FUJITSU

Refrigerant R410A INVERTER

AIR CONDITIONER

Duct type

SERVICE MANUAL

INDOOR

AMUG24LMAS
AMUG30LMAS
AMUG36LMAS
AMUG48LMAS

OUTDOOR

AOU24RGLX
AOU30RGLX

AOUG36LMAS1
AOUG48LMAS1

FUJITSU GENERAL LIMITED

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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

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1. GENERAL INFORMATION

GENERAL INFORMATION

1. Specifications

1-1. Indoor unit

Type					Duct			
					Inverter, Heat pump			
Model name					AMUG24LMAS	AMUG30LMAS	AMUG36LMAS	AMUG48LMAS
Power supply					208/230 V ~ 60 Hz			
Power supply intake					Outdoor unit			
Available voltage range					187—253 V			
Capacity	Cooling	95 °FDB (Outdoor temp.)	Rated	kW	7.03	8.79	10.55	13.36
				Btu/h	24,000	30,000	36,000	45,600
			Min.—Max.	kW	1.58—8.50	2.81—10.76	3.81—11.14	3.81—14.07
				Btu/h	5,400—29,000	9,600—35,000	13,000—38,000	13,000—48,000
		82 °FDB (Outdoor temp.)	Min.—Max.	kW	3.17—9.01	3.17—11.20	3.96—12.20	3.96—15.20
				Btu/h	10,800—30,700	10,800—38,000	13,500—41,700	13,500—51,800
	Heating	47 °FDB (Outdoor temp.)	Rated	kW	7.91	9.38	12.31	15.53
				Btu/h	27,000	32,000	42,000	53,000
			Min.—Max.	kW	1.58—9.50	2.70—11.43	3.22—15.24	3.22—15.83
				Btu/h	5,400—32,400	9,200—39,000	11,000—52,000	11,000—54,000
		17 °FDB (Outdoor temp.)*1	Rated	kW	5.48	6.62	8.62	11.28
				Btu/h	18,700	22,600	29,400	38,500
			Min.—Max.	kW	1.08—6.57	1.88—8.06	2.32—11.16	2.37—11.79
				Btu/h	3,700—22,400	6,400—27,500	7,900—38,000	8,100—40,200
		5 °FDB (Outdoor temp.)*2	Min.—Max.	kW	1.08—5.80	1.52—6.51	2.02—9.61	2.02—10.02
				Btu/h	3,700—19,800	5,200—22,200	6,900—32,800	6,900—34,200
		Lower limit (Outdoor temp.)	Min.—Max.	kW	0.88—5.30	1.49—6.36	1.70—8.45	1.70—8.77
				Btu/h	3,000—18,100	5,100—21,700	5,800—28,830	5,800—29,940
Input power	Cooling	95 °FDB (Outdoor temp.)	Rated	kW	2.05	3.03	3.36	5.56
			Min.—Max.		0.55—2.22	0.61—3.41	0.85—3.52	0.85—5.94
		82 °FDB (Outdoor temp.)	Min.—Max.		0.50—1.90	0.50—2.97	0.60—3.05	0.60—5.28
	Heating	47 °FDB (Outdoor temp.)	Rated		2.48	3.03	3.85	5.43
			Min.—Max.		0.55—3.47	0.57—4.16	0.67—5.39	0.67—5.42
		17 °FDB (Outdoor temp.)*1	Rated		1.93	2.42	3.29	4.66
			Min.—Max.		0.43—3.29	0.46—3.34	0.57—5.20	0.57—5.23
		5 °FDB (Outdoor temp.)*2	Min.—Max.		0.54—3.22	0.47—3.26	0.60—4.91	0.60—4.91
			Min.—Max.		0.48—3.20	0.42—3.24	0.59—4.28	0.59—4.30
	Fan		HIGH	W	106.9	136.3	204.3	412.4
			MED		67.4	96.3	63.4	118.2
			LOW		50.6	57.7	42.1	73.1
			QUIET		19.7	22.7	31.0	38.5
Current		Cooling	Rated	A	9.1	13.3	14.8	24.4
		Heating			10.9	13.4	17.0	23.8
EER2		Cooling		Btu/hW	11.7	9.9	10.7	8.20
COP2		Heating		kW/kW	3.20	3.10	3.20	2.86
SEER2		Cooling		Btu/hW	17.6	17.2	17.1	16.2
HSPF2		Heating			9.2	9.1	8.8	9.2
Power factor		Cooling		%	97.9	99.1	98.7	99.1
		Heating			98.9	98.3	98.5	99.2
Moisture removal				pints/h (L/h)	4.6 (2.2)	7.2 (3.4)		9.3 (4.4)
Maximum operating current*3		Cooling		A	15.6		32.4	
		Heating			16.1		32.4	
Fan	Airflow rate	Cooling	HIGH	CFM (m^3/h)	800 (1,359)	870 (1,478)	1,200 (2,039)	1,640 (2,786)
			MED		670 (1,138)	730 (1,240)	740 (1,257)	1,020 (1,733)
			LOW		590 (1,002)			820 (1,393)
			QUIET		310 (527)		490 (833)	590 (1,002)
		Heating	HIGH		800 (1,359)	870 (1,478)	1,200 (2,039)	1,640 (2,786)
			MED		670 (1,138)	730 (1,240)	740 (1,257)	1,020 (1,733)
			LOW		590 (1,002)			820 (1,393)
			QUIET		310 (527)		490 (833)	590 (1,002)
	Type × Qty				Sirocco fan × 1			
Static pressure range				inWG (Pa)	0.08 to 1 (20 to 250)			
Sound pressure level*4		Cooling	HIGH	dB (A)	40	42	41	48
			MED		34	37	30	36
			LOW		32	33	27	31
			QUIET		26	28	24	25
		Heating	HIGH		37	39	40	47
			MED		33	36	35	37
			LOW		31	32	28	32
			QUIET		25		26	29
Heat exchanger type		Dimensions (H × W × D)		in (mm)	16 × 17- 1/8 × 1- 1/2 (406 × 435 × 38)		32 × 17-1/8 × 1-1/2 (813 × 435 × 38)	
		Fin pitch		FPI	16		15	
		Rows × Stages			2 × 48		2 × 64	
		Pipe type			Aluminum			
		Fin type			Aluminum			
Enclosure		Material			Steel			
		Color			—			
Dimensions (H × W × D)	Net			in (mm)	42- 1/2 × 21 × 21- 11/16 (1,080 × 533 × 551)		57 × 21 × 21- 11/16 (1,448 × 533 × 551)	
	Gross				42- 3/4 × 24 × 25- 5/16 (1,086 × 610 × 643)		57- 1/8 × 23 × 26- 1/2 (1,451 × 584 × 673)	
Weight	Net			lb (kg)	104 (47)		132 (60)	
	Gross				116 (52.5)		146 (66)	
Connection pipe	Size	Liquid		in (mm)	Ø 3/8 (Ø 9.52)			
		Gas			Ø 5/8 (Ø 15.88)			
	Method				Flare			
Drain port	Size			in (mm)	Ø 3/4 (19) [O.D.]			

GENERAL INFORMATION

Type				Duct			
				Inverter, Heat pump			
Model name				AMUG24LMAS	AMUG30LMAS	AMUG36LMAS	AMUG48LMAS
Operation range	Cooling		°F (°C)	64 to 90 (18 to 32)			
			%RH	80 or less		—	
	Heating		°F (°C)	60 to 86 (16 to 30)			

NOTES:

- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 80°FDB/67°FWB (26.67°CDB/19.44°CWB), and outdoor temperature of 95°FDB/75°FWB (35°CDB/23.9°CWB).
  - Heating: Indoor temperature of 70°FDB/59°FWB (21.11°CDB/15°CWB), and outdoor temperature of 47°FDB/43°FWB (8.33°CDB/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).
  - *2: Heating (5°F): Indoor temperature of 70°FDB (21.11°CDB)/60°FWB (15.56°CWB), and outdoor temperature of 5°FDB (-15.0°CDB)/4°FWB (-15.56°CWB).
  - Test conditions are based on AHRI 210/240 2023.
  - Pipe length: 24 ft 7 in (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)
  - Standard static pressure: 0.18 in.WG (45 Pa): 24 model, 0.23 in.WG (58 Pa): 30, and 36 model, 0.28 in.WG (70 Pa): 48 model
- Protective function might work when using it outside the operation range.
- *3: Maximum current:
  - The maximum value when operated within the operation range.
  - The total current of indoor unit and outdoor unit.
- *4: 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.

M condition

Model name					AMUG24LMAS	AMUG30LMAS	AMUG36LMAS	AMUG48LMAS
Capacity	Cooling	95 °FDB (Outdoor temp.)	Rated	kW	7.03	8.79	10.55	13.36
				Btu/h	24,000	30,000	36,000	45,600
			Min.—Max.	kW	1.58—8.50	2.81—10.76	3.81—11.14	3.81—14.07
				Btu/h	5,400—29,000	9,600—35,000	13,000—38,000	13,000—48,000
		82 °FDB (Outdoor temp.)	Min.—Max.	kW	3.17—9.01	3.17—11.20	3.96—12.20	3.96—15.20
				Btu/h	10,800—30,700	10,800—38,000	13,500—41,700	13,500—51,800
	Heating	47 °FDB (Outdoor temp.)	Rated	kW	7.91	9.38	12.31	15.53
				Btu/h	27,000	32,000	42,000	53,000
			Min.—Max.	kW	1.58—9.50	2.70—11.43	3.22—15.24	3.22—15.83
				Btu/h	5,400—32,400	9,200—39,000	11,000—52,000	11,000—54,000
		17 °FDB (Outdoor temp.)*1	Rated	kW	5.48	6.62	8.62	11.28
				Btu/h	18,700	22,600	29,400	38,500
			Min.—Max.	kW	1.08—6.57	1.88—8.06	2.32—11.16	2.37—11.79
				Btu/h	3,700—22,400	6,400—27,500	7,900—38,000	8,100—40,200
		5 °FDB (Outdoor temp.)*2	Min.—Max.	kW	1.08—5.80	1.52—6.51	2.02—9.61	2.02—10.02
				Btu/h	3,700—19,800	5,200—22,200	6,900—32,800	6,900—34,200
		Lower limit (Outdoor temp.)	Min.—Max.	kW	0.88—5.30	1.49—6.36	1.70—8.45	1.70—8.77
				Btu/h	3,000—18,100	5,100—21,700	5,800—28,830	5,800—29,940
Input power	Cooling	95 °FDB (Outdoor temp.)	Rated	kW	2.00	2.97	3.18	5.56
			Min.—Max.		0.55—2.22	0.61—3.41	0.85—3.52	0.85—5.94
		82 °FDB (Outdoor temp.)	Min.—Max.		0.50—1.90	0.50—2.97	0.60—3.05	0.60—5.28
	Heating	47 °FDB (Outdoor temp.)	Rated		2.48	3.02	3.82	5.35
			Min.—Max.		0.55—3.47	0.57—4.16	0.67—5.39	0.67—5.42
		17 °FDB (Outdoor temp.)*1	Rated		1.93	2.42	3.29	4.66
			Min.—Max.		0.43—3.29	0.46—3.34	0.57—5.20	0.57—5.23
		5 °FDB (Outdoor temp.)*2	Min.—Max.		0.54—3.22	0.47—3.26	0.60—4.81	0.60—4.91
			Min.—Max.		0.48—3.20	0.42—3.24	0.59—4.28	0.59—4.30
	Fan		HIGH	W	106.9	136.3	204.3	412.4
			MED		67.4	96.3	63.4	118.2
			LOW		50.6	57.7	42.1	73.1
			QUIET		19.7	22.7	31.0	38.5
Current		Cooling	Rated	A	8.8	13.0	14.0	24.4
		Heating			10.9	13.3	16.8	23.5
EER		Cooling		kW/kW	3.52	2.96	3.31	2.40
				Btu/hW	12.0	10.1	11.3	8.20
COP		Heating		kW/kW	3.19	3.11	3.22	2.90
				Btu/hW	10.9	10.6	11.0	9.9
SEER		Cooling		Btu/hW	19.0	18.5	18.0	17.0
HSPF		Heating			10.7	10.3	10.2	
Power factor		Cooling		%	98.8	99.2	98.8	99.1
		Heating			98.9	98.7	98.9	99.0

NOTES:

- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 80°FDB/67°FWB (26.67°CDB/19.44°CWB), and outdoor temperature of 95°FDB/75°FWB (35°CDB/23.9°CWB).
  - Heating: Indoor temperature of 70°FDB/59°FWB (21.11°CDB/15°CWB), and outdoor temperature of 47°FDB/43°FWB (8.33°CDB/6.11°CWB).
  - Pipe length: 24 ft 7 in (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)
  - *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).
  - *2: Heating (5°F): Indoor temperature of 70°FDB (21.11°CDB)/60°FWB (15.56°CWB), and outdoor temperature of 5°FDB (-15.0°CDB)/4°FWB (-15.56°CWB).
  - Test conditions are based on AHRI 210/240 2017.
  - Standard static pressure: 0.18 in.WG (45 Pa): 24 model, 0.23 in.WG (58 Pa): 30, and 36 model, 0.28 in.WG (70 Pa): 48 model
- Protective function might work when using it outside the operation range.

GENERAL INFORMATION

1-2. Outdoor unit

Type				Inverter heat pump	
Model name				AOU24RGLX	AOU30RGLX
Power supply				208/230 V ~ 60 Hz	
Power supply intake				Outdoor unit	
Available voltage range				187—253 V	
Starting current			A	9.6	11.5
Fan	Airflow rate	Cooling	CFM (m^3/h)	2,119 (3,600)	
		Heating		2,119 (3,600)	
	Type × Q'ty			Propeller × 1	
	Motor output		W	100	
Sound pressure level *		Cooling	dB (A)	53	
		Heating		55	
Heat exchanger type		Dimensions (H × W × D)	in	31-7/16 × 35-7/16 × 1-7/16	
			mm	798 × 900 × 36.4	
		Fin pitch	FPI	20	
		Rows × Stages		2 × 38	
		Pipe type		Copper	
		Fin	Type (Material)	Aluminum	
			Surface treatment	PC Fin	
Compressor	Type × Q'ty			DC twin rotary × 1	
	Motor output		W	2,100	
Refrigerant		Type		R410A	
		Charge	lb oz	4 lb 10 oz	
			g	2,100	
Refrigerant oil		Type		POE (RB68)	
		Amount	in^3 (cm^3)	48.8 (800)	
Enclosure		Material		Steel	
		Color		Beige Approximate color of Munsell 10YR 7.5/1.0	
Dimensions (H × W × D)	Net		in (mm)	32-11/16 × 35-7/16 × 13 (830 × 900 × 330)	
	Gross		in (mm)	39-3/8 × 41-5/16 × 17-1/2 (1,000 × 1,050 × 445)	
Weight	Net		lb (kg)	134 (61)	
	Gross			152 (69)	
Connection pipe	Size	Liquid	in (mm)	Ø3/8 (9.52)	
		Gas		Ø5/8 (15.88)	
	Method			Flare	
	Pre-charge length		ft (m)	66 (20)	
	Max. length			164 (50)	
	Max. height difference			98 (30)	
Operation range		Cooling	°F (°C)	-4 to 115 (-20 to 46)	
		Heating		-4 to 75 (-20 to 24)	
Drain hose	Material			LDPE	
	Size		in (mm)	Ø1/2 (13.0) [I.D.], Ø5/8 to Ø11/16 (16.0 to 16.7) [O.D.]	

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: 24 ft 6 in (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.
- *: 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

Type				Inverter heat pump	
Model name				**AOUG36LMAS1**	**AOUG48LMAS1**
Power supply				208/230 V ~ 60 Hz	
Power supply intake				Outdoor unit	
Available voltage range				187—253 V	
Starting current			A	20.1	
Fan	Airflow rate	Cooling	CFM (m^3/h)	2,590 (4,400)	
		Heating		2,590 (4,400)	
	Type × Q'ty			Propeller × 1	
	Motor output		W	111	
Sound pressure level *		Cooling	dB (A)	53	54
		Heating		54	55
Heat exchanger type		Dimensions (H × W × D)	in	38-1/16 × 36-5/16 × 2-3/16	
			mm	966 × 922 × 55	
		Fin pitch	FPI	18	
		Rows × Stages		3 × 46	
		Pipe type		Copper	
		Fin	Type (Material)	Aluminum	
			Surface treatment	Blue Fin	
Compressor	Type × Q'ty			DC twin rotary × 1	
	Motor output		W	2,100	
Refrigerant		Type		R410A	
		Charge	lb oz	9 lb 8 oz	
			g	4,300	
Refrigerant oil		Type		POE (RB68)	
		Amount	in^3 (cm^3)	70.2 (1,150)	
Enclosure		Material		Steel	
		Color		Beige Approximate color of Munsell 10YR 7.5/1.0	
Dimensions (H × W × D)	Net		in (mm)	39-5/16 × 38-3/16 × 14-9/16 (998 × 970 × 370)	
	Gross		in (mm)	45-12/16 × 41-14/16 × 18-13/16 (1,162 × 1,064 × 478)	
Weight	Net		lb (kg)	198 (90)	
	Gross			220 (100)	
Connection pipe	Size	Liquid	in (mm)	Ø3/8 (9.52)	
		Gas		Ø5/8 (15.88)	
	Method			Flare	
	Pre-charge length		ft (m)	98 (30)	
	Max. length			230 (70)	
	Max. height difference			98 (30)	
Operation range		Cooling	°F (°C)	14 to 115 (-10 to 46)	
		Heating		-4 to 75 (-20 to 24)	
Drain hose	Material			LDPE	
	Size		in (mm)	Ø1/2 (13.0) [I.D.], Ø5/8 to Ø11/16 (16.0 to 16.7) [O.D.]	

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: 24 ft 6 in (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.
- *: 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.

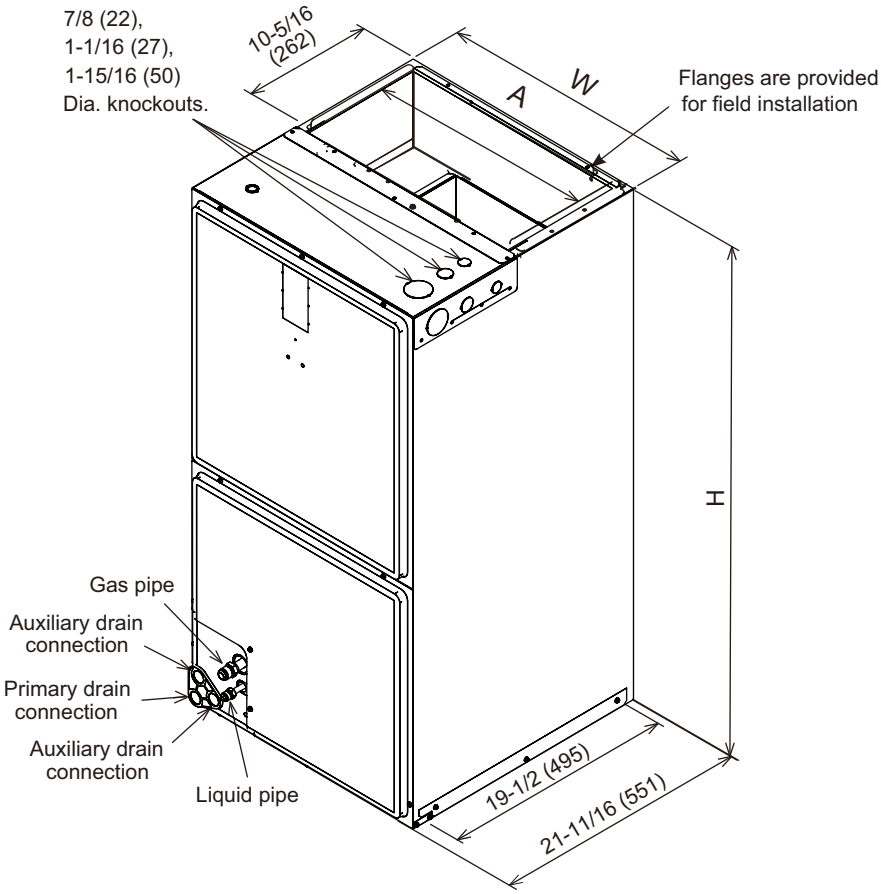
GENERAL INFORMATION

2. Dimensions

2-1. Indoor unit

■ Models: AMUG24LMAS, AMUG30LMAS, AMUG36LMAS, and AMUG48LMAS

Unit: in (mm)



Model	Dimension		
	A (Supply duct)	W (Unit width)	H (Unit height)
AMUG24LMAS AMUG30LMAS	19-1/2 (495)	21 (533)	42-1/2 (1,080)
AMUG36LMAS AMUG48LMAS	19-1/2 (495)	21 (533)	57 (1,448)

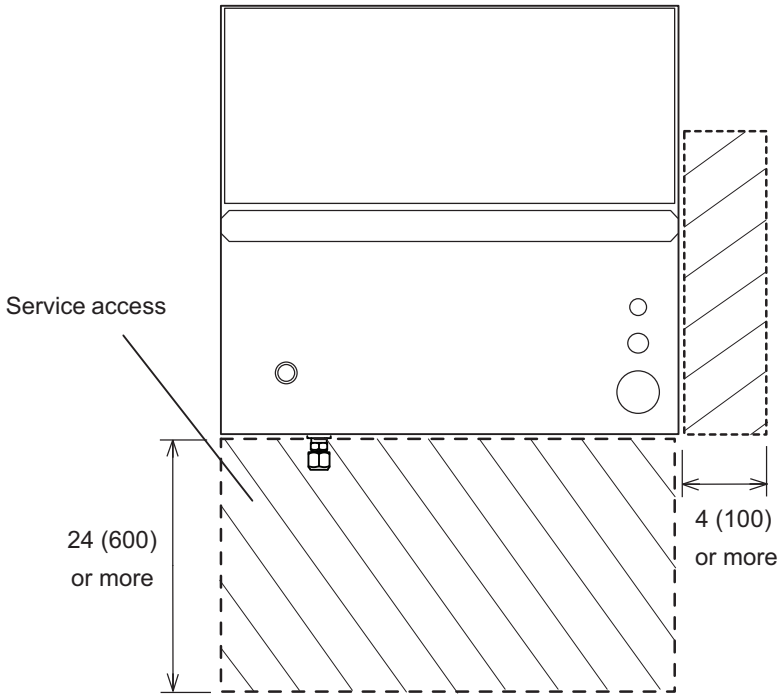
Model	Return air opening	
	Width	Depth/Length
AMUG24LMAS AMUG30LMAS AMUG36LMAS AMUG48LMAS	19-3/8 (492)	19-3/4 (502)

GENERAL INFORMATION

■ Installation space requirement

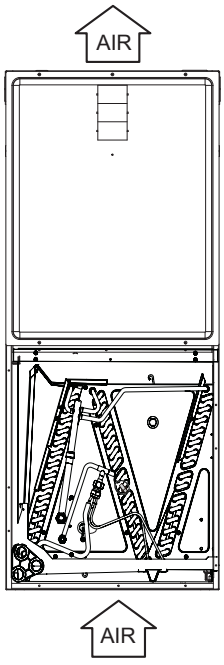
Provide sufficient installation space for product safety.

(Top side)

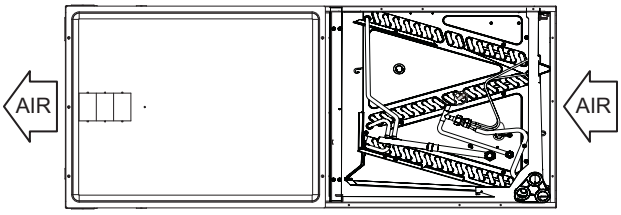


For installation method, the following 4 patterns

- **Pattern A: Vertical installation, air intake port at the bottom**

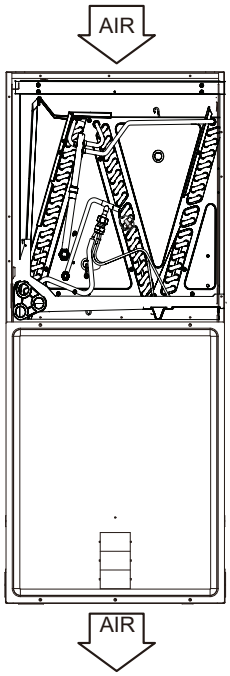


- **Pattern B: Horizontal installation, air intake port at the right**

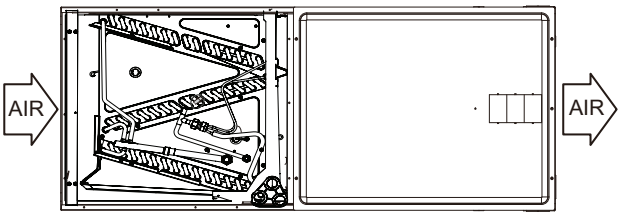


GENERAL INFORMATION

- **Pattern C: Vertical installation, air intake port at the top**
  Reversing the heat exchanger and reattaching the thermistor are required



- **Pattern D: Horizontal installation, air intake port at the left**
  Reversing the heat exchanger and reattaching the thermistor are required

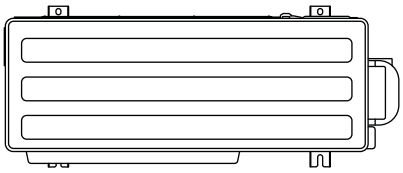


GENERAL INFORMATION

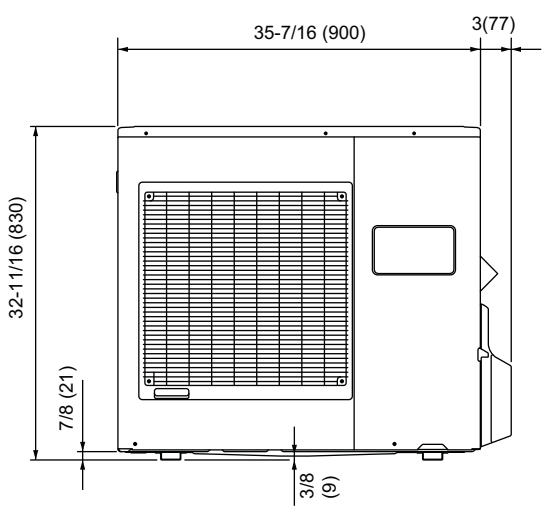
2-2. Outdoor unit

■ Models: AOU24RGLX and AOU30RGLX

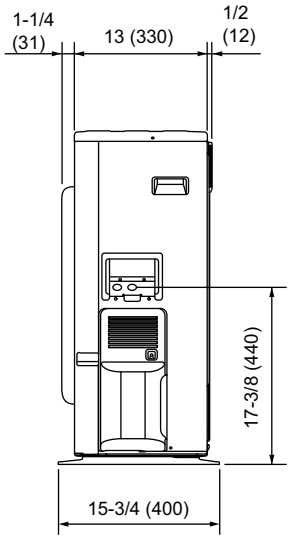
Unit: in (mm)



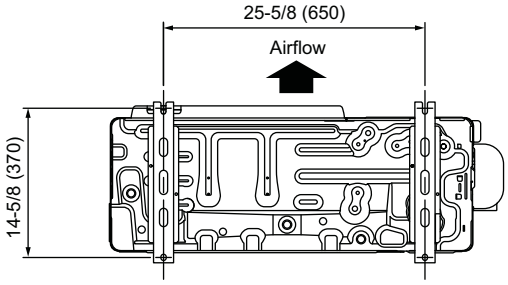
Top view



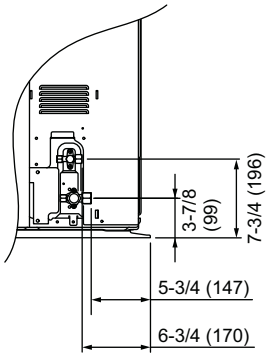
Front view



Side view



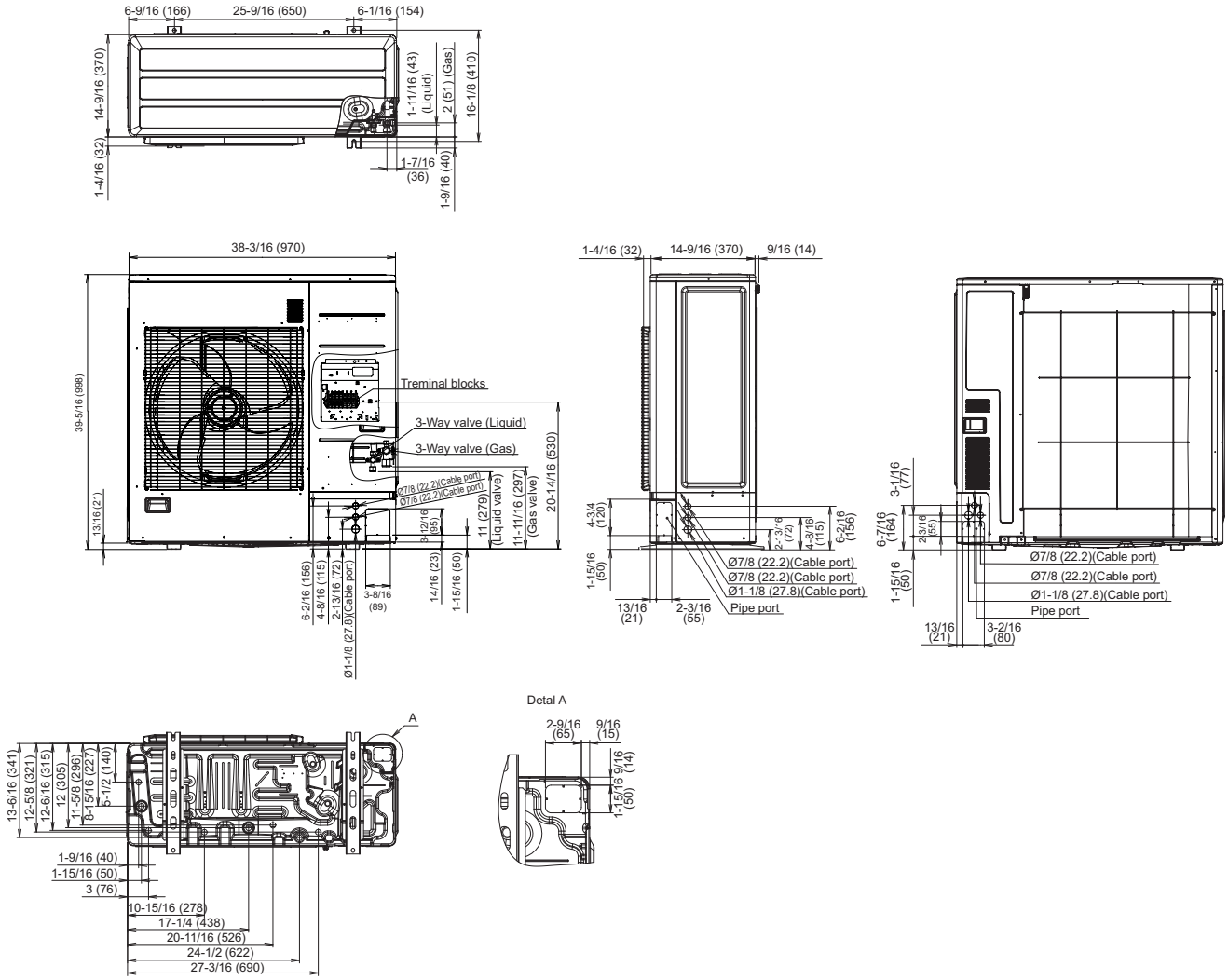
Bottom view



GENERAL INFORMATION

■ Models: AOUG36LMAS1 and AOUG48LMAS1

Unit: in (mm)



GENERAL INFORMATION

Refrigerant R410A
INVERTER

2. TECHNICAL DATA AND PARTS LIST

2022.12.15
SR_CH02_AR024EF_10

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.

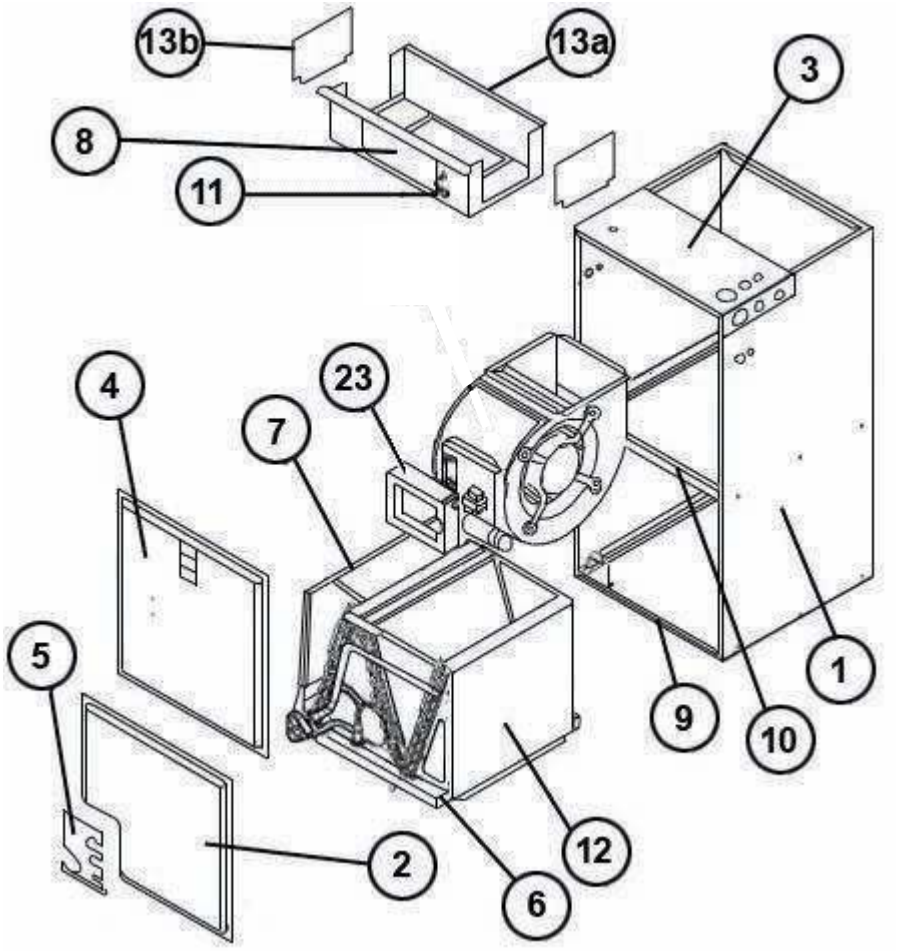
- Service parts information and design are subject to change without notice for product improvement.
- For the latest information of the service parts, refer to our Service Portal.
  https://fujitsu-general.force.com/portal/
- Precise figure of the service parts listed in this manual may differ from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

TECHNICAL DATA AND PARTS LIST

2. Indoor unit parts list

2-1. Models: AMUG24LMAS, AMUG30LMAS, AMUG36LMAS, and AMUG48LMAS

■ Exterior parts and chassis

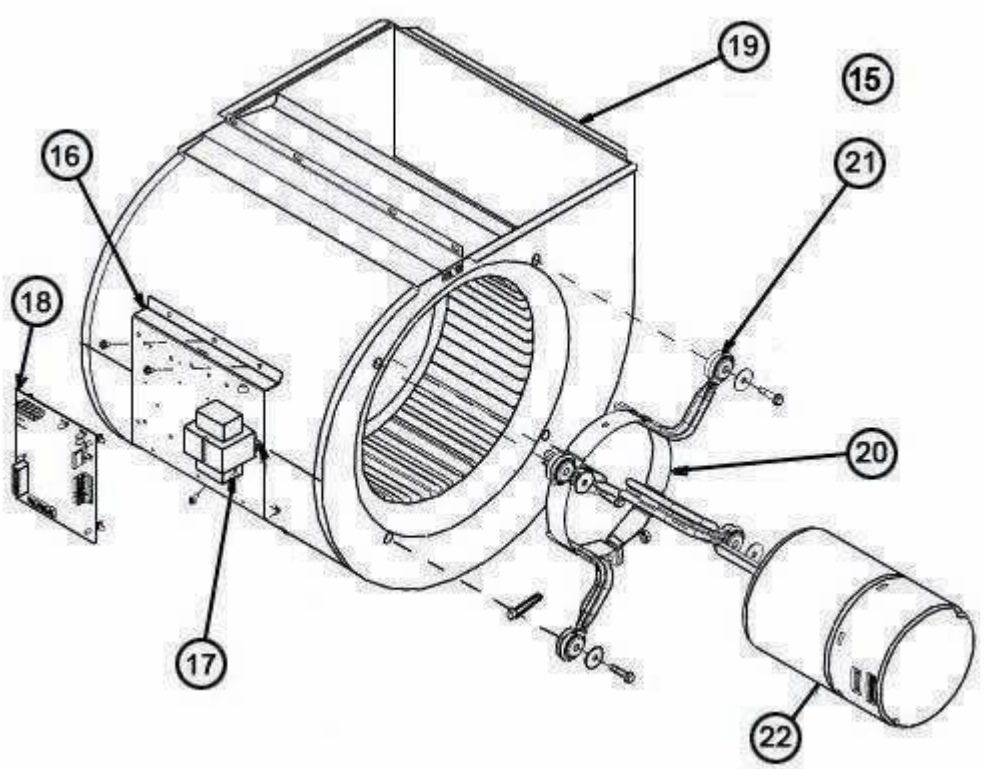


TECHNICAL DATA AND PARTS LIST

Item no.	Part name	Part no.			
		AMUG24LMAS	AMUG30LMAS	AMUG36LMAS	AMUG48LMAS
Panel, Sheet metal, Miscellaneous					
1	Insulation - Cabinet	68-101121-02	68-101121-02	68-101121-15	68-101121-15
	Insulation Retainer Rod (2)	45-102868-03	45-102868-03	45-102868-03	45-102868-03
2	Coil Door	AE-100685-23	AE-100685-23	N/A	N/A
	Insulation - Coil Door	68-101577-07	68-101577-07	68-101577-10	68-101577-10
3	Top Cover Plate	AE-100686-02	AE-100686-02	AE-100686-02	AE-100686-02
	Insulation - Top Cover Plate	68-101122-02	68-101122-02	68-101122-02	68-101122-02
4	Blower Door	AE-100684-22	AE-100684-22	AE-100684-22	AE-100684-22
	Insulation - Blower Door	68-101576-02	68-101576-02	68-101576-02	68-101576-02
5	Access Panel	AE-101133-21	AE-101133-21	AE-101133-21	AE-101133-21
	Insulation - Access Panel	68-101644-01	68-101644-01	68-101644-01	68-101644-01
6	Drain Pan - Vertical	See RCH Coil Parts List			
7	Drain Pan - Horizontal	See RCH Coil Parts List			
8	Plate - Block Off	AE-100455-01	AE-100455-01	AE-100455-01	AE-100455-01
9	Cabinet Brace	AE-101134-03	AE-101134-03	AE-101134-03	AE-101134-03
10	Middle Brace	AE-101054-02	AE-101054-02	AE-101054-02	AE-101054-02
13a	Heat Barrier	AE-100683-05	AE-100683-05	AE-100683-06	AE-100683-06
13b	Heat Barrier Side (2)	AE-104241-01	AE-104241-01	AE-104241-01	AE-104241-01
	Touch-up Paint - Private Label Gray (Aerosol)	523014	523014	523014	523014
	Touch-up Paint - Private Label Gray (Paint Pens)	523015	523015	523015	523015
Coil group					
12	Replacement Coil	RCH-3021SNAVUA	RCH-3021SNAVUA	RCH-4821SNAVUA	RCH-4821SNAVUA
	Horizontal Adapter Kit	See specified RCH Coil Parts List			
	Drain Pan - Vertical	See specified RCH Coil Parts List			

TECHNICAL DATA AND PARTS LIST

■ Blower assy



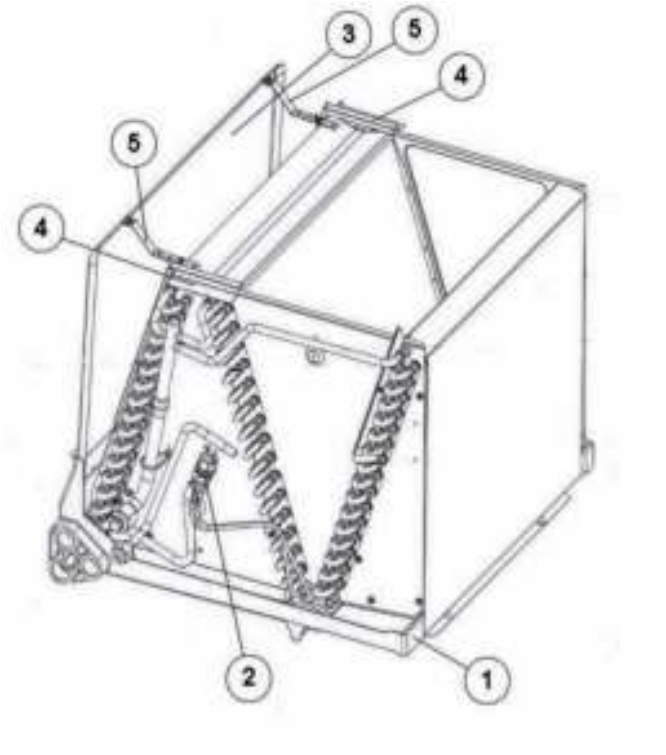
TECHNICAL DATA AND PARTS LIST

Item no.	Part name	Part no.			
		AMUG24LMAS	AMUG30LMAS	AMUG36LMAS	AMUG48LMAS
Electrical group					
17	Transformer*	46-101905-01			
18	Control Board*	9711678003	9711678010	9711678027	9711678034
	Communication PCB	9710019005			
	Control board spacer	0600035037			
	Communication PCB holder	0600063023			
11	Terminal Block for Power	9306488154			
11	Terminal Block for RC/ External input	9900896027			
	Thermistor (Pipe)	9901058004			
	Thermistor (Room)	9900960056			
	Wire with connector	9382318222			
	Wire with connector	9382318239			
	Wire with connector	9382318246			
	Wire with terminal	9382318253			
Blower group					
16	Mounting Bracket - Control Board	10-101049-03	10-101049-03	10-101049-03	10-101049-03
17	Transformer	See Electrical group			
18	Control Board	See Electrical group			
19	Blower Housing w/Wheel	70-101729-02	70-101729-02	70-101729-08	70-101729-08
	Blower Wheel*	703014	703014	703023	703023
20	Motor Mount - Band	70-19927-04	70-19927-04	70-19927-04	70-19927-04
21	Motor Mount - Arm (4)	70-19929-10	70-19929-10	70-19929-10	70-19929-10
22	Blower Motor*	51-102601-01	51-102601-01	51-102603-01	51-102603-01
23	Mounting Bracket Cover	10-101797-03	10-101797-03	10-101797-03	10-101797-03

*: It is recommended that stock be maintained for this part.

TECHNICAL DATA AND PARTS LIST

■ RCH coil



Item no.	Part name	Part no.			
		AMUG24LMAS	AMUG30LMAS	AMUG36LMAS	AMUG48LMAS
1	Drain Pan - Vertical*	68-104822-03			
2	Distributor Assembly*	83-104030-02			
	Horizontal Adapter Kit - Includes Straps, Shields, Drain Pan and Insulation	RXHH-A03			
3	Drain Pan - Horizontal	AE-101128-31			
	Insulation - Horizontal Pan	68-100528-01			
4	Rear/Front Shield (2)	AE-101136-07			
5	Straps (2)	AE-100530-07			

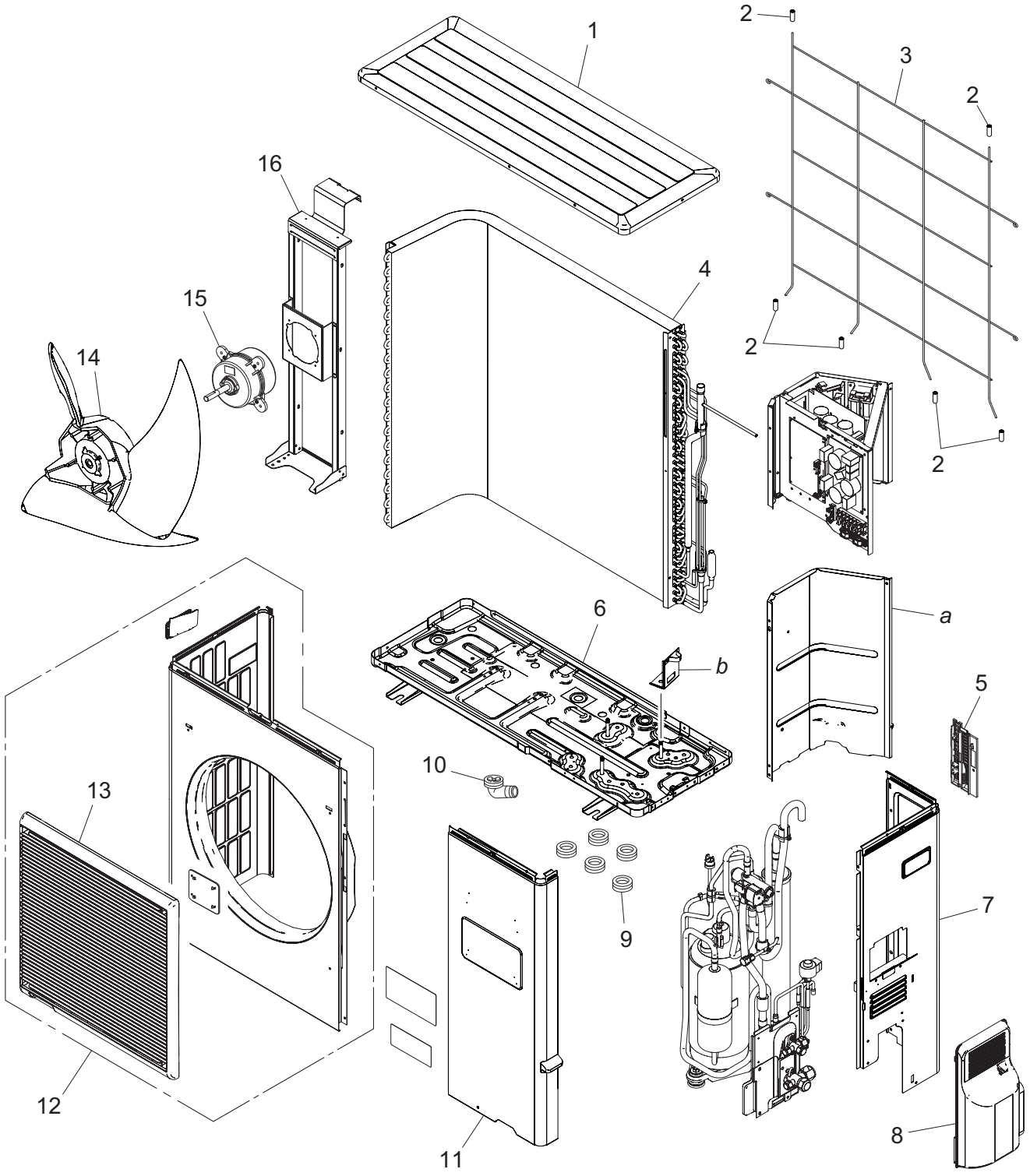
*: It is recommended that stock be maintained for this part.

TECHNICAL DATA AND PARTS LIST

3. Outdoor unit parts list

3-1. Models: AOU24RGLX and AOU30RGLX

■ Exterior parts and chassis

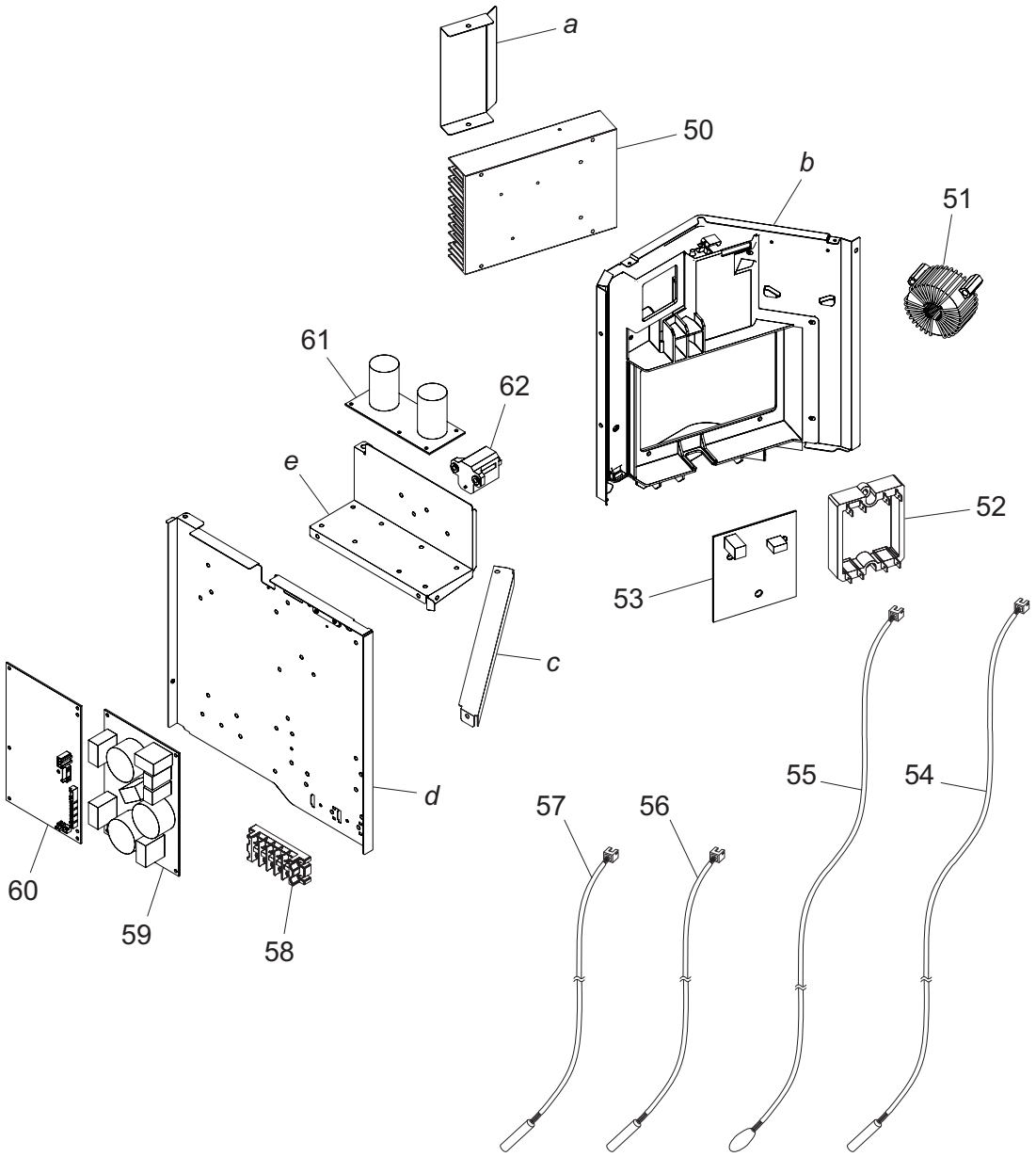


TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
1	9374417070	Top panel sub assy	♦
2	9375361013	Net rubber	♦
3	9375381011	Protective net	♦
4	9374420308	Condenser A sub assy	♦
5	9375211011	Thermo sensor holder	♦
6	9374166206	Base assy	♦
7	9374416271	Right panel sub assy	♦
8	9374174010	Valve cover	♦
9	313166024302	Drain cap	♦
10	9303029015	Drain assy	♦
11	9374415106	Service panel sub assy	♦
12	9374414079	Front panel sub assy	♦
13	9374330010	Fan guard	♦
14	9366378020	Propeller fan assy	♦
	9366378037		
15	9379385015	Fan motor assy	♦
16	9374418152	Motor bracket sub assy	♦
a	—	Separation wall	—
b	—	Accumulator support assy	—

■ Inverter unit

TECHNICAL DATA AND PARTS LIST

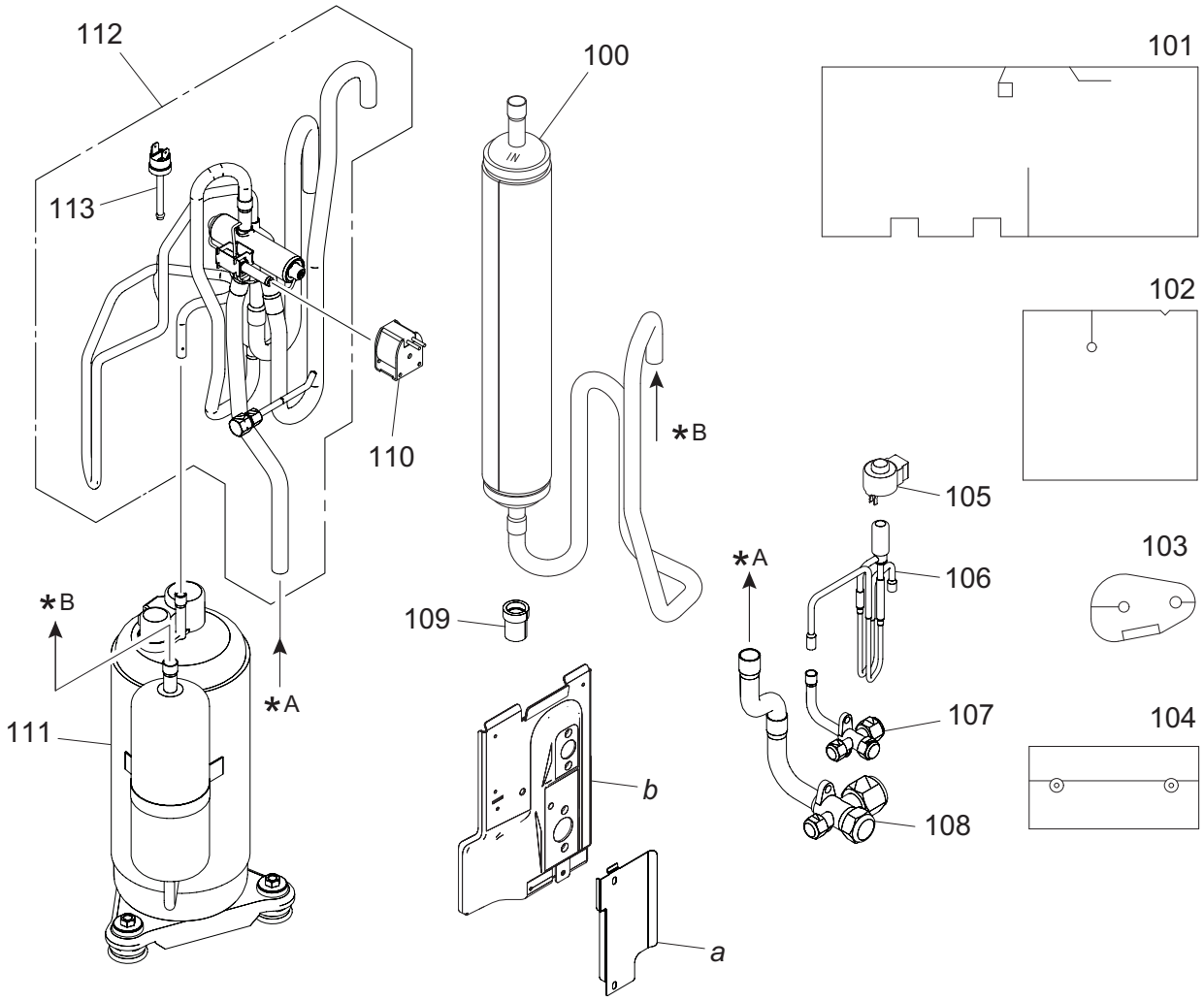


TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
50	9378530010	Heat sink	♦
51	9900223014	Choke coil	♦
52	9707592016	ACTPM	♦
53	9708512181	Transistor PCB	♦
54	9901114014	Thermistor (Heat exchanger)	♦
55	9900988036	Thermistor (Outdoor temp.)	♦
56	9900827021	Thermistor (Compressor temp.)	♦
57	9901041020	Thermistor (Discharge temp.)	♦
58	9900203023	Terminal (5P)	♦
59	9709894040	Filter PCB	♦
60	9711685001	Main PCB (24 model)	♦
	9711685018	Main PCB (30 model)	♦
61	9708513072	Capacitor PCB	♦
62	9704265012	Thermistor	♦
—	9707837032	Wire assy	♦
—	9367595112	Wire (Pressure switch) (Red)	♦
—	9708548012	Wire with connector (White) (CN40 on Main PCB—CN301 on Transistor PCB)	♦
—	9708550015	Wire with connector (White) (CN42 on Main PCB—CN303 on Transistor PCB)	♦
—	9708549019	Wire with connector (Red) (CN400 on Main PCB—ACTPM)	♦
a	—	Heat sink cover	—
b	—	Case (Inverter and Heat sink)	—
c	—	RFM A	—
d	—	Case (PCB)	—
e	—	Case (Condenser)	—

TECHNICAL DATA AND PARTS LIST

■ Compressor



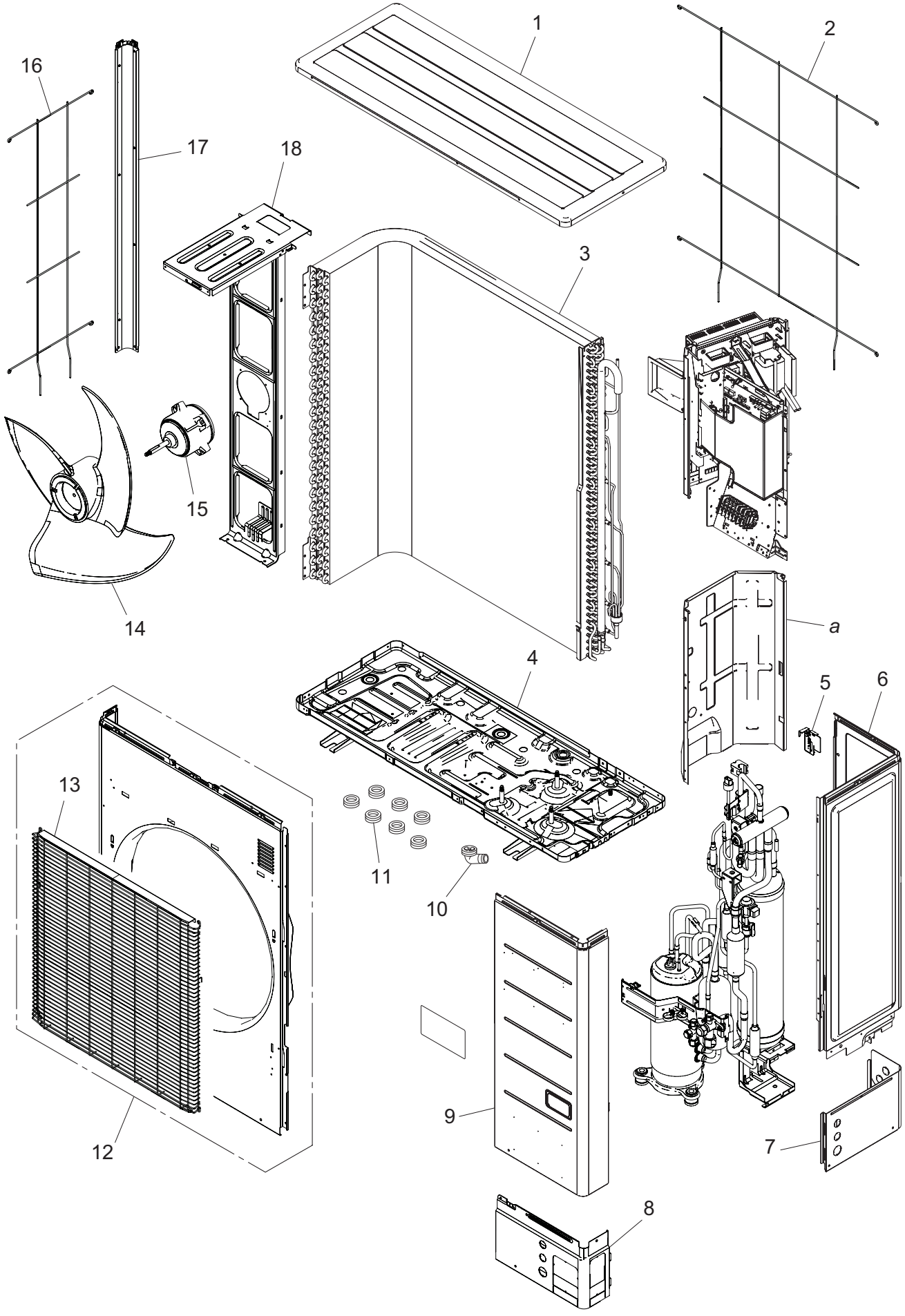
TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
100	9374426133	Accumulator sub assy	♦
101	9378851177	Compressor cover A	♦
102	9378851184	Compressor cover D	♦
103	9378851283	Compressor cover B	♦
104	9378851023	Compressor cover C	♦
105	9970095030	Expansion valve coil	♦
106	9370947144	Expansion valve assy	♦
107	9377958013	3-way valve assy	♦
108	9374470044	3-way valve sub assy	♦
109	9354022010	Accumulator holder rubber	♦
110	9970055034	Solenoid	♦
111	9810135001	Compressor	♦
112	9374425198	4-way valve assy	♦
113	9900186012	Pressure switch	♦
a	—	Cover plate	—
b	—	Valve plate	—

TECHNICAL DATA AND PARTS LIST

3-2. Models: AOUG36LMAS1 and AOUG48LMAS1

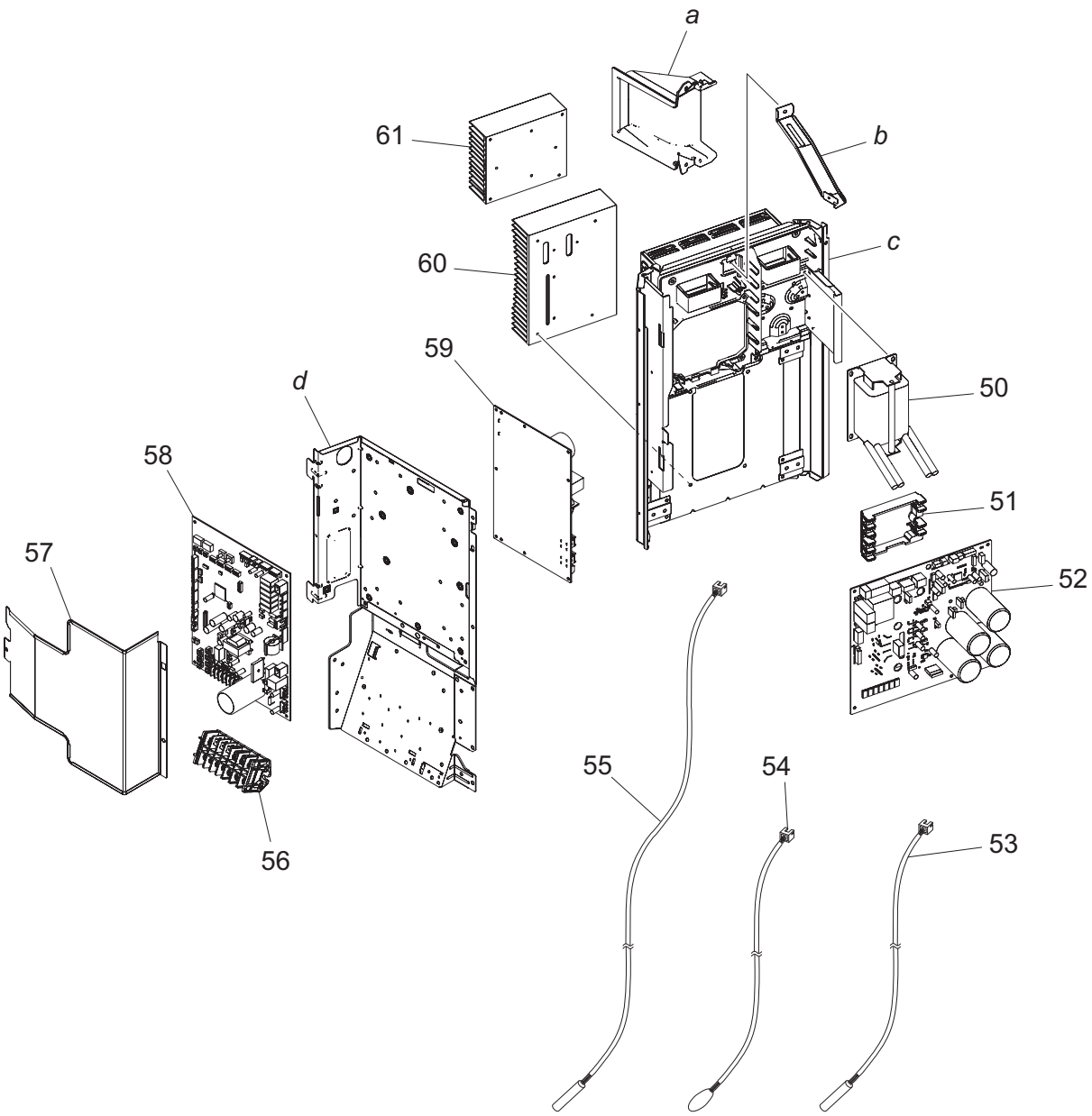
■ Exterior parts and chassis



Item no.	Part no.	Part name	Service part
1	9379416108	Top panel sub assy	♦
2	9378926059	Protective net (Rear)	♦
3	9374420766	Condenser sub assy	♦
4	9379425087	Base sub assy	♦
5	9332505009	Thermistor holder	♦
6	9380570042	Cabinet sub assy (Right)	♦
7	9384171009	Pipe cover (Rear)	♦
8	9384170002	Pipe cover (Front)	♦
9	9380571049	Service panel sub assy	♦
10	9303029015	Drain assy	♦
11	313166024302	Drain cap	♦
12	9380569091	Front panel sub assy	♦
13	9382179007	Fan guard	♦
14	9379414005	Propeller fan	♦
15	9603496029	DC fan motor	♦
16	9378928022	Protective net (Left)	♦
17	9380968009	Cabinet (Left)	♦
18	9380566021	Motor bracket sub assy	♦
a	—	Separation wall	—

TECHNICAL DATA AND PARTS LIST

■ Inverter

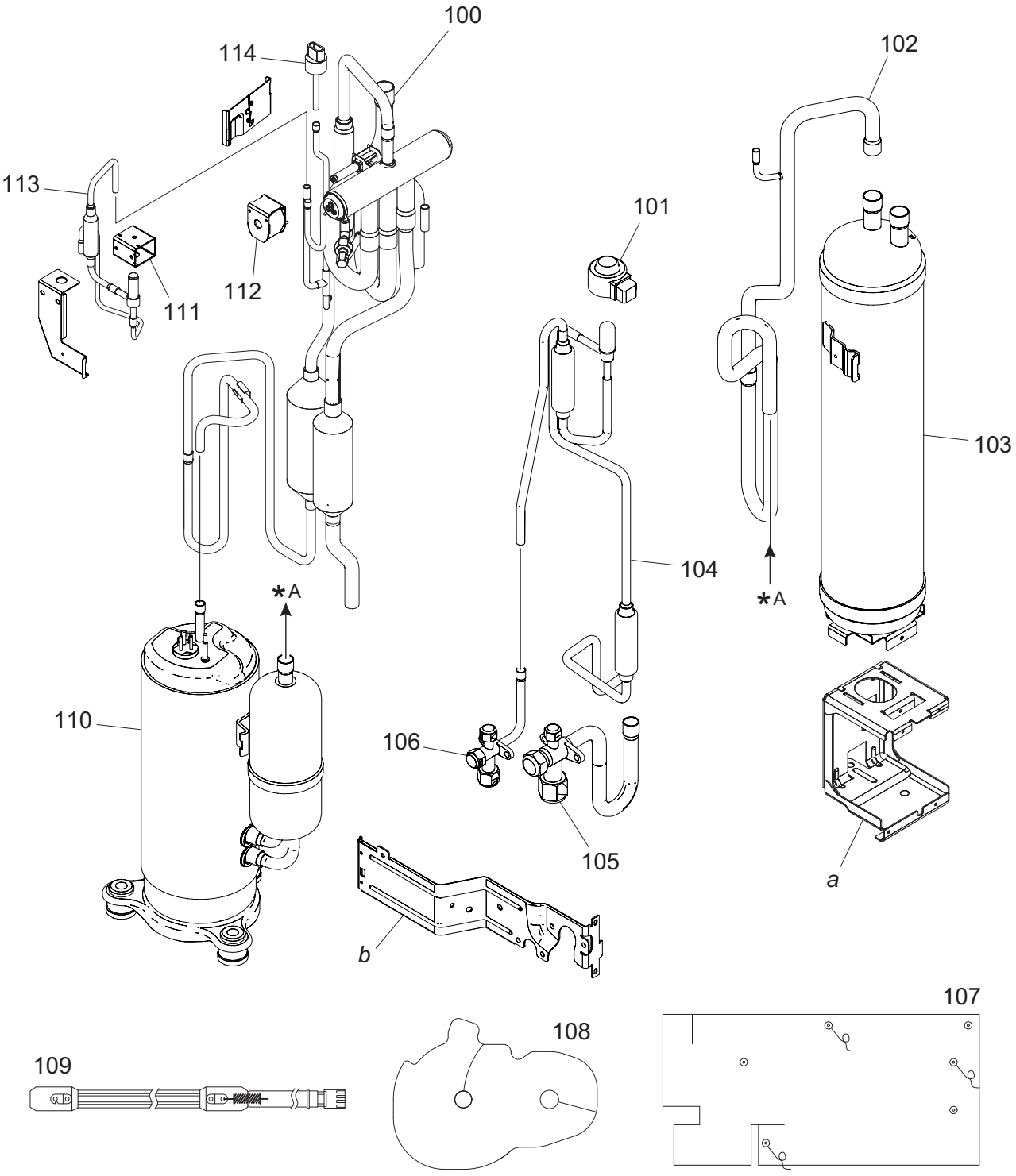


TECHNICAL DATA AND PARTS LIST

Item no.	Part no.	Part name	Service part
50	9900592011	Choke coil	♦
51	9708590004	ACTPM	♦
52	9708497242	Inverter PCB	♦
53	9900922016	Thermistor assy	♦
54	9900565046	Thermistor (Outdoor temp.)	♦
55	9900923013	Thermistor (Heat exchanger)	♦
56	9900428167	Terminal	♦
57	9380495000	Control box cover	♦
58	9710455162	Main PCB (36 model)	♦
	9710455148	Main PCB (48 model)	♦
59	9709911181	Filter PCB	♦
60	9380483007	Heat sink A	♦
61	9380980001	Heat sink B	♦
—	9710456008	Wire with connector (Black) (CN251 on Main PCB—CN380 on Inverter PCB)	♦
—	9708609010	Wire with connector (White) (CN271 on Main PCB—CN390 on Inverter PCB)	♦
—	9708610016	Wire with connector (White) (CN281 on Main PCB—CN320 on Inverter PCB)	♦
—	9708612010	Wire with connector (Black) (CN395 on Inverter PCB—CN11 on ACTPM)	♦
—	9708613017	Wire with connector (Blue) (CN370 on Inverter PCB—CN501 on Filter PCB)	♦
a	—	Duct D	—
b	—	Control box bracket B	—
c	—	Control box (Inverter)	—
d	—	Control box (Main) assy	—

TECHNICAL DATA AND PARTS LIST

■ Compressor



TECHNICAL DATA AND PARTS LIST

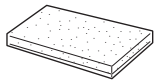
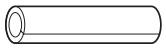
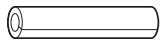
Item no.	Part no.	Part name	Service part
100	9382460006	4-way valve total assy	♦
101	9970173004	Expansion valve coil	♦
102	9372514191	Suction pipe assy	♦
103	9372700075	Accumulator sub assy	♦
104	9378750333	Expansion valve total assy	♦
105	9315414045	3-way valve assy	♦
106	9381055005	3-way valve assy	♦
107	9379647090	Compressor cover	♦
108	9380516071	Compressor cover (Top)	♦
109	9901076039	Belt heater	♦
110	9810275004	Compressor	♦
111	9970165016	Solenoid	♦
112	9970110146	Solenoid	♦
113	9380016038	Solenoid valve assy	♦
114	9970158018	Sensor	♦
a	—	Installation plate (Accumulator)	—
b	—	Valve plate	—

TECHNICAL DATA AND PARTS LIST

4. Accessories

4-1. Indoor unit

■ Models: AMUG24LMAS, AMUG30LMAS, AMUG36LMAS, and AMUG48LMAS

Part name	Exterior	Q'ty	Part name	Exterior	Q'ty
Operating manual		1	Cable tie (large)		4
Installation manual (indoor unit)		1	Cable tie (medium)		1
Rail		2	Cable tie (small)		1
Duct flanges		2	Drain hose insulation		1
Drain cap		2	Coupler heat insulation (large)		1
Screw		16	Coupler heat insulation (small)		1

4-2. Outdoor unit

■ Models: AOU24RGLX and AOU30RGLX

Part name	Exterior	Qty	Part name	Exterior	Qty
Installation manual		1	Drain cap		5
Drain pipe		1			

■ Models: AOUG36LMAS1 and AOUG48LMAS1

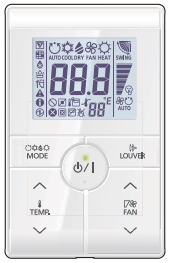
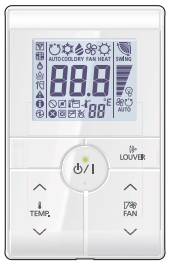
Part name	Exterior	Q'ty	Part name	Exterior	Q'ty
Installation manual		1	Drain cap		7
Drain pipe		1			

TECHNICAL DATA AND PARTS LIST

5. Optional parts

5-1. Indoor unit

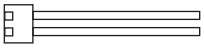
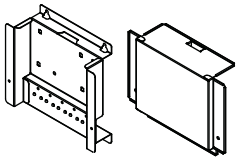
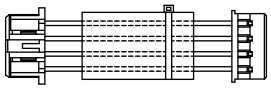
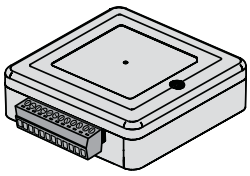
■ Controllers

Exterior	Part name	Model name	Summary
	Wired Remote Controller	UTY-RNRUZ*	Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room. Wire type: Non-polar 2-wire
	Simple Remote Controller	UTY-RSRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode. Wire type: Non-polar 2-wire
	Simple Remote Controller	UTY-RHRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, and temperature setting. Wire type: Non-polar 2-wire
	IR Receiver Kit with Wireless Remote Controller	UTY-LBTUM	Unit control is performed by Wireless Remote Controller Connecting point: CN48 on Main PCB

NOTE: Available functions may differ by the remote controller. For details, refer to the operation manual.

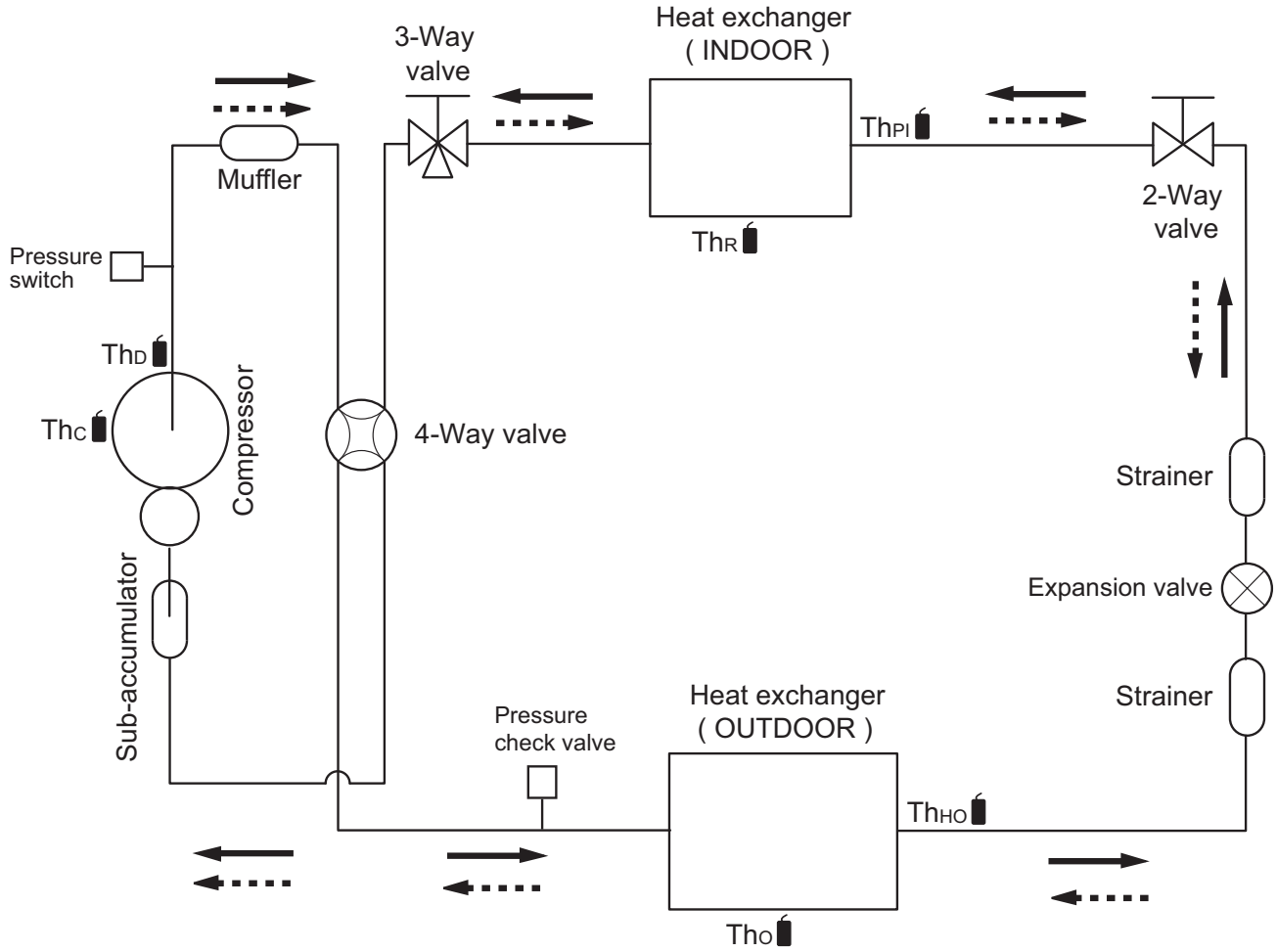
TECHNICAL DATA AND PARTS LIST

■ Others

Exterior	Part name	Model name	Summary
	Remote Sensor Unit	UTY-XSZX	Thermo-sensor for sensing the temperature of arbitrary place in the room.
	External Connect Kit	UTY-XWZXZG	Use to connect with various peripheral devices and air conditioner PCB. For control output port. Connecting point: CN47 on Main PCB
	External Input and Output PCB	UTY-XCSX	Use to connect with external devices and air conditioner PCB. Connecting point: CN65 on Main PCB
	External Input and Output PCB Box	UTZ-GXRA	For installing the External input and output PCB.
	Wire Kit	UTY-XWZXZJ	Use to connect with external input and output PCB and Indoor unit PCB.
	WLAN Adapter	UTY-TFSXZ2	Remotely manage an air conditioning system using mobile devices such as smartphones and tablets. For connection indoor unit with UART interface. Appropriate application for each region is required to use this option. For details, contact FGL sales company.
	Thermostat Converter	UTY-TTRX	This converter can control Fujitsu General products using a third-party thermostat controller.
	Network Converter	UTY-VTGX	This converter is required when connecting single split system to VRF network system.

6. Refrigerant system diagrams

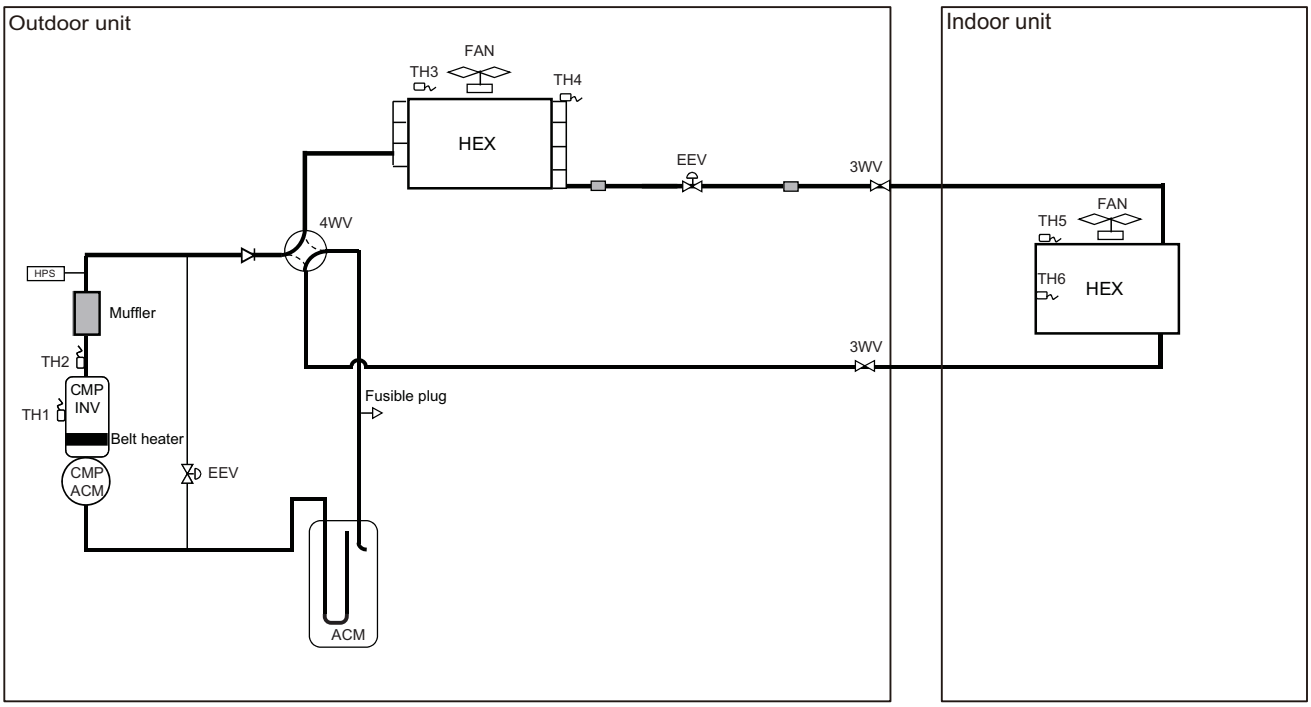
6-1. Models: AOU24RGLX and AOU30RGLX



: Cooling
: Heating

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

6-2. Models: AOUG36LMAS1 and AOUG48LMAS1

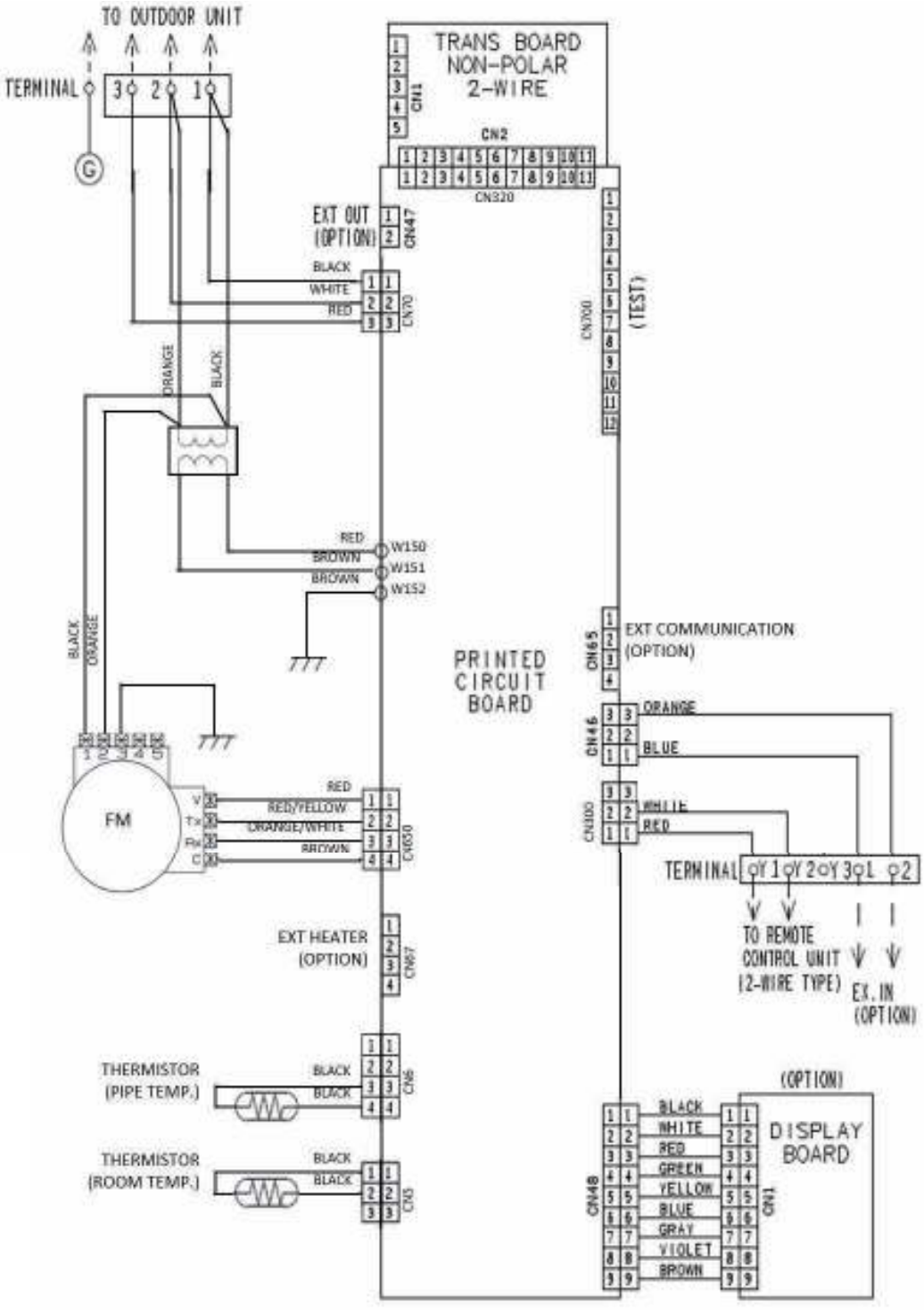


⋈ : Check valve	TH1 : Thermistor (Shell)
▭ : Strainer	TH2 : Thermistor (Discharge temperature thermistor)
CMP : Compressor (Inverter type)	TH3 : Thermistor (Outdoor temperature)
HEX : Heat exchanger	TH4 : Thermistor (Heat Exchanger Out temperature)
ACM : Accumulator	TH5 : Thermistor (Room temperature)
HPS : High pressure sensor	TH6 : Thermistor (Heat Exchanger Med temperature)
4WV : 4-way valve	
3WV : 3-way valve	
EEV : Electric expansion valve	

7. Wiring diagrams

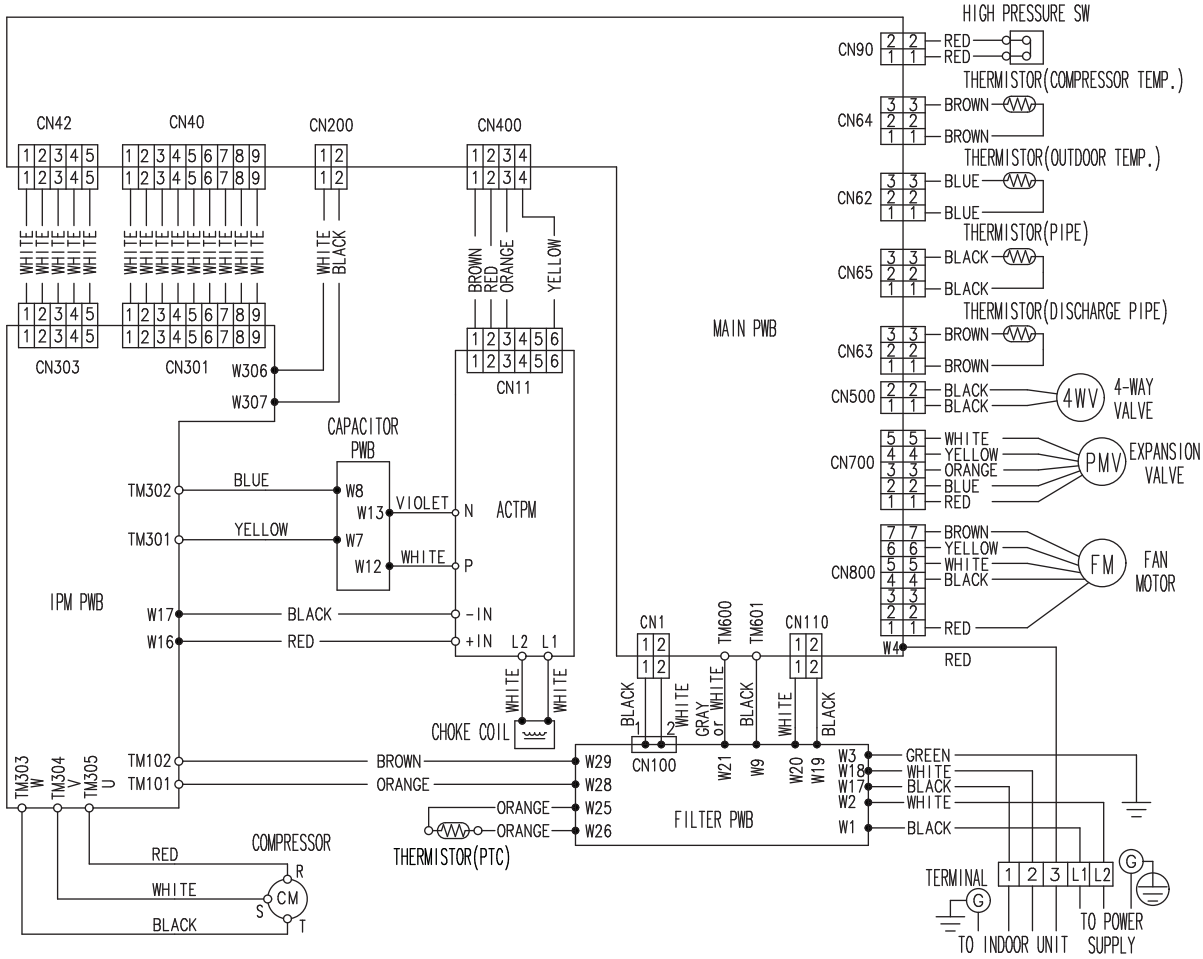
7-1. Indoor unit

■ Models: AMUG24LMAS, AMUG30LMAS, AMUG36LMAS, and AMUG48LMAS

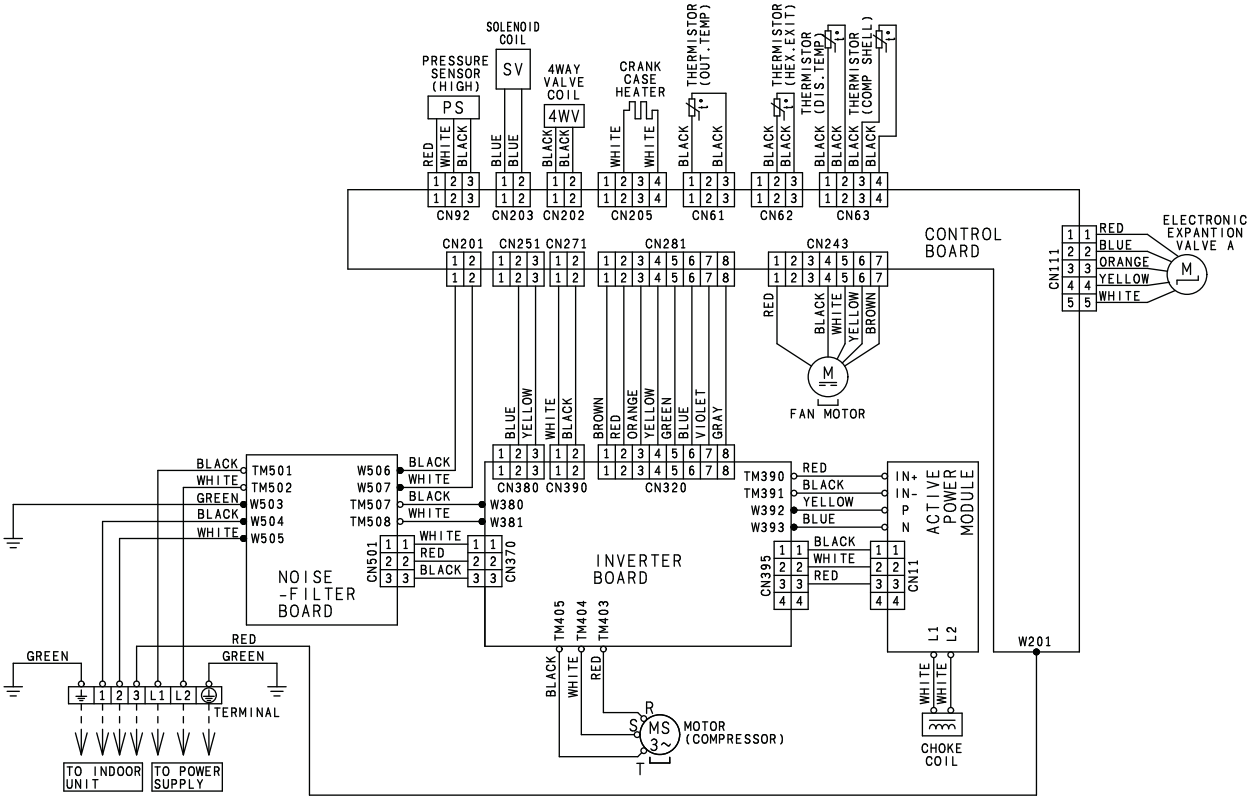


7-2. Outdoor unit

■ Models: AOU24RGLX and AOU30RGLX

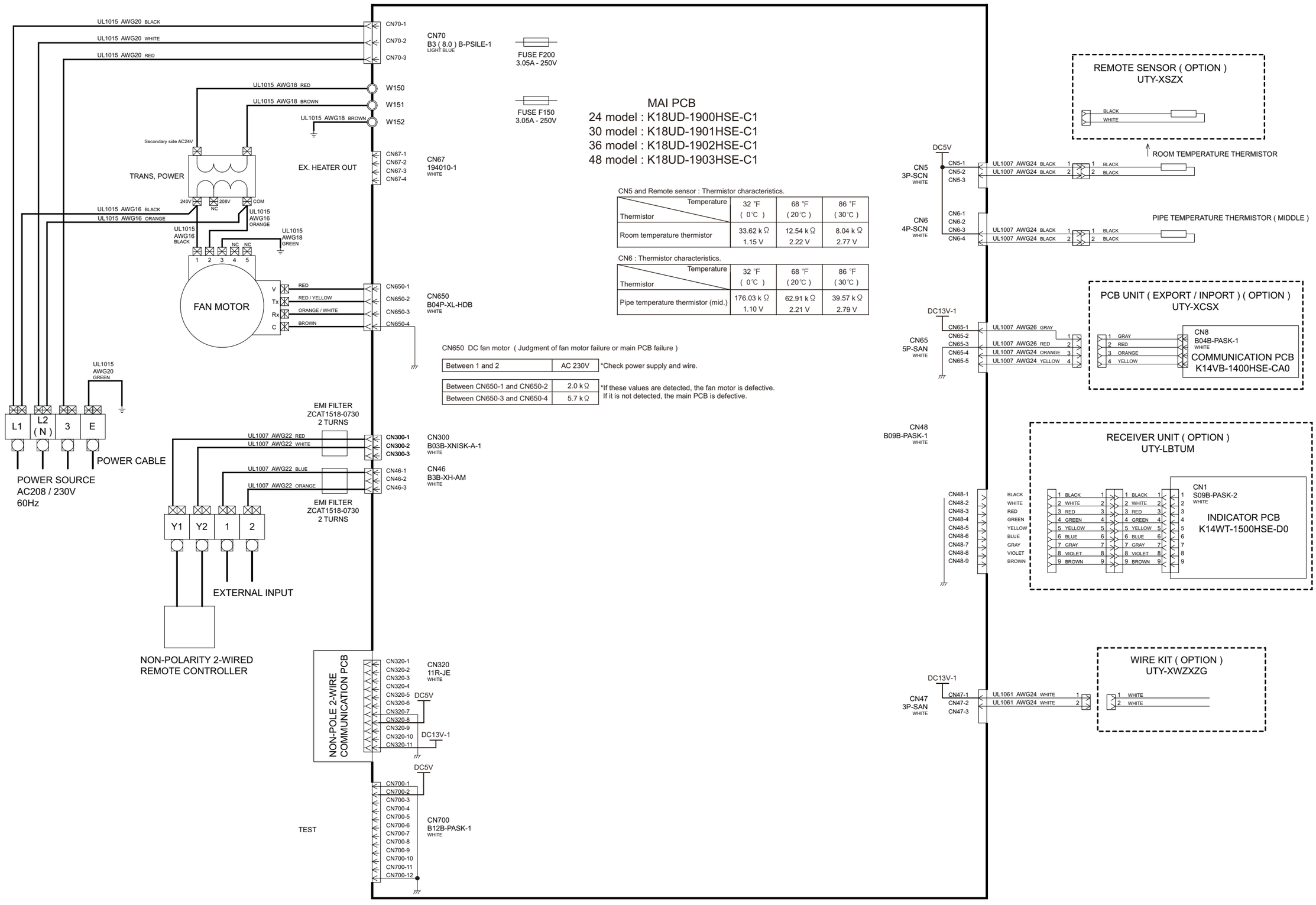


■ Models: AOUG36LMAS1 and AOUG48LMAS1



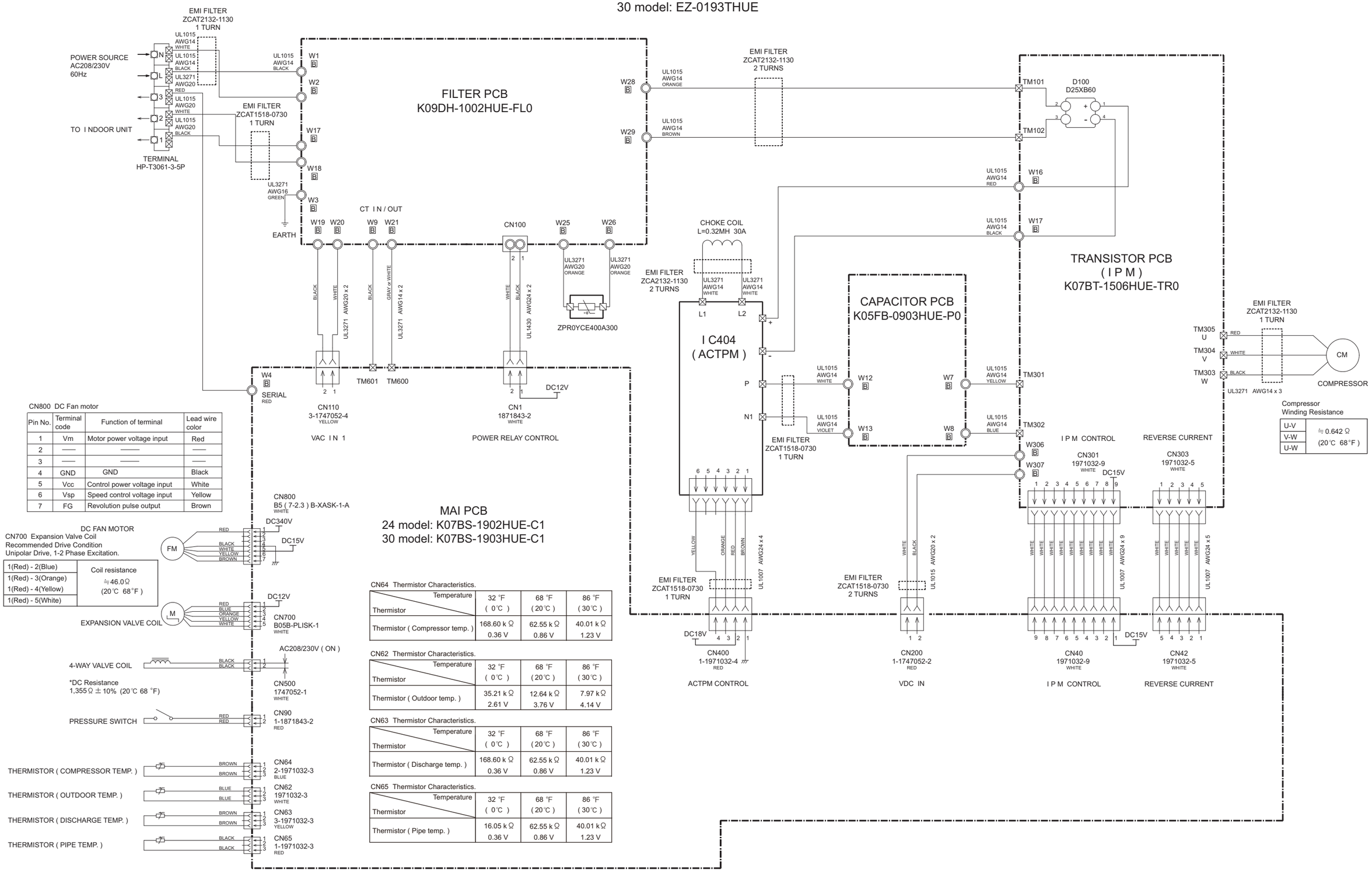
8. PC board diagrams

8-1. Models: AMUG24LMAS, AMUG30LMAS, AMUG36LMAS, and AMUG48LMAS



8-2. Models: AOU24RGLX and AOU30RGLX

INVERTER ASSEMBLY
24 model: EZ-0193SHUE
30 model: EZ-0193THUE



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

1(Red) - 2(Blue)	Coil resistance ≒46.0Ω (20℃ 68°F)
1(Red) - 3(Orange)	
1(Red) - 4(Yellow)	
1(Red) - 5(White)	

U-V	≒0.642 Ω (20℃ 68°F)
V-W	
U-W	

CN64 Thermistor Characteristics.

Thermistor \ Temperature	32 °F (0℃)	68 °F (20℃)	86 °F (30℃)
Thermistor (Compressor temp.)	168.60 k Ω 0.36 V	62.55 k Ω 0.86 V	40.01 k Ω 1.23 V

CN62 Thermistor Characteristics.

Thermistor \ Temperature	32 °F (0℃)	68 °F (20℃)	86 °F (30℃)
Thermistor (Outdoor temp.)	35.21 k Ω 2.61 V	12.64 k Ω 3.76 V	7.97 k Ω 4.14 V

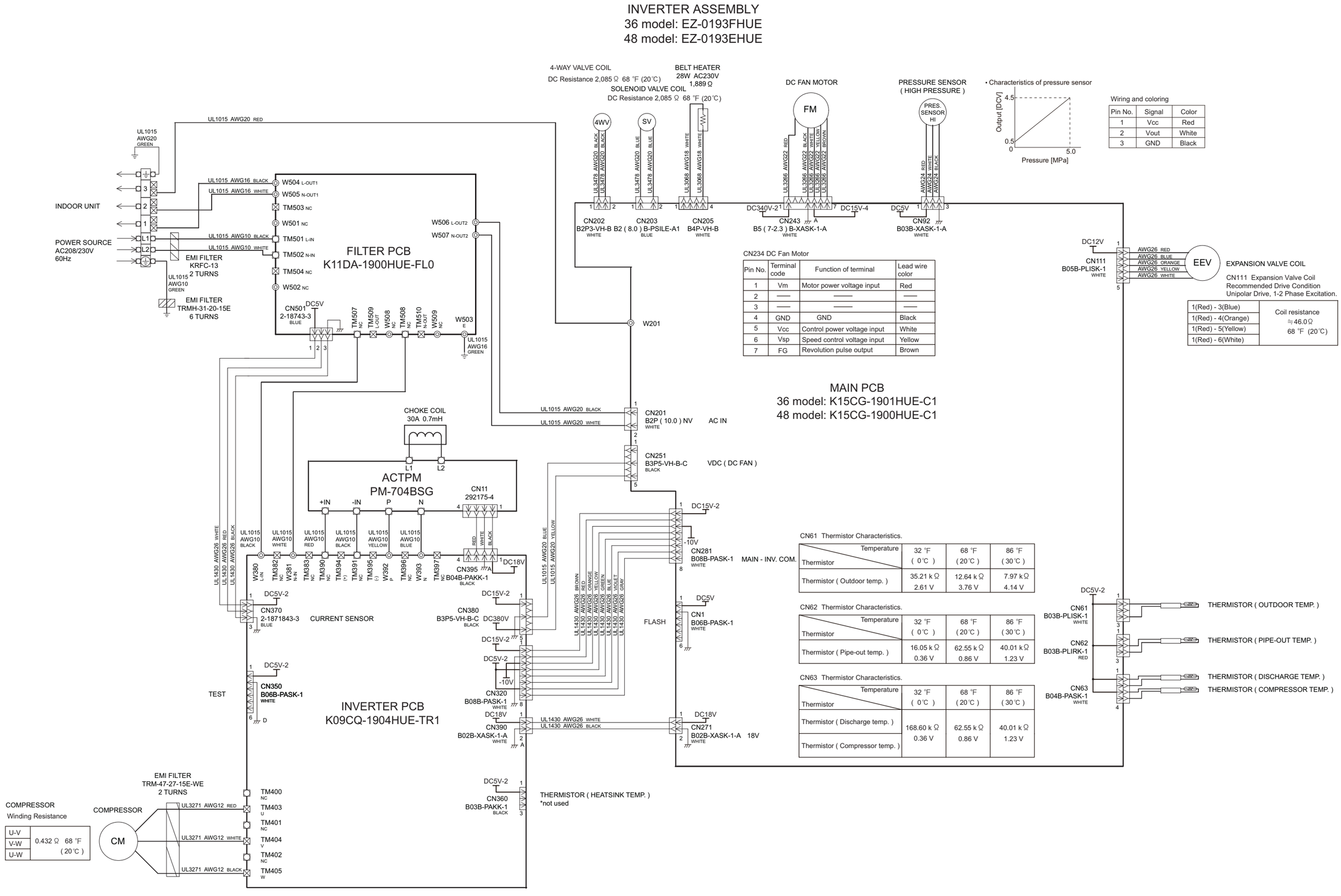
CN63 Thermistor Characteristics.

Thermistor \ Temperature	32 °F (0℃)	68 °F (20℃)	86 °F (30℃)
Thermistor (Discharge temp.)	168.60 k Ω 0.36 V	62.55 k Ω 0.86 V	40.01 k Ω 1.23 V

CN65 Thermistor Characteristics.

Thermistor \ Temperature	32 °F (0℃)	68 °F (20℃)	86 °F (30℃)
Thermistor (Pipe temp.)	16.05 k Ω 0.36 V	62.55 k Ω 0.86 V	40.01 k Ω 1.23 V

8-3. Models: AOUG36LMAS1 and AOUG48LMAS1



Refrigerant R410A
INVERTER

3. TROUBLESHOOTING

CONTENTS

3. TROUBLESHOOTING

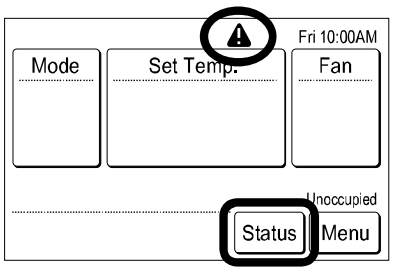
1. ERROR DISPLAY

1-1 INDOOR UNIT AND WIRED REMOTE CONTROL DISPLAY

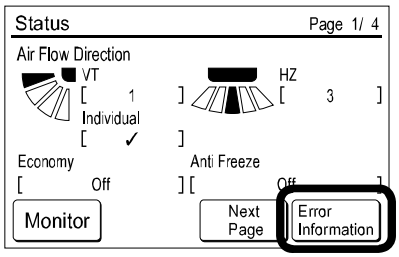
When you use a wired type remote control, error codes will appear on remote control display.
For more information, refer to an installation manual of a remote control.
When you use a wireless remote control, lamps on an IR receiver unit will output error codes by way of blinking patterns.
Refer to lamp blinking patterns and error codes next page.
Error display is displayed only during operation.

Error code display on a wired remote control (option)

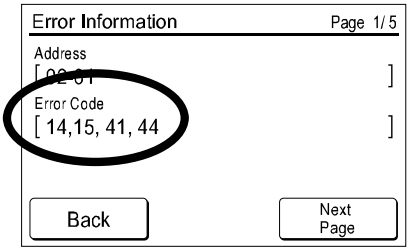
1. If error occurs, error icon appears on “Monitor mode screen”.
Touch [Status] and “Status” screen is displayed.



2. Touch [Error information] on “Status” screen.
“Error information” screen is displayed.
(If there are no errors, [Error information] will not be displayed.)



3. 2-digit numbers correspond to error code next page.
Touch [Next page] (or [Previous page] to switch to other connected indoor units.



Error display			Wired remote control error code	Description	Trouble shooting
Operation indicator lamp (green)	Timer indicator lamp (orange)	Economy indicator lamp (green)			
●(1)	●(1)	◇	11	Serial communication error	1,2
●(1)	●(2)	◇	12	Wired remote control communication error	3
●(1)	●(8)	◇	18	External communication error	4
●(2)	●(3)	◇	23	Combination error	5
●(2)	●(6)	◇	26	Address setting error in wired remote control system	6
●(2)	●(9)	◇	29	Connection unit number error (indoor unit wired remote control error)	7
●(3)	●(2)	◇	32	Indoor unit PCB model information error	8
●(3)	●(5)	◇	35	Manual auto switch error	9
●(3)	●(10)	◇	3A	Indoor unit communication circuit (wired remote control) error	10
●(4)	●(1)	◇	41	Room temperature sensor error	11
●(4)	●(2)	◇	42	Indoor unit heat-exchanger middle temperature sensor error	12
●(5)	●(1)	◇	51	Indoor unit fan motor error	13
●(6)	●(2)	◇	62	Outdoor unit PCB model information error	14
●(6)	●(3)	◇	63	Inverter error	15
●(6)	●(4)	◇	64	Active filter voltage error	16
●(6)	●(5)	◇	65	IPM error	17
●(7)	●(1)	◇	71	Discharge temperature sensor error	18
●(7)	●(2)	◇	72	Compressor temperature sensor error	19
●(7)	●(3)	◇	73	Outdoor unit heat-exchanger liquid temperature sensor error	20
●(7)	●(4)	◇	74	Outdoor temperature sensor error	21
●(8)	●(4)	◇	84	Current sensor 1 error (Stoppage permanently)	22
●(8)	●(6)	◇	86	High pressure switch error (24/30) Outdoor unit discharge pressure sensor error (36/48)	23
●(9)	●(4)	◇	94	Outdoor unit trip detection	24
●(9)	●(5)	◇	95	Compressor motor control error (Stoppage permanently)	25
●(9)	●(7)	◇	97	Outdoor unit fan motor 1 error	26
●(9)	●(9)	◇	99	4-way valve error	27
●(9)	●(10)	◇	9A	Coil (expansion valve) error	28
●(10)	●(1)	◇	A1	Discharge temperature error	29
●(10)	●(3)	◇	A3	Compressor temperature error	30

● : 0.5s on / 0.5S off ◇ : 0.1s on / 0.1S off

( ) : Number of flashing

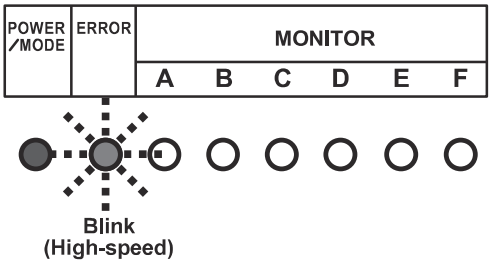
1-2 OUTDOOR UNIT DISPLAY (AOUG36,48LMAS1)

Error code

- If an error occurs, the LED will light up to display the error location and the error code.

In the event of an error

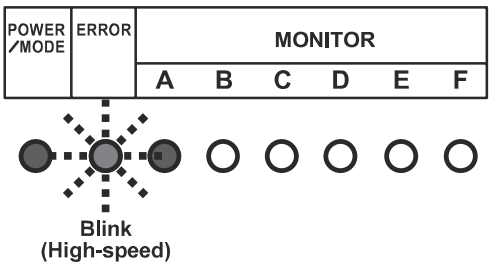
- The error LED flashes quickly.



Error location display

- LEDs A to F of MONITOR light up and display the error location. In the case of an overall error, LEDs A to F of MONITOR do not light up.

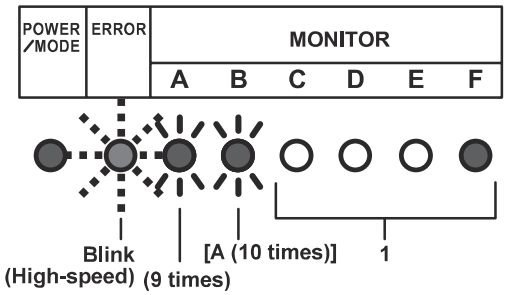
Example) Coil error in indoor unit A



Error code display

- While the error is occurring, briefly press SW1. The error code is displayed.

Example) Coil error (Error code = 9A.1)



Display mode

LED on:

LED off:

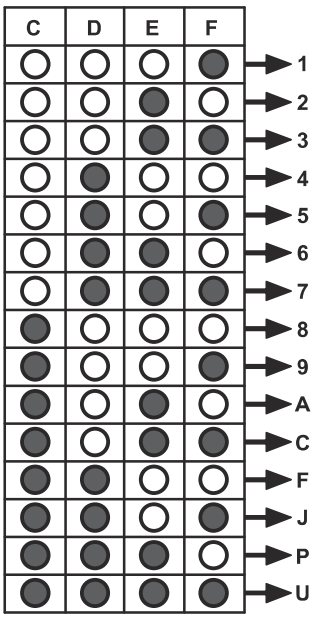
Blink:

(0.5s Light on / 0.5s Light off)

Number of blinking: ( )

For MONITOR (A and B)

A: 10 times
C: 11 times
F: 12 times
J: 13 times
P: 14 times
U: 15 times



○ : Light OFF ● : Light ON ●1 ~ ●15 : 1~ 15 Times Blinking

Error code	Error contents	Outdoor unit LED display part						Trouble shooting
		Monitor						
		A	B	C	D	E	F	
11.3	Serial communication error	●1	●1	○	○	●	●	2
11.4	Serial communication error during operation	●1	●1	○	●	○	○	2
5U.1	Indoor unit error	●5	●15	○	○	○	●	3,4,5,6,7,8,10,11, 12,13
62.1	Outdoor unit PCB model information error	●6	●2	○	○	○	●	14
62.3	EEPROM access error	●6	●2	○	○	●	●	
62.8	EEPROM data comuption error	●6	●2	●	○	○	○	
63.1	Inverter error	●6	●3	○	○	○	●	15
65.3	IPM error (Trip terminal L error)	●6	●5	○	○	●	●	17
71.1	Discharge temp. sensor error	●7	●1	○	○	○	●	18
72.1	Compressor temp. sensor error	●7	●2	○	○	○	●	19
73.2	Outdoor unit heat ex. middle temp. sensor error	●7	●3	○	○	●	○	20
73.3	Heat ex. liquid temp. sensor error	●7	●3	○	○	●	●	
74.1	Outdoor temp. sensor error	●7	●4	○	○	○	●	21
84.1	Current sensor 1 error (Stoppage permanently)	●8	●4	○	○	○	●	22
86.1	High pressure switch error (24/30) Outdoor unit discharge pressure sensor error(36/48)	●8	●6	○	○	○	●	23
94.1	Outdoor unit trip detection	●9	●4	○	○	○	●	24
95.1	Compressor motor control error (Stoppage permanently)	●9	●5	○	○	○	●	25
97.3	Outdoor unit fan motor 1 error	●9	●7	○	○	●	●	26
99.1	4-way valve error	●9	●9	○	○	○	●	27
9A.1	Coil 1 (Expansion valve 1) error	●9	●10	○	○	○	●	28
A1.1	Discharge temperature error	●10	●1	○	○	○	●	29
A3.1	Compressor temperature error	●10	●3	○	○	○	●	30

2. TROUBLESHOOTING WITH ERROR CODE

Troubleshooting 1

Serial communication error
(Serial reverse transfer error)

Indicate or Display:

Indoor unit
Operation lamp: 1 time Flash,
Timer lamp : 1 time Flash

Wired remote control
Error code : [E : 11]

Outdoor unit (AOUG36/48LMAS1)
No indication

Detective actuators:

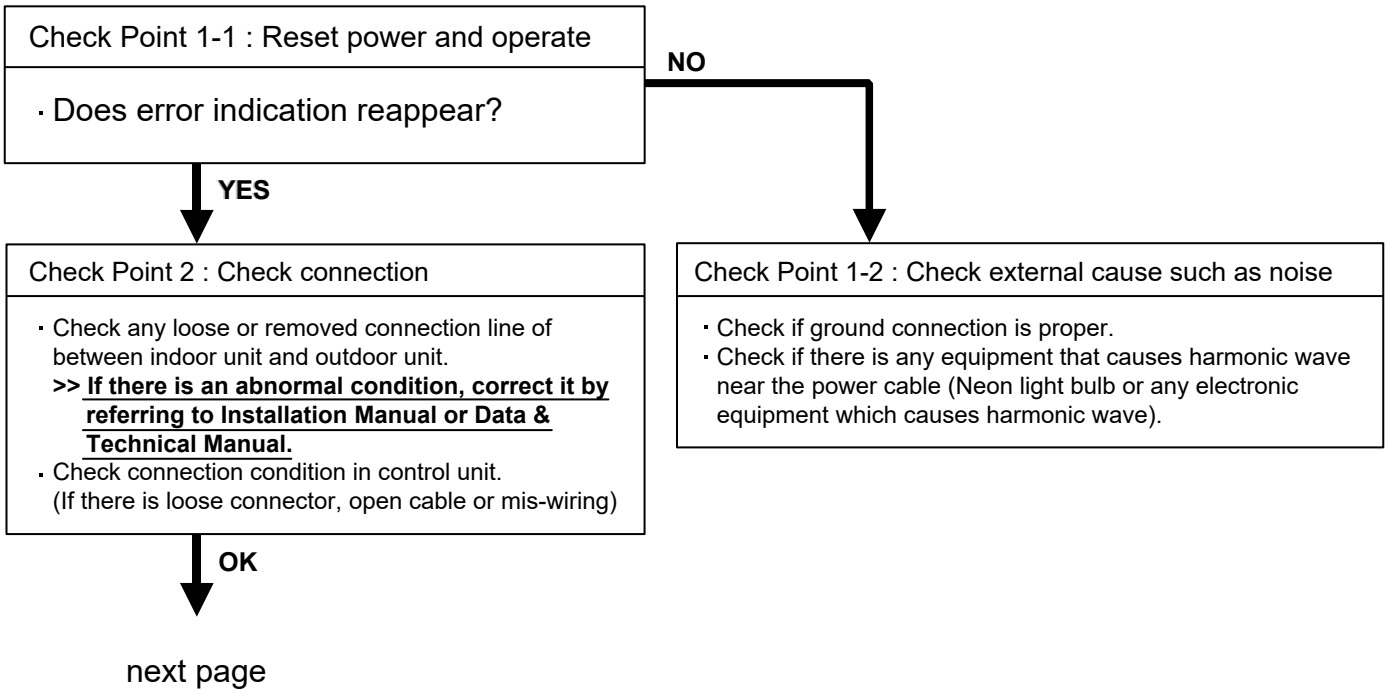
Outdoor unit main PCB
Outdoor unit fan motor

Detective details:

When indoor unit cannot receive serial signal from Outdoor unit more than 2minutes after power ON, or the indoor unit cannot receive serial signal more than 15 seconds during normal operation.

Forecast of cause:

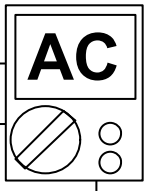
1. Connection failure
2. External cause
3. Main PCB failure
4. Active filter module failure
5. Transistor PCB (IPM) failure
6. Filter PCB failure
7. Outdoor unit fan motor failure



next page

previous page

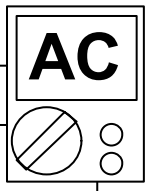
OK



Check Point 3 : Check voltage of power supply

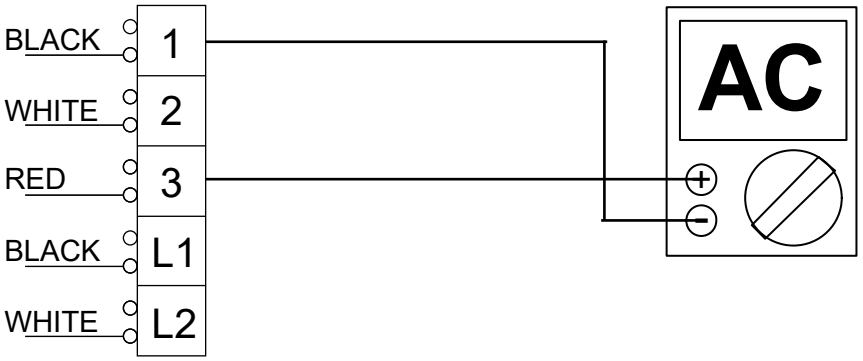
- Check the voltage of power supply
  >> Check if AC187V (AC208V-10%) - 253V (AC230V+10%) appears at outdoor unit terminal L1 - L2.

OK



Check Point 4 : Check serial signal (Reverse transfer signal)

- Check serial signal (Reverse transfer signal)
  >> Check if indicated value swings between AC90V and AC270V at outdoor unit terminal 1 - 3.
  >> If it is abnormal, Check the parts as follows.
  - Outdoor unit fan motor (Parts information 4)
  - Active filter module (Parts information 5)
  - Transistor PCB (IPM) (Parts information 6)
  - Filter PCB (Check the wire of CN110 : AOU24/30RGLX
  CN201 : AOUG36/48LMAS1)
  >> If Outdoor fan motor is abnormal, replace outdoor unit fan motor and main PCB.
  >> If Active filter module or IPM is abnormal, replace it.
  >> If the parts are normal, replace main PCB.



Troubleshooting 2

Serial communication error
(Serial forward transfer error)

Detective details:

When outdoor unit cannot properly receive serial signal from indoor unit for 10 seconds or more.

Forecast of cause:

1. Connection failure
2. External cause
3. Controller PCB failure

Indicate or Display:

Indoor unit
Operation lamp: 1 time Flash,
Timer lamp : 1 time Flash

Wired remote control
Error code : [E : 11]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆1	◆1	○	○	●	●

Mode	Error	A	B	C	D	E	F
◆2	●	◆1	◆1	○	●	○	○

○: Light OFF ●: Light ON ◆n: n times blinking

Check Point 1-1 : Reset the power and operate

・Does error indication reappear?

NO

YES

Check Point 2 : Check connection

・Check any loose or removed connection line of between indoor unit and outdoor unit.
>> <u>If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.</u>
・Check connection condition in control unit.
(If there is loose connector, open cable or mis-wiring)

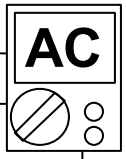
Check Point 1-2 : Check external cause such as noise

・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).

OK

Check Point 3 : Check the voltage of power supply

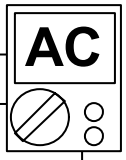
・Check the voltage of power supply
>> <u>Check if AC187V (AC208V-10%) - 253V (AC230V+10%) appears at outdoor unit terminal L1 - L2.</u>

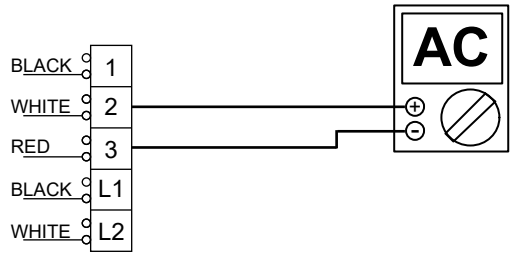


OK

Check Point 4 : Check serial signal (Forward transfer signal)

・Check serial signal (Forward transfer signal)
>> <u>Check if indicated value swings between AC30V and AC130V at outdoor unit terminal 2 - 3.</u>
>> <u>If it is abnormal, replace Controller PCB.</u>





Troubleshooting 3

Wired remote control communication error

Indicate or Display:

Indoor unit
Operation lamp: 1 times Flash,
Timer lamp : 2 times Flash

Wired remote
Error code : [E : 12]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective details:

Upon receiving signal more than 1 time from wired remote or other Indoor unit, but the same signal has not been received more than 1 minute.

Forecast of cause:

1. Terminal connection abnormal
2. Wired remote control failure
3. Controller PCB failure

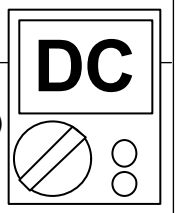
Check Point 1 : Check connection of terminal

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

- ☐ Indoor unit - Check the connection of terminal between remote control and Indoor unit, or between Indoor units, and check if there is a disconnection or short of the cable.

OK

Check Point 1-2 : Check wired remote control and controller PCB



- ☐ Check terminal voltage of controller PCB Connector CN300. (Power supply for remote controller)
  If DC12V, Remote control failure (Controller PCB is OK) >>> Replace Remote
  If DC0V, Controller PCB failure (Remote is OK) >>> Replace Controller PCB

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

Check Point 2 : Wire installation Wrong RC-group setting

- ☐ Wrong wire connection in RC-group (Please refer to the installation manual)
- ☐ The number of connecting indoor unit and Remote control in one RC-group were less than 16 units.

Check Point 2-1 : Check indoor unit controller PCB

- ☐ Check if controller PCB damage
- ☐ Change controller PCB and check the Error after setting remote control address

Troubleshooting 4

External communication error

Indicate or Display:

Indoor unit
Operation lamp: 1 times Flash,
Timer lamp : 8 times Flash

Wired remote control
Error code : [E : 18]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

External communication error

Detective details:

After receiving signal from external I/O PCB, the same signal has not been received for 15 seconds

Forecast of cause :

1. Connection failure
2. External I/O PCB failure
3. Controller PCB failure

Check Point 1 : Check connection

- Check any loose or removed connection of between the controller PCB to the external I/OPCB
  >>If there is an abnormal condition, correct it by refer to installation manual or the technical manual.
- Check the connection condtion on the external I/O PCB and the controller PCB
  (If there is loose connector, open cable or mis-wiring)

OK

Check Point 2: Replace external I/O PCB

▶ If Check Point 1 do not improve the symptom, change external I/O PCB.

OK

Check Point 3: Replace controller PCB

▶ If Check Point 2 do not improve the symptom, change Controller PCB.

Troubleshooting 5

Combination error

Indicate or Display:

Indoor unit
Operation lamp: 2 times Flash,
Timer lamp : 3 times Flash

Wired remote control
Error code : [E : 23]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective details:

1. Outdoor unit receives serial signal of applied refrigerant information from Indoor unit
When the refrigerant is R410A.
2. When outdoor unit type is multi.

Forecast of cause:

1. Selection of indoor units is incorrect

Check Point 1 : Check the type of indoor unit

- Check the type of the connected indoor unit.
>> If abnormal condition is found, correct it.

OK

Check Point 2 : Replace main PCB

▶ If Check Point 1 do not improve the symptom, replace main PCB of Outdoor unit.

Troubleshooting 6

Address setting error in wired remote control system

Indicate or Display:

Indoor unit
Operation lamp: 2 times Flash,
Timer lamp : 6 times Flash

Wired remote control
Error code : [E : 26]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

Wired remote control (2-Wire)
Indoor unit Controller PCB circuit

Detective details:

Wrong wire connection.

Forecast of cause :

1. Wrong wiring of remote controller
2. Indoor unit controller PCB failure
3. Remote control failure

Check Point 1 : Wire installation

- ☐ Wrong wire connection in RC-group (Please refer to the installation manual)

↓

Check Point 2 : Wrong RC-group setting

- ☐ The given address number by auto setting (00) and the manual set number (Except 00) were not existing in one RCG.
- ☐ The remote control address setting by U.I. were not existing same address.
- ☐ The duplicated address number is not existing in one RC-group

↓

Check Point 3 : Check indoor unit controller PCB

- ☐ Check if controller PCB damage
- ☐ Change controller PCB and check the error after setting remote control address

Troubleshooting 7

Connection unit number error
(Indoor unit in wired remote control system)

Indicate or Display:

Indoor unit
Operation lamp: 2 times Flash,
Timer lamp : 9 times Flash

Wired remote control
Error code : [E : 29]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

Wired remote control (2-Wire)
Indoor unit controller PCB circuit

Detective details:

When number of connecting indoor units are out of specified rule.

Forecast of cause :

1. Wrong wiring / number of indoor units, remote control in RC-group
2. Indoor unit controller PCB defective

Check Point 1 : Wire installation

- ☐ Wrong number of connecting indoor unit

Check Point 2 : Check Indoor unit controller PCB

- ☐ Check if controller PCB damage
- ☐ Check if controller PCB and check the error after setting remote control address

Troubleshooting 8

Indoor unit PCB model information error

Indicate or Display:

Indoor unit
Operation lamp: 3 times Flash,
Timer lamp : 2 times Flash

Wired remote control
Error code : [E : 32]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective details:

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:

1. External cause
2. Defective connection of electric components
3. Controller PCB failure

Check Point 1-1 : Reset power supply and operate

・Does error indication show again?

NO → **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).

YES → **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 controller PCB

▶ Change controller PCB.

Note : EEPROM

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

Troubleshooting 9

Manual auto switch error

Indicate or Display:

Indoor unit :
Operation lamp: 3 times Flash,
Timer lamp : 5 times Flash

Wired remote control
Error code : [E : 35]

Outdoor unit : No indication

Detective actuators:

Indoor unit controller PCB
Indicator PCB
Manual auto switch

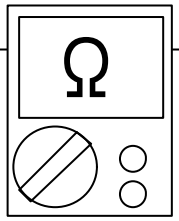
Detective details:

When the manual auto switch becomes ON for consecutive 60 or more seconds.

Forecast of cause :

1. Manual auto switch failure
2.Controller PCB and indicator PCB failure

Check Point 1 : Check the manual auto switch



- Check if manual auto switch is kept pressed.
- Check ON/OFF switching operation by using a meter.

<u>>>If manual auto switch is disabled (on/off switching), replace it.</u>

OK

Check Point 2 : Replace controller PCB

▶ **If Check Point 1 do not improve the symptom, change Controller PCB and Indicator PCB.**

Troubleshooting 10

Indoor unit communication circuit (WRC) error

Indicate or Display:

Indoor unit
Operation lamp: 3 timesFlash,
Timer lamp : 10times Flash

Wired remote control
Error code : [E : 3A]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

Wired remote control (2-wire)

Indoor unit controller PCB circuit

Detective details:

When the indoor unit(s) detects the configuration of RCG abnormal or the indoor unit detects lack of primary -remote control.

Forecast of cause:

1. Terminal connection abnormal
2. Wired remote control failure
3. Indoor unit controller PCB defective

Check Point 1 : Check the connection of terminal

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

- ☐ Indoor unit - Check the connection of terminal between remote control and indoor unit, or between indoor units and check if there is a disconnection or short of the cable

Check Point 2 , 3: Check Indoor unit controller PCB

- ☐ Check terminal voltage of controller PCB connector CN300 (Power supply for remote controller)
  If DC12V, Remote control failure (Controller PCB is OK) >>> Replace remote controller
  If DC0V, Controller PCB failure (Remote is OK) >>> Replace controller PCB

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

Troubleshooting 11

Room temperature sensor error

Detective actuators:

Indoor unit controller PCB circuit
Indoor temperature thermistor

Detective details:

Indoor unit thermistor is open or short is detected always.

Indicate or Display:

Indoor unit
Operation lamp: 4 times Flash,
Timer lamp : 1 time Flash

Wired remote control
Error code : [E : 41]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Forecast of cause:

1. Connector failure connection
2. Thermistor failure
3. Controller 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.

OK

Check Point 2 : Remove connector and check thermistor resistance value

Thermistor characteristics (Rough value)

Temperature	14°F (-10°C)	23°F (-5°C)	32°F (0°C)	41°F (5°C)	50°F (10°C)	59°F (15°C)
Resistance value	58.2 kΩ	44.0 kΩ	33.6 kΩ	25.9 kΩ	20.2 k	15.8 kΩ

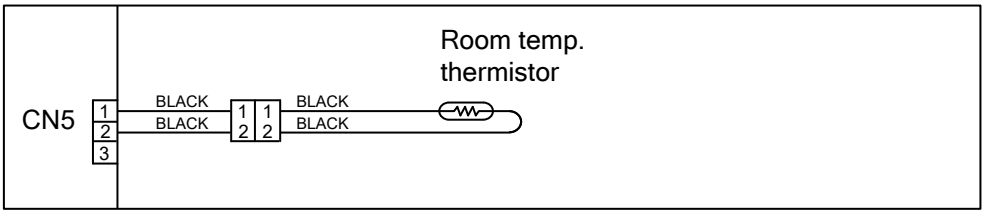
Temperature	68°F (20°C)	77°F (25°C)	86°F (30°C)	95°F (35°C)	104°F (40°C)	113°F (45°C)
Resistance value	12.5 kΩ	10.0 kΩ	8.0 kΩ	6.5 kΩ	5.3 kΩ	4.35 kΩ

▶ If Thermistor is either open or shorted, replace it and reset the power.

OK

Check Point 3 : Check voltage of controller PCB (DC5.0V)

Make sure circuit diagram of indoor unit and check terminal voltage at thermistor (DC5.0V)



▶ If the voltage does not appear, replace controller PCB.

Troubleshooting 12

Indoor unit heat-exchanger middle temperature sensor error

Detective actuators:

Indoor unit controller PCB
Heat-exchanger (MID) thermistor

Detective details:

Indoor unit thermistor is open or short is detected always.

Forecast of cause:

1. Connector failure connection
2. Thermistor failure
3. Controller PCB failure

Indicate or Display:

Indoor unit
Operation lamp: 4 times Flash,
Timer lamp : 2 times Flash

Wired remote control
Error code : [E : 42]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

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.

OK

Check Point 2 : Remove connector and check thermistor resistance value

Thermistor characteristics (Rough value)

Temperature	-22°F (-30°C)	-4°F (-20°C)	14°F (-10°C)	23°F (-5°C)	32°F (0°C)	41°F (5°C)
Resistance value	1131.9 kΩ	579.6 kΩ	312.3 kΩ	233.2 kΩ	176.0 kΩ	134.2 kΩ

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)	86°F (30°C)	95°F (35°C)
Resistance value	103.3 kΩ	80.3 kΩ	62.9 kΩ	49.7 kΩ	39.6 kΩ	31.7 kΩ

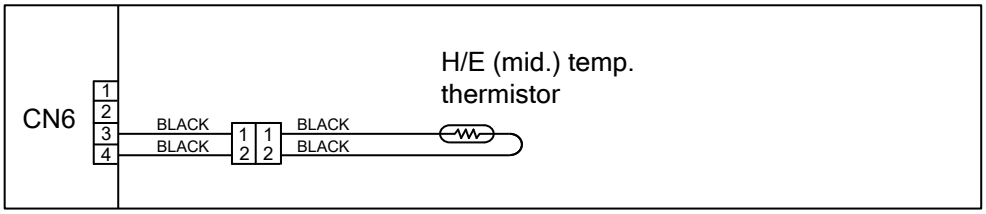
Temperature	104°F (40°C)	113°F (45°C)	122°F (50°C)	131°F (55°C)	140°F (60°C)	145.4°F (63°C)
Resistance value	25.6 kΩ	20.8 kΩ	17.1 kΩ	14.1 kΩ	11.6 kΩ	10.4 kΩ

- If thermistor is either open or shorted, replace it and reset the power.

OK

Check Point 3 : Check voltage of controller PCB (DC5.0V)

Make sure circuit diagram of indoor unit and check terminal voltage at thermistor (DC5.0V)



- If the voltage does not appear, replace controller PCB.

Troubleshooting 13

Indoor unit fan motor error

Detective actuators:

Indoor unit controller PCB
Indoor unit fan motor

Detective details:

When condition that actual frequency of Indoor fan is below 1/3 of target frequency is continued more than 56 seconds.

Forecast of cause:

1. Fan rotation failure
2. Fan motor winding open
3. Motor protection by surrounding temperature rise
4. Power supply PCB failure
5. Indoor unit fan motor failure
6. Wrong fan motor connected

Indicate or Display:

Indoor unit
Operation lamp: 5 times Flash,
Timer lamp : 1 time Flash

Wired remote
Error code : [E : 51]

Outdoor unit (AOG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Check Point 1 : Check rotation of Fan

・Try rotating the fan by hand when the operation is off to see if the shaft is caught or locked.
>>If Fan or Bearing is abnormal, replace it.

OK

Check Point 2 : Check for missing connectors and broken wires

・Reinsert the connector. Or check the wiring continuity between the transformer and fan motor and between the CN650 and controller PCB.
>>Replace the wire with connector or the wire.

OK

Check Point 3* : Check the resistance value between pins of CN650
*Check with the fan motor disconnected from the controller PCB and with the power off.

・Is the resistance value between pin3 and 4 of CN650 of 5.7kΩ±5% and a resistance value between pin1 and 2 of 2.0kΩ±5% ?
>>If it is not the specified resistance value, replace the controller PCB.

OK

Check Point 4 : 24V AC transformer check

▶ Turn on the power and measure the voltage with a tester.
24V AC is OK.
>>If it is not 24V, replace the transformer.

OK

Replace fan motor

Troubleshooting 14-1

Outdoor unit PCB
model information error

Detective actuators:

Outdoor unit main PCB

Detective details:

Access to EEPROM failed due to some cause after outdoor unit started.

Forecast of cause:

1. External cause
   (Noise, temporary open, voltage drop)
2. Main PCB failure

Indicate or Display:

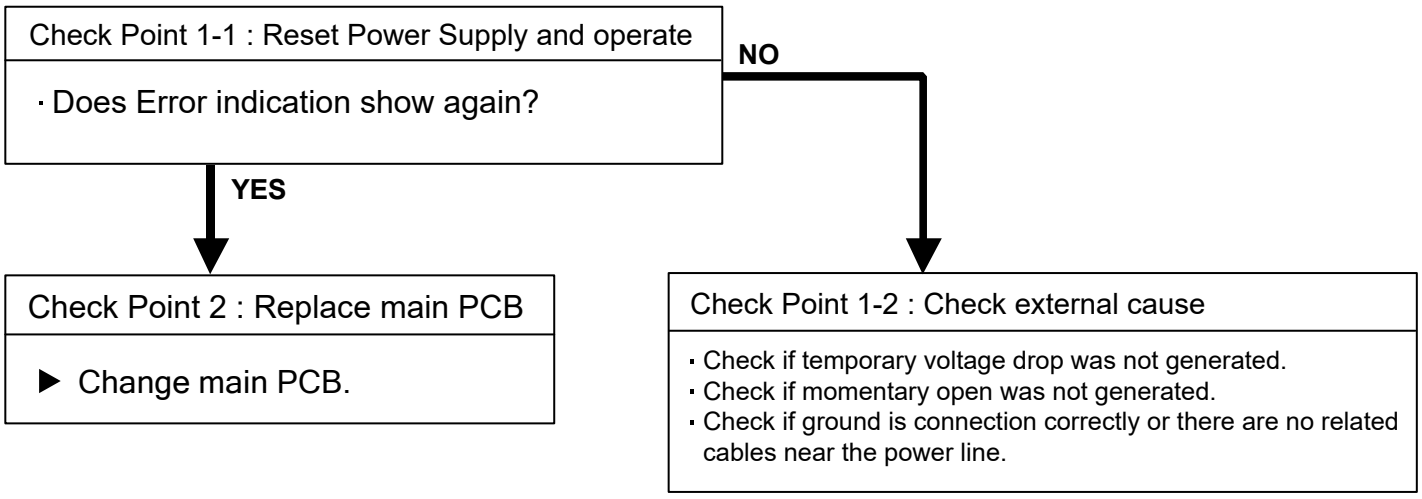
Indoor unit
Operation lamp: 6 times Flash,
Timer lamp : 2 times Flash

Wired remote
Error code : [E : 62]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆6	◆2	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking



Troubleshooting 14-2

EEPROM access error

Indicate or Display:

Indoor unit
Operation lamp: - times Flash,
Timer lamp : - times Flash

Wired remote
Error code : [E : --]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆6	◆2	○	○	●	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

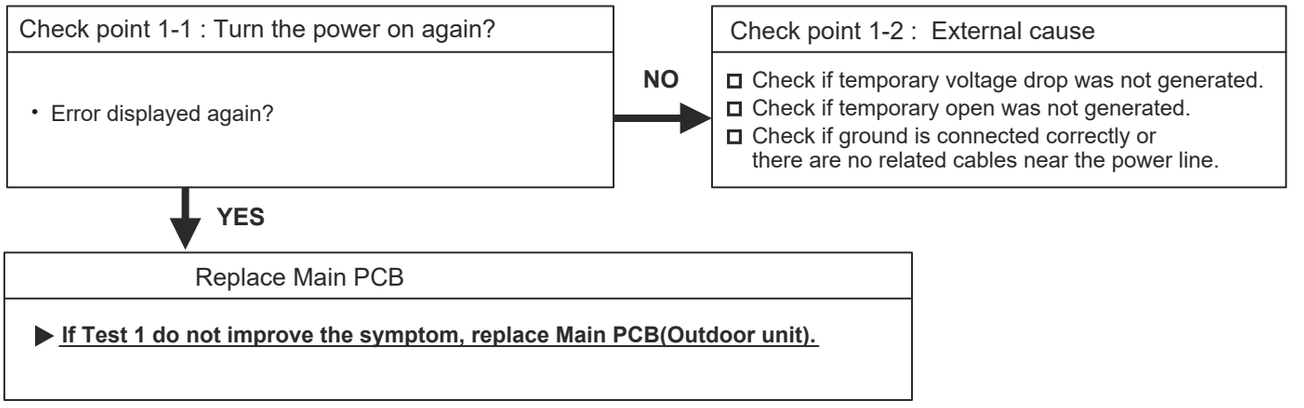
Outdoor unit main PCB

Detective details:

When the check run if can not write data to the EEPROM.

Forecast of cause:

1. External cause
(Noise, temporary open, voltage drop)
2. Main PCB failure



Troubleshooting 14-3

EEPROM Data Corruption Error

Detective actuators:

Outdoor unit main PCB

Detective details:

When the power is turned on and
When the data of the automatic correction was damaged

Forecast of cause:

1. External cause
   (Noise, temporary open, voltage drop)
2. Main PCB defective

Indicate or Display:

Indoor unit
Operation lamp: 6 times Flash,
Timer lamp : 2 times Flash

Wired remote
Error code : [E : 62]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆6	◆2	●	○	○	○

○: Light OFF ●: Light ON ◆n: n times blinking

Check 1-1 : Turn the power on again?

- Error displayed again?

NO

Check 1-2 : External cause

- ☐ Check if temporary voltage drop was not generated.
- ☐ Check if temporary open was not generated.
- ☐ Check if ground is connected correctly or there are no related cables near the power line.

YES

Check 2Replace Main PCB

▶ **If Test 1 do not improve the symptom, replace Main PCB(Outdoor unit).**

Troubleshooting 15

Inverter error

Indicate or Display:

Indoor unit
Operation lamp: 6 times Flash,
Timer lamp : 3 times Flash

Wired remote
Error code : [E : 63]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆6	◆3	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

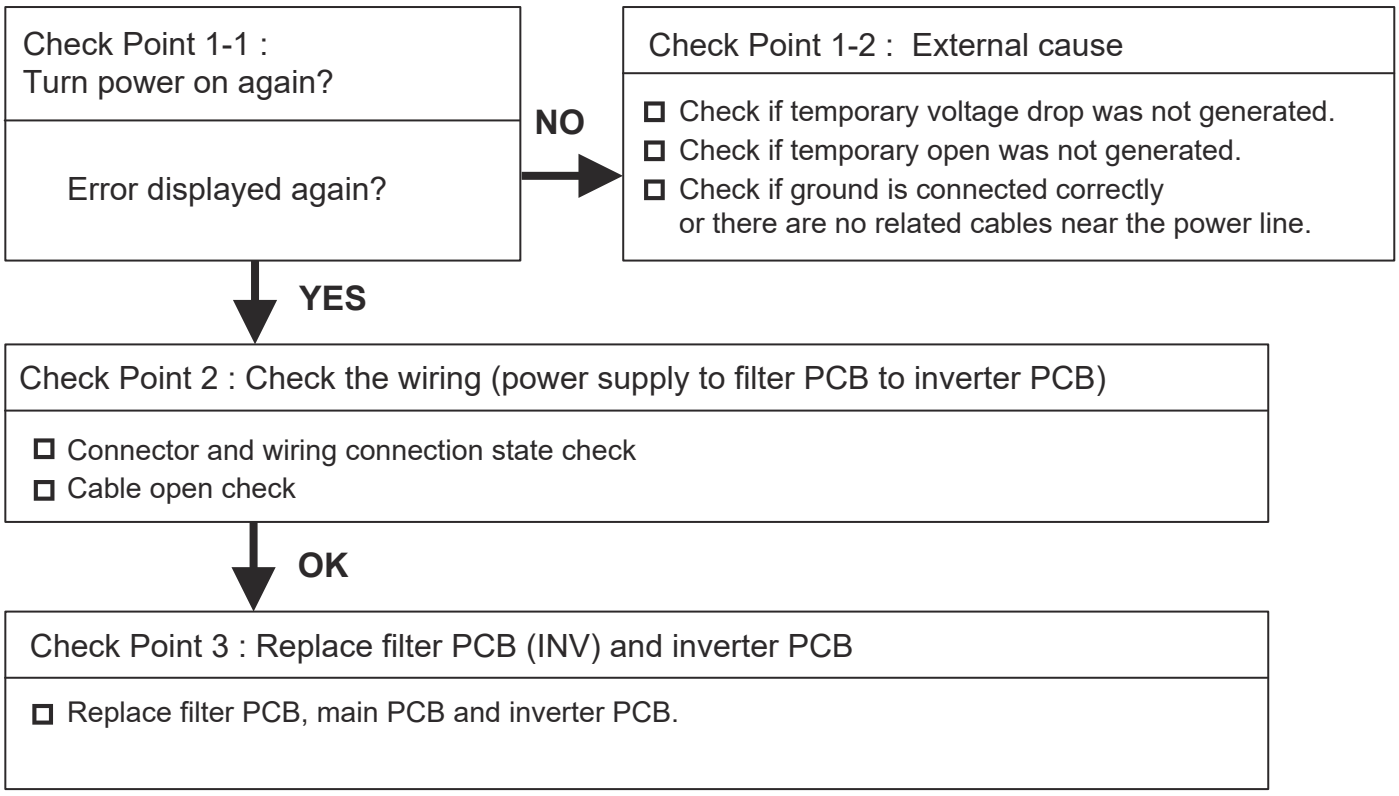
Inverter PCB

Detective details:

Error information is received
from outdoor unit inverter PCB

Forecast of cause :

1. External cause.
2. Power supply to filter PCB to inverter PCB wiring disconnection, open
3. Filter PCB failure
4. Inverter PCB failure



Troubleshooting 16

Active filter voltage error

Indicate or Display:

Indoor unit
Operation lamp: 6 times Flash,
Timer lamp : 4 times Flash

Wired remote control
Error code : [E : 64]

Outdoor unit : No indication

Detective actuators:

Outdoor unit main PCB
Active filter module

Detective details:

① When inverter input DC voltage is higher than 430V or lower than 110V.
② When momentary power cut off occurred on low voltage

Forecast of cause:

1. External cause
2. Connector connection failure
3. Main PCB failure
4. Active filter module 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.

OK

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.

OK

Check Point 3 : Check active filter module

- Check Active filter module. **(Parts information 5)**

>>If Active filter module is abnormal, replace it.

OK

Check Point 4 : Replace main PCB

▶ If Check Point 1 - 3 do not improve the symptom, change Main PCB.

Troubleshooting 17

IPM error

Indicate or Display:

Indoor unit
Operation lamp: 6 times Flash,
Timer lamp : 5 times Flash

Wired remote
Error code : [E : 65]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆6	◆5	○	○	●	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

Outdoor unit main PCB
Compressor
Transistor PCB

Detective details:

① When more than normal operating current to IPM in main PCB flows, the compressor stops.
② After the compressor restarts. If the same operation is repeated within 40sec, the compressor stops.
③ If ① and ② repeats 5 times, the compressor stops permanently.

Forecast of cause:

1. Defective connection of electric components
2. Outdoor Fan Operation failure
3. Outdoor heat-exchanger clogged
4. Compressor failure
5. Main PCB failure
6. Transistor PCB failure

Test 1 : Check connections of outdoor unit electrical components

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

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

OK

Test 2 : Check outdoor fan, heat-exchanger

- Is there anything obstructing the air distribution circuit?
- Is there any clogging of Outdoor Heat Exchanger?
- Is the Fan rotating by hand when operation is off ?

>> If the Fan Motor is locked, replace it.

OK

Test 3 : Check outdoor fan

- Check Outdoor Fan Motor. (Refer to Troubleshooting 26)

>> If the Fan Motor is failure, replace it.

OK

Test 4 : Check compressor

- Check Compressor. **(PARTS INFORMATION 2)**

OK

Test 5 : Check transistor PCB

- Check Transistor PCB

>>If Transistor PCB is abnormal, replace it.

OK

Test 6 : Replace main PCB

▶ If Test 1 - 5 do not improve the symptom, change Main PCB.

Troubleshooting 18

Discharge temperature sensor error

Detective actuators:

Discharge temperature thermistor

Detective details:

Discharge temperature thermistor short detected
Discharge thermistor open detected

Forecast of cause :

1. Connector connection failure, open
2. Thermistor failure
3. Main PCB failure

Indicate or Display:

Indoor unit
Operation lamp: 7 times Flash,
Timer lamp : 1 time Flash

Wired remote control
Error code : [E : 71]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆7	◆1	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Check Point 1 : Check connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

OK

Check Point 2 : Check thermistor

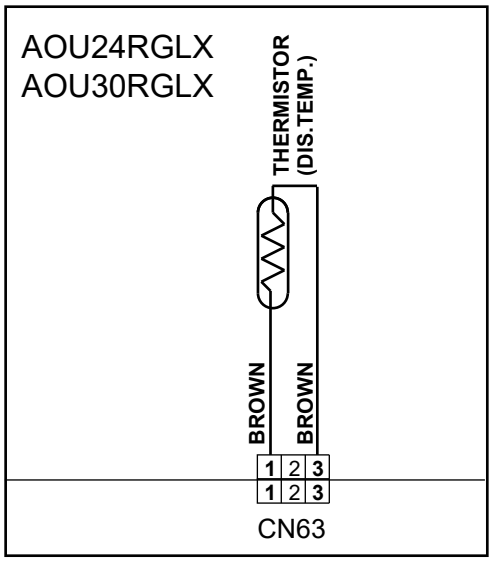
- ☐ Thermistor characteristics check (Disconnect thermistor from PCB and check.)
  (PARTS INFORMATION 7)

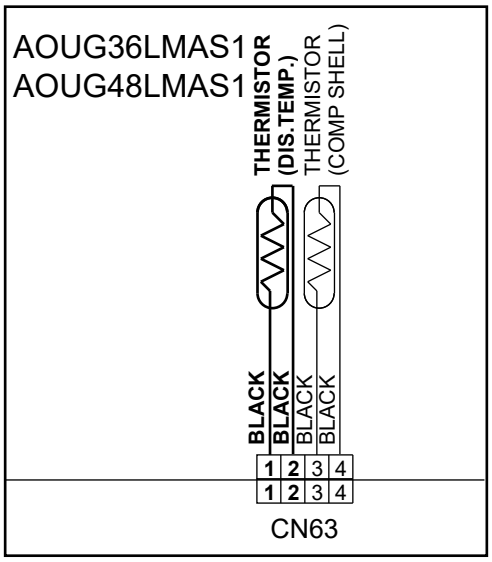
OK

Check Point 3 : Check voltage of main PCB (DC 5.0V)

- ☐ Main PCB (CN63:1-3) voltage value = 5V (AOU24/30RGLX)
- ☐ Main PCB (CN63:1-2) voltage value = 5V (AOUG36/48LMAS1)

Disconnect thermistor from main PCB, and check voltage.





► If the voltage does not appear, replace main PCB, and execute the check operation again.

Troubleshooting 19

Compressor temperature sensor error

Detective actuators:

Compressor temperature thermistor

Detective details:

Compressor temperature thermistor short detected
Compressor thermistor open detected

Forecast of cause:

1. Connector connection failure, open
2. Thermistor failure
3. Main PCB failure

Indicate or Display:

Indoor unit
Operation lamp: 7 times Flash,
Timer lamp : 2 times Flash

Wired remote control
Error code : [E : 72]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆7	◆2	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Check Point 1 : Check the connector connection and cable open

- Connector connection state check
- Cable open check

Check Point 2 : Check the thermistor

- Thermistor characteristics check (Disconnect the thermistor from the PCB and check.) (PARTS INFORMATION 7)

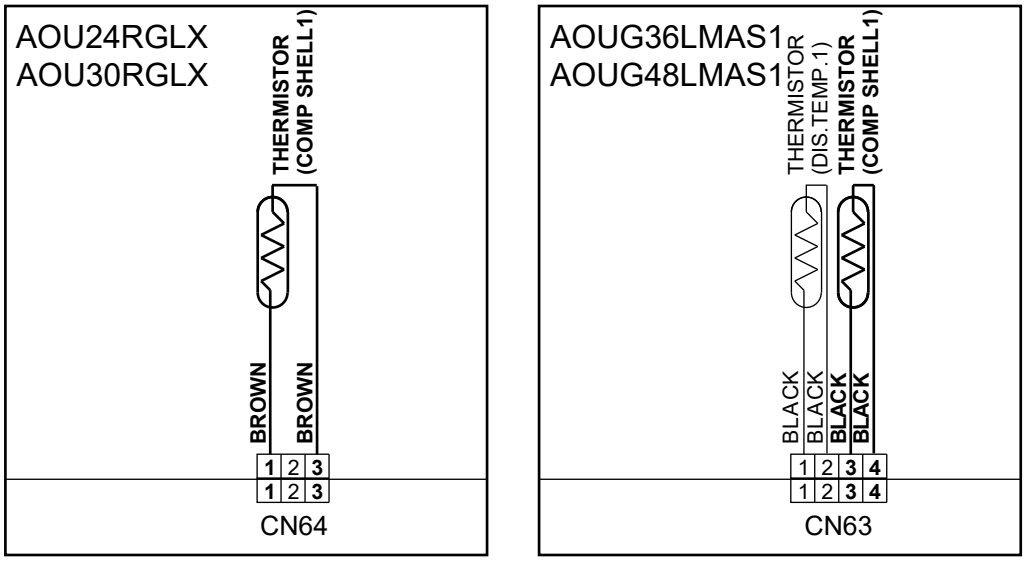
OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

DC

- Main PCB (CN64:1-3) voltage value = 5V (AOU24/30RGLX)
- Main PCB (CN63:3-4) voltage value = 5V (AOUG36/48LMAS1)

Disconnect thermistor from main PCB, and check voltage.



►**If the voltage does not appear, replace Main PCB, and execute the check operation again.**

Troubleshooting 20

Outdoor unit heat-exchanger liquid temperature sensor error

Detective actuators:

Heat-exchanger liquid temperature thermistor

Detective details:

Heat-exchanger outlet or middle temperature thermistor short or open detected

Forecast of cause:

1. Connector connection defective, open
2. Thermistor failure
3. Main PCB failure

Indicate or Display:

Indoor unit
Operation lamp: 7 times Flash,
Timer lamp : 3 times Flash

Wired remote control
Error code : [E : 73]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆7	◆3	○	○	●	○/●

○: Light OFF ●: Light ON ◆n: n times blinking

Check Point 1 : Check the connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

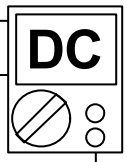
OK

Check Point 2 : Check thermistor

Thermistor characteristics check (Disconnect thermistor from PCB and check.)
(PARTS INFORMATION 7)

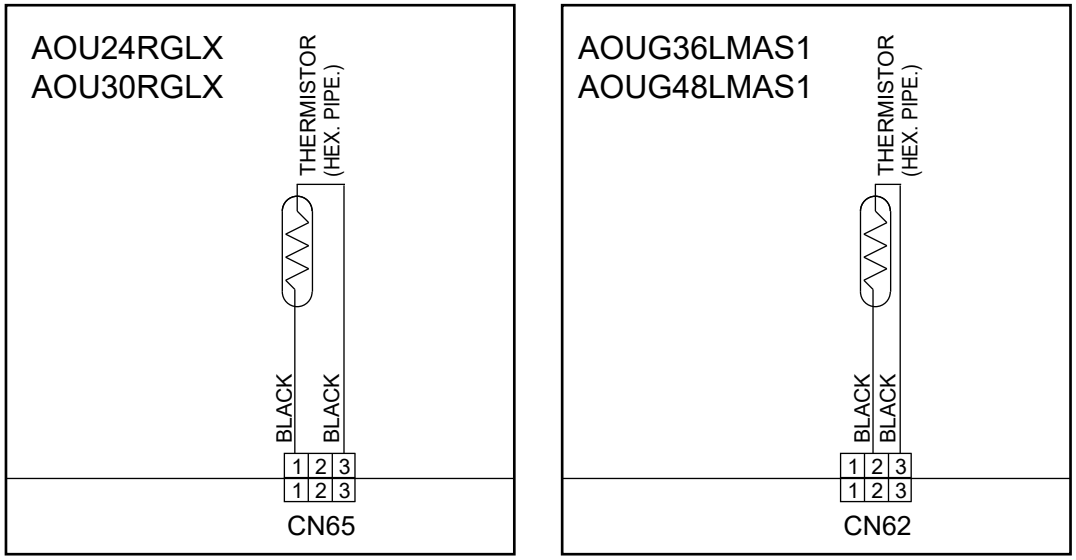
OK

Check Point 3 : Check voltage of main PCB (DC5.0V)



Main PCB (CN65:1-3) voltage value = 5V (AOU24/30RGLX)
Main PCB (CN62:2-3) voltage value = 5V (AOUG36/48LMAS1)

Disconnect thermistor from main PCB, and check voltage.



► If voltage does not appear, replace main PCB, and execute check operation again.

Troubleshooting 21

Outdoor temperature sensor error

Detective actuators:

Outdoor temperature thermistor

Detective details:

Outdoor temperature thermistor
short or open detected

Forecast of cause:

1. Connector connection defective, open
2. Thermistor failure
3. Main PCB failure

Indicate or Display:

Indoor unit
Operation lamp: 7 times Flash,
Timer lamp : 4 times Flash

Wired remote control
Error code : [E : 74]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆7	◆4	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Check Point 1 : Check the connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

Check Point 2: Check the thermistor

- ☐ Thermistor characteristics check (Disconnect the thermistor from the PCB and check.)
  * For the thermistor characteristics, refer to the "Parts Information 7".

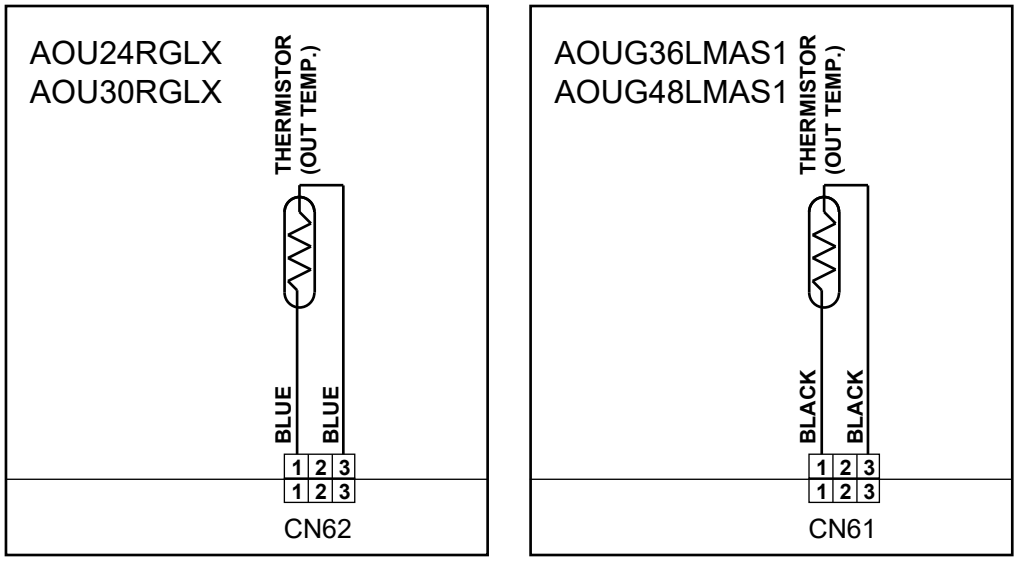
OK

Check Point 3 : Check voltage of main PCB (DC5.0V)

DC

- ☐ Main PCB (CN62:1-3) voltage value = 5V (AOU24/30RGLX)
- ☐ Main PCB (CN61:1-3) voltage value = 5V (AOUG36/48LMAS1)

Remove thermistor from main PCB, and check voltage.



- ▸ If voltage does not appear, replace main PCB, and execute check operation again.

Troubleshooting 22

Current sensor 1 error
(Stoppage permanently)

Detective actuators:

Outdoor unit main PCB

Detective details:

When input current sensor has detected 0A, while inverter compressor is operating at higher than 56 rps (36/48models 60 rps), after 1minute upon starting compressor. (Except during the defrost operation)

Indicate or Display:

Indoor unit
Operation lamp: 8 times Flash,
Timer lamp : 4 times Flash

Wired remote control
Error code : [E : 84]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆8	◆4	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Forecast of cause:

1. Defective connection of electric components
2. External cause
3. Filter PCB failure
4. Main PCB failure

Check Point 1-1 : Reset Power Supply and operate

・Does Error indication show again?

NO → **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.

YES

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.

OK

Check Point 3 : Replace filter PCB

▶ If Check Point 1, 2 do not improve the symptom, change filter PCB.

OK

Check Point 4 : Replace main PCB

▶ If Check Point 3 do not improve the symptom, change main PCB.

Troubleshooting 23-1

High pressure switch error
(AOU24/30RGLX)

Indicate or Display:

Indoor unit
Operation lamp: 8 times Flash,
Timer lamp : 6 times Flash

Wired remote control
Error code : [E : 86]

Outdoor unit : No indication

Detective actuators:

High pressure switch

Detective details:

When power is turned on,
"high pressure switch : open" is detected.

Forecast of cause:

1. High pressure switch connector disconnection, open
2. High pressure switch characteristics failure
3. Main PCB failure

Check Point 1 : Check the high pressure switch connection state

- ☐ Connector and wiring connection state check
- ☐ Cable open check

↓ **OK**

Check Point 2 : Check the high pressure switch characteristics

- ☐ Switch characteristics check
  * For the characteristics of high pressure switch, refer to below.

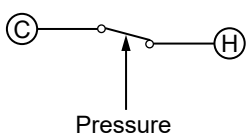
↓ **OK**

Check Point 3 : Replace main PCB

- ☐ Change main PCB, and execute check operation again.

▪ Type of contact

CN90



▪ Characteristics of pressure switch

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

Troubleshooting 23-2

Outdoor unit discharge pressure sensor error
(AOUG36/48LMAS1)

Detective actuators:

Outdoor unit main PCB

Detective details:

30 seconds or more after power-on, when pressure sensor detection value detects the condition below continuosly for 30 seconds or more.

Ps ≤ 43.51 psi (0.30 Mpa)
or Ps ≥ 725.19 psi (5.00 Mpa)

Forecast of cause:

1. Connector connection failure
2. Pressure sensor failure
3. Main PCB failure

Indicate or Display:

Indoor unit
Operation lamp: 8 times Flash,
Timer lamp : 6 times Flash

Wired remote control
Error code : [E : 86]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆8	◆6	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Test 1 : Check the connection of the pressure sensor

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

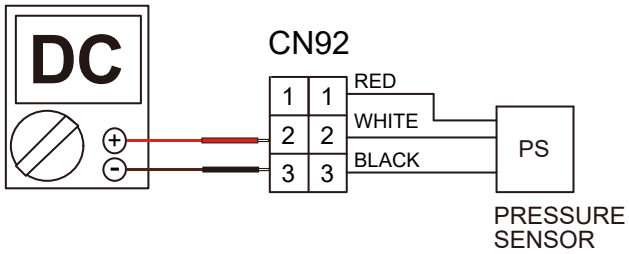
>> Upon correcting the removed connector or miss-wiring, reset the power.

OK

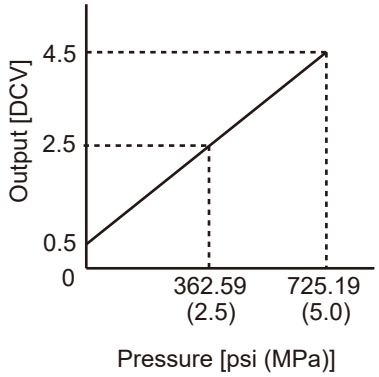
Test 2 : Check voltage from main PCB (Parts information 8)

DC

□ With the connector connected to the PCB, measure the voltage between CN92:2-3 of the main PCB.



▪ Characteristics of pressure sensor



▶ **If the voltage is not on the connector, replace Main PCB.**

▶ **If the voltage is incorrect value, replace the Pressure sensor.**

Troubleshooting 24

Outdoor unit trip detection

Indicate or Display:

Indoor unit
Operation lamp: 9 times Flash,
Timer lamp : 4 times Flash

Wired remote control
Error code : [E : 94]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆9	◆4	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

Outdoor unit main PCB
Compressor
Transistor PCB

Detective details:

"Protection stop by overcurrent generation after inverter compressor start processing completed" generated consecutively 10 times (36/48 models 5 times).
* The number of generations is reset if the start-up of the compressor succeeds.

Forecast of cause:

1. Outdoor unit fan operation defective, foreign matter on heat-exchanger, excessive rise of ambient temperature
2. Main PCB
3. Inverter compressor failure (lock, winding short)
4. Transistor PCB (IPM) failure

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?

OK

Check Point 2: Check transistor PCB (IPM)

- Check IPM. **(Parts information 6)**

>> If IPM is abnormal, replace Transistor PCB.

OK

Check Point 3: Replace main PCB

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

OK

Check Point 4: Replace compressor

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

Troubleshooting 25

Compressor motor control error
(Stoppage permanently)

Indicate or Display:

Indoor unit
Operation lamp: 9 times Flash,
Timer lamp : 5 times Flash

Wired remote control
Error code : [E : 95]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆9	◆5	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

Outdoor unit main PCB
Compressor
Transistor PCB

Detective details:

① While running compressor, if the detected rotor location is out of phase with actual rotor location more than 90° (36/48 models 105°), the compressor stops.
② After the compressor restarts, if the same operation is repeated within 40sec, the compressor stops again.
③ If ① and ② repeats 5 times, the compressor stops permanently.

Forecast of cause:

1. Defective connection of electric components
2. Main PCB failure
3. Compressor failure
4. Transistor PCB (IPM) failure

Check Point 1 : Check noise from compressor

- Turn on power and check operation noise.

▶ If an abnormal noise show, replace compressor.

OK

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.

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

OK

Check Point 3: Check Transistor PCB (IPM)

- Check IPM. **(Parts information 6)**

>> If IPM is abnormal, replace transistor PCB.

OK

Check Point 4: Replace main PCB

▶ If Check Point 1,2 or 1～3 do not improve the symptom, change main PCB.

OK

Check Point 5: Replace compressor

▶ If Check Point 4 do not improve the symptom, change Compressor.

Troubleshooting 26

Outdoor unit fan motor 1 error

Indicate or Display:

Indoor unit
Operation lamp: 9 times Flash,
Timer lamp : 7 times Flash

Wired remote control
Error code : [E : 97]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆9	◆7	○	○	●	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

Outdoor unit main PCB
Outdoor unit fan motor

Detective details:

① When outdoor fan rotation speed is less than 100rpm in 20 seconds after fan motor starts, fan motor stops.
② After fan motor restarts, if the same operation within 60sec 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.

Forecast of cause:

1. Fan rotation failure
2. Motor protection by surrounding temperature rise
3. Main PCB failure
4. Outdoor 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.

OK

Check Point 2 : Check ambient temp. 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.

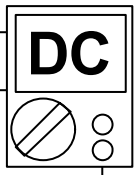
OK

Check Point 3 : Check outdoor unit fan motor

・Check Outdoor unit fan motor. **(Parts information 4)**
>>If Outdoor Fan Motor is abnormal, replace Outdoor fan motor and Main PCB.

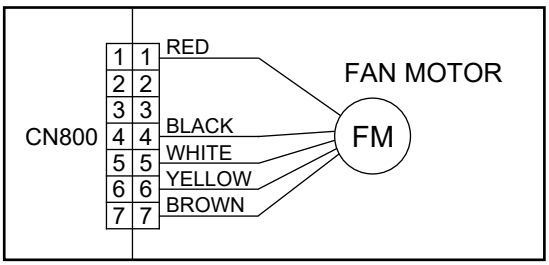
OK

Check Point 4 : Check output voltage of main PCB



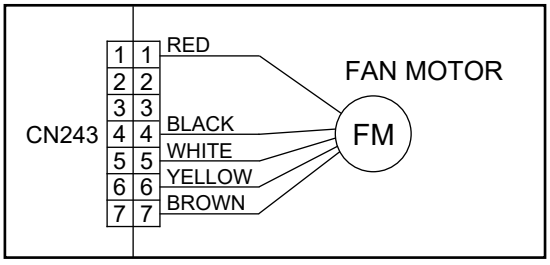
Check outdoor unit circuit diagram and voltage. (Measure at main PCB side connector)

AOU24/30RGLX



Read wire	DC voltage
Red - Black	260V ~ 400V
White - Black	15±1.5V

AOUG36/48LMAS1



Read wire	DC voltage
Red - Black	260V ~ 400V
White - Black	15±1.5V

▶ If voltage is not correct, replace main PCB.

Troubleshooting 27

4-way valve error

Indicate or Display:

Indoor unit
Operation lamp: 9 times Flash,
Timer lamp : 9 times Flash

Wired remote control
Error code : [E : 99]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆9	◆9	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

Indoor unit controller PCB circuit
Heat-exchanger temperature thermistor
Room temperature thermistor
4-way valve

Detective details:

When the indoor heat-exchanger temperature is compared with the room temperature, and either following condition is detected continuously two times, the compressor stops.

- Cooling or Dry operation
  [Indoor heat-exchanger temp.] - [Room temp.] > 18°F (10°C)
- Heating operation
  [indoor heat-exchanger temp.] - [Room temp.] < -18°F (-10°C)

If the same operation is repeated 5 times,
the compressor stops permanently.

Forecast of cause :

1. Connector connection failure
2. Thermistor failure
3. Coil failure
4. 4-way valve failure
5. Main PCB failure

Check Point 1 : Check connection of Connector

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

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

OK

Check Point 2 : Check thermistor of indoor unit

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

>> Check characteristics of thermistor. (Refer to Troubleshooting 11, 12),
If defective, replace the thermistor.

OK

Check Point 3 : Check the solenoid coil and 4-way valve

[Solenoid coil]

Remove connector (AOU24/30RGLX:CN500, AOUG36/48LMAS1:CN202) from PCB and check the resistance value of coil.
Resistance value is about 1355 ±135Ω (24/30), 2085 ±208.5Ω (36/48)
>> 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.

OK

Check Point 4 : Replace main PCB

▶ If Check Point 1- 3 do not improve the symptom, replace Main PCB.

Troubleshooting 28

Coil (expansion valve) error

Indicate or Display:

Indoor unit
Operation lamp: 9 times Flash,
Timer lamp : 10 times Flash

Wired remote
Error code : [E : 9A]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆9	◆10	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

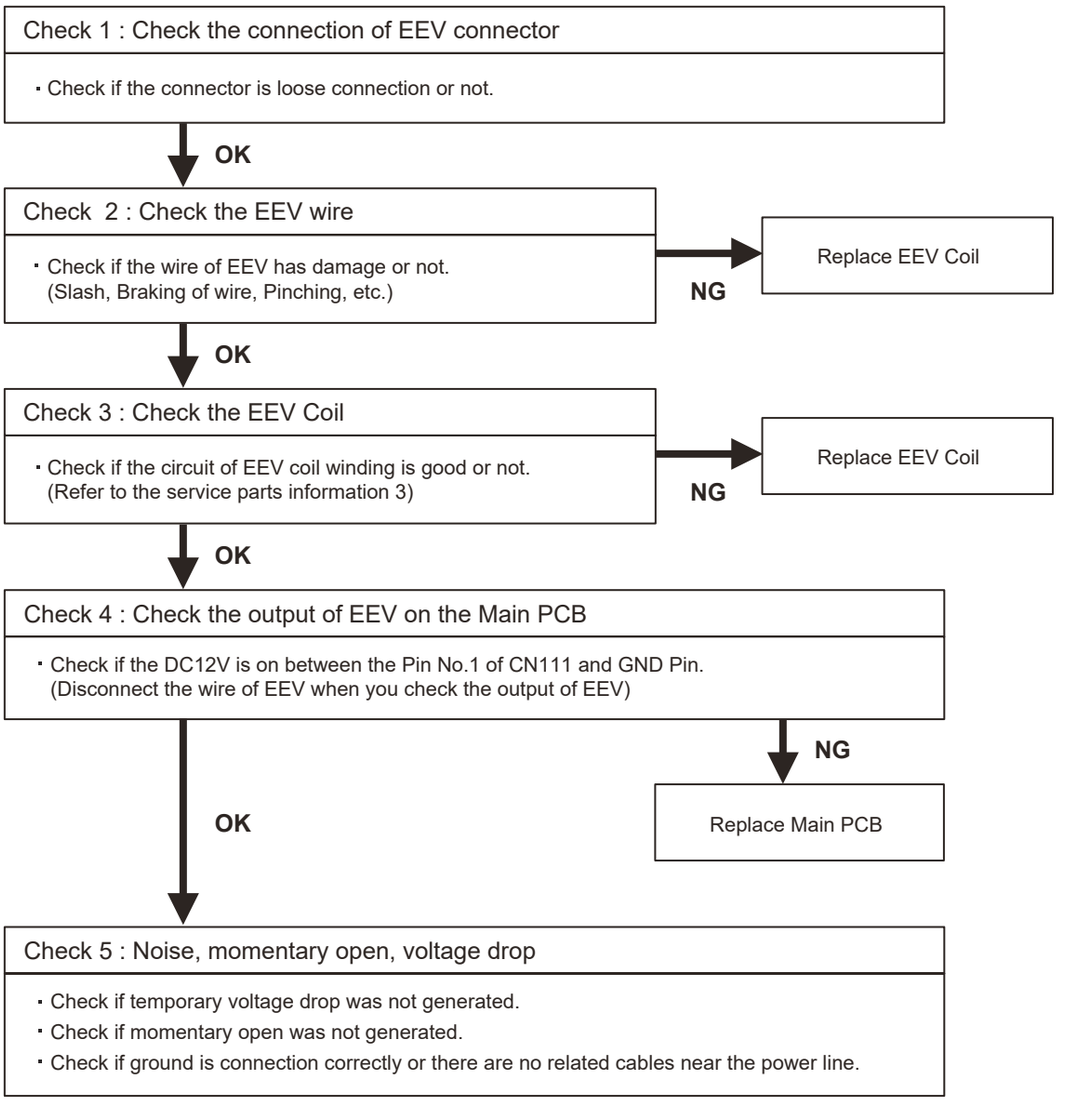
EEV coil
Main PCB

Detective details:

When the power is turned on and
When the data of the automatic correction was damaged

Forecast of cause:

1. EEV coil loose connection
2. EEV wires cut or pinched
3. Defective EEV coil
4. Main PCB (DC12V) output abnormal



Troubleshooting 29

Discharge temperature error

Indicate or Display:

Indoor unit
Operation lamp: 10 times Flash,
Timer lamp : 1 time Flash

Wired remote control
Error code : [E : A1]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆10	◆1	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

Discharge temperature thermistor

Detective details:

"Protection stop by
"discharge temperature ≥ 239°F (115°C)
(36/48 models 230°F (110°C))
during compressor operation"
generated 2 times within 24 hours.

Forecast of cause:

1. 3-way valve not opened
2. EEV defective, strainer clogged
3. Outdoor unit operation failure, foreign matter on heat-exchanger
4. Discharge temperature thermistor failure
5. Insufficient refrigerant

Cooling operation

Check Point 1 : Check if 3-way valve(gas side) is open.
- ☐ If the 3-way valve(gas side) was closed, open the 3-way valve(gas side) and check operation.

OK

Check Point 2 : Check the EEV, strainer
- ☐ EEV open?
- ☐ Strainer clogging check (before and after EEV, ACM, oil return) **(Parts information 3)**

OK

Check Point 3 : Check the outdoor unit fan,heat-exchanger
- ☐ Check for foreign object at heat exchanger
- ☐ Check if fan can be rotated by hand.
- ☐ Motor check **(Parts information 4)**

OK

Check Point 4 : Check the discharge thermistor
- ☐ Discharger thermistor characteristics check (Check by disconnecting thermistor from PCB) refer to the "Troubleshooting 18".

OK

Check Point 5 : Check the refrigerant amount
- ☐ Leak check

Heating operation

Check Point 1 : Check if 3-way valve(liquid side) is open.
- ☐ If the 3-way valve(liquid side) was closed, open the 3-way valve(liquid side) and check operation.

OK

Check Point 2 : Check the EEV, strainer
- ☐ EEV open?
- ☐ Strainer clogging check (before and after EEV, ACM, oil return) **(Parts information 3)**

OK

Troubleshooting 30

Compressor temperature error

Indicate or Display:

Indoor unit
Operation lamp: 10 times Flash,
Timer lamp : 3 times Flash

Wired remote control
Error code : [E : A3]

Outdoor unit (AOUG36/48LMAS1)

Mode	Error	A	B	C	D	E	F
◆2	●	◆10	◆3	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective actuators:

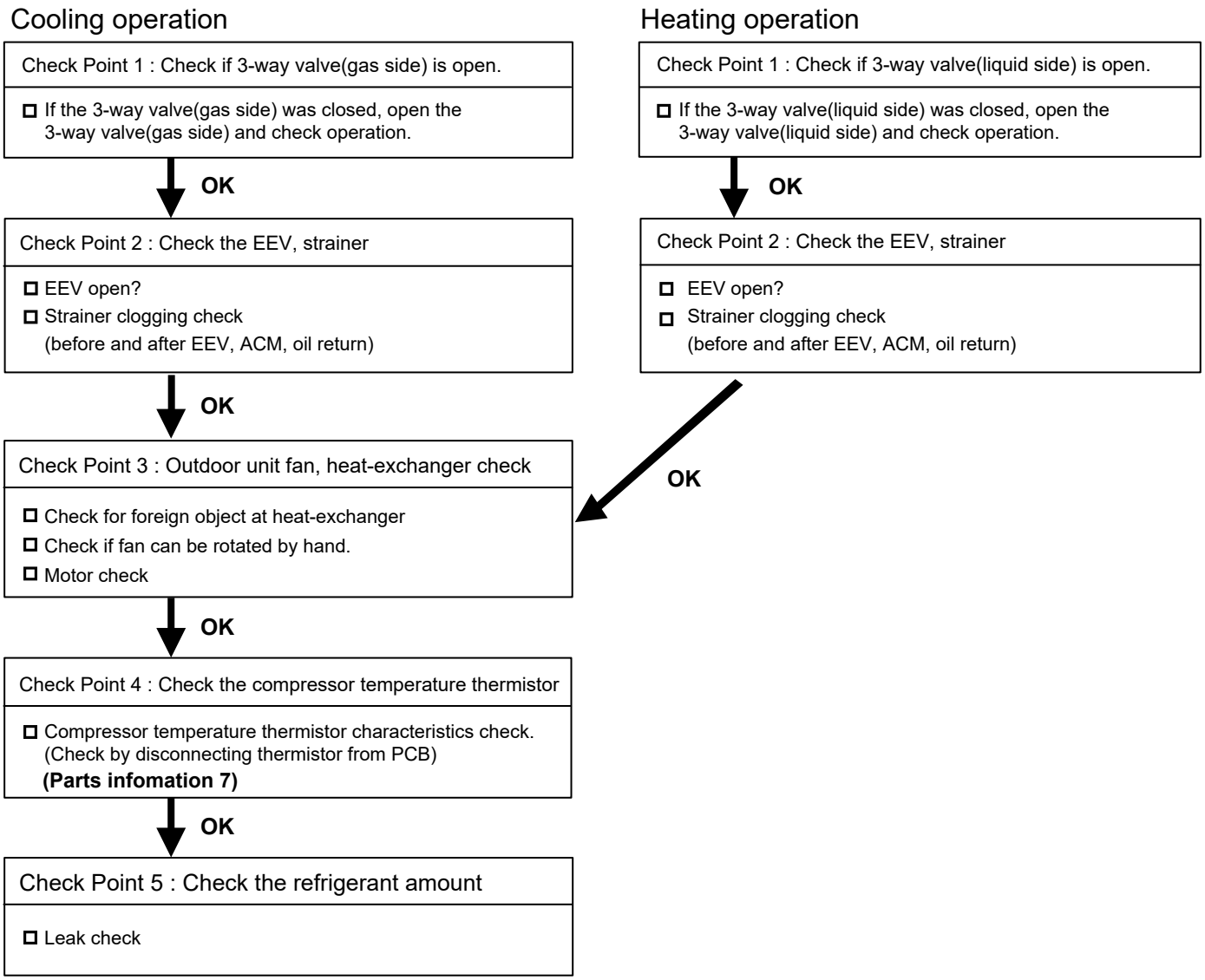
Compressor temperature thermistor

Detective details:

"Protection stop
by compressor temperature ≥ 230°F (110°C)
(36/48 models 226.4°F (115°C))
during compressor operation"
generated 2 times within 24 hours

Forecast of cause:

1. 3-way valve not opened
2. EEV defective, strainer clogged
3. Outdoor unit operation failure, foreign matter on heat-exchanger
4. Compressor temperature thermistor failure
5. Insufficient refrigerant



3. TROUBLESHOOTING WITH NO ERROR CODE

Troubleshooting 31

Indoor unit - No power

Forecast of cause:

1. Power supply failure
2. External cause
3. Electrical Components defective

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 Installation Manual or Data & Technical Manual.

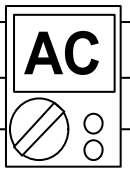
OK

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.

OK

Check Point 3 : Check electrical components



- Check the voltage of power supply.

>> Check if AC187 - 253V appears at outdoor unit terminal L1 - L2.

NO

YES

- 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.

OK

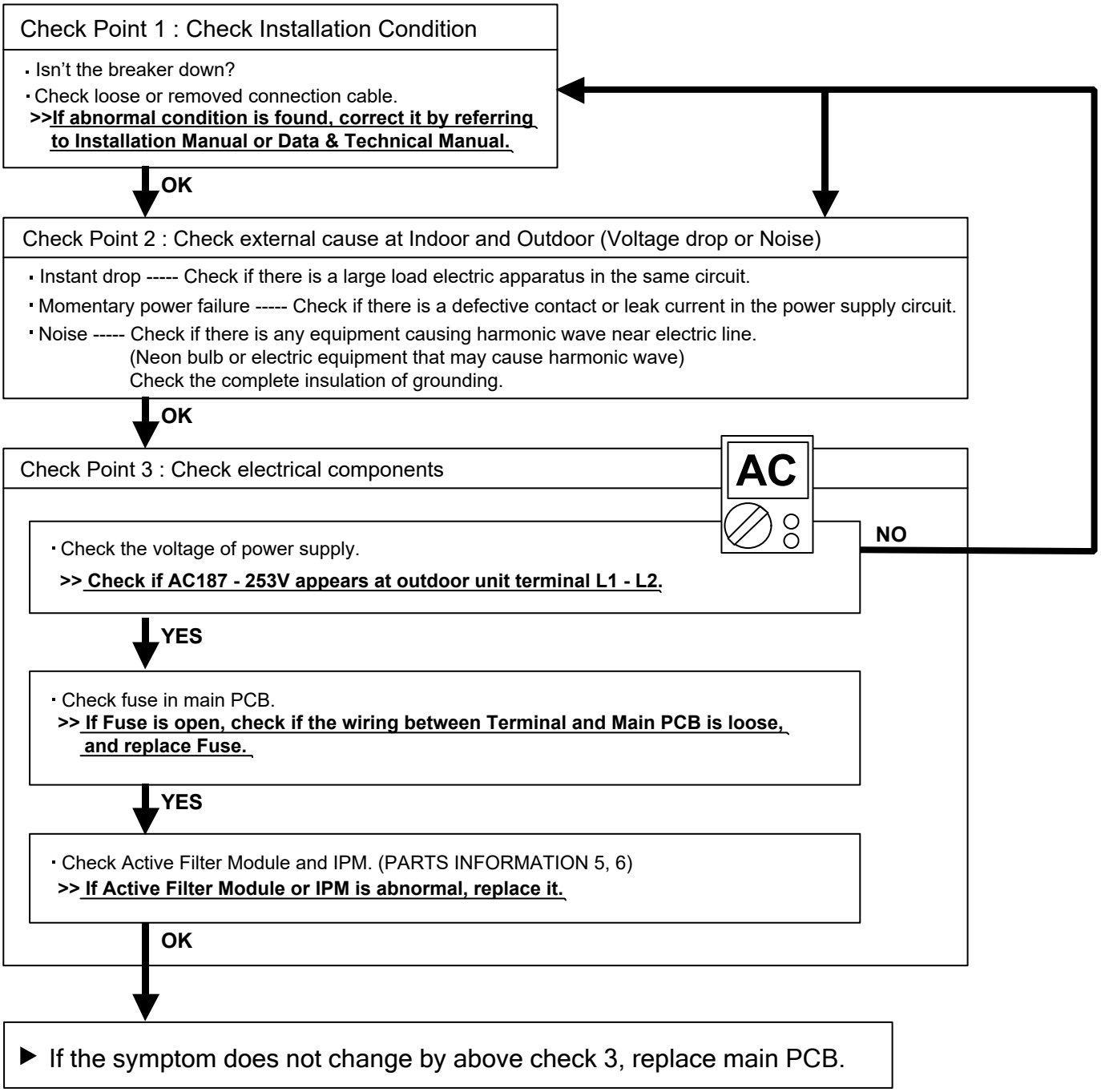
▶ If the symptom does not change by above check 3, replace main PCB.

Troubleshooting 32

Outdoor unit - No power

Forecast of cause:

1. Power supply failure
2. External cause
3. Electrical components defective



Troubleshooting 33

No operation (Power is ON)

Forecast of cause:

1. Setting / connection failure
2. External cause
3. Electrical component defective
4. Communication error between controller PCB and wired remote control

Check Point 1 :
Check indoor and outdoor installation condition

- Indoor unit - Check incorrect wiring between indoor unit and remote control.
  Or, check if there is an open cable connection.
- Are these indoor unit, outdoor unit, and remote control suitable model numbers to connect?

>> If there is some abnormal condition,correct it by referring to Installation manual and Data & Technical Manual.

OK

Turn off power and check/ correct followings.

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

OK

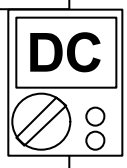
Check Point 2 :
Check external cause at indoor and outdoor (voltage drop or noise)

- 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.

OK

Check Point 3 :
Check wired remote control and controller PCB

- Check voltage at CN300 of controller PCB.
  (Power supply to remote control)



>> If it is DC12V, remote control is failure.
(Controller PCB is normal)
Replace remote control

>> If it is DC 0V, controller PCB is failure.
(Check remote control once again)
Replace controller PCB

OK

Check Point 3 :
Check wired remote control (2 wire type)

- If the connection condition is normal, replace the wired remote control.

Troubleshooting 34

No Cooling / No Heating (unworking)

Forecast of cause:

1. Indoor unit error
2. Outdoor unit error
3. Effect by surrounding environment
4. Connection pipe / connection wire failure
5. Refrigeration cycle failure

Check Point 1 : Check indoor unit

- Does indoor unit FAN run on HIGH FAN?
- Is air filter dirty?
- Is heat-exchanger clogged?
- Check if energy-save function is operated.

OK

Check Point 2 : Check outdoor unit operation

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

OK

Check Point 3 : Check site condition

- Is capacity of indoor unit fitted to room size?
- Any windows open? Or direct sunlight ?

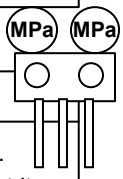
OK

Check Point 4 :
Check indoor / outdoor installation condition

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

>> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.

OK



Check Point 5 : Check refrigeration cycle

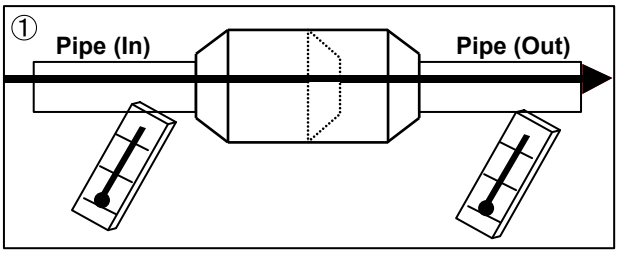
- Check if strainer is clogged (Refer to the figure at right).
- Measure Gas Pressure and if there is a leakage, correct it.

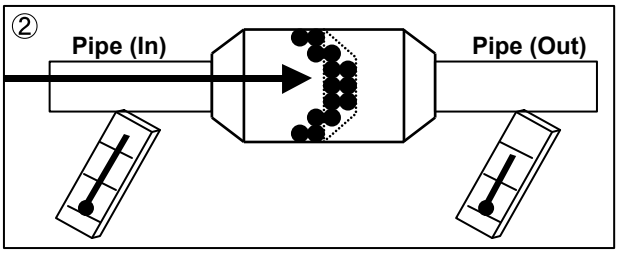
>> When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.

- Check EEV (Parts information 3)
- Check Compressor (Parts information 1, 2)

Attention

Strainer normally does not have temperature difference between inlet and outlet as shown in ① , but if there is a difference like shown in ② , there is a possibility of inside clogged. In this case, replace Strainer.





Troubleshooting 35

Abnormal noise

Forecast of cause :

1. Abnormal installation (Indoor / Outdoor)
2. Fan failure (Indoor / Outdoor)
3. 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?

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

- Abnormal noise is coming from Outdoor Unit. (Check and correct followings)
  - Is Main Unit installed in stable condition?
  - Is Fan Guard installed normally?

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

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

  OK
  - Is Compressor locked?

    >> Check Compressor (Parts information 1, 2)

Troubleshooting 36

Water leaking

Forecast of cause:

1. Erroneous installation
2. Drain hose failure

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?

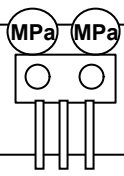
OK
- Is Drain Hose connection loose?
- Is there a trap in Drain Hose?
- Is Drain Hose clogged?

OK
- Is Fan rotating?

Diagnosis method when water is spitting out.

- Is the filter clogged?

OK
- Check Gas Pressure and correct it if there was a gas leak.



4. PARTS INFORMATION

Parts information 1

Compressor

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

Does not start up

- Is there open or loose connection cable?

- 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)

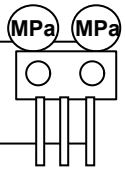
Replace Compressor

Stops soon after starting up

- Is there open or loose connection cable?

- Is Gas Pipe Valve open? (Low Pressure is too low)

- Check if Refrigerant is leaking. (Recharge Refrigerant)



- Check if Strainer is clogged. (Parts information 3)

- 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

Abnormal noise

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

▶Defective Compressor can be considered. (due to inside dirt clogging or broken component)

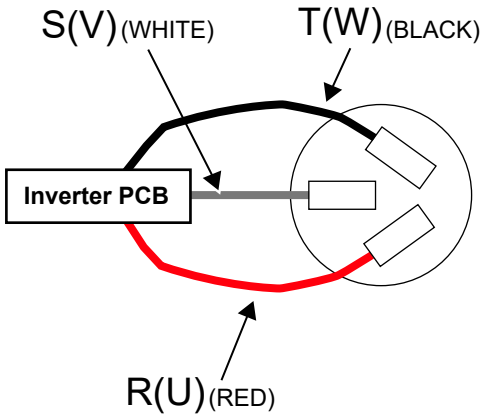
Replace Compressor

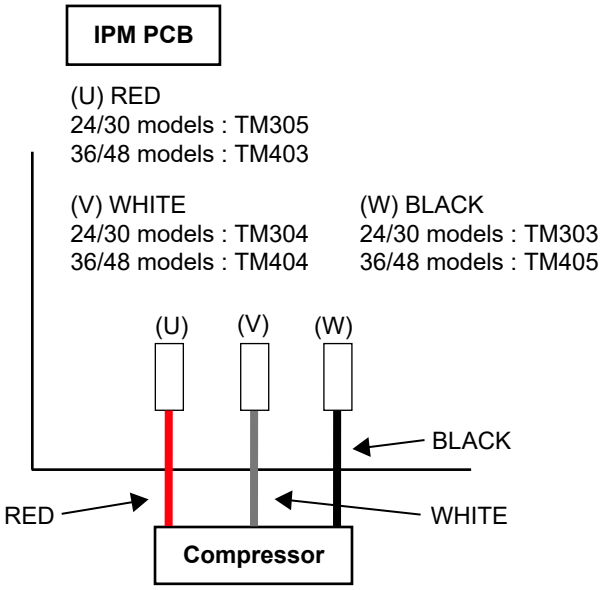
Inverter compressor

AOU24/30RGLX
AOUG36/48LMAS1

Check Point 1 :
Check connection

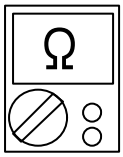
・Check terminal connection of compressor
(loose or incorrect wiring)

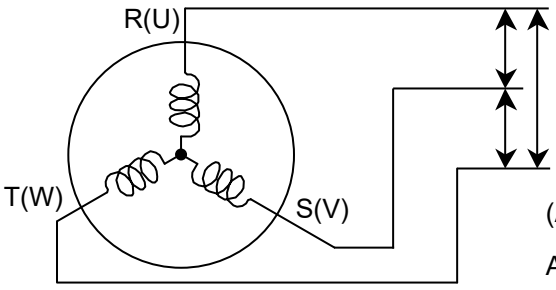




Check Point 2 :
Check winding resistance

・Check winding resistance of each terminal
▶ **If the resistance value is 0Ω or infinite, replace compressor.**





(Appropriate) Resistance value :

AOU24/30RGLX : 0.642 Ω at 68°F (20°C)

AOUG36/48LMAS1 : 0.432 Ω at 68°F (20°C)

Check Point 3 :
Replace main PCB

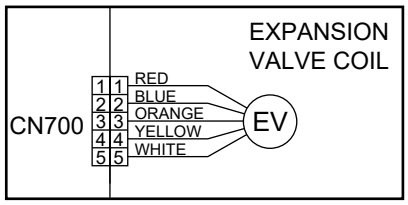
▶ If the symptom does not change with above check 1, 2, replace main PCB.

Outdoor unit electronic expansion valve (EEV)

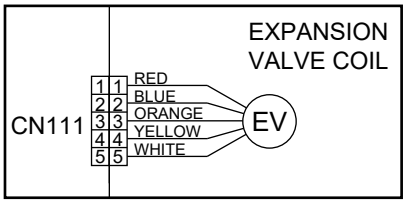
Check Point 1 : Check Connections

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

AOU24/30RGLX



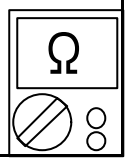
AOUG36/48LMAS1



Check Point 2 : Check coil of EEV

・Remove connector, check each winding resistance of Coil.

Read wire	Resistance value
White - Red	24,30 **46**Ω ± **4.0**Ω
Yellow - Red	
Orange - Red	36,48 **46**Ω ± **3.7**Ω
Blue - Red	at 68°F (20°C)



▶ **If Resistance value is abnormal, replace EEV.**

Check Point 3 : Check noise at start-up

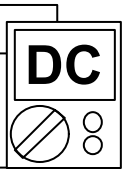
・Turn on Power and check operation noise.

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

Check Point 4 : Check voltage from main PCB.

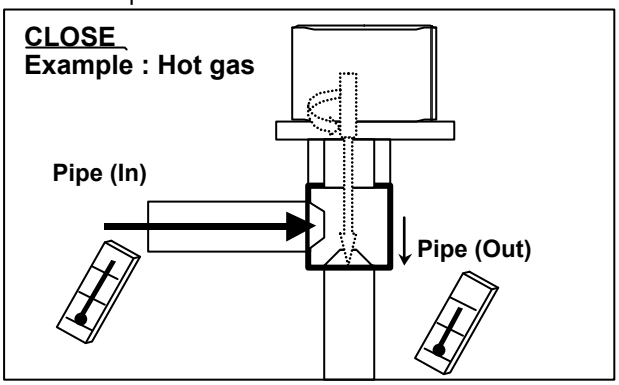
・Remove Connector and check voltage (DC12V)

▶ **If it does not appear, replace Main PCB.**

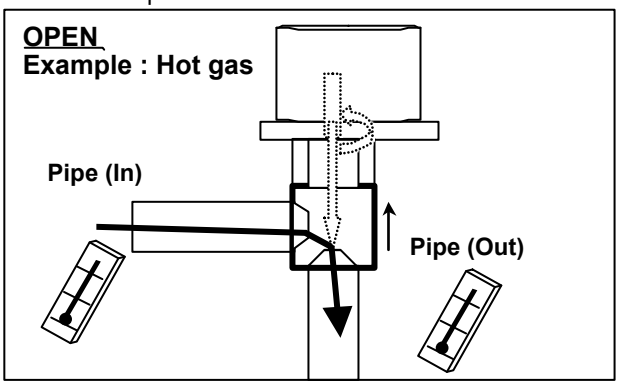


Check Point 5 : Check opening and closing operation of valve

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

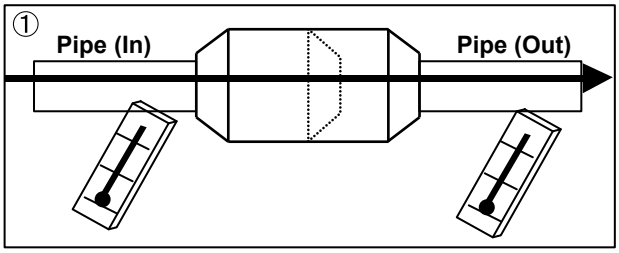


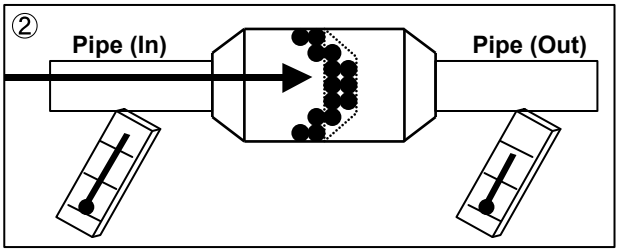
If it is open,
it has no temp. difference between inlet and outlet.



Check Point 6 : Check Strainer

Strainer normally does not have temperature difference between inlet and outlet as shown in ① ,
but if there is a difference as shown in ② , there is a possibility of inside clogged. In this case, replace strainer.





Parts information 4

Outdoor unit fan motor

Check Point 1 : Check rotation of fan

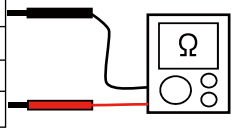
・Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
>>If Fan or bearing is abnormal, replace it.

Check Point 2 : Check resistance of outdoor fan motor

・Refer to below. Circuit-test "Vm" and "GND" terminal.
(Vm: DC voltage, GND: Earth terminal)
>>If they are short-circuited (below 300 kΩ), replace outdoor fan motor and main PCB.

AOU24/30RGLX(CN800)
AOUG36/48LMAS1(CN243)

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)



Active filter module

Check Point 1 : Check Open or Short-circuit and Diode (D1)

・Remove connector, check the open or short-circuit and the diode in the module

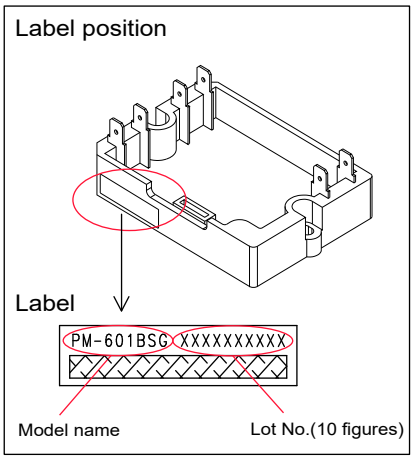
Check the open or short-circuit

Table.1 Each type standard value

	Terminal		Resistance value	
			Type A	Type B
	multimeter (+)	multimeter (-)	SACT32010 [HITACHI] LACT33020 [HITACHI] PM-601 [FGEL] **LOT No. - 1302931395**	PM-604 [FGEL] PM-703 [FGEL] PM-601 [FGEL] **LOT No. 1302931396 -**
	+ (+IN)*	- (-IN)*	**360kΩ ± 20%**	**360kΩ ± 20%**
	- (-IN)*	N1 (N)*	**0 Ω**	**0 Ω**
※	P	+ (+IN)*	**720kΩ ± 20%**	**900kΩ ± 20%**
	L1	L2	**1.01MΩ / 0.76MΩ** **(Ref. value 1) (Ref. value 2)**	**1.01MΩ / 0.76MΩ** **(Ref. value 1) (Ref. value 2)**
	P	N1 (N)*	**360kΩ ± 20%**	**540kΩ ± 20%**
	L1 , L2	Control Box	**∞Ω**	**∞Ω**
※	L2	N1 (N)*	**1.65MΩ / 1.14MΩ** **(Ref. value 1) (Ref. value 2)**	**1.65MΩ / 1.14MΩ** **(Ref. value 1) (Ref. value 2)**

* ( ) is FGEL terminal name.

LOT No. of PM-601 [FGEL] type



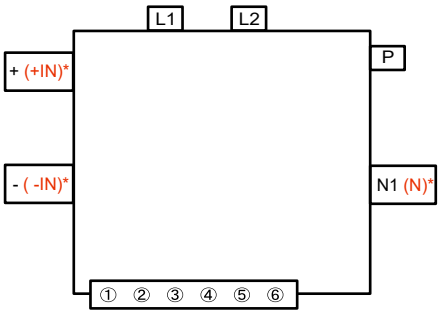


Table.2 Standard value is changed by the tool specification
(Type A and B are the same value)

	Terminal		Resistance value
	multimeter (+)	multimeter (-)	
※	L2	P	**1.32MΩ / 0.66MΩ** **(Ref. value 1) (Ref. value 2)**
※	P	L2	**1.01MΩ / 0.76MΩ** **(Ref. value 1) (Ref. value 2)**

※ By kind of multimeter , the value may change significantly.

Ref. value 1
Specifications for Multimeter
Manufacturer : FLUKE
Model name : FLUKE11
Power source : DC9V.

Ref. value 2
Specifications for Multimeter
Manufacturer : SANWA
Model name : PM3
Power source : DC3V.

▶ If it is abnormal,replace ACTIVE FILTER MODULE

Check Point 2 : Check the Output DC voltage (between P and N)

・Check the Output DC voltage (between P and N) of compressor stopping and operating.

>> If the output voltage of compressor operating is less than the output voltage of compressor stopping, Active Filter Module is detective. >> **Replace Active Filter Module**

IPM
(Mounted on Transistor PCB)

Check Point 1

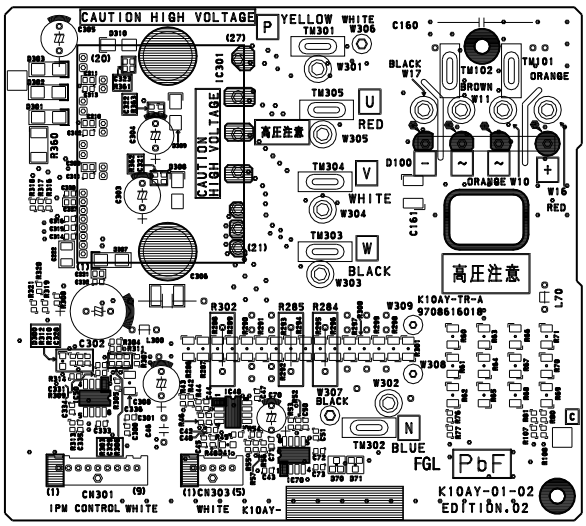
① Disconnect the connection wires between the Transistor PCB - Capacitor PCB and Transistor PCB - Inverter Compressor.

② Set the tester to the "Resistance" mode, and measure the resistance between the following terminals.

TM301 (P) - TM305(U) / TM304(V) / TM303(W)
TM302 (N) - TM305(U) / TM304(V) / TM303(W)

③ Judge the result of ② as follows:

Terminal		Resistance value
Tester(+)	Tester(-)	
P	U	Over 2kΩ (Including ∞Ω)
P	V	
P	W	
U	P	Over 20kΩ (Including ∞Ω)
V	P	
W	P	
N	U	
N	V	
N	W	
U	N	Over 2kΩ (Including ∞Ω)
V	N	
W	N	



Check Point 2

④ Set the tester to the "Diode" mode, and measure the voltage value between the following terminals.

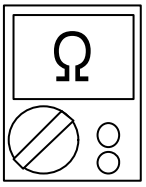
⑤ Judge the result of ④ as follows:

Terminal		Tester display
Tester(+)	Tester(-)	
P	U	∞
P	V	
P	W	
U	P	0.3V～0.7V
V	P	
W	P	
N	U	
N	V	
N	W	
U	N	∞
V	N	
W	N	

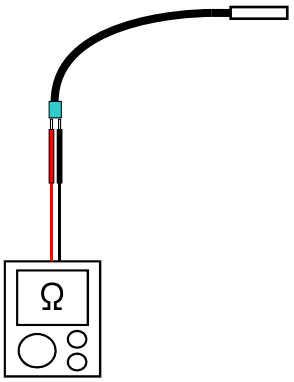
Thermistor

Check Point : Check thermistor resistance value

□ Remove connector and check Thermistor resistance value.

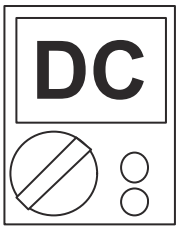


Temperature [°F]	Temperature [°C]	Resistance Value [kΩ] Thermistor A	Thermistor B	Thermistor C
- 22	- 30	920.2	88.4	205.7
- 4	- 20	503.5	48.1	109.0
14	- 10	286.3	27.3	60.2
23	- 5	218.6	20.8	45.4
32	0	168.6	16.1	34.6
41	5	130.9	12.5	26.5
50	10	102.5	9.7	20.6
59	15	80.8	7.7	16.0
68	20	64.2	6.1	12.6
77	25	51.4	4.9	10.0
86	30	41.3	3.9	8.0
104	40	27.3	2.6	5.2
122	50	18.4	1.7	3.5
140	60	12.7	1.2	2.4
158	70	8.9	0.8	1.6
176	80	6.4	0.6	1.2
194	90	4.6	0.4	0.8
212	100	3.4	0.3	0.6
230	110	2.6	---	---
248	120	2.0	---	---
Applicable Thermistors		Discharge temp. TH Compressor temp. TH	Heat exchanger. TH	Outdoor temp. TH

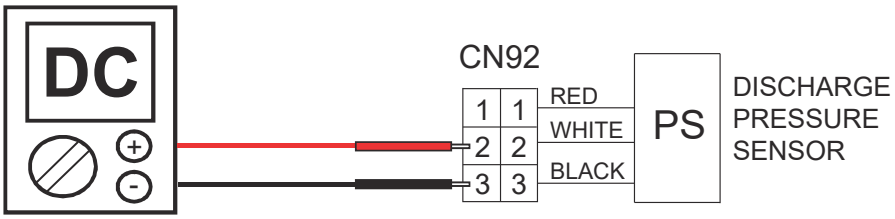


Discharge pressure sensor (AOUG36/48LMAS1)

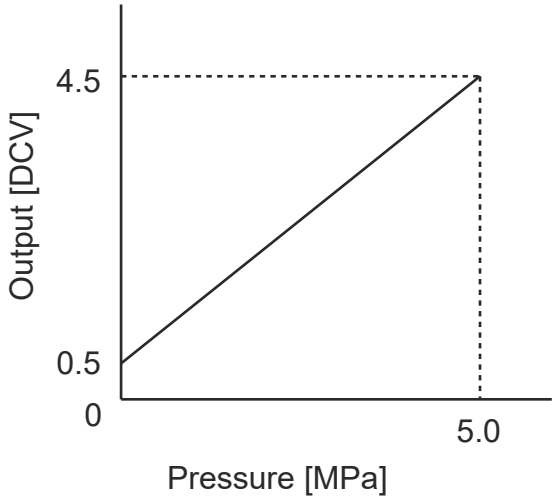
Check Point : Check Voltage from Main PCB



☐ With the connector connected to the PCB,
measure the voltage between CN92:2-3 of the Main PCB.



▪ Characteristics of pressure sensor



Refrigerant R410A
INVERTER

4. CONTROL AND FUNCTIONS

CONTENTS

4. DESCRIPTION OF EACH CONTROL OPERATION

1. COMPRESSOR FREQUENCY AT STARTUP

AOU24RGLX
AOU30RGLX

Compressor frequency soon after starting
is controlled as shown below.

When it is first start after switching on a breaker, Pattern II is applied.

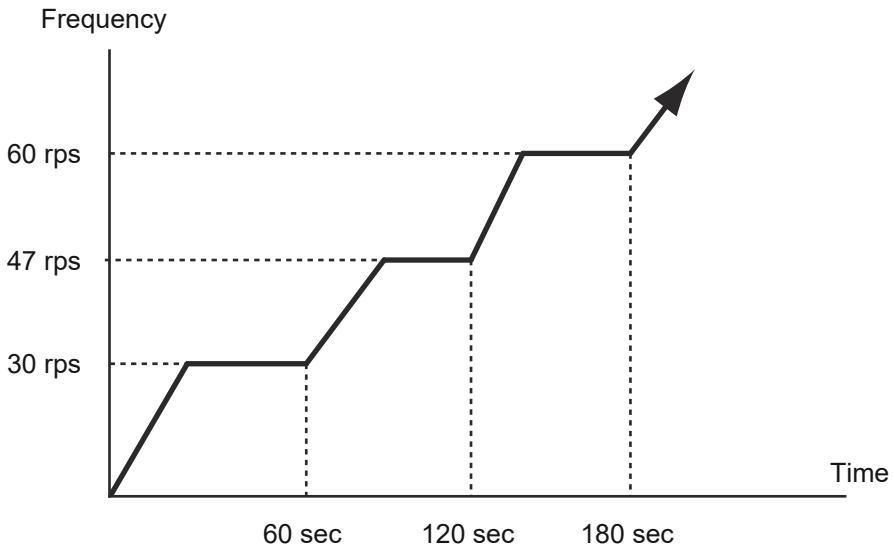
Pattern I

Condition
(Normal)

In Cooling or dry operation

In Heating operation within
3 hours after compressor stop
and compressor bottom
thermistor is over 89.6°F (32˚C)

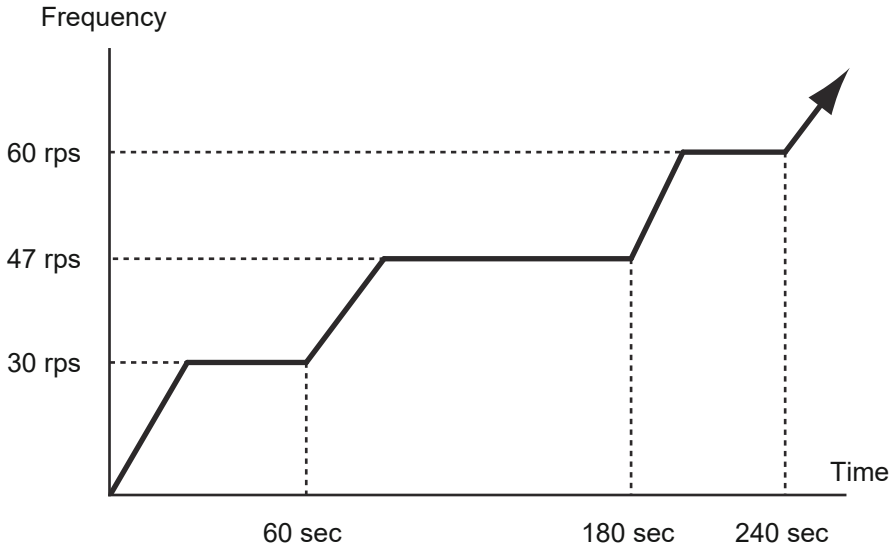
Defrost operation
Start after defrosting



Pattern II

Condition
(Oil and refrigerant are mixed
in compressor)

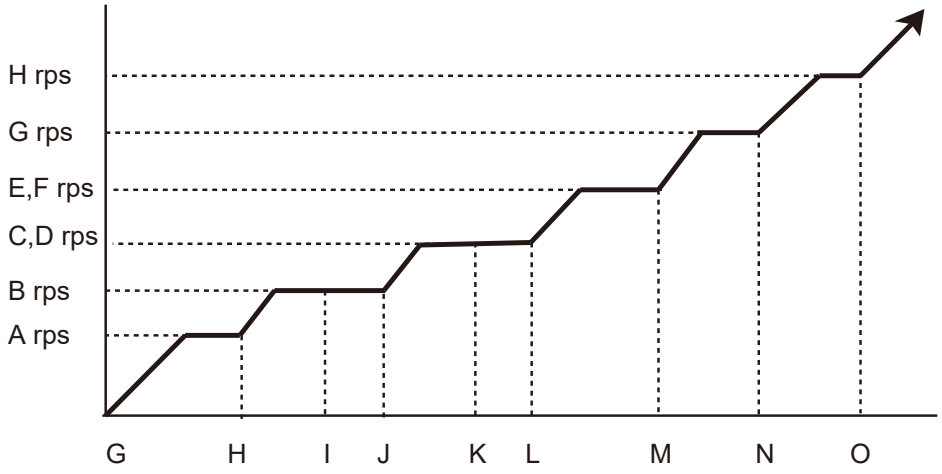
In Heating operation
over 3 hours after
compressor stop
or compressor bottom
thermistor is under 89.6°F (32˚C)



AOUG36LMAS1
AOUG48LMAS1

Operation frequency control at startup.

Compressor frequency immediately after startup.



[Frequency]

	A rps	B rps	C rps	D rps	E rps	F rps	G rps	H rps
AOUG36LMAS1 AOUG48LMAS1	30	36	47	47	60	60	80	100

[Time]

	G～H	H～I	I～J	J～K	K～L	L～M	M～N	N～O
AOUG36LMAS1 AOUG48LMAS1	60 sec	60 sec	480 sec	120 sec	300 sec	180 sec	120 sec	120 sec

2. BASIC FREQUENCY RANGE OF COMPRESSOR

Frequency of compressor is basically defined by operation mode as shown below.

	Cooling		Heating		Dry	
	Min	Max	Min	Max	Min	Max
AOU24RGLX	16 rps	72 rps	18 rps	90 rps	16 rps	29 rps
AOU30RGLX	16 rps	72 rps	18 rps	90 rps	16 rps	39 rps
AOUG36LMAS1	16 rps	110 rps	16 rps	117 rps	16 rps	76 rps
AOUG48LMAS1	16 rps	110 rps	16 rps	117 rps	16 rps	76 rps

3. COMPRESSOR FREQUENCY LIMITED BY OUTDOOR TEMPERATURE

Frequency of compressor is limited
by outdoor temperature as shown below.

Minimum frequency in cooling or dry operation

	under 14 ˚F (-10 ˚C)	over 14 ˚F (-10 ˚C) under 32 ˚F (0 ˚C)	over 32 ˚F (0 ˚C) under 50 ˚F (10 ˚C)	over 50 ˚F (10 ˚C) under 100 ˚F (38 ˚C)	over 100 ˚F (38 ˚C)
AOU24RGLX	40 rps	32 rps	25 rps	12 rps	25 rps
AOU30RGLX	40 rps	32 rps	25 rps	16 rps	25 rps

	under 26.6 ˚F (-3 ˚C)	over 26.6 ˚F (-3 ˚C) under 120.2 ˚ F (49˚C)	over 120.2 ˚F (49 ˚C)
AOUG36LMAS1 AOUG48LMAS1	26 rps	20 rps	25 rps

Minimum frequency in heating operation

	under 14 ˚F (-10 ˚C)	over 14 ˚F (-10 ˚C) under 32 ˚F (0 ˚C)	over 32 ˚F (0 ˚C) under 45 ˚F (7 ˚C)	over 45 ˚F (7 ˚C)
AOU24RGLX	40 rps	25 rps	25 rps	16 rps (not working)
AOU30RGLX	42 rps	35 rps	26 rps	16 rps (not working)

	under 3.2˚F (-16 ˚C)	over 3.2˚F (-16 ˚C) under 12.2˚F(-11˚C)	over 12.2˚F (-11˚C) under 21.2˚F(-6˚C)	over 21.2˚F (-6 ˚C) under 30.2˚F(-1˚C)	over 30.2 ˚F (-1 ˚C)
AOUG36LMAS1 AOUG48LMAS1	40 rps	35 rps	30 rps	25 rps	20 rps

Maximum frequency in heating operation

	over -4.0˚F (-20 ˚C) under 75.2˚F (24˚C)
AOU24RGLX AOU30RGLX	90 rps

	over -4.0˚F (-20 ˚C) under 53.0˚F (12˚C)	over 53.0˚F (12˚C) under 60.8˚F (16˚C)	over 60.8˚F (16˚C) under 68.0˚F (20˚C)	over 68.0˚F (20˚C) under 75.2˚F (24˚C)
AOUG36LMAS1 AOUG48LMAS1	110 rps	100 rps	90 rps	80 rps

5. COOLING OPERATION

A sensor (room temperature thermistor) built in an indoor unit body usually perceives difference or variation between set temperatu re and present room temperature, and controls operation frequency of the compressor.

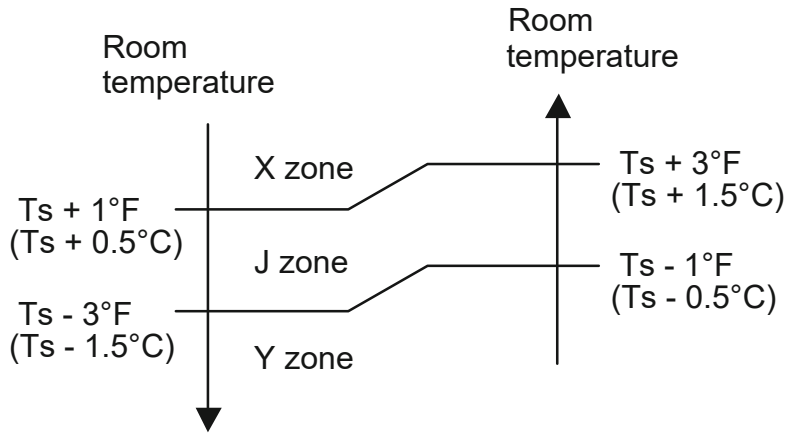
* When the room temperature is 7°F(3.5°C) higher than a set temperature, the compressor operation frequency will attain to maximum performance.

* When the room temperature is 1°F(0.5°C) lower than a set temperature, the compressor will be stopped.

* When the room temperature is between +7°F(+3.5°C) to -1°F(-0.5°C) of the setting temperature, the compressor frequency is controlled within the range shown in Table 1.

6. DRY OPERATION

Compressor frequency is defined by the set temperature and room temperature as below.



	Operating frequency		
	X zone	J zone	Y zone
AOU24RGLX	29 rps	29 rps	0 rps
AOU30RGLX	39 rps	39 rps	0 rps
AOUG36LMAS1	76 rps	76 rps	0 rps
AOUG48LMAS1	76 rps	76 rps	0 rps

7. HEATING 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 frequency of the compressor.

* When room temperature is lower by 9°F (4.5°C) than a set temperature, compressor operation frequency will attain to maximum performance.

* When room temperature is higher 1°F (0.5°C) than set temperature, compressor will be stopped.

* When room temperature is between +1° F(+0.5°C) to -9°F(-4.5°C) of the setting temperature, the compressor frequency is controlled within the range shown in Table 1.

In heating operation
Maximum frequency is limited by airflow mode

	High	Medium	Low	Quiet
AOU24RGLX	90 rps	55 rps	41 rps	34 rps
AOU30RGLX	90 rps	67 rps	59 rps	54 rps
AOUG36LMAS1	117 rps			
AOUG48LMAS1				

2. COMPRESSOR PREHEATING

It works to keep compressor temperature higher than around
and prevent oil and refrigerant from mixing in a compressor.

AOU24RGLX
AOU30RGLX
AOUG36LMAS1
AOUG48LMAS1

It works when outdoor temperature is lower than 68°F (20°C)
and a compressor stops for 30 minutes.

When, power is applied to a compressor to be heated.

When operation starts or outdoor temperature exceed 77°F (25°C), preheating ends.

3. AUTO CHANGEOVER OPERATION

When AUTO mode is set using a remote control,
optimum operation mode is selected from Heating, Cooling and Monitoring mode.
In operation, optimum mode is automatically switched by temperature changes.
Set temperature can be set between 64°F (18°C) and 86°F (30°C) by 1°F (0.5°C).

① When operation starts, indoor fan and outdoor fan are operated for around 1 minutes.
Room temperature and outdoor temperature are sensed, and the operation mode is selected in accordance with the table below. **<Monitoring mode>**

Operation mode selection table

Room temperature (TR)	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

*If it's Middle zone, operation mode of indoor unit is selected as below.

(1). 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.

(2). Selected by the 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.

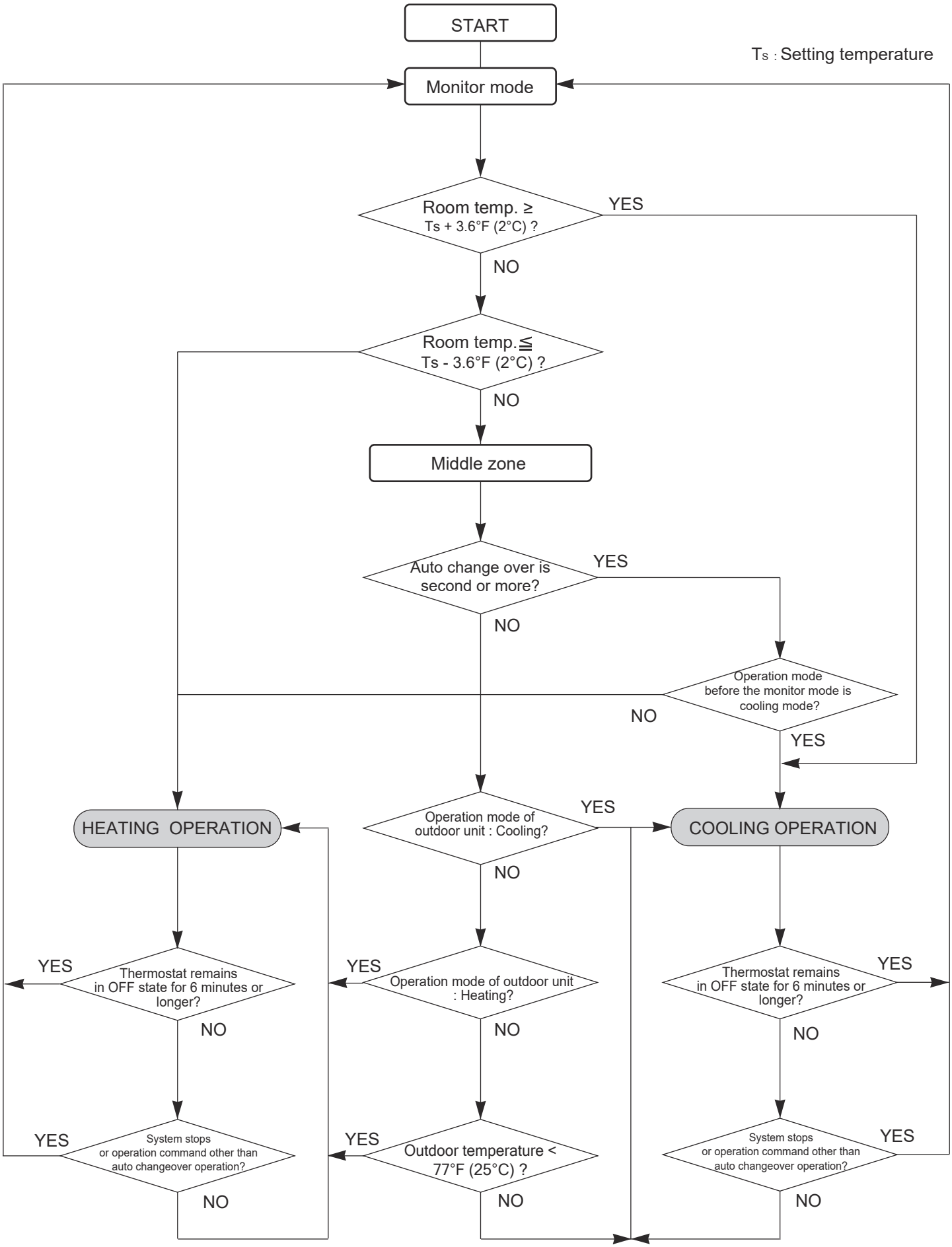
Outdoor temperature zone selection

Temperature	Mode
77°F (25°C) and over	Cooling
75.2°F (24°C) and under	Heating

② When the compressor was stopped for 6 consecutive minutes by the temperature control function after the Cooling or Heating mode was selected at ① above, operation is switched to Monitoring and the operation mode is selected again.

③ When the middle zone is selected on the predetermining of the operation mode, the operation mode before the changing to the monitor mode is selected.

AUTO CHANGEOVER operation flow chart



4. INDOOR FAN CONTROL

1. FAN SPEED

Indoor fan speed is defined by operation mode and airflow mode.

		Airflow Volume (CFM)			
		AMUG24LMAS	AMUG30LMAS	AMUG36LMAS	AMUG48LMAS
Heating	High	800	870	1200	1640
	Medium +	-	-	-	-
	Medium	670	730	740	1020
	Low	590	590	590	820
	Quiet	310	310	490	590
	Cool air prevention	-	-	-	-
	S-low	300	300	480	480
Cooling	High	800	870	1200	1640
	Medium	670	730	740	1020
	Low	590	590	590	820
	Quiet	310	310	490	590
	S-low	300	300	480	480
Fan	High	800	870	1200	1640
	Medium	670	730	740	1020
	Low	590	590	590	820
	Quiet	310	310	490	590
	Soft quiet	300	300	480	480
Dry		310	310	490	590

In Economy operation and when operation mode is fan,
airflow is 1 step downs.

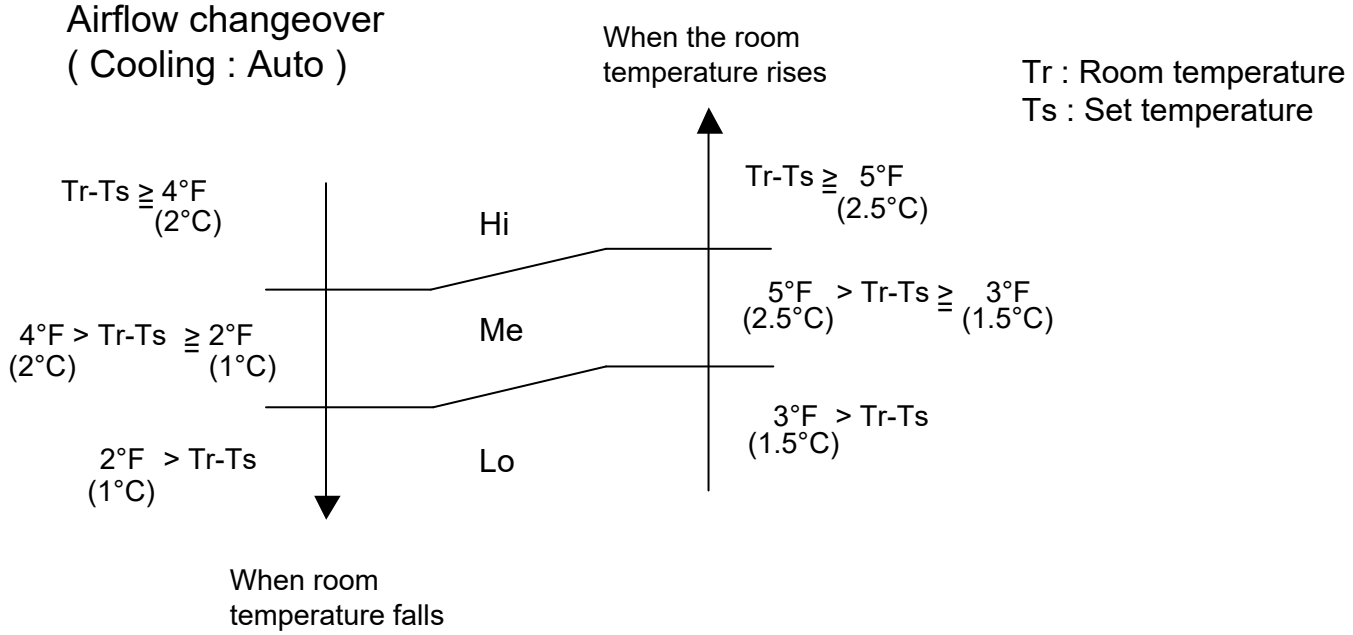
2. FAN OPERATION

In fan operation, airflow can be switched in 5 steps such as Auto, Quiet, Low, Med, High, while an indoor fan only runs.

3. COOLING OPERATION

Switch the airflow [Auto], and the indoor fan motor will run according to room temperature, as shown below.

Airflow changeover
(Cooling : Auto)



*1 : Contains a condition to the following

① When the operation mode is set to AUTO mode at the start of operation.
② When the setting temperature was changed.
③ When the operation mode was changed to Cooling mode.
④ When the airflow mode was changed to AUTO mode.

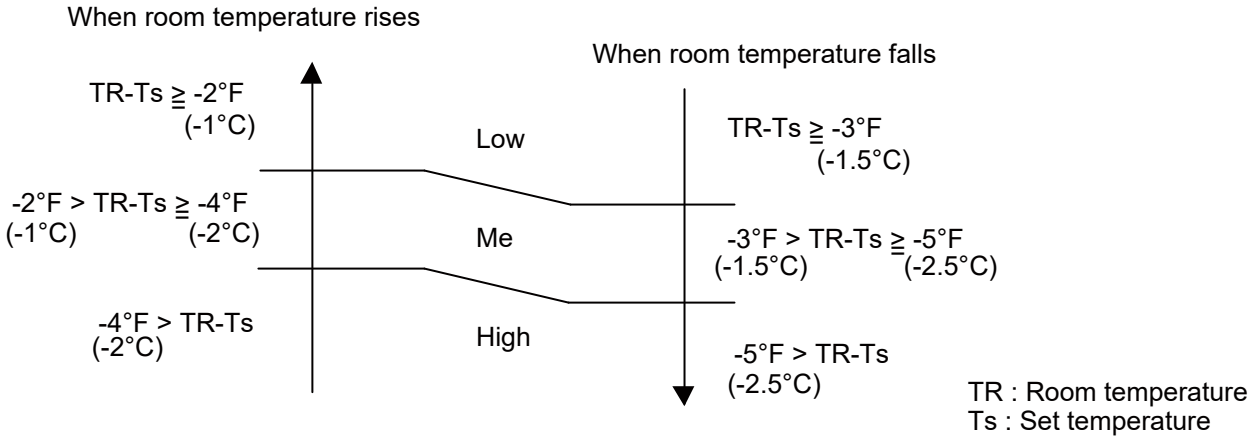
4. DRY OPERATION

In dry operation, fan speed setting can not be changed.

5. HEATING OPERATION

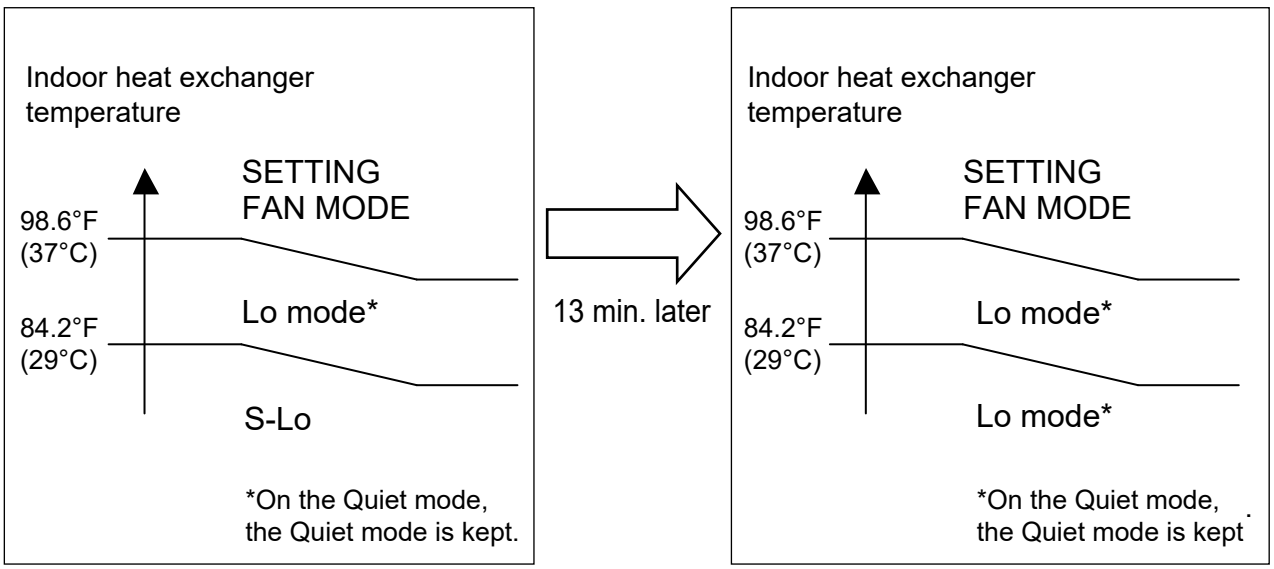
Switch airflow [AUTO], and an indoor fan motor will run according to room temperature as below.

Airflow changeover (Heating : Auto)



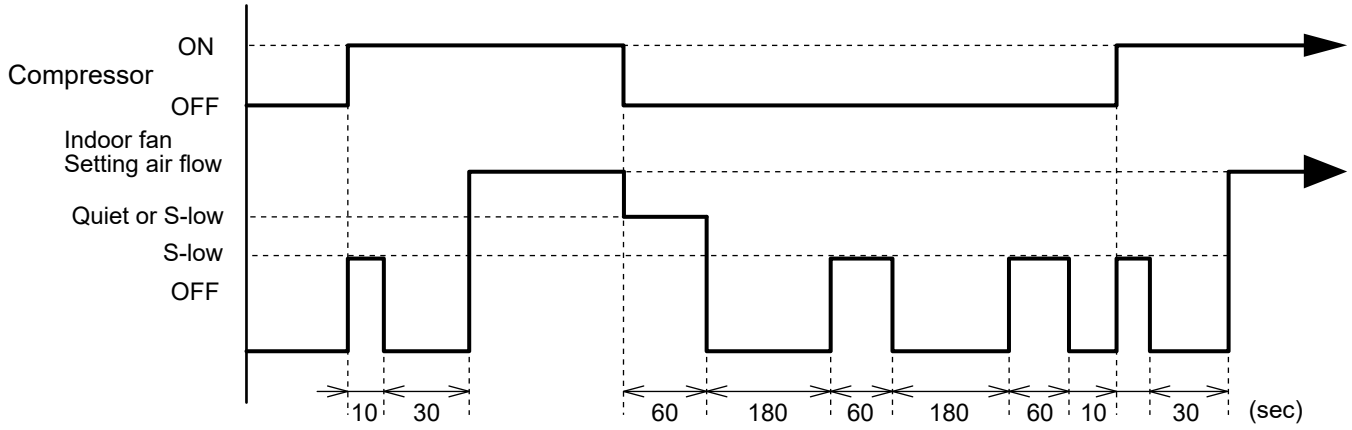
6. COOL AIR PREVENTION CONTROL (Heating mode)

The maximum value of the indoor fan speed is set as shown in Fig.7, based on the detected temperature by the indoor heat exchanger sensor on heating mode.
When the compressor does not operate, the indoor fan motor operates [S-Lo] mode.



7. FAN CONTROL FOR ENERGY SAVING

When the air flow setting except AUTO mode,
the indoor fan motor will run as below.



	Function setting 49		Note
	0	Setting air flow	In the case of 3 wire remote controller is connected, set it to 0 or 1. 3 wire remote controller can't be set it.
	1	Work	
Factory setting	2	Set by remote controller	This function can be set by 2 wire remote controller and the wireless remote controller.

8. DEFROST OPERATION

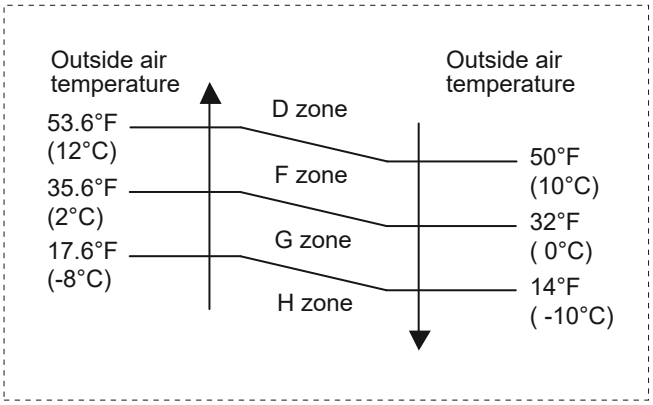
When defrost operation starts, indoor fan runs
according to cool air prevention control for 20 seconds.
And the fan is stopped if 20 seconds have passed.
When 60 seconds have passed after defrost operation is released,
the fan runs according to cool air prevention control.

5. OUTDOOR FAN CONTROL

1. FAN SPEED

Outdoor fan speed is defined by operation mode.
and AOU24/30RGLX fan speed is defined
by outdoor temperature zone.

Outside air temperature zone selection



(rpm)

	Cooling (D zone)	Heating	Dry	Low outdoor temperature cooling / dry		
				F zone	G zone	H zone
AOU24RGLX	850 / 800 / 620 / 500 / 400	900/ 850/ 800/ 620/ 550/ 450	550/ 450	500/ 320/ 250	300/ 230/ 200	220/ 200
AOU30RGLX	850 / 800 / 620 / 500 / 400	900/ 850/ 800/ 620/ 550/ 450	550/ 450	500/ 320/ 250	300/ 250/ 200	220/ 200

(rpm)

	Cooling	Heating
AOUG36LMAS1 AOUG48LMAS1	890/ 830/ 710/ 640/ 580/ 520/ 460/ 390/ 340/ 290	910/ 830/ 710/ 640/ 580/ 520/ 460/ 390/ 340/ 290

2. AFTER DEFROST

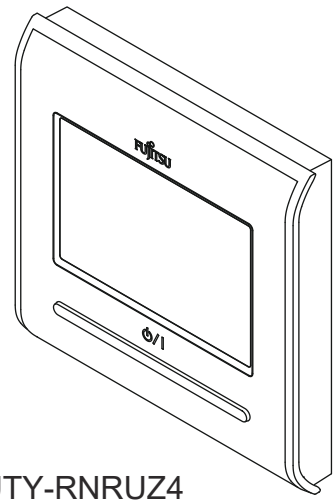
After defrost control runs on heating mode, fan speed keeps at higher speed as below without relating to compressor frequency.

	Fan speed
AOU24RGLX	900 rpm
AOU30RGLX	900 rpm
AOUG36LMAS1	640 rpm
AOUG48LMAS1	640 rpm

6. TIMER OPERATION CONTROL

1. WIRED REMOTE CONTROL

AR-WEE1U (2-wire remote control)



UTY-RNRUZ4

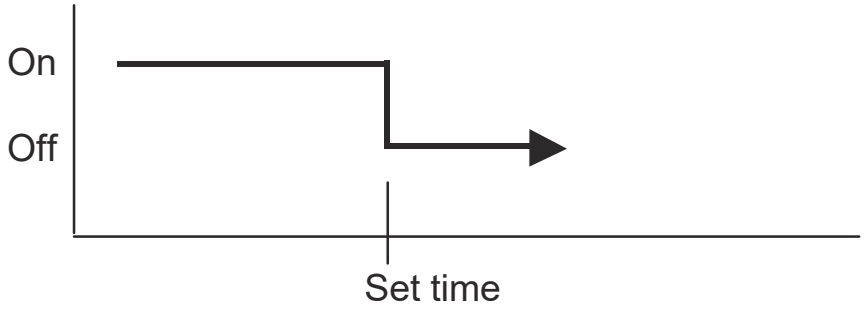
- OFF TIMER
- ON TIMER
- WEEKLY TIMER

*3-wire remote control can be connected
When 3-wire remote control is connected, set the DIP-SW on the controller PCB
Refer to the installation manual for detailed.
If used in combination with wireless and wired remote control, the following function is limited.

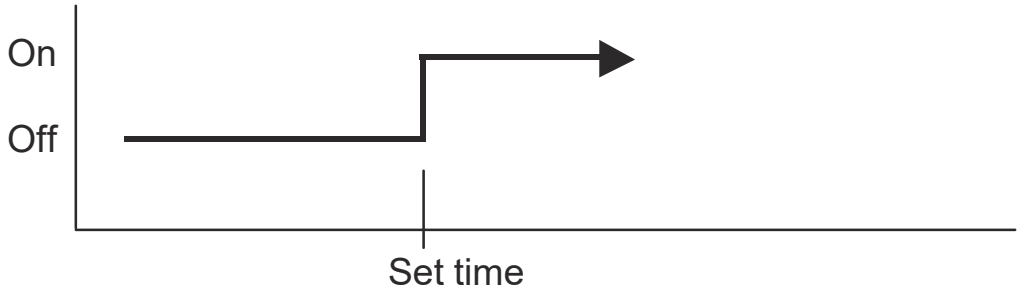
- Sleep timer
- Timer
- 10°C heat operation

1-1. ON / OFF TIMER

・OFF timer : When the clock reaches the set time, the air conditioner will be turned off.



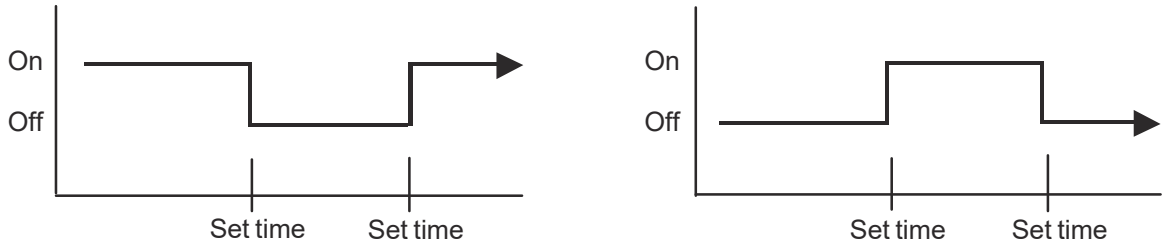
・ON timer : When the clock reaches the set time, the air conditioner will be turned on.



1-2. WEEKLY TIMER

1-2-1. WEEKLY TIMER

・Use this timer function to set operating time for each day of the week.
・The weekly timer allows up to two ON and OFF time to set up per day.

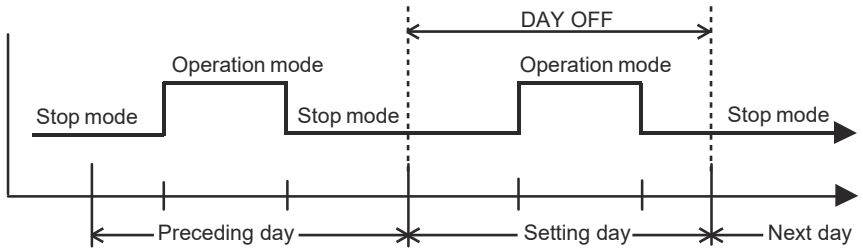


・The operating time can be set in 30 min increments only.
・The OFF time can be carried over to next day.
・The ON timer and the OFF timer functions cannot be set with using the weekly timer.
Both ON and OFF time must be set.

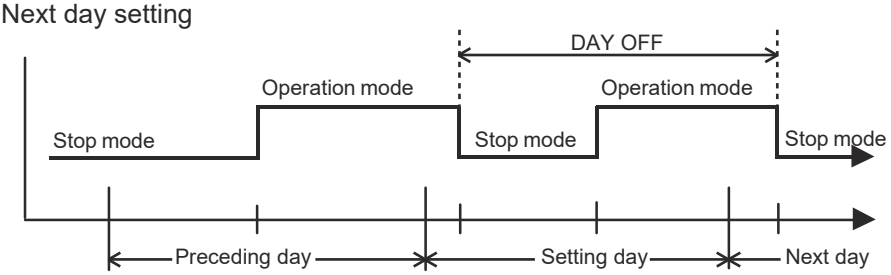
1-2-2. DAY OFF setting

・DAY OFF setting is only available for days for which weekly settings already exist.
・If the operating time carries over to the next day (during a next day setting), the effective DAY OFF range will be set as shown below.

・Normal



・Next day setting

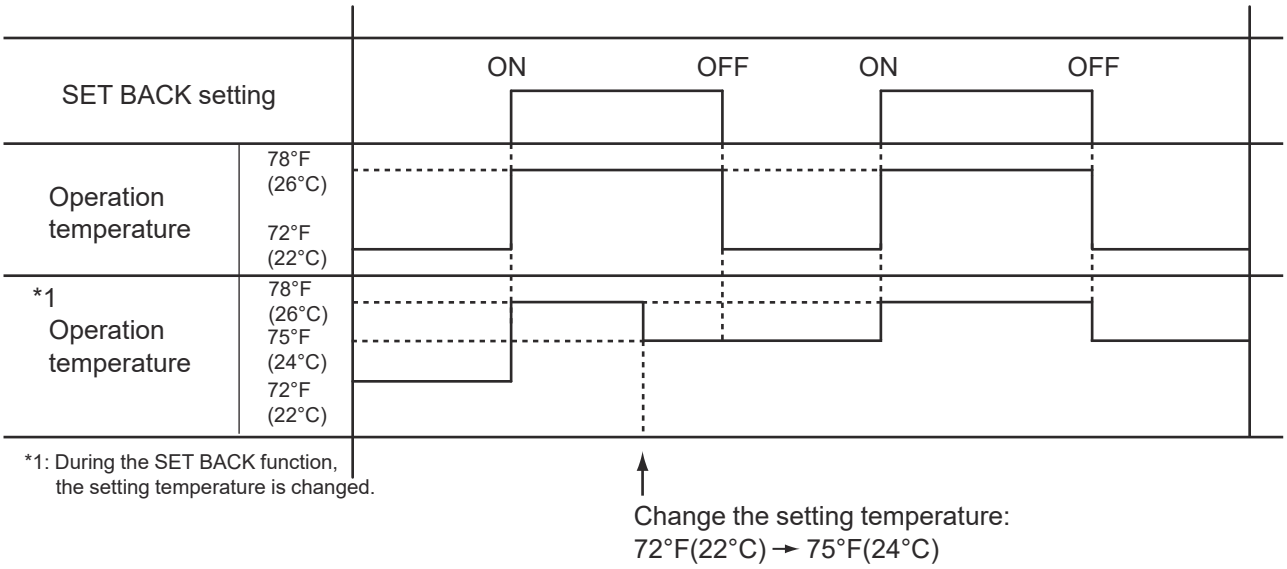


・DAY OFF setting can only be set one time.
DAY OFF setting is cancelled automatically after the set day has passed.

1-3. 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))



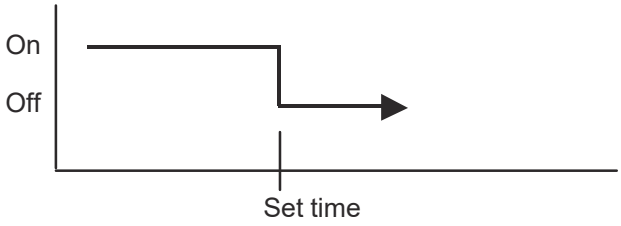
2. WIRELESS REMOTE CONTROL (OPTION)

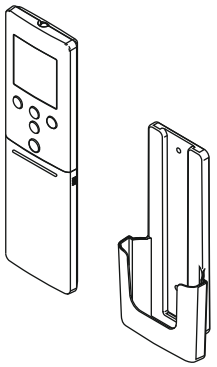
AR- REJ1U

- OFF TIMER
- ON TIMER
- PROGRAM TIMER
- SLEEP TIMER

2-1. ON / OFF TIMER

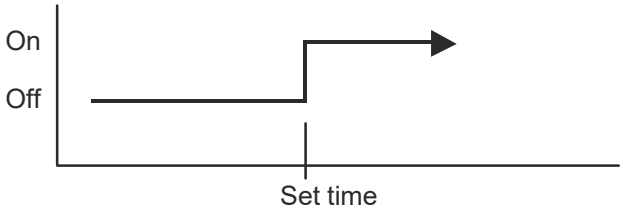
・OFF timer : When the clock reaches the set time, the air conditioner will be turned off.





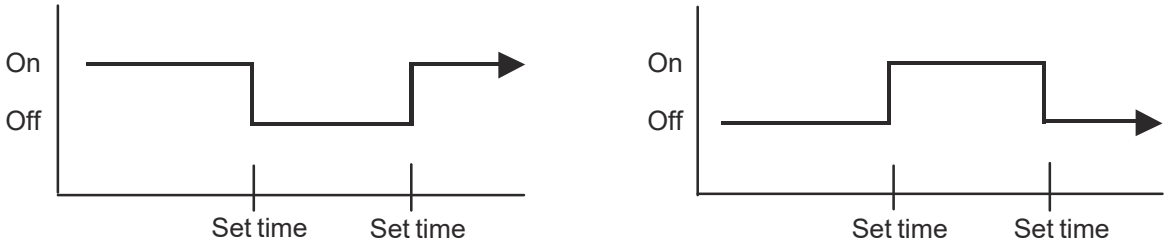
UTY-LBTUM

・ON timer : When the clock reaches the set time, the air conditioner will be turned on.



2-2. PROGRAM TIMER

・The program timer allows the OFF timer and ON timer to be used in combination one time.



・Operation will start from the timer setting (either OFF timer or ON timer) whichever is closest to the clock's current timer setting.
The order of operations is indicated by the arrow in the remote control unit's display.

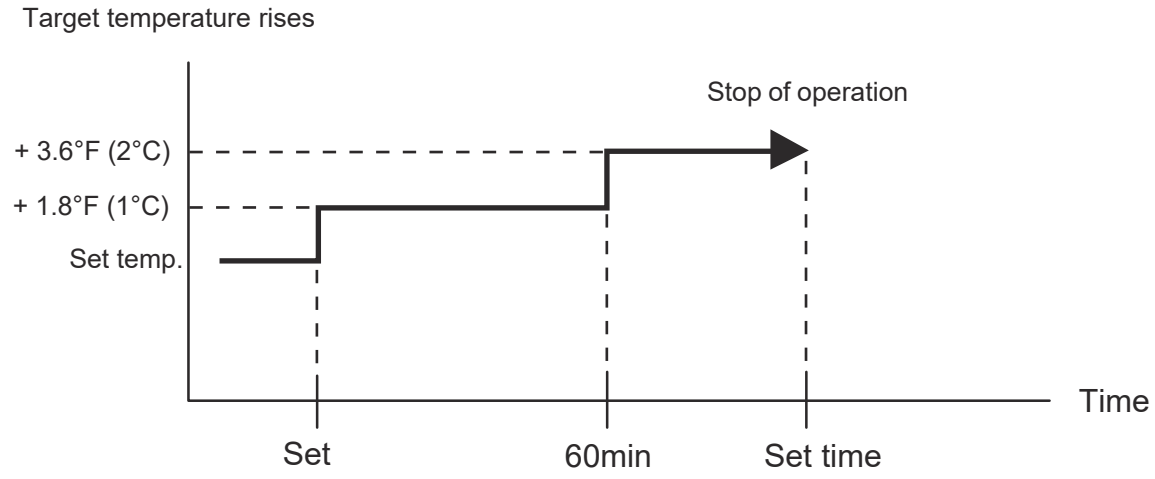
・SLEEP timer operation cannot be combined with ON timer operation.

2-3. SLEEP TIMER

- When a sleep timer is set, room temperature is monitored and an 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.

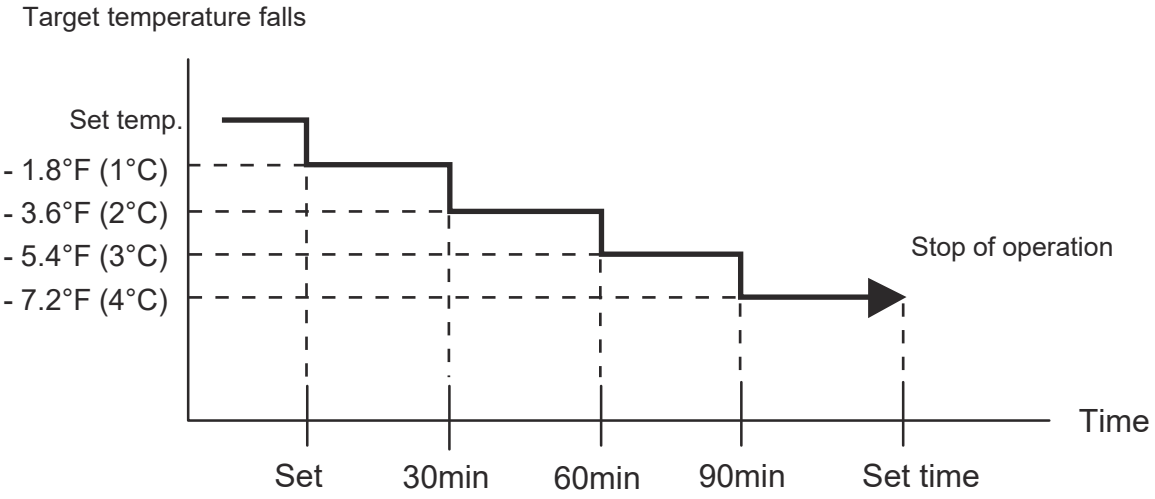
In cooling / dry operation

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 time of timer setting.



In heating operation

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 stops at the time of timer setting.



7. MINIMUM HEAT OPERATION

MINIMUM HEAT operation functions by pressing MIN. HEAT button on a wireless remote control.
This function prevents a room from overcooling. (When there is no one)

* Timer and MINIMUM HEAT (Wireless RC only) functions of a remote control specified as the secondary cannot be used.

Minimum heat operation

Operatioin mode	Heating
Set temperature	50°F (10°C)
Fan mode	Auto

8. ECONOMY OPERATION

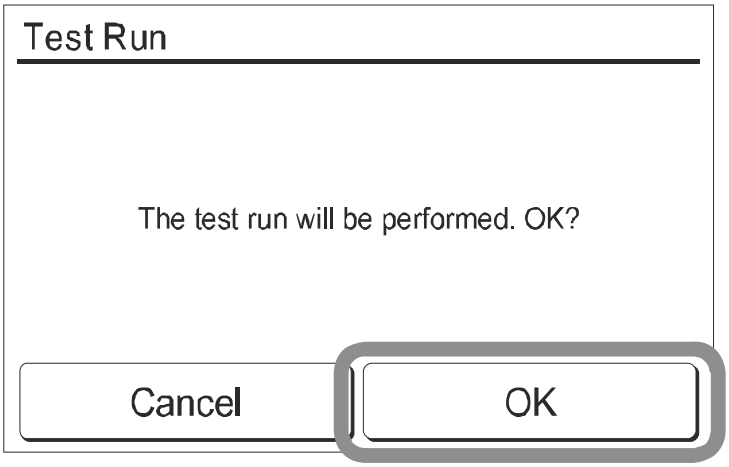
ECONOMY operation functions by pressing ECONOMY button on a remote control.
This function shifts target temperature like below.

Mode	Cooling/ Dry	Heating
Target temperature	Set temperature + 2°F (1°C)	Set temperature - 2°F (1°C)

9. TEST OPERATION CONTROL

With Wired Remote Control

Touch the [Test run] in the “Maintenance” screen.
The “Test Run” screen is displayed.
Touch [OK] to return to the Maintenance screen, and start the test run.
The test run will automatically end is approximately 60 min.
If you wish to cancel the test run before it is complete, return to the “Monitor Mode screen”, and touch the On/Off button.



*Installer password is required.
If the password has been charged from the default setting “0000”, contact to the installer.

With Wireless Remote Control

Under the condition where the air conditioner runs, press the TEST RUN button, and the test operation control mode will appear.
During test running, the Operation LED and Timer LED of the air conditioner body blinks simultaneously.
Set the test operation mode, and the compressor will continue to run regardless of whether the room temperature sensor detects.
The test operation mode is released if 60 minutes have passed after setting up the test operation.

10. FORCED OPERATION

FORCED AUTO OPERATION

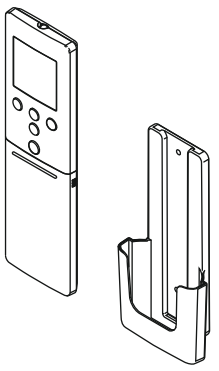
If a wireless remote control or battery power is lost,
this function can work without a remote control.
This function starts by pushing a body button for 3 seconds
like the below table.
(It doesn't work when a body button is pushed for 10 seconds.)

Forced auto operation

Operation mode	Auto changeover
Set temperature	75°F (24°C)
Fan control mode	Auto
Louver (group)	Last position
Louver (individual)	Off
Timer mode	Continuous operation
Economy	Off
Energy saving fan	As a setting
Swing	Off
Human sensor	Off

FORCED COOLING OPERATION

This function is for cooling test operation and pump down.
This function starts by pushing a body button for 10 seconds
like the below table.



UTY-LBTUM

Forced cooling operation

Operation mode	Cooling
Set temperature	75°F (24°C)
Fan control mode	High
Set louver direction	Standard position
Louver swing	Off
Louver (individual)	Released
Timer mode	Continuous operation
Economy	Off
Energy saving fan	As a setting
Left and right swing	Off
Human sensor	Off

11. DEFROST OPERATION CONTROL

1. CONDITION OF STARTING DEFROST OPERATION

Defrost operation starts as below.

Tn : Outdoor heat-exchanger temperature.
Ta : Outside temperature.
Tn10 : Temperature of continuous operation at 10 minutes.
Tnb : Back 5 minutes temperature.

AOU24/30RGLX
(1st defrost after starting operation)

Compressor integrating operation time	Less than 17 minutes	More than 17 minutes	More than 57 minutes
Condition	Does not work	Tn ≤ 15.8°F (-9°C) and Ta - Tn ≥ 41°F (5°C) (and after 5 minutes, if 41°F (5°C))	Tn ≤ 23°F (-5°C) (and after 5 minutes, if 23°F (-5°C))

AOU24/30RGLX
(2nd defrost or later after staring operation)

Compressor integrating operation time	Less than 35 minutes	More than 35 minutes
AOU24, 30RGLX, Condition	Does not work	① Tn ≤ -13°F (-25°C) ② Tn - Tn10 < 9°F (-5°C) (Tn ≤ 21.2°F (-6°C)) ③ Tn - Tnb < -3.6°F (-2°C) (Tn ≤ 21.2°F (-6°C))

AOUG36/48LMAS1

Normal defrost	Compressor integrating operation time	
	Less than 35 minutes	More than 35 minutes
	Does not operate	Tn ≦ 1.4°F (-17°C) (at Ta ≧ 14°F (-10°C)
		Tn ≦ 0.8 x Ta-11.6 or Tn ≦ -18.4°F (-28°C) (at 4°F (-20°C) ≦ Ta < 14°F (-10°C)
		Tn ≦ 0.8 x Ta-11.6 or Tn ≦ -18.4°F (-28°C) (at Ta < 4°F (-20°C))
		Tn - Tn-1 < 28.4°F (-2°C) (Tn 21.2°F (-6°C))

Tn : Outdoor heat-exchanger temperature.
Ta : Outside temperature.
Tn-1 : Before 5 minutes detected Tn.

Condition of Integrating defrost operation

Compressor integrating operation time	More than 210 minutes (For long continuous operation)	More than 210 minutes (For long continuous operation)
Condition	Tn ≤ 26.6°F (-3°C) (and after 30 minutes, if 26.6°F (-3°C))	Tn ≤ 23°F (-5°C) (and after 5 minutes, if 23°F (-5°C))

Integrating (OFF count) defrost operation

Compressor integrating operation time	Less than 10 minutes* (For intermittent operation)
Condition	OFF count of compressor : 40 times

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

2. CONDITION OF THE DEFROST OPERATION COMPLETION

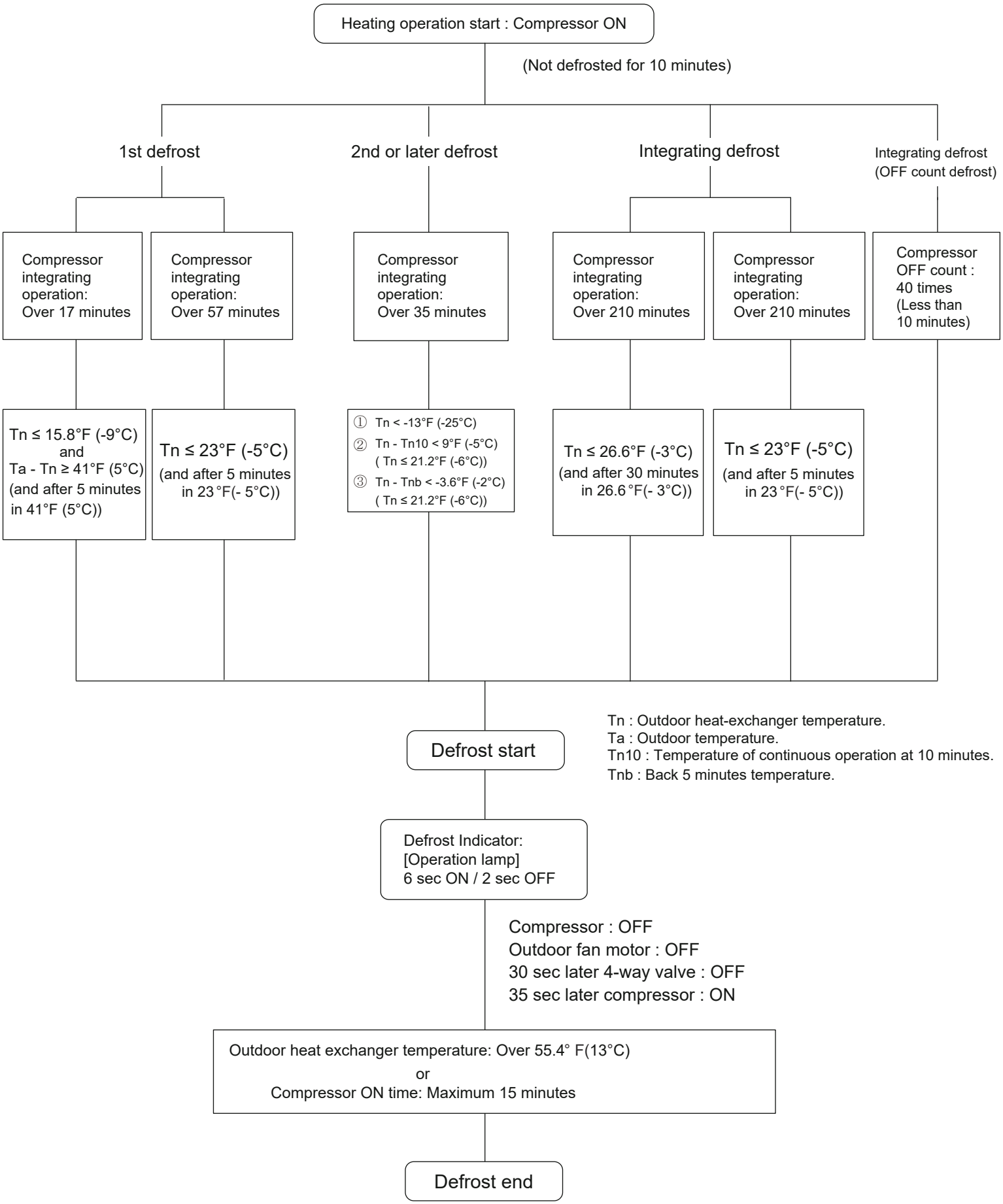
Defrost operation is released when conditions become as below.

AOU24/30RGLX	Outdoor heat-exchanger temperature is higher than 55.4°F (13°C) or Compressor operation time has passed 15 minutes.
AOUG36/48LMAS1	Outdoor heat-exchanger temperature is higher than 59.0°F (15°C) or Compressor operation time has passed 15 minutes.

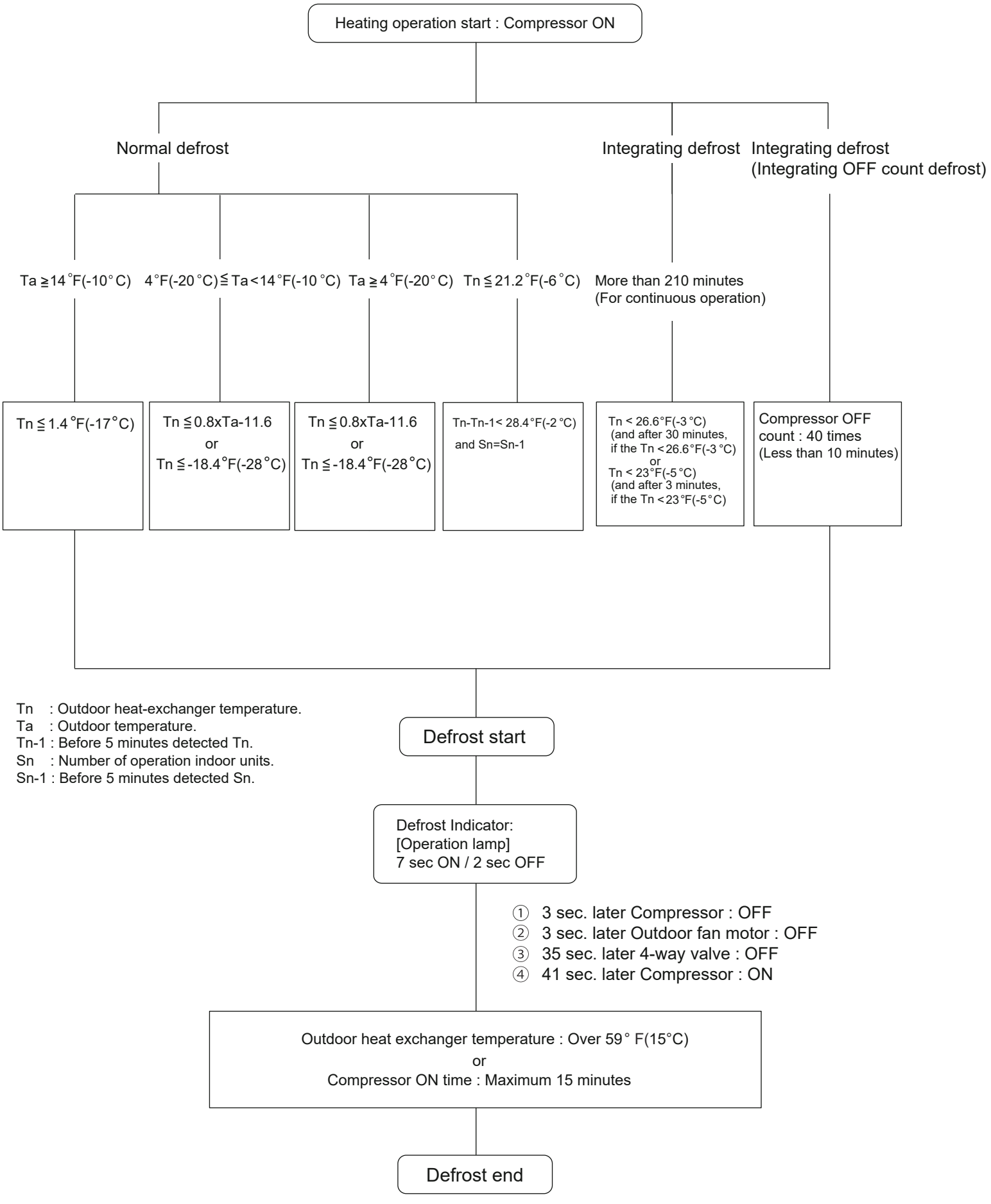
3. DEFROST FLOWCHART

Defrosting shall proceed by integrating operation time,
outdoor temperature and oudoor heat-exchanger temperature as below.

AOU24RGLX
AOU30RGLX



AOUG36LMAS1
AOUG48LMAS1



12. OFF DEFROST OPERATION CONTROL

When operation stops in the [Heating operation] mode, if frost is adhered to the outdoor unit heat exchanger, the defrost operation will proceed automatically. In this time, if indoor unit operation lamp flashes slowly (7 sec ON / 2 sec OFF), the outdoor unit will allow the heat exchanger to defrost, and then stop.

1. OFF DEFROST OPERATION CONDITION

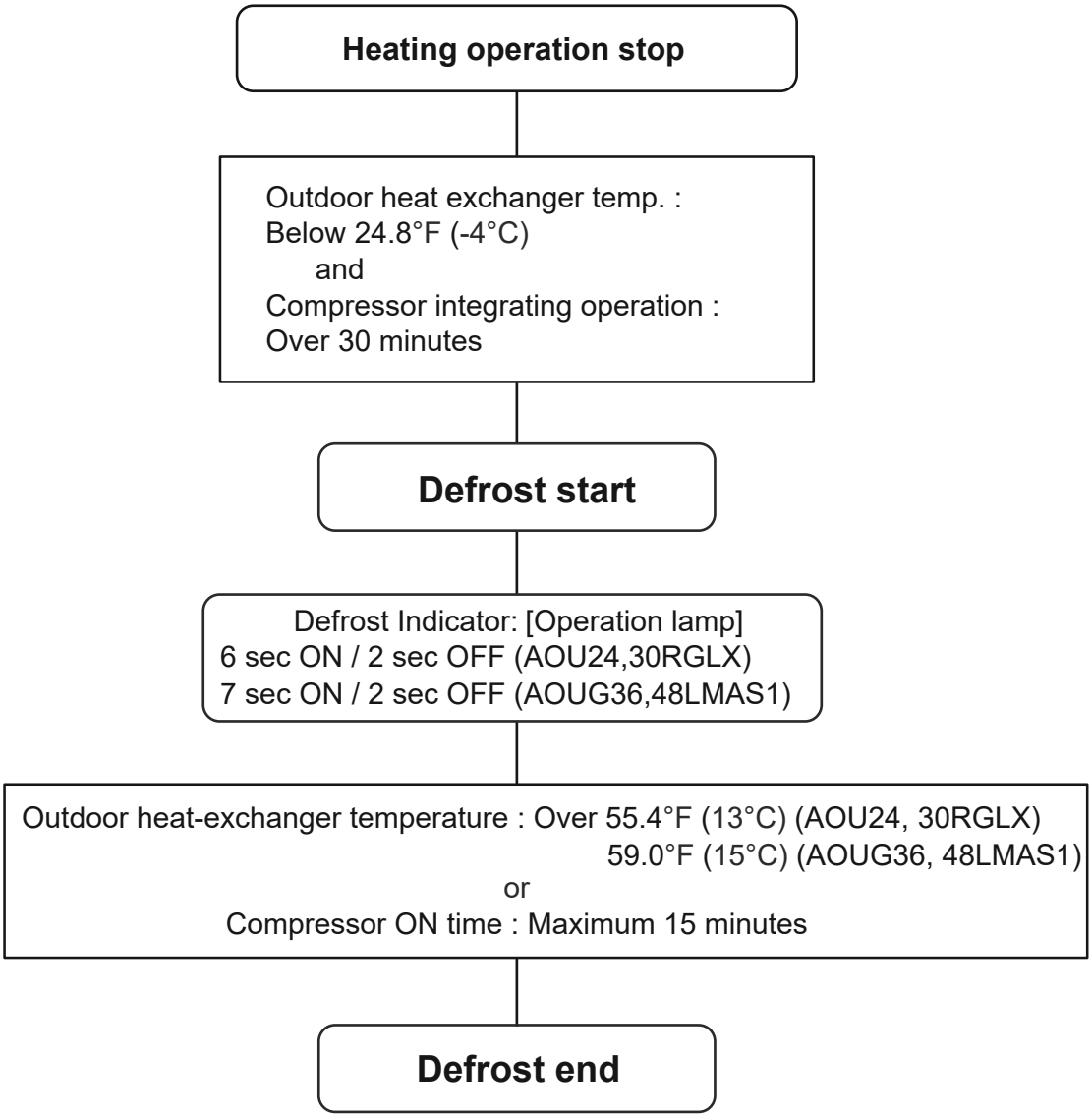
In heating operation, the outdoor heat-exchanger temperature is less than 24.8°F (-4°C), and compressor operation integrating time lasts for more than 30 minutes.

2. OFF DEFROST RELEASE CONDITION

OFF defrost operation is released when the conditions becomes as below.

Outdoor heat-exchanger temperature is higher than 55.4°F (13°C) (AOU24, 30RGLX)
59.0°F (15°C) (AOUG36, 48LMAS1)
or
Compressor operation time has passed 15 minutes.

3. OFF DEFROST FLOWCHART



13. PREVENT TO RESTART FOR 3 MINUTES (3 MINUTES ST)

The compressor won't enter operation status for 3 minutes after a compressor is stopped, even if any operation is given.

14. 4-WAY VALVE EXTENSION SELECT

At the time when air conditioner is switched from Cooling mode to Heating mode, a compressor is stopped, and a 4-way valve is switched in 3 minutes later after a compressor stopped.

15. AUTO RESTART

If power is interrupted by blackout, etc. in operation, the operation contents at that time are memorized. And when power is recovered, operation is automatically resumed with the memorized operation contents.

When power is interrupted and recovered during timer operation, timer operation is canceled, but only setting time is memorized.

Operation contents memorized

- Operation mode
- Set temperature
- Set airflow
- Timer mode and timer time (Set by wireless remote control)
- MIN. HEAT (Wireless remote control is in use)
- ECONOMY
- Air flow direction (Swing setting)
- Individual air flow direction (Swing setting)
- Human sensor auto saving (setting/timer)
- Human sensor auto off (setting/timer)
- Energy saving setting
- Each central setting

16. ELECTRONIC EXPANSION VALVE CONTROL

The most proper opening of an electronic expansion valve is calculated and controlled under the present operating condition based on the following values.
The compressor frequency, the temperatures detected by the discharge temperature sensor, the indoor heat-exchanger sensor, the outdoor heat-exchanger sensor, and the outdoor temperature sensor.

Pulse range of electronic expansion valve control

	Operation	Pulse range
AOU24RGLX AOU30RGLX	Cooling / Dry	53 ~ 480 pulse
	Heating	40 ~ 480 pulse
AOUG48LMAS1 AOUG36LMAS1	Cooling / Dry	53 ~ 480 pulse
	Heating	53 ~ 480 pulse

The EEV is set up at 480 pulses when a compressor is stopped.

Initialization (Input of 528 pulses toward closing direction) is operated under the following condition.

* When the power is turned on.
* 4 hours has passed since the last initialization, and 3 minutes has passed after the compressor stop. (If 12 hours has passed since the last initialization, the compressor is compulsorily stopped.)

17. VARIOUS PROTECTIONS

1. DISCHARGE GAS TEMPERATURE OVERRIDE PREVENTION CONTROL

Discharge gas thermosensor (discharge thermistor : Outdoor side)
detects discharge gas temperature.

AOU24RGLX
AOU30RGLX

When discharge temperature exceeds 219.2˚F (104.0˚C),
compressor frequency is decreased 10rps,
and it continues to decrease 10 rps every 120 seconds
until temperature dips from 219.2˚F (104.0˚C)

When discharge temperature dips from 213.8˚F (101.0˚C),
control of compressor frequency is released.

When discharge temperature exceeds 230.0˚F (110.0˚C),
compressor stops and indoor unit LED starts blinking.

AOUG36LMAS1
AOUG48LMAS1

When discharge temperature exceeds 219.2˚F (104.0˚C),
compressor frequency is decreased 30rps,
and it continues to decrease 30 rps every 120 seconds
until temperature dips from 219.2˚F (104.0˚C)

When discharge temperature dips from 213.8˚F (101.0˚C),
control of compressor frequency is released.

When discharge temperature exceeds 230.0˚F (110.0˚C),
compressor stops and indoor unit LED starts blinking.

2. CURRENT RELEASE CONTROL

AOU24RGLX
AOU30RGLX

The compressor frequency is controlled so that the outdoor unit input current does not exceeds the current limit value that was set up with the outdoor temperature.
The compressor frequency returns to the designated frequency of the indoor unit at the time when the frequency becomes lower than the release value.

Current release operation value / Release value

OT : Outdoor temperature

Heating

AOU24/30RGLX	
OT	(Control / Release)
62.6°F(17°C)	11.0A/ 10.5A
53.6°F(12°C)	13.0A/ 12.5A
41°F(5°C)	15.0A/ 14.5A
	15.0A/14.5A

Cooling

AOU24/30RGLX	
OT	(Control / Release)
122°F(50°C)	9.0A/ 8.5A
114.8°F(46°C)	10.0A/ 9.5A
104°F(40°C)	13.0A/ 12.5A
53.6°F(12°C)	14.5A/ 14.0A
35.6°F(2°C)	14.5A/ 14.0A
	14.5A/ 14.0A

2. CURRENT RELEASE CONTROL

Compressor frequency is controlled so that the outdoor unit input current does not exceeds the current limit value that was set up with the outdoor temperature.
The compressor frequency returns to the designated frequency of the indoor unit at the time when the frequency becomes lower than the release value.

AOUG36LMAS1
AOUG48LMAS1

Operation value / Release value

Cooling

Ta: Outdoor temperature

Outside air temperature	Outdoor unit fan speed									
	890rpm	830rpm	710rpm	640rpm	580rpm	520rpm	460rpm	390rpm	340rpm	290rpm
120.2°F (49°C) ≦ Ta	17.0A / 16.5A		15.0A / 14.5A		13.5A / 13.0A					11.0A / 10.5A
113.0°F (45°C) ≦ Ta < 120.2°F (49°C)	18.0A / 17.5A		16.0A / 15.5A							
100.4°F (38°C) ≦ Ta < 113.0°F (45°C)	22.0A / 21.5A				21.0A / 20.5A		20.0A / 19.5A		13.5A / 13.0A	
87.8°F (31°C) ≦ Ta < 100.4°F (38°C)						25.0A / 24.5A				
78.8°F (26°C) ≦ Ta < 87.8°F (31°C)										
71.6°F (22°C) ≦ Ta < 78.8°F (26°C)										
64.4°F (18°C) ≦ Ta < 71.6°F (22°C)	25.5A / 25.0A									
53.6°F (12°C) ≦ Ta < 64.4°F (18°C)										
44.6°F (7°C) ≦ Ta < 53.6°F (12°C)										
37.4°F (3°C) ≦ Ta < 44.6°F (7°C)										
26.6°F (-3°C) ≦ Ta < 37.4°F (3°C)										
17.6°F (-8°C) ≦ Ta < 26.6°F (-3°C)										
Ta < 17.6°F (-8°C)										

Heating

Ta: Outdoor temperature

Outside air temperature	Outdoor unit fan speed									
	890rpm	830rpm	710rpm	640rpm	580rpm	520rpm	460rpm	390rpm	340rpm	290rpm
75.2°F (24°C) ≦ Ta	19.0A / 18.5A									
68.0°F (20°C) ≦ Ta < 75.2°F (24°C)										
60.8°F (16°C) ≦ Ta < 68.0°F (20°C)	25.5A / 25.0A									
53.6°F (12°C) ≦ Ta < 60.8°F (16°C)										
41.0°F (5°C) ≦ Ta < 53.6°F (12°C)										
30.2°F (-1°C) ≦ Ta < 41.0°F (5°C)										
21.2°F (-6°C) ≦ Ta < 30.2°F (-1°C)										
12.2°F (-11°C)≦ Ta < 21.2°F (-6°C)										
3.2°F (-16°C)≦ Ta < 12.2°F (-11°C)										
-4.0°F (-20°C)≦ Ta < 3.2°F (-16°C)										
-13.0°F (-25°C)≦ Ta < -4.0°F (-20°C)										
≦ Ta < -13.0°F (-25°C)										

3. ANTIFREEZING CONTROL (Cooling and Dry mode)

The compressor frequency is decrease on cooling & dry mode when the indoor heat exchanger temperature sensor detects the temperature lower than Temperature Ⅰ.
Then, the anti-freezing control is released when it becomes higher than Temperature Ⅱ.

AOU24RGLX
AOU30RGLX

Anti-freezing protection operation / Release temperature

Outdoor temperature	Temperature Ⅰ	Temperature Ⅱ
Over than 50°F (10°C) *1 or 53.6°F (12°C) *2	39.2°F (4°C)	44.6°F (7°C)
Less than 50°F (10°C) *1 or 53.6°F (12°C) *2		55.4°F (13°C)

*1. When the temperature rises.
*2. When the temperature drops.

AOUG36LMAS1
AOUG48LMAS1

Anti-freezing protection operation / Release temperature

Outdoor temperature	Temperature Ⅰ	Temperature Ⅱ
Over than 50°F (10°C) *1 or 53.6°F (12°C) *2	37.4°F (3°C)	44.6°F (7°C)
Less than 50°F (10°C) *1 or 53.6°F (12°C) *2		

*1. When the temperature rises.
*2. When the temperature drops.

4. COOLING PRESSURE OVERRISE PROTECTION

36 and 48 models do not have this control.

AOU24RGLX
AOU30RGLX

When outdoor unit heat-exchanger sensor temperature exceeds 152.6°F (67°C), a compressor and outdoor fan motor stop and trouble display is performed.

5. HIGH PRESSURE PROTECTION

AOUG36/48LMAS1

During the compressor operation, when detect the condition of the following table value, the protection function will be worked.
The operation condition varies according to the compressor speed.
The protection function is, the compressor speed is descreased 7 rps every 60 seconds.
When the outdoor unit discharge pressure sensor rises above 580.2 psi (4 MPa), the compressor will stop.

Cooling operation

Compressor frequency[rps]	Operation value[psi(MPa)]	Release value[psi(MPa)]
rps ≦ 20	HP≧500.38psi(3.45MPa)	HP≧471.37psi(3.25MPa)
20<rps ≦ 90	HP≧551.14psi(3.80MPa)	HP≧522.14psi(3.60MPa)
90<rps ≦ 100	HP≧478.62psi(3.30MPa)	HP≧449.62psi(3.10MPa)

Heating operation

Compressor frequency[rps]	Operation value[psi(MPa)]	Release value[psi(MPa)]
rps ≦ 20	HP≧500.38psi(3.45MPa)	HP≧471.37psi(3.25MPa)
20<rps ≦ 90	HP≧507.63psi(3.50MPa)	HP≧478.62psi(3.30MPa)
90<rps ≦ 100	HP≧478.62psi(3.30MPa)	HP≧449.62psi(3.10MPa)
100<rps	HP≧449.62psi(3.10MPa)	HP≧420.61psi(2.90MPa)

HP : Detected discharge pressure sensor value.
rps : Detected compressor frequency.

6. COMPRESSOR TEMPERATURE PROTECTION

AOUG36/48LMAS1

Compressor temperature sensor is monitoring the compressor Temperature 1.
When the compressor temperature sensor detects higher than Temperature 1, the compressor is stopped.
When 3 minutes has passed from the compressor stop and the compressor temperature sensor detects lower than Temperature 2, protection is released and compressor will restart.

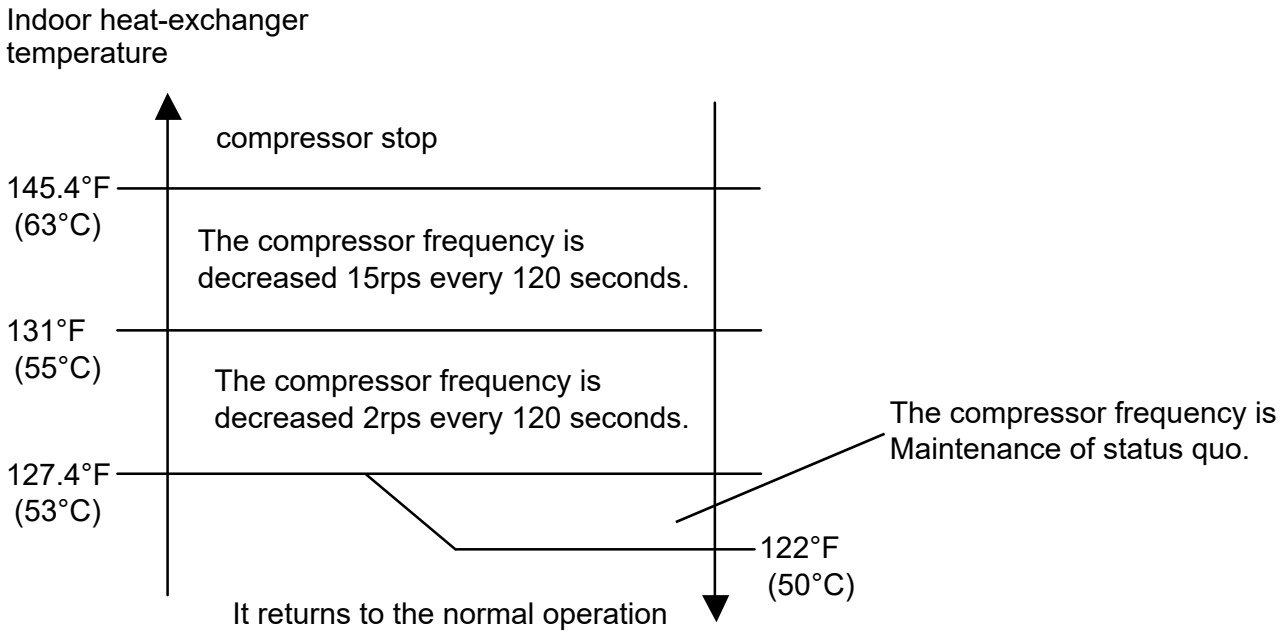
Operation value

	Temperature 1	Temperature 2
AOUG36LMAS1 AOUG48LMAS1	226 °F (108 °C)	176 °F (80 °C)

7. HIGH TEMPERATURE RELEASE CONTROL (Heating mode)

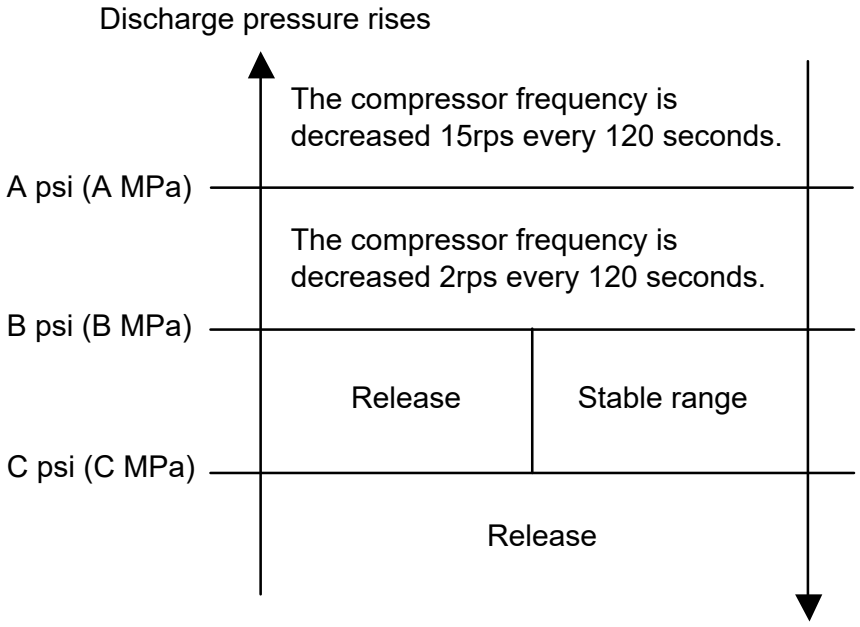
In heating mode, compressor frequency is controlled as following
based on the detection value of the indoor heat exchanger temperature sensor.

AOU24RGLX
AOU30RGLX



AOUG36LMAS1
AOUG48LMAS1

Heating overload protection control



Outdoor heat exchange temperature	Discharge pressure [psi(MPa)]		
	A	B	C
8.6°F(-13°C)≦Tn<12.2°F(-11°C)	478.62 psl (3.30 MPa)	449.62 psl (3.10 MPa)	406.11 psl (2.80 MPa)
5°F(-15°C)≦Tn<8.6°F(-13°C)	464.12 psl (3.20 MPa)	478.62 psl (3.00 MPa)	391.60 psl (2.70 MPa)
-13°F(-25°C)≦Tn<5°F(-15°C)	435.11 psl (3.00 MPa)	406.11 psl (2.80 MPa)	377.10 psl (2.60 MPa)
-20.2°F(-29°C)≦Tn<-13°F(-25°C)	377.10 psl (2.60 MPa)	362.59 psl (2.50 MPa)	333.59 psl (2.30 MPa)
Tn<-20.2°F(-29°C)	333.59 psl (2.30 MPa)	319.08 psl (2.20 MPa)	290.08 psl (2.00 MPa)

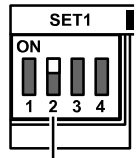
18. PUMP DOWN OPERATION

AOUG36LMAS1
AOUG48LMAS1

When moving or discarding the air conditioner, in order to consider the environment and avoid the discharge of refrigerant to the atmosphere, please pump down according to the following procedure.

(1) Connect the pressure gauge to the charging port.

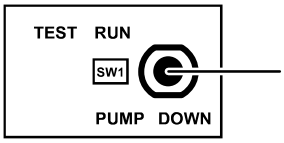
(2) Change the DIP switch on the board (SET1-2) to ON*1



*Be sure the power supply is disconnected on the breaker is turned off when changing the DIP switch.

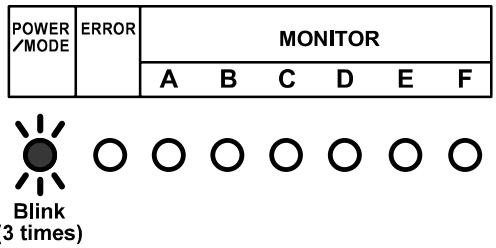
*1: DIP switch (SET1-2)

(3) To start operation, press the [PUMP DOWN] switch*2 for 3 seconds or press after the power has been on for 3 min.



*2: Push switch (SW1)

During pump down, the LED (POWER/MODE) will flash 3 times consecutively.

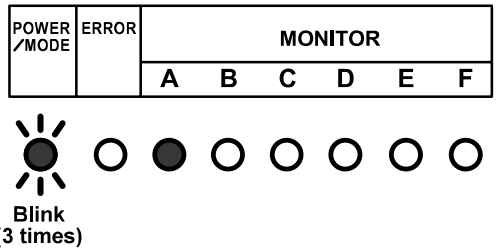


NOTE:
If the [PUMP DOWN] switch is pressed during compressor operation, the compressor will stop, and the operation will start after about 3 min.

(4) Close the liquid pipe valve.

(5) When 7.3 psi ~ 0 psi (0.05 MPa ~ 0 MPa) is shown, close the gas pipe valve.

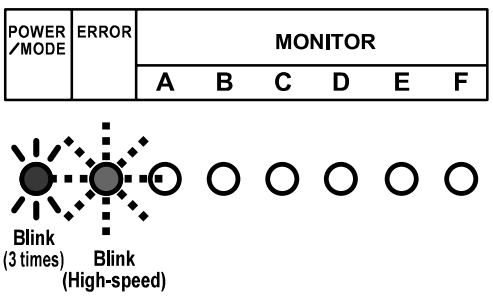
(6) Stop pump down by pressing the [PUMP DOWN] switch for 3 seconds.
The LED will light as follows.



(7) Disconnect the power supply or turn off the breaker.

NOTES:

- If the pump down is not stopped by pressing the switch as in step (6), it will stop automatically after 15 min. and the LED will light as follows. If the pump down is complete, disconnect the power supply or turn off the breaker. If not completed open the liquid pipe valve, and then start again from step (3).



- In order to interrupt the pump down operation, press the [PUMP DOWN] switch again. The LED will return to the original display before starting pump down. (POWER/MODE LED: On)
- The pump down may stop before completion due to error. To complete the pump down, correct the error, open the liquid pipe valve and then start from step (1) again. Otherwise, the refrigerant can be recovered from the service port.

⚠ CAUTION

Make sure the refrigerant circuit for any leaks before starting the pump down operation.
Do not proceed with the pump down operation if there is no refrigerant left in the circuit due to bent or broken piping.
During the pump down operation, be sure to turn off the compressor before removing the refrigerant piping.

TEST RUN

⚠ CAUTION

Always connect the power supply 12 hours prior to the start of the operation in order to protect the compressor.

(1) Indoor unit
① Is the drain normal?
② Is there any abnormal noise and vibration during operation?

(2) Outdoor unit
① Is there any abnormal noise and vibration during operation?
② Will noise, wind, or drain water from the unit disturb the neighbors?
③ Is there any gas leakage?

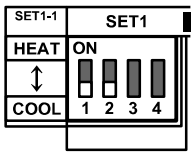
- Do not operate the air conditioner in the test running state for a long time.
- For the operation method of the test run for indoor unit and central remote controller, refer to the operating manual and perform operation check.

TEST RUN method

Be sure to temporarily disconnect the power supply or turn off the breaker before changing the DIP switch settings.

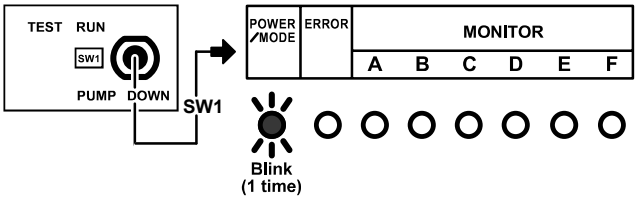
(1) Check the 3-way valves (both at the liquid side and gas side) are opened. Confirm that the DIP switch SET1-2 is switched OFF.

(2) Set the operation mode to “COOL” or “HEAT”. If you wish to change the DIP switch SET1-1 to “HEAT”, switch it after temporarily disconnecting the power supply or turning off the breaker switching the power off.



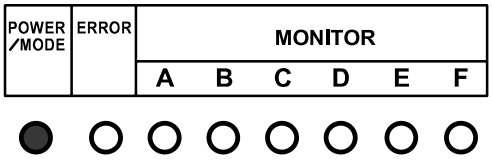
- In the first test run, be sure to set the operation mode to “COOL”.
- The operation mode cannot be switched between “COOL” and “HEAT” during the test run. To switch the operation mode between “COOL” and “HEAT”, stop the test run, switch the operation mode, and then start the test run again.

(3) Press “TEST RUN” switch for more than 3 seconds.
The POWER / MODE LED flashes once.



(4) Confirm operating status.

(5) Press “TEST RUN” switch for more than 3 seconds.



POWER/MODE LED will turn on, and test run stops.

Refrigerant R410A
INVERTER

5. FILED WORKING

CONTENTS

5. FILED WORKING

1. Function settings (For indoor unit)

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 on indoor unit

■ Models: AMUG24LMAS, AMUG30LMAS, AMUG36LMAS, and AMUG48LMAS

By using some components on the PCB, you can change the function settings.

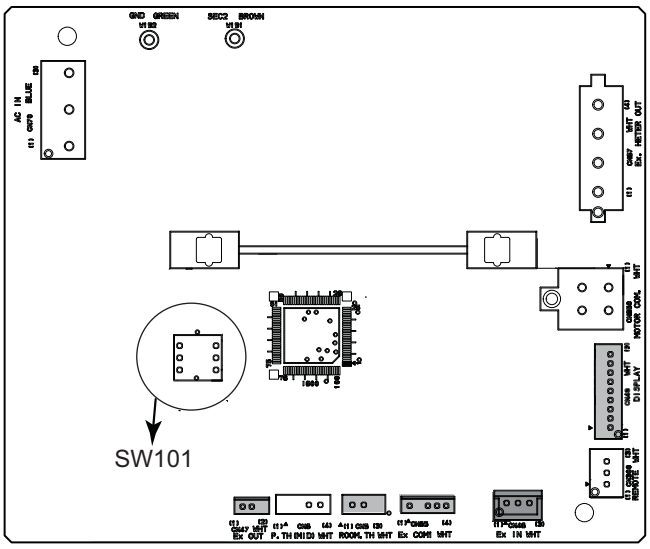
Related components on the PCB and the applicable settings

Component		Setting content
DIP switch101	1	Setting change prohibited
	2	Setting change prohibited
	3	Fan delay setting

FIELD WORKING

● Component location

Components on the indoor unit main PCB used for the function settings are located as shown in the following figure.



● DIP switch setting

- **Switch 1: Setting change prohibited (SW101)**
- **Switch 2: Setting change prohibited (SW101)**
- **Switch 3: Fan delay setting (SW101)**
  When the indoor unit is stopped while operating in conjunction with auxiliary heater, the indoor unit fan operation will continue for 1 minute.

Switch 3	Fan delay	Factory setting
ON	Enabled	♦
OFF	Disabled	

1-2. 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 remote controller

Remote controller is not attached for this product. For details of the installing remote controller, refer to following information.

- Overview information: Operating manual of the remote controller
- Setting procedure: Installation manual of the remote controller

■ 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)	43	Cold air prevention
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)	74	Fan delay time
19)	75	External heater use in defrosting
20)	92	Airflow adjustment for operation mode
21)	93	Airflow adjustment at heater only operation

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 (2,500 hours)	
	01	Long interval (4,400 hours)	
	02	Short interval (1,250 hours)	
	03	No indication	♦

2) Room temperature control for indoor unit sensor

NOTE: If the remote sensor unit option is selected, perform this setting.

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).

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 (-1.0 °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)		

FIELD WORKING

3) Room temperature control for wired remote controller sensor

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

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

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

Function number		Setting value	Setting description		Factory setting
35 (For cooling)	36 (For heating)	00	Standard setting		♦
		01	No correction 0.0 °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)		

FIELD WORKING

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

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.

NOTES:

- Remote controller sensor must be turned on by using the remote controller.
- When using the remote sensor unit, set to "00" or set to "01" and then select "indoor unit sensor" from wired remote controller.

6) Cold air prevention

This setting is to disable the cold air prevention function during heating operation. When disabled, the fan setting will always follow the setting on the remote controller. (Excluding defrost mode)

Function number	Setting value	Setting description	Factory setting
43	00	Enable	♦
	01	Disable	

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	♦
	01	(Setting prohibited)	
	02	Forced stop mode	
	03	Operation/Stop mode 2	

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.

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

10) Switching functions for external output terminal

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

Function number	Setting value	Setting description	Factory setting
60	00	Operation status	♦
	01—04	Cooling thermostat On	
	05	Heating thermostat On	
	06	Operation/Stop	
	07—08	Cooling thermostat On	
	09	Error status	
	10	Indoor unit fan operation status	
	11	External heater	

11) Control switching of external heaters

Sets the control method for external heater to be used.

For details, refer to “External heater output” in "Details of control output function" on page 05-31.

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	

FIELD WORKING

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 "Details of control output function" on page 05-31.

Function number	Setting value	Setting description				Factory setting
		Setting value of function 61:				
		00		01 to 09		
		Heater: On	Heater: Off	Heater: On	Heater: Off	
62	00	-5.4 °F (-3 °C)	-1.8 °F (-1 °C)	-0.9 °F (-0.5 °C)	0.9 °F (0.5 °C)	♦
	01	-3.6 °F (-2 °C)	-1.8 °F (-1 °C)	-1.8 °F (-1 °C)	0.9 °F (0.5 °C)	
	02	-3.6 °F (-2 °C)	-1.8 °F (-1 °C)	-3.6 °F (-2 °C)	0.9 °F (0.5 °C)	
	03	-5.4 °F (-3 °C)	-1.8 °F (-1 °C)	-5.4 °F (-3 °C)	0.9 °F (0.5 °C)	
	04	-7.2 °F (-4 °C)	-1.8 °F (-1 °C)	-7.2 °F (-4 °C)	0.9 °F (0.5 °C)	
	05	-9.0 °F (-5 °C)	-1.8 °F (-1 °C)	-9.0 °F (-5 °C)	0.9 °F (0.5 °C)	
	06	-5.4 °F (-3 °C)	-0.9 °F (-0.5 °C)	-0.9 °F (-0.5 °C)	0 °F (0 °C)	
	07	-3.6 °F (-2 °C)	-0.9 °F (-0.5 °C)	-1.8 °F (-1 °C)	0 °F (0 °C)	
	08	-3.6 °F (-2 °C)	-0.9 °F (-0.5 °C)	-3.6 °F (-2 °C)	0 °F (0 °C)	
	09	-5.4 °F (-3 °C)	-0.9 °F (-0.5 °C)	-5.4 °F (-3 °C)	0 °F (0 °C)	
	10	-7.2 °F (-4 °C)	-0.9 °F (-0.5 °C)	-7.2 °F (-4 °C)	0 °F (0 °C)	
	11	-9.0 °F (-5 °C)	-0.9 °F (-0.5 °C)	-9.0 °F (-5 °C)	0 °F (0 °C)	
	12	-5.4 °F (-3 °C)	0 °F (0 °C)	-0.9 °F (-0.5 °C)	-0.9 °F (-0.5 °C)	
	13	-3.6 °F (-2 °C)	0 °F (0 °C)	-1.8 °F (-1 °C)	-0.9 °F (-0.5 °C)	
	14	-3.6 °F (-2 °C)	0 °F (0 °C)	-3.6 °F (-2 °C)	-0.9 °F (-0.5 °C)	
	15	-5.4 °F (-3 °C)	0 °F (0 °C)	-5.4 °F (-3 °C)	-0.9 °F (-0.5 °C)	
	16	-7.2 °F (-4 °C)	0 °F (0 °C)	-7.2 °F (-4 °C)	-0.9 °F (-0.5 °C)	
	17	-9.0 °F (-5 °C)	0 °F (0 °C)	-9.0 °F (-5 °C)	-0.9 °F (-0.5 °C)	

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 "Details of control output function" on page 05-31.

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)	

FIELD WORKING

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 and 3 is performed on the indoor unit.

For details, refer to “External heater output” in "Details of control output function" on page 05-31.

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)	

FIELD WORKING

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 "Details of control output function" on page 05-31.

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) Fan delay time

Sets the fan delay time when the heater is turned off.

Function number	Setting value	Setting description	Factory setting
74	00	1 minute	♦
	01	50 seconds	
	02	40 seconds	
	03	30 seconds	

19) External heater use in defrosting

Enables or disables external heater use in defrosting.

NOTE: Inappropriate heater selection may cause cold air in defrosting.

Function number	Setting value	Setting description	Factory setting
75	00	Disable	♦
	01	Enable	

20) Airflow adjustment for operation mode

Strong or weak airflow can be set by ±10%.
Since the airflow volume by motor has the upper limit and lower limit, up-down adjustment may not be performed depending on the models or settings even if this setting is performed.

FIELD WORKING

Function number	Setting value	Setting description		Factory setting
		Cooling setting	Heating setting	
92	00	Standard (no change)	Standard (no change)	♦
	01	Standard (no change)	+10% up	
	02	Standard (no change)	-10% down	
	03	+10% up	Standard (no change)	
	04	+10% up	+10% up	
	05	+10% up	-10% down	
	06	-10% down	Standard (no change)	
	07	-10% down	+10% up	
	08	-10% down	-10% down	

21) Airflow adjustment at heater only operation

By selecting the heater output in the table below at heater only operation, this function adjusts the airflow volume according to the heater output to prevent cold air feeling.

Function number	Setting value	Setting description	Factory setting
		Heater output range	
93	00	No heater	♦
	01	0 — 3.4 kW (Min. CFM)	
	02	3.4 — 6.8 kW (350 CFM)	
	03	6.8 — 10.4 kW (710 CFM)	
	04	10.4 — 13.7 kW (1,070 CFM)	
	05	13.7 — 17.1 kW (1,410 CFM)	

2. Function settings (For 36 and 48 model outdoor unit)

2-1. Setting methods

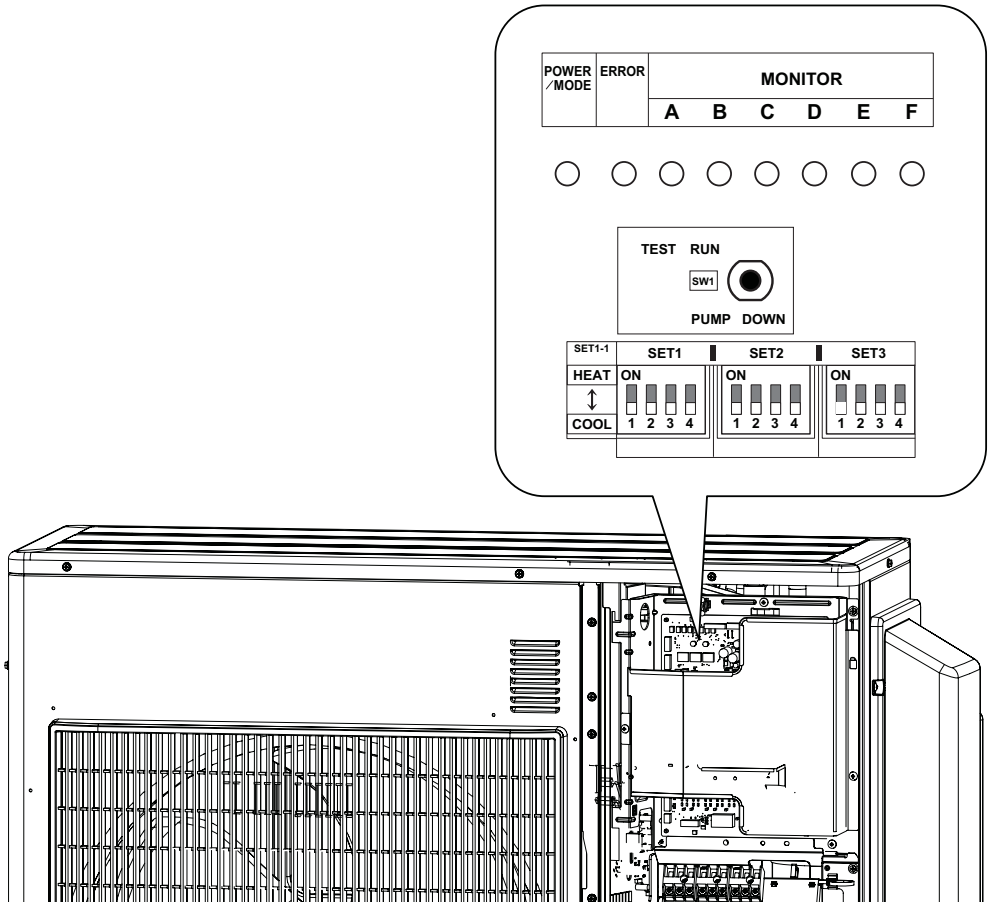
⚠ WARNING

Never touch electrical components such as the terminal blocks or reactor except the switch on the display board. It may cause a serious accident such as electric shock.

⚠ CAUTION

- Once refrigerant charging is completed, be sure to open the valve prior to performing the local settings. Otherwise, the compressor may fail.
- Discharge any static electricity from your body before touching the push switches. Never touch any terminal or pattern of any parts on the control board.

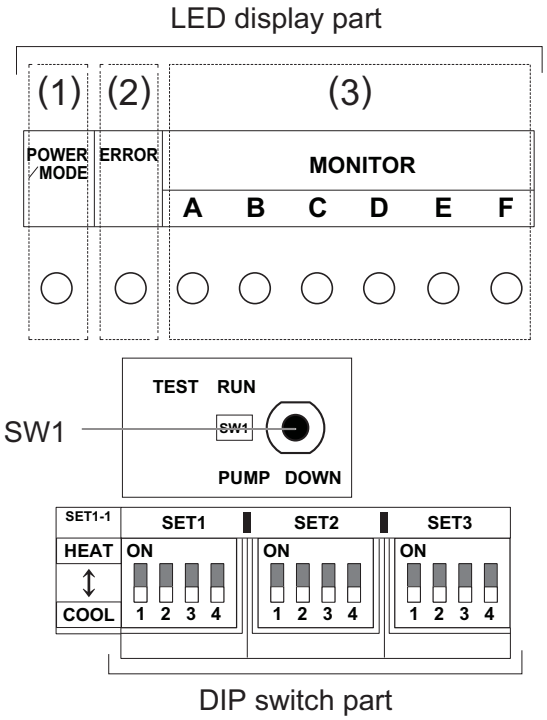
The positions of the switches on the outdoor unit control board are shown in the figure below.



FIELD WORKING

■ Setting method

1. Be sure to disconnect the power supply or turn off the breaker.
2. Change the DIP switch setting according to the required setting.
   - Various settings can be adjusted by changing DIP switches and push switches on the board of the outdoor unit.
   - The printed characters for the LED display are shown below.



FIELD WORKING

■ Description of display

LED display lamp				Function or operation method
(1)	POWER/MODE		Green	• Turns on when the power supply is ON (Including when error occurs). • Indicate the MODE by the number of flashes when the installation function is active.
(2)	ERROR		Red	Flashes at high-speed when there is an error.
(3)	MONITOR	A	Red	• Displays the location and contents of errors when there is an error. (Refer to Chapter 3-2. "Error code" on page 05-15 for details.)
		B	Red	
		C	Red	
		D	Red	
		E	Red	
		F	Red	

Switch		Function or operation method	Factory setting
SW1	Push	• For the test run start and stop. • For the pump down start and stop.	—
SET1-1	DIP	For selecting cooling or heating during test operation.	OFF
SET1-2	DIP	For switching SW1 operation.	OFF
SET1-3	DIP	(Prohibited)	OFF (Do not change)
SET1-4	DIP	For using outdoor low noise operation function	OFF
SET2-1	DIP	For selecting outdoor unit low noise operation mode.	OFF
SET2-2	DIP	(Prohibited)	OFF (Do not change)
SET2-3	DIP	(Prohibited)	OFF (Do not change)
SET2-4	DIP	(Prohibited)	OFF (Do not change)
SET3-1	DIP	(Prohibited)	OFF (Do not change)
SET3-2	DIP	(Prohibited)	OFF (Do not change)
SET3-3	DIP	(Prohibited)	OFF (Do not change)
SET3-4	DIP	(Prohibited)	OFF (Do not change)

Be sure to disconnect the power supply or turn off the breaker before changing the DIP switch setting.

2-2. Outdoor unit low noise operation function

Change the outdoor unit low noise operation by using this setting.

SET1-4	Setting	Factory setting
ON	Low noise operation	
OFF	Normal operation	♦

SET2-1	Setting	Factory setting
ON	Lower	
OFF	Low	♦

⚠ CAUTION

- When the low noise operation function is working, cooling and heating capacity will decrease.
- When changing the settings, explain to the customer beforehand that the capacity decreases.

3. Test

3-1. Test run

⚠ CAUTION

Always connect the power supply 12 hours prior to the start of the operation in order to protect the compressor.

1. Indoor unit
   a. Is the drain normal?
   b. Is there any abnormal noise and vibration during operation?
2. Outdoor unit
   a. Is there any abnormal noise and vibration during operation?
   b. Will noise, wind, or drain water from the unit disturb the neighbors?
   c. Is there any gas leakage?

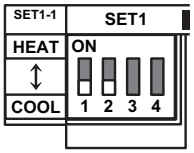
- Do not operate the air conditioner in the test running state for a long time.
- For the operation method of the test run for indoor unit and central remote controller, refer to the operating manual and perform operation check.

FIELD WORKING

■ Test run method

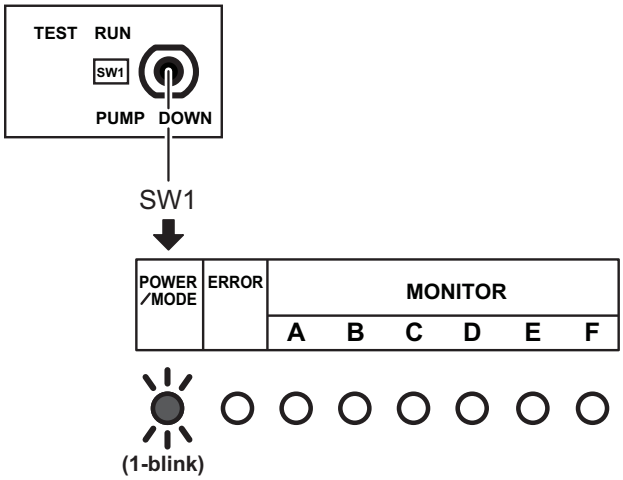
Be sure to temporarily disconnect the power supply or turn off the breaker before changing the DIP switch settings.

1. Check the 3-way valves (both at the liquid side and gas side) are opened. Confirm that the DIP switch SET1-2 is switched off.
2. Set the operation mode to “COOL” or “HEAT”. When switching the DIP switch SET1-1 between HEAT and COOL, disconnect the power supply or turn off the circuit breaker beforehand.



- In the first test run, be sure to set the operation mode to “COOL”.
- The operation mode cannot be switched between “COOL” and “HEAT” during the test run. To switch the operation mode between “COOL” and “HEAT”, stop the test run, switch the operation mode, and then start the test run again.

3. Press "TEST RUN" switch for more than 3 seconds.
   The POWER / MODE LED flashes once.



4. Confirm operating status.

5. Press "TEST RUN" switch for more than 3 seconds.

POWER /MODE	ERROR	MONITOR					
		A	B	C	D	E	F

POWER/MODE LED will turn on, and test run stops.

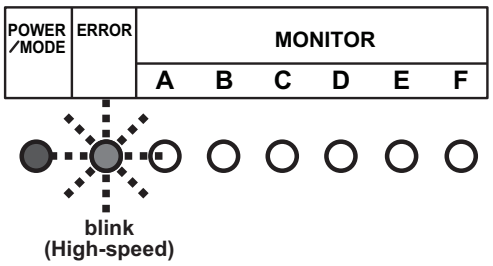
FIELD WORKING

3-2. Error code

If an error occurs, the LED will light up to display the error location and the error code.

■ In the event of an error

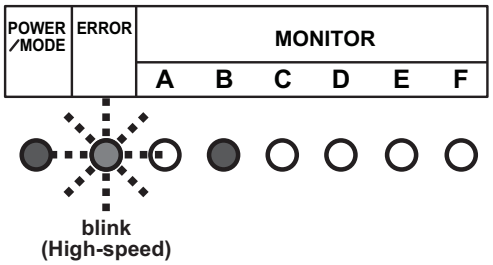
The error LED blink quickly.



■ Error location display

LEDs A to F of MONITOR light up and display the error location. In the case of an overall error, LEDs A to F of MONITOR do not light up.

Example: Coil error in indoor unit B

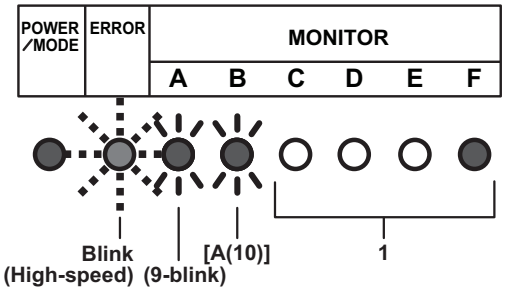


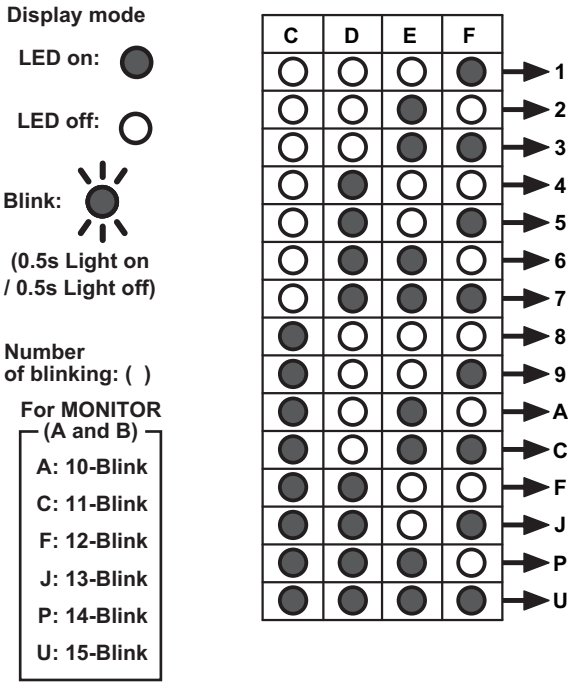
FIELD WORKING

■ Error code display

While the error is occurring, briefly press SW1. The error code is displayed.

Example: Coil error (Error cord = 9A.1)





FIELD WORKING

Error code	Error type
11.3	Serial communication error
11.4	Serial communication error during operation
16.5	Communication error between controller and outdoor unit
22.1	Indoor unit capacity error
5U.1	Indoor unit error
62.1	Outdoor unit PCB Model information error
62.3	EEPROM access error
62.8	EEPROM data corruption error
63.1	Inverter error
65.3	IPM error (Trip terminal L error)
71.1	Discharge temp. sensor error
72.1	Compressor temp. sensor error
73.2	Heat exchanger middle temp. sensor error
73.3	Heat exchanger liquid temp. sensor error
74.1	Outdoor temp. sensor error
75.1	Suction gas temp. sensor error
76.1	Valve sensor error
76.2	
77.1	Heat sink temp. sensor error
84.1	Current sensor 1 error (stoppage permanently)
86.1	Discharge pressure sensor error
86.4	Outdoor unit high pressure switch1 error
94.1	Trip detection
95.1	Compressor motor control error (stoppage permanently)
97.3	Fan motor 1 error (Duty error)
98.3	Fan motor 2 error (Duty error)
99.1	4-way valve error
9A.1	Coil 1 (expansion valve 1) error
A1.1	Discharge temperature 1 error (stoppage permanently)
A3.1	Compressor 1 temperature error

FIELD WORKING

3-3. Pump down

⚠ WARNING

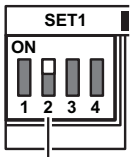
During the pump down operation, make sure that compressor is off before you remove the refrigerant pipe. Do not remove the connection pipe while the compressor is in operation with valve open. This may cause abnormal pressure in the refrigeration cycle that leads to breakage and even injury.

■ Pump down operation

When moving or discarding the air conditioner, in order to consider the environment and avoid the discharge of refrigerant to the atmosphere, pump down according to the following procedure.

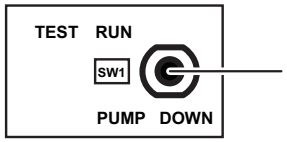
1. Connect the pressure gauge to the charging port.

2. Change the DIP switch on the board (SET1-2) to On*1
   *Be sure the power supply is disconnected on the breaker is turned off when changing the DIP switch.



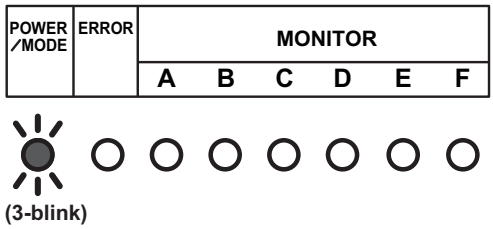
*1: DIP switch (SET1-2)

3. To start operation, press the [PUMP DOWN] switch*2 for 3 seconds or press after the power has been on for 3 min.



*2: Push switch (SW1)

During pump down, the LED (POWER/MODE) will flash 3 times consecutively.

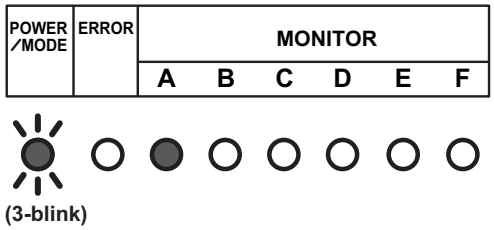


NOTE: If the [PUMP DOWN] switch is pressed during compressor operation, the compressor will stop, and the operation will start after about 3 min.

4. Close the liquid pipe valve.

5. When the value between 7.3 psi and 0 psi (0.05 Mpa to 0 Mpa) is shown, close the gas pipe valve.

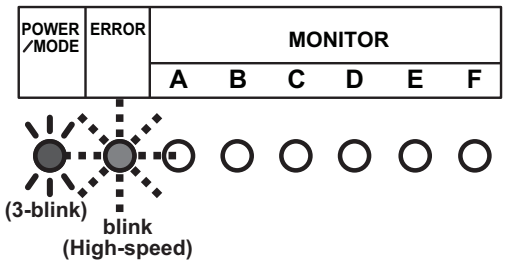
6. Stop pump down by pressing the [PUMP DOWN] switch for 3 seconds.
   The LED will light as follows.



FIELD WORKING

7. Disconnect the power supply or turn off the breaker.

NOTE: If the pump down is not stopped by pressing the switch as in step 6, it will stop automatically after 15 minutes and the LED will light as follows. If the pump down is complete, disconnect the power supply or turn off the breaker. If not completed open the liquid pipe valve, and then start again from step 3.



- In order to interrupt the pump down operation, press the [PUMP DOWN] switch again. The LED will return to the original display before starting pump down.
  (POWER/MODE LED: On)
- The pump down may stop before completion due to error. To complete the pump down, correct the error, open the liquid pipe valve and then start from step 1 again.
  Otherwise, the refrigerant can be recovered from the service port.

FIELD WORKING

4. External input and output

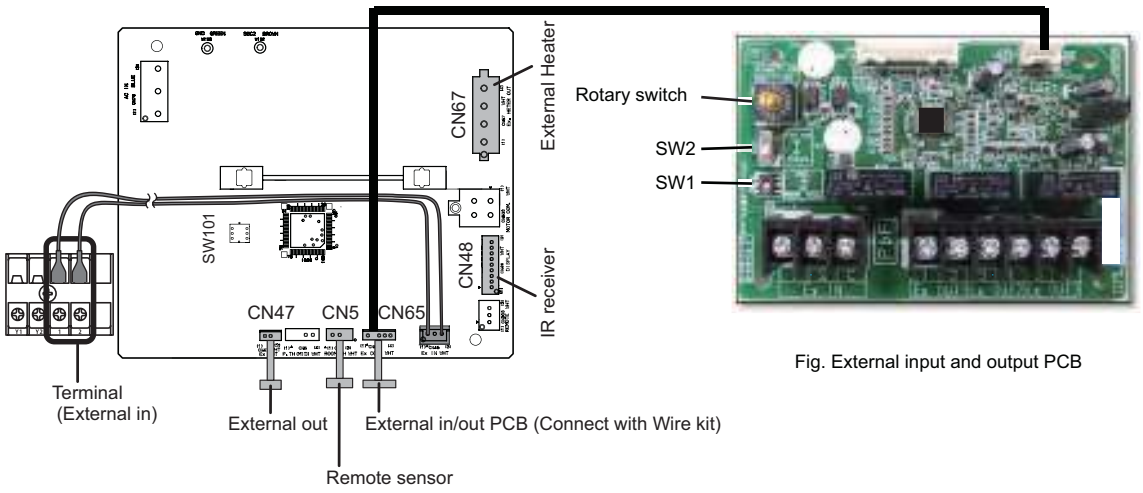


Fig. External input and output PCB

Connecting point		Input/Output	Function	Input select	Input signal
Indoor unit	Terminal	Input	Operation/Stop	Dry contact	Edge
			Forced stop		
	CN47	Output	Operation/Stop	—	—
			Error status		
			Indoor unit fan operation status		
			Cooling thermostat On		
			Heating thermostat On		
	CN47/CN67		External heater output		
External Input and Output PCB (UTY-XCSX)	Ex IN 1/2	Input	Operation/Stop	Dry contact/Apply voltage	Edge/Pulse
	Ex IN 1		Forced thermostat off		Edge
	Ex OUT 1 Ex OUT 2 Ex OUT 3	Output	Operation/Stop	—	—
			Error status		
			Indoor unit fan operation status		
			External heater output		
			Cooling high/low output		
			Heating thermostat On		

NOTE: For details of the switching function, refer to "Setting of external input and output" on page 05-25.

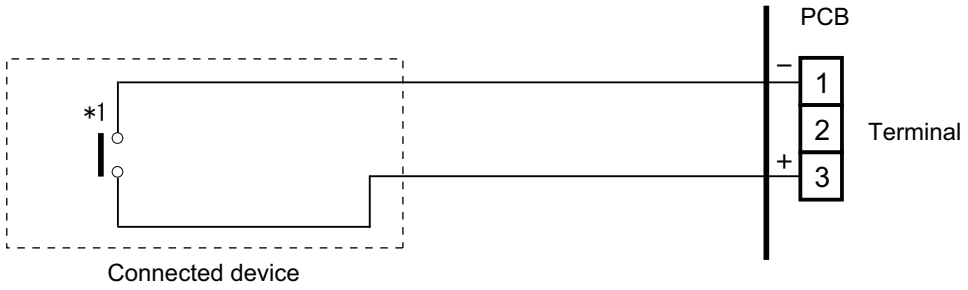
FIELD WORKING

4-1. External input

- “Operation/Stop” mode or "Forced stop" mode can be selected with function setting of indoor unit.
- A twisted pair cable (22 AWG) should be used. Maximum length of cable is 492 ft (150 m).
- Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.
- The wire connection should be separate from the power cable line.

■ Indoor unit

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

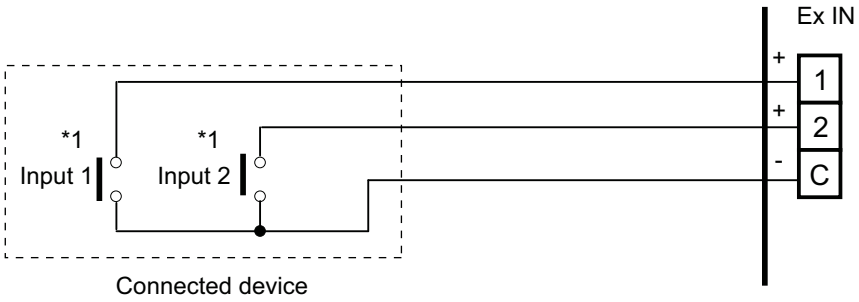


*1: The switch can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

■ External Input and Output PCB

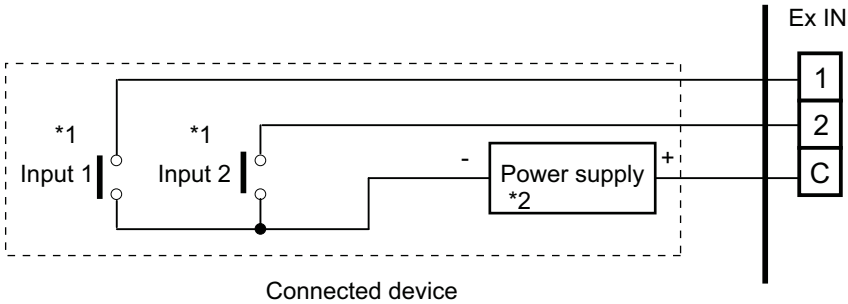
The indoor unit Operation/Stop can be set by using the input terminal on the PCB.

- **Input select**
  Use either one of these types of terminal according to the application. (Both types of terminal cannot be used simultaneously.)
  – **Dry contact**
  In case of internal power supply, set the slide switch of SW1 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 SW1 to “VOL” side.

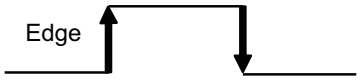


*1: The switches can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.
*2: Make the power supply DC 12 V to 24 V, 10 mA or more.

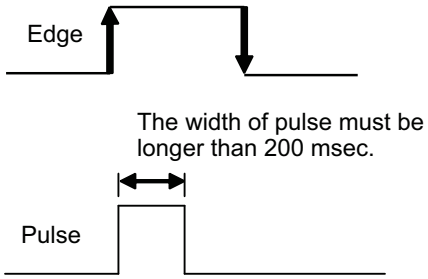
FIELD WORKING

■ Input signal type

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



- **External Input and Output PCB**
  The input signal type can be selected.
  Signal type (edge or pulse) can be switched by the DIP switch 2 (SW2) on the External Input and Output PCB.



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

FIELD WORKING

4-2. External output

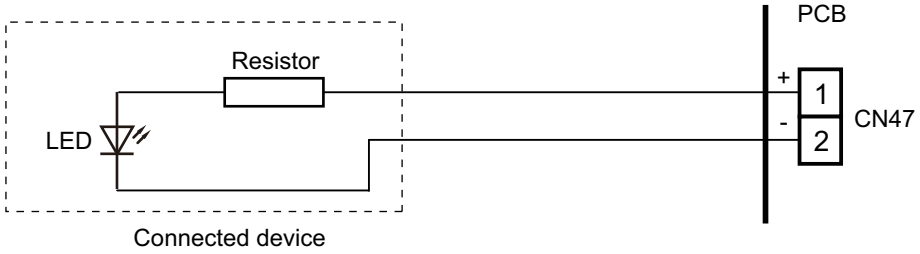
Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

■ Indoor unit

- A twisted pair cable (22 AWG) 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 "Setting of external input and output" on page 05-25.

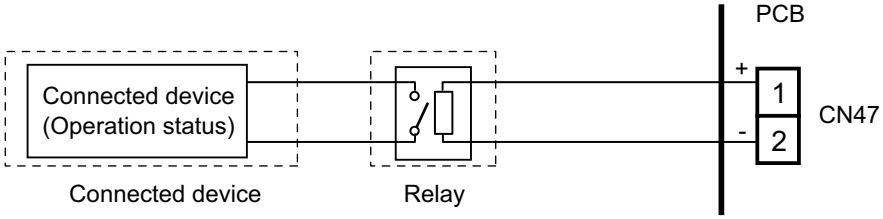
- **When indicator, etc. are connected directly**

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



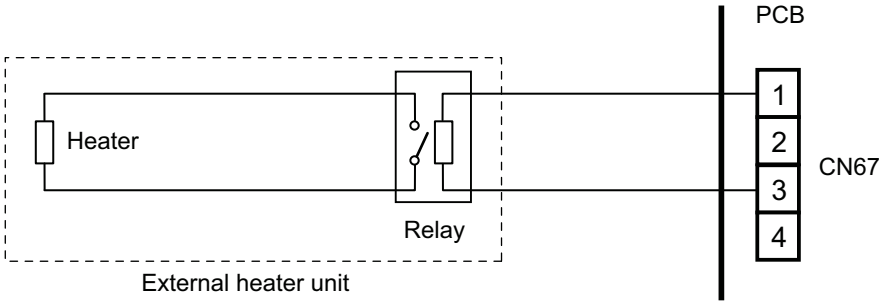
- **When connecting with a device equipped with a power supply**

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



- **When connecting with a external heater**

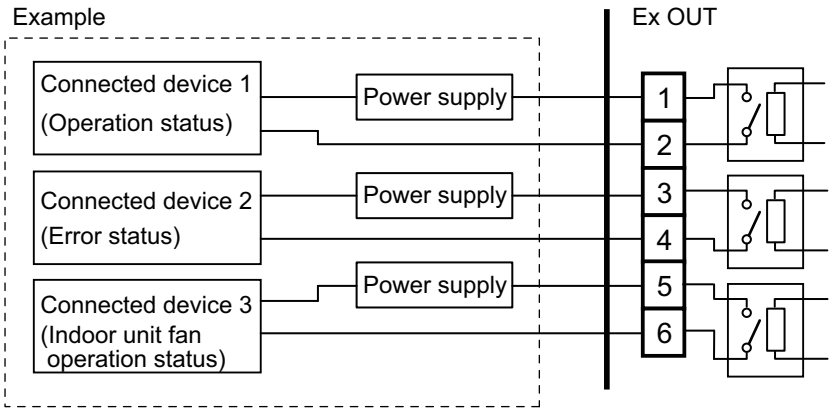
Output voltage:	Heater on: AC 24 V ±25% Heater off: Open
Permissible current:	500 mA



FIELD WORKING

■ External Input and Output PCB

- A twisted pair cable (22 AWG) should be used.
- Permissible voltage and current: DC 5 V to 30 V/3 A, AC 30 V to 250 V/3 A
- For details, refer to "Setting of external input and output" on page 05-25.



FIELD WORKING

4-3. Setting of external input and output

- **Indoor unit**

Input		
Connection point	**Function setting number 46**	**Function**
Terminal	00	Operation/Stop mode 1
	01	(Setting prohibited)
	02	Forced stop mode
	03	Operation/Stop mode 2

Output		
Connection point	**Function setting number 60**	**Function**
CN47	00	Operation/Stop
	01—04	Cooling thermostat On
	05	Heating thermostat On
	06	Operation/Stop
	07—08	Cooling thermostat On
	09	Error status
	10	Indoor unit fan status
CN47/CN67	11	External heater output

FIELD WORKING

- **External Input and Output PCB**

Switch setting		Ex IN		Ex OUT		
Rotary switch	**SW2**	**1**	**2**	**1**	**2**	**3**
1	Edge	Operation/Stop	Not available	Operation/Stop	Error status	Indoor unit fan status
	Pulse	Operation	Stop			
2	Edge*1	Forced thermostat off	Not available	Error status	Indoor unit fan operation status	External heater output
3		Mechanical cooling off	Not available	Error status	Indoor unit fan operation status	External heater output
4		Forced thermostat off	Not available	Error status	Operation/Stop	External heater output
5		Mechanical cooling on*2	Not available	Cooling high/low output	Operation/Stop	External heater output
6		Mechanical cooling on*2	Not available	Error status	Operation/Stop	Cooling high/low output
7		Forced thermostat off	Not available	Error status	Indoor unit fan operation status	External heater output
8		Forced thermostat off	Not available	Error status	Indoor unit fan operation status	Heating thermostat on
9		Mechanical cooling off	Not available	Error status	Heating thermostat on	External heater output
A		Forced thermostat off	Not available	Heating thermostat on	Operation/Stop	External heater output
B		Forced thermostat off	Not available	Operation/Stop	Indoor unit fan operation status	External heater output
C		Forced thermostat off	Not available	Operation/Stop	Error status	External heater output
D		Forced thermostat off	Not available	Operation/Stop	Indoor unit fan operation status	Error status

NOTES:

- When the rotary switch is selected to “1", the operation of the terminal input of the indoor unit and the External Input and Output PCB input are the same. The operation content depends on the setting of function setting number 46.
- *1: The external input other than “Operation/Stop” is available only when the SW2 is set to “Edge”.
- *2: The external input of “Mechanical cooling on” is available only when the function setting number 60 is set to “03” or “04”.

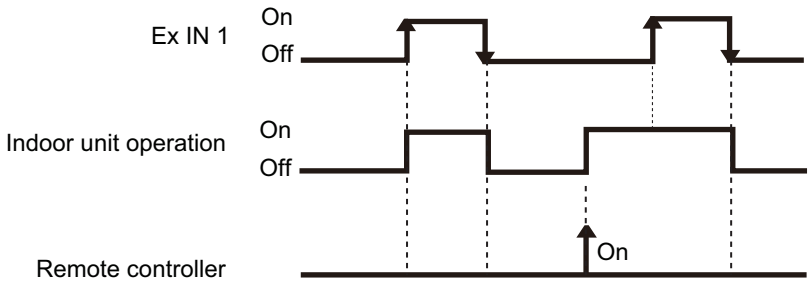
FIELD WORKING

4-4. Details of control input function

■ Operation/Stop mode 1

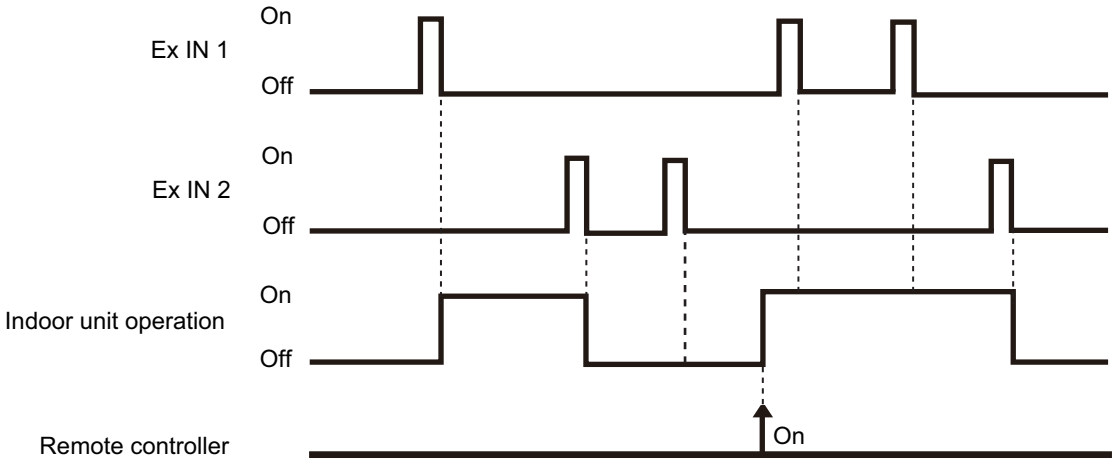
- **In the case of "Edge" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-00	—		Input of indoor unit	Terminal	Off → On	Operation
					On → Off	Stop
	1	Edge	External Input and Output PCB	Ex IN 1	Off → On	Operation
					On → Off	Stop



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

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-00	1	Pulse	External Input and Output PCB	Ex IN 1	Pulse	Operation
				Ex IN 2		Stop



NOTES:

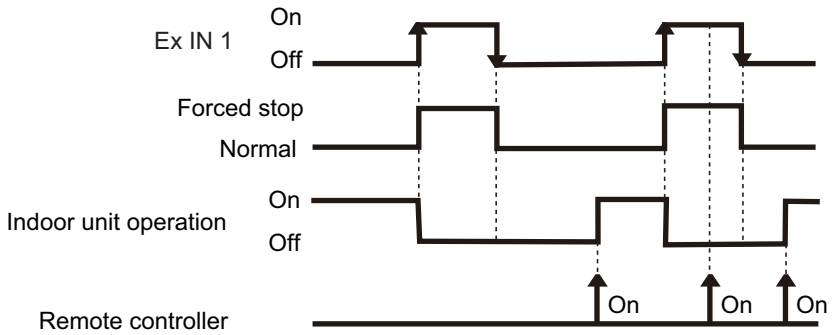
- The last command has priority.
- The indoor units within the same remote controller group operates in the same mode.

FIELD WORKING

■ Forced stop

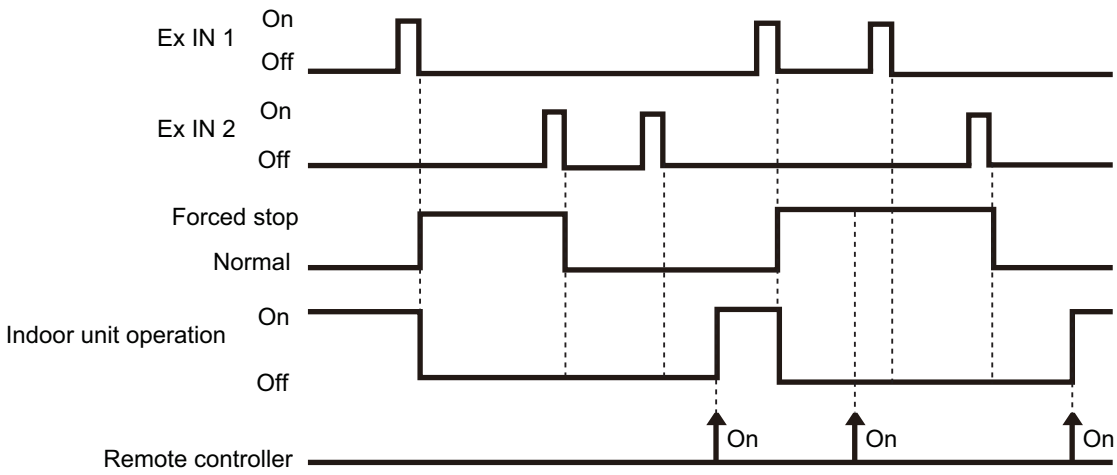
- **In the case of "Edge" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-02	—		Input of indoor unit	Terminal	Off → On	Forced stop (R.C. disabled)
					On → Off	Normal (R.C. enabled)
	1	Edge	External Input and Output PCB	Ex IN 1	Off → On	Forced stop (R.C. disabled)
					On → Off	Normal (R.C. enabled)



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

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-02	1	Pulse	External Input and Output PCB	Ex IN 1	Pulse	Forced stop (R.C. disabled)
				Ex IN 2		Normal (R.C. enabled)



NOTES:

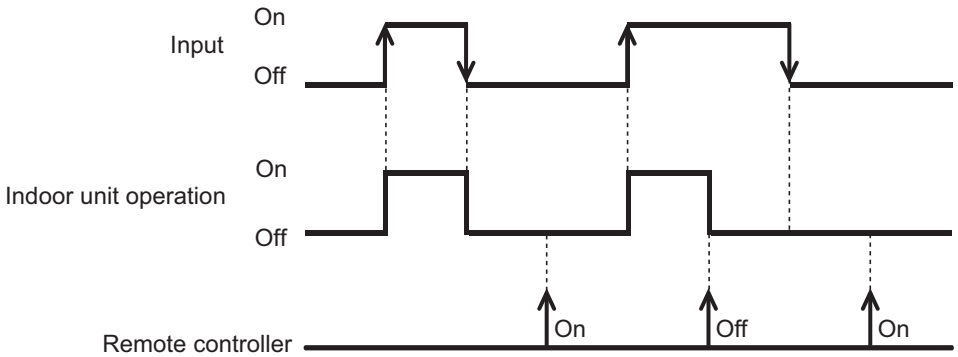
- When the forced stop is triggered, indoor unit stops and Operation/Stop operation by the remote controller is restricted.
- When forced stop function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

FIELD WORKING

■ Operation/Stop mode 2

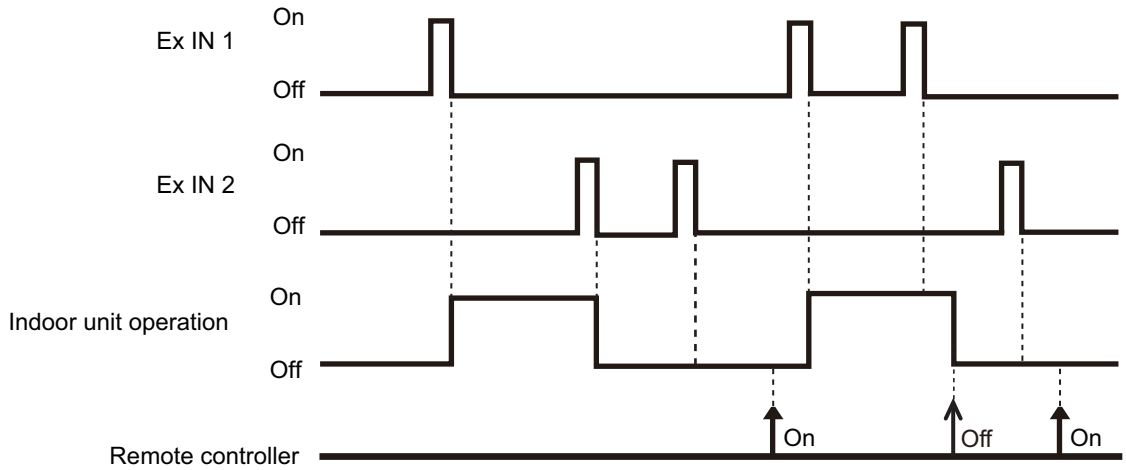
- **In the case of "Edge" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-03	—		Input of indoor unit	Terminal	Off → On	Operation (R.C. enabled)
					On → Off	Stop (R.C. disabled)
	1	Edge	External Input and Output PCB	Ex IN 1	Off → On	Operation (R.C. enabled)
					On → Off	Stop (R.C. disabled)



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

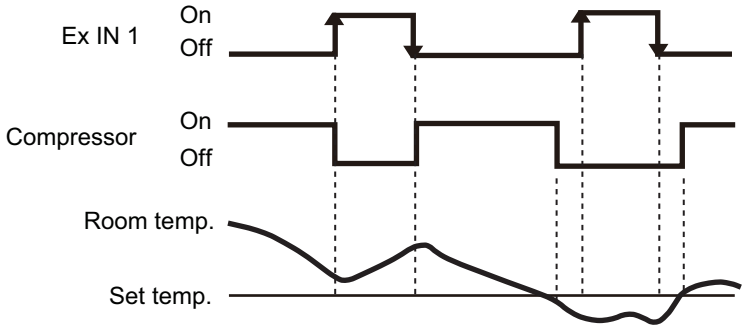
Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-03	1	Pulse	External Input and Output PCB	Ex IN 1	Pulse	Operation (R.C. enabled)
				Ex IN 2		Stop (R.C. disabled)



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

■ Forced thermostat off

External Input and Output PCB	External input		Input signal	Command
Rotary switch				
2, B, C, D	External Input and Output PCB	Ex IN 1	Off → On	Thermostat off
			On → Off	Normal operation
4, 7, 8, A	External Input and Output PCB	Ex IN 1	Off → On	Thermostat off
			On → Off	Normal operation



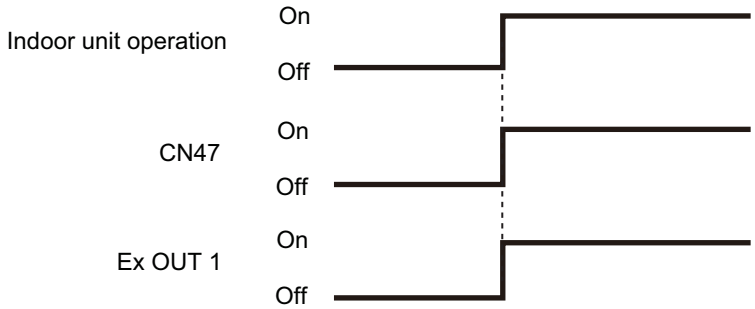
FIELD WORKING

4-5. Details of control output function

■ Operation status

Function setting	External Input and Output PCB Rotary switch	External output		Output signal	Status
60-00 60-06	—	Output of indoor unit	CN47	Off → On	Operation
				On → Off	Stop
—	1, B, C, D	External Input and Output PCB	Ex OUT 1	Off → On	Operation
				On → Off	Stop

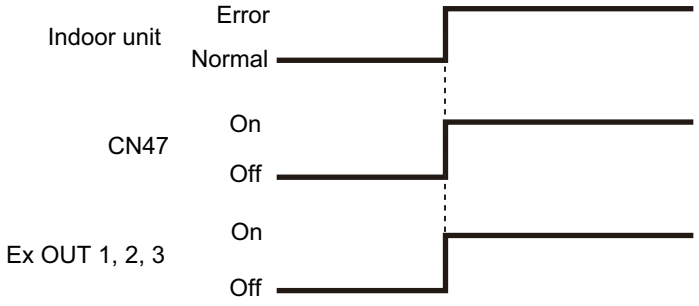
The output is low when the unit is stopped.



■ Error status

Function setting	External Input and Output PCB Rotary switch	External output		Output signal	Status
60-09	—	Output of indoor unit	CN47	Off → On	Error
				On → Off	Normal
—	2, 3, 4, 6, 7, 8, 9	External Input and Output PCB	Ex OUT 1	Off → On	Error
				On → Off	Normal
—	1, C	External Input and Output PCB	Ex OUT 2	Off → On	Error
				On → Off	Normal
—	D	External Input and Output PCB	Ex OUT 3	Off → On	Error
				On → Off	Normal

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

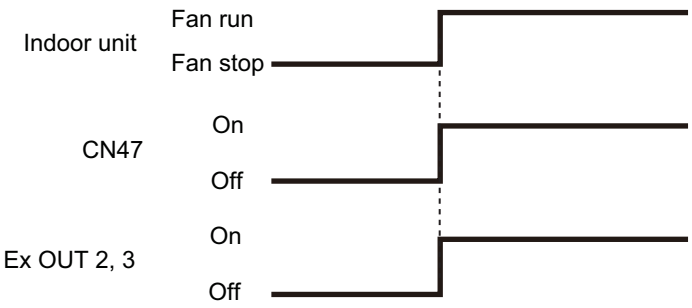


FIELD WORKING

■ Indoor unit fan operation status

Function setting	External Input and Output PCB Rotary switch	External output		Output signal	Status
60-10	—	Output of indoor unit	CN47	Off → On	Fan run
				On → Off	Fan stop
—	2, 3, 7, 8, B, D	External Input and Output PCB	Ex OUT 2	Off → On	Fan run
				On → Off	Fan stop
—	1	External Input and Output PCB	Ex OUT 3	Off → On	Fan run
				On → Off	Fan stop

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



FIELD WORKING

■ 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)

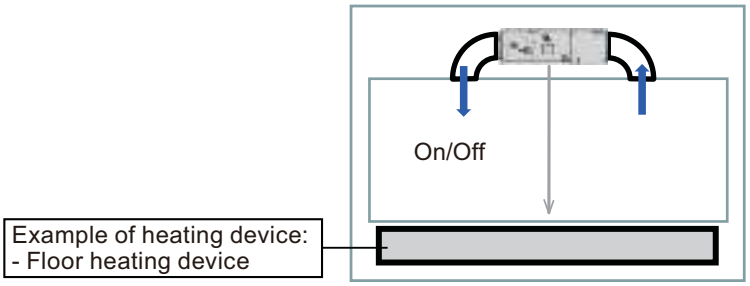
NOTES:

- 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.

FIELD WORKING

● Installation configuration of individual connection

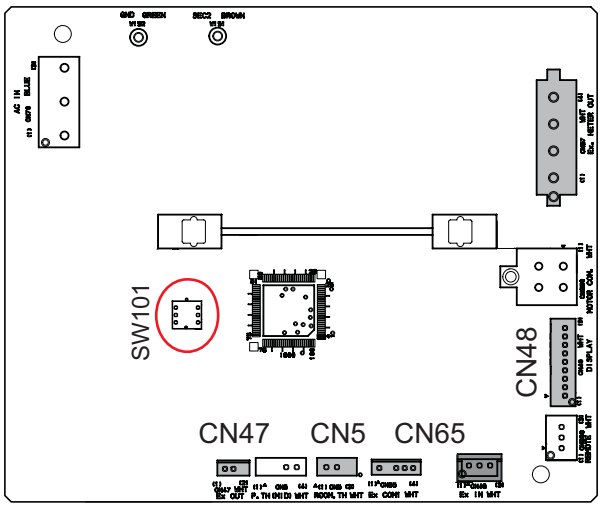
External heating device is installed individually. (No use of indoor unit fan)



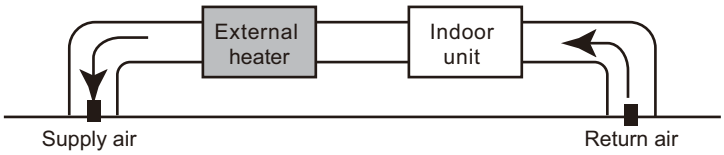
⚠ WARNING

- **DIP Switch 101-3 must be in the ON position when ducted electric heat application is being used.** DIP switch 101-3 is set in the ON position by default from the factory. When DIP switch 101-3 is in the ON position and ducted electric heat application is not being used, cold draft occurs due to fan delay off operation.

Operation			Condition
Heater off	DIP-SW101-3 Indoor unit fan setting for external heater	On Enabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection
	DIP-SW101-3 Indoor unit fan setting for external heater	Off Disabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off



- Design and install external heater appropriately with considering its protection.

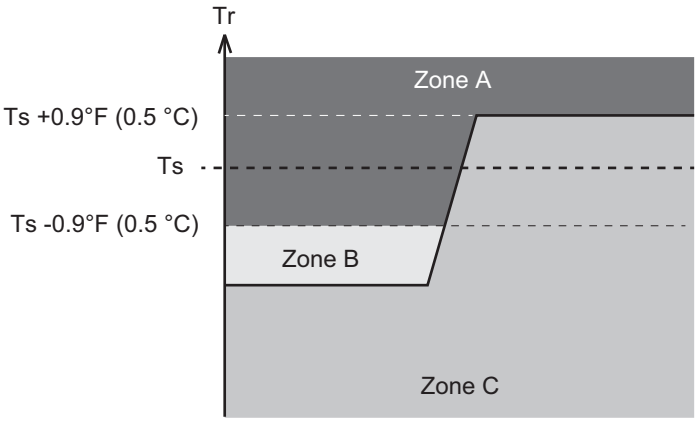


- Inappropriate designing and installation of external heater may cause a fire by emitted heat from the external heater.
- Fujitsu General Ltd. is not responsible for inappropriate designing or installation of external heating device.

FIELD WORKING

● Auxiliary equipment control by room temperature

Auxiliary equipment control is switchable by room temperature. Auxiliary equipment switching is performed for each room temperature divided to following 3 zones.



Ts: Setting temperature
Tr: Room temperature

Zone	Application	When temperature dropping		When temperature rising	
		Primary	Auxiliary	Primary	Auxiliary
A	Both of primary and auxiliary equipment is unnecessary.	Off	Off	Off	Off
B	Primary heater only.When room temperature stays in zone B for a long time, auxiliary equipment also operates.	On	Off*1	—	—
C	Auxiliary equipment also operates.	On	On*2	On	On*2

*1: For standby time for auxiliary equipment operation, refer to indoor unit function number 71 "Contents of function setting" on page 05-2.

*2: When indoor unit function number 61 is set to "00", auxiliary equipment operates according to the following conditions.

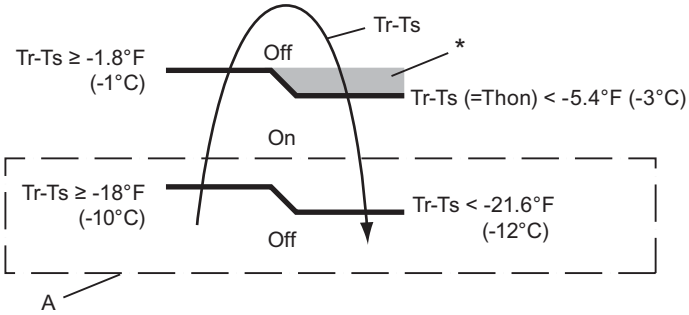
- Ts - Tr > 21.6 °F (-12.0 °C): Auxiliary equipment turn off.
- Ts - Tr > 18.0 °F (-10.0 °C): Auxiliary equipment turn on.

FIELD WORKING

● 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

*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

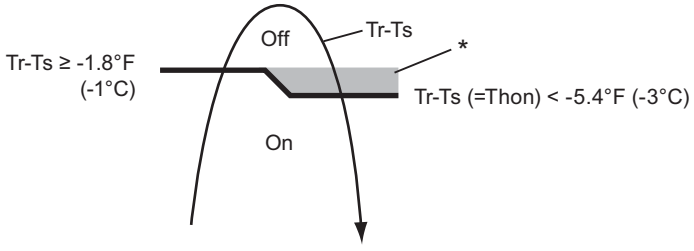
Example: When set temperature (Ts) is 72°F (22°C) (Factory setting),
- and room temperature (Tr) increases above 53.6°F (12°C), signal output is on.
- and room temperature (Tr) increases above 69.8°F (21°C), signal output is off.
- and room temperature (Tr) decreases below 66.2°F (19°C), signal output is on.
- and room temperature (Tr) decreases below 50°F (10°C), signal output is off.

● Auxiliary heater control 2

Control that excludes “A” from "Auxiliary heater control 1" on page 05-36.

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

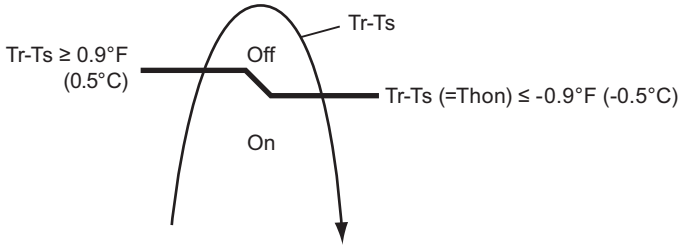
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

● Heat pump prohibition control

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

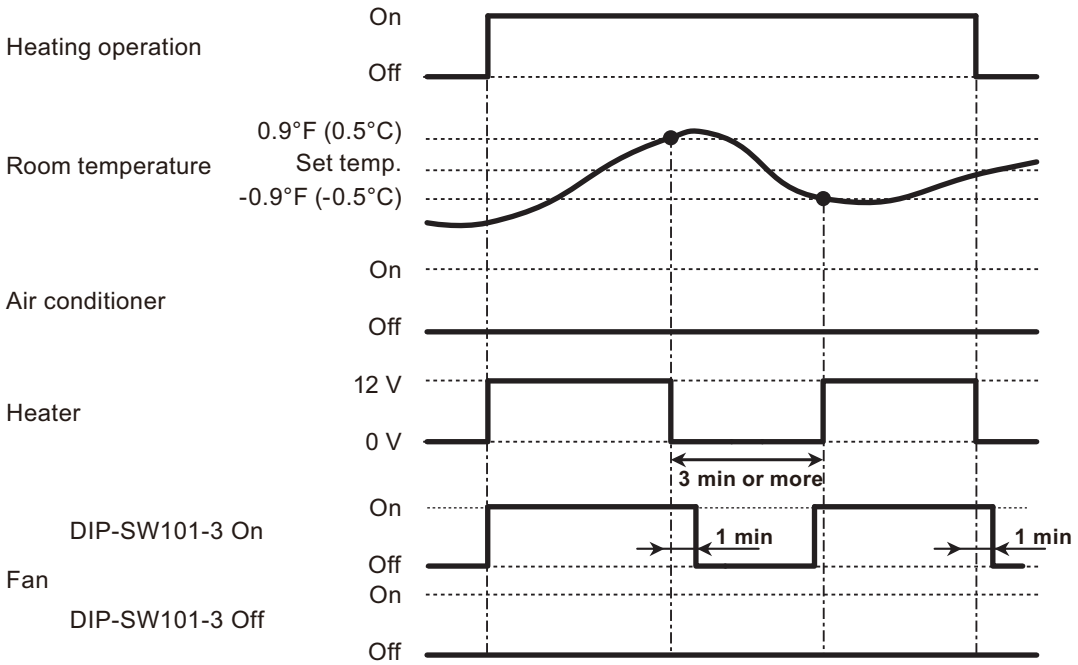
Operation			Condition
Heater on			Heater is on as shown in following diagram of heating temperature.
Heater off	DIP-SW101-3 Indoor unit fan setting for external heater	On Enabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection
	DIP-SW101-3 Indoor unit fan setting for external heater	Off Disabled	• 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

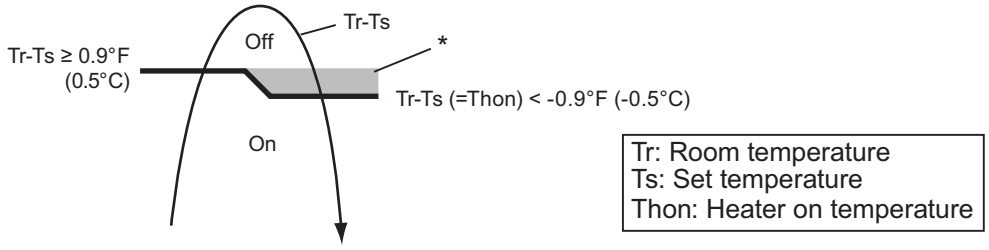
● Auxiliary heater control by outdoor temperature 1

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	DIP-SW101-3 Indoor unit fan setting for external heater	On Enabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Heat pump only zone • Fan stop protection
	DIP-SW101-3 Indoor unit fan setting for external heater	Off Disabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Heat pump only zone

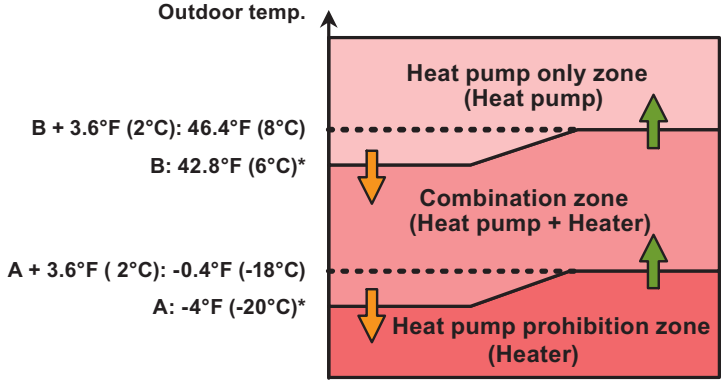
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.
- Outdoor temperature zone boundary A and B: Adjustable individually by function setting number 66 and 67.

- **External heater output**



*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

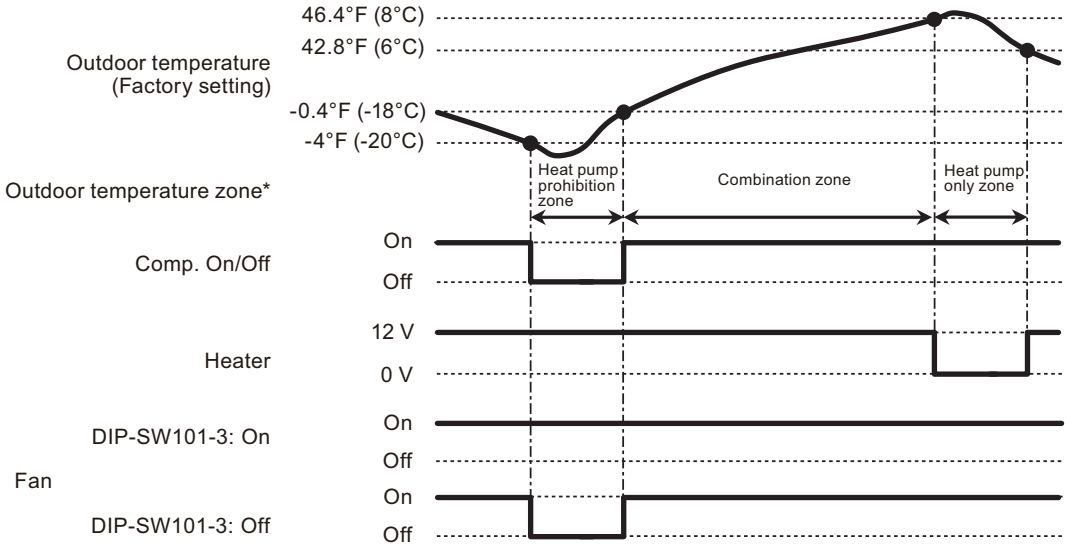
- **Outdoor temperature zone**



*: 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

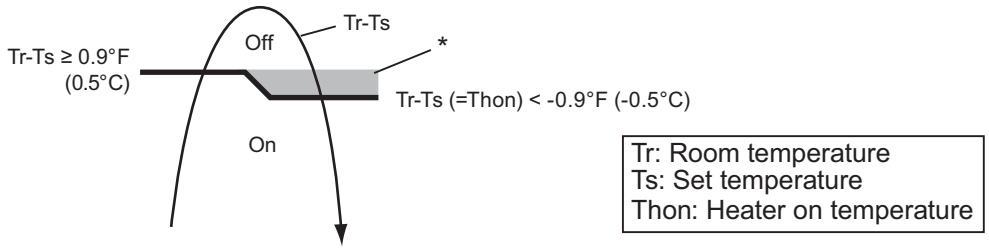
● Auxiliary heater control by outdoor temperature 2

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	DIP-SW101-3 Indoor unit fan setting for external heater	On Enabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection
	DIP-SW101-3 Indoor unit fan setting for external heater	Off Disabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

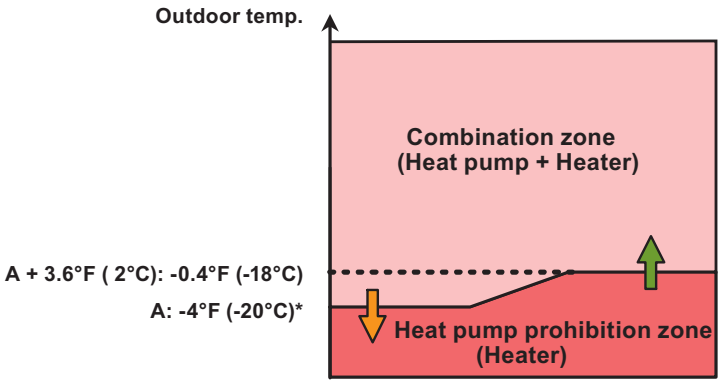
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.
- Outdoor temperature zone boundary A: Adjustable by function setting number 66.

- **External heater output**



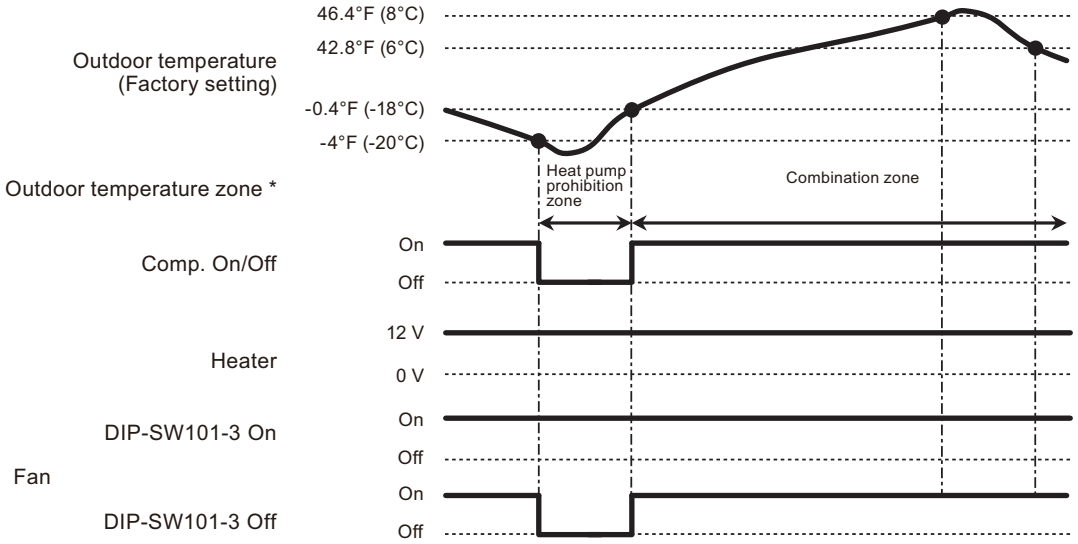
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

- **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

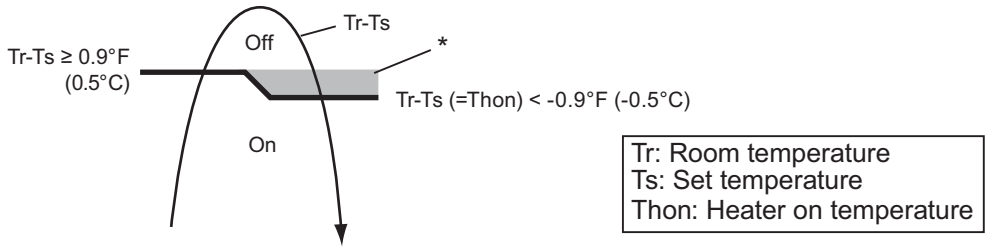
● Auxiliary heater control by outdoor temperature 3

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	DIP-SW101-3 Indoor unit fan setting for external heater	On Enabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection
	DIP-SW101-3 Indoor unit fan setting for external heater	Off Disabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

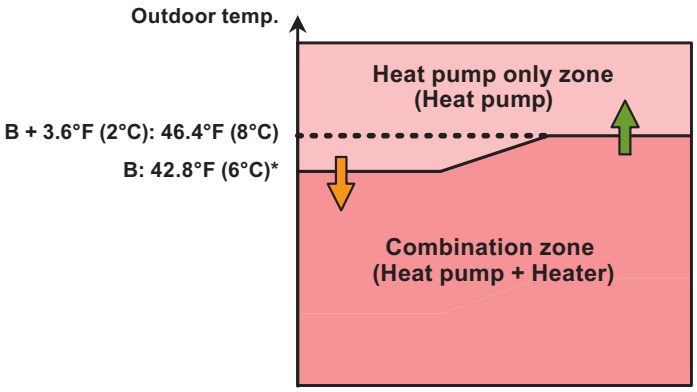
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.
- Outdoor temperature zone boundary B: Adjustable by function setting number 67.

- **External heater output**



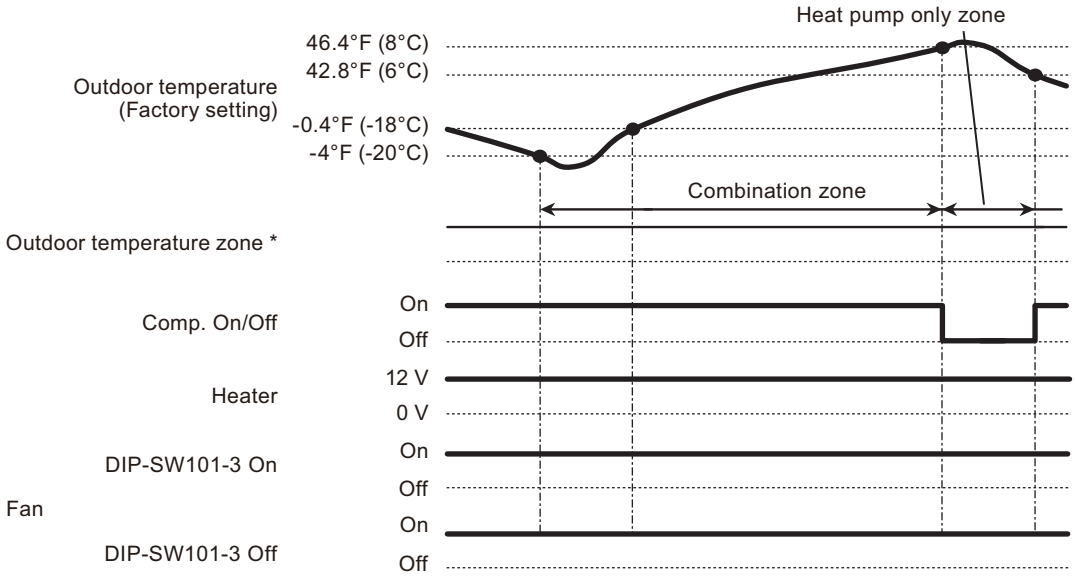
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

- **Outdoor temperature zone**



*: Adjustable by function setting 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

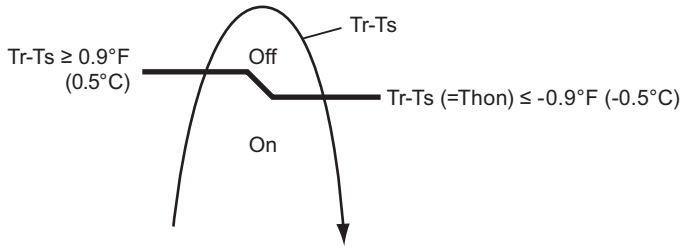
FIELD WORKING

● Auxiliary heat pump control

- **External heater output**

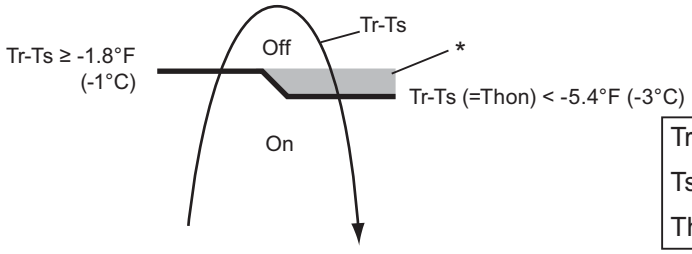
Operation			Condition
Heater on			Heater is on as shown in following diagram of heating temperature.
Heater off	DIP-SW101-3 Indoor unit fan setting for external heater	On Enabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection
	DIP-SW101-3 Indoor unit fan setting for external heater	Off Disabled	• 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

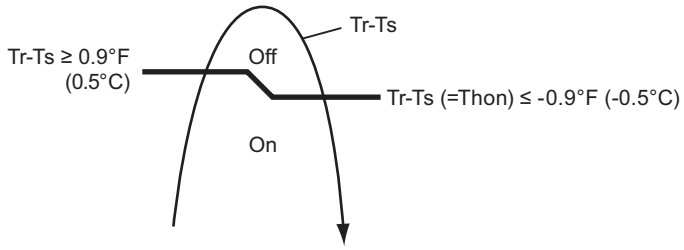
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

● Auxiliary heat pump control by outdoor temperature 1

- **External heater output**

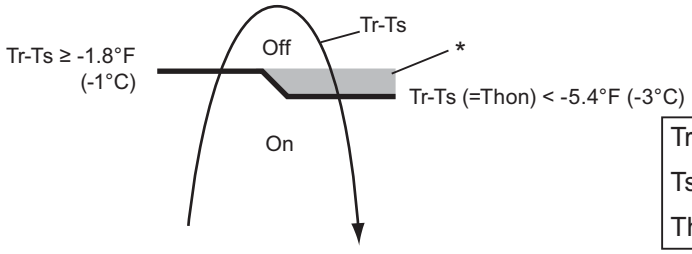
Operation			Condition
Heater on			Heater is on as shown in following diagram of heating temperature.
Heater off	DIP-SW101-3 Indoor unit fan setting for external heater	On Enabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection
	DIP-SW101-3 Indoor unit fan setting for external heater	Off Disabled	• 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

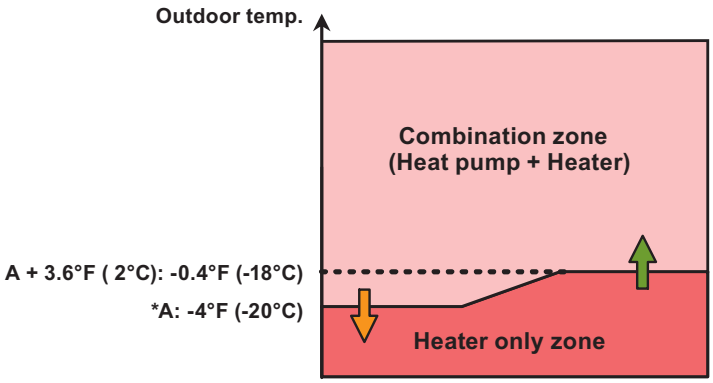
- **Auxiliary heat pump On/Off**
  – Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
  – All control temperatures will shift by adjusting “Thon”.



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

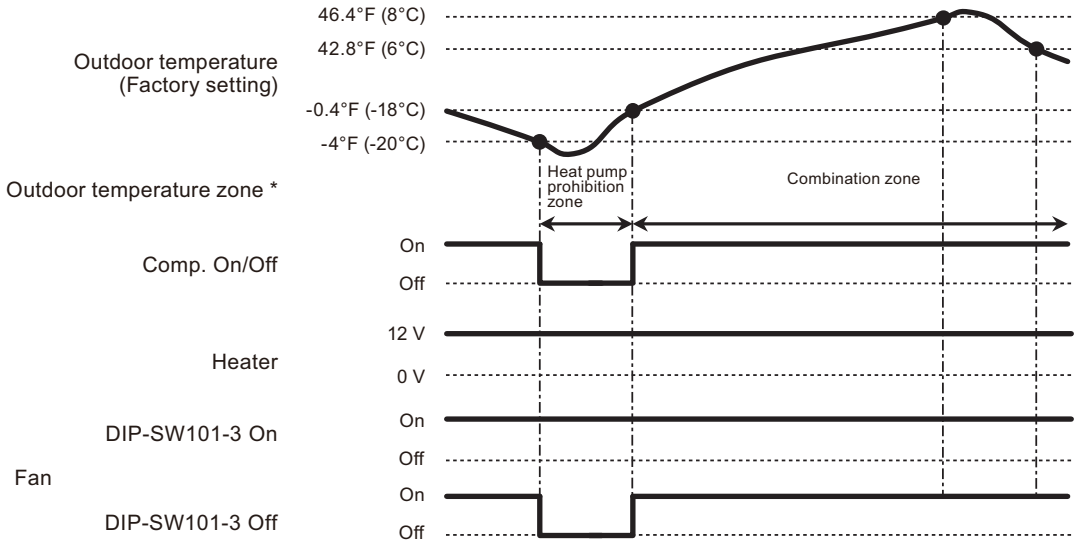
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

- **Outdoor temperature zone**



*: Adjustable by function setting 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

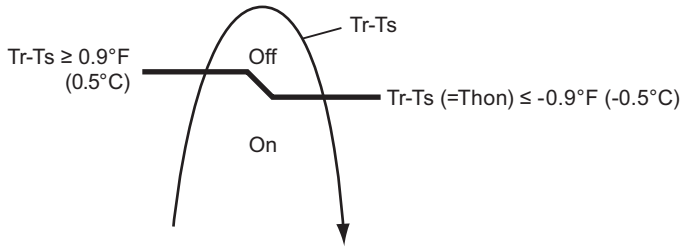
FIELD WORKING

● Auxiliary heat pump control by outdoor temperature 2

- **External heater output**

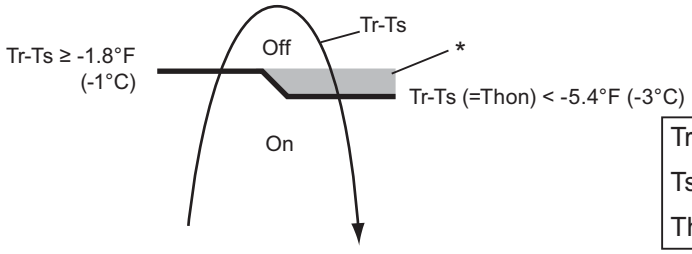
Operation			Condition
Heater on			Heater is on as shown in following diagram of heating temperature.
Heater off	DIP-SW101-3 Indoor unit fan setting for external heater	On Enabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection
	DIP-SW101-3 Indoor unit fan setting for external heater	Off Disabled	• 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

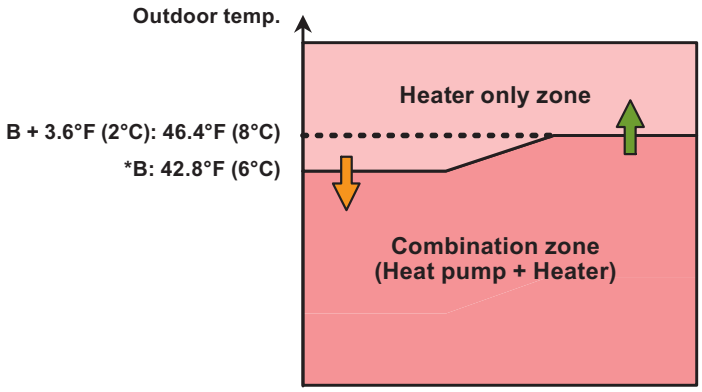
- **Auxiliary heat pump On/Off**
  – Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
  – All control temperatures will shift by adjusting “Thon”.



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

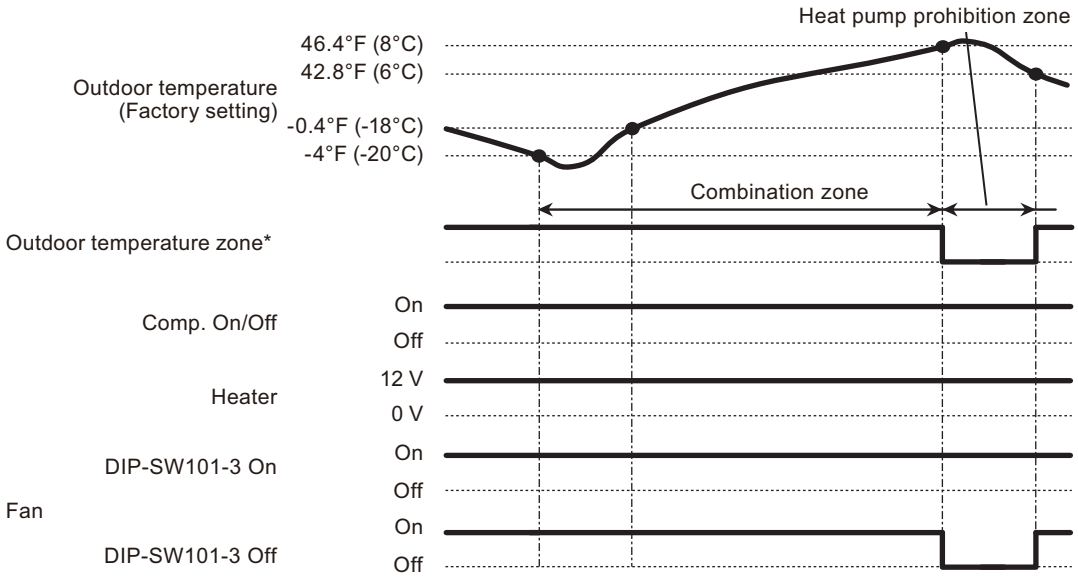
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

- **Outdoor temperature zone**



*: Adjustable by function setting 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

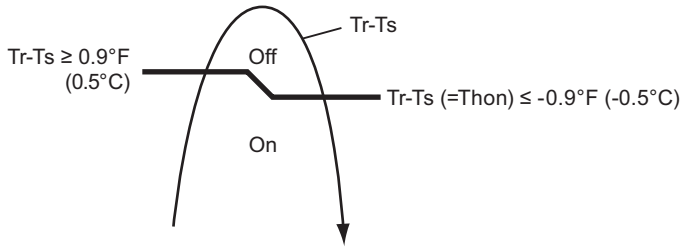
FIELD WORKING

● Auxiliary heat pump control by outdoor temperature 3

- **External heater output**

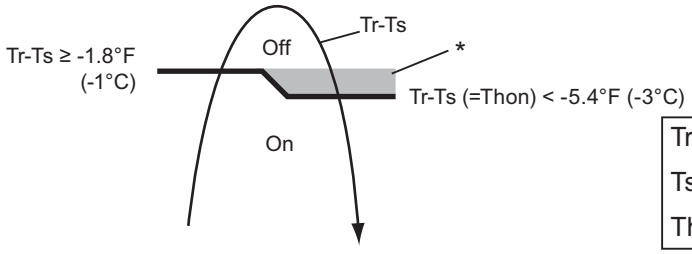
Operation			Condition
Heater on			Heater is on as shown in following diagram of heating temperature.
Heater off	DIP-SW101-3 Indoor unit fan setting for external heater	On Enabled	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection
	DIP-SW101-3 Indoor unit fan setting for external heater	Off Disabled	• 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

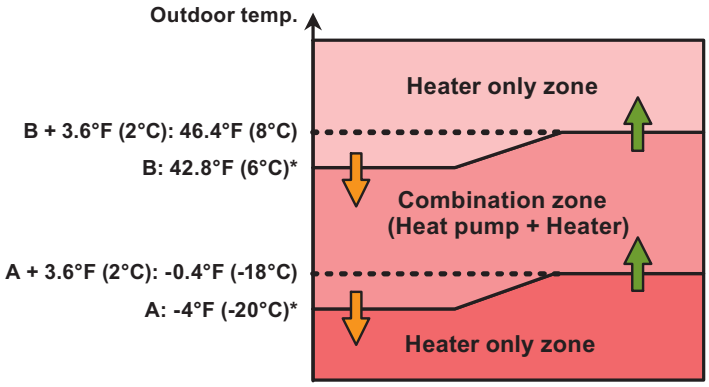
- **Auxiliary heat pump On/Off**
  – Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
  – All control temperatures will shift by adjusting “Thon”.



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

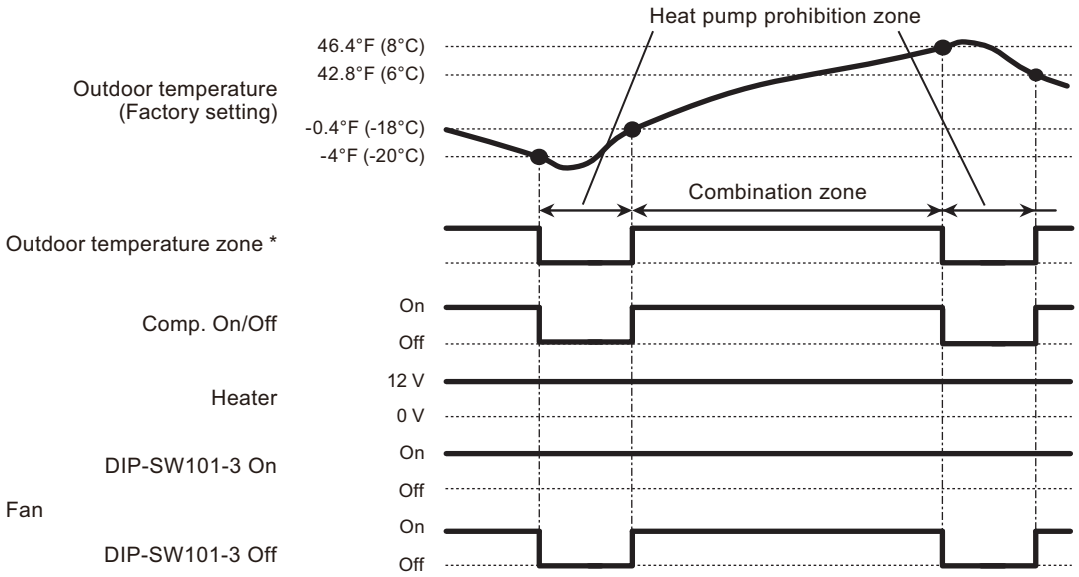
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

- **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.

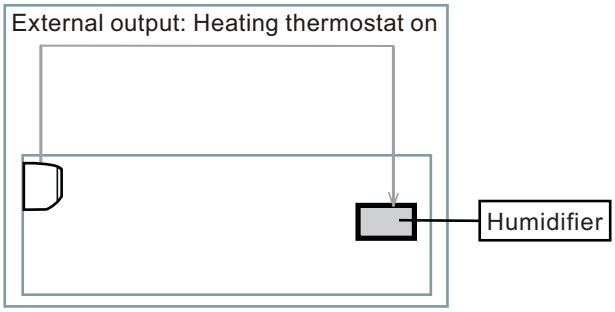
- Other than heating
- Test run

FIELD WORKING

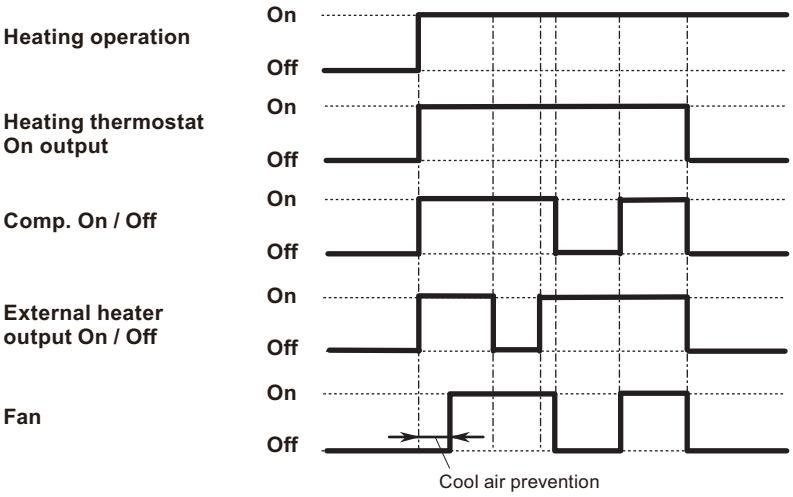
■ Heating thermostat on for humidifier

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	Output3	
	7	60-07	9	Output2	
	8	60-08	A	Output1	

- **Example of individual connection**



- **Operation status**
  The heating thermostat output for CN47, Output1, Output2, and Output3 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