



# Innovair Goldtec Wiring / Dip Switch / Optimal Refrigerant Charge Guide



Scenario	Controller	Indoor unit	Connection between Thermostat - Indoor and outdoor	Outdoor unit
<a href="#">Scenario 1</a>	24V Thermostat	Innovair AHU	24V: R/C/B/Y/G/W1/W2	Innovair ODU
<a href="#">Scenario 2</a>	24V Thermostat	Innovair AHU	24V: R/C/B/Y/G/W1/W2	The third-party ODU
<a href="#">Scenario 3</a>	24V Thermostat	The third-party AHU / Furnace / A-COIL as a Heat-Pump	24V: R/C/B/Y/G/W1/W2	Innovair ODU
<a href="#">Scenario 4</a>	24V Thermostat	The third-party AHU / a Furnace / A-COIL as a Straight Cooling	24V: R/C/Y/G/W1/W2	Innovair ODU

Note: Need to set the dip switch first before the unit power on.

# Scenario 1:

24V Thermostat

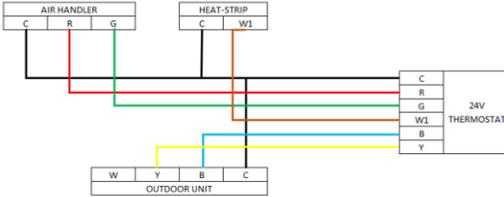
24V +

Innovair Goldtec AHU Indoor unit

24V +

Innovair Goldtec Outdoor unit

Ecobee 24V thermostat as an example

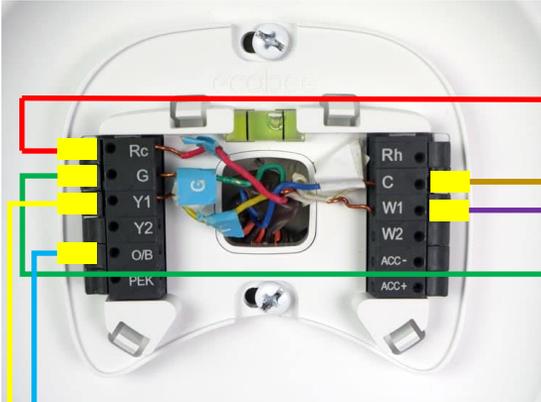
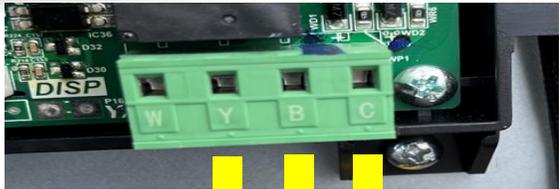


DESIGN SUPERHEAT / SUBCOOLING		
MODEL	SUPERHEAT - °F	SUBCOOLING - °F
VEA24H2V18	3 ~ 5	9 ~ 11
VEA36H2V18	5 ~ 7	7 ~ 9
VEA48H2V18	10 ~ 12	7 ~ 9
VEA60H2V18	12 ~ 14	7 ~ 9

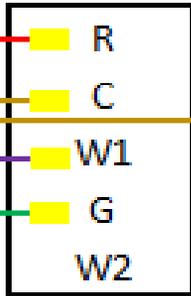
Note: Please refer to last page for final Superheat and subcooling charts.

Note: Need to set the dip switch first before the unit power on.

MODEL	SW1 ON THE INDOOR			FAN SPEED
	1	2	3	
DHV24H2V18	ON	OFF	OFF	MEDIUM
/	OFF	ON	OFF	MEDIUM HIGH
DHV36H2V18	OFF	OFF	ON	HIGH
DHV60H2V18	ON	OFF	OFF	LOW
	OFF	ON	OFF	MEDIUM
	OFF	OFF	ON	HIGH



24V



(4 Wires will be connected: R/C/W1 (To Heat-Strip)/G)

		STATIC PRESSURE - INCHES W.C.						
		0	0.1	0.16	0.2	0.3	0.4	0.5
DHV24H2V18	MEDIUM	601	528	475	466	406		
	MEDIUM HIGH	701	650	609	602	547	489	422
	HIGH	943	894	861	853	805	754	694
DHV36H2V18	MEDIUM	1077	1031	986	964	885	811	735
	MEDIUM HIGH	1268	1220	1171	1150	1115	1045	898
	HIGH	1534	1478	1427	1407	1350	1306	1238
DHV60H2V18	LOW	1379	1348	1295	1264	1254	1206	
	MEDIUM	1671	1629	1576	1535	1524	1469	1409
	HIGH	1943	1886	1828	1774	1757	1695	1628

24V

(4 Wires will be connected: W/Y/B/C)



# Scenario 2:

24V Thermostat

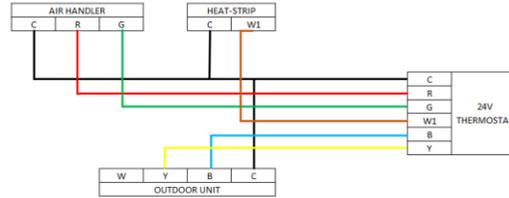
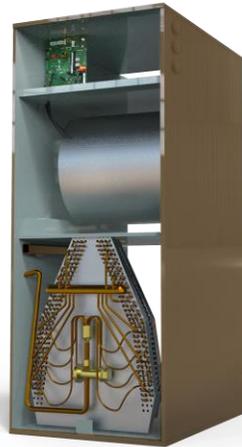
24V +

Innovair Goldtec AHU Indoor unit

24V +

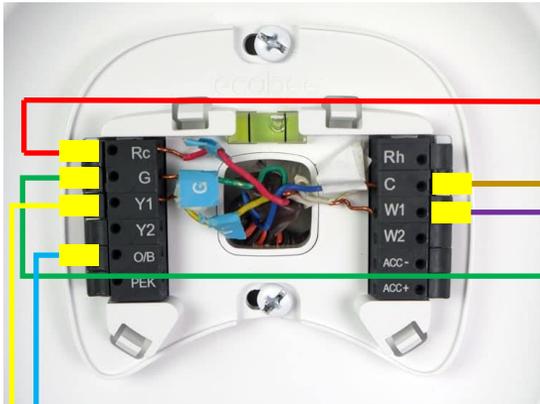
Third Party Outdoor unit

Ecobee 24V thermostat as an example

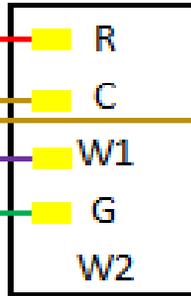


Note: Need to set the dip switch first before the unit power on.

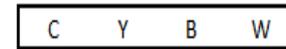
MODEL	SW1 ON THE INDOOR			FAN SPEED
	1	2	3	
DHV24H2V18 / DHV36H2V18	ON	OFF	OFF	MEDIUM
	OFF	ON	OFF	MEDIUM HIGH
DHV60H2V18	ON	OFF	OFF	LOW
	OFF	ON	OFF	MEDIUM
	OFF	OFF	ON	HIGH



24V



(4 Wires will be connected: R/C/W1 (To Heat-Strip)/G)



24V

(4 Wires will be connected: W/Y/B/C)

		STATIC PRESSURE - INCHES W.C.						
		0	0.1	0.16	0.2	0.3	0.4	0.5
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DHV60H2V18	LOW	1379	1348	1295	1264	1254	1206	
	MEDIUM	1671	1629	1576	1535	1524	1469	1409
	HIGH	1943	1886	1828	1774	1757	1695	1628

# Scenario 3:

24V Thermostat

24V +

The third-party Indoor unit or Furnace as a Heat-Pump

24V +

Innovair Goldtec Outdoor unit

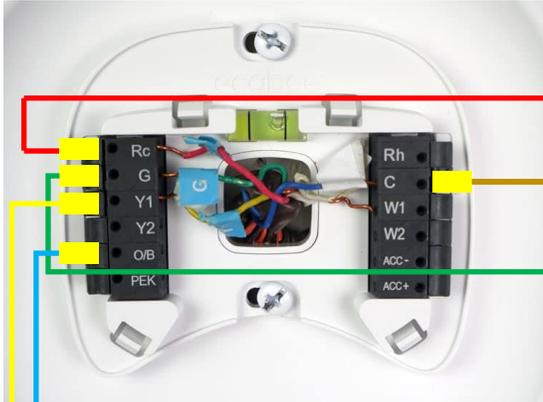
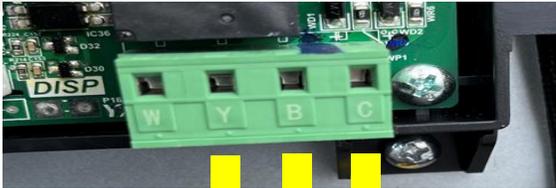
Ecobee 24V thermostat as an example



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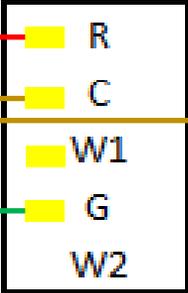
Note: Please refer to last page for final Superheat and subcooling charts.

Note: If you will be using this outdoor unit as a heat-pump, make sure you have a heat-pump TXV installed on your indoor unit.



(4 Wires will be connected: R/C/W1/G)

24V



24V  
(4 Wires will be connected: W/Y/B/C)

# Scenario 4:

24V Thermostat

24V  
+

TheThe third-party Indoor unit or Furnace as Straight Cooling

24V  
+

Innovair Goldtec Outdoor unit

Ecobee 24V thermostat as an example

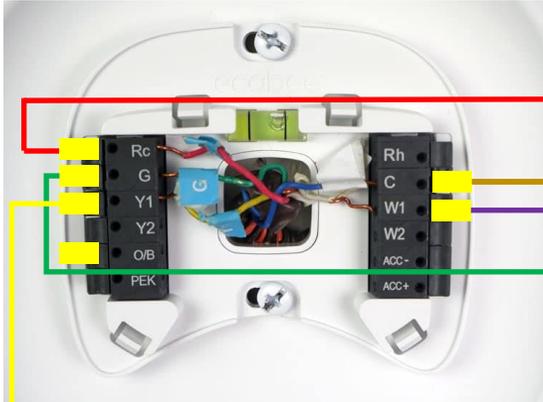
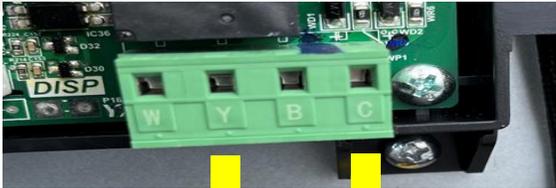


Note: If you will be using this outdoor unit as a cooling only unit, make sure you have at least a TXV installed on your indoor unit.



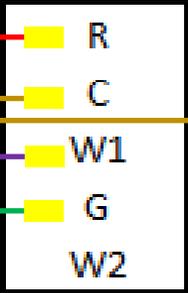
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Note: Please refer to last page for final Superheat and subcooling charts.



(4 Wires will be connected: R/C/W1 (For Heat-Strip)/G)

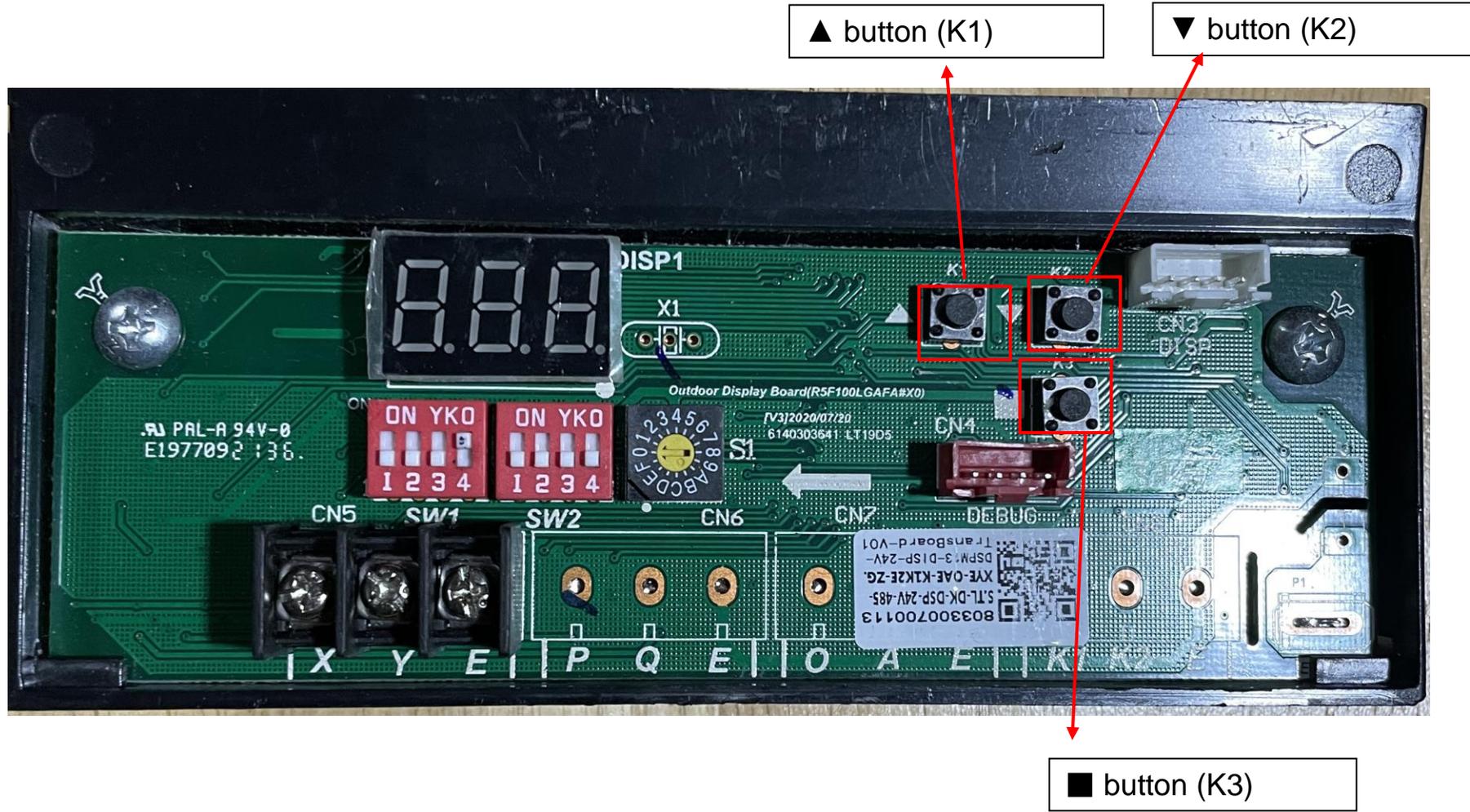
24V



24V

(2 Wires will be connected: Y/C)

Outdoor Interface Board:



## Force Cooling Procedure :

### Indoor Unit:

**Step 1:** Have the indoor fan on the ON position.

### Outdoor Unit:

**Step 2:** Short press “■” (K3); force cooling mode, display board will show “dH”

**Step 3:** Long press “■” (K3); entering test mode, and you can change unit parameter manually: When it show “Sc”, then you can set Compressor Frequency manually, using “▲” (K1) and “▼” (K2) to change frequency.

**Step 4:** Choose from table 1.1 the corresponding frequency that you desire to run your unit according to the capacity you are installing the unit for:

Table 1.1:

Compressor Frequency in Force Mode in Cooling				
ODU Capacity	24K	36K	48K	60K
Frequency (Hz)	56	76	56	66

**Step 5:** System may take 10 minutes to ramp up. Operate the system for a minimum of twenty (20) minutes.

**Step 6:** Install your gauges and clamp temperature reader to find the superheat. Make sure the system is properly charged on the superheat values. Use table 1.2 to make sure the unit is inside the corresponding values for the model in use:

Table 1.2:

DESIGN SUPERHEAT / SUBCOOLING		
MODEL	SUPERHEAT - °F	SUBCOOLING - °F
VEA24H2V18	3 ~ 5	9 ~ 11
VEA36H2V18	5 ~ 7	7 ~ 9
VEA48H2V18	10 ~ 12	7 ~ 9
VEA60H2V18	12 ~ 14	7 ~ 9

**Step 7:** Once the unit has the proper superheat, the power source to the outdoor unit must be removed in order to forget the Force Cooling Mode. If this is not done the outdoor unit will continue to run nonstop and can ruin the unit.

## Additional Guides:

Suction Temp (°F)	Final Superheat (°F)								
	6	8	10	12	14	16	18	20	22
	Suction Gauge Pressure (PSI)								
40	105	101	97	93	89	86	82	78	75
42	109	105	101	97	93	89	86	82	78
44	114	109	105	101	97	93	89	86	82
46	118	114	109	105	101	97	93	89	86
48	123	118	114	109	105	101	97	93	98
50	128	123	118	114	109	105	101	97	93
52	133	128	123	118	114	109	105	101	97
54	138	133	128	123	118	114	109	105	101
56	143	138	133	128	123	118	114	109	105
58	148	143	138	133	128	123	118	114	109
60	153	148	143	138	133	128	123	118	114
62	159	153	148	143	138	133	128	123	118
64	164	159	153	148	143	138	133	128	123
66	150	164	159	153	148	143	138	133	128
68	176	150	164	159	153	148	143	138	133
70	182	176	150	164	159	153	148	143	138
72	188	182	176	150	164	159	153	148	143

Liquid Temp (°F)	Final Sub cooling (°F)							
	6	7	8	9	10	11	12	13
	Liquid Gauge Pressure (PSI)							
55	173	176	179	182	185	188	191	195
60	188	191	195	198	201	204	208	211
65	204	208	211	215	218	221	225	229
70	221	225	229	232	236	239	243	247
75	239	243	247	251	255	259	265	266
80	259	265	266	270	275	279	283	287
85	279	283	287	291	295	300	304	309
90	300	304	309	313	318	322	327	331
95	322	327	331	336	341	346	351	355
100	346	351	355	360	365	370	376	381
105	370	376	381	386	391	397	402	407
110	397	402	407	413	418	424	430	435
115	424	430	435	441	447	453	459	465
120	453	459	465	471	477	483	489	496
125	483	489	496	502	508	515	521	528

### Additional refrigerant:

The unit comes pre-charged for installations up to 15 feet. If you need to add refrigerant, add 0.6 oz/feet.

**Note:** The only approved procedure for setting a valid system charge is by using the charging mode: Cooling. Outdoor temperature must be between 55°F and 120°F with Indoor temperature kept between 70°F and 80°F.

## Outdoor Check Table:

01	Outdoor power (Model)
02	Run mode (0: Standby mode / 2: Cooling mode / 3: Heating mode)
03	Target frequency (Hz; Actual value)
04	Running frequency (Hz; Actual value)
05	Actual frequency (Hz; Actual value)
06	Fan Speed (High / Low; Actual value)
07	Temp transform by pressure sensor (°F; Actual value)
08	T3 condenser coil temp (°F; Actual value)
09	T4 outdoor ambient temp (°F; Actual value)
10	T5 exhaust temp (°F; Actual value)
11	AC current (A; Actual value)
12	Compressor current
13	AC Voltage (VAC; Actual value)
14	DC Voltage (VDC; Actual value)
15	EXV opening degree (step; Actual value/4)

16	Frequency increase (Shift; Actual value)
17	EV (Step; Actual value)
18	-----
19	IPM modular temp Tfin (°F; Actual value)
20	Oil Output (CC; Actual output)
21	Target Temp Tes/Tcs (°F; Actual value)
22	Pressure value (PSI; Actual value)
23	Pressure value transform by T3 (PSI; Actual value*25)
24	-----
25	Target superheat (°F; Actual value)
26	Discharge temp superheat (°F; Actual value)
28	Ability Test Mode (1-40; Mode gear)
29	Software version number (1-255)
31	Enter PI control sign (0 or 1)
34	Frequency limit item
37	Last failure or protection code

### Outdoor Unit:

**While in running mode:** With the “▲” (K1) and “▼” (K2) navigate through the outdoor check options.

## Failure & Protection Table:

Code	Failure or protection definition
E4	T4 outdoor air temperature sensor fault
E6	T3 Condenser Coil temperature sensor fault
E5	T5 Exhaust temperature sensor fault
E9	AC overvoltage/undervoltage protection
E10	EEPROM failure
E12	IPM modular sensor error
E13	Pressure sensor error
E14	T3 or T5 sensor disconnect error
E15	High pressure switch error
H0	Communication fault of master board and driver chip
H1	T3 sensor high temperature error (In cooling mode) (20 times P5 error within 180 mins)
H2	High pressure switch error (20 times P1 error within 150 mins)
H3	High pressure abnormal in heating mode (20 times P13 error within 180 mins)
H4	IPM modular high temp error (20 times P8 within 120 mins)
H5	Low pressure error (20 times P2 within 100 mins)
H6	Discharge temperature abnormal error (20 times P4 within 100 mins)
H7	Wet operation error (20 times P12 within 200 mins)
H8	T3 condenser sensor disconnect error (20 times E14 within 100 mins)
H12	Discharge temp sensor disconnect error (20 times E14 within 180 mins)
P1	High pressure protection
P2	Low pressure protection
P3	Inverter overcurrent protection

Code	Failure or protection definition
P4	Exhaust overheating protection
P5	T3 condenser coil sensor high temp protection (In cooling Mode)
P6	IPM protection
P8	IPM high temperature protection (Ft)
P9	DC fan motor error
P12	Wet operation error
P13	High pressure abnormal error ( In heating mode)
P14	High compression ratio protection
P15	Low compression ratio protection
L1	DC cable bus low voltage protection
L2	DC cable bus high voltage protection
L4	MCE Fault / sync / closed loop
L5	Zero speed protection
L7	Compressor phase loss protection ratio protection
L8	Compressor stalls
L9	Frequency limitation or decline by high pressure
LA	Frequency limitation by voltage
LC	Frequency limitation by condenser temp
LD	Frequency limitation by discharge temp
LE	Frequency limitation by IPM modular high temp
LF	Frequency limitation by current
d0	Oil return
dF	Defrost
dH	Force Cooling