Quick Start Guide

High Efficiency Heat Pump System
Standard and Extreme Series with R-454B

ACiQ-24-AHD/ACiQ-24-HPD
ACiQ-24-AHD/ACiQ-24-EHPD

ACiQ-36-AHD/ACiQ-36-HPD
ACiQ-36-AHD/ACiQ-36-EHPD

ACiQ-48-AHD/ACiQ-48-HPD
ACiQ-48-AHD/ACiQ-48-EHPD

ACiQ-60-AHD/ACiQ-60-HPD
ACiQ-60-AHD/ACiQ-60-EHPD

Thank you for purchasing a High Efficiency Heat Pump system from ACiQ! This system gives you the benefits of a variable speed, inverter driven heat pump condenser, combined with a smart air handler with a variable speed blower.

This Quick Start Guide covers how to connect the thermostat to your system and ensure proper communication. It is not meant to replace the entire installation manual. Please reference install manual for in depth instructions.

2025 Gen2 R-454B, V4

Wiring Diagrams and Connections

These systems are designed to either reuse existing thermostat wiring between the thermostat, AHU, and ODU or with new wiring. Installation is dependent on the number of wires available. The wiring diagrams below and on the following pages show the proper wiring and DIP switch settings (for indoor and outdoor units) depending upon your application and the type of thermostat used (standard wired controller or 24V thermostat).

INSTALLATION SITUATION	THERMOSTAT CONTROLLER	CONNECTION BETWEEN T-STAT AND AHU	CONNECTION BETWEEN AHU & ODU	AHU DIP SWITCH		ODU DIP SWITCH
				SW1-1	SW1-4	S1-2
2-WIRE/2-WIRE INSTALLATION *(SEE PAGE 4)*	ACIQ COMMUNICATING THERMOSTATS (KJR-120N, KJR-120X, TL04-1)	**2**-wire (HA/HB)	**2**-wire (S1/S2)	OFF (Default)	OFF (Default)	OFF (Default)
8-WIRE/2-WIRE INSTALLATION (RECOMMENDED) *(SEE PAGE 5)*	24V STANDARD THERMOSTAT	**8**-wire (24v) (R/C/B/Y1/Y2/G/W/W2)	**2**-wire (S1/S2)	ON	OFF (Default)	OFF (Default)
8-WIRE/8-WIRE INSTALLATION *(SEE PAGE 6)*		**8**-wire (24v) (R/C/B/Y1/Y2/G/W/W2)	**8**-wire (24v) (R/C/B/Y1/Y2/G/W/W2)	ON	ON	ON

WARNING! *In ALL wiring scenarios, be sure to turn off the circuit breakers and pull the disconnect before wiring. Incorrect wiring can cause an electrical short and destroy the main circuits boards!*

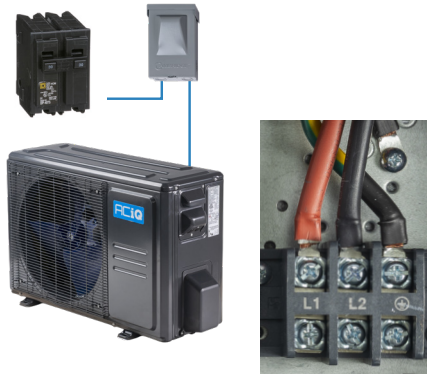
IMPORTANT NOTES

By default, the ACiQ KJR series communicating thermostats run the indoor fan continuously and read the temperature of the air in the ductwork, not the temperature of the room, which makes them different than most thermostats. You can change this to room mode by using the "Follow Me" fuction.

According to AHRI there is at most a 0.9 SEER2 increase in energy efficiency using the communicating system. Most customers are extremely happy with a sophisticated learning thermostat such as the standard ACiQ Communicating Thermostat.

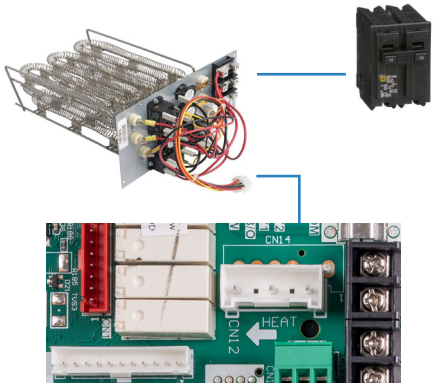
ELECTRIC CONNECTIONS

Please note - Each component requires a dedicated double-pole circuit breaker and wiring, sized according to national and local codes.



ODU

AHU



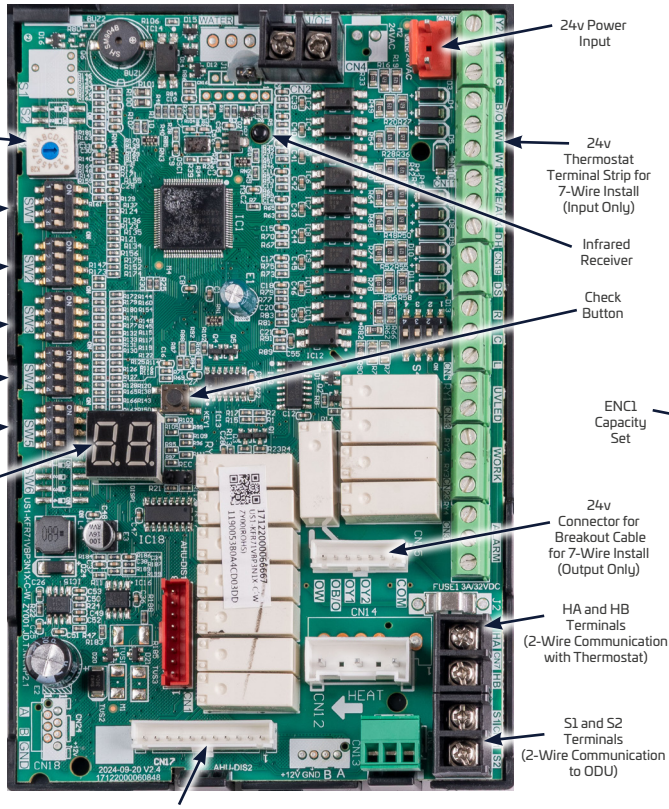
5 to 20kW HEAT STRIP KIT

IMPORTANT! 24v must NEVER be connected to S1 & S2.
Doing so will cause irreversible damage to the outdoor communication board.

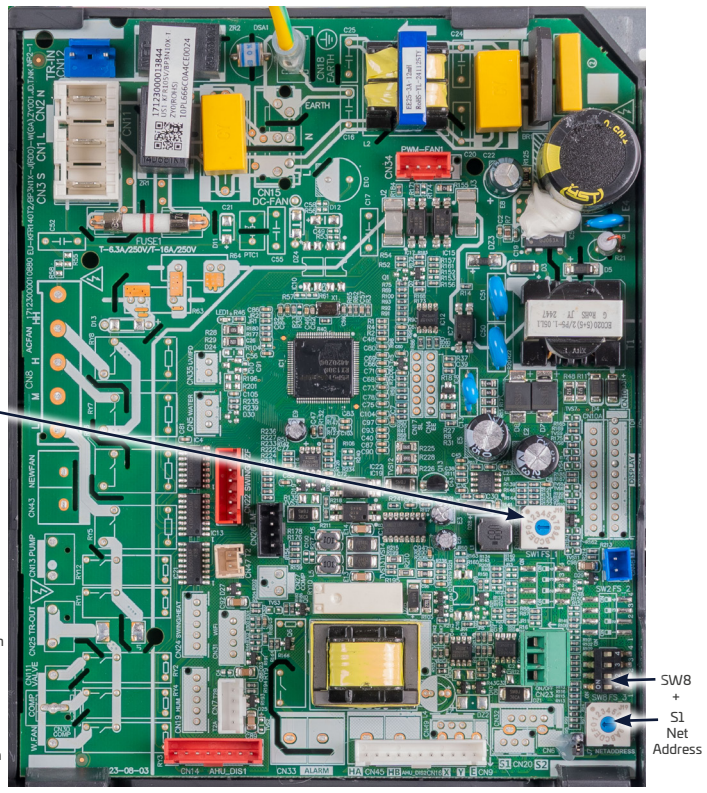
Wiring Diagrams and Connections

GEN2 R-454B INDOOR AIR HANDLER CIRCUIT BOARDS

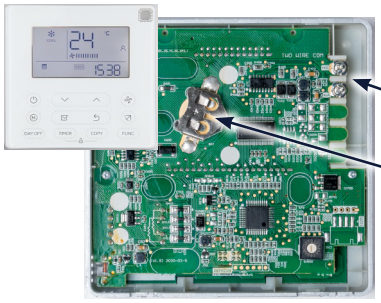
Data Transfer Board



Main Board (Side Facing)



OPTIONAL ACIQ COMMUNICATING THERMOSTATS



KJR Series Thermostats

HA & HB wiring terminals

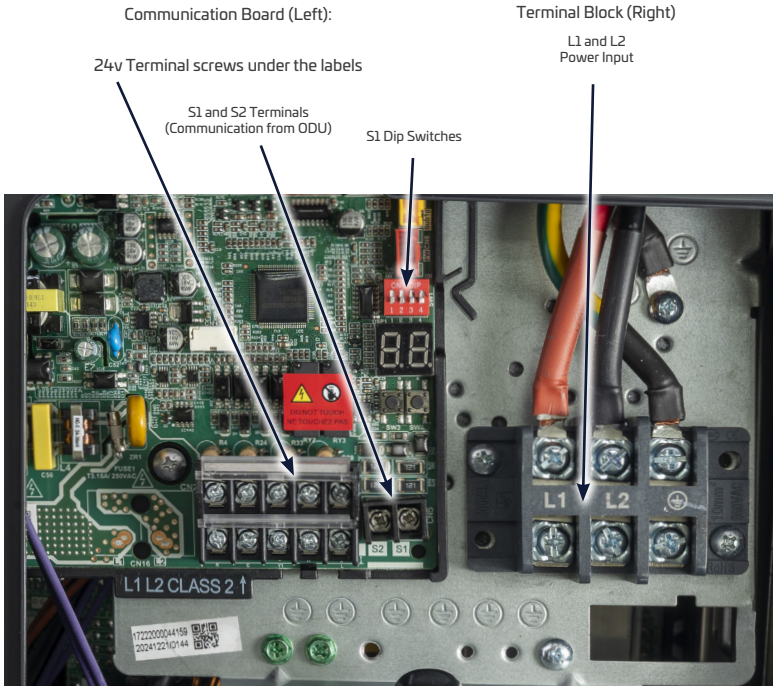
Battery maintains the thermostat's internal date and time

TL04-1 Thermostat

HA & HB wiring terminals

24v wiring terminals

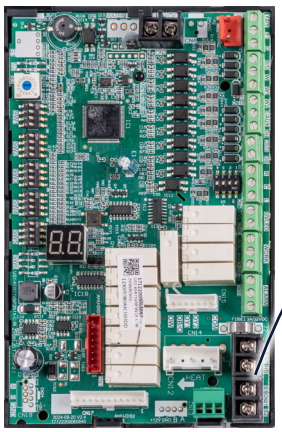
OUTDOOR UNIT CIRCUIT BOARD



2-WIRE to 2-WIRE INSTALLATION: USING OPTIONAL COMMUNICATING THERMOSTAT
(INCLUDES ACiQ KJR Series and ACiQ TL04-1)

This is the simplest installation method, reusing 2 wires from the existing thermostat wiring between the AHU, thermostat, and ODU. The optional communicating thermostat provides maximum efficiency, causing the unit to prioritize efficiency over comfort. It will maintain a comfortable temperature, but could run longer than some people desire. For more conventional control over the unit, see the additional installation options on pages 5 and 6.

STEP 1 CONNECT 2-WIRE CABLE TO THE **HA/HB** TERMINALS ON THE **INDOOR AHU**

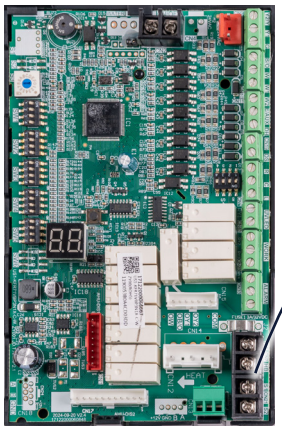


INDOOR AHU CONTROL BOARD

STEP 2 CONNECT 2-WIRE CABLE TO THE **HA/HB** TERMINALS ON THE **THERMOSTAT**

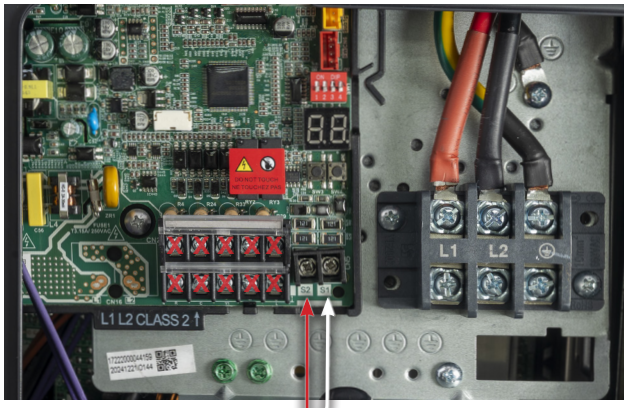
NOTE: ACiQ TL04-1 Communicating Thermostat shown.

STEP 3 CONNECT 2-WIRE CABLE TO THE **S1/S2** TERMINALS ON THE **INDOOR AHU**



INDOOR AHU CONTROL BOARD

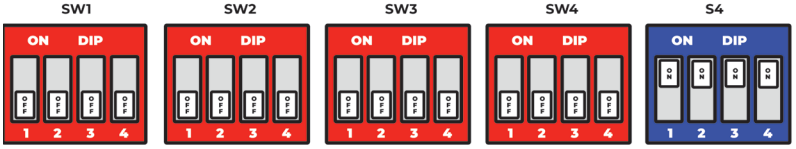
STEP 4 CONNECT 2-WIRE CABLE TO THE **S1/S2** TERMINALS ON THE **OUTDOOR ODU**



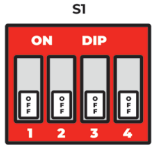
OUTDOOR ODU MAIN BOARD

IMPORTANT NOTE: Connecting S1/S2 to any terminal other than the designated S1/S2 terminals WILL cause permanent damage to the board NOT covered under warranty!

STEP 5 SET THE DIP SWITCHES



AHU



ODU

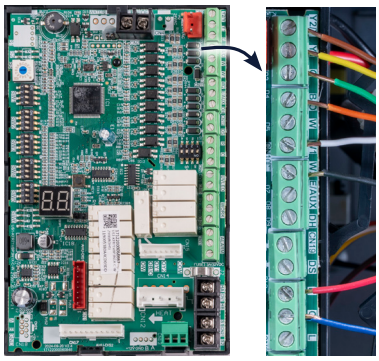
ALL DIP Switch are set to OFF, except S4. For DIP Switch functions, see p7.

IMPORTANT! Power must be OFF, BEFORE DIP switch changes. *The default DIP setting is all OFF except S4.*

8-WIRE to 2-WIRE INSTALLATION: USING OPTIONAL 24v THERMOSTAT
(INCLUDES ACIQ T855W, NEST, ECOBEE, ETC.)

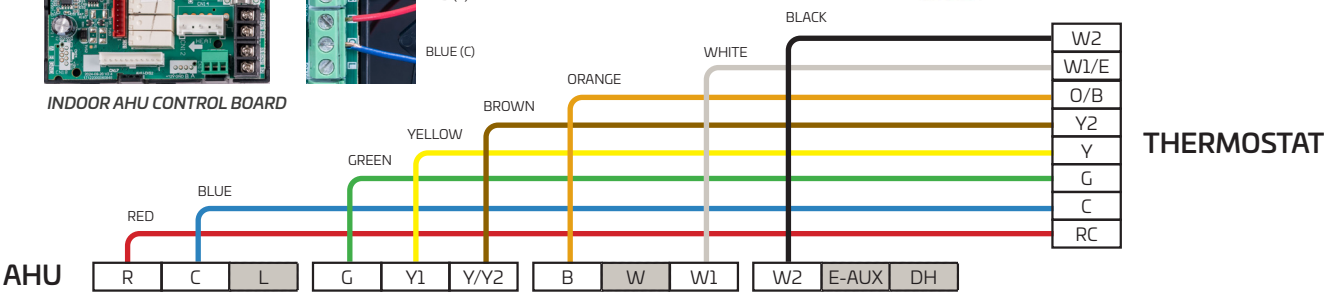
This option shows how to wire a 24 volt thermostat to the air handler, using existing or new 24v cable with 8 wires. This method prioritizes comfort over efficiency. Please note for this method to work, DIP switch SW1-1 needs to be turned ON. This method uses S1 & S2 to communicate between the air handler and the condenser, using the existing 24 volt wires or 18/2 shielded wire run outside. For additional thermostat wiring options, consult the manual.

STEP 1 CONNECT 24v 8-CONDUCTOR-WIRE **24v TERMINALS** ON THE **INDOOR AHU**

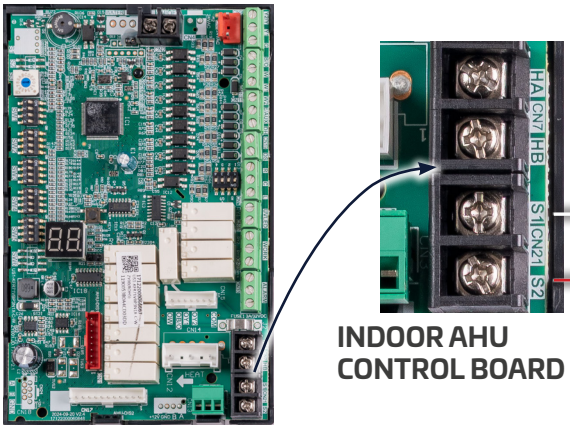


INDOOR AHU CONTROL BOARD

STEP 2 CONNECT 24v 8-CONDUCTOR-WIRE **24v TERMINALS** ON THE **THERMOSTAT**

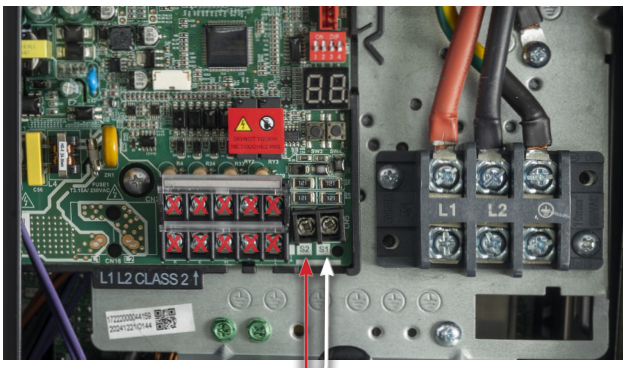


STEP 3 CONNECT 2-WIRE CABLE TO THE **S1/S2** TERMINALS ON THE **INDOOR AHU**



INDOOR AHU CONTROL BOARD

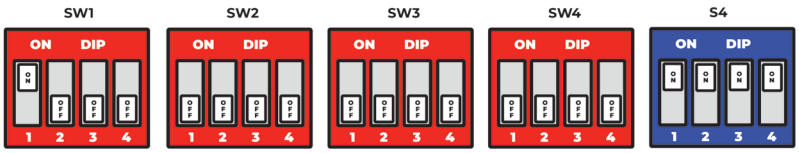
STEP 4 CONNECT 2-WIRE CABLE TO THE **S1/S2** TERMINALS ON THE **OUTDOOR ODU**



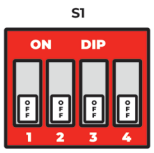
OUTDOOR ODU MAIN BOARD

STEP 5 SET THE DIP SWITCHES

IMPORTANT NOTE: Connecting S1/S2 to any terminal other than the designated S1/S2 terminals WILL cause permanent damage to the board NOT covered under warranty!



AHU



ODU

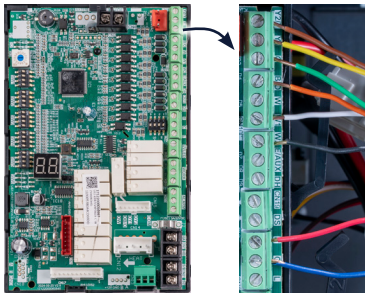
For 8-Wire to 2-Wire installations, **SW1-1** DIP Switch is set to **ON**. Remaining DIP switches remain OFF, except S4. For DIP Switch functions, see p7.
IMPORTANT! Power must be OFF, BEFORE DIP switch changes. ***The default DIP setting is all OFF except S4.***

8-WIRE to 8-WIRE INSTALLATION: USING OPTIONAL 24v THERMOSTAT

(INCLUDES ACIQ T855W, NEST, ECOBEE, ETC.)

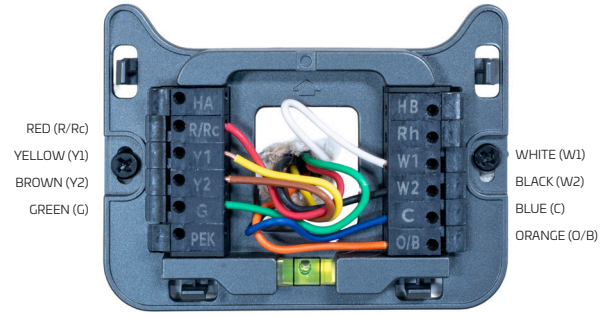
This option shows how to wire a 24 volt thermostat to the air handler, using existing or new 24v cable with 8 wires. This method prioritizes comfort over efficiency. Please note for this method to work, DIP switches SW1-1 and SW1-4 needs to be turned ON. This method also uses 24v cable to communicate between the air handler and the condenser, using the existing 24v cable with 8 wires run outside. For additional thermostat wiring options, consult the manual.

STEP 1 CONNECT 24v 8-CONDUCTOR-WIRE **24v TERMINALS** ON THE **INDOOR AHU**

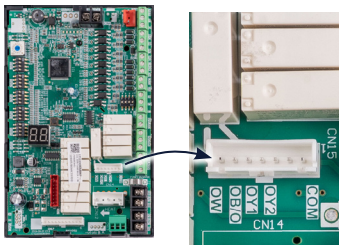


INDOOR AHU CONTROL BOARD

STEP 2 CONNECT 24v 8-CONDUCTOR-WIRE **24v TERMINALS** ON THE **THERMOSTAT**



STEP 3 CONNECT 8-WIRE CONDUCTORS TO **24v BREAKOUT ADAPTER** ON THE **INDOOR AHU**

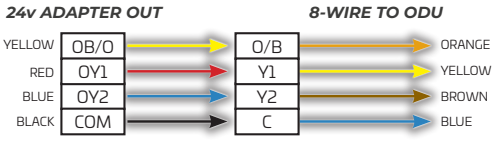


INDOOR AHU CONTROL BOARD

24v BREAKOUT ADAPTER

NOTE: REFER TO THE OUTPUT LABELS ON THE ADAPTER WIRES, AND NOT THE ADAPTER'S WIRE COLORS!

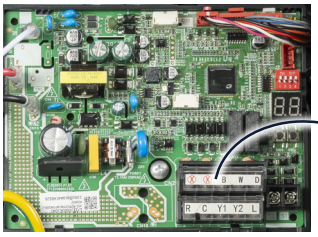
WIRENUT THE WIRES TOGETHER AS SEEN IN DIAGRAM.



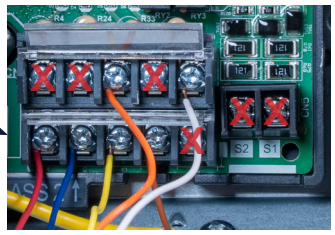
NOTE: GREEN FROM THE 24v ADAPTER IS NOT USED.

NOTE: GREEN AND BLACK TO THE ODU ARE NOT USED.

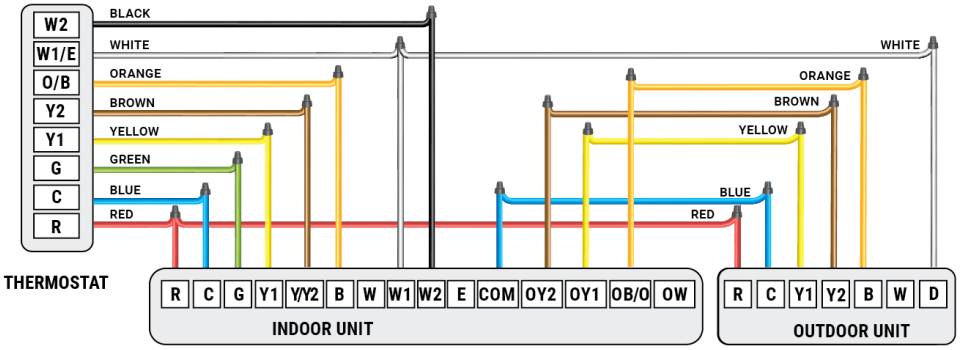
STEP 4 CONNECT 8-WIRE CONDUCTORS TO **24v TERMINALS** ON THE **ODU**



OUTDOOR ODU MAIN BOARD

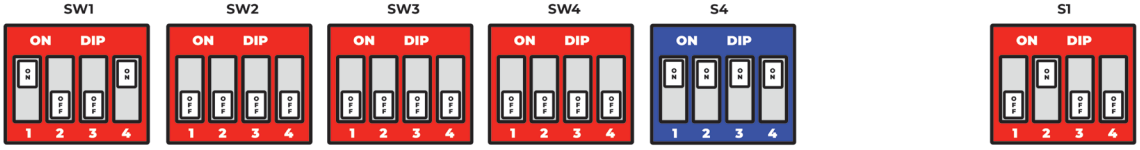


NOTE: RED AND WHITE ARE JUMPERED FROM THE AHU INPUTS AND T-STAT TO THE ODU.



IMPORTANT NOTE: Connecting 24v to any terminal other than the designated terminals WILL cause permanent damage to the board NOT covered under warranty!

STEP 5 SET THE DIP SWITCHES



For 8-Wire to 8-Wire installations, **SW1-1** and **SW1-4** DIP Switches on the **AHU** are set to **ON.** Remaining AHU DIP switches remain OFF, except S4. **S1-2** on the **ODU** is **ON**. For DIP Switch functions, see p7.

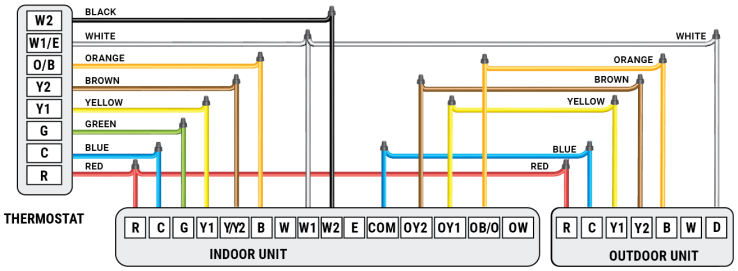
IMPORTANT! Power must be OFF, BEFORE DIP switch changes. *The default DIP setting is all OFF except S4.*

Wiring Diagrams and 24v Connections Without Communication

The following wiring diagrams are suitable for the AHU and outdoor condenser when used ith a 24v thermostat without communication.

NOTE: This equipment uses B functionality, meaning the terminal is energized for heat functionality over cooling. Please ensure thermostat is setup for B functionality.

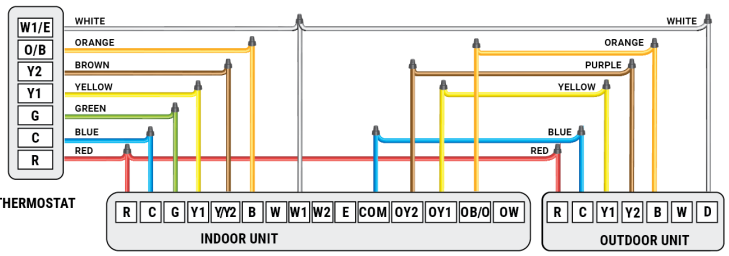
WIRING FOR 4H AND 2C THERMOSTAT



S4-2 DIP switch ON, DH Function off
Turn switch off to activate DH function.

S4-4 Default ON, W1 and W2 shorted for single AUX heat operation. Turn off to separate stages.

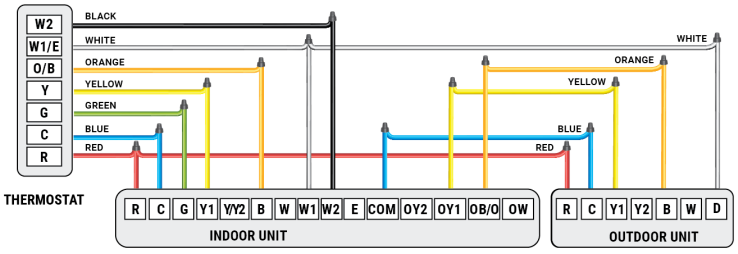
WIRING FOR 3H AND 2C THERMOSTAT



3rd Most Common Installation Type.
S4-2 DIP switch ON, DH function off
Turn switch off to activate DH function.

S4-4 Default ON, W1 and W2 shorted for single AUX heat operation. Turn off to separate stages.

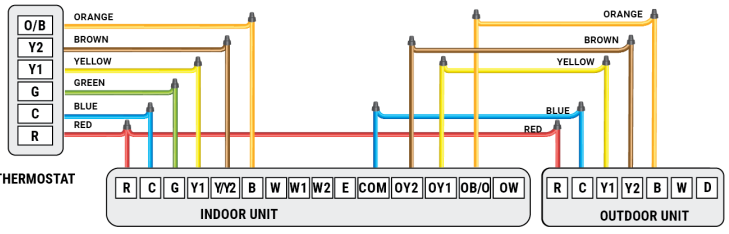
WIRING FOR 3H AND 1C THERMOSTAT



3rd Most Common Installation Type.
S4-2 DIP switch ON, DH function off
Turn switch off to activate DH function.

S4-4 Default ON, W1 and W2 shorted for single AUX heat operation. Turn off to separate stages.

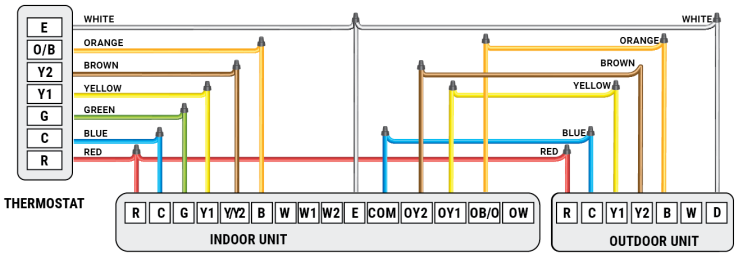
WIRING FOR 2H AND 2C THERMOSTAT



2nd Most Common Installation Type.
S4-2 DIP switch ON, DH function off
Turn switch off to activate DH function.

S4-4 Default ON, W1 and W2 shorted for single AUX heat operation. Turn off to separate stages.

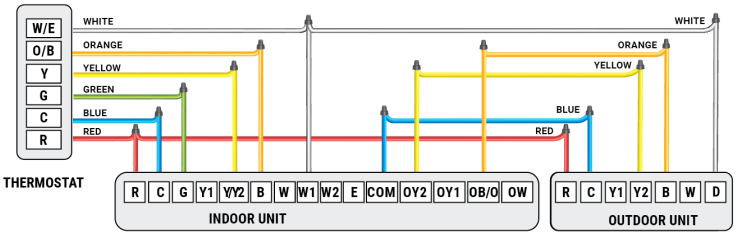
WIRING FOR 3H AND 2C THERMOSTAT



E Option Installation.
S4-2 DIP switch ON, DH function off
Turn switch off to activate DH function.

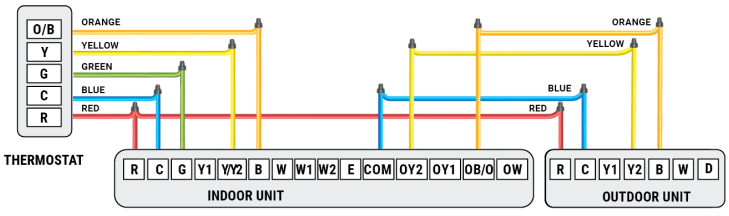
Emergency heating control two groups of electri heating at the same time.

WIRING FOR 2H AND 1C THERMOSTAT



S4-4 Default ON, W1 and W2 shorted for single AUX heat operation. Turn off to separate stages.

WIRING FOR 1H AND 1C THERMOSTAT



Most common installation.
S4-2 DIP switch ON, DH function off
Turn switch off to activate DH function.

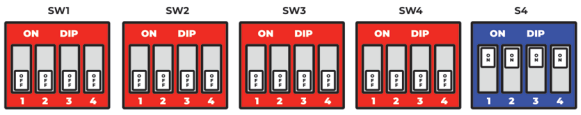
S4-4 Default ON, W1 and W2 shorted for single AUX heat operation. Turn off to separate stages.

Air Handler DIP Switch Guide

Function Settings

SW1-1	**Thermostat Wiring Method**	
	OFF	RS-485 Communication. Used For Thermostat.
	ON	Used for 24 Volt Thermostat.
SW1-2	**Cold Air Prevention - Defrost**	
	OFF	Cold Air Prevention Activated - Fan Stops
	ON	No Cold Air Prevention - Fan Continues To Operate
SW1-3	**System Type**	
	OFF	Heat Pump
	ON	Cooling Only
SW1-4	**Indoor and Outdoor Unit Wiring Method**	
	OFF	S1 and S2 - DC Communication. Only Applies to ACiQ Condenser
	ON	24 Volt Wires (No True Communication / Applies To All Condenser)

Default AHU DIP Switch Settings Shown Below



Compressor & Heat Mode Settings (120N controller only)

SW2-1	**Auxiliary Heat Activation Differential**		Delay between 1st stage & 2nd stage electric heat is time based, not temperature based.
	OFF	3.6°F Gap Between T1 & Ts Sensors	
	ON	1.8°F Gap Between T1 & Ts Sensors	
SW2-2	**W1 Auxiliary Heat Activation Delay**		T1 Sensor = Return Air Temp (Room Temp), Ts = Set point
	OFF	None	
	ON	Yes	
SW2-3	**Auxiliary Heat Activation Delay Time**		SW2-3 only works if SW2-2 is turned ON.
	OFF	15 Minute Delay (For Electric Heat)	
	ON	30 Minute Delay (For Electric Heat)	
SW2-4	**Compressor Low Temp Lock Out**		This sets maximum temperature, anything over this setting locks out. This sets minimum temperature, anything under this setting locks out.
	OFF	In This Position Electric Heat Lockout Can Be Set Via ENC2	
	ON	In This Position Compressor Lockout Can Be Set Via ENC2	

S3 (ENC2)	ENC2 Dial Referenced In SW2-4. 16 Digits To Select From (0-9, A-F). Lock Out Range = -4 °F to 46 °F. **0 = No Lock Out**, 1 = -4 °F Lock Out, F = 46 °F Lock Out. Each Digit Increases Temperature By 3.6 °F. Chart Provides Temperature Rounded To Nearest Whole Number.			
	1 = -4 °F	**5 = 10 °F**	**9 = 25 °F**	**D = 39 °F**
	2 = 0 °F	**6 = 14 °F**	**A = 28 °F**	**E = 43 °F**
	3 = 3 °F	**7 = 18 °F**	**B = 32 °F**	**F = 46 °F**
	4 = 7 °F	**8 = 21 °F**	**C = 37 °F**	

Compressor & Heat Mode Settings Continued (120N controller only)

SW3-1	**Ramping Up Algorithm Delay**		This sets the maximum continuous runtime allowed before the system automatically stages up capacity. Only applies if 24 volt thermostat is being used.
	OFF	1.5 Hours (Efficiency)	
	ON	0.5 Hours (Comfort)	
SW3-2	**Y/Y2 Temperature Differential Adjustment**		If using 24 volt thermostat this sets compressor speed instead. ON = slower, OFF = Faster.
	OFF	3.6 °F (Efficiency)	
	ON	1.8 °F (Comfort)	
SW3-3	**W2 Temperature Differential Activation**		This DIP switch only works if using the provided communicating ACiQ thermostat. Otherwise delay is time based.
	OFF	6 °F (Efficiency)	
	ON	4 °F (Comfort)	
SW3-4	**Fan Turbo**		
	OFF	Normal High-Speed Fan	
	ON	Turbo Fan	

Air Flow Settings (See table at right for settings)

SW4-1, 2, 3, 4	**Air Delivery**	
	OFF	0 For example [SW4-1 OFF, SW4-2 ON, SW4 -3 OFF] = 010
	ON	1 For example [SW4-1 OFF, SW4-2 ON, SW4 -3 OFF] = 010

CFM Air Delivery Setting Table

Model	000 (Default)	001	010	011
24k	871	841	818	788
36k	1306	1241	1176	1112
48k	1741	1653	1559	1471
60k	2171	2029	1894	1753

R-454 Sensor Settings

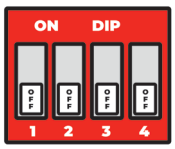
SW5-1	**Reserved**	
	OFF	
	ON	
SW5-2	**Reserved**	
	OFF	
	ON	
SW5-3	**L or Alarm Relay Selection**	
	OFF	L output 24v/Relay closed when any fault detected
	ON	L output 24v/Relay closed when R-454B fault or leak detected
SW5-4	**R Output Selection**	
	OFF	R Keep 24v output even if R-454B sensor fault or leak detected
	ON	R Stop 24v output when R-454B sensor fault or leak detected

E/AUX Settings (24v Only)		
S4-1	Reserved	
	OFF	
	ON	
S4-2	Dehumidify Control	
	OFF	DH Terminal Available To Be Used
	ON	DH Terminal Deactivated
S4-3	Reserved	
	OFF	
	ON	
S4-4	Aux Heat Control (Use when only 1 W stage)	
	OFF	W1 & W2 Controlled Separately
	ON	W1 & W2 Not Controlled Separately

General Notes
If selected 24 volt thermostat has an E/AUX option and it is used to activate heat, all delays will be bypassed.
When auxiliary heat is energized the fan will run in Turbo Mode.

Outdoor Condenser DIP Switch Guide

S1



Default Outdoor Unit DIP Settings

ODU S1 DIP Settings		
S1-1	Reserved	
	OFF	NONE
	ON	NONE
S1-2	Communication Protocool	
	OFF	RS485 Communication
	ON	24v Communication
S1-3	Capacity Output	
	OFF	NONE
	ON	Enhanced Cooling & Heating with single stage thermostats (24v only)
S1-4	Defrost	
	OFF	NORMAL DEFROST (DEFAULT)
	ON	ENHANCED DEFROSTING

Please note if using the optional ACiQ communicating thermostats, DIP Switch Settings will not need to be adjusted. DIP Switch settings should only be adjusted by a professional HVAC service technician. Please note in this quick start guide, the specific DIP Switches that need to be adjusted will be shown to ensure accurate operation for the chosen set up. For 2-wire to 2-wire, nothing needs to be done. For 7-wire to 2-wire and 7-wire to 7-wire, please refer to the DIP Switch diagram that shows the correct position of the DIP Switches.

IMPORTANT: In order for changes to take effect power must be OFF BEFORE DIP switch changes. Default setting is OFF except S4.