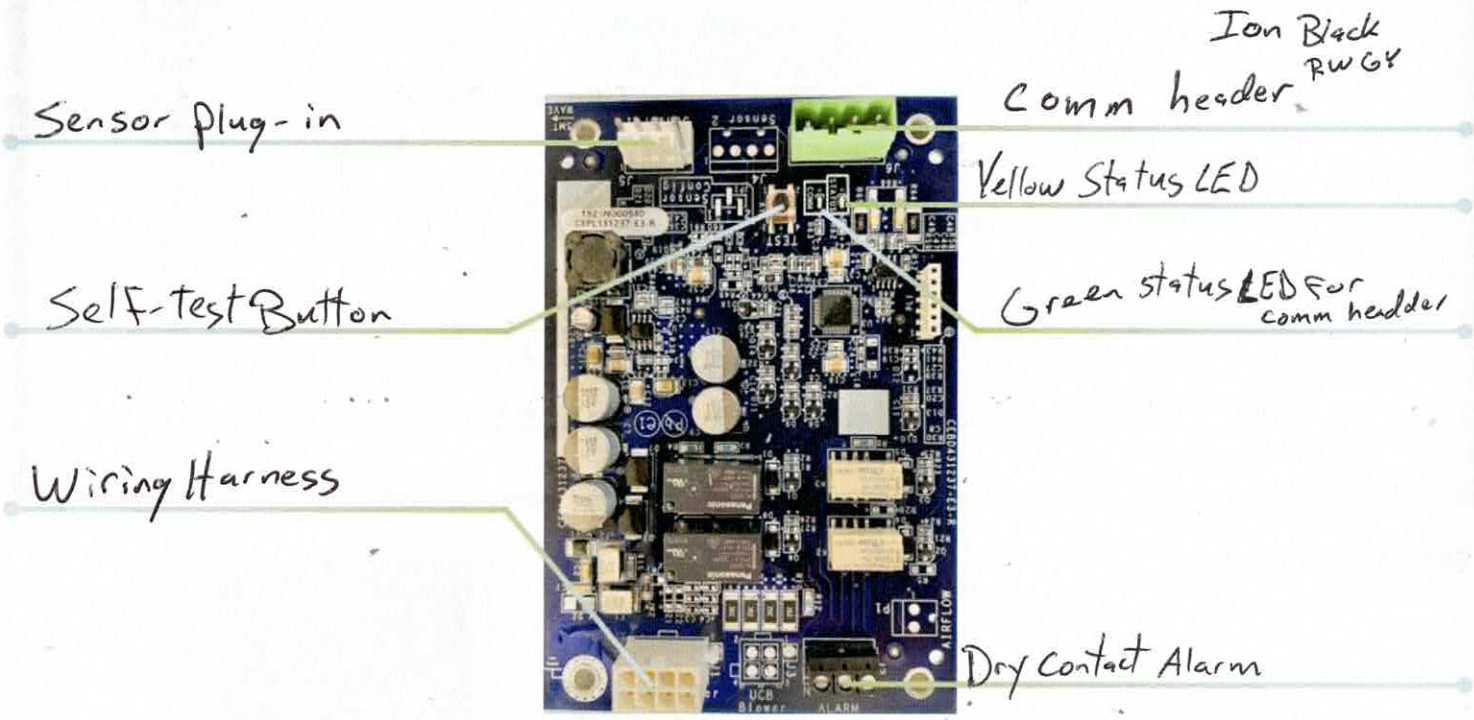
Dissipation

Residential Fan Coils & Furnaces

- What is dissipation?
  - Break apart or scatter to the point of disappearing
  - Dilutes refrigerant in the event of a leak
- Dissipation Assembly
  - Dissipation board inserted inside the enclosure/housing
- Wiring harnesses
  - From sensor to dissipation board
  - From dissipation board to furnace

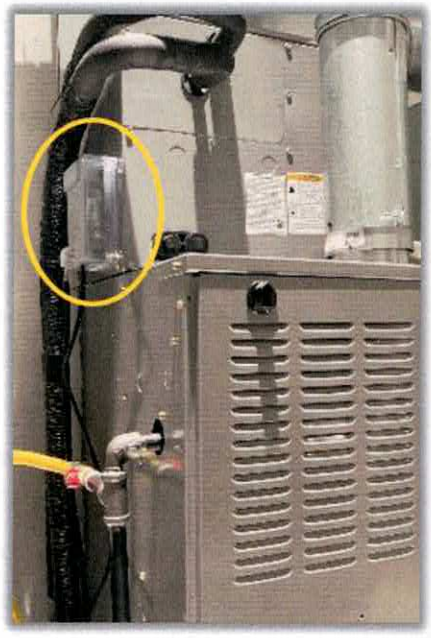


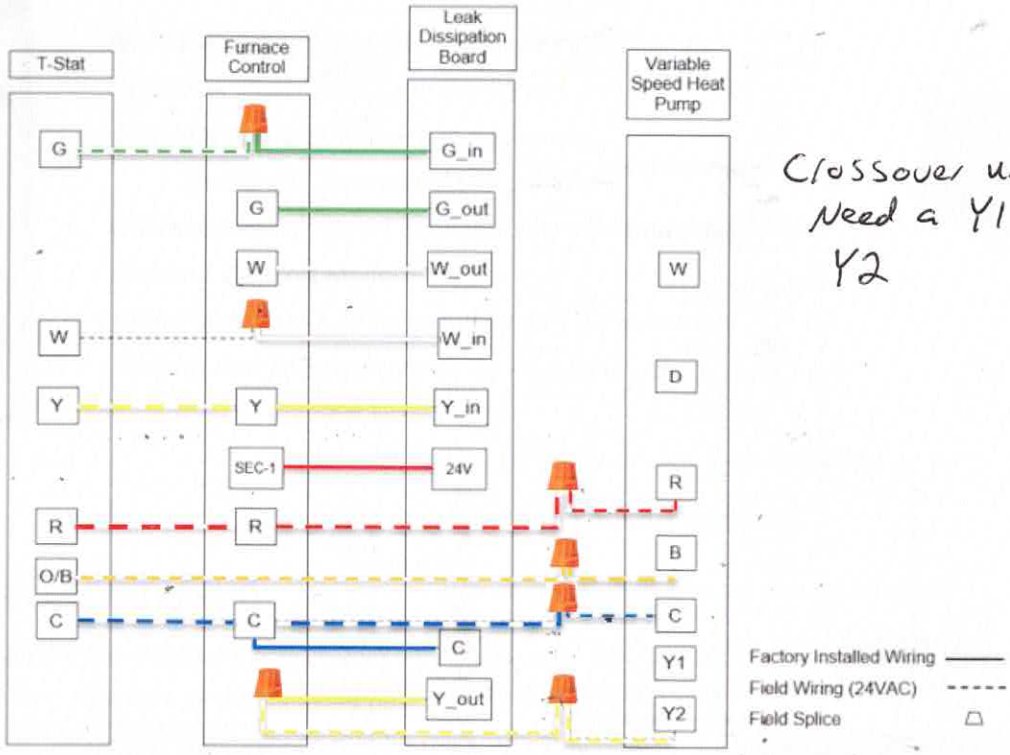
Dissipation System (Board)



Dissipation System

- DO mount the dissipation board assembly:
  - As close as possible to the furnace control box
  - In a vertical orientation with the harnesses coming out of the bottom
  - Where easily accessible and indicator light is visible
- DO NOT mount the dissipation board assembly:
  - Where it will be exposed to water
  - Inside evaporator coil
  - Inside furnace
  - Inside ductwork





Crossover units Do NOT need a Y1 call To operate Y2

Fig. 27 —Single-Stage Furnace with Variable Speed Heat Pump (with Single Speed Airflow)

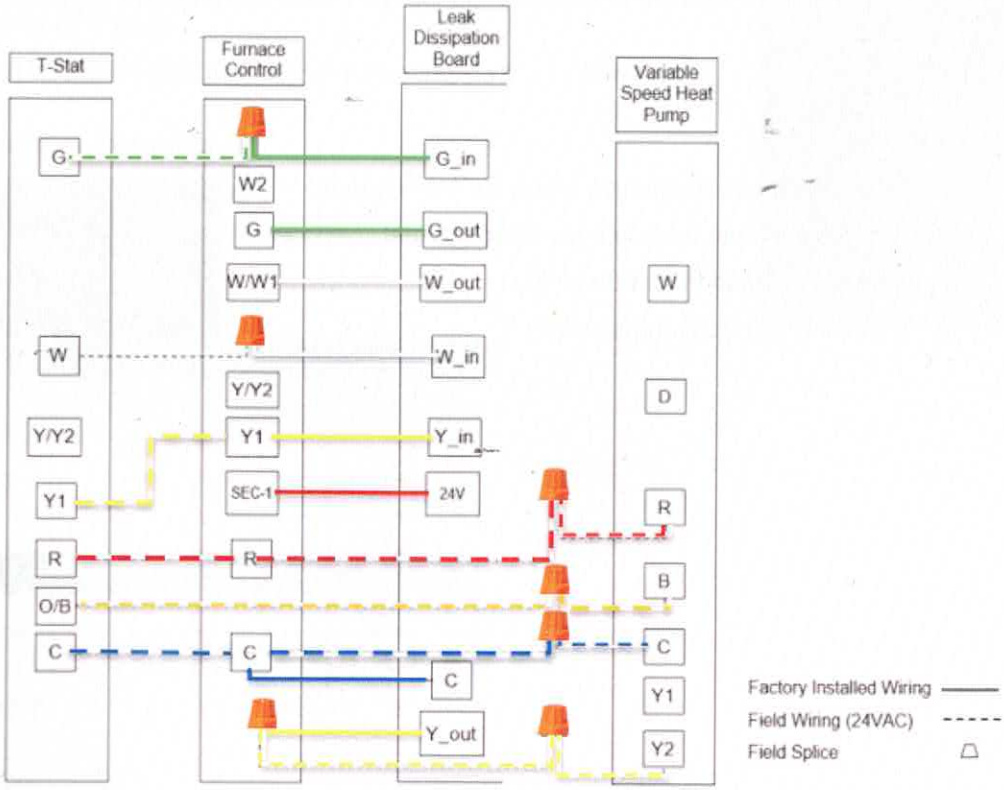


Fig. 28 —Single-Stage and Two-Stage Furnace with Variable Speed Heat Pump

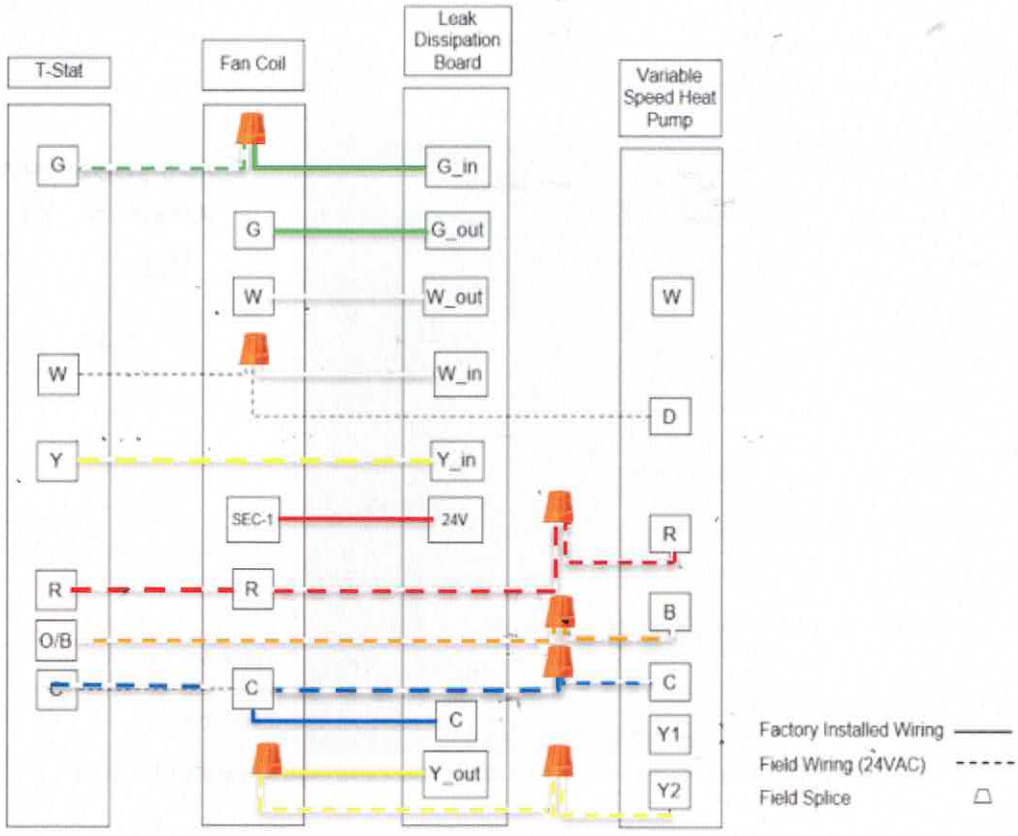
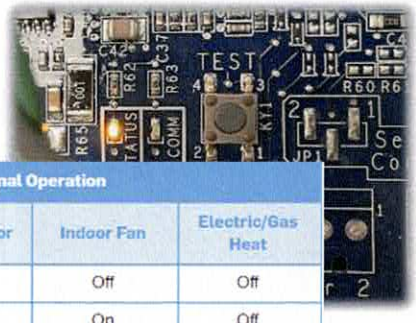
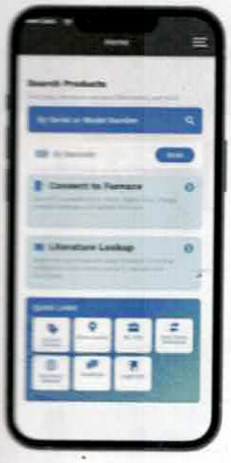


Fig. 29 —Single-Speed Fancoil with Variable Speed Heat Pump (1S Heat) 1

- Establish thermostat call
  - Press **TEST** button on dissipation board for 1-4 seconds
- Verify component operation per table in installation manual
- **TEST** button activates dissipation for 60 seconds
  - After 60 second test, LED turns solid



Normal Operation				
Test #	T-Stat Call	Compressor	Indoor Fan	Electric/Gas Heat
1	None	Off	Off	Off
2	Cool	On	On	Off
3	Heat	Off	On	On
Dissipation Activated				
4	None	Off	On	Off
5	Cool	Off	On	Off
6	Heat	Off	On	Off



Barcode scanning of unit's serial or model number

Warranty entitlement & service history

Communications with select equipment

- Near Field Communication (NFC)

Literature list by model or search of all available literature

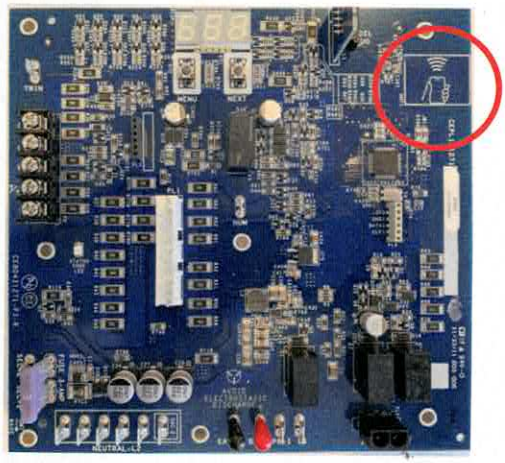
Product Catalog model lookup

Bill of Material parts list including part supersession

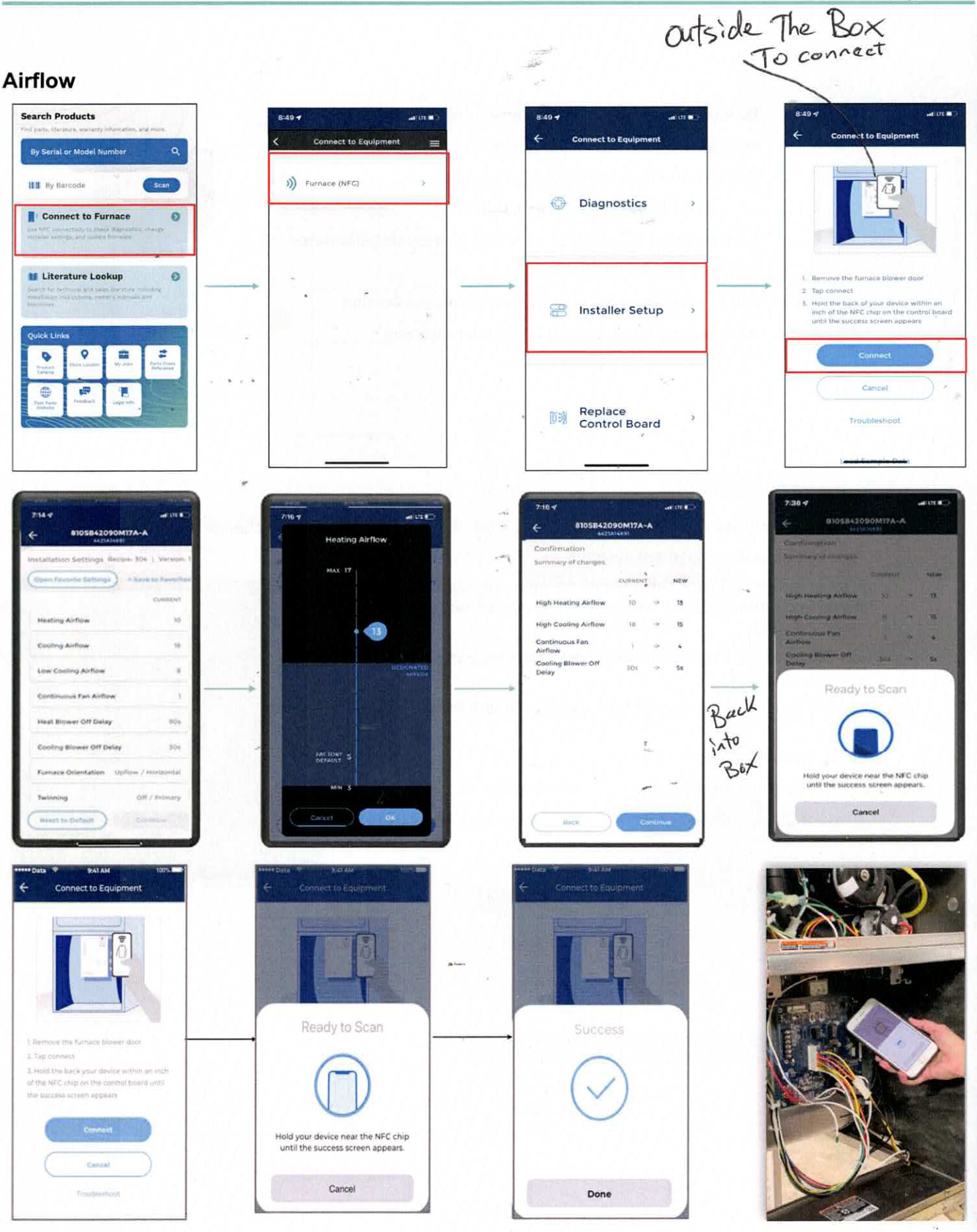
Aftermarket components cross reference tool

Near Field Communication

- NFC allows two devices placed within a few centimeters of one another to exchange information
- Used by contactless payment systems
- Installer recipe and user settings can be read, adjusted, and loaded into furnace control without switches or contact with the furnace control
- Non-powered, so information MUST be exchanged with furnace power in OFF state
- Allows for information transfer from existing control to new control easily
- Allows for runtime data
  - Fault code history
  - Runtime cycles/hours



Airflow



Crossover Solutions Quick Reference Guide

Ductless Systems

Indoor Unit With Factory Installed 24V Interface[1]	Outdoor Unit With Base Pan Heater	AHRI Rated Btu's Cooling @ 95F [35C] Heating @ 47F [6.3C]	SEER2	EER2	HSPF2	Energy Star v6.1 Certified	Line Set Liquid x Suction	Max. Line Length ft.	Max. Lift ft.	MCA/MOP Heat Pump	MCA/MOP Fan Coil	Max Heating Capacity BTU's At 70F [21.1C] Indoor DB @ Max CFM @-22F [-30C]	@-4F [-20C]	@5F [-15C]	Maximum Cooling BTU's At 80F [26.7C] Indoor DB @ Max CFM @110F [43C]	@122F [50C]
This sheet is not intended to replace the installation instructions. It is a reference guide only. Always read through the installation instructions.																
Performance Horizontal Discharge AHU 1:1 Performance Heat Pump Systems (Crossover Solutions)																
D5FUHAH24XAK	D5CUHAH18AAK	18,000/18,000	19	12.5	10.2	YES	3/8" x 3/4"	98	66	16A / 20A	5.5A / 3.5A / 15A	11,928	16,514	19,261	17,916	14,214
D5FUHAH24XAK	D5CUHAH24AAK	24,000/24,000	18.7	12	10	YES	3/8" x 3/4"	164	82	19A / 20A	5.5A / 3.5A / 15A	12,297	17,927	21,458	23,751	17,725
D5FUHAH36XAK	D5CUHAH30AAK	30,000/33,000	17.2	12.1	10.8	YES	3/8" x 3/4"	164	82	29.5A / 30A	8A / 6A / 15A	18,551	27,252	33,236	32,779	20,649
D5FUHAH36XAK	D5CUHAH36AAK	36,000/37,000	18	12	10	YES	3/8" x 3/4"	246	98	29A / 30A	8A / 6A / 15A	27,729	37,170	38,436	38,525	24,495
D5FUHAH60XAK	D5CUHAH48AAK	48,000/48,000	17.5	12	9.5	YES	3/8" x 3/4"	246	98	38A / 40A	14.5 A / 10 A / 15 A	30,363	43,387	48,328	45,560	32,789
D5FUHAH60XAK	D5CUHAH60AAK	54,000/55,000	17.5	12	9.5	YES	3/8" x 3/4"	246	98	40A / 40A	14.5 A / 10 A / 15 A	37,307	49,989	56,830	53,125	33,738
Comfort Horizontal Discharge AHU 1:1 Performance Heat Pump Systems (Crossover Solutions)																
D5FUAAH18XAK	D5CUHAH18AAK	18,000/19,000	19	12.5	9.8	YES	3/8" x 3/4"	98	66	16A / 20A	5.5A / 4A / 15A	11,229	16,780	19,813	18,855	15,316
D5FUAAH24XAK	D5CUHAH24AAK	23,000/24,000	18.4	11.7	10	YES	3/8" x 3/4"	164	82	19A / 20A	5.5A / 4A / 15A	12,099	17,309	22,891	25,051	16,371
D5FUAAH30XAK	D5CUHAH30AAK	30,000/34,000	16.9	11.7	10	YES	3/8" x 3/4"	164	82	29.5A / 30A	8A / 6A / 15A	20,066	28,190	33,287	32,404	21,287
D5FUAAH36XAK	D5CUHAH36AAK	36,000/37,000	17.4	11.7	10.3	YES	3/8" x 3/4"	246	98	29A / 30A	8A / 6A / 15A	27,944	35,662	41,538	36,996	24,959
D5FUAAH48XAK	D5CUHAH48AAK	48,000/50,000	16.5	10.5	9.5	NO	3/8" x 3/4"	246	98	38A / 40A	14.5A / 11A / 15A	25,870	40,674	46,850	42,234	30,465
D5FUAAH60XAK	D5CUHAH60AAK	54,000/56,000	16	10	9	NO	3/8" x 3/4"	246	98	40A / 40A	14.5A / 11A / 15A	30,882	46,714	54,228	50,848	34,671
18k/24k IDU Capacity select via dip switch and must match ODU size																
Comfort Tier Horizontal Discharge AHU 1:1 Heat Pump Systems (Crossover Solutions)																
D5FUAAH18XAK	D5CURAH18AAK	18,000/18,000	18.8	11	9.2	NO	3/8" x 3/4"	98	66	16A / 20A	5.5A / 4A / 15A		9,175	11,379	15,815	9,543
D5FUAAH24XAK	D5CURAH24AAK	24,000/26,000	18.2	11	9.7	NO	3/8" x 3/4"	164	82	19A / 20A	5.5A / 4A / 15A		16,963	22,433	24,550	16,043
D5FUAAH30XAK	D5CURAH30AAK	30,000/31,000	17	10.8	8.5	NO	3/8" x 3/4"	164	82	22.5A / 25A	8A / 6A / 15A		15,521	19,356	29,603	14,498
D5FUAAH36XAK	D5CURAH36AAK	36,000/36,000	16.2	10	8.7	NO	3/8" x 3/4"	246	98	24A / 30A	8A / 6A / 15A		22,765	26,515	32,032	18,926
D5FUAAH48XAK	D5CURAH48AAK	48,000/48,000	16	10	8.5	NO	3/8" x 3/4"	246	98	36A / 40A	14.5A / 11A / 15A		35,908	43,152	42,022	30,316
D5FUAAH60XAK	D5CURAH60AAK	54,000/54,000	15.2	8.7	8.4	NO	3/8" x 3/4"	246	98	39A / 40A	14.5A / 11A / 15A		35,597	41,473	41,858	32,571

18k/24k IDU Capacity select via dip switch and must match ODU size

Accessory Electric Heater Kits for D5FSAA & D5FUAA

Model Number	Size Used With	Model Number	Size Used With	Model Number	Size Used With	Model Number	Size Used With
EHKMC05KN	18k, 24k, 30k, 36k	EHKMC15KN	24k, 30k, 36k, 48k, 60k	EHKMD05KN	24k, 36k	EHKMD15KN	24k, 36k, 60k
EHKMC08KN	18k, 24k, 30k, 36k, 48k	EHKMC20KN	36k, 48k, 60k	EHKMD08KN	24k, 36k	EHKMD20KN	36k, 60k
EHKMC10KN	18k, 24k, 30k, 36k, 48k, 60k	EHKMC25KN	60k	EHKMD10KN	24k, 36k, 60k	EHKMD25KN	60k

Installation Note: A separate power supply is required for an Auxiliary Electric Heater. Do not power the electric heater directly from the outdoor unit. Always follow recommendations on the installation guide

Crossover System Installation Notes:

[1] Crossover Fan Coils (D5FUHAH/D5FUAAH) are powered separately from the outdoor units. Fan coil power can be powered by 115V-1Ph-60Hz or 208/230V-1Ph-60Hz. If using auxiliary electric heat, installation requires 208/230V-1Ph-60Hz power.

The minimum line length for all systems is 10'

D5FUAAH/D5FUHAH systems allow for either Non-Polarity RS485 or 24V Communication. Refer to the system's Product Data for more information on required wiring depending on communication style.

D5FUAA and D5FUHA fan coils require the use of a 3/8" bi-flow liquid line filter drier. The use of filter driers is not allowed on any other ductless style system.

Warranty Information

Residential & Multi-Family Applications: 10 year limited warranty to original purchaser on compressor and parts when system is *registered within 90-days of installation. *Registration not required in CA and Quebec .

ICP No Hassle Warranty: QuietComfort Series crossover units qualify for No Hassle Warranty. See warranty certificate for full details and exclusions.

Commercial Applications: 7 year limited warranty to original purchaser on compressor and parts. See Warranty documents for full details

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