FUJITSU

Refrigerant R410A INVERTER

AIR CONDITIONER

Wall mounted type

SERVICE MANUAL

INDOOR

ASUH18LMAS

ASUH24LMAS

OUTDOOR

AOUH18LMAS1
AOUH24LMAS1

FUJITSU GENERAL LIMITED

SR_AS052EF_03
2021.11.17

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 R410A
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					ASUH18LMAS	ASUH24LMAS
Power supply					208/230 V ~ 60 Hz	
Power supply intake					Outdoor unit	
Available voltage range					187—253 V	
Capacity		Cooling	Rated	kW	5.28	6.45
				Btu/h	18,000	22,000
			Min.—Max.	kW	2.05—5.86	2.67—8.00
				Btu/h	7,000—20,000	9,100—27,300
		Heating	Rated	kW	6.33	7.39
				Btu/h	21,600	25,200
			Min.—Max.	kW	2.34—8.50	2.40—10.84
				Btu/h	8,000—29,000	8,200—37,000
		Heating (17°F)[*1]	Rated	kW	3.99	4.60
				Btu/h	13,600	15,700
			Max.	kW	6.95	8.41
				Btu/h	23,700	28,700
Input power		Cooling	Rated	kW	1.38	1.76
			Min.—Max.		0.45—1.86	0.43—2.63
		Heating	Rated		1.58	1.87
			Min.—Max.		0.55—2.82	0.52—3.53
		Heating (17°F)[*1]	Rated		1.28	1.51
			Max.		0.41—3.06	0.39—3.60
Current		Cooling	Rated	A	6.2	7.8
		Heating			7.0	8.3
EER		Cooling		kW/kW	3.80	3.66
				Btu/hW	13.0	12.5
COP		Heating		kW/kW	4.00	3.95
				Btu/hW	13.6	13.5
SEER		Cooling		Btu/hW	21.1	22.5
HSPF		Heating		Btu/hW	12.5	12.0
Power factor		Cooling		%	96.8	98.1
		Heating			98.1	98.0
Moisture removal				pints/h (L/h)	4.0 (1.9)	6.3 (3.0)
Maximum operating current[*2]		Cooling		A	13.4	15.4
		Heating			13.9	15.9
Fan	Airflow rate	Cooling	HIGH	CFM (m^3/h)	577 (980)	647 (1,100)
			MED		489 (830)	530 (900)
			LOW		377 (640)	436 (740)
			QUIET		300 (510)	371 (630)
		Heating	HIGH		589 (1,000)	730 (1,240)
			MED		500 (850)	530 (900)
			LOW		377 (640)	436 (740)
			QUIET		300 (510)	371 (630)
	Type × Q'ty				Crossflow fan × 1	
	Motor output			W	59	78
Sound pressure level[*3]		Cooling	HIGH	dB (A)	46	46
			MED		41	42
			LOW		35	37
			QUIET		30	33
		Heating	HIGH		46	48
			MED		41	38
			LOW		35	34
			QUIET		30	30
Heat exchanger type		Dimensions (H × W × D)		in (mm)	Main 1: 8-1/4 × 31-5/16 × 1-1/16 (210 × 796 × 26.6) Main 2: 4-15/16 × 31-5/16 × 1-1/16 (126 × 796 × 26.6) Sub 1: 3-5/16 × 31-5/16 × 1/2 (84 × 796 × 13.3)	18-3/16 × 35-6/16 × 1-1/16 (462 × 898 × 26.6)
		Fin pitch		FPI (mm)	Main 1: 21 (1.2) Main 2: 21 (1.2) Sub 1: 18 (1.4)	21 (1.2)
		Rows × Stages			Main 1: 2 × 10 Main 2: 2 × 6 Sub 1: 1 × 4	2 × 22
		Pipe type			Copper	
		Fin type			Aluminum	
Enclosure		Material			Polystyrene	
		Color			White Approximate color of Munsell N 9.25/	
Dimensions (H × W × D)		Net		in (mm)	11 × 38-9/16 × 9-7/16 (280 × 980 × 240)	13-6/16 × 45-4/16 × 11 (340 × 1,150 × 280)
		Gross			12-11/16 × 42-7/16 × 13-5/8 (322 × 1,078 × 346)	15-15/16 × 50 × 17-11/16 (405 × 1,270 × 450)
Weight		Net		lb (kg)	29 (13.0)	36 (16.5)
		Gross			36 (16.5)	49 (22.0)
Connection pipe		Size	Liquid	in (mm)	Ø3/8 (Ø9.52)	
			Gas		Ø5/8 (Ø15.88)	
		Method			Flare	
Drain hose		Material			PP+HDPE	
		Tip diameter		in (mm)	Ø17/32 (Ø13.8) (I.D.), Ø19/32 to 21/32 (Ø15.0 to 16.8) (O.D.)	

GENERAL INFORMATION

Type			Wall mounted	
			Inverter heat pump	
Model name			ASUH18LMAS	ASUH24LMAS
Operation range	Cooling	°F (°C)	64 to 90 (18 to 32)	
		%RH	80 or less	
	Heating	°F (°C)	86 (30) or less	
Remote controller type			Wireless (Wired, Mobile app*4 [FGLair™] [option])	

NOTES:

- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 80°FDB (26.67°CDB) /67°FWB (19.44°CWB), and outdoor temperature of 95°FDB (35°CDB) / 75°FWB (23.9°CWB).
  - Heating: Indoor temperature of 70°FDB (21.11°CDB) /59°FWB (15.56°CWB), and outdoor temperature of 47°FDB (8.33°CDB) /43°FWB (6.11°CWB).
  - *1: Heating (17°F): Indoor temperature of 70°FDB (21.11°CDB) /60°FWB (15.56°CWB), and outdoor temperature of 17°FDB (-8.33°CDB) /15°FWB (-9.44°CWB).
  - Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- *2: Maximum current is maximum value when operated within the operation range.
- *3: 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.
- *4: Available on Google Play™ store or on App Store®. Optional WLAN adapter is also required. For details, refer to the setting manual.

GENERAL INFORMATION

1-2. Outdoor unit

Type				Inverter heat pump	
Model name				**AOUH18LMAS1**	**AOUH24LMAS1**
Power supply				208/230 V ~ 60 Hz	
Power supply intake				Outdoor unit	
Available voltage range				187—253 V	
Starting current			A	7.0	8.3
Fan	Airflow rate	Cooling	CFM (m^3/h)	1,683 (2,860)	1,936 (3,290)
		Heating		1,742 (2,960)	2,187 (3,715)
	Type × Q'ty			Propeller fan × 1	
	Motor output		W	100	
Sound pressure level *1		Cooling	dB (A)	49	52
		Heating		50	54
Heat exchanger type		Dimensions (H × W × D)	in (mm)	Main 1: 29-3/4 × 35-5/8 × 11/16 (756 × 905 × 18.19) Main 2: 29-3/4 × 35-5/8 × 11/16 (756 × 905 × 18.19)	
		Fin pitch	FPI	Main 1: 18 (1.45) Main 2: 18 (1.45)	
		Rows × Stages		Main 1: 1 × 36 Main 2: 1 × 36	
		Pipe type		Copper	
		Fin type	Type (Material)	Aluminum	
			Surface treatment	Blue fin	
Compressor	Type			DC twin rotary	
	Motor output		W	1,360	
Refrigerant		Type		R410A	
		Charge	lb oz	3 lb 15 oz	4 lb 10 oz
			g	1,800	2,100
Refrigerant oil		Type		POE (RB68)	
		Amount	in^3 (cm^3)	48.8 (800)	
Enclosure		Material		Steel sheet	
		Color		Beige Approximate color of Munsell 10YR 7.5/1.0	
Dimensions (H × W × D)	Net		in (mm)	31 × 37 × 12-5/8 (788 × 940 × 320)	
	Gross			38-1/16 × 40-7/16 × 17-1/2 (966 × 1,027 × 445)	
Weight	Net		lb (kg)	117 (53)	
	Gross			134 (61)	
Connection pipe	Size	Liquid	in (mm)	Ø3/8 (Ø9.52)	
		Gas		Ø5/8 (Ø15.88)	
	Method			Flare	
	Pre-charge length		ft (m)	49 (15)	66 (20)
	Max. length			164 (50)	
	Max. height difference			98 (30)	
Drain hose	Material			LDPE	
	Tip diameter		in (mm)	Ø1/2 (Ø13.0) (I.D.), Ø5/8 to 11/16 (Ø16.0 to 16.7) (O.D.)	
Operation range		Cooling	°F (°C)	14 to 115 (-10 to 46)	
		Heating		5 to 75 (-15 to 24)	

NOTES:

- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 80 °FDB (26.67 °CDB) / 67 °FWB (19.44 °CWB), and outdoor temperature of 95 °FDB (35 °CDB) / 75 °FWB (23.9 °CWB).
  - Heating: Indoor temperature of 70 °FDB (21.11 °CDB) / 59 °FWB (15 °CWB), and outdoor temperature of 47 °FDB (8.33 °CDB) / 43 °FWB (6.11 °CWB).
  - Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- *1: 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.

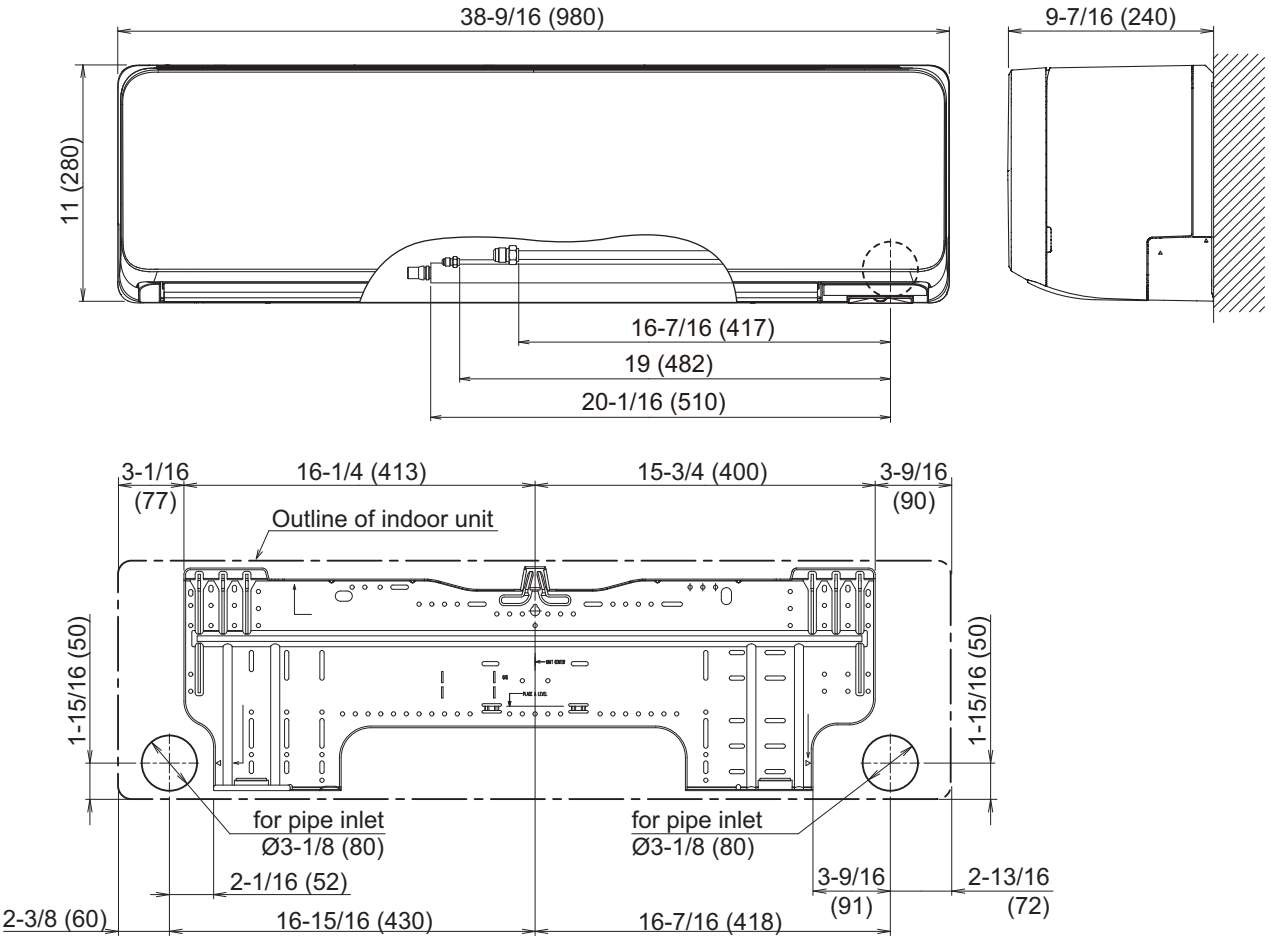
GENERAL INFORMATION

2. Dimensions

2-1. Indoor unit

■ Model: ASUH18LMAS

Unit: in (mm)



GENERAL INFORMATION

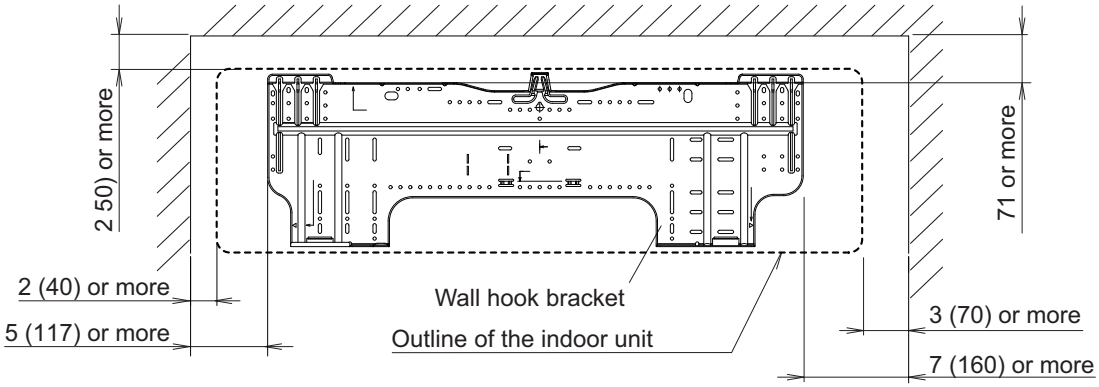
● Installation space requirement

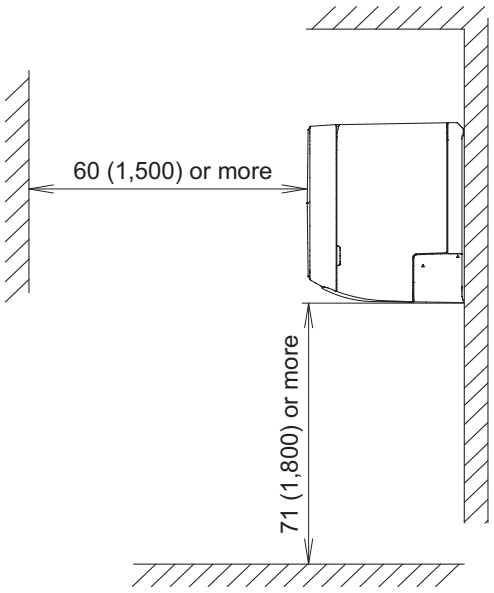
Provide sufficient installation space for product safety.

⚠ CAUTION

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.

Unit: in (mm)

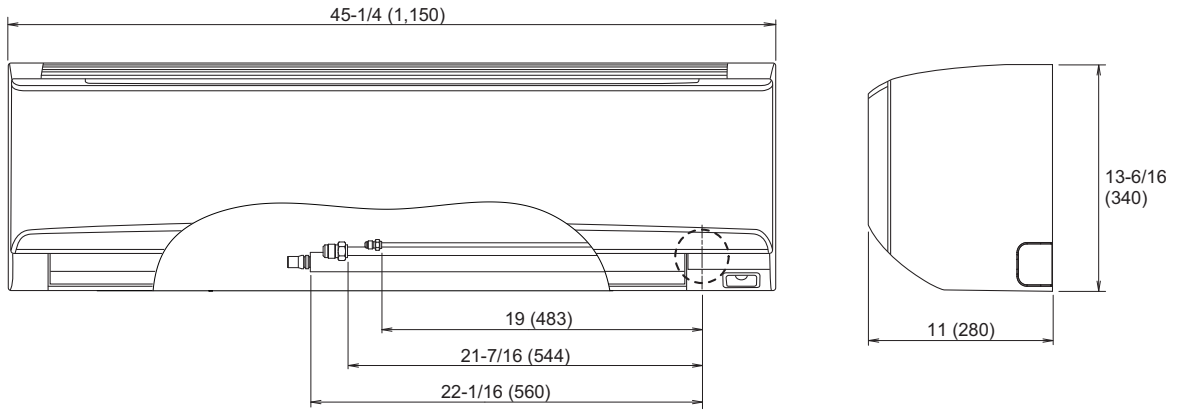


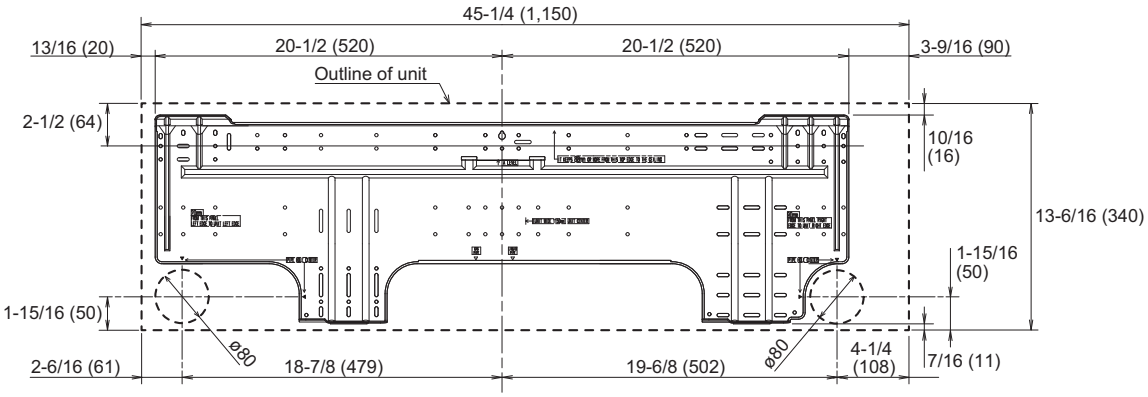


GENERAL INFORMATION

■ Model: ASUH24LMAS

Unit: in (mm)





GENERAL INFORMATION

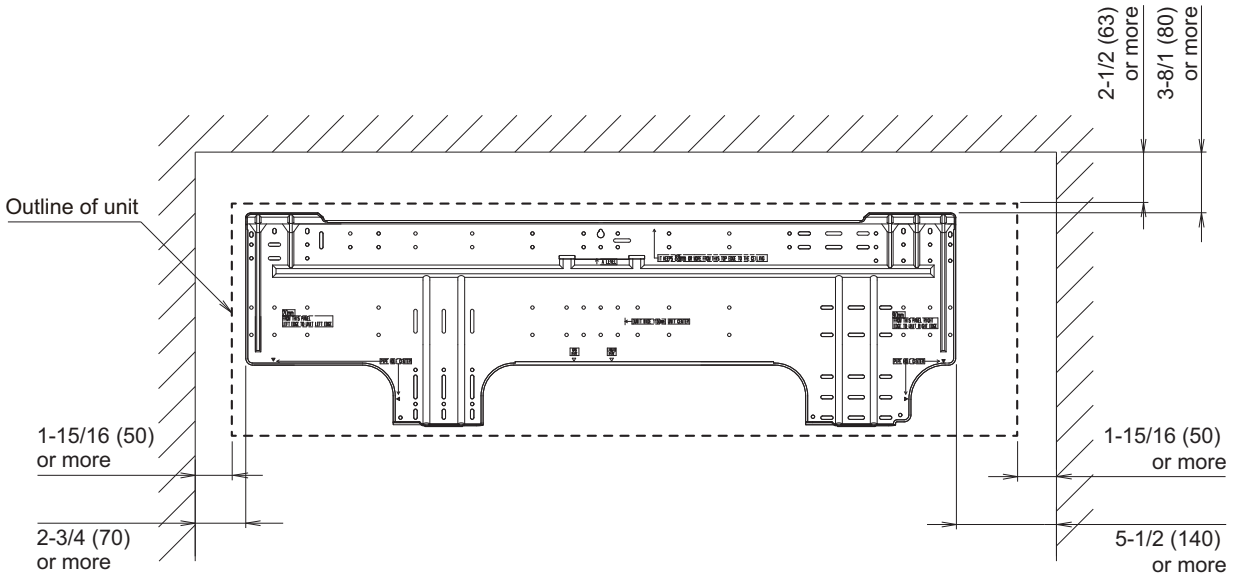
● Installation space requirement

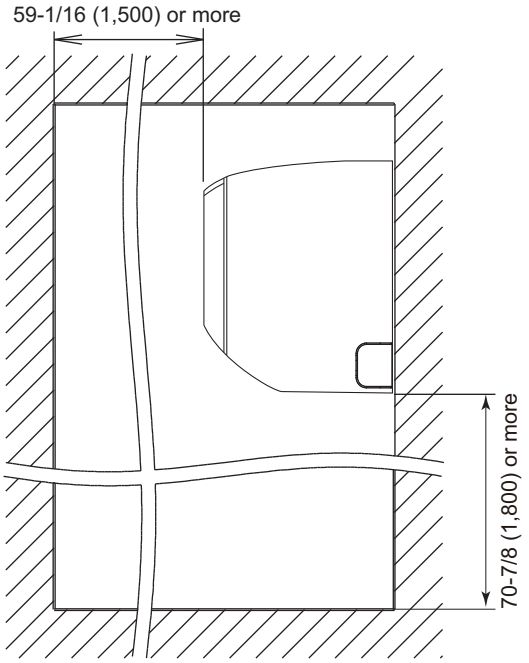
Provide sufficient installation space for product safety.

⚠ CAUTION

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.

Unit: in (mm)



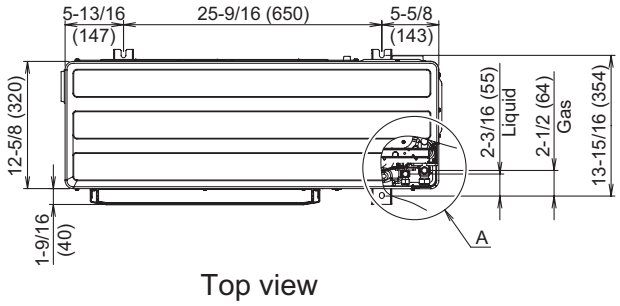


GENERAL INFORMATION

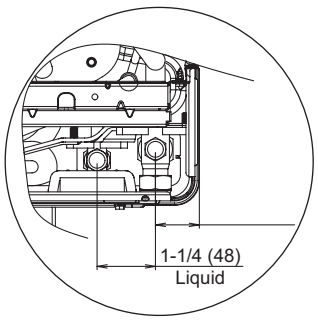
2-2. Outdoor unit

■ Models: AOUH18LMAS1 and AOUH24LMAS1

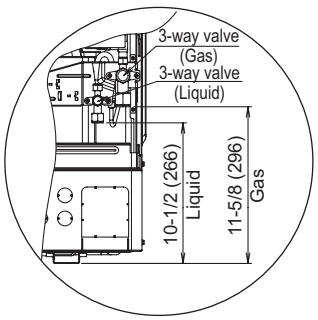
Unit: in (mm)



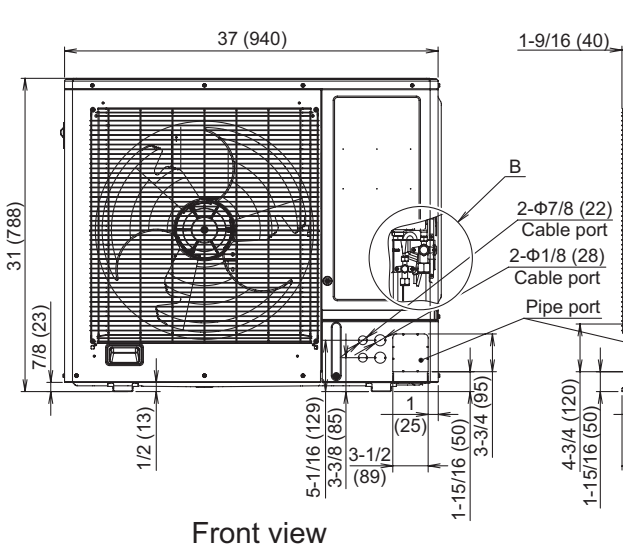
Top view



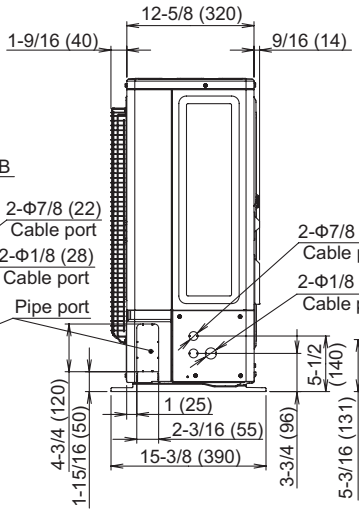
Detail A



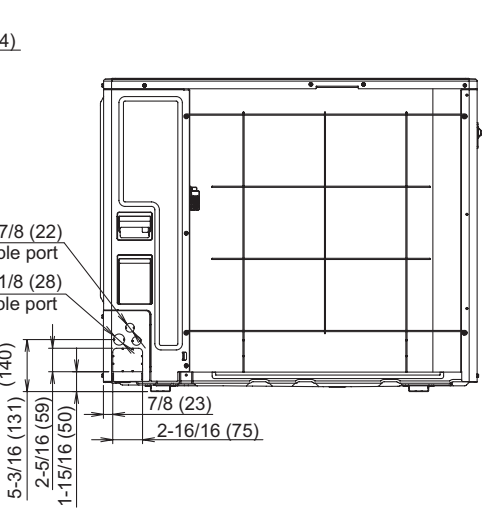
Detail B



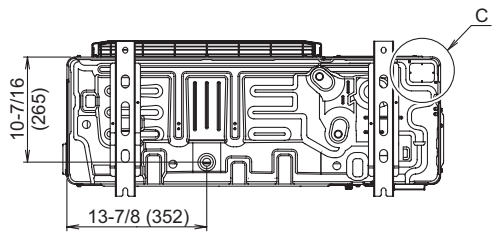
Front view



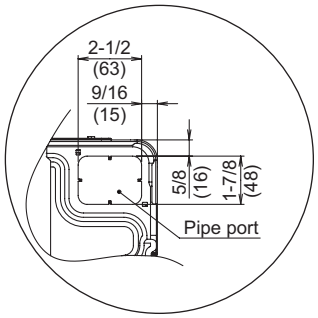
Side view



Rear view



Bottom view



Detail C

Refrigerant R410A

INVERTER

2. TECHNICAL DATA AND PARTS LIST

CONTENTS

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
  - Work in confined spaces shall be avoided.
  - The area around the workspace shall be sectioned off.
  - 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.

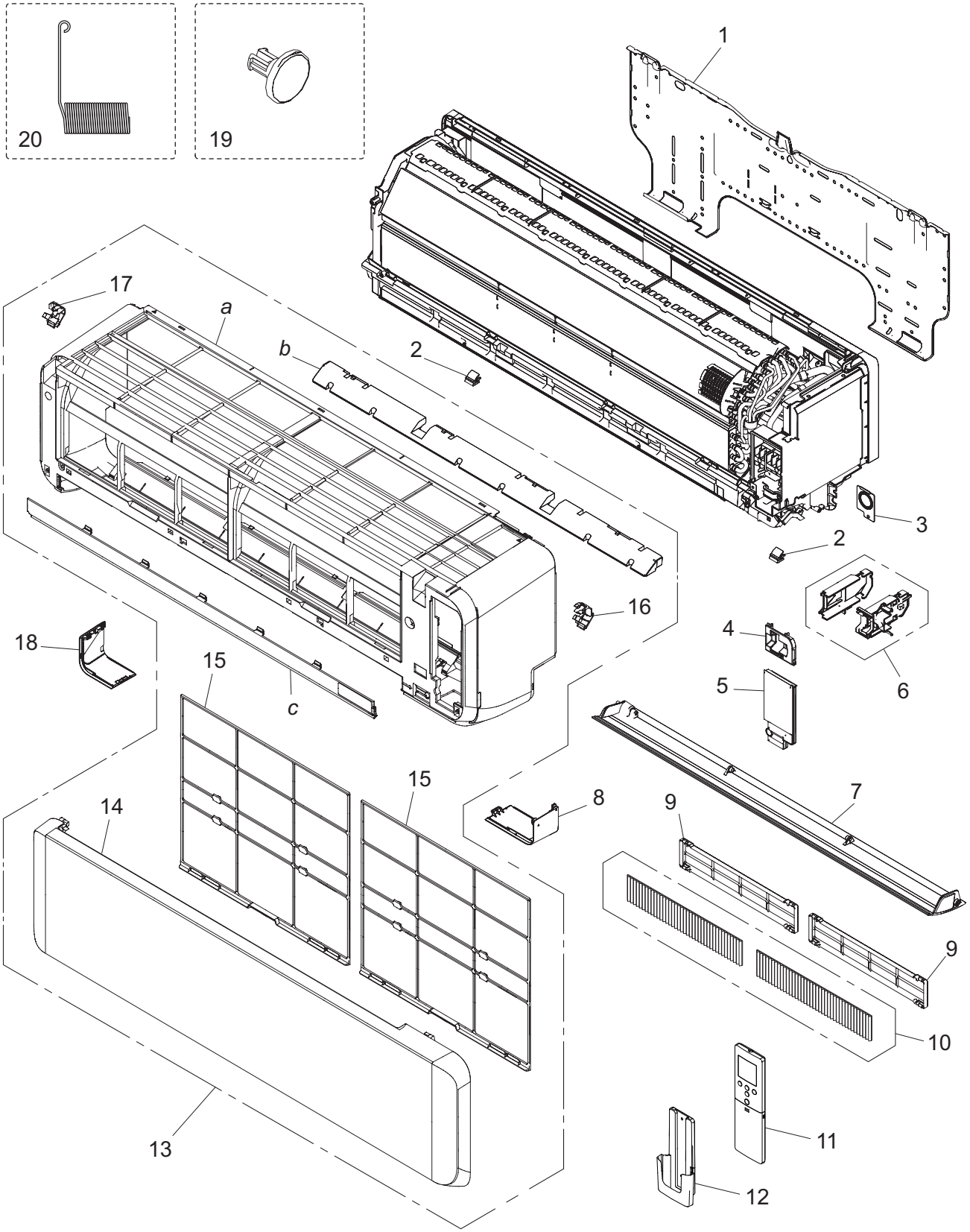
- Service parts information and design are subject to change without notice for product improvement.
- For the latest information of the service parts, refer to our Service Portal.
  https://fujitsu-general.force.com/portal/
- Precise figure of the service parts listed in this manual may differ from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

TECHNICAL DATA AND PARTS LIST

2. Indoor unit parts list

2-1. Model: ASUH18LMAS

■ Exterior parts

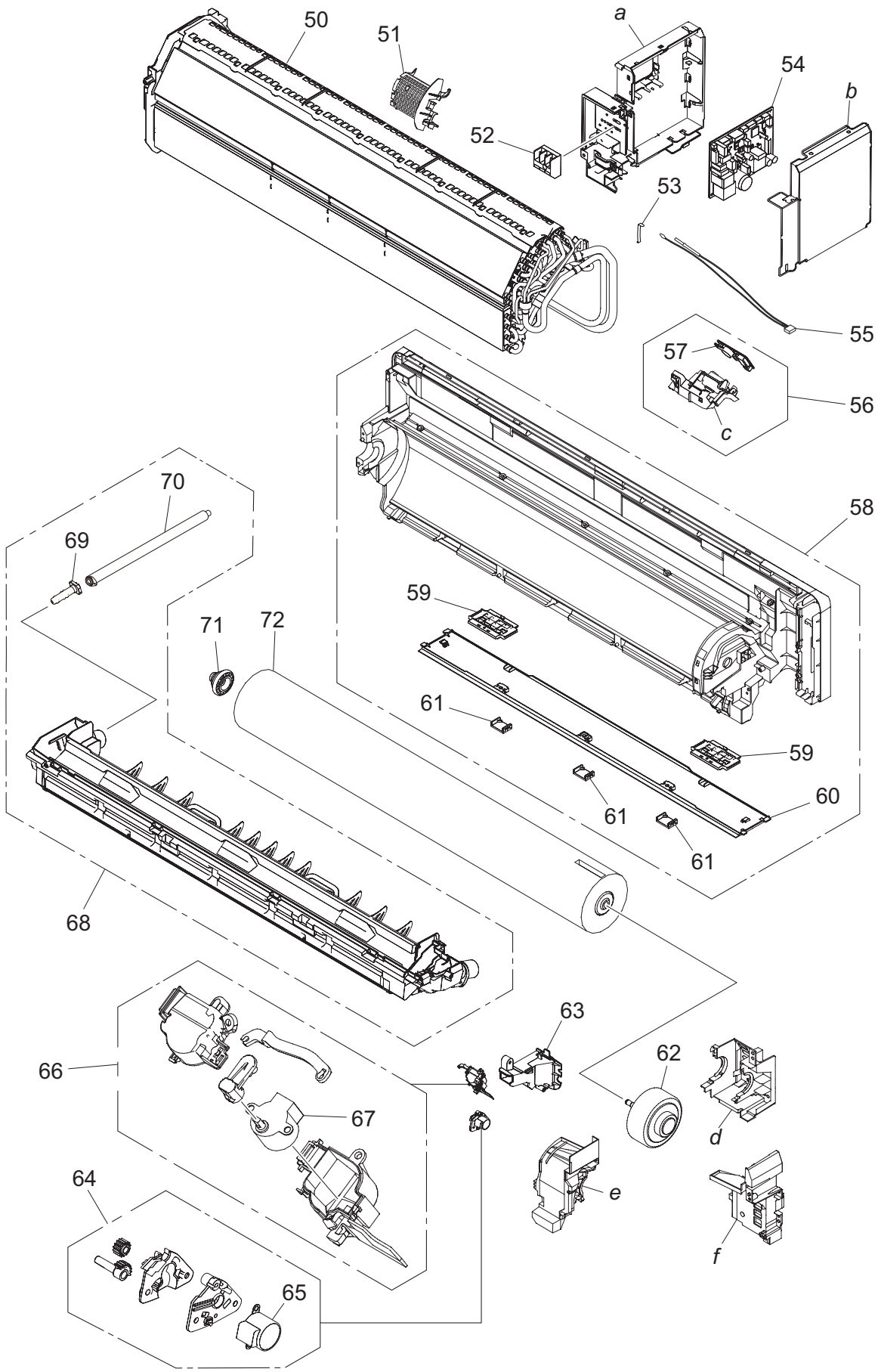


TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
1	9388158013	Bracket panel	♦
2	9387476002	Screw cap	♦
3	9313951047	Conduit holder	♦
4	9383729027	Wire cover assy B	♦
5	9387597035	Wire cover assy	♦
6	9383765056	WLAN adapter holder assy	♦
7	9387479010	Louver assy (Up/Down)	♦
8	9323342033	Under cover R	♦
9	9332911008	Electric filter holder	♦
10	9317250009	Air cleaning filter assy	♦
11	9332438895	Wireless remote controller	♦
12	9318912005	Remote controller holder	♦
13	9384977007	Front panel total assy	♦
14	9387756210	Intake grille assy	♦
15	9323340008	Air filter	♦
16	9333719009	Grille clamper L	♦
17	9333704005	Grille clamper R	♦
18	9323341036	Under cover L	♦
19	9333608006	Bush	♦
20	9383730030	Louver spring	♦
a	—	Front panel	—
b	—	Panel cover	—
c	—	Front panel B	—

■ Chassis

TECHNICAL DATA AND PARTS LIST



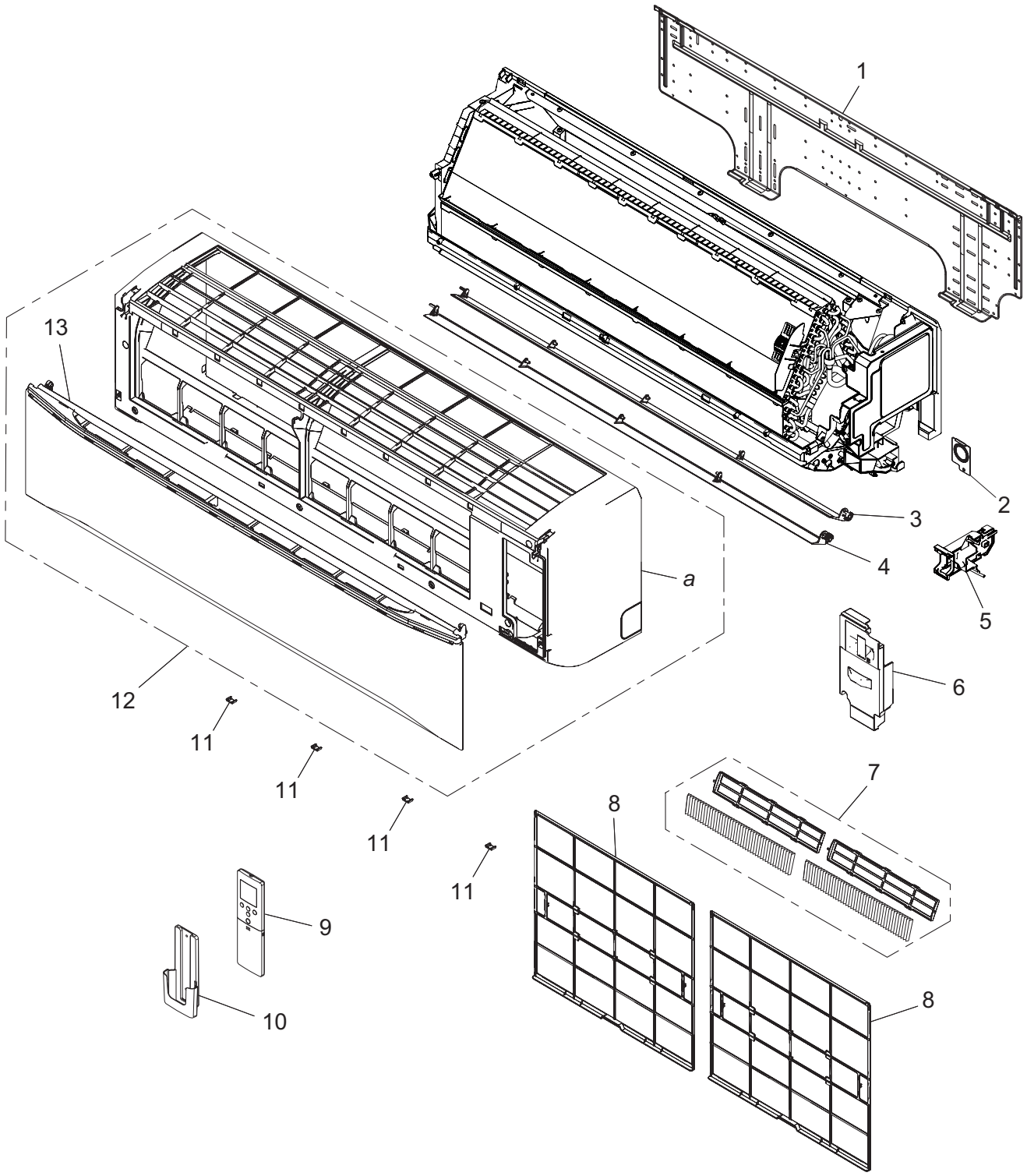
TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
50	9383735158	Evaporator total assy	♦
51	9387467000	Room thermistor holder	♦
52	9901013010	Terminal 3P	♦
53	9316577008	Thermistor spring B	♦
54	9711732026	Main PCB	♦
55	9900627041	Thermistor assy	♦
56	9711146052	Display assy	♦
57	9711147011	Indicator PCB	♦
58	9387587173	Base assy	♦
59	9388150000	Pipe bracket A	♦
60	9388155005	Under cover C	♦
61	9388182001	Screw cap	♦
62	9603821005	DC fan motor	♦
63	9387488043	Cable guide	♦
64	9387714012	Gear case assy	♦
65	9901011016	Stepping motor	♦
66	9383728006	R and L louver SPM assy	♦
67	9901011023	Stepping motor	♦
68	9387590142	Drain pan total assy	♦
69	9316177017	Drain cap	♦
70	9316904002	Drain hose assy	♦
71	9333628004	Bearing D assy	♦
72	9387055054	Crossflow fan assy	♦
—	9901010071	Wire with connector (CN75 on Main PCB—WLAN adapter [option])	♦
a	—	Control box	—
b	—	Control cover	—
c	—	Display case	—
d	—	Motor case	—
e	—	Motor cover assy	—
f	—	Pipe bracket	—

TECHNICAL DATA AND PARTS LIST

2-2. Model: ASUH24LMAS

■ Exterior parts

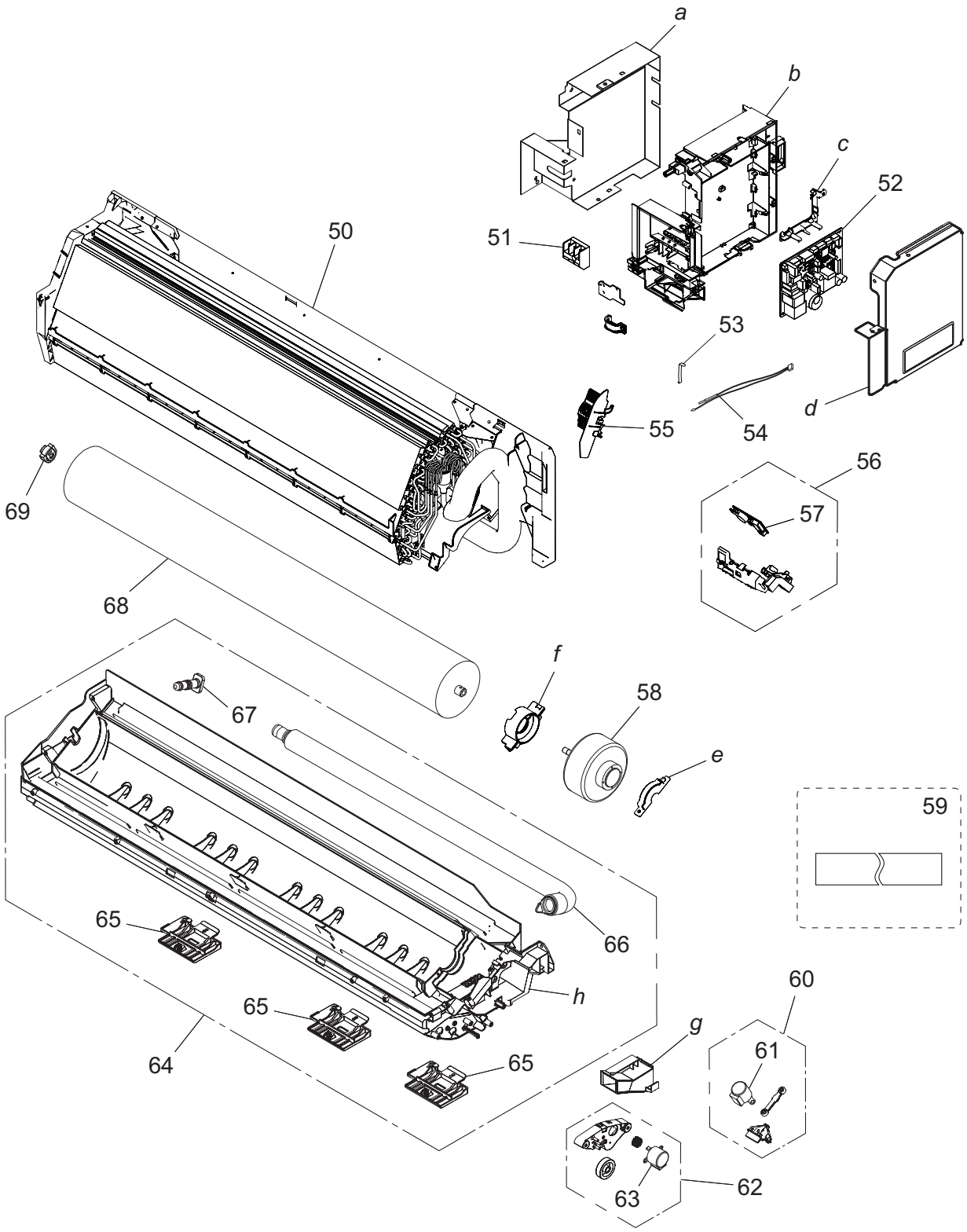


TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
1	9386990004	Bracket panel	♦
2	9313951047	Conduit holder	♦
3	9386958004	Louver U	♦
4	9386959001	Louver Z	♦
5	9383765063	WLAN adapter holder assy	♦
6	9387074017	Wire cover assy	♦
7	9315212016	Air clean filter assy	♦
8	9386960007	Air filter	♦
9	9332438895	Wireless remote controller	♦
10	9318912005	Remote controller holder	♦
11	9386986007	Screw cap	♦
12	9387072211	Front panel total assy	♦
13	9382114039	Intake grille assy	♦
a	—	Front panel	—

TECHNICAL DATA AND PARTS LIST

■ Chassis



TECHNICAL DATA AND PARTS LIST

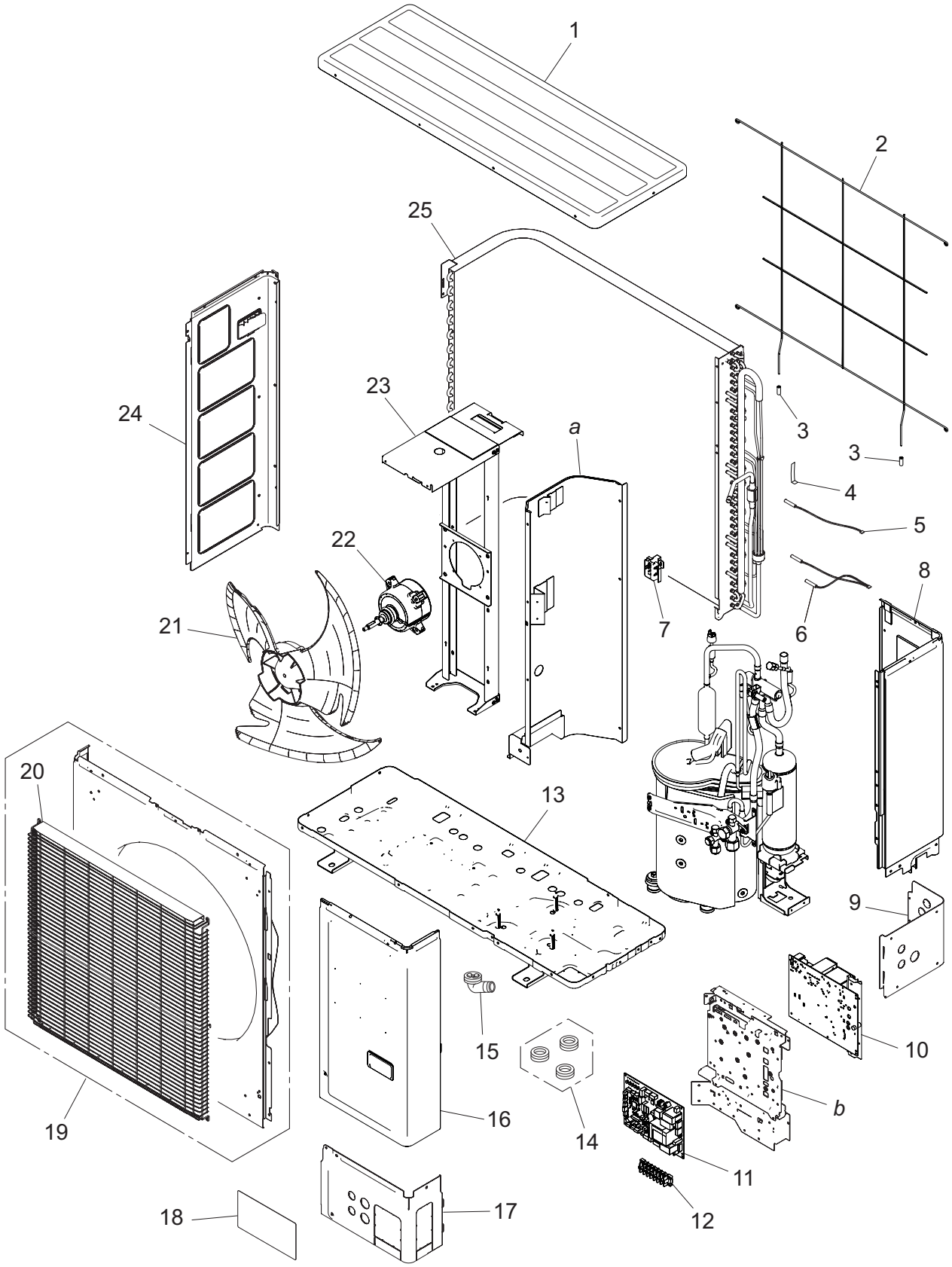
Item no.	Part no.	Part name	Service part
50	9387064155	Evaporator total assy	♦
51	9901013010	Terminal	♦
52	9711732033	Main PCB	♦
53	9316577008	Thermistor spring B	♦
54	9900627027	Thermistor assy	♦
55	9386988001	Room thermistor holder	♦
56	9711146090	Display assy	♦
57	9711147035	Indicator PCB	♦
58	9603933005	DC fan motor	♦
59	9361756007	Drain hose insulation T	♦
60	9387063004	Link holder assy	♦
61	9900139186	Step motor	♦
62	9387062007	Gear cover assy	♦
63	9900384234	Step motor	♦
64	9387060034	Casing assy	♦
65	9318743012	Pipe bracket	♦
66	9388540009	Drain hose assy	♦
67	9316177017	Drain cap	♦
68	9387055009	Crossflow fan assy	♦
69	9306628017	Bearing C assy	♦
a	—	Box shield assy	—
b	—	Control box	—
c	—	PCB holder A	—
d	—	Control cover	—
e	—	Motor cover	—
f	—	Motor cover	—
g	—	Cable guide	—
h	—	Casing	—

TECHNICAL DATA AND PARTS LIST

3. Outdoor unit parts list

3-1. Models: AOUH18LMAS1 and AOUH24LMAS1

■ Exterior parts and chassis

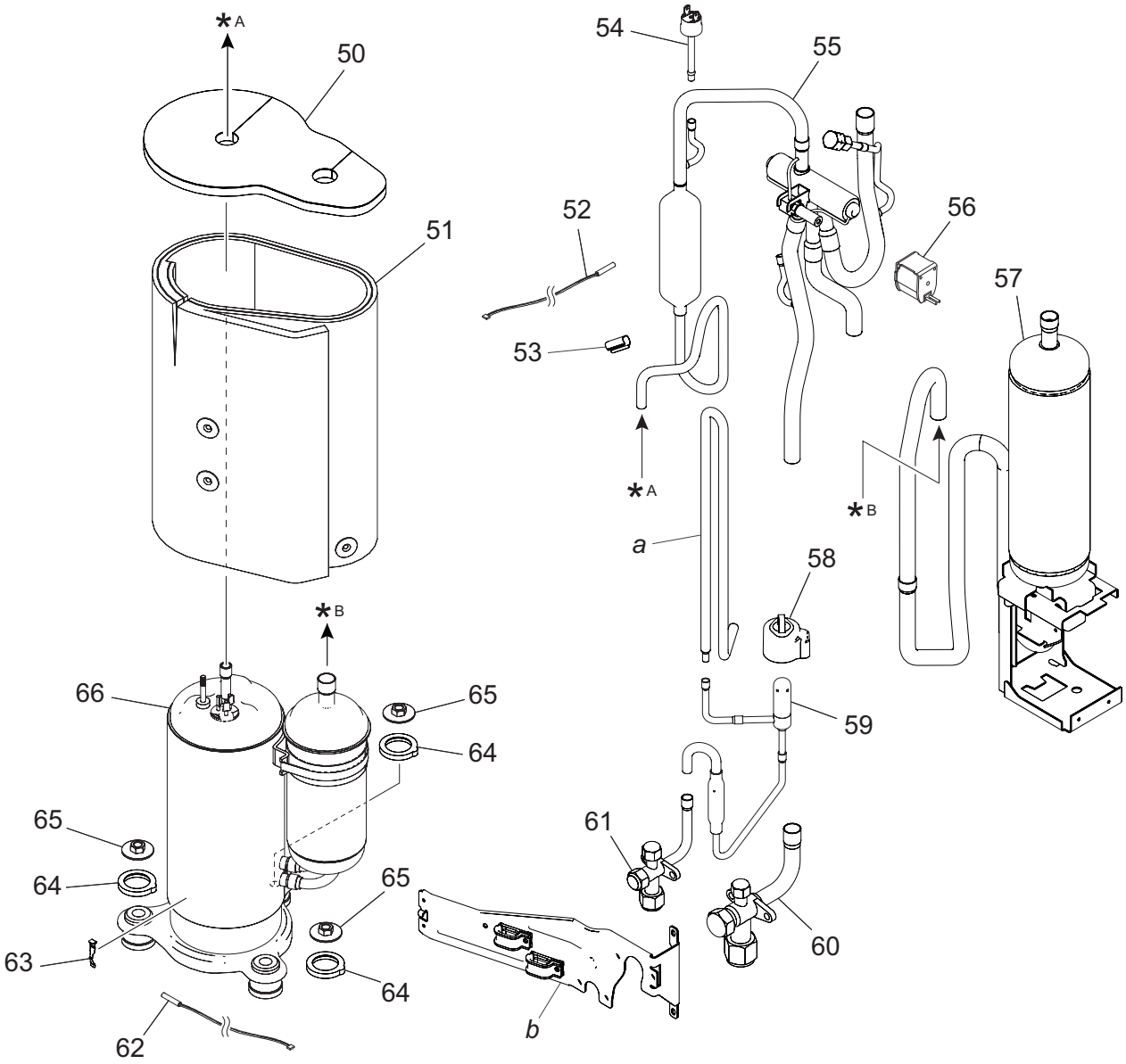


TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
1	9383880001	Top panel assy	♦
2	9383779008	Protective net	♦
3	9375361013	Net rubber	♦
4	313728262708	Thermistor spring A	♦
5	9900984038	Thermistor (Heat exchanger temp.)	♦
6	9900727154	Thermistor assy (Evaporator and Compressor temp.)	♦
7	9383607004	Thermo holder	♦
8	9383874000	Right panel sub assy	♦
9	9384997005	Rear pipe cover	♦
10	9709686317	Inverter PCB	♦
11	9711431578	Main PCB (18 model)	♦
	9711431585	Main PCB (24 model)	♦
12	9900203085	Terminal	♦
13	9383871016	Base assy	♦
14	313166024302	Drain cap	♦
15	9303029015	Drain assy	♦
16	9383876004	Service panel sub assy	♦
17	9384196019	Front pipe cover	♦
18	9380114000	Emblem rear	♦
19	9383863035	Front panel assy	♦
20	9350680009	Fan guard assy	♦
21	9383336003	Propeller fan	♦
22	9603732011	DC fan motor	♦
23	9383862007	Motor bracket assy	♦
24	9383882005	Left panel sub assy	♦
25	9374420711	Condenser sub assy	♦
—	9711198006	Wire with connector (P108 on Main PCB—Terminal)	♦
—	9711203038	Wire with connector (P660 on Main PCB—P662 on Inverter PCB)	♦
—	9711204004	Wire with connector (P661 on Main PCB—P663 on Inverter PCB)	♦
—	9711205001	Wire with connector (P350 on Main PCB—P351 on Inverter PCB)	♦
—	9711212009	Wire with connector (P650 on Inverter PCB—DC fan motor)	♦
—	9711213006	Wire with connector (P770 on Inverter PCB)	♦
—	9711214003	Wire with connector (Pressure switch)	♦
a	—	Separate wall assy	—
b	—	Control box unit	—

TECHNICAL DATA AND PARTS LIST

■ Compressor



TECHNICAL DATA AND PARTS LIST

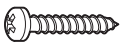
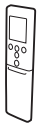
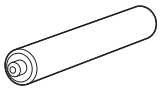
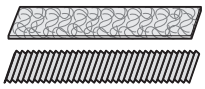
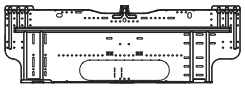
Item no.	Part no.	Part name	Service part
50	9380516064	Sound insulator (Top)	♦
51	9379647243	Sound insulator (Body)	♦
52	9900565091	Thermistor (Outdoor temp.)	♦
53	9357804002	Thermostat holder	♦
54	9900186029	Pressure switch	♦
55	9374425723	4-way valve assy	♦
56	9970194016	Solenoid	♦
57	9383855115	Refrigerant volume adjustment unit	♦
58	9970209000	Expansion valve coil	♦
59	9370947328	Expansion valve assy	♦
60	9379079013	3-way valve assy	♦
61	9377958037	3-way valve assy	♦
62	9900985035	Thermistor (Compressor temp.)	♦
63	9810028006	Thermistor stopper	♦
64	9379179096	Rubber washer G	♦
65	9377973016	Special nut	♦
66	9810666000	Compressor assy	♦
a	—	Joint pipe D	—
b	—	Wiring fixation unit	—

TECHNICAL DATA AND PARTS LIST

4. Accessories

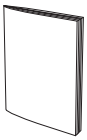
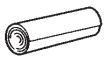
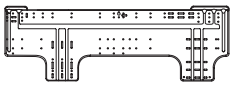
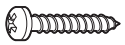
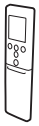
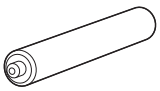
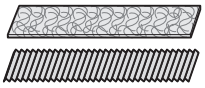
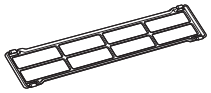
4-1. Indoor unit

■ Model: ASUH18LMAS

Part name	Exterior	Q'ty	Part name	Exterior	Q'ty
Operating manual		1	Tapping screw (large)		5
Installation manual		1	Tapping screw (small)		2
Remote controller		1	Battery		2
Remote controller holder		1	Filter holder		2
Cloth tape		1	Air cleaning filters		1
Wall hook bracket		1			

TECHNICAL DATA AND PARTS LIST

■ Model: ASUH24LMAS

Part name	Exterior	Q'ty	Part name	Exterior	Q'ty
Operating manual		1	Drain hose insulation		1
Installation manual		1	Cloth tape		1
Wall hook bracket		1	Tapping screw (large)		8
Remote controller		1	Tapping screw (small)		2
Battery		2	Air cleaning filters		1
Remote controller holder		1	Filter holder		2

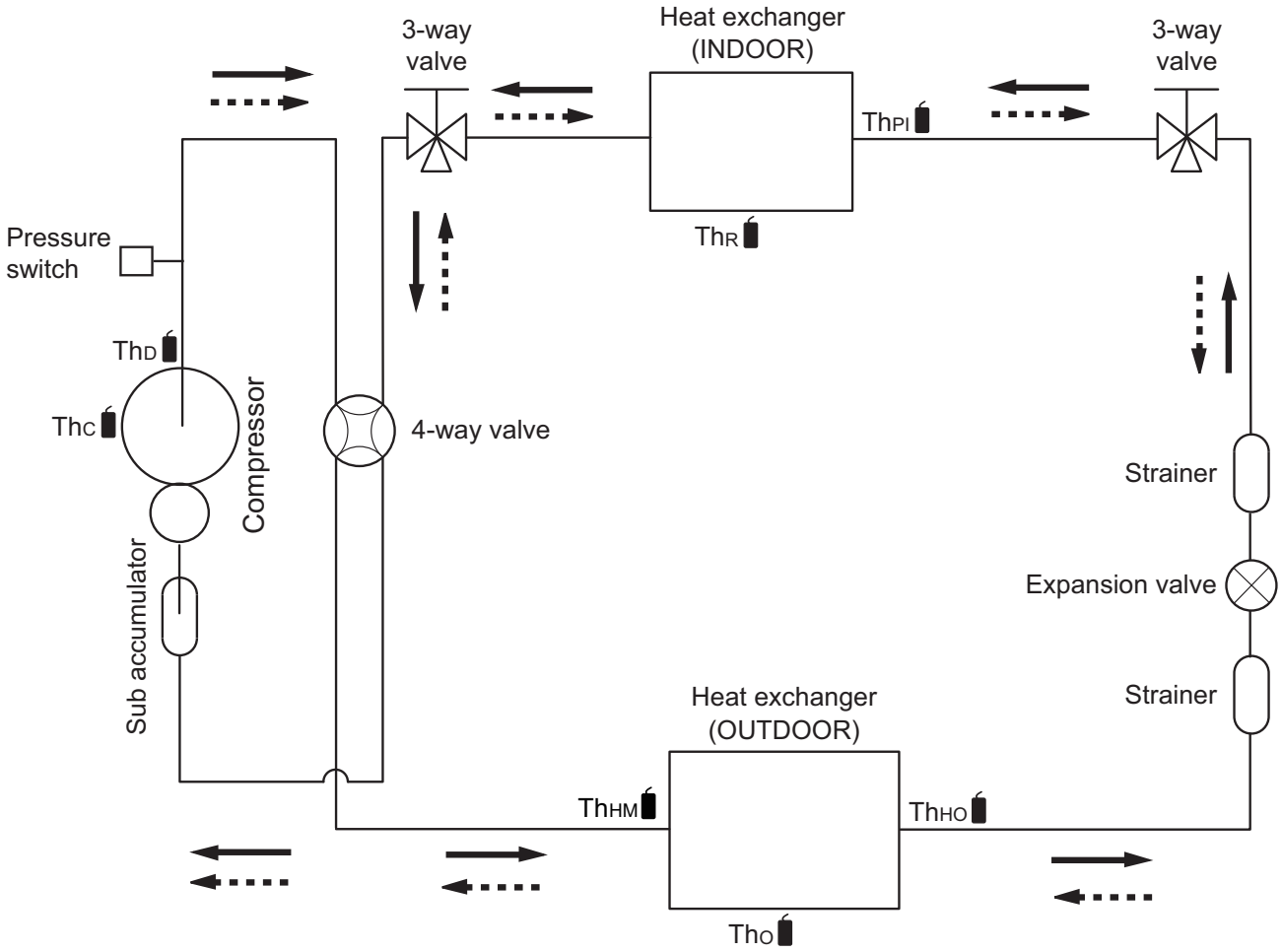
4-2. Outdoor unit

■ Models: AOUH18LMAS1 and AOUH24LMAS1

Part name	Exterior	Q'ty	Part name	Exterior	Q'ty
Installation manual		1	Drain cap		3
Drain pipe		1			

5. Refrigerant system diagrams

5-1. Models: AOUH18LMAS1 and AOUH24LMAS1



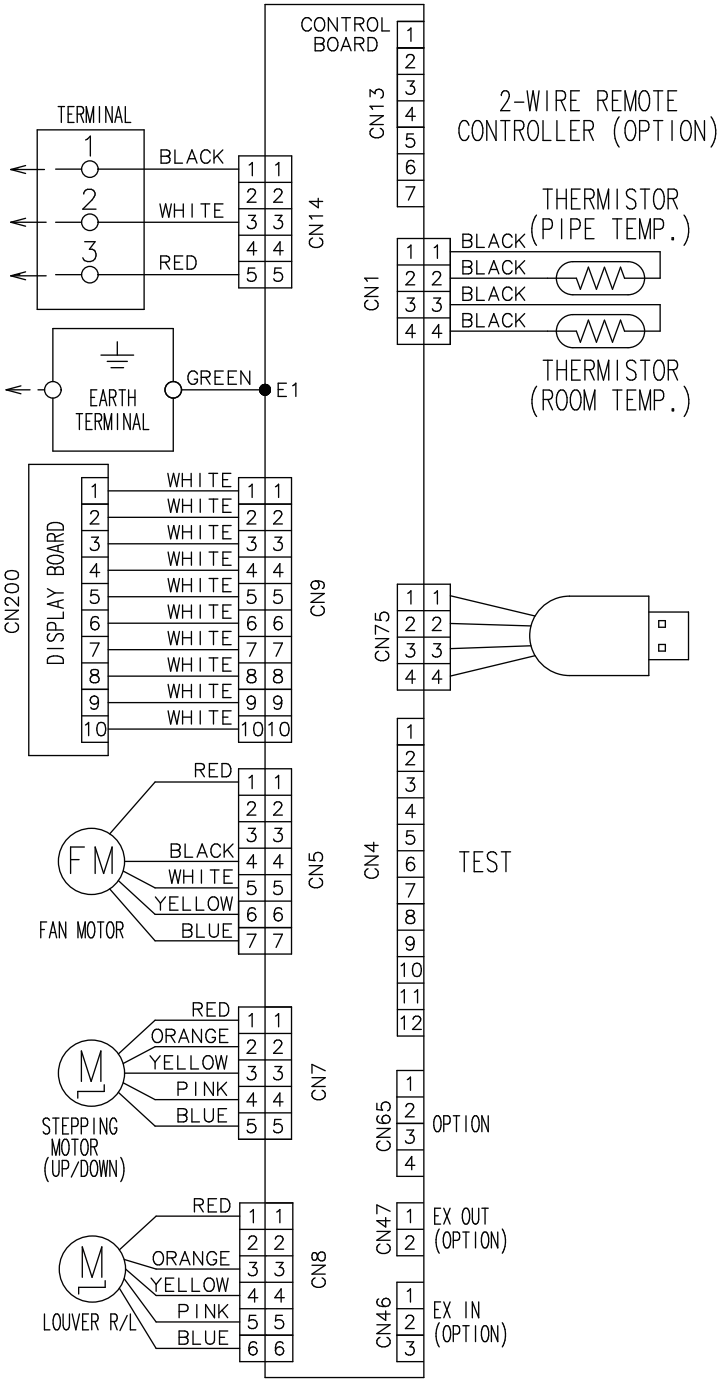
: Cooling
: Heating

ThC : Thermistor (Compressor temperature)
ThD : Thermistor (Discharge temperature)
ThHM : Thermistor (Heat Exchanger Med temperature)
ThO : Thermistor (Outdoor temperature)
ThHO : Thermistor (Heat Exchanger Out temperature)
ThPI : Thermistor (Pipe temperature)
ThR : Thermistor (Room temperature)

6. Wiring diagrams

6-1. Indoor unit

■ Models: ASUH18LMAS and ASUH24LMAS

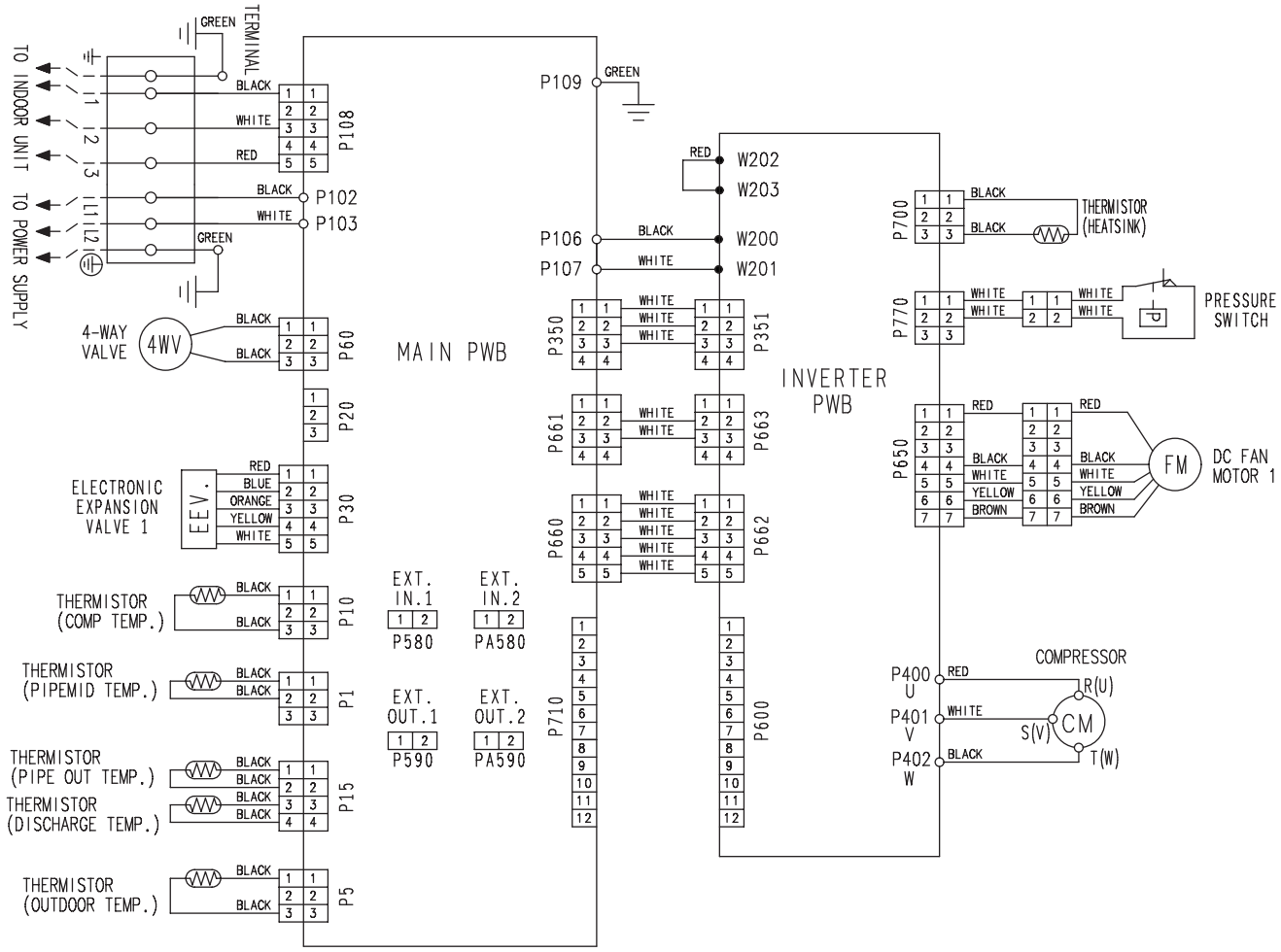


TECHNICAL DATA AND PARTS LIST

6-2. Outdoor unit

■ Models: AOUH18LMAS1 and AOUH24LMAS1

TECHNICAL DATA AND PARTS LIST



7. PC board diagrams

7-1. Models: ASUH18LMAS and ASUH24LMAS

TECHNICAL DATA AND PARTS LIST

CONTROL UNIT
18 model: EZ-0200HHSE
24 model: EZ-0200KHSE

MAIN PCB
18 model: K20AZ-2002HSE-C1
24 model: K20AZ-2003HSE-C1

TERMINAL
L
N
SERIAL
OUTDOOR UNIT
POWER SOURCE
AC208-230V
60Hz
AWG22 BLACK
AWG22 WHITE
AWG22 RED
CN14
B3 (5.0) B-XASK-1-A
WHITE
EMI FILTER
ZC7KT 14X8X4
3 TURNS
UL1015 AWG20 GREEN
E1
EARTH
UL1015 AWG16 GREEN

INDICATOR PCB
K18RB-1800HSE-D0
CN200
S10B-PASK-2
WHITE
AWG28 WHITE
DC5V
CN9
B10B-PASK-1
WHITE
DC12V

DC FAN MOTOR
FM
RED
BLACK
WHITE
YELLOW
BLUE
DC340V
DC15V
CN5
B5 (7-2.3) B-XASK-1-A
WHITE
A

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

LOUVER UP / DOWN
M
RED
ORANGE
YELLOW
PINK
BLUE
DC12V
CN7
B05B-PLISK-1
WHITE

LOUVER (RIGHT / LEFT)
M
RED
ORANGE
YELLOW
PINK
BLUE
DC12V
CN8
B06B-PLIRK-1
RED

EX. OUT
DC12V
CN47
B2B-XH-AM
WHITE

EX. IN
DC5V
CN46
B3B-XH-AM
WHITE

OPTION UNIT (2-WIRE REMOTE CONTROLLER)
CN13
B07B-PASK-1
WHITE
DC5V
DC12V
AWG26 RED
AWG26 WHITE
CN301
B07B-PASK-1
WHITE
CN300
B03B-XNISK-A-1
WHITE
COMMUNICATION PCB
K16JS-1600HSE-CA0
CN1
SM05B-SRSS-TB
WHITE
FLASH
AWG22 RED
AWG22 WHITE
REMOTE
CONTROLLER
(2-WIRE)
EMI FILTER
ZCAT1518-0730
2 TURNS

DC5V-2
CN1
B04B-PLIRK-1
RED
BLACK
THERMISTOR (PIPE TEMP.)
THERMISTOR (ROOMTEMP.)

CN1 Thermistor Characteristics.

Thermistor \ Temperature	32 ℉	68 ℉	86 ℉
Thermistor (Pipe temp.)	176.03 k Ω 1.10 V	62.91 k Ω 2.21 V	39.57 k Ω 2.79 V
Thermistor (Room temp.)	33.62 k Ω 1.15 V	12.54 k Ω 2.22 V	8.04 k Ω 2.77 V

DC5V
CN4
B12B-PASK-1
WHITE
TEST

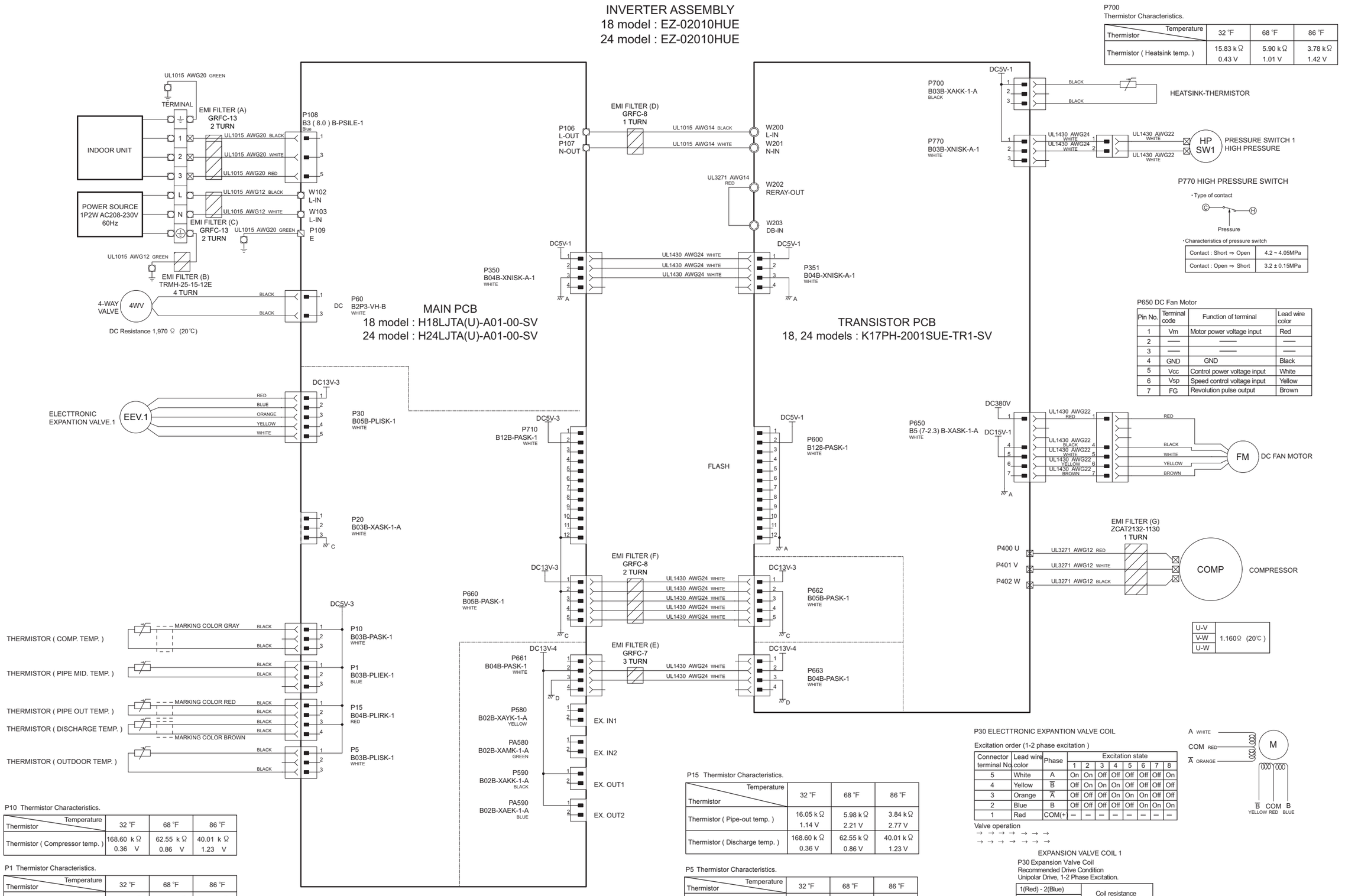
TYPE A
OPTION UNIT (WIRELESS LAN ADAPTER)
BLACK
GREEN
WHITE
RED
UL1430 AWG26 x 4
(4 BLACK)
(3 GREEN)
(2 WHITE)
(1 RED)
J2
USB5-A4M2-KNSO-01
WHITE
DC12V-3
CN75
B04B-PAKK-1
BLACK
OR
*Either A or B can be connected.

OPTION UNIT (EXTERNAL INPUT AND OUTPUT)
AWG26 GRAY
CN308
B04B-PASK-1
WHITE
FLASH
CN309
B12B-PASK-1
WHITE
UART COMMUNICATION PCB
K14YM-1500HSE-CA0
CN310 B2B-XH-AM WHITE
CN311 B2B-XH-AM WHITE
CN312 B2B-XH-AM WHITE
CN313 B3B-XH-AM WHITE
CN314 B3B-XH-AM WHITE
EX. OUT1
EX. OUT2
EX. OUT3
EX. IN1
EX. IN2

TYPE B
OPTION UNIT (EXTERNAL INPUT AND OUTPUT)
DC12V-3
CN65
B04B-PASK-1
WHITE
AWG26 GRAY
CN308
B04B-PASK-1
WHITE
FLASH
CN309
B12B-PASK-1
WHITE
COMMUNICATION PCB
K14YM-1500HSE-CA0
CN310 B2B-XH-AM WHITE
CN311 B2B-XH-AM WHITE
CN312 B2B-XH-AM WHITE
CN313 B3B-XH-AM WHITE
CN314 B3B-XH-AM WHITE
EX. OUT1
EX. OUT2
EX. OUT3
EX. IN1
EX. IN2

*Only type B can be connected.

7-2. Models: AOUH18LMAS1 and AOUH24LMAS1



P700
Thermistor Characteristics.

Thermistor \ Temperature	32 ℉	68 ℉	86 ℉
Thermistor (Heatsink temp.)	15.83 k Ω 0.43 V	5.90 k Ω 1.01 V	3.78 k Ω 1.42 V

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

P770 HIGH PRESSURE SWITCH
・Type of contact
C H
Pressure
・Characteristics of pressure switch

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

U-V V-W U-W	1.160Ω (20℃)

P10 Thermistor Characteristics.

Thermistor \ Temperature	32 ℉	68 ℉	86 ℉
Thermistor (Compressor temp.)	168.60 k Ω 0.36 V	62.55 k Ω 0.86 V	40.01 k Ω 1.23 V

P1 Thermistor Characteristics.

Thermistor \ Temperature	32 ℉	68 ℉	86 ℉
Thermistor (Pipe-mid. temp.)	16.05 k Ω 1.14 V	5.98 k Ω 2.21 V	3.84 k Ω 2.77 V

P15 Thermistor Characteristics.

Thermistor \ Temperature	32 ℉	68 ℉	86 ℉
Thermistor (Pipe-out temp.)	16.05 k Ω 1.14 V	5.98 k Ω 2.21 V	3.84 k Ω 2.77 V
Thermistor (Discharge temp.)	168.60 k Ω 0.36 V	62.55 k Ω 0.86 V	40.01 k Ω 1.23 V

P5 Thermistor Characteristics.

Thermistor \ Temperature	32 ℉	68 ℉	86 ℉
Thermistor (Outdoor temp.)	35.21 k Ω 2.61 V	12.64 k Ω 3.76 V	7.97 k Ω 4.14 V

P30 ELECTTRONIC EXPANTION VALVE COIL

Excitation order (1-2 phase excitation)

Connector terminal No.	Lead wire color	Phase	Excitation state							
			1	2	3	4	5	6	7	8
5	White	A	On	On	Off	Off	Off	Off	Off	On
4	Yellow	$\overline{B}$	Off	On	On	On	Off	Off	Off	Off
3	Orange	$\overline{A}$	Off	Off	Off	On	On	On	Off	Off
2	Blue	B	Off	Off	Off	Off	Off	On	On	On
1	Red	COM(+)	—	—	—	—	—	—	—	—

Valve operation
→ → → → → → → →
→ → → → → → → →

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

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

TECHNICAL DATA
AND PARTS LIST

Refrigerant R410A
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 LED lamps to indicate the error content.

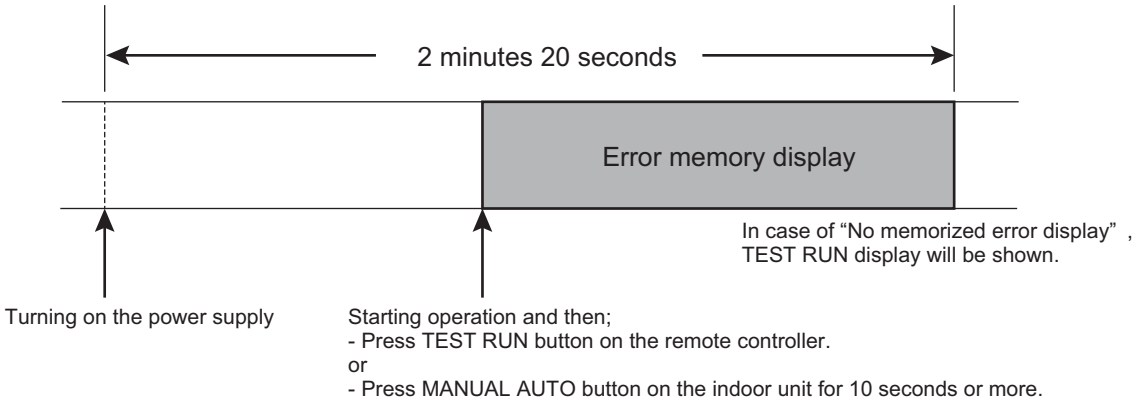
Errors, once displayed, will be automatically stored in the PC board of the indoor unit. Even if the power is disconnected, the memory containing the error history will not be erased.

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.X. Serial communication error (Serial reverse transfer error) (Outdoor unit)	1 times	1 times	Continuous	11
E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit)	1 times	1 times	Continuous	11
E: 12.X. Wired remote controller communication error (Indoor unit)	1 times	2 times	Continuous	12
E: 18.X. External communication error (Indoor unit)	1 times	8 times	Continuous	18
E: 18.X. External communication error between indoor unit and WLAN adapter	1 times	8 times	Continuous	18
E: 18.X. Communication error	1 times	8 times	Continuous	18
E: 18.X. Wireless LAN adapter non-energized	1 times	8 times	Continuous	18
E: 23.X. Combination error (Outdoor unit)	2 times	3 times	Continuous	23
E: 26.X. Address setting error in wired remote controller (Indoor unit)	2 times	6 times	Continuous	26
E: 29.X. Connected unit number error (Indoor unit)	2 times	9 times	Continuous	29
E: 32.X. Indoor unit main PCB error (Indoor unit)	3 times	2 times	Continuous	32
E: 35.X. MANUAL AUTO button error (Indoor unit)	3 times	5 times	Continuous	35
E: 3A.X. Indoor unit communication circuit error (Indoor unit)	3 times	10 times	Continuous	3A
E: 41.X. Room temperature sensor error (Indoor unit)	4 times	1 times	Continuous	41
E: 42.X. Indoor unit heat exchanger sensor error (Indoor unit)	4 times	2 times	Continuous	42
E: 51.X. Indoor unit fan motor error (Indoor unit)	5 times	1 times	Continuous	51
E: 58.X. Intake grille error (Indoor unit)	5 times	8 times	Continuous	58
E: 62.X. Outdoor unit main PCB error (Outdoor unit)	6 times	2 times	Continuous	62
E: 63.X. Inverter error (Outdoor unit)	6 times	3 times	Continuous	63
E: 64.X. PFC circuit error (Outdoor unit)	6 times	4 times	Continuous	64
E: 65.X. Trip terminal L error (Outdoor unit)	6 times	5 times	Continuous	65
E: 71.X. Discharge thermistor error (Outdoor unit)	7 times	1 times	Continuous	71
E: 73.X. Heat exchanger (Middle/Outlet) temperature thermistor error (Outdoor unit)	7 times	3 times	Continuous	73
E: 74.X. Outdoor temperature thermistor error (Outdoor unit)	7 times	4 times	Continuous	74
E: 77.X. Heat sink thermistor error (Outdoor unit)	7 times	7 times	Continuous	77
E: 84.X. Current sensor error (Outdoor unit)	8 times	4 times	Continuous	84
E: 86.X. High pressure switch error (Outdoor unit)	8 times	6 times	Continuous	86
E: 86.X. Pressure sensor error (Outdoor unit)	8 times	6 times	Continuous	86
E: 94.X. Trip detection (Outdoor unit)	9 times	4 times	Continuous	94

TROUBLESHOOTING

Error contents	Indoor unit display			Wired remote controller display
	Operation [⏻] (Green)	Timer [⏲] (Orange)	Economy [🌿] (Green)	
E: 95.X. Compressor motor control error (Outdoor unit)	9 times	5 times	Continuous	95
E: 97.X. Outdoor unit fan motor error (Outdoor unit)	9 times	7 times	Continuous	97
E: 99.X. 4-way valve error (Outdoor unit)	9 times	9 times	Continuous	99
E: A1.X. Discharge temperature error (Outdoor unit)	10 times	1 times	Continuous	A1
E: A5.X. Low pressure error (Outdoor unit)	10 times	5 times	Continuous	A5
E: AC.X. Heat sink temperature error (Outdoor unit)	10 times	12 times	Continuous	AC

TROUBLESHOOTING

1-4. Error code table (Outdoor unit)

The operation status is determined by the lighting up and blinking of the LED lamp.
After check that ERROR LED lamp blinks, press the ENTER button once.

NOTE: For the positions of LED lamp and buttons, refer to "Function settings (for outdoor unit)" in Chapter 5. FIELD WORK.

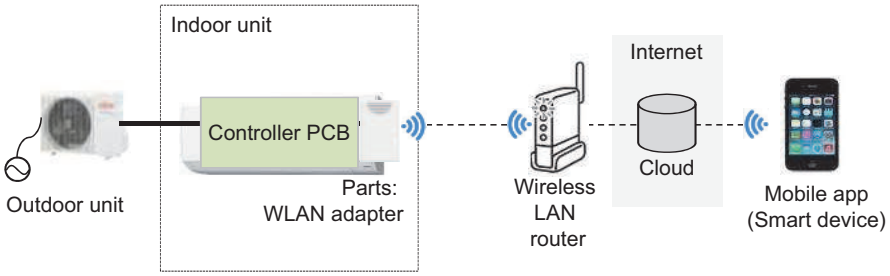
Error contents	POWER/ MODE	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
			L1	L2	L3	L4	L5	L6
E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit) (Occurs immediately after starting operation)	■ 2	●	■ 1	■ 1	○	○	●	●
E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit) (Occurs during operation)	■ 2	●	■ 1	■ 1	○	●	○	○
E: 12.X. Wired remote controller communication error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 18.X. External communication error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 23.X. Combination error (Outdoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 26.X. Address setting error in wired remote controller (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 29.X. Connected unit number error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 32.X. Indoor unit main PCB error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 35.X. MANUAL AUTO button error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 3A.X. Indoor unit communication circuit error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 41.X. Room temperature sensor error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 42.X. Indoor unit heat exchanger sensor error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 51.X. Indoor unit fan motor error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 62.X. Outdoor unit main PCB error (Outdoor unit)	■ 2	●	■ 6	■ 2	○	○	○	●
E: 63.X. Inverter error (Outdoor unit)	■ 2	●	■ 6	■ 3	○	○	○	●
E: 65.X. Trip terminal L error (Outdoor unit)	■ 2	●	■ 6	■ 5	○	○	●	●
E: 71.X. Discharge thermistor error (Outdoor unit)	■ 2	●	■ 7	■ 1	○	○	○	●
E: 73.X. Heat exchanger (Middle/Outlet) temperature thermistor error (Outdoor unit)	■ 2	●	■ 7	■ 3	○	○	●	○
E: 74.X. Outdoor temperature thermistor error (Outdoor unit)	■ 2	●	■ 7	■ 4	○	○	○	●
E: 77.X. Heat sink thermistor error (Outdoor unit)	■ 2	●	■ 7	■ 7	○	○	○	●
E: 84.X. Current sensor error (Outdoor unit)	■ 2	●	■ 8	■ 4	○	○	○	●
E: 86.X. High pressure switch error (Outdoor unit)	■ 2	●	■ 8	■ 6	○	●	●	○

Error contents	POWER/ MODE	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
			L1	L2	L3	L4	L5	L6
E: 86.X. Pressure sensor error (Outdoor unit)	■ 2	●	■ 8	■ 6	○	●	●	○
E: 94.X. Trip detection (Outdoor unit)	■ 2	●	■ 9	■ 4	○	○	○	●
E: 95.X. Compressor motor control error (Outdoor unit)	■ 2	●	■ 9	■ 5	○	○	○	●
E: 97.X. Outdoor unit fan motor error (Outdoor unit)	■ 2	●	■ 9	■ 7	○	○	●	●
E: 99.X. 4-way valve error (Outdoor unit)	■ 2	●	■ 9	■ 9	○	○	○	●
E: A1.X. Discharge temperature error (Outdoor unit)	■ 2	●	■ 10	■ 1	○	○	○	●
E: A5.X. Low pressure error (Outdoor unit)	■ 2	●	■ 10	■ 5	○	○	○	●
E: AC.X. Heat sink temperature error (Outdoor unit)	■ 2	●	■ 10	■ 12	○	○	●	●

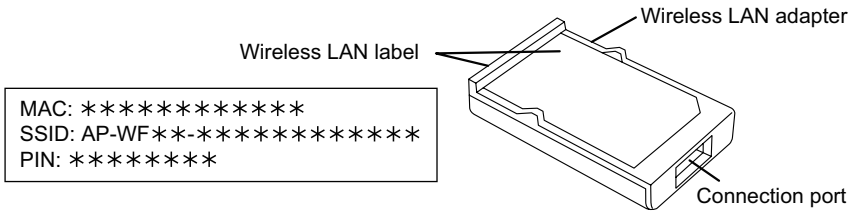
● : Light on ○ : Light off ■ (n) : n Times blinking

1-5. Error code table (Wireless LAN indicator)

- Wireless LAN control system diagram example



- Name of parts



- Wireless LAN indicator
  For confirmation of the error contents, refer the flashing pattern as follows.
  Wireless LAN LED (orange) on the indoor unit operate according to the error contents.

Error contents	Wireless LAN LED (orange)	Error code
E: 18.X. External communication error between indoor unit and WLAN adapter	On: Connection information with router is available Off: Connection information with router is unavailable	18
Wireless LAN adapter error	Flashing slow	No error
Network communication error between wireless LAN router and WLAN adapter	On	No error
E: 18.X. Communication error	Flashing slow	18
E: 18.X. Wireless LAN adapter non-energized	Off	18
Wireless LAN adapter Sleep mode (Indoor unit)	Off	No error

Flashing slow: Repeating 7 seconds on/2 seconds off

1-6. Error code table (Mobile app)

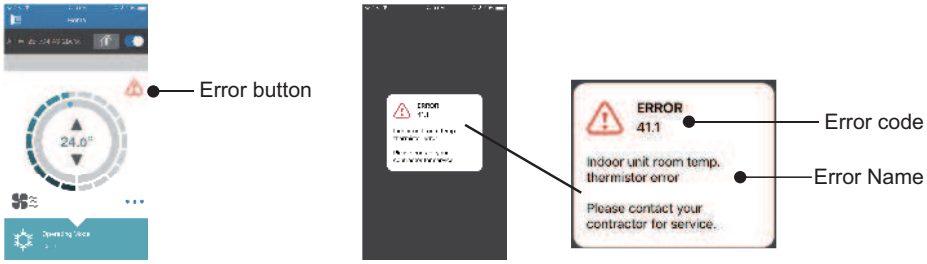
- Error display

  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.

  – For Android

  – For iOS



TROUBLESHOOTING

TROUBLESHOOTING

- Error code

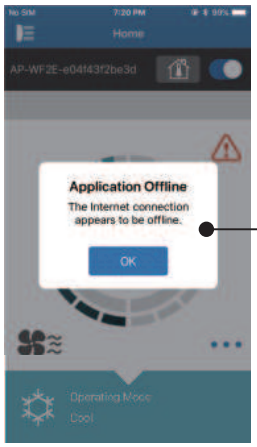
Error message	Error contents	Error code
Serial communication error (Serial Reverse Transfer Error)	E: 11.X. Serial communication error (Serial reverse transfer error) (Outdoor unit)	11.1
		11.2
Serial communication error (Serial Forward Transfer Error)	E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit)	11.3
		11.4
Wired remote controller communication error	E: 12.X. Wired remote controller communication error (Indoor unit)	12.1
Indoor unit PCB model information error	E: 32.X. Indoor unit main PCB error (Indoor unit)	32.1
Manual auto switch error	E: 35.X. MANUAL AUTO button error (Indoor unit)	35.1
Room temp. sensor error	E: 41.X. Room temperature sensor error (Indoor unit)	41.1
Indoor unit Heat Ex. Middle temp. sensor error	E: 42.X. Indoor unit heat exchanger sensor error (Indoor unit)	42.2
Indoor unit fan motor error	E: 51.X. Indoor unit fan motor error (Indoor unit)	51.1
		51.2
Outdoor unit main PCB model information error	E: 62.X. Outdoor unit main PCB error (Outdoor unit)	62.1
		62.2
Inverter error	E: 63.X. Inverter error (Outdoor unit)	63.1
		63.2
PC circuit error	E: 64.X. PFC circuit error (Outdoor unit)	64.1
		64.3
		64.4
		64.8
Discharge temp. sensor error	E: 71.X. Discharge thermistor error (Outdoor unit)	71.1
Outdoor temp. sensor error	E: 74.X. Outdoor temperature thermistor error (Outdoor unit)	74.1
Current sensor error	E: 84.X. Current sensor error (Outdoor unit)	84.1
Trip detection	E: 94.X. Trip detection (Outdoor unit)	94.1
Compressor rotor position detection error	E: 95.X. Compressor motor control error (Outdoor unit)	95.1
		95.3
Outdoor unit fan motor error	E: 97.X. Outdoor unit fan motor error (Outdoor unit)	97.3
4-way valve error	E: 99.X. 4-way valve error (Outdoor unit)	99.1
Discharge temp. error	E: A1.X. Discharge temperature error (Outdoor unit)	A1.1

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.
  The error message disappears after 5 seconds and the normal screen is displayed.

For Android

For iOS



TROUBLESHOOTING

TROUBLESHOOTING

- Error message list
  - For Android

Registration error		
Error message	**Cause**	**Solution**
Wi-Fi must be enabled to set up new device	The user has disabled Wi-Fi on the smart device.	Enable the Wi-Fi on the smart device.
We weren't able to sign you onto null. Please goto the Wi-Fi settings and join the network from there. Return to the app when you're done.	The smart device and air conditioner are connected to difference Wi-Fi networks when attempting to register.	Connect the mobile device to the same network as air conditioner, then retry the registration.
Could not connect to the device at this time. Please reset the device and try again.	The air conditioner is not connected to Wi-Fi.	Check if the router connected to the air conditioner has internet access. (You can check by connecting the smart device to the router, then opening the website.) If there is no access, connect the router to the internet.
	Smart device is not connected to the same network as the air conditioner.	Connect the mobile device to the same network as the air conditioner, then retry the registration.
The device failed to connect with service.	Your internet access may be down or a firewall may be blocking requests to the service.	Check if the router connected to the air conditioner has internet access. (You can check by connecting the smart device to the router, then opening the website.) If there is no access, connect the router to the internet.
Could not register the device. Make sure the device is ready for registration.	The air conditioner is not connected to the router.	Enter the Wi-Fi setting on the smart device, then check if the SSID of the air conditioner (AP-WF∗∗-∗∗∗∗∗∗∗∗∗∗) is connected. If the air conditioner is connected, retry the registration.
	The router the air conditioner is connected to, has no internet access.	Check if the router connected to the air conditioner has internet access. (You can check by connecting the smart device to the router, then opening the website.) If there is no access, connect the router to the internet.
	The air conditioner is already registered.	If there is a smart device that has already been registered to the air conditioner, unregister by using the registered smart device. Retry the registration with the smart device you wish to register. If you do not own the smart device registered to the air conditioner (lost, property of previous owner, etc.), ask your maker service to unregister the smart device. Notify the MAC address of the WLAN adapter as written on the Wireless LAN label.
	If the problem persists even if the all of the above is conducted, please contact your dealer or authorized service personnel. When asking for advice, Notify the MAC address of the WLAN adapter as written on the Wireless LAN label.	
Please ensure your air conditioner is ready to pair, and that you have entered its SSID and password correctly.	Occurs when pairing is executed, when the user erroneously enter the SSID of the adapter.	Enter the SSID literally. (Uppercase and lowercase letters also match)

TROUBLESHOOTING

General error		
Error message	**Cause**	**Solution**
No connectivity to Wi-Fi or the cloud. Please check your network connection.	The smart device has no internet access.	Connect the mobile device to the internet.
An error occurred while trying to update your profile. Please try again later.		
Device is offline and cannot be modified.	The router the air conditioner is connected to, has no internet access.	Check if the router connected to the air conditioner has internet access. (You can check by connecting the mobile device to the router, then opening the website.) If there is no access, connect the router to the internet.
	The air conditioner is not connected to the router.	Check the W-LAN LED indicators on the air conditioner. If the W-LAN LED lamp is flashing or off, refer to "Error code table (Wireless LAN indicator)" on page 03-6

Sign in error		
Error message	**Cause**	**Solution**
Could not reach service.	The smart device has no internet access.	Connect the smart device to the internet.

– For iOS

Registration error		
Error message	**Cause**	**Solution**
You need an internet connection to add new devices.	The user has disabled Wi-Fi on their smart device.	Enable Wi-Fi from the iOS setting.
Could not register same LAN device. Make sure both devices are in the same LAN and try again to register.	The smart device and air conditioner are connected to different Wi-Fi networks when attempting to register.	Connect the smart device to the same network as the air conditioner, then retry the registration.
No registrable device was found. Make sure Wi-Fi setup was successful. This method only works if the Wi-Fi was recently performed.	The air conditioner is not connected to Wi-Fi.	Check if the router connected to the air conditioner has internet access. (You can check by connecting the smart device to the router, then opening the website.) If there is no access, connect the router to the internet.
	Smart device is not connected to the same network as the air conditioner.	Connect the mobile device to the same network as the air conditioner, then tap register button.
Could not register the device. Make sure the device is ready for registration.	The air conditioner is not connected to the router.	Enter the Wi-Fi setting on the smart device, then check if the SSID of the air conditioner (AP-WF∗∗-∗∗∗∗∗∗∗∗∗∗) is connected. If the air conditioner is connected, retry the registration.

TROUBLESHOOTING

Registration error		
Error message	**Cause**	**Solution**
Could not register the device. Make sure the device is ready for registration.	The router the air conditioner is connected to, has no internet access.	Check if the router connected to the air conditioner has internet access. (You can check by connecting the smart device to the router, then opening the website.) If there is no access, connect the router to the internet, then retry the registration.
	The air conditioner is already registered.	If there is a smart device that has already been registered to the air conditioner, unregister by using the registered smart device. Retry the registration with the smart device you wish to register. If you do not own the smart device registered to the air conditioner (lost, property of previous owner, etc.), ask your maker service to unregister the smart device. Notify the MAC address of the WLAN adapter as written on the Wireless LAN label.
	If the problem persists even if the all of the above is conducted, please contact your dealer or authorized service personnel. When asking for advice, please notify the MAC address of the WLAN adapter as written on the Wireless LAN label.	
Please ensure your air conditioner is ready to pair, and that you have entered its SSID and password correctly.	Occurs when pairing is executed, when the user erroneously enter the SSID of the adapter.	Enter the SSID literally. (Uppercase and lowercase letters also match)

General error		
Error message	**Cause**	**Solution**
Failed to change password.	The smart device has no internet access.	Connect the mobile device to the internet.
Cloud not determine service reachability.		
Failed to update property.		
Could not retrieve schedules.		
The operation couldn't be completed. Operation timed out.		
"Device name" is offline. (Device name varies depending on the air conditioner)	The router the air conditioner is connected to has no internet access.	Check if the router connected to the air conditioner has internet access. (You can check by connecting the mobile device to the router, then opening the website to check access.) If there is no access, connect the router to the internet.
	The air conditioner is not connected to the router.	Check the W-LAN LED indicators on the air conditioner. If the W-LAN LED lamp is flashing or off, refer to "Error code table (Wireless LAN indicator)" on page 03-6

Sign in error		
Error message	**Cause**	**Solution**
Could not reach service.	The smart device has no internet access.	Connect the smart device to the internet.

2. Troubleshooting with error code

2-1. E: 11.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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".

↓

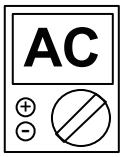
Check point 2. Check connection

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 187 V (AC 208 V -10%) to AC 253 V (AC 230 V +10%) appears at outdoor unit terminal L—N.

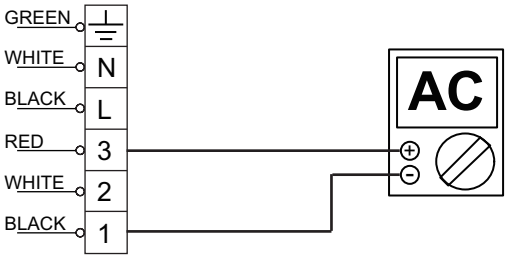


↓

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 in "Service parts information" on page 03-80
- 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.X. 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
	Outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Indoor 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
			Indoor 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".

↓

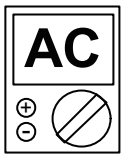
Check point 2. Check connection

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 187 V (AC 208 V -10%) to AC 253 V (AC 230 V +10%) appears at outdoor unit terminal L—N.



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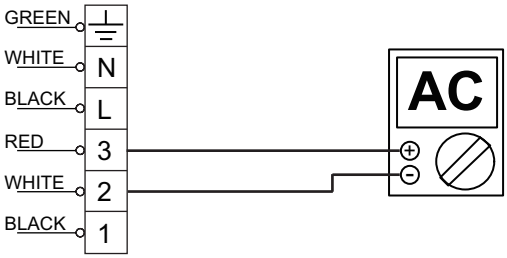
TROUBLESHOOTING

Check point 4. Check serial signal (reverse 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 03-80) • If indoor unit fan motor is abnormal, replace indoor unit fan motor and 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.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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 UTY-TWRXZ2 (Communication kit) (for 18 model). Check voltage at CN12 of main PCB (terminal 1—2) (for 24 model). (Power supply to the remote controller)

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

- If it is DC 5 V (for 18 model) or DC 12 V (for 24 model), 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.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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 WAN 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 main PCB

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

↓

End

2-5. E: 23.X. 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
	Outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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 main PCB

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

↓

End

2-6. E: 26.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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

2-7. E: 29.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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

2-8. E: 32.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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 electric 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 electric components

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

↓

Check point 3. Replace main PCB

Change 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.

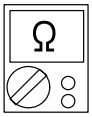
2-9. E: 35.X. MANUAL AUTO button error (Indoor unit)

Indicator	Indoor unit	Operation indicator	3 time flash
		Timer indicator	5 time flash
		Economy indicator	Continuous flash
		Error code	E: 35
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Indoor unit controller PCB		When the MANUAL AUTO button becomes on for consecutive 30 (for 18 model) or 60 (for 24 model) 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 main PCB and indicator PCB

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

↓

End

2-10. E: 3A.X. Indoor unit communication circuit error (Indoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	3 time flash
		Timer indicator	10 time flash
		Economy indicator	Continuous flash
		Error code	E: 3A
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Wired remote controller (2-wire)		When the indoor unit detects the configuration of remote controller group abnormal or the indoor unit detects lack of the primary remote controller
	Indoor unit controller PCB circuit		
Forecast of cause			Terminal connection abnormal
			Wired remote controller failure
			Indoor unit main PCB defective

Check point 1. Check the connection of terminal

- After turning off the power supply, check and correct as follows:
  Indoor unit: Check the connection of the terminal between the remote controller and indoor unit, or between indoor units and check if there is a disconnection or short of the cable.

↓

Check point 2. Check the indoor unit main PCB

- Check terminal voltage of CN2 (terminal 1—3) of UTY-TWRXZ2 (Communication kit) (for 18 model). Check voltage at CN12 of main PCB (terminal 1—2) (for 24 model) (Power supply for remote)
  If terminal voltage is DC 5 V (for 18 model) or DC 12 V (for 24 model), remote controller failure (Control PCB is OK).
  If terminal voltage is DC 0 V, main PCB failure (Remote controller is OK).

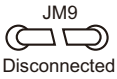
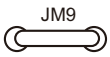
NOTE: In case of re-installation is done due to removed connector or incorrect wiring, turn on the power again.

↓

End

Tip

Depending on the connected remote controller type, following setting is required:

Connected remote controller	DIP switch	Jumper (JM9)
2-wire type	 2WIRE/3WIRE Factory setting: 2WIRE	 JM9 Disconnected
3-wire type	 2WIRE/3WIRE Factory setting: 3WIRE	 JM9 Connected (Factory setting)

- 2-wire type remote main PCB
  If the communication PCB is not connected and JM9 is disconnected, 3A error is displayed.
  If the communication PCB is connected and JM9 is connected, the 2-wire remote controller does not work.
  If the DIP switch is 3-wire side, the 2-wire type remote controller does not work.
- 3-wire type remote main PCB
  If the DIP switch is 2-wire side, the 3-wire type remote controller does not work.

TROUBLESHOOTING

2-11. E: 41.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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

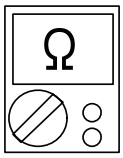
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> 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 03-88.
- 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 02-18.

If the voltage does not appear, replace main PCB.

↓

End

2-12. E: 42.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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

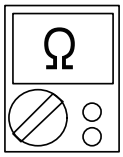
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> 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 03-88.
- 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 02-18.

If the voltage does not appear, replace main PCB.

↓

End

2-13. E: 51.X. Indoor unit fan motor error (Indoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	5 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: 51
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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

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 03-80.)
→ If Indoor unit fan motor is abnormal, replace Indoor unit fan motor.

↓

Check point 4. Replace main PCB

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

↓

End

2-14. E: 58.X. Intake grille error (Indoor unit)

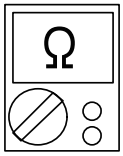
Indicator	Indoor unit	Operation indicator	5 time flash
		Timer indicator	8 time flash
		Economy indicator	Continuous flash
		Error code	E: 58
	Outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Indoor unit main PCB		When the Micro switch is detected open while running the compressor.
	Micro switch		
Forecast of cause			Micro switch failure
			Shorted connector/wire
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check limit switch

- Check operation of Micro switch. (any blocking by dust, etc.)
- Remove Micro switch and check ON/OFF switching operation by using a meter.

-> If micro switch is detective, replace it.



↓

Check point 2. Check connector (CN11)/wire

Check loose contact of CN11/shorted wire (pinched wire).
-> Replace micro switch if the wire is abnormal

↓

Check point 3. Replace main PCB

If Check Point 1 and 2 do not improve the symptom, change main PCB.

↓

End

2-15. E: 62.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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 main PCB
Change 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

2-16. E: 63.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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

2-17. E: 64.X. PFC circuit error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	6 time flash
		Timer indicator	4 time flash
		Economy indicator	Continuous flash
		Error code	E: 64
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Outdoor unit	Main PCB	• When inverter input DC voltage is higher than 420 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

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 main PCB

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

↓

End

2-18. E: 65.X. Trip terminal L error (Outdoor unit)

Indicator	Indoor unit	Operation indicator	6 time flash
		Timer indicator	5 time flash
		Economy indicator	Continuous flash
		Error code	E: 65
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Outdoor unit	Main PCB	When the signal from FO terminal of IPM is “L” (0 V) during the compressor stopping.
Forecast of cause			Main PCB failure

Check point 1. Check main PCB
Replace the outdoor unit main PCB.

↓

End

TROUBLESHOOTING

2-19. E: 71.X. Discharge thermistor error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	7 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: 71
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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

Check point 1. Check connection of connector

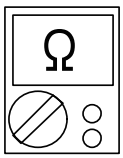
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ 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 03-88.
- 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 02-18.

If the voltage does not appear, replace main PCB.

↓

End

2-20. E: 73.X. Heat exchanger (Middle/Outlet) temperature 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Heat exchanger liquid temperature thermistor		• Heat exchanger liquid temperature thermistor short or open detected • Heat exchanger middle temperature thermistor short or open detected
	Heat exchanger middle temperature thermistor		
Forecast of cause			Connector failure
			Thermistor failure
			Main PCB failure

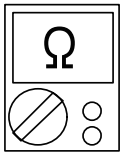
Check Point 1 : Check the connector connection and cable open

- Connector connection state check
- Cable open check

↓

Check Point 2 : Check the thermistor

- For the outdoor unit heat exchanger thermistor resistance value, refer to "Thermistor resistance values" on page 03-88.
- 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 02-18.

If the voltage does not appear, replace main PCB.

↓

End

2-21. E: 74.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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

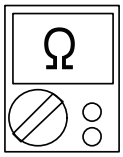
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> 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 03-88.
- 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 02-18.

If the voltage does not appear, replace main PCB.

↓

End

2-22. E: 77.X. Heat sink thermistor error (Outdoor unit)

Indicator	Indoor unit	Operation indicator	7 time flash
		Timer indicator	7 time flash
		Economy indicator	Continuous flash
		Error code	E: 77
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Heat sink temperature thermistor		Heat sink temperature thermistor short or open detected
Forecast of cause			Connector failure
			Thermistor failure
			Inverter PCB failure

TROUBLESHOOTING

Check point 1. Check connection of connector

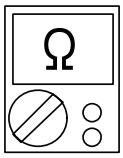
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

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

↓

Check point 2. Remove connector and check thermistor resistance value

- For the Heat sink thermistor resistance value, refer to "Thermistor resistance values" on page 03-88.
- If thermistor is either open or shorted, replace it and reset the power.



↓

Check point 3. Check voltage of inverter 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 02-18.

If the voltage does not appear, replace inverter PCB.

↓

End

2-23. E: 84.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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 electric 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 main PCB

If Check point 1, 2 do not improve the symptom, change 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

2-24. E: 86.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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.

↓

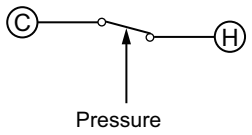
Check point 3. Replace main PCB

Change main PCB and check operation again.

↓

End

- Type of contact



- Characteristics of pressure switch

Pressure switch 1	
Contact: Short → Open	4.2 ±0.1 MPa
Contact: Open → Short	3.2 ±0.15 MPa

18/24 model: P770

2-25. E: 86.X. Pressure sensor error (Outdoor unit)

Indicator	Indoor unit	Operation indicator	8 time flash
		Timer indicator	6 time flash
		Economy indicator	Continuous flash
		Error code	E: 86
	Outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Outdoor unit main PCB		30 seconds or more after power-on, when pressure sensor detection value detects the condition below continuously for 30 seconds or more. Ps ≤ 0 or Ps ≥ 5 [MPa]
	High pressure switch		
Forecast of cause			Connector connection failure
			Pressure sensor failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check connection of the pressure sensor

- 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 output voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V ± 5%).

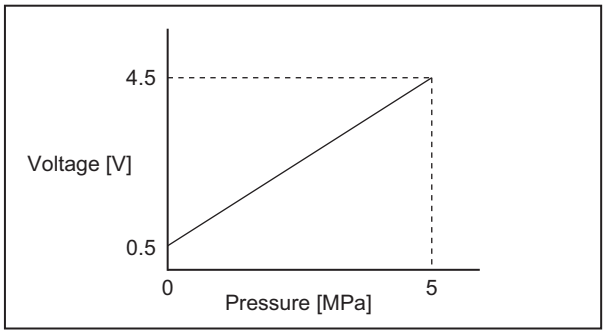
NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-18.

If the voltage is not correct, replace main PCB.

↓

Check point 3. Check output voltage of pressure sensor

Make sure circuit diagram of outdoor unit and check terminal voltage. Voltage is refer to the following graph.



If the voltage is not correct, replace pressure sensor.

↓

End

2-26. E: 94.X. Trip detection (Outdoor unit)

Indicator	Indoor unit	Operation indicator	9 time flash
		Timer indicator	4 time flash
		Economy indicator	Continuous flash
		Error code	E: 94
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Outdoor unit	Inverter 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.
		Main PCB	
		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)
			Inverter PCB

TROUBLESHOOTING

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 inverter PCB

If Check point 1 do not improve the symptom, change inverter PCB.

↓

Check point 3. Replace main PCB

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

↓

Check point 4. Replace compressor

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

↓

End

2-27. E: 95.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Outdoor unit	Inverter PCB	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.
		Main PCB	
		Compressor	
Forecast of cause			Defective connection of electric components
			Inverter PCB failure
			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 03-80.)

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

↓

Check point 3. Replace inverter PCB

If Check point 1, 2 do not improve the symptom, change inverter PCB.

↓

Check point 4. Replace main PCB

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

↓

Check point 5. Replace compressor

If Check point 4 do not improve the symptom, change compressor.

↓

End

2-28. E: 97.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Outdoor unit	Inverter 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.
		Main PCB	
		Fan motor	
Forecast of cause			Fan rotation failure
			Motor protection by surrounding temperature rise
			Inverter PCB failure
			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

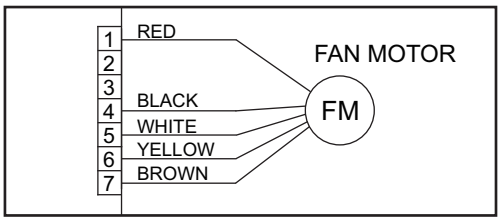
Check outdoor unit fan motor. (Refer to outdoor unit fan motor in "Service parts information" on page 03-80.)
→ If outdoor unit fan motor is abnormal, replace outdoor unit fan motor and main PCB.

↓

TROUBLESHOOTING

Check point 4. Check output voltage of inverter PCB

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



NOTE: For details of wiring diagram, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-18.

Read wire	DC voltage
Red—Black	280 V (AC 220 V -10 %) to 373 V (AC 240 V +10 %)
White—Black	15±1.5 V

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

↓

Check point 5. Replace main PCB

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

↓

End

2-29. E: 99.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
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. > 20 °F (10 °C) (Cooling or Dry operation) Indoor heat exchanger temp. - Room temp. < -20 °F (-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			Air filter clogged
			Connector connection failure
			Thermistor failure
			Coil failure
			4-way valve failure
			Main PCB failure

Check point 1. Check air filter condition

Check air filter dirty.
→ If the air filter dirty, clean up the air filter.

↓

Check point 2. 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 3. 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 03-88.
→ If defective, replace the thermistor.

↓

Check point 4. Check the solenoid coil and 4-way valve
NOTE: Refer solenoid coil and 4-way valve in "Service parts information" on page 03-80. • **Solenoid coil** Remove P60 from PCB and check the resistance value of coil. Resistance value is 1.97 kΩ. → 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 5. Replace main PCB
If Check Point 1 to 4 do not improve the symptom, replace main PCB.

↓

End

TROUBLESHOOTING

2-30. E: A1.X. 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
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Outdoor unit main PCB		Protection stop by discharge temperature ≥ 230 °F (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 Electrronic Expansion Valve (EEV) or Capillary tube in "Service parts information" on page 03-80.
- 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 03-80.)

↓

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 03-88.

↓

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

↓

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

↓

End

TROUBLESHOOTING

2-31. E: A5.X. Low pressure error (Outdoor unit)

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	10 time flash
		Timer indicator	5 time flash
		Economy indicator	Continuous flash
		Error code	E: A5
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Outdoor unit main PCB		Protection stop by suction pressure ≥ 0.02 MPaG continued 5 minutes repeats 5 times within 24 hours.
	Suction pressure sensor		
Forecast of cause			3-way valve not opened
			Outdoor unit ambient temperature too low
			Outdoor unit operation failure, foreign matter on heat exchanger
			EEV defective, strainer clogged
			Solenoid valve defective
			Low pressure sensor characteristics defective
			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 outdoor unit ambient temperature (Only when heating operation)

Outdoor unit ambient temperature lower than operating range?

↓

Check point 3. Check the outdoor unit fan and heat exchanger (Only when heating operation)

- No foreign object in air passage?
- Heat exchanger fins clogged?
- Fan rotes?
- Check the motor. (Refer to outdoor unit fan motor in "Service parts information" on page 03-80.)

↓

Check point 4. 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 03-80.
- Check the strainer clogging.

↓

Check point 5. Check the suction pressure sensor

Check the suction pressure sensor characteristics.

NOTE: For the characteristics of the thermistor, refer to suction pressure sensor in "Service parts information" on page 03-80.

↓

Check point 6. Check the refrigerant amount
Check the refrigerant leakage.

↓

Check point 7. Replace main PCB
If check point 1 to 6 do not improve the symptom, replace the main PCB.

↓

End

TROUBLESHOOTING

2-32. E: AC.X. Heat sink temperature error (Outdoor unit)

Indicator	Indoor unit	Operation indicator	10 time flash
		Timer indicator	12 time flash
		Economy indicator	Continuous flash
		Error code	E: AC
	outdoor unit		Refer to "Error code table (Outdoor unit)" on page 03-4
Detective actuator	Outdoor unit inverter PCB		Protection stop by heat sink temperature ≥ 176 °F (80 °C) during heat sink operation generated 2 times within 24 hours.
	Heat sink temperature thermistor		
Forecast of cause			Foreign matter on heat sink, heat sink dirty
			Foreign matter on heat exchanger, excessive ambient temperature rise
			Heat sink temp. thermistor defective

TROUBLESHOOTING

Check point 1. Check the heat sink state

Heat sink foreign matter, soiling check

↓

Check point 2. Check the foreign matter and ambient temperature of heat exchanger

- Heat exchange foreign matter check
- Ambient temperature not raised by effect of other heat sources?
- Discharged air not sucked in?

↓

Check point 3. Check the heat sink temperature thermistor

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

NOTE: For the characteristics of the thermistor, refer to "Thermistor resistance values" on page 03-88.

↓

Check point 4. Replace inverter PCB

Replace inverter PCB

↓

End

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".

↓

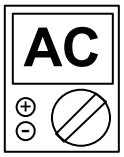
Check point 2. Check external cause at indoor and outdoor (voltage drop or noise)

- 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 187 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”.

↓

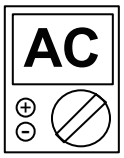
Check point 2. Check external cause at indoor and outdoor (voltage drop or noise)

- 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 198 to 264 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 main PCB

If check point 1 to 3 do not improve the symptom, change 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 numbers 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 UTY-TWRXZ2 (Communication kit) (for 18 model). Check voltage at CN12 of main PCB (terminal 1—2) (for 24 model).
(Power supply to remote controller)

- If it is DC 5 V (for 18 model) and DC 12 V (for 24 model), 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

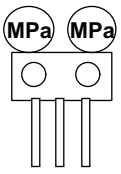
- Check connection pipe (specified pipe length and pipe diameter?)
- Check any loose or removed communication line.

→ 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 Electrronic Expansion Valve (EEV) or Capillary tube in "Service parts information" on page 03-80.
- Check compressor.
  Refer to compressor in "Service parts information" on page 03-80.
  Refer to inverter compressor in "Service parts information" on page 03-80.



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

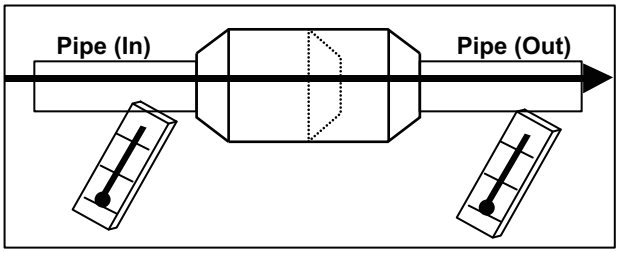
↓

End

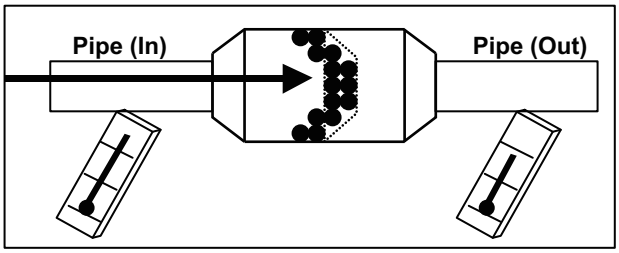
TROUBLESHOOTING

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)

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 03-80.

↓

End

TROUBLESHOOTING

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?

↓

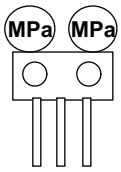
End

Diagnosis method when water is spitting out

Is the filter clogged?

↓

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



↓

End

3-7. Too warm

Forecast of cause	House insulation setting has not been changed.
	Temperature sensing location has not been changed.
	Installation location of the wired remote.
	Function settings have not been changed.

TROUBLESHOOTING

Check point 1. Check insulation level of structure of house

Is insulation level greater than R-13?
→ If no, go to "Check Point 4".

↓

Check point 2. Check function setting

If insulation level is greater than R-13 set function 95 to 01.

NOTE: For details of function setting number 95, refer to "Function settings " in Chapter 5. FIELD WORKING on page 05-1.

↓

Check Point 3. Check effects of function setting change

Is the space still too warm in relation to set point?

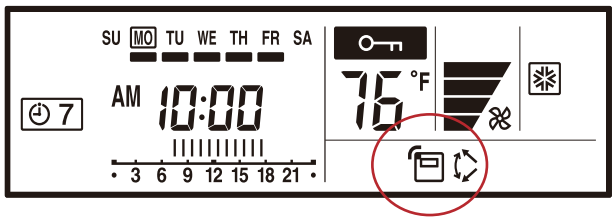
↓

Check Point 4. Verify room temperature sensing location

Do you want room temperature sensed at the wired remote controller (Wired remote sensor) or by they build in sensor inside the unit (Indoor unit sensor)?
→ If indoor unit sensor, go to "Check Point 5".
→ If wired remote sensor, go to "Check point 8".

Check Point 5. Check the remote controller display

Is the "Thermo Sensor Icon" displayed on the screen?



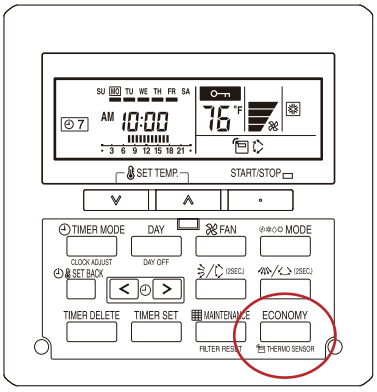
→ If no, go to "Check point 7".

↓

TROUBLESHOOTING

Check point 6. Check the remote controller

Hold down the THERMO SENSOR button until the thermo sensor icon is turned off.



→ If the space is still too warm, go to "Check point 7".

↓

End

Check point 7. Check function settings

Using the table on the right adjust function 31. (Room Temperature Control for indoor unit sensor)

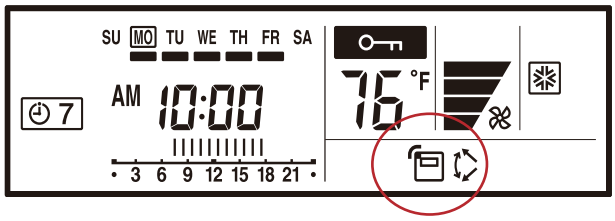
NOTE: For details of function setting number 31, refer to "Function settings " in Chapter 5. FIELD WORKING on page 05-1.

↓

End

Check point 8. Check the remote controller display

Is the "Thermo Sensor Icon" displayed on the screen?



→ If no, go to "Check point 8-1".

↓

Check point 9. Check the function Setting

Is function 48 (Room temperature sensor switching) set to 01?
→ If no, go to "Check point 9-1".

↓

TROUBLESHOOTING

Check point 10. Location of the remote controller
Is the mounting location of the wired remote controller affecting the temperature sensing? (Sunlight on the remote, heat source next to the remote) → If no, go to "Check point 12".

↓

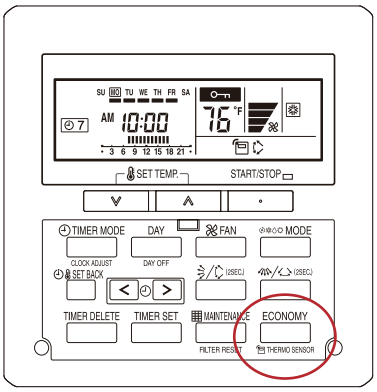
Check point 11. Location of the remote controller
Move the remote controller. → If the space is still too warm, go to "Check point 12".

↓

End

Check point 8-1. Check function setting
Is function 42 (Indoor room temperature sensor switching function) set to 01? **NOTE:** For details of function setting number 42, refer to "Function settings " in Chapter 5. FIELD WORKING on page 05-1.

↓

Check point 8-2. Check the remote controller
Press and hold down the THERMO SENSOR button to turn on the icon.  → If the space is still too warm, go to "Check point 9".

↓

End

Check point 9-1. Check function setting
Change setting of function 48 (Room temperature sensor switching) to 01. **NOTE:** For details of function setting number 48, refer to "Function settings " in Chapter 5. FIELD WORKING on page 05-1.

↓

Check point 9-2. Check the effects of function setting change
Did this function setting improve temperature control? → If the space is still too warm, go to "Check point 10".

↓

End

Check point 12. Check function setting
Using the table on the right adjust temperature correction by changing function setting 36. (Room Temperature control for wired remote controller sensor) **NOTE:** For details of function setting number 36, refer to "Function settings " in Chapter 5. FIELD WORKING on page 05-1.

↓

End

TROUBLESHOOTING

3-8. Too cool

Forecast of cause	House insulation setting has not been changed.
	Temperature sensing location has not been changed.
	Installation location of the wired remote.
	Function settings have not been changed.

TROUBLESHOOTING

Check point 1. Check insulation level of structure of house

Is insulation level greater than R-13?
→ If no, go to "Check Point 4".

↓

Check point 2. Check function setting

If insulation level is greater than R-13 set function 95 to 01.

NOTE: For details of function setting number 95, refer to "Function settings " in Chapter 5. FIELD WORKING on page 05-1.

↓

Check Point 3. Check effects of function setting change

Is the space still too cool in relation to set point?

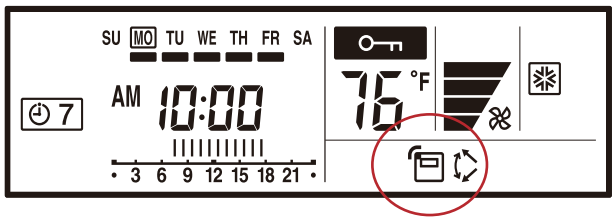
↓

Check Point 4. Verify room temperature sensing location

Do you want room temperature sensed at the wired remote controller (Wired remote sensor) or by they build in sensor inside the unit (Indoor unit sensor)?
→ If indoor unit sensor, go to "Check Point 5".
→ If wired remote sensor, go to "Check point 8".

Check Point 5. Check the remote controller display

Is the "Thermo Sensor Icon" displayed on the screen?



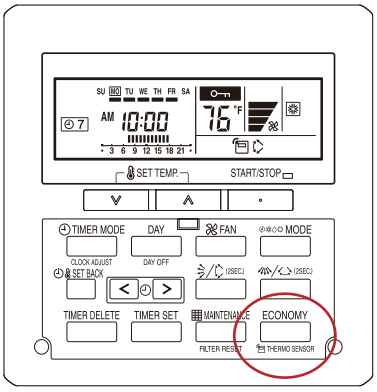
→ If no, go to "Check point 7".

↓

TROUBLESHOOTING

Check point 6. Check the remote controller

Hold down the THERMO SENSOR button until the thermo sensor icon is turned off.



→ If the space is still too cool, go to "Check point 7".

↓

End

Check point 7. Check function settings

Using the table on the right adjust function 30. (Room Temperature Control for indoor unit sensor)

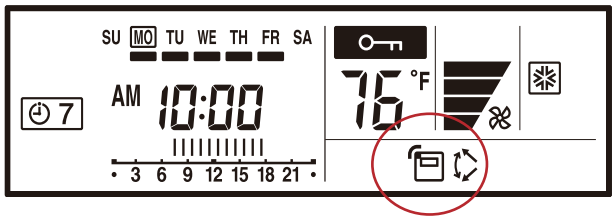
NOTE: For details of function setting number 30, refer to "Function settings " in Chapter 5. FIELD WORKING on page 05-1.

↓

End

Check point 8. Check the remote controller display

Is the "Thermo Sensor Icon" displayed on the screen?



→ If no, go to "Check point 8-1".

↓

Check point 9. Check the function Setting

Is function 48 (Room temperature sensor switching) set to 01?
→ If no, go to "Check point 9-1".

↓

Check point 10. Location of the remote controller
Is the mounting location of the wired remote controller affecting the temperature sensing? (Sunlight on the remote, heat source next to the remote) → If no, go to "Check point 12".

↓

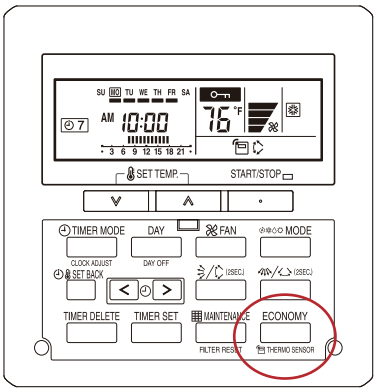
Check point 11. Location of the remote controller
Move the remote controller. → If the space is still too cool, go to "Check point 12".

↓

End

Check point 8-1. Check function setting
Is function 42 (Indoor room temperature sensor switching function) set to 01? **NOTE:** For details of function setting number 42, refer to "Function settings " in Chapter 5. FIELD WORKING on page 05-1.

↓

Check point 8-2. Check the remote controller
Press and hold down the THERMO SENSOR button to turn on the icon.  → If the space is still too cool, go to "Check point 9".

↓

End

Check point 9-1. Check function setting
Change setting of function 48 (Room temperature sensor switching) to 01. **NOTE:** For details of function setting number 48, refer to "Function settings " in Chapter 5. FIELD WORKING on page 05-1.

↓

Check point 9-2. Check the effects of function setting change
Did this function setting improve temperature control? → If the space is still too cool, go to "Check point 10".

↓

End

Check point 12. Check function setting
Using the table on the right adjust temperature correction by changing function setting 35. (Room Temperature control for wired remote controller sensor) **NOTE:** For details of function setting number 35, refer to "Function settings " in Chapter 5. FIELD WORKING on page 05-1.

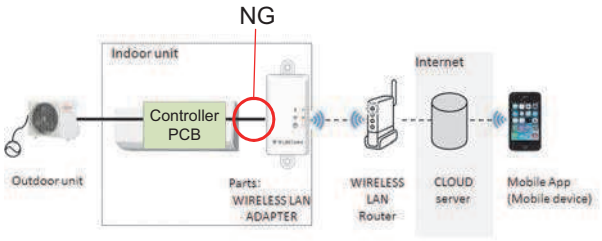
↓

End

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

4-1. E: 18.X. External communication error between indoor unit and WLAN adapter

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	1 time flash
		Timer indicator	8 time flash
		Economy indicator	Continuous flash
		Error code	E: 18
	Wireless LAN adapter	LED1 (green)	Flashing fast
		LED2 (orange)	On
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 03-75.

↓

Check point 3. Replace controller PCB

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

↓

End

4-2. Wireless LAN adapter error

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	No indication
		Timer indicator	No indication
		Economy indicator	No indication
		Error code	—
	Wireless LAN adapter	LED1 (green)	Flashing fast
		LED2 (orange)	Flashing fast
Detective actuator	Wireless LAN adapter setting button		When the setting button becomes on for consecutive 60 seconds or more. 
	Wireless LAN adapter PCB		
Forecast of cause			Wireless LAN adapter setting button failure
			Wireless LAN adapter PCB failure

Check point 1. Check the setting button

Check if setting button is kept pressed.
-> If the setting button is held down by the foreign matter, remove the foreign matter or remove the cause of the button press.

↓

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 03-75.

↓

Check point 3. Replace controller PCB

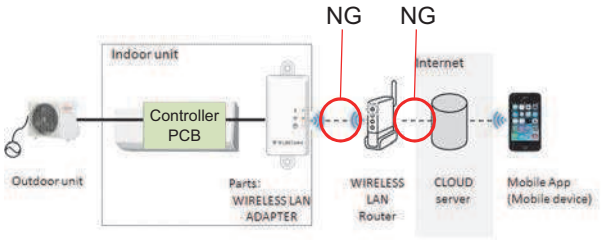
If check point 1 to 2 do not improve the symptom, replace the Wireless LAN adapter.

↓

End

4-3. Network communication error between wireless LAN router and WLAN adapter

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	No indication
		Timer indicator	No indication
		Economy indicator	No indication
		Error code	—
	Wireless LAN adapter	LED1 (green)	On
		LED2 (orange)	Flashing fast
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 03-75.

↓

End

TROUBLESHOOTING

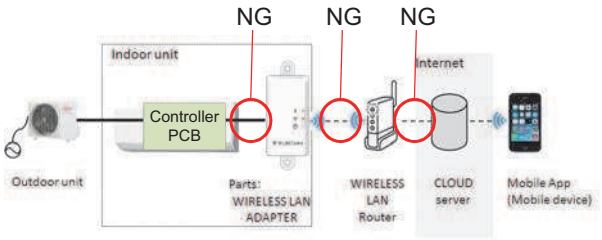
Check point 2-2. Check the transmission state
Check the wireless transmission state pf the wireless LAN router (LED status). -> If the wireless transmission from the wireless LAN router has not been outgoing, inquire to the wireless LAN router maker.

↓

End

4-4. E: 18.X. Communication error

TROUBLESHOOTING

Indicator	Indoor unit	Operation indicator	1 time flash
		Timer indicator	8 time flash
		Economy indicator	Continuous flash
		Error code	E: 18
	Wireless LAN adapter	LED1 (green)	Flashing fast
		LED2 (orange)	Flashing fast
Detective actuator	Wireless LAN router		When the external communication error between indoor unit and WLAN adapter and network communication error between wireless LAN router and WLAN 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 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.and transmission state

- 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 4".

- Check the wireless transmission state of wireless LAN router (LED status).
  -> If the wireless transmission from the wireless LAN router has not been outgoing, inquire to wireless LAN router maker.

  If the display pattern is changed as follows, go to "Check point 3-2".
  – LED 1 (green): flashing fast
  – LED 2 (orange): on

  If no, go to "Check point 3-1".

↓

TROUBLESHOOTING

Check point 3-1. 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. -> When the flashing pattern of the LED 2 (orange) is on, go to "Check point 3-2". -> When the flashing pattern of the LED 2 (orange) is flashing fast, go to "Check point 4".

↓

Check point 3-2. 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 4. Replace wireless LAN adapter.
If check point 2 to 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 03-75.

↓

Check point 5. Replace controller PCB
If check point 4 do not improve the symptom, replace the controller PCB.

↓

End

4-5. E: 18.X. Wireless LAN adapter non-energized

Indicator	Indoor unit	Operation indicator	1 time flash
		Timer indicator	8 time flash
		Economy indicator	Continuous flash
		Error code	E: 18
	Wireless LAN adapter	LED1 (green)	Off
		LED2 (orange)	Off
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 CN6 (terminal 1—2) 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 03-75.

↓

End

4-6. Wireless LAN adapter Sleep mode (Indoor unit)

Indicator	Indoor unit	Operation indicator	No indication
		Timer indicator	No indication
		Economy indicator	No indication
		Error code	—
	Wireless LAN adapter	LED1 (green)	Off
		LED2 (orange)	Off
Detective actuator	Sleep mode		When the state in which fly a wireless(SSID) have passed 1 hour.
Forecast of cause			Sleep mode

TROUBLESHOOTING

Check point 1. Cheak the sleep mode
Press the Wireless LAN adapter setting button the 3 seconds or more. -> If the display pattern is changed as follows, refer to "Network communication error between wireless LAN router and WLAN adapter" on page 03-69. • LED 1 (green): on • LED 2 (orange): flashing fast

4-7. Mobile app setting method

■ Air conditioner deregistration method

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

1. Launch the mobile app.

2. Press and hold the registered device name of the air conditioner.

3. If the Unregister button is displayed, tap the button.

4. Tap the Yes button.

5. Deregstration of the air conditioner is completed.

TROUBLESHOOTING

TROUBLESHOOTING

■ Air conditioner registration pairing method

Choose the following modes to connect the air conditioner to the wireless LAN router.

NOTES:

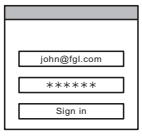
- Before starting this setting, wait for 60 seconds or more after the power supply is connected to the air conditioner (via breaker or plug).
- Check that the smartphone or tablet PC is linked to the wireless router to be connected to the air conditioner.
  The setting does not work if the same wireless LAN router is not connected.
- The displayed screen design may differ depending on the version of the mobile app.
- To control 2 or more air conditioners with the same smartphone or tablet PC, repeat the setup of the chosen mode.

Lighting pattern: ○ Off ● On ✳ Flashing

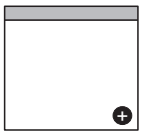
● Button mode

1. Launch the mobile app.

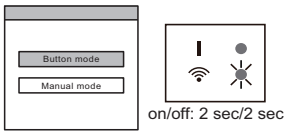
2. Sign in with your E-mail address and password following the screen on the mobile app.



3. Press the + button to add a new air conditioner.



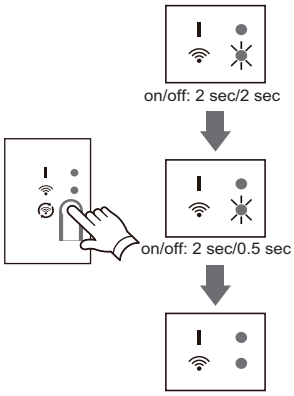
4. Confirm that LED 2 is flashing (On/Off at 2 seconds intervals). Then select Button mode on the screen. If LED 2 and 2 are off, push the setting button once.



5. Press the WPS button on the wireless LAN router to be connected.
   For the button location of the wireless LAN router and how to press it, refer to the operation manual of the wireless LAN router.

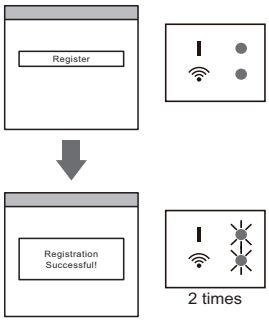
TROUBLESHOOTING

6. Confirm LED 2 is flashing (On/Off at 2 seconds intervals). Then press and hold the setting button on the wireless LAN adapter for 3 seconds.



LED 2 lighting will change. (On/Off: 2 sec./2 sec. → 2 sec./0.5 sec.)
Confirm both of the LED 1 and 2 are on to proceed.

7. Press Register button to start the connection with the wireless LAN router.



Both of the LED 1 and 2 flash 2 times and a message appear when the setup is completed.

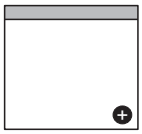
TROUBLESHOOTING

● Manual mode (For Android)

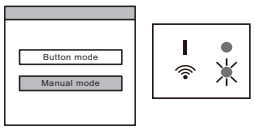
1. Launch the mobile app.

2. Sign in with your E-mail address and password following the screen on the mobile app.

3. Press the + button to add a new air conditioner.

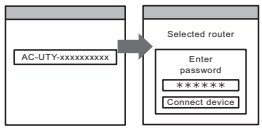


4. Select manual mode.



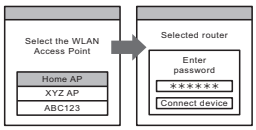
If both of the LED 1 and 2 are off, push the setting button once.

5. Select the SSID of the air conditioner to be connected.



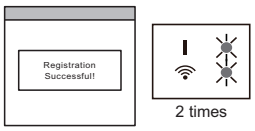
Input the PIN code written on the wireless LAN label.

6. Select the SSID of the wireless LAN router to be connected.



Input the wireless LAN router (wireless LAN access point) password then press Connect device button.

7. When setup is completed, both of the LED 1 and 2 flash 2 times, and a message appear.



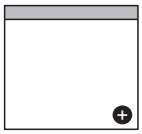
TROUBLESHOOTING

● Manual mode (For iOS)

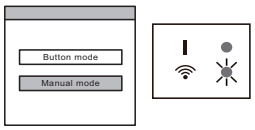
1. Launch the mobile app.

2. Sign in with your E-mail address and password following the screen on the mobile app.

3. Press the + button to add a new air conditioner.

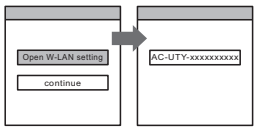


4. Select manual mode.



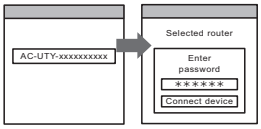
If both of the LED 1 and 2 are off, push the setting button once.

5. Select Open W-LAN setting button or activate the wireless LAN by pressing the Home button → Setting button → Wi-Fi button.

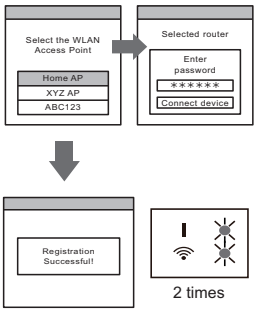


Select the SSID of the air conditioner to be connected.

6. Input the PIN code written on the wireless LAN label.



7. Select the SSID of the wireless LAN router to be connected.
Input the wireless LAN router (wireless LAN access point) password then press Connective device button.



When setup is completed, both of the LED 1 and 2 flash 2 times and a message appear.

5. Service parts information

5-1. Compressor

TROUBLESHOOTING

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

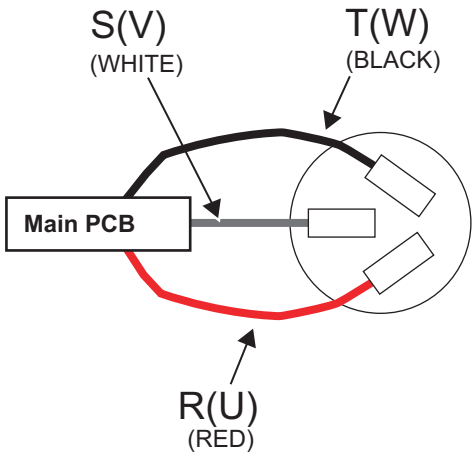
Does not start up	Stops soon after starting up	Abnormal noise
↓	↓	↓
Is there open or loose connection cable?	Is there open or loose connection cable?	Check if vibration noise by loose bolt or contact noise of piping is happening.
↓	↓	↓
Check main PCB, connection of compressor, and winding resistance. (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

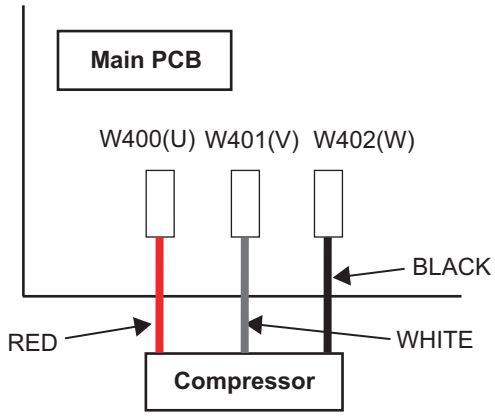
TROUBLESHOOTING

Check point 1. Check connection

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



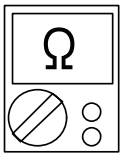
- Check terminal connection of main PCB (loose or incorrect wiring)

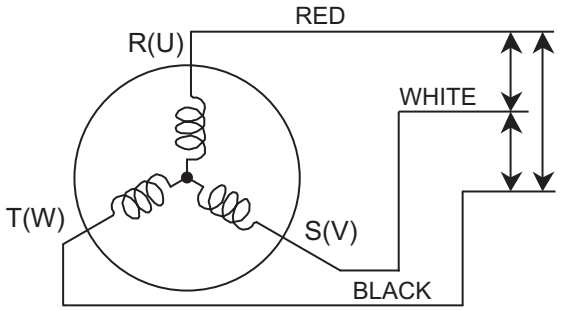


↓

Check point 2. Check winding resistance

Check winding resistance of each terminal.
Resistance value: 1.160 Ω ±8 % 68 °F (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

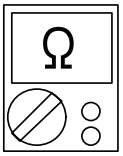
Check point 1. Check connections

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 02-18.

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 ±3 Ω at 68 °F (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.

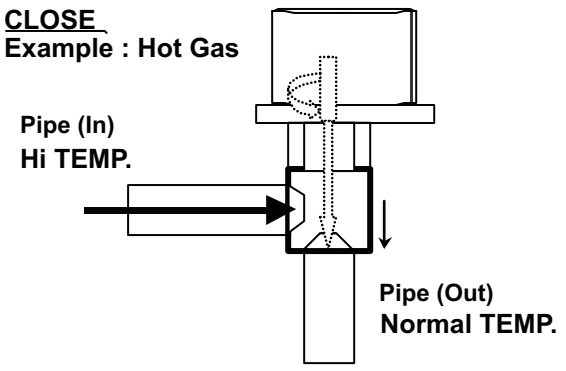
Check point 4. Check noise at start up

Turn on the power and check the operation noise.

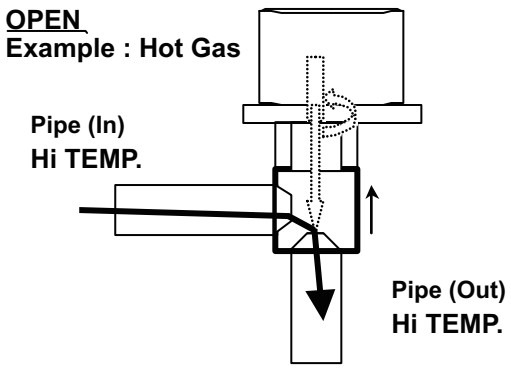
→ If an abnormal noise does not show, replace main PCB.

Check point 5. Check Opening and Closing Operation of Valve

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



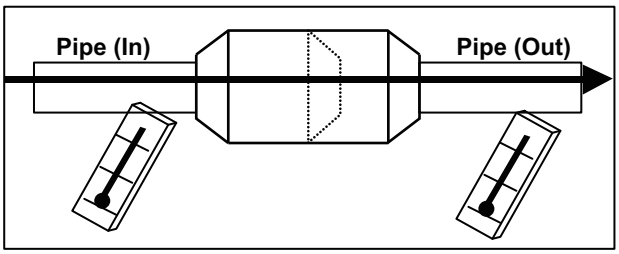
If it is open, it has no temp. difference between inlet and outlet



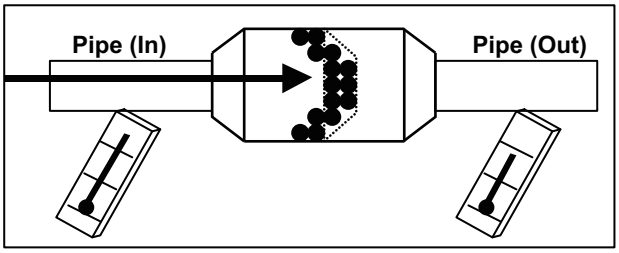
TROUBLESHOOTING

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

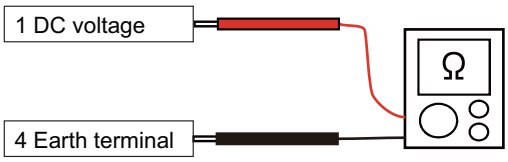
Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.

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

TROUBLESHOOTING

Check point 1. Check rotation of fan

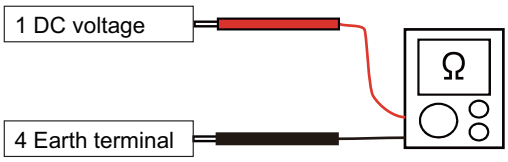
Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.

Check point 2. Check resistance of outdoor fan motor

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

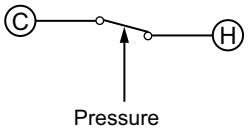
→ If they are short-circuited (below 300 kΩ), replace outdoor fan motor and controller PCB.

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

18/24 model: P770

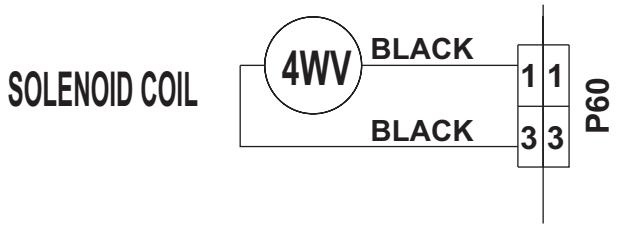
TROUBLESHOOTING

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

TROUBLESHOOTING

Check point 1. Check connection

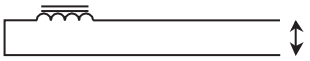
- Check the connection of connector P60.

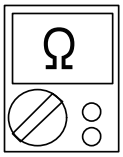


↓

Check Point 2 : Check solenoid coil

Remove P60 from PCB and check the resistance value of coil.
Resistance Value ≈ 1.97 kΩ



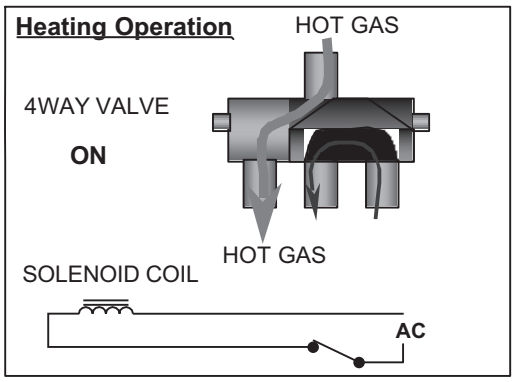


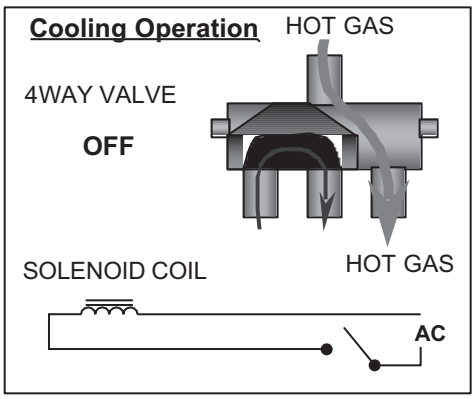
→ If it is Open or abnormal resistance value, replace solenoid coil.

↓

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 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 °F (°C)	Resistance (kΩ)	Voltage (V)
14.0 (-10.0)	58.25	0.73
23.0 (-5.0)	44.03	0.93
32.0 (0.0)	33.62	1.15
41.0 (5.0)	25.93	1.39
50.0 (10.0)	20.18	1.66
59.0 (15.0)	15.84	1.94
68.0 (20.0)	12.54	2.22
77.0 (25.0)	10.00	2.50
86.0 (30.0)	8.04	2.77
95.0 (35.0)	6.51	3.03
104.0 (40.0)	5.30	3.27
113.0 (45.0)	4.35	3.49

■ Heat exchanger temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	1,131.91	0.21
-13.0 (-25.0)	804.52	0.29
-4.0 (-20.0)	579.59	0.40
5.0 (-15.0)	422.89	0.53
14.0 (-10.0)	312.27	0.69
23.0 (-5.0)	233.21	0.88
32.0 (0.0)	176.03	1.10
41.0 (5.0)	134.23	1.36
50.0 (10.0)	103.34	1.63
59.0 (15.0)	80.28	1.92
68.0 (20.0)	62.91	2.21
77.0 (25.0)	49.70	2.51
86.0 (30.0)	39.57	2.79
95.0 (35.0)	31.74	3.06
104.0 (40.0)	25.64	3.30
113.0 (45.0)	20.85	3.53
122.0 (50.0)	17.06	3.73
131.0 (55.0)	14.05	3.90
140.0 (60.0)	11.64	4.05
149.0 (65.0)	9.69	4.19

TROUBLESHOOTING

6-2. Outdoor unit

■ Discharge temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	1,013.11	0.06
-12.0 (-25.0)	729.09	0.09
-4.0 (-20.0)	531.56	0.12
5.0 (-15.0)	392.31	0.16
14.0 (-10.0)	292.91	0.21
23.0 (-5.0)	221.09	0.28
32.0 (0.0)	168.60	0.36
41.0 (5.0)	129.84	0.46
50.0 (10.0)	100.91	0.57
59.0 (15.0)	79.12	0.71
68.0 (20.0)	62.55	0.86
77.0 (25.0)	49.84	1.03
86.0 (30.0)	40.01	1.23
95.0 (35.0)	32.35	1.43
104.0 (40.0)	26.34	1.65
113.0 (45.0)	21.58	1.88
122.0 (50.0)	17.79	2.11
131.0 (55.0)	14.75	2.34
140.0 (60.0)	12.30	2.57
149.0 (65.0)	10.32	2.79
158.0 (70.0)	8.69	3.00
167.0 (75.0)	7.36	3.19
176.0 (80.0)	6.27	3.37
185.0 (85.0)	5.36	3.54
194.0 (90.0)	4.60	3.69
203.0 (95.0)	3.96	3.83
212.0 (100.0)	3.43	3.96
221.0 (105.0)	2.98	4.07
230.0 (110.0)	2.60	4.17
239.0 (115.0)	2.27	4.26
248.0 (120.0)	2.00	4.33

TROUBLESHOOTING

■ Compressor temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	1,013.11	0.06
-12.0 (-25.0)	729.09	0.09
-4.0 (-20.0)	531.56	0.12
5.0 (-15.0)	392.31	0.16
14.0 (-10.0)	292.91	0.21
23.0 (-5.0)	221.09	0.28
32.0 (0.0)	168.60	0.36
41.0 (5.0)	129.84	0.46
50.0 (10.0)	100.91	0.57
59.0 (15.0)	79.12	0.71
68.0 (20.0)	62.55	0.86
77.0 (25.0)	49.84	1.03
86.0 (30.0)	40.01	1.23
95.0 (35.0)	32.35	1.43
104.0 (40.0)	26.34	1.65
113.0 (45.0)	21.58	1.88
122.0 (50.0)	17.79	2.11
131.0 (55.0)	14.75	2.34
140.0 (60.0)	12.30	2.57
149.0 (65.0)	10.32	2.79
158.0 (70.0)	8.69	3.00
167.0 (75.0)	7.36	3.19
176.0 (80.0)	6.27	3.37
185.0 (85.0)	5.36	3.54
194.0 (90.0)	4.60	3.69
203.0 (95.0)	3.96	3.83
212.0 (100.0)	3.43	3.96
221.0 (105.0)	2.98	4.07
230.0 (110.0)	2.60	4.17
239.0 (115.0)	2.27	4.26
248.0 (120.0)	2.00	4.33

TROUBLESHOOTING

TROUBLESHOOTING

■ Heat exchanger temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	95.57	0.24
-12.0 (-25.0)	68.89	0.32
-4.0 (-20.0)	50.31	0.43
5.0 (-15.0)	37.19	0.57
14.0 (-10.0)	27.81	0.73
23.0 (-5.0)	21.02	0.92
32.0 (0.0)	16.05	1.14
41.0 (5.0)	12.38	1.39
50.0 (10.0)	9.63	1.65
59.0 (15.0)	7.56	1.93
68.0 (20.0)	5.98	2.21
77.0 (25.0)	4.77	2.49
86.0 (30.0)	3.84	2.77
95.0 (35.0)	3.11	3.02
104.0 (40.0)	2.53	3.26
113.0 (45.0)	2.08	3.48
122.0 (50.0)	1.71	3.67
131.0 (55.0)	1.42	3.85
140.0 (60.0)	1.19	4.00
149.0 (65.0)	1.00	4.13
158.0 (70.0)	0.84	4.25
167.0 (75.0)	0.71	4.35
176.0 (80.0)	0.61	4.43

■ Heat exchanger (Middle) temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	95.57	0.24
-12.0 (-25.0)	68.89	0.32
-4.0 (-20.0)	50.31	0.43
5.0 (-15.0)	37.19	0.57
14.0 (-10.0)	27.81	0.73
23.0 (-5.0)	21.02	0.92
32.0 (0.0)	16.05	1.14
41.0 (5.0)	12.38	1.39
50.0 (10.0)	9.63	1.65
59.0 (15.0)	7.56	1.93
68.0 (20.0)	5.98	2.21
77.0 (25.0)	4.77	2.49
86.0 (30.0)	3.84	2.77
95.0 (35.0)	3.11	3.02
104.0 (40.0)	2.53	3.26
113.0 (45.0)	2.08	3.48
122.0 (50.0)	1.71	3.67
131.0 (55.0)	1.42	3.85
140.0 (60.0)	1.19	4.00
149.0 (65.0)	1.00	4.13
158.0 (70.0)	0.84	4.25
167.0 (75.0)	0.71	4.35
176.0 (80.0)	0.61	4.43

TROUBLESHOOTING

■ Outdoor temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	224.33	0.73
-12.0 (-25.0)	159.71	0.97
-4.0 (-20.0)	115.24	1.25
5.0 (-15.0)	84.21	1.56
14.0 (-10.0)	62.28	1.90
23.0 (-5.0)	46.58	2.26
32.0 (0.0)	35.21	2.61
41.0 (5.0)	26.88	2.94
50.0 (10.0)	20.72	3.25
59.0 (15.0)	16.12	3.52
68.0 (20.0)	12.64	3.76
77.0 (25.0)	10.00	3.97
86.0 (30.0)	7.97	4.14
95.0 (35.0)	6.40	4.28
104.0 (40.0)	5.18	4.41
113.0 (45.0)	4.21	4.51
122.0 (50.0)	3.45	4.59
131.0 (55.0)	2.85	4.65

Refrigerant R410A
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 11 °F (6.0 °C) higher than a set temperature, the operation rotation number of compressor will attain to maximum performance.
- If the room temperature is 2 °F (1.0 °C) lower than a set temperature, the compressor will be stopped.
- When the room temperature is within the range of +11 °F (6.0 °C) to -2 °F (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.

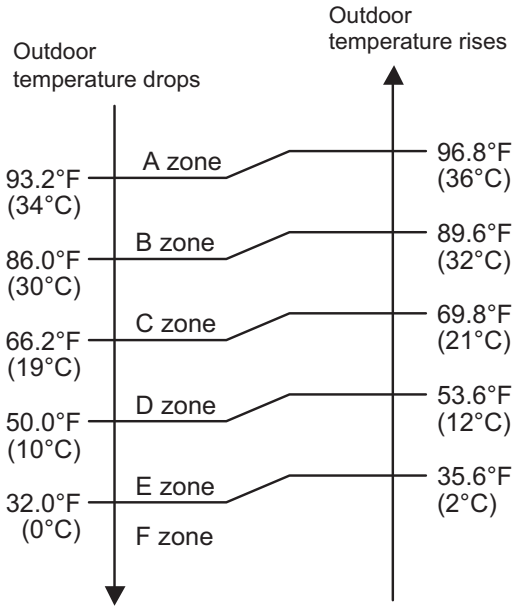
CONTROL AND FUNCTIONS

- **Rotation number of compressor range**

Unit: rps

Model name	Minimum frequency	Maximum frequency
ASUH18LMAS	10	63
ASUH24LMAS	10	80

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



Unit: rps

Model name	Outdoor temperature zone	Indoor unit fan mode			
		HIGH	MED	LOW	QUIET
ASUH18LMAS	A zone	63	34	26	18
	B zone	63	34	26	18
	C zone	63	34	26	18
	D zone	39	39	32	28
	E zone	39	39	32	28
	F zone	39	39	32	28
ASUH24LMAS	A zone	80	68	58	46
	B zone	80	68	58	46
	C zone	80	68	58	46
	D zone	58	54	50	46
	E zone	58	54	50	46
	F zone	54	54	50	46

CONTROL AND FUNCTIONS

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 11 °F (6.0 °C) lower than a set temperature, the operation rotation number of compressor will attain to maximum performance.
- If the room temperature is 2 °F (1.0 °C) higher than a set temperature, the compressor will be stopped.
- When the room temperature is within the range of +2 °F (1.0°C) to -11 °F (6.0°C) of the setting temperature, the rotation number of compressor is controlled within the range shown below.

- **Rotation number of compressor range**

Unit: rps

Model name	Minimum frequency	Maximum frequency
ASUH18LMAS ASUH24LMAS	10	130

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.

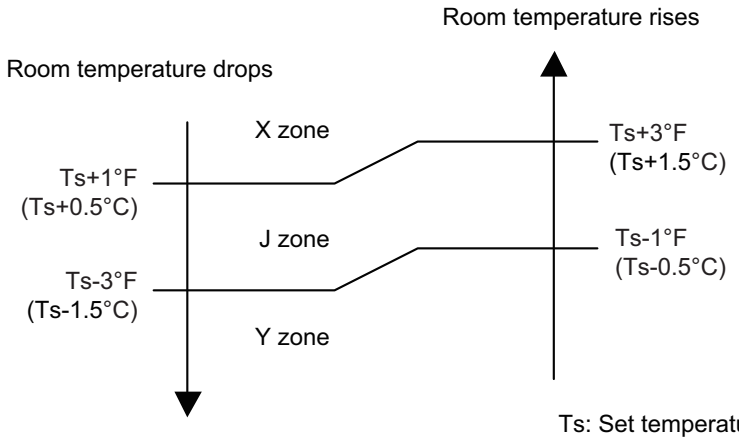
Zone is defined by set temperature and room temperature.

- **Rotation number of compressor range**

Unit: rps

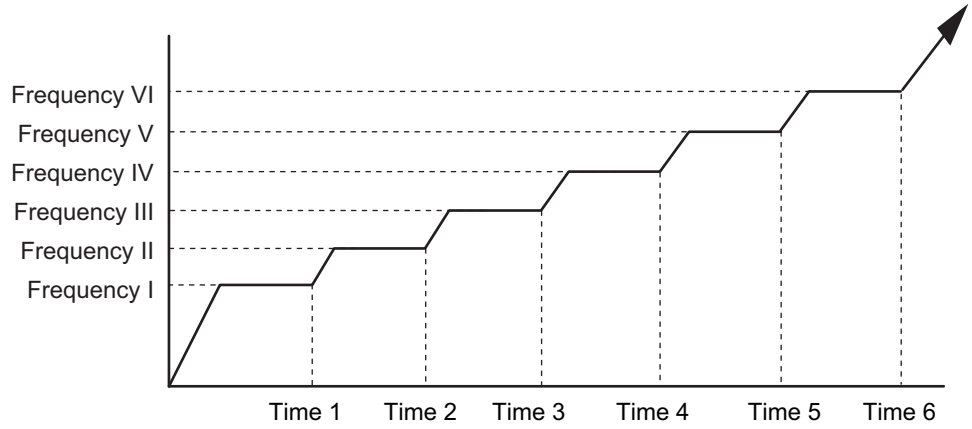
Model name	Outdoor temperature zone	Operating frequency
ASUH18LMAS	X zone	22
	J zone	18
	Y zone	0
ASUH24LMAS	X zone	46
	J zone	24
	Y zone	0

- **Compressor control based on room temperature**



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

Compressor frequency soon after starting is controlled as below.



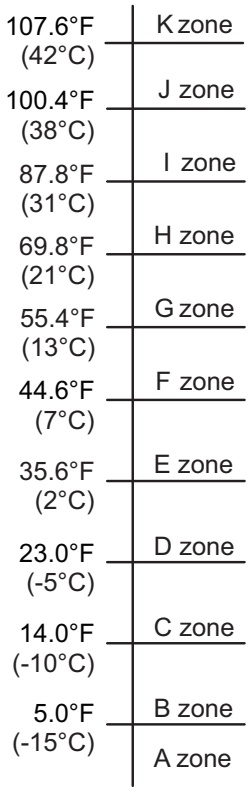
Frequency (rps)	I	II	III	IV	V	VI
	35	52	64	71	89	97
Time (sec)	1	2	3	4	5	6
	60	140	170	200	350	410

CONTROL AND FUNCTIONS

1-5. Rotation number of compressor limitation by outdoor temperature

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

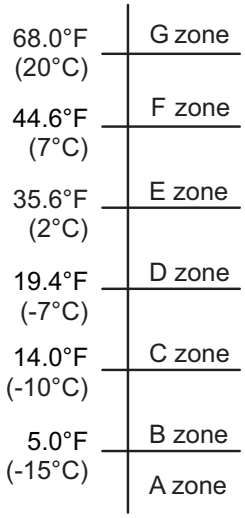
- **Cooling/Dry mode**



Model name	Outdoor temperature zone	Limitation of compressor frequency
AOUH18LMAS1	A zone	55 rps
	B zone	50 rps
	C zone	36 rps
	D zone	34 rps
	E zone	30 rps
	F zone	26 rps
	G zone	19 rps
	H zone	19 rps
	I zone	21 rps
	J zone	24 rps
	K zone	29 rps
AOUH24LMAS1	A zone	60 rps
	B zone	55 rps
	C zone	52 rps
	D zone	45 rps
	E zone	36 rps
	F zone	28 rps
	G zone	21 rps
	H zone	19 rps
	I zone	21 rps
	J zone	24 rps
	K zone	29 rps

CONTROL AND FUNCTIONS

- **Heating mode**



CONTROL AND FUNCTIONS

Model name	Outdoor temperature zone	Limitation of compressor frequency
AOUH18LMAS1 AOUH24LMAS1	A zone	71 rps
	B zone	53 rps
	C zone	44 rps
	D zone	39 rps
	E zone	29 rps
	F zone	23 rps
	G zone	21 rps

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 64.4°F (18°C) and 86.0°F (30°C) in 1.8°F (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 + 3.6°F (2°C)	Cooling
Ts + 3.6°F (2°C) ≥ Tr ≥ Ts - 3.6°F (2°C)	Middle zone
Tr < Ts - 3.6°F (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.

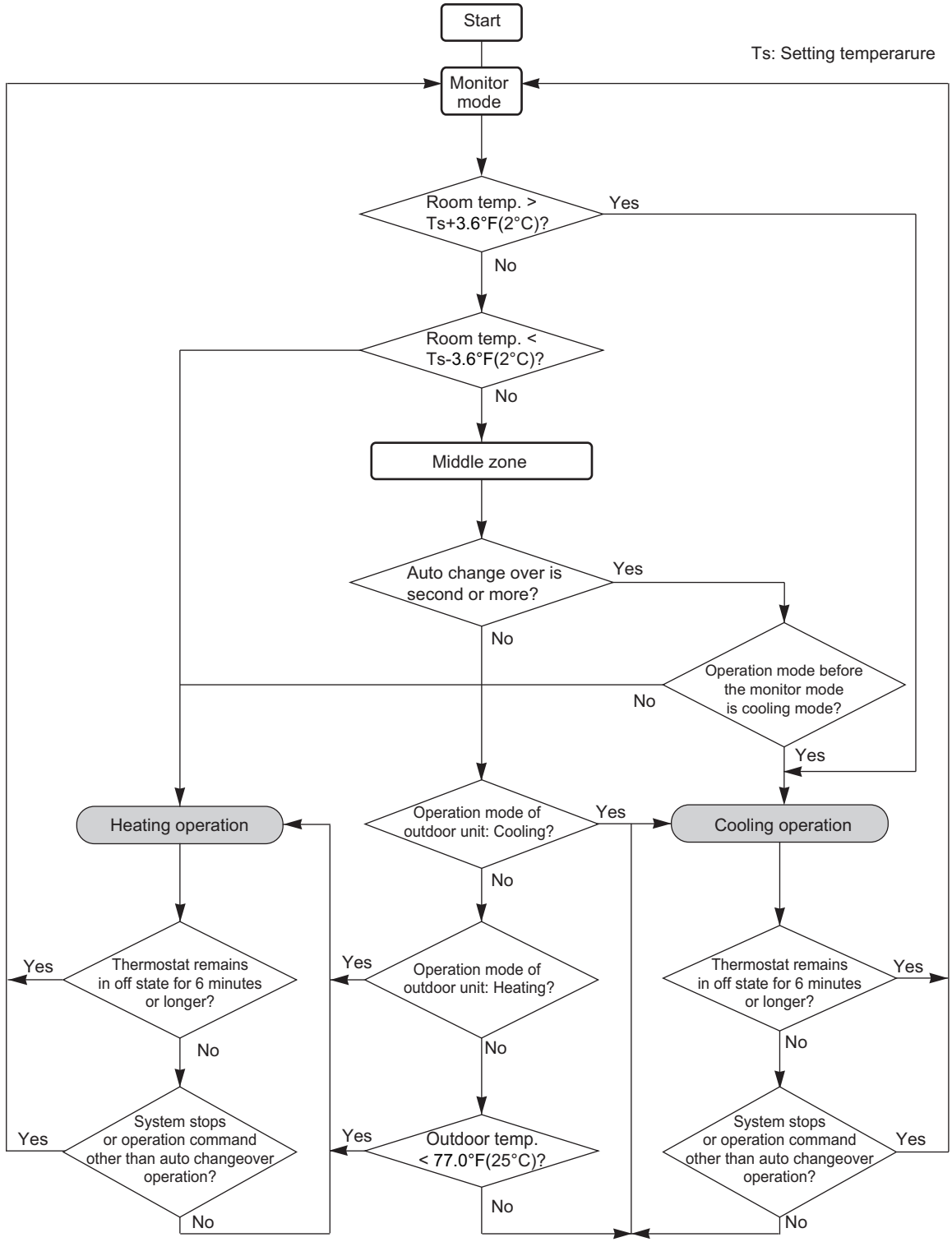
Outdoor temp.	Operation mode
77.0°F (25°C) or more	Cooling
Less than 77.0°F (25°C)	Heating

- 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

Operation flow chart



CONTROL AND FUNCTIONS

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)	
		AOUH18LMAS1	AOUH24LMAS1
Heating	POWERFUL	1,490	1,280
	HIGH	1,390	1,180
	MED+	1,320	1,040
	MED	1,210	900
	LOW	960	770
	QUIET	810	680
	Cool air prevention	680	550
	S-LOW	540	450
Cooling/Fan	POWERFUL	1,460	1,160
	HIGH	1,360	1,060
	MED	1,180	900
	LOW	960	770
	QUIET	810	680
	Soft quiet	680*1	550*1
	S-LOW	540*2	450*2
Dry		X zone: 860 J zone: 810	X zone: 680 J zone: 640

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

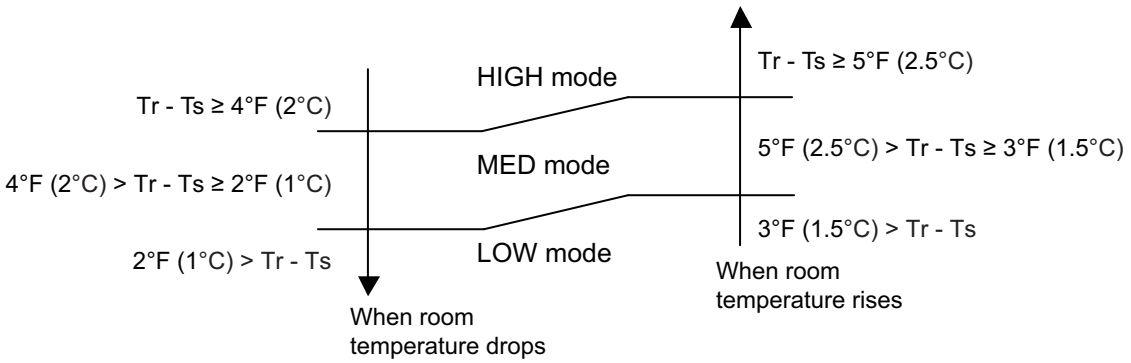
■ Fan operation

Airflow can be switched in 5 steps such as AUTO, QUIET, LOW, MED, HIGH while indoor unit fan only runs.
When fan mode is set at AUTO, it operates on MED fan speed.

■ 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)



CONTROL AND FUNCTIONS

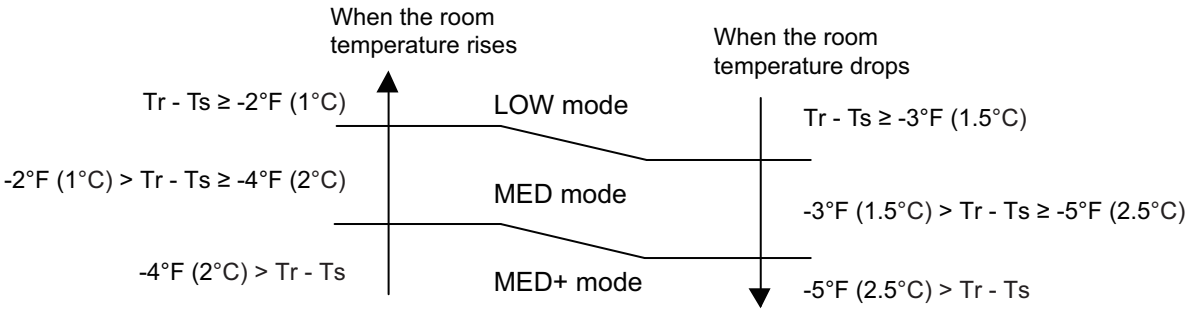
■ Dry operation

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.

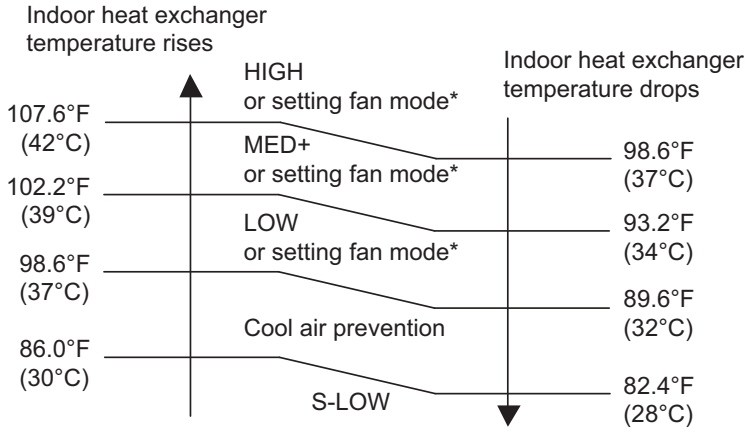
Airflow change over (Heating: Auto)



■ Cool air prevention control (heating mode)

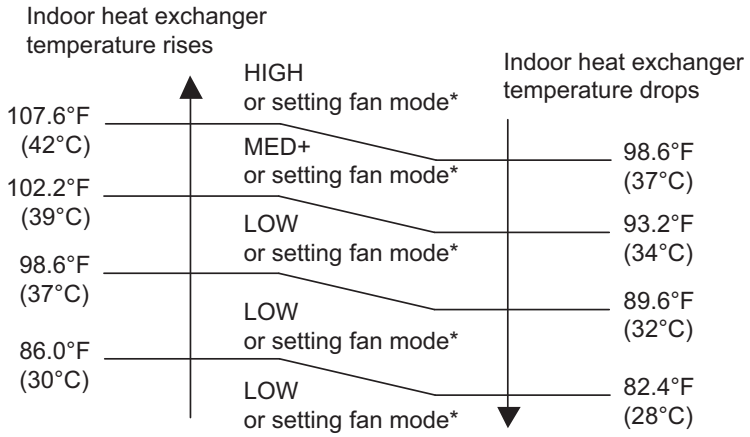
The maximum value of the indoor fan speed is set as shown below, based on the detected temperature by the indoor heat exchanger sensor on heating mode.

- **Normal operation**



*: Lower speed is selected.

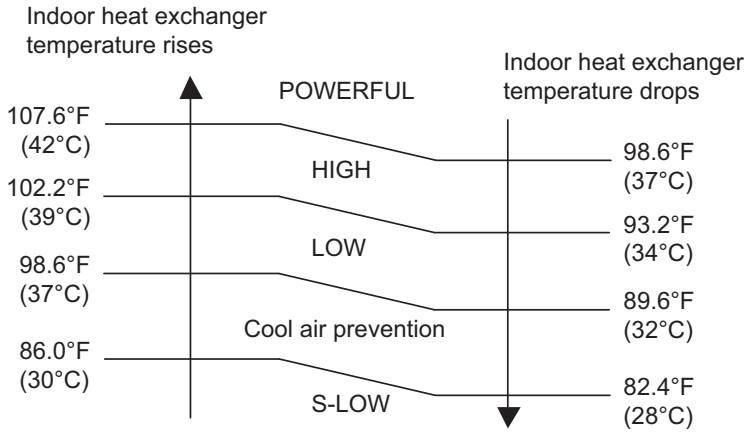
7 minutes later:



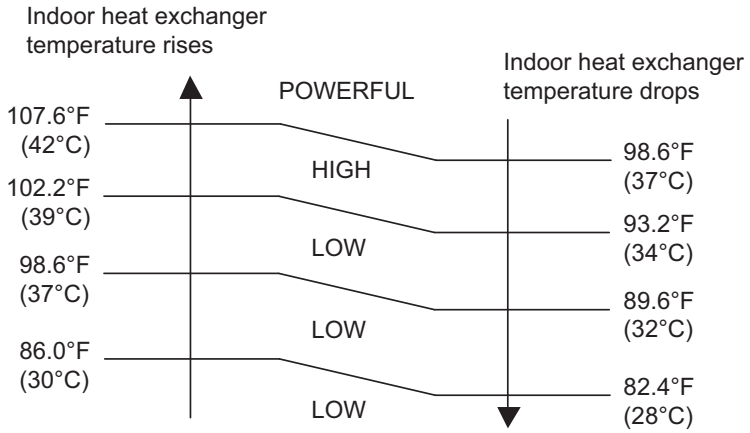
*: Lower speed is selected.

CONTROL AND FUNCTIONS

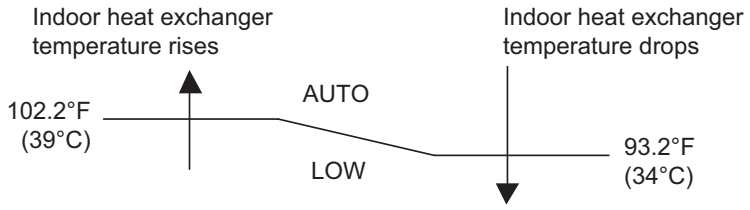
- **Powerful operation**



7 minutes later:

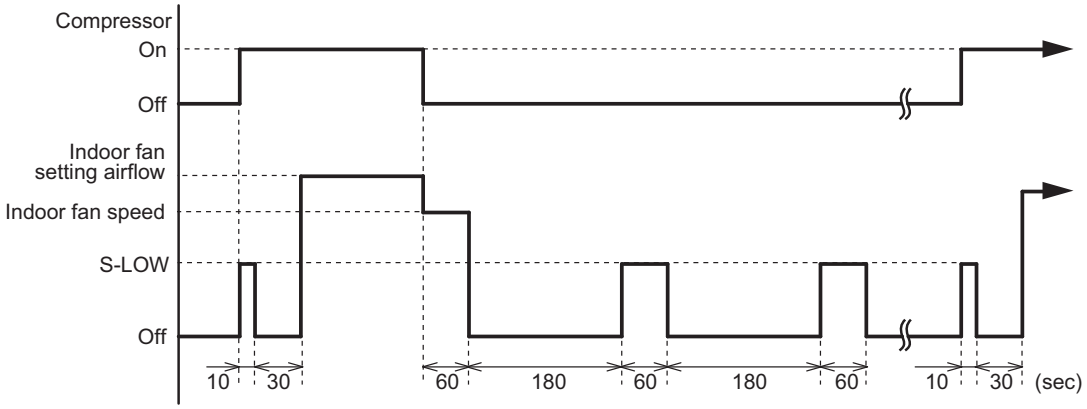


- **MIN. HEAT operation**



■ 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.



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

● AOUH18LMAS1

Fan speed is defined by outdoor temperature and compressor frequency.

Unit: rpm

Fan step	Cooling or dry	Heating
13	830	—
12	830	—
11	740	—
10	700	830
9	650	740
8	570	670
7	570	620
6	540	590
5	510	480
4	480	410
3	480	340
2	400	270
1	200	200
S-HIGH	—	830

- When the compressor frequency increases, the outdoor fan speed also changes to the higher speed.
- When the compressor frequency decreases, the outdoor fan speed also changes to the lower speed.

NOTE: After defrost control on the heating mode, the fan speed is kept higher regardless of the compressor frequency.
Fan speed after defrost control: 830 rpm

CONTROL AND FUNCTIONS

● AOUH24LMAS1

Fan speed is defined by outdoor temperature and compressor frequency.

Unit: rpm

Fan step	Cooling or dry	Heating
13	830	—
12	830	—
11	740	—
10	700	830
9	650	740
8	570	690
7	570	620
6	540	590
5	510	480
4	480	410
3	480	340
2	400	270
1	200	200
S-HIGH	—	830

CONTROL AND FUNCTIONS

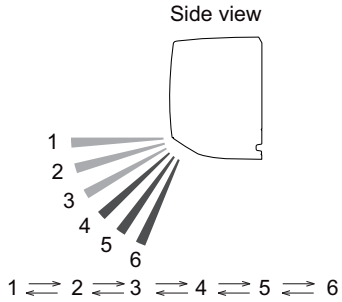
- When the compressor frequency increases, the outdoor fan speed also changes to the higher speed.
- When the compressor frequency decreases, the outdoor fan speed also changes to the lower speed.

NOTE: After defrost control on the heating mode, the fan speed is kept higher regardless of the compressor frequency.
Fan speed after defrost control: 830 rpm

4. Louver control

4-1. Vertical airflow direction louver control

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



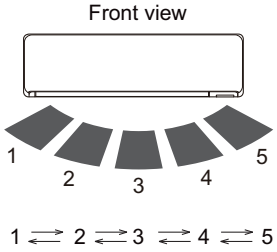
- Remote controller display is not changed.
- Vertical airflow direction is set automatically as shown, in accordance with the type of operation selected.

Operation mode	ASUH18LMAS	ASUH24LMAS
Cooling/Dry	Horizontal flow 1	
Heating	Downward flow 6	Downward flow 5

- 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. Horizontal airflow direction louver control

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



Remote controller display is not changed.

CONTROL AND FUNCTIONS

4-3. Swing operation

- To select vertical airflow swing operation
  When the swing signal is received, the vertical airflow direction 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 horizontal airflow swing operation
  When the swing signal is received, the horizontal airflow direction 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 upper end or bottom end.

- To select vertical and horizontal airflow swing operation
  When the swing signal is received, both of the vertical and the horizontal airflow direction louver start to swing.

CONTROL AND FUNCTIONS

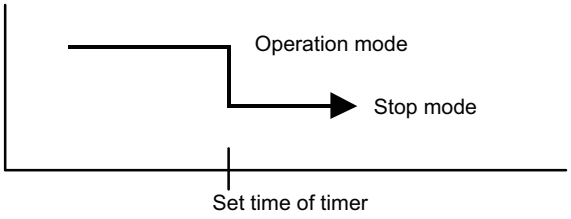
5. Timer operation control

5-1. Wireless remote control

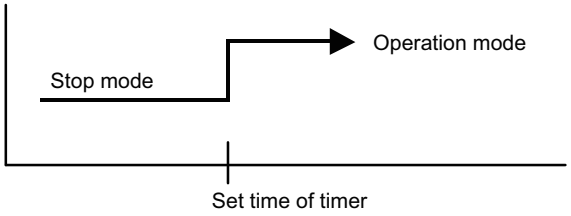
On/Off timer	Program timer	Sleep timer	Weekly timer
○	○	○	—

■ On/Off timer

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

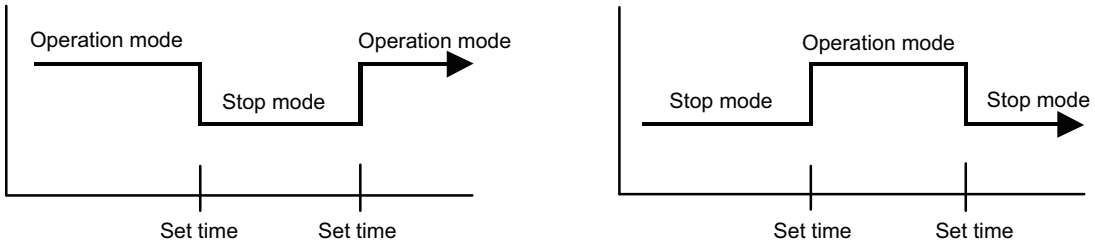


- On timer: When the clock reaches the set timer, the air conditioner will be turned on.



■ Program timer

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



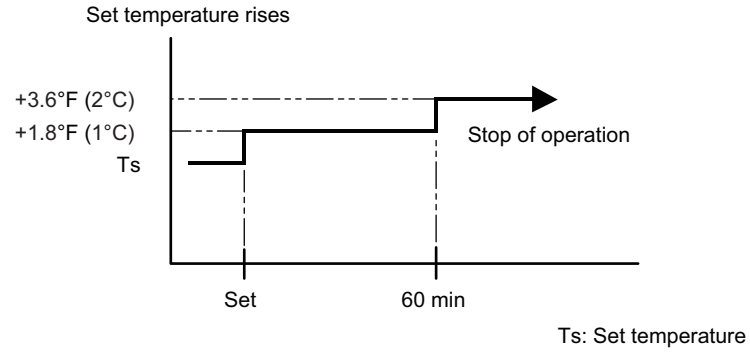
- Operation will start from the timer setting (either off timer and on timer) whichever is closest to the clock current timer setting. The order of operations is indicated by the allow in the remote controller screen.
- Sleep timer operation cannot be combined with on timer operation.

CONTROL AND FUNCTIONS

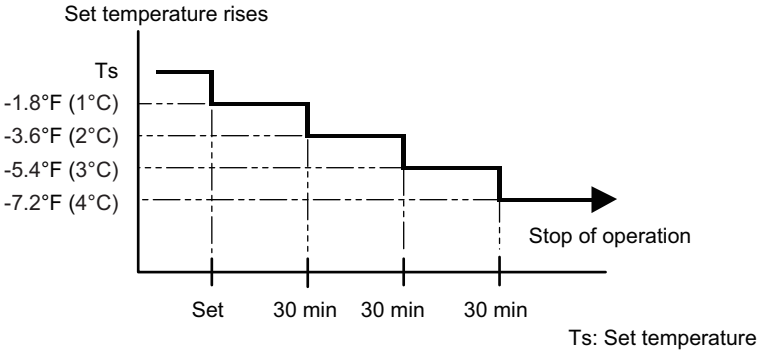
■ Sleep timer

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 1.8°F (1°C). It increases the setting temperature another 1.8°F (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 1.8°F (1°C). It decreases the setting temperature another 1.8°F (1°C) every 30 minutes. Upon lowering 7.2°F (4°C), the setting temperature is not changed and the operation is stopped at the setting time.



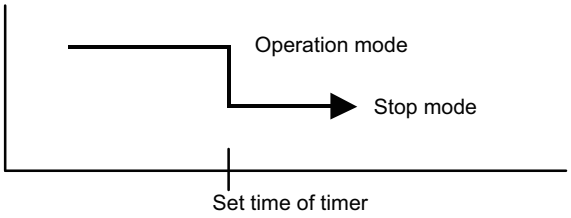
CONTROL AND FUNCTIONS

5-2. Wired remote control

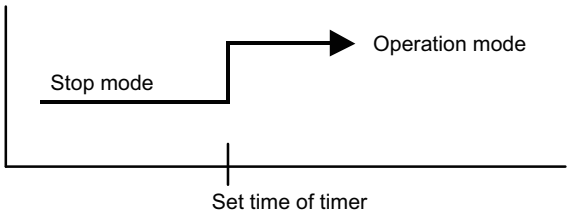
On/Off timer	Program timer	Sleep timer	Weekly timer	Temperature set back timer
○	○	○	○	○

■ On/Off timer

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



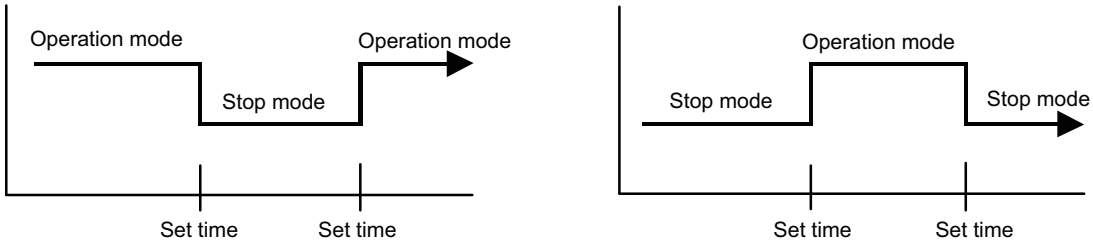
- On timer: When the clock reaches the set timer, the air conditioner will be turned on.



CONTROL AND FUNCTIONS

■ Program timer

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

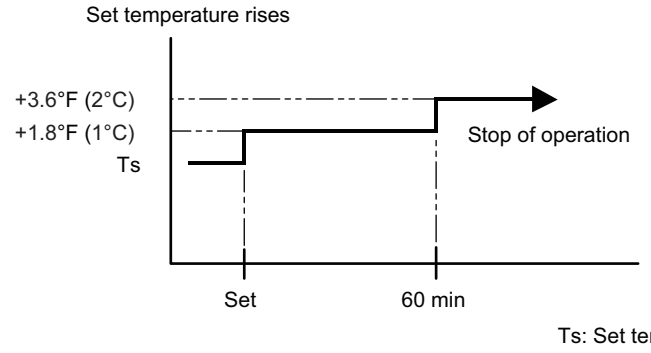


- Operation will start from the timer setting (either off timer and on timer) whichever is closest to the clock current timer setting. The order of operations is indicated by the allow in the remote controller screen.
- Sleep timer operation cannot be combined with on timer operation.

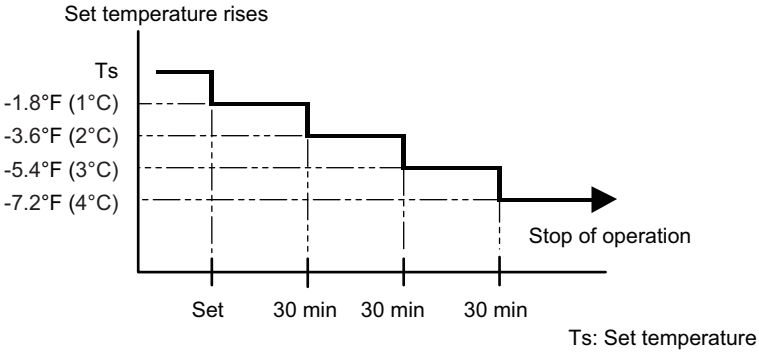
■ Sleep timer

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 1.8°F (1°C). It increases the setting temperature another 1.8°F (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 1.8°F (1°C). It decreases the setting temperature another 1.8°F (1°C) every 30 minutes. Upon lowering 7.2°F (4°C), the setting temperature is not changed and the operation is stopped at the setting time.



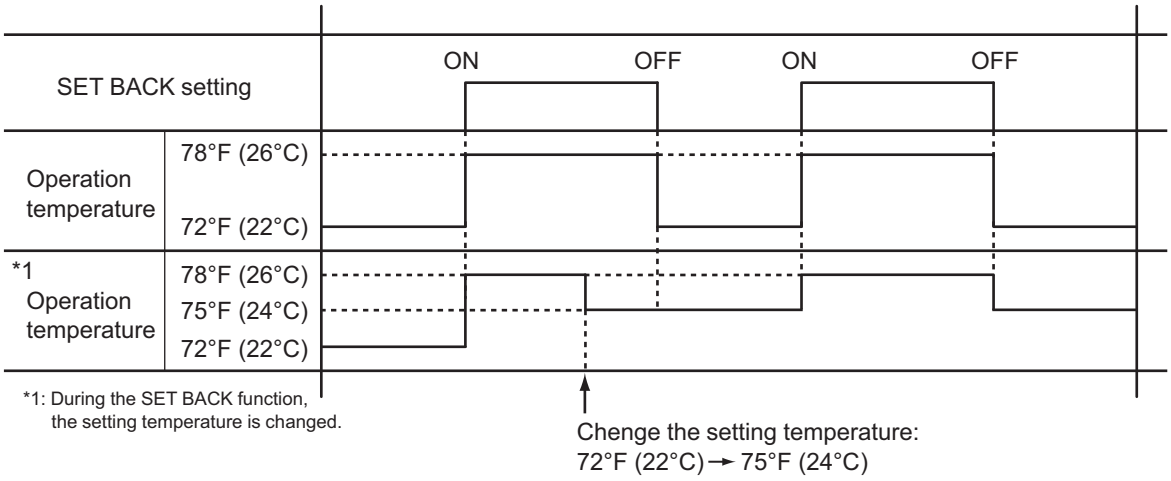
■ Weekly timer

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 set back timer

- The SET BACK timer only changes the set temperature for 7 days, it cannot be used to start or stop air conditioner operation.
- The SET BACK 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 64°F (18°C) even if the SET BACK temperature is set to 63°F (17°C) or lower.

Case of SET BACK timer on the Cooling operation. (Setting temperature :72°F [22°C], SET BACK temperature :78°F [26°C])



CONTROL AND FUNCTIONS

6. Defrost operation control

Tn: Outdoor unit heat exchanger 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 ≤ 15.8°F (-9°C) and Tn-Ta ≥ 9.0°F (5°C)	Tn ≤ 23.0°F (-5°C)

– **2nd time and after**

Compressor integrating operation time	Less than 35 min.	More than 35 min.
Condition	Does not operate	Tn-Tn10 < -9.0°F (-5°C) (Tn ≤ 14.0 °F [-10 °C]) Tn-Tnb < -3.6°F (-2°C) (Tn ≤ 14.0 °F [-10 °C]) Tn ≤ -13.0 °F (-25 °C) (Ta ≥ -4.0°F [-20°C]) Tn ≤ 19.4 °F (-7 °C) or Tn ≤ -13.0 °F (-25 °C) (Ta < -4.0°F [-20°C])

– **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 ≤ 26.6 °F (-3 °C)	Tn ≤ 23.0 °F (-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)	53.6 °F (12 °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: 24.8°F (-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)	53.6 °F (12 °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
MIN. HEAT operation
Remote control setting
WLAN LED 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	75.2°F (24°C)
Vertical airflow direction louver setting	Standard
Horizontal airflow direction 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	Auto changeover
Fan mode	AUTO
Timer mode	Continuous (no timer setting available)
Setting temperature	75.2°F (24°C)
Vertical airflow direction louver setting	Standard
Horizontal airflow direction louver setting	According to memory position
SWING	Off
ECONOMY	Off
Human sensor	Off

CONTROL AND FUNCTIONS

- During the forced cooling operation, it operates regardless of room temperature sensor.
- Operation LED and timer LED blink at the same time during the forced cooling operation. They blink for 1 second ON and 1 second OFF on both operation LED and timer LED (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.

7-4. MIN. HEAT operation

MIN. HEAT operation performs as below setting when pressing MIN. HEAT button.

Operation mode	Heating
Setting temperature	50°F (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 +2°F (1°C)	Setting temperature -2°F (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.

		ASUH18LMAS	ASUH24LMAS
Compressor frequency		Maximum	
Fan mode		POWERFUL	
Vertical airflow direction louver setting	Cooling	3	
	Dry		
	Heating	6	5

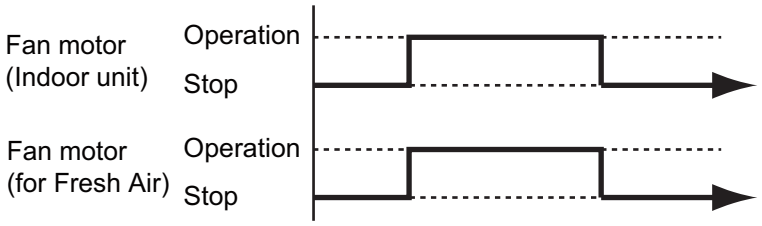
Release condition:

- Cooling/Dry
  Room temperature ≤ Setting temperature -1°F (-0.5°C) or Operation time has passed 20 minutes.
- Heating
  Room temperature ≥ Setting temperature +1°F (+0.5°C) or Operation time has passed 20 minutes.

CONTROL AND FUNCTIONS

7-7. Fresh air control

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

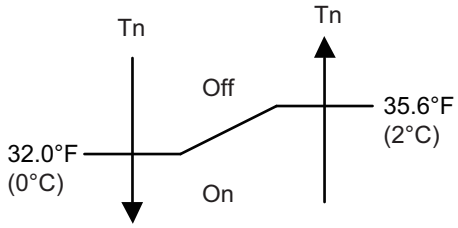


7-8. Compressor preheating

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

- **Triggering condition 1**
  – Outdoor temperature ≤ 68°F (20°C)
  When outdoor temperature reaches 78.8°F (26°C), compressor preheating stops.
  – 30 minutes after compressor stopped

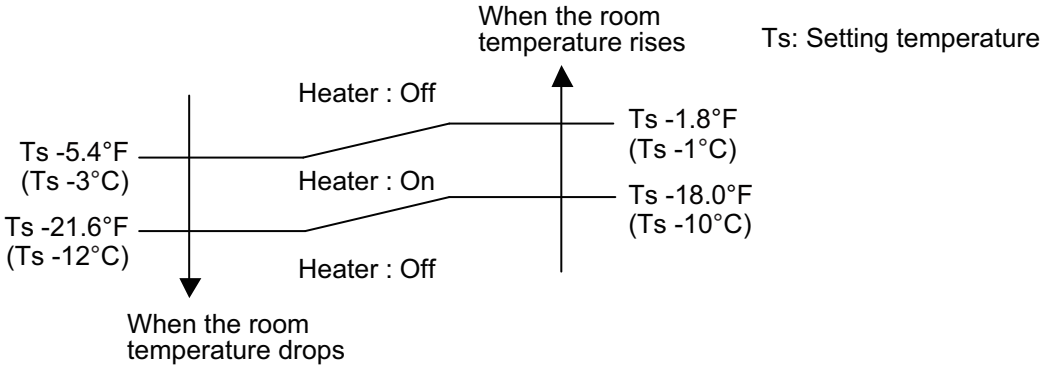
- **Triggering condition 2**



Tn: Outdoor unit heat exchanger temp.

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 47 and 480 pulses
Heating mode	Between 39 and 480 pulses

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	30
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 3 minutes passes and the compressor is started.

7-13. Peak cut operation

The current value is limited to reduce the power consumption by external input.

Peak cut level	Level 1	Level 2	Level 3	Level 4
Peak cut for rated capacity	Forced thermostat off	50%	75%	100%

NOTES:

- During defrost operation, peak cut operation becomes invalid.
- Even during the peak cut operation, the operations of current overload, economy, and low noise are effective and the outdoor unit operates by lowest current of them.

7-14. 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.

CONTROL AND FUNCTIONS

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: °F or °C	
00	001	Room temp.	01: °F or °C	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: °F or °C	
00	003	Wireless remote controller detected temp.	01: °F or °C	Temperature detected by wireless remote controller
00	004	Discharge air temp.	01: °F or °C	
00	005	Heat exchanger inlet temp.	01: °F or °C	
00	006	Heat exchanger middle temp.	01: °F or °C	
00	007	Heat exchanger outlet temp.	01: °F or °C	
00	020	Fan rotation number	03: rpm	
00	021	Fan 2 rotation number	03: rpm	
00	022	Fan 3 rotation number	03: rpm	
00	030	Expansion valve	05: pls	
00	040	Operating pulse for right filter	05: pls	
00	041	Operating pulse for left filter	05: pls	
00	042	Operating pulse for filter brush	05: pls	
00	050	Power relay for outdoor unit On/Off	08: On/Off	0: Off, 1: On
00	051	Float switch On/Off	08: On/Off	0: Off, 1: On (When the water level rises)
00	052	Drain pump On/Off	08: On/Off	0: Off, 1: On
00	053	Solenoid valve for reheat operation On/Off	08: On/Off	0: Off (Opened), 1: On (Closed)
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	056	Limit switch 2 (For right filter) On/Off	08: On/Off	0: Off, 1: On

Available Sensor ID				
Sensor ID		**Item**	**Unit**	**Remarks**
00	057	Limit switch 3 (For left filter) On/Off	08: On/Off	0: Off, 1: On
00	070	Current sensor	09: A	
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	083	Indoor unit fan 2 total operation hours	11: h	
00	084	Indoor unit fan 3 total operation hours	11: h	
00	090	Temperature sensor	12: %	
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	141	Emergency 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	144	External thermostat off (External input)	00: —	0: Off, 1: On
00	145	Cooling operation on (External input)	00: —	0: Off, 1: On
00	146	Cooling operation 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	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.
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.

CONTROL AND FUNCTIONS

Available Sensor ID				
Sensor ID		**Item**	**Unit**	**Remarks**
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.
00	163	Set-point temp. not reached in server room function 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.
01: Outdoor unit				
01	000	Outdoor temp.	01: °F or °C	
01	001	Discharge temp.	01: °F or °C	
01	002	Suction temp.	01: °F or °C	
01	003	Heat exchanger middle temp.	01: °F or °C	
01	004	Heat exchanger outlet temp.	01: °F or °C	
01	005	Liquid pipe temp. (Before expansion valve)	01: °F or °C	
01	006	Liquid pipe temp. 2 (After expansion valve)	01: °F or °C	
01	007	Compressor temp.	01: °F or °C	
01	008	Heat sink temp.	01: °F or °C	
01	009	Liquid pipe temp. 3 (Sub cool heat exchanger inlet)	01: °F or °C	
01	010	Liquid pipe temp. 4 (Sub cool heat exchanger outlet)	01: °F or °C	
01	011	2-way valve temp. (For multi-split type)	01: °F or °C	
01	012	3-way valve temp. (For multi-split type)	01: °F or °C	
01	040	Discharge pressure	02: MPa	
01	041	Suction pressure	02: MPa	
01	042	Gas pipe pressure for outdoor unit	02: MPa	
01	050	Fan 1 rotation number	03: rpm	
01	051	Fan 2 rotation number	03: rpm	
01	055	Compressor rotation number	04: rps	
01	060	Expansion valve (Upstream during heating)	05: pls	
01	061	Expansion valve 2 (Downstream during heating)	05: pls	
01	062	Expansion valve 3 (For sub cool heat exchanger)	05: pls	
01	063	Expansion valve 4 (For injection)	05: pls	
01	064	Expansion valve 5 (For multi-split type)	05: pls	
01	075	Solenoid valve (For injection)	06: Open/Close	0: Close, 1: Open
01	080	4-way valve output status	07: Cooling/ Heating	0: Cooling, 1: Heating
01	085	Pressure switch (High pressure)	08: On/Off	0: Off (Close), 1: On (Open)
01	086	Pressure switch (Low pressure)	08: On/Off	0: Off (Close), 1: On (Open)
01	088	Crankcase heater output On/Off	08: On/Off	0: Off, 1: On

CONTROL AND FUNCTIONS

Available Sensor ID				
Sensor ID		Item	Unit	Remarks
01	089	Base heater output On/Off	08: On/Off	0: Off, 1: On
01	090	Belt 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	
01	115	Outdoor unit fan 2 total operating hours	11: h	
01	145	Outdoor low noise input (External input)	00: —	0: Off, 1: On
01	146	Outdoor peak cut (External input)	00: —	0: Off 1: Mode 4 (100%) 2: Mode 3 (75%) 3: Mode 2 (50%) 4: Mode 1 (Forced thermostat off)
01	147	Demand response (External input)	00: —	0: Normal, 1: DRM1, 2: DRM2, 3: DRM3
01	148	Switching cooling and heating mode (External input)	00: —	0: Cooling, 1: Heating
01	149	Emergency stop (External input)	00: —	0: Off, 1: On

CONTROL AND FUNCTIONS

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 compressor frequency 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 frequency is released.
- When the discharge temperature becomes higher than the compressor protection temperature, the compressor is stopped and the indoor unit LED starts blinking.

Trigger condition	219.2°F (104°C)
Compressor frequency	-14 rps/120 seconds
Release condition	213.8°F (101°C)
Compressor protection temperature	230.0°F (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		39.2°F (4°C)
Release condition	Outdoor temp. ≥ 50°F (10°C)*1 Outdoor temp. ≥ 53.6°F (12°C)*2	44.6°F (7°C)
	Outdoor temp. < 50°F (10°C)*1 Outdoor temp. < 53.6°F (12°C)*2	55.4°F (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.

■ AOUH18LMAS1

Operation mode	Outdoor temp. (Ta)	Trigger condition	Release condition
Cooling	125.6 °F (52 °C) ≤ Ta	8.0 A	7.5 A
	122.0 °F (50 °C) ≤ Ta < 125.6 °F (52 °C)	10.0 A	9.5 A
	Ta < 122.0 °F (50 °C)	12.5 A	12.0 A
Heating	60.8 °F (16 °C) ≤ Ta	10.0 A	9.5 A
	53.6 °F (12 °C) ≤ Ta < 60.8 °F (16 °C)	11.5 A	11.0 A
	Ta < 53.6 °F (12 °C)	13.0 A	12.5 A

■ AOUH24LMAS1

Operation mode	Outdoor temp. (Ta)	Trigger condition	Release condition
Cooling	125.6 °F (52 °C) ≤ Ta	8.0 A	7.5 A
	122.0 °F (50 °C) ≤ Ta < 125.6 °F (52 °C)	10.0 A	9.5 A
	114.8 °F (46 °C) ≤ Ta < 122.0 °F (50 °C)	13.0 A	12.5 A
	107.6 °F (42 °C) ≤ Ta < 114.8 °F (46 °C)	14.0 A	13.5 A
	Ta < 107.6 °F (42 °C)	14.5 A	14.0 A
Heating	68.0 °F (20 °C) ≤ Ta	11.0 A	10.5 A
	60.8 °F (16 °C) ≤ Ta < 68.0 °F (20 °C)	13.0 A	12.5 A
	Ta < 60.8 °F (16 °C)	15.0 A	14.5 A

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	226.4°F (108°C)
Release condition	176.0°F (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

CONTROL AND FUNCTIONS

8-6. Low outdoor temperature protection

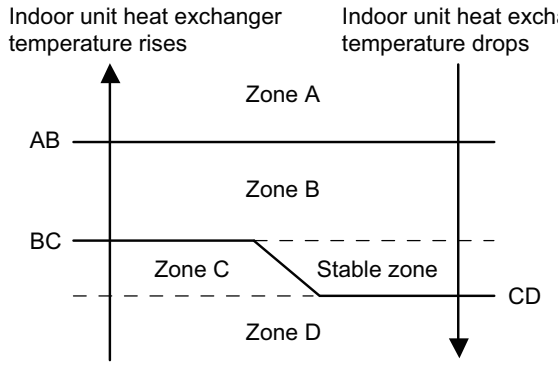
When the outdoor temperature sensor detects lower than the trigger condition below, the compressor is stopped.

Operation mode	Cooling/Dry
Trigger condition	-4°F (-20°C)
Release condition	5°F (-15°C)

8-7. High temperature and high pressure release control

The compressor is controlled as follows.

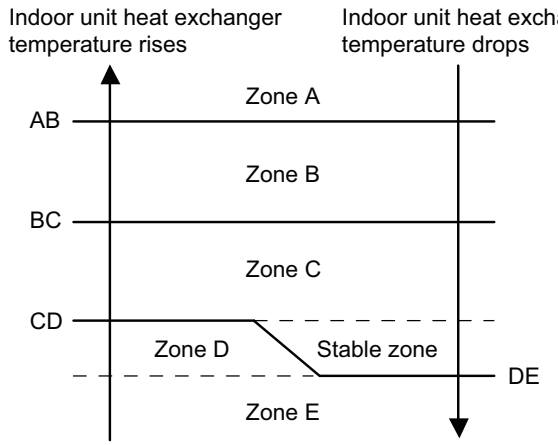
- **Cooling mode**



AB: 149.0°F (65°C)
BC: 143.6°F (62°C)
CD: 140.0°F (60°C)

Zone	Operation	
Zone A	Compressor is stopped.	
Zone B	The compressor frequency is decreased.	-7 rps/120 sec.
Zone C	The protection is released and the operation is returned to normal mode.	
Zone D		

- **Heating mode**



AB: 145.4°F (63°C)
BC: 131.0°F (55°C)
CD: 127.4°F (53°C)
DE: 122.0°F (50°C)

Zone	Operation	
Zone A	Compressor is stopped.	
Zone B	The compressor frequency is decreased.	-15 rps/120 sec.
Zone C		-2 rps/120 sec.
Zone D	The protection is released and the operation is returned to normal mode.	
Zone E		

CONTROL AND FUNCTIONS

CONTROL AND FUNCTIONS

Refrigerant R410A
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 tight 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:

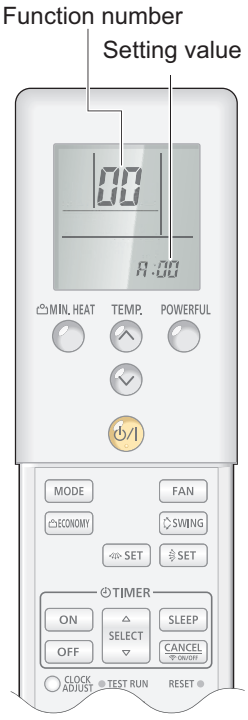
- Settings will not be changed if invalid numbers or setting values are selected.
- When optional wired remote controller is used, refer to the installation manual enclosed with the remote controller.

FIELD WORKING

FIELD WORKING

Entering function setting mode:

While pressing the POWERFUL button and TEMP. (∧) button simultaneously, press the RESET button to enter the function setting mode.



Selecting the function number and setting value:

1. Press the MIN. HEAT button. TEMP. (∧) (∨) buttons to select the function number. Press theMIN. HEAT button to switch between the left and right digits.
2. Press the POWERFUL button to proceed to value setting. To return the function number selection, press the POWERFUL button again.
3. Press the TEMP. (∧) (∨) buttons to select the setting value. To switch between the left and right digits, press the MIN. HEAT button.
4. Press the MODE button once. Confirm that you hear the beep sound.
5. Press the START/STOP button to fix the function setting. Confirm that you hear the beep sound.
6. Press the RESET button to end the function setting mode.
7. 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.

NOTES:

- The air conditioner custom code is set to A prior to shipment.
- If you do not know the air conditioner custom code setting, try each of the custom codes (A →b →c →d) until you find the code that operates the air conditioner.

FIELD WORKING

■ 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
11)	61	Control switching of external heaters
12)	62	Operating temperature switching of external heaters
13)	66	Outdoor temperature zone boundary temperature A
14)	67	Outdoor temperature zone boundary temperature B
15)	71	Standby time for auxiliary equipment operation
16)	72	Heat pump backup setting
17)	73	Emergency heat for external output terminal
18)	95	Heat insulation condition (building insulation)
19)	96	Special cooling operation

FIELD WORKING

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	♦

2) Room temperature control for indoor unit sensor

NOTE: Before performing this setting, refer to Function 95.
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 78°F and the setting value is “03” (-2°F), the corrected temp. will be 80°F (78°F - [-2°F]).

The temperature correction values show the difference from the Standard setting “00” (manufacturer’s recommended value).
*When Function 95-01 (High insulation) is set, the Standard setting “00” will be the same as “No correction 0.0 °F (0.0 °C)” (01).

Function number		Setting value	Setting description		Factory setting
30 (For cooling)	31 (For heating)	00	Standard setting*		♦
		01	No correction 0.0 °F (0.0 °C)		
		02	-1 °F (-0.5 °C)	More cooling Less heating	
		03	-2 °F (-1.5 °C)		
		04	-3 °F (-2.0 °C)		
		05	-4 °F (-2.5 °C)		
		06	-5 °F (-3.0 °C)		
		07	-6 °F (-3.5 °C)		
		08	-7 °F (-4.0 °C)		
		09	-8 °F (-4.0 °C)		
		10	+1 °F (+0.5 °C)	Less cooling More heating	
		11	+2 °F (+1.5 °C)		
		12	+3 °F (+2.0 °C)		
		13	+4 °F (+2.5 °C)		
		14	+5 °F (+3.0 °C)		
		15	+6 °F (+3.5 °C)		
		16	+7 °F (+4.0 °C)		
		17	+8 °F (+4.0 °C)		

FIELD WORKING

3) Room temperature control for wired remote controller sensor

NOTE: Before performing this setting, refer to Function 95.
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.

*When Function 95-01 (High insulation) is set, the Standard setting "00" will be the same as "No correction 0.0 °C" (01).

Function number		Setting value	Setting description		Factory setting
35 (For cooling)	36 (For heating)	00	Standard setting*		♦
		01	No correction 0.0 °F (0.0 °C)		
		02	-1 °F (-0.5 °C)	More cooling Less heating	
		03	-2 °F (-1.0 °C)		
		04	-3 °F (-1.5 °C)		
		05	-4 °F (-2.0 °C)		
		06	-5 °F (-2.5 °C)		
		07	-6 °F (-3.0 °C)		
		08	-7 °F (-3.5 °C)		
		09	-8 °F (-4.0 °C)		
		10	+1 °F (+0.5 °C)	Less cooling More heating	
		11	+2 °F (+1.0 °C)		
		12	+3 °F (+1.5 °C)		
		13	+4 °F (+2.0 °C)		
		14	+5 °F (+2.5 °C)		
		15	+6 °F (+3.0 °C)		
		16	+7 °F (+3.5 °C)		
		17	+8 °F (+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.

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 (R.C. enabled)	♦
	01	(Setting prohibited)	
	02	Forced stop mode	
	03	Operation/Stop mode 2 (R.C. disabled)	

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.

FIELD WORKING

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.

NOTES:

- As the factory setting, this setting is initially invalidated.
- 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—04	Cooling thermostat On	
	05	Heating operation	
	06	Operation/Stop	
	07—08	Cooling thermostat On	
	09	Error status	
	10	Indoor unit fan operation status	
	11	External heater	
	12	Set point attainment status	

11) Control switching of external heaters

Sets the control method for external heater to be used.

For details, refer to “External heater output” in Chapter 2-4. "Details of function" on page 05-19.

Function number	Setting value	Setting description	Factory setting
61	00	Auxiliary heater control 1	♦
	01	Auxiliary heater control 2	
	02	Heat pump prohibition control	
	03	Auxiliary heater control by outdoor temperature 1	
	04	Auxiliary heater control by outdoor temperature 2	
	05	Auxiliary heater control by outdoor temperature 3	
	06	Auxiliary heat pump control	
	07	Auxiliary heat pump control by outdoor temperature 1	
	08	Auxiliary heat pump control by outdoor temperature 2	
	09	Auxiliary heat pump control by outdoor temperature 3	

12) Operating temperature switching of external heaters

Sets the temperature conditions when the external heater is ON.

For details, refer to “External heater output” in Chapter 2-4. "Details of function" on page 05-19.

Function number	Setting value	Setting description		Factory setting
		Heater: On	Heater: Off	
62	00	-5.4 °F (-3 °C)	-1.8 °F (-1 °C)	♦
	01	-3.6 °F (-2 °C)	-1.8 °F (-1 °C)	
	02	-3.6 °F (-2 °C)	-1.8 °F (-1 °C)	
	03	-5.4 °F (-3 °C)	-1.8 °F (-1 °C)	
	04	-7.2 °F (-4 °C)	-1.8 °F (-1 °C)	
	05	-9.0 °F (-5 °C)	-1.8 °F (-1 °C)	

FIELD WORKING

13) Outdoor temperature zone boundary temperature A

Setting required if changing of the outdoor temperature setting for heat pump prohibition zone is required when auxiliary heater control by outdoor temperature 1 and 2 are performed on the indoor unit. For details, refer to “External heater output” in Chapter 2-4. "Details of function" on page 05-19.

Function number	Setting value	Setting description	Factory setting
66	00	-4.0 °F (-20 °C)	♦
	01	-0.4 °F (-18 °C)	
	02	3.2 °F (-16 °C)	
	03	6.8 °F (-14 °C)	
	04	10.4 °F (-12 °C)	
	05	14.0°F (-10 °C)	
	06	17.6 °F (-8 °C)	
	07	21.2 °F (-6 °C)	
	08	24.8 °F (-4 °C)	

14) Outdoor temperature zone boundary temperature B

Setting required if changing of the outdoor temperature setting for heat pump only zone is required when auxiliary heater control by outdoor temperature 1 is performed on the indoor unit. For details, refer to “External heater output” in Chapter 2-4. "Details of function" on page 05-19.

FIELD WORKING

Function number	Setting value	Setting description	Factory setting
67	00	42.8 °F (6 °C)	♦
	01	14.0 °F (-10 °C)	
	02	17.6 °F (-8 °C)	
	03	21.2 °F (-6 °C)	
	04	24.8 °F (-4 °C)	
	05	28.4°F (-2 °C)	
	06	32.0 °F (0 °C)	
	07	35.6 °F (2 °C)	
	08	39.2 °F (4 °C)	
	09	42.8 °F (6 °C)	
	10	46.4 °F (8 °C)	
	11	50.0 °F (10 °C)	
	12	53.6 °F (12 °C)	
	13	57.2 °F (14 °C)	
	14	60.8 °F (16 °C)	
	15	64.4 °F (18 °C)	

15) Standby time for auxiliary equipment operation

Sets the standby time until the auxiliary equipment operation starts during primary equipment operation.

For details, refer to Chapter 2-4. "Details of function" on page 05-19.

Function number	Setting value	Setting description	Factory setting
71	00	Disable	♦
	01	1 minute	
	02	2 minutes	
	•	•	
	•	•	
	•	•	
	98	98 minutes	
	99	99 minutes	

16) Heat pump backup setting

Enables or disables the heat pump backup instruction from the outdoor unit.
This function will be usable provided that the corresponding outdoor unit is connected.

Function number	Setting value	Setting description	Factory setting
72	00	Disable	♦
	01	Enable	

17) Emergency heat for external output terminal

Enables or disables emergency heat input.

Function number	Setting value	Setting description	Factory setting
73	00	Disable	♦
	01	Enable	

NOTE: When this function is used, IR receiver unit is necessary.

18) Heat insulation condition (building insulation)

Heat insulation conditions differ according to the installed environment.
"Standard insulation" (00) allows system to rapidly respond to the cooling or heating load changes.
"High insulation" (01) is when the heat insulation structure of the building is high and does not require system to rapidly respond to cooling or heating load changes.
When "High insulation" (01) is selected:

- Overheating (overcooling) is prevented at the start-up.
- All room-temperature control settings (Function 30, 31, 35, and 36) will reset to "No correction 0.0 °F (0.0 °C)".

FIELD WORKING

Function number	Setting value	Setting description	Factory setting
95	00	Standard insulation	♦
	01	High insulation	

NOTE: When changing Function 95, perform this setting before other room-temperature control settings (Function 30, 31, 35, and 36). If Function 95 is not set first, room-temperature control settings (Function 30, 31, 35, and 36) will be reset and you must re-do them again.

19) Special cooling operation

Stabilizes the cooling operation when the outdoor temperature is low.

- Operation mode: Fixed at COOL
- Airflow: Fixed at HIGH
- Set temperature: 76°F (24°C) to 88°F (30°C)

Function number	Setting value	Setting description	Factory setting
96	00	Disable	♦
	01	Enable	

NOTES:

- Connect the optional wired remote controller to change the setting value to “Enable” (01).
- Do not use the wireless remote controller after changing the setting value to “Enable” (01).
- If the wired remote controller becomes noncommunicable after setting “Enable” (01), the cooling operation starts automatically.
- If dew condenses on the indoor unit surface after setting “Enable” (01), set the setting value back to “Disable” (00).

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. (∧) (∨) 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.

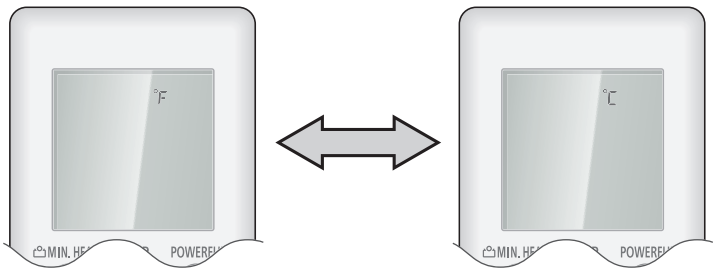
FIELD WORKING

1-3. Switching the temperature unit of remote controller

Displayed temperature unit on the remote controller LCD can be switched between °F (Fahrenheit) and °C (Celsius).

To change temperature unit, do as follows:

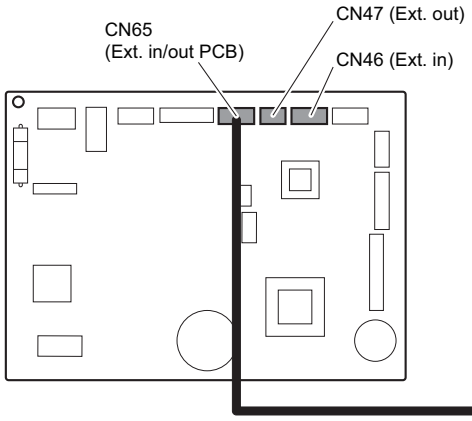
1. Press the TEMP. (Up) button (∧) for at least 5 seconds to display the current temperature unit. (Factory setting: °F)
2. Press the TEMP. (∧) (∨) buttons to switch the temperature unit between °F and °C.
3. With either of pressing the START/STOP button or no additional button operation for 30 seconds in step 2., the temperature unit currently selected will be set.



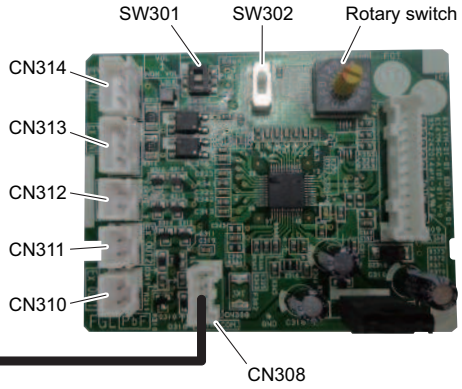
FIELD WORKING

2. External input and output

Indoor unit PCB



External input and output PCB



PCB	External input	External output	Connector	Input select	Input signal
Indoor unit	Operation/Stop	—	CN46	Dry contact	Edge
	Forced stop				
	—	Operation status	CN47	—	—
		Error status			
		Indoor unit fan operation status			
		Cooling thermostat On			
		Heating thermostat On			
		External heater output			
		Set point attainment status			
External input and output (UTY-XCSXZ2)	Operation/Stop	—	CN313/ CN314	Dry contact/ Apply voltage	Edge/Pulse
	Forced stop				
	Forced thermostat off		CN313		Edge
	—	Operation status	CN310/ CN311/ CN312	—	—
		Error status			
		Indoor unit fan operation status			
		External heater output			
		Remote controller output			
		Cooling high/low output			
		Heating thermostat On			

FIELD WORKING

FIELD WORKING

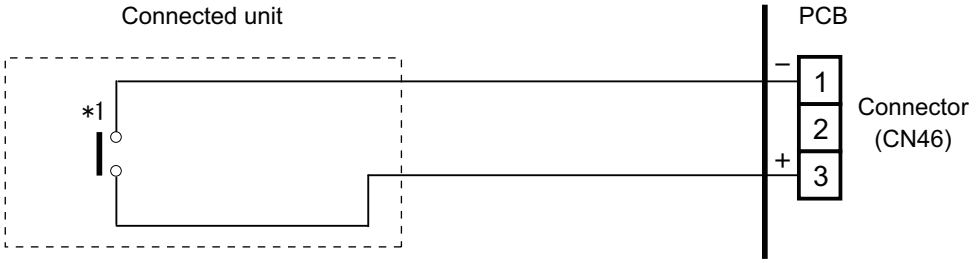
2-1. External input

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 (22AWG) should be used. Maximum length of cable is 492 ft (150 m).
- 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.



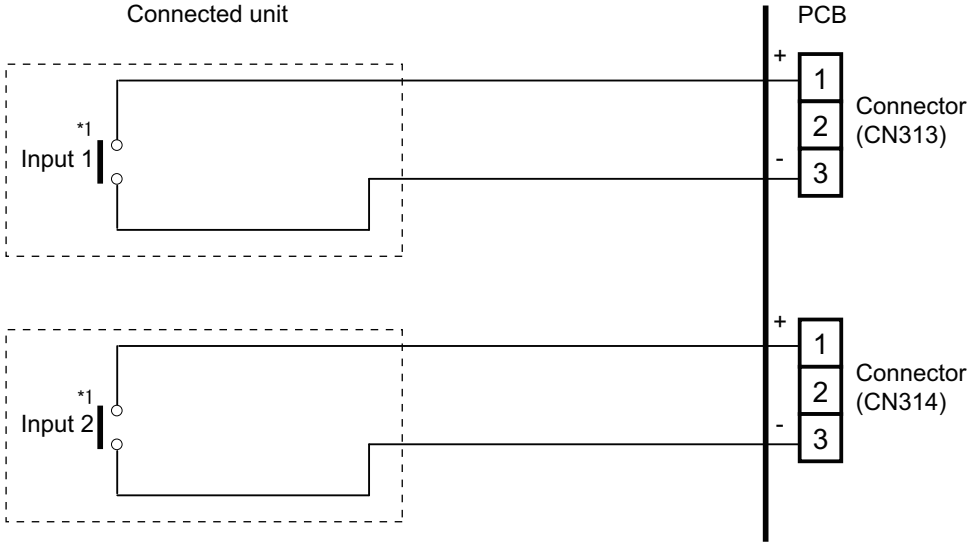
*1: The switch can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

FIELD WORKING

■ External input and output PCB

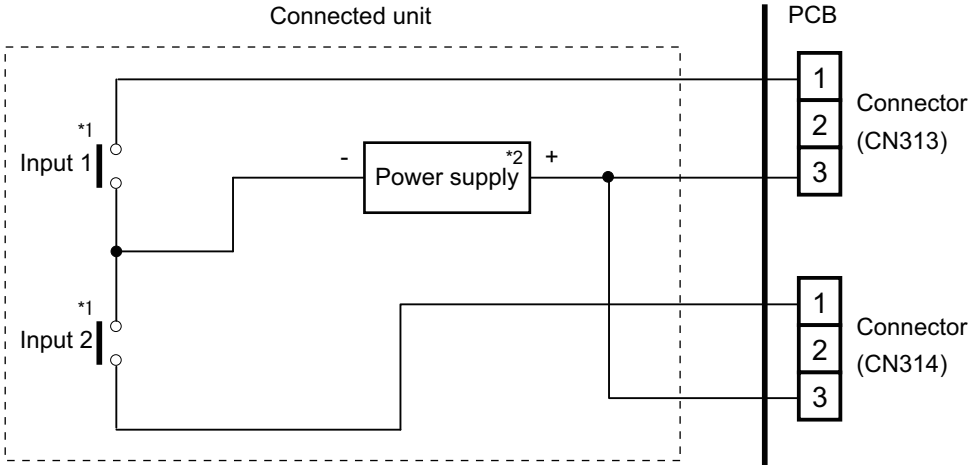
The indoor unit Operation/Stop can be set by using the input connector on the PCB.

- **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 to 24 V, 10 mA or more.

FIELD WORKING

2-2. External output

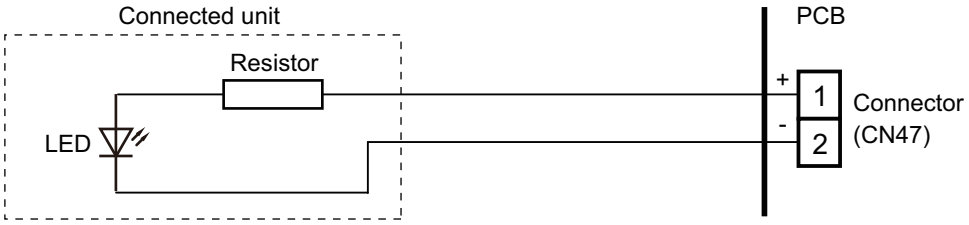
Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

■ Indoor unit

- A twisted pair cable (22AWG) should be used. Maximum length of cable is 82 ft (25 m).
- Output voltage: High DC 12 V ± 2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to "Combination of external input and output" on page 05-17.

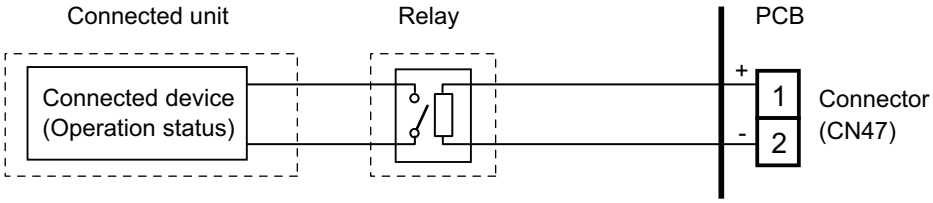
● When indicator or other components are connected directly

Example: Function setting 60 is set to "00"



● When connecting with a device equipped with a power supply

Example: Function setting 60 is set to "00"



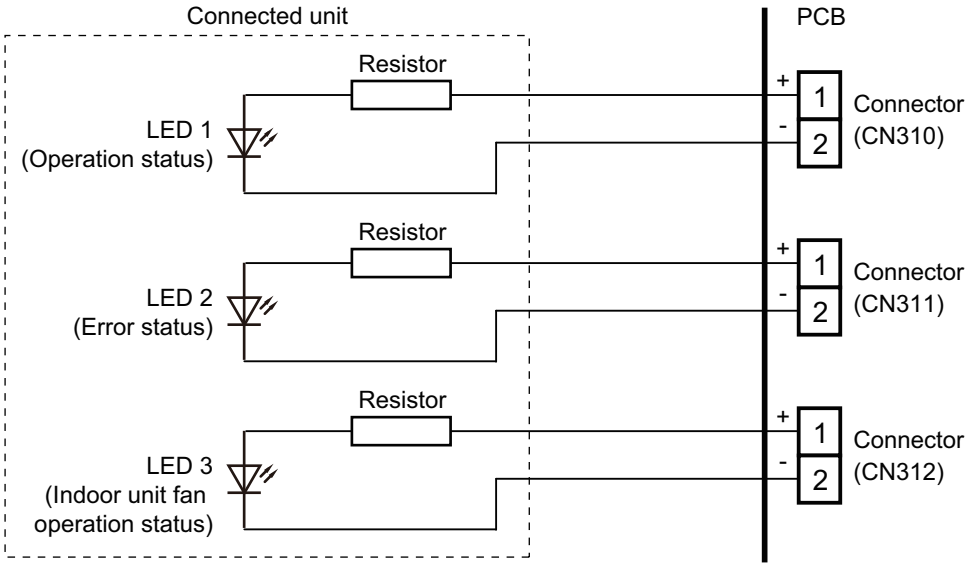
FIELD WORKING

FIELD WORKING

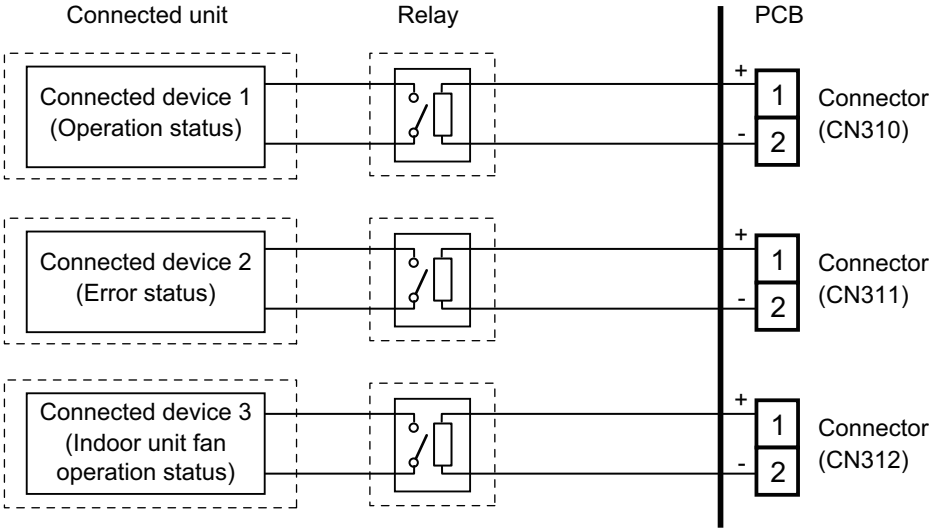
■ External input and output PCB

- A twisted pair cable (22AWG) should be used. Maximum length of cable is 82 ft (25 m).
- Output voltage: High DC 12 V±2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to "Combination of external input and output" on page 05-17.

- **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. Combination of external input and output

By combining the function setting of the indoor unit and rotary switch setting of the External input and output PCB, you can select various combinations of functions.

Combination examples of external input and output are as follows:

Mode	Function setting	Rotary SW	External input		
			Indoor unit	External input and output PCB	
			CN46	1 CN313	2 CN314
0-1	60—00	1	Operation/Stop (Function setting 46-00) or Forced stop (Function setting 46-02)	Operation/Stop	Not available
				Operation	Stop
0-2	60-00	2		Forced thermostat Off	Not available
1	60-01	3		Mechanical cooling Off	
2	60-02	4		Forced thermostat Off	
3	60-03	5		Mechanical cooling On	
4	60-04	6		Mechanical cooling On	
5	60-05	7		Forced thermostat Off	
6	60-06	8		Forced thermostat Off	
7	60-07	9		Mechanical cooling Off	
8	60-08	A		Forced thermostat Off	
9	60-09	B		Forced thermostat Off	
10	60-10	C		Forced thermostat Off	
11	60-11	D		Forced thermostat Off	
12	60-12	D		Forced thermostat Off	

NOTE: Input of Operation/Stop depends on the setting of function setting 46.

00: Operation/Stop mode 1 (R.C. enabled)

01: (Setting prohibited)

02: Forced stop

03: Operation/Stop mode 2 (R.C. disabled)

FIELD WORKING

Mode	Function setting	Rotary SW	External output			
			Indoor unit	External input and output PCB		
			CN47	1 CN310	2 CN311	3 CN312
0-1	60-00	1	Operation/Stop	Operation/Stop	Error status	Indoor unit fan operation status
0-2	60-00	2	Operation/Stop	Error status	Indoor unit fan operation status	External heater output
1	60-01	3	Cooling thermostat On	Error status	Indoor unit fan operation status	External heater output
2	60-02	4	Cooling thermostat On	Error status	Remote controller output	External heater output
3	60-03	5	Cooling thermostat On	Cooling high/low output	Remote controller output	External heater output
4	60-04	6	Cooling thermostat On	Error status	Remote controller output	Cooling high/low output
5	60-05	7	Heating thermostat On	Error status	Indoor unit fan operation status	External heater output
6	60-06	8	Operation/Stop	Error status	Indoor unit fan operation status	Heating thermostat On
7	60-07	9	Cooling thermostat On	Error status	Heating thermostat On	External heater output
8	60-08	A	Cooling thermostat On	Heating thermostat On	Remote controller output	External heater output
9	60-09	B	Error status	Operation/Stop	Indoor unit fan operation status	External heater output
10	60-10	C	Indoor unit fan operation status	Operation/Stop	Error status	External heater output
11	60-11	D	External heater output	Operation/Stop	Indoor unit fan operation status	Error status
12	60-12	D	Set point attainment status	Operation/Stop	Indoor unit fan operation status	Error status

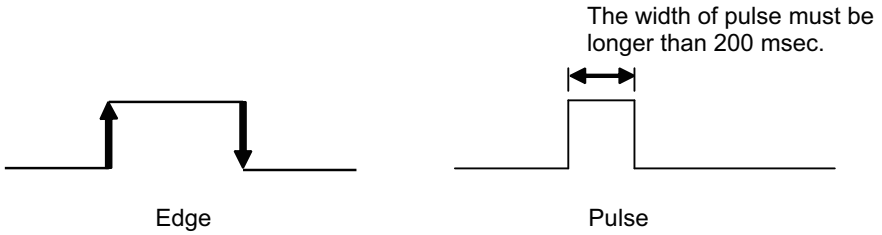
FIELD WORKING

■ Input signal type

External input and output PCB:

The input signal type can be selected.

Signal type (edge or pulse) can be switched by the DIP switch SW302 on the External input and output PCB.

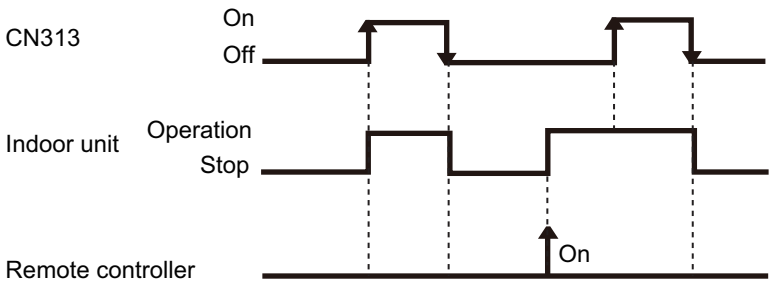


2-4. Details of function

■ Control input function

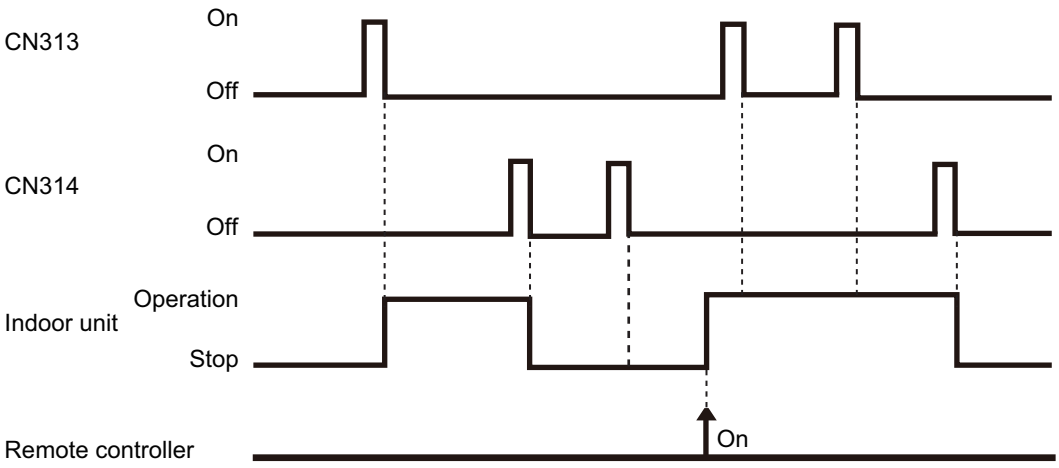
- **When function setting is “Operation/Stop” mode 1**
  - In the case of “Edge” input:

Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
46-00	1	External input and output PCB	CN313	Off → On	Operation
				On → Off	Stop



  - In the case of “Pulse” input:

Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
46-00	1	External input and output PCB	CN313	Pulse	Operation
			CN314	Pulse	Stop



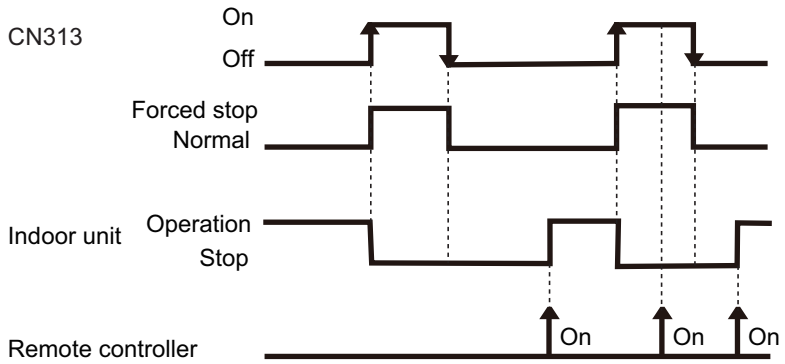
NOTES:

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

FIELD WORKING

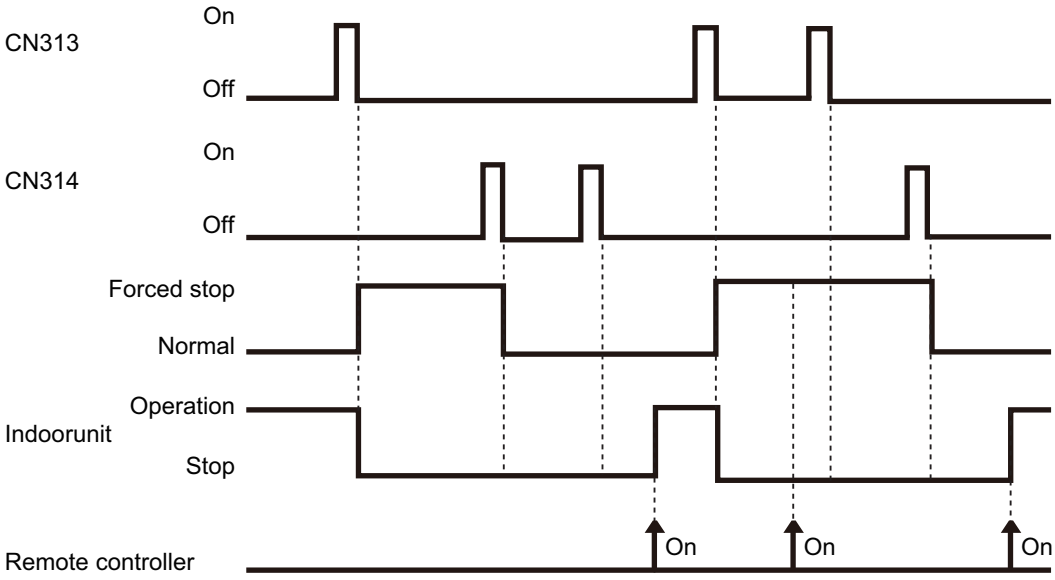
- **When function setting is “Forced stop” mode**
  - In the case of “Edge” input:

Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
46-02	1	External input and output PCB	CN313	Off → On	Forced stop
				On → Off	Normal



  - In the case of “Pulse” input:

Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
46-02	1	External input and output PCB	CN313	Pulse	Forced stop
			CN314	Pulse	Normal



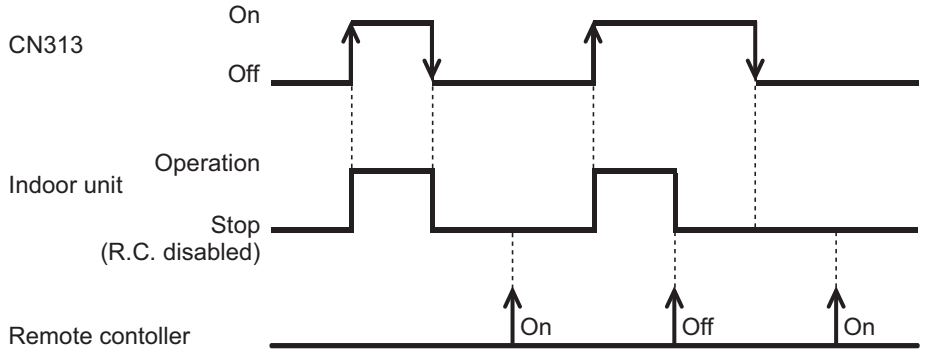
NOTES:

- 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.

FIELD WORKING

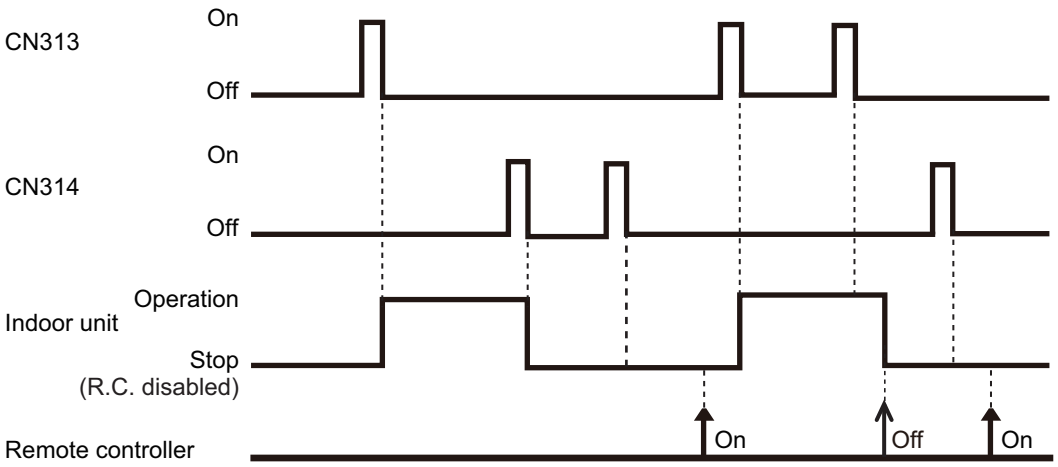
- **When function setting is “Operation/Stop” mode 2**
  - In the case of “Edge” input:

Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
46-03	1	External input and output PCB	CN313	Off → On	Operation
				On → Off	Stop (R.C. disabled)



  - In the case of “Pulse” input:

Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
46-03	1	External input and output PCB	CN313	Pulse	Operation
			CN314	Pulse	Stop (R.C. disabled)

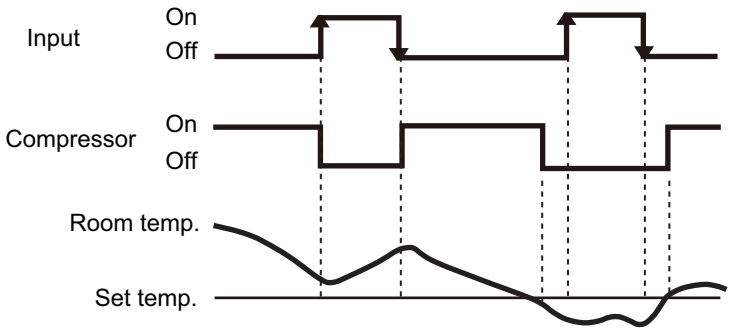


NOTE: When “Operation/Stop” mode 2 function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

FIELD WORKING

- **Forced thermostat off function**

Function setting / Rotary SW on External input and output PCB	External input		Input signal	Command
60-00 / 2 60-09 / B 60-10 / C 60-11 / D 60-12 / D	External input and output PCB	CN313	Off → On	Thermostat off
			On → Off	Normal operation

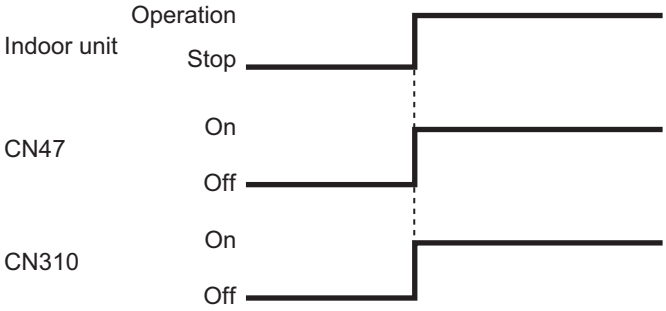


■ Control output function

- **Operation/Stop status**

Function setting / Rotary SW on External input and output PCB	External output		Output signal	Command
60-00 / 2	Output of indoor unit	CN47	Off → On	Operation
			On → Off	Stop
60-00 / 1 60-09 / B 60-10 / C 60-11 / D 60-12 / D	External input and output PCB	CN310	Off → On	Operation
			On → Off	Stop

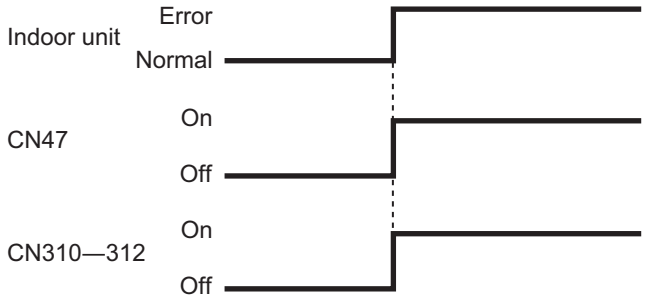
The output is low when the unit is stopped.



- **Error status**

Function setting / Rotary SW on External input and output PCB	External output		Output signal	Command
60-09 / B	Output of indoor unit	CN47	Off → On	Error
			On → Off	Normal
60-00 / 2	External input and output PCB	CN310	Off → On	Error
			On → Off	Normal
60-00 / 1 60-09 / B 60-10 / C		CN311	Off → On	Error
			On → Off	Normal
60-11 / D 60-12 / D		CN312	Off → On	Error
			On → Off	Normal

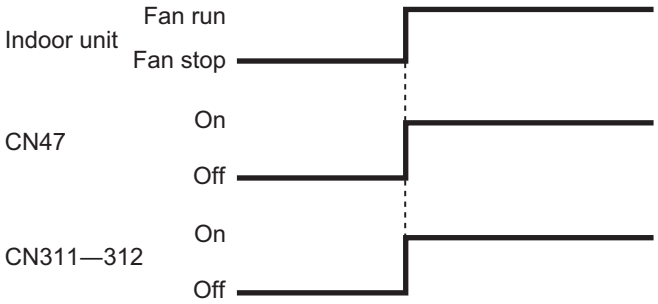
The output is ON when an error is generated for the indoor unit.



- **Indoor unit fan operation status**

Function setting / Rotary SW on External input and output PCB	External output		Output signal	Command
60-10 / C	Output of indoor unit	CN47	Off → On	Fan run
			On → Off	Fan stop
60-00 / 2 60-09 / B 60-11 / D 60-12 / D	External input and output PCB	CN311	Off → On	Fan run
			On → Off	Fan stop
60-00 / 1		CN312	Off → On	Fan run
			On → Off	Fan stop

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



FIELD WORKING

- **External heater output**

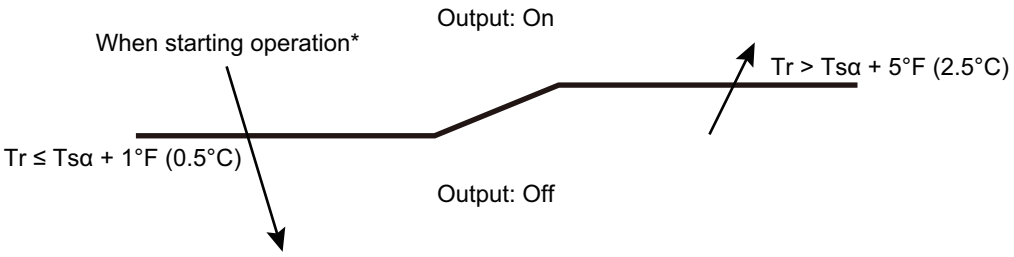
Function setting / Rotary SW on External input and output PCB	External output		Output signal	Command
60-11 / D	Output of indoor unit	CN47	Off → On	Heater on
			On → Off	Heater off
60-00 / 2 60-09 / B 60-10 / C	External input and output PCB	CN312	Off → On	Heater on
			On → Off	Heater off

- **Set point attainment status**

NOTE: This function is valid only when function setting 96 is set to “Enable” (01).
When the room temperature does not reach the set point at a room due to the lower cooling performance caused by external factor such as the outdoor temperature change, signal is output to tell the attainment status of set point.

Function setting / Rotary SW on External input and output PCB	External output		Output signal	Command
60-12 / D	Output of indoor unit	CN47	On → Off	Normal
			Off → On	Set point attainment

Output signal	Condition
Off	Reached the set point. (Tr ≤ Tsα +1°F [0.5°C])
On	Unreached the set point. (Tr > Tsα +5°F [2.5°C]) However, even if the set point unreached, the signal will not be output for 7 minutes after power is turned on.



*: When starting operation or resetting, judges the zone to descending direction.

FIELD WORKING

■ External heater output

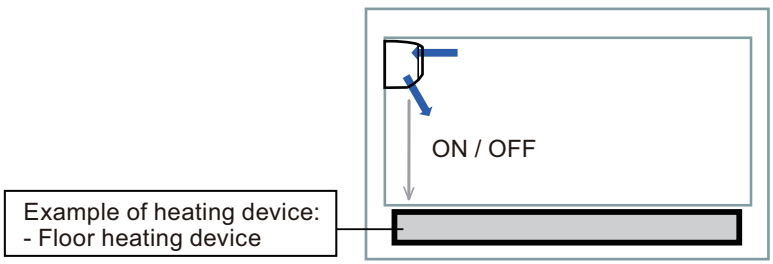
Control	Primary heater	Auxiliary heater	Function setting	
			Indoor unit	Wired R. C.
			Control switching external heaters No. 61	Sensor activation*2
Auxiliary heater control 1	Heat pump	External device*1	61-00	—
Auxiliary heater control 2	Heat pump	External device	61-01	—
Heat pump prohibition control	External device	None	61-02	On (Enabled)
Auxiliary heater control by outdoor temperature 1	Heat pump	External device	61-03	On (Enabled)
Auxiliary heater control by outdoor temperature 2	Heat Pump	External device	61-04	On (Enabled)
Auxiliary heater control by outdoor temperature 3	Heat Pump	External device	61-05	On (Enabled)
Auxiliary heat pump control	External device	Heat pump	61-06	On (Enabled)
Auxiliary heat pump control by outdoor temperature 1	External device	Heat pump	61-07	On (Enabled)
Auxiliary heat pump control by outdoor temperature 2	External device	Heat pump	61-08	On (Enabled)
Auxiliary heat pump control by outdoor temperature 3	External device	Heat pump	61-09	On (Enabled)

NOTES:

- After turning off the heater, 3 minutes of standby time is required by next power-on of the heater.
- For items marked "—" in the table, any of validate or invalidate of the setting are acceptable.
- *1: External device means Hot water, Electrical heater, etc.
- *2: Sensor activation:
  - Setting change from the factory setting is required.
  - Indoor unit fan setting will be on for safety reason without sensor activation of wired remote controller.

● Installation configuration of individual connection

External heating device is installed individually. (No use of indoor unit fan)



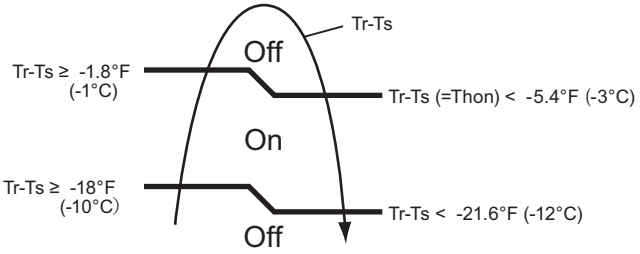
⚠ WARNING

- Design and install external heater appropriately with considering its protection.
- Inappropriate designing and installation of external heater may cause a fire by emitted heat from the external heater.
- Fujitsu General Ltd. is not responsible for inappropriate designing or installation of external heating device.

● Auxiliary heater control 1

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection

- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.



Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

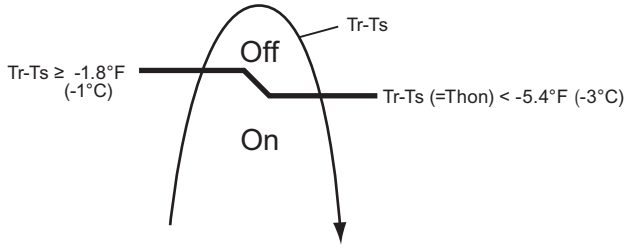
Example: When set temperature (Ts) is 72°F (22°C) (Factory setting),

- and room temperature (Tr) increases above 53.6°F (12°C), signal output is on.
- and room temperature (Tr) increases above 69.8°F (21°C), signal output is off.
- and room temperature (Tr) decreases below 66.2°F (19°C), signal output is on.
- and room temperature (Tr) decreases below 50°F (10°C), signal output is off.

● Auxiliary heater control 2

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection

- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.



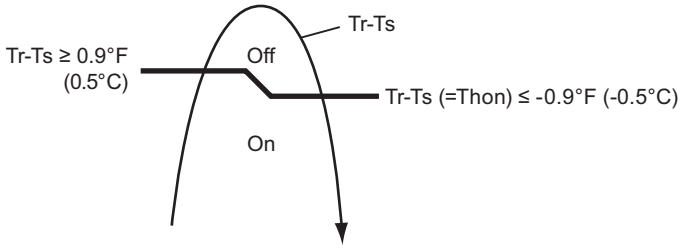
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

● Heat pump prohibition control

Perform heating by external heater only. Indoor unit is continuous thermostat off.

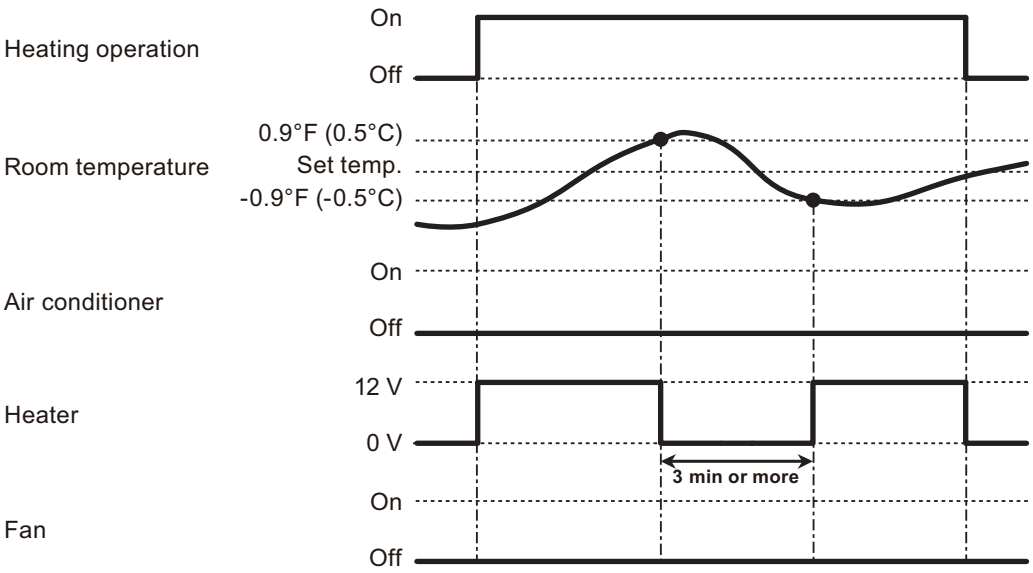
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.



Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

- **Operation status**



NOTE: In following operations, compressor will be on.
- Other than heating
- Test run

FIELD WORKING

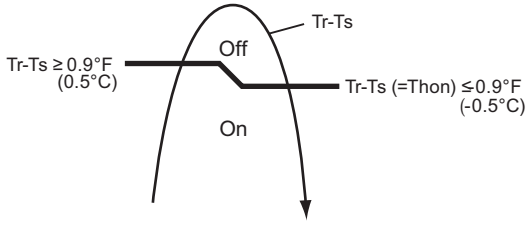
● Auxiliary heater control by outdoor temperature 1

This control selects heat pump or external heater according to the outdoor temperature. When outdoor temperature is high, the heating is performed by using heat pump only.

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Heat pump only zone

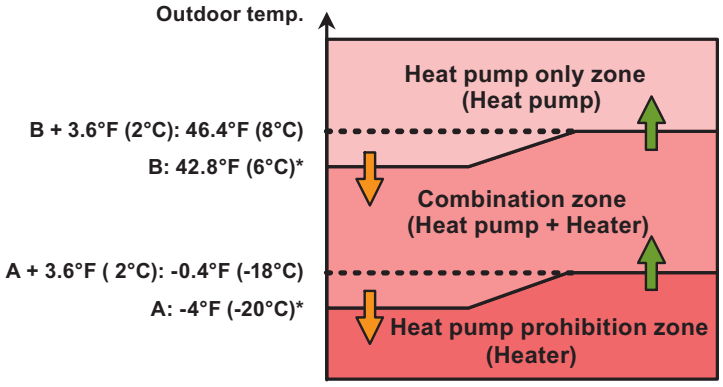
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.
- Outdoor temperature zone boundary A and B: Adjustable individually by function setting number 66 and 67.

- **External heater output**



Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

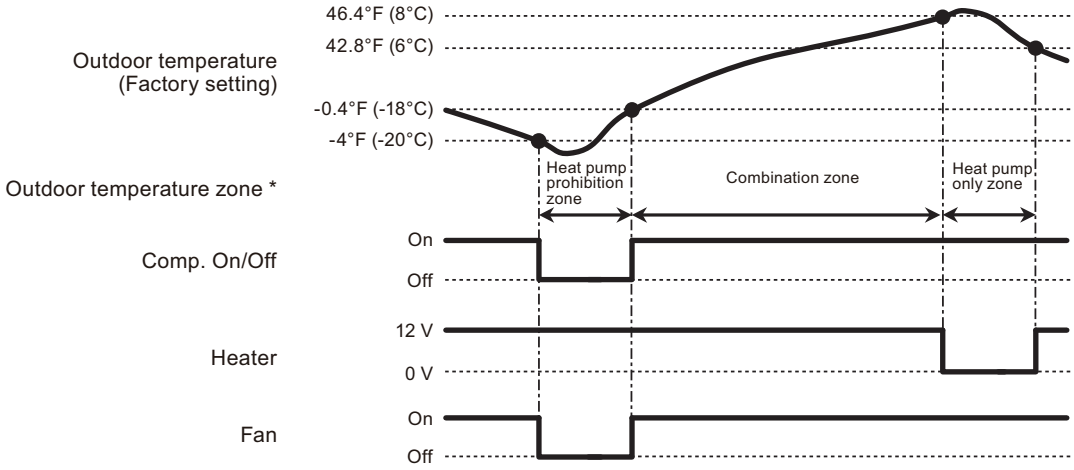
- **Outdoor temperature zone**



*: Adjustable by function setting 66 and 67

FIELD WORKING

- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

FIELD WORKING

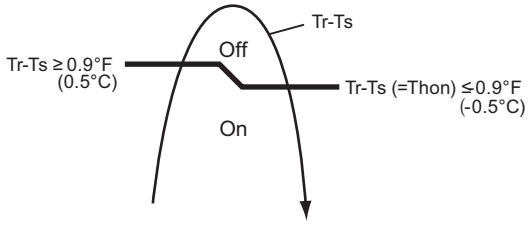
● Auxiliary heater control by outdoor temperature 2

This control selects heat pump or external heater according to the outdoor temperature. Even when outdoor temperature is high, the heating is performed by using both of heat pump and external heater.

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

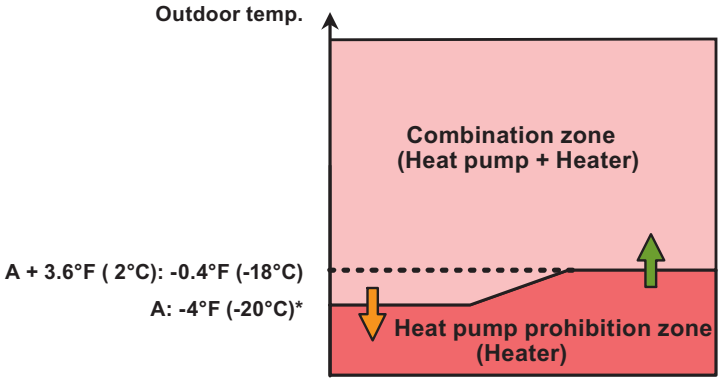
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.
- Outdoor temperature zone boundary A: Adjustable by function setting number 66.

- **External heater output**



Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

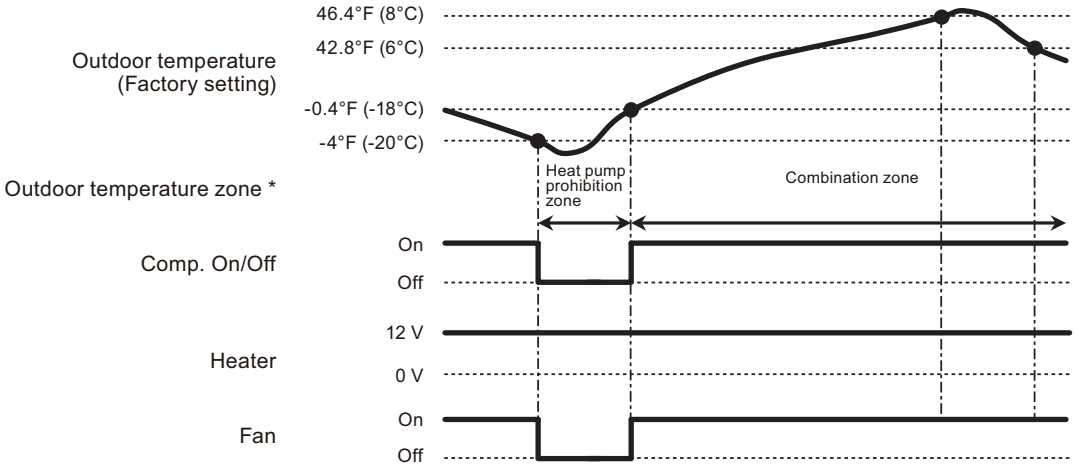
- **Outdoor temperature zone**



*: Adjustable by function setting 66

FIELD WORKING

- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

FIELD WORKING

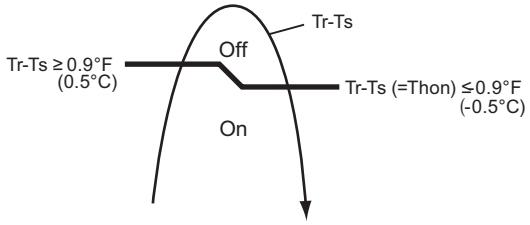
● Auxiliary heater control by outdoor temperature 3

This control selects heat pump or external heater according to the outdoor temperature. Even when outdoor temperature is high, the heating is performed by using both of heat pump and external heater.

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

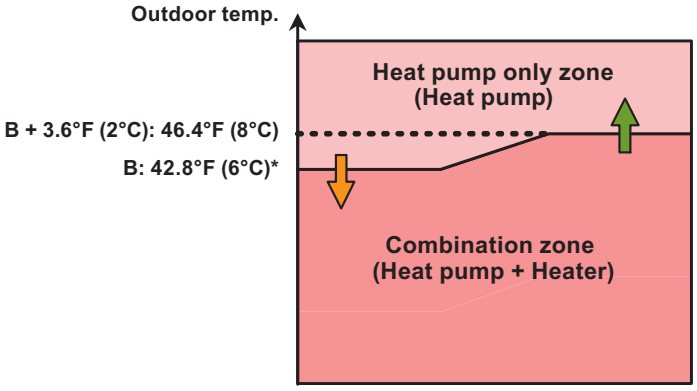
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.
- Outdoor temperature zone boundary B: Adjustable by function setting number 67.

- **External heater output**



Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

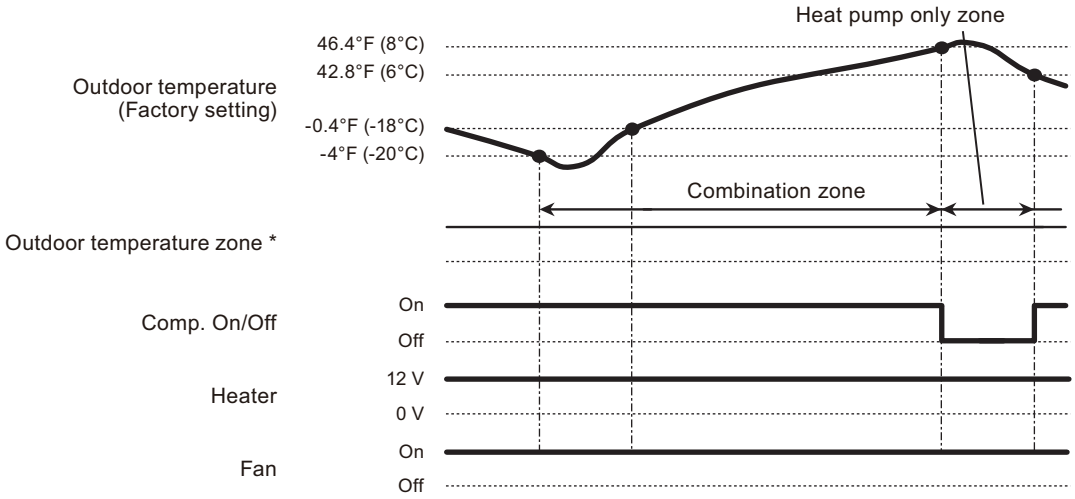
- **Outdoor temperature zone**



*: Adjustable by function setting 67

FIELD WORKING

- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

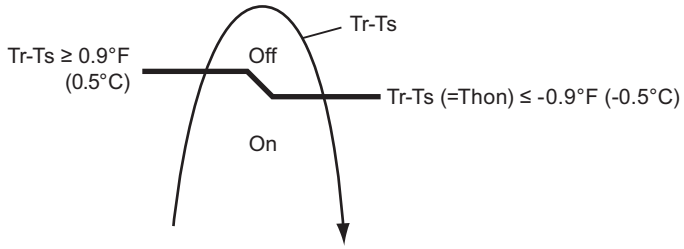
FIELD WORKING

● Auxiliary heat pump control

- **External heater output**

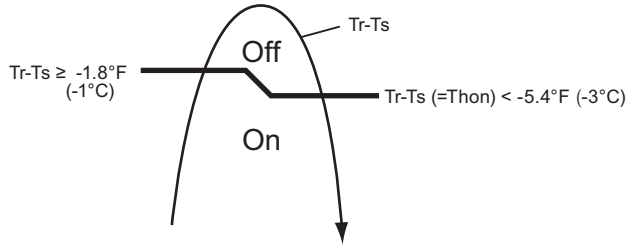
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

– Temperature of heater on (Thon): Set temperature (Ts) - 0.9 °F (- 0.5 °C)
– Temperature of heater off: Set temperature (Ts) + 0.9 °F (+ 0.5 °C)



Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

- **Auxiliary heat pump On/Off**
  – Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
  – All control temperatures will shift by adjusting “Thon”.



Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

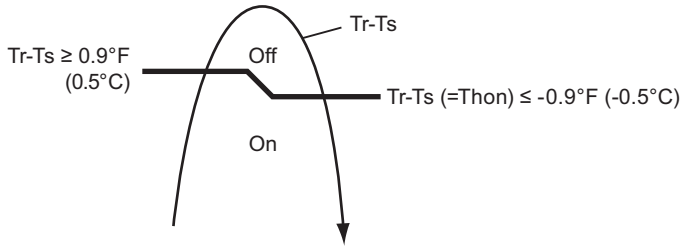
FIELD WORKING

● Auxiliary heat pump control by outdoor temperature 1

- **External heater output**

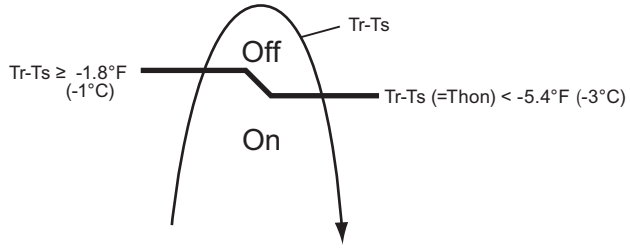
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

– Temperature of heater on (Thon): Set temperature (Ts) - 0.9 °F (- 0.5 °C)
– Temperature of heater off: Set temperature (Ts) + 0.9 °F (+ 0.5 °C)



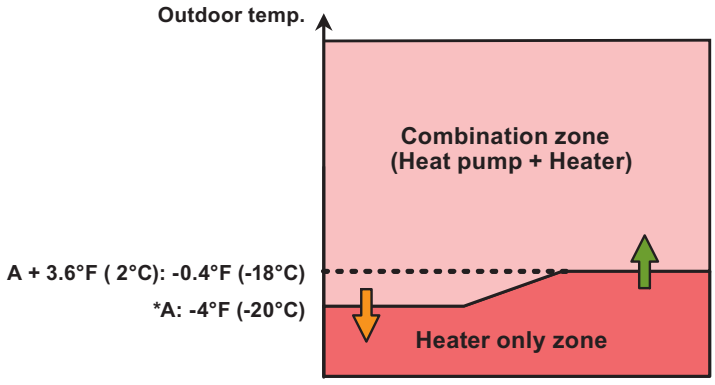
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

- **Auxiliary heat pump On/Off**
  – Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
  – All control temperatures will shift by adjusting “Thon”.



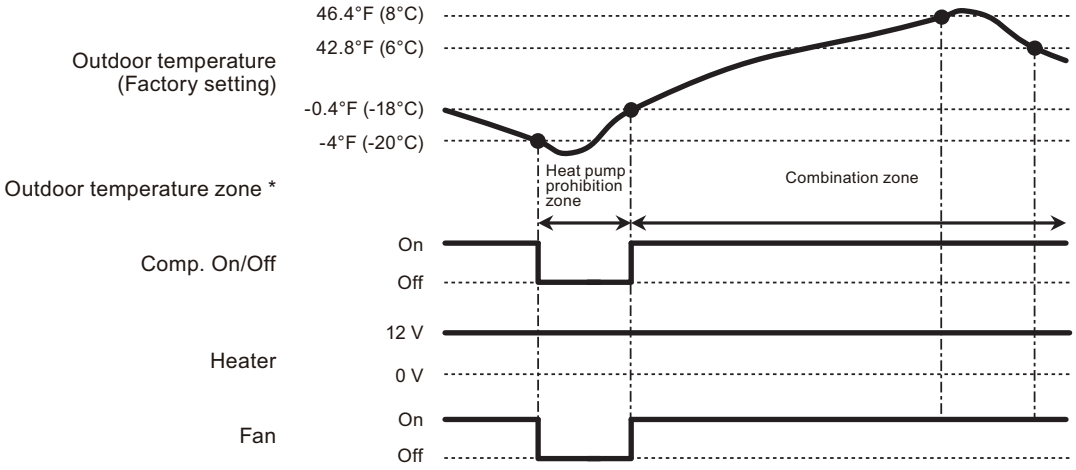
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

- **Outdoor temperature zone**



*: Adjustable by function setting 66

- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

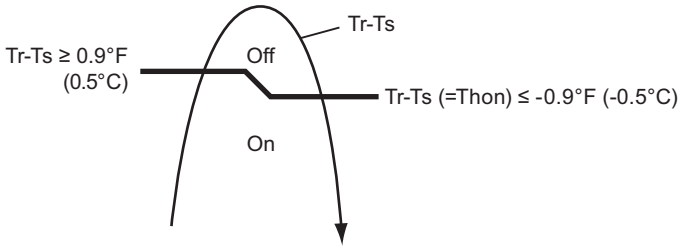
FIELD WORKING

● Auxiliary heat pump control by outdoor temperature 2

- **External heater output**

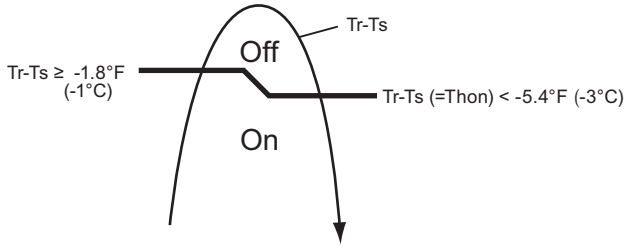
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

– Temperature of heater on (Thon): Set temperature (Ts) - 0.9 °F (- 0.5 °C)
– Temperature of heater off: Set temperature (Ts) + 0.9 °F (+ 0.5 °C)



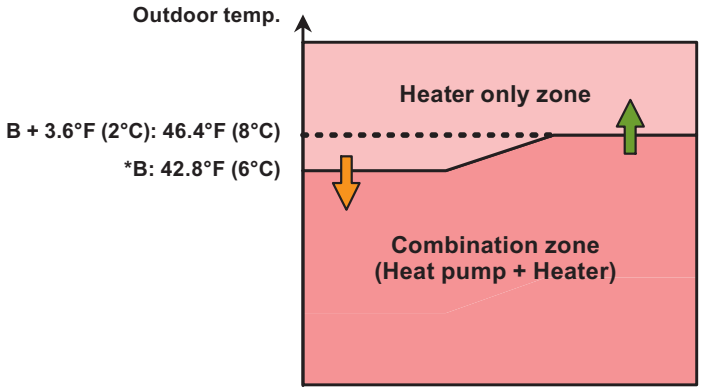
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

- **Auxiliary heat pump On/Off**
  – Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
  – All control temperatures will shift by adjusting “Thon”.



Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

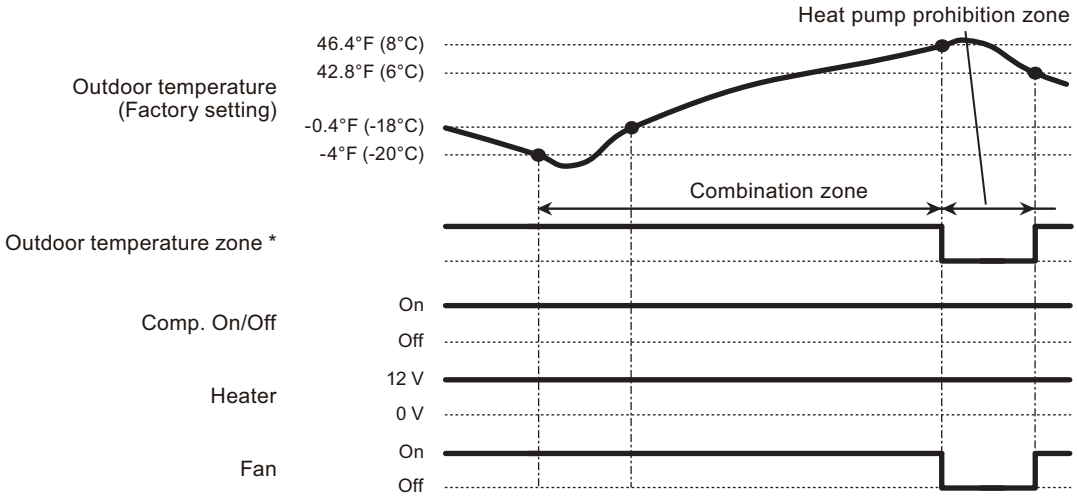
- **Outdoor temperature zone**



*: Adjustable by function setting 67

FIELD WORKING

- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

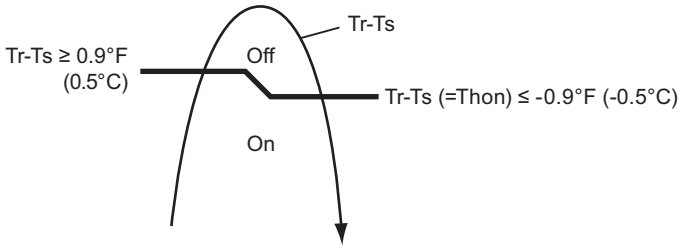
FIELD WORKING

● Auxiliary heat pump control by outdoor temperature 3

- **External heater output**

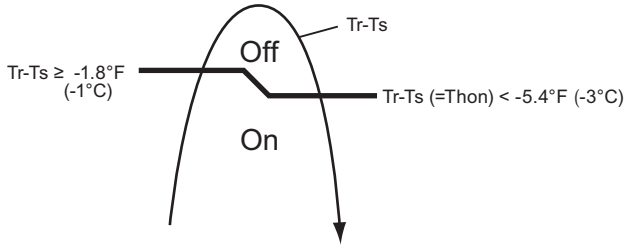
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

– Temperature of heater on (Thon): Set temperature (Ts) - 0.9 °F (- 0.5 °C)
– Temperature of heater off: Set temperature (Ts) + 0.9 °F (+ 0.5 °C)



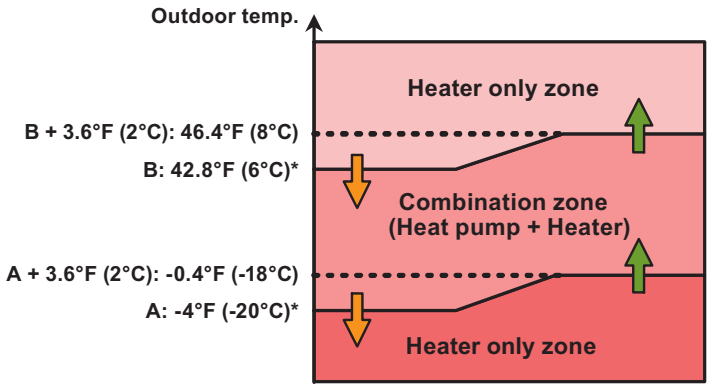
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

- **Auxiliary heat pump On/Off**
  – Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
  – All control temperatures will shift by adjusting “Thon”.



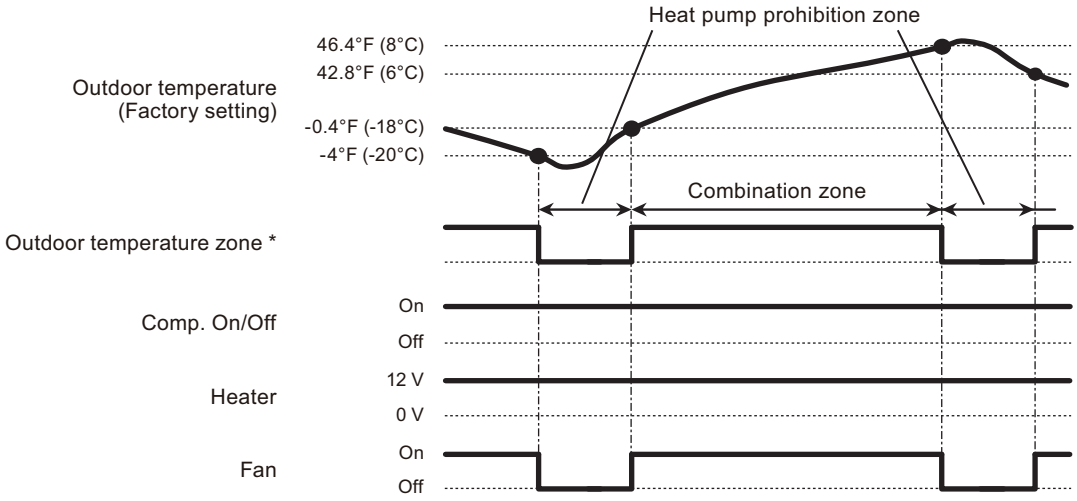
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

- **Outdoor temperature zone**



*: Adjustable by function setting 66 and 67

- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

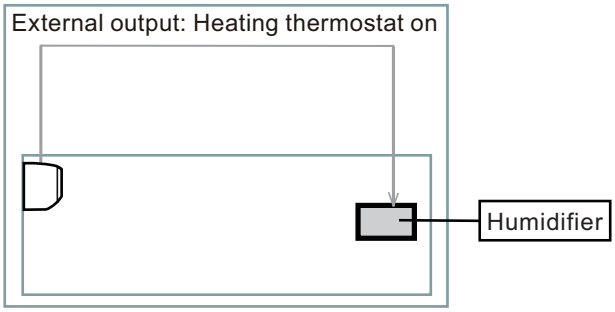
- Other than heating
- Test run

FIELD WORKING

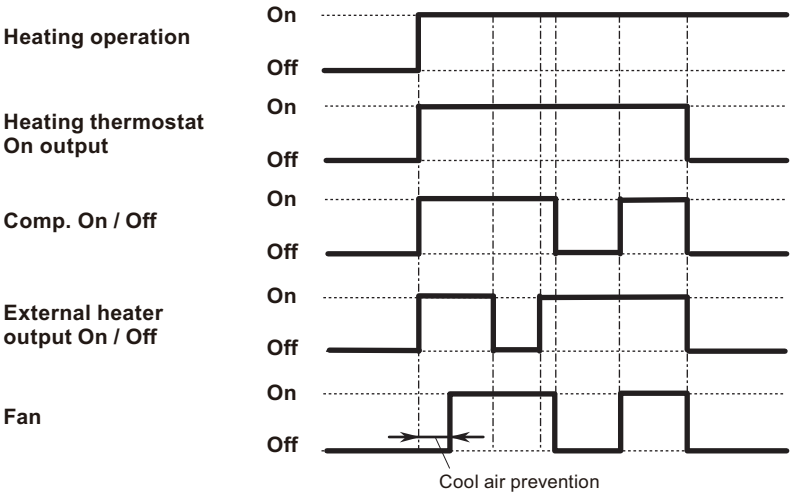
■ Heating thermostat on for humidifier

Situation	Indoor unit				
	Mode	Function setting	Rotary SW	External output	
		Heating thermostat on no. 60		Heating thermostat on	Indoor unit fan operation status
Example of individual connection	5	60-05	7	CN47	Not used
	6	60-06	8	CN312	
	7	60-07	9	CN311	
	8	60-08	A	CN310	

- **Example of individual connection**



- **Operation status**
  The heating thermostat output for CNB01 (1-2 or 1-3 or 1- or 1-5) will be on when comp on or external heater on.
  The heating thermostat output will be off when comp off and external heater off.



FIELD WORKING