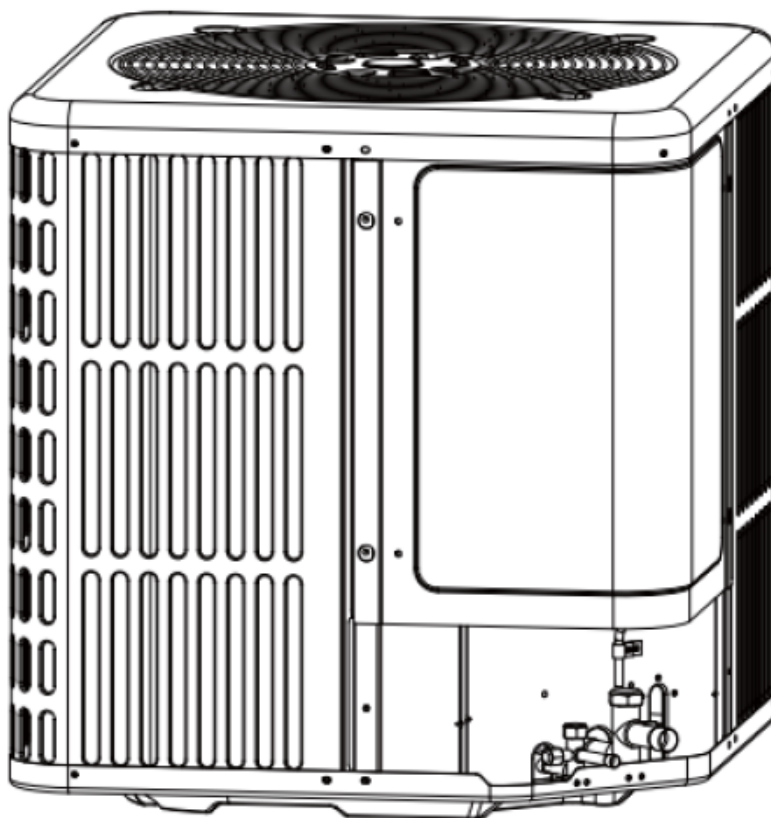


R32 18K-60K TOP-DISCHARGE HEAT PUMP CONDENSER

SERVICE MANUAL

Models Covered:

AC-I-18HP14
AC-I-24HP14
AC-I-30HP14
AC-I-36HP14
AC-I-42HP14
AC-I-48HP14
AC-I-60HP14



RECOGNIZE THIS SYMBOL AS A SAFETY PRECAUTION

ATTENTION SERVICE PERSONNEL

Prior to performing service, thoroughly familiarize yourself with this Service Manual. Observe all safety warnings and practice them during installation, service, or repair. It is your responsibility to install the product safely and inform & educate the customer how to operate it safely.

VERSION DATE: 08-25-26

Part 1

General Information

1 Product lineup2

2 Specifications 3

1 Product lineup

Model	Cooling Capacity (Btu/h)	Heating Capacity (Btu/h)	Appearance
AC-I-18HP14	18000	17600	
AC-I-24HP14	24000	24000	
AC-I-30HP14	30000	30000	
AC-I-36HP14	34200	34000	
AC-I-42HP14	42000	42000	
AC-I-48HP14	46000	46000	
AC-I-60HP14	54000	53000	

2 Specifications*

Outdoor unit			AC-I-18HP14	AC-I-24HP14	AC-I-30HP14	AC-I-36HP14
Power Supply		V, Ph, Hz	208/230, 1, 60,	208/230, 1, 60,	208/230, 1, 60,	208/230, 1, 60,
Cooling	Cooling Capacity at 95°F (35°C)	Btu/h	18000	24000	30000	34200
	Cooling Capacity at 120°F (49°C)	Btu/h	14800	20000	23100	24000
	SEER2	Btu/W	14.3	14.3	14.3	14.3
	EER2	Btu/W	11.7	11.7	11.7	11.7
Heating	Capacity	Btu/h	17600	24000	30000	34000
	HSPF2	Btu/h/W	7.5	7.5	7.5	7.5
Refrigerant	Type		R32	R32	R32	R32
	Factory charging volume	kg	1.30	1.50	2.15	2.25
Piping size	Liquid side	inch	3/8	3/8	3/8	3/8
	Gas side	inch	3/4	3/4	3/4	3/4
Sound pressure level		dB(A)	58	58	59	59
Max. refrigerant pipe length		feet	98	131	131	131
Max. difference in level		feet	66	66	82	82
Unit Dimension	W*D*H	mm	600×600×635	600×600×635	740×740×635	740×740×635
	W*D*H	inch	23-5/8×23-5/8×25	23-5/8×23-5/8×25	29-9/64×29-9/64×25	29-9/64×29-9/64×25
Packing Dimension	W*D*H	mm	660×660×665	660×660×665	770×770×665	770×770×665
	W*D*H	inch	25-63/64×25-63/64×26-3/16	25-63/64×25-63/64×26-3/16	30-5/16×30-5/16×26-3/16	30-5/16×30-5/16×26-3/16
Net/Gross Weight		kg	53/56	54/57	63.1/67	65.9/70
		lbs	117/123	119/126	139/148	145/154
Ambient temp. operation range	Cooling	°F	23~125.6	23~125.6	23~125.6	23~125.6
	Heating	°F	-4~86	-4~86	-4~86	-4~86

*Some performance ratings & specs represent heat pump condenser when paired with appropriately sized AireForce R32 evaporator A-Coils. Some of the performance ratings & specs will vary if the heat pump condensers is are paired with a different air handler or used in a third-party system with different branded components.

Outdoor unit			AC-I-42HP14	AC-I-48HP14	AC-I-60HP14
Power Supply		V, Ph, Hz	208/230, 1, 60,	208/230, 1, 60,	208/230, 1, 60,
Cooling	Cooling Capacity at 95°F (35°C)	Btu/h	42000	46000	52500
	Cooling Capacity at 120°F (49°C)	Btu/h	27300	29200	36500
	SEER2	Btu/W	14.3	14.3	14.3
	EER2	Btu/W	11.7	11.7	11.7
Heating	Capacity	Btu/h	42000	46000	53000
	HSPF2	Btu/h/W	7.5	7.5	7.5
Refrigerant	Type		R32	R32	R32
	Factory charging volume	kg	2.60	2.60	2.90
Piping size	Liquid side	inch	3/8	3/8	3/8
	Gas side	inch	3/4	3/4	3/4
Sound pressure level		dB(A)	60	60	60
Max. refrigerant pipe length		feet	213	213	213
Max. difference in level		feet	98	98	98
Unit Dimension	W*D*H	mm	740×740×835	740×740×835	740×740×835
	W*D*H	inch	29-9/64×29-9/64×32-7/8	29-9/64×29-9/64×32-7/8	29-9/64×29-9/64×32-7/8
Packing Dimension	W*D*H	mm	770×770×865	770×770×865	770×770×865
	W*D*H	inch	30-5/16×30-5/16×34-1/16	30-5/16×30-5/16×34-1/16	30-5/16×30-5/16×34-1/16
Net/Gross Weight		kg	80/85	80/85	82.5/87.5
		lbs	176/187	176/187	182/193
Ambient temp. operation range	Cooling	°F	23~125.6	23~125.6	23~125.6
	Heating	°F	-4~86	-4~86	-4~86

***Some performance ratings & specs represent heat pump condenser when paired with appropriately sized AireForce R32 evaporator A-Coils. Some of the performance ratings & specs will vary if the heat pump condensers is are paired with a different air handler or used in a third-party system with different branded components.**

Part 2

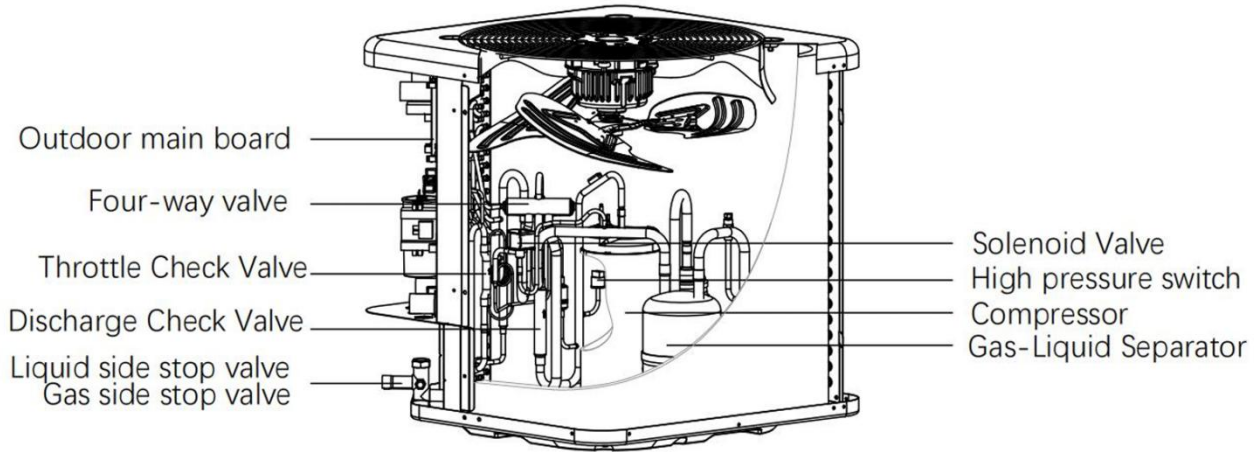
Component Layout and Refrigerant Circuit

1 Layout Functional Components 6

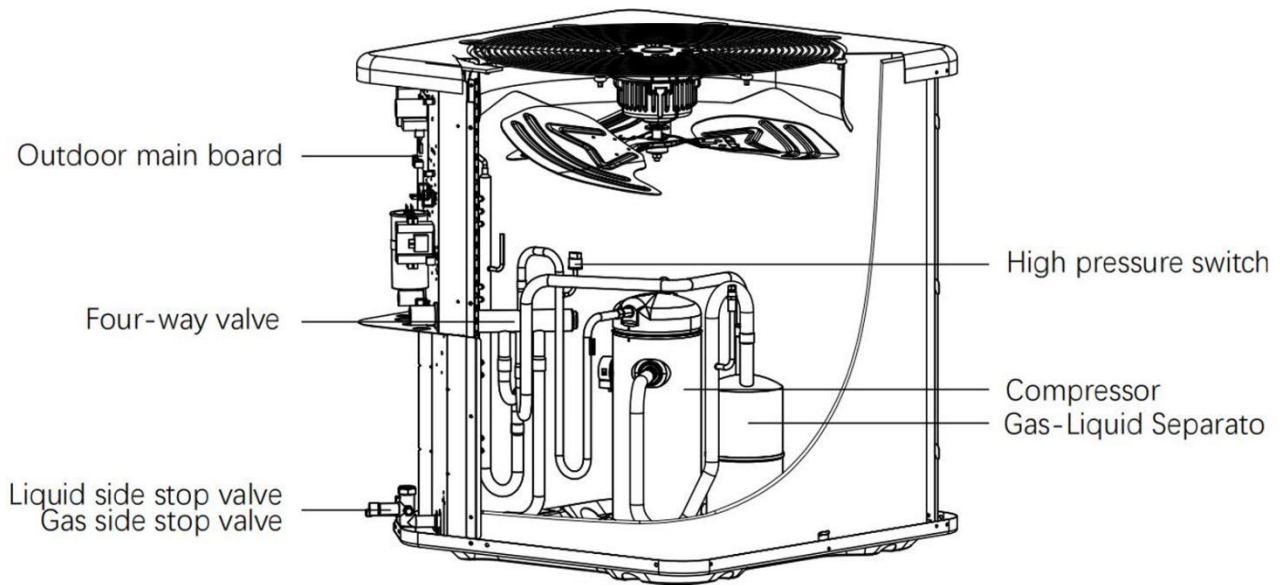
2 Piping diagrams 7

1 Layout Functional Components

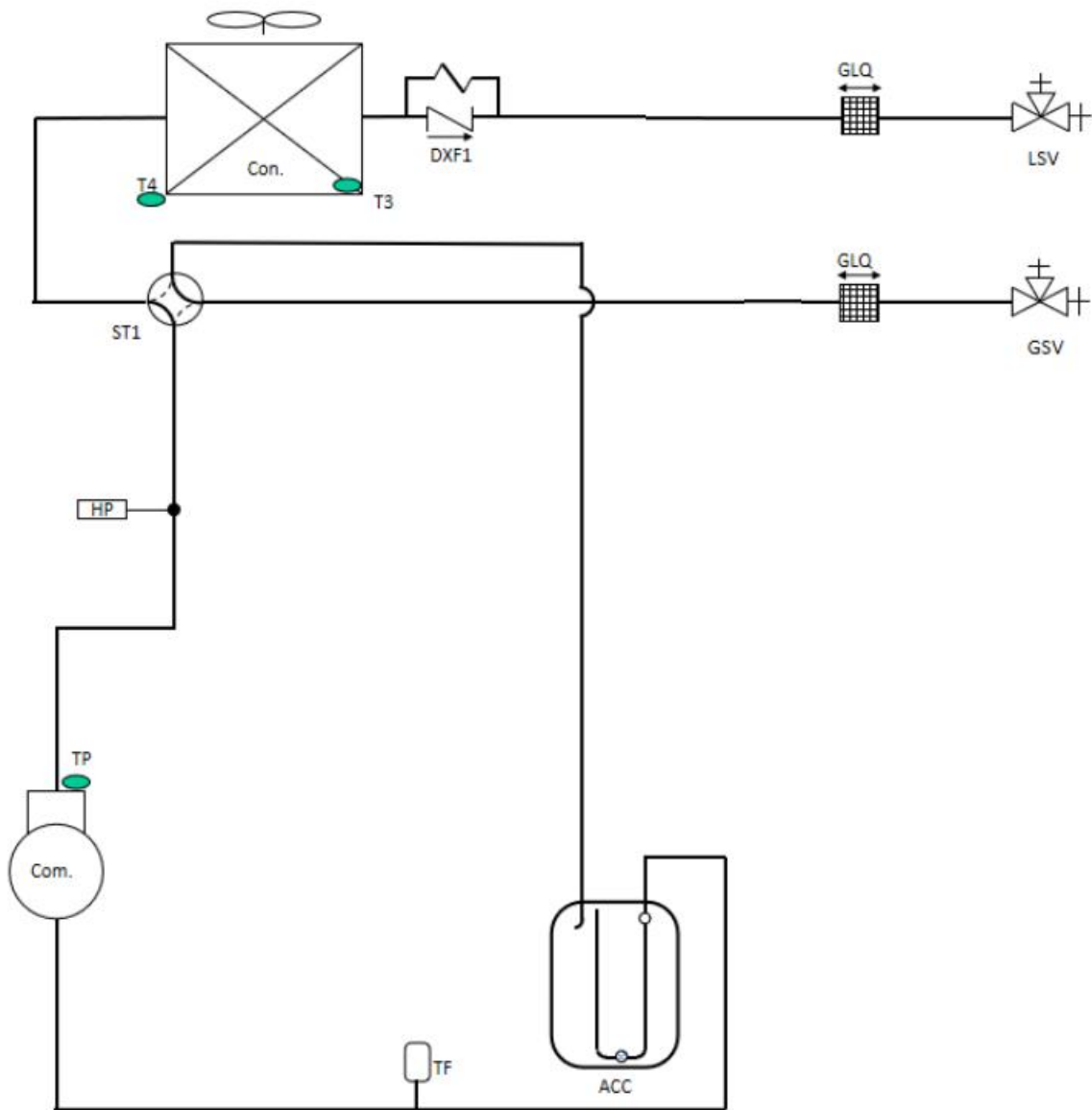
AC-I-18HP14, AC-I-24HP14, AC-I-30HP14, AC-I-36HP14



AC-I-42HP14, AC-I-48HP14, AC-I-60HP14



2 Piping diagrams



NO.	Component(Outdoor unit)	NO.	Component(Outdoor unit)
Com.	Compressor	DXF1	One-way valve
TP	Exhaust temperature sensor	GLQ	Filter
HP	High pressure switch	LSV	Liquid Stop Valve
ST1	Four-way valve	GSV	Gas Stop Valve
T4	Ambient temperature sensor	ACC	Gas-liquid separator
T3	Condenser coil temperature sensor	TF	Thermal fuse
Con.	Condenser		

Part 3

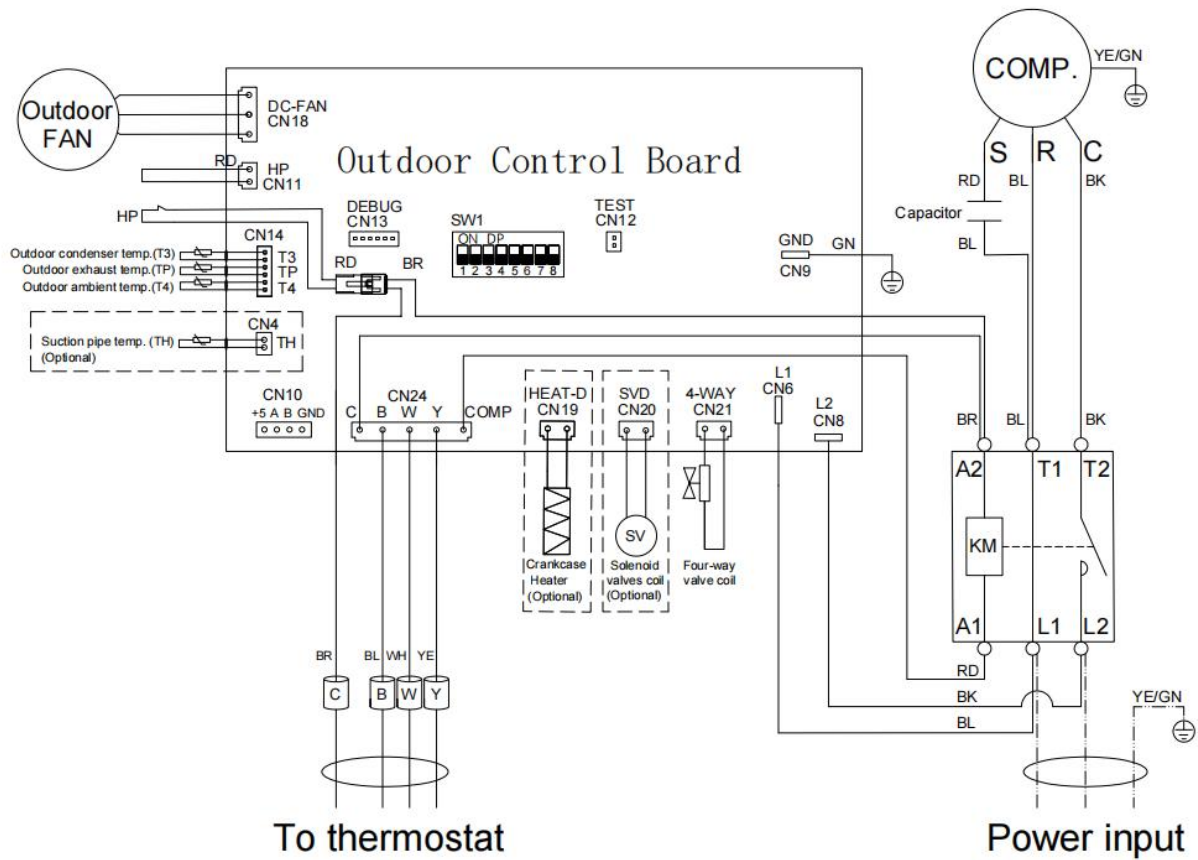
Wiring Diagram

1 Electric wiring diagram 9

2 PCB 10

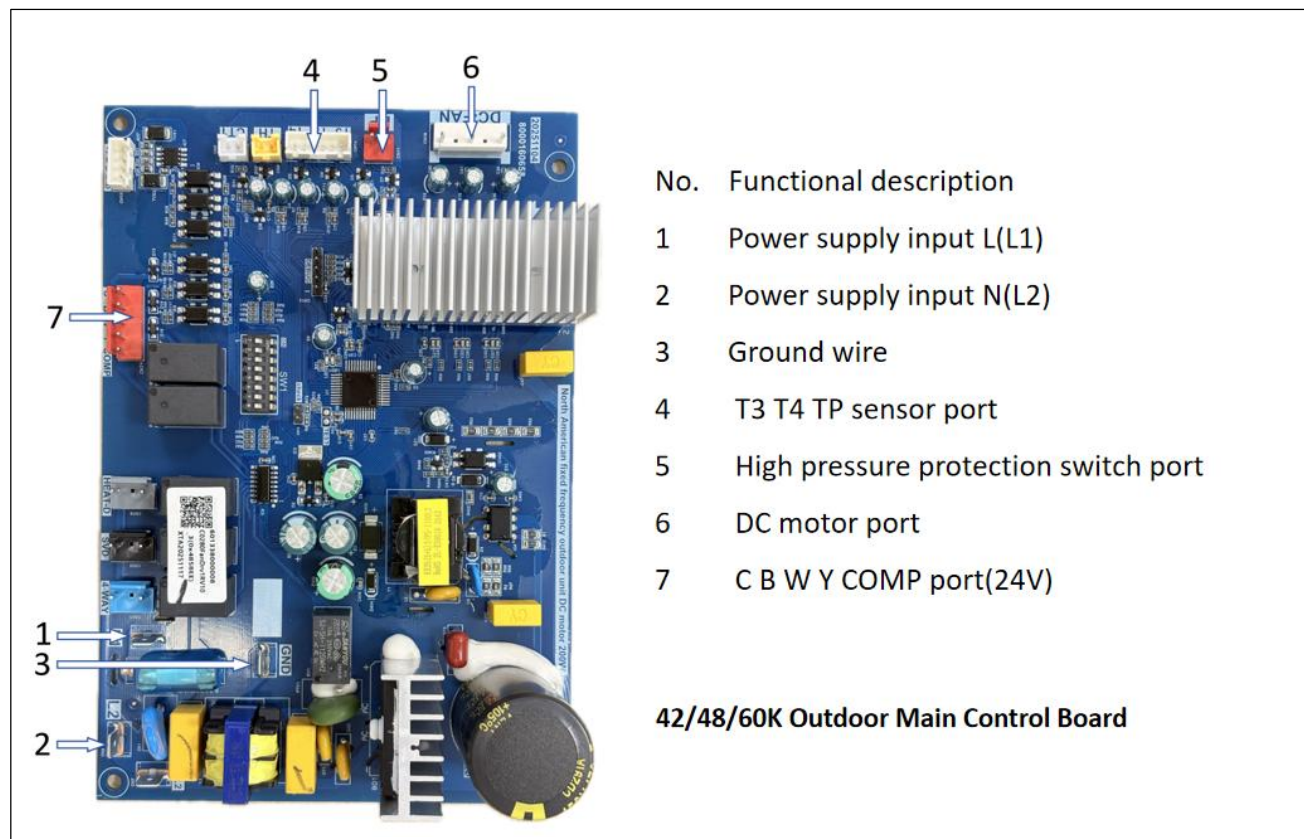
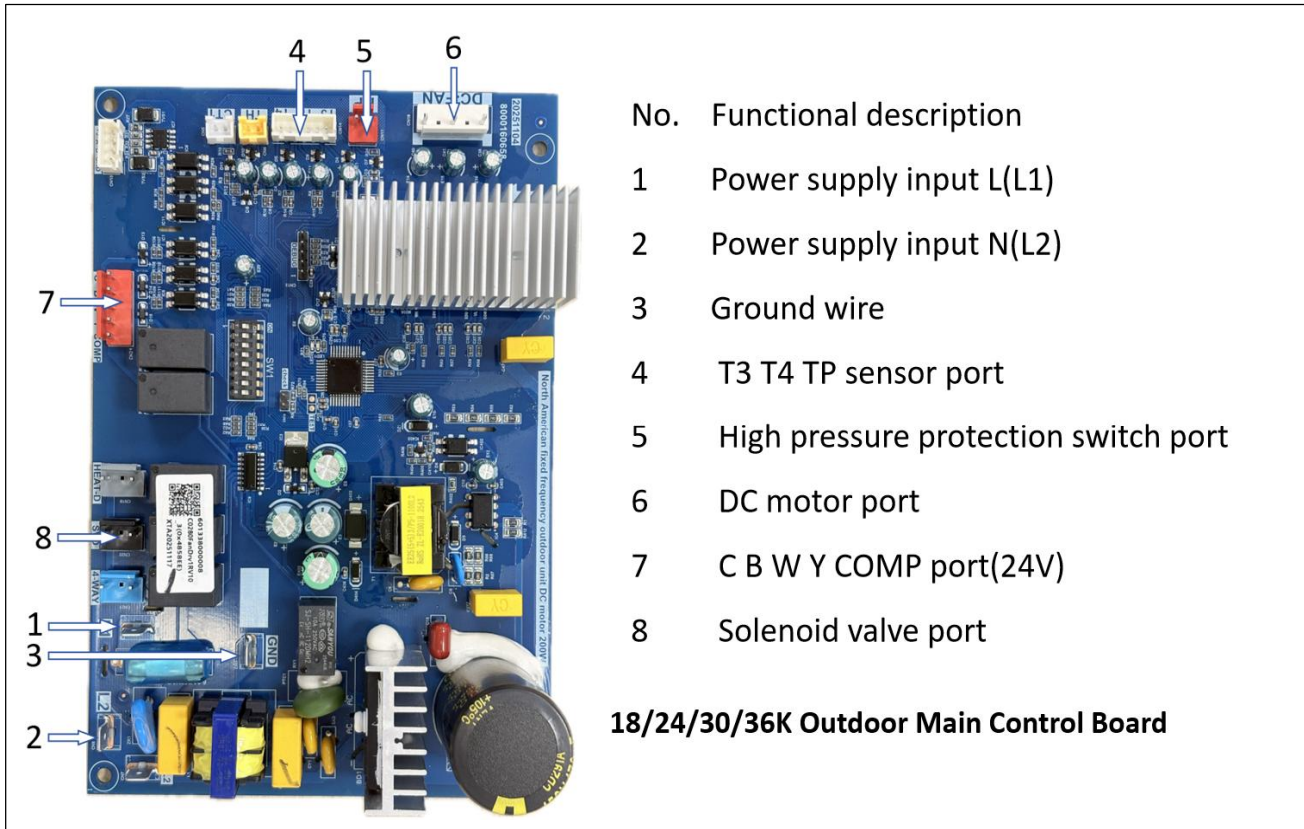
3 Low voltage wiring diagram 12

1 Electric wiring diagram



Note: 18k 24k 30k 36k models should connect Solenoid valves coil

2 PCB



Definition of SW1

Wire Color Code	DIP switch status Indicate		Outdoor Display Board SW1 DIP switch selection				Outdoor Display Board SW1 DIP switch selection	
			SW1.1	SW1.2	SW1.3	SW1.4	SW1.5	SW1.6
RD RED OR ORANGE BL BLUE GN GREEN BR BROWN GY GRAY BK BLACK YE YELLOW WH WHITE PR PURPLE	ON ☐	This Indicate OFF (The DIP switch is dialed to the digital side)	OFF	24V Control (Default)	SW1.5	OFF	Reserved (Default)	SW1.6
	OFF ☒		ON	RS485 Comm. Mode		ON	Manual Defrosting	
	ON ☐	This Indicate ON (The DIP switch is dialed to the non-digital side)	OFF	Heating and cooling	SW1.7	OFF	Auto Defrosting (Default)	SW1.8
	OFF ☒		ON	Single-cooled (Default)		ON	Periodically Defrosting	
	ON ☐		OFF	18K	SW1.7	OFF	Defrost interval 60 minutes (Default)	SW1.8
	OFF ☒		ON	24K 30K 36K 42K		ON	Defrost interval 30 minutes	
	ON ☐		OFF	Reserved	SW1.7	OFF	General mode (Default)	SW1.8
	OFF ☒		ON	48K 60K		ON	High vertical mode	

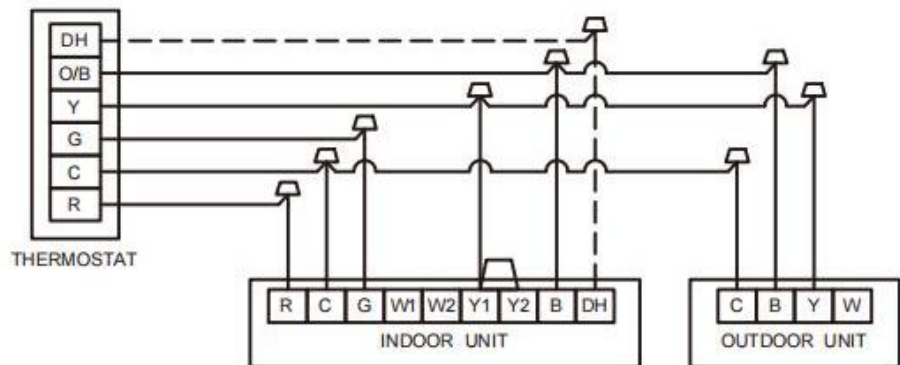
3 Low voltage wiring diagram

The following wiring diagram are suitable for the Indoor Unit and Outdoor Unit with 24V thermostat.

Heat Pump System Model

Wiring for 1H and 1C thermostat (heat pump system model)

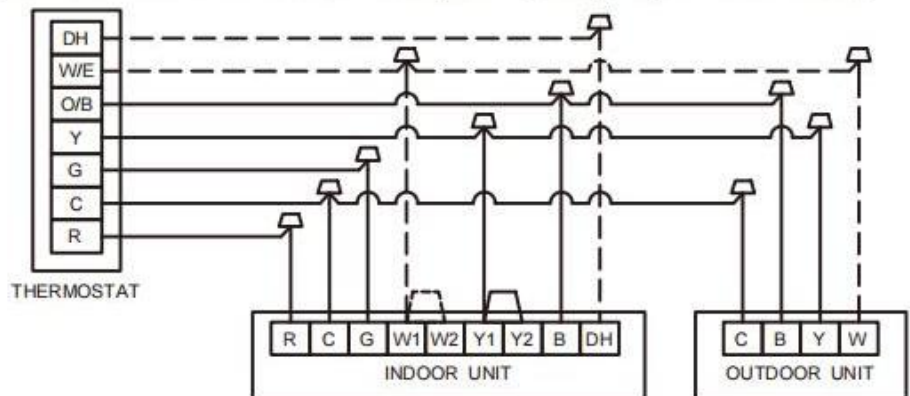
Note: Because Y1 and Y2 are jumped, the indoor fan will only run in high stage.



Wiring for 2H and 1C thermostat (heat pump system model)

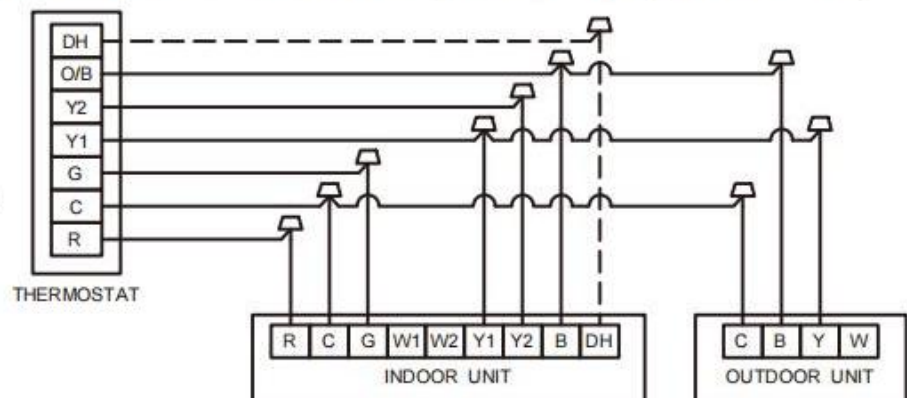
Note: Because Y1 and Y2 are jumped, the indoor fan will only run in high stage.

Note: Any time the electric heat elements are active, the indoor fan will run in high stage.

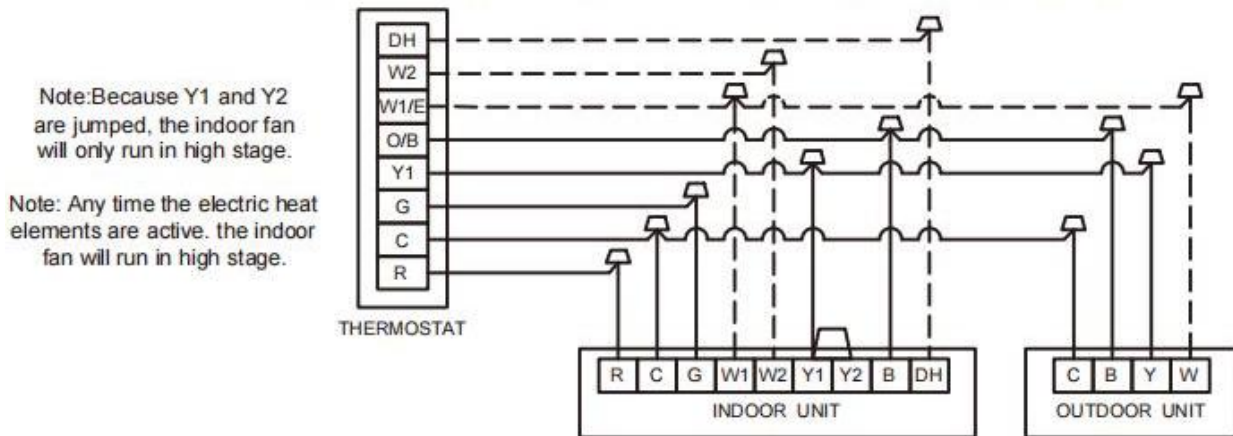


Wiring for 2H and 2C thermostat (heat pump system model)

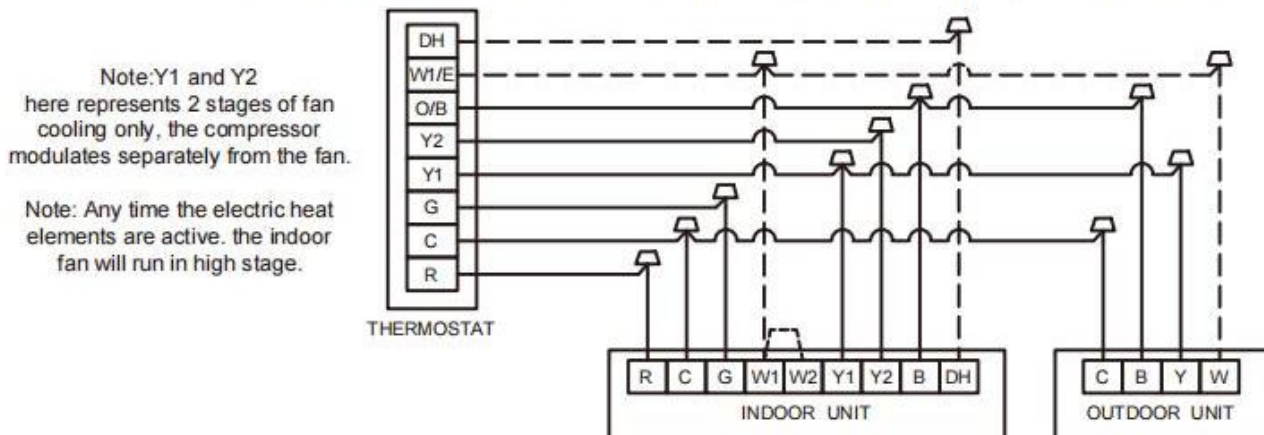
Note: Y1 and Y2 here represents 2 stages of fan cooling only, the compressor modulates separately from the fan.



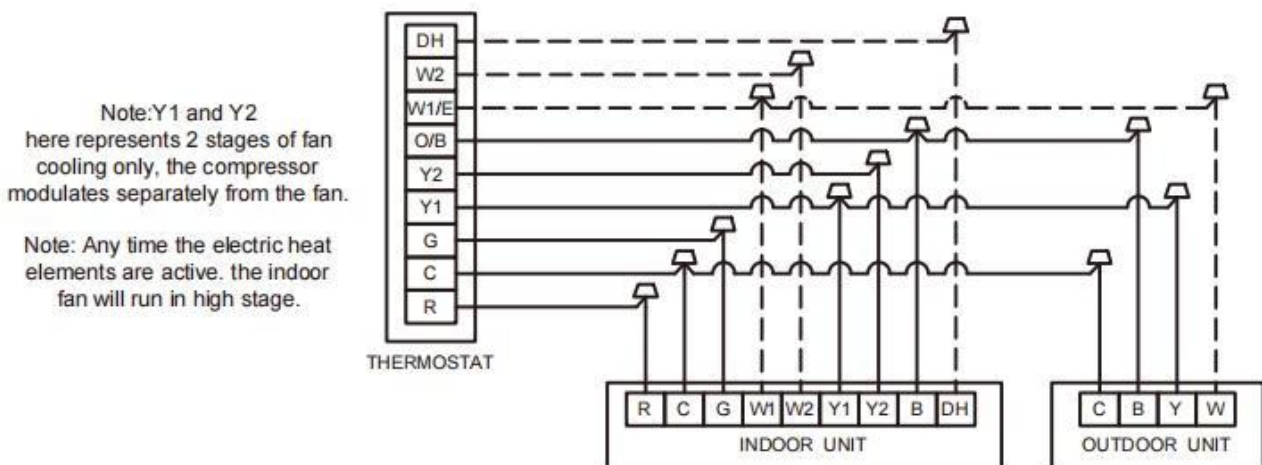
Wiring for 3H and 1C thermostat (heat pump system model)



Wiring for 3H and 2C thermostat (heat pump system model)



Wiring for 4H and 2C thermostat (heat pump system model)



Control Logic:**Indoor unit connector**

Connector	Purpose
R	24V Power Connection
C	Common
G	Fan Control
Y1	Low Demand
Y2	High Demand
B	Heating Reversing Valve
W1	Stage 1 Electric Heating
W2	Stage 2 Electric Heating
DH	Dehumidification

Outdoor unit connector

Connector	Purpose
C	Common
Y	Compressor
B	Heating Reversing Valve
W	Defrost control

Note:

- 1) DH wiring is optional and requires a thermostat with a humidistat. DH functions as Passive Dehumidification and will downstage the indoor fan to first stage. System will operate according to normal sequence of operations if DH wiring is absent.
- 2) Dashed lines in the above thermostat wiring diagrams refer to optional wiring (wiring for Passive Dehumidification Function and/OR Electric Heat). For thermostat wiring please refer to the Owner's Manual of the thermostat.

Part 4

Diagnosis and Troubleshooting

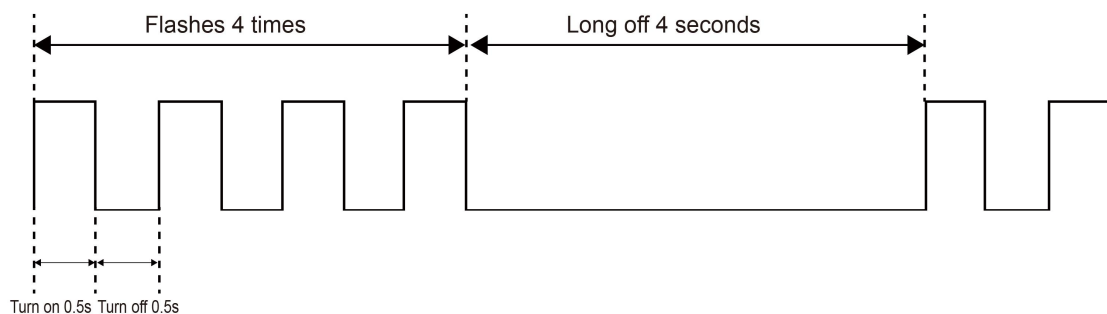
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1 Error code table

	LED Display	System Status
Operating Mode	Green Light: Flash 1 time per Second Red Light: Off	Standby
	Green Light: Steadily On Red Light: Off	Cooling
	Green Light: Steadily On Red Light: Off	Heating
System Alert	Green Light: Flashes 1 Time Red Light: Off	Low Pressure Alert(Reserved)
	Green Light: Flashes 2 Times Red Light: Off	High Pressure Alert
	Green Light: Flashes 3 Times Red Light: Off	Tp Exhaust Over-temperature Protection
	Green Light: Flashes 4 Times Red Light: Off	TH Anti-freeze Protection Fault(Reserved)
	Green Light: Flashes 5 Times Red Light: Off	T4 Ambient Temperature Protection
	Green Light: Flashes 6 Times Red Light: Off	T3 Over-temperature Protection
	Green Light: Off Red Light: Flashes 1 Time	T3 Sensor Error
	Green Light: Off Red Light: Flashes 2 Times	T4 Sensor Error
	Green Light: Off Red Light: Flashes 3 Times	Tp Sensor Error
	Green Light: Off Red Light: Flashes 4 Times	TH Sensor Error(Reserved)
	Green Light: Flashes 1 Time Red Light: Flashes 1 Time	DC fan failure
System Lockout	Green Light: Off Red Light: Flashes 5 Times	6 Low Pressure Faults within 60 Mins(Reserved)
	Green Light: Off Red Light: Flashes 6 Times	3 Exhaust Over-temperature Faults within 60 Mins
	Green Light: Off Red Light: Flashes 7 Times	8 TH Anti-freeze Faults within 200 Mins(Reserved)

Note: When a fault code is indicated by "flashing N times", it means the LED will perform N short cycles of 0.5s ON / 0.5s OFF, followed by a 4-second long OFF period.

For example, a fault code of "flashing 4 times" means the LED will flash 4 times (0.5s ON / 0.5s OFF per cycle), then stay off for 4 seconds. The timing diagram is shown below.



2 Troubleshooting

2.1 Safety Precautions

The following precautions here are quite important, so be sure to follow them carefully. Read these instructions carefully before installation. Keep this manual in a handy for future reference.

Failure to adhere to all precautionary measures listed in this section may result in personal injury, damage to the unit or to property, or in extreme cases, death.



WARNING

- Indicates a potentially hazardous situation which if not avoided, could result in death or serious injury.



CAUTION

- Indicates a potentially hazardous situation which if not avoided, may result in minor or moderate injury.
- It is also used to alert against unsafe practices.

2.1.1 In case of Accidents or Emergency



WARNING

- If a gas leak is suspected, immediately turn off the gas and ventilate the area if a gas leak is suspected before turning the unit on.
- If strange sounds or smoke is detected from the unit, turn the breaker off and disconnect the power supply cable.
- If the unit comes into contact with liquid, contact an authorized service center.
- If liquid from the batteries makes contact with skin or clothing, immediately rinse or wash the area well with clean water.
- Do not insert hands or other objects into the air inlet or outlet while the unit is plugged in.
- Do not operate the unit with wet hands.



CAUTION

- Clean and ventilate the unit at regular intervals when operating it near a stove or near similar devices.
- Do not use the unit during severe weather conditions. If possible, remove the product from the window before such occurrences.

2.1.2 Information servicing(For flammable materials)



WARNING

- Use this unit only on a dedicated circuit.
 - Damage to the installation area could cause the unit to fall, potentially resulting in personal injury, property damage, or product failure.
 - Only qualified personnel should disassemble, install, remove, or repair the unit.
 - Only a qualified electrician should perform electrical work. For more information, contact your dealer, seller, or an authorized service center.
-



CAUTION

- While unpacking be careful of sharp edges around the unit as well as the edges of the fins on the condenser and evaporator.

2.1.3 Operation and Maintenance



WARNING

- Do not use defective or under-rated circuit breakers.
- Ensure the unit is properly grounded and that a dedicated circuit and breaker are installed.
- Do not modify or extend the power cable. Ensure the power cable is secure and not damaged during operation.
- Do not unplug the power supply plug during operation.
- Do not store or use flammable materials near the unit.
- Do not open the inlet grill of the unit during operation.
- Do not touch the electrostatic filter if the unit is equipped with one.
- Do not block the inlet or outlet of air flow to the unit.
- Do not use harsh detergents, solvents, or similar items to clean the unit. Use a soft cloth for cleaning.
- Do not touch the metal parts of the unit when removing the air filter as they are very sharp.
- Do not step on or place anything on the unit or outdoor units.
- Do not drink water drained from the unit.
- Avoid direct skin contact with water drained from the unit.
- Use a firm stool or step ladder according to manufacturer procedures when cleaning or maintaining the unit.



CAUTION

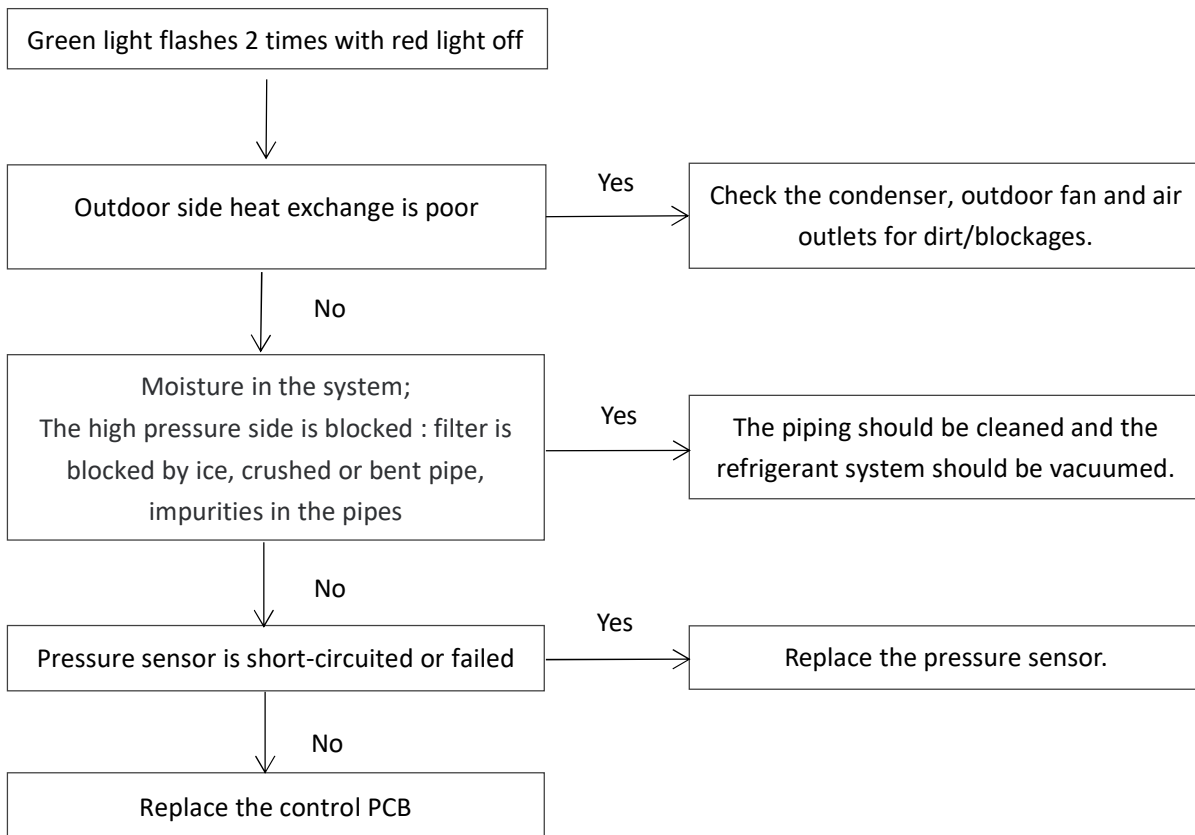
- Do not install or operate the unit for an extended period of time in areas of high humidity or in an environment directly exposing it to sea wind or salt spray.
- Do not install the unit on a defective or damaged installation stand, or in an unsecured location.
- Ensure the unit is installed at a level position
- Do not install the unit where noise or air discharge
- Created by the outdoor unit will negatively impact the environment or nearby residences.
- Do not expose skin directly to the air discharged by the unit for prolonged periods of time.
- Ensure the unit operates in areas waterOr other liquids.
- Ensure the drain hose is installed correctly to ensure proper water drainage.
- When lifting or transporting the unit, it is recommended that two or more people are used for this task.
- When the unit is not to be used for an extended time, disconnect the power supply or turn off the breaker.

2.2 ATL Troubleshooting

- ATL indicates ambient temperature out of bounds protection.
- The unit stops running and will not start operating until the ambient temperature returns to the allowable temperature range, error code is displayed on the communication board.
- The allowable ambient temperature range is 5~125°F (-15~52°C).

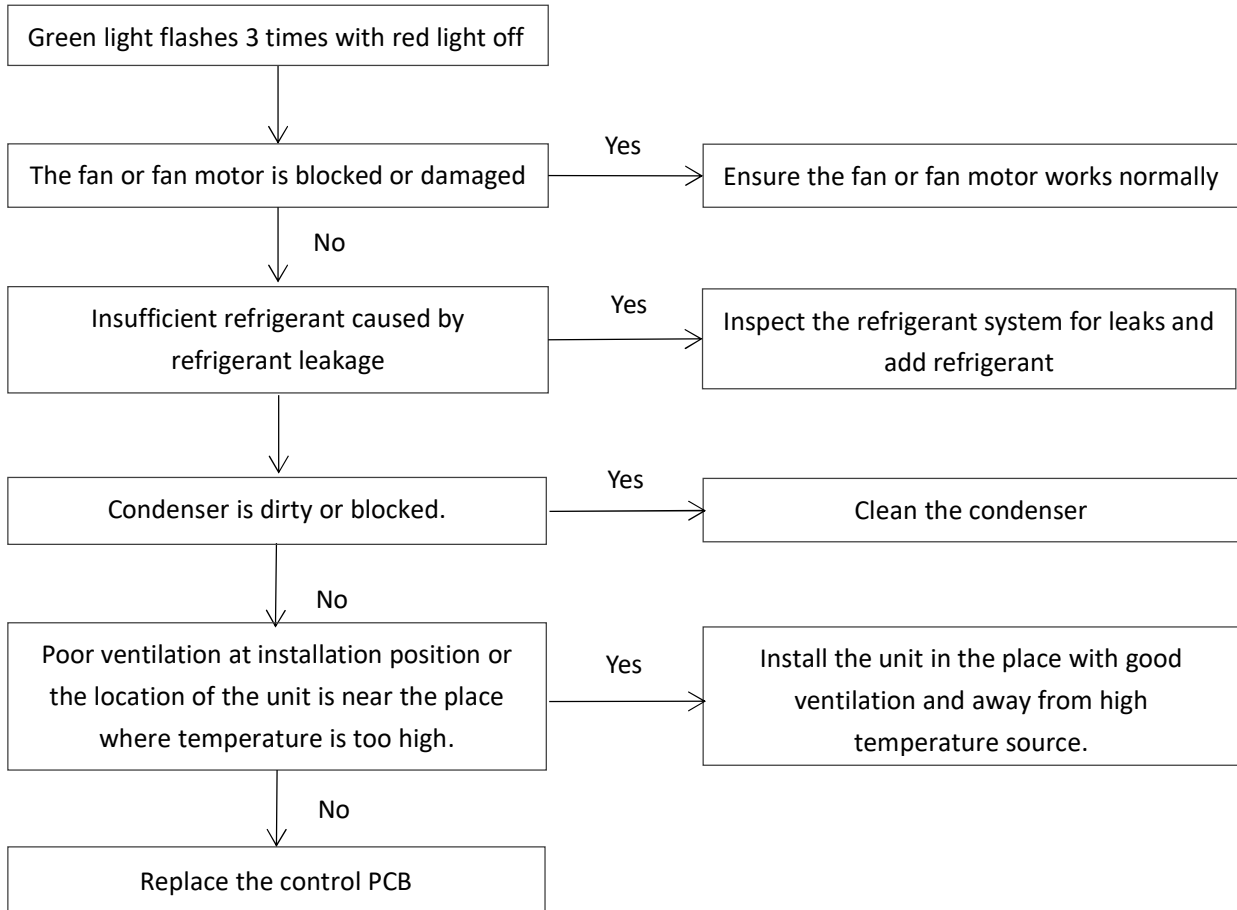
2.3 High Pressure Alert

- Green light flashes 2 times with red light off indicates High Pressure Alert.



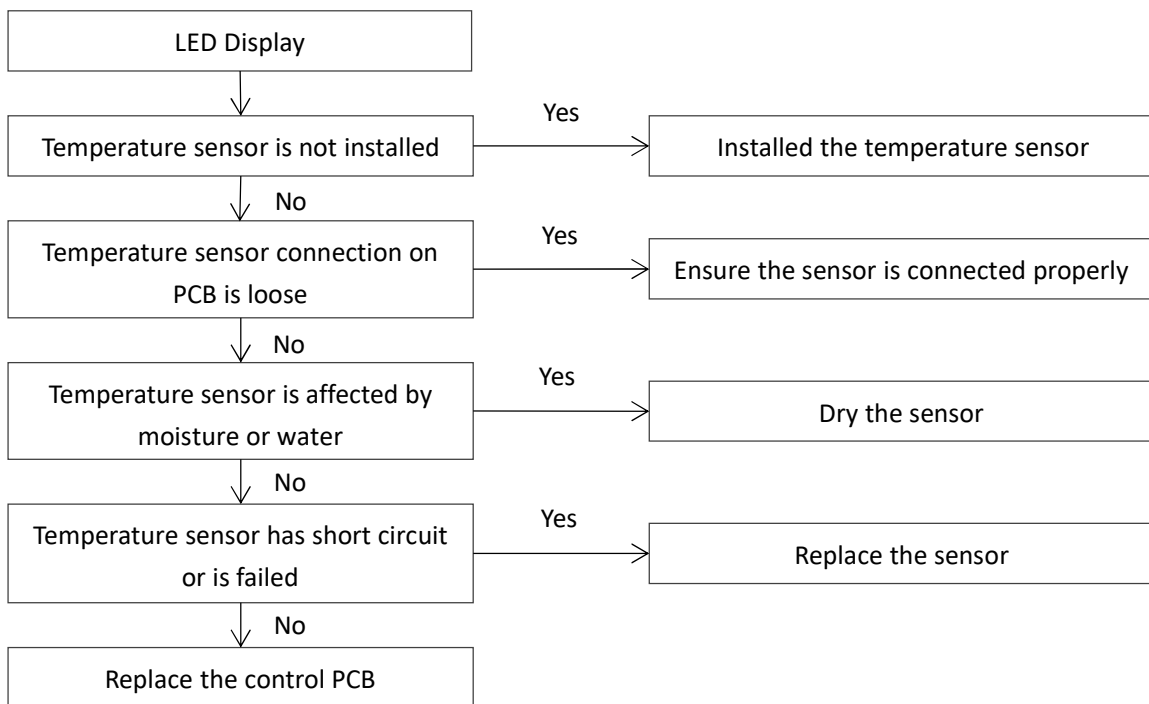
2.4 TP Exhaust Over-temperature Protection Troubleshooting

- Green light flashes 3 times with red light off indicates discharge temperature protection.
- The unit stops running and error code is displayed on the communication board.



2.5 T3/T4/TP Troubleshooting

- Green light flashes 5 times with red light off indicates Ambient Temperature Protection.
- Green light flashes 5 times with red light off indicates T3 Over-temperature Protection.
- Green light off with red light flashes 1 times indicates T3 Sensor Error.
- Green light off with red light flashes 2 times indicates T4 Sensor Error.
- Green light off with red light flashes 3 times indicates TP Sensor Error.
- Green light off with red light flashes 6 times indicates Exhaust Over-temperature Faults within 60 mins.



Note:

- 1) Measure sensor resistance. If the resistance is too low, the sensor has short-circuited. If the resistance is not consistent with the sensor's resistance characteristics table, the sensor has failed.

3. Temperature Sensor Resistance Characteristics

Outdoor ambient temperature sensor(T4) and condenser coil temperature sensor(T3) resistance characteristics.

Temperature (°F)	Resistance Rmax(kΩ)	Resistance Rnor(kΩ)	Resistance Rmin(kΩ)	Temperature (°F)	Resistance Rmax(kΩ)	Resistance Rnor(kΩ)	Resistance Rmin(kΩ)
-22	65.02	62.77	60.59	142	1.45	1.42	1.39
-20	61.52	59.42	57.39	144	1.41	1.37	1.34
-18	58.24	56.28	54.39	145	1.36	1.33	1.30
-17	55.15	53.32	51.56	147	1.32	1.29	1.26
-15	52.24	50.54	48.89	149	1.28	1.25	1.22
-13	49.51	47.92	46.38	151	1.24	1.21	1.18
-11	46.94	45.46	44.02	153	1.21	1.18	1.15
-9	44.51	43.13	41.79	154	1.17	1.14	1.11
-8	42.23	40.94	39.69	156	1.13	1.11	1.08
-6	40.08	38.88	37.71	158	1.10	1.07	1.05
-4	38.05	36.93	35.84	160	1.07	1.04	1.02
-2	36.14	35.09	34.07	162	1.04	1.01	0.98
0	34.34	33.36	32.40	163	1.01	0.98	0.96
1	32.63	31.72	30.83	165	0.98	0.95	0.93
3	31.03	30.17	29.34	167	0.95	0.92	0.90
5	29.51	28.71	27.93	169	0.92	0.90	0.87
7	28.07	27.33	26.60	171	0.90	0.87	0.85
9	26.72	26.02	25.34	172	0.87	0.85	0.82
10	25.44	24.78	24.15	174	0.85	0.82	0.80
12	24.22	23.61	23.02	176	0.82	0.80	0.78
14	23.08	22.51	21.95	178	0.80	0.78	0.75
16	21.99	21.46	20.93	180	0.78	0.75	0.73
18	20.96	20.46	19.97	181	0.75	0.73	0.71
19	19.99	19.52	19.06	183	0.73	0.71	0.69
21	19.06	18.63	18.20	185	0.71	0.69	0.67
23	18.19	17.78	17.38	187	0.69	0.67	0.65
25	17.36	16.98	16.61	189	0.68	0.66	0.64
27	16.57	16.22	15.87	190	0.66	0.64	0.62
28	15.83	15.49	15.17	192	0.64	0.62	0.60
30	15.12	14.81	14.50	194	0.62	0.60	0.58
32	14.45	14.16	13.87	196	0.61	0.59	0.57
34	13.81	13.54	13.27	198	0.59	0.57	0.55
36	13.20	12.95	12.70	199	0.57	0.56	0.54
37	12.63	12.39	12.15	201	0.56	0.54	0.52
39	12.08	11.85	11.64	203	0.54	0.53	0.51
41	11.56	11.35	11.14	205	0.53	0.51	0.50
43	11.06	10.87	10.67	207	0.52	0.50	0.48
45	10.59	10.41	10.23	208	0.50	0.49	0.47
46	10.14	9.97	9.80	210	0.49	0.47	0.46
48	9.71	9.56	9.40	212	0.48	0.46	0.45
50	9.31	9.16	9.01	214	0.47	0.45	0.43
52	8.92	8.78	8.65	216	0.45	0.44	0.42
54	8.55	8.42	8.30	217	0.44	0.43	0.41
55	8.20	8.08	7.96	219	0.43	0.42	0.40

57	7.86	7.75	7.64	221	0.42	0.41	0.39
59	7.55	7.44	7.34	223	0.41	0.40	0.38
61	7.24	7.14	7.05	225	0.40	0.39	0.37
63	6.95	6.86	6.77	226	0.39	0.38	0.36
64	6.67	6.59	6.50	228	0.38	0.37	0.35
66	6.41	6.33	6.25	230	0.37	0.36	0.34
68	6.15	6.08	6.01	232	0.36	0.35	0.34
70	5.91	5.85	5.78	234	0.35	0.34	0.33
72	5.68	5.62	5.56	235	0.34	0.33	0.32
73	5.46	5.40	5.35	237	0.34	0.32	0.31
75	5.25	5.20	5.14	239	0.33	0.32	0.30
77	5.05	5.00	4.95	241	0.32	0.31	0.30
79	4.86	4.81	4.76	243	0.31	0.30	0.29
81	4.68	4.63	4.58	244	0.31	0.29	0.28
82	4.51	4.46	4.41	246	0.30	0.29	0.28
84	4.34	4.29	4.24	248	0.29	0.28	0.27
86	4.18	4.13	4.08	250	0.28	0.27	0.26
88	4.03	3.98	3.93	252	0.28	0.27	0.26
90	3.89	3.84	3.79	253	0.27	0.26	0.25
91	3.75	3.70	3.65	255	0.27	0.25	0.24
93	3.61	3.56	3.52	257	0.26	0.25	0.24
95	3.48	3.44	3.39	259	0.25	0.24	0.23
97	3.36	3.31	3.27	261	0.25	0.24	0.23
99	3.24	3.20	3.15	262	0.24	0.23	0.22
100	3.13	3.08	3.04	264	0.24	0.23	0.22
102	3.02	2.97	2.93	266	0.23	0.22	0.21
104	2.91	2.87	2.83	268	0.23	0.22	0.21
106	2.81	2.77	2.73	270	0.22	0.21	0.20
108	2.72	2.67	2.63	271	0.22	0.21	0.20
109	2.63	2.58	2.54	273	0.21	0.20	0.19
111	2.54	2.49	2.45	275	0.21	0.20	0.19
113	2.45	2.41	2.37	277	0.20	0.19	0.19
115	2.37	2.33	2.29	279	0.20	0.19	0.18
117	2.29	2.25	2.21	280	0.19	0.19	0.18
118	2.21	2.17	2.13	282	0.19	0.18	0.17
120	2.14	2.10	2.06	284	0.19	0.18	0.17
122	2.07	2.03	1.99	286	0.18	0.17	0.17
124	2.00	1.97	1.93	288	0.18	0.17	0.16
126	1.94	1.90	1.86	289	0.17	0.17	0.16
127	1.88	1.84	1.80	291	0.17	0.16	0.16
129	1.82	1.78	1.74	293	0.17	0.16	0.15
131	1.76	1.72	1.69	295	0.16	0.16	0.15
133	1.70	1.67	1.63	297	0.16	0.15	0.15
135	1.65	1.61	1.58	298	0.16	0.15	0.14
136	1.60	1.56	1.53	300	0.15	0.15	0.14
138	1.55	1.51	1.48	302	0.15	0.14	0.14
140	1.50	1.46	1.43				

Compressor exhaust temperature sensor (TP) resistance characteristics.

Temperature (°F)	Resistance Rmax(kΩ)	Resistance Rnor(kΩ)	Resistance Rmin(kΩ)	Temperature (°F)	Resistance Rmax(kΩ)	Resistance Rnor(kΩ)	Resistance Rmin(kΩ)
31	165.85	162.28	158.78	169	7.24	7.02	6.82
33	157.60	154.29	151.04	171	7.00	6.79	6.59
35	149.81	146.74	143.71	172	6.77	6.57	6.37
36	142.44	139.59	136.79	174	6.55	6.35	6.16
38	135.48	132.84	130.23	176	6.33	6.14	5.95
40	128.90	126.45	124.03	178	6.13	5.94	5.76
42	122.68	120.40	118.15	180	5.93	5.75	5.57
44	116.79	114.68	112.59	181	5.74	5.56	5.39
45	111.21	109.26	107.32	183	5.56	5.38	5.21
47	105.94	104.12	102.33	185	5.38	5.21	5.04
49	100.94	99.26	97.59	187	5.21	5.04	4.88
51	96.20	94.64	93.10	189	5.05	4.88	4.72
53	91.72	90.27	88.84	190	4.89	4.73	4.57
54	87.46	86.13	84.80	192	4.74	4.58	4.43
56	83.43	82.19	80.97	194	4.59	4.44	4.29
58	79.60	78.46	77.33	196	4.45	4.30	4.15
60	75.97	74.92	73.87	198	4.31	4.16	4.02
62	72.53	71.55	70.58	199	4.18	4.03	3.89
63	69.26	68.36	67.46	201	4.05	3.91	3.77
65	66.15	65.32	64.49	203	3.93	3.79	3.66
67	63.20	62.43	61.67	205	3.81	3.67	3.54
69	60.40	59.69	58.99	207	3.69	3.56	3.43
71	57.73	57.08	56.44	208	3.58	3.45	3.33
72	55.20	54.60	54.01	210	3.48	3.35	3.23
74	52.79	52.25	51.70	212	3.37	3.25	3.13
76	50.50	50.00	49.50	214	3.27	3.15	3.03
78	48.36	47.86	47.36	216	3.18	3.06	2.94
80	46.33	45.83	45.33	217	3.08	2.97	2.86
81	44.39	43.89	43.39	219	2.99	2.88	2.77
83	42.54	42.04	41.55	221	2.90	2.79	2.69
85	40.78	40.28	39.80	223	2.82	2.71	2.61
87	39.10	38.61	38.12	225	2.74	2.63	2.53
89	37.49	37.01	36.53	226	2.66	2.56	2.46
90	35.96	35.49	35.01	228	2.58	2.48	2.38
92	34.51	34.03	33.56	230	2.51	2.41	2.32
94	33.11	32.65	32.18	232	2.44	2.34	2.25
96	31.78	31.32	30.86	234	2.37	2.27	2.18
98	30.51	30.06	29.61	235	2.30	2.21	2.12
99	29.30	28.85	28.41	237	2.24	2.15	2.06
101	28.14	27.70	27.26	239	2.18	2.09	2.00
103	27.04	26.60	26.17	241	2.11	2.03	1.94
105	25.98	25.55	25.13	243	2.06	1.97	1.89
107	24.97	24.55	24.13	244	2.00	1.92	1.84
108	24.00	23.59	23.18	246	1.94	1.86	1.78
110	23.08	22.67	22.26	248	1.89	1.81	1.73

112	22.19	21.79	21.39	250	1.84	1.76	1.69
114	21.35	20.95	20.56	252	1.79	1.71	1.64
116	20.54	20.15	19.77	253	1.74	1.67	1.59
117	19.76	19.38	19.00	255	1.69	1.62	1.55
119	19.02	18.64	18.28	257	1.65	1.58	1.51
121	18.31	17.94	17.58	259	1.60	1.53	1.47
123	17.62	17.27	16.91	261	1.56	1.49	1.43
125	16.97	16.62	16.27	262	1.52	1.45	1.39
126	16.35	16.00	15.66	264	1.48	1.41	1.35
128	15.75	15.41	15.08	266	1.44	1.38	1.31
130	15.17	14.84	14.52	268	1.40	1.34	1.28
132	14.62	14.30	13.98	270	1.37	1.30	1.24
134	14.09	13.78	13.46	271	1.33	1.27	1.21
135	13.59	13.27	12.97	273	1.30	1.24	1.18
137	13.10	12.79	12.50	275	1.26	1.20	1.15
139	12.63	12.33	12.04	277	1.23	1.17	1.12
141	12.19	11.89	11.61	279	1.20	1.14	1.09
143	11.76	11.47	11.19	280	1.17	1.11	1.06
144	11.34	11.06	10.79	282	1.14	1.08	1.03
146	10.95	10.67	10.40	284	1.11	1.06	1.01
148	10.57	10.30	10.03	286	1.08	1.03	0.98
150	10.20	9.94	9.68	288	1.05	1.00	0.95
152	9.85	9.59	9.34	289	1.03	0.98	0.93
153	9.51	9.26	9.01	291	1.00	0.95	0.91
155	9.19	8.94	8.70	293	0.98	0.93	0.88
157	8.87	8.63	8.40	295	0.95	0.91	0.86
159	8.57	8.34	8.11	297	0.93	0.88	0.84
161	8.28	8.05	7.83	298	0.91	0.86	0.82
162	8.01	7.78	7.56	300	0.88	0.84	0.80
164	7.74	7.52	7.30	302	0.86	0.82	0.78
166	7.48	7.27	7.06				