

10. Air Filter (Not Factory-Installed)

Filters and filter racks are not included with the unit and must be field supplied.

An external filter or other means of filtration must be properly sized for a maximum of 300 feet/min. air velocity or what is recommended for the type of filter installed.

Filter application and placement are critical to airflow, which may affect the heating and cooling system performance. Reduced airflow can shorten the life of the system's major components, such as motor, elements, heat relays, evaporator coil or compressor. Consequently, we recommend that the return air duct system have only one filter location. For systems without a return air filter grill, multiple filter grills can be installed at each of the return air openings.

If adding high efficiency filters or electronic air filtration systems, it is very important that the air flow is not reduced. If air flow is reduced the overall performance and efficiency of the unit will be reduced. It is strongly recommended that a professional installation technician.



Do not double filter the return air duct system. Do not filter the supply air duct system. This will change the performance of the unit and reduce airflow.



WARNING: FIRE HAZARD

- Do not operate the system without filters. A portion of the dust suspended in the air may temporarily lodge in the duct runs and at the supply registers. Any circulated dust particles could be heated and charred by contact with the air handler elements. This residue could soil ceilings, walls, drapes, carpets and other articles in the house. Soot damage may occur with filters in place, when certain types of candles, oil lamps or standing pilots are burned.
-

11. Electrical Wiring

The wiring on site must comply with the National Electric Code (C.E.C. in Canada) and any applicable local regulations.



WARNING: Electric shock

- Before installation or maintenance, please disconnect all power supply of the device. More than one disconnect switch may be required to cut off the power of the equipment. Dangerous voltage can cause serious personal injury or death.
-

11.1 Power Wiring

1. It is important that proper electrical power is available for connection to the unit being installed. See the unit rating label, wiring diagram, and electrical data in the installation instructions for more detailed requirements. Voltage tolerance should not be over 10% from rating voltage.
2. If any of the wiring must be replaced, replacement wiring must be the same type as shown in rating label, wiring diagram and electrical data sheet.
3. Install a branch circuit disconnect of adequate size to handle starting current, located within sight, and readily accessible to the unit.
4. Electric Heater: If the optional Electric Heat Kit is installed, the unit should be equipped with suitable circuit breakers or fuse. Refer to Table 11-1 for more information. These breaker(s) protect the internal wiring in the event of a short circuit and serve as a disconnect. Circuit breakers installed within the unit do not provide over-current protection of the supply wiring and therefore may be sized larger than the branch circuit protection.
 - Supply circuit power wiring must be 221 °F minimum copper conductors only. Refer to Table 11-1 and Table 11-2 for ampacity, wire size and circuit protector requirements. Supply circuit protective devices may be either fuses or "HACR" type circuit breakers. 1-3/8" knockouts inside the cabinet are provided for connection of power wiring to electric heater.
 - Power wiring is connected to the power terminal block in unit electric cabinet. See Electric Heater Kit Installation Instructions for details.
5. See wiring diagram located on inside of control board access panel for proper wiring instructions.

11.2 Grounding

Danger: Electric shock

The device must be permanently grounded. Otherwise, it will cause electric shock, personal injury or death.



- The unit must be electrically grounded in accordance with local codes and the National Electric Code.
 - Grounding may be accomplished by attaching ground wire(s) to ground lug(s) provided in the unit wiring compartment.
-

11.3 Control Wiring



WARNING: FIRE HAZARD

Low voltage control wiring should not be run in conduit with high voltage wiring. Keep distance between the two conduits per local codes.

- 18 AWG. color-coded low voltage wire should be used for lengths less than 50 ft. For wire lengths longer than 50 ft., 16 AWG. wire should be used.
- 7/8" knockout hole should be used to route control wires into the unit.
- After installation, ensure separation of low voltage and high voltage wiring is maintained.

Refer to the figures below for thermostat wiring diagrams.

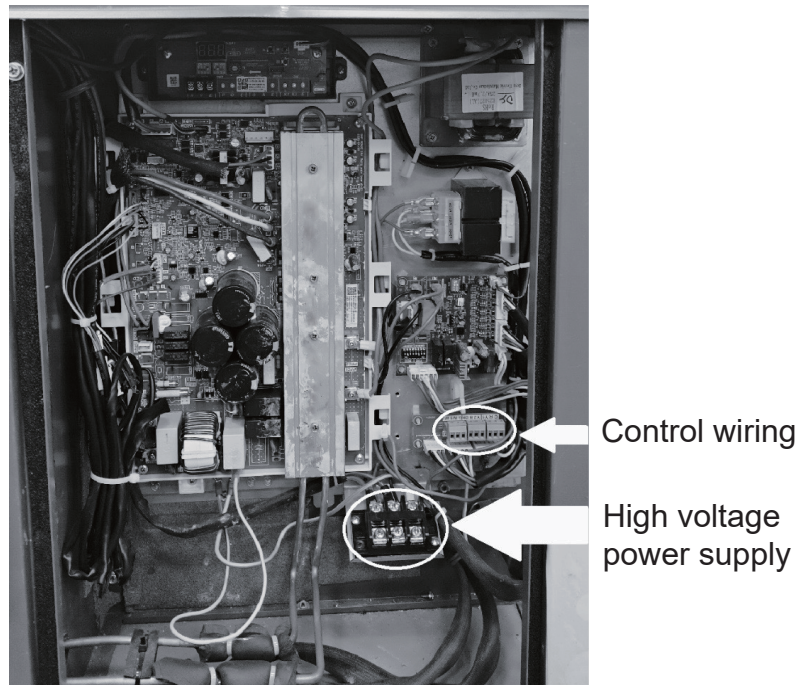
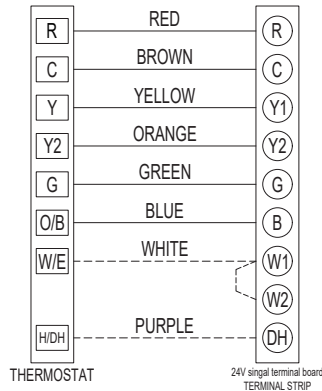
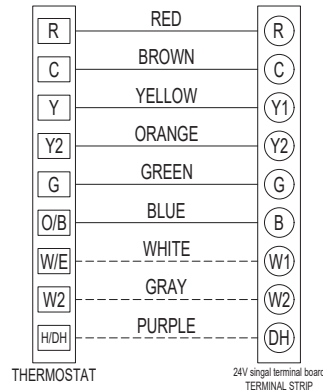


Figure 11-1

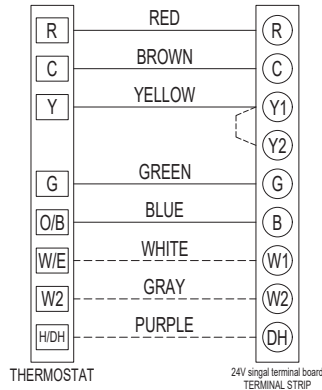
Support 3H and 2C thermostat



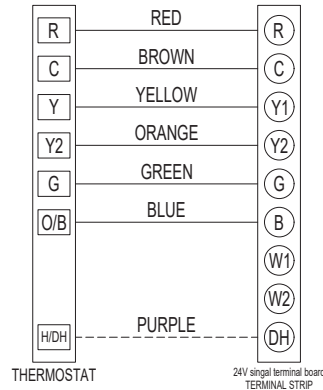
Support 4H and 2C thermostat



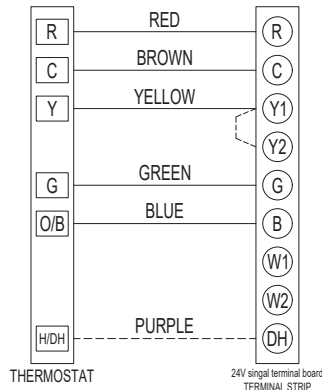
Support 3H and 1C thermostat



Support 2H and 2C thermostat



Support 1H and 1C thermostat



Support 2H and 1C thermostat

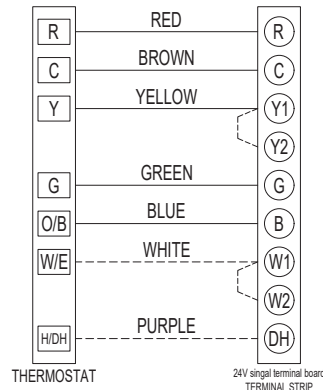


Figure 11-2



Y2 wiring is optional for 4 speed fan control. For 2 stage fan control Y2 wiring is required. If your thermostat only have one "Y" port, please connect to Y1 and then jump with the Y2.



Dashed lines in the above thermostat wiring diagrams refer to optional wiring (wiring for Passive Dehumidification Function and/OR Electric Heat, and 2 stage fan control). For thermostat wiring please refer to the Owner's Manual of the thermostat.



B wire must be used with heat pump system only, the reversing valve energizes in heating.



WARNING: ELECTRICAL SHOCK

- Label all wiring prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

Table 11-1 Electrical Data Without Electric Heat

Model Number	Power Supply	Unit		Compressor	Outdoor Fan	Indoor Fan
		MCA(Amps)	MAX FUSE/MAX CKT.BKR.	RLA	FLA	FLA
24K	208/230V, 1PH, 60 Hz	16.0	20.0	8.5	1.8	2.8
36K	208/230V, 1PH, 60 Hz	19.0	25.0	11.0	1.8	2.8
48K	208/230V, 1PH, 60 Hz	30.0	40.0	18.5	1.8	4.1
60K	208/230V, 1PH, 60 Hz	40.0	50.0	24.4	1.8	4.1

Table 11-2 Electrical Data With Electric Heat

Size(Tons)	ModelSize(Tons)	k W	Amps		MCA ¹	Max Fuse ² Breaker ³ Size (Amps)	Fan Speed				
			240 VAC	208 VAC			1	2	3	4	5
24 (2.0)	21-4402-01	5	20.66	18.18	35	35	●	●	●	●	●
	21-4402-02	7.5	32.25	28.31	45	45	●	●	●	●	●
	21-4402-03	10	41.00	36.31	60	60	×	●	●	●	●
36 (3.0)	21-4402-01	5	20.66	18.18	35	35	●	●	●	●	●
	21-4402-02	7.5	32.25	28.31	45	45	●	●	●	●	●
	21-4402-03	10	41.00	36.31	60	60	×	●	●	●	●
	21-4402-04	15	62.51	55.53	45/45	45/45	×	×	●	●	●
48 (4.0)	21-4402-01	5	20.66	18.18	35	35	●	●	●	●	●
	21-4402-02	7.5	32.25	28.31	45	45	●	●	●	●	●
	21-4402-03	10	41.00	36.31	60	60	×	●	●	●	●
	21-4402-04	15	62.51	55.53	45/45	45/45	×	×	●	●	●
	21-4402-05	20	82.19	72.81	60/60	60/60	×	×	×	●	●
60 (5.0)	21-4402-01	5	20.66	18.18	35	35	●	●	●	●	●
	21-4402-02	7.5	32.25	28.31	45	45	●	●	●	●	●
	21-4402-03	10	41.00	36.31	60	60	×	●	●	●	●
	21-4402-04	15	62.51	55.53	45/45	45/45	×	×	●	●	●
	21-4402-05	20	82.19	72.81	60/60	60/60	×	×	×	●	●

Note: ● means available, × means not available.

Electrical Data

1. Minimum Circuit Ampacity.
2. Maximum Over Current Protection per Standard UL 1995.
3. Fuse or HACR circuit breaker size field installed.

* Max Fuse/Breaker Sizes are for electric heater ONLY (dual point electric heat).

DOES NOT include breaker size for the unit.



Refer to Electric Heat Kit Installation Manual, some heater kits include fuses from the manufacturer.



WARNING: ELECTRICAL SHOCK / FIRE HAZARD

- Any power supply and circuits must be wired and protected in accordance with federal, state and local electrical codes.

12. Start Up

12.1 System Start Up

- | |
|---|
| • 1. Ensure the instructions above completed. |
| • 2. Set System Thermostat to OFF. |
| • 3. Turn on power switch to apply power to the unit. |
| • 4. Set system thermostat to ON. |

13. System Charge Adjustment



Units is precharged in the factory. Follow charging methods below when system charge needs adjustment.

Weighing Method

When the refrigerant replaced, weighing method is recommended. Weighing method is also available when no power supply for the unit, or the operating conditions not within the range suitable for subcooling charging method mentioned below.

Refer to rating label for factory charge.

Subcooling Method

1. 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.

2. Start "forced cooling" mode.

Start the system in cooling mode and short press "■" button to start "forced cooling" mode. LED Display should flash continuous between Symbol "dH" and pressure sensor reading in "forced cooling" mode. "Forced cooling" mode will automatically exit after 60 minutes.



short press "■" button to start/quit "forced cooling" mode

Figure 13-1

3. 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.

4. Calculate subcooling value.

Calculate subcooling value with measured liquid line temperature and pressure according to Table 13-1. If calculated subcooling value is lower than the design subcooling value of Table 13-2, refrigerant should be added. If calculated subcooling value is higher than the value of Table 13-2, refrigerant should be recovered.

5. Adjust refrigerant.

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

6. 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.

7. Recover normal state.

Remove service tools and short press "■" button to quit "forced cooling" mode. Symbol "dH" should disappear when "forced cooling" mode quitted.

Table 13-1

Liquid Line Temp (°F)	Subcooling Value (°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	262	266
80	259	262	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	469	502	508	515	521	528

Table 13-2

		Ambient Temperature(°F)				
		68-77	77-86	86-95	95-104	104-113
Model	24K	18±2	18±2	18±2	18±2	18±2
	36K					
	48K	26±2	24±2	22±2	20±2	18±2
	60K					



WARNING:

- "Forced cooling mode" is the only mode approved for refrigerant charging.

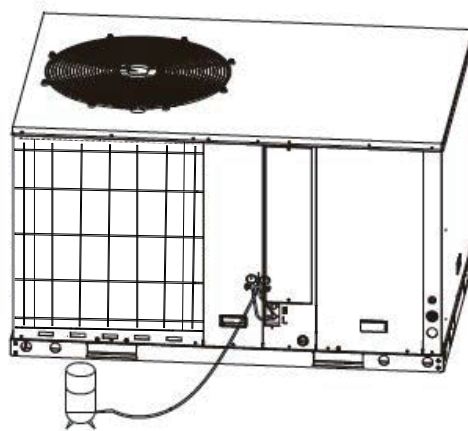


Figure 13-2

14. System Operation and Troubleshooting

Unit should be installed in accordance with national and local safety codes, including but not limited to ANSI/NFPA No. 70, local plumbing and wastewater codes and any other applicable codes. This product work with the same 24VAC control as other conventional heat pump. System runs in models according.

Table 14-1 Signal And Model

	Signal Name					Model & Indoor Fan Speed
	Y1	Y2	B	G	DH	
Signal State	OFF	OFF	OFF	OFF	OFF	Off
	OFF	OFF	OFF	OFF	ON	Dehumidification, Low Speed
	ON	ON	OFF	ON	ON	Dehumidification, High Speed
	ON	OFF	OFF	ON	OFF	Cooling, Low Speed
	ON	ON	OFF	ON	OFF	Cooling, High Speed
	OFF	ON	OFF	ON	OFF	Cooling, High Speed
	OFF	OFF	OFF	ON	OFF	Ventilation, Low Speed
	OFF	OFF	ON	ON	OFF	Off
	ON	OFF	ON	ON	OFF	Heating, Low Speed
	ON	ON	ON	ON	OFF	Heating, High Speed
	OFF	ON	ON	ON	OFF	Heating, High Speed

Note:

When W/W2 is energized, indoor fan runs in high speed.

14.1 Sensors

T2: Indoor Coil Temperature

— Anti-cold air function of heating mode

T3: Outdoor Coil Temperature

— High/Low temperature protection

• Outdoor fan control (cooling mode)

• Defrost control (heating mode)

T4: Ambient Temperature

— Operating condition permission

— Defrosting function

— Outdoor fan control (heating mode)

T5: Compressor Discharge Temperature

— High temperature / Low superheat protection

— Electronic Expansion Valve (EEV) control

PS1: 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)

14.2 Anti-cooling fan delay

This function is realized by the T2 sensor on the indoor coil, which prevents the fan from being turned on before the indoor coil reaches a certain temperature. This function can prevent the machine from blowing cold air during heating.

When SW3-1 (indoor board) set to "OFF" in heating mode. The anti-cooling fan delay function will activate according to the T2 sensor; When SW3-1 set to "ON" in heating mode, the fan will operate after a 90 seconds delay.

SW3-1	OFF	Anti-cooling
	ON	90 seconds delay

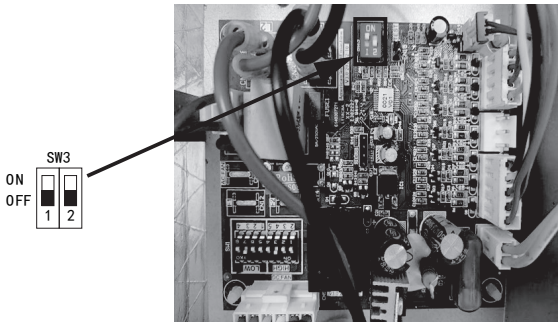


Figure 14-1

14.3 Passive Dehumidification Function (Optional)

This model has dehumidification function, which can make the blower run at low speed by DH signal sent by thermostat. This function needs to be supported by connecting an appropriate DH line from the indoor unit to the thermostat (with constant humidity function).

14.4 Compressor Control

The control of compressor frequency is bases on evaporator pressure of cooling mode, and condensing pressure of heating mode. The compressor frequency is automatically adjusted to achieve target pressure. Target pressure can be changed by adjusting SW1 (Outdoor board) to achieve better dehumidification and capacity effect.

	SW1-1	SW1-2	SW1-3
Normally cooling/heating	OFF	OFF	OFF
Accelerated cooling/heating	ON	ON	ON




Figure 14-2

14.5 Auto Defrost Function

Unit will defrost in heating mode basing on Demand Defrost Control by monitoring outdoor coil temperature (T3) and outdoor ambient temperature (T4).

Unit will defrost in conditions below after minimum run time achieved:

1. Outdoor coil temperature low.

Unit will defrost when outdoor coil temperature low. Specifically, unit will defrost when sensor readings of T3 and T4 achieve the values of the same colum below:

Table 14-2

Low Temperature Defrosting Condition															
Sensor	Defrosting Conditions (°F)														
T4	≥46	43	39	36	32	28	25	21	18	14	10	7	3	0	-4
T3	30	28	25	22	19	16	13	10	9	5	2	-1	-4	-7	-10

2. Accumulated operation time achieved.

Unit will defrost when conditions below achieved:

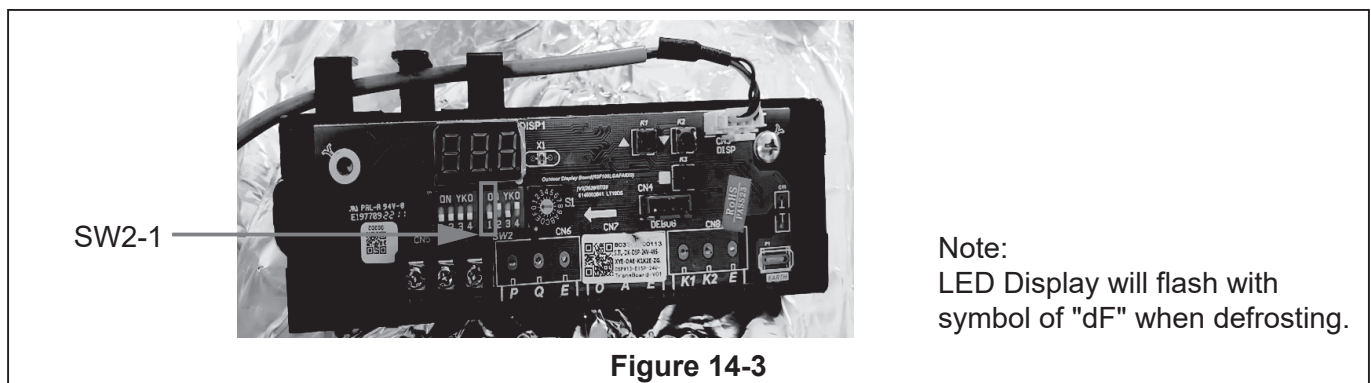
- Operating for about 2.0 hours when $T_4 \geq 41^\circ\text{F}$ after the last defrosting.
- Operating for about 3.5 hours when $T_4 < 41^\circ\text{F}$ after the last defrosting.

3. Condensing temperature low.

Unit will defrost when there is a high capacity need but Condensing temperature lower than 82°F .

14.6 Manual Defrost Function

1. System must have been operating in heating mode for 5 minutes.
2. Turn SW2-1 (outdoor board) to ON to begin forced defrost.
3. Wait about 45 seconds for defrosting to initiate.
5. Defrosting will terminate automatically.
6. Turn SW2-1 (outdoor board) to OFF.
7. Repeat steps 2-6 after 5 minutes if a second defrosting is required.



14.7 Protection Functions

- Temperature protection of outdoor coil in cooling mode (T3)
 1. If $T_3 >$ Maximum set temperature, the system stops for protection.
 2. If $T_3 <$ the set recovery temperature value, the system restarts.

Note: Please consult the supplier for maximum temperature and recovery temperature.
- Exhaust temperature protection (T5)
 1. In cooling or heating mode, if the temperature is higher than the set maximum value, the system will stop for protection.
 2. In cooling or heating mode, if the temperature is lower than the set recovery temperature, the system will restart.

Note: Please consult the supplier for maximum temperature and recovery temperature.
- IPM module (inverter) protection (TF)
 1. $TF \geq$ the highest judgment value C. If the outdoor fan does not reach the highest level at this time, the fan speed will be increased one by one. At this time, the compressor frequency is not limited. If the outdoor fan is the highest fan speed, the current frequency is the highest allowable operating frequency.
 2. $TF \geq$ the highest judgment value B, the compressor reduces the frequency successively.
 3. $TF \geq$ the highest judgment value A, the compressor stands by abnormally.
 4. $TF \leq$ the highest judgment value D, the system restarts.

Note: The highest judgment value A/B/C/D are all parameters set in the program. Please consult the supplier for specific values.

14.8 Fault Code Table

Code	Fault description
E4	T4 Outdoor ambient temperature sensor failure
E6	T3 Condenser temperature sensor failure
E5	T5 Exhaust temperature sensor failure
E9	Undervoltage on primary side
E10	Outdoor EEPROM failure
E12	IPM sensor failure
E13	HLP pressure sensor failure
E14	T3/T5 sensor is not plugged tightly, causing abnormal standby
E15	HPS high pressure switch failure
H0	Communication failure between main control chip and IPM chip
H1	T3 sensor high temperature failure and unit abnormally shutdown without restarting (In cooling mode)-----P5 protection occurs 20 times in 180 minutes.
H2	High pressure switch failure and unit abnormally shutdown without restarting -----P1 protection occurs 20 times in 150 minutes
H3	Condensing high pressure abnormal and unit shutdown without restarting (In heating mode)-----P13 protection occurs 20 times in 180 minutes.
H4	IPM module high temperature abnormal and unit shutdown with restarting -----P8 protection occurs 20 times in 120 minutes.
H5	Low pressure failure and unit shutdown with restarting -----P2 protection occurs 5 times within 100 minutes.
H6	T5 Exhaust high temperature abnormal-----P4 protection occurs 20 times in 100 minutes.
H7	Abnormal wet operation-----P12 protection occurs 20 times in 200 minutes.
H8	T3 condenser sensor is not plugged tightly and unit does not restart (In cooling mode)-----E14 protection occurs 20 times in 120 minutes.
H12	TP exhaust sensor is not plugged tightly and unit does not restart-----E14 protection occurs 20 times in 180 minutes.
P1	High pressure protection
P2	Low pressure protection
P3	Overcurrent protection of primary side or secondary side
P4	T5 Exhaust high temperature protection
P5	T3 Condenser high temperature protection (In cooling mode)
P6	IPM module protection
P8	Tf IPM module high temperature protection
P9	DC fan motor failure
P12	Wet operation abnormal standby
P13	Abnormal high-pressure condensing pressure standby (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 failure/synchronization failure/compressor startup failure
L5	Zero-speed fault
L7	Compressor phase loss protection
L8	Compressor stall
L9	High pressure frequency limit/High pressure frequency reduction
LA	Voltage frequency limiting
LC	Condenser temperature limiting frequency /T3 condenser temperature reducing frequency
LD	Exhaust temperature limiting frequency /T5 exhaust temperature reducing frequency
LE	IPM module high temperature frequency limit /IPM module temperature frequency reduction
LF	Current frequency limiting
Condition	State description
D0	Oil return
DF	Defrost
DH	Forced cooling

14.8.1 Indoor Unit Board LED Codes

Table 14-3

Number of flashes	Description
Always ON	Normal
slow flashes 1 time every 3 seconds	Standby
fast flashes 2 time every 8 seconds	Temperature sensor fault (T2)
fast flashes 3 time every 8 seconds	Anti-cold air function active

14.9 Parameter Checklist

- To display system parameters, press the "Check" 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 "-"
- Normal Status, last two digits will display under the following conditions
 - Unit not operating (Standby Mode): displays "opening value of the EEV".
 - Unit operating: displays "compressor operating frequency".
- After 20 seconds on same parameter, the display will revert back to normal status.
- If a system protection or fault is active, first digit will display "status code". Please see "14.9 Fault Code Table" for the meaning.

Parameter Point Check Table

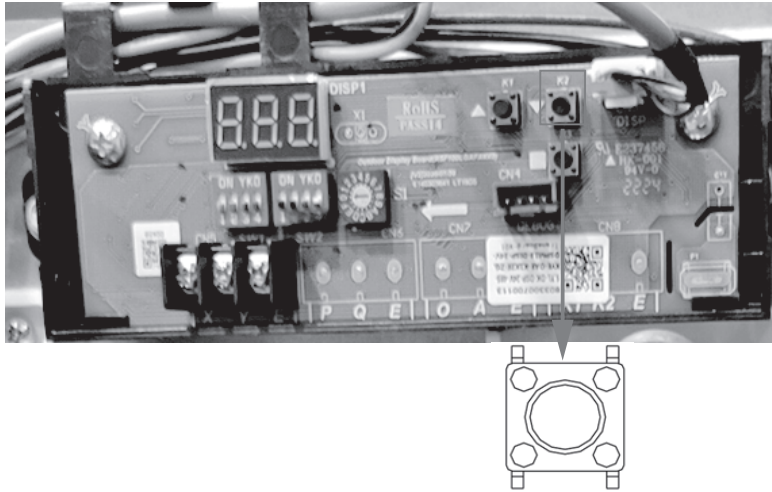


Figure 14-4

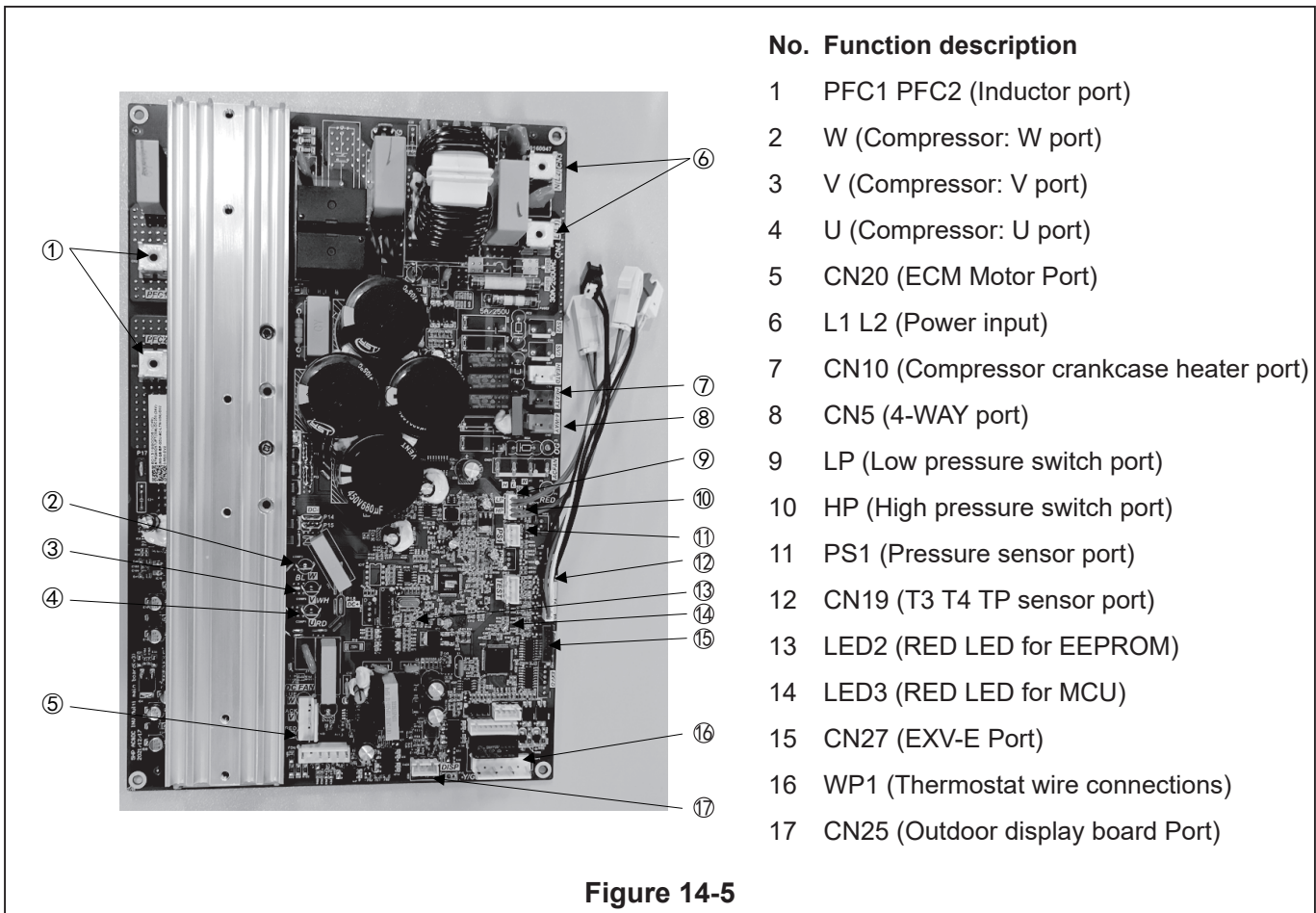
Table 14-4

No.	Spot check content	Example	Remarks	Display
1	Outdoor unit capacity	24	Type	
2	Outdoor unit mode	3	0-Standby, 2-Cooling, 3-Heating, 4-Forced cooling	
3	Compressor target frequency	33	Hz	Actual value
4	Actual frequency of compressor	33	Hz	Actual value
5	Compressor operating frequency	33	Hz	Actual value
6	Fan speed	11	fan speed level	Actual value
7	Pressure sensor conversion temperature	91	°F	Actual value
8	T3 condenser temperature	29	°F	Actual value
9	T4 ambient temperature	335	°F	Actual value
10	T5 exhaust temperature	105	°F	Actual value
11	AC input current (primary side)	5	A	Actual value
12	Compressor current (secondary side)	0	A	Actual value
13	AC input voltage (primary side)	334	VAC	(Valid value-60)*2
14	DC bus voltage	145	VDC	Actual value /2
15	Electronic expansion valve opening	30	Step	Actual value /4
16	Frequency amplification	0	Hz	Actual value
17	Electronic expansion valve Δ EV	2	Step	Actual value
18	Reserve			
19	Tfin module temperature	0	°F	Actual value
20	Oil spitting amount	79	CC	Actual value /8
21	Tes/Tcs target temperature	122	°F	Actual value
22	Pressure sensor pressure	48	MPa	Actual value *25

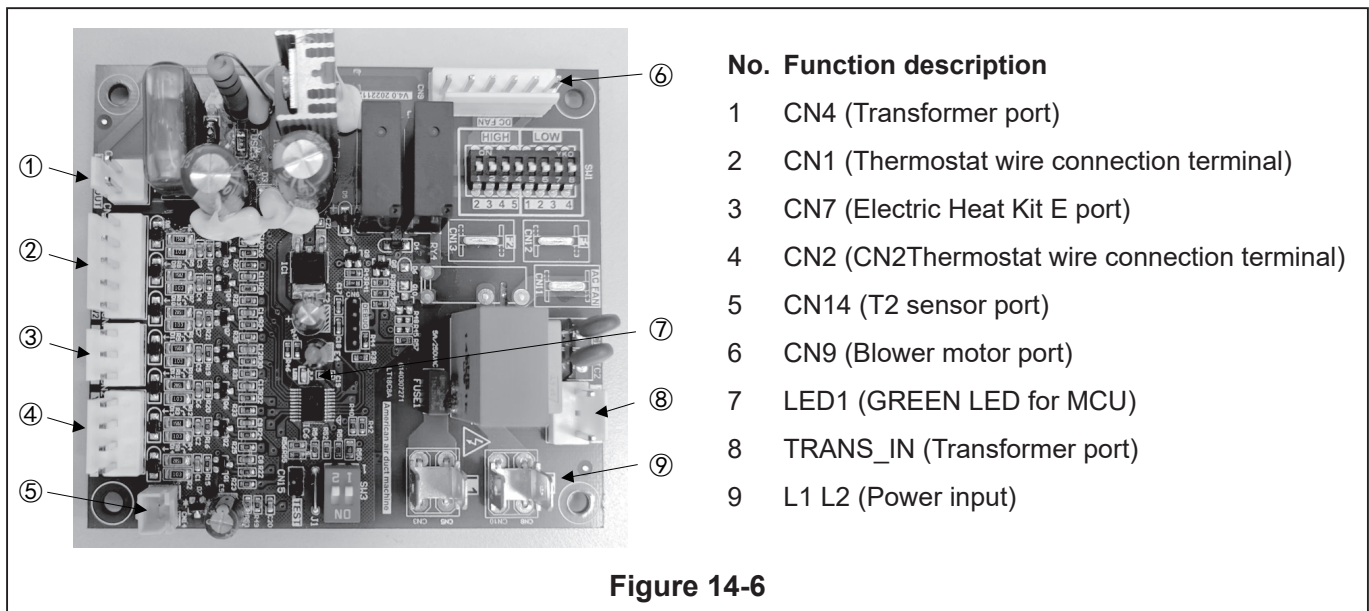
23	T3 switching pressure	16	MPa	Actual value *25
24	Reserve			
25	Target superheat degree	32	°F	Actual value
26	Exhaust superheat	14	°F	Actual value
28	Ability test mode	24	1 - 40	Gear mode
29	Software version number	4		1 - 255
31	Enter PI control flag	1		0 or 1
34	Frequency limiting term	L-		
37	The last fault code	E-		

14.10 Control Board Overview

14.10.1 Outdoor Unit Control Board



14.10.2 Indoor Unit Control Board

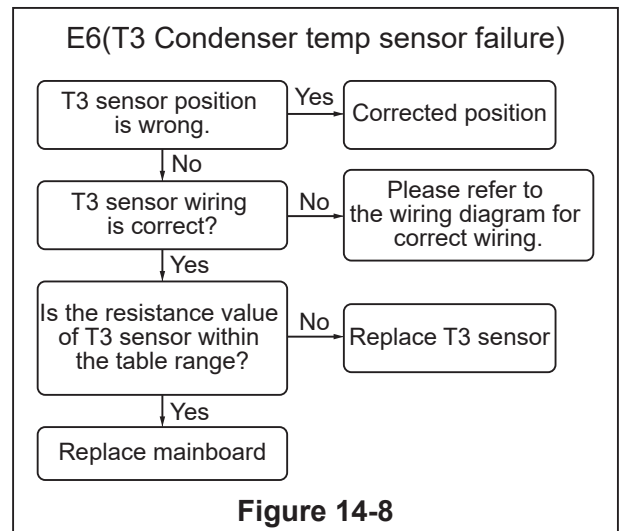
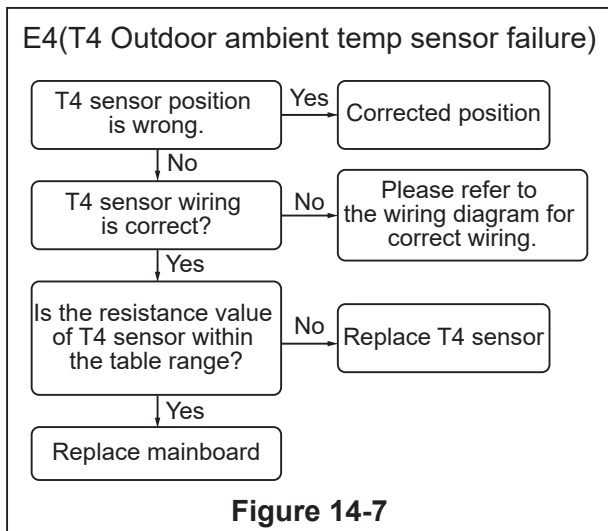


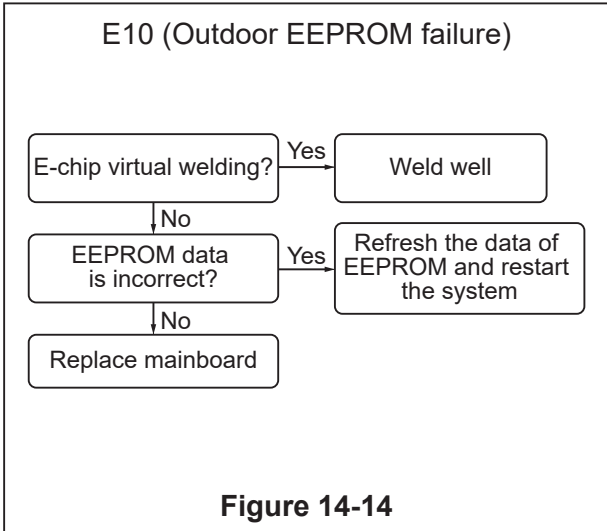
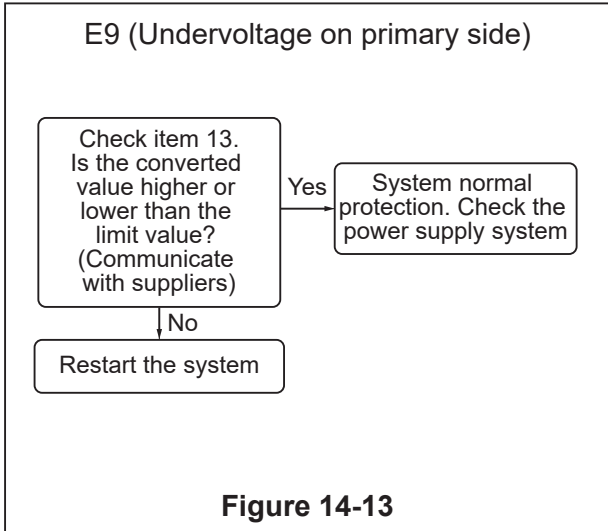
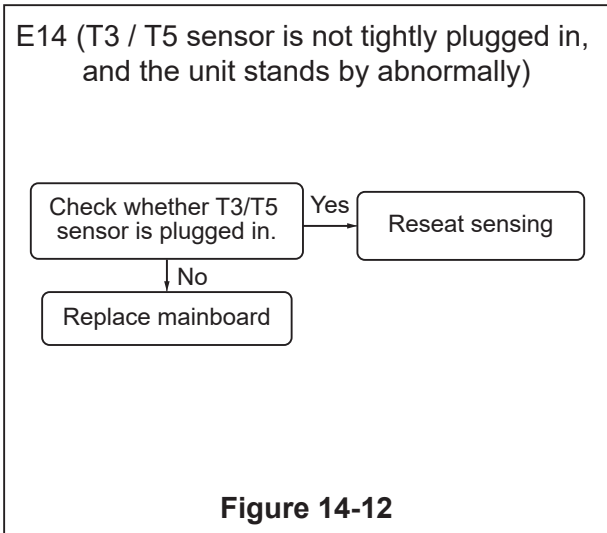
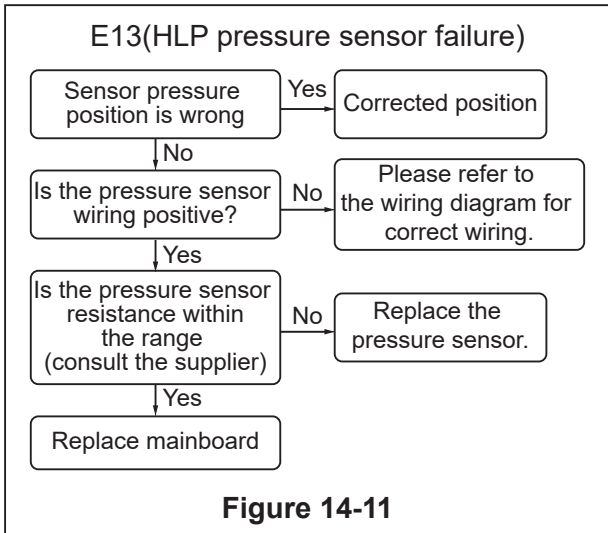
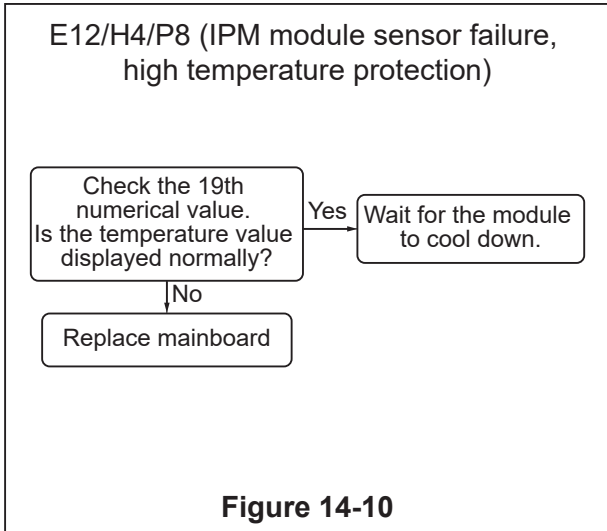
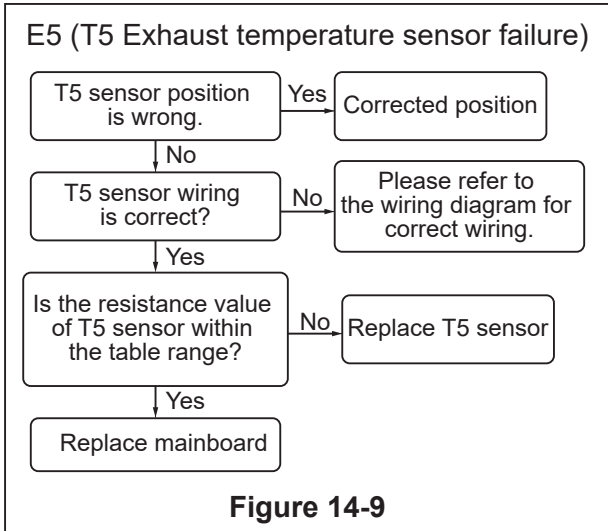
14.11 Troubleshooting of Fault Codes

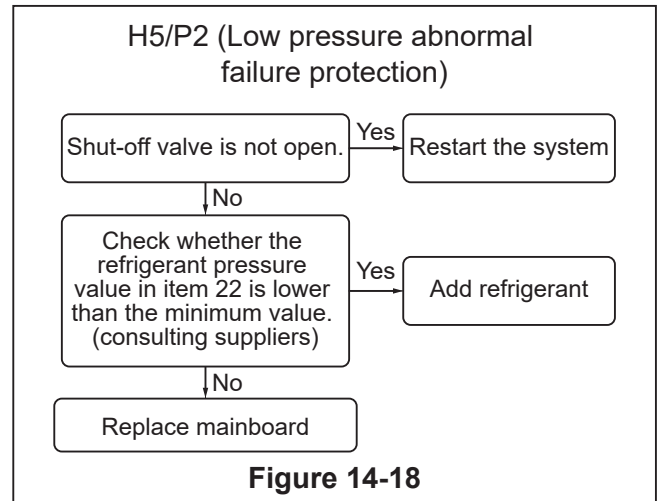
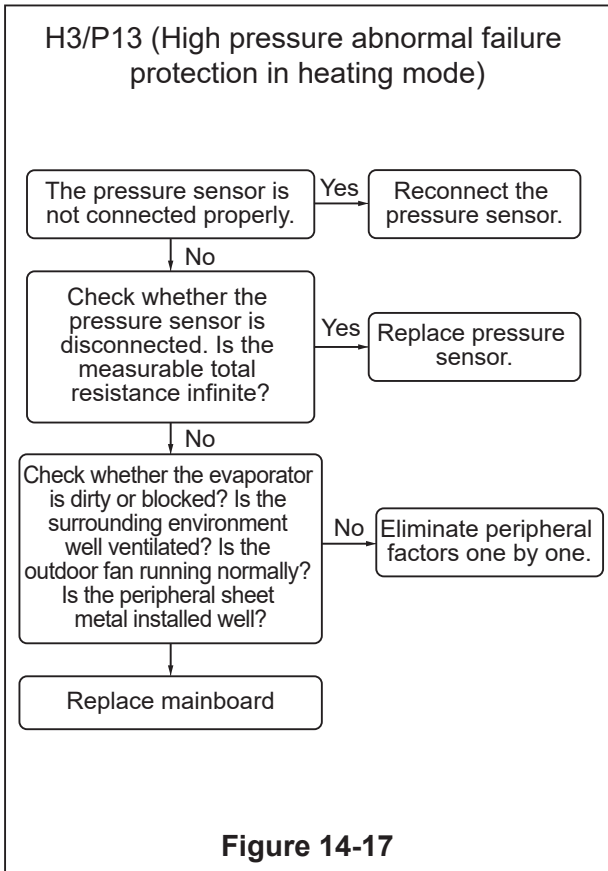
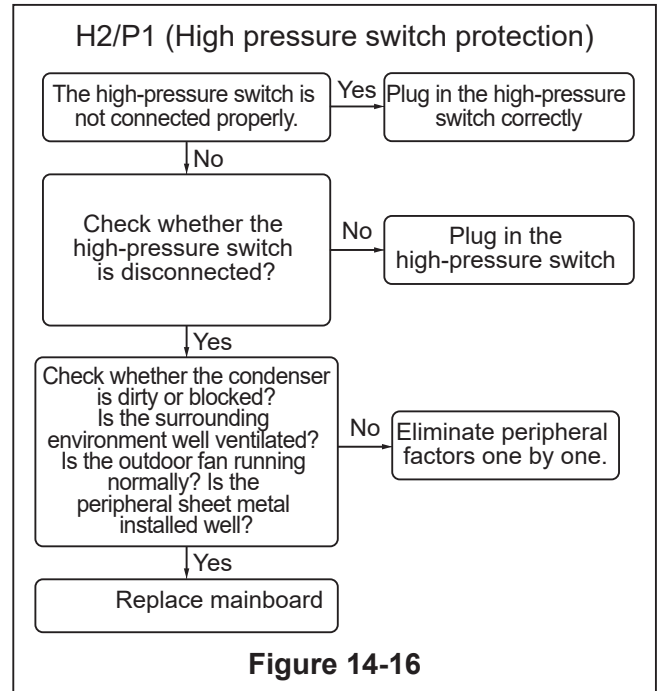
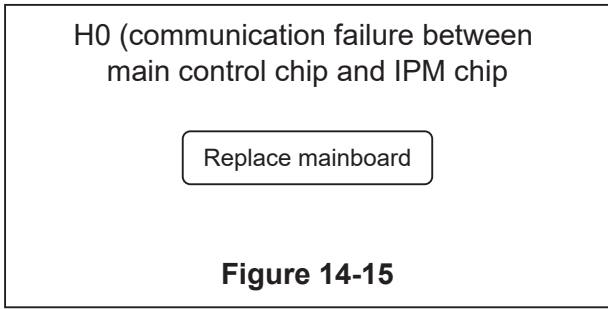


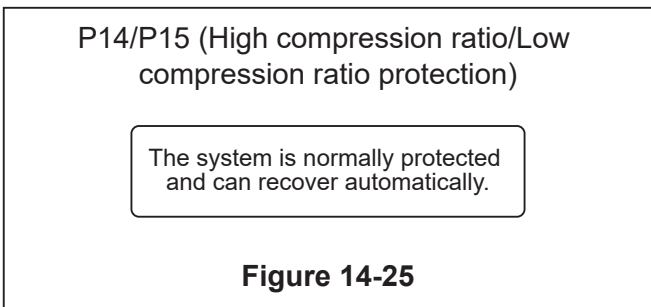
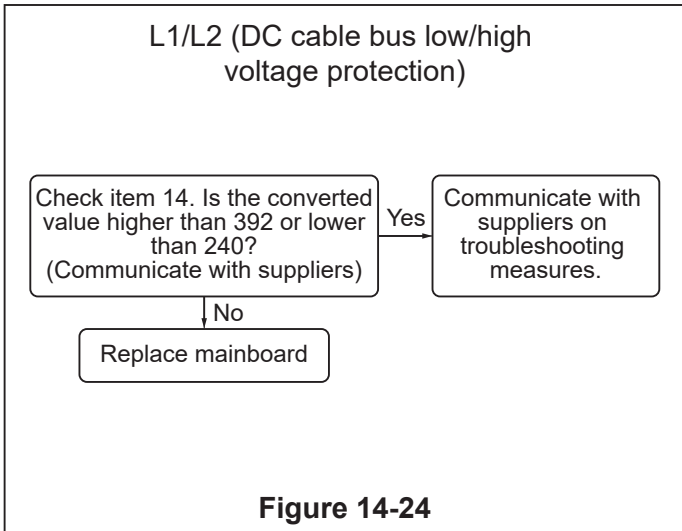
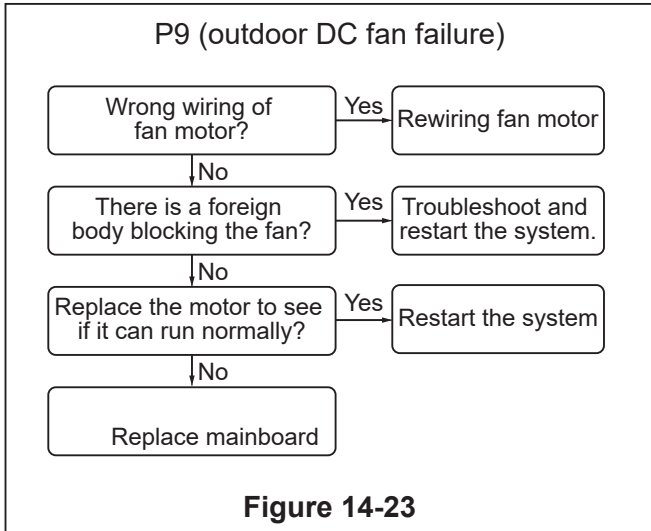
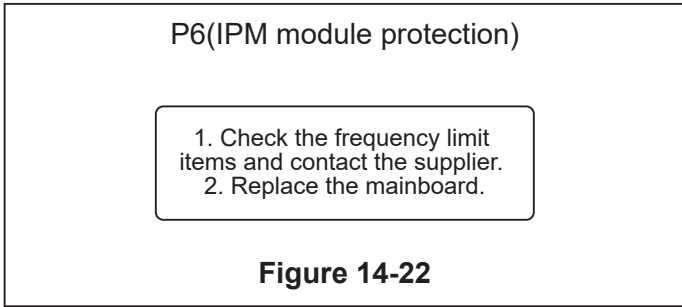
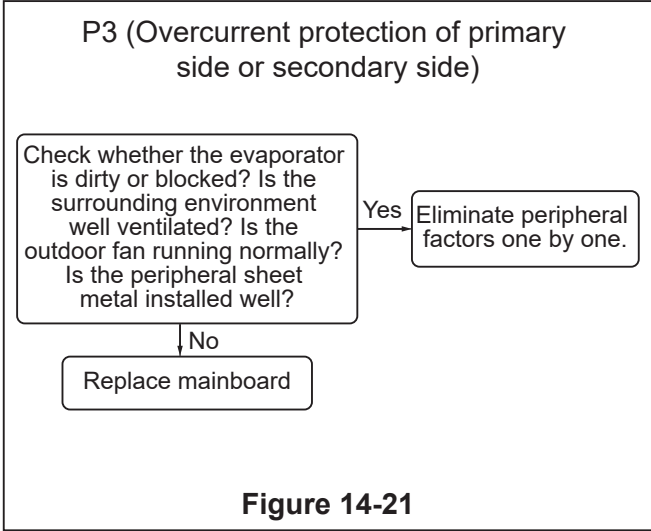
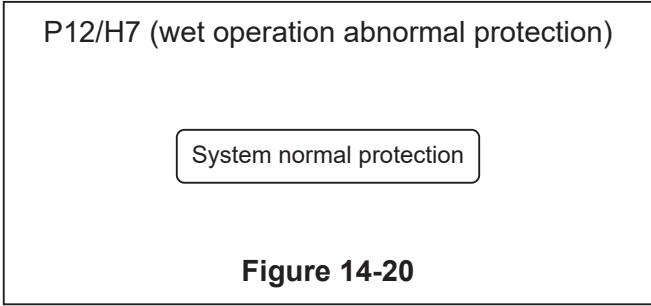
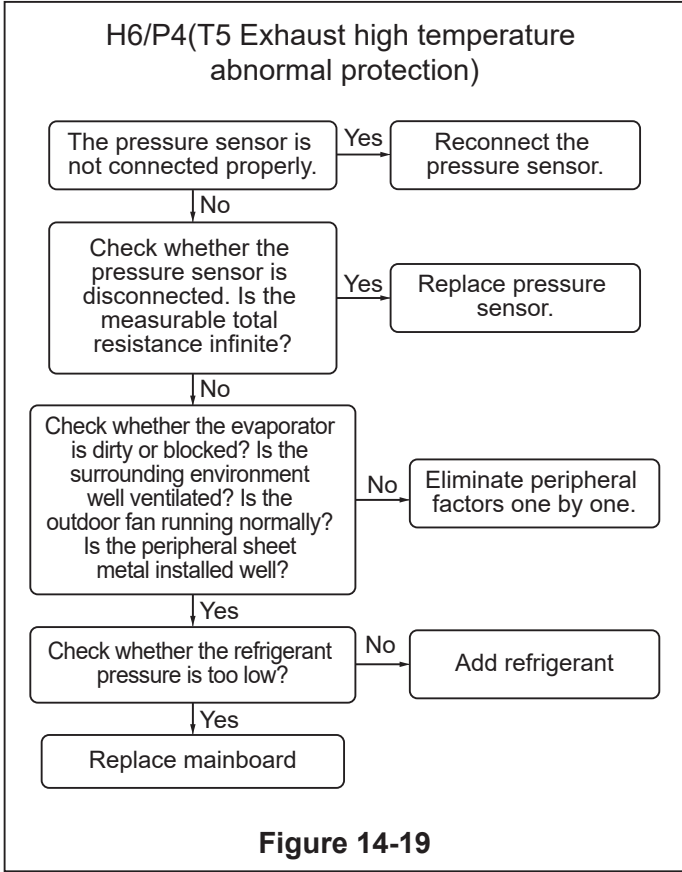
WARNING: Dangerous voltage

- When measuring the resistance, make sure that the power of the unit is turned off and wait for 3 minutes before measuring.









14.12 Temperature and Resistance Relationship Tables (for Sensors)

Table for T3, T4

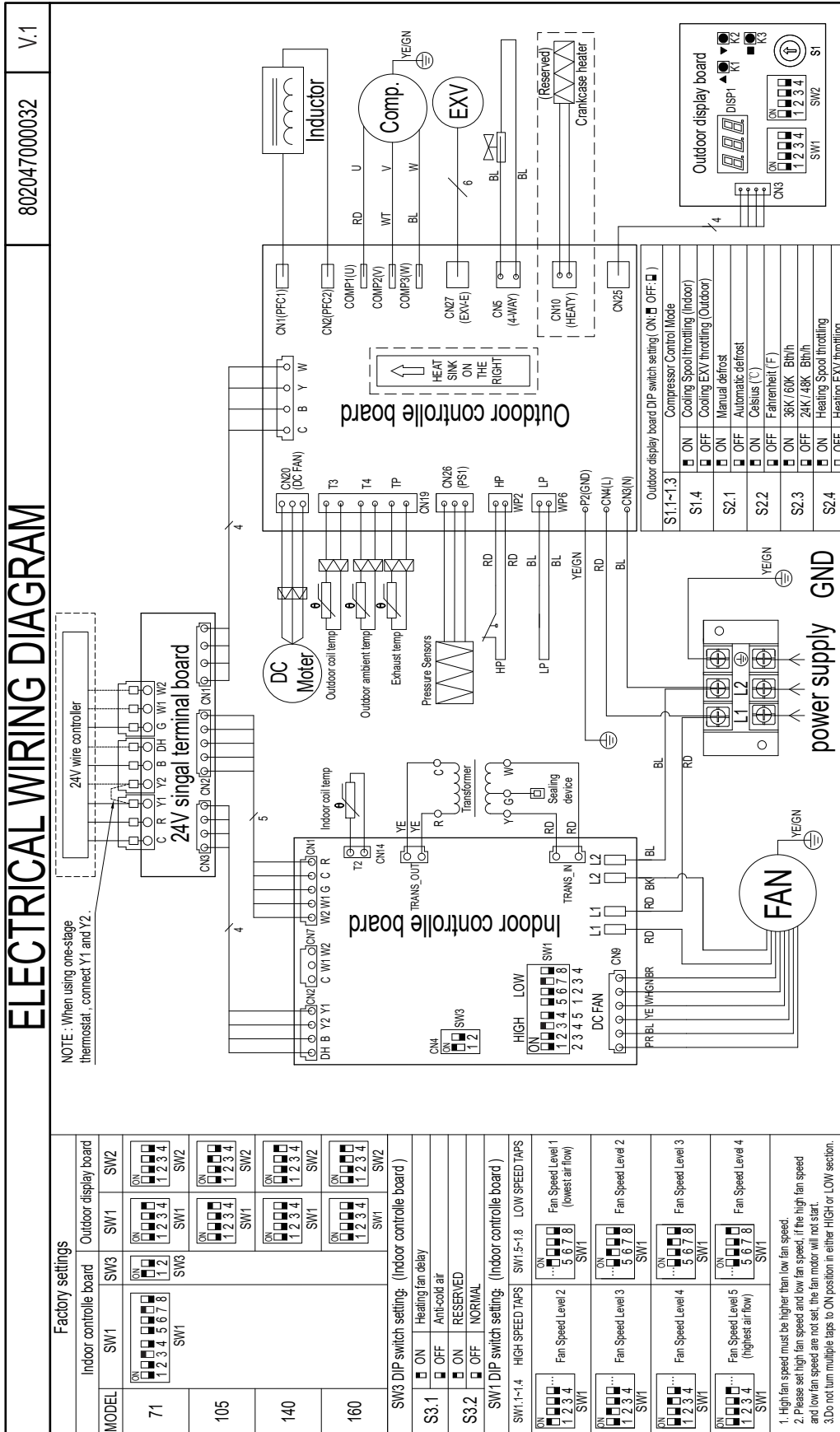
Temperature F	Temperature C	Electric resistance kΩ	Volt DC	Temperature F	Temperature C	Electric resistance kΩ	Volt DC
-5	-20.6	33.367	0.57	90	32.2	3.865	2.63
0	-17.8	29.227	0.64	95	35.0	3.508	2.75
5	-15.0	25.657	0.72	100	37.8	3.187	2.87
10	-12.2	22.595	0.80	105	40.6	2.900	2.99
15	-9.4	19.942	0.89	110	43.3	2.652	3.09
20	-6.7	17.697	0.98	115	46.1	2.421	3.20
25	-3.9	15.673	1.08	120	48.9	2.214	3.30
30	-1.1	13.917	1.18	125	51.7	2.025	3.40
40	4.4	11.060	1.40	130	54.4	1.861	3.49
45	7.2	9.867	1.52	135	57.2	1.706	3.58
50	10.0	8.823	1.64	140	60.0	1.567	3.66
55	12.8	7.884	1.76	145	62.8	1.442	3.74
60	15.6	7.101	1.89	150	65.6	1.327	3.82
65	18.3	6.409	2.01	155	68.3	1.226	3.89
70	21.1	5.767	2.14	160	71.1	1.132	3.96
75	23.9	5.150	2.28	165	73.9	1.046	4.02
80	26.7	4.700	2.39	170	76.7	0.967	4.08
85	29.4	4.266	2.51				

14.13 Temperature and Resistance Relationship Tables (for T5 & Tf)

Table for T5

Temperature F	Temperature C	Electric resistance kΩ	Volt DC	Temperature F	Temperature C	Electric resistance kΩ	Volt DC
-5	-20.6	496.38	0.08	140	60.0	12.348	1.97
0	-17.8	422.97	0.09	145	62.8	11.164	2.10
5	-15.0	361.35	0.11	150	65.6	10.106	2.22
10	-12.2	309.74	0.13	155	68.3	9.193	2.34
15	-9.4	266.152	0.15	160	71.1	8.344	2.46
20	-6.7	230.462	0.17	165	73.9	7.585	2.58
25	-3.9	198.968	0.19	170	76.7	6.904	2.69
30	-1.1	172.231	0.22	175	79.4	6.313	2.80
35	1.7	149.467	0.26	180	82.2	5.761	2.92
40	4.4	130.642	0.29	185	85.0	5.263	3.02
45	7.2	113.87	0.33	190	87.8	4.815	3.13
50	10.0	99.456	0.37	195	90.6	4.410	3.23
55	12.8	87.095	0.42	200	93.3	4.057	3.33
60	15.6	76.425	0.48	205	96.1	3.724	3.42
65	18.3	67.501	0.53	210	98.9	3.423	3.51
70	21.1	59.457	0.60	215	101.7	3.149	3.60
75	23.9	52.489	0.67	220	104.4	2.910	3.67
80	26.7	46.429	0.74	225	107.2	2.689	3.75
85	29.4	41.322	0.82	230	110	2.476	3.82
90	32.2	36.682	0.90	235	112.8	2.288	3.89
95	35.0	32.619	0.99	240	115.6	2.117	3.96
100	37.8	29.068	1.09	245	118.3	1.965	4.02
105	40.6	25.948	1.19	250	121.1	1.821	4.08
110	43.3	23.291	1.29	255	123.9	1.690	4.13
115	46.1	20.855	1.39	260	126.7	1.569	4.19
120	48.9	18.708	1.51	265	129.4	1.462	4.23
125	51.7	16.809	1.62	270	132.2	1.360	4.28
130	54.4	15.184	1.73	275	135.0	1.266	4.32
135	57.2	13.682	1.85	280	137.8	1.180	4.36

14.14 Wiring Diagram



15. Maintenance



For continuing high performance and to minimize possible equipment failure, periodic maintenance must be performed on this equipment.

15.1 Cleaning Precautions



WARNING:

- Any unit repairs must be performed by qualified service personnel only.
-



WARNING: ELECTRICAL SHOCK

- Always turn off your heat pump and disconnect its power supply before cleaning or maintenance.
-



CAUTION:

- When removing filter, do not touch metal parts in the unit. The sharp metal edges can cut you.
-



NOTICE:

- Do not use chemicals or chemically treated cloths to clean the unit .
 - Do not use benzene, paint thinner, polishing powder or other solvents to clean the unit.
 - Do not operate the system without a filter in place
-

15.2 Regular Maintenance

Your heat pump must be inspected regularly by a qualified service technician.

1. Inspect the air filter every ninety days or as often as needed. If blocked or obstructed, clean or replace at once.

Your annual system inspection must include:

2. Inspection and/or cleaning of the blower wheel housing and motor.
3. Inspection and cleaning of indoor and outdoor coils as required.
4. Inspection and/or cleaning of the indoor coil drain pan and drain lines, as well as auxiliary drain pan and lines.
5. Check all electrical wiring and connections. Correct as needed, referring to the wiring diagram.