AIRSTAGE

AIR CONDITIONER

Wall mounted type

FUJITSU

REFRIGERANT R32

INVERTER

SERVICE MANUAL

INDOOR

ASEH09KHCBN
ASEH12KHCBN
ASEH14KHCBN

OUTDOOR

AOEH09KHCBN

AOEH12KHCBN
AOEH14KHCBN

FUJITSU GENERAL LIMITED

SR_AS129ES_02
2023.11.10

Notices:
- Product specifications and design are subject to change without notice for future improvement.
- For further details, please check with our authorized dealer.

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REFRIGERANT R32
INVERTER

1. GENERAL INFORMATION

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1. GENERAL INFORMATION

GENERAL INFORMATION

1. Specifications

1-1. Indoor unit

Type					Wall mounted		
					Inverter, Heat pump		
Model name					**ASEH09KHCBN**	**ASEH12KHCBN**	**ASEH14KHCBN**
Power supply intake					Outdoor unit		
System power supply	Voltage			V	230		
	Frequency			Hz	50		
	Available voltage range			V	207—253		
Indoor unit power supply (from outdoor unit)				V	230		
Capacity	Cooling	Rated		kW	2.5	3.5	4.2
				Btu/h	8,500	11,900	14,300
		Min.—Max.		kW	0.7—4.7	0.7—5.1	0.8—5.9
				Btu/h	2,400—16,000	2,400—17,400	2,700—20,100
	Heating	Rated		kW	3.2	4.0	5.4
				Btu/h	10,900	13,600	18,400
		Min.—Max.		kW	0.7—7.7	0.7—8.4	0.8—9.0
				Btu/h	2,400—26,300	2,400—28,700	2,700—30,700
Input power	Cooling	Rated		kW	0.42	0.68	0.88
		Min.—Max.			0.12—1.11	0.12—1.30	0.12—1.65
	Heating	Rated			0.54	0.74	1.11
		Min.—Max.			0.11—2.15	0.12—2.40	0.13—2.58
	Fan	HIGH		W	25.0	27.8	33.2
		MED—HIGH			21.1	22.3	28.6
		MED			17.5		24.3
		MED—LOW			14.3		19.2
		LOW			11.1		14.3
		QUIET			3.8		5.7
Current	Cooling	Rated		A	2.0	3.1	3.9
	Heating				2.5	3.4	5.0
Energy efficiency class	Cooling				A^{+++}		
	Heating (Average)				A^{+++}		
Pdesign	Cooling			kW	2.5	3.5	4.2
	Heating (Average)				2.5	3.6	4.2
SEER	Cooling			kWh/kWh	10.9	10.6	9.9
SCOP	Heating (Average)				5.3		
Annual energy consumption	QCE			kWh/a	80	115	148
	QHE (Average)				658	939	1,109
EER	Cooling			kW/kW	5.95	5.15	4.77
COP	Heating				5.93	5.41	4.86
Sensible capacity	Cooling			kW	2.50	3.23	3.70
Power factor	Cooling			%	93.6	95.7	97.3
	Heating				95.0	96.0	97.6
Moisture removal				L/h (pints/h)	1.50 (2.6)	1.95 (3.4)	2.20 (3.9)
Maximum operating current*1	Cooling			A	6.5	7.5	9.0
	Heating				9.5	12.5	15.5
Fan	Airflow rate	Cooling	HIGH	m^3/h	800	830	890
			MED—HIGH		740	760	840
			MED		690		790
			MED—LOW		640		720
			LOW		580		640
			QUIET		350		440
		Heating	HIGH		900		940
			MED—HIGH		800		860
			MED		690		780
			MED—LOW		640		710
			LOW		580		640
			QUIET		290		390
	Type × Qty				Crossflow fan × 1		
	Motor output			W	61		
Sound pressure level*2	Cooling		HIGH	dB (A)	42	43	45
			MED—HIGH		40		42
			MED		37		40
			MED—LOW		35		38
			LOW		33		35
			QUIET		23		26
	Heating		HIGH		44		46
			MED—HIGH		40		42
			MED		36		39
			MED—LOW		34		36
			LOW		32		34
			QUIET		19		23
Sound power level	Cooling	HIGH		dB (A)	57	58	60
	Heating				59	60	
Heat exchanger	Dimensions (H × W × D)			mm	Main: 384 × 720 × 30.0 Sub 1: 84 × 720 × 13.3 Sub 2: 126 × 720 × 13.3		
	Fin pitch				Main: 1.2 Sub 1: 1.4 Sub 2: 1.4		
	Rows × Stages				Main: 3 × 24 Sub 1: 1 × 4 Sub 2: 1 × 6		
	Pipe type				Copper tube		
	Fin type				Aluminum		

GENERAL INFORMATION

Type				Wall mounted		
				Inverter, Heat pump		
Model name				**ASEH09KHCBN**	**ASEH12KHCBN**	**ASEH14KHCBN**
Enclosure	Material			Polystyrene		
	Color			White Approximate color of Munsell N9.25/		
Dimensions (H × W × D)	Net		mm	295 × 894 × 280		
	Gross			360 × 990 × 370		
Weight	Net		kg	14.5		
	Gross			18.0		
Connection pipe	Size	Liquid	mm (in)	Ø6.35 (Ø1/4)		
		Gas		Ø9.52 (Ø3/8)		
	Method			Flare		
Drain hose	Material			Polypropylene + Linear low-density polyethylene		
	Tip diameter		mm	Ø13.8 (I.D.), Ø15.8 to Ø16.7 (O.D.)		
Operation range	Cooling		°C	18 to 32		
			%RH	80 or less		
	Heating		°C	16 to 30		
Remote controller type				Wireless (Option: Wired, Mobile app*3 [AIRSTAGE Mobile])		

NOTES:

- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 27°CDB/19°CWB, and outdoor temperature of 35°CDB/24°CWB.
  - Heating: Indoor temperature of 20°CDB/15°CWB, and outdoor temperature of 7°CDB/6°CWB.
  - Pipe length: 5.0 m, Height difference: 0 m. (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- *1: Maximum operating current is the total current of the indoor unit and the outdoor unit.
- *2: Sound pressure level:
  - Measured values in manufacturer's anechoic chamber.
  - Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.
- *3: Available on Google Play™ store or on App Store®.
- This data is based on EN 14511 standard.

GENERAL INFORMATION

1-2. Outdoor unit

Type				Inverter, Heat pump		
Model name				**AOEH09KHCBN**	**AOEH12KHCBN**	**AOEH14KHCBN**
Power supply				230 V~ 50 Hz		
Power supply intake				Outdoor unit		
Available voltage range				207—253 V		
Starting current			A	2.5	3.4	5.0
Fan	Airflow rate	Cooling	m^3/h	1,850	2,630	2,530
		Heating		1,690	2,140	2,070
	Type × Qty			Propeller fan × 1		
	Motor output		W	49		
Sound pressure level*		Cooling	dB (A)	44	48	51
		Heating		44	49	
Sound power level		Cooling	dB (A)	57	61	64
		Heating		55	59	60
Heat exchanger type		Dimensions (H × W × D)	mm	Main 1: 588 × 881 × 18.19 Main 2: 588 × 851 × 18.19	Main 1: 672 × 881 × 18.19 Main 2: 672 × 851 × 18.19	Main 1: 672 × 873 × 18.19 Main 2: 672 × 845 × 18.19 Main 3: 672 × 784 × 18.19
		Fin pitch		Main 1: 1.30 Main 2: 1.30	Main 1: 1.30 Main 2: 1.30	Main 1: 1.45 Main 2: 1.45 Main 3: 1.45
		Rows × Stages		Main 1: 1 × 28 Main 2: 1 × 28	Main 1: 1 × 32 Main 2: 1 × 32	Main 1: 1 × 32 Main 2: 1 × 32 Main 3: 1 × 32
		Pipe type		Copper tube		
		Fin type	Type (Material)	Aluminum		
			Surface treatment	PC fin		
Compressor		Type		DC rotary		
		Motor output	W	925		1,060
Refrigerant		Type		R32 (675)		
		Charge	g	1,220	1,320	1,390
Refrigerant oil		Type		RmM68AF		
		Amount	cm^3	400		
Enclosure		Material		Steel sheet		
		Color		Beige Approximate color of Munsell 10YR 7.5/1.0		
Dimensions (H × W × D)		Net	mm	632 × 799 × 290	716 × 820 × 315	
		Gross		692 × 940 × 375	776 × 961 × 450	
Weight		Net	kg	39	42	45
		Gross		43	47	50
Connection pipe	Size	Liquid	mm (in)	Ø6.35 (Ø1/4)		
		Gas		Ø9.52 (Ø3/8)		
	Method			Flare		
	Pre-charge length		m	15		
	Max. length			20		
	Max. height difference			15		
	Max. height difference		g/m	20		
Operation range		Cooling	°C	-10 to 50		
		Heating		-30 to 24		

NOTES:

- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 27°CDB/19°CWB, and outdoor temperature of 35°CDB/24°CWB.
  - Heating: Indoor temperature of 20°CDB/15°CWB, and outdoor temperature of 7°CDB/6°CWB.
  - Pipe length: 5.0 m, Height difference: 0 m. (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- *: Sound pressure level
  - Measured values in manufacturer's semi-anechoic chamber.
  - Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.

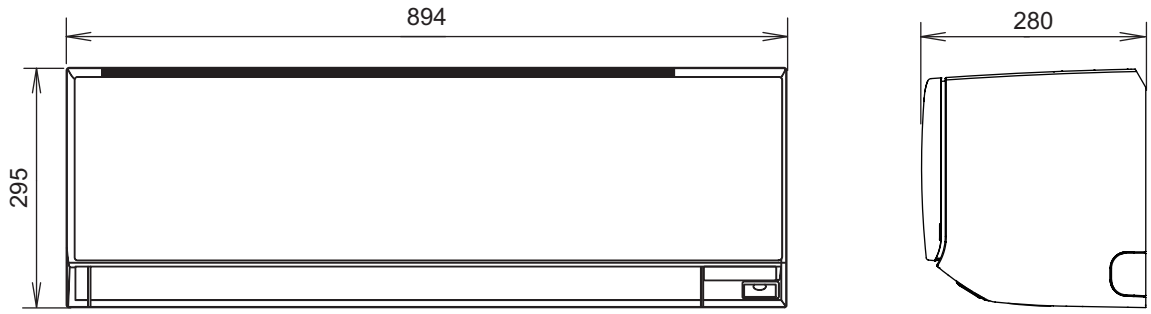
GENERAL INFORMATION

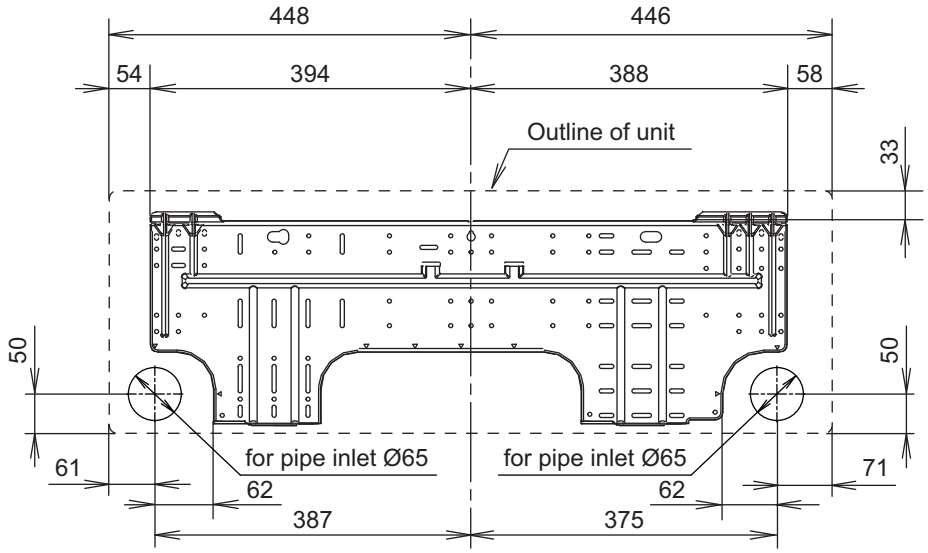
2. Dimensions

2-1. Indoor unit

■ Models: ASEH09KHCBN, ASEH12KHCBN, and ASEH14KHCBN

Unit: mm



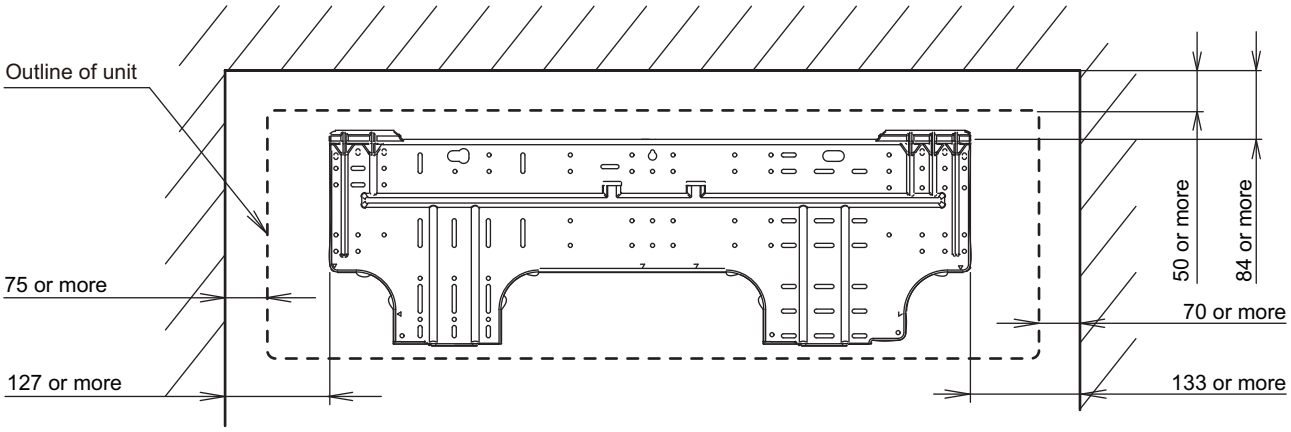


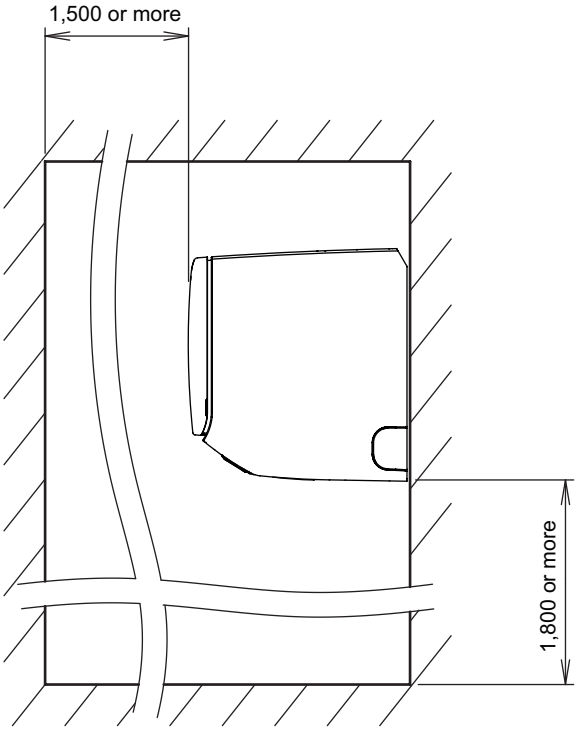
GENERAL INFORMATION

● Installation space requirement

Provide sufficient installation space for product safety.

Unit: mm





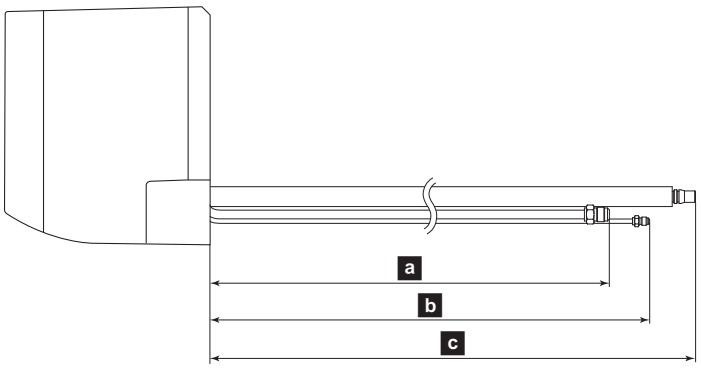
GENERAL INFORMATION

■ Pipe exit length from the rear

Design the system considering the length of the pipes or hose exiting from the rear of the indoor unit.

NOTE: Detailed shapes of the indoor unit and the tip of each pipe or hose may vary depending on the model.

Unit: mm



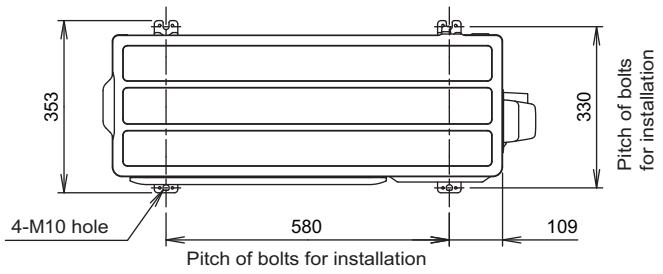
Model name	Approximate length		
	a Gas pipe	b Liquid pipe	c Drain hose
ASEH09–14KHCBN	615	660	420

GENERAL INFORMATION

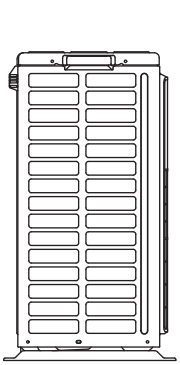
2-2. Outdoor unit

■ Model: AOEH09KHCBN

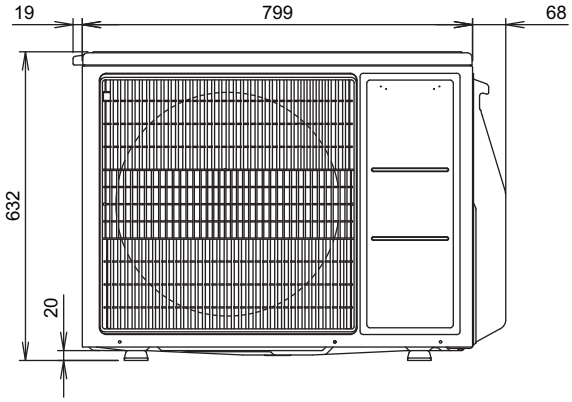
Unit: mm



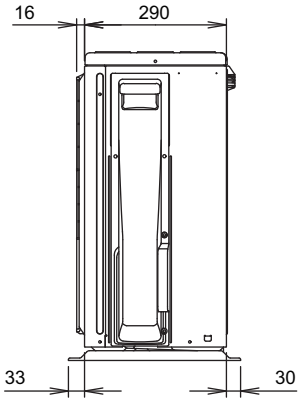
Top view



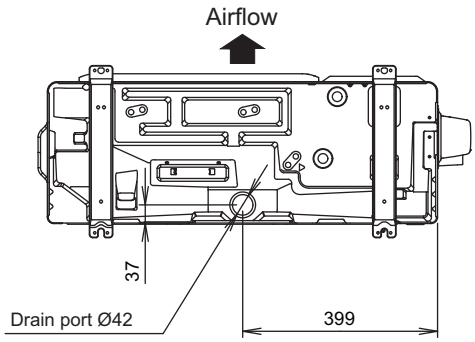
Side view



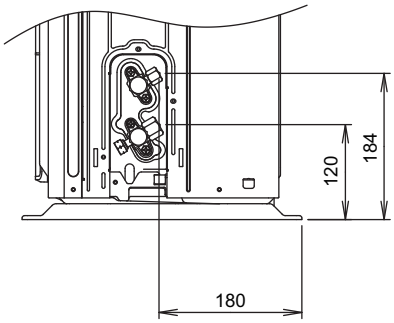
Front view



Side view



Bottom view

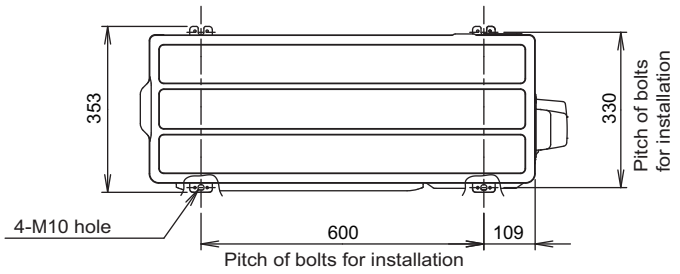


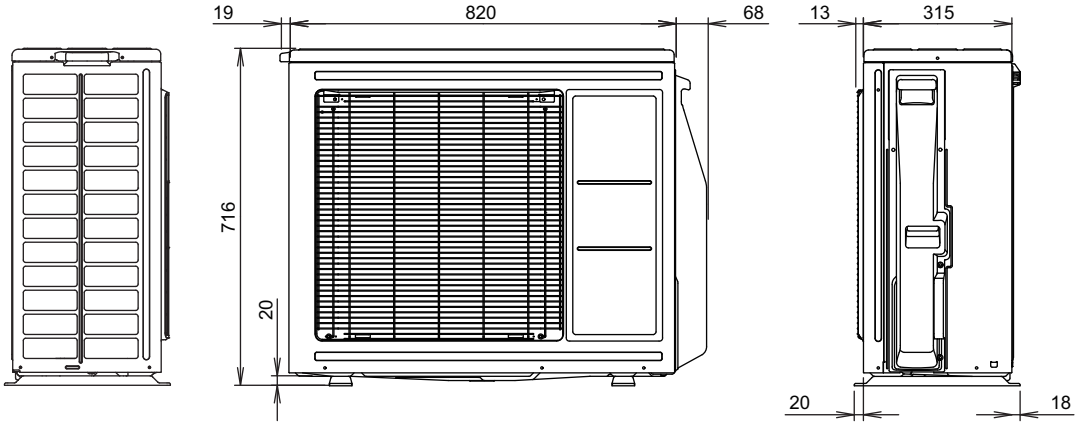
Side view (Valve part)

GENERAL INFORMATION

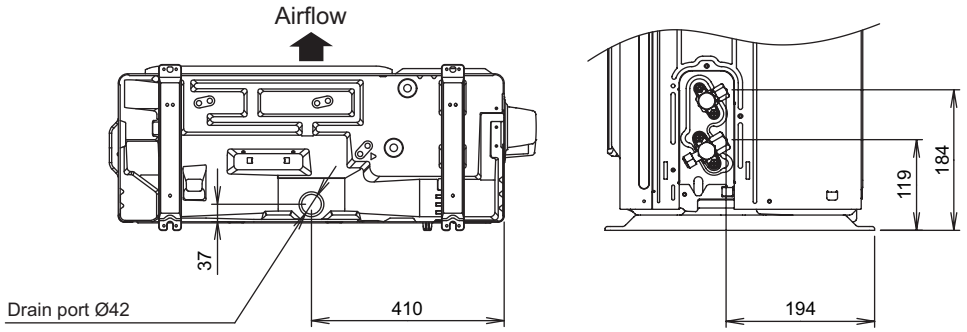
■ Models: AOEH12KHCBN and AOEH14KHCBN

Unit: mm





Side view　　Front view　　Side view



Bottom view　　Side view (Valve part)

REFRIGERANT R32
INVERTER

2. TECHNICAL DATA AND PARTS LIST

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2. TECHNICAL DATA AND PARTS LIST

TECHNICAL DATA AND PARTS LIST

1. Precautions

When you start servicing, pay attention to the following points. For detailed precautions, refer to the installation manual of the products.

⚠ CAUTION

- Service personnel
  - Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
  - Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
  - Servicing shall be performed only as recommended by the manufacturer.
- Work
  - Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. When repairing the refrigerant system, refer to the precautions written in the installation manual of the products before you start servicing.
  - Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.
  - All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out.
  - Work in confined spaces shall be avoided.
  - The area around the workspace shall be sectioned off.
  - Ensure that the conditions within the area have been made safe by control of flammable material.
  - Electric shock may occur. After turning off the power, always wait 5 minutes before touching electrical components.
  - Do not touch the fins of the heat exchanger. Touching the heat exchanger fins could result in damage to the fins or personal injury such as skin rupture.
  - Do not place any other electrical products or household belongings under the product.
  - Condensation dripping from the product might get them wet, and may cause damage or malfunction to the property.
- Checking for presence of refrigerant
  - The area shall be checked with an appropriate refrigerant leak detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
  - Ensure that the leak detector being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

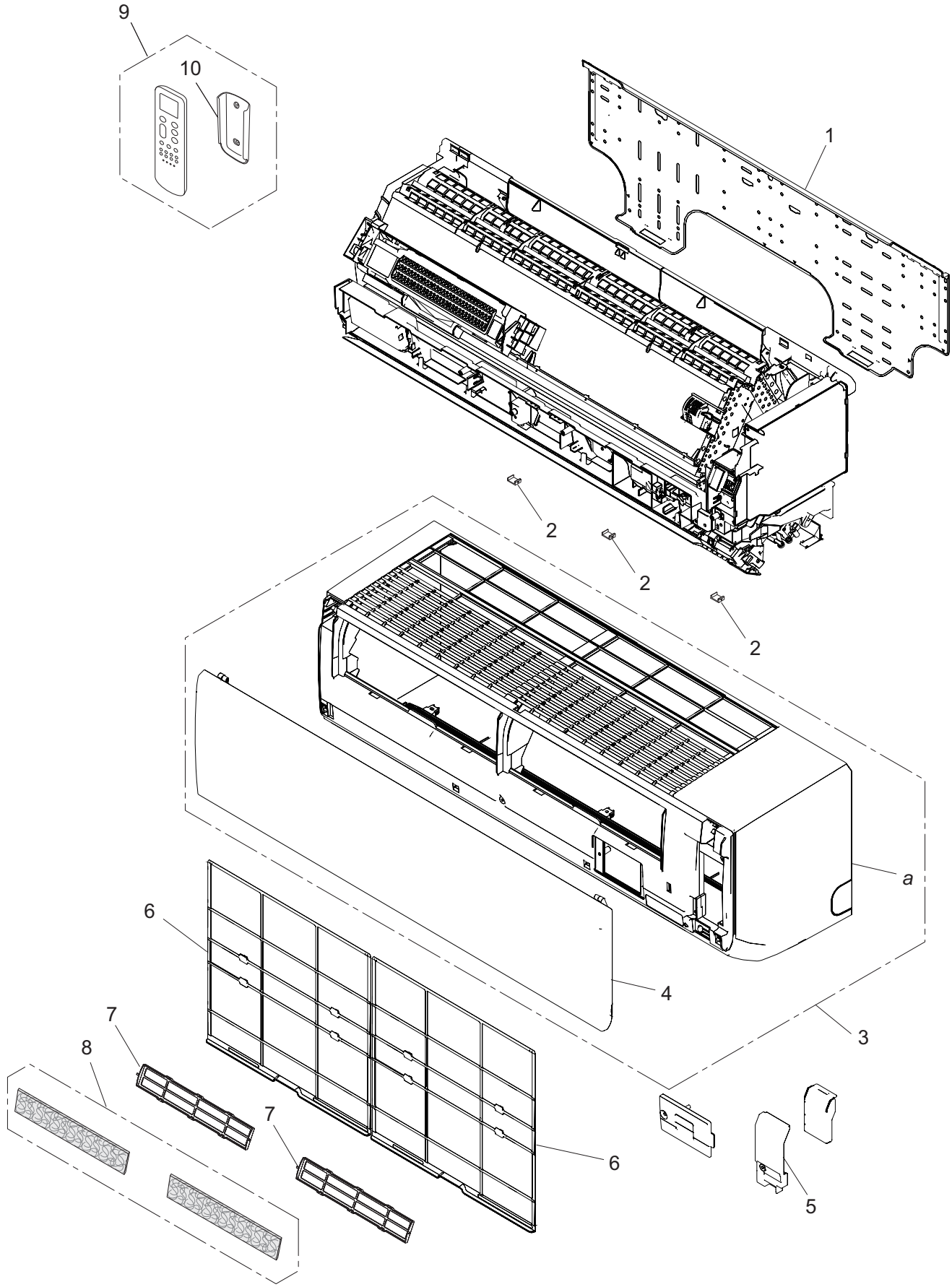
- Service parts information and design are subject to change without notice for product improvement.
- For the latest information of the service parts, refer to our Service Portal.
  https://fujitsu-general.force.com/portal/
- Precise figure of the service parts listed in this manual may differ from the actual service parts.

TECHNICAL DATA AND PARTS LIST

2. Indoor unit parts list

2-1. Models: ASEH09KHCBN, ASEH12KHCBN, and ASEH14KHCBN

■ Exterior parts

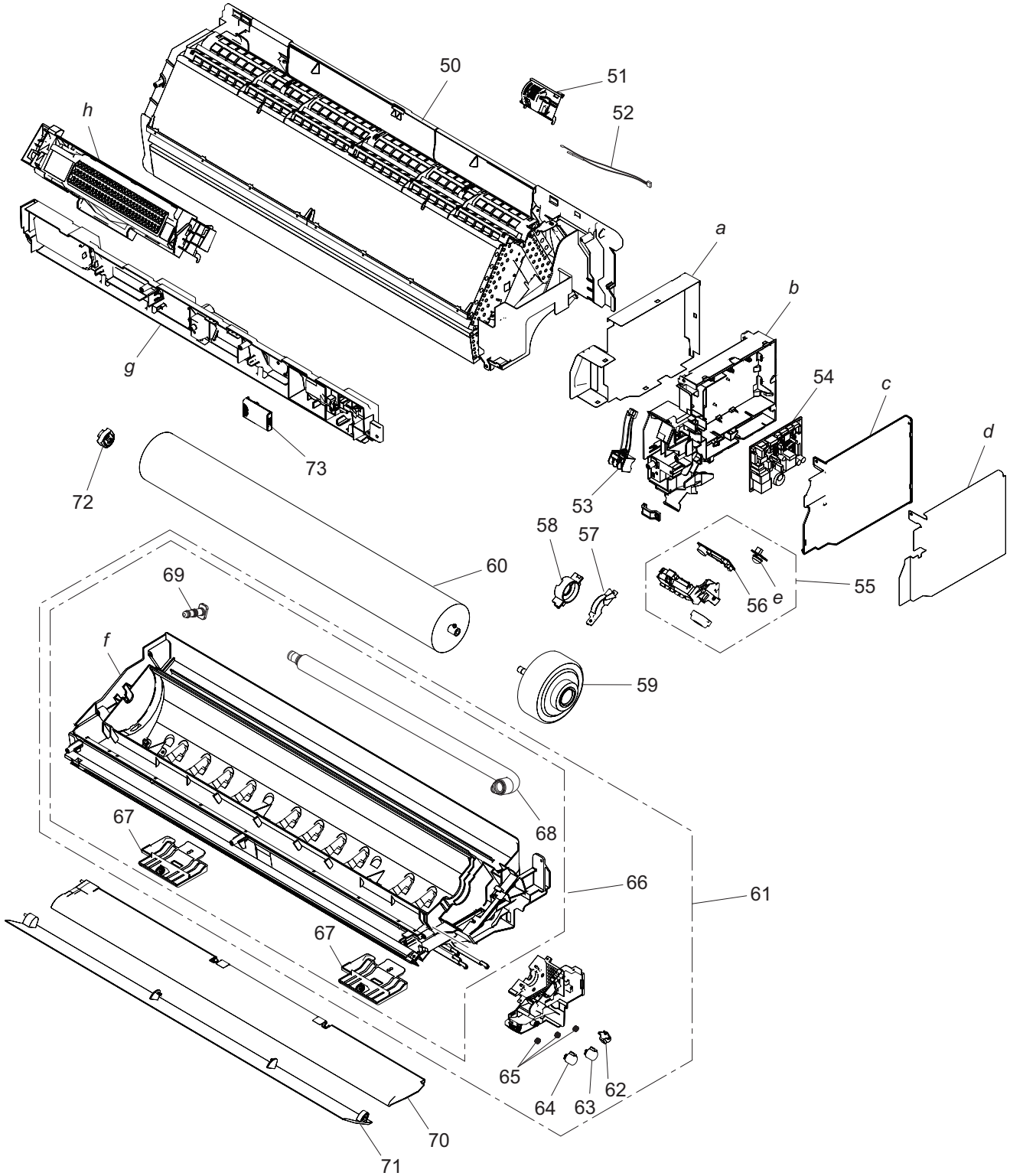


TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
1	9318861020	Bracket panel	♦
2	9309002074	Screw cover	♦
3	9320460068	Front panel sub assy	♦
4	9300454001	Intake grille assy	♦
5	9318786002	Wire cover	♦
6	9300394000	Air filter	♦
7	9332911008	Filter holder	♦
8	9300450003	Air cleaning filter assy	♦
9	9359743002	Remote controller total assy	♦
10	9350319008	Remote controller holder	♦
a	—	Front panel	—

■ Chassis

TECHNICAL DATA AND PARTS LIST



TECHNICAL DATA AND PARTS LIST

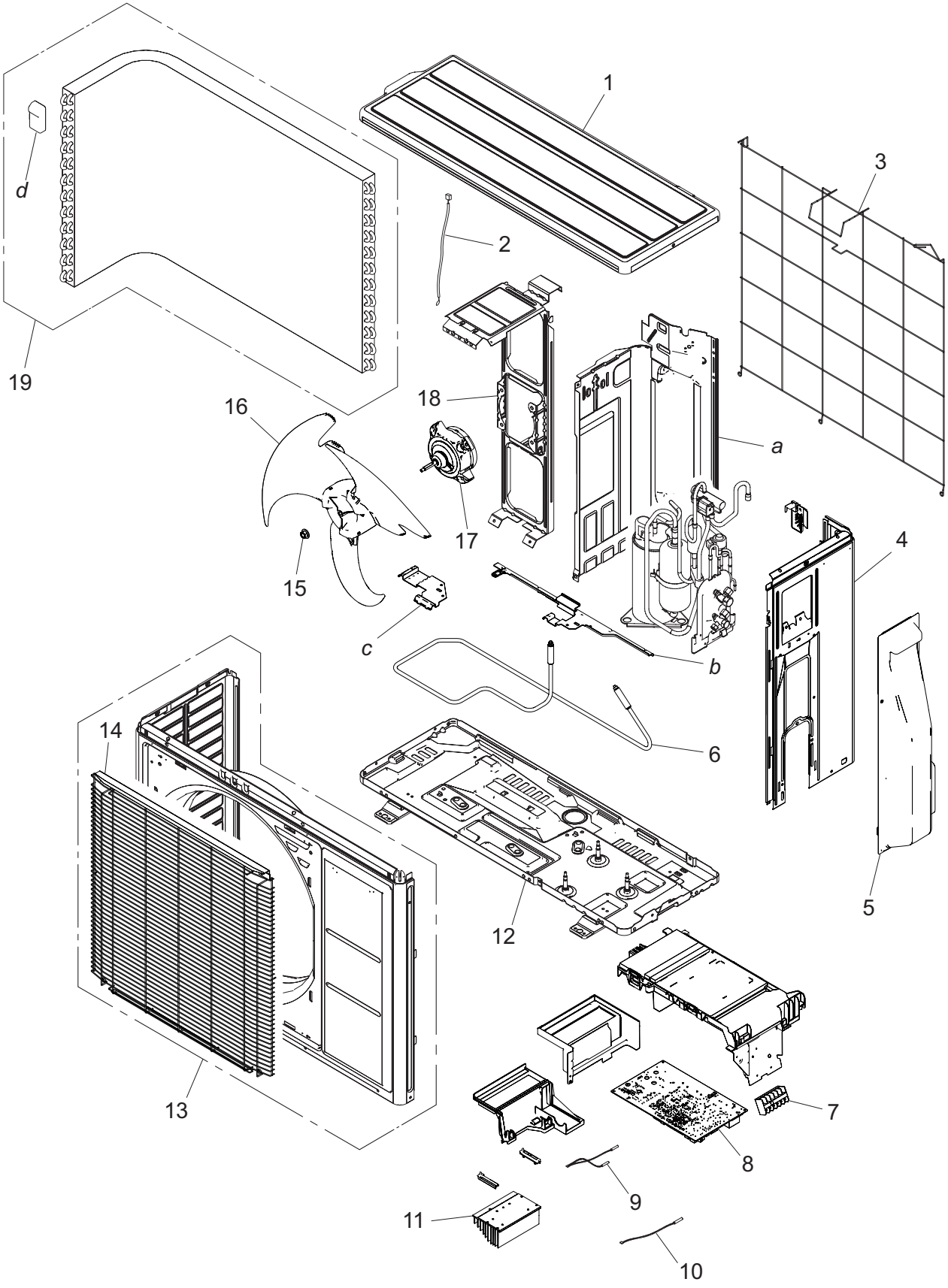
Item no.	Part no.	Part name	Service part
50	9323532175	Evaporator total assy	♦
51	9379930000	Room thermistor holder	♦
52	9901160059	Thermistor assy	♦
53	9900720094	Terminal 3P	♦
54	9712386006	Main PCB (09 model)	♦
	9712386013	Main PCB (12 model)	♦
	9712386020	Main PCB (14 model)	♦
55	9712392007	Display assy	♦
56	9712344006	Indicator PCB	♦
57	9316601000	Motor cover	♦
58	9316568006	Motor cover	♦
59	9603253073	DC fan motor	♦
60	9315024060	Crossflow fan assy	♦
61	9319171357	Casing total assy	♦
62	9900139230	Stepping motor (Left and right)	♦
63	9901011122	Stepping motor (Diffuser)	♦
64	9901011115	Stepping motor (Up and down)	♦
65	9309994003	Gear A	♦
66	9319172101	Casing assy	♦
67	9318743029	Pipe bracket	♦
68	9316904019	Drain hose assy	♦
69	9316177017	Drain cap	♦
70	9319232133	Diffuser assy	♦
71	9318849011	Horizontal louver	♦
72	9306628024	Bearing C assy	♦
73	9300506007	Wireless LAN adapter sub assy	♦
—	9901169021	Wire with connector (CN75 on Main PCB—WLAN adapter)	♦
a	—	Box shield	—
b	—	Control box	—
c	—	Control cover	—
d	—	Cover shield	—
e	—	Pyroelectric sensor	—
f	—	Casing	—
g	—	Panel case assy	—
h	—	Air cleaner assy	—

TECHNICAL DATA AND PARTS LIST

3. Outdoor unit parts list

3-1. Model: AOEH09KHCBN

■ Exterior parts and Chassis

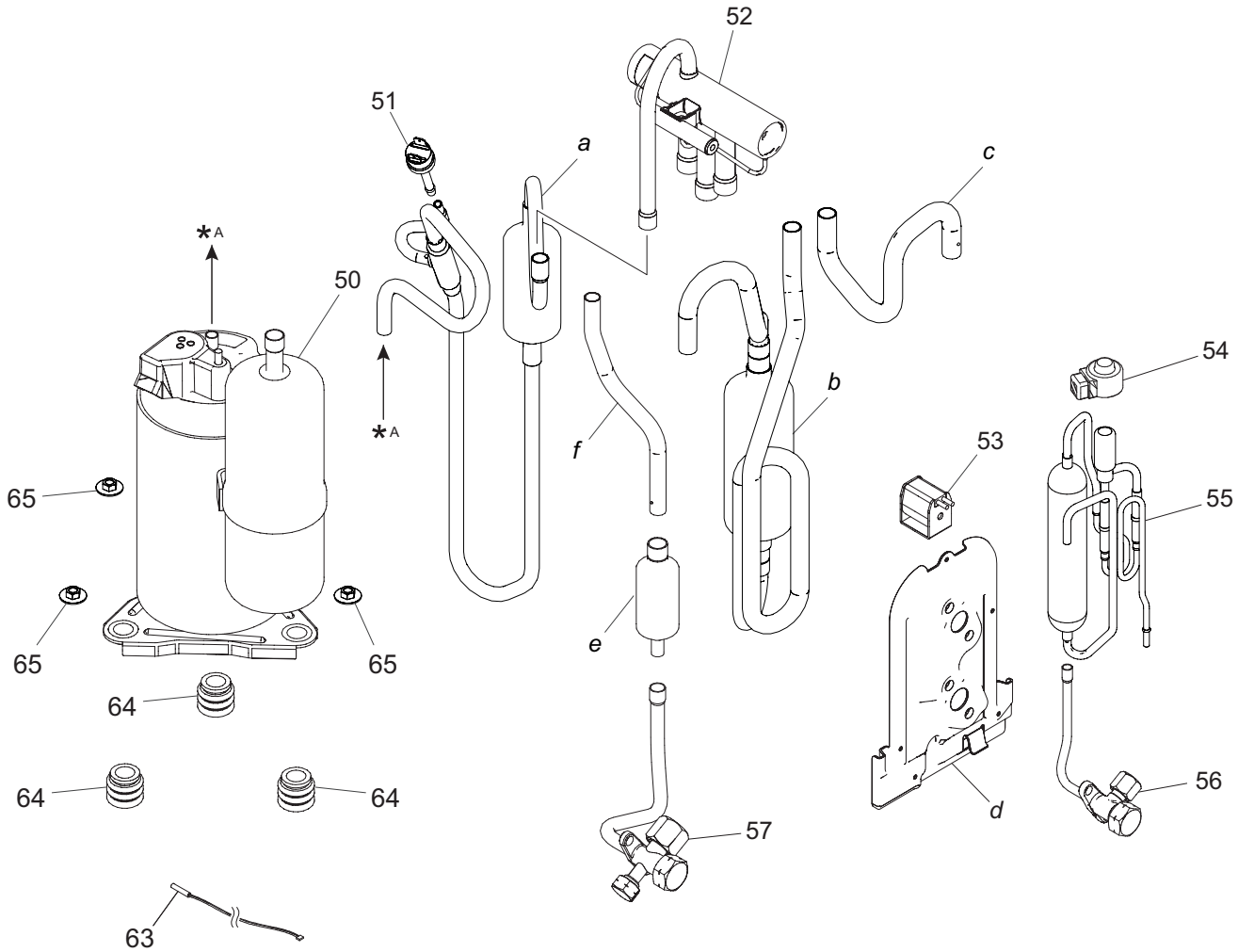


TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
1	9322556066	Top panel assy	♦
2	9900565060	Thermistor (Outdoor temp.)	♦
3	9377854025	Protective net	♦
4	9322552099	Cabinet right assy	♦
5	9322570024	Switch cover assy	♦
6	9901059025	Base pan heater	♦
7	9901070013	Terminal 6P	♦
8	9709688953	Main PCB	♦
9	9900935054	Thermistor assy	♦
10	9901054037	Thermistor (Heat exchanger)	♦
11	9322420053	Heat sink	♦
12	9323550032	Base assy	♦
13	9384851000	Front panel assy	♦
14	9384273017	Fan guard	♦
15	0700103070	Nut	♦
16	9322150004	Propeller fan	♦
17	9604091001	Fan motor	♦
18	9322553331	Motor bracket assy	♦
19	9323834835	Heat exchanger unit	♦
a	—	Separator	—
b	—	Heater holder A	—
c	—	Heater holder B	—
d	—	Hair pin cushion	—

TECHNICAL DATA AND PARTS LIST

■ Compressor



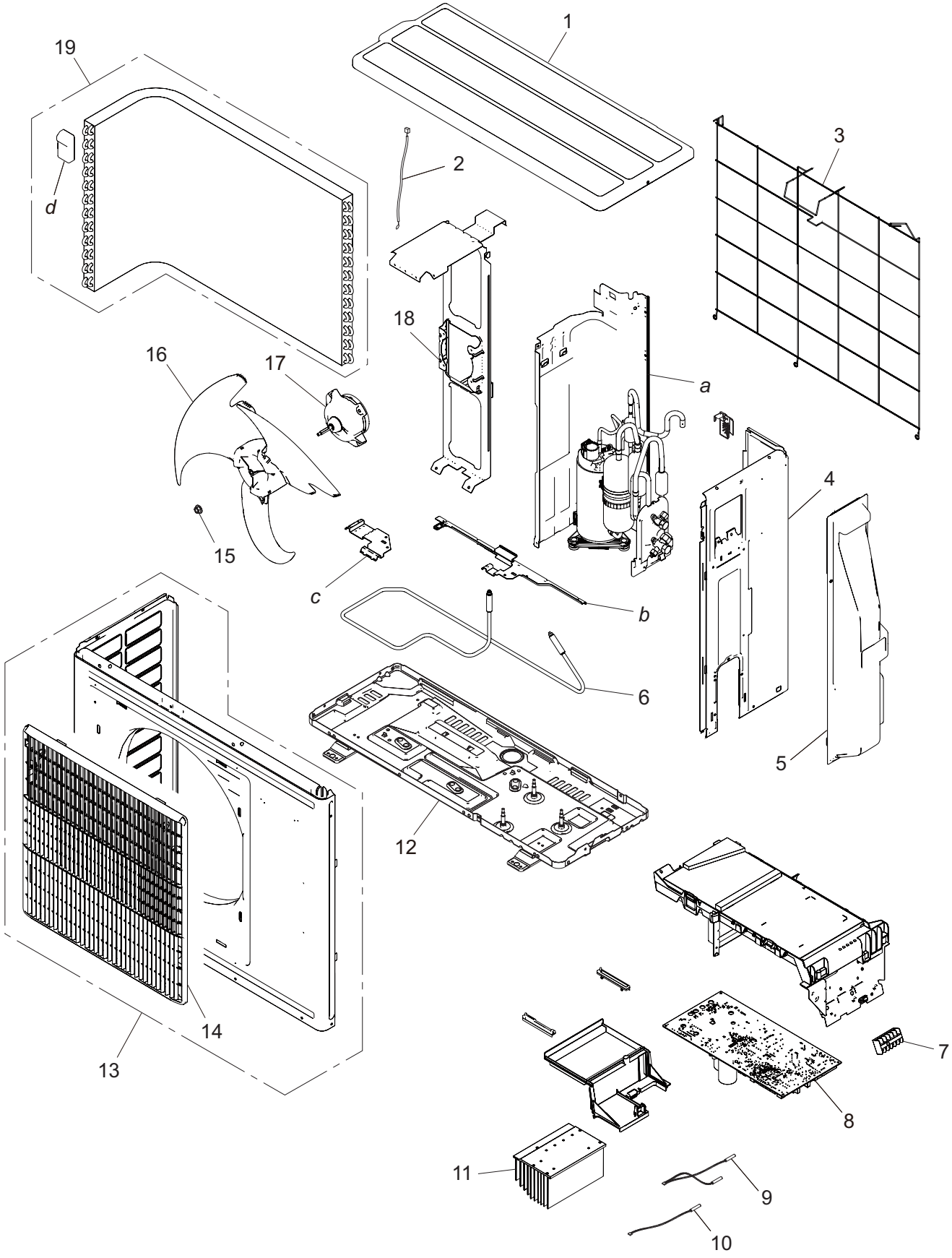
TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
50	9810523006	Compressor assy	♦
51	9900186029	Pressure switch	♦
52	9970210006	4-way valve	♦
53	9970110160	Solenoid	♦
54	9970222016	Expansion valve coil	♦
55	9322462015	Pulse motor valve assy	♦
56	9322474001	2-way valve assy	♦
57	9322850010	3-way valve assy	♦
58	9324014014	Sound insulator B	♦
59	9322847003	Sound insulator F	♦
60	9322501004	Sound insulator H	♦
61	9323045002	Sound insulator V	♦
62	9322824004	Sound insulator K	♦
63	9900985011	Thermistor (Compressor temp.)	♦
64	9322386007	Rubber cushion	♦
65	9313437008	Special nut (M8)	♦
—	9900934040	Wire with connector (Fuse holder) (P50 on Main PCB—Base pan heater)	♦
a	—	Discharge pipe sub assy	—
b	—	Suction pipe assy	—
c	—	Joint pipe (Condenser)	—
d	—	Valve bracket	—
e	—	Muffler	—
f	—	Joint pipe (3-way valve)	—

TECHNICAL DATA AND PARTS LIST

3-2. Models: AOEH12KHCBN and AOEH14KHCBN

■ Exterior parts and chassis

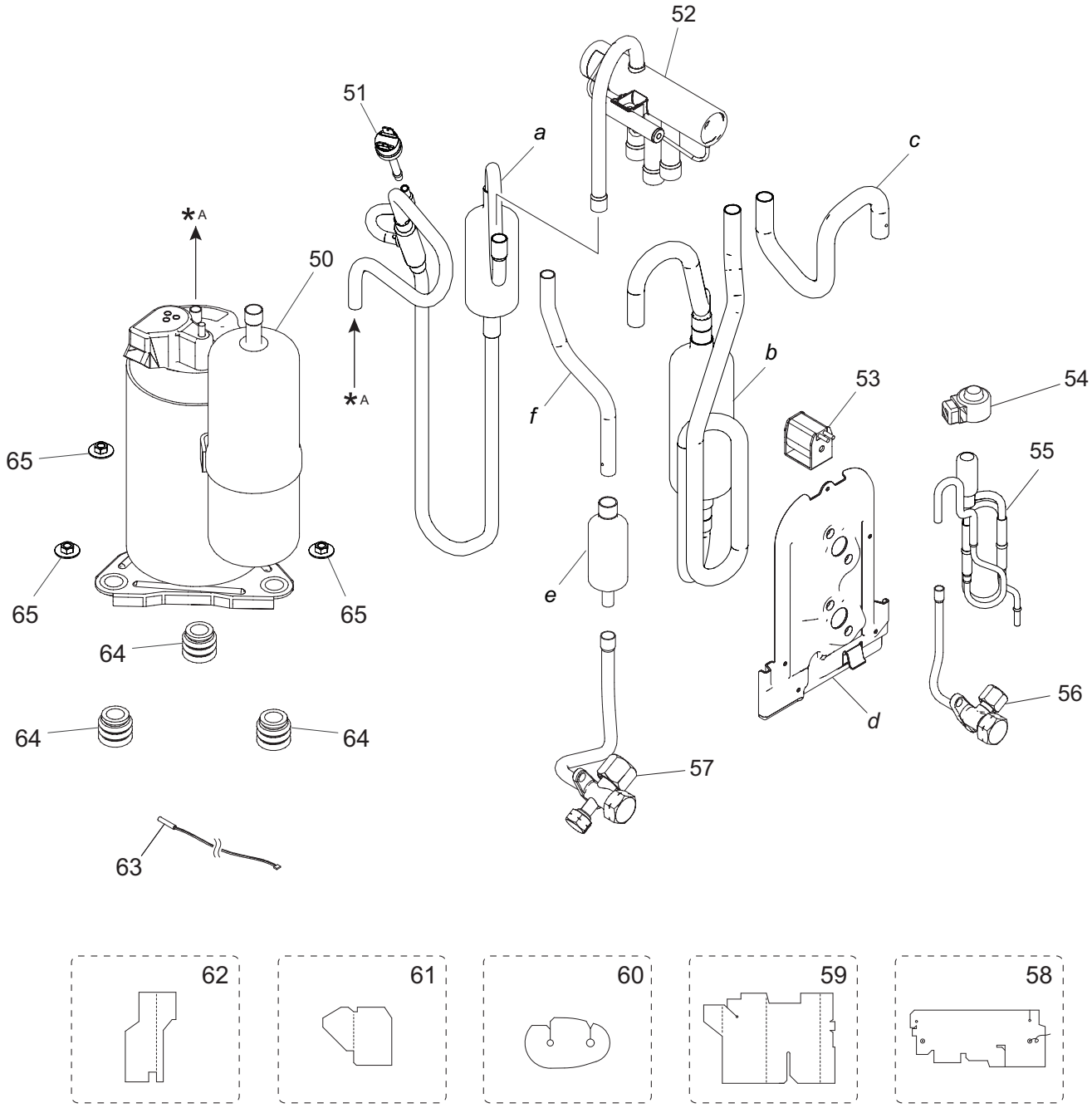


TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
1	9322556073	Top panel assy	♦
2	9900565060	Thermistor (Outdoor temp.) (12 model)	♦
	9900565138	Thermistor (Outdoor temp.) (14 model)	♦
3	9334053003	Protective net assy (12 model)	♦
	9334053010	Protective net assy (14 model)	♦
4	9322552334	Cabinet right assy	♦
5	9322570031	Switch cover assy	♦
6	9900350017	Base pan heater	♦
7	9901070013	Terminal 6P	♦
8	9709688960	Main PCB (12 model)	♦
	9709688977	Main PCB (14 model)	♦
9	9900935061	Thermistor assy	♦
10	9901054037	Thermistor (Heat exchanger)	♦
11	9322421067	Heat sink	♦
12	9323920002	Base assy	♦
13	9322555304	Front panel assy	♦
14	9384273017	Fan guard	♦
15	0700103070	Nut	♦
16	9322150004	Propeller fan	♦
17	9604091001	DC fan motor	♦
18	9322553218	Motor bracket assy (12 model)	♦
	9322553317	Motor bracket assy (14 model)	♦
19	9323834842	Heat exchanger unit (12 model)	♦
	9323834859	Heat exchanger unit (14 model)	♦
a	—	Separator	—
b	—	Heater holder A	—
c	—	Heater holder B	—
d	—	Hair pin cushion	—

TECHNICAL DATA AND PARTS LIST

■ Compressor



TECHNICAL DATA AND PARTS LIST

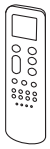
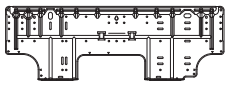
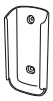
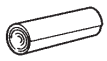
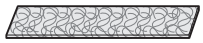
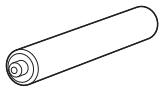
Item no.	Part no.	Part name	Service part
50	9810523006	Compressor (12 model)	♦
	9810521002	Compressor (14 model)	♦
51	9900186029	Pressure switch	♦
52	9970210006	4-way valve	♦
53	9970110160	Solenoid	♦
54	9970222016	Expansion valve coil	♦
55	9322462015	Pulse motor valve assy (09 and 12 models)	♦
	9322463029	Pulse motor valve assy (14 model)	♦
56	9322474001	2-way valve assy	♦
57	9322850010	3-way valve assy	♦
58	9324014014	Sound insulator B	♦
59	9322529008	Sound insulator F	♦
60	9322501004	Sound insulator H	♦
61	9323045002	Sound insulator V	♦
62	9322824004	Sound insulator K	♦
63	9900985011	Thermistor (Compressor temp.)	♦
64	9322386007	Rubber cushion	♦
65	9313437008	Special nut (M8)	♦
—	9900934040	Wire with connector (Fuse holder) (P50 on Main PCB—Base pan heater)	♦
—	9710542015	Wire assy (Pressure switch)	♦
a	—	Discharge pipe sub assy	—
b	—	Suction pipe assy	—
c	—	Joint pipe (Condenser)	—
d	—	Valve bracket	—
e	—	Muffler	—
f	—	Joint pipe (3-way valve)	—

TECHNICAL DATA AND PARTS LIST

4. Accessories

4-1. Indoor unit

■ Models: ASEH09KHCBN, ASEH12KHCBN, and ASEH14KHCBN

Part name	Exterior	Qty	Part name	Exterior	Qty
Operation manual		1	Self-tapping screw (Large)		5
Installation manual		1	Self-tapping screw (Small)		2
Remote controller		1	Wall hook bracket		1
Remote controller holder		1	Cloth tape		1
Air cleaning filter		2	Battery		2
Filter holder		2			

4-2. Outdoor unit

■ Models: AOEH09KHCBN, AOEH12KHCBN, and AOEH14KHCBN

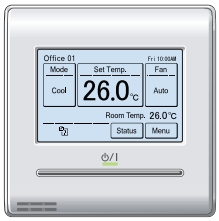
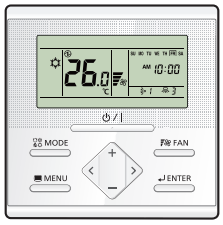
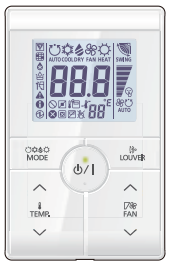
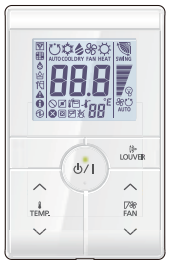
Part name	Exterior	Qty	Part name	Exterior	Qty
Installation manual		1			

TECHNICAL DATA AND PARTS LIST

5. Optional parts

5-1. Indoor unit

■ Controllers

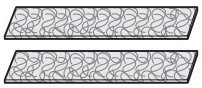
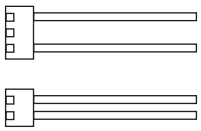
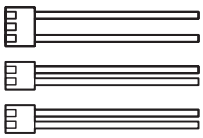
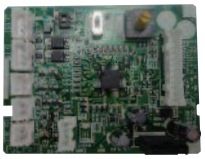
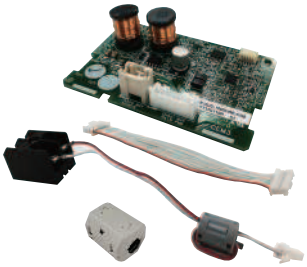
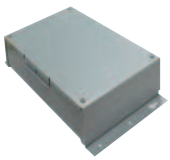
Exterior	Part name	Model name	Summary
	Wired Remote Controller	UTY-RNRYZ*	Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room. Wire type: Non-polar 2-wire
	Wired Remote Controller	UTY-RLRY	High visibility and easy operation. Room temperature can be accurately controlled using the thermo sensor. Wire type: Non-polar 2-wire
	Compact Wired Remote Controller	UTY-RCRYZ1	Compact body and easy operation. Room temperature can be accurately controlled using the thermo sensor. Wire type: Non-polar 2-wire
	Simple Remote Controller	UTY-RSRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode. Wire type: Non-polar 2-wire
	Simple Remote Controller	UTY-RHRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, and temperature setting. Wire type: Non-polar 2-wire

NOTES:

- Available functions may differ by the remote controller. For details, refer to the operation manual.
- When using the group controlling system of the Wired Remote Controller, using WLAN Adapter is prohibited.

TECHNICAL DATA AND PARTS LIST

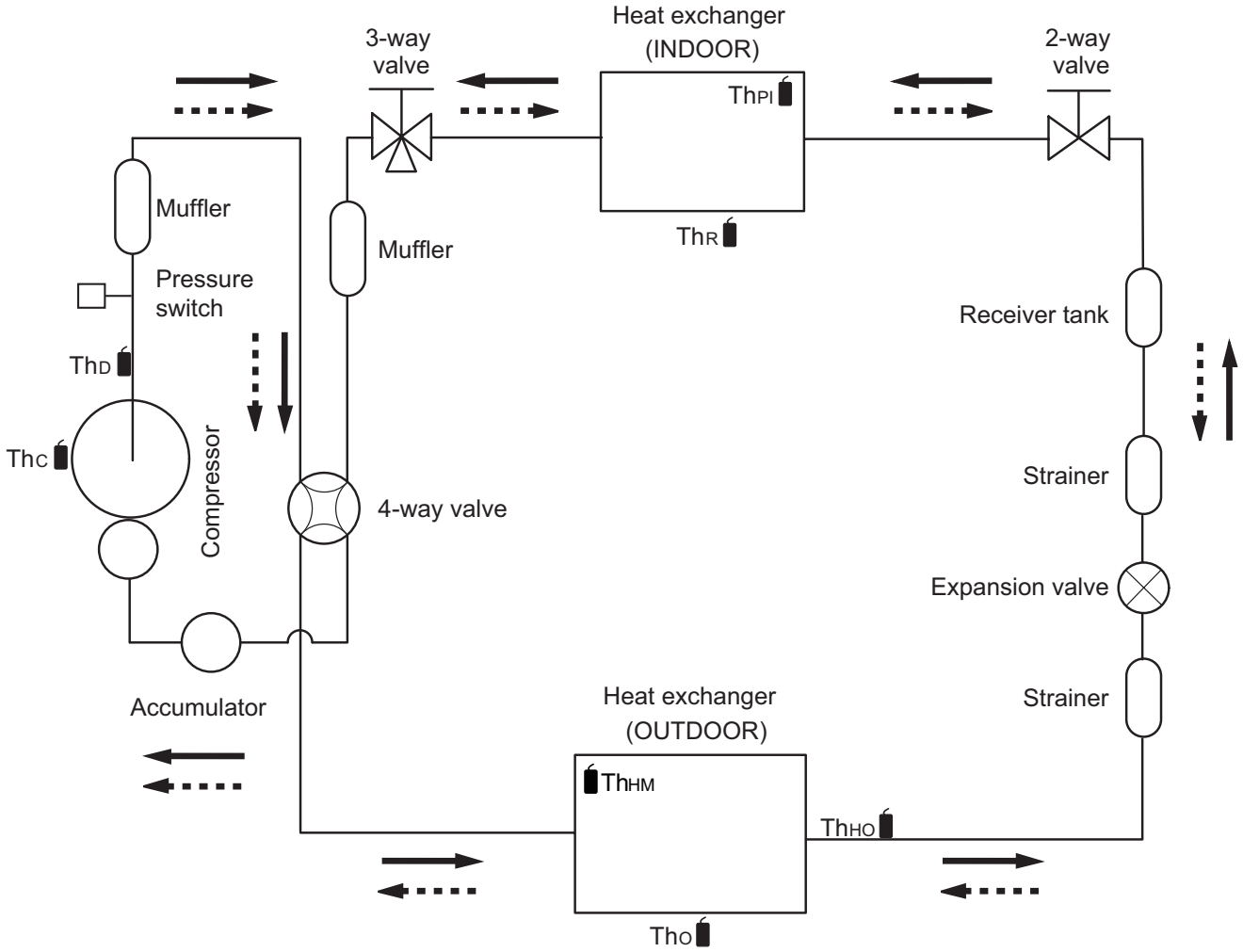
■ Others

Exterior	Part name	Model name	Summary
	Air Cleaning Filter	UTR-FA16-5	Air Cleaning Filter can be mounted to the indoor unit.
	External Connect Kit	UTY-XWZX	Use to connect with various peripheral devices and air conditioner PCB. Connecting point: CN46 and CN47 on Main PCB
	External Connect Kit	UTY-XWZXZ5	Required when external device is connected. Connecting point: CN46 and CN47 on Main PCB
	External Input and Output PCB	UTY-XCSXZ3	Use to connect with external devices and air conditioner PCB. Optional External Connect Kit is necessary for installation. Connecting point: CN65 on Main PCB
	Communication Kit	UTY-TWRXZ4	Use to connect Non-polar 2-core wired remote controller.
	Modbus Converter	UTY-VMSX	For connection between indoor unit with UART interface and a Modbus open network. Connecting point: CN65 on Main PCB
	KNX Convertor	UTY-VKSX	For connection between indoor unit with UART interface and a KNX open network. Connecting point: CN65 on Main PCB
	Network Converter	UTY-VTGX	This converter is required when connecting single split system to VRF network system. Connecting point: CN13 via Communication Kit
	Network Converter (AC power supply)	UTY-VTGXV	This converter is required when connecting single split system to VRF network system. Connecting point: CN13 via Communication Kit
	External Switch Controller	UTY-TERX	Air conditioner switching can be controlled by connecting other external sensor switches. Connecting point: CN13 via Communication Kit

TECHNICAL DATA AND PARTS LIST

6. Refrigerant system diagrams

6-1. Models: AOEH09KHCBN and AOEH12KHCBN



ThC : Thermistor (Compressor temperature)

ThD : Thermistor (Discharge temperature)

ThHM: Thermistor (Heat exchanger middle temperature)

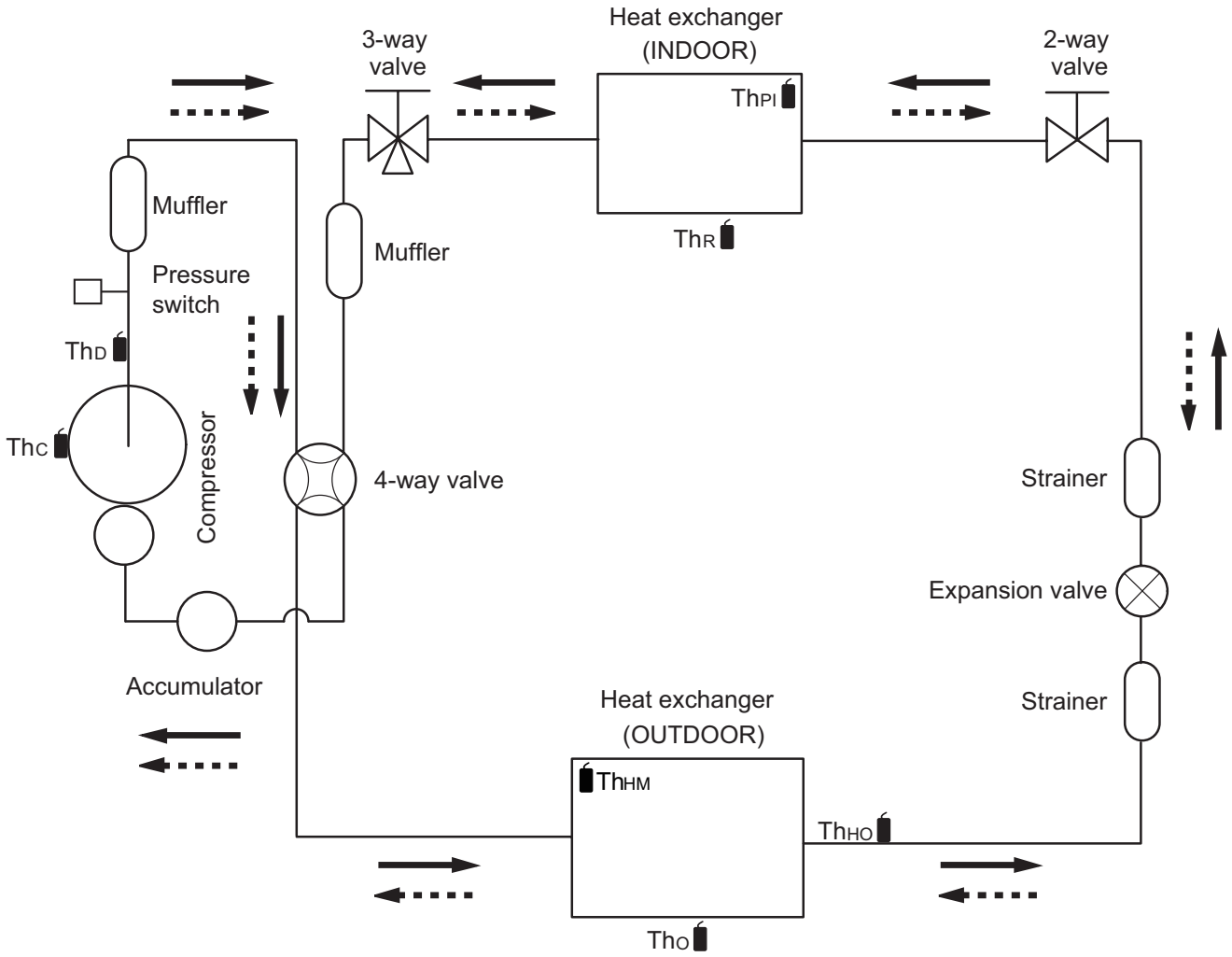
ThO : Thermistor (Outdoor temperature)

ThHO: Thermistor (Heat exchanger out temperature)

ThPI : Thermistor (Pipe temperature)

ThR : Thermistor (Room temperature)

6-2. Model: AOEH14KHCBN



ThC : Thermistor (Compressor temperature)

ThD : Thermistor (Discharge temperature)

ThHM: Thermistor (Heat exchanger middle temperature)

ThO : Thermistor (Outdoor temperature)

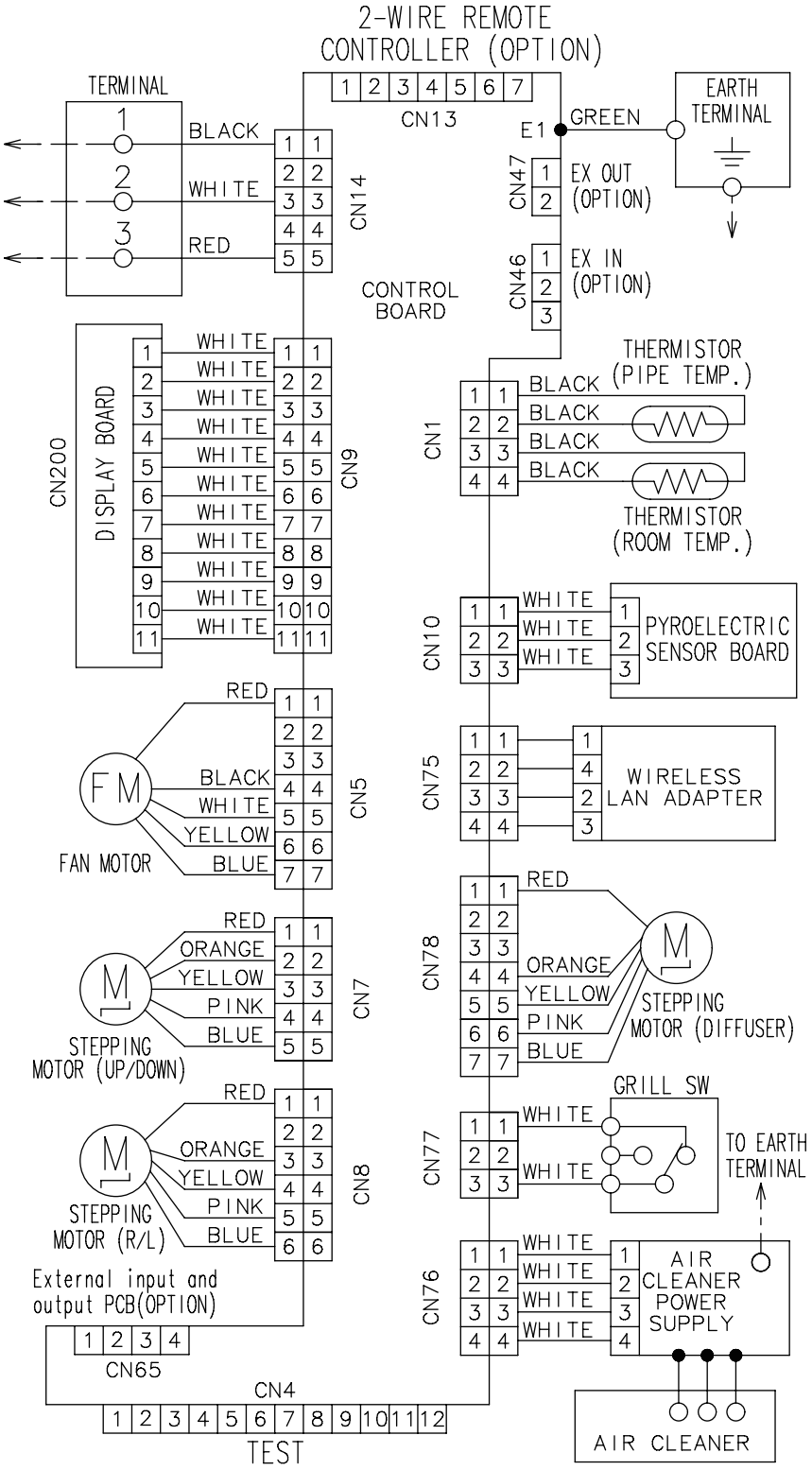
ThHO: Thermistor (Heat exchanger out temperature)

ThPI : Thermistor (Pipe temperature)

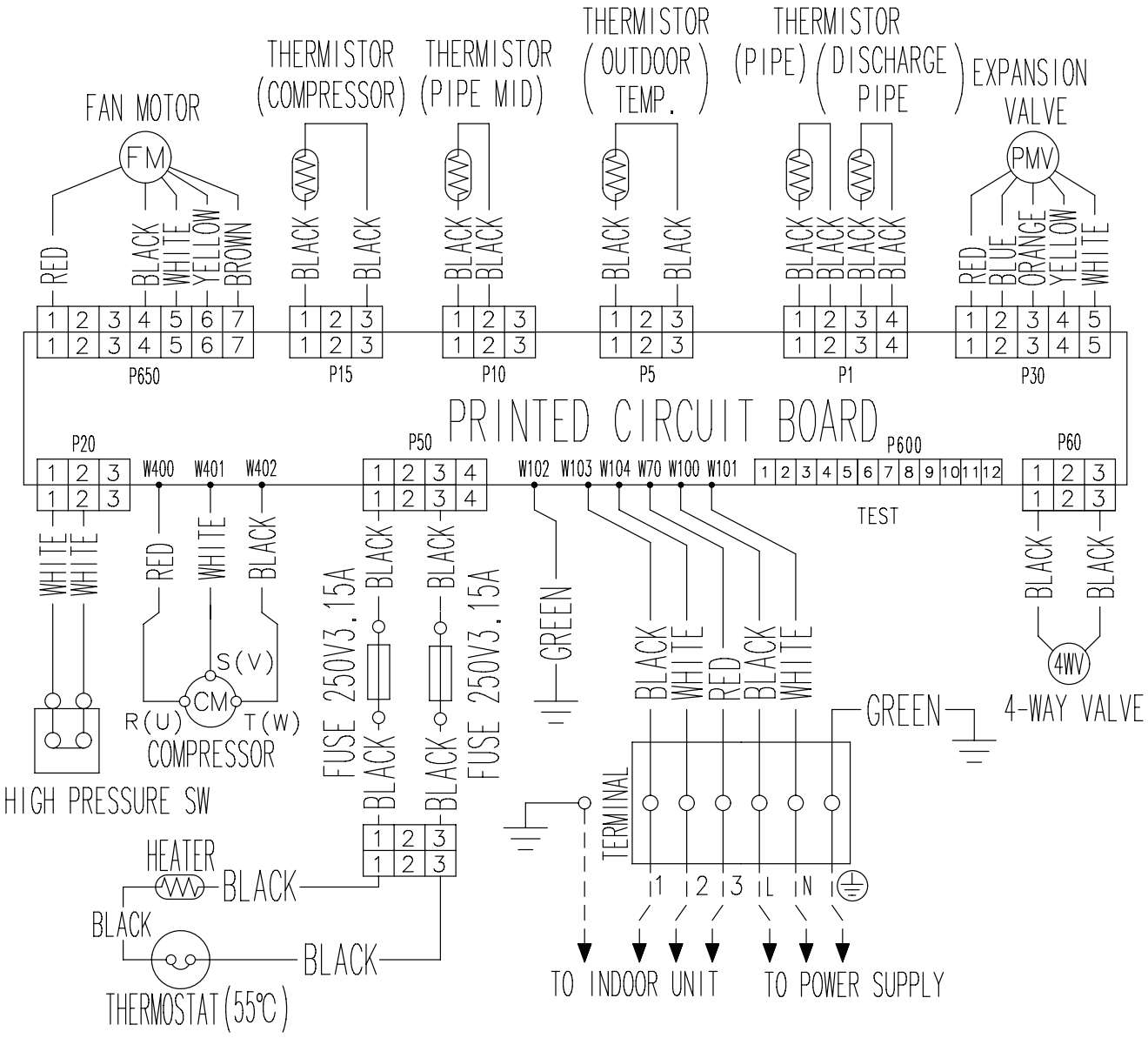
ThR : Thermistor (Room temperature)

7. Wiring diagrams

7-1. Models: ASEH09KHCBN, ASEH12KHCBN, and ASEH14KHCBN



7-2. Models: AOEH09KHCBN, AOEH12KHCBN, and AOEH14KHCBN



8. PC board diagrams

8-1. Models: ASEH09KHCBN, ASEH12KHCBN, and ASEH14KHCBN

CONTROL UNIT
09 model: EZ-0222BHSE
12 model: EZ-0222CHSE
14 model: EZ-0222DHSE

MAIN PCB
K22PK-2200HSE-C1

TERMINAL
L
N
SERIAL
OUTDOOR UNIT POWER SUPPLY
AWG22 BLACK
AWG22 WHITE
AWG22 RED
CN14
AC POWER
B3 (5.0)B-XASK-1-A (LF) (SN)
WHITE
EMI FILTER
ZC7KT 14X8X4
3 TURNS
URITE ELECTRONICS
AWG22 GREEN
E1
B
EARTH
AWG16 GREEN

INDICATOR PCB
K22PU-2200HSE-D0
CN200
DISPLAY
S11B-PASK-2 (LF) (SN)
WHITE
DC 5 V
DC 12 V
AWG28 WHITE
CN9
INDICATOR PCB
B11B-PASK-1 (LF) (SN)
WHITE
GND_B4

CN5 DC Fan Motor

Pin No	Terminal code	Function of terminal	Lead wire color
1	Vm	Motor power voltage input	Red
2	——	——	——
3	——	——	——
4	GND	GND	Black
5	Vcc	Control power voltage input	White
6	Vsp	Speed control voltage input	Yellow
7	FG	Revolution pulse output	Blue

DC FAN MOTOR
FM
RED
BLACK
WHITE
YELLOW
BLUE
DC 340 V
DC 15 V
CN5
FAN MOTOR
B5 (7-2.3)B-XASK-1-A (LF)SN
WHITE
GND_A2

HORIZONTAL LOUVER
M
RED
ORANGE
YELLOW
PINK
BLUE
DC 12 V
CN7
HORIZONTAL LOUVER
B05B-PLISK-1 (LF) (SN)
WHITE

VERTICAL LOUVER
M
CN8
VERTICAL LOUVER
B06B-PLIRK-1 (LF) (SN)
RED

DIFFUSER
M
CN78
DIFFUSER
B07B-PLISK-1 (LF) (SN)
WHITE

HUMAN SENSOR
PYROELECTRIC SENSOR
CN1
B03B-PLISK-1
WHITE
AWG26 WHITE
DC 5 V-2
CN10
HUMAN SENSOR
B03B-PLISK-1 (LF) (SN)
WHITE
GND_B4

PLASMA CLEAN
WHITE
PINK
GREEN
PLASMA POWER PWB
B04B-XASK-1
(LF) (SN)
AWG20 GREEN
AWG28 WHITE
DC 12 V-2
CN76
PLASMA
B04B-PARK-1 (LF) (SN)
RED
GND_B2

CN47
EX OUT
B2B-XH-AM (LF) (SN)
WHITE
DC 12 V

CN46
EX IN
B3B-XH-AM (LF) (SN)
WHITE
DC 5 V

LIMIT SWITCH
AWG28 WHITE
DC 12 V-2
CN77
LIMIT SWITCH
B03B-PASK-1 (LF) (SN)
WHITE

OPTION UNIT (2-WIRE REMOTE CONTROLLER)

CN13
COMUNICATION
B07B-PASK-1 (LF) (SN)
WHITE
DC 5 V
DC 12 V
GND_B2
AWG26 RED
AWG26 WHITE
CN301
COMMUNICATION
B07B-PASK-1 (LF) (SN)
WHITE
CN300
REMOTE
B03B-XNISK-A-1 (LF) (SN)
WHITE
2-WIRE
COMMUNICATION PCB
K16JS-1600HSE-CA0
CN1
FRASH
SM05B-SRSS-TB
WHITE
AWG22 RED
AWG22 WHITE
EMI FILTER
ZCAT1518-0730
2 TURNS
REMOTE CONTROLLER (2-WIRE)

CN1
THERMISTOR
B04B-PLIRK-1 (LF) (SN)
RED
DC 5 V-2
BLACK
THERMISTOR (PIPE TEMP.)
THERMISTOR (ROOM TEMP.)

CN1 Thermistor Characteristics.

Thermistor \ Temperature	0°C	20°C	30°C
Thermistor (Pipe temp.)	176.03 kΩ 1.10 V	62.91 kΩ 2.21 V	39.57 kΩ 2.79 V
Thermistor (Room temp.)	33.62 kΩ 1.15 V	12.54 kΩ 2.22 V	8.04 kΩ 2.77 V

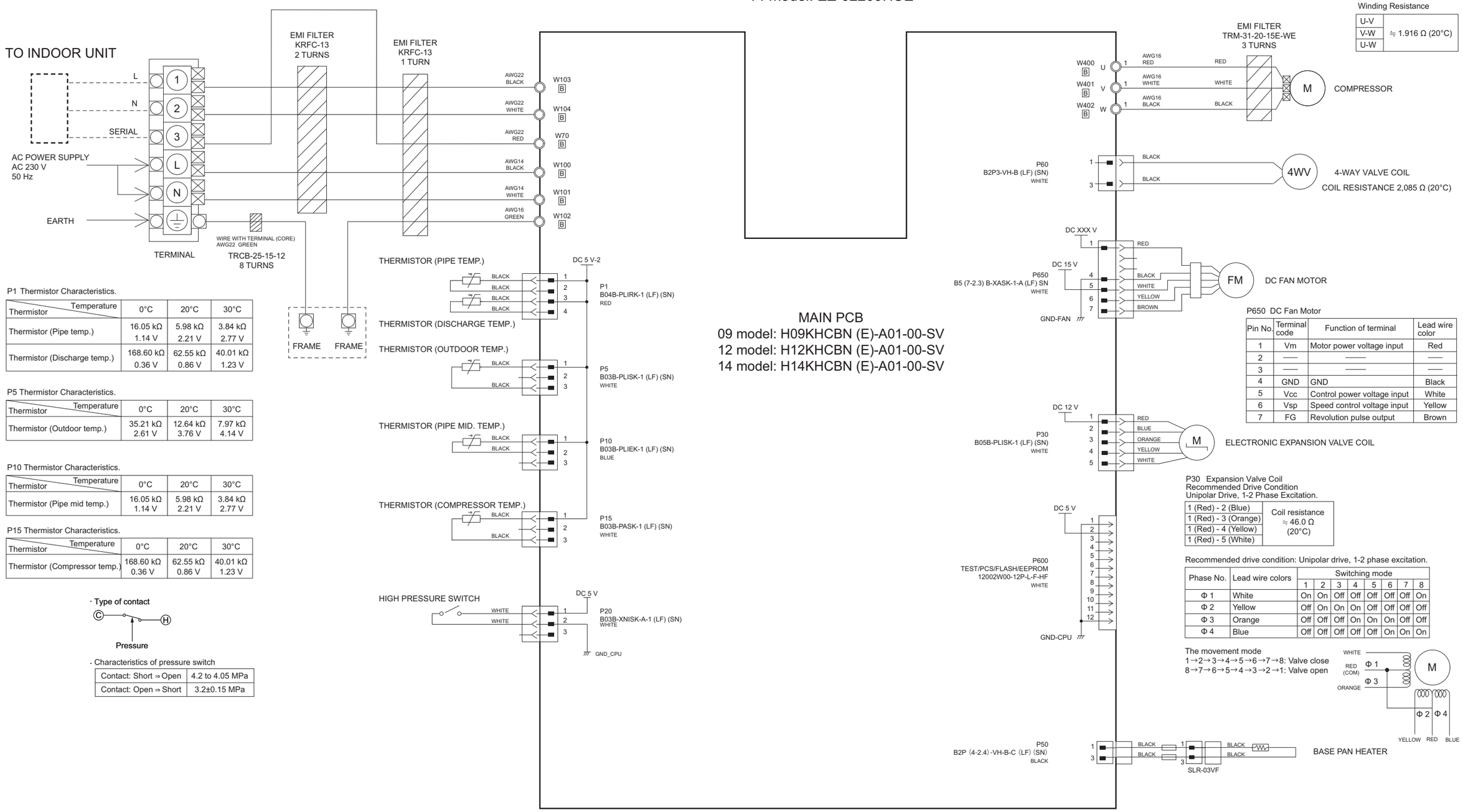
CN4
TEST/PCS/FLASH/EEPROM
B12B-PASK-1 (LF) (SN)
WHITE
DC 5 V
GND_B4

WLAN ADAPTER
CN75
EX COM1
B04B-PAKK-1 (LF) (SN)
BLACK
DC12 V-3
GND_B2
AWG28 RED
AWG28 BLACK
AWG28 WHITE
AWG28 GREEN
WLAN ADAPTER
(4 BLACK)
(3 GREEN)
(2 WHITE)
(1 RED)
J2
AP-WH3E-B
WHITE

OPTION UNIT (EXTERNAL INPUT AND OUTPUT)
CN65
EZ COM2
B04B-PASK-1 (LF) (SN)
WHITE
DC 12 V
GND_B2
AWG26 GRAY
CN308
MAIN COM.
B04B-PASK-1 (LF) (SN)
WHITE
CN309
FLASH
B12B-PASK-1 (LF) (SN)
WHITE
EXTERNAL INPUT AND OUTPUT PCB
K14YM-1500HSE-CA0
CN310
EX OUT1
B2B-XH-AM
(LF) (SN)
WHITE
CN311
EX OUT2
B2B-XH-AM
(LF) (SN)
WHITE
CN312
EX OUT3
B2B-XH-AM
(LF) (SN)
WHITE
CN313
EX IN1
B3B-XH-AM
(LF) (SN)
WHITE
CN314
EX IN2
B3B-XH-AM
(LF) (SN)
WHITE

8-2. Models: AOEH09KHCBN, AOEH12KHCBN, and AOEH14KHCBN

CONTROL UNIT
09 model: EZ-02207HUE
12 model: EZ-02208HUE
14 model: EZ-02209HUE



Winding Resistance

U-V	≒ 1.916 Ω (20°C)
V-W	
U-W	

P650 DC Fan Motor

Pin No.	Terminal code	Function of terminal	Lead wire color
1	Vm	Motor power voltage input	Red
2	——	——	——
3	——	——	——
4	GND	GND	Black
5	Vcc	Control power voltage input	White
6	Vsp	Speed control voltage input	Yellow
7	FG	Revolution pulse output	Brown

P30 Expansion Valve Coil
Recommended Drive Condition
Unipolar Drive, 1-2 Phase Excitation.

1 (Red) - 2 (Blue)	Coil resistance ≒ 46.0 Ω (20°C)
1 (Red) - 3 (Orange)	
1 (Red) - 4 (Yellow)	
1 (Red) - 5 (White)	

Recommended drive condition: Unipolar drive, 1-2 phase excitation.

Phase No.	Lead wire colors	Switching mode							
		1	2	3	4	5	6	7	8
Φ 1	White	On	On	Off	Off	Off	Off	Off	On
Φ 2	Yellow	Off	On	On	On	Off	Off	Off	Off
Φ 3	Orange	Off	Off	Off	On	On	On	Off	Off
Φ 4	Blue	Off	Off	Off	Off	Off	On	On	On

The movement mode
1→2→3→4→5→6→7→8: Valve close
8→7→6→5→4→3→2→1: Valve open

P1 Thermistor Characteristics.

Thermistor \ Temperature	0°C	20°C	30°C
Thermistor (Pipe temp.)	16.05 kΩ 1.14 V	5.98 kΩ 2.21 V	3.84 kΩ 2.77 V
Thermistor (Discharge temp.)	168.60 kΩ 0.36 V	62.55 kΩ 0.86 V	40.01 kΩ 1.23 V

P5 Thermistor Characteristics.

Thermistor \ Temperature	0°C	20°C	30°C
Thermistor (Outdoor temp.)	35.21 kΩ 2.61 V	12.64 kΩ 3.76 V	7.97 kΩ 4.14 V

P10 Thermistor Characteristics.

Thermistor \ Temperature	0°C	20°C	30°C
Thermistor (Pipe mid temp.)	16.05 kΩ 1.14 V	5.98 kΩ 2.21 V	3.84 kΩ 2.77 V

P15 Thermistor Characteristics.

Thermistor \ Temperature	0°C	20°C	30°C
Thermistor (Compressor temp.)	168.60 kΩ 0.36 V	62.55 kΩ 0.86 V	40.01 kΩ 1.23 V

· Type of contact

· Characteristics of pressure switch

Contact: Short ⇒ Open	4.2 to 4.05 MPa
Contact: Open ⇒ Short	3.2±0.15 MPa

REFRIGERANT R32
INVERTER

3. TROUBLESHOOTING

CONTENTS

3. TROUBLESHOOTING

CONTENTS (continued)

TROUBLESHOOTING

1. Error code

When a problem occurs in the system or the connected device, the error content is notified by displaying the code.

NOTE: This function is only available in a system with indoor or IR receiver units equipped with indicator lamps to show the error content.

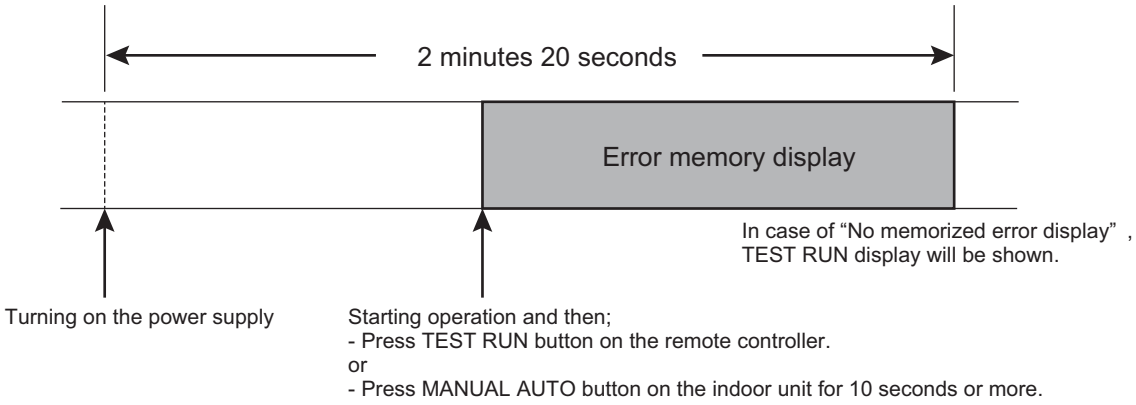
Errors, once displayed, will be automatically stored in the PC board of the indoor unit. Even if the power is disconnected, the memory containing the error history will not be erased.

If another error occurs later, the stored error memory will be updated automatically and replaced with the new one. (Previous error will be erased.)

1-1. How to check the error memory

When an error occurs, the operation lamp (Green) and the timer lamp (Orange) indicate the error content by blinking. To check the error memory, follow the procedures below.

1. Stop the operation of the air conditioner, and then disconnect the power supply.
2. Reconnect the power supply.
3. In one of the following two methods, the memorized error is only displayed during the “3 minutes ST”* state period.
   - Start the operation and then press the TEST RUN button on the remote controller.
   - Press the MANUAL AUTO button on the indoor unit for 10 seconds or more.



*: The “3 minutes ST” period lasts 2 minutes and 20 seconds after turning on the power supply.

1-2. How to erase the error memory

The error memory can be erased in one of the following two methods.

- Manual erase: Pressing the MANUAL AUTO button on the indoor unit while the “Error memory display” is being shown. (Short beep emits for about 3 seconds.)

- Automatic erase: After continuing the normal operation of the air conditioner without error for 2 hours or longer after displaying the error memory as described in How to check the error memory. (Except FAN operation mode.)

1-3. Error code table (Indoor unit and wired remote controller)

The operation, timer, and economy indicators operate according to the error contents.
For confirmation of the error contents, refer the flashing pattern as follows.

Error contents	Indoor unit display			Wired remote controller display
	Operation [I] (Green)	Timer [⏲] (Orange)	Economy [🐷] (Green)	
E: 11. Serial communication error (Serial reverse transfer error) (Outdoor unit)	1 times	1 times	Continuous	11
E: 11. Serial communication error (Serial forward transfer error) (Indoor unit)	1 times	1 times	Continuous	11
E: 12. Wired remote controller communication error (Indoor unit)	1 times	2 times	Continuous	12
E: 18. External communication error (Indoor unit)	1 times	8 times	Continuous	18
E: 22. Indoor unit capacity error (Indoor unit)	2 times	2 times	Continuous	22
E: 23. Combination error (Outdoor unit)	2 times	3 times	Continuous	23
E: 26. Address setting error in wired remote controller (Indoor unit)	2 times	6 times	Continuous	26
E: 29. Connected unit number error (Indoor unit)	2 times	9 times	Continuous	29
E: 32. Indoor unit main PCB error (Indoor unit)	3 times	2 times	Continuous	32
E: 33. Indoor unit motor electricity consumption detection error (Indoor unit)	3 times	3 times	Continuous	33
E: 35. MANUAL AUTO button error (Indoor unit)	3 times	5 times	Continuous	35
E: 39. Indoor unit power supply error for fan motor (Indoor unit)	3 times	9 times	Continuous	39
E: 3A. Indoor unit communication circuit (wired remote controller) error	3 times	10 times	Continuous	3A
E: 41. Room temperature sensor error (Indoor unit)	4 times	1 times	Continuous	41
E: 42. Indoor unit heat exchanger sensor error (Indoor unit)	4 times	2 times	Continuous	42
E: 44. Human sensor error	4 times	4 times	Continuous	44
E: 51. Indoor unit fan motor error (Indoor unit)	5 times	1 times	Continuous	51
E: 62. Outdoor unit main PCB error (Outdoor unit)	6 times	2 times	Continuous	62
E: 63. Inverter error (Outdoor unit)	6 times	3 times	Continuous	63
E: 64. PFC circuit error (Outdoor unit)	6 times	4 times	Continuous	64
E: 65. IPM error (Outdoor unit)	6 times	5 times	Continuous	65
E: 71. Discharge thermistor error (Outdoor unit)	7 times	1 times	Continuous	71
E: 72. Compressor thermistor error (Outdoor unit)	7 times	2 times	Continuous	72
E: 73. Outdoor unit heat exchanger thermistor error (Outdoor unit)	7 times	3 times	Continuous	73
E: 74. Outdoor temperature thermistor error (Outdoor unit)	7 times	4 times	Continuous	74
E: 84. Current sensor error (Outdoor unit)	8 times	4 times	Continuous	84
E: 86. High pressure switch error (Outdoor unit)	8 times	6 times	Continuous	86
E: 94. Trip detection (Outdoor unit)	9 times	4 times	Continuous	94
E: 95. Compressor motor control error (Outdoor unit)	9 times	5 times	Continuous	95

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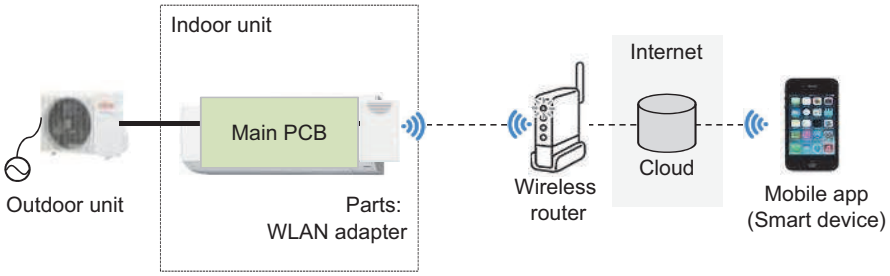
Error contents	Indoor unit display			Wired remote controller display
	Operation [I] (Green)	Timer [⏲] (Orange)	Economy [🐷] (Green)	
E: 97. Outdoor unit fan motor error (Outdoor unit)	9 times	7 times	Continuous	97
E: 99. 4-way valve error (Outdoor unit)	9 times	9 times	Continuous	99
E: A1. Discharge temperature error (Outdoor unit)	10 times	1 times	Continuous	A1
E: A3. Compressor temperature error (Outdoor unit)	10 times	3 times	Continuous	A3

TROUBLESHOOTING

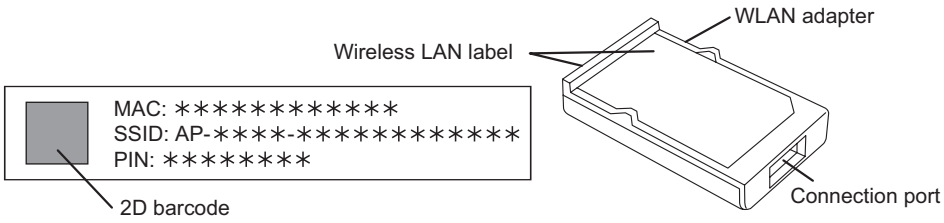
1-4. Error code table (Wireless LAN indicator)

TROUBLESHOOTING

- Wireless LAN control system diagram example



- Name of parts



- Wireless LAN indicator lamps
  For confirmation of the error contents, refer to the following flashing patterns.
  Wireless LAN indicator lamp (orange) on the indoor unit operate according to the error contents.

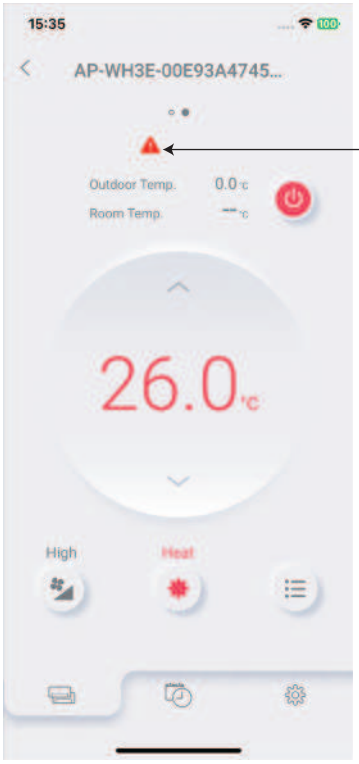
Error contents	Wireless LAN indicator lamp (orange)	Error code
E: 18. External communication error between indoor unit and wireless LAN adapter	Flashing slowly	18
Network communication error between wireless LAN router and wireless LAN adapter	Flashing slowly	No error
E: 18. Communication error	Flashing slowly	18
E: 18. Wireless LAN adapter non-energized	Off	18

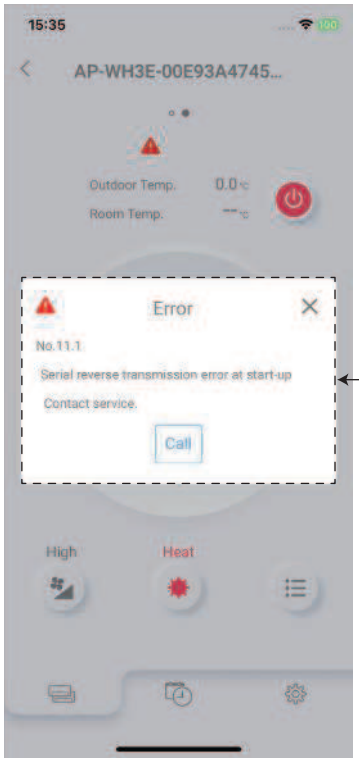
Flashing slowly: Repeating 7 seconds on/2 seconds off

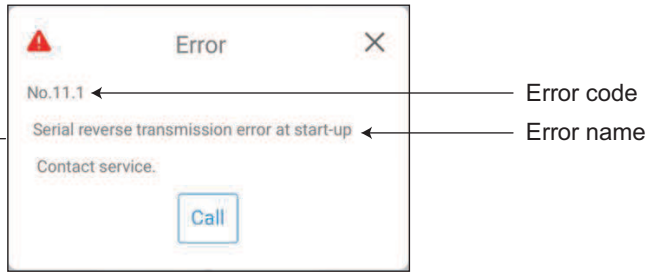
1-5. How to check the error code on Mobile app

If there is an abnormality on the air conditioning, refer to ⚠ as follows.

When the ⚠ (error button) on the home screen is tapped, error code and error name is displayed.







TROUBLESHOOTING

1-6. Error code table (Mobile app)

Error message	Error contents	Error code
Serial reverse transmission error at start-up	E: 11. Serial communication error (Serial reverse transfer error) (Outdoor unit)	11.1
Serial reverse transmission error during operation		11.2
Serial forward transmission error at start-up	E: 11. Serial communication error (Serial forward transfer error) (Indoor unit)	11.3
Serial forward transmission error during operation		11.4
Wired remote controller communication error	E: 12. Wired remote controller communication error (Indoor unit)	12.1
External communication 1 error	E: 18. External communication error (Indoor unit)	18.1
Indoor unit capacity error	E: 22. Indoor unit capacity error (Indoor unit)	22.1
Connection forbidden (series error)	E: 23. Combination error (Outdoor unit)	23.1
Unit combination error		23.2
Address duplication in wired remote controller system	E: 26. Address setting error in wired remote controller (Indoor unit)	26.4
Address setting error in wired remote controller system		26.5
Connection unit number error (indoor unit in wired remote controller system)	E: 29. Connected unit number error (Indoor unit)	29.1
Indoor unit PCB model information error	E: 32. Indoor unit main PCB error (Indoor unit)	32.1
Constant correction control error		32.6
Indoor unit motor electricity consumption detection microcomputers error	E: 33. Indoor unit motor electricity consumption detection error (Indoor unit)	33.2
Indoor unit manual auto switch error	E: 35. MANUAL AUTO button error (Indoor unit)	35.1
Indoor unit power supply error for fan motor 1	E: 39. Indoor unit power supply error for fan motor (Indoor unit)	39.1
Indoor unit communication circuit (wired remote controller) microcomputers communication error	E: 3A. Indoor unit communication circuit (wired remote controller) error	3A.1
Indoor unit suction air temp. thermistor error	E: 41. Room temperature sensor error (Indoor unit)	41.1
Indoor unit heat ex. middle temp. thermistor error	E: 42. Indoor unit heat exchanger sensor error (Indoor unit)	42.2
Human detection sensor error	E: 44. Human sensor error	44.1
Indoor unit fan motor 1 lock error	E: 51. Indoor unit fan motor error (Indoor unit)	51.1
Indoor unit fan motor 1 rotation speed error		51.2
Outdoor unit PCB model information error	E: 62. Outdoor unit main PCB error (Outdoor unit)	62.1
Outdoor unit PCB microcomputer communication error		62.2
Outdoor unit inverter error	E: 63. Inverter error (Outdoor unit)	63.1
Outdoor unit abnormal voltage error (permanent stop)	E: 64. PFC circuit error (Outdoor unit)	64.1
Outdoor unit abnormal voltage error (automatic restore)		64.3
Outdoor unit over current error (permanent stop)		64.4
Outdoor unit PFC hardware error		64.8
Outdoor unit trip terminal L error	E: 65. IPM error (Outdoor unit)	65.3
Outdoor unit discharge temp. thermistor 1 error	E: 71. Discharge thermistor error (Outdoor unit)	71.1
Outdoor unit compressor temp. thermistor 1 error	E: 72. Compressor thermistor error (Outdoor unit)	72.1
Outdoor unit heat ex. liquid temp. thermistor error	E: 73. Outdoor unit heat exchanger thermistor error (Outdoor unit)	73.3

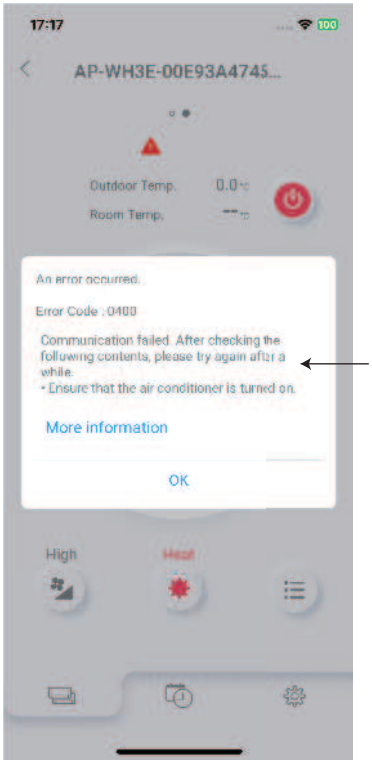
Error message	Error contents	Error code
Outside air temp. thermistor error	E: 74. Outdoor temperature thermistor error (Outdoor unit)	74.1
Outdoor unit current sensor 1 error (permanent stop)	E: 84. Current sensor error (Outdoor unit)	84.1
Outdoor unit high pressure switch 1 error	E: 86. High pressure switch error (Outdoor unit)	86.4
Outdoor unit trip detection	E: 94. Trip detection (Outdoor unit)	94.1
Outdoor unit compressor rotor position detection error (permanent stop)	E: 95. Compressor motor control error (Outdoor unit)	95.1
Outdoor unit fan motor 1 power source duty error	E: 97. Outdoor unit fan motor error (Outdoor unit)	97.3
Outdoor unit 4-way valve error	E: 99. 4-way valve error (Outdoor unit)	99.1
Outdoor unit discharge temperature 1 error (permanent stop)	E: A1. Discharge temperature error (Outdoor unit)	A1.1
Outdoor unit compressor 1 temperature error	E: A3. Compressor temperature error (Outdoor unit)	A3.1

TROUBLESHOOTING

1-7. Error message for wireless LAN control (Mobile app)

■ Error display

If there is an abnormality on the wireless control system, refer to error messages as follows.



Error message

TROUBLESHOOTING

■ Error message list

- **Registration error**

Error code	Error message	Cause Solution
2400	Communication failed. After checking the following contents, please try again after a while. • Ensure that the air conditioner is turned on.	Communication with the air conditioner failed. Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** – Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. – Check that the power plug of the air conditioner main unit is plugged in. • **When lighting** Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. • **When blinking** Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.
2930	Cannot connect to your air conditioner. Check if the WiFi setting of the mobile device is turned on. When problems are not resolved, there may be other causes. Tap the link below to check other solutions.	Failed because the smartphone could not connect to the air conditioner. Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** 1. Check that the 2D barcode is for the air conditioner to be registered. 2. Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. 3. Check that the power plug of the air conditioner main unit is plugged in. 4. Retry the connection step procedure for the air conditioner registration displayed in the application to set the lamp to the blinking state. • **When lighting or blinking** 1. Check that the 2D barcode is for the air conditioner to be registered. 2. Check that the wireless LAN setting of smartphone is set to ON.

TROUBLESHOOTING

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Error code	Error message	Cause Solution
2931	WLAN adapter password is wrong. Enter it again. When problems are not resolved, there may be other causes. Tap the link below to check other solutions.	Failed because the smartphone could not connect to the air conditioner.
		Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** 1. Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. 2. Check that the power plug of the air conditioner main unit is plugged in. 3. Retry the connection step procedure for the air conditioner registration displayed in the application to set the lamp to the blinking state. • **When lighting or blinking** 1. Check that the entered SSID and PIN numbers of WLAN Adapter are correct. 2. Check that the wireless LAN setting of smartphone is set to ON.
2932 2933	Failed to connect to wireless router. Check if the WiFi setting of the mobile device is turned on. When problems are not resolved, there may be other causes. Tap the link below to check other solutions.	• Registration failed because the smartphone cannot connect to the network. • Connection to the WLAN Adapter was disconnected during processing.
		1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet.
2934	Wi-Fi router password is wrong. Tap “From the beginning” to enter it again. When problems are not resolved, there may be other causes. Tap the link below to check other solutions.	• The wireless router password is not correct. • The air conditioner is not connected to the same wireless router as the smartphone.
		Check the following contents and operate again. 1. Check that the wireless router password is correct. 2. Check that the smartphone and the air conditioner are connected to the same wireless router. 3. The wireless router encryption method WPA3 is not supported. Check if SSID other than WPA3 is selected. 4. Check that the local network setting of the smartphone is “Enabled”. (Only for smartphones with iOS14 or later)
2935 2937 2939 2941	Failed to register the air conditioner. Make sure the wireless router is connected to the Internet, and then tap “Re-register” to perform the registration process again. When problems are not resolved, there may be other causes. Tap the link below to check other solutions.	Registration failed because the air conditioner cannot connect to the Internet.
		Check the following contents and operate again. 1. Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. 2. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. 3. Check that the MAC address filter and privacy separator settings are not “enabled” on the wireless router.

TROUBLESHOOTING

Error code	Error message	Cause Solution
2936 2940	Air conditioner registration failed. Tap “Re-register” and conduct the registration processing again. If not successful after multiple attempts, tap “From the beginning” and then initialize the WLAN and start over from the beginning.	• The air conditioner you are trying to register is already registered to another account. • Registration failed because the air conditioner cannot connect to the Internet. • Immediately after turning on the power of the air conditioner, wait for about 5 minutes before registering it. Check the following contents and operate again. 1. Tap “Re-register” and conduct the registration processing again. 2. Delete from another account or initialize the WLAN Adapter. 3. Check that the wireless router is turned on. 4. Check that wireless router is connected to the Internet. If not connected, reboot the wireless router. When rebooting does not solve the problem, contact the manufacturer of the wireless router. 5. Check that the MAC address filter and privacy separator settings are not “enabled” on the wireless router.
2938	Registration failed because the air conditioner could not connect to the Internet. Perform the WPS connection procedure again and confirm that the WLAN lamp on the indoor unit or LED2 on the WLAN adapter is lit before registering. When problems are not resolved, there may be other causes. Tap the link below to check other solutions.	• Registration failed because the air conditioner cannot connect to the Internet. • Registration failed because the air conditioner is not connected to the same wireless router as the smartphone. Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** 1. Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. 2. Check that the power plug of the air conditioner main unit is plugged in. 3. Check that the wireless router is turned on. 4. Retry the connection step procedure for the air conditioner registration displayed in the application and complete WPS connection with wireless router to set the lamp to the blinking state. • **When lighting** 1. Check that the air conditioner and the smartphone are connected to the same wireless router. 2. Check that the local network setting of the smartphone is “Enabled”. (Only for smartphones with iOS14 or later)
2942	Your mobile device is not connected to WiFi. Connect to the target wireless router through the OS WiFI setting and restart the procedure. 1. Open the Wi-Fi setting screen of your device. 2. Connect your mobile device to the {ssid}. 3. Return to the application screen and tap “Re-register”. When problems are not resolved, there may be other causes. Tap the link below to check other solutions.	Registration failed because the air conditioner cannot connect to the Internet. Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Set the connection setting with the wireless router to Auto Connection in the smartphone settings. 4. Check that the wireless router is turned on.

TROUBLESHOOTING

Error code	Error message	Cause Solution
2944	Communication failed.	Registration may have failed because a problem occurred in communication with the server (cloud). Wait for a while and then operate again.
2946	The connected air conditioner cannot use the Direct control.	Your air conditioner does not support Direct Control. Operate the air conditioner with Cloud Control.
2947	Already reached the max number of air conditioners per user.	The number of air conditioners that can be registered on AIRSTAGE Mobile has reached the maximum limit. Check the number of air conditioners registered on AIRSTAGE Mobile. (Maximum number of registered units: 50 units for Cloud Control, 50 units for Direct Control) Delete the unused air conditioners on the “Air conditioner editing” screen before registration.
2949	The number of air conditioners registered by the entered user has reached the upper limit, so registration is not possible.	The number of sub users that can be registered has reached the maximum limit. Check the number of registered sub users. (Maximum number of registered sub users: 4 sub users) Delete the unused sub users on the “Sub User Registration” screen.
2953	The specified air conditioner is already registered. To Reregister, delete the air conditioner information on the air conditioner edit screen and initialize the wireless LAN adapter with the remote control.	The specified air conditioner was already registered. Check that the specified air conditioner is displayed on the air conditioner list screen. To register again, delete the air conditioner on the air conditioner editing screen.
2954	The wireless router to which the mobile device and the wireless LAN adapter are connected must be the same. Follow the steps below. 1. Please open the Wi-Fi setting screen of the mobile device. 2. Connect your mobile device to the wireless router that you pressed the automatic connection button. 3. Return to the app screen and tap “OK”.	The air conditioner and the smartphone are not connected to the same wireless router network. Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. 4. Check that the air conditioner and the smartphone are connected to the same wireless router.

TROUBLESHOOTING

- **Sign in error**

Error code	Error message	Cause / Solution
4010 4410 4610 4810 4910	Communication failed. After checking the following contents, please try again after a while. • Ensure that your mobile device is connected to the internet.	Various settings could not be completed because communication with the server (cloud) failed.
		Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on.
4100	The account you are currently signed in to may have been deleted. If necessary, please create the account again.	Token has been disabled because the signed-in account has been deleted or certain amount of time has elapsed.
		Restart the application and check that you can sign in.If you cannot sign in, create the account again.
4101	The session has expired. Please sign in again to continue.	Token has been disabled because the signed-in account has been deleted or certain amount of time has elapsed.
		Restart the application and check that you can sign in. If you cannot sign in, create the account again.
4102	Your session has expired. Please sign in again. *If you cannot sign in, your account may have been deleted. If necessary, please create an account again.	Token has been disabled because the signed-in account has been deleted or certain amount of time has elapsed.
		Restart the application and check that you can sign in. If you cannot sign in, create the account again.
4110	Failed to connect to the server. Some functions can be used with Direct Control. Do you want to switch to direct control?	• Communication with the server (cloud) failed at sign in. • Registration process of Account registration procedure verification email has not been completed.
		Check the following contents and sign in again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. 4. Tap the link of Account registration procedure verification email and check that registration process has completed.
4111	Failed to read the device. Since some functions are available in Direct control, switch to Direct control.	Air conditioner information could not be obtained because communication with the server (cloud) failed after sign in.
		Check the following contents and sign in again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on.
4112	Failed to connect to the server. Some functions are limited.	• Communication with the server (cloud) failed at sign in. • Registration process of Account registration procedure verification email has not been completed.
		Check the following contents and sign in again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. 4. Tap the link of Account registration procedure verification email and check that registration process has completed.
4113	Failed to connect to the server. Would you like to sign in again? Yes: Sign in again No: Return to the sign-in screen	Air conditioner information could not be obtained because communication with the server (cloud) failed after sign in.
		Check the following contents and sign in again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on.

TROUBLESHOOTING

Error code	Error message	Cause Solution
4420	Loading of user information failed. Check the following contents. • Check that your mobile device is connected to the internet.	User information or temperature unit information could not be obtained because communication with the server (cloud) failed. Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on.
4530	Password update failed. Please check if the entered current password is correct.	Password update failed because the entered password was not correct. Check that the entered “Current password” is correct and operate again.
4920	Loading of time zone failed. Check the following contents. • Check that your mobile device is connected to the internet.	Time zone information could not be obtained because communication with server (cloud) failed. Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on.

TROUBLESHOOTING

- **General error**

Error code	Error message	Cause Solution
0100		Communication with the air conditioner failed.
0200 0300 0400 0500 0501 0600 0601 0800 0900 1000 1200 1400 1500 3200 5500 5700 5900 6200	Communication failed. After checking the following contents, please try again after a while. • Ensure that the air conditioner is turned on.	Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** – Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. – Check that the power plug of the air conditioner main unit is plugged in. • **When lighting** Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.
0810 0811 0812 1510		• Various settings could not be completed because communication with the server (cloud) failed. • Air conditioner information could not be obtained because communication with server (cloud) failed.
1511 1512 3010 5510 5520 5530 6001 6002 6003 6010 6011 6012 6013 6310	Communication failed. After checking the following contents, please try again after a while. • Ensure that your mobile device is connected to the internet.	Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on.

TROUBLESHOOTING

Error code	Error message	Cause Solution
0820	Loading of outdoor low noise timer failed. Check the following contents. • Ensure that your mobile device is connected to the internet.	The outdoor unit low noise timer information could not be obtained because communication with the server (cloud) failed.
		Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** – Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. – Check that the power plug of the air conditioner main unit is plugged in. • **When lighting** Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. • **When blinking** Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.
1520	Loading of weekly timer failed. Check the following contents. • Ensure that your mobile device is connected to the internet.	The weekly timer setting information could not be obtained because communication with the server (cloud) failed.
		Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** – Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. – Check that the power plug of the air conditioner main unit is plugged in. • **When lighting** Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. • **When blinking** Wait for a while until the lamp lights and then operate again. If the lamp is still blinking after waiting for a while, check that the wireless router is turned on.

TROUBLESHOOTING

Error code	Error message	Cause Solution
1720	Loading of error history failed. Check the following contents. • Ensure that your mobile device is connected to the internet.	The error history information could not be obtained because communication with the server (cloud) failed. Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** – Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. – Or check that the power plug of the air conditioner main unit is plugged in. • **When lighting** Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. • **When blinking** Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.
3110	Communication failure prevented the group movement processing from being conducted. After checking the following contents, please try again after a while. • Ensure that your mobile device is connected to the internet.	Air conditioner group setting has not been completed because communication with air conditioner failed. Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** – Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. – Check that the power plug of the air conditioner main unit is plugged in. • **When lighting** Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. • **When blinking** Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.

TROUBLESHOOTING

Error code	Error message	Cause Solution
3111	Communication failure prevented the group creation processing from being conducted. After checking the following contents, please try again after a while. • Ensure that your mobile device is connected to the internet.	Air conditioner group setting has not been completed because communication with air conditioner failed. Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** – Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. – Check that the power plug of the air conditioner main unit is plugged in. • **When lighting** Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. • **When blinking** Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.
3112	Communication failure prevented the group name change processing from being conducted. After checking the following contents, please try again after a while. • Ensure that your mobile device is connected to the internet.	Air conditioner group setting has not been completed because communication with air conditioner failed. Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** – Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. – Check that the power plug of the air conditioner main unit is plugged in. • **When lighting** Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. • **When blinking** Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.

TROUBLESHOOTING

Error code	Error message	Cause Solution
3113	Communication failure prevented the group deletion processing from being conducted. After checking the following contents, please try again after a while. • Ensure that your mobile device is connected to the internet.	Air conditioner group setting has not been completed because communication with air conditioner failed. Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** – Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. – Check that the power plug of the air conditioner main unit is plugged in. • **When lighting** Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. • **When blinking** Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.
3114	The room temperature display indoor unit setting could not be made due to a communication failure. After checking the following contents, please try again after a while. • Ensure that your mobile device is connected to the internet.	Air conditioner group setting has not been completed because communication with air conditioner failed. Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** – Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. – Check that the power plug of the air conditioner main unit is plugged in. • **When lighting** Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. • **When blinking** Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.

TROUBLESHOOTING

Error code	Error message	Cause Solution
3115	Some device group move processing could not be conducted due to communication failure. After checking the following contents, please try again after a while. • Ensure that your mobile device is connected to the internet.	Air conditioner group setting has not been completed because communication with air conditioner failed. Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. • **When not lighting** – Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. – Check that the power plug of the air conditioner main unit is plugged in. • **When lighting** Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. • **When blinking** Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.
5320	Loading of air conditioner information failed. Check the following contents. • Ensure that your mobile device is connected to the internet.	Air conditioner information could not be obtained because communication with server (cloud) failed. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on.
5531 5540	New firmware update failed.	Firmware update failed. Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. 4. Refer to the operation manual of air conditioner and check the indicator lamp state of air conditioner indoor unit.
5601	Failed to get the air conditioner information.	Failed to obtain air conditioner information by Direct Control. Sign in again.
5602	Failed to add the air conditioner.	Failed to add air conditioner by Direct Control. Check the following contents and operate again. 1. When 2D barcode label is used, scan 2D barcode label again. 2. When 2D barcode label is not used, check that the entered SSID or PIN code is correct.
5630	Device disconnection failed.After checking the following contents, please try again after a while. • Ensure that your mobile device is connected to the internet.	Failed to disconnect the connection with air conditioner by Direct Control. Check the following contents and operate again. 1. Check that the smartphone is connected with the air conditioner. 2. Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. 3. Check that the power plug of the air conditioner main unit is plugged in.

Error code	Error message	Cause Solution
6201	Failed to update the screen. After checking the following contents, please try again after a while. • Ensure that your mobile device is connected to the internet.	Various settings could not be completed because communication with the server (cloud) failed. Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on.
7610	Communication failed. Check the following contents. • Ensure that your mobile device is connected to the internet.	Various settings could not be completed because communication with the server (cloud) failed. Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on.

TROUBLESHOOTING

2. Troubleshooting with error code

2-1. E: 11. Serial communication error (Serial reverse transfer error) (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	1 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: 11
Detective actuator	Outdoor unit	Main PCB	When the indoor unit cannot receive the serial signal from outdoor unit more than 2 minutes after power on, or the indoor unit cannot receive the serial signal more than 15 seconds during normal operation.
		Fan motor	
Forecast of cause			Connection failure
			External cause
			Main PCB failure
			Outdoor unit fan motor failure

Check point 1. Reset the power and operate

Does error indication show again?
→ If no, go to "Check point 1-2".

↓

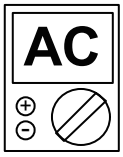
Check point 2. Check connection

Check any loose or removed connection line of indoor unit and outdoor unit.
Check connection condition is control unit. (If there is loose connector, open cable or mis-wiring.)
→ If there is an abnormal condition, correct it by referring to the installation manual or the “DESIGN & TECHNICAL MANUAL”.

↓

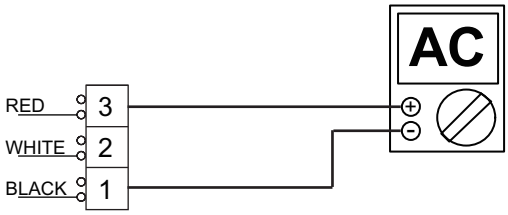
Check point 3. Check the voltage of power supply

Check the voltage of power supply
Check if AC 207 V (AC 230 V -10%) to AC 253 V (AC 230 V +10%) appears at outdoor unit terminal L—N.



↓

TROUBLESHOOTING

Check point 4. Check serial signal (Reverse transfer signal)
Check serial signal (Reverse transfer signal)    • Check if indicated value swings between AC 90 V and AC 270 V at the outdoor unit terminal 1 —3. • If it is abnormal, check the parts below. – Outdoor unit fan motor • If outdoor fan motor is abnormal, replace outdoor unit fan motor and main PCB. • If the checked parts are normal, replace the main PCB.

↓

End

Check point 1-2. Check external cause such as noise
• Check the complete insulation of the grounding. • Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).

↓

End

2-2. E: 11. Serial communication error (Serial forward transfer error) (Indoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	1 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: 11
Detective actuator	Indoor unit	Main PCB	When the outdoor unit cannot receive the serial signal from indoor unit more than 10 seconds.
		Fan motor	
	Outdoor unit	Main PCB	
Forecast of cause			Connection failure
			External cause
			Main PCB failure
			Indoor unit fan motor failure
			Outdoor unit Main PCB

Check point 1. Reset the power and operate

Does error indication show again?
→ If no, go to "Check point 1-2".

↓

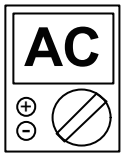
Check point 2. Check connection

Check any loose or removed connection line of indoor unit and outdoor unit.
Check connection condition is control unit. (If there is loose connector, open cable or mis-wiring.)
→ If there is an abnormal condition, correct it by referring to the installation manual or the “DESIGN & TECHNICAL MANUAL”.

↓

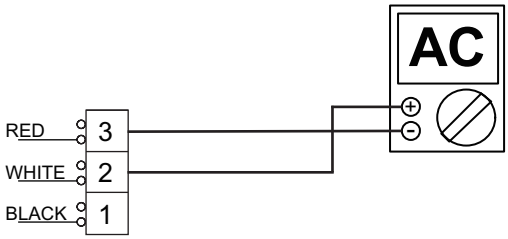
Check point 3. Check the voltage of power supply

Check the voltage of power supply
Check if AC 207 V (AC 230 V -10%) to AC 253 V (AC 230 V +10%) appears at outdoor unit terminal L—N.



↓

TROUBLESHOOTING

Check point 4. Check serial signal (Forward transfer signal)
Check serial signal (Forward transfer signal)    • Check if indicated value swings between AC 30 V and AC 130 V at outdoor unit terminal 2—3. • If it is abnormal, replace main PCB. • If it is abnormal, check indoor unit fan motor. (Indoor unit fan motor in "Service parts information" on page 03-76) • If indoor unit fan motor is abnormal, replace indoor unit fan motor and main PCB. • If it is abnormal, replace outdoor unit main PCB.

↓

End

Check point 1-2. Check external cause such as noise
• Check the complete insulation of the grounding. • Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).

↓

End

2-3. E: 12. Wired remote controller communication error (Indoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	1 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 12
Detective actuator	Indoor unit	Main PCB	When the indoor unit cannot receive the signal from Wired remote controller more than 1 minute during normal operation.
	Wired remote control		
Forecast of cause			Terminal connection abnormal
			Wired remote control failure
			Main PCB failure

Check point 1. Check the connection of terminal

After turning off the power, check & correct the followings.

- Check the connection of terminal between remote controller and indoor unit, and check if there is a disconnection of the cable.

↓

Check point 2. Check connection

Check voltage at CN2 (terminal 1—3) of Communication Kit. (Power supply to the remote controller)

Upon correcting the removed connector or mis-wiring, reset the power.

- If it is DC 5 V, remote controller is failure. (Main PCB is normal)
  - – Replace Remote Control
- If it is DC 0 V, main PCB is failure. (Check remote controller once again)
  - – Replace main PCB

↓

End

2-4. E: 18. External communication error (Indoor unit)

Indicator	Indoor unit	Operation indicator	1 time flash
		Timer indicator	8 time flash
		Economy indicator	Continuous flash
		Error code	E: 18
Detective actuator	Indoor unit	External communication error	After receiving a signal from the external input and output PCB, the same signal has not been received for 15 seconds.
Forecast of cause			Connection failure
			WLAN Adapter failure
			Main PCB

TROUBLESHOOTING

Check point 1. Check the connection

- Check any loose or removed connection between the main PCB to the WLAN Adapter.
  -> If there is an abnormal condition, correct it by refer to the installation manual or the “DESIGN & TECHNICAL MANUAL”.
- Check the connection condition on the WLAN Adapter and the main PCB (If there is loose connector, open cable or mis-wiring.)

↓

Check point 2. Replace the WLAN Adapter

If check point 1 do not improve the symptom, change WLAN Adapter.

↓

Check point 3. Replace the main PCB

If check point 2 do not improve the symptom, replace the main PCB.

↓

End

2-5. E: 22. Indoor unit capacity error (Indoor unit)

Indicator	Indoor unit	Operation indicator	2 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 22
Detective actuator	Indoor unit main PCB		When the total capacity of the indoor units does not match outdoor unit capacity while 3 minutes after power on.
Forecast of cause			Indoor unit selection is incorrect.
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check the total capacity of indoor units
Check the total capacity of the indoor units. → If abnormal condition is found, correct it referring to the installation manual or DESIGN & TECHNICAL MANUAL.

↓

Check point 2. Replace the main PCB
If check point 1 does not improve the symptom, replace the main PCB.

↓

End

2-6. E: 23. Combination error (Outdoor unit)

Indicator	Indoor unit	Operation indicator	2 time flash
		Timer indicator	3 time flash
		Economy indicator	Continuous flash
		Error code	E: 23
Detective actuator	Indoor unit		The outdoor unit receives the serial signal of applied refrigerant information from indoor unit.
Forecast of cause			Incorrect indoor unit is selected.

TROUBLESHOOTING

Check point 1. Check the type of indoor unit

- Check the type of the connected indoor unit.
  -> If there is an abnormal condition, correct it by refer to the installation manual or the “DESIGN & TECHNICAL MANAL”.

↓

Check point 2. Replace the main PCB

If check point 1 do not improve the symptom, replace the main PCB of the outdoor unit.

↓

End

2-7. E: 26. Address setting error in wired remote controller (Indoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	2 time flash
		Timer indicator	6 time flash
		Economy indicator	Continuous flash
		Error code	E: 26
Detective actuator	Wired remote controller (2-wire)		• When the address number set by auto setting and manual setting are mixed in one remote controller group • When the duplicated address number exists in one remote controller group
	Indoor unit controller PCB		
Forecast of cause			Wrong wiring of remote controller group
			Wrong remote controller address setting
			Indoor unit main PCB failure
			Remote controller failure

Check point 1. Wire installation

- Check the wire connection in the remote controller group (For installation method, refer to installation manual)
  -> If there is an abnormal condition, correct it by refer to the installation manual or the “DESIGN & TECHNICAL MANUAL”.

↓

Check point 2. Wrong remote controller group setting

- The given address number by auto setting (00) and the manual set number (except 00) are not existing in one remote controller group.
- The remote controller address setting by UI is not existing same address.
- The duplicate address number is not existing in one remote controller group.

↓

Check point 3. Check indoor unit main PCB

- Check if main PCB is damaged.
- Change main PCB and check the error after setting remote controller address.

↓

End

2-8. E: 29. Connected unit number error (Indoor unit)

Indicator	Indoor unit	Operation indicator	2 time flash
		Timer indicator	9 time flash
		Economy indicator	Continuous flash
		Error code	E: 29
Detective actuator	Wired remote controller (2-wire)		When the number of the connected indoor unit exceeds the limitation.
	Indoor unit main PCB		
Forecast of cause			Wrong wiring of indoor unit or remote controller
			Number of indoor unit or remote controller in remote controller group
			Indoor unit main PCB failure

TROUBLESHOOTING

Check point 1. Wire installation
• Wrong number of connected indoor unit -> If there is an abnormal condition, correct it by refer to the installation manual or the “DESIGN & TECHNICAL MANUAL”.

↓

Check point 2. Check indoor unit main PCB
• Check if main PCB is damaged. • Change main PCB and check the error after setting remote controller address.

↓

End

2-9. E: 32. Indoor unit main PCB error (Indoor unit)

Indicator	Indoor unit	Operation indicator	3 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 32
Detective actuator	Indoor unit	Main PCB	When power is on and there is some below case. 1. When model information of EEPROM is incorrect. 2. When the access to EEPROM failed.
Forecast of cause			External cause
			Defective connection of electrical components
			Main PCB failure

TROUBLESHOOTING

Check point 1. Reset power supply and operate

Does error indication show again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check Indoor unit electrical components

- Check all connectors. (loose connector or incorrect wiring)
- Check any shortage or corrosion on PCB.

↓

Check point 3. Replace the main PCB

Replace the main PCB.

↓

End

Check point 1-2. Check external cause such as noise

- Check if the ground connection is proper.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).

↓

End

NOTE: EEPROM

EEPROM (Electronically Erasable and Programmable Read Only Memory) is a non-volatile memory which keeps memorized information even if the power is turned off. It can change the contents electronically. To change the contents, it uses higher voltage than normal, and it cannot change a partial contents. (Rewriting shall be done upon erasing the all contents.) There is a limit in a number of rewriting.

2-10. E: 33. Indoor unit motor electricity consumption detection error (Indoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	3 time flash
		Timer indicator	3 time flash
		Economy indicator	Continuous flash
		Error code	E: 33
Detective actuator	Indoor unit motor electricity consumption detection		When the voltage value or the current value of the motor go beyond the limits
Forecast of cause			Fan motor failure
			Main PCB failure

Check point 1. Check the rotation of fan

Rotate the fan by hand when the operation is off. (Check if fan is caught, drop off or locked motor)
→ If fan or bearing is abnormal, replace it.

↓

Check point 2. Check ambient temperature around the motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat.)
→ Upon the temperature coming down, restart operation.

↓

Check point 3. Check indoor unit fan motor

Check indoor unit fan motor. (Refer to indoor unit fan motor in "Service parts information" on page 03-76.)
→ If indoor unit fan motor is abnormal, replace it.

↓

Check point 4. Replace the main PCB

If check point 1-3 does not improve the symptom, replace the main PCB.

↓

End

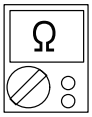
2-11. E: 35. MANUAL AUTO button error (Indoor unit)

Indicator	Indoor unit	Operation indicator	3 time flash
		Timer indicator	5 time flash
		Economy indicator	Continuous flash
		Error code	E: 35
Detective actuator	Indoor unit controller PCB		When the MANUAL AUTO button becomes on for consecutive 60 or more seconds.
	Indicator PCB		
	Manual auto switch		
Forecast of cause			MANUAL AUTO button failure
			Controller PCB and indicator PCB failure

TROUBLESHOOTING

Check point 1. Check the MANUAL AUTO button

- Check if MANUAL AUTO button is kept pressed.
- Check ON/OFF switching operation by using a meter.



If MANUAL AUTO button is disabled (ON/OFF switching), replace it.

↓

Check point 2. Replace the main PCB and indicator PCB

If Check Point 1 does not improve the symptom, replace the main PCB and indicator PCB.

↓

End

2-12. E: 39. Indoor unit power supply error for fan motor (Indoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	3 time flash
		Timer indicator	9 time flash
		Economy indicator	Continuous flash
		Error code	E: 39
Detective actuator	Indoor unit main PCB		• When a momentary power cut off • When do not start fan motor
Forecast of cause			External cause
			Connector connection failure
			Main PCB failure

Check point 1. Check external cause at indoor and outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

↓

Check point 2. Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

→ Upon correcting the removed connector or mis-wiring, reset the power.

↓

Check point 3. Replace the main PCB

If check point 1 to 2 do not improve the symptom, replace the main PCB.

↓

End

2-13. E: 3A. Indoor unit communication circuit (wired remote controller) error

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	3 time flash
		Timer indicator	10 time flash
		Economy indicator	Continuous flash
		Error code	E: 3A
Detective actuator	Wired remote controller (2-wire)		Detect the communication error of microcomputer and communication PCB.
	Indoor unit controller PCB circuit		
Forecast of cause			Communication PCB defective
			Indoor unit main PCB defective

Check point 1. Check the connection of terminal

- After turning off the power supply, check and correct the followings
  Indoor unit - Check the connection the communication PCB and the main PCB

↓

Check Point 2 : Replace the communication PCB

If the Check point 1 is ok, replace the communication PCB

↓

Check Point 3 : Replace the main PCB

If condition is doesn't change, replace the main PCB

↓

End

2-14. E: 41. Room temperature sensor error (Indoor unit)

Indicator	Indoor unit	Operation indicator	4 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: 41
Detective actuator	Indoor unit main PCB		Room temperature thermistor is open or short is detected always.
	Room temperature thermistor		
Forecast of cause			Connector failure
			Thermistor failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check connection of connector

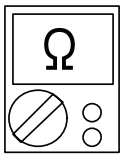
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Remove connector and check thermistor resistance value

- For the room thermistor resistance value, refer to "Thermistor resistance values" on page 03-83.
- If thermistor is either open or shorted, replace it and reset the power.



↓

Check point 3. Check voltage of main PCB

Make sure circuit diagram of each indoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-19.

If the voltage does not appear, replace main PCB.

↓

End

2-15. E: 42. Indoor unit heat exchanger sensor error (Indoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	4 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 42
Detective actuator	Indoor unit main PCB		When heat exchanger temperature thermistor open or short circuit is detected.
	Heat exchanger temperature thermistor		
Forecast of cause			Connector connection failure
			Thermistor failure
			Main PCB failure

Check point 1. Check connection of connector

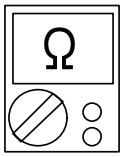
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Remove connector and check thermistor resistance value

- For the heat exchanger thermistor resistance value, refer to "Thermistor resistance values" on page 03-83.
- If thermistor is either open or shorted, replace it and reset the power.



↓

Check point 3. Check voltage of main PCB

Make sure circuit diagram of each indoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-19.

If the voltage does not appear, replace main PCB.

↓

End

2-16. E: 44. Human sensor error

Indicator	Indoor unit	Operation indicator	4 time flash
		Timer indicator	4 time flash
		Economy indicator	Continuous flash
		Error code	E: 44
Detective actuator	Indoor unit main PCB		1. Detect the open condition of the sensor. 2. When signal from sensor is "L" (0 V) for more than 20 min.
Forecast of cause			Connector connection failure
			Sensor failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check the connector connection and cable open

- Check if connector is loose or removed.
- Check erroneous connection.
- Check if sensor cable is open
  → Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Check the conduction or voltage

- **Conduction check (sensor connections error)**
  Disconnect the sensor and check the 2-3 pin on sensor connector.
  → With conduction: Sensor failure
  → Without conduction: Main PCB failure

- **Voltage check (sensor signal error)**
  Disconnect the sensor and check the voltage of 3 pin of the CN10 on the main PCB.
  → 5 V: Sensor failure
  → Other than 5 V: Main PCB failure

↓

End

2-17. E: 51. Indoor unit fan motor error (Indoor unit)

Indicator	Indoor unit	Operation indicator	5 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: 51
Detective actuator	Indoor unit	Main PCB	When the actual rotation number of the indoor unit fan motor is below 1/3 of the target rotation number continuously for more than 56 seconds.
		Fan motor	
Forecast of cause			Fan rotation failure
			Fan motor winding open
			Motor protection by surrounding temperature rise
			Control PCB failure
			Indoor unit fan motor failure

TROUBLESHOOTING

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.

↓

Check point 2. Check ambient temperature around motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat)
→ Upon the temperature coming down, restart operation.

↓

Check point 3. Check indoor unit fan motor

Check Indoor unit fan motor. (Refer to indoor unit fan motor in "Service parts information" on page 03-76.)
→ If Indoor unit fan motor is abnormal, replace Indoor unit fan motor.

↓

Check point 4. Replace the main PCB

If Check Point 1 to 3 do not improve the symptom, replace the main PCB.

↓

End

2-18. E: 62. Outdoor unit main PCB error (Outdoor unit)

Indicator	Indoor unit	Operation indicator	6 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 62
Detective actuator	Outdoor unit	Main PCB	Access to EEPROM failed due to some cause after outdoor unit started.
Forecast of cause			External cause (Noise, temporary open, voltage drop)
			Main PCB failure

TROUBLESHOOTING

Check point 1. Reset power supply and operate
Does error indication show again?

If no, go to "Check point 1-2".

↓

Check point 2. Replace the main PCB
Replace the main PCB.

↓

End

Check point 1-2. Check external cause
• Check if temporary voltage drop was not generated. • Check if momentary open was not generated. • Check if ground is connection correctly or there are no related cables near the power line.

↓

End

2-19. E: 63. Inverter error (Outdoor unit)

Indicator	Indoor unit	Operation indicator	6 time flash
		Timer indicator	3 time flash
		Economy indicator	Continuous flash
		Error code	E: 63
Detective actuator	Outdoor unit	Inverter PCB	Error information received from inverter PCB
Forecast of cause			External cause
			Power supply to inverter PCB wiring disconnection or open
			Inverter PCB failure

TROUBLESHOOTING

Check point 1. Turn the power on again?
Error displayed again?

If no, go to "Check point 1-2".

↓

Check point 2. Check the wiring (power supply to inverter PCB)
• Connector and wiring connection state check • Cable open check

↓

Check point 3. Replace inverter PCB
Replace inverter PCB

↓

End

Check point 1-2. Check external cause
• Check if temporary voltage drop was not generated. • Check if momentary open was not generated. • Check if ground is connection correctly or there are no related cables near the power line.

↓

End

2-20. E: 64. PFC circuit error (Outdoor unit)

Indicator	Indoor unit	Operation indicator	6 time flash
		Timer indicator	4 time flash
		Economy indicator	Continuous flash
		Error code	E: 64
Detective actuator	Outdoor unit	Main PCB	• When inverter input DC voltage is higher than 415 V for over 3 seconds, the compressor stops. • If the same operation is repeated 5 times, the compressor stops permanently.
Forecast of cause			External cause
			Connector connection failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check external cause at indoor and outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

↓

Check point 2. Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

→ Upon correcting the removed connector or mis-wiring, reset the power.

↓

Check point 3. Replace the main PCB

If check point 1 to 2 do not improve the symptom, replace the main PCB.

↓

End

2-21. E: 65. IPM error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	6 time flash
		Timer indicator	5 time flash
		Economy indicator	Continuous flash
		Error code	E: 65
Detective actuator	Outdoor unit	Main PCB	1. When more than normal operating current to IPM in main PCB flows, the compressor stops. 2. After the compressor restarts, if the same operation is repeated within 40 seconds, the compressor stops again. 3. If 1. and 2. repeats 5 times, the compressor stops permanently.
		Compressor	
Forecast of cause			Defective connection of electrical components
			Outdoor fan operation failure
			Outdoor heat exchanger clogged
			Compressor failure
			Main PCB failure

Check point 1. Check connections of outdoor unit electrical components

- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

→ Upon correcting the removed connector or mis-wiring, reset the power.

↓

Check point 2. Check outdoor fan and heat exchanger

- Is there anything obstructing the air distribution circuit?
- Is there any clogging of outdoor heat exchanger?
- Is the fan rotating by hand when operation is off?

→ If the fan motor is locked, replace it.

↓

Check point 3. Check outdoor fan

Check outdoor fan motor. (Refer to "E: 97. Outdoor unit fan motor error (Outdoor unit)" on page 03-54.)
→ If the fan motor is failure, replace it.

↓

Check point 4. Check compressor
Check compressor. (Refer to inverter compressor in "Service parts information".)

↓

Check point 5. Replace main PCB
If Check point 1 to 4 do not improve the symptom, change main PCB.

↓

End

TROUBLESHOOTING

2-22. E: 71. Discharge thermistor error (Outdoor unit)

Indicator	Indoor unit	Operation indicator	7 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: 71
Detective actuator	Outdoor unit main PCB		When discharge pipe temperature thermistor open or short circuit is detected at power on or while running the compressor
	Discharge pipe temperature thermistor		
Forecast of cause			Connector failure
			Thermistor failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check connection of connector

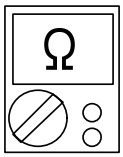
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Remove connector and check thermistor resistance value

- For the discharge temperature thermistor resistance value, refer to "Thermistor resistance values" on page 03-83.
- If thermistor is either open or shorted, replace it and reset the power.



↓

Check point 3. Check voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-19.

(09-14 models: P1)

If the voltage does not appear, replace main PCB.

↓

End

2-23. E: 72. Compressor thermistor error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	7 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 72
Detective actuator	Outdoor unit main PCB		When compressor temperature thermistor open or short circuit is detected at power on or while running the compressor
	Compressor temperature thermistor		
Forecast of cause			Connector failure
			Thermistor failure
			Main PCB failure

Check point 1. Check connection of connector

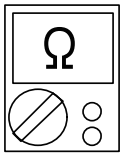
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Remove connector and check thermistor resistance value

- For the compressor thermistor resistance value, refer to "Thermistor resistance values" on page 03-83.
- If thermistor is either open or shorted, replace it and reset the power.



↓

Check point 3. Check voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-19.
(09-14 models: P15)

If the voltage does not appear, replace main PCB.

↓

End

2-24. E: 73. Outdoor unit heat exchanger thermistor error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	7 time flash
		Timer indicator	3 time flash
		Economy indicator	Continuous flash
		Error code	E: 73
Detective actuator	Outdoor unit main PCB		When heat exchanger temperature thermistor open or short circuit is detected at power on or while running the compressor
	Heat exchanger temperature thermistor		
Forecast of cause			Connector failure
			Thermistor failure
			Main PCB failure

Check point 1. Check connection of connector

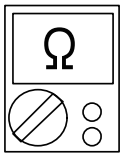
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Remove connector and check thermistor resistance value

- For the outdoor unit heat exchanger thermistor resistance value, refer to "Thermistor resistance values" on page 03-83.
- If thermistor is either open or shorted, replace it and reset the power.



↓

Check point 3. Check voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-19.

If the voltage does not appear, replace main PCB.

↓

End

2-25. E: 74. Outdoor temperature thermistor error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	7 time flash
		Timer indicator	4 time flash
		Economy indicator	Continuous flash
		Error code	E: 74
Detective actuator	Outdoor unit main PCB		When outdoor temperature thermistor open or short circuit is detected at power on or while running the compressor
	Outdoor temperature thermistor		
Forecast of cause			Connector failure
			Thermistor failure
			Main PCB failure

Check point 1. Check connection of connector

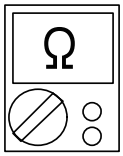
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Remove connector and check thermistor resistance value

- For the outdoor temperature thermistor resistance value, refer to "Thermistor resistance values" on page 03-83.
- If thermistor is either open or shorted, replace it and reset the power.



↓

Check point 3. Check voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-19.
(09-14 models: P5)

If the voltage does not appear, replace main PCB.

↓

End

2-26. E: 84. Current sensor error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	8 time flash
		Timer indicator	4 time flash
		Economy indicator	Continuous flash
		Error code	E: 84
Detective actuator	Outdoor unit	Main PCB	When input current sensor has detected 0 A, while inverter compressor is operating at higher than 56 rps, after 1 minute upon starting the compressor. (Except during the defrost operation)
Forecast of cause			Defective connection of electrical components
			External cause
			Main PCB failure

Check point 1. Reset power supply and operate

Does error indication show again?

If no, go to "Check point 1-2".

↓

Check point 2. Check connections of outdoor unit electrical components

- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

Upon correcting the removed connector or mis-wiring, reset the power.

↓

Check point 3. Replace the main PCB

If Check point 1, 2 do not improve the symptom, replace the main PCB.

↓

End

Check point 1-2. Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

↓

End

2-27. E: 86. High pressure switch error (Outdoor unit)

Indicator	Indoor unit	Operation indicator	8 time flash
		Timer indicator	6 time flash
		Economy indicator	Continuous flash
		Error code	E: 86
Detective actuator	Outdoor unit main PCB		When pressure switch open is detected in 10 seconds after the power is turned on.
	High pressure switch		
Forecast of cause			High pressure switch connector disconnection or open
			High pressure switch characteristics failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check the high pressure switch connection state

- Check connector and wiring connection state.
- Check if cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Check the high pressure switch characteristics

- Check switch characteristics.
  For the characteristics of the high pressure switch, refer to below.

↓

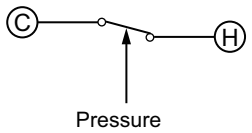
Check point 3. Replace main PCB

Change main PCB and check operation again.

↓

End

- Type of contact



- Characteristics of pressure switch

Pressure switch 1	
Contact: Short → Open	4.20 to 4.05 MPa
Contact: Open → Short	3.2 ±0.15 MPa

09-14 models: P20

2-28. E: 94. Trip detection (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	9 time flash
		Timer indicator	4 time flash
		Economy indicator	Continuous flash
		Error code	E: 94
Detective actuator	Outdoor unit	Main PCB	Protection stop by over-current generation after inverter compressor start processing completed generated consecutively 10 times. **NOTE:** The number of generations is reset when the compressor starts up.
		Compressor	
Forecast of cause			Outdoor unit fan operation defective, foreign matter on heat-exchanger, excessive rise of ambient temperature
			Main PCB failure
			Inverter compressor failure (lock, winding short)

Check point 1. Check the outdoor unit fan operation, heat-exchanger, ambient temperature

- No obstructions in air passages?
- Heat exchange fins clogged
- Outdoor unit fan motor check
- Ambient temperature not raised by the effect of other heat sources?
- Discharged air not sucked in?

↓

Check point 2. Replace the main PCB

If Check point 1 do not improve the symptom, replace the main PCB.

↓

Check point 3. Replace compressor

If Check point 2 do not improve the symptom, change compressor.

↓

End

2-29. E: 95. Compressor motor control error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	9 time flash
		Timer indicator	5 time flash
		Economy indicator	Continuous flash
		Error code	E: 95
Detective actuator	Outdoor unit	Main PCB Compressor	1. When running the compressor, if the detected rotor location is out of phase with actual rotor location more than 90°, the compressor stops. 2. After the compressor restarts, if the same operation is repeated within 40 seconds, the compressor stops again. 3. If 1. and 2. repeats 5 times, the compressor stops permanently.
Forecast of cause			Defective connection of electrical components
			Main PCB failure
			Compressor failure

Check point 1. Check Noise from Compressor

Turn on Power and check operation noise.
→ If an abnormal noise show, replace compressor.

↓

Check point 2. Check connection of around the compressor components

For compressor terminal, main PCB

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open. (Refer to inverter compressor in "Service parts information" on page 03-76.)

→ Upon correcting the removed connector or mis-wiring, reset the power.

↓

Check point 3. Replace the main PCB

If Check point 1, 2 do not improve the symptom, replace the main PCB.

↓

Check point 4. Replace compressor

If Check point 3 do not improve the symptom, change compressor.

↓

End

2-30. E: 97. Outdoor unit fan motor error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	9 time flash
		Timer indicator	7 time flash
		Economy indicator	Continuous flash
		Error code	E: 97
Detective actuator	Outdoor unit	Main PCB	1. When outdoor fan rotation speed is less than 100 rpm in 20 seconds after fan motor starts, fan motor stops. 2. After fan motor restarts, if the same operation within 60 seconds is repeated 3 times in a row, compressor and fan motor stops. 3. If 1. and 2. repeats 5 times in a row, compressor and fan motor stops permanently.
		Fan motor	
Forecast of cause			Fan rotation failure
			Motor protection by surrounding temperature rise
			Main PCB failure
			Outdoor unit fan motor

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.

↓

Check point 2. Check ambient temperature around motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat)
→ Upon the temperature coming down, restart operation.

↓

Check point 3. Check outdoor unit fan motor

Check outdoor unit fan motor. (Refer to outdoor unit fan motor in "Service parts information" on page 03-76.)
→ If outdoor unit fan motor is abnormal, replace outdoor unit fan motor and main PCB.

↓

Check point 4. Check output voltage of main PCB

Check outdoor unit circuit diagram and the voltage. (Measure at main PCB side connector)

NOTE: For details of wiring diagram, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-19.

Read wire	DC voltage
Red—Black	306—374 V
White—Black	15 ±1.5 V

-> If the voltage is not correct, replace Main PCB.

↓

End

2-31. E: 99. 4-way valve error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	9 time flash
		Timer indicator	9 time flash
		Economy indicator	Continuous flash
		Error code	E: 99
Detective actuator	Indoor unit	main PCB	When the indoor heat exchanger temperature is compared with the room temperature, and either following condition is detected continuously two times, the compressor stops. Indoor heat exchanger temp. - Room temp. > 10°C (Cooling or Dry operation) Indoor heat exchanger temp. - Room temp. < -10°C (Heating operation) If the same operation is repeated 5 times, the compressor stops permanently.
	Heat exchanger temperature thermistor		
	Room temperature thermistor		
	4-way valve		
Forecast of cause			Connector connection failure
			Thermistor failure
			Coil failure
			4-way valve failure
			Main PCB failure

Check point 1. Check connection of connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

→ Upon correcting the removed connector or mis-wiring, reset the power.

↓

Check point 2. Check each thermistor

- Isn't it fallen off the holder?
- Is there a cable pinched?

Check characteristics of room thermistor and indoor unit heat exchanger thermistor.
For the thermistor resistance value, refer to "Thermistor resistance values" on page 03-83.
→ If defective, replace the thermistor.

↓

Check point 3. Check the solenoid coil and 4-way valve
NOTE: Refer solenoid coil and 4-way valve in "Service parts information" on page 03-76. • **Solenoid coil** Remove P60 from PCB and check the resistance value of coil. Resistance value is 2.085 kΩ (at 20°C). → If it is open or abnormal resistance value, replace solenoid coil. • **4-way valve** Check each piping temperature, and the location of the valve by the temperature difference. If the value location is not proper, replace 4-way valve.

↓

Check point 4. Replace main PCB
If Check Point 1 to 3 do not improve the symptom, replace main PCB.

↓

End

TROUBLESHOOTING

2-32. E: A1. Discharge temperature error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	10 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: A1
Detective actuator	Outdoor unit main PCB		Protection stop by discharge temperature ≥ 110°C during compressor operation generated 2 times within 24 hours.
	Discharge temperature thermistor		
Forecast of cause			3-way valve not opened
			EEV or capillary tube defective, strainer clogged
			Outdoor unit operation failure, foreign matter on heat exchanger
			Discharge temperature thermistor failure
			Insufficient refrigerant
			Main PCB failure

Check point 1. Check if 3-way valve is open

If the 3-way valve is closed, open the 3-way valve and check operation.

NOTE: For cooling operation, check gas side of the 3-way valve.
For heating operation, check liquid side of the 3-way valve.

↓

Check point 2. Check any of the electronic expansion valve (EEV), capillary tube, or strainer, or all

- Check if EEV open or there is a capillary tube defect.
  Refer to outdoor unit Electronic Expansion Valve (EEV) or Capillary tube in "Service parts information" on page 03-76.
- Check the strainer clogging.

↓

Check point 3. Check the outdoor unit fan and heat exchanger

- Check for foreign object at heat exchanger
- Check if fan can be rotated by hand.
- Check the motor. (Refer to outdoor unit fan motor in "Service parts information" on page 03-76.)

↓

Check point 4. Check the discharge thermistor

The discharge temperature thermistor characteristics check. (Check by disconnecting thermistor from PCB.)

NOTE: For the characteristics of the thermistor, refer to "Thermistor resistance values" on page 03-83.

↓

Check point 5. Check the refrigerant amount
Check the refrigerant leakage.

↓

Check point 6. Replace the main PCB
If check point 1 to 5 do not improve the symptom, replace the main PCB.

↓

End

TROUBLESHOOTING

2-33. E: A3. Compressor temperature error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	10 time flash
		Timer indicator	3 time flash
		Economy indicator	Continuous flash
		Error code	E: A3
Detective actuator	Outdoor unit main PCB		Protection stop by compressor temperature ≥ 108°C during compressor operation generated 2 times within 24 hours.
	Compressor temperature thermistor		
Forecast of cause			3-way valve not opened
			EEV defective, strainer clogged
			Outdoor unit operation failure, foreign matter on heat exchanger
			Compressor temperature thermistor failure
			Insufficient refrigerant
			Main PCB failure

Check point 1. Check if 3-way valve is open

If the 3-way valve is closed, open the 3-way valve and check operation.

NOTE: For cooling operation, check gas side of the 3-way valve.
For heating operation, check liquid side of the 3-way valve.

↓

Check point 2. Check the electronic expansion valve (EEV) and strainer

- Check if EEV open.
  Refer to outdoor unit Electronic Expansion Valve (EEV) in "Service parts information" on page 03-76.
- Check the strainer clogging.

↓

Check point 3. Check the outdoor unit fan and heat exchanger

- Check for foreign object at heat exchanger
- Check if fan can be rotated by hand.
- Check the motor. (Refer to outdoor unit fan motor in "Service parts information" on page 03-76.)

↓

Check point 4. Check the compressor thermistor

The compressor temperature thermistor characteristics check. (Check by disconnecting thermistor from PCB.)

NOTE: For the characteristics of the thermistor, refer to "Thermistor resistance values" on page 03-83.

↓

Check point 5. Check the refrigerant amount
Check the refrigerant leakage.

↓

Check point 6. Replace the main PCB
If check point 1 to 5 do not improve the symptom, replace the main PCB.

↓

End

TROUBLESHOOTING

3. Troubleshooting without error code

3-1. Indoor unit—No power

Forecast of cause	Power supply failure
	External cause
	Electrical components defective

TROUBLESHOOTING

Check point 1. Check installation condition

- Isn't the breaker down?
- Check loose or removed connection cable.

-> If abnormal condition is found, correct it by referring to the installation manual or the "DESIGN & TECHNICAL MANUAL".

↓

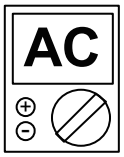
Check point 2. Check external cause at indoor and outdoor (voltage drop or noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

↓

Check point 3. Check electrical components

Check the voltage of power supply.
Check if AC 207 to 253 V appears at outdoor unit terminal L—N.
-> If no, go to "Check point 1" and "Check point 2".



↓

- Check fuse in filter PCB.
  If fuse is open, check if the wiring between terminal and filter PCB is loose, and replace fuse.
- Check varistor in filter PCB.
  If varistor is defective, there is a possibility of an abnormal power supply.
  Check the correct power supply and replace varistor.
  Upon checking the normal power supply, replace varistor.

↓

End

3-2. Outdoor unit—No power

Forecast of cause	Power supply failure
	External cause
	Electrical components defective

TROUBLESHOOTING

Check point 1. Check installation condition

- Is the circuit breaker on or off?
- Check loose or removed connection cable.

→ If abnormal condition is found, correct it by referring to the installation manual or the “DESIGN & TECHNICAL MANUAL”.

↓

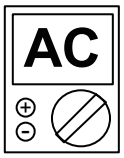
Check point 2. Check external cause at indoor and outdoor (voltage drop or noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

↓

Check point 3. Check electrical components

Check the voltage of power supply.
Check if AC 207 to 253 V appears at outdoor unit terminal L—N
→ If no, go to "Check point 1" and "Check point 2".



↓

- Check fuse in main PCB.
  If fuse is open, check if the wiring between terminal and main PCB is loose, and replace fuse.
- Check varistor in main PCB.
  If varistor is defective, there is a possibility of an abnormal power supply. Check the correct power supply and replace varistor.
  → Upon checking the normal power supply, replace varistor.

↓

Check point 4. Replace the main PCB

If check point 1 to 3 do not improve the symptom, replace the main PCB.

↓

End

3-3. No operation (Power is on)

Forecast of cause	Setting/ Connection failure
	External cause
	Electrical components defective

TROUBLESHOOTING

Check point 1. Check indoor and outdoor installation condition

- Indoor unit:
  - Check incorrect wiring between indoor unit and remote controller.
  - Check if there is an open cable connection.
- Are these indoor unit, outdoor unit, and remote controller suitable model names to connect?

-> If there is some abnormal condition, correct it by referring to the installation manual and “DESIGN & TECHNICAL MANUAL”.

↓

Turn off the power and check correct followings.

- Is there loose or removed communication line of indoor unit and outdoor unit?

↓

Check point 2. Check external cause at indoor and outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

↓

Check point 3. Check wired remote controller and controller PCB

Check voltage at CN2 (terminal 1—3) of Communication Kit.
(Power supply to remote controller)

- If it is DC 5 V, remote controller is failure. (The controller PCB is normal)
  -> Replace remote controller.
- If it is DC 0 V, controller PCB is failure. (Check the remote controller once again)
  -> Replace controller PCB.

↓

Check point 4. Replace main PCB

If check point 1 to 3 do not improve the symptom, change main PCB.

↓

End

3-4. No cooling/No heating

Forecast of cause	Indoor unit error
	Outdoor unit error
	Effect by surrounding environment
	Connection pipe/Connection wire failure
	Refrigeration cycle failure

TROUBLESHOOTING

Check point 1. Check Indoor unit

- Does Indoor unit fan run in the HIGH mode?
- Is air filter dirty?
- Is heat exchanger clogged?
- Check if energy save function is operated.

↓

Check point 2. Check outdoor unit operation

- Check if outdoor unit is operating.
- Check any objects that obstruct the air flow route.
- Check if heat exchanger is clogged.
- Is the valve open?

↓

Check point 3. Check site condition

- Is capacity of Indoor unit fitted to the room size?
- Any windows open or direct sunlight?

↓

Check point 4. Check indoor/outdoor installation condition

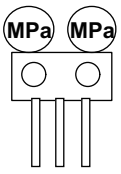
- Check connection pipe (specified pipe length and pipe diameter?)
- Check any loose or removed communication line.

→ If there is an abnormal condition, correct it by referring to the installation manual or the “DESIGN & TECHNICAL MANUAL”.

↓

Check point 5. Check Refrigeration cycle

- Check if strainer is clogged (Refer to the figure below).
- Measure gas pressure, and if there is a leakage, correct it.
- Check if EEV open or there is a capillary tube defect.
  Refer to outdoor unit Electronic Expansion Valve (EEV) or Capillary tube in "Service parts information" on page 03-76.
- Check compressor.
  Refer to compressor in "Service parts information" on page 03-76.
  Refer to inverter compressor in "Service parts information" on page 03-76.



NOTE: When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.

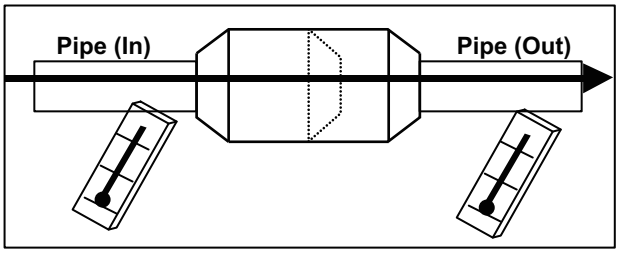
↓

End

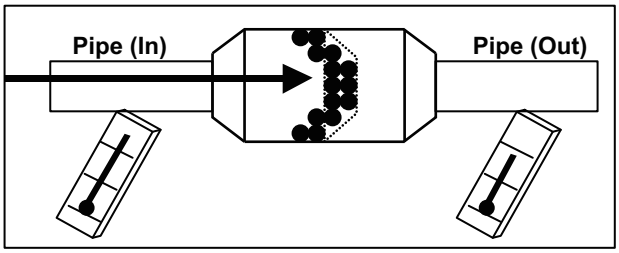
TROUBLESHOOTING

NOTES:

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



3-5. Abnormal noise

Forecast of cause	Abnormal installation (indoor unit/outdoor unit)
	Fan failure (indoor unit/outdoor unit)
	Compressor failure (outdoor)

TROUBLESHOOTING

Diagnosis method when abnormal noise is occurred

Abnormal noise is coming from Indoor unit.
(Check and correct followings)

↓

- Is main unit installed in stable condition?
- Is the installation of air suction grille and front panel normal?

↓

- Is fan broken or deformed?
- Is the screw of fan loose?
- Is there any object which obstruct the fan rotation?

↓

End

Abnormal noise is coming from Outdoor unit.
(Check and correct followings)

↓

- Is main unit installed in stable condition?
- Is fan guard installed normally?

↓

- Is fan broken or deformed?
- Is the screw of fan loose?
- Is there any object which obstruct the fan rotation?

↓

Check if vibration noise by loose bolt or contact noise of piping is happening.

↓

Is compressor locked?

- Check Compressor
  Refer to compressor and inverter compressor in "Service parts information" on page 03-76.

↓

End

3-6. Water leaking

Forecast of cause	Erroneous installation
	Drain hose failure

TROUBLESHOOTING

Diagnosis method when water leak occurs

- Is main unit installed in stable condition?
- Is main unit broken or deformed at the time of transportation or maintenance?

↓

- Is drain hose connection loose?
- Is there a trap in drain hose?
- Is drain hose clogged?

↓

Is fan rotating?

↓

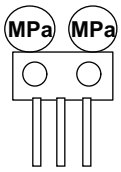
End

Diagnosis method when water is spitting out

Is the filter clogged?

↓

Check gas pressure and correct it if there was a gas leak.



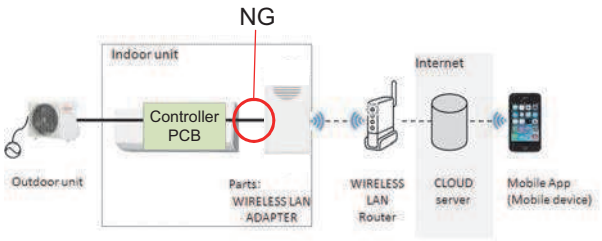
↓

End

4. Troubleshooting with error code (For wireless LAN adapter)

4-1. E: 18. External communication error between indoor unit and wireless LAN adapter

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	1 time flash
		Timer indicator	8 time flash
		Economy indicator	Continuous flash
		Wireless LAN indicator	Flashing slowly
		Error code	E: 18
	Mobile app		E: 18.1
Detective actuator	Wireless LAN adapter PCB		After receiving a signal from the wireless LAN adapter, the same signal has not been received for 15 seconds. 
	Controller PCB		
Forecast of cause			Connection between indoor unit and wireless LAN adapter failure
			Wireless LAN adapter PCB failure
			Controller PCB failure

Check point 1. Check the connection

- Check any loose or removed connection of between the wireless LAN adapter PCB and controller PCB.
  -> If there is abnormal condition, correct it.

- Check the connection condition on the controller PCB.
  -> If there is loose connector, open cable or mis-wiring, correct it.

↓

Check point 2. Replace wireless LAN adapter.

If check point 1 do not improve the symptom, replace the wireless LAN adapter and cancel the registration of air conditioner on the Mobile app.
After replacing the adapter, perform the pairing on the Mobile app.

For the method of the Mobile app, refer to "Mobile app setting method" on page 03-74.

↓

Check point 3. Replace controller PCB

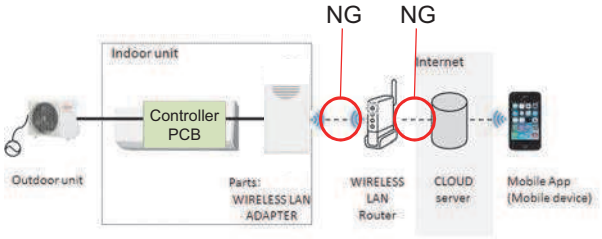
If check point 1 to 2 do not improve the symptom, replace the controller PCB.

↓

End

4-2. Network communication error between wireless LAN router and wireless LAN adapter

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	No indication
		Timer indicator	No indication
		Economy indicator	No indication
		Wireless LAN indicator	Flashing slowly
		Error code	—
	Mobile app		No indication
Detective actuator	Wireless LAN router		When the not connection between wireless LAN adapter and wireless LAN router. 
	Wireless LAN adapter PCB		
Forecast of cause			Connection cable failure of wireless LAN router
			Connection between wireless LAN adapter and wireless LAN router failure
			Wireless LAN router failure
			Wireless LAN adapter PCB failure

Check point 1. Check the connection cable

Check the connection cable on the wireless LAN router.
-> If there is loose connector, open cable or mis-wiring, correct it.

↓

Check point 2. Check the connection status.

Check the connection status to the Internet and wireless LAN router.
-> If the wireless LAN router is not connected to the Internet, check the transmission between wireless LAN products (ex. PC or game console, etc.) other than air conditioner and wireless LAN router.

If no, go to "Check point 2-2".

↓

Check point 3. Turn on the power again of air conditioner.

If check point 1 to 2 do not improve the symptom, turn on the power of the air conditioner again and wait for 60 seconds.

↓

Check point 4. Replace wireless LAN adapter.
If check point 3 do not improve the symptom, replace the wireless LAN adapter and cancel the registration of air conditioner on the Mobile app. After replacing the adapter, perform the pairing on the Mobile app. For the method of the Mobile app, refer to "Mobile app setting method" on page 03-74.

↓

End

Check point 2-2. Check the transmission state
Check the wireless transmission state pf the wireless LAN router (indicator lamp status). -> If the wireless transmission from the wireless LAN router has not been outgoing, inquire to the wireless LAN router maker.

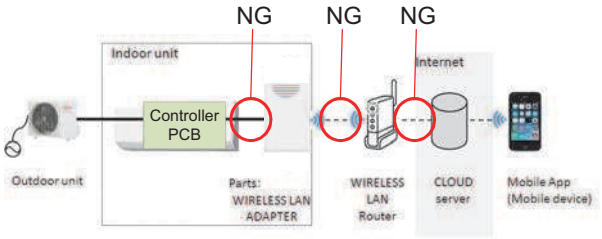
↓

End

TROUBLESHOOTING

4-3. E: 18. Communication error

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	1 time flash
		Timer indicator	8 time flash
		Economy indicator	Continuous flash
		Wireless LAN indicator	Flashing slowly
		Error code	E: 18
	Mobile app		E: 18.1
Detective actuator	Wireless LAN router		When the external communication error between indoor unit and wireless LAN adapter and network communication error between wireless LAN router and wireless LAN adapter has occurred simultaneously. 
	Wireless LAN adapter PCB		
	Indoor unit controller PCB		
Forecast of cause			Connection cable failure of wireless LAN router
			Wireless LAN router failure
			Connection between indoor unit and wireless LAN adapter failure
			Connection between wireless LAN adapter and wireless LAN router failure
			Wireless LAN adapter PCB failure
			Controller PCB failure

Check point 1. Check the connection

- Check any loose or removed connection of between the wireless LAN adapter PCB and controller PCB.
  -> If there is abnormal condition, correct it.

- Check the connection condition on the controller PCB.
  -> If there is loose connector, open cable or mis-wiring, correct it.

↓

Check point 2. Replace wireless LAN adapter.

If check point 1 do not improve the symptom, replace the wireless LAN adapter and cancel the registration of air conditioner on the Mobile app.
After replacing the adapter, perform the pairing on the Mobile app.

For the method of the Mobile app, refer to "Mobile app setting method" on page 03-74.

↓

Check point 3. Replace controller PCB

If check point 1 to 2 do not improve the symptom, replace the controller PCB.

↓

TROUBLESHOOTING

Check point 4. Check the connection cable
Check the connection cable on the wireless LAN router. -> If there is loose connector, open cable or mis-wiring, correct it.

↓

Check point 5. Check the connection status.
Check the connection status to the Internet and wireless LAN router. -> If the wireless LAN router is not connected to the Internet, check the transmission between wireless LAN products (ex. PC or game console, etc.) other than air conditioner and wireless LAN router. If no, go to "Check point 5-2".

↓

Check point 6. Turn on the power again of air conditioner.
If check point 1 to 2 do not improve the symptom, turn on the power of the air conditioner again and wait for 60 seconds.

↓

Check point 7. Replace wireless LAN adapter.
If check point 3 do not improve the symptom, replace the wireless LAN adapter and cancel the registration of air conditioner on the Mobile app. After replacing the adapter, perform the pairing on the Mobile app. For the method of the Mobile app, refer to "Mobile app setting method" on page 03-74.

↓

End

Check point 5-2. Check the transmission state
Check the wireless transmission state pf the wireless LAN router (indicator lamp status). -> If the wireless transmission from the wireless LAN router has not been outgoing, inquire to the wireless LAN router maker.

↓

End

4-4. E: 18. Wireless LAN adapter non-energized

Indicator	Indoor unit	Operation indicator	1 time flash
		Timer indicator	8 time flash
		Economy indicator	Continuous flash
		Wireless LAN indicator	No indication
		Error code	E: 18
	Mobile app		No indication
Detective actuator	Indoor unit controller PCB		When the voltage (DC 12 V) does not output from the controller PCB.
	Wireless LAN adapter PCB		
Forecast of cause			Indoor unit controller PCB failure
			Wireless LAN adapter PCB failure
			Wiring connection failure

TROUBLESHOOTING

Check point 1. Check the connection.

- Check any loose or removed connection of between the wireless LAN adapter PCB and controller PCB.
  -> If there is abnormal condition, correct it.

- Check the connection condition on the controller PCB.
  -> If there is loose connector, open cable or mis-wiring, correct it.

↓

Check point 2. Check the wireless LAN adapter PCB and the controller PCB

Check voltage at CN13 (terminal 1—3) of main PCB.
(Power supply to remote controller)

- If it is DC 0 V, controller PCB is failure.
  -> Replace controller PCB.
- If it is DC 12 V, wireless LAN adapter PCB is failure.
  -> Replace the wireless LAN adapter and cancel the registration of air conditioner on the Mobile app.
  After replacing the adapter, perform the pairing on the Mobile app.

  For the method of the Mobile app, refer to "Mobile app setting method" on page 03-74.

↓

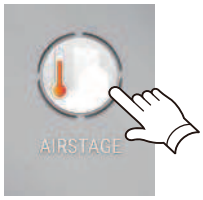
End

4-5. Mobile app setting method

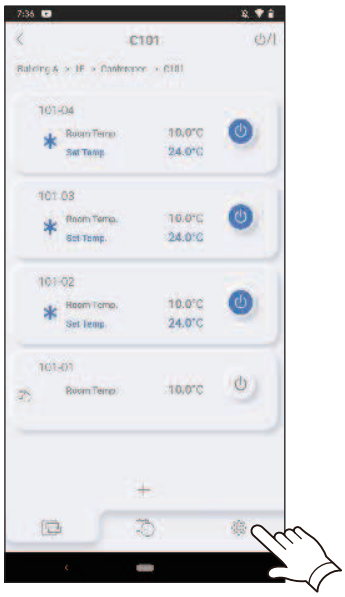
■ Air conditioner delete method

When the wireless LAN adapter is replaced, delete of all air conditioner is necessary on the mobile app.

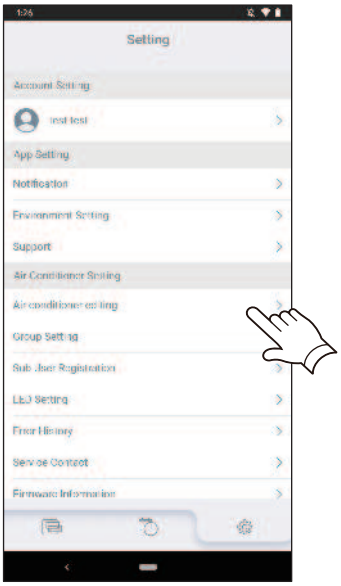
1. Launch the mobile app.



2. Tap the ⚙ icon to display the Setting screen.



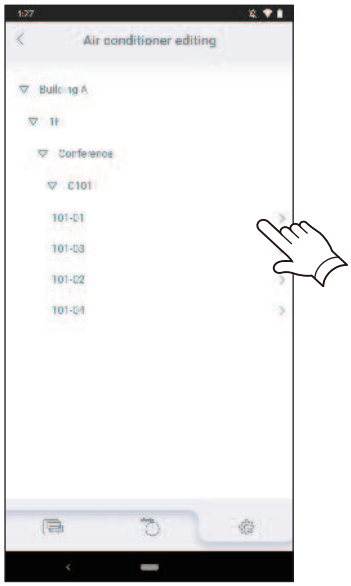
3. Tap the “Air conditioner editing”.



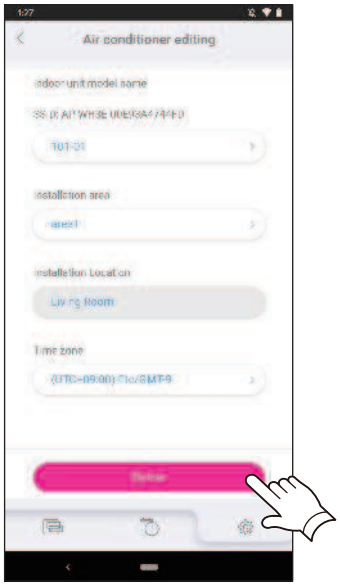
TROUBLESHOOTING

TROUBLESHOOTING

4. Tap the air conditioner to be deleted.



5. Tap the Delete button.



6. Tap the OK button.

7. Deletion of the air conditioner registered in the mobile app is completed.

5. Service parts information

5-1. Compressor

TROUBLESHOOTING

Diagnosis method of compressor (If outdoor unit LED displays error, refer to troubleshooting)

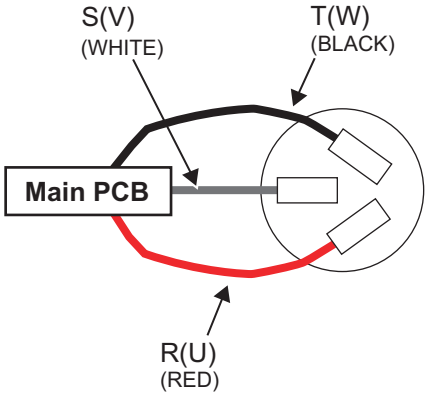
Does not start up	Stops soon after starting up	Abnormal noise
↓	↓	↓
Is there open or loose connection cable?	Is there open or loose connection cable?	Check if vibration noise by loose bolt or contact noise of piping is happening.
↓	↓	↓
Check main PCB, connection of compressor, and winding resistance. (Refer to the next page) → If there is no failure, the defect of compressor is considered (Locked compressor due to clogged dirt or less oil)	Is gas pipe valve open? (Low pressure is too low)	Defective compressor can be considered. (due to inside dirt clogging or broken component)
↓	↓	↓
Replace compressor.	Check if refrigerant is leaking. 	Replace compressor.
↓	↓	↓
End	Check if strainer is clogged. (Refer to outdoor EEV or capillary tube in this chapter.)	**End**
	↓	
	Check main PCB, connection of compressor and winding resistance. (Refer to the next page) → If there is no failure, the defect of compressor can be considered. (Compression part broken or valve defective.)	
	↓	
	Replace compressor.	
	↓	
	End	

5-2. Inverter compressor

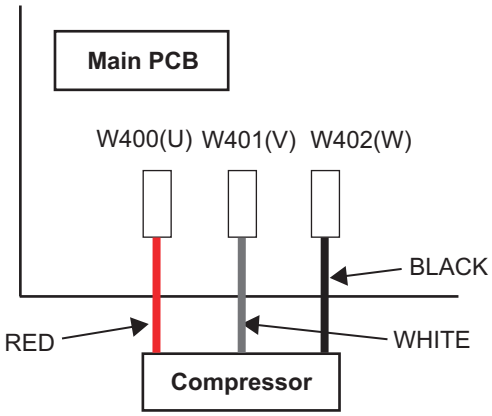
TROUBLESHOOTING

Check point 1. Check connection

- Check terminal connection of compressor (loose or incorrect wiring)



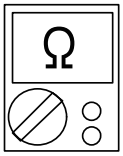
- Check terminal connection of main PCB (loose or incorrect wiring)

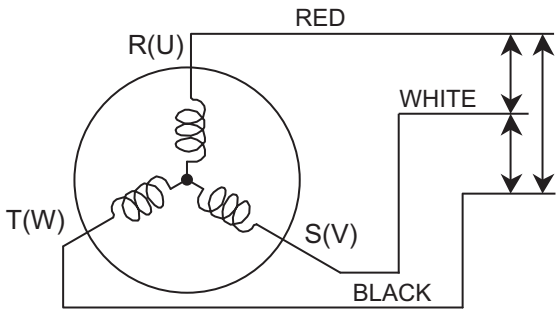


↓

Check point 2. Check winding resistance

Check winding resistance of each terminal.
Resistance value: 1.916 Ω at 20°C





→ If the resistance value is 0 Ω or infinite, replace compressor.

↓

Check point 3. Replace inverter PCB

If check point 1 to 2 do not improve the symptom, replace main PCB.

5-3. Outdoor unit Electronic Expansion Valve (EEV)

TROUBLESHOOTING

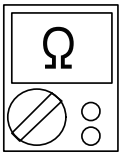
Check point 1. Check connections

Check connection of connector. (Loose connector or open cable)

NOTE: For details of wiring diagram, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-19.

Check point 2. Check coil of EEV

Remove connector, check each winding resistance of coil.

Read wire	Resistance value
1 (Red)—2 (Blue)	46 Ω at 20°C 
1 (Red)—3 (Orange)	
1 (Red)—4 (Yellow)	
1 (Red)—5 (White)	

→ If Resistance value is abnormal, replace EEV.

Check point 3. Check Voltage from main PCB

Remove connector and check voltage (DC 12 V)

→ If it does not appear, replace main PCB.

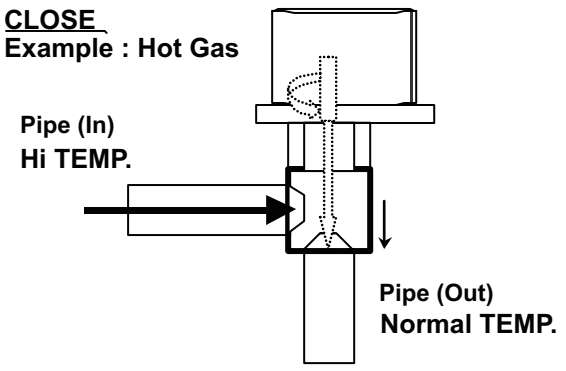
Check point 4. Check noise at start up

Turn on the power and check the operation noise.

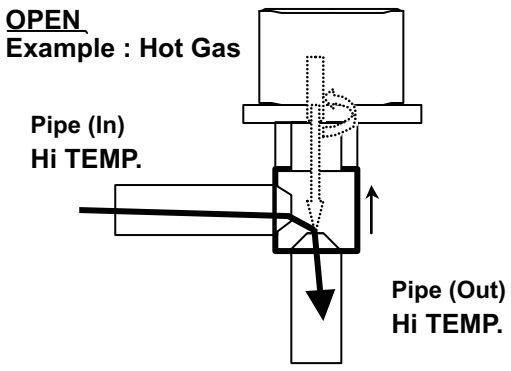
→ If an abnormal noise does not show, replace main PCB.

Check point 5. Check Opening and Closing Operation of Valve

When valve is closed, it has a temp. difference between inlet and outlet



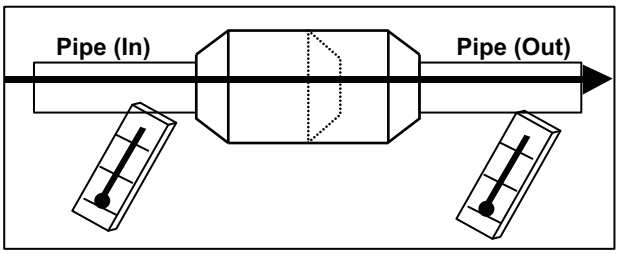
If it is open, it has no temp. difference between inlet and outlet



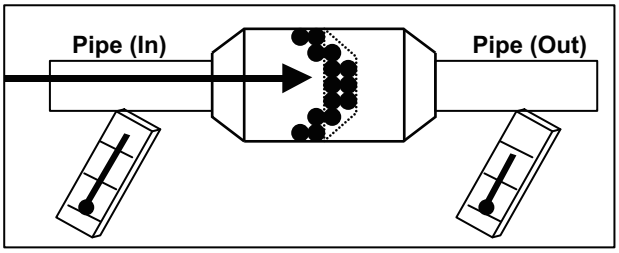
TROUBLESHOOTING

Check point 6. Check strainer

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



5-4. Indoor unit fan motor

TROUBLESHOOTING

Check point 1. Check rotation of fan

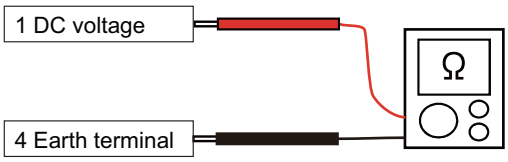
Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.

Check point 2. Check resistance of indoor fan motor

Refer to below. Circuit-test “Vm” and “GND” terminal
NOTE: Vm: DC voltage, GND: Earth terminal

→ If they are short-circuited (below 300 kΩ), replace indoor fan motor and controller PCB.

Pin number (wire color)	Terminal function (symbol)
1 (Red)	DC voltage (Vm)
2	No function
3	No function
4 (Black)	Earth terminal (GND)
5 (White)	Control voltage (Vcc)
6 (Yellow)	Speed command (Vsp)
7 (Blue)	Feed back (FG)



5-5. Outdoor unit fan motor

Check point 1. Check rotation of fan
Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor) → If fan or bearing is abnormal, replace it.

Check point 2. Check resistance of outdoor fan motor

Refer to below. Circuit-test “Vm” and “GND” terminal

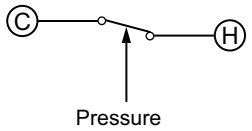
NOTE: Vm: DC voltage, GND: Earth terminal

→ If they are short-circuited (below 300 kΩ), replace outdoor fan motor and controller PCB.

Pin number (wire color)	Terminal function (symbol)
1 (Red)	DC voltage (Vm)
2	No function
3	No function
4 (Black)	Ground terminal (GND)
5 (White)	Control voltage (Vcc)
6 (Yellow)	Speed command (Vsp)
7 (Blue)	Feed back (FG)

5-6. Pressure switch

- Type of contact



- Characteristics of pressure switch

Pressure switch 1	
Contact: Short → Open	4.2 — 4.05 MPa
Contact: Open → Short	3.2 ± 0.15 MPa

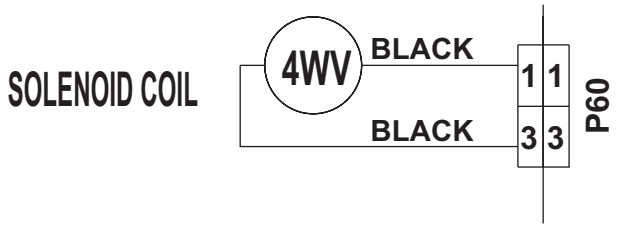
09-14 models: P20

5-7. 4-way valve coil (solenoid coil)/4-way valve

TROUBLESHOOTING

Check point 1. Check connection

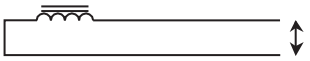
- Check the connection of connector P60.

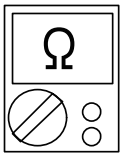


↓

Check Point 2 : Check solenoid coil

Remove P60 from PCB and check the resistance value of coil.
Resistance value ≈ 2.085 kΩ at 20°C



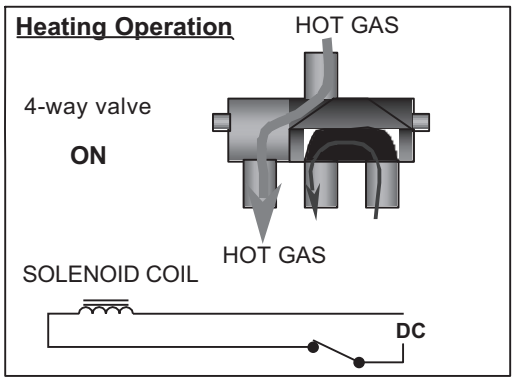


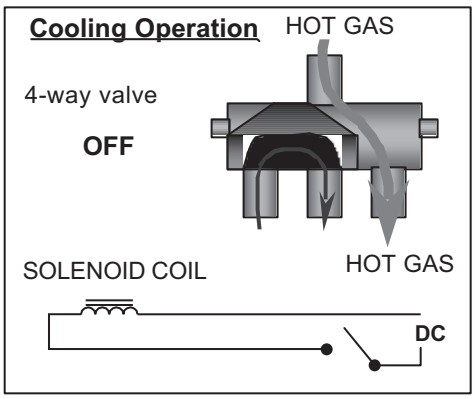
→ If it is Open or abnormal resistance value, replace solenoid coil.

↓

Check Point 3: Check operation of 4-way valve

Check each piping temperature, and confirm the location of the valve by the temperature difference





→ If the valve location is not proper, replace the 4-way valve.

↓

Check Point 4: Replace Main PCB

If none of Checks 1 to 3 apply, replace the Main PCB.

6. Thermistor resistance values

6-1. Indoor unit

■ Room temperature thermistor

Temperature (°C)	Resistance (kΩ)	Voltage (V)
-10.0	58.2	0.73
-5.0	44.0	0.93
0.0	33.6	1.15
5.0	25.9	1.39
10.0	20.2	1.66
15.0	15.8	1.94
20.0	12.5	2.22
25.0	10.00	2.50
30.0	8.0	2.77
35.0	6.5	3.03
40.0	5.3	3.27
45.0	4.4	3.49

■ Heat exchanger temperature thermistor

Temperature (°C)	Resistance (kΩ)	Voltage (V)
-30.0	1,131.9	0.21
-25.0	804.5	0.29
-20.0	579.6	0.40
-15.0	422.9	0.53
-10.0	312.3	0.69
-5.0	233.2	0.88
0.0	176.0	1.10
5.0	134.2	1.36
10.0	103.3	1.63
15.0	80.3	1.92
20.0	62.9	2.21
25.0	49.7	2.51
30.0	39.6	2.79
35.0	31.7	3.06
40.0	25.6	3.30
45.0	20.8	3.53
50.0	17.1	3.73
55.0	14.1	3.90
60.0	11.6	4.05
63.0	10.4	4.14

TROUBLESHOOTING

6-2. Outdoor unit

■ Discharge temperature thermistor

Temperature (°C)	Resistance (kΩ)	Voltage (V)
-30.0	1,013.11	0.06
-25.0	729.09	0.09
-20.0	531.56	0.12
-15.0	392.31	0.16
-10.0	292.91	0.21
-5.0	221.09	0.28
0.0	168.60	0.36
5.0	129.84	0.46
10.0	100.91	0.57
15.0	79.12	0.71
20.0	62.55	0.86
25.0	49.84	1.03
30.0	40.01	1.23
35.0	32.35	1.43
40.0	26.34	1.65
45.0	21.58	1.88
50.0	17.79	2.11
55.0	14.75	2.34
60.0	12.30	2.57
65.0	10.32	2.79
70.0	8.69	3.00
75.0	7.36	3.19
80.0	6.27	3.37
85.0	5.36	3.54
90.0	4.60	3.69
95.0	3.96	3.83
100.0	3.43	3.96
105.0	2.98	4.07
110.0	2.60	4.17
115.0	2.27	4.26
120.0	2.00	4.33

TROUBLESHOOTING

TROUBLESHOOTING

■ Heat exchanger temperature thermistor

Temperature (°C)	Resistance (kΩ)	Voltage (V)
-30.0	95.57	0.24
-25.0	68.89	0.32
-20.0	50.31	0.43
-15.0	37.19	0.57
-10.0	27.81	0.73
-5.0	21.02	0.92
0.0	16.05	1.14
5.0	12.38	1.39
10.0	9.63	1.65
15.0	7.56	1.93
20.0	5.98	2.21
25.0	4.77	2.49
30.0	3.84	2.77
35.0	3.11	3.02
40.0	2.53	3.26
45.0	2.08	3.48
50.0	1.71	3.67
55.0	1.42	3.85
60.0	1.19	4.00
65.0	1.00	4.13
70.0	0.84	4.25
75.0	0.71	4.35
80.0	0.61	4.43

■ Heat exchanger (Middle) temperature thermistor

Temperature (°C)	Resistance (kΩ)	Voltage (V)
-30.0	95.58	0.24
-25.0	68.90	0.32
-20.0	50.31	0.43
-15.0	37.19	0.57
-10.0	27.81	0.73
-5.0	21.02	0.92
0.0	16.05	1.14
5.0	12.38	1.39
10.0	9.63	1.65
15.0	7.56	1.93
20.0	5.98	2.21
25.0	4.77	2.49
30.0	3.84	2.77
35.0	3.11	3.02
40.0	2.53	3.26
45.0	2.08	3.48
50.0	1.71	3.68
55.0	1.42	3.85
60.0	1.19	4.00
65.0	1.00	4.13
70.0	0.84	4.25
75.0	0.71	4.35
80.0	0.61	4.43

■ Outdoor temperature thermistor

Temperature (°C)	Resistance (kΩ)	Voltage (V)
-30.0	224.33	0.73
-25.0	159.71	0.97
-20.0	115.24	1.25
-15.0	84.21	1.56
-10.0	62.28	1.90
-5.0	46.58	2.26
0.0	35.21	2.61
5.0	26.88	2.94
10.0	20.72	3.25
15.0	16.12	3.52
20.0	12.64	3.76
25.0	10.00	3.97
30.0	7.97	4.14
35.0	6.40	4.28
40.0	5.18	4.41
45.0	4.21	4.51
50.0	3.45	4.59
55.0	2.85	4.65

TROUBLESHOOTING

■ Compressor temperature thermistor

Temperature (°C)	Resistance (kΩ)	Voltage (V)
-30.0	1,013.11	0.06
-25.0	729.09	0.09
-20.0	531.56	0.12
-15.0	392.31	0.16
-10.0	292.91	0.21
-5.0	221.09	0.28
0.0	168.60	0.36
5.0	129.84	0.46
10.0	100.91	0.57
15.0	79.12	0.71
20.0	62.55	0.86
25.0	49.84	1.03
30.0	40.01	1.23
35.0	32.35	1.43
40.0	26.34	1.65
45.0	21.58	1.88
50.0	17.79	2.11
55.0	14.75	2.34
60.0	12.30	2.57
65.0	10.32	2.79
70.0	8.70	3.00
75.0	7.36	3.19
80.0	6.27	3.37
85.0	5.36	3.54
90.0	4.60	3.69
95.0	3.96	3.83
100.0	3.43	3.96
105.0	2.98	4.07
110.0	2.60	4.17
115.0	2.27	4.26
120.0	2.00	4.33

TROUBLESHOOTING

TROUBLESHOOTING

REFRIGERANT R32
INVERTER

4. CONTROL AND FUNCTIONS

CONTENTS

4. CONTROL AND FUNCTIONS

CONTENTS (continued)

1. Rotation number control of compressor

1-1. Cooling operation

A sensor (room temperature thermistor) built in the indoor unit body will usually perceive difference or variation between a set temperature and present room temperature, and controls the operation rotation number of the compressor.

- If the room temperature is 6.0°C higher than a set temperature, the operation rotation number of compressor will attain to maximum performance.
- If the room temperature is 1.0°C lower than a set temperature, the compressor will be stopped.
- When the room temperature is within the range of +6.0°C to -1.0°C of the setting temperature, the rotation number of compressor is controlled within the range shown in the table below. However, the maximum rotation number is limited in the range shown in the figure below based on the indoor fan mode and the outdoor temperature.

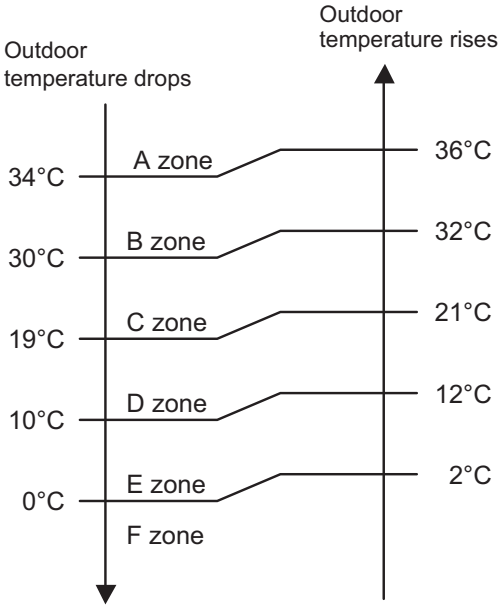
CONTROL AND FUNCTIONS

- **Rotation number range of compressor**

Unit: rps

Model name	Minimum rotation number	Maximum rotation number
ASEH09KHCBN	8	58
ASEH12KHCBN	8	68
ASEH14KHCBN	8	74

- **Limit of maximum speed based on outdoor temperature**



CONTROL AND FUNCTIONS

Unit: rps

Model name	Outdoor temperature zone	Indoor unit fan mode					
		HIGH	MED—HIGH	MED	MED—LOW	LOW	QUIET
ASEH09KHCBN	A zone	58	46	32	28	26	20
	B zone	58	46	32	28	26	20
	C zone	58	46	32	28	26	20
	D zone	34	28	22	20	20	18
	E zone	34	28	22	20	20	18
	F zone	34	28	22	20	20	18
ASEH12KHCBN	A zone	68	50	34	30	28	22
	B zone	68	50	34	30	28	22
	C zone	68	50	34	30	28	22
	D zone	36	30	24	22	22	20
	E zone	36	30	24	22	22	20
	F zone	36	30	24	22	22	20
ASEH14KHCBN	A zone	74	54	36	32	30	22
	B zone	74	54	36	32	30	22
	C zone	74	54	36	32	30	22
	D zone	34	30	26	24	24	20
	E zone	34	30	26	24	24	20
	F zone	34	30	26	24	24	20

1-2. Heating operation

A sensor (room temperature thermistor) built in indoor unit body will usually perceive difference or variation between setting temperature and present room temperature, and controls operation rotation number of compressor.

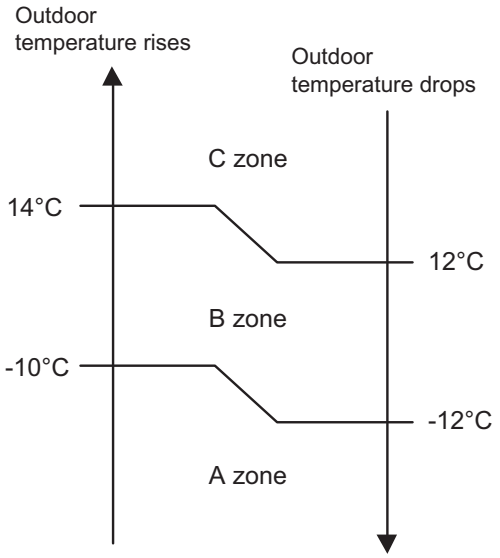
- If the room temperature is 6.0°C lower than a set temperature, the operation rotation number of compressor will attain to maximum performance.
- If the room temperature is 1.0°C higher than a set temperature, the compressor will be stopped.
- When the room temperature is within the range of +1.0°C to -6.0°C of the setting temperature, the rotation number of compressor is controlled within the range shown below.

- **Rotation number range of compressor**

Unit: rps

Model name	Minimum rotation number	Maximum rotation number
ASEH09KHCBN	8	130
ASEH12KHCBN ASEH14KHCBN	8	140

- **Limit of maximum speed based on outdoor temperature**
  In heating operation, maximum rotation number is defined by outdoor temperature and fan mode.



Unit: rps

Model name	Outdoor temperature zone	Indoor unit fan mode					
		HIGH	MED—HIGH	MED	MED—LOW	LOW	QUIET
ASEH09KHCBN	A zone	130	111	87	68	54	32
	B zone	130	111	87	68	54	36
	C zone	130	120	102	94	87	74
ASEH12KHCBN	A zone	140	111	94	74	58	34
	B zone	140	111	94	74	58	39
	C zone	140	120	111	102	94	80
ASEH14KHCBN	A zone	140	111	94	80	63	36
	B zone	140	111	94	80	63	46
	C zone	140	120	111	102	94	80

CONTROL AND FUNCTIONS

1-3. Dry operation

The rotation number of compressor shall change according to the temperature, set temperature, and room temperature variation which the room temperature sensor of the indoor unit has detected as shown in the table below.

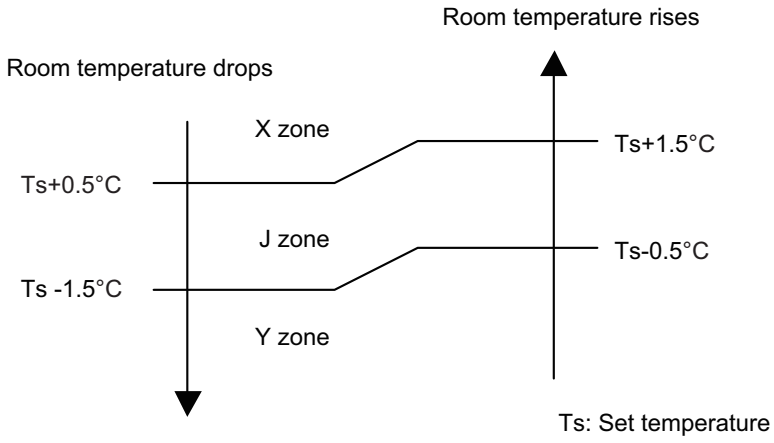
Zone is defined by set temperature and room temperature.

- **Rotation number range of compressor**

Unit: rps

Model name	Outdoor temperature zone	Operating rotation number
ASEH09KHCBN	X zone	16
	J zone	12
	Y zone	0
ASEH12KHCBN ASEH14KHCBN	X zone	18
	J zone	14
	Y zone	0

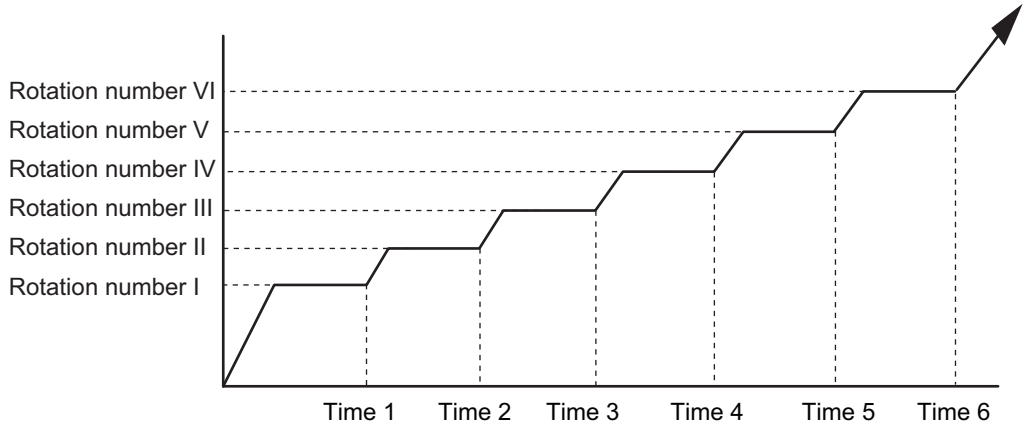
- **Compressor control based on room temperature**



CONTROL AND FUNCTIONS

1-4. Rotation number of compressor at normal start-up

Rotation number of compressor soon after starting is controlled as below.



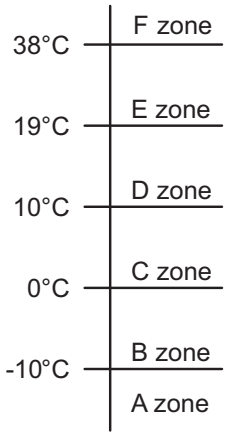
Rotation number (rps)	I	II	III	IV	V	VI
	35	52	64	71	89	97
Time (sec)	1	2	3	4	5	6
	60	140	170	200	350	410

CONTROL AND FUNCTIONS

1-5. Limitation of compressor rotation number by outdoor temperature

The minimum rotation number of compressor is limited by outdoor temperature as below.

- **Cooling/Dry mode**

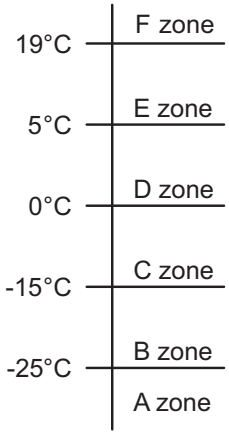


Unit: rps

Model name	Outdoor temperature zone	Limitation of compressor rotation number
AOEH09KHCBN	A zone	30
	B zone	30
	C zone	18
	D zone	1
	E zone	1
	F zone	24
AOEH12KHCBN	A zone	32
	B zone	32
	C zone	20
	D zone	1
	E zone	1
	F zone	32
AOEH14KHCBN	A zone	26
	B zone	26
	C zone	20
	D zone	1
	E zone	1
	F zone	30

CONTROL AND FUNCTIONS

- **Heating mode**



Unit: rps

Model name	Outdoor temperature zone	Limitation of compressor rotation number
AOEH09KHCBN AOEH12KHCBN	A zone	60
	B zone	39
	C zone	20
	D zone	14
	E zone	1
	F zone	1
AOEH14KHCBN	A zone	60
	B zone	31
	C zone	20
	D zone	14
	E zone	1
	F zone	1

CONTROL AND FUNCTIONS

2. Auto changeover operation

When the air conditioner is set to AUTO mode by remote controller, operation starts in the optimum mode from among heating, cooling, dry and monitoring modes. During operation, the optimum mode is automatically switched in accordance with temperature changes. The temperature can be set between 18°C and 30°C in 1.0°C steps.

- When operation starts, indoor fan and outdoor fan are operated for around 1 minute.
  Room temperature and outdoor temperature are sensed, and the operation mode is selected in accordance with the table below.

Room temperature	Operation mode
Tr > Ts + 2°C	Cooling
Ts + 2°C ≥ Tr ≥ Ts - 2°C	Middle zone
Tr < Ts - 2°C	Heating

Tr: Room temperature

Ts: Setting temperature

NOTE: When the operation mode is middle zone, indoor unit operation mode is selected as below.

- Same operation mode is selected as outdoor unit.
  If outdoor unit is operating in cooling and heating mode, indoor unit will be operated by the same operation mode.
- Selected by outdoor temperature.
  If outdoor unit is operating in other than cooling and heating mode, indoor unit will be operated according to the outdoor temperature as below.

Outdoor temp.	Operation mode
25°C or more	Cooling
Less than 25°C	Heating

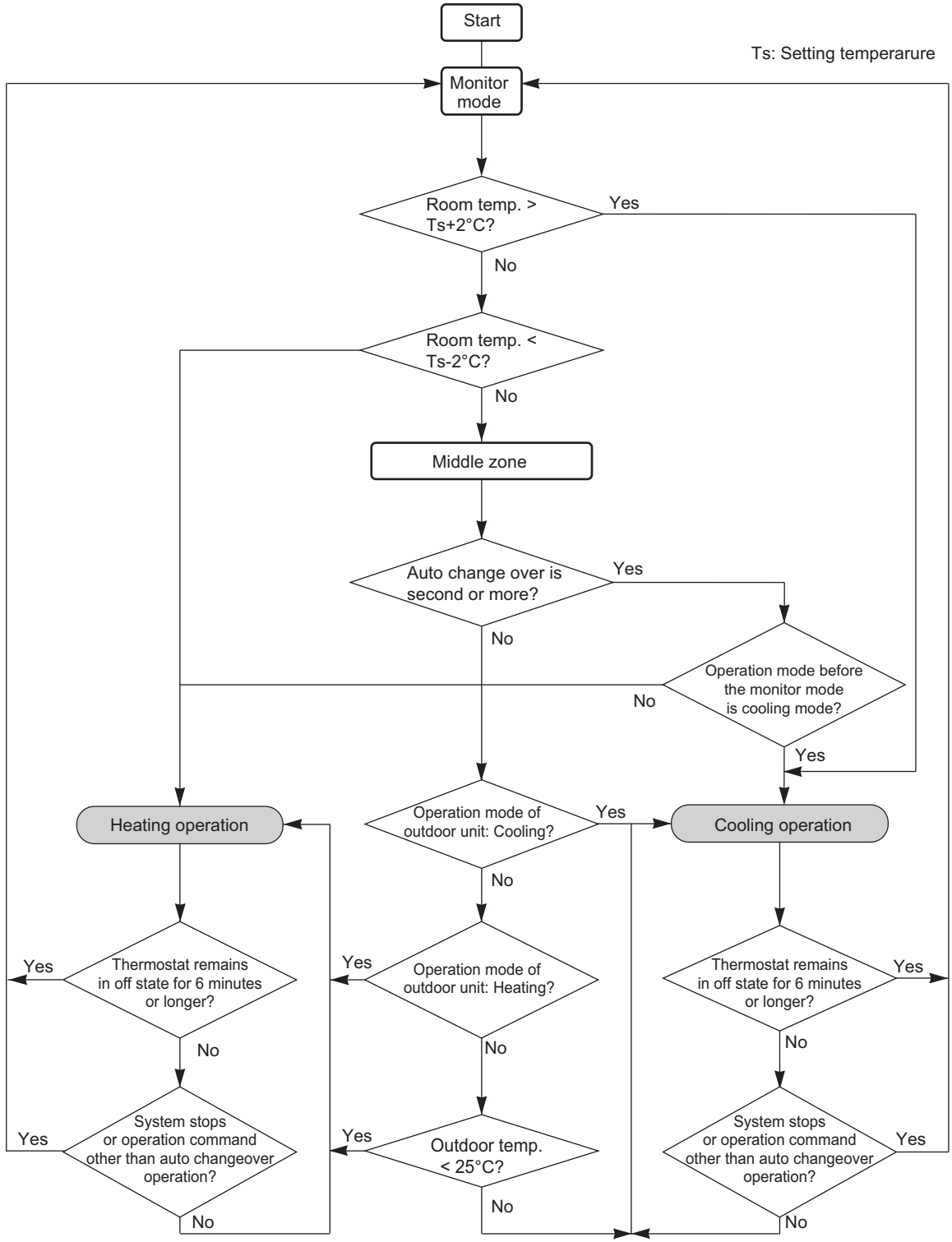
- When the compressor was stopped for 6 consecutive minutes by temperature control function after the cooling or heating mode was selected as above, operation is switched to monitoring mode and the operation mode selection is done again.

- When the middle zone is selected on the predetermining of the operation mode, the operation mode before the changing to the monitoring mode is selected.

CONTROL AND FUNCTIONS

CONTROL AND FUNCTIONS

Operation flow chart



3. Fan control

Tr: Room temperature
Ts: Setting temperature

3-1. Indoor fan control

■ Fan speed

Indoor fan speed is defined as below.

Operation mode	Fan mode	Speed (rpm)		
		ASEH09KHCBN	ASEH12KHCBN	ASEH14KHCBN
Heating	POWERFUL	1,380	1,380	1,430
	HIGH	1,240	1,240	1,280
	MED—HIGH	1,120	1,120	1,190
	MED	1,000	1,000	1,100
	MED—LOW	940	940	1,020
	LOW	870	870	940
	QUIET	540	540	650
	Cool air prevention	650	650	650
	S-LOW	540	540	540
Cooling/Fan	POWERFUL	1,380	1,380	1,430
	HIGH	1,120	1,160	1,230
	MED—HIGH	1,060	1,080	1,170
	MED	1,000	1,000	1,110
	MED—LOW	940	940	1,030
	LOW	870	870	940
	QUIET	610	610	710
	Soft quiet	540*1	540*1	610*1
	S-LOW	540*2	540*2	540*2
Dry		X zone: 580 J zone: 540	X zone: 580 J zone: 540	X zone: 670 J zone: 610

*1: Fan mode only
*2: Cooling mode only

■ Fan operation

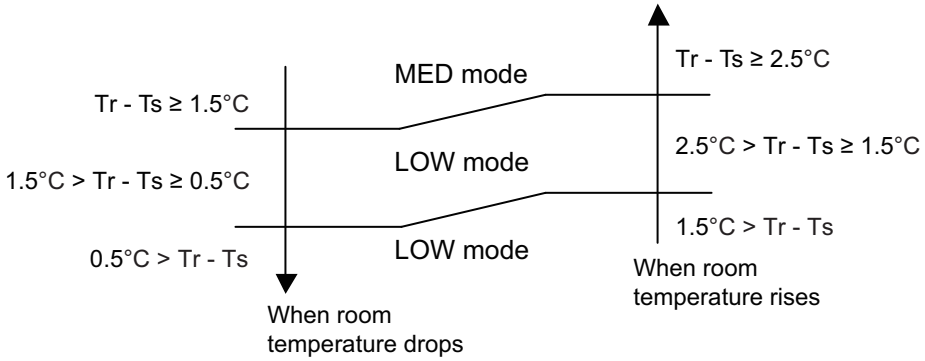
Airflow can be switched in 7 steps such as AUTO, QUIET, LOW, MED—LOW, MED, MED—HIGH, HIGH while indoor unit fan only runs.
When fan mode is set at AUTO, it operates on MED fan speed.

CONTROL AND FUNCTIONS

■ Cooling operation

Switch the airflow AUTO, and indoor fan motor will run according to room temperature, as below.
On the other hand, if switched in HIGH—QUIET, indoor motor will run at a constant airflow of COOL operation modes QUIET, LOW, MED, HIGH as shown in “Fan speed” above.

Airflow change over (Cooling: Auto)



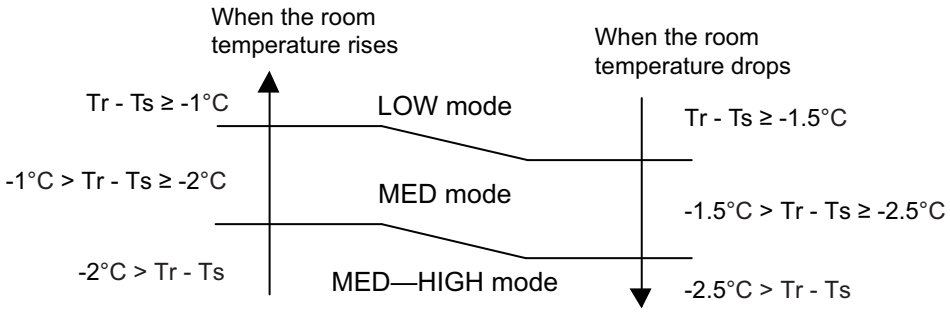
■ Dry operation

During dry operation, fan speed setting can not be changed as shown in “Fan speed” above.

■ Heating operation

Switch the airflow AUTO, and the indoor fan motor will run according to a room temperature, as below.
On the other hand, if switched in HIGH—QUIET, the indoor motor will run at a constant airflow of HEAT operation modes QUIET, LOW, MED, HIGH as shown in “Fan speed” above.

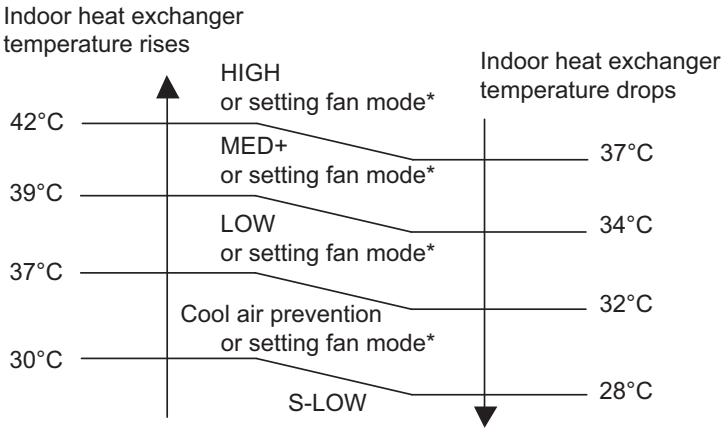
Airflow change over (Heating: Auto)



■ Cool air prevention control (heating mode)

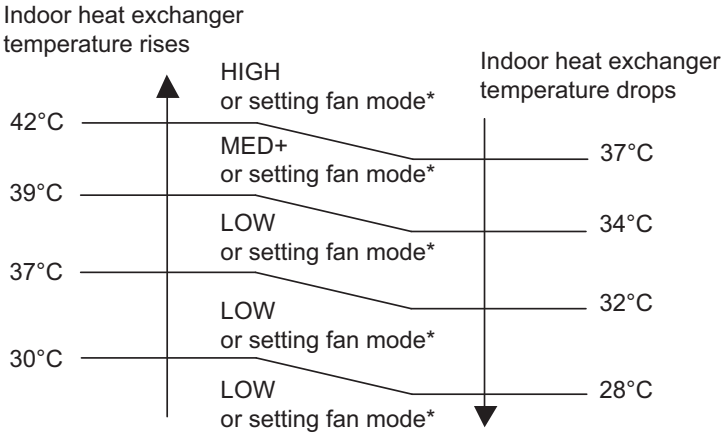
The maximum value of the indoor fan speed is set as shown below, based on the detected temperature by the indoor heat exchanger sensor on heating mode.

- **Normal operation**



*: Lower speed is selected.

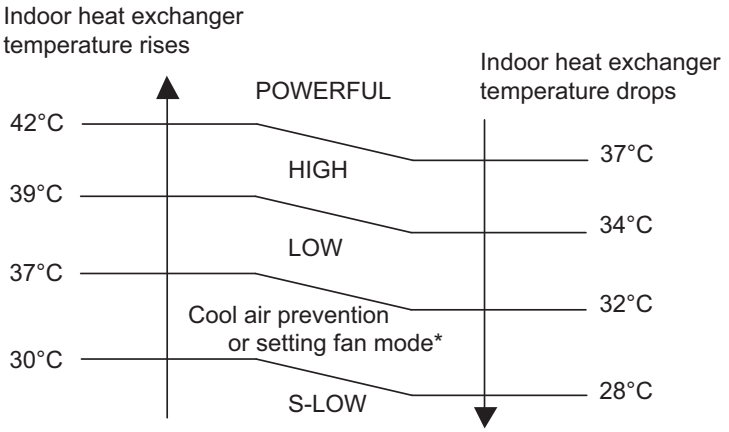
7 minutes later:



*: Lower speed is selected.

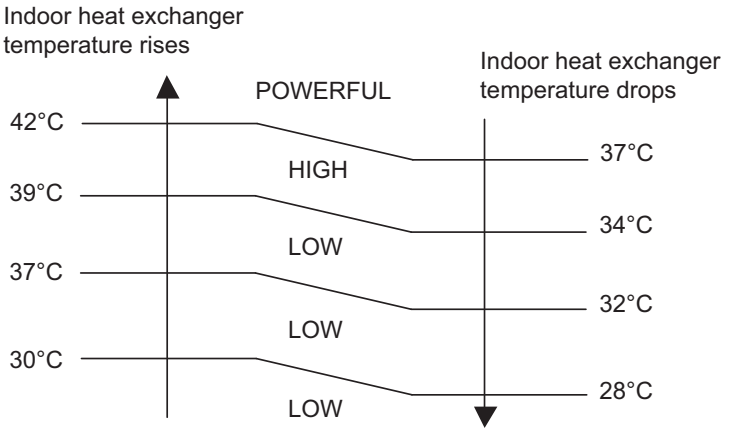
CONTROL AND FUNCTIONS

- **Powerful operation**

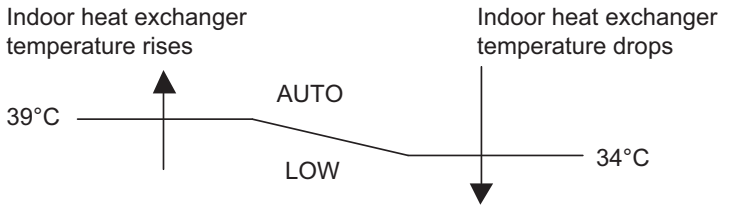


*: Lower speed is selected.

7 minutes later:

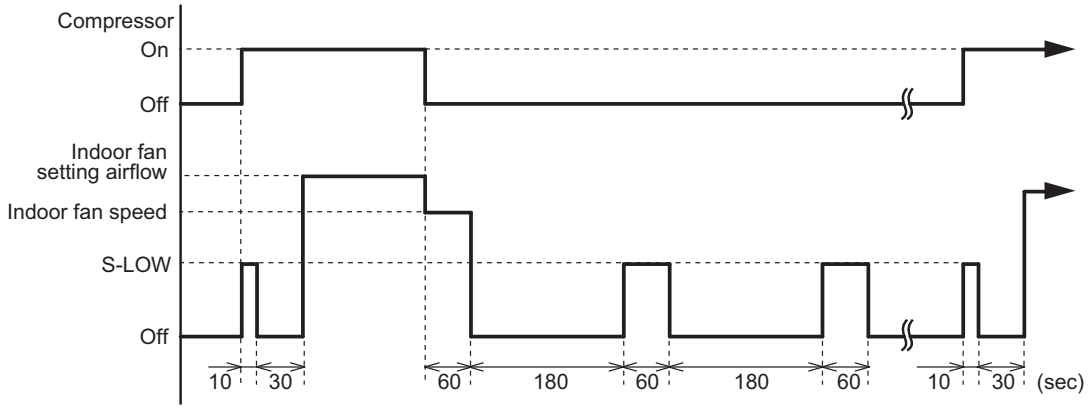


- **10 °C HEAT operation**



■ Moisture return prevention control (cooling and dry mode)

Switch the airflow AUTO at cooling mode, and the indoor fan motor will run as shown below.



CONTROL AND FUNCTIONS

3-2. Outdoor fan control

■ Outdoor fan motor

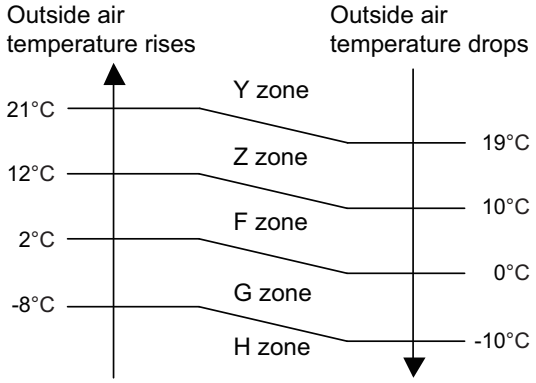
This outdoor unit has a DC fan motor. (Control method is different between AC and DC motors.)

■ Fan speed

● Model: AOEH09KHCBN

Fan speed is defined by outdoor temperature and rotation number of compressor.

- **Outside air temperature zone selection**



Unit: rpm

Fan step	Cooling	Heating	Dry	Cooling or dry at low outdoor temp.			
	Y zone		Y zone	Z zone	F zone	G zone	H zone
S-HIGH2	—	1,100	—	—	—	—	—
S-HIGH1	1,050	1,100	—	—	—	—	—
HIGH	1,050	1,100	—	—	—	—	—
10	—	1,100	—	—	—	—	—
9	1,050	1,100	1,050	810	300	230	230
8	1,050	970	1,050	810	300	230	230
7	1,030	850	1,030	730	250	230	230
6	890	700	890	550	250	200	200
5	760	660	760	340	220	200	200
4	660	660	660	270	220	200	200
3	520	470	520	270	200	200	200
2	420	370	420	270	200	200	200
1	400	370	400	270	200	200	200

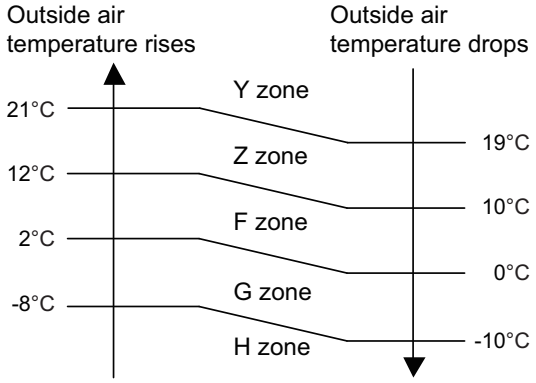
NOTE: After defrost control on the heating mode, the fan speed is kept higher regardless of the compressor frequency.
Fan speed after defrost control: 1,100 rpm

CONTROL AND FUNCTIONS

● Model: AOEH12KHCBN

Fan speed is defined by outdoor temperature and rotation number of compressor.

- **Outside air temperature zone selection**



Unit: rpm

Fan step	Cooling	Heating	Dry	Cooling or dry at low outdoor temp.			
	Y zone		Y zone	Z zone	F zone	G zone	H zone
S-HIGH2	—	1,200	—	—	—	—	—
S-HIGH1	1,180	1,200	—	—	—	—	—
HIGH	1,180	1,200	—	—	—	—	—
10	—	1,170	—	—	—	—	—
9	1,180	1,170	1,180	550	280	220	220
8	1,080	930	1,080	550	280	220	220
7	900	840	900	500	280	220	220
6	900	740	900	400	240	200	200
5	780	740	780	280	210	200	200
4	570	710	570	280	210	200	200
3	550	410	550	280	210	200	200
2	430	380	430	280	210	200	200
1	400	380	400	280	210	200	200

NOTE: After defrost control on the heating mode, the fan speed is kept higher regardless of the compressor frequency.

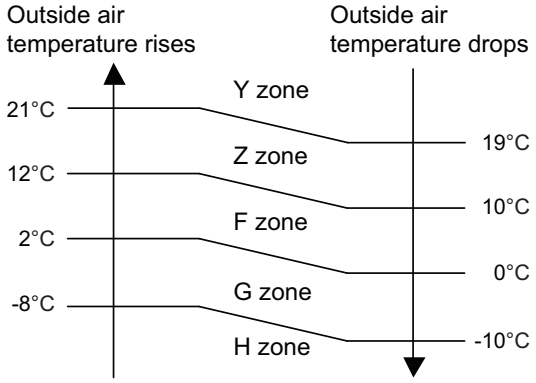
Fan speed after defrost control: 1,200 rpm

CONTROL AND FUNCTIONS

● Model: AOEH14KHCBN

Fan speed is defined by outdoor temperature and rotation number of compressor.

- **Outside air temperature zone selection**



Unit: rpm

Fan step	Cooling	Heating	Dry	Cooling or dry at low outdoor temp.			
	Y zone		Y zone	Z zone	F zone	G zone	H zone
S-HIGH2	—	1,200	—	—	—	—	—
S-HIGH1	1,290	1,200	—	—	—	—	—
HIGH	1,290	1,200	—	—	—	—	—
10	—	1,200	—	—	—	—	—
9	1,290	1,170	1,290	440	270	220	220
8	1,150	990	1,150	440	270	220	220
7	1,000	830	1,000	440	270	220	220
6	880	800	880	350	230	200	200
5	760	740	760	260	200	200	200
4	640	640	640	260	200	200	200
3	550	460	550	260	200	200	200
2	460	420	460	260	200	200	200
1	460	380	460	260	200	200	200

NOTE: After defrost control on the heating mode, the fan speed is kept higher regardless of the compressor frequency.

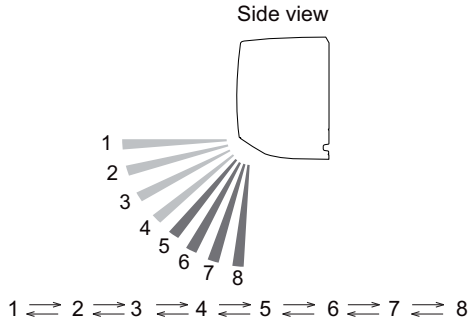
Fan speed after defrost control: 1,200 rpm

CONTROL AND FUNCTIONS

4. Louver control

4-1. Horizontal louver control

Each time the button is pressed, the airflow direction range will change as below:



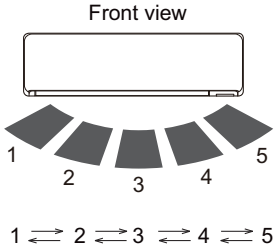
- Remote controller display is not changed.
- Up/down airflow direction is set automatically as shown, in accordance with the type of operation selected.

  Cooling / Dry mode : Horizontal flow 1

  Heating mode : Downward flow 7
- During AUTO operation, for the first a few minutes after beginning operation, airflow will be horizontal 1; the air direction cannot be adjusted during this period.
  The airflow direction setting will temporarily become 1 when the temperature of the airflow is low at the start of the Heating mode.
- After beginning of AUTO/HEAT mode operated and automatic defrosting operation, the airflow will be horizontal 1. However, the airflow direction cannot be adjusted at beginning AUTO operation mode.

4-2. Vertical louver control

Each time the button is pressed, the airflow direction range will change as below:



Remote controller display is not changed.

CONTROL AND FUNCTIONS

4-3. Swing operation

- To select up/down airflow swing operation
  When the swing signal is received, the horizontal louver starts to swing.
  - Swinging range
    - Cooling mode/dry mode/fan mode (1 to 3): 1 ↔ 4
    - Heating mode/fan mode (4 to 6): 3 ↔ 6
  - When the indoor fan is S-LOW or stop mode, the swing operation is interrupted and it stops at either upper end or bottom end.

- To select left/right airflow swing operation
  When the swing signal is received, the vertical louver starts to swing.
  - Swinging range
    - All mode: 1 ↔ 5
  - When the indoor fan is S-LOW or stop mode, the swing operation is interrupted and it stops at either left end or right end.

- To select up/down and left/right airflow swing operation
  When the swing signal is received, both of the vertical and the horizontal louvers start to swing.

CONTROL AND FUNCTIONS

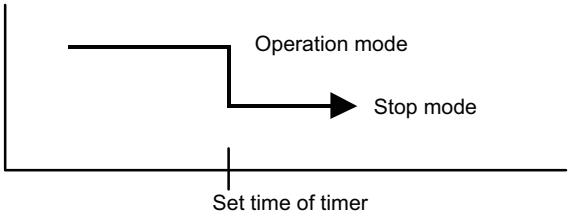
5. Timer operation control

5-1. Wireless remote control

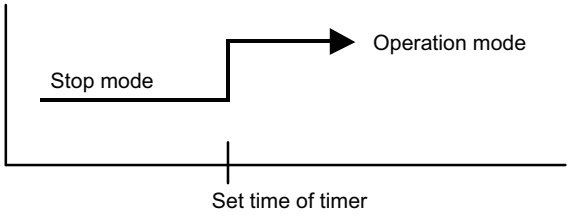
On/Off timer	Program timer	Sleep timer	Weekly timer
○	○	○	—

■ On/Off timer

- Off timer: When the clock reaches the set timer, the air conditioner will be turned off.

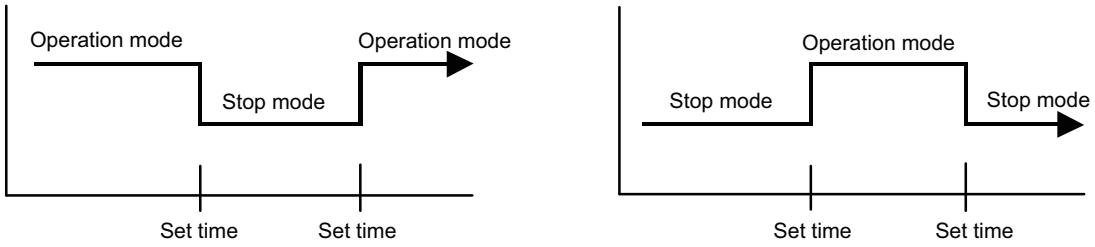


- On timer: When the clock reaches the set timer, the air conditioner will be turned on.



■ Program timer

- The program timer allows the off timer and the on timer to be used in combination one time.



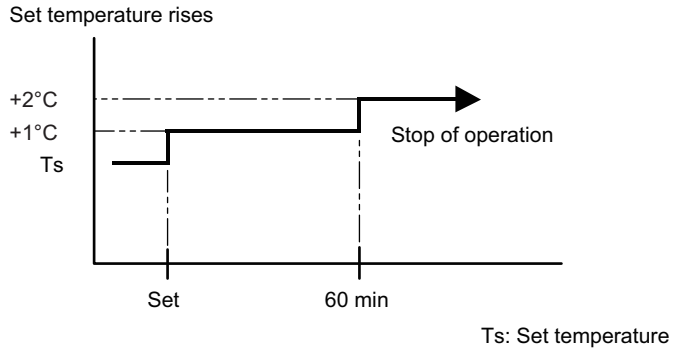
- Operation will start from the timer setting (either off timer and on timer) whichever is closest to the clock current timer setting. The order of operations is indicated by the allow in the remote controller screen.
- Sleep timer operation cannot be combined with on timer operation.

CONTROL AND FUNCTIONS

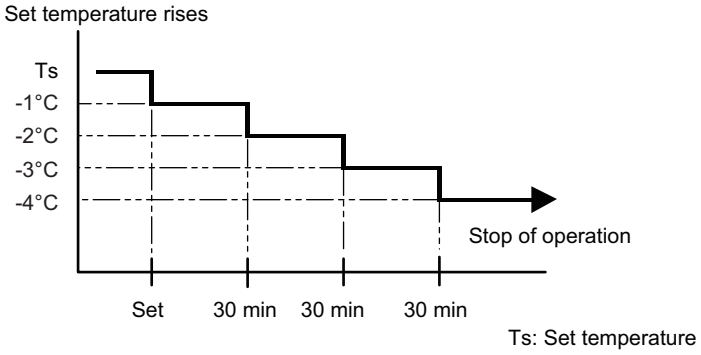
■ Sleep timer

If the sleep timer is set, the room temperature is monitored and the operation is stopped automatically. If the operation mode or the set temperature is change after the sleep timer is set, the operation is continued according to the changed setting of the sleep timer from that time on.

- In the cooling operation mode
  When the sleep timer is set, the setting temperature is increased 1°C. It increases the setting temperature another 1°C after 1 hour. After that, the setting temperature is not changed and the operation is stopped at the setting time.



- In the heating operation mode
  When the sleep timer is set, the setting temperature is decreased 1°C. It decreases the setting temperature another 1°C every 30 minutes. Upon lowering 4°C, the setting temperature is not changed and the operation is stopped at the setting time.



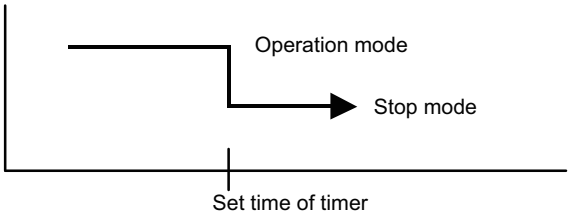
CONTROL AND FUNCTIONS

5-2. Wired remote control

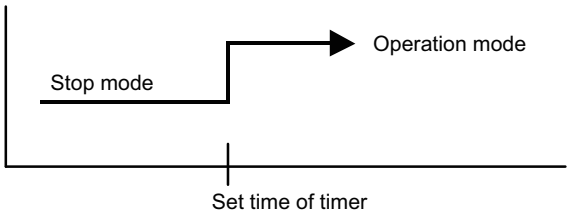
On/Off timer	Program timer	Sleep timer	Weekly timer	Temperature Setback Timer
○	○	○	○	○

■ On/Off timer

- Off timer: When the clock reaches the set timer, the air conditioner will be turned off.



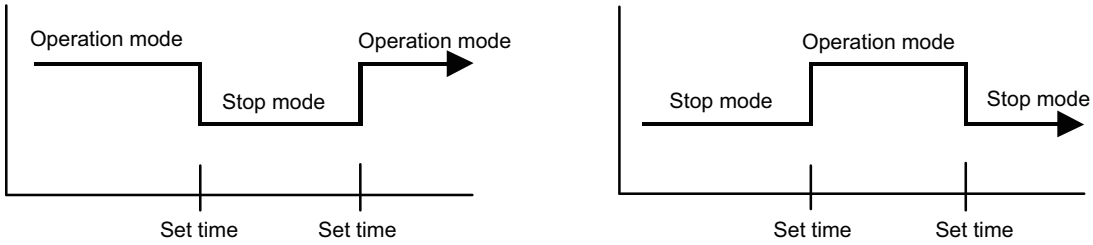
- On timer: When the clock reaches the set timer, the air conditioner will be turned on.



CONTROL AND FUNCTIONS

■ Program timer

- The program timer allows the off timer and the on timer to be used in combination one time.

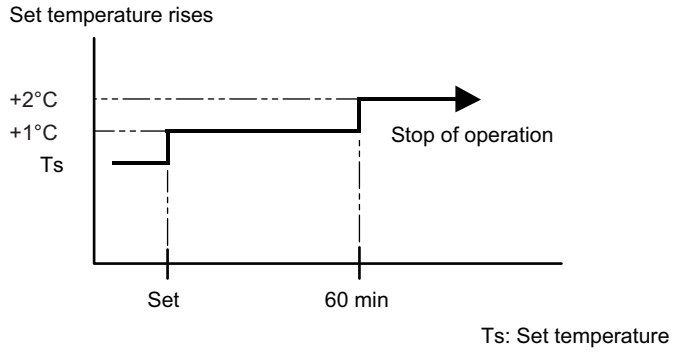


- Operation will start from the timer setting (either off timer and on timer) whichever is closest to the clock current timer setting. The order of operations is indicated by the allow in the remote controller screen.
- Sleep timer operation cannot be combined with on timer operation.

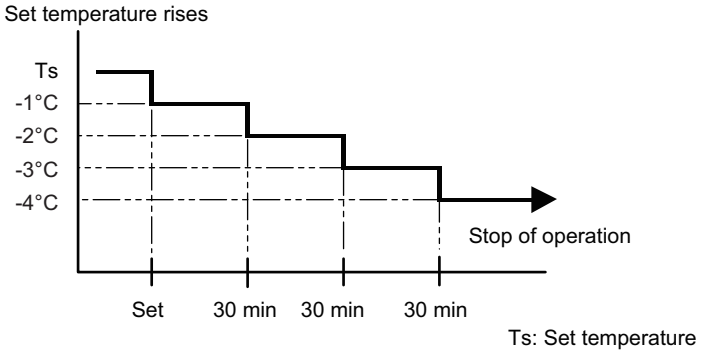
■ Sleep timer

If the sleep timer is set, the room temperature is monitored and the operation is stopped automatically. If the operation mode or the set temperature is change after the sleep timer is set, the operation is continued according to the changed setting of the sleep timer from that time on.

- In the cooling operation mode
  When the sleep timer is set, the setting temperature is increased 1°C. It increases the setting temperature another 1°C after 1 hour. After that, the setting temperature is not changed and the operation is stopped at the setting time.



- In the heating operation mode
  When the sleep timer is set, the setting temperature is decreased 1°C. It decreases the setting temperature another 1°C every 30 minutes. Upon lowering 4°C, the setting temperature is not changed and the operation is stopped at the setting time.



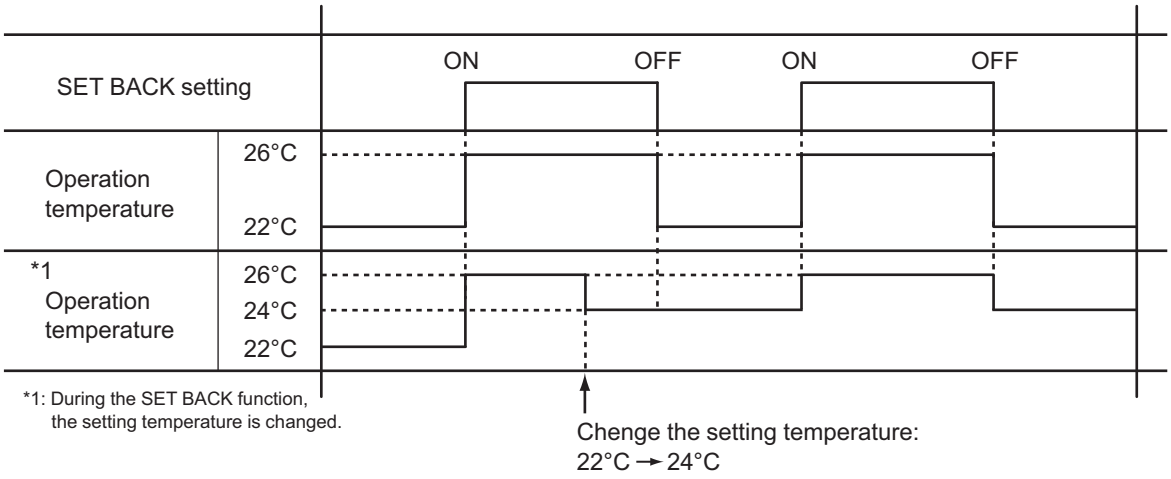
■ Weekly timer

On and off timer can be combined, and up to 4 reservations per day and 28 reservations per week. Before setting the program, set the week and time of the air conditioner at first. If the week and time are not set, the weekly timer will not operate correctly at the setting time.

■ Temperature Setback Timer

- The temperature setback timer only changes the set temperature for 7 days, it cannot be used to start or stop air conditioner operation.
- The temperature setback timer can be set to operate up to two times per day but only one temperature setting can be used.
- During COOLING/DRY mode, the air conditioner will operate at a minimum of 18°C even if the SET BACK temperature is set to 17°C or lower.

Case of Temperature Setback Timer on the Cooling operation. (Setting temperature :22°C, SET BACK temperature :26°C)



CONTROL AND FUNCTIONS

6. Defrost operation control

Tn: Outdoor unit heat exchanger temperature
Tom: Outdoor heat exchanger middle temperature
Ta: Outdoor temperature
Tn10: Temperature at 10 minutes after compressor start
Tnb: Temperature before 5 minutes

• Triggering condition

The defrost operation starts when outdoor unit heat exchanger temperature sensor detects the temperature lower than the values shown below.

– **1st time defrosting after starting operation**

Compressor integrating operation time	Less than 17 min.	17 to 57 min.	More than 57 min.
Condition	Does not operate	Tn ≤ -9°C and Tn-Ta ≥ 5 deg	Tn ≤ -5°C

– **2nd time and after**

Compressor integrating operation time	Less than 40 min.	More than 40 min.
Condition	Does not operate	Tn-Tn10 < -5 deg (Tn ≤ -6°C) Tn-Tnb < -2 deg (Tn ≤ -6°C)* Tn ≤ -17°C (Ta ≥ -10°C) Tn ≤ Ta-7°C or Tn ≤ -30°C (-25°C ≤ Ta < -10°C) Tn ≤ Ta-7°C or Tom ≤ -38°C (Ta < -25°C)

*: Detection continues in the following sequence (Tn ≤ -6°C)

1. "Tn-Tnb < -2 deg" is detected.
2. "Tn-Tnb < 0 deg" is detected 5 minutes after step 1.
3. Besides the detection of step 2, "Tn-Tnb < -2 deg" is additionally detected or not.
4. Judges if step 3 detection continues or not.

– **Integrating defrost (Constant monitoring)**

Compressor integrating operation time	More than 240 min. (For long continuous operation)	More than 215 min. (For long continuous operation	Less than 10 min.* (For intermittent operation)
Condition	Tn ≤ -3°C	Tn ≤ -5°C	Count of the compressor off: 40 times

*: If the compressor continuous operation time is less than 10 minutes, the number of the compressor off is counted. If any defrost operated, the compressor off count is cleared.

• Release condition

The defrost operation is released when either one of the conditions below is satisfied.

Outdoor unit heat exchanger temperature (after 1 minute or later since compressor start)	16°C or more
Compressor operation time	15 minutes

CONTROL AND FUNCTIONS

6-1. Defrost operation in heating operation stopped

If the outdoor unit is frosted when stopping the heating operation, it stops after performing the automatic defrosting operation.

In this time, if the indoor unit operation lamp flashes slowly (6 sec on/2 sec off), the outdoor unit allow the heat exchanger to defrost, and then stop.

• Triggering condition

When all of the following conditions are satisfied in heating operation

– Compressor operation integrating time: 30 minutes or more
– Compressor continuous operation time: 10 minutes or more
– Outdoor unit heat exchanger temperature: -4°C or less

• Release condition

The defrost operation is released when either one of the conditions below is satisfied.

Outdoor unit heat exchanger temperature (after 1 minute or later since compressor start)	16°C or more
Compressor operation time	15 minutes

CONTROL AND FUNCTIONS

7. Various control

7-1. Auto restart

When the power was interrupted by a power failure etc. during operation, the operation contents at that time are memorized and when the power is recovered, operation is automatically started with the memorized operation contents.

Operation contents memorized when the power is interrupted
Operation mode
Setting temperature
Fan mode setting
Timer mode and set time (set by wireless remote controller)
Airflow direction setting
Swing
ECONOMY operation
10 °C HEAT operation
Outdoor low noise operation
Remote control setting
WLAN indicator lamp setting

CONTROL AND FUNCTIONS

7-2. MANUAL AUTO operation

When the wireless remote controller is lost or battery power dissipated, this function will work without the remote controller.

When MANUAL AUTO button is pressed more than 3 seconds and less than 10 seconds, MANUAL AUTO operation starts as shown in the table below. To stop operation, press the MANUAL AUTO button for 3 seconds.

Operation mode	Auto changeover
Fan mode	AUTO
Timer mode	Continuous (no timer setting available)
Setting temperature	24°C
Horizontal louver setting	Standard
Vertical louver setting	According to memory position
SWING	Off
ECONOMY	Off
Human sensor	Off

7-3. Forced cooling operation

The outdoor unit may not operate depending on the room temperature.

When FORCED COOLING OPERATION button is pressed more than 10 seconds, forced cooling operation starts as shown in the table below.

Operation mode	Cooling
Fan mode	HIGH
Timer mode	Continuous (no timer setting available)
Setting temperature	24°C
Horizontal louver setting	Standard
Vertical louver setting	According to memory position
SWING	Off
ECONOMY	Off
Human sensor	Off

- During the forced cooling operation, it operates regardless of room temperature sensor.
- The operation indicator lamp and the timer indicator lamp blink simultaneously during the forced cooling operation.
  They blink for 1 second ON and 1 second OFF on both the operation indicator lamp and the timer indicator lamp (same as test operation).

By performing one of the following action, test operation will be canceled:

- Pressing the remote controller START/STOP button
- Pressing FORCED COOLING OPERATION button for 3 seconds
- 60 minutes passed after starting forced cooling operation

NOTE: When HEAT operation is selected on the remote controller during forced cooling operation, heating test run will begin in about 3 minutes.

CONTROL AND FUNCTIONS

7-4. 10 °C HEAT operation

10 °C HEAT operation performs as below setting when pressing 10 °C HEAT button.

Operation mode	Heating
Setting temperature	10°C
Fan mode	AUTO
LED display	Economy
Defrost operation	Operate as normal

7-5. ECONOMY operation

The ECONOMY operation starts by pressing ECONOMY button on the remote controller.

The ECONOMY operation is almost the same operation as below settings.

Mode	Cooling/Dry	Heating
Target temperature	Setting temperature +1°C	Setting temperature -1°C

7-6. POWERFUL operation

The POWERFUL operation starts by pressing POWERFUL button on the remote controller.
The indoor unit and outdoor unit operate at maximum power as shown in the table below.

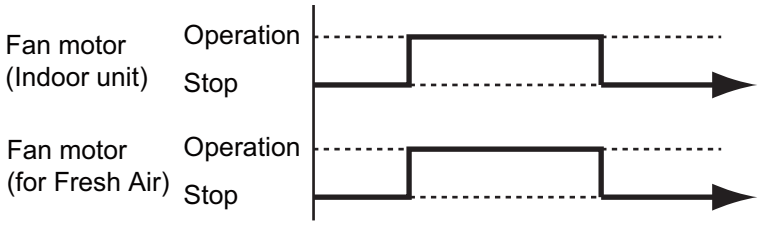
Rotation number of compressor		Maximum
Fan mode		POWERFUL
Horizontal louver setting	Cooling	3
	Dry	
	Heating	7

Release condition:

- Cooling/Dry
  Room temperature ≤ Setting temperature -0.5°C or Operation time has passed 20 minutes.
- Heating
  Room temperature ≥ Setting temperature +0.5°C or Operation time has passed 20 minutes.

7-7. Fresh air control

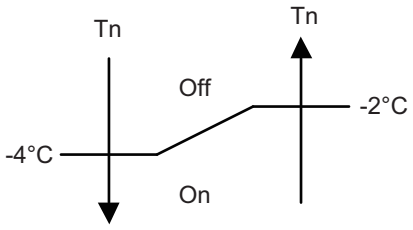
The fan motor for Fresh Air is operated in synchronization with the indoor fan operation as below.



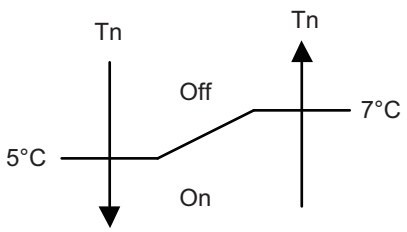
7-8. Compressor preheating

By preheating the compressor, warm airflow is quickly discharged when the operation is started.

- **Triggering condition**
  – 30 minutes after compressor stopped.
  – Outdoor unit heat exchanger temperature (Tn)

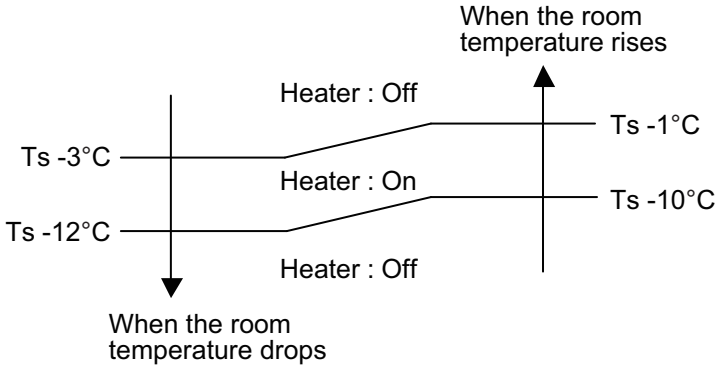


When the jumper wire (JM2) is disconnected:



7-9. External electrical heater control

The external electrical heater is operated as below.



NOTES:

- When the compressor stop, external electric heater is off.
- It operates only in heating mode and when the indoor fan operates. (However, S-LOW is excluded.)

CONTROL AND FUNCTIONS

7-10. Electronic expansion valve control

The most proper opening of the electronic expansion valve is calculated and controlled under the present operating condition based on the table below.

Operation mode	Pulse range
Cooling/dry mode	Between 52 and 480 pulses
Heating mode	

NOTE: At the time of supplying the power to the outdoor unit, the initialization of the electronic expansion valve is operated (528 pulses are input to the closing direction).

7-11. Prevention to restart for 3 minutes (3 minutes st)

When the compressor fails to start for the number of times below, it does not enter operation status for 3 minutes.

Retry number	50
Retry set number	3

When the compressor fails to start in the retry set number above, the compressor is stopped.

7-12. 4-way valve control

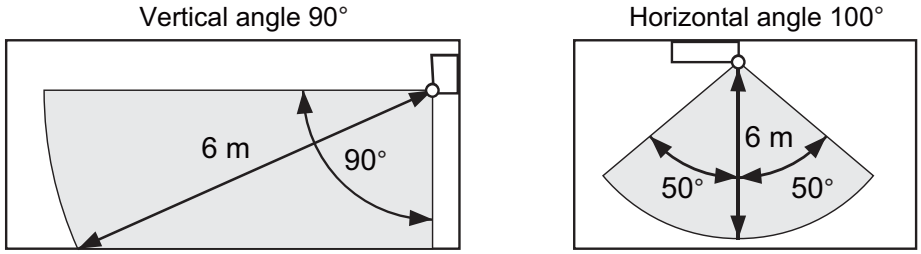
- If heating mode is selected at the compressor start, 4-way valve is energized for heating.
- When the air conditioner is switched between cooling and heating mode, compressor is stopped, and the 4-way valve is switched when the 140 seconds passes and the compressor is started.

7-13. Human sensor for energy saving

If no one enters the room for approximately 20 minutes, the set temperature is automatically controlled. (When someone comes back into the room, the human sensor detect this, and automatically revert to the original settings.)

Operation mode	Operation details (If there is no one in the room for a while)
Cool/Dry	The setting temperature is increased by maximum 2°C. (Maximum setting temperature: 30°C)
Heat	The setting temperature is decreased by maximum 4°C. (Minimum setting temperature: 16°C)
Auto	Energy saving function is performed automatically for the selected mode (cool/heat/dry).

- Application range:



Energy saving function may not work when the room temperature is very different from the temperature defined in the temperature setting, such as when immediately after starting the operation.

- Details about detection with the human sensor:
  The human sensor detects whether there are people in the room by looking for movement by people in the room.

7-14. Outdoor unit low noise operation

The outdoor unit low noise operation functions by OUTDOOR UNIT LOW NOISE button on the remote controller.

This operation stops the PFC control, and changes the current value.

- **Models: AOEH09KHCBN and AOEH12KHCBN**

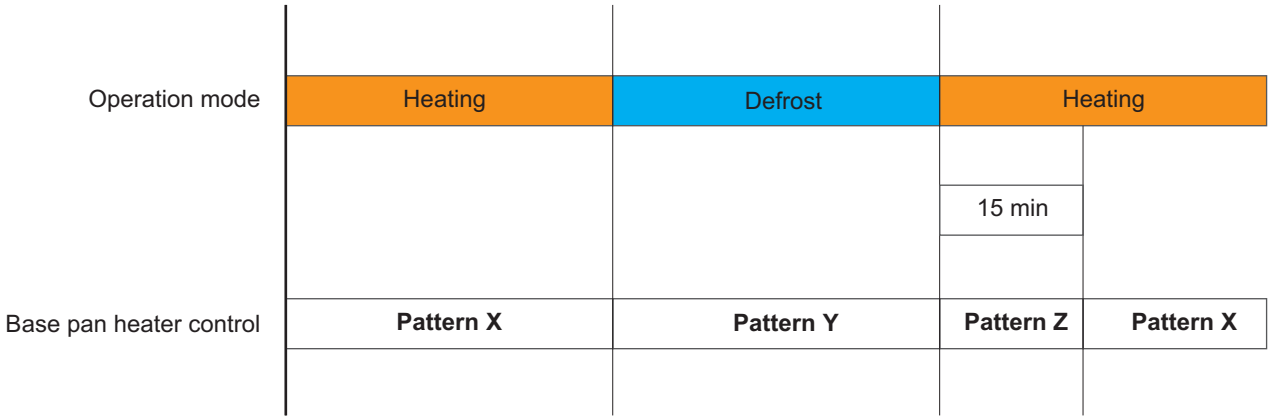
Operation mode	Current	
	Trigger condition	Release condition
Cooling/Dry mode	4.5 A	4.0 A
Heating mode	7.0 A	6.5 A

- **Model: AOEH14KHCBN**

Operation mode	Current	
	Trigger condition	Release condition
Cooling/Dry mode	7.0 A	6.5 A
Heating mode	10.5 A	10.0 A

7-15. Base pan heater control

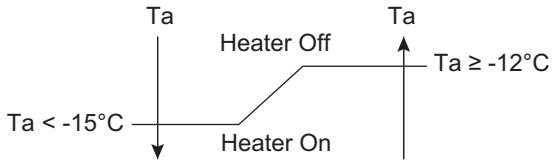
The base pan heater operates as follows, depending on the outdoor temperature and operating condition.



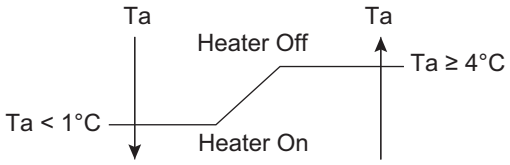
CONTROL AND FUNCTIONS

Control pattern

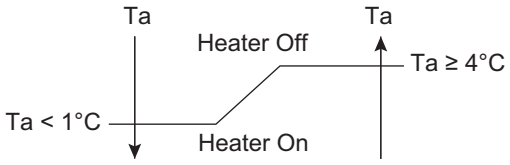
Pattern X



Pattern Y



Pattern Z



Ta: Outdoor temperature

7-16. Unit status monitoring and the detected value indication

The wired remote controller can monitor the indoor and outdoor units' status and display the detected result as a relevant ID.

For details of the display method, refer to the Chapter of “Display Sensor Values” in the *Installation Manual* of Wired Remote Controller (Touch Panel).

The status can be monitored and displayed on the wired remote controller by assigning an arbitrary ID. For available ID list, refer to the table below.

NOTE: Operating time for each part cannot be reset when the part is replaced. Take notes of the operating time before replacing to count the operating time of the replaced part.

Available Sensor ID				
Sensor ID		**Item**	**Unit**	**Remarks**
00: Indoor unit				
00	000	Suction temp.	01: °C or °F	
00	001	Room temp.	01: °C or °F	When the wired remote controller thermistor is enabled, temperature of the wired remote controller thermistor is displayed.
00	002	Wired remote controller detected temp.	01: °C or °F	
00	006	Heat exchanger middle temp.	01: °C or °F	
00	020	Fan rotation number	03: rpm	
00	054	Air cleaner status On/Off	08: On/Off	0: Off, 1: On
00	055	Limit switch 1 (For grille) On/Off	08: On/Off	0: Off, 1: On
00	080	Indoor unit total energized hours	11: h	
00	081	Total filtering hours	11: h	
00	082	Indoor unit fan total operation hours	11: h	
00	086	Plasma air clean unit energized hours count (for cleaning time notification)	11: h	
00	095	Presence or absence detected by human sensor	00: —	0: Absence, 1: Presence —: Human sensor error or No human sensor
00	140	Operation or Stop (External input)	00: —	0: Off, 1: On —: When the function setting 46 is not set **NOTE:** Available only for external input port of the indoor unit
00	142	Forced stop (External input)	00: —	0: Off, 1: On —: When the function setting 46 is not set **NOTE:** Available only for external input port of the indoor unit
00	143	Operation or Stop 2 (External input)	00: —	0: Off, 1: On —: When the function setting 46 is not set **NOTE:** Available only for external input port of the indoor unit
00	155	Operation or Stop On/Off (External output)	00: —	0: Off, 1: On **NOTE:** The value is output even if the function setting or rotary switch is not set.
00	156	Error On/Off (External output)	00: —	0: Off, 1: On **NOTE:** The value is output even if the function setting or rotary switch is not set.

CONTROL AND FUNCTIONS

Available Sensor ID				
Sensor ID		**Item**	**Unit**	**Remarks**
00	157	Indoor unit fan interlocking On/Off (External output)	00: —	0: Off, 1: On **NOTE:** The value is output even if the function setting or rotary switch is not set.
00	158	Cooling thermostat On/Off (External output)	00: —	0: Off, 1: On **NOTE:** The value is output even if the function setting or rotary switch is not set.
00	159	Requested cooling strength On/Off (External output)	00: —	0: Off, 1: On **NOTE:** The value is output even if the function setting or rotary switch is not set.
00	160	External heater On/Off (External output)	00: —	0: Off, 1: On **NOTE:** The value is output even if the function setting or rotary switch is not set.
00	161	Heating operation status (External output)	00: —	0: Off, 1: On **NOTE:** The value is output even if the function setting or rotary switch is not set.
00	162	External output command by remote controller (External output)	00: —	0: Off, 1: On **NOTE:** The value is output even if the function setting or rotary switch is not set.
01: Outdoor unit				
01	000	Outdoor temp.	01: °C or °F	
01	001	Discharge temp.	01: °C or °F	
01	003	Heat exchanger middle temp.	01: °C or °F	
01	004	Heat exchanger outlet temp.	01: °C or °F	
01	007	Compressor temp.	01: °C or °F	
01	050	Fan 1 rotation number	03: rpm	
01	055	Compressor rotation number	04: rps	
01	060	Expansion valve (Upstream during heating)	05: pls	
01	080	4-way valve output status	07: Cooling/ Heating	0: Cooling, 1: Heating
01	089	Base pan heater output On/Off	08: On/Off	0: Off, 1: On
01	100	Operating current	09: A	
01	110	Outdoor unit total power-on hours	11: h	
01	111	Compressor total heating operation hours	11: h	
01	112	Compressor total cooling operation hours	11: h	
01	113	Compressor total operation hours	11: h	
01	114	Outdoor unit fan 1 total operation hours	11: h	

8. Various protections

8-1. Discharge gas temperature over-rise prevention control

The discharge gas temperature sensor (discharge thermistor: outdoor unit side) detects the discharge gas temperature.

- When the discharge temperature becomes higher than the trigger condition, the rotation number of compressor is decreased as the table below, and it continues to decrease until the discharge temperature becomes lower than the trigger condition.
- When the discharge temperature becomes lower than the release condition, control of compressor rotation number is released.
- When the discharge temperature becomes higher than the compressor protection temperature, the compressor is stopped and the indoor unit indicator lamp starts blinking.

Trigger condition	104°C
Rotation number of compressor	-20 rps/120 seconds
Release condition	101°C
Compressor protection temperature	110°C

CONTROL AND FUNCTIONS

8-2. Anti-freezing control (cooling and dry mode)

The rotation number of compressor is decrease in cooling and dry mode when the indoor unit heat exchanger temperature sensor detects the temperature lower than the trigger condition.

When the indoor unit heat exchanger temperature reaches release condition, the anti-freezing control is stopped.

Trigger condition		4°C
Release condition	Outdoor temp. ≥ 10°C*1 Outdoor temp. ≥ 12°C*2	7°C
	Outdoor temp. < 10°C*1 Outdoor temp. < 12°C*2	13°C

*1: During the outdoor temperature dropping

*2: During the outdoor temperature rising

8-3. Current release control

The rotation number of compressor is controlled so that the outdoor unit input current does not exceeds current limit value set according to the outdoor temperature.

The rotation number of compressor returns according to the operation mode, when the current becomes lower than the release value.

■ Model: AOEH09KHCBN

The rotation number of compressor is controlled so that the outdoor unit input current does not exceeds current limit value set according to the outdoor temperature.

The rotation number of compressor returns according to the operation mode, when the current becomes lower than the release value.

Operation mode	Outdoor temp. (Ta)	Trigger condition	Release condition
Cooling	50°C ≤ Ta	4.5 A	4.0 A
	46°C ≤ Ta < 50°C	4.5 A	4.0 A
	40°C ≤ Ta < 46°C	5.5 A	5.0 A
	12°C ≤ Ta < 40°C	5.5 A	5.0 A
	2°C ≤ Ta < 12°C	5.5 A	5.0 A
	Ta < 2°C	5.5 A	5.0 A
Heating	17°C ≤ Ta	7.0 A	6.5 A
	12°C ≤ Ta < 17°C	9.0 A	8.5 A
	5°C ≤ Ta < 12°C	9.0 A	8.5 A
	Ta < 5°C	9.0 A	8.0 A

■ Model: AOEH12KHCBN

The rotation number of compressor is controlled so that the outdoor unit input current does not exceeds current limit value set according to the outdoor temperature.

The rotation number of compressor returns according to the operation mode, when the current becomes lower than the release value.

Operation mode	Outdoor temp. (Ta)	Trigger condition	Release condition
Cooling	50°C ≤ Ta	4.5 A	4.0 A
	46°C ≤ Ta < 50°C	4.5 A	4.0 A
	40°C ≤ Ta < 46°C	6.0 A	5.5 A
	12°C ≤ Ta < 40°C	6.5 A	6.0 A
	2°C ≤ Ta < 12°C	6.5 A	6.0 A
	Ta < 2°C	6.5 A	6.0 A
Heating	17°C ≤ Ta	7.0 A	6.5 A
	12°C ≤ Ta < 17°C	9.0 A	8.5 A
	5°C ≤ Ta < 12°C	12.0 A	11.5 A
	Ta < 5°C	12.0 A	11.5 A

CONTROL AND FUNCTIONS

■ Model: AOEH14KHCBN

The rotation number of compressor is controlled so that the outdoor unit input current does not exceeds current limit value set according to the outdoor temperature.
The rotation number of compressor returns according to the operation mode, when the current becomes lower than the release value.

Operation mode	Outdoor temp. (Ta)	Trigger condition	Release condition
Cooling	50°C ≤ Ta	7.0 A	6.5 A
	46°C ≤ Ta < 50°C	7.0 A	6.5 A
	40°C ≤ Ta < 46°C	8.0 A	7.5 A
	12°C ≤ Ta < 40°C	8.0 A	7.5 A
	2°C ≤ Ta < 12°C	8.0 A	7.5 A
	Ta < 2°C	8.0 A	7.5 A
Heating	17°C ≤ Ta	10.5 A	10.0 A
	12°C ≤ Ta < 17°C	13.0 A	12.5 A
	5°C ≤ Ta < 12°C	15.0 A	14.5 A
	Ta < 5°C	15.0 A	14.5 A

CONTROL AND FUNCTIONS

8-4. Compressor temperature protection

When the compressor temperature sensor detects higher than the trigger condition below, the compressor is stopped. When the compressor temperature sensor detects the release condition, the protection is released.

Trigger condition	108°C
Release condition	80°C (3 minutes after compressor stop)

8-5. High pressure protection

Trigger condition	Pressure switch: Off (Open: Higher than 4.2 MPa) Compressor stop
Release condition	Pressure switch: On (Close: Lower than 3.2 MPa) (3 minutes after compressor stop) Compressor restart

8-6. Low outdoor temperature protection

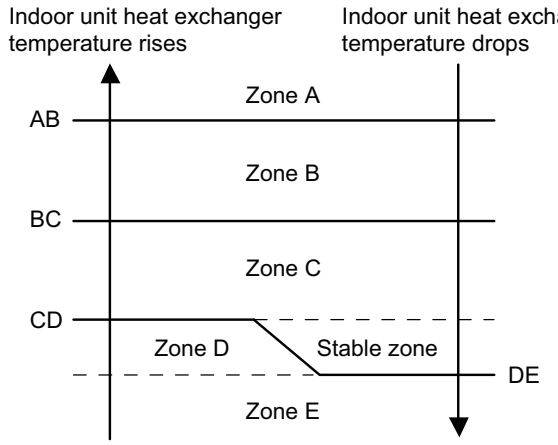
When the outdoor temperature sensor detects lower than the trigger condition below, the compressor is stopped.

Operation mode	Cooling/Dry
Trigger condition	-15°C
Release condition	-10°C

8-7. High temperature and high pressure release control

The compressor is controlled as follows.

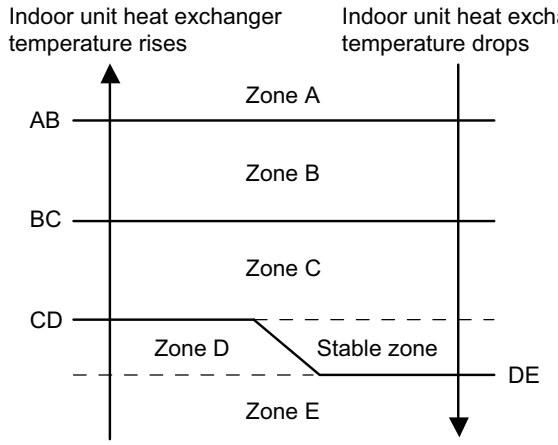
- **Cooling mode**



AB: 61°C
BC: 60°C
CD: 59°C
DE: 54°C

Zone	Operation	
Zone A	Compressor is stopped.	
Zone B	The compressor frequency is decreased.	-30 rps/30 sec.
Zone C		-5 rps/60 sec.
Zone D	The protection is released and the operation is returned to normal mode.	
Zone E		

- **Heating mode**



AB: 63°C
BC: 55°C
CD: 53°C
DE: 50°C

Zone	Operation	
Zone A	Compressor is stopped.	
Zone B	The compressor frequency is decreased.	-25 rps/120 sec.
Zone C		-3 rps/60 sec.
Zone D	The protection is released and the operation is returned to normal mode.	
Zone E		

CONTROL AND FUNCTIONS

CONTROL AND FUNCTIONS

REFRIGERANT R32
INVERTER

5. FILED WORKING

CONTENTS

5. FILED WORKING

1. Function settings

To adjust the functions of this product according to the installation environment, various types of function settings are available.

NOTE: Incorrect settings can cause a product malfunction.

1-1. Function settings by using remote controller

Some function settings can be changed on the remote controller. After confirming the setting procedure and the content of each function setting, select appropriate functions for your installation environment.

■ Setting procedure by using wireless remote controller

The function number and the associated setting value are displayed on the LCD of the remote controller. Follow the instructions written in the local setup procedure supplied with the remote controller, and select appropriate setting according to the installation environment.

Before connecting the power supply of the indoor unit, reconfirm following items:

- Cover for the electrical enclosure on the outdoor unit is in place.
- There is no wiring mistake.
- Piping air tightness test and vacuuming have been performed firmly.
- All the necessary wiring work for outdoor unit has been finished.

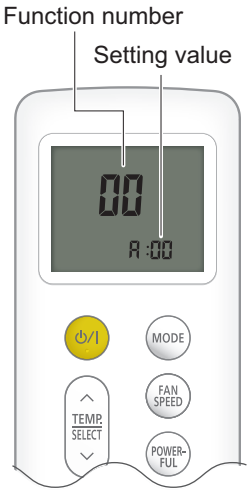
After reconfirming the items listed above, connect the power supply of the indoor unit.

NOTES:

- Settings will not be changed if invalid numbers or setting values are selected.
- When optional wired remote controller is used, refer to the installation manual enclosed with the remote controller.

Entering function setting mode:

While pressing the FAN SPEED button and TEMP./SELECT (∧) button simultaneously, press the RESET button to enter the function setting mode.



Selecting the function number and setting value:

1. Press MODE button.
2. Press the TEMP./SELECT (∧) (∨) buttons to select the function number. (Press MODE button to switch between the left and right digits.)
3. Press the FAN SPEED button to proceed to value setting. (Press FAN SPEED button again to return to the function number selection.)
4. Press the TEMP./SELECT (∧) (∨) buttons to select the setting value. (Press MODE button to switch between the left and right digits.)
5. Press the POWERFUL button once. Please confirm the beeping sound.
6. Press the START/STOP button once to fix the Function setting. Please confirm the beeping sound.
7. Press the RESET button to cancel the function setting mode.
8. After completing the function setting, be sure to disconnect the power supply and then reconnect it.

⚠ CAUTION

After disconnecting the power supply, wait 30 seconds or more before reconnecting it. The function setting will not become active unless the power supply is disconnected and then reconnected.

■ Contents of function setting

Each function setting listed in this section is adjustable in accordance with the installation environment.

NOTE: Setting will not be changed if invalid numbers or setting values are selected.

● Function setting list

	Function no.	Functions
1)	11	Filter sign
2)	30/31	Room temperature control for indoor unit sensor
3)	35/36	Room temperature control for wired remote controller sensor
4)	40	Auto restart
5)	42	Room temperature sensor switching
6)	44	Remote controller custom code
7)	46	External input control
8)	48	Room temperature sensor switching (Aux.)
9)	49	Indoor unit fan control for energy saving for cooling
10)	60	Switching functions for external output terminal

1) Filter sign

Select appropriate intervals for displaying the filter sign on the indoor unit according to the estimated amount of dust in the air of the room.

If the indication is not required, select "No indication" (03).

Function number	Setting value	Setting description	Factory setting
11	00	Standard (400 hours)	
	01	Long interval (1,000 hours)	
	02	Short interval (200 hours)	
	03	No indication	♦

FIELD WORKING

2) Room temperature control for indoor unit sensor

Depending on the installed environment, correction of the room temperature sensor may be required. Select the appropriate control setting according to the installed environment.

The temperature of the room temperature sensor is corrected as follows:

Corrected temp. = Temp. of the room temp. sensor - Correction temp. value

Example of correction:

When the temperature of the room temp. sensor is 26°C and the setting value is “03” (-1.0°C), corrected temp. will be 27°C (26°C - [-1.0°C]).

The temperature correction values show the difference from the Standard setting "00" (manufacturer’s recommended value).

Function number		Setting value	Setting description		Factory setting
30 (For cooling)	31 (For heating)	00	Standard setting		♦
		01	No correction 0.0°C		
		02	-0.5°C	More cooling Less heating	
		03	-1.0°C		
		04	-1.5°C		
		05	-2.0°C		
		06	-2.5°C		
		07	-3.0°C		
		08	-3.5°C		
		09	-4.0°C		
		10	+0.5°C	Less cooling More heating	
		11	+1.0°C		
		12	+1.5°C		
		13	+2.0°C		
		14	+2.5°C		
		15	+3.0°C		
		16	+3.5°C		
		17	+4.0°C		

FIELD WORKING

3) Room temperature control for wired remote controller sensor

Depending on the installed environment, correction of the wire remote temperature sensor may be required. Select the appropriate control setting according to the installed environment.

To change this setting, set Function 42 to Both “01”.

Ensure that the Thermo Sensor icon is displayed on the remote controller screen.

Function number		Setting value	Setting description		Factory setting
35 (For cooling)	36 (For heating)	00	Standard setting		♦
		01	No correction 0.0°C		
		02	-0.5°C	More cooling Less heating	
		03	-1.0°C		
		04	-1.5°C		
		05	-2.0°C		
		06	-2.5°C		
		07	-3.0°C		
		08	-3.5°C		
		09	-4.0°C		
		10	+0.5°C	Less cooling More heating	
		11	+1.0°C		
		12	+1.5°C		
		13	+2.0°C		
		14	+2.5°C		
		15	+3.0°C		
		16	+3.5°C		
		17	+4.0°C		

4) Auto restart

Enables or disables automatic restart after a power interruption.

Function number	Setting value	Setting description	Factory setting
40	00	Enable	♦
	01	Disable	

NOTE: Auto restart is an emergency function such as for power outage etc. Do not attempt to use this function in normal operation. Be sure to operate the unit by remote controller or external device.

5) Room temperature sensor switching

(Only for wired remote controller)

When using the wired remote controller temperature sensor, change the setting to "Both" (01).

Function number	Setting value	Setting description	Factory setting
42	00	Indoor unit	♦
	01	Both	

00: Sensor on the indoor unit is active.

01: Sensors on both indoor unit and wired remote controller are active.

NOTE: Remote controller sensor must be turned on by using the remote controller.

FIELD WORKING

6) Remote controller custom code

(Only for wireless remote controller)

The indoor unit custom code can be changed. Select the appropriate custom code.

Function number	Setting value	Setting description	Factory setting
44	00	A	♦
	01	B	
	02	C	
	03	D	

7) External input control

"Operation/Stop" mode or "Forced stop" mode can be selected.

Function number	Setting value	Setting description	Factory setting
46	00	Operation/Stop mode 1 (Remote controller enabled)	♦
	01	(Setting prohibited)	
	02	Forced stop mode	
	03	Operation/Stop mode 2 (Remote controller disabled)	

FIELD WORKING

8) Room temperature sensor switching (Aux.)

To use the temperature sensor on the wired remote controller only, change the setting to "Wired remote controller" (01).

This function will only work if the function setting 42 is set at "Both" (01).

When the setting value is set to "Both" (00), more suitable control of the room temperature is possible by setting function setting 30 and 31 too.

Function number	Setting value	Setting description	Factory setting
48	00	Both	♦
	01	Wired remote controller	

9) Indoor unit fan control for energy saving for cooling

Enables or disables the power-saving function by controlling the indoor unit fan rotation when the outdoor unit is stopped during cooling operation.

Function number	Setting value	Setting description	Factory setting
49	00	Disable	
	01	Enable	
	02	Remote controller	♦

00: When the outdoor unit is stopped, the indoor unit fan operates continuously following the setting on the remote controller.

01: When the outdoor unit is stopped, the indoor unit fan operates intermittently at a very low speed.

02: Enable or disable this function by remote controller setting.

NOTE: Set to "00" or "01" when connecting a remote controller that cannot set the Fan control for energy saving function or connecting a network converter. To confirm if the remote controller has this setting, refer to the operating manual of each remote controller.

10) Switching functions for external output terminal

Functions of the external output terminal can be switched. For details, refer to “External input and output”.

Function number	Setting value	Setting description	Factory setting
60	00	Operation status	♦
	01—08	(Setting prohibited)	
	09	Error status	
	10	Indoor unit fan operation status	
	11	(Setting prohibited)	

FIELD WORKING

1-2. Custom code setting for wireless remote controller

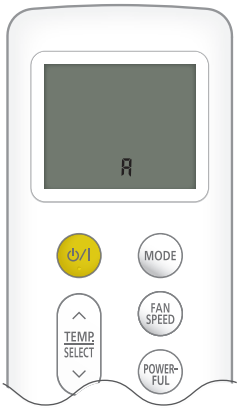
To interconnect the air conditioner and the wireless remote controller, assignment of the custom code for the wireless remote controller is required.

NOTE: Air conditioner cannot receive a signal if the air conditioner has not been set for the custom code.

When 2 or more air conditioners are installed in a room, and the remote controller is operating an air conditioner other than the one you wish to set, change the custom code of the remote controller to operate only the air conditioner you wish to set. (4 selections possible.)

Confirm the setting of the remote controller custom code and the function setting. If these do not match, the remote controller cannot be used to operate for the air conditioner.

1. Press the START/STOP button until only the clock is displayed on the remote controller display.
2. Press the MODE button for at least 5 seconds to display the current custom code. (Initially set to A.)
3. Press the TEMP./SELECT (∧) (∨) buttons to change the custom code between A →b →c →d. Match the code on the display to the air conditioner custom code. (Initially set to A.)
4. Press the MODE button again to return to the clock display. The custom code will be changed.

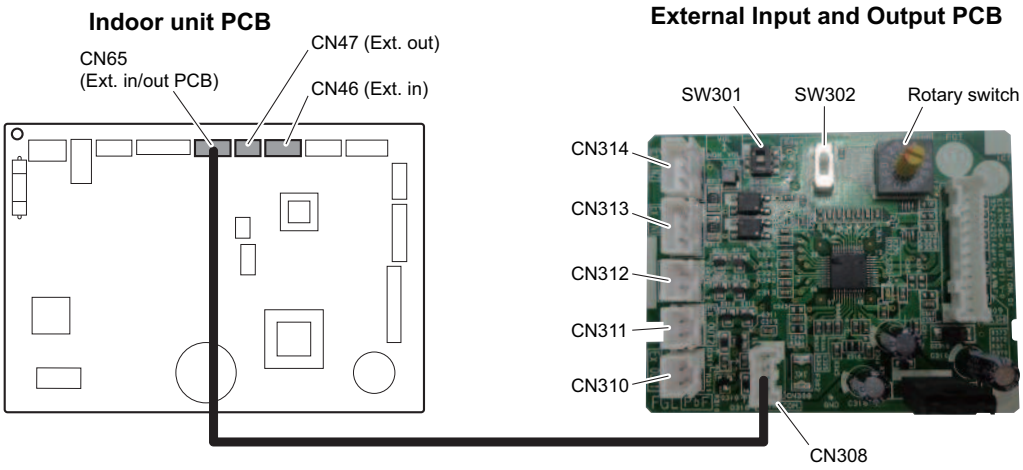


NOTES:

- If no button is pressed within 30 seconds after the custom code is displayed, the system returns to the original clock indicator. In this case, start again from step 1.
- The air conditioner custom code is set to A prior to shipment. To change the custom code, contact your retailer.
- If you do not know the assigned code for the air conditioner, try each of the custom code (A →b →c →d) until you find the code which operates the air conditioner.

FIELD WORKING

2. External input and output



Connecting point		Input/Output	Function	Input select	Input signal
Indoor unit	CN46	Input	Operation/Stop	Dry contact	Edge
			Forced stop		
	CN47	Output	Operation/Stop	—	—
			Error status		
			Indoor unit fan operation status		
External Input and Output PCB (UTY-XCSXZ3)	CN313 CN314	Input	Operation/Stop	Dry contact/Apply voltage	Edge/Pulse
			Forced stop		
	CN313		Forced thermostat off		Edge
	CN310 CN311 CN312	Output	Operation/Stop	—	—
			Error status		
			Indoor unit fan operation status		

NOTE: For details of the switching function, refer to "Setting of external input and output" on page 05-14.

FIELD WORKING

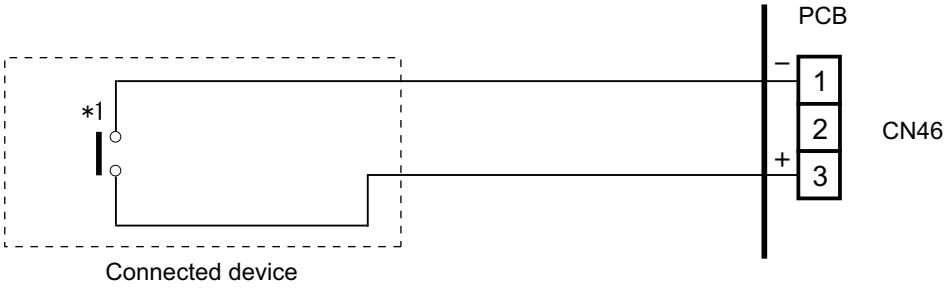
2-1. External input

With using external input function, some functions on this product can be controlled from an external device.

- “Operation/Stop” mode or "Forced stop" mode can be selected with function setting of indoor unit.
- A twisted pair cable should be used. Maximum length of cable is 150 m.
- Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.
- The wire connection should be separate from the power cable line.

■ Indoor unit

Indoor unit functions such as Operation/Stop can be done by using indoor unit connectors.



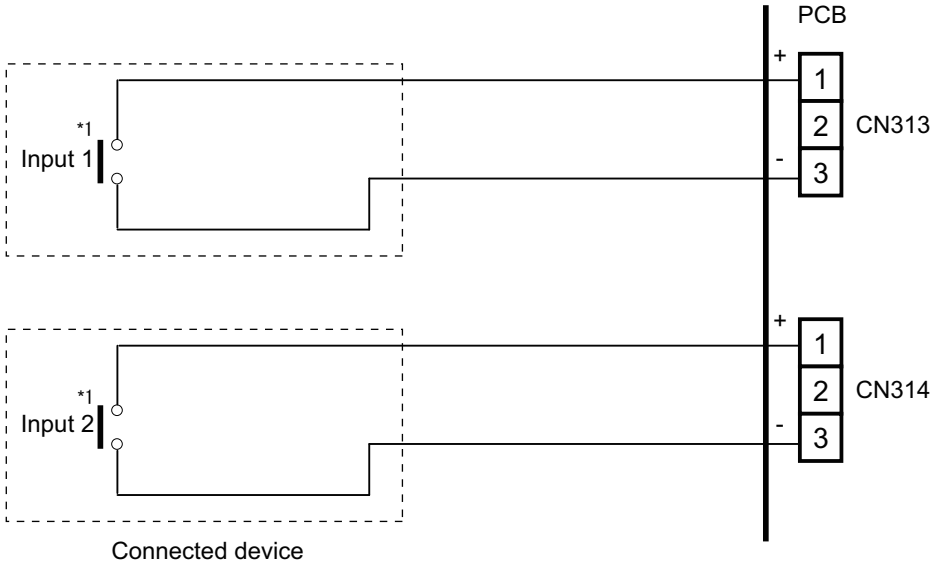
*1: The switch can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

FIELD WORKING

■ External Input and Output PCB

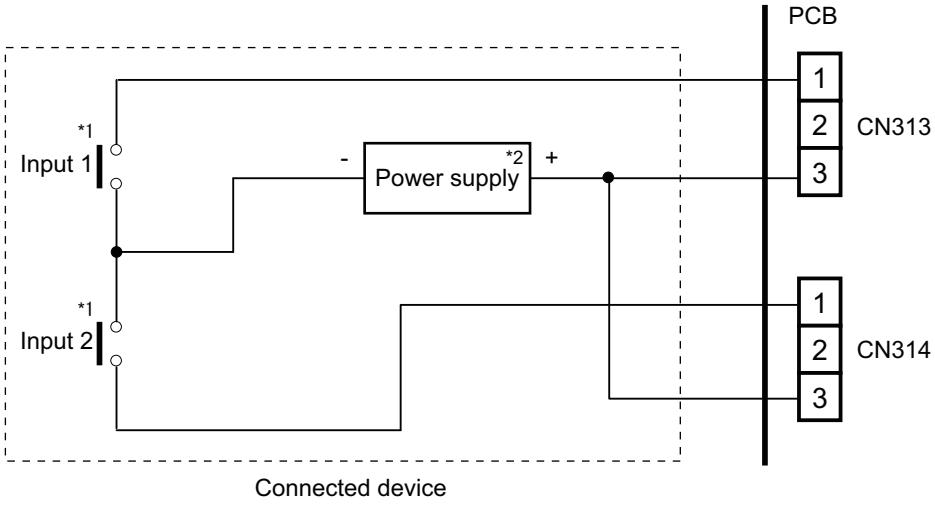
The indoor unit Operation/Stop can be set by using the input connector on the PCB.

- **Input select**
  Use either one of these types of connectors according to the application. (Both types of connectors cannot be used simultaneously.)
  - **Dry contact**
    In case of internal power supply, set the slide switch of SW301 to "NON VOL" side.



*1: The switches can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

  - **Apply voltage**
    In case of external power supply, set the slide switch of SW301 to "VOL" side.

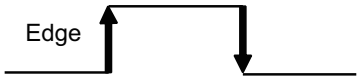


*1: The switches can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.
*2: Make the power supply DC 12 V to 24 V, 10 mA or more.

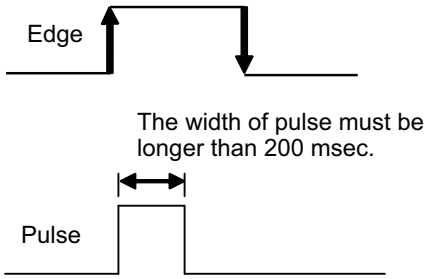
FIELD WORKING

■ Input signal type

- **Indoor unit**
  Input signal type is only "Edge".



- **External Input and Output PCB**
  The input signal type can be selected.
  Signal type (edge or pulse) can be switched by the DIP switch 2 (SW302) on the External Input and Output PCB.



NOTE: The input signal supports the following switch type:
- Edge: Alternate type switch
- Pulse: Momentary type switch

FIELD WORKING

2-2. External output

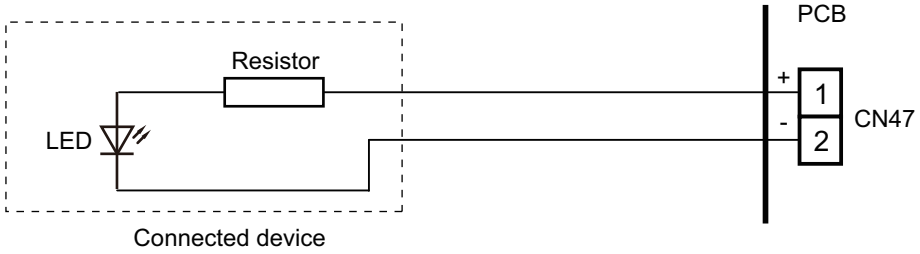
Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

■ Indoor unit

- A twisted pair cable should be used. Maximum length of cable is 25 m.
- Output voltage: High DC 12 V ±2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to "Setting of external input and output" on page 05-14.

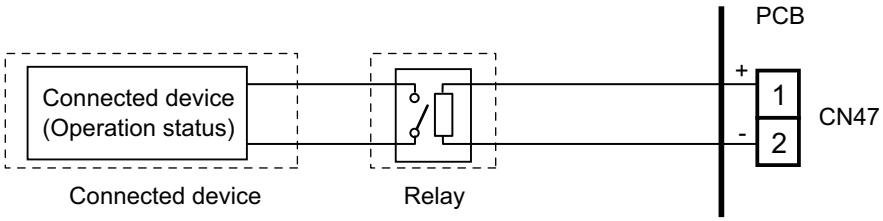
- **When indicator, etc. are connected directly**

Example: Function setting number 60 is set to "00"



- **When connecting with a device equipped with a power supply**

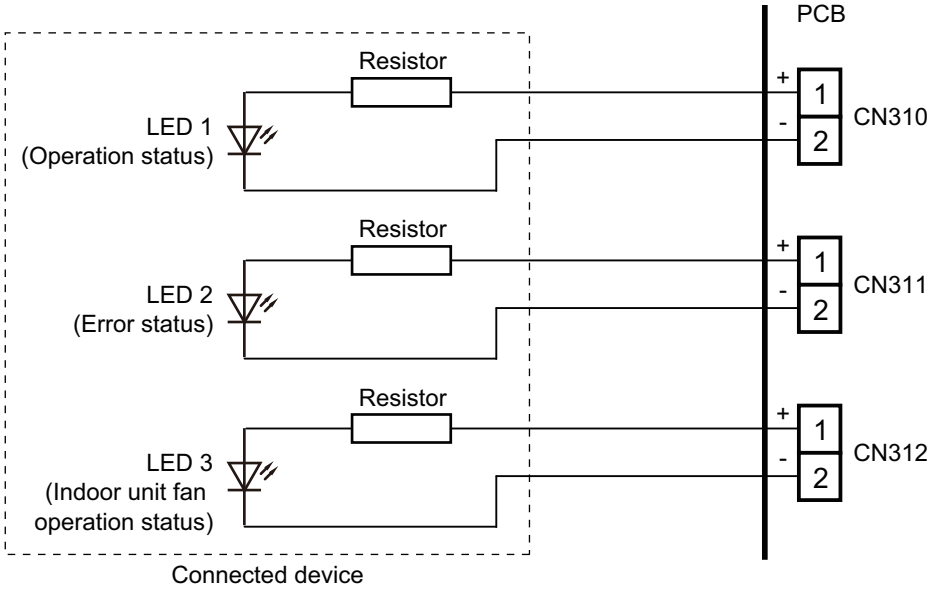
Example: Function setting number 60 is set to "00"



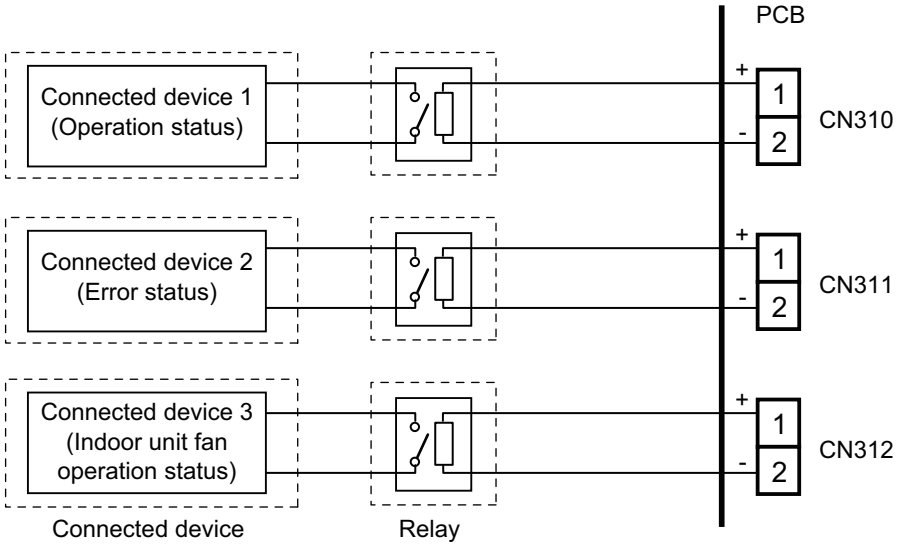
■ External Input and Output PCB

- A twisted pair cable should be used. Maximum length of cable is 25 m.
- Output voltage: High DC 12 V ±2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to "Setting of external input and output" on page 05-14.

- **When indicator or other components are connected directly:**
  Example: Rotary SW on External Input and Output PCB is set to “1”.



- **When connecting with a device equipped with a power supply:**
  Example: Rotary SW on External Input and Output PCB is set to “1”.



FIELD WORKING

2-3. Setting of external input and output

- **Indoor unit**

Input		
Connection point	**Function setting number 46**	**Function**
CN46	00	Operation/Stop mode 1 (R.C. enabled)
	01	(Setting prohibited)
	02	Forced stop mode
	03	Operation/Stop mode 2 (R.C. disabled)

Output		
Connection point	**Function setting number 60**	**Function**
CN47	00	Operation/Stop
	01 to 08	(Setting prohibited)
	09	Error status
	10	Indoor unit fan operation status
	11	(Setting prohibited)

- **External Input and Output PCB**

Switch setting		Input		Output		
Rotary switch	**SW302**	**CN313**	**CN314**	**CN310**	**CN311**	**CN312**
1	Edge	Operation/Stop	Not available	Operation/Stop	Error status	Indoor unit fan operation status
	Pulse	Operation	Stop			
2	Edge*	Forced thermostat off	Not available	Error status	Indoor unit fan operation status	Not available
3 to 9, A		(Setting prohibited)				
B		Forced thermostat off	Not available	Operation/Stop	Indoor unit fan operation status	Not available
C		Forced thermostat off	Not available	Operation/Stop	Error status	Not available
D		Forced thermostat off	Not available	Operation/Stop	Indoor unit fan operation status	Error status

NOTES:

- When the rotary switch is selected to “1”, the operation of the connector input of the indoor unit and the External Input and Output PCB input are the same. The operation content depends on the setting of function setting number 46.
- *: The external input other than “Operation/Stop” is available only when the SW302 is set to “Edge”.

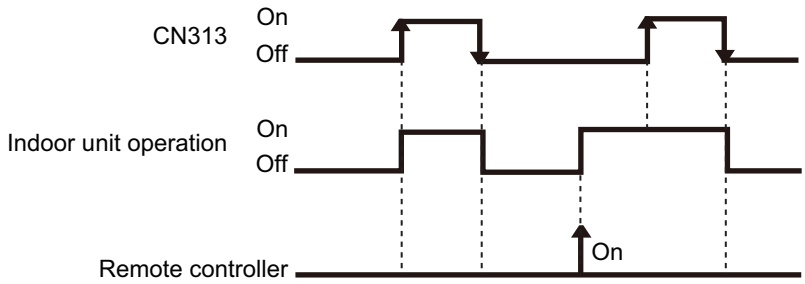
FIELD WORKING

2-4. Details of control input function

■ Operation/Stop mode 1

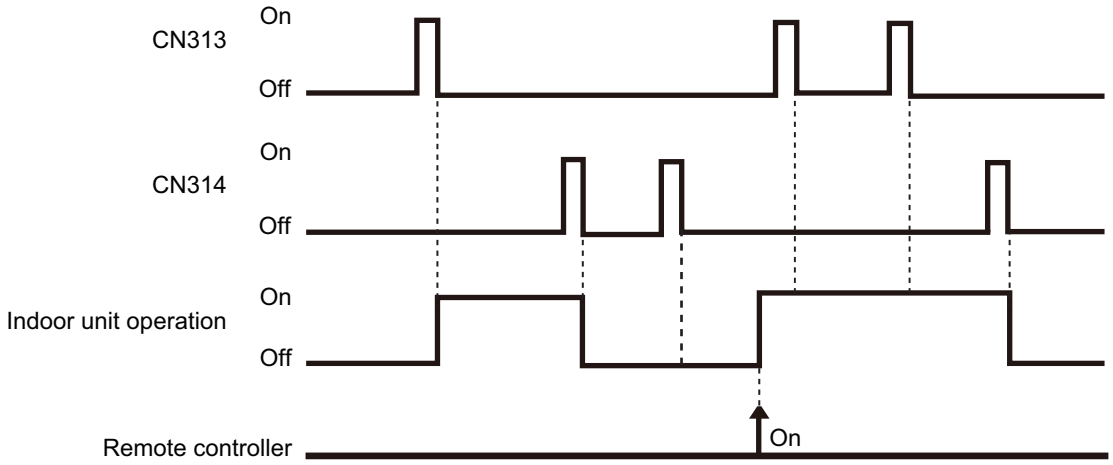
- **In the case of "Edge" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-00	—		Input of indoor unit	CN46	Off → On	Operation
					On → Off	Stop
	1	Edge	External Input and Output PCB	CN313	Off → On	Operation
					On → Off	Stop



- **In the case of "Pulse" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-00	1	Pulse	External Input and Output PCB	CN313	Pulse	Operation
				CN314		Stop



NOTES:

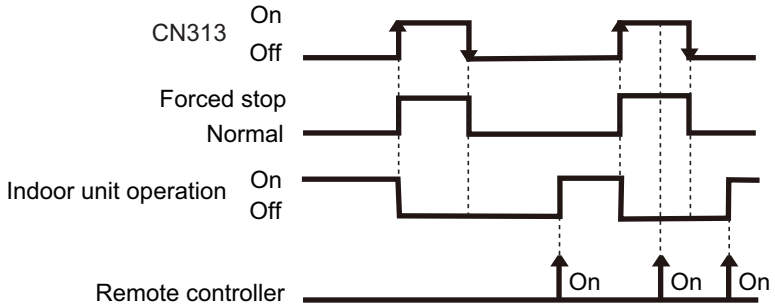
- The last command has priority.
- The indoor units within the same remote controller group operates in the same mode.

FIELD WORKING

■ Forced stop

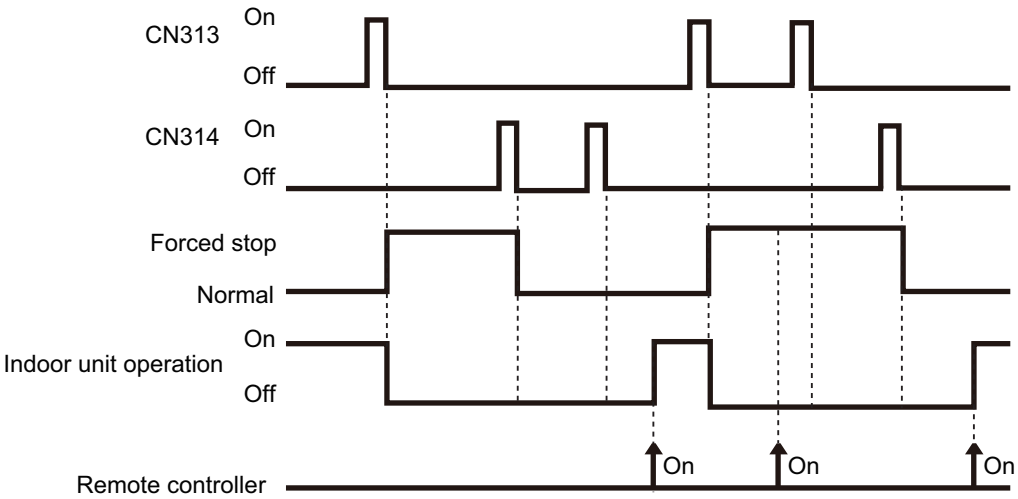
- **In the case of "Edge" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-02	—		Input of indoor unit	CN46	Off → On	Forced stop (R.C. disabled)
					On → Off	Normal (R.C. enabled)
	1	Edge	External Input and Output PCB	CN313	Off → On	Forced stop (R.C. disabled)
					On → Off	Normal (R.C. enabled)



- **In the case of "Pulse" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-02	1	Pulse	External Input and Output PCB	CN313	Pulse	Forced stop (R.C. disabled)
				CN314		Normal (R.C. enabled)



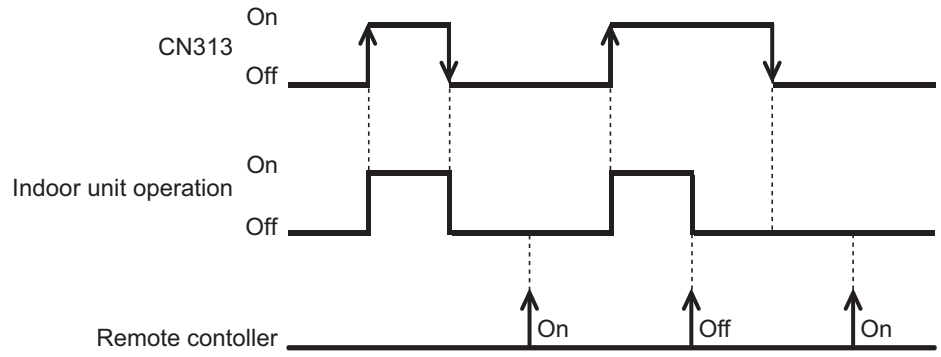
NOTES:

- When the forced stop is triggered, indoor unit stops and Operation/Stop operation by the remote controller is restricted.
- When forced stop function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

■ Operation/Stop mode 2

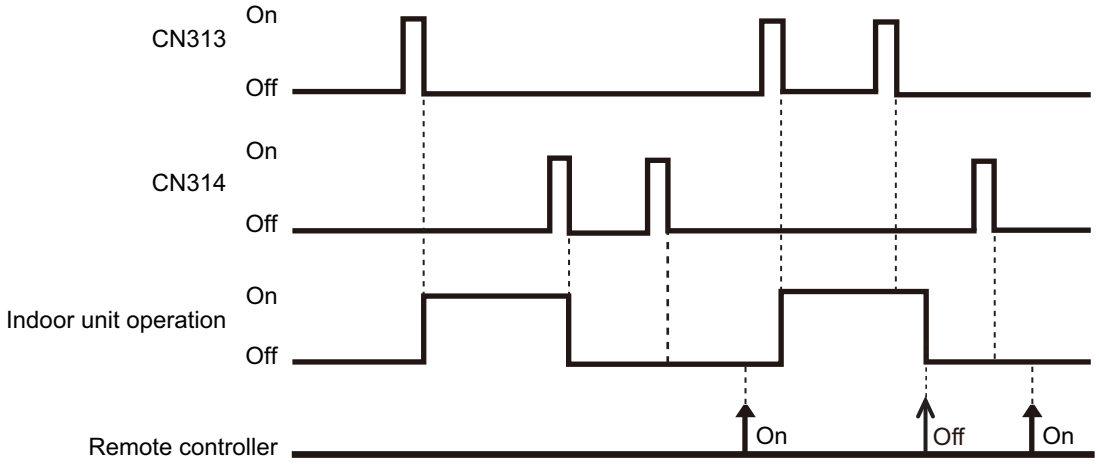
- **In the case of “Edge” input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-03	—		Input of indoor unit	CN46	Off → On	Operation (R.C. enabled)
					On → Off	Stop (R.C. disabled)
	1	Edge	External Input and Output PCB	CN313	Off → On	Operation (R.C. enabled)
					On → Off	Stop (R.C. disabled)



- **In the case of “Pulse” input**

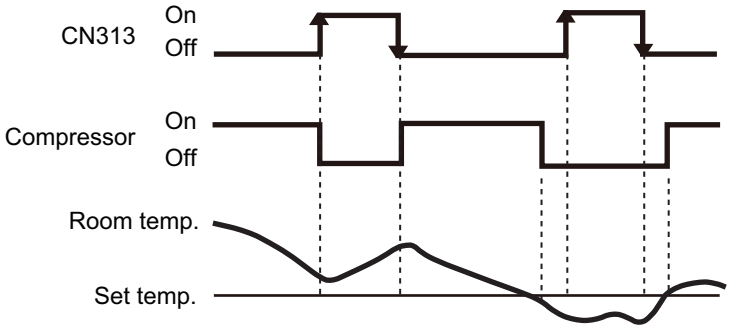
Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-03	1	Pulse	External Input and Output PCB	CN313	Pulse	Operation (R.C. enabled)
				CN314		Stop (R.C. disabled)



NOTE: When “Operation/Stop” mode 2 function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

■ Forced thermostat off

External Input and Output PCB	External input		Input signal	Command
Rotary switch				
2, B, C, D	External Input and Output PCB	CN313	Off → On	Thermostat off
			On → Off	Normal operation



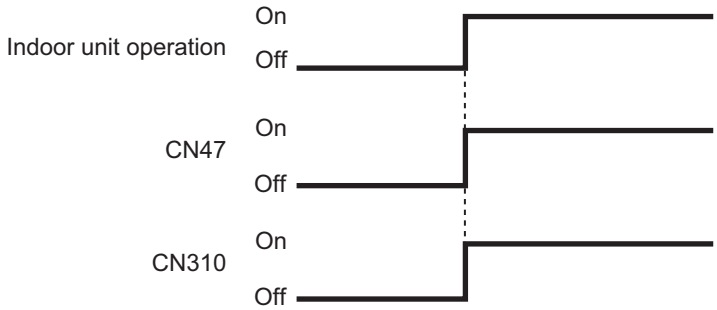
FIELD WORKING

2-5. Details of control output function

■ Operation status

Function setting	External Input and Output PCB Rotary switch	External output		Output signal	Status
60-00	1, 2	Output of indoor unit	CN47	Off → On	Operation
				On → Off	Stop
—	1, B, C, D	External Input and Output PCB	CN310	Off → On	Operation
				On → Off	Stop

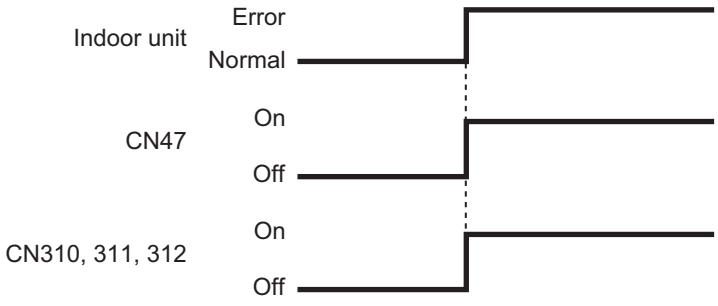
The output is low when the unit is stopped.



■ Error status

Function setting	External Input and Output PCB Rotary switch	External output		Output signal	Status
60-09	—	Output of indoor unit	CN47	Off → On	Error
				On → Off	Normal
—	2	External Input and Output PCB	CN310	Off → On	Error
				On → Off	Normal
—	1, C	External Input and Output PCB	CN311	Off → On	Error
				On → Off	Normal
—	D	External Input and Output PCB	CN312	Off → On	Error
				On → Off	Normal

The output is on when an error is generated for the indoor unit.

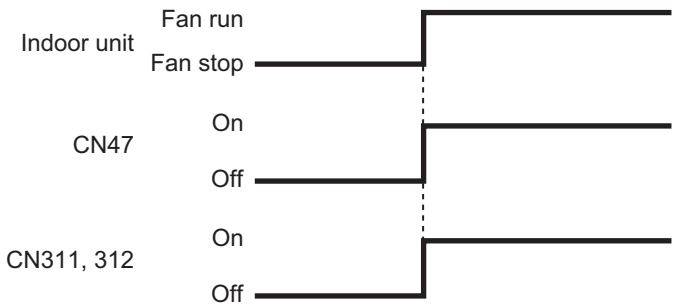


FIELD WORKING

■ Indoor unit fan operation status

Function setting	External Input and Output PCB Rotary switch	External output		Output signal	Status
60-10	C	Output of indoor unit	CN47	Off → On	Fan run
				On → Off	Fan stop
—	2, B, D	External Input and Output PCB	CN311	Off → On	Fan run
				On → Off	Fan stop
—	1	External Input and Output PCB	CN312	Off → On	Fan run
				On → Off	Fan stop

Output signal	Condition
On	The indoor unit fan is operating.
Off	The fan is stopped or during cold air prevention. During thermostat off when in dry mode operation.



FIELD WORKING