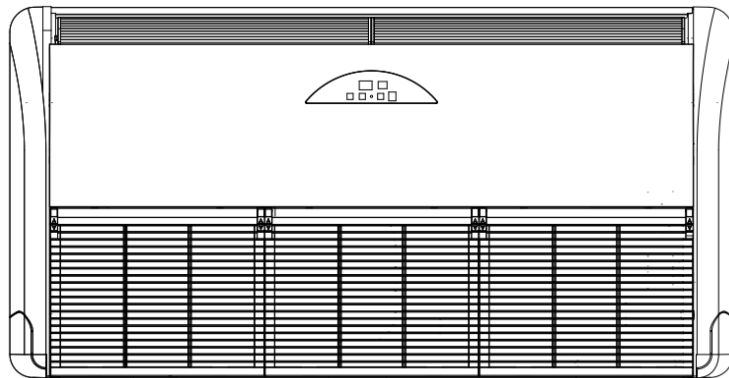


SPLIT INVERTER AIR CONDITIONERS

Service Manual

ComfortStar®

**Indoor Unit: NEI32-24 NEI32-36
NEI32-48 NEI32-60**



IMPORTANT NOTE:



Read this manual carefully before operating your new air conditioning unit. Make sure to save this manual for future reference.

Please check the applicable models, technical data, F-GAS(if any) and manufacturer information from the "Owner's Manual - Product Fiche " in the packaging of the outdoor unit.

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Part 1

General Information

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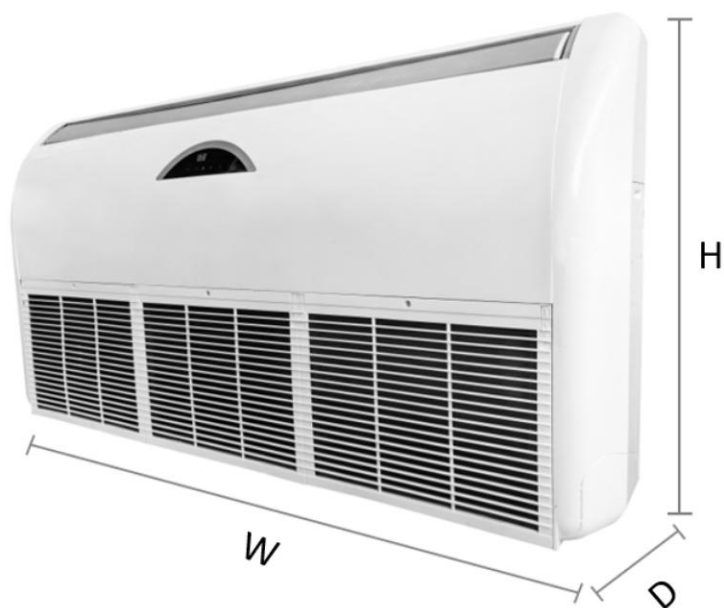
1 Product lineup

Model	Capacity(Btu/h)	Appearance
NEI32-24	24000	
NEI32-36	36000	
NEI32-48	48000	
NEI32-60	55000	

2 Specifications

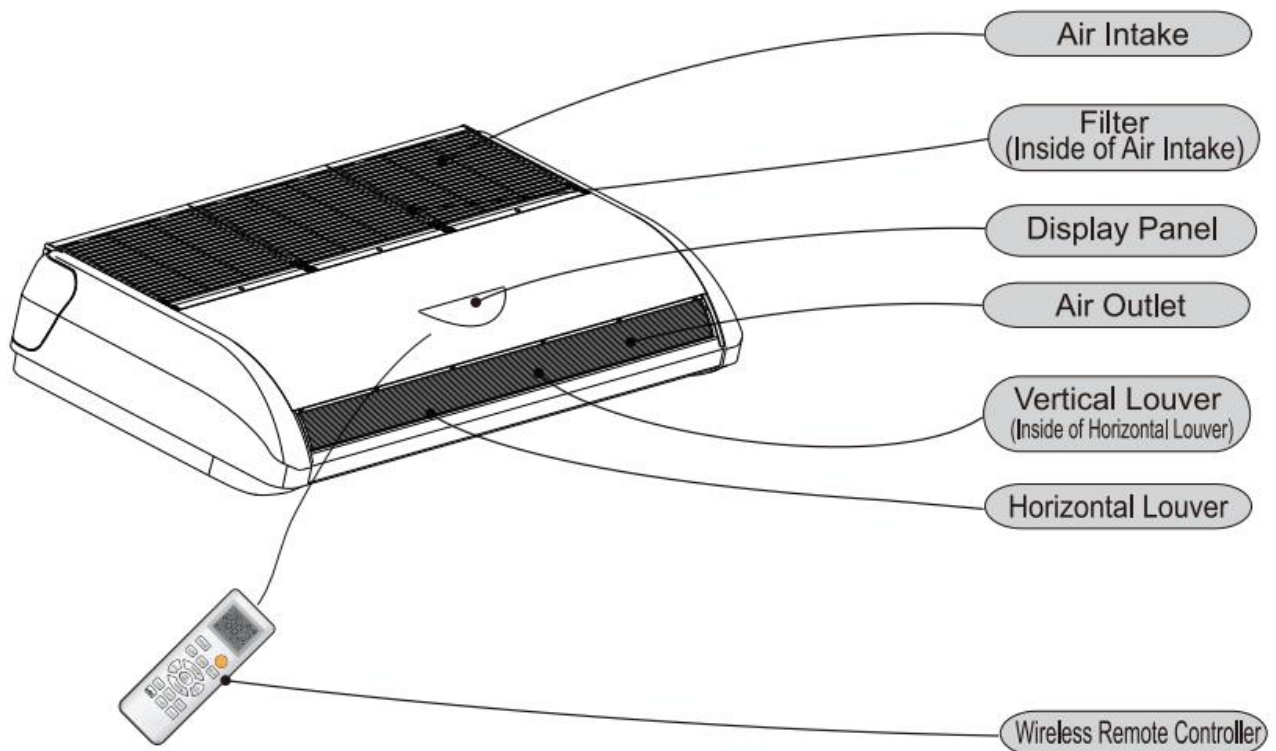
Indoor unit			NEI32-24	NEI32-36	NEI32-48	NEI32-60
Power Supply	Rated Voltage		208/230V, 1Ph, 60Hz			
Cooling	Capacity	Btu/h	24000	36000	48000	55000
Indoor MINIMUM CIRCUIT AMPACITY		A	1.5	6	6	6
Indoor MAX.FUSE		A	15	15	15	15
Indoor Indoor air flow		CFM	912	912	1176	1176
Indoor Noise level (H/L)		dB(A)	36-42	36-42	38-44	38-44
N.A. Design pressure		PSI	609/174	609/174	609/174	609/174
Indoor unit	Unpacking(W×H×D)	inch	51-3/8×9-29/64×26-31/32		66-17/32×9-29/64×26-31/32	
	Packing (W×H×D)	inch	55-5/16×12-51/64×30-5/16		70-9/32×12-51/64×30-5/16	
	Net/Gross Weight	lbs	73/84	76/87	99/112	99/112
Refrigerant pipe	Liquid/Gas side	inch	(3/8) / (1/2)	(3/8) / (1/2)	(3/8) / (5/8)	(3/8) / (5/8)
Connection wiring			485: AWG 25*3 Shielded, 24V: AWG 20			
Communication Type			24V / 485	24V / 485	24V / 485	24V / 485
Throttle type			Piston	Piston	Piston	Piston
Operating Temperature Range	Cooling	°F	62~90	62~90	62~90	62~90

3 Dimensional drawings

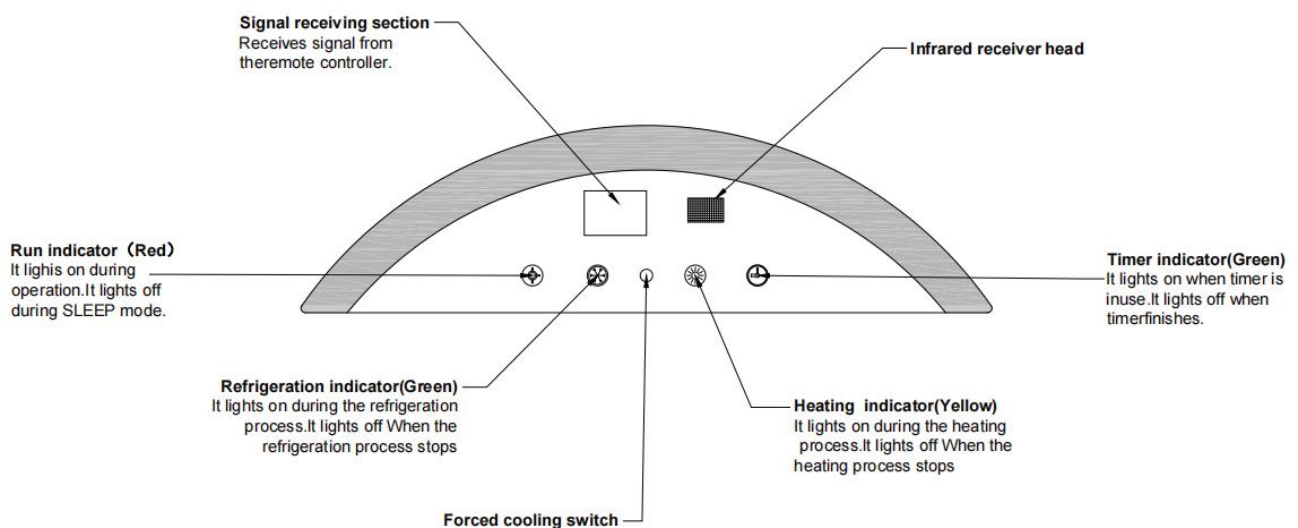


Indoor Unit Capacity (Btu/h)		24/36K	48/60K
W	inch	51-3/8	66-17/32
D	inch	9-29/64	9-29/64
H	inch	26-31/32	26-31/32
Loading Quantity (40HQ)		200	144

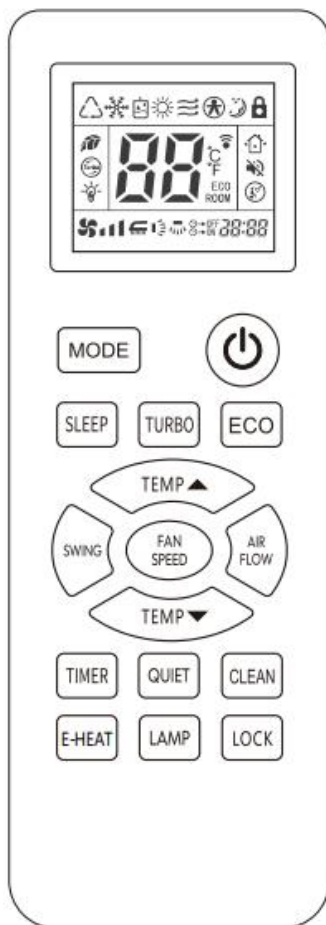
4 Layout Functional Components



LED Display



Remote Controller



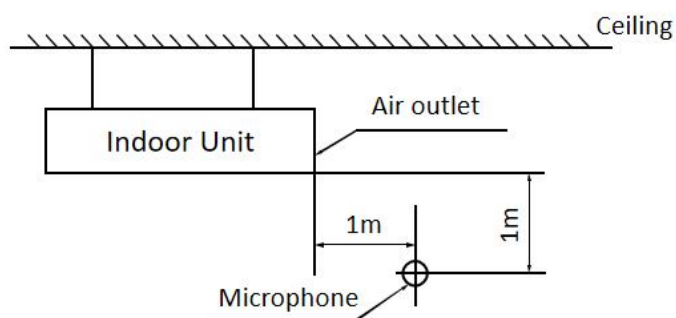
Button	Function Description
	This button changes the operation mode: AUTO, COOL, DRY, HEAT, FAN.
	This button, when pressed starts operation and stops when repressed.
	This button changes to SLEEP operation.
	This button changes to TURBO operation (It does not work in AUTO, DRY, and FAN mode.)
	This button is used to open and close the ECO (energy saving) operation function, which can only be entered when the remote control is set to power on, and the ECO mode switches between 0, 1, 2, 3. Every time change the ECO mode, the remote control shows the corresponding ECO mode for 10s (0 is not displayed, ECO1 shows C1, ECO2 shows C2, ECO3 shows C3).
	This button sets the room temperature.
	This button changes the flap mode: swing or fixed wind.
	This button set air rate.
	This button used for selection of the left/right air flow direction, whenever pressed the in flap will swing or fix (It just works on three-dimensional air flow model.)
	This button is used to set the switch-on or switch-off and the timer time.
	Only for models with electrical auxiliary heater This button used to control the auxiliary electric heating function, and the button only valid in the HEAT mode. Press the button to switch the auxiliary heating function between "auxiliary heat on → auxiliary heat off → automatic auxiliary heating".

Button	Function Description
	Press this button to make the AC keep quiet.
	Press this button to turn off the indications on the device.
	Press this button to CLEAN when the device and remote control are OFF, and the cleaning icon will be displayed on the remote control. The cleaning icon shows that it will disappear automatically in 6 minutes, and the air conditioner will enter standby mode after the cleaning is completed logically. Press this button during the cleaning process to cancel the cleaning function. If the user implements the mode change and shutdown operation during the cleaning mode, the cleaning function will be terminated and the air conditioner will run according to the new mode.
	Press this button to lock or unlock the keyboard.
	°C/°F function: Press TURBO button and TEMP▲ button at the same time to switch to Fahrenheit or Celsius temperature display on the remote control.
	10°C HEAT function: Press TURBO button and TEMP▼ button at the same time to start or stop the 10°C HEAT function.

Note:

Remote controller can only be used when the outdoor unit and the indoor unit are communicating via RS485.

6 Sound level



Notes:

- Sound measured at 1m away from the air outlet of the unit.
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- Reference acoustic pressure 0dB = 20μPa
- Sound level will vary depending on a range of factors such as the construction -(acoustic absorption coefficient) of particular room, in which the equipment is installed.
- The operating conditions are assumed to be standard.

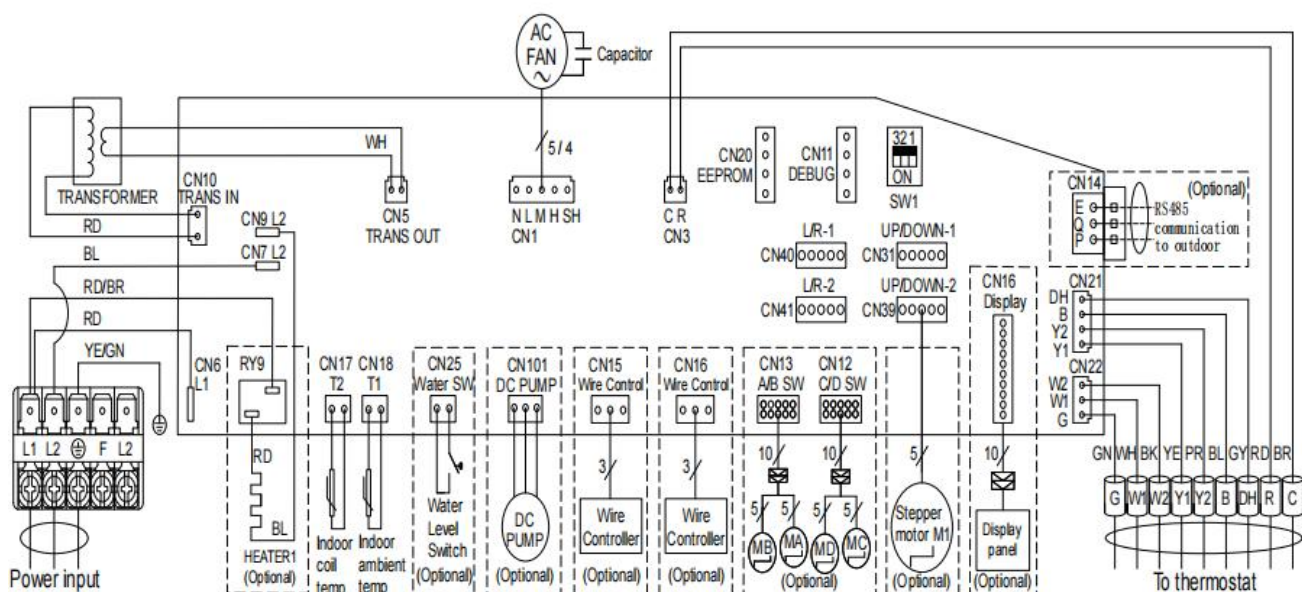
Model	Indoor Noise level (H/L) dB(A)
NEI32-24	36-42
NEI32-36	36-42
NEI32-48	38-44
NEI32-60	38-44

Part 2

Wiring Diagram

1 Electric wiring diagram	15
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4 Electrical parameters	20

1 Electric wiring diagram



DIP switch status Indicate

ON ☐	OFF ☒	This Indicate OFF(the DIP switch is dialed to the digital side)
ON ☒	OFF ☐	This Indicate ON(the DIP switch is dialed to Non-digital side)

SW1 DIP switch selection

SW1.1	OFF	24V Control
	ON	RS485 Comm. Mode
SW1.2	OFF	Anti-Cold Air Delay 90S
	ON	Disable Anti-Cold Air Delay
SW1.3	OFF	T1 from main board
	ON	T1 from thermostat

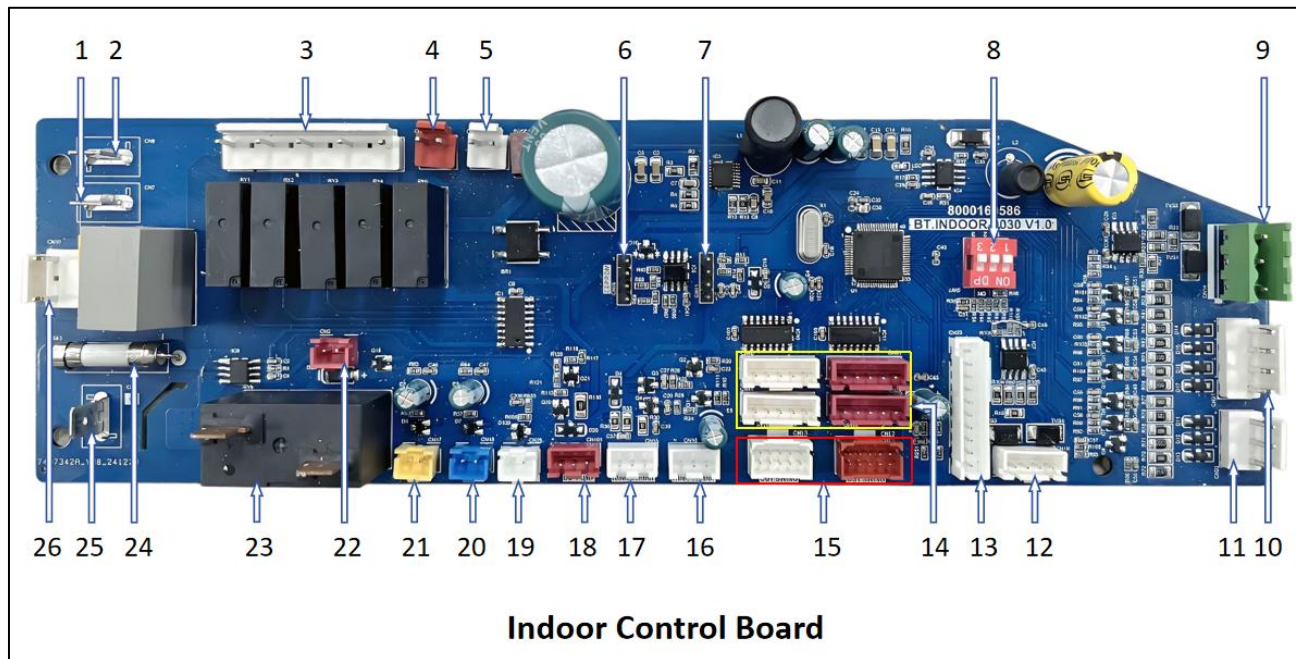
Wire Color Code

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

Line annotation

—————	Factory wiring
-----	Engineering connection
—————	Physical appearance
-----	Dashed box

2 PCB

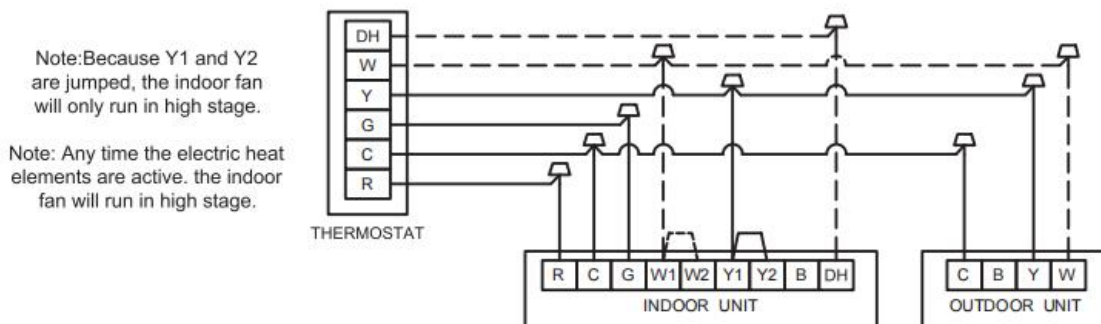


No.	Port Names and Definitions	No.	Port Names and Definitions
1	220V tans in from power supply(L2)	14	Port for stepper motor(Floor Ceiling Unit)
2	220V trans out (reserved)	15	Port for stepper motor(Cassette Unit)
3	Port for indoor fan motor	16	Port to wired controller
4	Port to 24V thermostat	17	Port to wired controller(reserved)
5	24V trans in from transformer	18	Port for drainage water pump
6	Programming Port for EEPROM	19	Port for water level switch
7	Programming Port for debug	20	Port for room temperature sensor T1
8	DIP switch	21	Port for coil temperature sensor T2
9	RS-485 communication port	22	Reserved
10	Port to 24V thermostat	23	Relay for electrical heater(reserved)
11	Port to 24V thermostat	24	Fuse
12	Port for refrigerant concentration monitor	25	220V tans in from power supply(L1)
13	Port to the panel	26	220V trans out to transformer

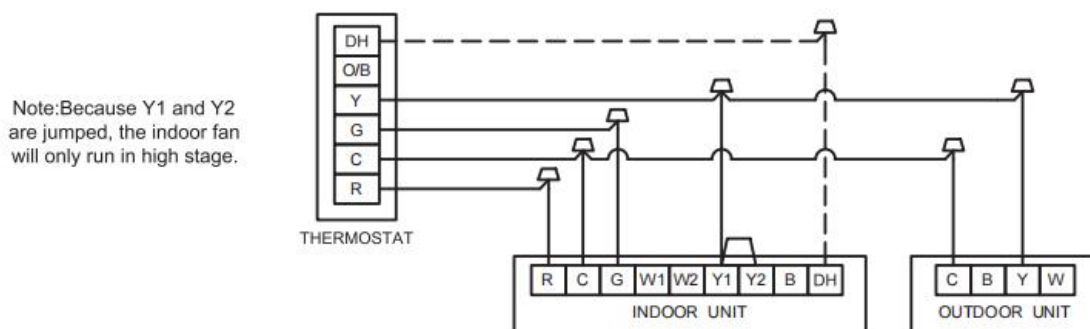
3 Low voltage wiring diagram

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

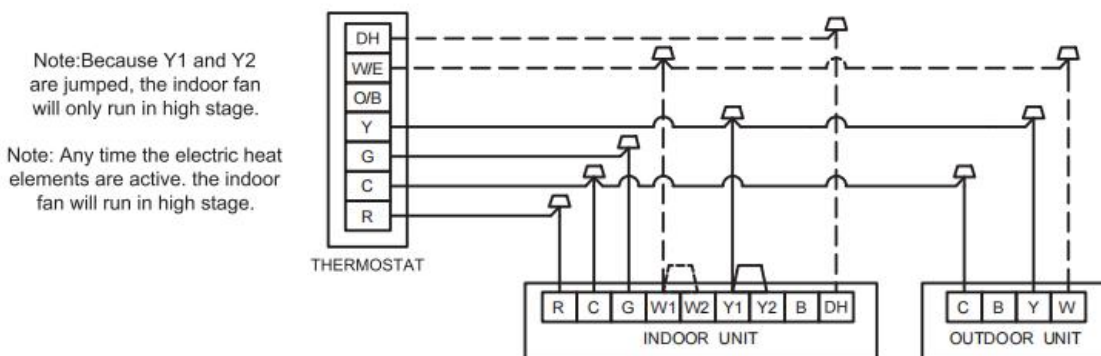
Wiring for 1H and 1C thermostat (no heat pump system model)



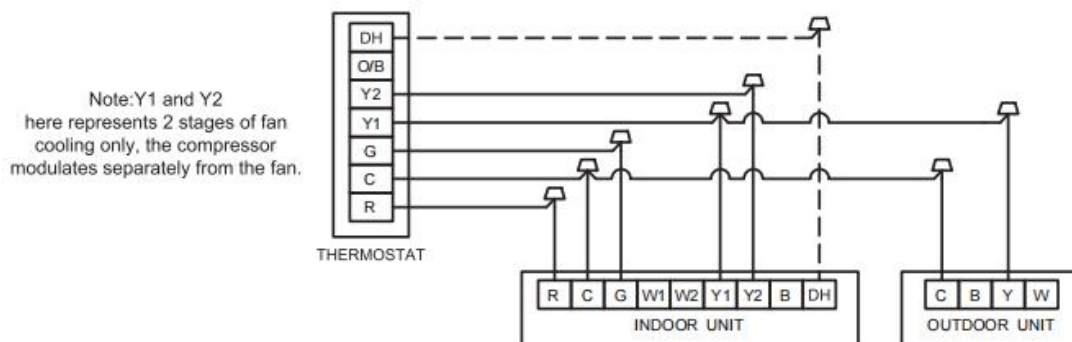
Wiring for 1H and 1C thermostat (no heat pump system model)



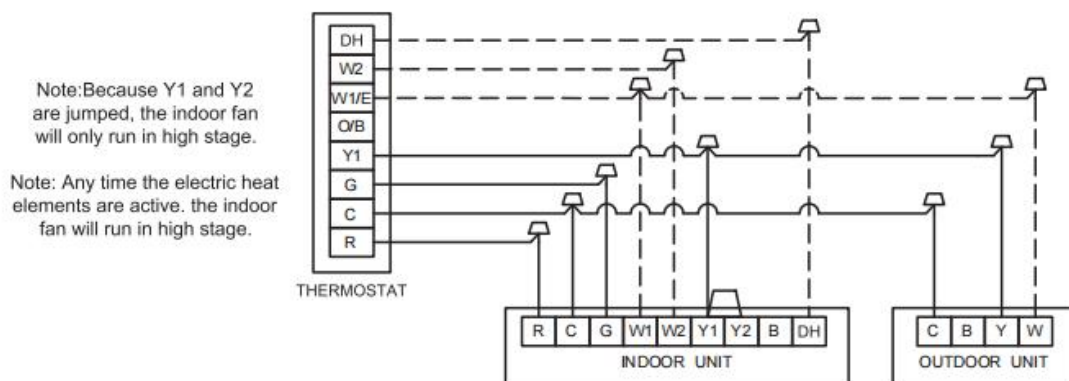
Wiring for 2H and 1C thermostat (no heat pump system model)



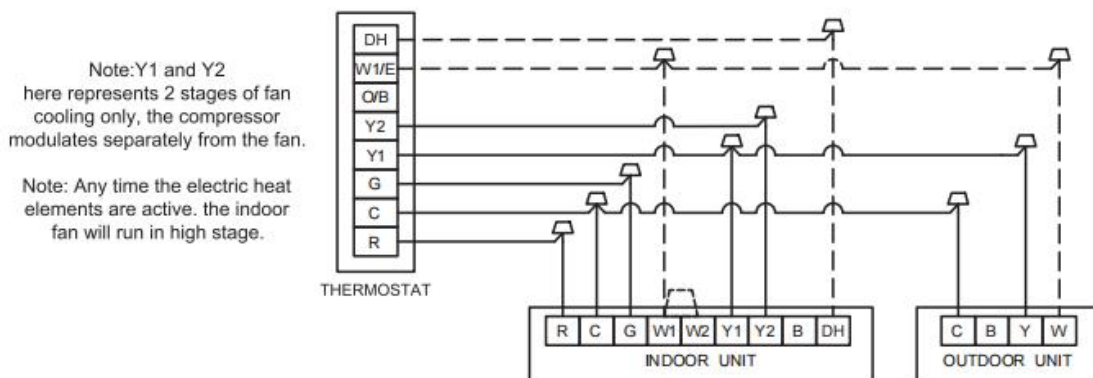
Wiring for 2H and 2C thermostat (no heat pump system model)



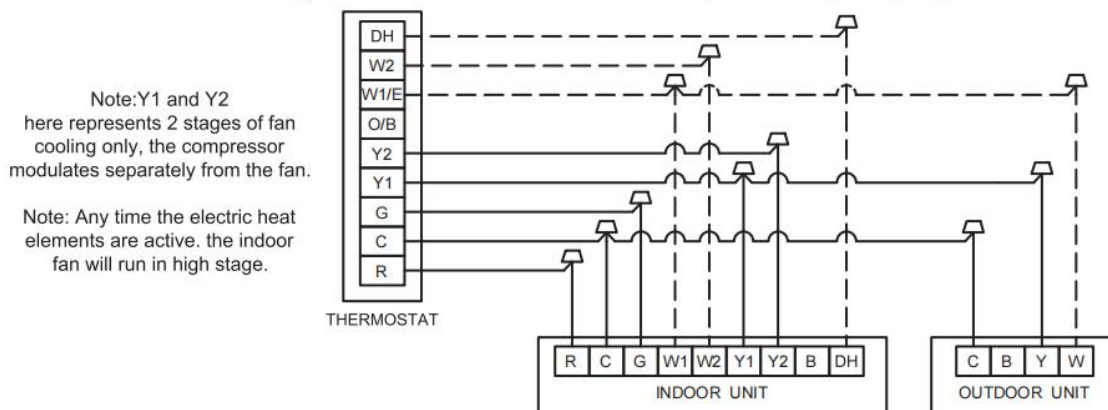
Wiring for 3H and 1C thermostat (no heat pump system model)



Wiring for 3H and 2C thermostat (no heat pump system model)



Wiring for 4H and 2C thermostat (no heat pump system model)



Control Logic:

Indoot unit connector

Connector	Purpose
R	24V Power Connection
C	Common
G	Fan Control
Y1	Low Cooling
Y2	High Cooling
B	Heating Reversing Valve
W1	Stage1 Electrical Heating
W2	Stage2 Electrical Heating
DH	Dehumidification

Outdoot unit connector

Connector	Purpose
C	Common
Y	Cooling
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.
- 3) B wire must be used with heat pump system only, the reversing valve energizes in heating.

4 Electrical parameters

Capacity(Btu/h)		24K	36K	48K	60K
Power (indoor)	Phase	1	1	1	1
	Frequency and Volt	208/230, 60Hz			
Power (outdoor)	Phase	1	1	1	1
	Frequency and Volt	208/230, 60Hz			
Max.Fuse	Indoor unit(A)	15	15	15	15
	Outdoor unit(A)				
Indoor unit Powerline	Line quantity	3	3	3	3
	Line diameter(AWG)	16/1.5mm ²	16/1.5mm ²	16/1.5mm ²	16/1.5mm ²
Outdoor unit Powerline	Line quantity	3	3	3	3
	Line diameter(AWG)				
Outdoor unit Signal line	Line quantity	3	3	3	3
	Line diameter(AWG)	20/0.5mm ²	20/0.5mm ²	20/0.5mm ²	20/0.5mm ²
Thermostat Signal line	Line quantity	/	/	/	/
	Line diameter(AWG)	18/1.0mm ²	18/1.0mm ²	18/1.0mm ²	18/1.0mm ²

Part 3

Diagnosis and Troubleshooting

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2.4 E4 Troubleshooting	28
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1 Error code table

Error code	Error definition
E1	Outdoor unit and indoor unit communication error
E2	Indoor unit T1 temperature sensor fault
E3	Indoor unit T2 temperature sensor fault
E4	Refrigerant concentration sensor fault (Only valid when connected to a refrigerant concentration sensor.)
E6	Refrigerant leakage protection
E8	Indoor fan motor current fault
E9	Wired controller communication fault
d3	Water level switch protection (effective only for cassette units and duct units.)

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 preference.

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.

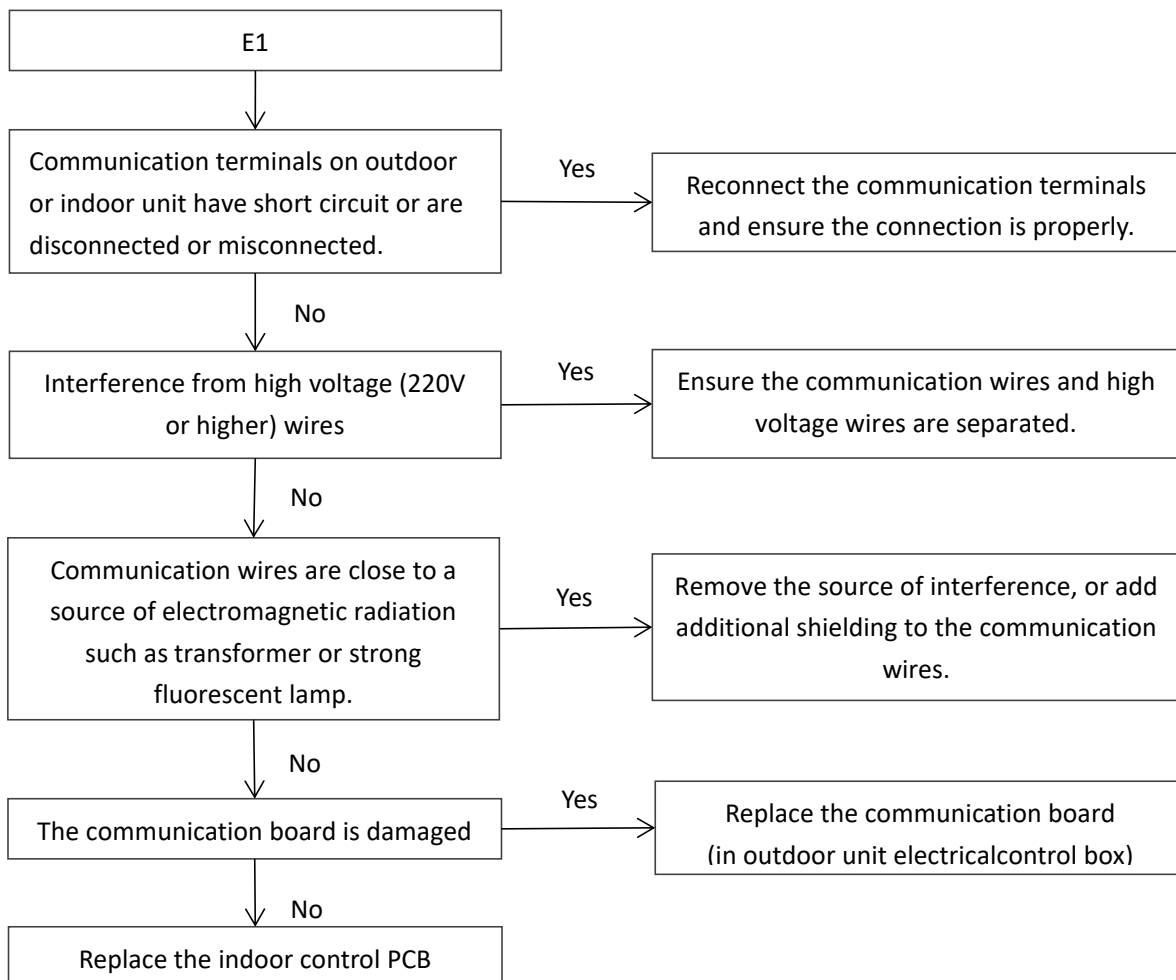
- Use a firm stool or step ladder according to manufacturer procedures when cleaning or maintaining the unit.

**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.

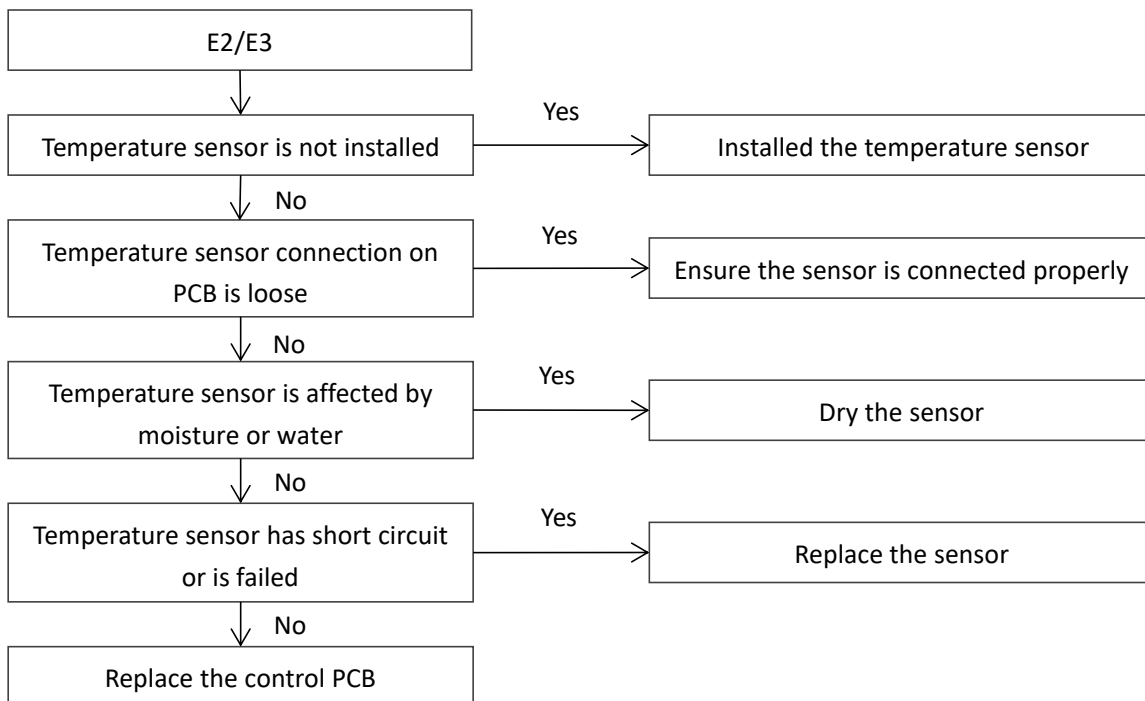
2.2 E1 Troubleshooting

- E1 indicates RS485 communication fault between outdoor unit and indoor unit.
- The unit stops running and error code is displayed on the LED display on the panel .



2.3 E2/E3 Troubleshooting

- E2 indicates indoor unit T1 temperature sensor fault
- E3 indicates indoor unit T2 temperature sensor fault
- The unit stops running and error code is displayed on the LED display on the panel.

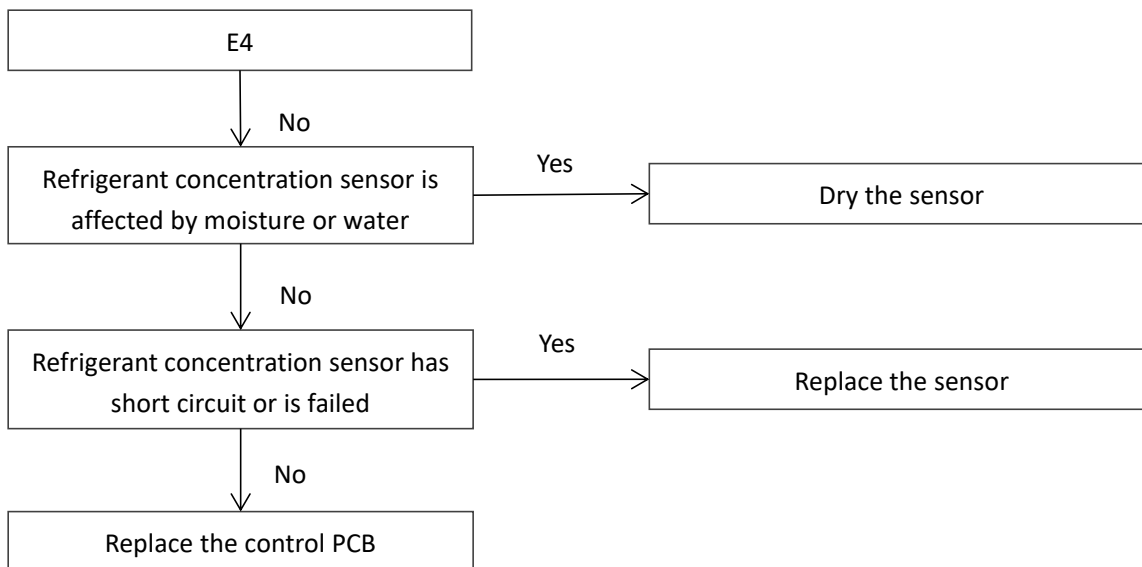


Note:

- 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.
- 2) E2/E3 is applicable only when communication is established between the ComfortStar outdoor unit and the ComfortStar indoor unit via RS-485.

2.4 E4 Troubleshooting

- E4 indicates refrigerant concentration sensor fault (Only valid when connected to a refrigerant concentration sensor.)
- The unit stops running and error code is displayed on the LED display on the panel.

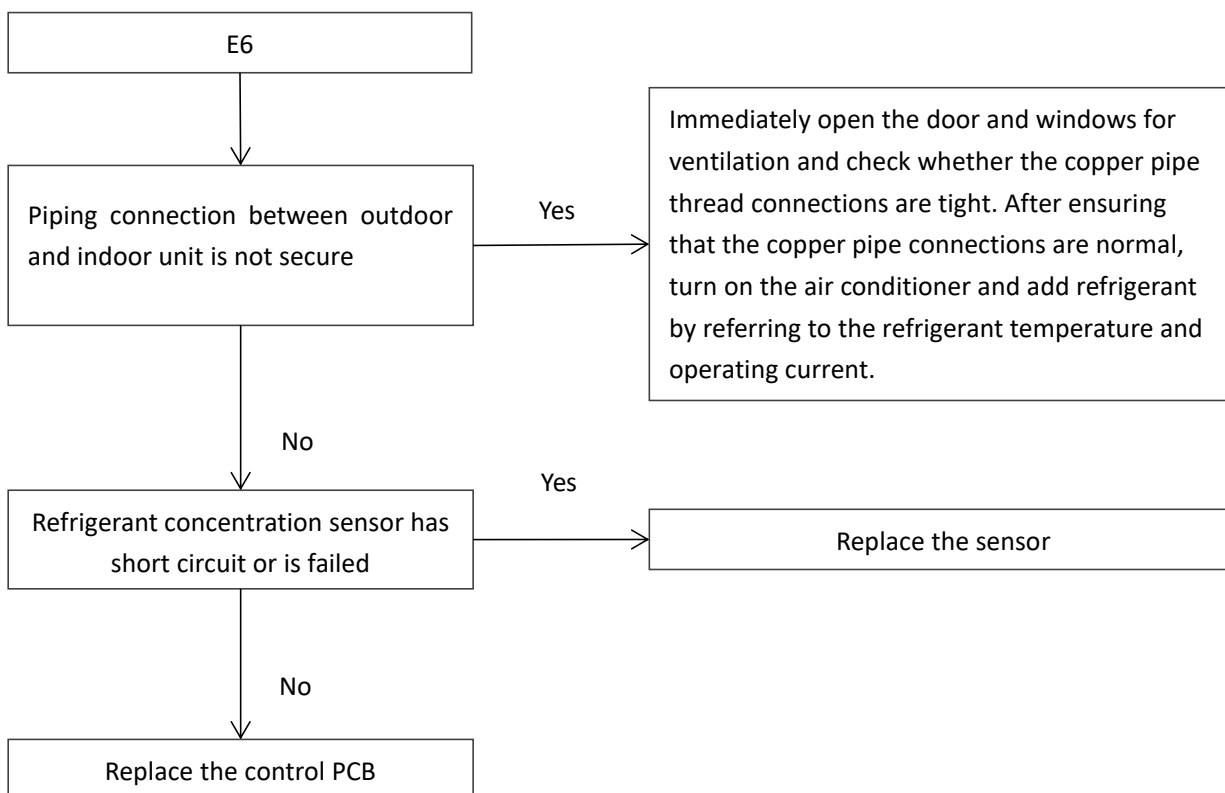


Note:

- 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.
- 2) E2/E3 is applicable only when communication is established between the ComfortStar outdoor unit and the ComfortStar indoor unit via RS-485.

2.5 E6 Troubleshooting

- E6 Refrigerant leakage protection (Only valid when connected to a refrigerant concentration sensor.)
- The unit stops running and error code is displayed on the LED display on the panel.

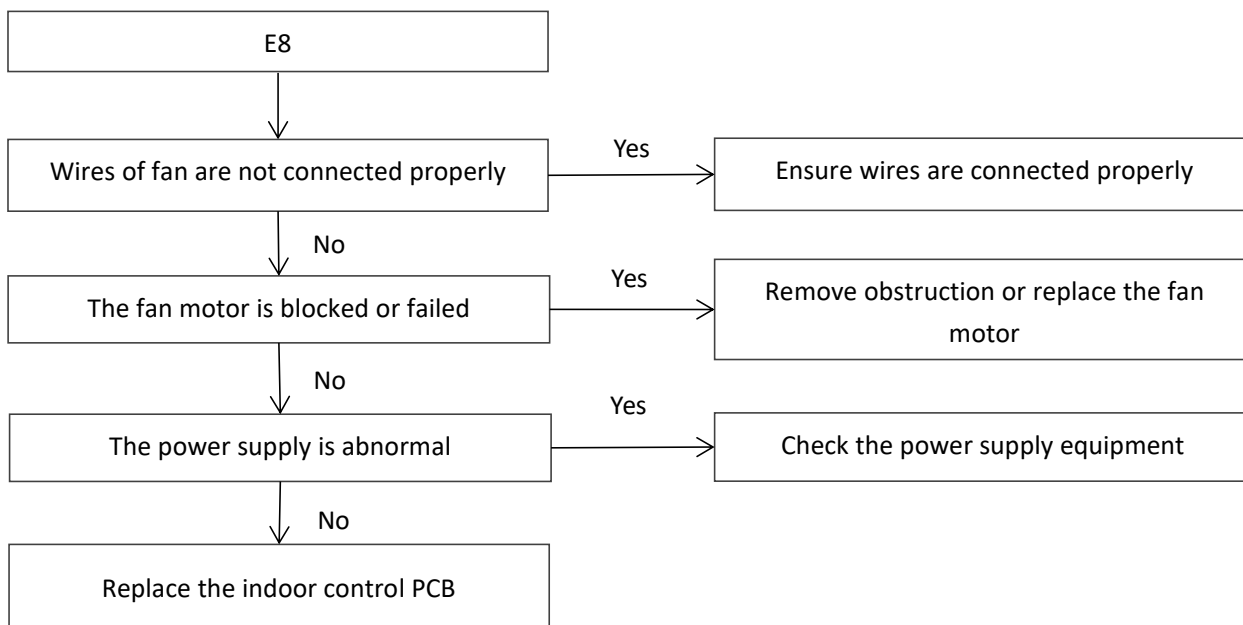


Note:

- 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.
- 2) E2/E3 is applicable only when communication is established between the ComfortStar outdoor unit and the ComfortStar indoor unit via RS-485.

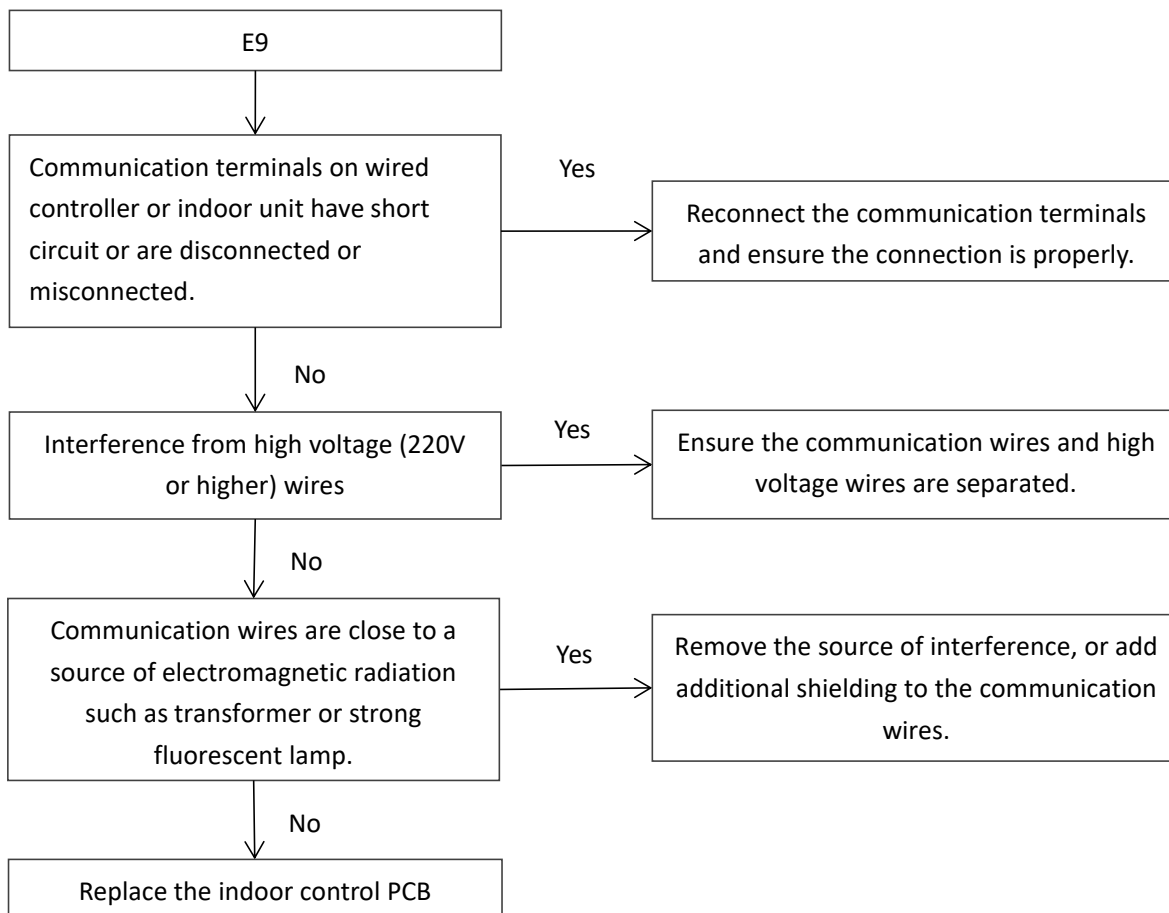
2.6 E8 Troubleshooting

- E8 indicates indoor fan motor current fault.
- The unit stops running and error code is displayed on the LED display on the panel.



2.7 E9 Troubleshooting

- E9 indicates wired controller communication fault.
- The unit stops running and error code is displayed on the LED display on the panel.



3. Temperature Sensor Resistance Characteristics

Room temperature sensor(T1) and condenser coil temperature sensor(T2) resistance characteristics.

Temperature (°C)	Resistance (kΩ)	Temperature (°C)	Resistance (kΩ)	Temperature (°C)	Resistance (kΩ)	Temperature (°C)	Resistance (kΩ)
-25	144.266	15	16.079	55	2.841	95	0.708
-24	135.601	16	15.313	56	2.734	96	0.686
-23	127.507	17	14.588	57	2.632	97	0.666
-22	119.941	18	13.902	58	2.534	98	0.646
-21	112.867	19	13.251	59	2.44	99	0.627
-20	106.732	20	12.635	60	2.35	100	0.609
-19	100.552	21	12.05	61	2.264	101	0.591
-18	94.769	22	11.496	62	2.181	102	0.574
-17	89.353	23	10.971	63	2.102	103	0.558
-16	84.278	24	10.473	64	2.026	104	0.542
-15	79.521	25	10	65	1.953	105	0.527
-14	75.059	26	9.551	66	1.883		
-13	70.873	27	9.125	67	1.816		
-12	66.943	28	8.721	68	1.752		
-11	63.252	29	8.337	69	1.69		
-10	59.784	30	7.972	70	1.631		
-9	56.524	31	7.625	71	1.574		
-8	53.458	32	7.296	72	1.519		
-7	50.575	33	6.982	73	1.466		
-6	47.862	34	6.684	74	1.416		
-5	45.308	35	6.401	75	1.367		
-4	42.903	36	6.131	76	1.321		
-3	40.638	37	5.874	77	1.276		
-2	38.504	38	5.63	78	1.233		
-1	36.492	39	5.397	79	1.191		
0	34.596	40	5.175	80	1.151		
1	32.807	41	4.964	81	1.113		
2	31.12	42	4.763	82	1.076		
3	29.528	43	4.571	83	1.041		
4	28.026	44	4.387	84	1.007		
5	26.608	45	4.213	85	0.974		
6	25.268	46	4.046	86	0.942		
7	24.003	47	3.887	87	0.912		
8	22.808	48	3.735	88	0.883		
9	21.678	49	3.59	89	0.855		
10	20.61	50	3.451	90	0.828		
11	19.601	51	3.318	91	0.802		
12	18.646	52	3.191	92	0.777		
13	17.743	53	3.069	93	0.753		
14	16.888	54	2.952	94	0.73		

ComfortStar®

The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details.