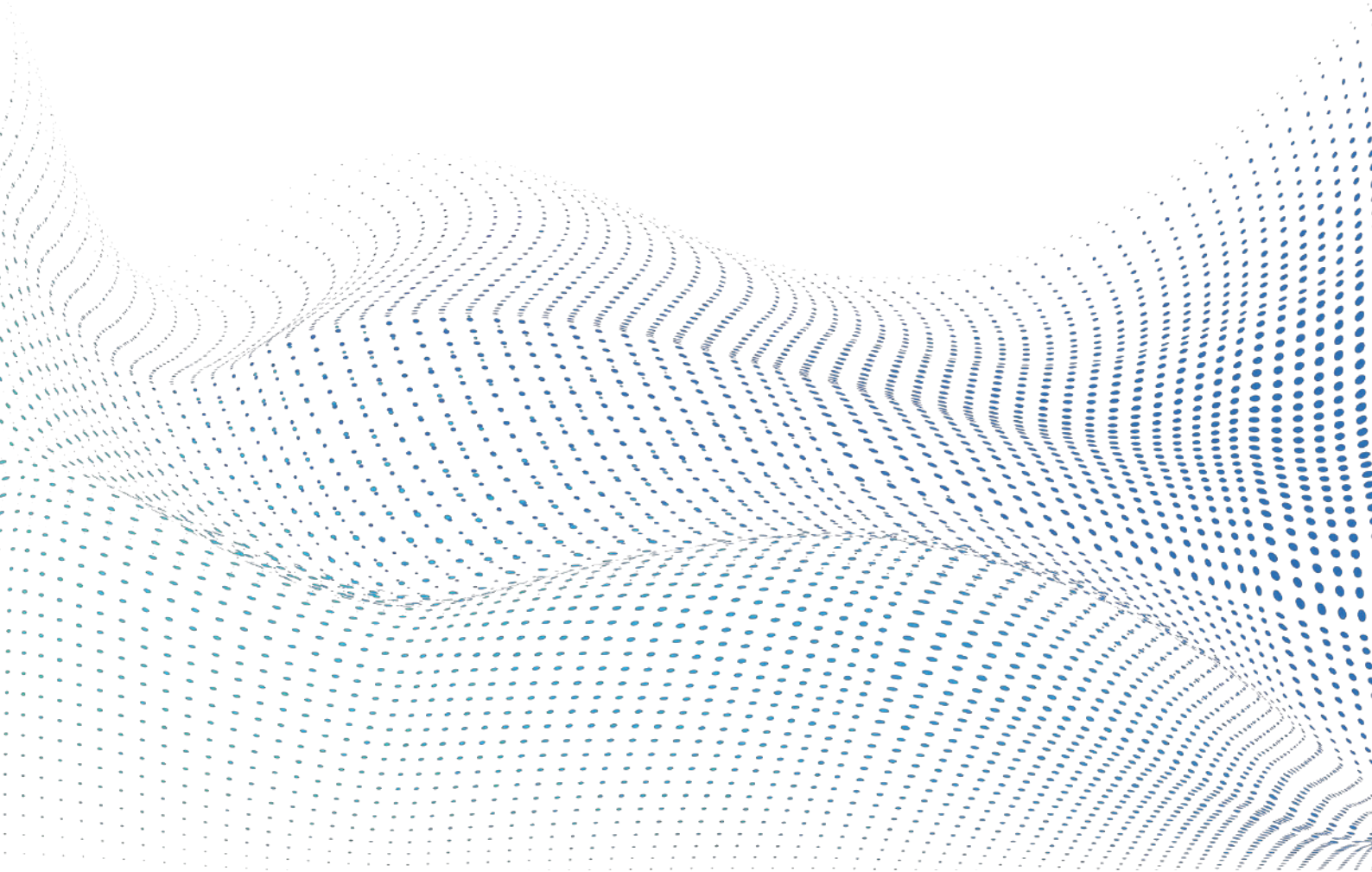
COOLPRO

Technical Manual

R454b 60Hz Elite Series Inverter Heat Pump Splits Systems



Content

Part 1. General Information

1. Model Names of Indoor/Outdoor Units

1.1 Indoor Units

Model name	Dimension(W×H×D) (inch)	Power supply
CP20S24HPAH	19-5/8×45-3/4×22	208/230V-1Ph-60Hz
CP18S36HPAH	19-5/8×45-3/4×22	208/230V-1Ph-60Hz
CP18S48HPAH	22×53-1/8×24-1/2	208/230V-1Ph-60Hz
CP17S60HPAH	22×53-1/8×24-1/2	208/230V-1Ph-60Hz

1.2 Outdoor Units

Model name	Dimension(W×H×D) (inch)	Power supply
CP20S24HPCO	29-1/8×25×29-1/8	208/230V-1Ph-60Hz
CP18S36HPCO	29-1/8×25×29-1/8	208/230V-1Ph-60Hz
CP18S48HPCO	29-1/8×32-7/8×29-1/8	208/230V-1Ph-60Hz
CP17S60HPCO	29-1/8×32-7/8×29-1/8	208/230V-1Ph-60Hz

2. External Appearance

20SEER2 CONDENSER		
capacity	2/3 Ton	4/5 Ton
pic		
model	CP20S24HPCO CP18S36HPCO	CP18S48HPCO CP17S60HPCO
20SEER2 AIR HANDLER		
capacity	2/3 Ton	4/5 Ton
pic		
model	CP20S24HPAH CP18S36HPAH	CP18S48HPAH CP17S60HPAH

3. Features

3.1 Wide operation range.

3.2 Well-known brand inverter compressor, reliable quality.

3.3 Condenser coils constructed with copper tubing and enhanced golden fins.

3.4 Use TXV (cooling) as expansion device, and heat pump type with EXV.

3.5 DC fan motors, provide selections of air flow to meet desired applications.

3.6 ECM fan motor for air handlers, higher efficiency, lower noise, constant speed.

3.7 24V control, time delay relay, fan relay and transformer included.

3.8 R454b environment friendly refrigerant.

3.9 The air handler unit has a refrigerant leakage sensor, providing safer protection.

3.10 AHRI certification, ETL certification.

3.11 Energy efficiency up to 20SEER2

3.12 Multiple defrosting modes are available.

3.13 RS485 communication mode can be selected, and the manufacturer's wired controller can be used to query the operating parameters of the indoor unit.

3.14 The mainboard program can be upgraded via USB without a computer or special burning tool.

3.15 Multiple operating modes are available, including Accelerated cooling/ heating, forced cooling, / heating.

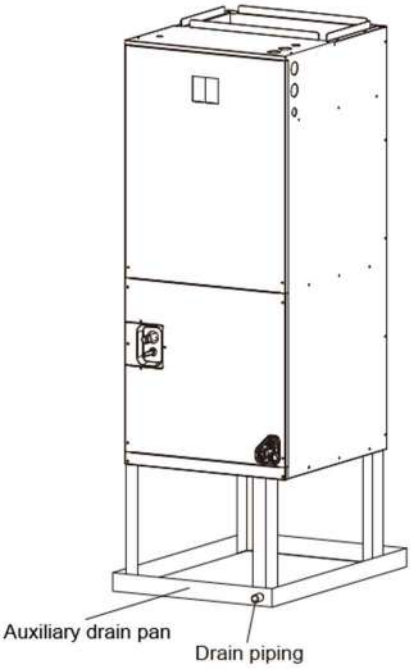
3.16 Refrigerant leakage sensor is configured to detect the refrigerant content in the air

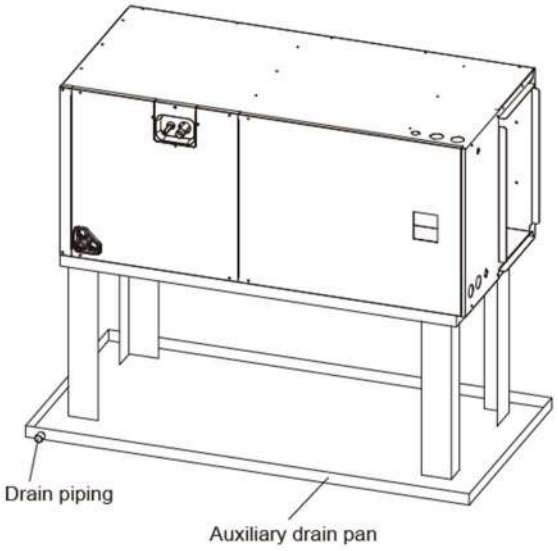
Intelligent oil return program to provide operating life

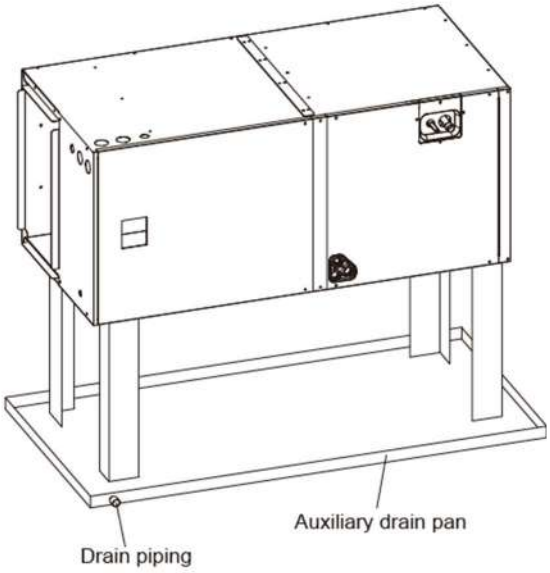
“A” shape coils, constructed with Oxygen-free copper tubing and enhanced aluminum fins

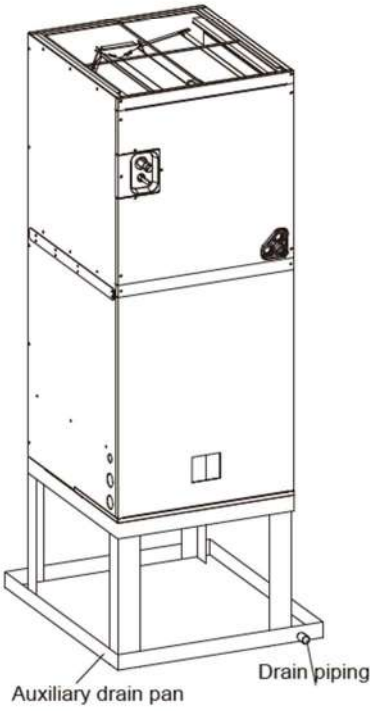
Detachable air filter for cleaning or renewal

(6) Versatile 4-way convertible design. The air can be discharged from four directions.


Auxiliary drain pan
Drain piping


Drain piping
Auxiliary drain pan


Auxiliary drain pan
Drain piping


Drain piping
Auxiliary drain pan

Part 2. Indoor Unit

1.Specification

Model			24K	36K	48K	60K
Power supply		V/Ph/Hz	208/230V-1Ph-60Hz			
Cooling	Capacity	Btu/h	24000	34000	47500	55000
	EER2	Btu/h.W	13.3	11.7	11.3	10
	SEER2	Btu/h.W	20	18.6	17.5	17
Heating	Capacity	Btu/h	24000	34200	48000	57000
		Btu/h(17℉)	19200	24000	40000	42000
		Btu/h(5℉)	20000	24000	34200	42500
	5℉ COP		2.1	2.1	2.1	2
	HSPF2		9.4	9.0	9.0	8.6
Minimum Circuit Ampacity		A	4	4	5	5
Max. Overcurrent Protection		A	6	6	10	10
Indoor coil	Number of rows*coil quantity		4*2	4*2	2*4	2*4
	Tube outside dia. / Type		7mm / Rifled tube			
	Fin spacing / Thickness / Type	mm / mm	1.6 / 0.095 / Hydrophilic aluminium			
	Length*Width*Height	mm	447*420*53.48		546*511*26.74	
	Tube pitch(a) × row pitch(b)	mm	13.37*10.5	13.37*10.5	13.37*10.5	13.37*10.5
Indoor motor	type		ECM			
	Rated HP	HP	1/3	1/2	3/4	3/4
	Rated RPM	r/min	1050	1050	1050	1050
	FLA		2.6	3.8	5.4	5.4
Indoor fan	material		Galvanized plate			
	Type		Centrifugal			
	Diameter	inch	φ273×272×φ12.7-195	φ273×272×φ12.7-195	φ273×272×φ12.7-195	φ273×272×φ12.7-195
Indoor air flow		CFM	700	1050	1670	1850
ESP		Pa	125	125	125	125
Indoor noise level		dB(A)	51	52	59	59
Metering device	Throttle type		TXV			
	Model number		3TR	3TR	5TR	5TR
Electrical Data	Voltage-Phase-Hz	V-Ph-Hz	208/230V 1Ph 60Hz			
	Minimum Circuit Ampacity		4	4	5	5
	Max. Overcurrent Protection		6	6	10	10
	Min / Max Volts	V	187 / 253	187 / 253	187 / 253	187 / 253
Indoor unit	Dimension (W×H×D)	mm	500×1162×560		560×1350×620	
		in.	19-5/8×45-3/4×22		22×53-1/8×24-1/2	
	Packing (W×H×D)	mm	580×1210×650		640x1390x710	
		in.	22-5/6×47-5/8×25-3/5		25-1/5×54-3/4×28	
	Net / Gross weight	kg	59 / 65	59 / 65	77/83	77/83
		lbs	130/ 143	130/ 143	169/182	169/182
Refrigerant piping Liquid side / Gas side		in.	3/8 / 3/4	3/8 / 3/4	3/8 / 7/8	3/8 / 7/8

Notes:
1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°C DB, 19°CWB; Outdoor temp: 35°C DB; Equivalent ref. piping: 5m (horizontal)
2.Actual noise level may differ, depending on the room structure, etc., since these noise values are from an anechoic room.

2.Dimension

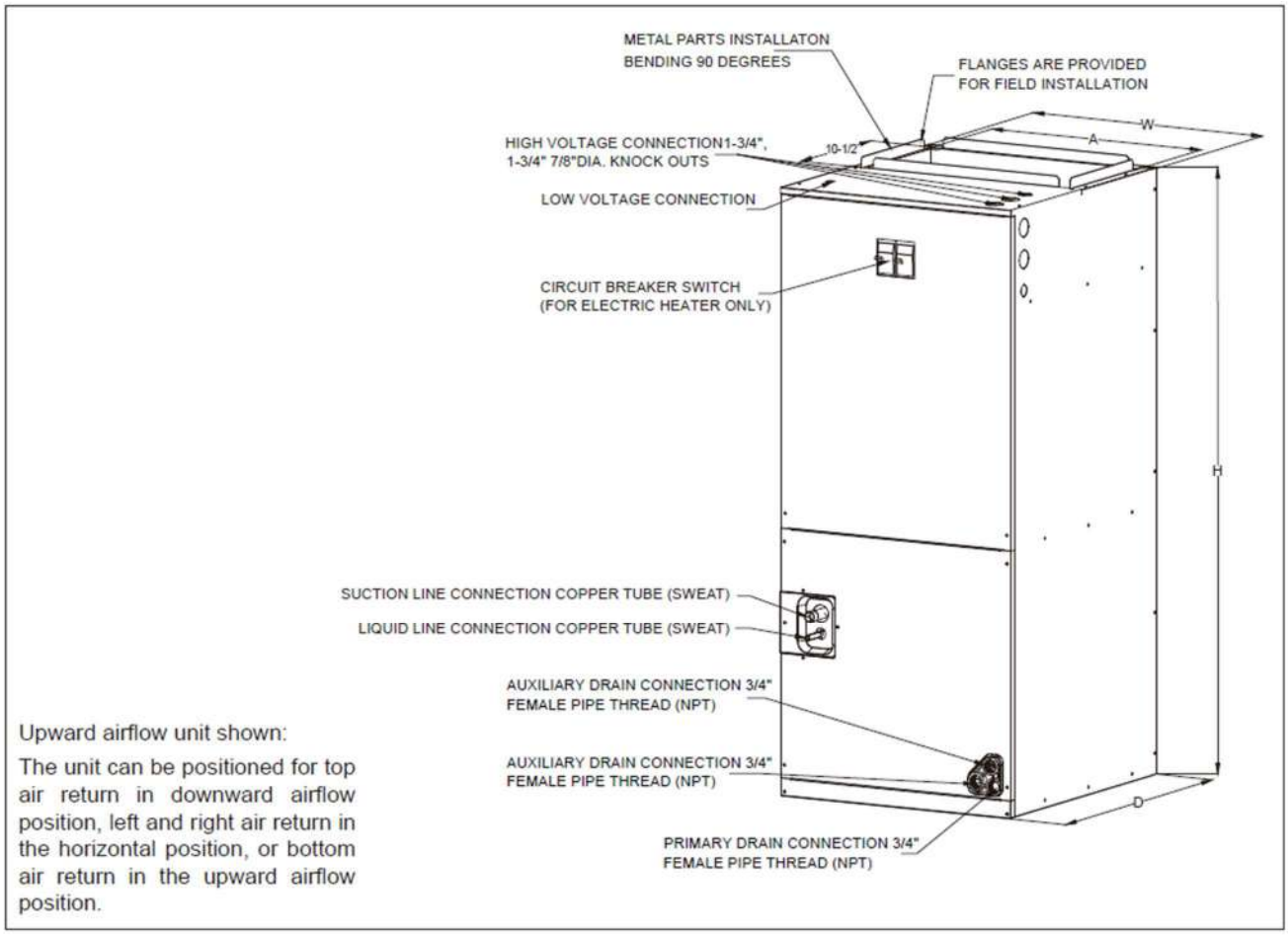
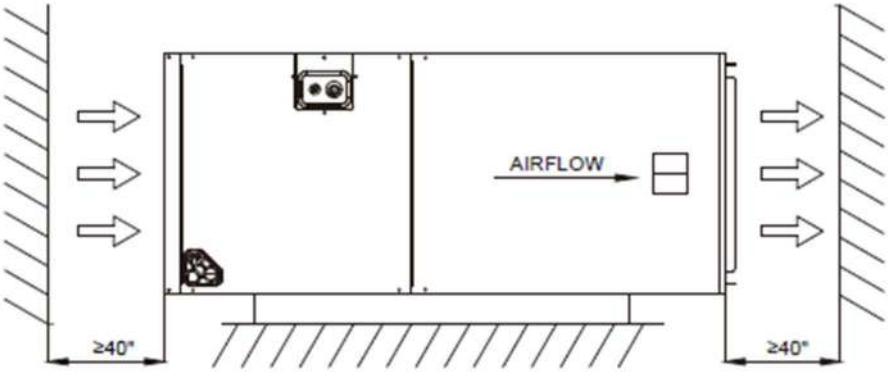


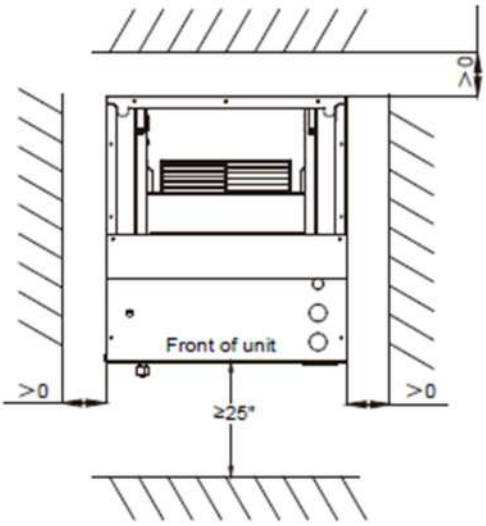
Fig.1 DIMENSIONS					
DIMENSIONAL DATA					
MODEL SIZE	Dimensions				
	UNIT HEIGHT "H"/in （mm）	UNIT WIDTH "W"/in （mm）	UNIT LENGTH "D"/in （mm）	SUPPLY DUCT "A"/in （mm）	LIQUID LINE / VAPOR LINE IN （mm）
24K	45-3/4 [1162]	19-5/8 [500]	22 [560]	17-7/8 [454]	3/8 / 3/4 [9.5]/[19]
36K	45-3/4 [1162]	19-5/8 [500]	22 [560]	17-7/8 [454]	3/8 / 3/4 [9.5]/[19]
48K	53-1/8 [1350]	22 [560]	24 -1/2[623]	19-1/2 [496]	3/8 / 7/8 [9.5]/[22]
60K	53-1/8 [1350]	22 [560]	24 -1/2[623]	19-1/2 [496]	3/8 / 7/8 [9.5]/[22]

3.Service Space

The distance between the air outlet or return air and the wall must be at least 40 inches, and the front of the indoor unit must be at least 25 inches away from the wall.



Clearances in the Horizontal Position



4.Four-way installation

Horizontal right installation is the default factory configuration for all models. By removing the indoor coil assembly and reinstalling the coil, the vertical up flow position can be converted into a horizontal left position. Rotate the device by 90° to the horizontal left position, with the coil segment on the right and the blower segment on the left. Re-install the indoor coil by rotating 180° from the original position. Ensure that the fixing groove is fully engaged with the coil guide rail. When configured to be placed horizontally above the ceiling and/or living space, it is recommended to use an additional field supplied drain pan.

Steps to Change Cabinet Direction to Vertical Downward or Horizontal Left Direction

1. Remove the screws and the front panel, and disconnect the plug of TI sensor 、T2 sensor and leak
detection sensor wire from the circuit board (Figure 4.1, Step 1).
2. Pull out the coil with sensor wire (do not disconnect T1 sensor、 T2 sensor and leak detection sensor
from the coil). (Figure 4.2, Step 2)
3. Install the coil in the correct direction and fix it in place. Reinsert those sensor wire in PCBA through
the gap on the cabinet cover (Figure 4.3, Step 3).

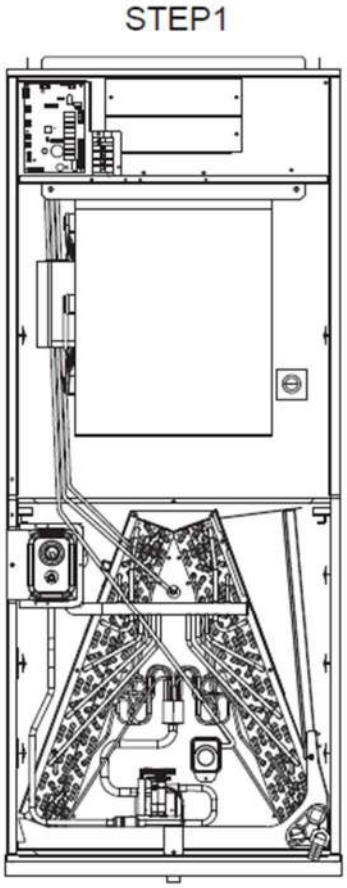


Figure 4.1

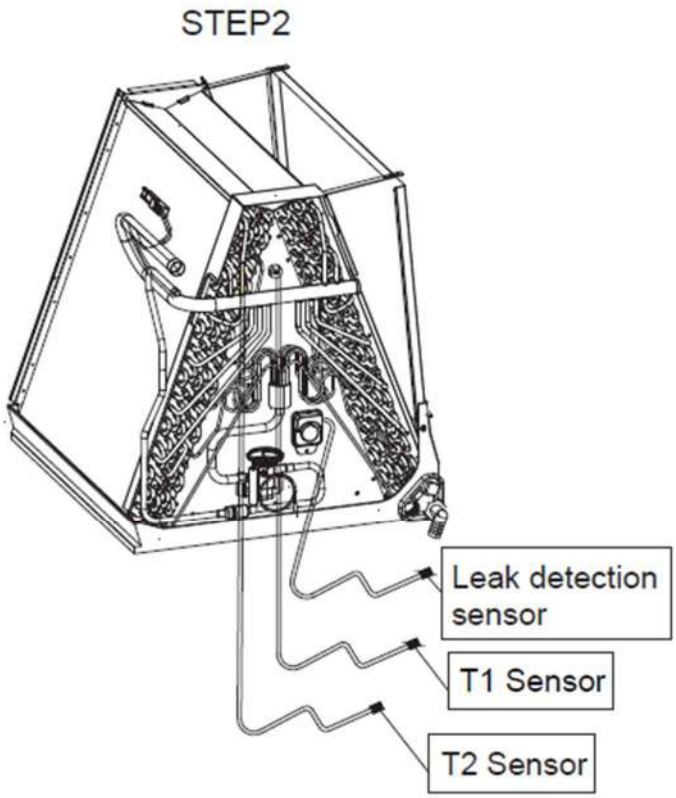


Figure 4.2

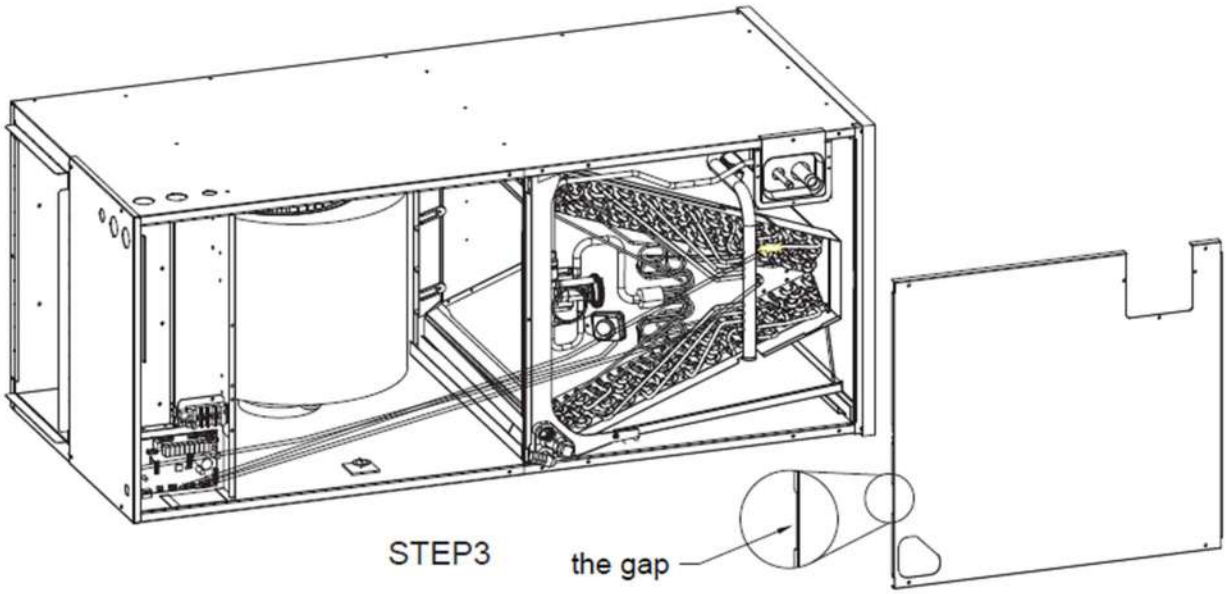


Figure 4.3

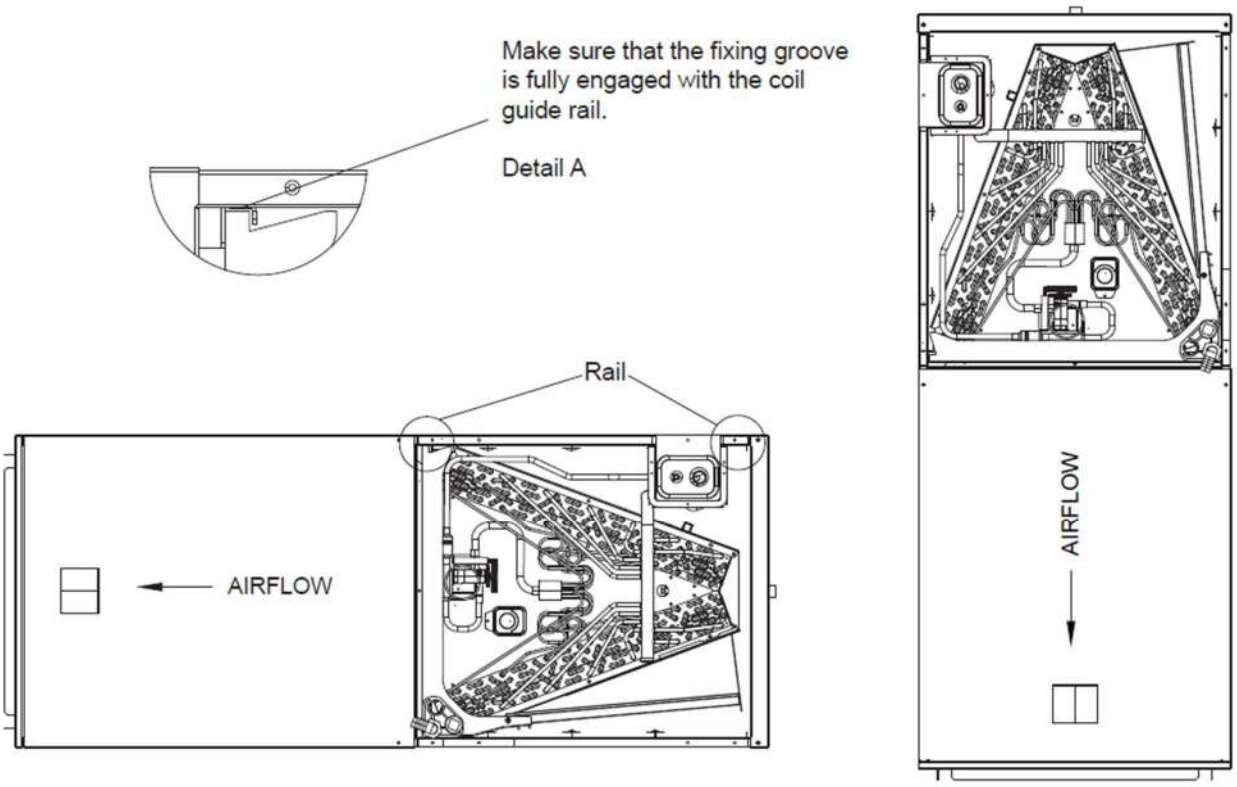
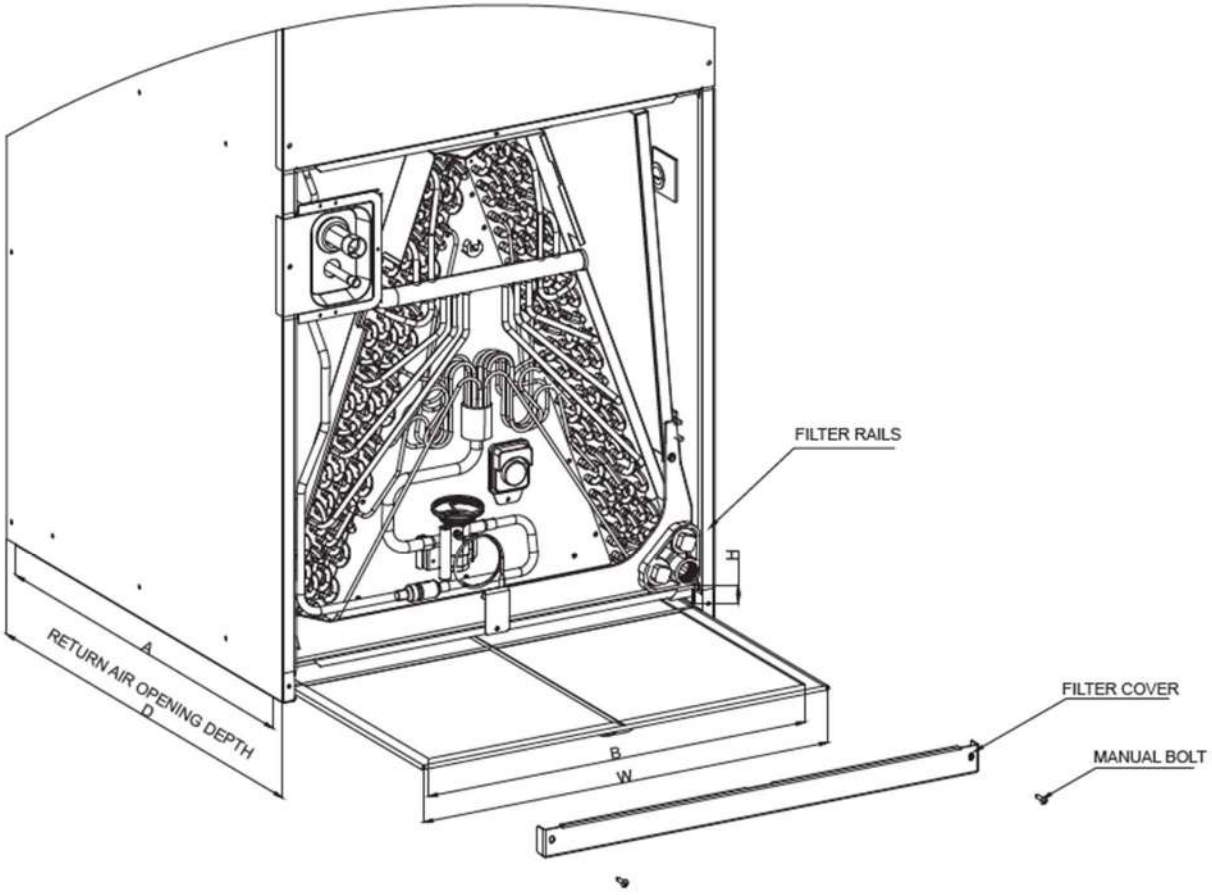


Figure 4.3

5.Air Filter (Not Factory Installed)

The filter is not included in the device and must be provided on site.
The size of external filters or other filtering devices must me et the maximum flow rate of 300ft/min or meet the recommended value of filter type.
The application and placement of filter is very important for airflow, which may affect the performance of heating and cooling system. Reduced airflow will shorten the life of the main components of the system, such as motors, components, thermal relays, evaporator coils or compressors. Therefore, we recommend that the return air duct system has only one filter position. For systems without return air filter grids, multiple filter grids can be installed at each return air opening.
If a high-efficiency filter screen or electronic air filtration system is used, it is very important that the air flow rate is not reduced. If the air flow decreases, the overall performance and efficiency of the device will decrease. It is strongly recommended to contact professional installation technicians to ensure the correct installation of such filtration systems.



Model	Filter size inches [mm]	"W" Inch [mm]	"D" Inch [mm]	"H" Inch [mm]	Return Width "A" inch [mm]	Return Length "B" inch [mm]
24K/36K	18.1×21.4[460×544]	18.3 [466]	21.6 [548]	1 [25.4]	20.8 [528]	16.3 [414]
48K/60K	20.5×23.8[521×605]	20.7 [526]	23.9 [608]	1 [25.4]	23 [584]	18.8 [478]

6.Electric heater

Heat kit model	AHU model	electric heat	MIN. Circuit Ampacity		MAX. Fuse or Breaker Ampacity		Fan speed				
		(kW)	208 VAC	230 VAC	208 VAC	230 VAC	1	2	3	4	5
21-4444-01	24K	5	20	25	30	35	●	●	●	●	●
21-4444-02		7.5	30	35	40	45	×	×	●	●	●
21-4444-03		10	40	45	55	60	×	×	×	●	●
21-4444-01	36K	5	20	25	30	35	●	●	●	●	●
21-4444-02		7.5	30	35	40	45	×	●	●	●	●
21-4444-03		10	40	45	55	60	×	×	●	●	●
21-4444-04		15	30+30	35+35	40+40	45+45	×	×	×	●	●
21-4444-01	48K	5	20	25	30	35	●	●	●	●	●
21-4444-02		7.5	30	35	40	45	●	●	●	●	●
21-4444-03		10	40	45	55	60	×	●	●	●	●
21-4444-04		15	30+30	35+35	40+40	45+45	×	×	●	●	●
21-4444-05		20	40+40	45+45	55+55	60+60	×	×	×	●	●
21-4444-01	60K	5	20	25	30	35	●	●	●	●	●
21-4444-02		7.5	30	35	40	45	●	●	●	●	●
21-4444-03		10	40	45	55	60	×	●	●	●	●
21-4444-04		15	30+30	35+35	40+40	45+45	×	×	●	●	●
21-4444-05		20	40+40	45+45	55+55	60+60	×	×	×	●	●

● indicates availability, and × indicates unavailability

7.Airflow performance

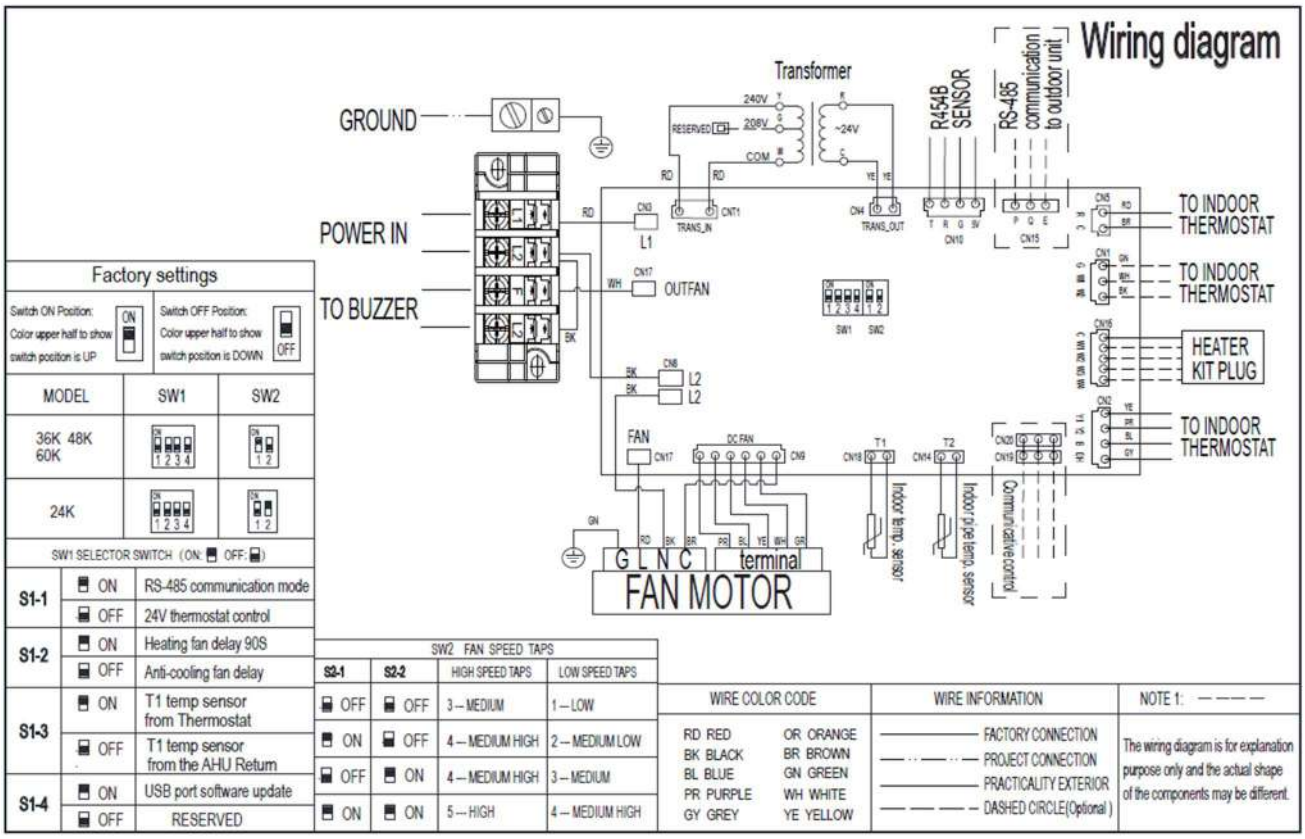
The air flow data is based on the cooling performance of coil and without filter. Performance table, select the appropriate product.
External static pressure ESP should be kept within the minimum and maximum limits shown in the following table to ensure the normal operation of cooling, heating, and electric heating.

Model size of air processor	Motor speed		SCFM								
			External Static Pressure-Inch Water Column [kPa]								
			0[0]	0.1[.02]	0.2[. 05]	0.3[.07]	0.4[.10]	0.5[.12]	0.6[.15]	0.7[.17]	0.8[.20]
24K	Tap (5)	SCFM	1193	1130	1072	1002	931	853	781	722	653
		Watts	139	145	154	161	171	177	187	197	202
	Tap (4)- default high fan	SCFM	1128	1060	998	920	850	766	693	622	573
		Watts	117	122	132	139	148	155	164	170	180
	Tap (3)	SCFM	1028	971	905	827	753	664	598	535	493
		Watts	95	102	111	118	127	133	141	148	156
	Tap (2)- Default low fan	SCFM	907	826	752	657	574	498	445	-	-
		Watts	66	71	79	85	93	100	107	-	-
	Tap (1)	SCFM	697	589	484	382	320	-	-	-	-
		Watts	34	37	45	49	56	-	-	-	-
36K	Tap (5)	SCFM	1491	1438	1390	1337	1290	1245	1187	1112	1053
		Watts	250	256	266	273	284	297	309	317	327
	Tap (4)- default high fan	SCFM	1357	1309	1250	1206	1158	1093	1018	960	890
		Watts	193	205	209	220	231	239	251	262	268
	Tap (3)	SCFM	1238	1184	1115	1069	1006	931	870	792	728
		Watts	147	157	163	174	181	193	204	210	220
	Tap (2)- Default low fan	SCFM	1116	1055	987	932	850	789	720	639	562
		Watts	113	127	128	139	146	157	167	174	183
	Tap (1)	SCFM	1061	937	851	762	692	599	536	472	432
		Watts	100	94	96	104	113	119	128	134	142
48K	Tap (5)	SCFM	2081	2047	2011	1974	1933	1884	1823	1768	1718
		Watts	520	532	543	554	566	570	567	563	560
	Tap (4)- default high fan	SCFM	1914	1874	1830	1787	1744	1703	1660	1609	1571
		Watts	407	418	432	439	449	460	473	479	483
	Tap (3)	SCFM	1766	1720	1675	1636	1588	1540	1486	1441	1392
		Watts	317	327	337	349	358	367	378	386	403
	Tap (2)- Default low fan	SCFM	1559	1514	1462	1408	1362	1318	1265	1203	1137
		Watts	214	235	246	252	263	273	284	296	308
	Tap (1)	SCFM	1370	1319	1271	1215	1164	1102	1035	950	882
		Watts	159	169	179	185	195	207	219	228	239
60K	Tap (5)	SCFM	2081	2047	2011	1974	1933	1884	1823	1768	1718
		Watts	520	532	543	554	566	570	567	563	560
	Tap (4)- default high fan	SCFM	1914	1874	1830	1787	1744	1703	1660	1609	1571
		Watts	407	418	432	439	449	460	473	479	483
	Tap (3)	SCFM	1766	1720	1675	1636	1588	1540	1486	1441	1392
		Watts	317	327	337	349	358	367	378	386	403
	Tap (2)- Default low fan	SCFM	1559	1514	1462	1408	1362	1318	1265	1203	1137
		Watts	214	235	246	252	263	273	284	296	308
	Tap (1)	SCFM	1370	1319	1271	1215	1164	1102	1035	950	882
		Watts	159	169	179	185	195	207	219	228	239

The highlighted area indicates the airflow within the required range of 300-450cfm/ton.

8.Wiring Diagrams

24K/36K/48K/60K



9.Electric Characteristics

Model	Indoor Units					
	Hz	Voltage	Min.	Max.	MCA	MOP
24K	60	208-230V	187V	253V	4.0	6.0
36K	60	208-230V	187V	253V	4.0	6.0
48K	60	208-230V	187V	253V	5.0	10.0
60K	60	208-230V	187V	253V	5.0	10.0

10.The Specification of Wiring

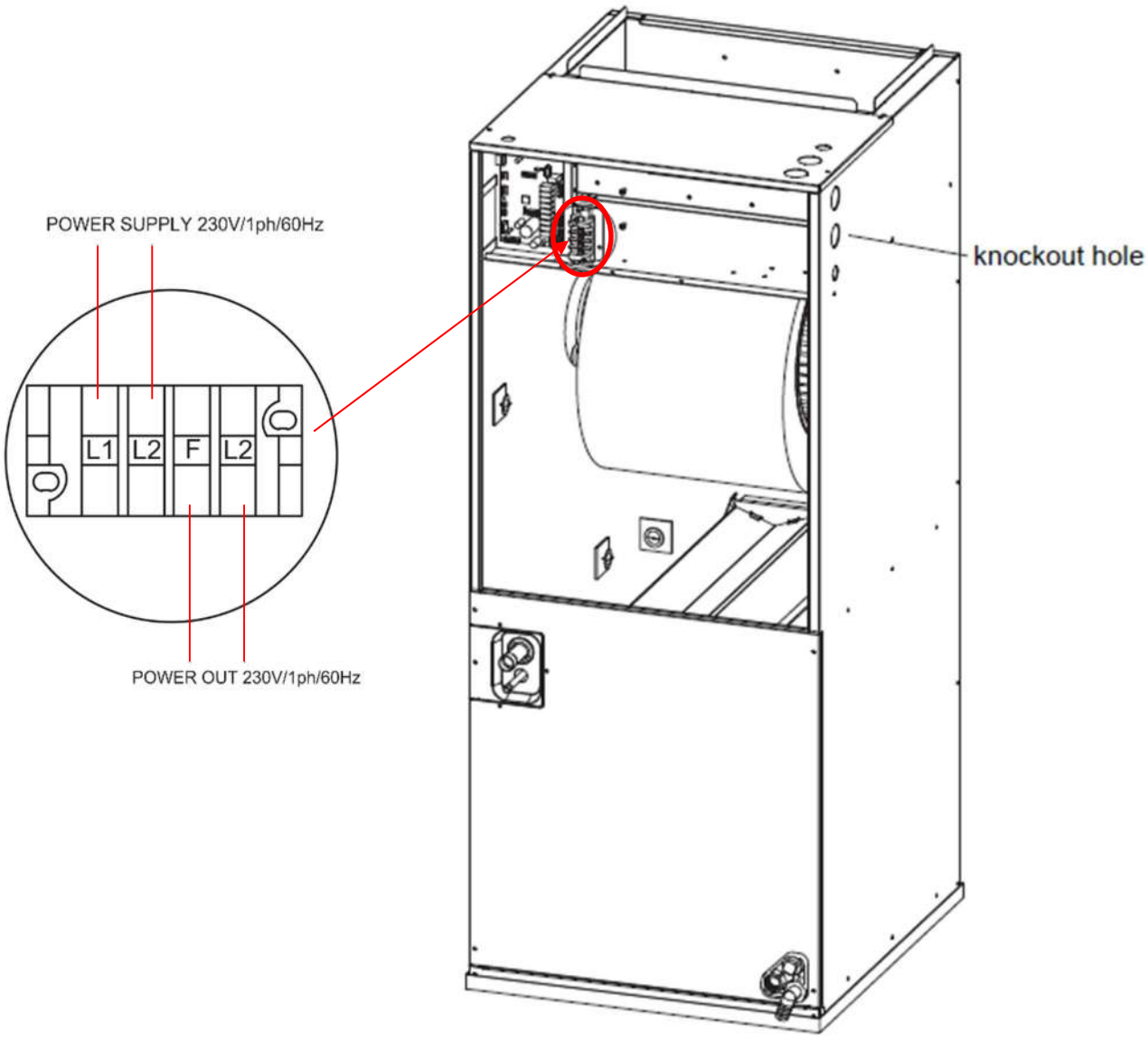
Note:
The cross-section areas of wires or lines should not be less than the corresponding ones listed in the table below; Besides, if the power wires is quite long from the unit, please choose the windings with larger cross-section guarantee the normal power supply.

Model	Type	Indoor power wire /Diameter (AWG)	24V Signal wire Diameter (AWG)	Outdoor power wire /Diameter (AWG)	RS485 communication wire Diameter (mm^2)
24K	Heat Pump	3*16	18	3*14	2 pin shielded cable 0.75㎟
36K	Heat Pump	3*16	18	3*12	2 pin shielded cable 0.75㎟
48K	Heat Pump	3*16	18	3*10	2 pin shielded cable 0.75㎟
60K	Heat Pump	3*16	18	3*10	2 pin shielded cable 0.75㎟

11.Field Wiring

1. To avoid the electrical shock, please connect the air conditioner with the ground lug. The main power plug in the air conditioner has been joined with the ground wiring, please don't change it freely.
2. The power socket is used as the air conditioner specially.
3. Don't pull the power wiring hard.
4. When connecting the air conditioner with the ground, observe the local codes.
5. If necessary, use the power fuse or the circuit, breaker or the corresponding scale ampere.

power supply wiring



During installation, a buzzer or alarm light needs to be installed and connected to the terminal of AHU F/L2. When the AHU detects refrigerant leakage, F/L2 will output 220V voltage. Therefore, the buzzer will receive the signal and respond in time. When the refrigerant concentration reaches the threshold, the indoor airflow will run at the highest gear and the outdoor unit will stop.

24V Thermostat wiring

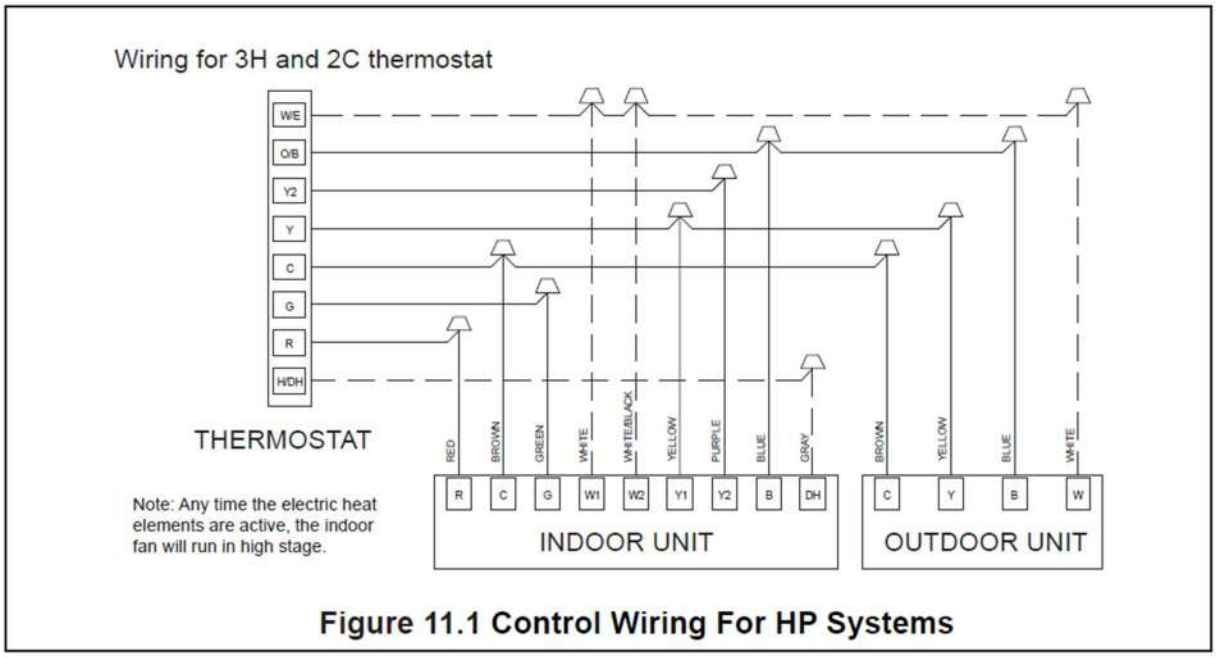


Figure 11.1 Control Wiring For HP Systems

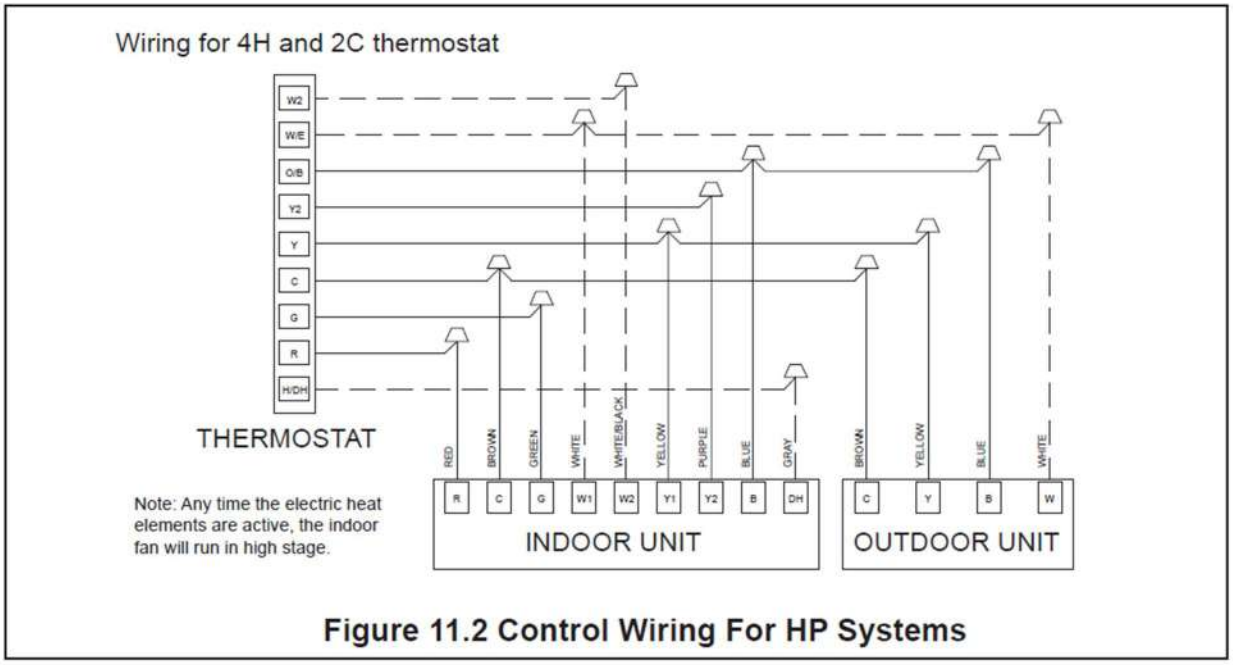


Figure 11.2 Control Wiring For HP Systems

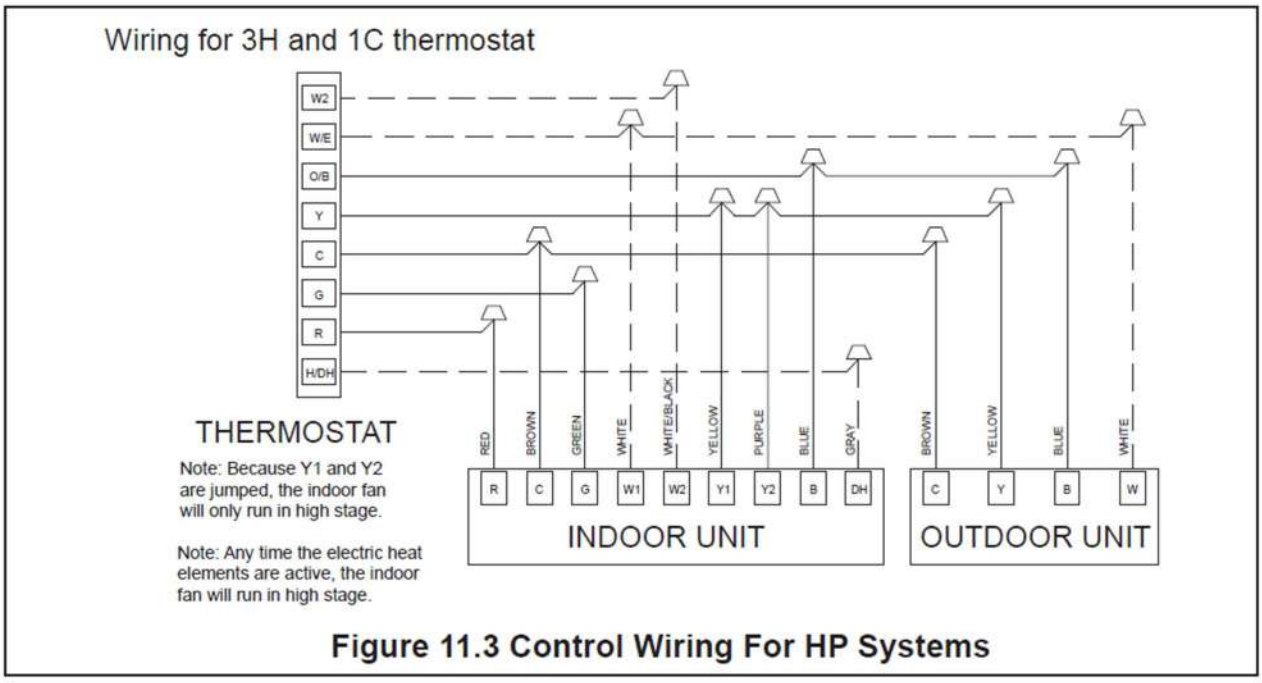


Figure 11.3 Control Wiring For HP Systems

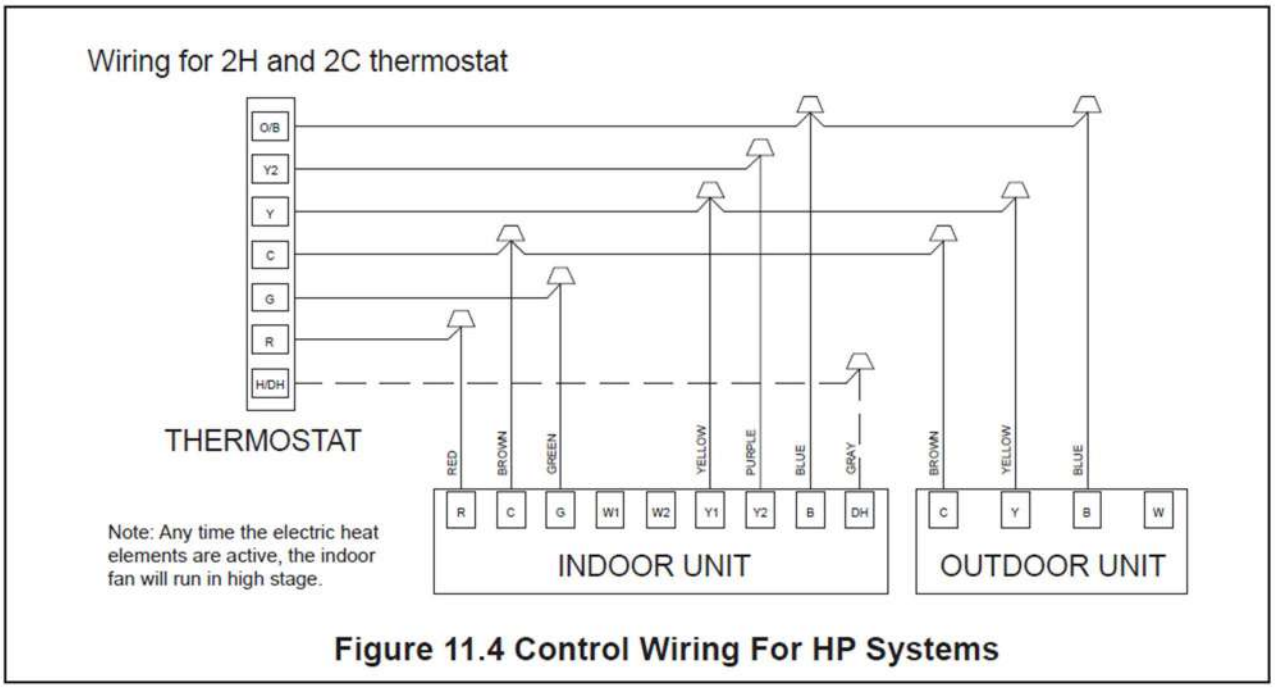


Figure 11.4 Control Wiring For HP Systems

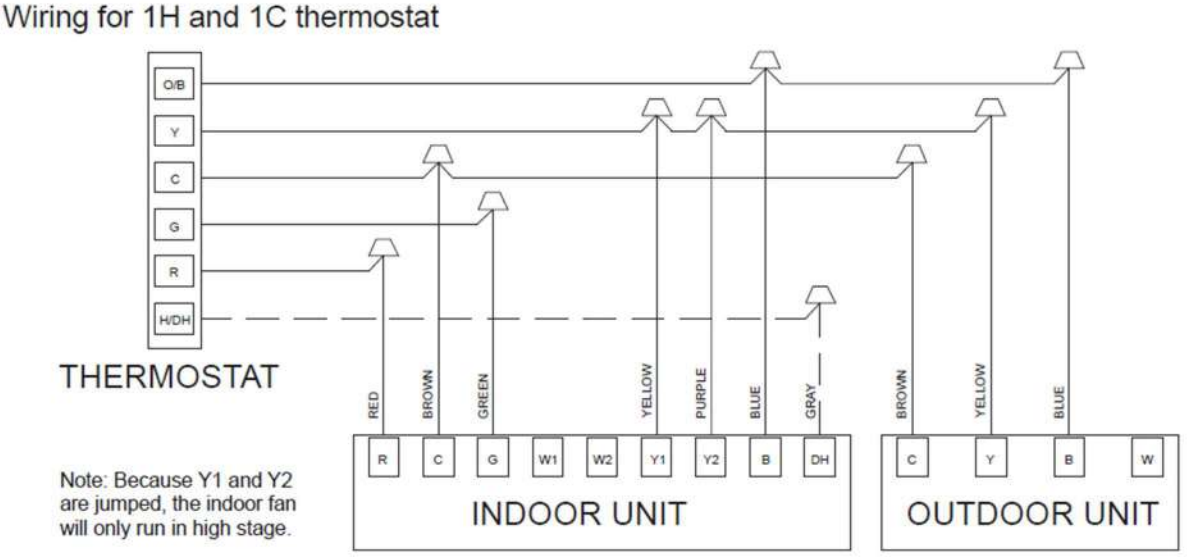


Figure 11.5 Control Wiring For HP Systems

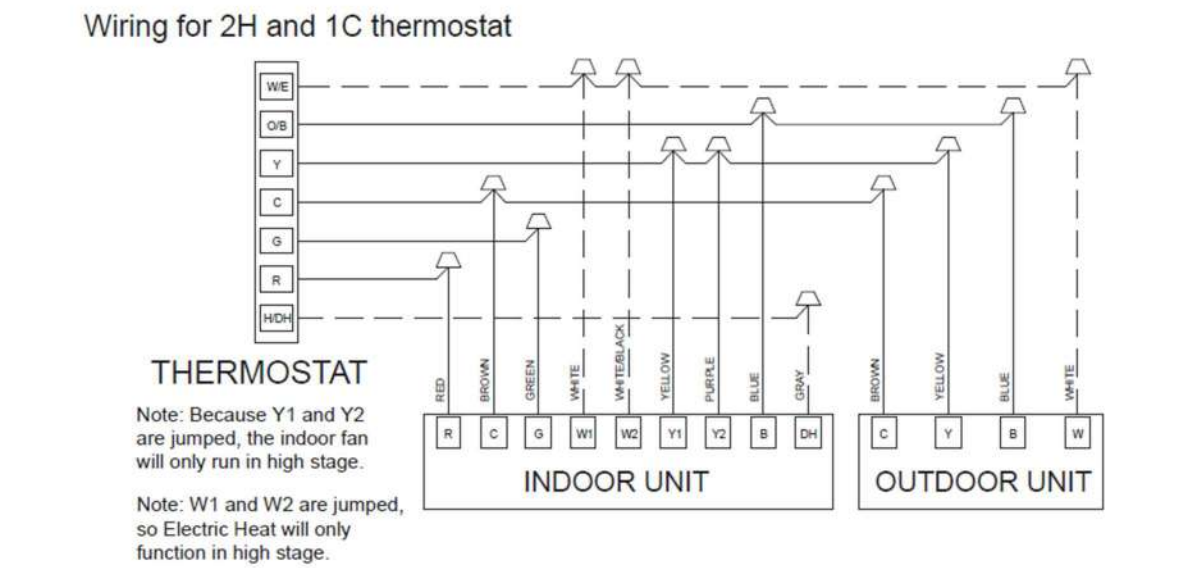
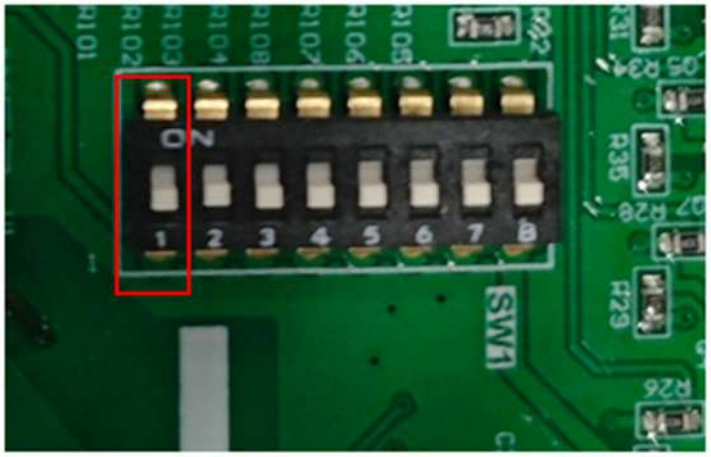


Figure 11.6 Control Wiring For HP Systems

12.RS485 communication wiring

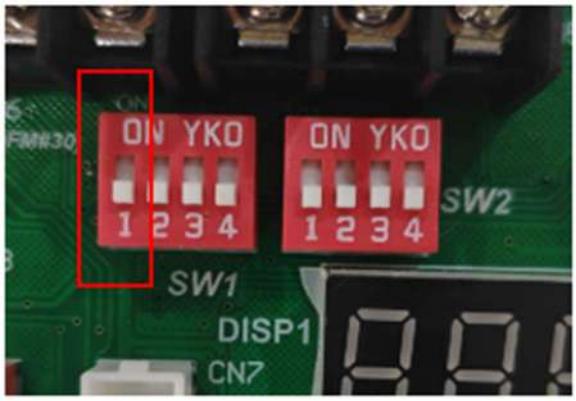
1. Set the dial switch of the indoor and outdoor units to RS485 communication mode.
The SW1-1 dial switch on the indoor mainboard and the SW1-1 dial switch on the ODU display board should both be turned to the “ON” position

Indoor unit



SW1-1	ON	RS-485 communication mode
	OFF	24V control(factory default)

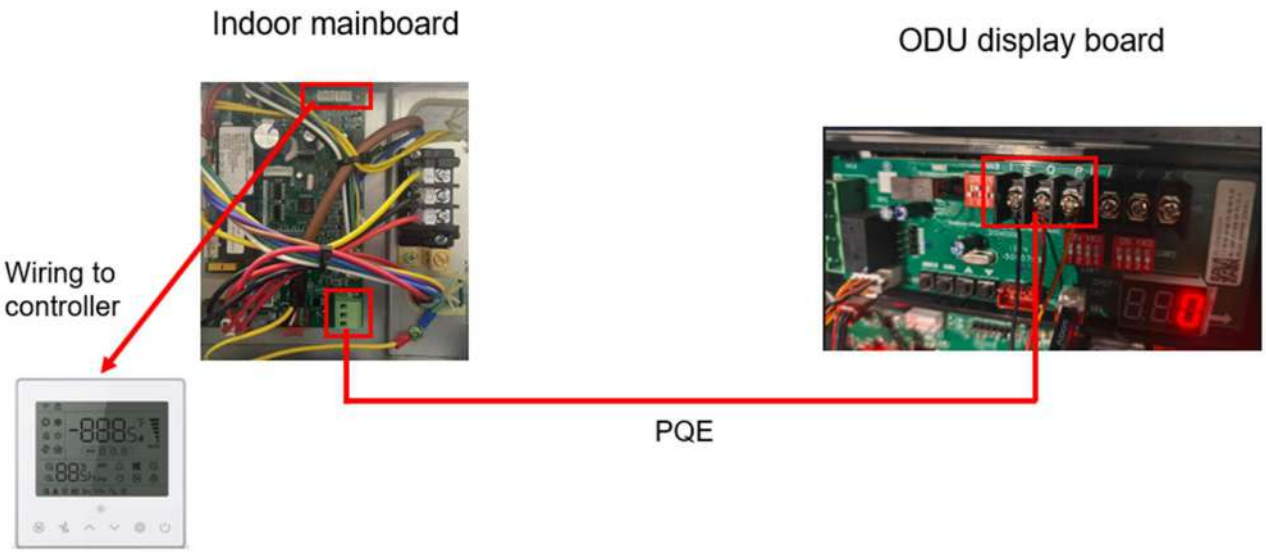
Outdoor unit



SW1-1	ON	RS-485 communication mode
	OFF	24V control (factory default)

2. Connect RS485 communication wire

Connect the indoor and outdoor units, P-P, Q-Q, E-E one by one, using 2-core shielded wires, with the shielding layer of the cable connected to E



NOTE: The wired controller communication cable is provided by the factory, and the PQE communication cables for the IDU and ODU need to be purchased by the customer in the local market

3. 12V wire controller

The 12V wire controller is provided by the factory and is an optional part. It is only applicable when the machine is in RS485 communication mode.

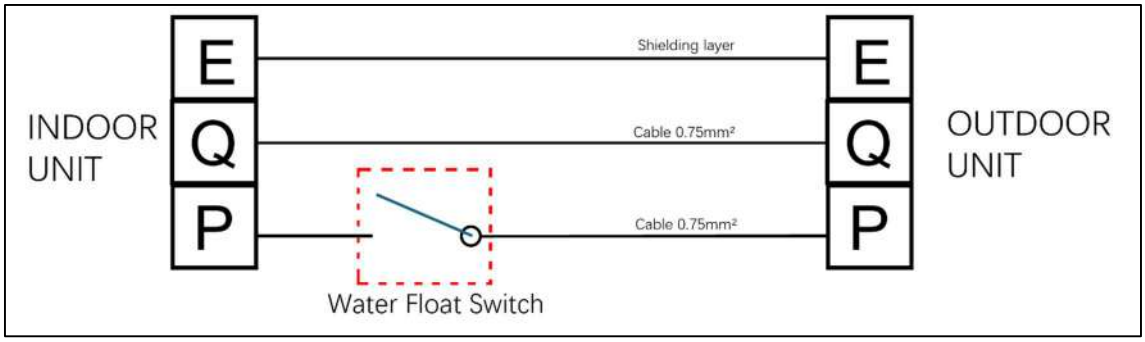
	Mode: Set the mode of the air conditioner.
	TEMP+ and TEMP- Set the setpoint of the air conditioner.
	Fan speed: Set different fan speeds of air conditioner.
	On/Off: Start-up and shut-down of air conditioner.
	Function: Set the timing start-up and shutdown, check mode, filter cleaning, and child lock, etc.

NOTE: For detailed operating instructions, please refer to the manual of the wire controller.

13.Water Float Switch Wiring

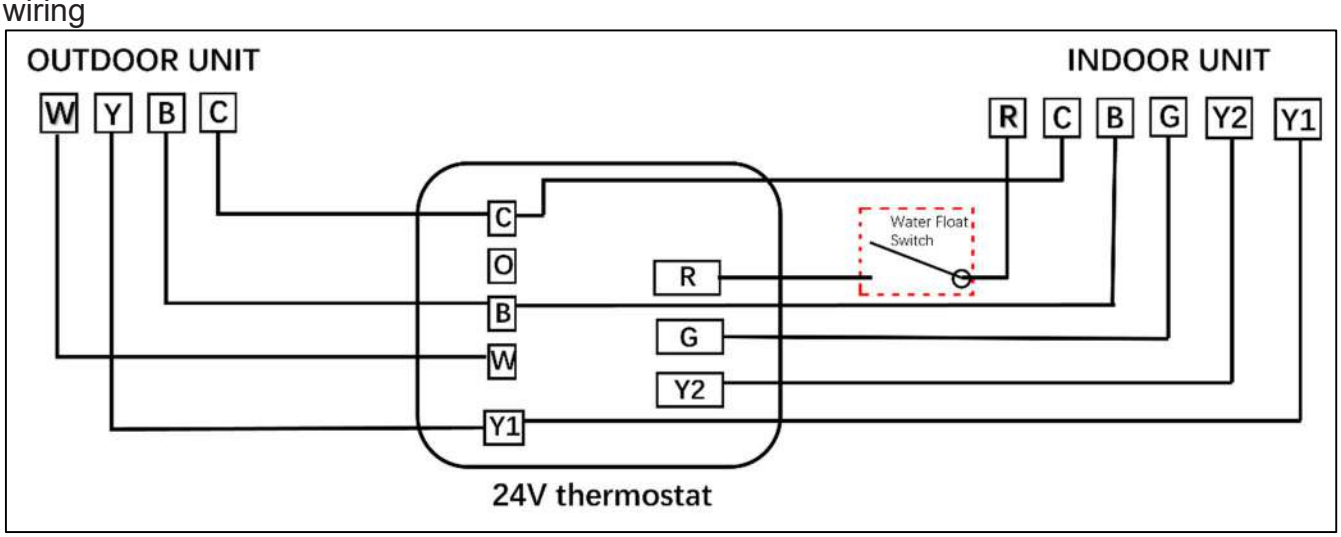
RS485 communication mode:

The indoor and outdoor units connect to three communication lines P.Q.E. The water float switch needs to be connected between the P of the communication line,
that is, the communication line of the terminal P of the indoor unit first passes through the water float switch and then to the terminal P of the outdoor unit.
Please refer to the following figure for wiring

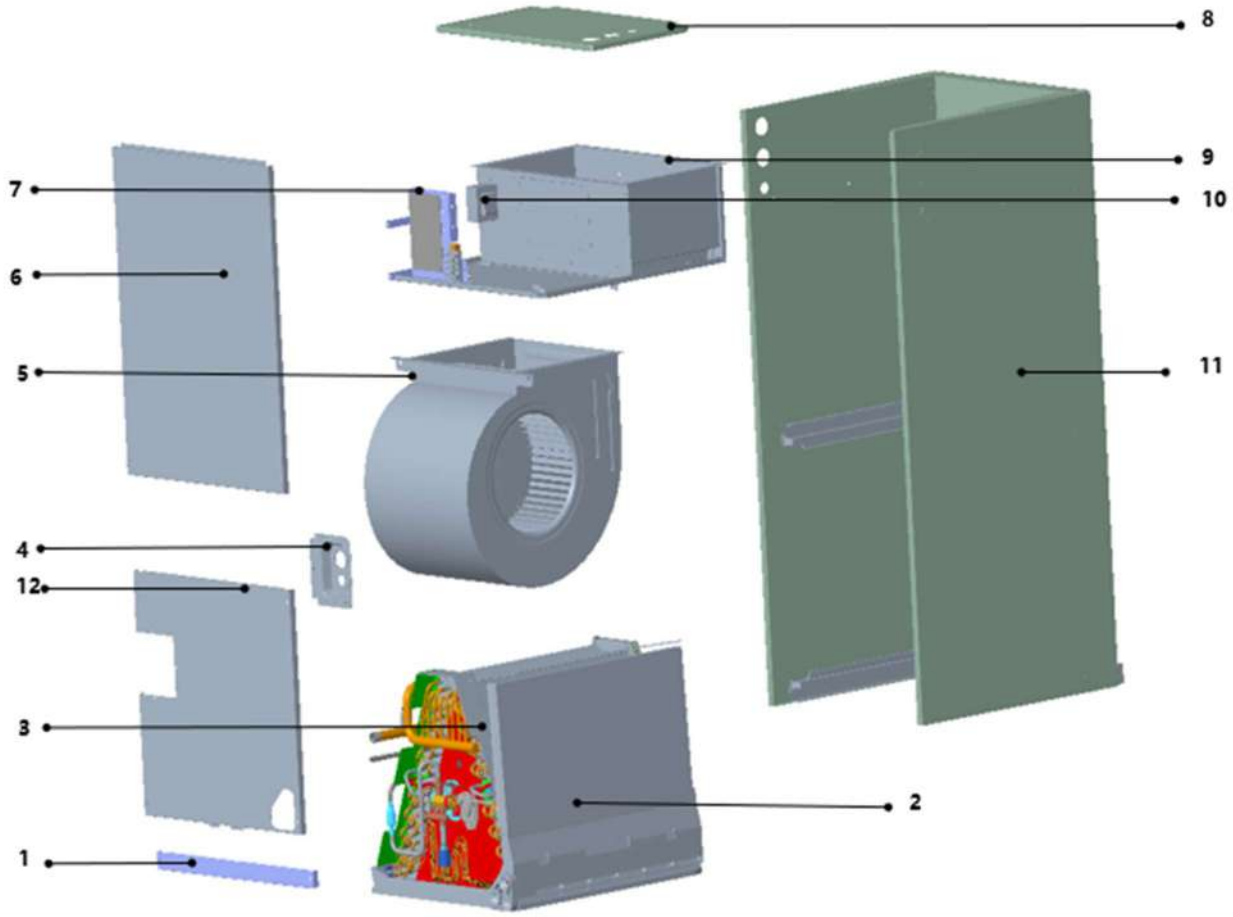


24V communication mode:

The indoor and outdoor units connect with R/C/Y/B/G via 24v thermostat. The R terminal is a 24V power supply. So, the water float switch needs to be connected to the R signal between the thermostat and the indoor unit. When the water float switch is in overcurrent state, the 24V power supply R will be disconnected, and the Y signal of the compressor will also be disconnected, causing the compressor to stop working. Please refer to the following figure for wiring



14.Exploded View



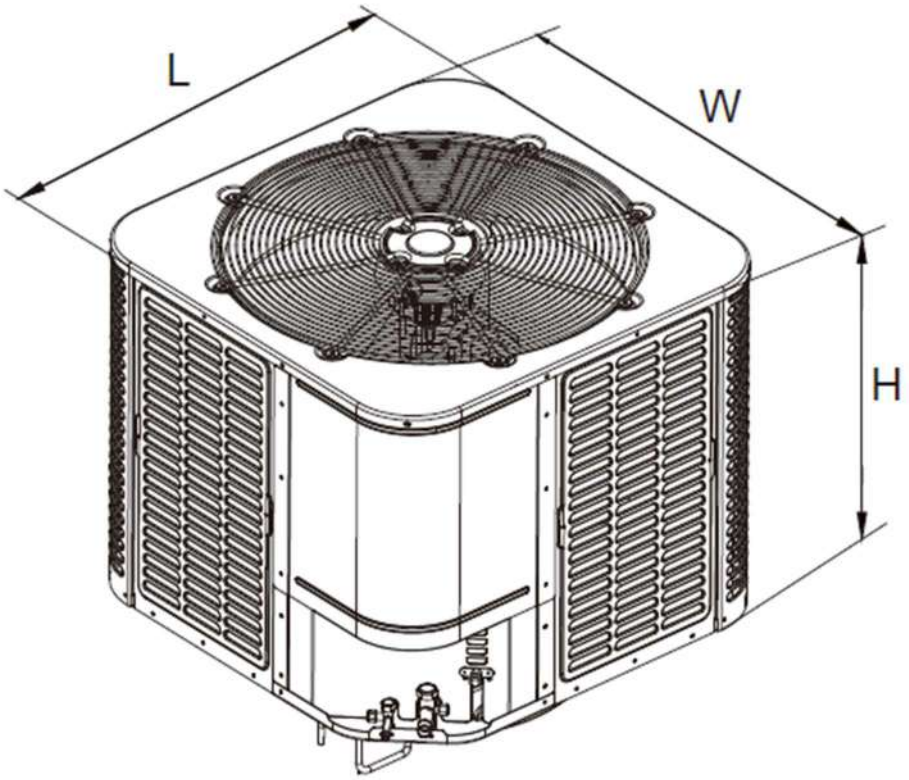
No.	Part Name	Quan.	No.	Part Name	Quan.
1	Filter Cover plate	1	3.10	Evaporator Fixing Plate #1	1
2	Water pan components	1	4	Pipe Cover plate assembly	1
2.1	Water pan# 1	1	5	Right Volute Wind Wheel	1
2.2	Water pan# 2	1	6	Upper side plate assembly	1
2.3	Water pan brace	2	7	Indoor electric control box assembly	1
3	Evaporator components	1	8	Control box cover assembly	1
3.1	Evaporator output tube assembly	1	9	Duct assembly	1
3.2	Evaporator input tube assembly	1	10	Transformers	1
3.4	Evaporator baffle	1	11	Rear Enclosure Assembly	1
3.5	Evaporator baffle	1	12	Down side plate assembly	1
3.6	Evaporator baffle	1	13	Refrigerant leakage sensor	1
3.7	Evaporator baffle	1	14	Temp. sensor (T1)	1
3.8	Evaporator baffle	1	15	Temp. sensor (T2)	1
3.9	Evaporator Fixing Plate #1	1	16	DC motor	1

Part 3 Outdoor Unit

1.Specification

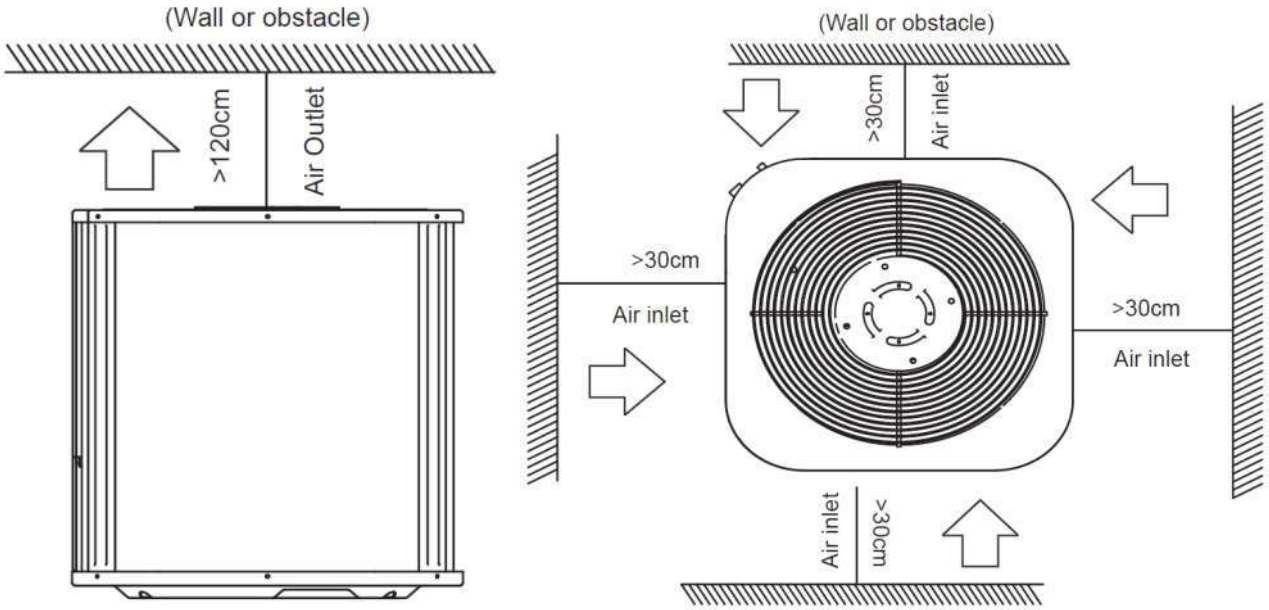
Model			24K	36K	48K	60K
Electrical Data	Voltage-Phase-Hz	V-Ph-Hz	208/230V-1Ph-60Hz			
	Minimum Circuit Ampacity	A	15	20	25	30
	Max. Overcurrent Protection	A	20	25	35	40
	Min / Max Volts	V	187 / 253	187 / 253	187 / 253	187 / 253
Refer to Room Area	square feet		365～660	536～990	709～1320	835～1650
Compressor	Model		TTM240D43UFTB	TTM240D43UFTB	TTQ440D1UMUA	TTQ440D1UMUA
	Brand		GMCC	GMCC	GMCC	GMCC
	Type		Rotary	Rotary	Rotary	Rotary
	Hz		18-100	18-100	18-100	18-100
	Capacity	W/h	6700	6700	13000	13000
	Input	W	1805	1805	3650	3650
	Rated current(RLA)	A	10	12.8	15.8	20
	Refrigerant oil	ml	920	920	1300cc	1300cc
	Refrigerant Oil Type		POE VG74			
	LRA		52	52	58.1	58.1
Outdoor motor	Model		S.TB-DQ-DRN-310-200-10	S.TB-DQ-DRN-310-200-10	S.TB-DQ-DRN-310-200-10	S.TB-DQ-DRN-310-200-10
	Brand		board-ocean	board-ocean	board-ocean	board-ocean
	Type		DC	DC	DC	DC
	Power	W	200	200	200	200
	Rated HP	HP	1/4	1/4	1/4	1/4
	Speed	rpm	1100	1100	1100	1100
	FLA (RLA)	A	1.8	1.8	1.8	1.8
Outdoor Fan	material		Metal			
	Type		Axial flow			
	Diameter	mm	φ595×115×φ12.7	φ595×115×φ12.7	φ595×115×φ12.7	φ595×115×φ12.7
Outdoor coil	Number of row		2	2	2	2
	Number of U-tubes		28		38	
	Tube outside dia	mm (in.)	7 (9/32)	7 (9/32)	7 (9/32)	7 (9/32)
	Fin spacing / Thickness / Type	**mm / mm**	1.4 / 0.095 / Hydrophilic aluminium			
	Length (outside/inside row)*Width*Height	**mm**	(2136/2076) *26.76*588		(2136/2073) *26.74*798	
	Tube pitch(a) × row pitch(b)	**mm**	13.37 × 21	13.37 × 21	13.37 × 21	13.37 × 21
Outdoor Sound power		dB(A)	76	79	76	79
Outdoor CFM		CFM	3900	3900	4440	4440
Oudoor unit	Dimension (W×H×D)	mm	750*635*750		750×835×750	
		inch	29-1/8×25×29-1/8		29-1/8×32-7/8×29-1/8	
	Packing (W×H×D)	mm	760×660×760		760×875×760	
		in.	30×26×30		30/16×34-4/9×3	
	Net / Gross weight	kg	62/66	62/66	85/ 89	85/ 89
		lbs	137/146	137/146	187 / 196	187 / 196
Refrigerant system	Liquid side / Gas side	in.	3/8 / 3/4	3/8 / 3/4	3/8 / 7/8	3/8 / 7/8
	Factory charge	oz	R454B/116.4	R454B/116.4	R454B/155.2	R454B/155.2
	Metering device		EEV	EEV	EEV	EEV
	Maximum Line Length	ft	100	100	100	100
	Maximum Elevation Difference	ft	50	50	50	50
communication wire		AWG	20	20	20	20
Operating temperatures	Cooling	℉	5-131	5-131	5-131	5-131
	Heating	℉	-4-86	-4-86	-4-86	-4-86

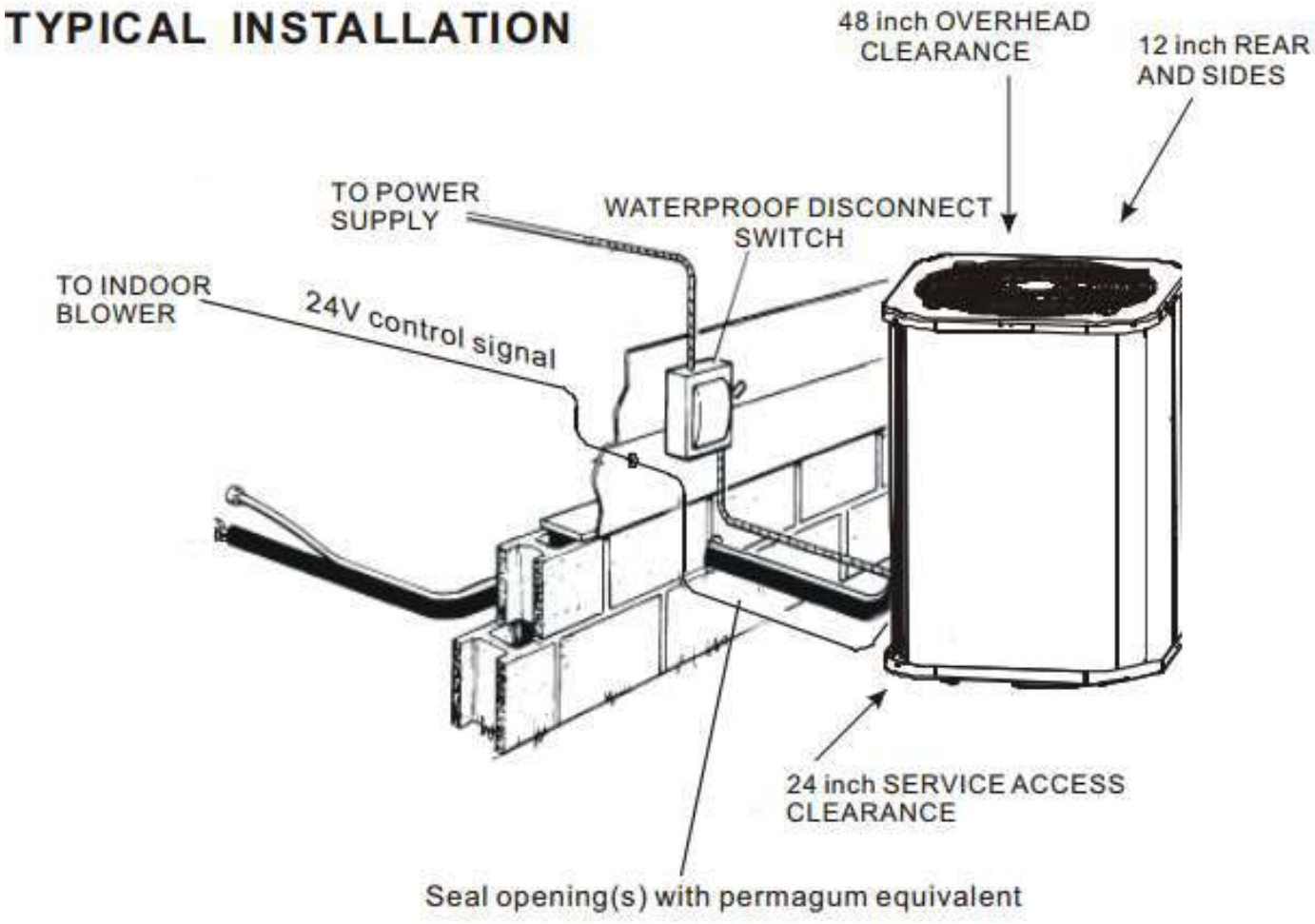
2.Dimensions



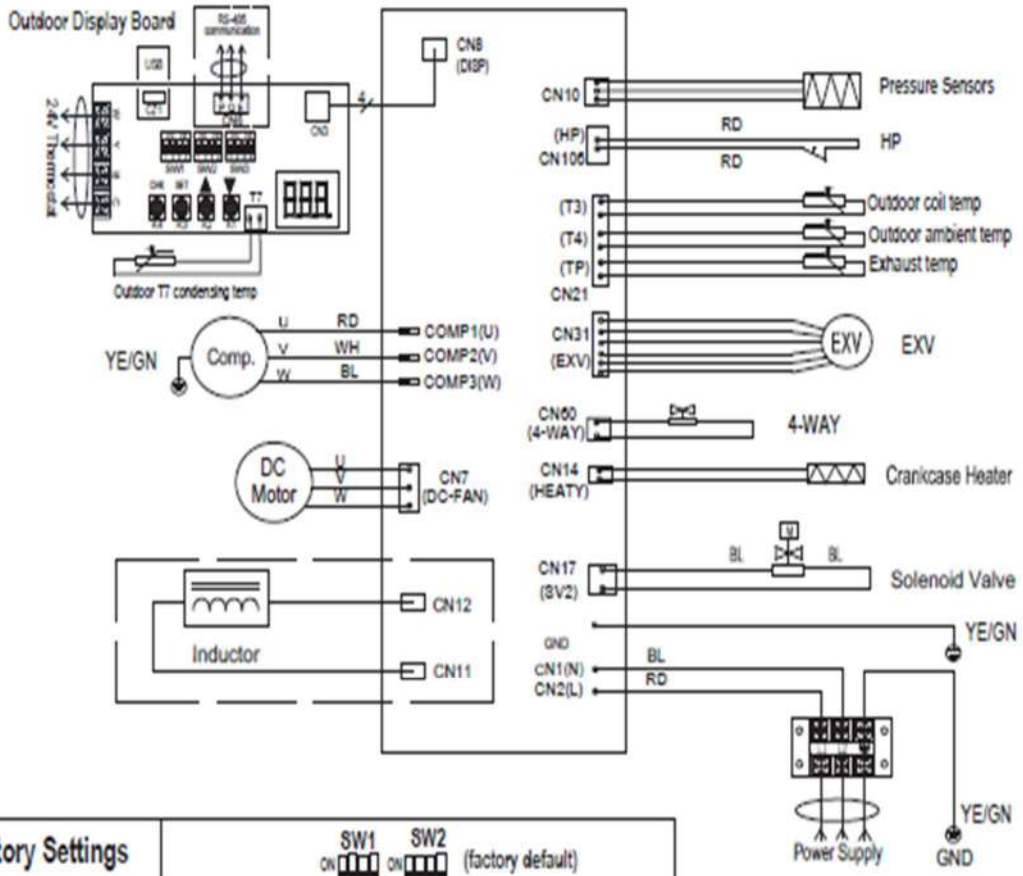
model	H×W×L (inches)
2/3 Ton	25 × 29-1/7 × 29-1/7
4/5 Ton	32-7/8 × 29-1/7 × 29-1/7

3.Service Space





4.Wiring Diagrams



Factory Settings		SW1 SW2 (factory default)	
MODEL		CHECK	
SW1-1	ON	RS-485 communication mode	
	OFF	24V control (factory default)	
SW1-2	ON	Display unit: ℃ & Mpa	
	OFF	Display unit: ℉ & PSI (factory default)	
SW1-3	ON	System operation mode: Cooling only	
	OFF	System operation mode: Heat pump (factory default)	
SW1-4	ON	USB upgrade	
	OFF	Reserved(factory default)	
SW2-1	ON	Fix timed defrost	Defrosting control mode
	OFF	Auto Defrost (factory default)	
SW2-2	ON	Timer 30 min	
	OFF	Timer 60 min(factory default)	
SW2-3	ON	Powerful defrosting	
	OFF	Normal (factory default)	
SW2-4	ON	Thermostat O/B signal is opposite	
	OFF	Normal (factory default)	
SW3-3	ON	Accelerated cooling	
	OFF	Normally cooling (factory default)	
SW3-4	ON	Accelerated heating	
	OFF	Normally heating (factory default)	

Factory Settings		
SW3-1	SW3-2	MODE
OFF	OFF	24K (2T)
OFF	ON	36K (3T)
ON	OFF	48K (4T)
ON	ON	60K (5T)

WIRE COLOR CODE

RD RED	OR ORANGE	BK BLACK
BR BROWN	BL BLUE	GN GREEN
PR PURPLE	WH WHITE	GY GREY
YE YELLOW		

WIRE INFORMATION

FACTORY CONNECTION
PROJECT CONNECTION
PRACTICALITY EXTERIOR
DASHED CIRCLE(Optional)

NOTE 1:

The wiring diagram is for explanation purpose only and the actual shape of the components may be different.

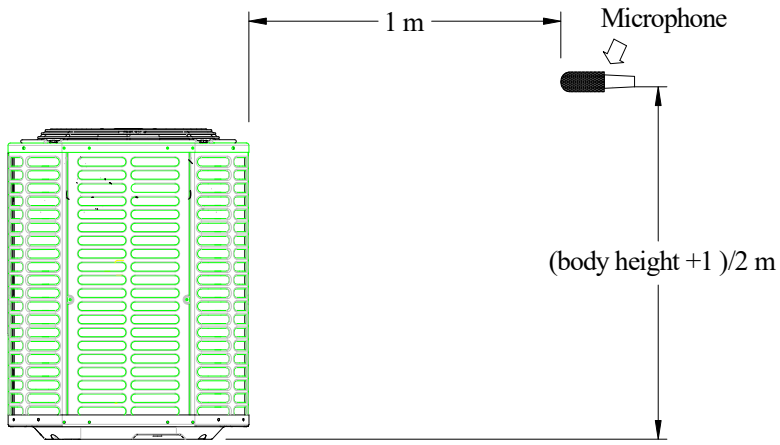
5.Electric Characteristics

Model	Outdoor Unit					
	Hz	Voltage	Min.	Max.	MCA	MOP
24K	60	208~230V	187V	253V	15.0	20.0
36K	60	208~230V	187V	253V	20.0	25.0
48K	60	208~230V	187V	253V	25.0	30.0
60K	60	208~230V	187V	253V	30.0	40.0

6.Operation Limits

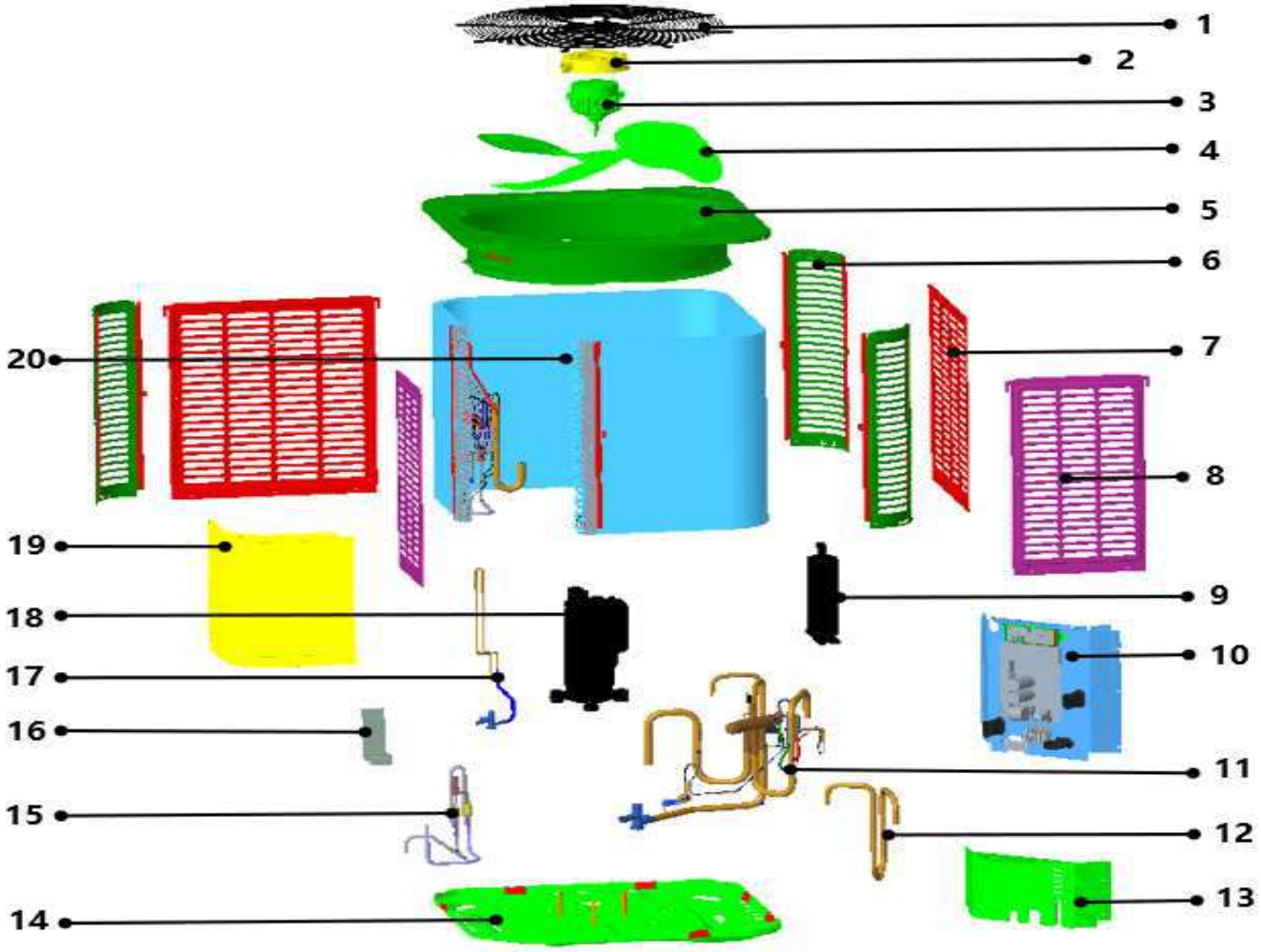
Operation mode	Outdoor temperature(℉)	Room temperature(℉)
Cooling operation	5—131	61—90
Heating operation	-4—86	61—90

7.Sound Levels



Note: Sound level is measured at a point 1 m in front of the unit, at a height of (Unit body height +1)/2 m.

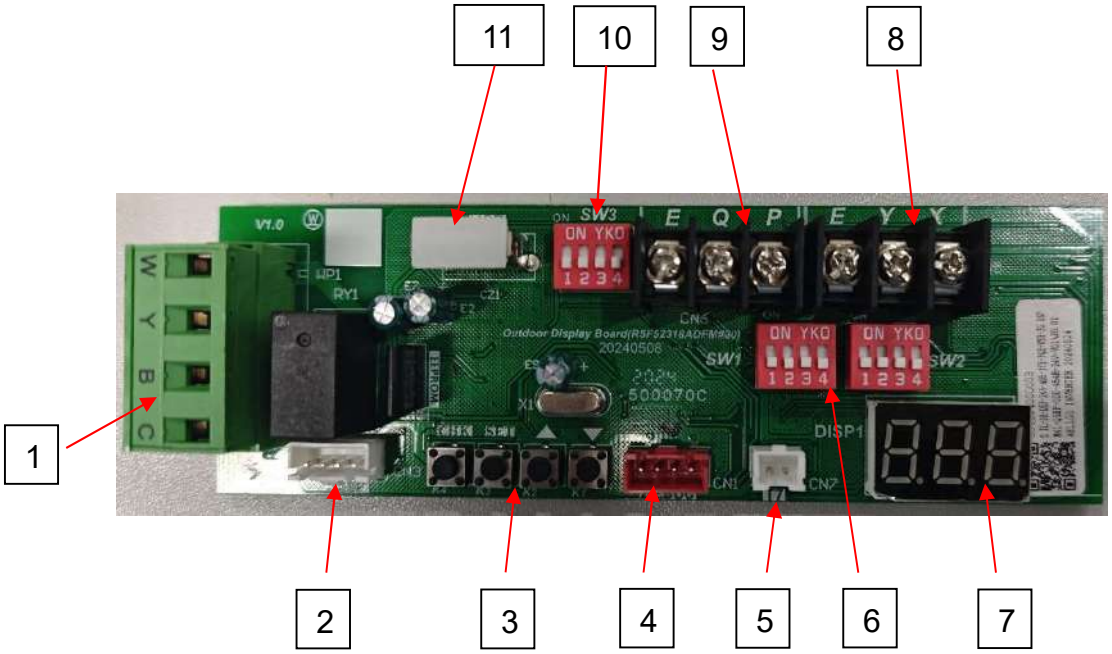
8.Exploded View



No.	Part Name	Quantity	No.	Part Name	Quantity
1	Cover net	1	12	Suction air pipe weld assembly	1
2	DC Motor Mount	1	13	Bottom side panel	1
3	Outdoor motor	1	14	Chassis assembly	1
4	Axial-flow fan	1	15	Electronic Expansion Valve Assemblies	1
5	Top cover assembly	1	16	Valve Support Plate	1
6	Support board	3	17	High pressure valve assembly	1
7	Rear side-panel	2	18	Compressor	1
8	Right side panel	2	19	Top panel	1
9	Gas-liquid separator	1	20	Condenser assembly	1
10	Electronic control board	1	21	Temperature sensor(T7)	1
10.1	Main control board	1	22	Pressure sensor	1
10.2	display board	1	23	Temperature sensor group (T3/T4/T5)	1
11	Four way valve welding assembly	1	24	High pressure switch	1

9.Troubleshooting

9.1. Display board button



NUM	Port definition	describe
1	24V communication interface	Connected to 24V thermostat
2	Communication port with mainboard	Communicate with the main control board
3	Function buttons	View parameters, adjust parameters, select functions, etc.
4	Reserve ports	Reserve
5	T7 sensor port	Detect the outlet temperature of the condenser
6	SW2 and SW3 dialing	Adjusting function parameters through dialing
7	display screen	Display parameter information or fault codes
8	Reserve ports	Reserve
9	PQE communication with indoor unit	Only effective in RS485 communication mode
10	SW1 dialing	Adjusting function parameters through dialing
11	USB debug port	Can be used to update the main control board program

Parameter spot check table

To display system parameters, press the "Check"(K4) button to index through the series of parameters available. The first time you press the "Check" button, it will display the sequence, and after 1 second it will display the value of the parameter. If you press the "Check" button again, it will display the next sequence.

Refer to the picture below for check button location on the display board.

▲：check button、and set the parameter "+"

▼：check button、and set the parameter "-"

After 20 seconds on same parameter, the display will revert to normal status.

Check Table			
NUM	Display content	20	AC current (A; Actual value)
00	Outdoor mode (0: Standby mode; 2: In cooling mode; 3: In heating mode)	21	Compressor current
01	Outdoor power (Model)	22	Oil output (CC; Actual value)
02	Running mode (0: Standby mode; 2: In cooling mode; 3: In heating mode)	23	T1 indoor ambient temp(℉; Actual value)
03	Target frequency (Hz; Actual value)	24	T2 indoor evaporator temp(℉; Actual value)
04	Actual frequency (Hz; Actual value)	25	Concentration value
05	Running frequency (Hz; Actual value)	26	Enter PI control sign (0 or 1)
06	T3 condensing temp (℉; Actual value)	27	Enter defrosting type
07	T4 outdoor ambient temp(℉; Actual value)	28	Test mode (1-40; Mode gear)
08	T5 exhaust temp(℉; Actual value)	29	Frequency increase (Shift; Actual value)
09	Temp transform by pressure sensor (℉; Actual value)	30	△EV (step; Actual value)
10	IPM modular temp (℉; Actual value)	31	PFC control state
11	Target temp Tes / Tcs (℉; Actual value)	32	Frequency limit item
12	Discharge temp superheat (℉;Actual value)	33	Driving failure code subdivision 1
13	Target superheat (℉; Actual value)	34	Driving failure code subdivision 2
14	Fan speed (Actual value / 10)	35	Last failure or protection code
15	EXV opening degree (step; Actual value)	36	Software version number (1-255)
16	Pressure value (PSI; Actual value * 25)	37	T7 condensing temp (℉; Actual value)
17	Pressure valve transform by T3 (PSI; Actual value * 25)	38	T30 temp (℉; Actual value)
18	AC voltage (VAC; Actual value)	39	Compression ratio
19	DC voltage (VDC; Actual value)		

Error codes

Outdoor unit

Code	Failure or protection definition	P7	T2 freeze protection
E1	Communication error(indoor unit)	P8	IPM high temperature protection (Ft)
E2	T1 sensor error	P9	DC fan motor error
E3	T2 sensor error	PC	Wet operation error
E4	R454b sensor error	PD	High pressure abnormal error(In heating mode)
E6	Refrigerant leakage error	H0	Communication fault of master board and driver chip
E7	EEPROM failure (indoor unit)	H1	T3 sensor high temperature error(In cooling mode) (3 times P5 error within 180mins)
E8	Fan motor error(indoor unit)	H2	High pressure switch error(3 times P1 error within 150 mins)
E9	Communication fault of wire control	H3	High pressure abnormal in heating mode (3 times PD error within 180 mins)
F0	Communication failure(outdoor unit)	H4	IPM modular high temp error (3 times P8 within 120 mins)
F4	T4 outdoor ambient temp sensor error	H5	Low pressure error (5 times P2 within 240 mins)
F5	T5 exhaust temp sensor error	H6	Discharge temperature abnormal error(3 times P4 within 100 mins)
F6	T3 condensing temp sensor error	H7	Wet operation error (3 times PC within 200 mins)
F7	T7 temp sensor error	H8	T3 condenser sensor disconnect error (3 times FE within 120 mins)
F8	T7 temp sensor error in detecting condensate risks	HC	Discharge temp sensor disconnect error(3 times FE within 180 mins)
F9	AC overvoltage/undervoltage protection	HE	Condensate error(3 times within 60 mins)
FA	EEPROM failure (outdoor unit)	L0	DC cable bus low voltage protection
FB	EEPROM failure of driver chip	L1	DC cable bus high voltage protection
FC	IPM modular sensor error	LA	Frequency limitation by voltage
FD	HLP pressure sensor failure	LB	Frequency limitation or decline by high pressure
FE	T3 or T5 sensor disconnect error	LC	Frequency limitation by condenser temp
FF	HPS condenser sensor disconnected	LD	Frequency limitation by discharge temp
P1	High pressure switch error	LE	Frequency limitation by IPM modular high temp
P2	Low pressure protection	LF	Frequency limitation by current
P3	Inverter overcurrent protection	d0	Oil return mode

P4	T5 exhaust temp sensor high temp protection	df	Defrost mode
P5	T3 condenser sensor high temp protection(In cooling mode)	dC	Force cooling mode
P6	IPM protection	ATL	Overtemperature protection

Indoor unit

Number of green light flashes	Fault description
2	T1 sensor fault
3	T2 sensor fault
4	Refrigerant concentration sensor fault
5	Refrigerant leakage
6	Anti-freeze protection
7	Mainboard chip fault
8	Motor protection
9	IDU and ODU unit communication fault (RS485 communication mode)
10	Wire controller communication fault (RS485 communication mode)

Part 4 Function introduction

1.Electrical Components Description

Temperature Sensor
T1: IDU Ambient Temperature
—capacity demand control (R485 mode)
— Defrost control (heating mode)

T2: Indoor Coil Temperature
— Anti-Cold Air Function (heating mode)
— Anti-Freezing Function

T3: Outdoor Coil Temperature
— High/Low temperature protection
—Outdoor fan control (cooling mode)
— Defrost control (heating mode)

T4: ODU Ambient Temperature
— Operating condition permission
— Defrosting condition (heating mode)
— Outdoor fan control (heating mode)

T5: Compressor Discharge Temperature
— High temperature / Low superheat protection
— Electronic Expansion Valve (EEV) control

Tfin: Inverter board heat sink temperature sensor.
—Protection against overheating of the inverter board.

T7: Control board Heat Pipe Temperature
— Control board Anti-Condensed

Pressure transducer: Evaporating pressure in cooling mode and condensing pressure in heating mode.
— Compressor frequency control
— Electronic Expansion Valve (EEV) control
— High pressure protection (heating mode)
— Low pressure protection (cooling mode)

Pressure equalizer Value (PEV)
— Used to balance the pressure in the system before compressor start up

Reversing value operation
— Reversing value energizes during heat mode and de-energizes in cool

Compressor Crankcase Heater Description
— Refrigerant migration during the OFF cycle can result in noisy start-ups, therefore a

Crankcase Heater (CCH) is used to minimize refrigerant migration thereby minimizing start-up noise and/or bearing “wash out”. All CCHs must be installed around the lower half of the compressor shell. Its purpose is to warm the compressor during the OFF cycle, driving refrigerant from compressor. After extended shutdown periods in cold weather, it is recommended to allow CCH to be energized for at least 12 hours prior to compressor operation by applying line voltage to heat pump with thermostat OFF.CCH operation energizes:
First time line voltage is applied and compressor discharge temperature T5<73.4℉
Compressor stops running for 3 hours (outdoor ambient temperature T4<50℉or T5<73.4℉
CCH operation de-energizes:
Compressor discharge temperature T5>82℉

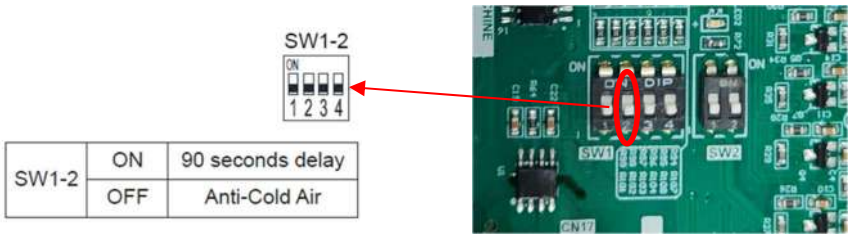
2.Control Logic Description

The variable speed system is applicable with the same 24V thermostat control as any conventional heat pump.
The compressor’s speed is controlled based on coil pressures monitored by the unit's pressure transducer and various temperature sensors. To ensure stable and adequate capacity, the compressor speed will modulate relative to evaporator pressure during cooling operation and relative to condensing pressure during heating operation.
After system startup and entered stable operation stage, the system software will continuously be monitoring the sensor input and adjust the compressor speed adaptively, so that it can provide enough stable output capacity.

3.Anti-Cold Air & Heating Fan Delay Function

Anti-Cold Air Function（Only effective in heating mode）
When SW1-2 is in the OFF position and running heating mode, the fan will not start when the coil temperature (T2) ＜82.4 ℉.
When T2 ≥ 82.4 ℉, the fan will start immediately, or when the electric heat kit is manually turned on, the fan will also start immediately

Heating Fan Delay Function
When the dip switch SW1-2 is set to “ON” and the indoor unit is in heating mode, the fan will operates with 90 seconds delay each time it starts. Fan speed determined by the Y1/Y2 signal from thermostat.



SW1-2	ON	90 seconds delay
	OFF	Anti-Cold Air

4.Indoor Coil Anti-Freezing Function

The function utilizes the indoor coil sensor(T2) to determine whether the indoor coil is freezing or not. The feature prevents the unit running at low evaporating temperature as well as low suction superheat.
When all the following conditions are met, the Anti-Freezing Function will activate，and the compressor will be turned off.
A. T2＜32℉ Duration exceeding 1 minute.
B. T2≤26.6℉ Duration exceeding 30 seconds.

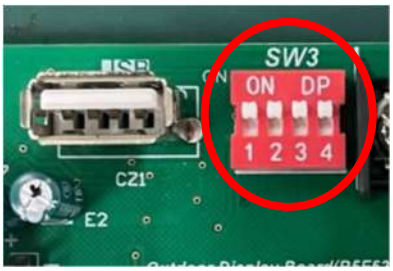
when T2≥42.8℉, the Anti-Freezing Function will deactivate:

5.R454B Leakage Detection Function

The function utilizes a R454B refrigerant sensor to detect the R454B concentration. Terminal F/L2 is reserved for connecting buzzer if needed.
When R454B leakage occur in the indoor coil and the concentration is above 10%LEF, the unit will perform as the following:
A. Cut off power to thermostat to stop compressor operation.
B. Electric Heat kit will be turned off.
C. High voltage will be output between terminal F and terminal L2.
D. The indoor fan is running at high wind speed, and at the same time, the fault light on the indoor mainboard is flash.

6.Accelerated operation mode

Through manually adjust the target outdoor coil temperature setting (SW3-3&4) to achieve improved cooling capacity and heating capacity demands.



	SW3-3	SW3-4
ON	Accelerated cooling	Accelerated heating
OFF	Normally cooling (factory default)	Normally heating (factory default)

Accelerated cooling/heating function changes the initial target coil temperature to provide "enhanced comfort" by increasing unit capacity.
In the Accelerated mode, the machine sets the target evaporation temperature to ±5 degrees Celsius. Provide a higher or lower target evaporation temperature or condensation temperature than normal mode, providing further cooling or heating effects. The compressor frequency is still be adjusted by variable frequency.

7.Defrost Description

According to the actual situation on site, the machine has multiple defrost modes to choose from:

Auto defrost:

the machine measures the ambient temperature and the temperature of the outdoor coil through sensors and calculates the condensation pressure and machine running time to determine whether to enter defrost mode. When the temperature of the coil exceeds the set value, the machine automatically exits defrosting mode.

Manual forced defrosting mode:

Press "▼" button on the display board for about 5 seconds to enter manual defrost. And LED display will show "dF" (shows the frequency of compressor in Hz)

1、manual defrosting could only be engaged after 5 min of operation after system power on for the 1st time. Also, the system should be operating in heating mode.

2. The system will exit manual defrosting by the same condition of normal defrosting cycles.

3. After the manual defrosting cycle finishes, the system will return the previous operation mode.

Fixed time defrosting:

You can choose to activate the defrost function every 30 minutes or 60 minutes. When the temperature of the coil exceeds the set value, the machine automatically exits defrosting mode.

Powerful defrosting：

Heating operating time is reduced by 10% and Defrosting extended for 60 seconds

Defrosting choice	SW2-1	SW2-2	SW2-3
ON	Fix timed defrost	Timer 30 min	Powerful defrosting
OFF	Auto Defrost (factory default)	Timer 60 min （factory default）	Normal （ factory default）
Remark	Defrosting ： control mode selection	Cycle time selection	Only applicable to fix timed defrosting timer and the Minimum Runtime Timer

If SW2-1 is ON, the fixed defrost time is determined by SW2-2 dial selection.

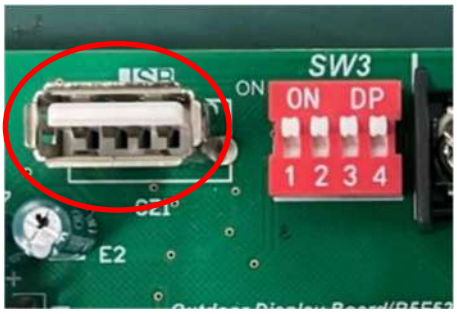
8.Forced operating mode:

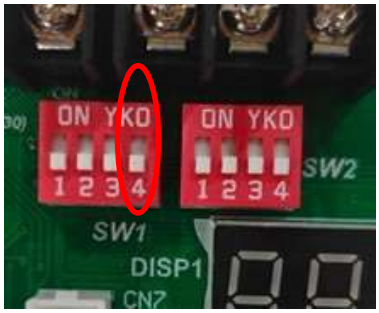
Forced cooling mode: Press “K3” button on the display board for about 5 seconds to enter. And LED display will show “dC”.

Forced heating mode: Press “▲” button on the display board for about 5 seconds to enter. And LED display will show “dH”.

9.Use USB to update the ODU program

USB can be used on the display board to update the main control program. Used in conjunction with SW1-4.





Operation steps:

a) Power off the unit.
b) Switch SW1-4 to ON.
c) Insert a USB flash drive.
d) Power on the unit, and then the display board will display num. 1.
e) Switch SW1-4 to OFF, and then the display board will display num. 2.
f) Subsequently, the display board displays num. 3 indicating that it is burning.
g) The program was successfully burned and entered normal operation after the display board displayed num. 888.
h) Unplug the USB drive

10.Capacity model selection

System software will recall performance setting parameters according to the DIP switch selection. The DIP should be set according to the matched IDU.

	SW3-1	SW3-2	Remark
2 Ton mode	OFF	OFF	
3 Ton mode	OFF	ON	Factory default
4 Ton mode	ON	OFF	
5 Ton mode	ON	ON	Factory default

Part 5 Installation

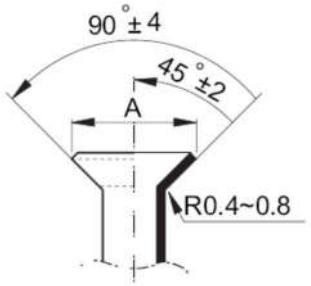
1.Precaution on Installation

1.1. Measure pipe length

Measure the necessary length of the connecting pipe and make it by the following way.
Connect the indoor unit at first, then the outdoor unit.
Bend the tubing in proper way.
Please refer to the table below for the length dimensions of the connection pipe

Refrigerant line		Capacity (Kbtu/h)			
		24K	36K	48K	60K
Liquid suction	In.	3/8-3/4	3/8-3/4	3/8-7/8	3/8-7/8
Max.Refrigerant Line Length*	Ft.	100			
Max.Elevation* Vertical Lift**	Ft.	50			

CAUTIONS:
Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds
With hands before fasten the flare nuts.
Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

Pipe gauge	Tightening torque	Flare dimension A Min (mm) Max		Flare shape
Φ6.35	15～16N.m (153～163 kgf.cm)	8.3	8.7	
Φ9.52	25～26N.m (255～265kgf.cm)	12.0	12.4	
Φ12.7	35～36N.m (357～367kgf.cm)	15.4	15.8	
Φ15.9	45～47N.m (459～480 kgf.cm)	18.6	19.1	
Φ19.1	65～67N.m (663～684kgf.cm)	22.9	23.3	

The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.
Expel the air after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair-points.

1.2. Locate The Pipe

Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.

Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.

Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.

1.3. Connect the pipes.

1.4. Then, open the stem of stop values of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.

1.5. Be sure of no leakage by checking it with leak detector or soap water.

1.6. Cover the joint of the connecting pipe to the indoor unit with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

2. Oil return bend installation

Note that the length of the connecting line from the outdoor unit to the indoor unit cannot exceed 100 feet.

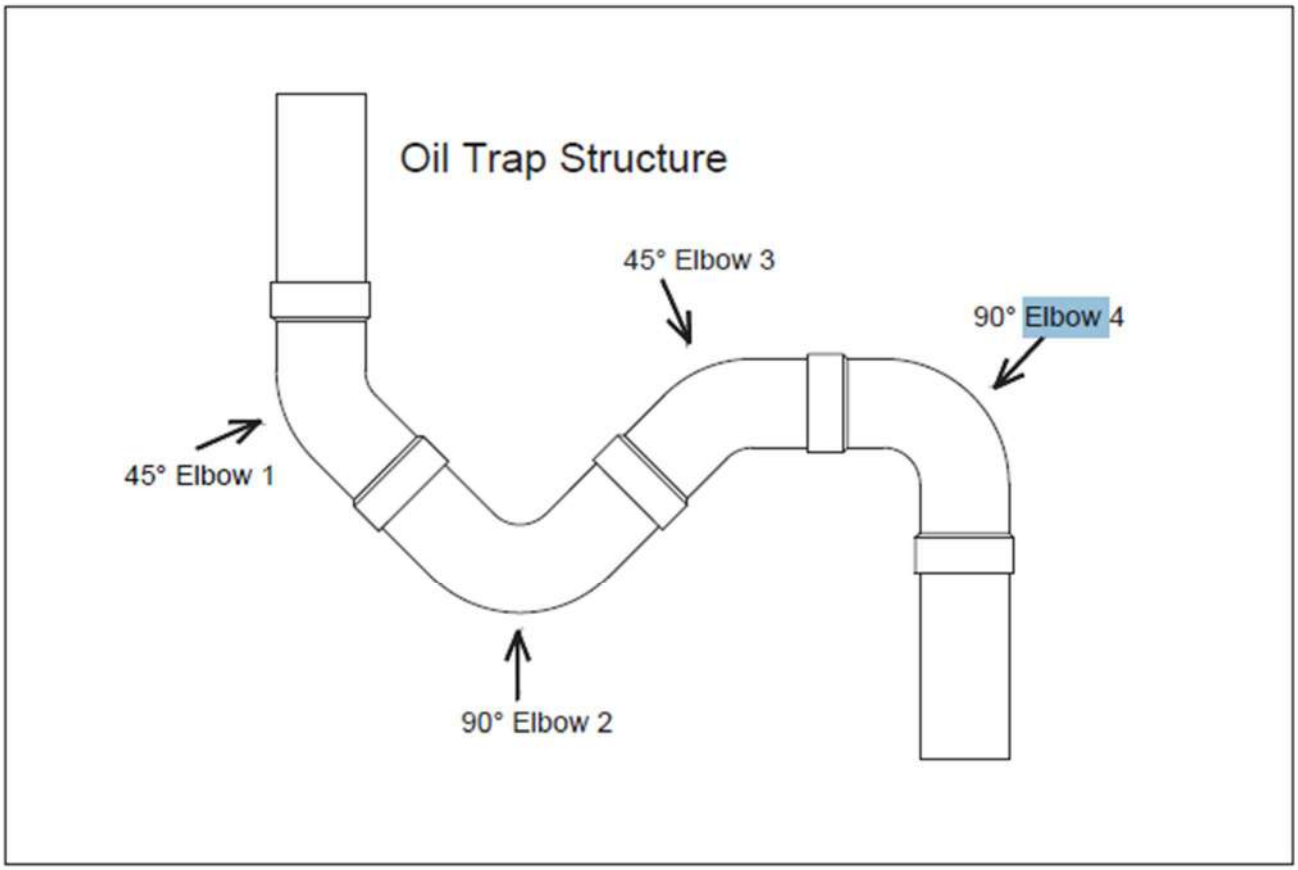
- If all long lines are in a horizontal state, no additional measures are required;
- If there is a vertical height difference in the long line, it needs to be installed according to the following

requirements:

- When the vertical height difference is 0＜h≤16.5feet, no additional measures are required;
- When the vertical height difference is 16.5feet＜h≤33feet, an oil return bend needs to be added in the middle of the height difference.
- When the vertical height difference is 33feet＜h≤50feet, two oil return bends need to be added at an equal distance in the height difference.

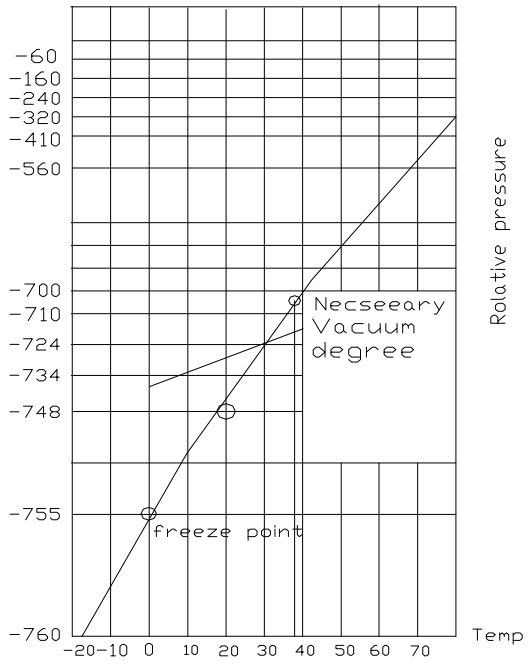
NOTE: The vertical height difference between the outdoor unit and the indoor unit cannot exceed 50 feet.

The following is the connection method of the oil return bend.



3.Vacuum Dry and Leakage Checking

3.1 Vacuum Dry: use vacuum pump to change the moisture (liquid) into steam (gas) in the pipe and discharge it out of the pipe to make the pipe dry. Under one atmospheric pressure, the boiling point of water(steam temperature) is 100℃. Use vacuum pump to make the pressure in the pipe near vacuum state, the boiling point of water falls relatively. When it falls under outdoor temperature, the moisture in the pipe will be vaporized.



3.2 Vacuum dry procedure

There are two methods of vacuum dry due to different construction environment: common vacuum dry, special vacuum dry.

①. Common vacuum dry procedure

Vacuum dry (for the first time) ---connect the all-purpose detector to the inlet of liquid pipe and gas pipe, and run the vacuum pump more than two hours (the vacuum pump should be below -755mmHg)

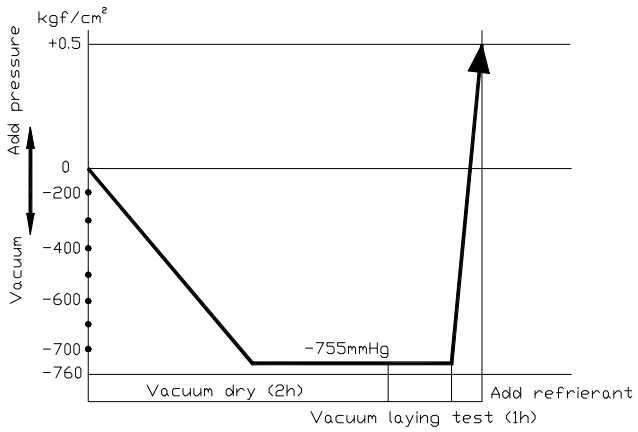
If the pump can't achieve below -755mmHg after pumping 2 hours, moisture or leakage point will still exist in the pipe. At this time, it should be pumped 1 hour more.

If the pump can't achieve -755mmHg after pumping 3 hours, please check if there are some leakage points.

Vacuum placement test: place 1 hour when it achieves -755mmHg, pass if the vacuum watch shows no rising. If it rises, it shows there's moisture or leakage point.

Vacuuming from liquid pipe and gas pipe at the same time.

Sketch map of common vacuum dry procedure.



② Special vacuum dry procedure

a. Vacuum dry for the first time 2h pumping

b. Fill nitrogen to 0.5Kgf/cm2

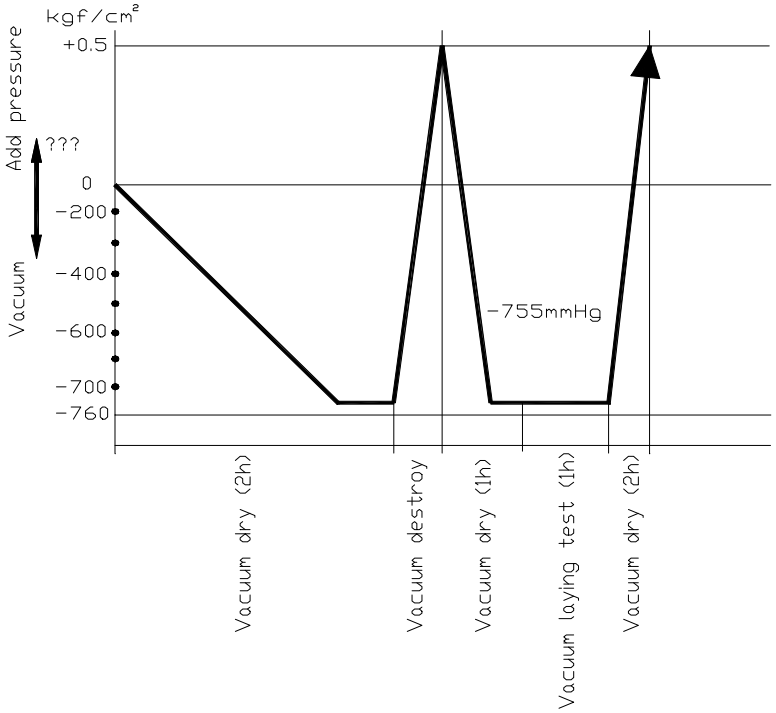
Because nitrogen is for drying gas, it has vacuum drying effect during vacuum destroy. But if the moisture is too much, this method can't dry thoroughly. So, please pay more attention to prevent water entering and forming condensation water.

c. Vacuum dry for the second time for 1h pumping

If -755mmHg can't be achieved in 2h, repeat procedure "b" and "c".

d. Vacuum placing test …… 1h

e. Sketch map of special vacuum dry procedure



4.Additional Refrigerant Charge

Caution

● Refrigerant cannot be charged until field wiring has been completed.

● Refrigerant may only be charged after performing the leak test and the vacuum pumping.

● When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.

● Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant is charged.

● Refrigerant containers shall be opened slowly.

● Always use protective gloves and protect your eyes when charging refrigerant.

Weigh-In Method

The factory charge in the outdoor unit is sufficient for 25 feet of standard size interconnecting liquid line. Additional 0.54 oz/ft refrigerant is needed when length of pipe is more than 25 feet.

Additional Refrigerant Guidelines

Piping length (ft)	Additional charge (oz)
25.0	0.00
50.0	13.5
75.0	27
100.0	40.5

Subcooling Method (10°F ± 2°F)

Check the ambient temperature. Subcooling method (cooling mode) is only for outdoor temperature between 68°F and 113°F, and indoor temperature between 68°F and 89°F. For temperature out of the range, use the weighing method mentioned above.

1. **Start "forced cooling" mode.**

Press the "Check" (K3) button for about 5 seconds to enter Force cooling mode. The LED display will show “dC”.

2. **Wait until the system is basically stable.**

Wait for twenty (20) minutes after "forced cooling" mode started. Compressor will maintain a specific frequency in "forced cooling" mode.

3. **Calculate subcooling value.**

Calculate subcooling value with measured liquid line temperature and pressure. If calculated subcooling value is lower than the design subcooling value of 10°F ± 2°F, refrigerant should be added. If calculated subcooling value is higher than the value shown in table "R-454B Refrigerant Physical Property") , refrigerant should be recovered.

4. **Adjust refrigerant.**

Connect service tools to unit and adjust refrigerant according to analysis in step 4.

5. **Wait for stabilization of system.**

Wait for 5 minutes, and repeat steps 4 through 5 until subcooling value matches the design subcooling value mentioned in step 4.·

6. **Recover normal mode.**

Remove service tools and short press "Check" (K3) " button to quit "forced cooling" mode.

Symbol "dC" should disappear when "forced cooling" mode quitted.

Liquid Line Temp (°F)	Subcooling Value(°F)							
	6	7	8	9	10	11	12	13
	Liquid Gauge Pressure (PSI)							
55	164	167	170	172	175	178	181	184
60	178	181	184	187	191	194	197	200
65	194	197	200	203	206	210	213	217
70	210	213	217	220	223	227	230	234
75	227	230	234	238	241	245	249	252
80	245	249	252	256	260	264	268	272
85	264	268	272	276	280	284	288	292
90	284	288	292	297	301	305	309	314
95	305	309	314	318	323	327	332	336
100	327	332	336	341	346	351	355	360
105	351	355	360	365	370	375	380	385
110	375	380	385	390	396	401	406	412
115	401	406	412	417	422	428	433	439
120	428	433	439	445	450	456	462	468
125	456	462	468	474	480	486	492	498

Subcooling (°F)		Ambient Remperature (°F)				
		68~77	77~86	86~95	95~104	104~113
Model	24K	10±2	8±2	8±2	6±2	6±2
	36K	10±2	8±2	8±2	6±2	6±2
	48K	8±2	8±2	8±2	6±2	6±2
	60K	8±2	8±2	8±2	6±2	6±2

5.Insulation Work

5.1 Insulation material and thickness

5.1.1. Insulation material

Insulation material should adopt the material which is able to endure the pipe's temperature: no less than 70℃ in the high-pressure side, no less than 120℃ in the low-pressure side(For the cooling type machine, no requirements at the low-pressure side.)

Example: Heat pump type----Heat-resistant Polyethylene foam (withstand above 120℃)

Cooling only type----Polyethylene foam (withstand above 100℃)

5.1.2. Thickness choice for insulation material

Insulation material thickness is as follows:

	Pipe diameter (mm)	Adiabatic material thickness
Refrigerant pipe	Φ6.4—Φ25.4	10mm
	Φ28.6—Φ38.1	15mm
Drainage pipe	Inner diameterΦ20—Φ32	6mm

5.2 Refrigerant pipe insulation

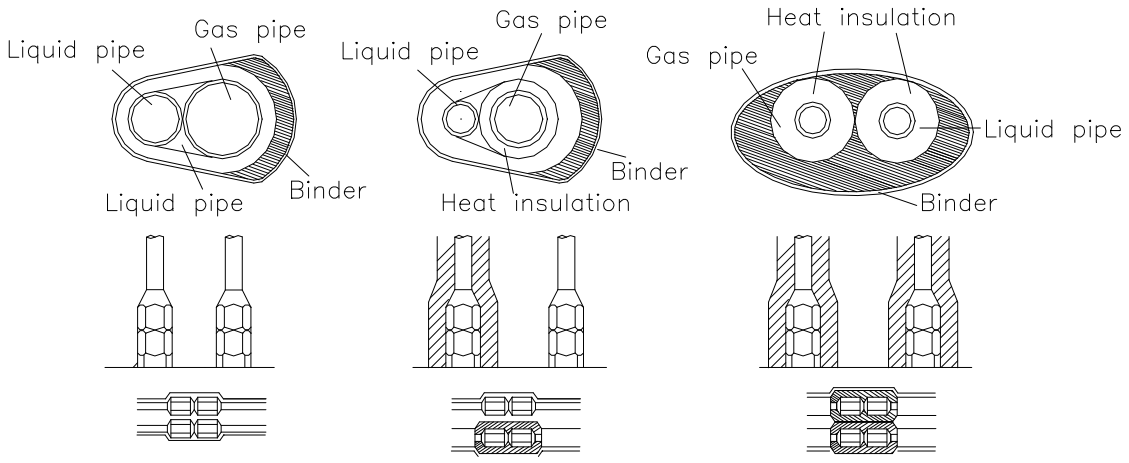
5.2.1. Work Procedure

① Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.

② When the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated.

5.2.2. Insulation for non-jointing parts and non-connection parts

wrong	right	
Gas pipe and liquid pipe should not be put together to insulate	Insulate the gas pipe (cooling only)	Insulate the gas pipe and liquid pipe

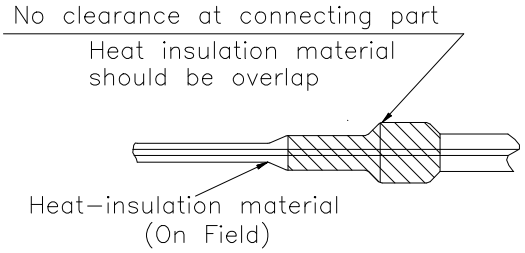


For construction convenience, before laying pipes, use insulation material to insulate the pipes to be deal with, at the same time, at two ends of the pipe, remain some length not to be insulated, in order to be welded and check the leakage after laying the pipes.

5.2.3. Insulate for the jointing area, expanding area and the flange area

① Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes

② Make sure there's no clearance in the joining part of the accessorial insulation material and local preparative insulation material.



5.3 Drainage pipe insulation

The connection part should be insulated, or else water will be condensing at the non-insulation part.

5.4 Note

5.4.1 The jointing area, expanding area and the flange area should be heat insulated after passing the pressure test.

5.4.2 The gas and liquid pipe should be heat insulated individually, the connecting part should be heat insulated individually.

5.4.3 Use the attached heat-insulation material to insulate the pipe connections (pipes' tie-in, expand nut) of the indoor unit.

6.Test Operation

(1) The test operation must be carried out after the entire installation has been completed.
(2) Please confirm the following points before the test operation.
The indoor unit and outdoor unit are installed properly.
Tubing and wiring are correctly completed.
The refrigerant pipe system is leakage-checked.
The drainage is unimpeded.
The ground wiring is connected correctly.
The length of the tubing and the added stow capacity of the refrigerant have been recorded.
The power voltage fits the rated voltage of the air conditioner.
There is no obstacle at the outlet and inlet of the outdoor and indoor units.
The gas-side and liquid-side stop values are both opened.
The air conditioner is pre-heated by turning on the power.
(3) According to the user's requirement, install the 24v thermostat
(4) Test operation
Set the air conditioner under the mode of "COOLING" with the thermostat.
, and check the following points.
Indoor unit
Whether the fan motor operate normally.
Whether the room temperature is adjusted well.
Whether the indicator lights of indoor board normally.
Whether the drainage is normal.
Whether there is vibration or abnormal noise during operation.
Outdoor unit
Whether there is vibration or abnormal noise during operation.
Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
Whether any of the refrigerant is leaked.

Thank you for purchasing
CoolPro air conditioning