FUJITSU

SPLIT TYPE
ROOM AIR CONDITIONER
WALL MOUNTED TYPE

SERVICE MANUAL

Refrigerant R410A

Indoor unit	Outdoor unit
ASYA07LGC	AOYR07LGC
ASYA09LGC	AOYR09LGC
ASYA12LGC	AOYR12LGC

CONTENTS

FUJITSU GENERAL LIMITED

SPECIFICATIONS

ELECTRICAL DATA

TYPE		Cool & heat inverter		
INDOOR UNIT		ASYA07LGC	ASYA09LGC	ASYA12LGC
OUTDOOR UNIT		AOYR07LGC	AOYR09LGC	AOYR12LGC
COOLING CAPACITY		2.10 kW	2.50 kW	3.40 kW
HEATING CAPACITY		3.00 kW	3.20 kW	4.00 kW
POWER SOURCE		230 V	230 V	230 V
FREQUENCY		50 Hz	50 Hz	50 Hz
RUNNING CURRENT	Cooling	2.4 A	3.2 A	4.3 A
	Heating	3.2 A	3.7 A	4.6 A
INPUT WATTS	Cooling	0.470 kW	0.630 kW	0.895 kW
	Heating	0.660 kW	0.750 kW	0.970 kW
E.E.R.	Cooling	4.47 kW/kW	3.97 kW/kW	3.80 kW/kW
COP	Heating	4.55 kW/kW	4.27 kW/kW	4.12 kW/kW
MOISTURE REMOVAL		1.0 L/h	1.3 L/h	1.8 L/h
AIR CIRCULATION HIGH	Cooling	750 m^3/h	750 m^3/h	750 m^3/h
	Heating	750 m^3/h	750 m^3/h	750 m^3/h
MAXIMUM CURRENT	Cooling	6.0 A	6.0 A	6.5 A
	Heating	7.5 A	7.5 A	9.0 A

FAN MOTOR

POWER SOURCE		230 V	230 V	230 V
INDOOR UNIT Cooling	High speed	1,440 r.p.m.	1,440 r.p.m.	1,440 r.p.m.
	Middle speed	1,200 r.p.m.	1,200 r.p.m.	1,200 r.p.m.
	Low speed	920 r.p.m.	920 r.p.m.	920 r.p.m.
	Quiet	680 r.p.m.	680 r.p.m.	680 r.p.m.
INDOOR UNIT Heating	High speed	1,440 r.p.m.	1,440 r.p.m.	1,440 r.p.m.
	Middle speed	1,200 r.p.m.	1,200 r.p.m.	1,200 r.p.m.
	Low speed	980 r.p.m.	980 r.p.m.	980 r.p.m.
	Quiet	700 r.p.m.	700 r.p.m.	700 r.p.m.
OUTDOOR UNIT Cooling		730 r.p.m.	730 r.p.m.	860 r.p.m.
OUTDOOR UNIT Heating		650 r.p.m.	650 r.p.m.	760 r.p.m.

NOISE LEVEL

INDOOR UNIT Cooling	High speed	43 dB	43 dB	43 dB
	Middle speed	38 dB	38 dB	38 dB
	Low speed	33 dB	33 dB	33 dB
	Quiet	21 dB	21 dB	21 dB
INDOOR UNIT Heating	High speed	43 dB	43 dB	43 dB
	Middle speed	38 dB	38 dB	38 dB
	Low speed	33 dB	33 dB	33 dB
	Quiet	21 dB	21 dB	21 dB
OUTDOOR UNIT Cooling		45 dB	45 dB	48 dB
OUTDOOR UNIT Heating		45 dB	45 dB	48 dB

INDOOR UNIT	ASYA07LGC	ASYA09LGC	ASYA12LGC
OUTDOOR UNIT	AOYR07LGC	AOYR09LGC	AOYR12LGC

DIMENSIONS

INDOOR UNIT H x W x D	260 x 790 x 198 mm	
OUTDOOR UNIT H x W x D	540 x 660 x 290 mm	

WEIGHT

INDOOR UNIT Gross / Net	10 kg / 7.5 kg		
OUTDOOR UNIT Gross / Net	28 kg / 25 kg	35 kg / 32 kg	

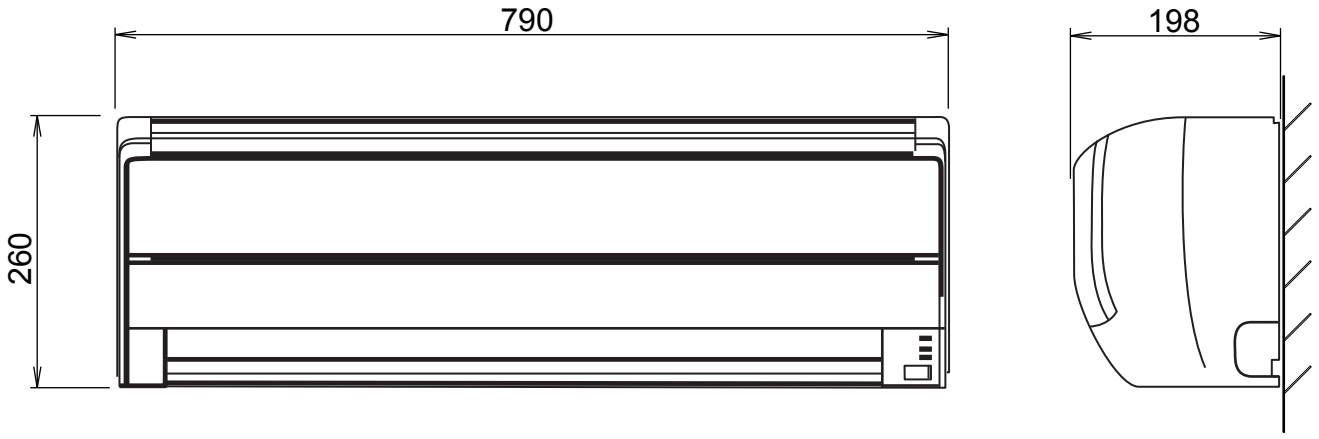
COMPRESSOR AND REFRIGERANT

COMPRESSOR TYPE		Hermetic type, 4 pole, 3 phase, DC inverter motor, Rotary	
DISCRIMINATION		5SS072XAA	DA89X1C-20FZ
WEIGHT (with oil)		5.9 kg	9.9 kg
STANDARD REFRIGERANT		650 g	800 g
REFRIGERANT TYPE		R410A	R410A
FULL CHARGE Pipe Length	15 m	650 g	800 g
	20 m	750 g	900 g
ADDITIONAL REFRIGERANT		20 g/m	
MAXIMUM PIPING HEIGHT		15m	

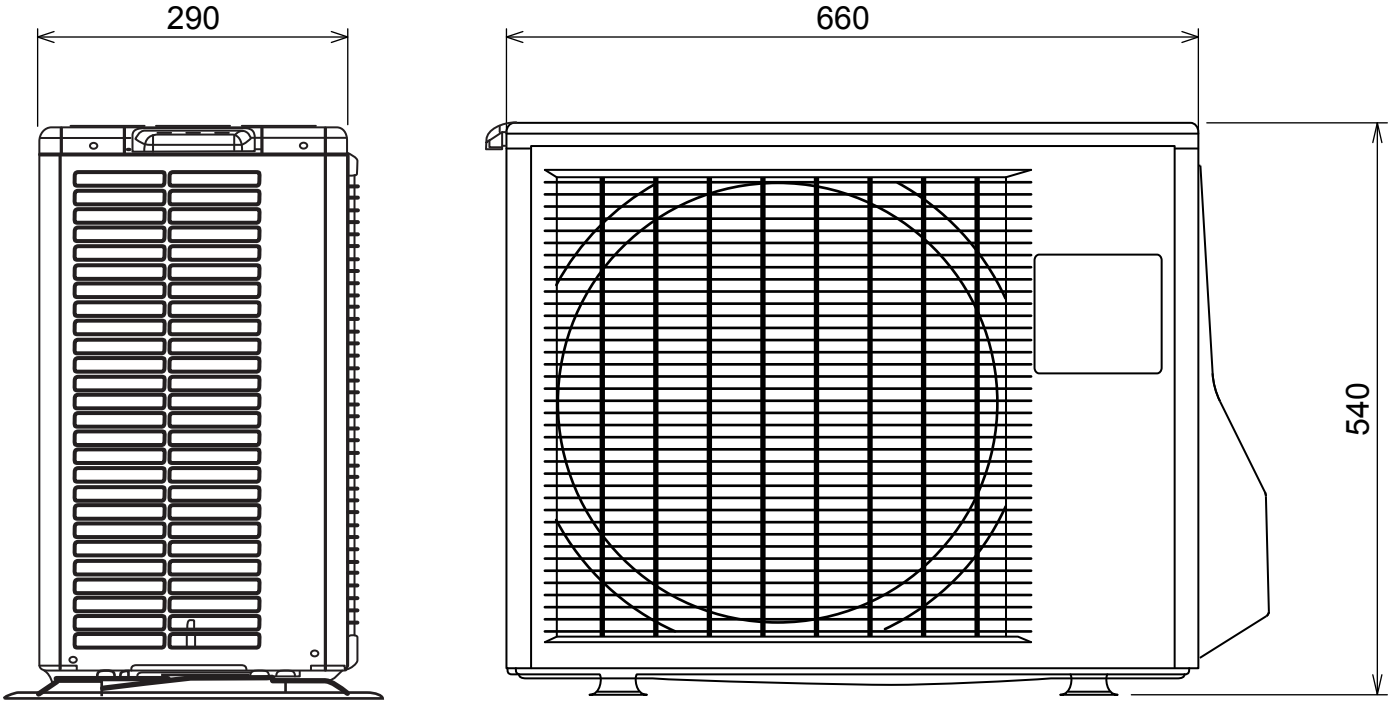
DIMENSIONS

unit : mm

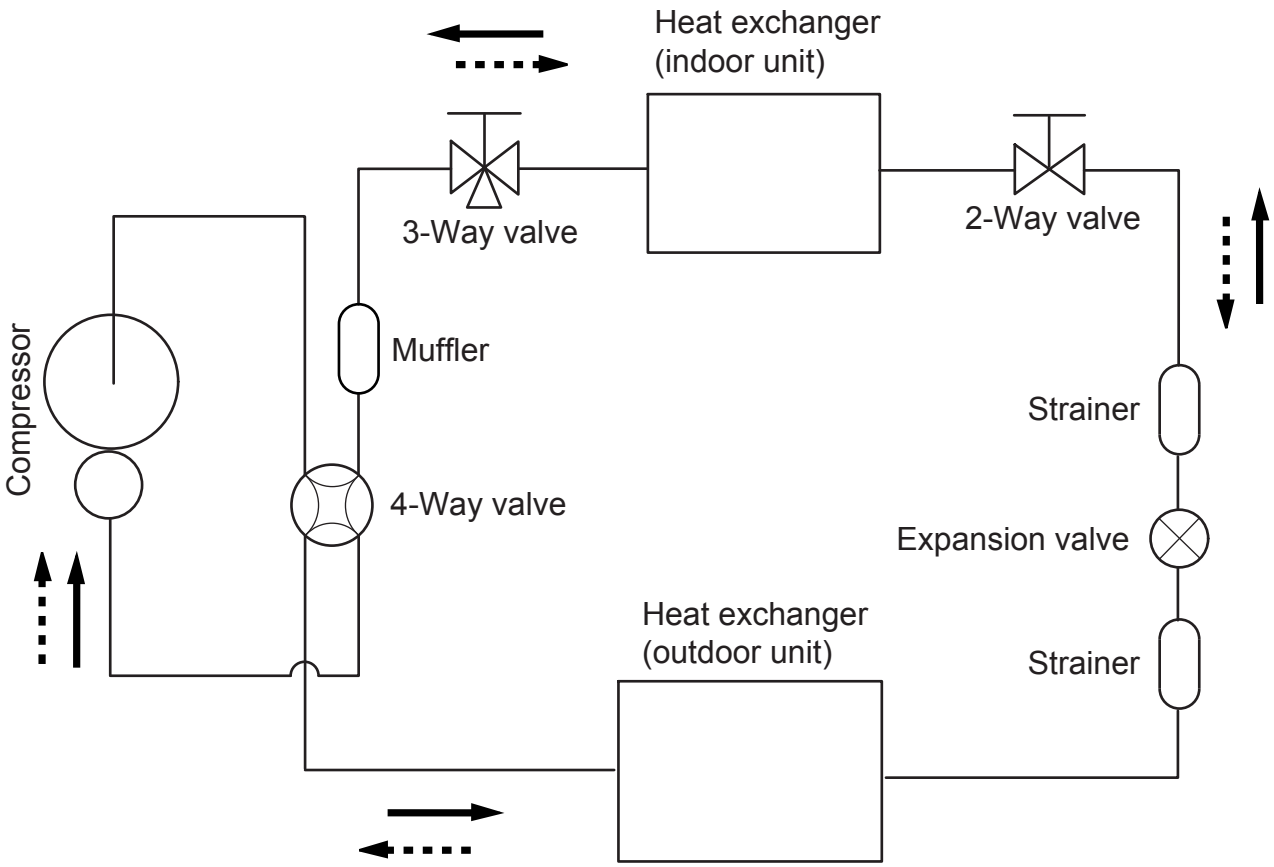
INDOOR UNIT



OUTDOOR UNIT



REFRIGERANT SYSTEM DIAGRAM



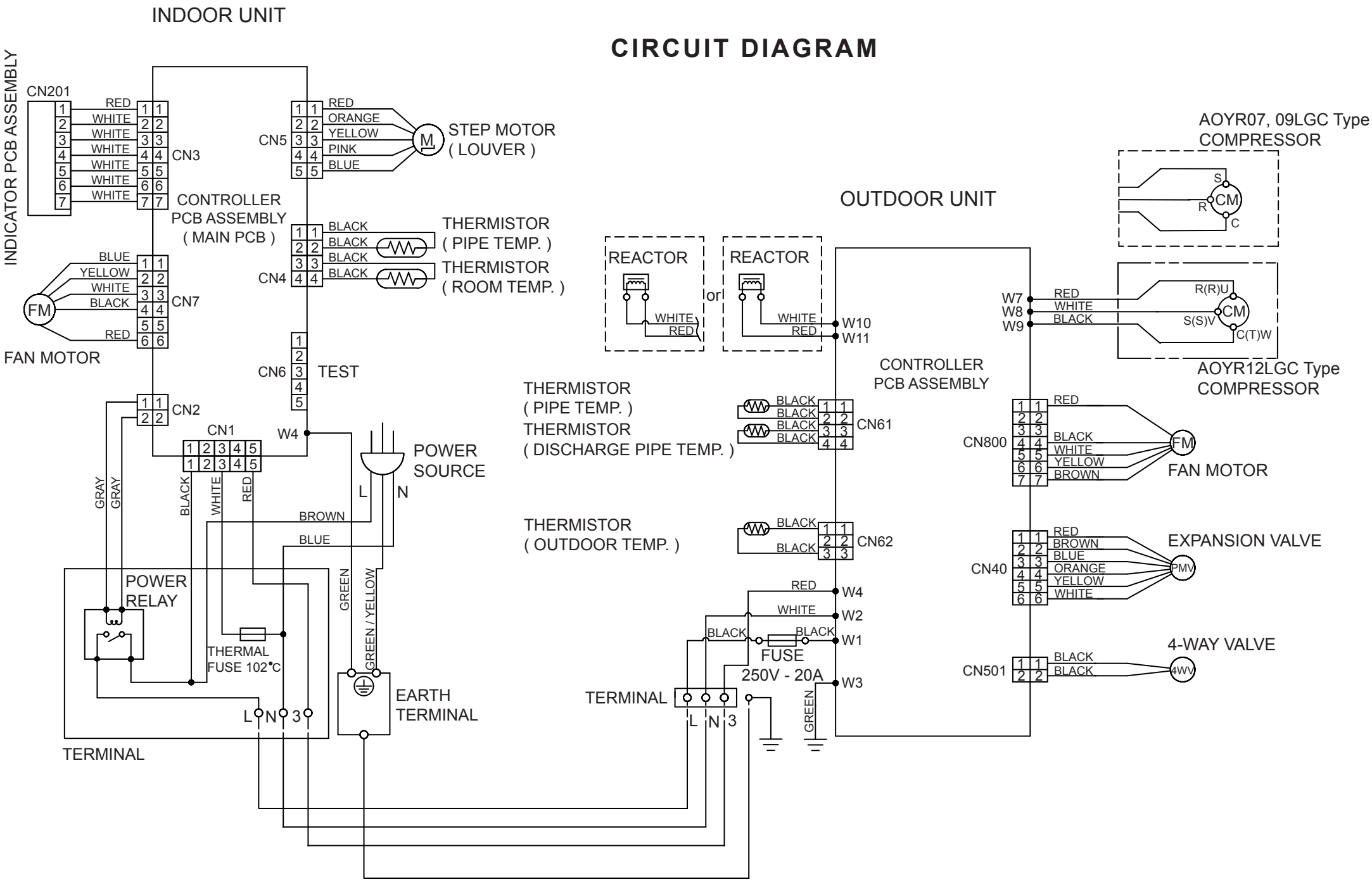
Refrigerant direction

Cooling

Heating

Refrigerant pipe diameter
Liquid : 1/4" (6.35 mm)
Gas : 3/8" (9.52 mm)

CIRCUIT DIAGRAM

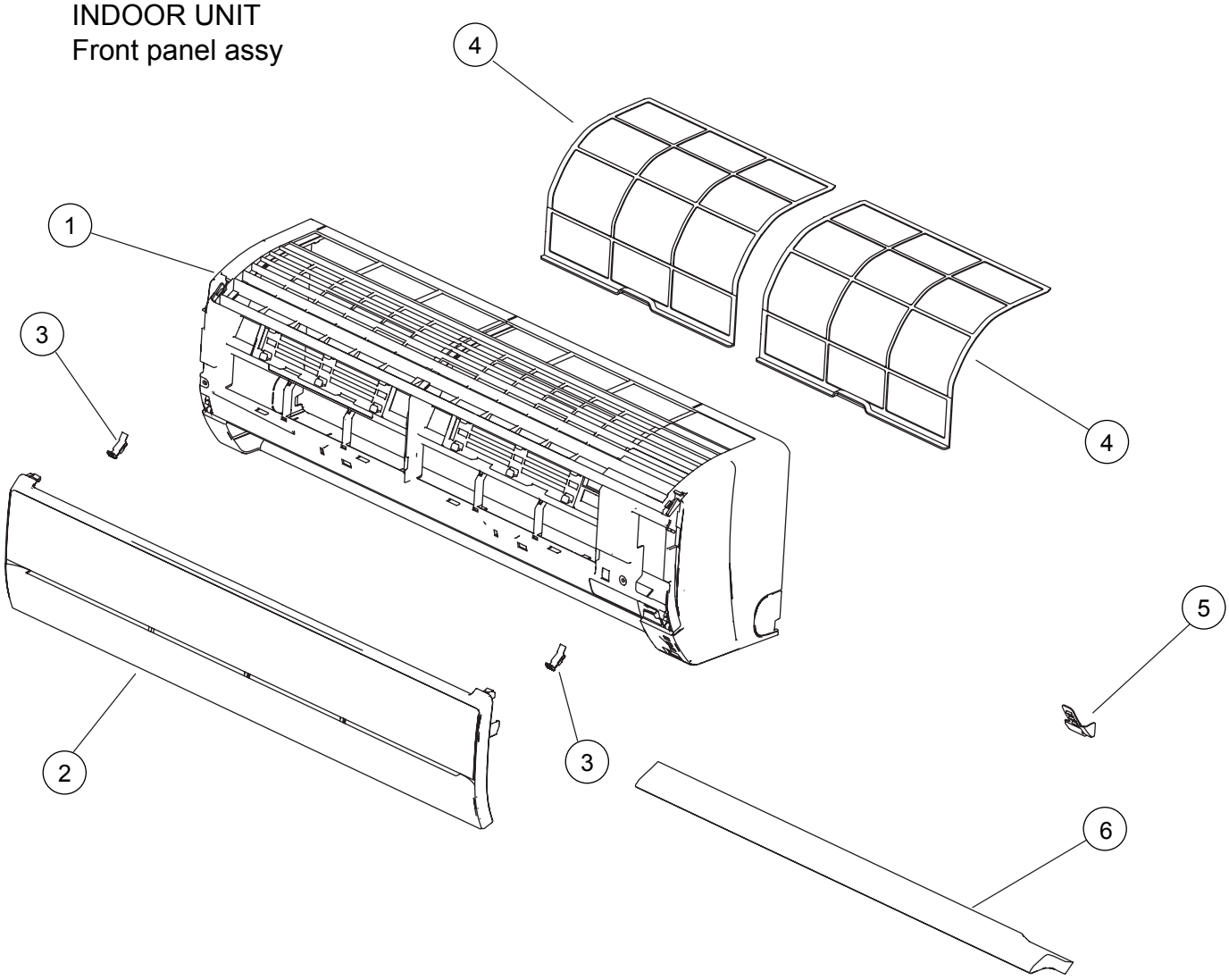


ERROR CONTENTS

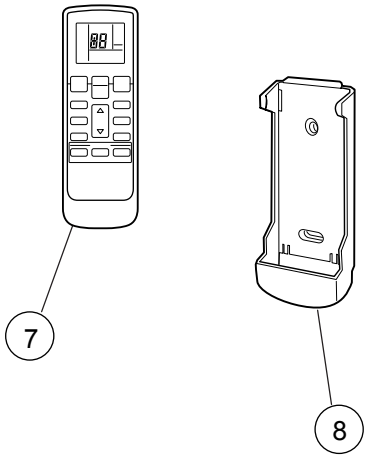
Error	Indoor unit LED			Wired remote control	Error
	Operation LED	Timer LED	Coil dry LED		
Serial signal error	Off	2 flash	off	01	Serial signal (reverse) error, at operation start up
		3 flash	off	01	Serial signal (reverse) error, during oeration
		4 flash	off	13	Serial signal (forward) error, at operation start up
		5 flash	off	13	Serial signal (forward) error, during operation
		8 flash	off	00	Wired remote control error
Indoor unit thermistor error	2 flash	2 flash	off	02	Indoor air thermistor error
		3 flash	off	04	Heat exchanger middle thermistor error
Outdoor unit thermistor error	3 flash	2 flash	off	0C	Discharge pipe thermistor error
		3 flash	off	06	Heat exchanger thermistor error
		4 flash	off	0A	Outdoor air thermistor error
Indoor unit control error	4 flash	2 flash	off	20	Manual auto button welded
		3 flash	off	-	Main relay welded
		4 flash	off	2A	Not distinguishing 50Hz or 60Hz
Outdoor unit control error	5 flash	2 flash	off	17	Current trip error
		3 flash	off	18	CT abnormal
		5 flash	off	1A	Compressor location detection error
		6 flash	off	1B	Outdoor unit fan drive system abnormal
Indoor fan motor error	6 flash	2 flash	off	12	Abnormal lock (upper fan motor)
		3 flash	off	12	Abnormal rotation (upper fan motor)
Refrigerant cycle error	7 flash	2 flash	off	0F	Discharge temperature abnormal
		3 flash	off	24	Cooling high pressure abnormal rise
		4 flash	off	2C ?	DC 4-way valve and expansion valve abnormal
Optional function error	8 flash	4 flash	off	25	PFC circuit error
Model information error	0.1 sec on/off	0.1 sec on/off	0.1 sec on/off	11	Model information error

PARTS

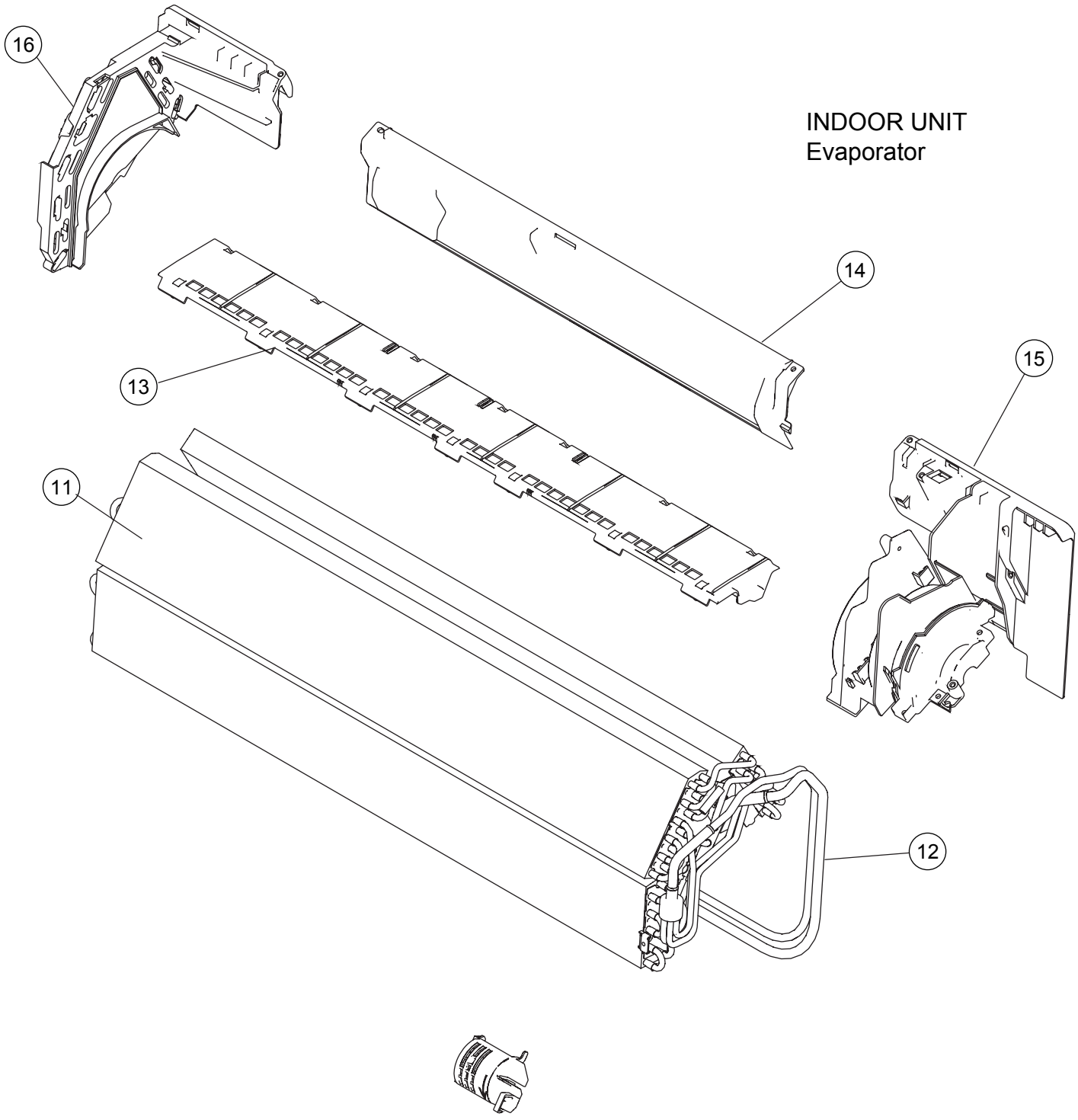
INDOOR UNIT
Front panel assy



Ref.	Description	Part number	
1	Front Panel	9316558014	
2	Intake Grille	9316560017	
3	Clamper (Grille)	9316906006	
4	Air Filter	9316562004	
5	Receiver Window	9316588004	
6	Panel Cover	9316561007	
7	Remote Control	9316397026	
8	Remote Control Holder	9305642045	
--	Air Clean Filter Assy	9317250009	
--	Wire Cover	9316559004	
--	Wire Shield	9316584006	

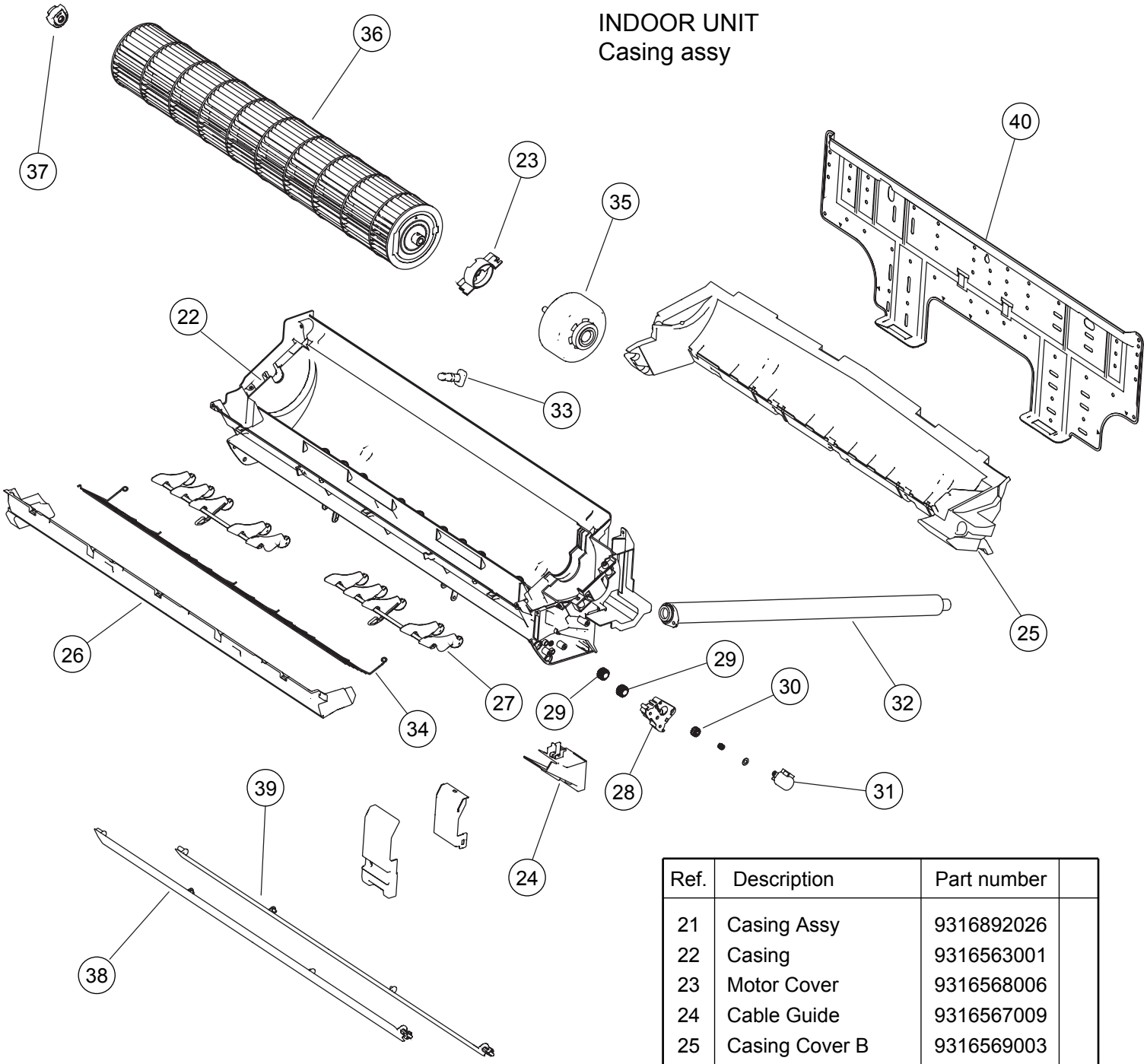


INDOOR UNIT
Evaporator



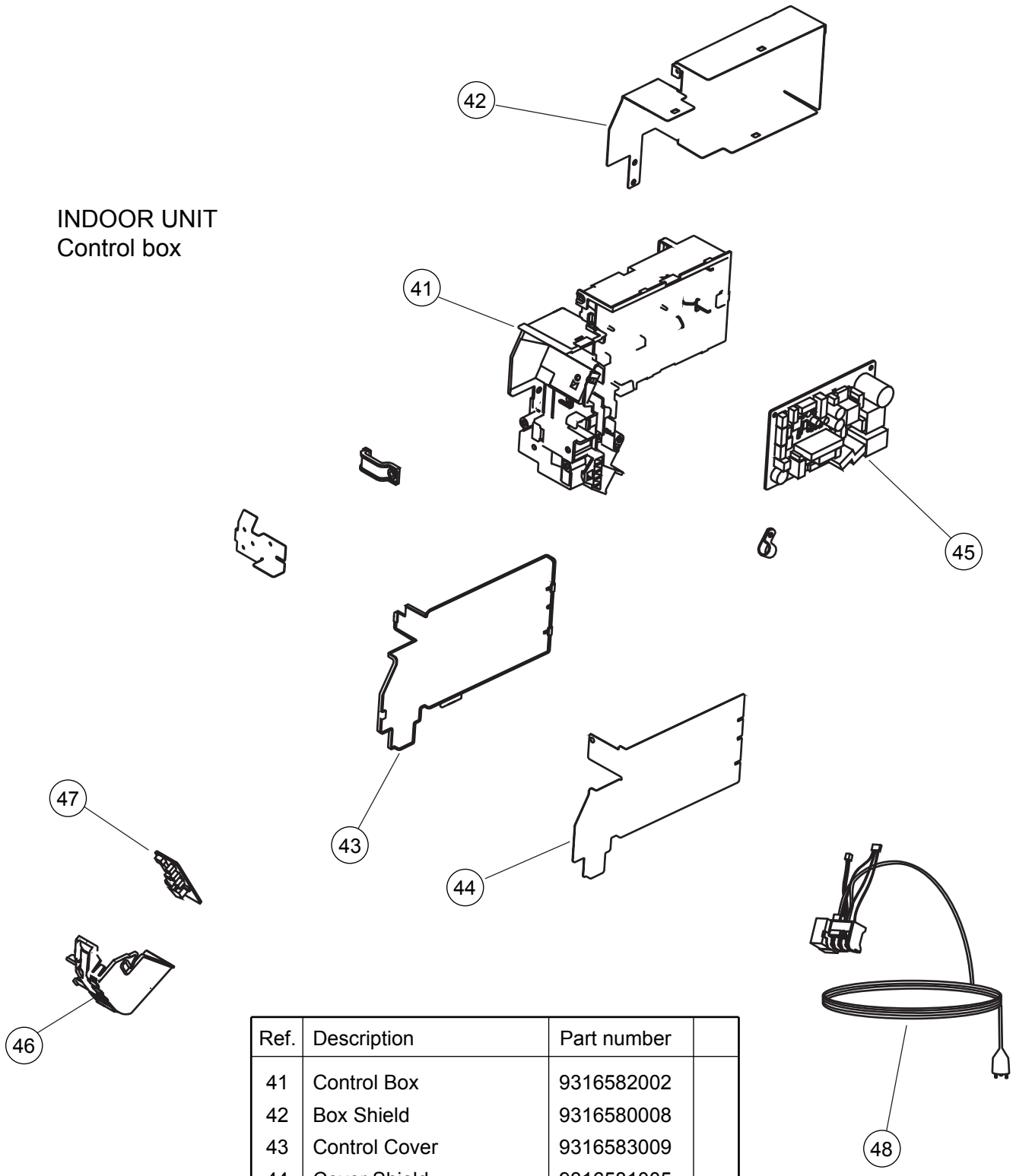
Ref.	Description	Part number	
11	Evaporator Assy (07, 09)	9316922013	
11	Evaporator Assy (12)	9317268011	
12	Joint Pipe Assy (07, 09)	9316923010	
12	Joint Pipe Assy (12)	9317190015	
13	Filter Guide	9316578005	
14	Rear Bracket	9316566002	
15	Evaporator Holder R	9316565005	
16	Evaporator Holder L	9316564008	

INDOOR UNIT
Casing assy



Ref.	Description	Part number	
21	Casing Assy	9316892026	
22	Casing	9316563001	
23	Motor Cover	9316568006	
24	Cable Guide	9316567009	
25	Casing Cover B	9316569003	
26	Casing Cover F	9316570009	
27	R and L Louver B	9316961005	
28	Louver Gear Holder	9316575004	
29	Louver Gear	9316574007	
30	Gear A	9309994003	
31	Motor Step	9900139117	
32	Drain Hose Assy	9316904002	
33	Drain Cap	9316177017	
34	Fan Guard	9317182003	
35	Fan Motor	9602704002	
36	Crossflow Fan Assy	9316830004	
37	Shaft Holder C	9306628017	
38	Louver U	9316572003	
39	Louver Z	9316573000	
40	Bracket Panel	9316590007	

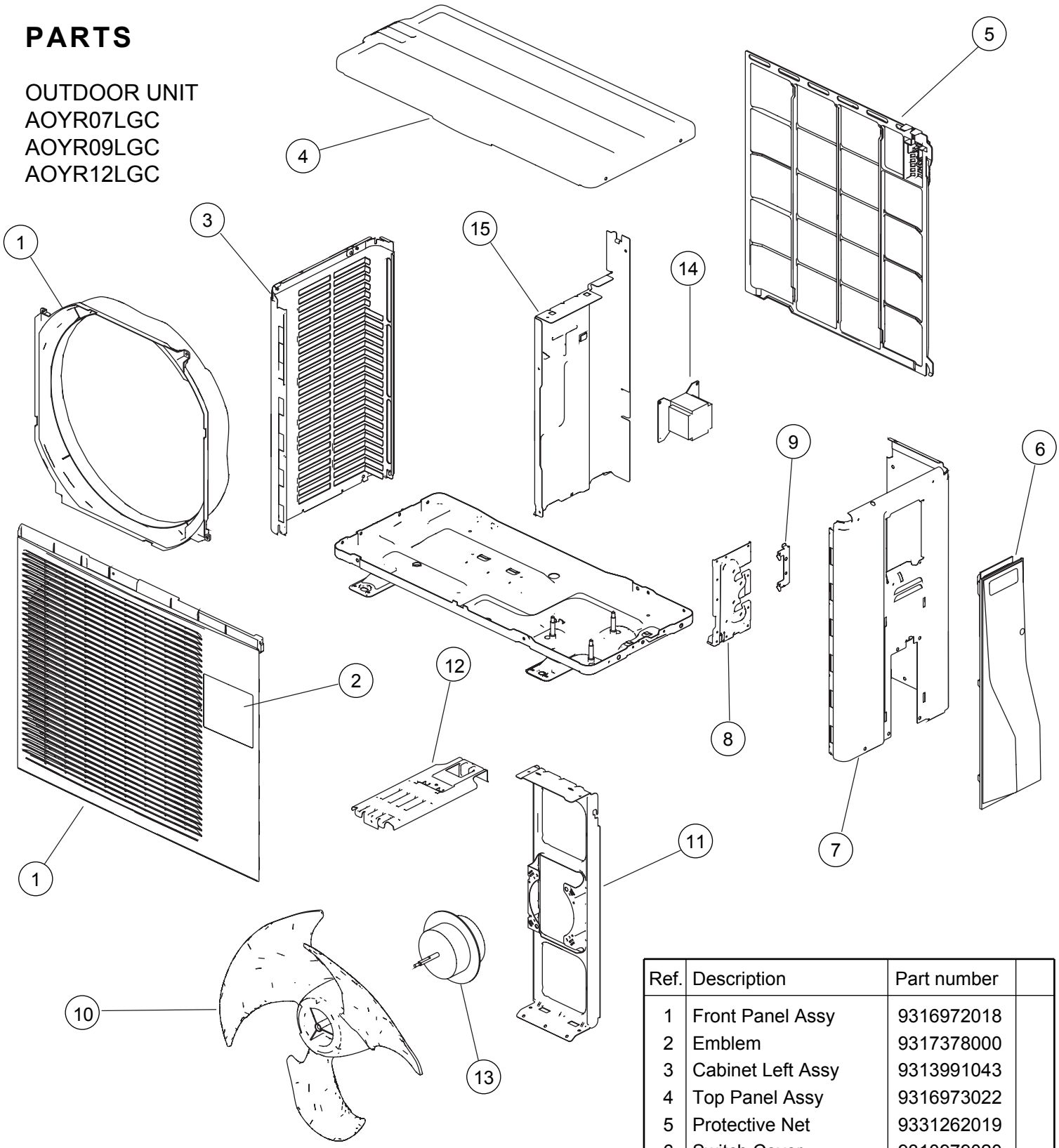
INDOOR UNIT
Control box



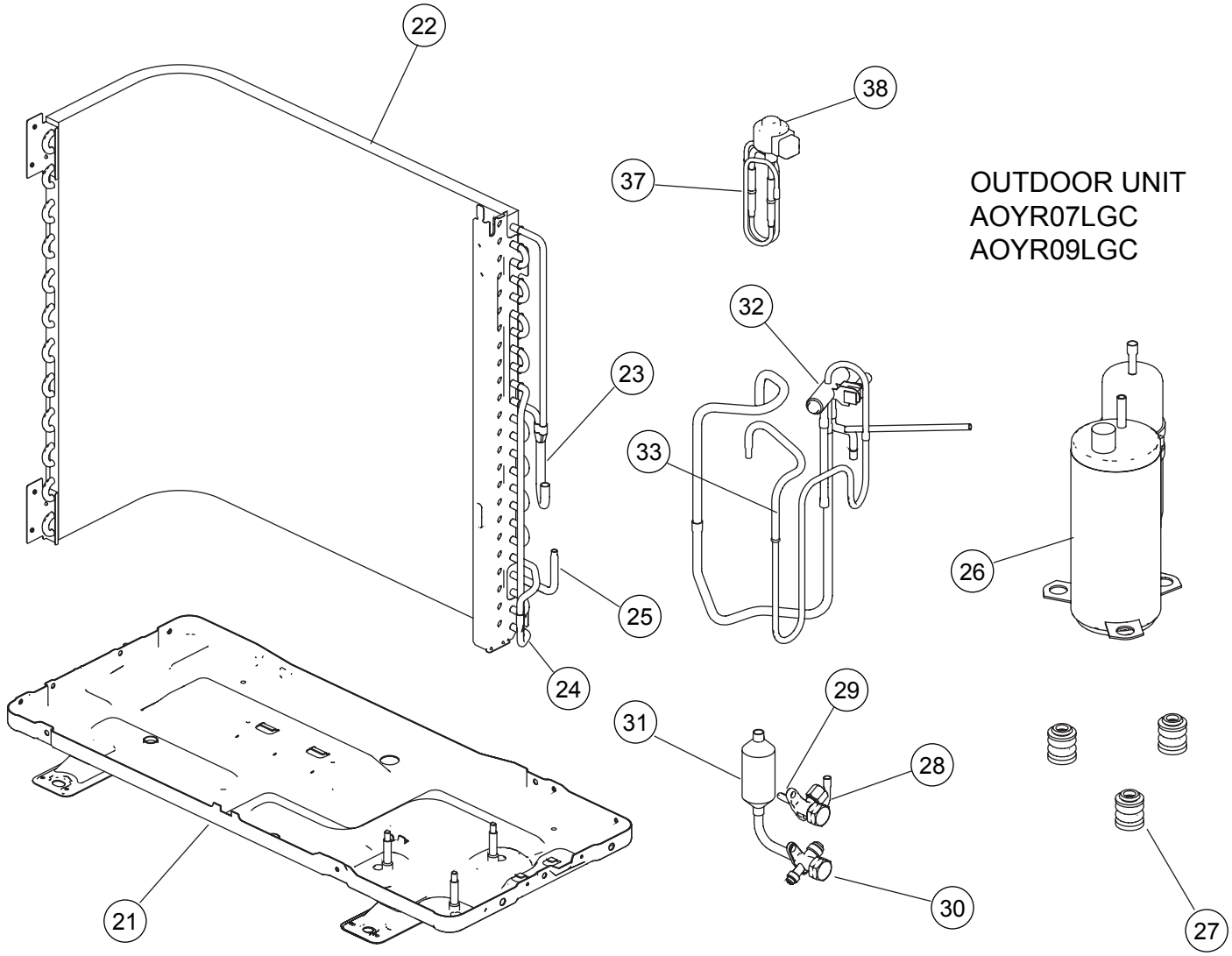
Ref.	Description	Part number	
41	Control Box	9316582002	
42	Box Shield	9316580008	
43	Control Cover	9316583009	
44	Cover Shield	9316581005	
45	Controller PCB Assy (07, 09)	9707645040	
45	Controller PCB Assy (12)	9707645057	
46	Display Case	9316587007	
47	Display PCB Assy	9707649017	
48	Power Cord Assy	9900456016	
--	Earth Terminal	9316586000	
--	Thermistor Assy	9900459000	
--	Room Thermistor Holder	9316895003	

PARTS

OUTDOOR UNIT
AOYR07LGC
AOYR09LGC
AOYR12LGC

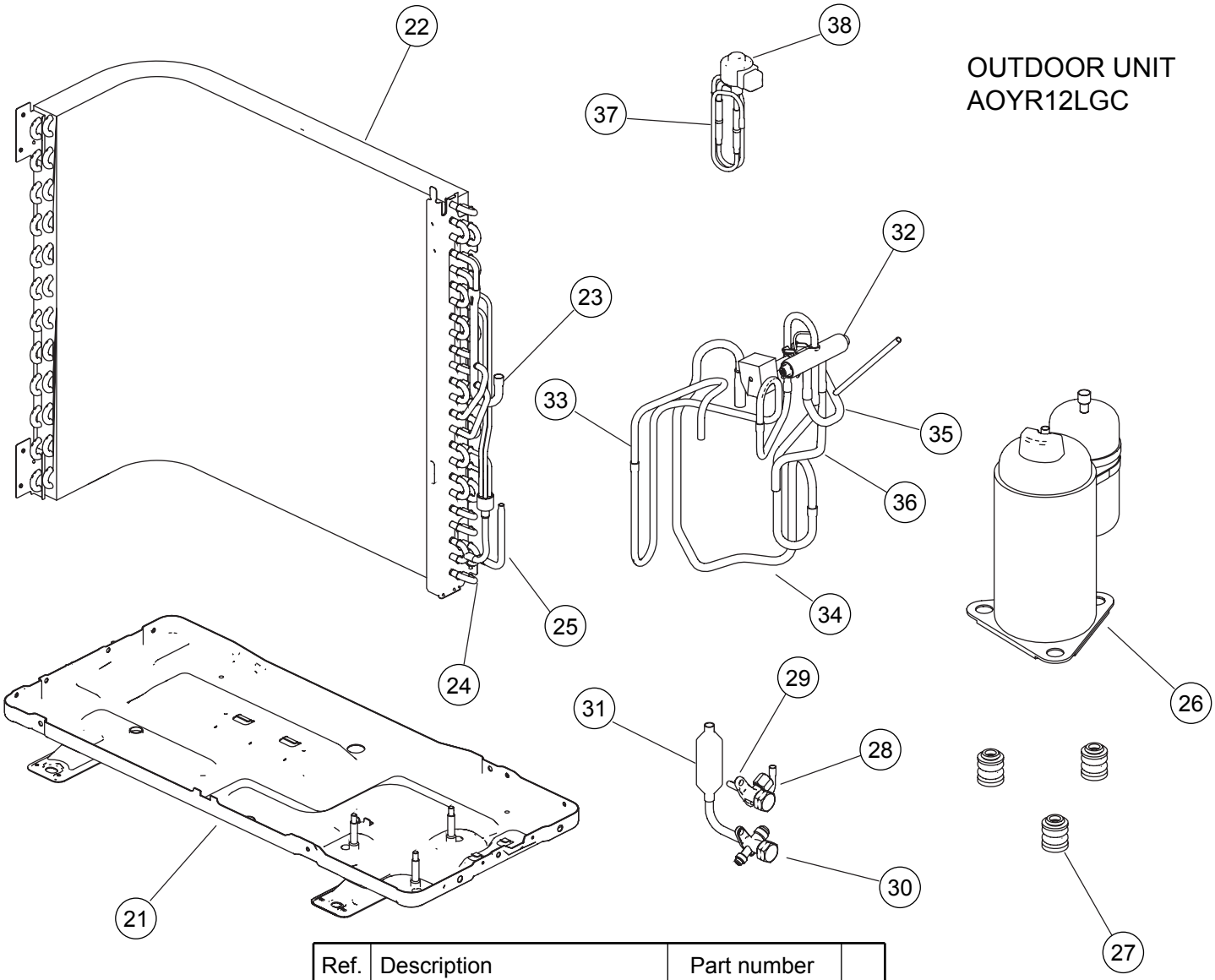


Ref.	Description	Part number	
1	Front Panel Assy	9316972018	
2	Emblem	9317378000	
3	Cabinet Left Assy	9313991043	
4	Top Panel Assy	9316973022	
5	Protective Net	9331262019	
6	Switch Cover	9310979020	
7	Cabinet Right Assy	9331336055	
8	Valve Bracket	9316523012	
9	Valve Bracket Cover	9331683005	
10	Propeller Fan	9309909014	
11	Motor Bracket	9316538009	
12	REM Plate Assy (07, 09)	9316967038	
12	REM Plate Assy (12)	9316967021	
13	Fan Motor (07, 09)	9602706013	
13	Fan Motor (12)	9602751013	
14	Reactor Assy	9900357023	
15	Separator Assy	9317392006	



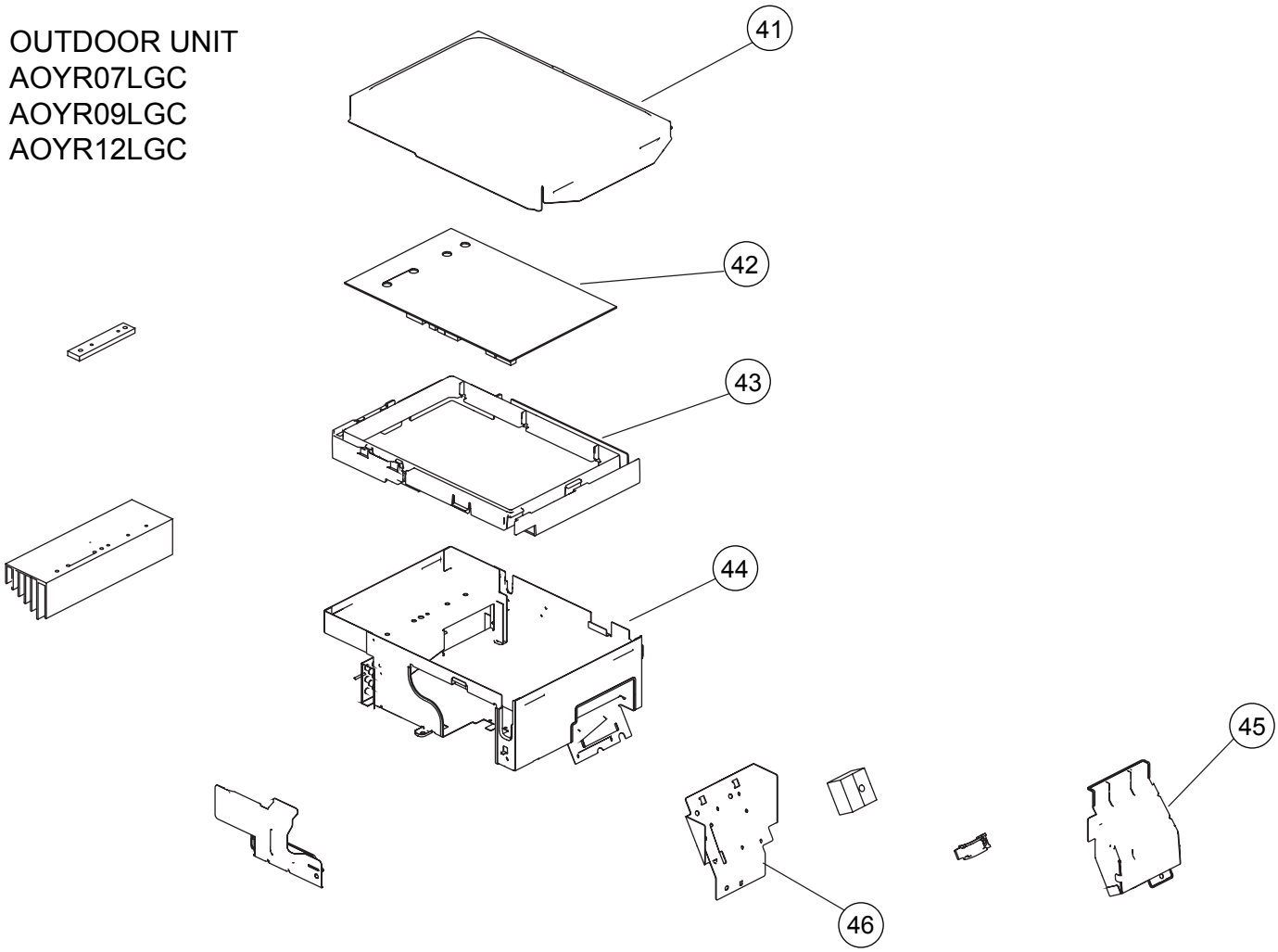
Ref.	Description	Part number	
21	Base Assy	9316916005	
22	Condenser Assy	9317286008	
23	Entrance Pipe Assy (Cond)	9317163019	
24	Separate Pipe Assy (Cond)	9317152013	
25	Exit Pipe	9317338004	
26	Compressor Assy	9317083010	
27	Cushion	9306410001	
28	2 way Valve Assy	9317171014	
29	Joint Pipe (2 way Valve)	9317344005	
30	3 way Valve Assy	9317174015	
31	Muffler	9317394000	
32	4 way Valve	9970074011	
33	Discharge Pipe Assy	9317159012	
37	Pulse Motor Valve Assy	9317216005	
38	Expansion Valve Coil	9900057039	
--	Solenoid	9970077012	
--	Condenser Total Assy	9317287012	
--	4 way Valve Assy	9317158015	
--	Insulator B	9317400015	
--	Insurator F	9331460019	
--	Insurator H	9317401012	

OUTDOOR UNIT
AOYR12LGC



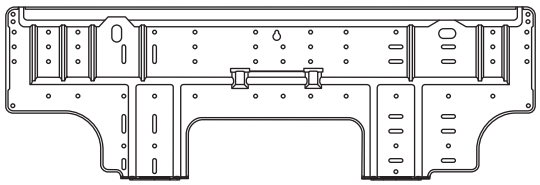
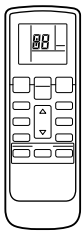
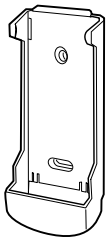
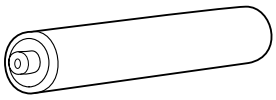
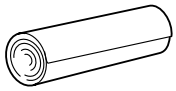
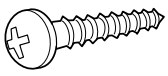
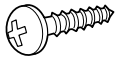
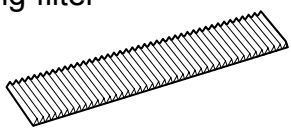
Ref.	Description	Part number	
21	Base Assy	9316980006	
22	Condenser Assy	9317193016	
23	Entrance Pipe Assy (Cond)	9317194013	
24	Separate Pipe Assy (Cond)	9317200011	
25	Exit Pipe	9317239004	
26	Compressor Assy	9315206015	
27	Cushion	9306410001	
28	2 way Valve Assy	9317171014	
29	Joint Pipe (2 way Valve)	9317344005	
30	3 way Valve Assy	9317174015	
31	Muffler	9317398008	
32	4 way Valve	9900162016	
33	Discharge Pipe Assy	9317279000	
34	Suction Pipe Assy	9317282017	
35	Joint Pipe Assy (Cond)	9317396011	
36	Joint Pipe (3 way Valve)	9317214001	
37	Pulse Motor Valve Assy	9317216005	
38	Expansion Valve Coil	9900057039	
--	Solenoid	9970055027	
--	Condenser Total Assy	9317192019	
--	4 way Valve Assy	9317278010	
--	Insulator B	9317321006	
--	Insurator F	9317403009	
--	Insurator H	9317322003	

OUTDOOR UNIT
AOYR07LGC
AOYR09LGC
AOYR12LGC



Ref.	Description	Part number	
41	Sealed Panel	9331256018	
42	Controller PCB Assy (07)	9707706086	
42	Controller PCB Assy (09)	9707706017	
42	Controller PCB Assy (12)	9707706024	
43	PCB Holder	9331261012	
44	Inverter Case Assy	9331279017	
45	Terminal Cover	9331269025	
46	Terminal	9306489168	
--	Outdoor Thermistor	9900452025	
--	Thermistor Assy	9900451059	

ACCESSORIES

Name and Shape	Part number
Wall hook bracket 	9316590007
Remote control 	9316397026
Remote control holder 	9305642045
Battery (penlight) 	0600185527
Cloth tape 	9310519004
Tapping screw (big) (ϕ 4 x 25) 	0700076046
Tapping screw (small) (ϕ 3 x 12) 	0700019036
Air cleaning filter 	9311925088 9312153077

FUJITSU

SPLIT TYPE
ROOM AIR CONDITIONER
WALL MOUNTED TYPE

SERVICE MANUAL

Indoor unit	Outdoor unit
ASYA14LGC	AOYR14LGC

Refrigerant R410A

CONTENTS

FUJITSU GENERAL LIMITED

SPECIFICATIONS

ELECTRICAL DATA

TYPE		Cool & heat inverter
INDOOR UNIT		ASYA14LGC
OUTDOOR UNIT		AOYR14LGC
COOLING CAPACITY		4.00 kW
HEATING CAPACITY		5.00 kW
POWER SOURCE		230 V
FREQUENCY		50 Hz
RUNNING CURRENT	Cooling	4.9 A
	Heating	5.7 A
INPUT WATTS	Cooling	1.080 kW
	Heating	1.295 kW
E.E.R.	Cooling	3.70 kW/kW
COP	Heating	3.86 kW/kW
MOISTURE REMOVAL		2.1 L/h
AIR CIRCULATION HIGH	Cooling	800 m^3/h
	Heating	800 m^3/h
MAXIMUM CURRENT	Cooling	9.0 A
	Heating	10.5 A

FAN MOTOR

POWER SOURCE		230 V
INDOOR UNIT Cooling	High speed	1,500 r.p.m.
	Middle speed	1,300 r.p.m.
	Low speed	1,020 r.p.m.
	Quiet	760 r.p.m.
INDOOR UNIT Heating	High speed	1,500 r.p.m.
	Middle speed	1,300 r.p.m.
	Low speed	1,080 r.p.m.
	Quiet	840 r.p.m.
OUTDOOR UNIT Cooling		870 r.p.m.
OUTDOOR UNIT Heating		780 r.p.m.

NOISE LEVEL

INDOOR UNIT Cooling	High speed	44 dB
	Middle speed	40 dB
	Low speed	33 dB
	Quiet	25 dB
INDOOR UNIT Heating	High speed	44 dB
	Middle speed	40 dB
	Low speed	34 dB
	Quiet	27 dB
OUTDOOR UNIT Cooling		48 dB
OUTDOOR UNIT Heating		49 dB

DIMENSIONS

INDOOR UNIT	H x W x D	260 x 790 x 198 mm
OUTDOOR UNIT	H x W x D	620 x 790 x 298 mm

WEIGHT

INDOOR UNIT	Gross / Net	10 kg / 7.5 kg
OUTDOOR UNIT	Gross / Net	44 kg / 40 kg

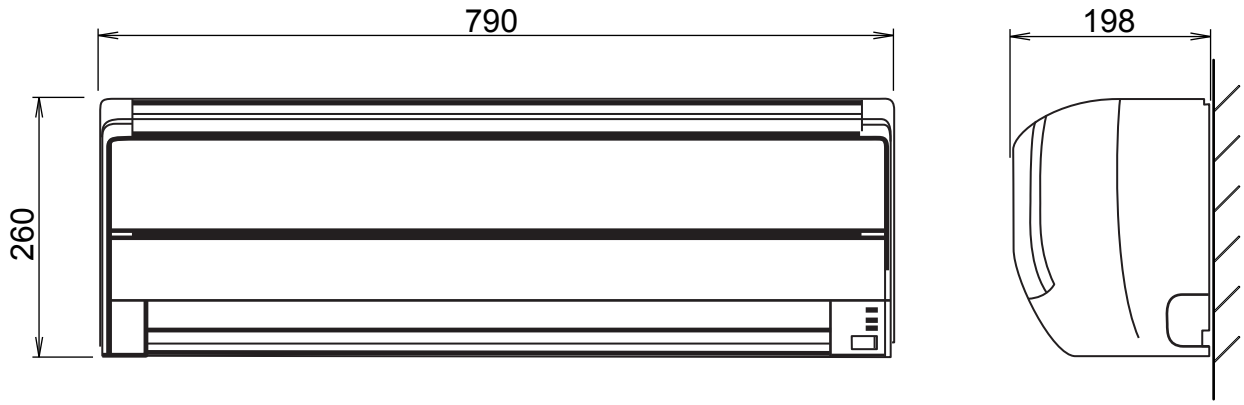
COMPRESSOR AND REFRIGERANT

COMPRESSOR TYPE		Hermetic type, 4 pole, 3 phase, DC inverter motor, Rotary
DISCRIMINATION		DA89X1C-20FZ
WEIGHT (with oil)		9.0 kg
STANDARD REFRIGERANT		1,000 g
REFRIGERANT TYPE		R410A
FULL CHARGE Pipe Length	15 m	1,000 g
	20 m	1,100 g
ADDITIONAL REFRIGERANT		20 g/m
MAXIMUM PIPING HEIGHT		15m

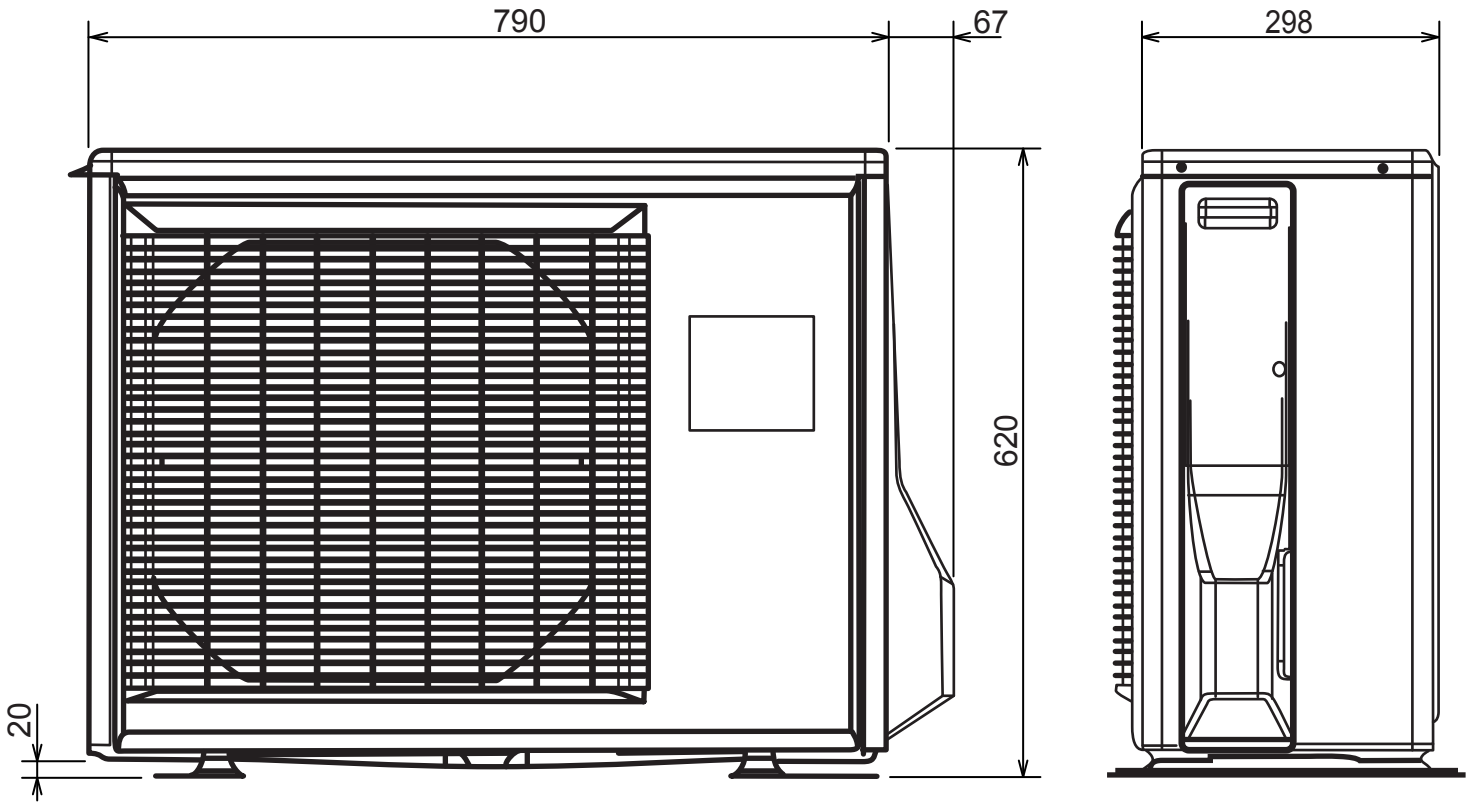
OUTLINE AND DIMENSIONS

Unit : mm

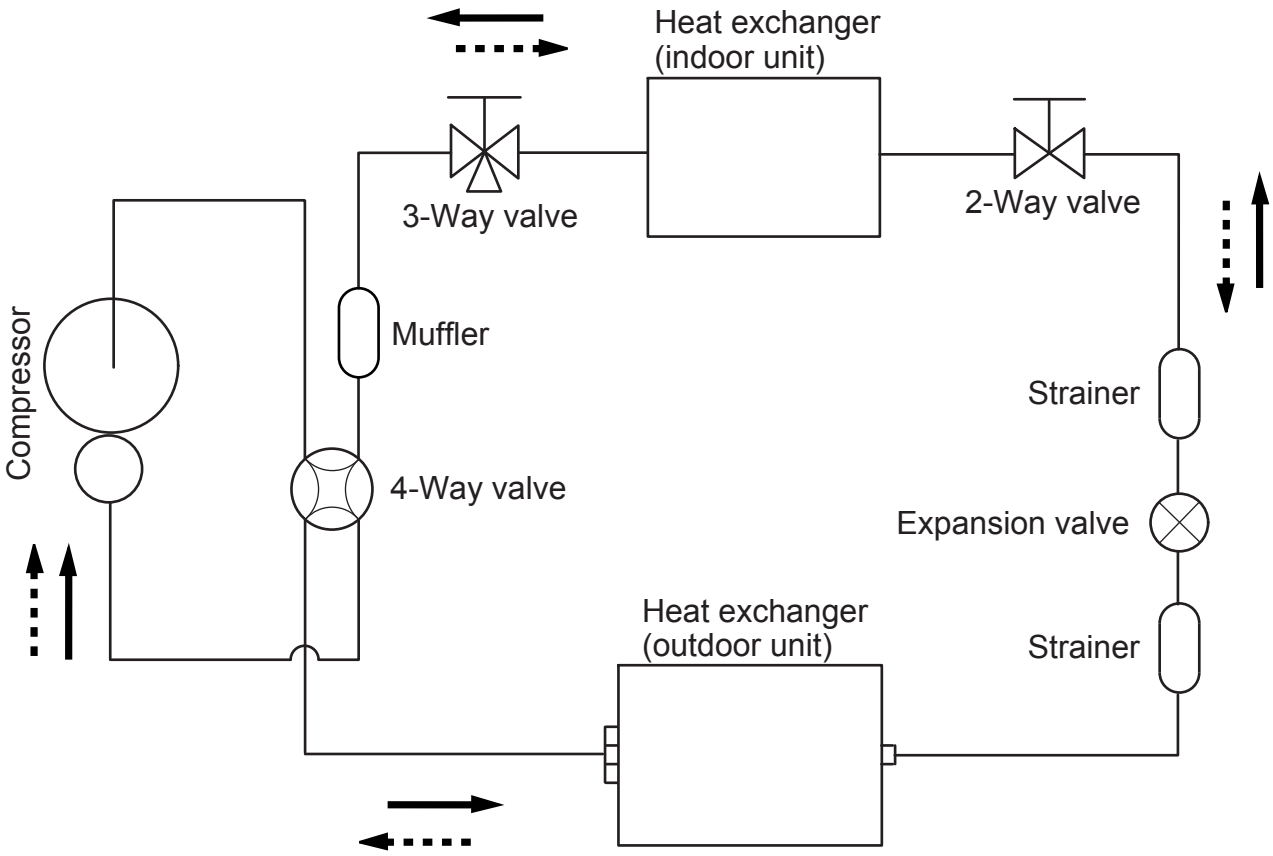
INDOOR UNIT



OUTDOOR UNIT



REFRIGERANT SYSTEM DIAGRAM



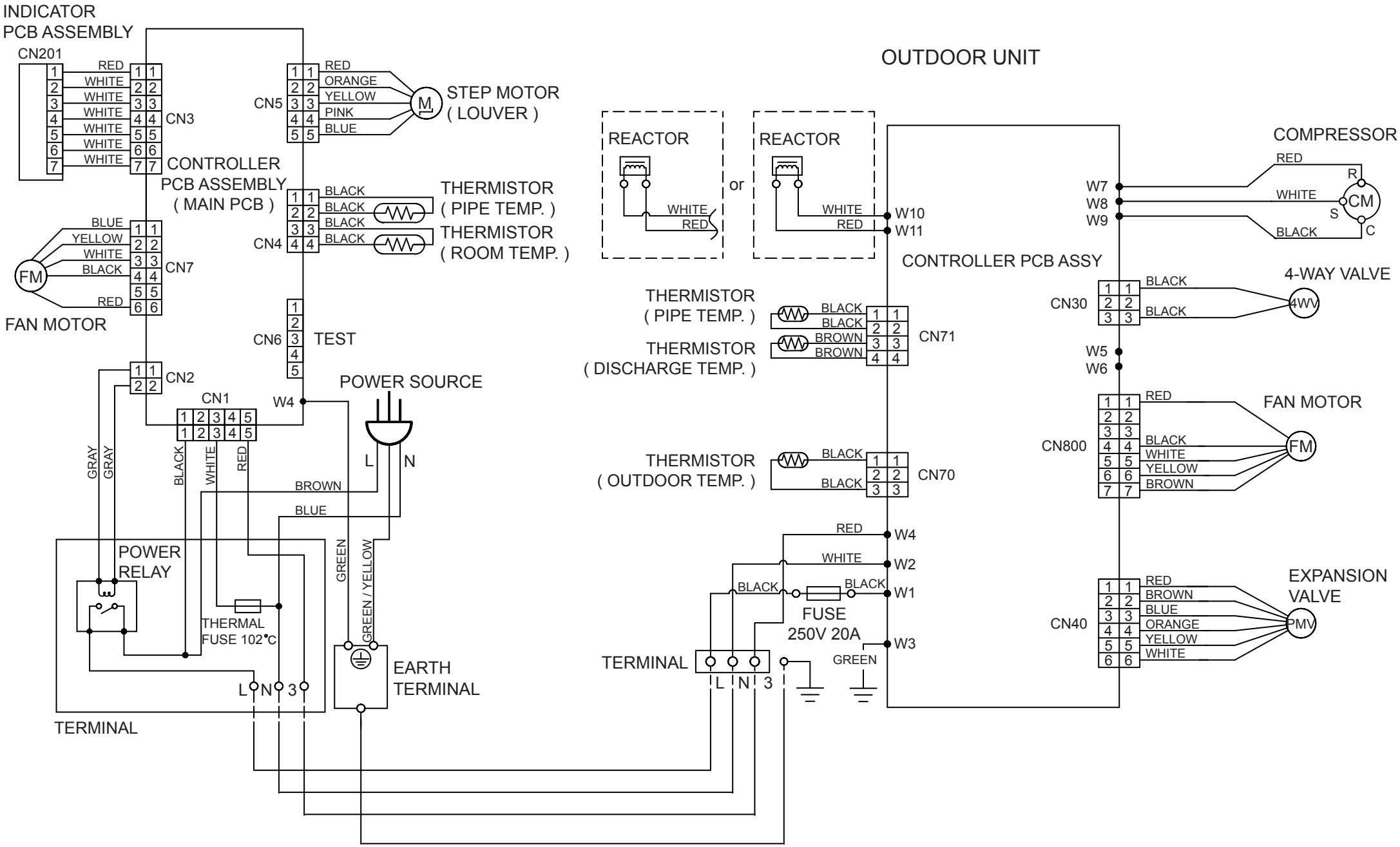
Refrigerant direction

Cooling

Heating

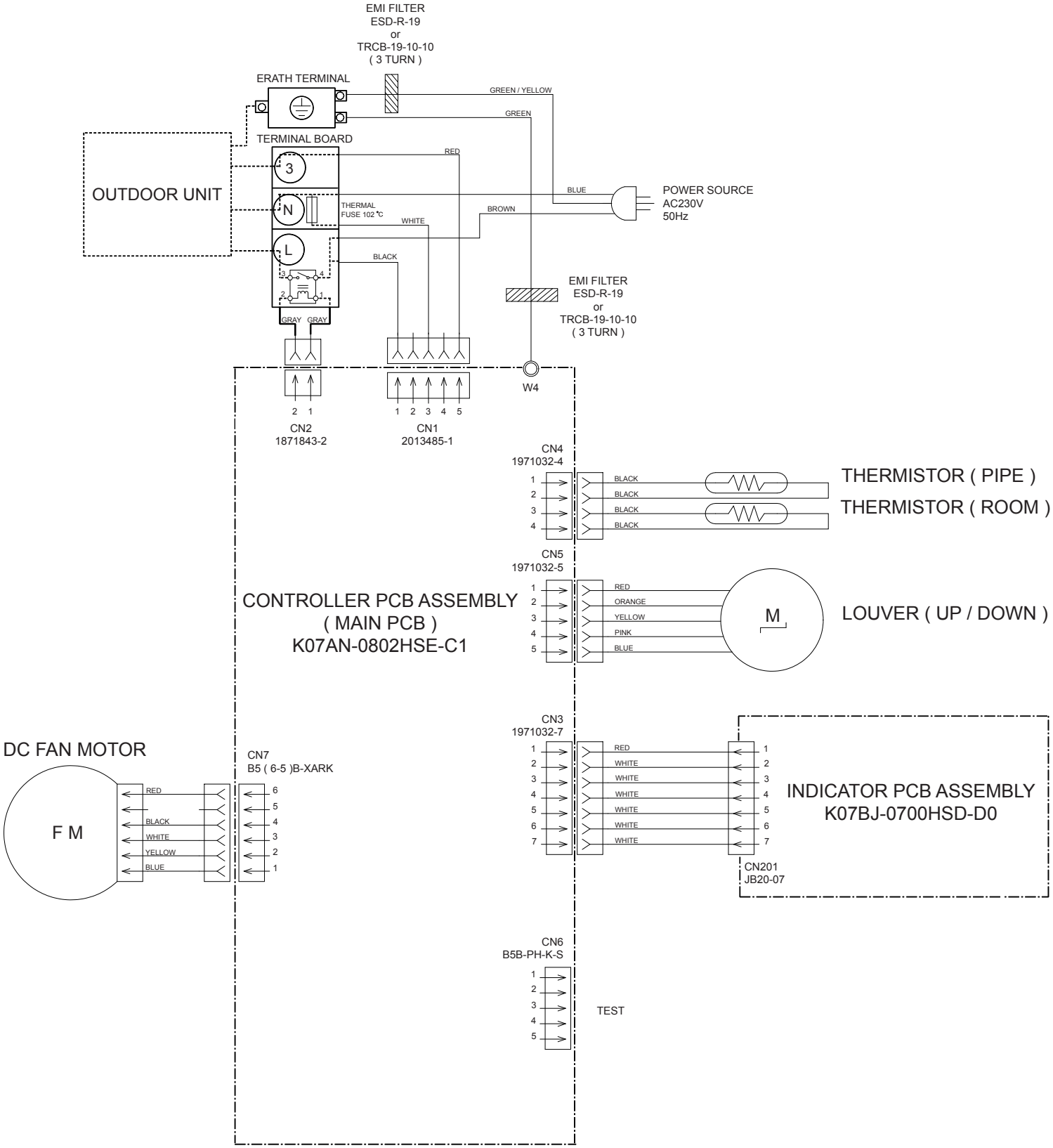
Refrigerant pipe diameter
Liquid : 1/4" (6.35 mm)
Gas : 1/2" (12.7 mm)

CIRCUIT DIAGRAM

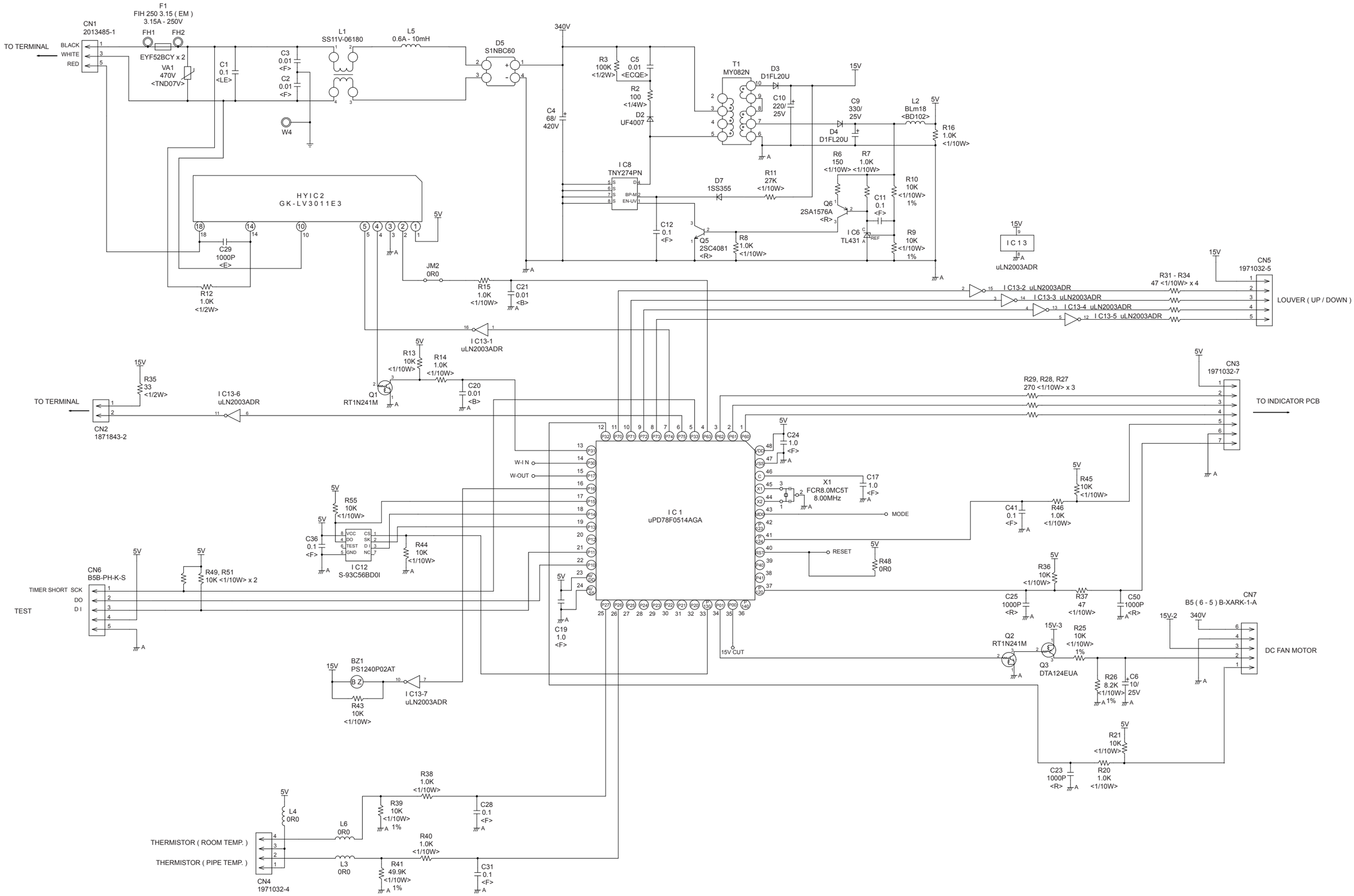


INDOOR PCB CIRCUIT DIAGRAM

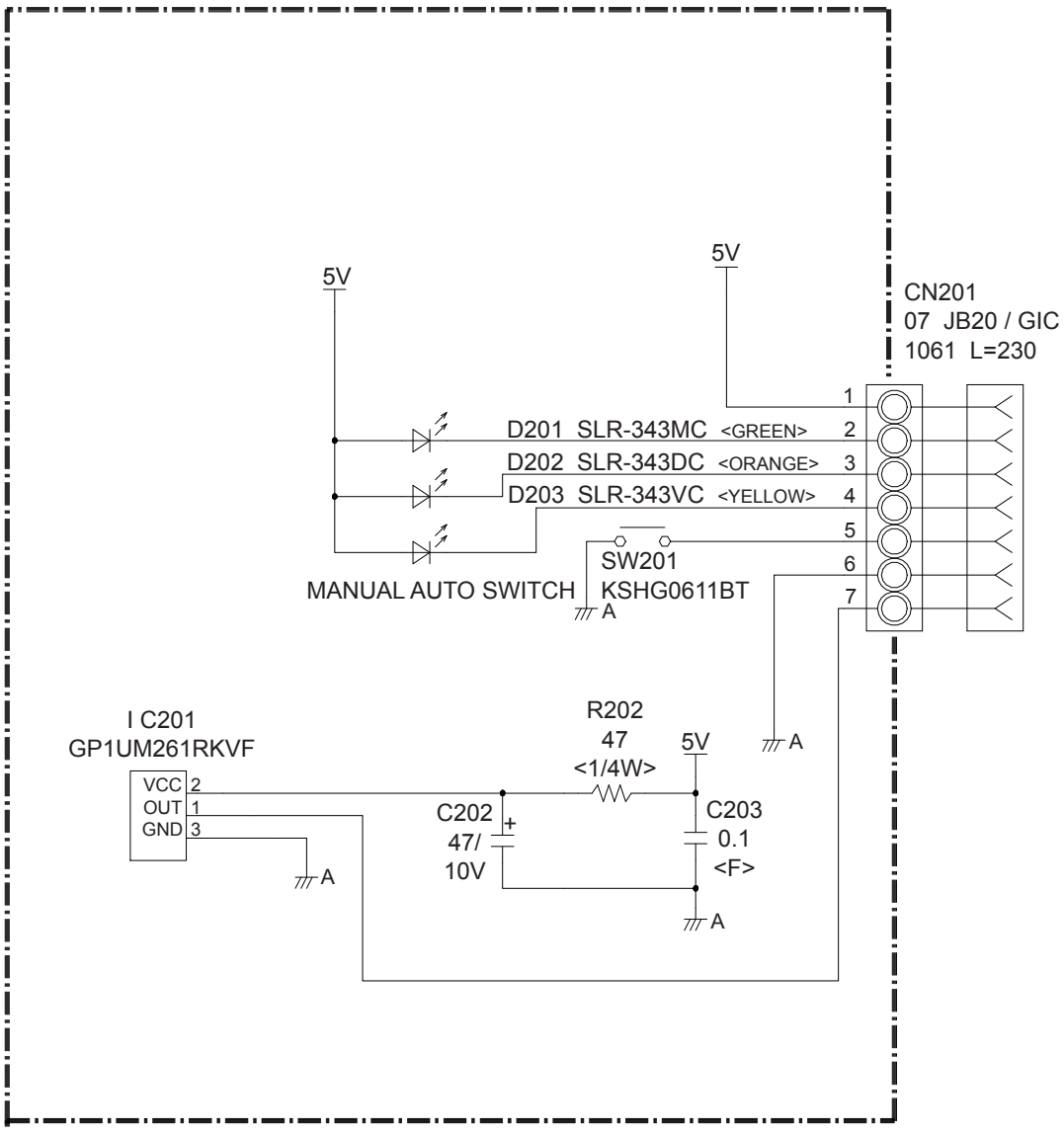
CONTROL UNIT
EZ-0080HSE



INDOOR UNIT
CONTROLLER PCB ASSEMBLY (MAIN PCB)
K07AN-0802HSE-C1

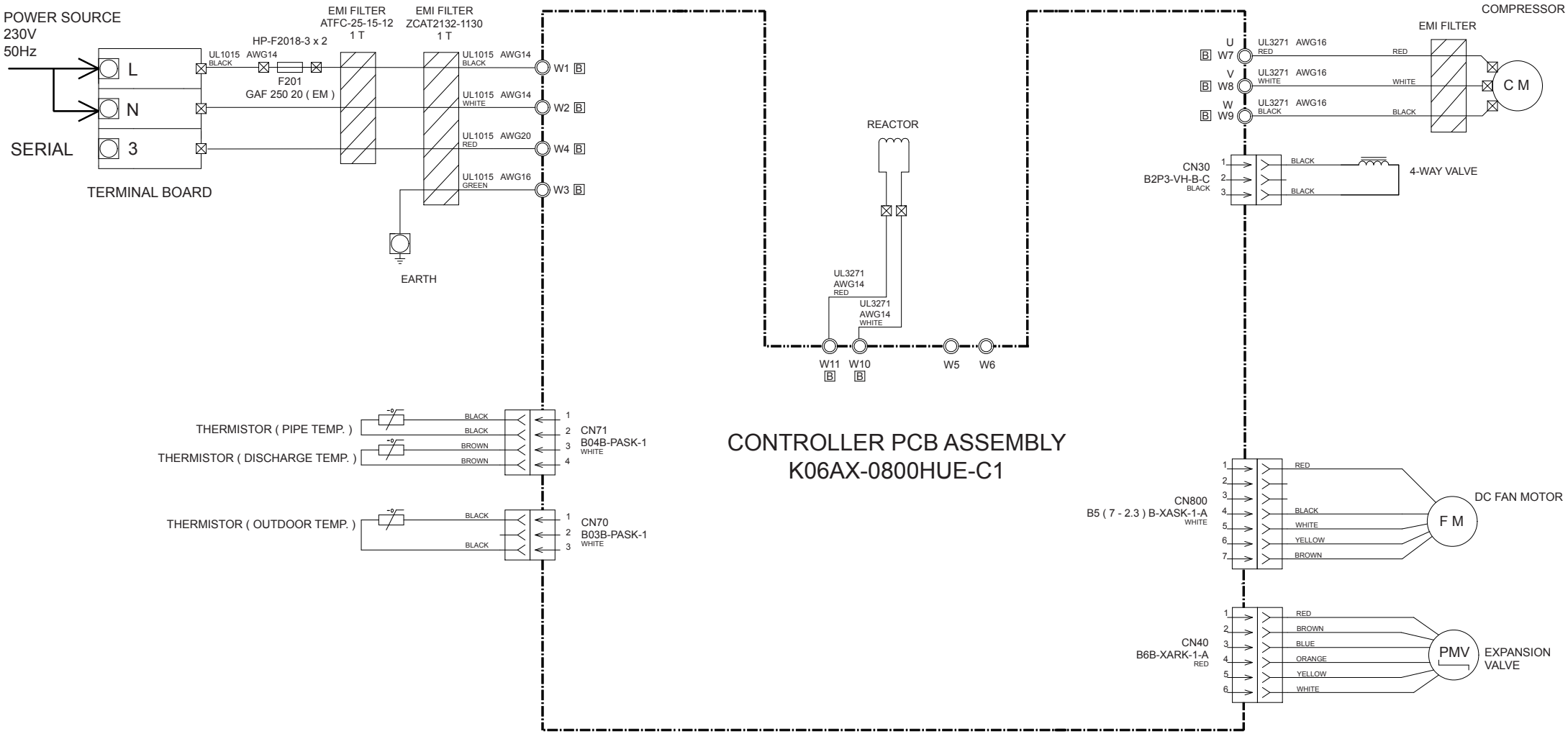


INDOOR UNIT
INDICATOR PCB ASSEMBLY
K07BJ-0700HSD-D0

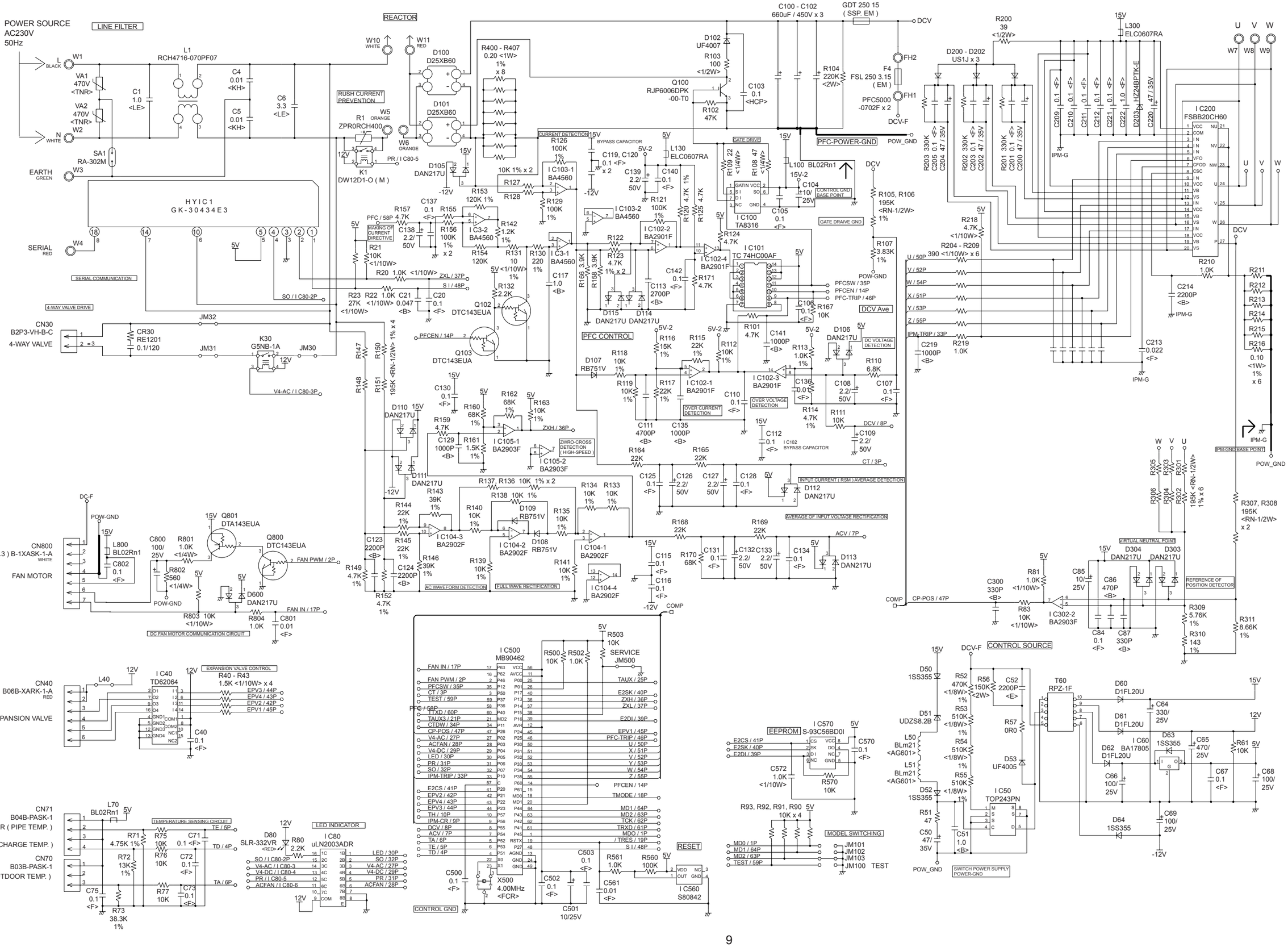


OUTDOOR PCB CIRCUIT DIAGRAM

INVERTER ASSEMBLY
EZ-0081HUE



OUTDOOR UNIT
CONTROLLER PCB ASSEMBLY (MAIN PCB)
K06AX-0800HUE-C1

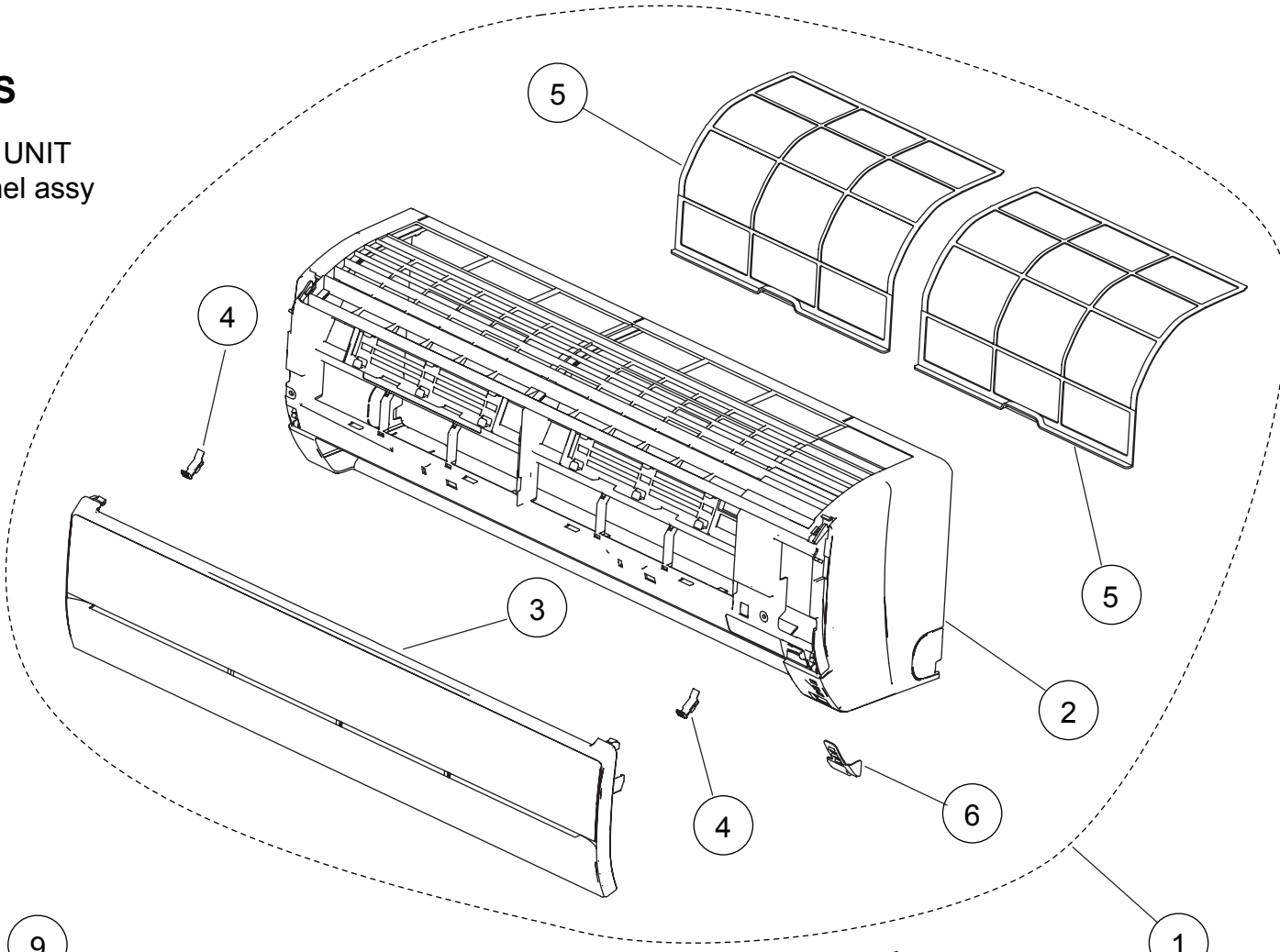


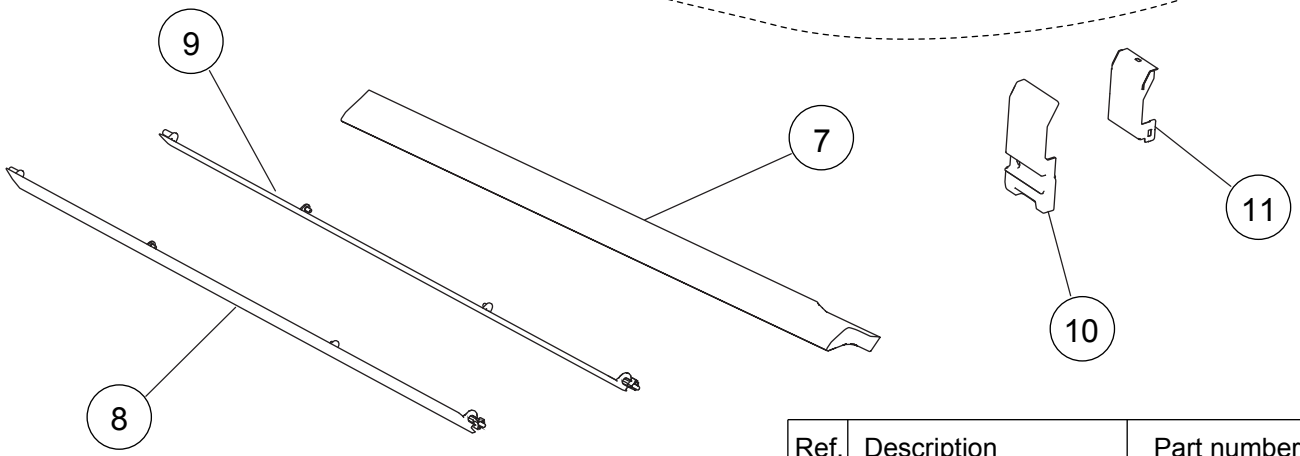
ERROR CONTENTS

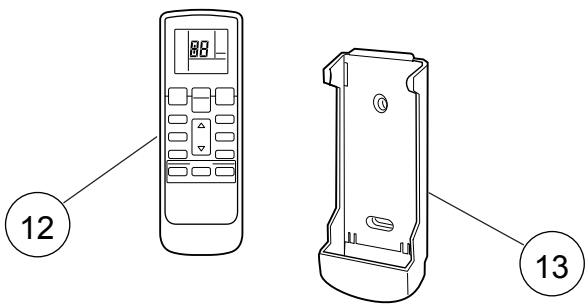
Error	Indoor unit LED			Wired remote control	Error
	Operation LED	Timer LED	Coil dry LED		
Serial signal error	Off	2 flash	off	01	Serial signal (reverse) error, at operation start up
		3 flash	off	01	Serial signal (reverse) error, during oeration
		4 flash	off	13	Serial signal (forward) error, at operation start up
		5 flash	off	13	Serial signal (forward) error, during operation
		8 flash	off	00	Wired remote control error
Indoor unit thermistor error	2 flash	2 flash	off	02	Indoor air thermistor error
		3 flash	off	04	Heat exchanger middle thermistor error
Outdoor unit thermistor error	3 flash	2 flash	off	0C	Discharge pipe thermistor error
		3 flash	off	06	Heat exchanger thermistor error
		4 flash	off	0A	Outdoor air thermistor error
Indoor unit control error	4 flash	2 flash	off	20	Manual auto button welded
		3 flash	off	-	Main relay welded
Outdoor unit control error	5 flash	2 flash	off	17	Current trip error
		3 flash	off	18	CT abnormal
		5 flash	off	1A	Compressor location detection error
		6 flash	off	1B	Outdoor unit fan drive system abnormal
Indoor fan motor error	6 flash	2 flash	off	12	Abnormal lock (upper fan motor)
		3 flash	off	12	Abnormal rotation (upper fan motor)
Refrigerant cycle error	7 flash	2 flash	off	0F	Discharge temperature abnormal
		3 flash	off	24	Cooling high pressure abnormal rise
		4 flash	off	2C ?	DC 4-way valve and expansion valve abnormal
Optional function error	8 flash	4 flash	off	25	PFC circuit error
Model information error	0.1 sec on/off	0.1 sec on/off	0.1 sec on/off	11	Model information error

PARTS

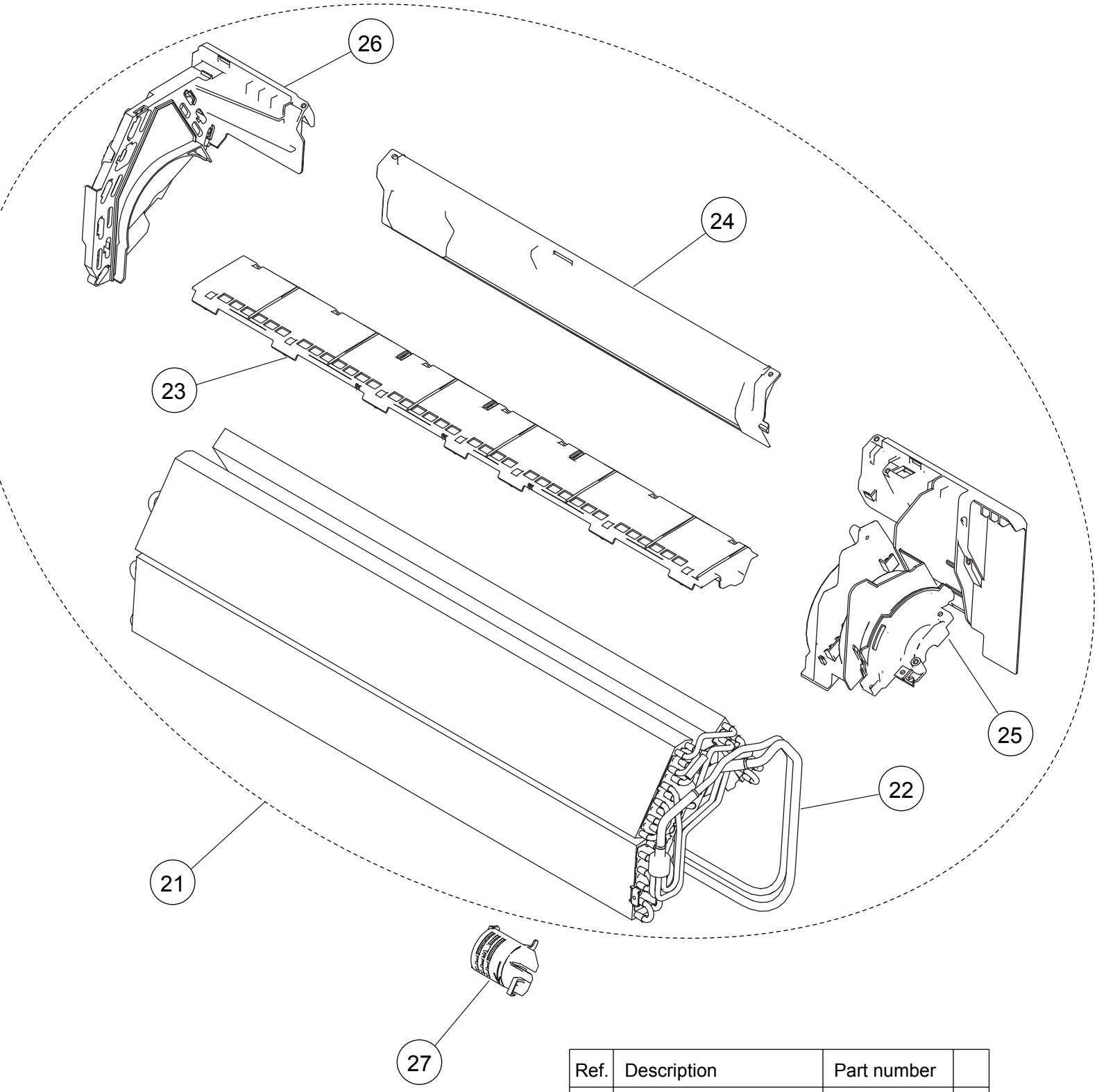
INDOOR UNIT
Front panel assy





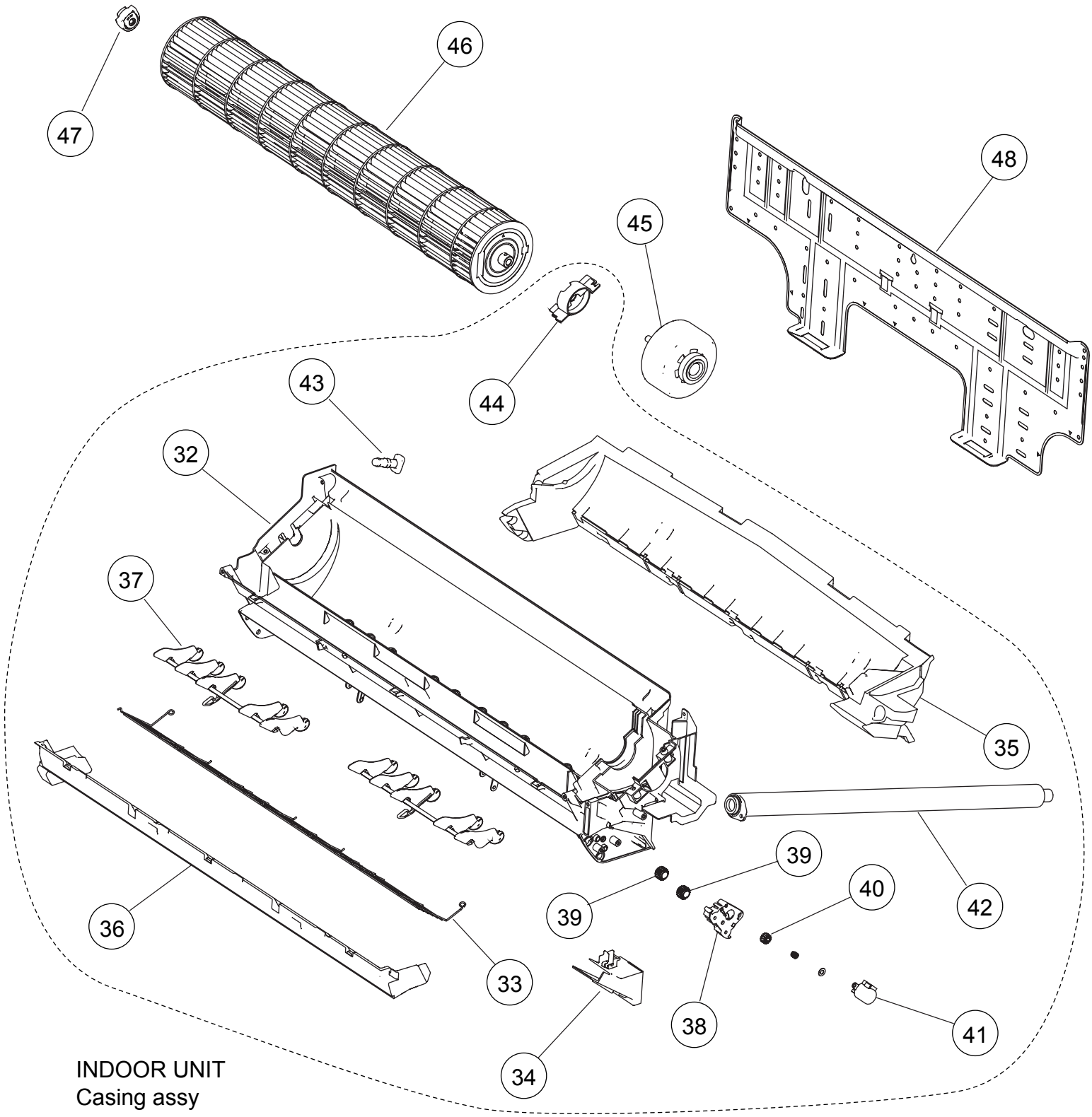


Ref.	Description	Part number	
1	Front Panel Assy	9316897014	
2	Front Panel	9316558014	
3	Intake Grille Assy	9317428019	
4	Clamper (Grille)	9316906006	
5	Air Filter	9316562004	
6	Receiver Window	9316588004	
7	Panel Cover	9316561014	
8	Louver U	9316572003	
9	Louver Z	9316573000	
10	Wire Cover	9316559004	
11	Wire Shield	9316584006	
12	Remote Control	9317475006	
13	Remote Control Holder	9305642045	
--	Air Clean Filter Assy	9317250009	



INDOOR UNIT
Evaporator

Ref.	Description	Part number	
21	Evaporator Total Assy	9316893047	
22	Joint Pipe Assy	9317468008	
23	Filter Guide	9316578005	
24	Rear Bracket	9316566019	
25	Evaporator Holder R	9316565005	
26	Evaporator Holder L	9316564008	
27	Room Thermistor Holder	9316895003	

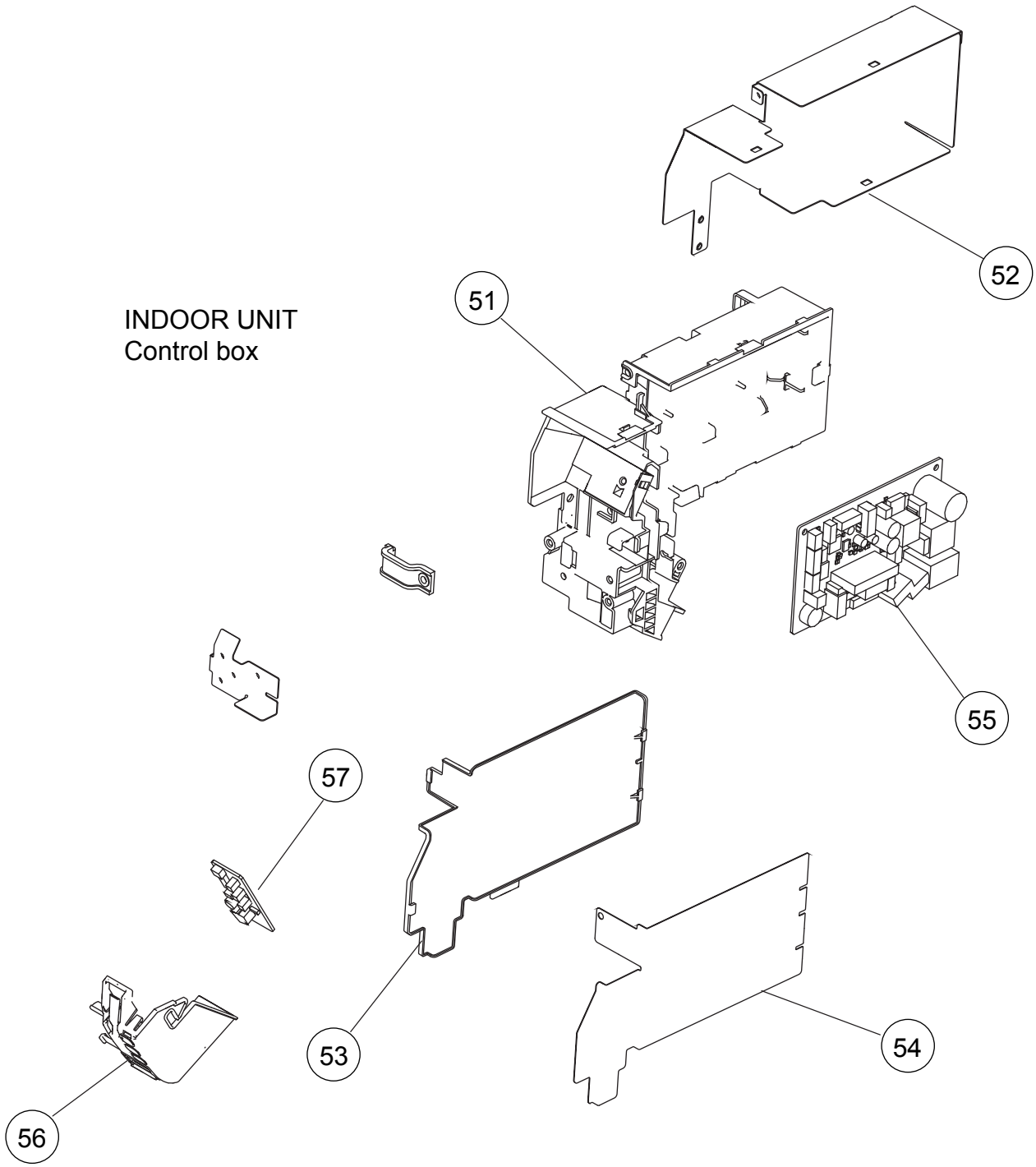


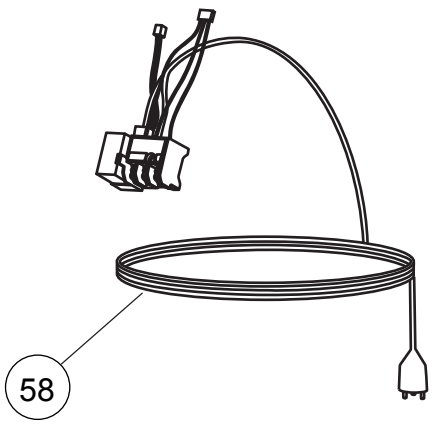
INDOOR UNIT
Casing assy

Ref.	Description	Part number	
31	Casing Assy	9316892026	
32	Casing	9316563001	
33	Fan Guard	9317182003	
34	Cable Guide	9316567009	
35	Casing Cover B	9316569003	
36	Casing Cover F	9316570009	
37	R and L Louver B	9316961005	
38	Louver Gear Holder	9316575004	
39	Louver Gear	9316574007	

Ref.	Description	Part number	
40	Gear A	9309994003	
41	Motor Step	9900139117	
42	Drain Hose Assy	9316904002	
43	Drain Cap	9316177017	
44	Motor Cover	9316568006	
45	Fan Motor	9602704002	
46	Crossflow Fan Assy	9316830004	
47	Shaft Holder C	9306628017	
48	Bracket Panel	9316590007	

INDOOR UNIT
Control box

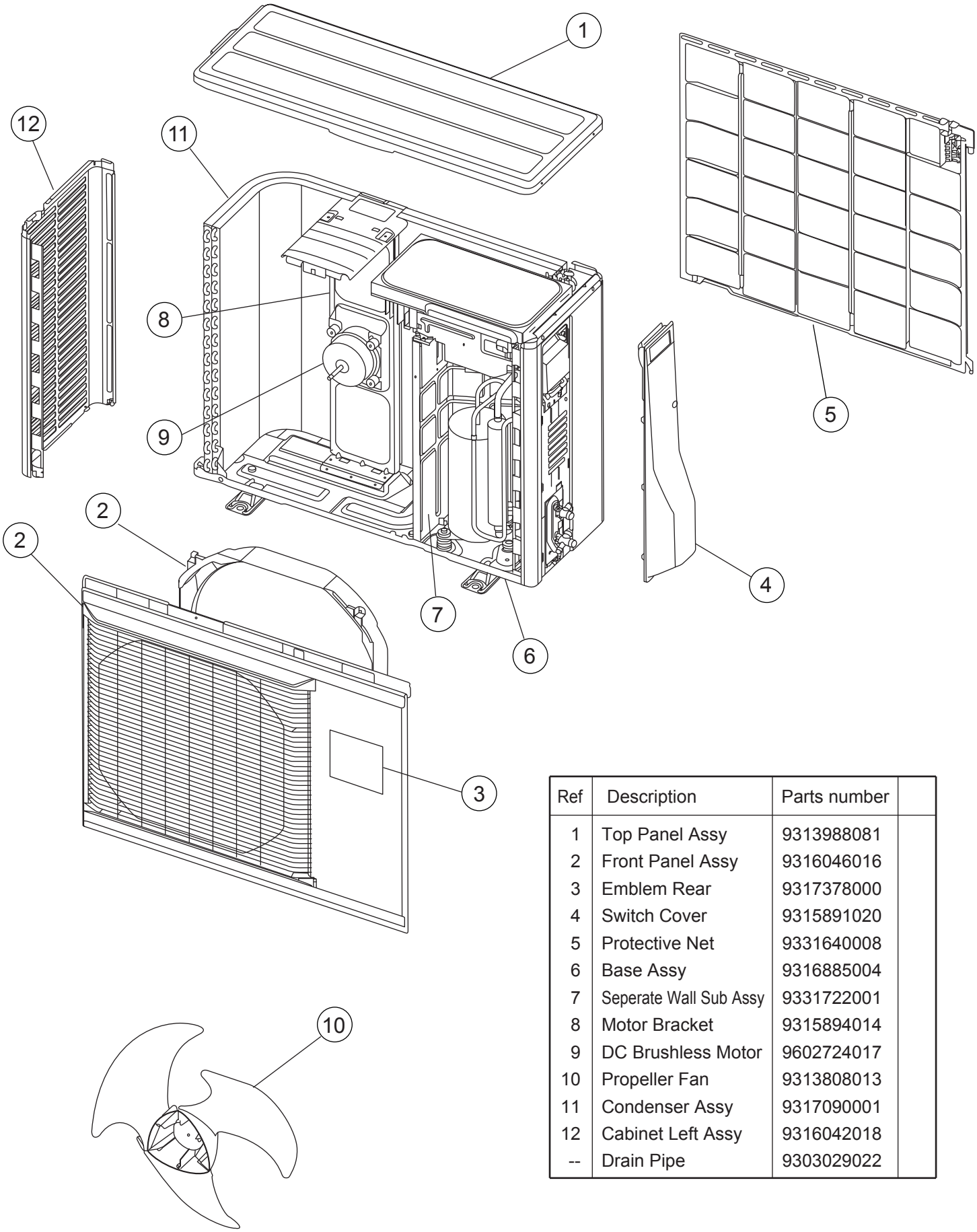




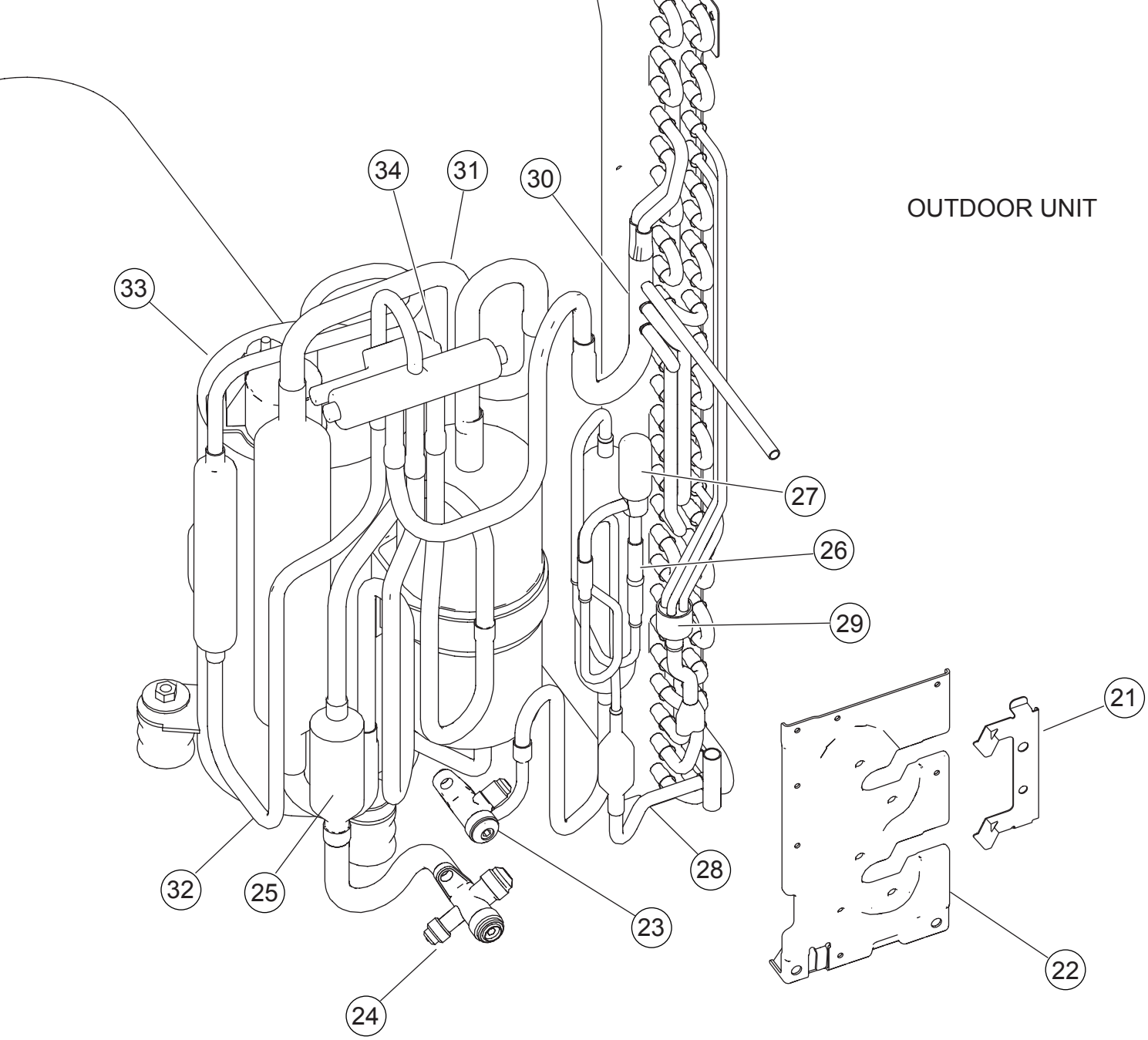
Ref.	Description	Part number	
51	Control Box	9316582002	
52	Box Shield	9316580008	
53	Control Cover	9316583009	
54	Cover Shield	9316581005	
55	Controller PCB Assy	9707645279	
56	Display Case	9316587007	
57	Display PCB Assy	9707649017	
58	Power Cord Assy	9900456009	
--	Earth Terminal	9316586000	
--	Thermistor Assy	9900459017	

PARTS

OUTDOOR UNIT

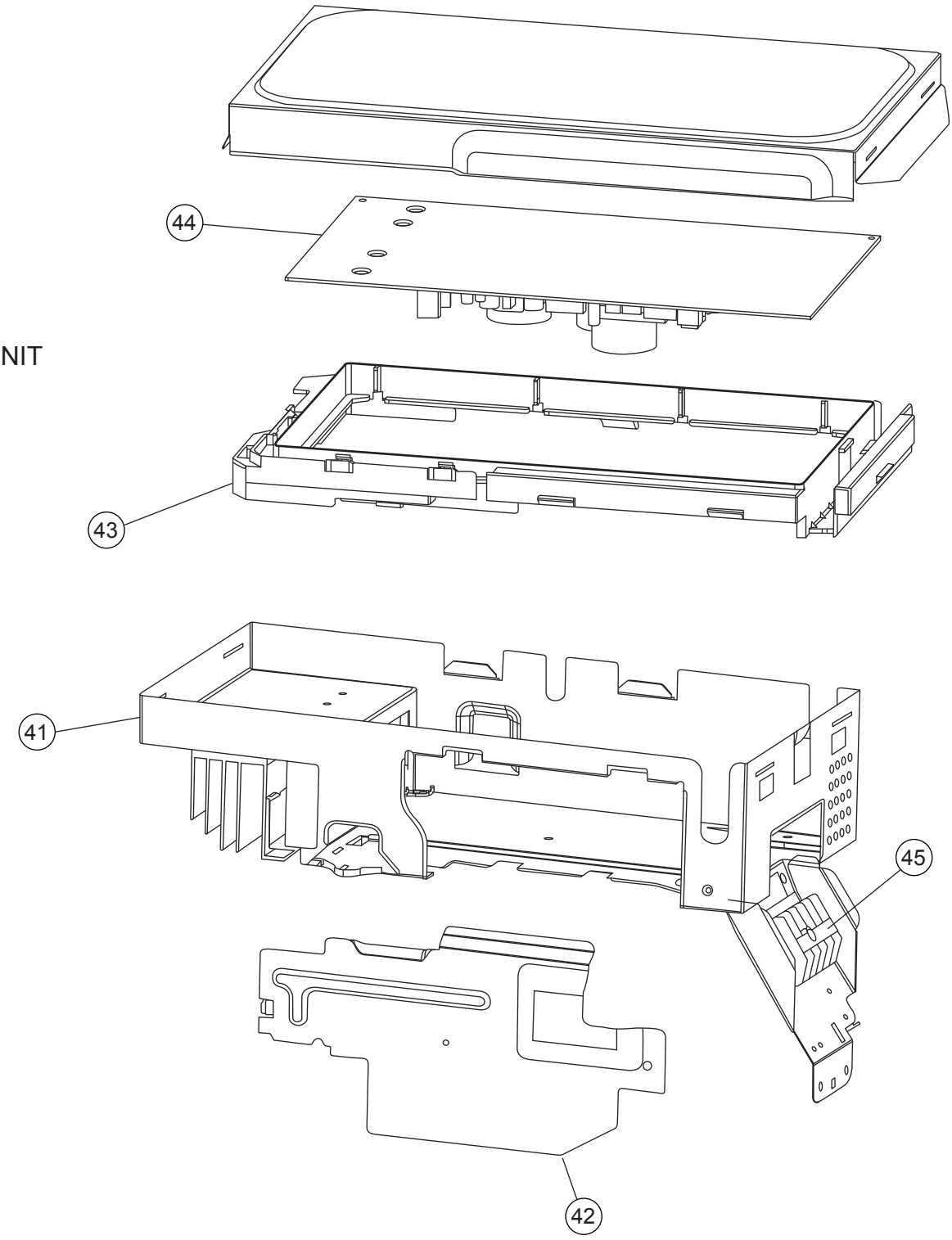


Ref	Description	Parts number	
1	Top Panel Assy	9313988081	
2	Front Panel Assy	9316046016	
3	Emblem Rear	9317378000	
4	Switch Cover	9315891020	
5	Protective Net	9331640008	
6	Base Assy	9316885004	
7	Seperate Wall Sub Assy	9331722001	
8	Motor Bracket	9315894014	
9	DC Brushless Motor	9602724017	
10	Propeller Fan	9313808013	
11	Condenser Assy	9317090001	
12	Cabinet Left Assy	9316042018	
--	Drain Pipe	9303029022	



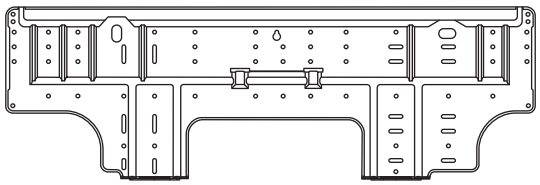
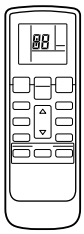
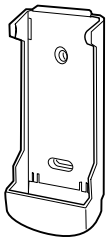
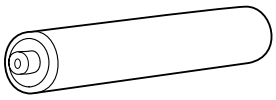
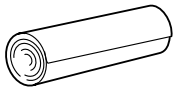
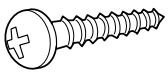
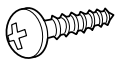
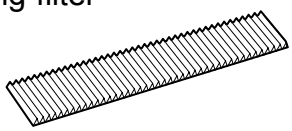
Ref	Description	Parts number	
21	Bracket Valve Cover	9331683005	
22	Bracket Valve	9331649001	
23	2-Way Valve Assy	9314554018	
24	3-Way Valve Assy	9316388017	
25	Muffler (3-Way Valve)	9316276017	
26	Pulse Motor Valve Assy	9315587015	
27	Expansion Valve Coil	9900057039	
28	Pipe (Cond Ex) Assy	9317105002	
29	Pipe (Cond Sepa) Assy	9317097000	
30	Entrance Pipe Assy	9317091008	
31	Discharge Pipe Assy	9331772006	
32	Suction Pipe Assy	9331775007	
33	Compressor Assy	9313279011	
34	4-Way Valve	9900162016	
--	Solenoid	9970055010	
--	Strainer A (in PMV Assy)	9313197018	
--	Reactor Assy	9900354022	

OUTDOOR UNIT



Ref	Description	Parts number	
41	Inverter Case	9313072063	
42	Inverter Case Cover	9314507038	
43	PCB Holder	9313074029	
44	Controller PCB Assy	9707427189	
45	Terminal	9306489168	
--	Bracket (Terminal)	9315233042	
--	Terminal Cover	9331704007	
--	Thermistor Assy	9900148041	
--	Outdoor Thermistor	9900210038	

ACCESSORIES

Name and Shape	Part number
Wall hook bracket 	9316590007
Remote control 	9316397026
Remote control holder 	9305642045
Battery (penlight) 	0600185527
Cloth tape 	9310519004
Tapping screw (big) (ϕ 4 x 25) 	0700076046
Tapping screw (small) (ϕ 3 x 12) 	0700019036
Air cleaning filter 	9311925088 9312153077

SPLIT TYPE
ROOM AIR CONDITIONER

WALL MOUNTED type
INVERTER

SERVICE INSTRUCTION

Models	Indoor unit	Outdoor unit
	AS*A07LGC	AO*R07LGC
	AS*A09LGC	AO*R09LGC
	AS*A12LGC	AO*R12LGC
	AS*A14LGC	AO*R14LGC

Refrigerant
R410A

FUJITSU GENERAL LIMITED

CONTENTS

Refrigerant
R410A

WALL MOUNTED type
INVERTER

1 . SPECIFICATIONS

SPECIFICATIONS

ELECTRICAL DATA

TYPE		Cool & heat inverter			
INDOOR UNIT		AS*A07LGC	AS*A09LGC	AS*A12LGC	AS*A14LGC
OUTDOOR UNIT		AO*R07LGC	AO*R09LGC	AO*R12LGC	AO*R14LGC
COOLING CAPACITY		2.10 kW	2.50 kW	3.40 kW	4.00 kW
HEATING CAPACITY		3.00 kW	3.20 kW	4.00 kW	5.00 kW
POWER SOURCE		230 V	230 V	230 V	230 V
FREQUENCY		50 Hz	50 Hz	50 Hz	50 Hz
RUNNING CURRENT	Cooling	2.4 A	3.2 A	4.3 A	4.9 A
	Heating	3.2 A	3.7 A	4.6 A	5.7 A
INPUT WATTS	Cooling	0.470 kW	0.630 kW	0.895 kW	1.080 kW
	Heating	0.660 kW	0.750 kW	0.970 kW	1.295 kW
E.E.R.	Cooling	4.47 kW/kW	3.97 kW/kW	3.80 kW/kW	3.70 kW/kW
COP	Heating	4.55 kW/kW	4.27 kW/kW	4.12 kW/kW	3.86 kW/kW
MOISTURE REMOVAL		1.0 L/h	1.3 L/h	1.8 L/h	2.1 L/h
AIR CIRCULATION HIGH	Cooling	750 m^3/h	750 m^3/h	750 m^3/h	800 m^3/h
	Heating	750 m^3/h	750 m^3/h	750 m^3/h	800 m^3/h
MAXIMUM CURRENT	Cooling	6.0 A	6.0 A	6.5 A	9.0 A
	Heating	7.5 A	7.5 A	9.0 A	10.5 A

FAN MOTOR

POWER SOURCE		230 V		
INDOOR UNIT	High speed	Cool 1,440 r.p.m. Heat 1,440 r.p.m.		Cool 1,500 r.p.m. Heat 1,500 r.p.m.
	Middle speed	Cool 1,200 r.p.m. Heat 1,200 r.p.m.		Cool 1,300 r.p.m. Heat 1,300 r.p.m.
	Low speed	Cool 920 r.p.m. Heat 980 r.p.m.		Cool 1,020 r.p.m. Heat 1,080 r.p.m.
	Quiet	Cool 680 r.p.m. Heat 700 r.p.m.		Cool 760 r.p.m. Heat 840 r.p.m.
OUTDOOR UNIT		C 730-150 r.p.m. H 650/ 470 r.p.m.	C 860- 200 r.p.m. H 760/ 680/ 470 r.p.m.	C 1050- 300 r.p.m. H 870- 480 r.p.m.

NOISE LEVEL

INDOOR UNIT	High speed	Cool 43 dB / Heat 43 dB		C 44 dB/ H 44 dB
	Middle speed	Cool 38 dB / Heat 38 dB		C 40 dB/ H 40 dB
	Low speed	Cool 33 dB / Heat 33 dB		C 33 dB/ H 34 dB
	Quiet	Cool 21 dB / Heat 21 dB		C 25 dB/ H 27 dB
OUTDOOR UNIT		C 45 dB / H 45 dB	C 48 dB / H 48 dB	C 48 dB / H 49 dB

DIMENSIONS

TYPE		Cool & heat inverter			
INDOOR UNIT		AS*A07LGC	AS*A09LGC	AS*A12LGC	AS*A14LGC
OUTDOOR UNIT		AO*R07LGC	AO*R09LGC	AO*R12LGC	AO*R14LGC
INDOOR UNIT	H x W x D	260 x 790 x 198 mm			
OUTDOOR UNIT	H x W x D	540 x 660 x 290 mm			620 x 790 x 298mm

WEIGHT

INDOOR UNIT	Gross / Net	10 kg / 7.5 kg		
OUTDOOR UNIT	Gross / Net	28 kg / 25 kg	35 kg / 32 kg	44 kg / 40 kg

COMPRESSOR AND REFRIGERANT

COMPRESSOR TYPE		Hermetic type, 4 pole, 3 phase, DC inverter motor, Rotary		
DISCRIMINATION		5SS072XAA	DA89X1C-20FZ	808 903 80(B)
WEIGHT (with oil)		5.9 kg	9.9 kg	9.0 kg
STANDARD REFRIGERANT		650 g	800 g	1000 g
REFRIGERANT TYPE		R410A	R410A	R410A
Pipe Length FULL CHARGE	15 m	650 g	800 g	1000 g
	20 m	750 g	900 g	1100 g
ADDITIONAL REFRIGERANT		20 g/m		
MAXIMUM PIPING HEIGHT		15m		

Refrigerant
R410A

WALL MOUNTED type
INVERTER

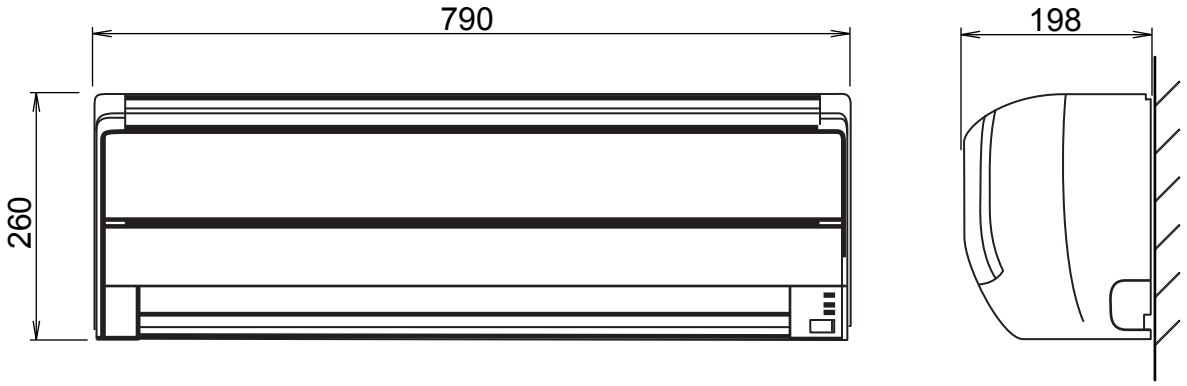
2 . DIMENSIONS

DIMENSIONS

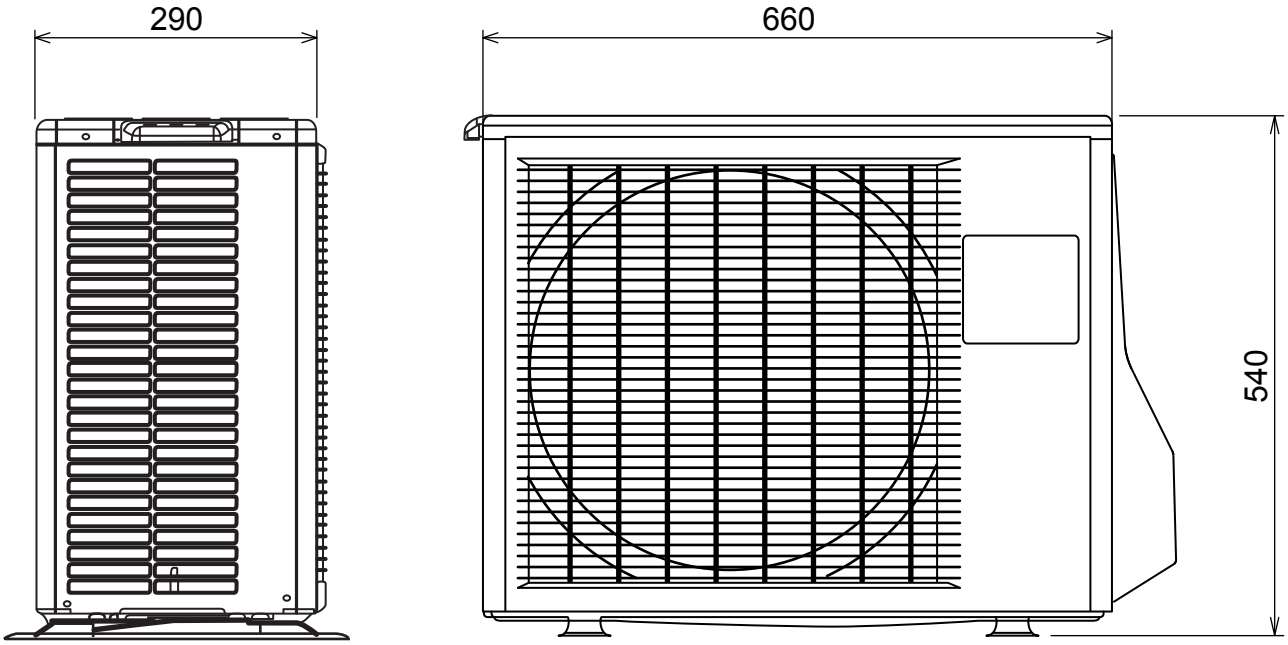
Models : AS*A07LGC / AO*R07LGC
AS*A09LGC / AO*R09LGC
AS*A12LGC / AO*R12LGC

(unit : mm)

INDOOR UNIT



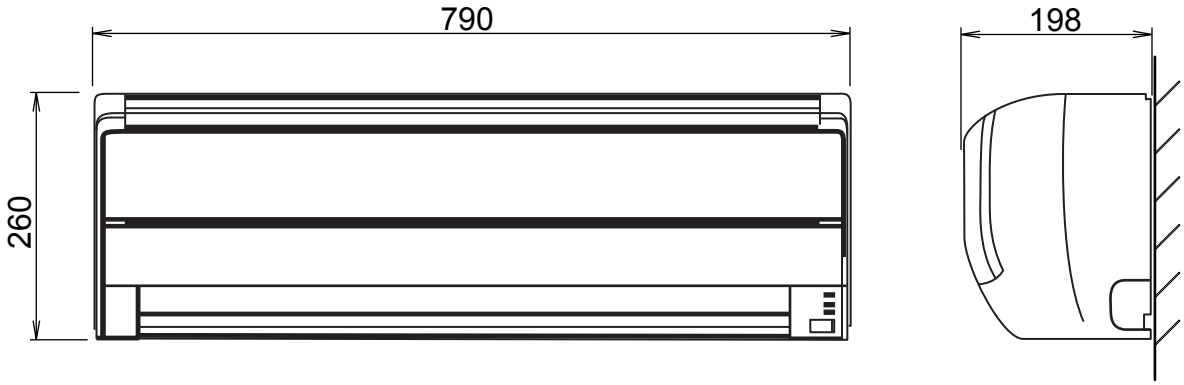
OUTDOOR UNIT



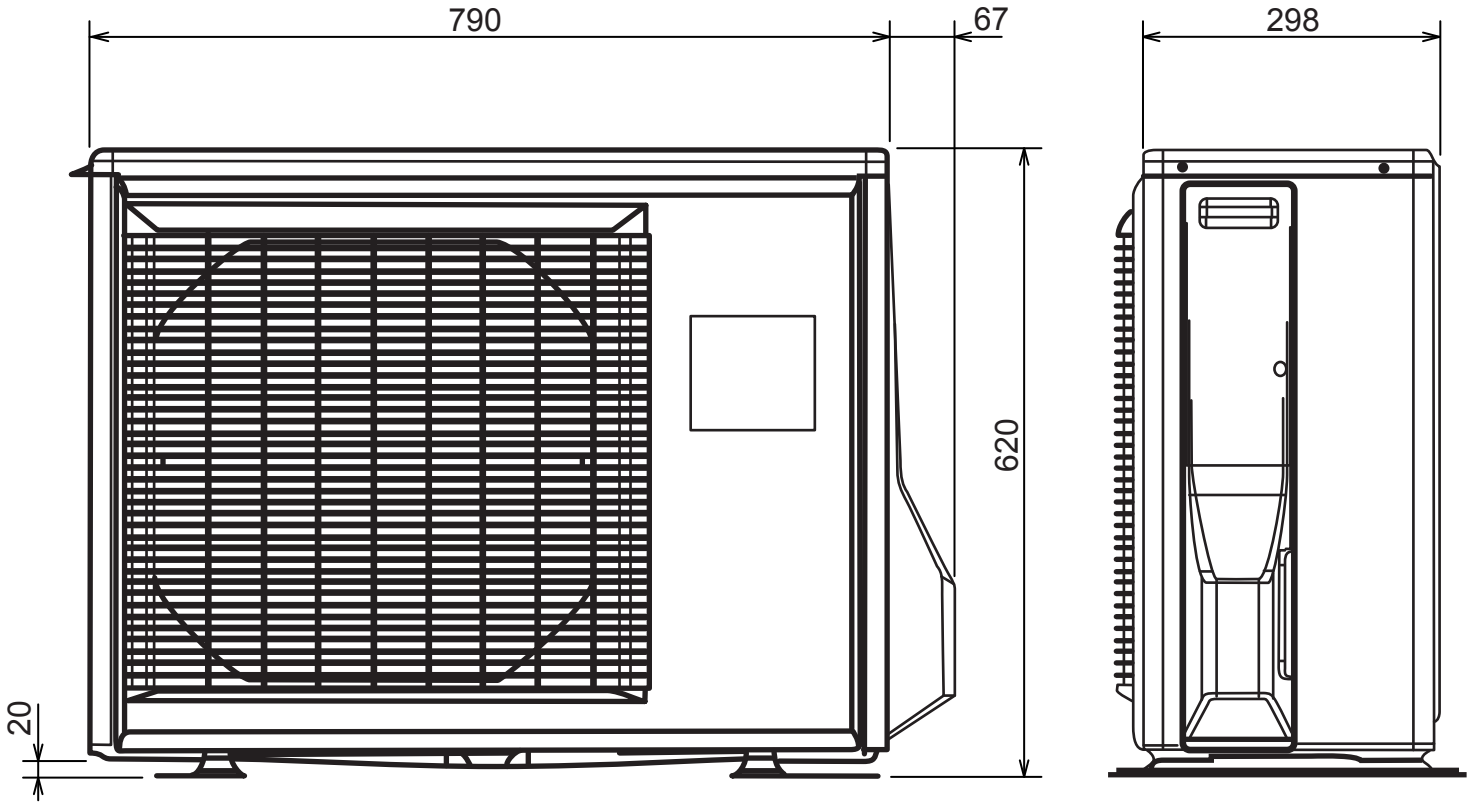
Models : AS*A14LGC / AO*R14LGC

(unit : mm)

INDOOR UNIT



OUTDOOR UNIT



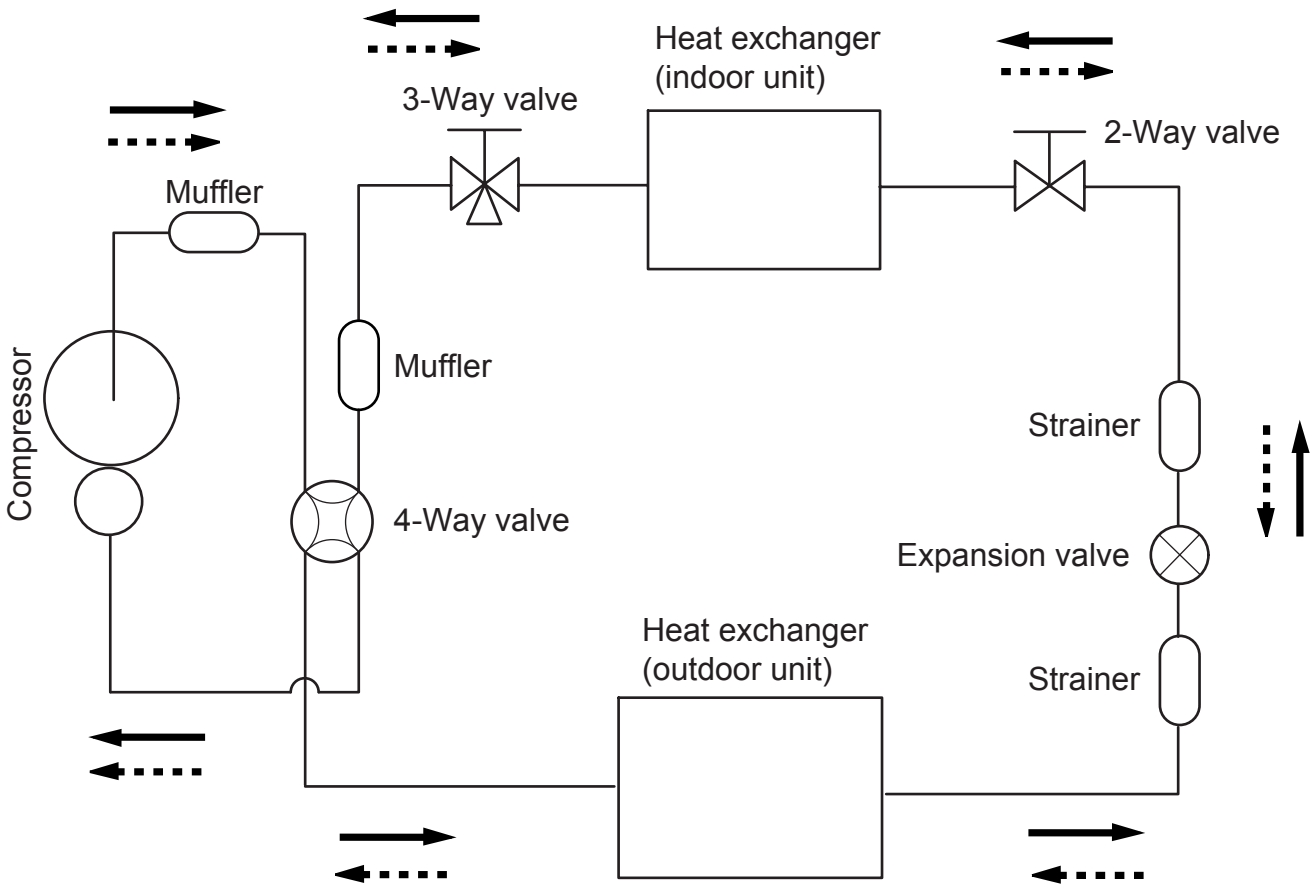
Refrigerant
R410A

WALL MOUNTED type
INVERTER

3 . REFRIGERANT SYSTEM DIAGRAM

REFRIGERANT SYSTEM DIAGRAM

Models : AS*A07LGC / AO*R07LGC
AS*A09LGC / AO*R09LGC
AS*A12LGC / AO*R12LGC
AS*A14LGC / AO*R14LGC



Refrigerant direction
Cooling
Heating

For AS*A07/ 09/ 12LGC
Refrigerant pipe diameter
Liquid : 1/4" (6.35 mm)
Gas : 3/8" (9.52 mm)

For AS*A14LGC
Refrigerant pipe diameter
Liquid : 1/4" (6.35 mm)
Gas : 1/2" (12.7 mm)

Refrigerant
R410A

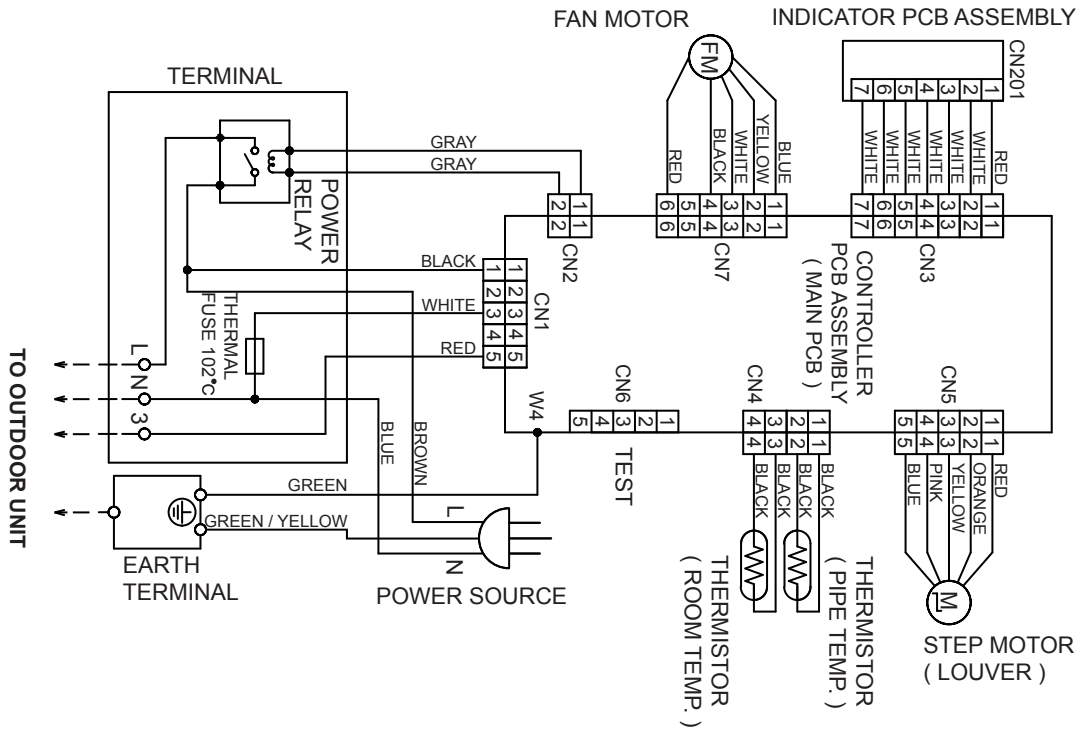
WALL MOUNTED type
INVERTER

4 . CIRCUIT DIAGRAM

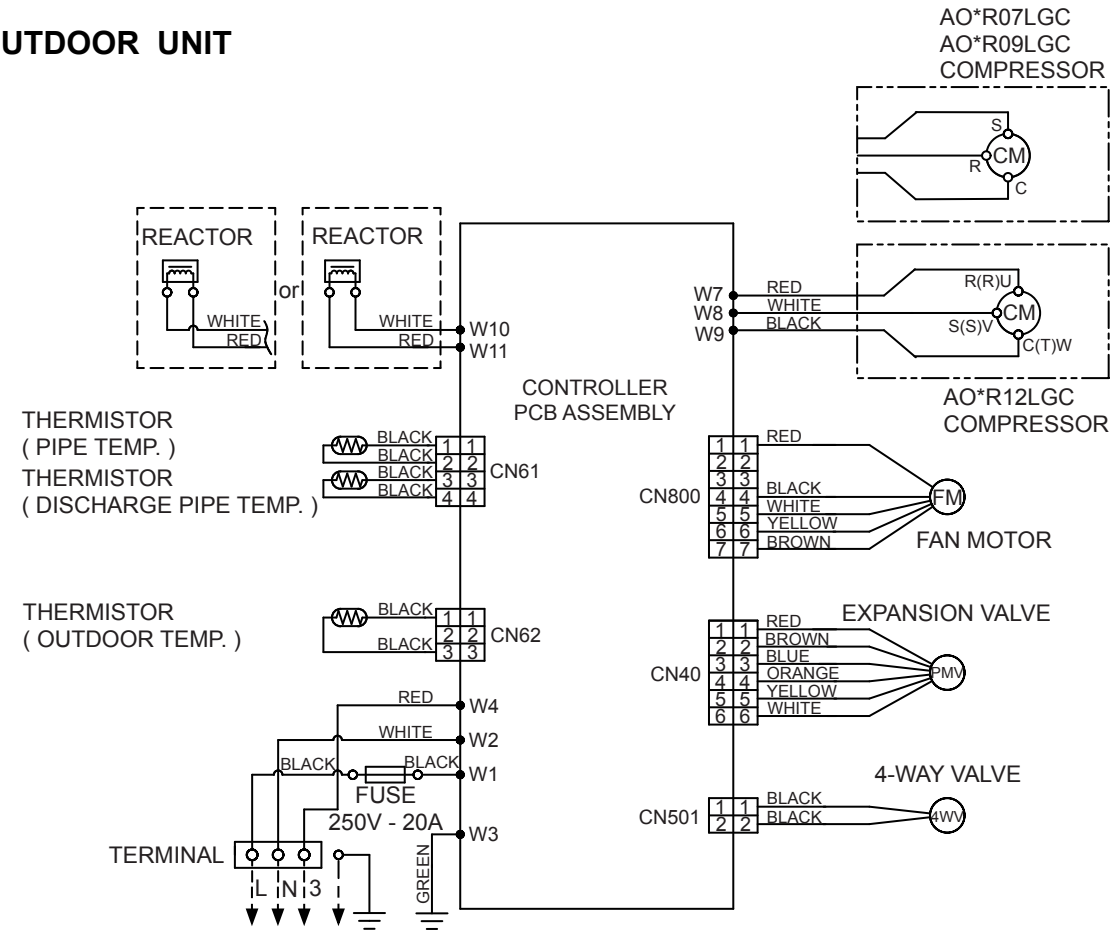
CIRCUIT DIAGRAM

Models : AS*A07LGC / AO*R07LGC
AS*A09LGC / AO*R09LGC
AS*A12LGC / AO*R12LGC

INDOOR UNIT

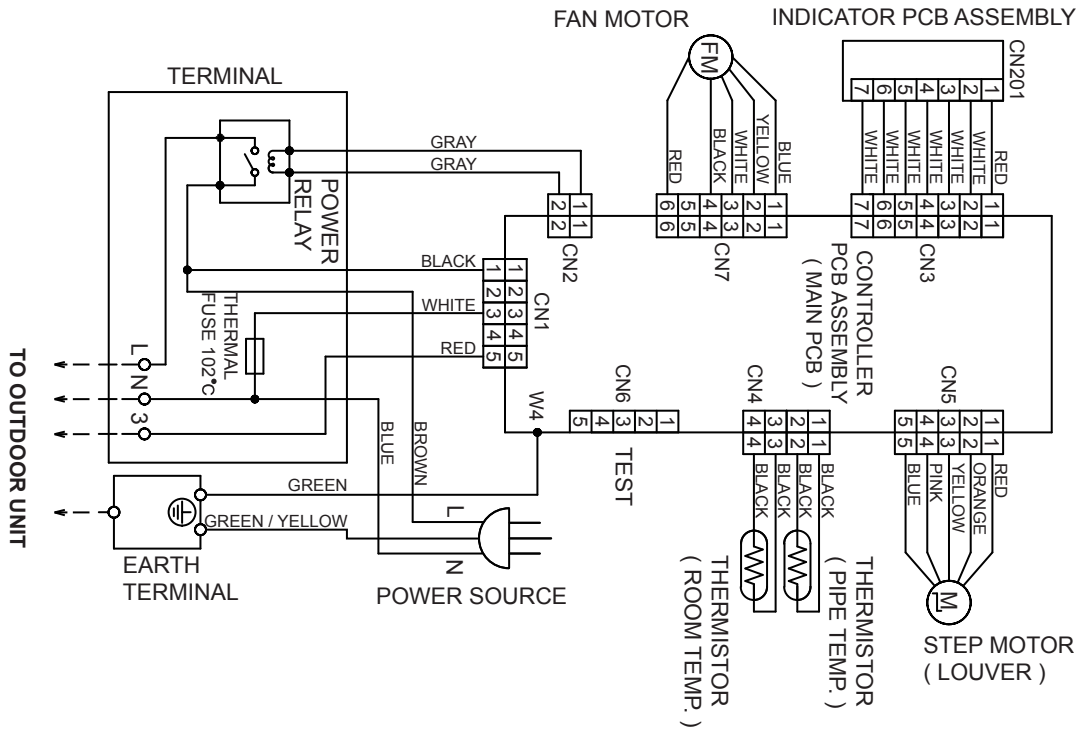


OUTDOOR UNIT

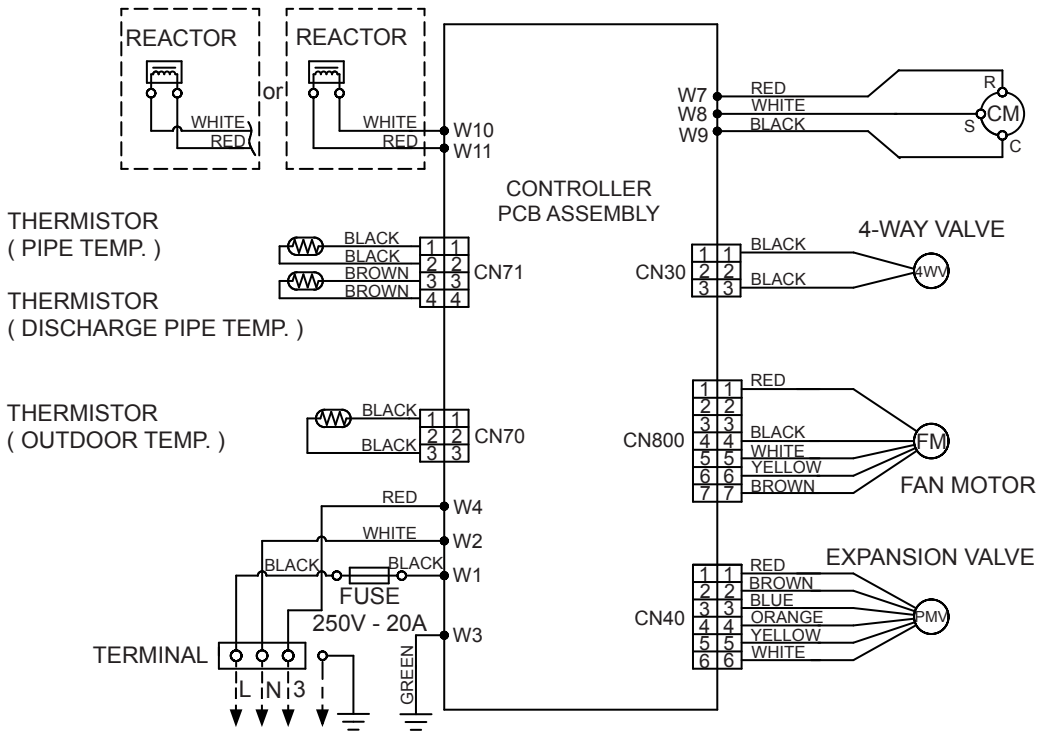


Models : AS*A14LGC / AO*R14LGC

INDOOR UNIT



OUTDOOR UNIT



Refrigerant
R410A

WALL MOUNTED type
INVERTER

5 . DESCRIPTION OF EACH CONTROL OPERATION

1. COOLING OPERATION

1-1 COOLING CAPACITY CONTROL

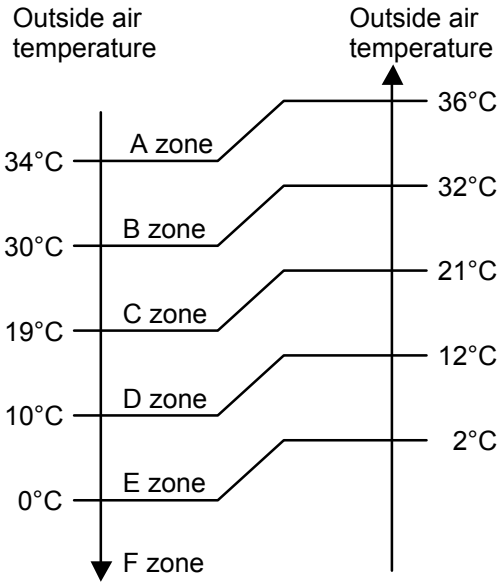
A sensor (room temperature thermistor) built in the indoor unit body will usually perceive difference or variation between a set temperature and present room temperature, and controls the operation frequency of the compressor.

* If the room temperature is 2°C higher than a set temperature, the compressor operation frequency will attain to maximum performance.
* If the room temperature is 2.5°C lower than a set temperature, the compressor will be stopped.
* When the room temperature is between +2°C to -2.5°C of the setting temperature, the compressor frequency is controlled within the range shown in Table1. However, the maximum frequency is limited in the range shown in Figure 1 based on the fan speed mode and the outdoor temperature.

(Table 1 : Compressor Frequency Range)

	minimum frequency	maximum frequency Ⅱ	maximum frequency Ⅰ
AS*A07/ 09LGC	22Hz	76Hz	79Hz
AS*A12LGC	18Hz	80Hz	96Hz
AS*A14LGC	18Hz	70Hz	80Hz

(Fig. 1 : Limit of Maximum Frequency based on Outdoor Temperature)



		Hi	Me	Lo	Quiet
07LGC 09LGC	A zone	79Hz	61Hz	52Hz	37Hz
	B zone	79Hz	61Hz	52Hz	37Hz
	C zone	79Hz	61Hz	52Hz	38Hz
	D zone	52Hz	43Hz	37Hz	28Hz
	E zone	64Hz	55Hz	49Hz	36Hz
	F zone	64Hz	55Hz	49Hz	36Hz
12LGC	A zone	96Hz	61Hz	51Hz	33Hz
	B zone	96Hz	61Hz	51Hz	33Hz
	C zone	96Hz	61Hz	51Hz	33Hz
	D zone	57Hz	42Hz	36Hz	27Hz
	E zone	57Hz	42Hz	36Hz	27Hz
	F zone	57Hz	42Hz	36Hz	27Hz
14LGC	A zone	80Hz	49Hz	38Hz	27Hz
	B zone	80Hz	49Hz	38Hz	27Hz
	C zone	80Hz	49Hz	38Hz	27Hz
	D zone	54Hz	38Hz	30Hz	22Hz
	E zone	54Hz	38Hz	30Hz	22Hz
	F zone	54Hz	38Hz	30Hz	22Hz

When the compressor operates for 30 minutes continuously at over the maximum frequency Ⅱ, the maximum frequency is changed from Maximum Frequency Ⅰ to Maximum Frequency Ⅱ.

2. HEATING OPERATION

2-1 HEATING CAPACITY CONTROL

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.

* If the room temperature is lower by 3°C than a set temperature, the compressor operation frequency will attain to maximum performance.

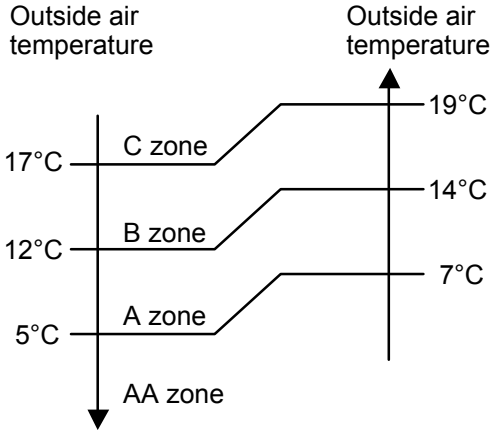
* If the room temperature is higher 2.5°C than a set temperatire, the compressor will be stopped.

* When the room temperature is between +2.5°C to -3°C of the setting temperature, the compressor frequency is controlled within the range shown in Table2. However, the maximum frequency is limited in the range shown in Figure 2 based on the fan speed mode and the outdoor temperature.

(Table 2 : Compressor Frequency Range)

	minimum frequency	maximum frequency
AS*A07/ 09LGC	22Hz	99Hz
AS*A12LGC	18Hz	130Hz
AS*A14LGC	18Hz	101Hz

(Fig.2 : Limit of Maximum Frequency based on Outdoor Temperature)



		Hi	Me+	Me	Lo	Quiet
07LGC 09LGC	AA zone	99Hz	99Hz	96Hz	79Hz	67Hz
	A zone	99Hz	99Hz	96Hz	79Hz	67Hz
	B zone	99Hz	99Hz	96Hz	79Hz	56Hz
	C zone	99Hz	99Hz	96Hz	79Hz	46Hz
12LGC	AA zone	130Hz	130Hz	96Hz	80Hz	68Hz
	A zone	130Hz	130Hz	96Hz	80Hz	68Hz
	B zone	130Hz	130Hz	96Hz	80Hz	54Hz
	C zone	130Hz	130Hz	96Hz	80Hz	45Hz
14LGC	AA zone	101Hz	101Hz	75Hz	58Hz	45Hz
	A zone	101Hz	101Hz	75Hz	58Hz	45Hz
	B zone	101Hz	101Hz	75Hz	58Hz	38Hz
	C zone	101Hz	101Hz	75Hz	58Hz	30Hz

* The room temperature is controlled 2°C higher than the setting temperature for 60 minutes after starting the operation.
After 60 minutes, it is controlled based on the normal setting temperature.

3. DRY OPERATION

3-1 INDOOR UNIT CONTROL

The compressor rotation frequency shall change according to the temperature, set temperature, and room temperature variation which the room temperature sensor of the indoor unit body has detected as shown in the Table 3.
However, after the compressor is driven, the indoor unit shall run at operation frequency of 70Hz (for AS*A07/09LGC) or 56Hz (for AS*A12LGC) or 40Hz (for AS*A14LGC), for a minute.

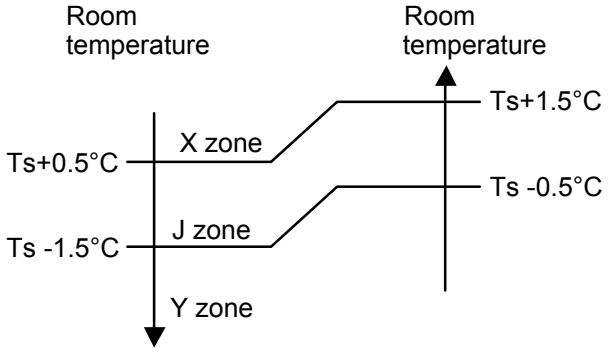
(Table 3 : Compressor frequency)

		Operating frequency
07LGC 09LGC	X zone	37Hz
	J zone	28Hz
	Y zone	0Hz

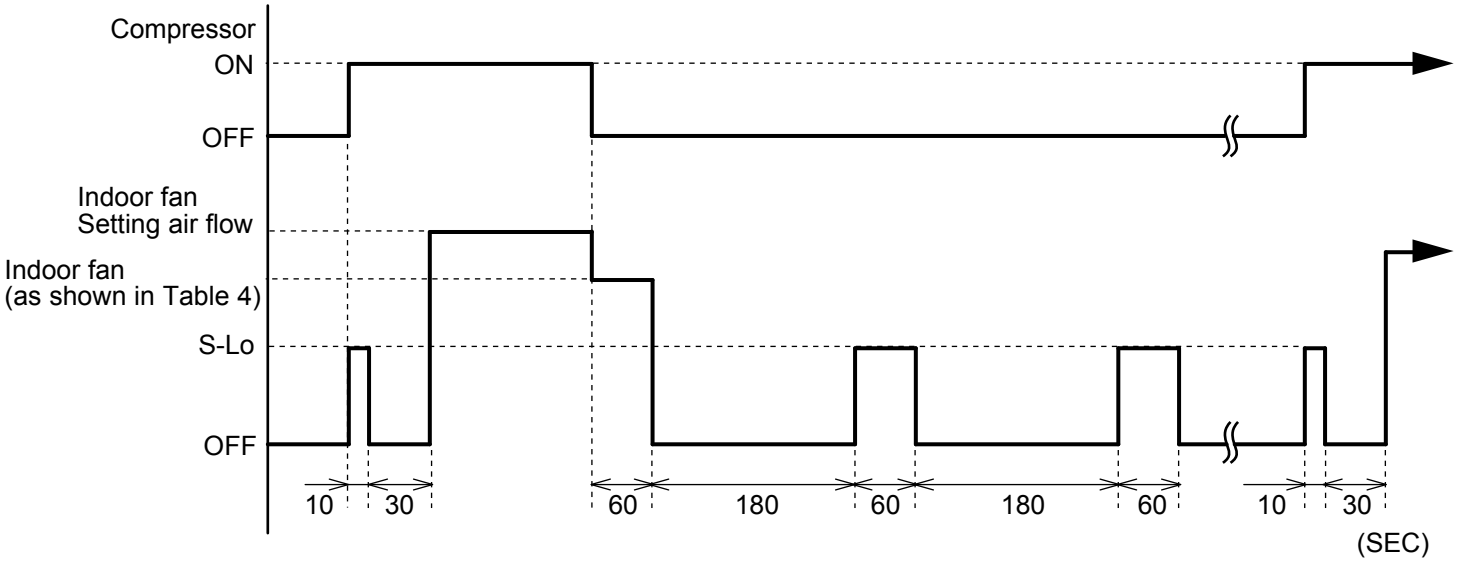
		Operating frequency
12LGC	X zone	33Hz
	J zone	25Hz
	Y zone	0Hz

		Operating frequency
14LGC	X zone	27Hz
	J zone	20Hz
	Y zone	0Hz

(Fig.3 : Compressor Control based on Room Temperature)



(Fig.4 : Indoor Fan Control)



(Table 4 : Indoor fan speed)

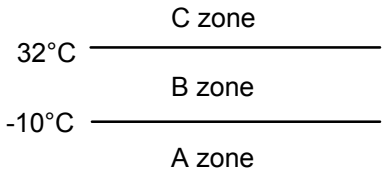
	X zone	J, Y zone
AS*A07/ 09LGC	620rpm	590rpm
AS*A12LGC	620rpm	590rpm
AS*A14LGC	760rpm	730rpm

4. AUTO CHANGEOVER OPERATION

When the air conditioner is set to the AUTO mode by remote control, operation starts in the optimum mode from among the HEATING, COOLING, DRY and MONITORING modes. During operation, the optimum mode is automatically switched in accordance with temperature changes. The temperature can be set between 18°C and 30°C in 1°C steps.

① When operation starts, only the indoor and outdoor fans are operated for 1 minute. After 1 minute, the room temperature and outside air temperature are sensed and the operation mode is selected in accordance with the table below.

(Fig.5 : Outside air temperature zone selection)



(Table.5 Operation mode selection table)

Outside air temperature (TO) / Room temperature (TB)	A zone	B zone	C zone
TB > TS+2°C	Monitoring	Cooling (automatic dry)	Cooling (automatic dry)
TS+2°C ≧TB ≧TS - 2°C	Monitoring	Monitoring	Monitoring
TB<TS - 2°C	Heating	Heating	Monitoring

② When COOING was selected at ① , the air conditioner operates as follow:
- The same operation as COOLING OPERATION of item 1 above is performed.
- When the room temperature has remained at (set temperature -1°C) for 8 minutes, operation is automatically switched to DRY and the same operation as DRY OPERATION of item 3 above is performed.
- If the room temperature reaches (set temperature +2°C during DRY operation, operation returns to COOLING operation.

③ When HEATING was selected at ① , the same operation as HEATING OPERATION of item 2 above is performed.

④ When the compressor was stopped for 6 consecutive minutes by the temperature control function after the COOLING or HEATING operation mode was selected at ① above, operation is switched to MONITORING and the operation mode is selected again.

5. INDOOR FAN CONTROL

1. Fan speed

(Table 6 : Indoor Fan Speed)

▪ AS*A07/ 09/ 12LGC

Operation mode	Air flow mode	Speed (rpm)
Heating	Hi	1440
	Me+	1370
	Me	1200
	Lo	980
	Quiet	700
	Cool air prevention	600
	S-Lo	480
Cooling	Hi	1440
	Me	1200
	Lo	920
	Quiet	680
Dry		X zone: 680 J zone: 650

▪ AS*A14LGC

Operation mode	Air flow mode	Speed (rpm)
Heating	Hi	1500
	Me+	1440
	Me	1300
	Lo	1080
	Quiet	840
	Cool air prevention	600
	S-Lo	480
Cooling	Hi	1500
	Me	1300
	Lo	1020
	Quiet	760
Dry		X zone: 760 J zone: 730

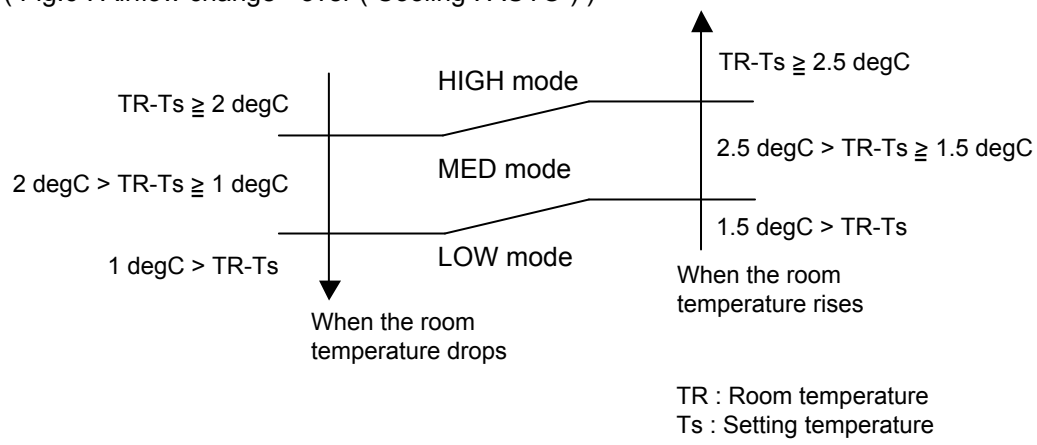
2. FAN OPERATION

The airflow can be switched in 5 steps such as AUTO, QUIET, LOW, MED, HIGH, while the indoor fan only runs.
When Fan mode is set at (Auto), it operates on (MED) Fan Speed.

3. COOLING OPERATION

Switch the airflow [AUTO], and the indoor fan motor will run according to a room temperature, as shown in Figure 6.
On the other hand, if switched in [HIGH]～[QUIET], the indoor motor will run at a constant airflow of [COOL] operation modes QUIET, LOW, MED, HIGH,as shown in Table 6.

(Fig.6 : Airflow change - over (Cooling : AUTO))



4. DRY OPERATION

Refer to the Table 6.

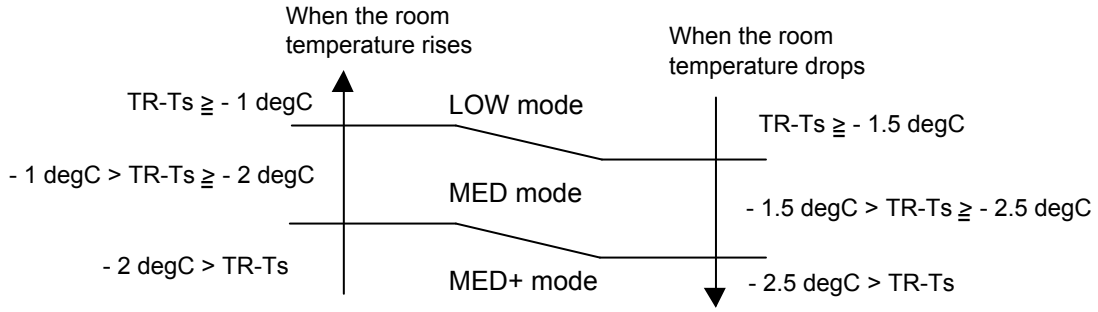
During the dry mode operation, the fan speed setting can not be changed.

5. HEATING OPERATION

Switch the airflow [AUTO], and the indoor fan motor will run according to a room temperature, as shown in Figure 7.

On the other hand, if switched in [HIGH] ～ [QUIET], the indoor motor will run at a constant airflow of [HEAT] operation modes QUIET, LOW, MED, HIGH, as shown in Table 6.

(Fig.7 : Airflow change - over (Heating : AUTO))

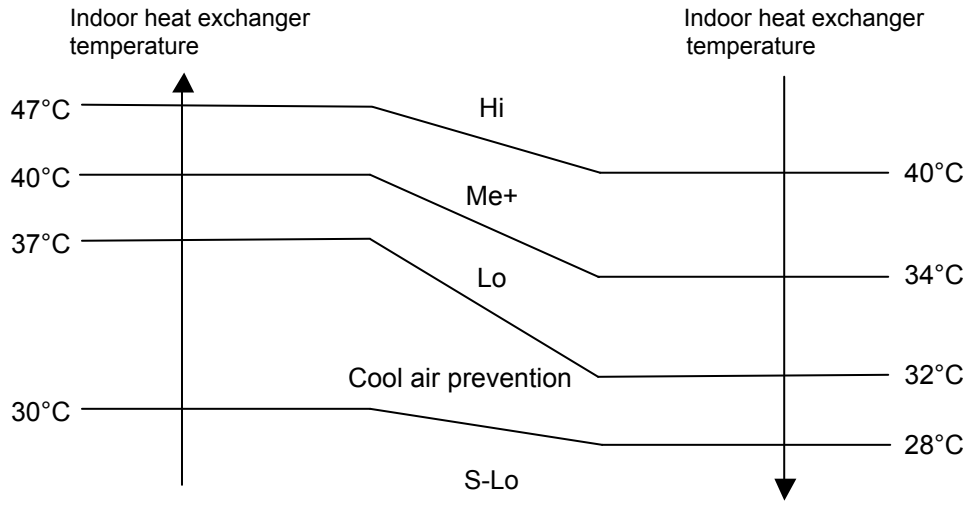


TR : Room temperature
Ts : Setting temperature

6. COOL AIR PREVENTION CONTROL (Heating mode)

The maximum value of the indoor fan speed is set as shown in Figure 8, based on the detected temperature by the indoor heat exchanger sensor on heating mode.

(Fig.8 : Cool Air Prevention Control)



6. OUTDOOR FAN CONTROL

1. Outdoor Fan Motor

Following table shows the type of the outdoor fan motor. The control method is different between AC motor and DC motor.

(Table 7 : Type of Motor)

	AC Motor	DC Motor
AS*A07/ 09/ 12/ 14LGC		◯

2. Fan Speed

(Table 8 : Outdoor fan speed)

(rpm)

	ZONE※	Cooling	Dry	Heating
AS*A07LGC AS*A09LGC	A - C	730/ 650/ 470	730/ 470	650/ 470
	D	730/ 470/ 230		
	E	230	230	
	F	150	150	
AS*A12LGC	A - C	860/ 760/ 470	760/ 470	760/ 680/ 470
	D	860/ 470/ 330		
	E	330	330	
	F	230/ 200	230/ 200	
AS*A14LGC	A - C	870/ 720/ 530	530	780/ 720/ 590/ 480
	D	870/ 720/ 530/ 300		
	E	300	300	
	F	250/ 200	250/ 200	

※ Refer to Fig1.

* It runs at 500(A-D ZONE)/200(E,F ZONE) rpm for 20 seconds after starting up the outdoor fan.
* The outdoor fan speed mentioned avobe depends on the compressor frequency. (When the compressor frequency increases, the outdoor fan speed also changes to the higher speed. When the compressor frequescy decreases, the outdoor fan speed also changes to the lower speed.)
* Outdoor temperature falls, and if it becomes E and F zone(Refer to Fig1), rotations of fan speed will fall.
* After the defrost control is operated on the heating mode, the fan speed keeps at the higher speed as table 9 without relating to the compressor frequency.

(Table 9 : Outdoor fan speed after the defrost)

	Min
AS*A07/ 09/ 12LGC	900rpm
AS*A14LGC	1100rpm

7. LOUVER CONTROL

1. VERTICAL LOUVER CONTROL

(Function Range)

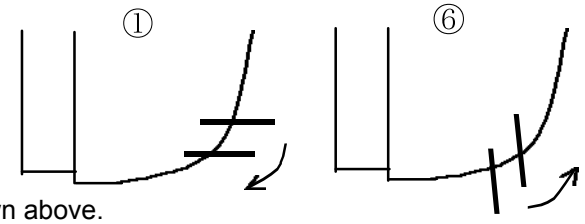
Each time the button is pressed, the air direction range will change as follow:

① ⇄ ② ⇄ ③ ⇄ ④ ⇄ ⑤ ⇄ ⑥

(Operation Range)

Cooling / Dry mode : ①－②－③
Heating mode : ④－⑤－⑥
Fan mode : ①－②－③－④－⑤－⑥

(Fig 9: Air Direction Range)



Use the air direction adjustments within the ranges shown above.

・The vertical airflow direction is set automatically as shown, in accordance with the type of operation selected.

Cooling / Dry mode : Horizontal flow ①
Heating mode : Downward flow ⑥

・When the temperature of the air being blown out is low at the start of heating operation or during defrosting, the airflow direction temporarily becomes ① to prevent cold air being blown onto the body.

・During use of the Cooling and Dry modes, do not set the Air Flow Direction Louver in the Heating range (④～⑥) for long period of time, since water vapor many condense near the outlet louvers and drop of water may drip from the air conditioner. During the Cooling and Dry modes, if the Air Flow Direction Louvers are left in the heating range for more than 30minutes, they will automatically return to position ③.

・During Monitor operation in AUTO CHANGEOVER mode, the airflow direction automatically becomes ①, and it cannot be adjusted.

2. SWING OPERATION

When the swing signal is received from the remote controller, the vertical louver starts to swing.

(Swinging Range)

Cooling mode / Dry mode / Fan mode(①～③) : ① ⇔ ③
Heating mode / Fan mode(④～⑥) : ③ ⇔ ⑥

・When the indoor fan is either at S-lo or Stop mode, the swinging operation is interrrupted and the louver stops at the memorized position.

8. COMPRESSOR CONTROL

1. OPEARTION FREQUENCY RANGE

The operation frequency of the compressor is different based on the operation mode as shown in the table 10.

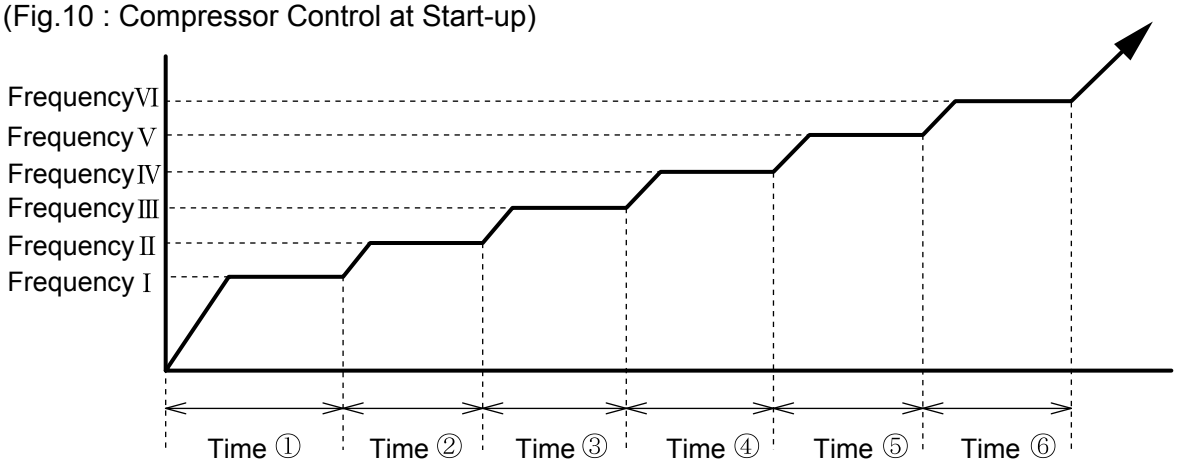
(Table 10 : Compressor Operation Frequency Range)

	Cooling		Heating		Dry	
	Min	Max	Min	Max	Min	Max
AS*A07/ 09LGC	22Hz	79Hz	22Hz	99Hz	28Hz	37Hz
AS*A12LGC	18Hz	96Hz	18Hz	130Hz	25Hz	33Hz
AS*A14LGC	18Hz	80Hz	18Hz	101Hz	20Hz	27Hz

2. OPEARTION FREQUENCY CONTROL AT START UP

The compressor frequency soon after the start-up is controlled as shown in the figure 10.

(Fig.10 : Compressor Control at Start-up)



(Frequency)

	Frequency Ⅰ	Frequency Ⅱ	Frequency Ⅲ	Frequency Ⅳ	Frequency Ⅴ	Frequency Ⅵ
AS*A07/ 09LGC	70Hz	82Hz	92Hz	96Hz	96Hz	96Hz
AS*A12LGC	56Hz	74Hz	87Hz	97Hz	108Hz	119Hz
AS*A14LGC	40Hz	59Hz	72Hz	85Hz	101Hz	110Hz

(Time)

	Time ①	Time ②	Time ③	Time ④	Time ⑤	Time ⑥
AS*A07/ 09LGC	80sec	60sec	60sec	180sec	60sec	60sec
AS*A12LGC	80sec	60sec	60sec	180sec	60sec	60sec
AS*A14LGC	120sec	60sec	40sec	50sec	80sec	60sec

9. TIMER OPEARTION CONTROL

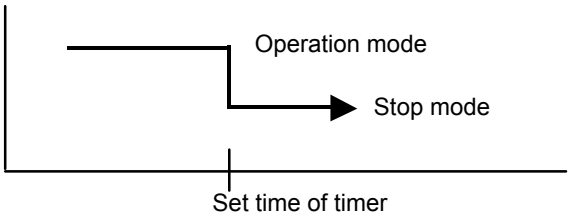
The table 11 shows the available timer setting based on the product model.

(Table 11 : Timer Setting)

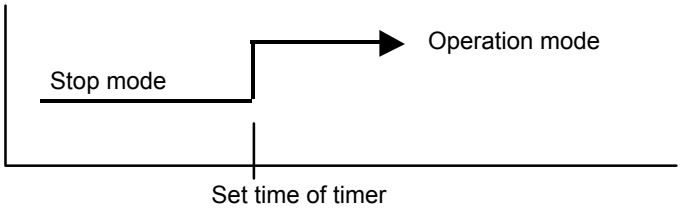
	ON TIMER / OFF TIMER	PROGRAM TIMER	SLEEP TIMER
AS*A07/ 09/ 12/ 14LGC	○	○	○

1. OPEARTION FREQUENCY RANGE

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

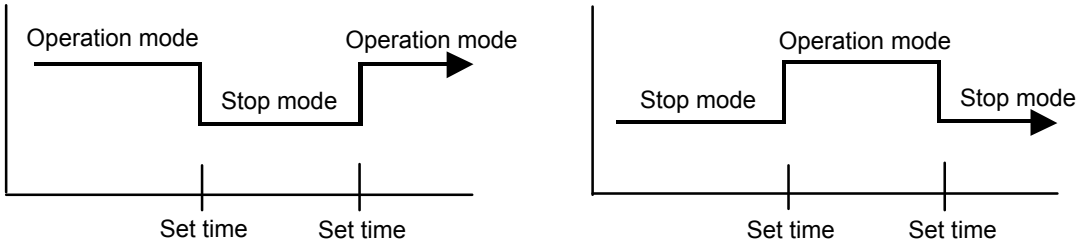


・ON timer : When the clock reaches the set time, the air conditioner will be turned on.



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.

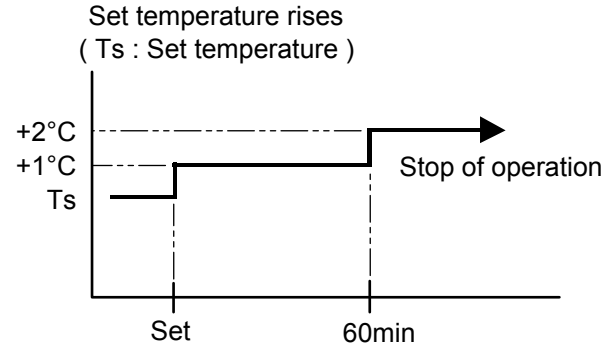
・SLEEP timer operation cannot be combined with ON timer operation.

3. SLEEP TIMER

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

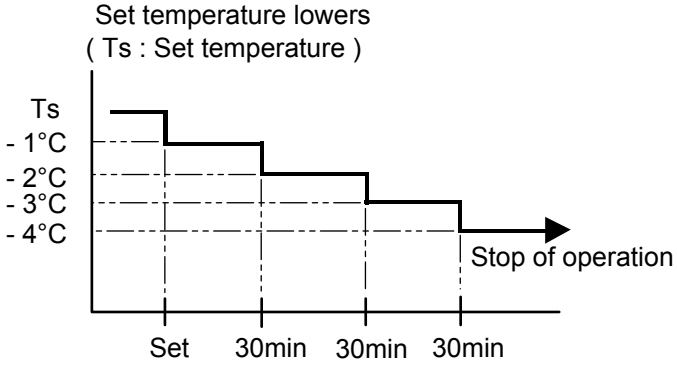
In the cooling operation mode

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



In the heating operation mode

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



10. ELECTRONIC EXPANSION VALVE CONTROL

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

* The pulse range of the electronic expansion valve control is between 60 to 480 pulses.
* The expansion valve is set at 480 pulses after 110 seconds of stopping compressor.
* At the time of supplying the power to the outdoor unit, the initialization of the electronic expansion valve is operated (528 pulses are input to the closing direction).

11. TEST OPERATION CONTROL

Under the condition where the air conditioner runs, press the test run button of the remote control, and the test operation control mode will appear. During test running, the operation lamp and timer lamp of the air conditioner body twinkle 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.

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

The compressor won't enter operation status for 2 minutes and 20 seconds after the compressor is stopped, even if any operation is given.

13. FOUR-WAY VALVE EXTENSION SELECT

At the time when the air conditioner is switched from the cooling mode to heating mode, the compressor is stopped, and the four-way valve is switched in 2 minutes and 20 seconds later after the compressor stopped.

14. AUTO RESTART

When the power was interrupted by a power failure, etc. during operation, the operation contents at that time are memorized and when power is recovered, operation is automatically started with the memorized operation contents.
When the power is interrupted and recovered during timer operation, since the timer operation time is shifted by the time the power was interrupted, an alarm is given by blinking (7 sec ON/2 sec OFF) the indoor unit body timer lamp.

[Operation contents memorized when the power is interrupted]

- Operation mode
- Set temperature
- Set air flow
- Timer mode and timer time
- Set air flow Direction
- Swing
- 10°C HEAT

15. MANUAL AUTO OPERATION (Indoor unit body operation)

If MANUAL AUTO Button is set, the operation is controlled as shown in Table 12.
If the remote control is lost or battery power dissipated, this function will work without the remote control.

(Table 12)

	Manual auto operation	Forced cooling operation
OPERATION MODE	Auto changeover	Cooling
FAN CONT. MODE	Auto	Hi
TIMER MODE	Continuous (No timer setting available)	-
SETTING TEMP.	24°C	Room Temp is not controlled
SETTING LOUVER	Standard	Horizontal
SWING	OFF	OFF

16. FORCED COOLING OPERATION

Forced cooling operation is started when pressing MANUAL AUTO button for 10 seconds or more.
During the forced cooling operation, it operates regardless of room temperature sensor.
Operation LED and timer LED blink during the forced cooling operation. They blink for 1 second ON and 1 second OFF on both operation LED and timer LED (same as test operation).
Forced cooling operation is released after 60 minutes of starting operation.
The FORCED COOLING OPERATION will start as shown in Table12.

17. COMPRESSOR PREHEATING

When the outdoor heat exchanger temperature is lower than 5°C and the heating operation has been stopped for 30 minutes, power is applied to the compressor and the compressor is heated. (By heating the compressor, warm air is quickly discharged when operation is started.)
When operation was started, and when the outdoor temperature rises to 7°C or greater, preheating is ended.

18. COIL DRY OPERATION CONTROL

The coil-dry operation functions by pressing COIL DRY button on the remote controller.
The coil-dry operation is consisted of Fan operation 50 minutes, Heating operation 3 minutes, and Fan operates for 30 minutes at last before ending the air conditioner operation.

(Table 13 : COIL-DRY Operating Functions)

	Indoor Fan Speed	Compressor Frequency	Louver Position	Main Unit Indication
AS*A07/ 09LGC	780rpm	43Hz	①	COIL-DRY : ON Other indication : OFF
AS*A12LGC	780rpm	39Hz	①	
AS*A14LGC	870rpm	27Hz	①	

19. DEFROST OPERATION CONTROL

1. CONDITION OF STARTING THE DEFROST OPERATION

The defrost operation starts when the outdoor heat exchanger temperature sensor detects the temperature lower than the values shown in Table 14.

(Table 14 : Condition of starting Defrost Operation)

	Compressor operating time		
	Less than 25 minutes	25 minutes to 4 hours	After 4 hours
AS*A07/ 09/ 12/ 14LGC	Does not operate	- 6°C	- 3°C

2. CONDITION OF THE DEFROST OPERATION COMPLETION

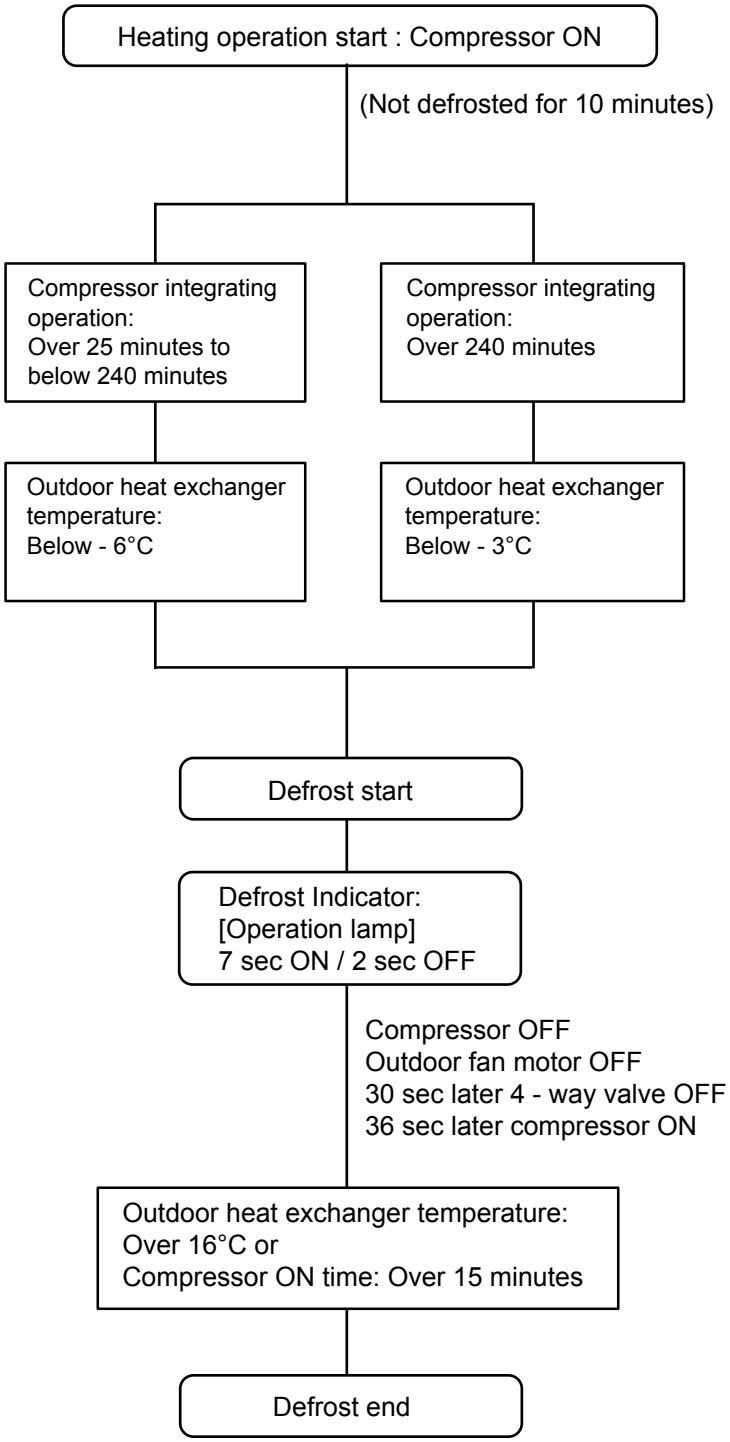
Defrost operation is released when the conditions become as shown in Table 15.

(Table 15 : Defrost Release Condition)

	Release Condition
AS*A07/ 09/ 12/ 14LGC	Outdoor heat exchanger temperature sensor value is higher than 16°C or Compressor operation time has passed 15 minutes.

Defrost Flow Chart

The defrosting shall proceed by the integrating operation time and outdoor heat exchanger temperature as follows.



20. OFF DEFROST OPEARTION 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.

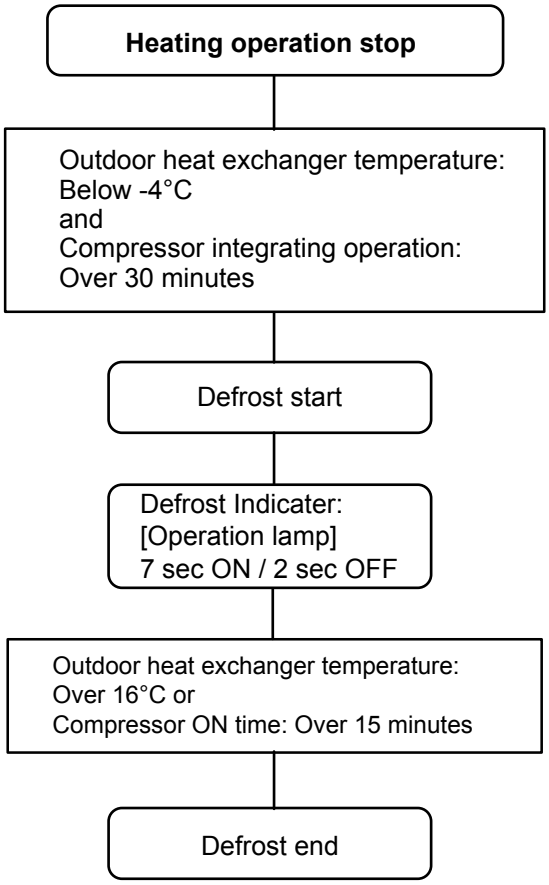
1. OFF DEFROST OPERATION CONDITION

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

2. OFF DEFROST END CONDITION

	Release Condition
AS*A09/ 12LGC	Outdoor heat exchanger temperature sensor value is higher than 16°C or Compressor operation time has passed 15 minutes.

OFF Defrost Flow Chart



21. 10°C HEAT OPERATION

The 10°C HEAT operation functions by pressing 10°C HEAT button on the remote controller. The 10°C HEAT operation is almost the same operation as below settings.

(Table 16)

mode	HEAT
setting temperature	10°C
fan mode	AUTO

22. VARIOUS PROTECTIONS

1. DISCHARGE GAS TEMPERATURE OVERRISE PREVENSION CONTROL

The discharge gas thermosensor (discharge thermistor : Outdoor side) will detect discharge gas temperature.

When the discharge temperature becomes higher than Temperature Ⅰ,the compressor frequency is decreased 20 Hz, and it continues to decrease the frequency for 20 Hz every 120 seconds until the temperature becomes lower than Temperature Ⅰ.

When the discharge temperature becomes lower than Temperature Ⅱ,the control of the control of the compressor frequency is released.

When the discharge temperature becomes higher than Temperature Ⅲ,the compressor is stopped and the indoor unit LED starts blinking.

(Table 17 : Discharge Temperature Over Rise Prevension Control / Release Temperature)

	Temperature Ⅰ	Temperature Ⅱ	Temperature Ⅲ
AS*A07/ 09/ 12/ 14LGC	104°C	101°C	110°C

2. CURRENT RELEASE CONTROL

The compressor frequency is controlled so that the outdoor unit input current does not exceeds the current limit velue 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.

(Table 18 : Current Release Operation Value / Release Value)

[Heating]

AS*A07/ 09LGC	AS*A12LGC	AS*A14LGC
OT (Control / Release)	OT (Control / Release)	OT (Control / Release)
17°C 5.5A/ 5.0A	17°C 5.5A/ 5.0A	17°C 7.0A/ 6.5A
12°C 6.0A/ 5.5A	12°C 7.0A/ 6.5A	12°C 9.0A/ 8.5A
5°C 7.0A/ 6.5A	5°C 7.5A/ 7.0A	5°C 10.0A/ 9.5A
7.0A/ 6.5A	8.5A/ 8.0A	10.0A/ 9.5A
OT : Outdoor Temperature	OT : Outdoor Temperature	OT : Outdoor Temperature

[Cooling]

AS*A07/ 09LGC	AS*A12LGC	AS*A14LGC
OT (Control / Release)	OT (Control / Release)	OT (Control / Release)
46°C 3.5A/ 3.0A	46°C 4.0A/ 3.5A	46°C 4.5A/ 4.0A
42°C 4.0A/ 3.5A	42°C 5.0A/ 4.5A	42°C 6.0A/ 5.5A
5.5A/ 5.0A	6.0A/ 5.5A	8.5A/ 8.0A
OT : Outdoor Temperature	OT : Outdoor Temperature	OT : Outdoor Temperature

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.

(Table 19 : Anti-freezing Protection Operation / Release Temperature)

Outdoor temperature	Temperature Ⅰ	Temperature Ⅱ
Over than 10°C *1 or 12°C *2	4°C	7°C
Less than 10°C *1 or 12°C *2		13°C

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

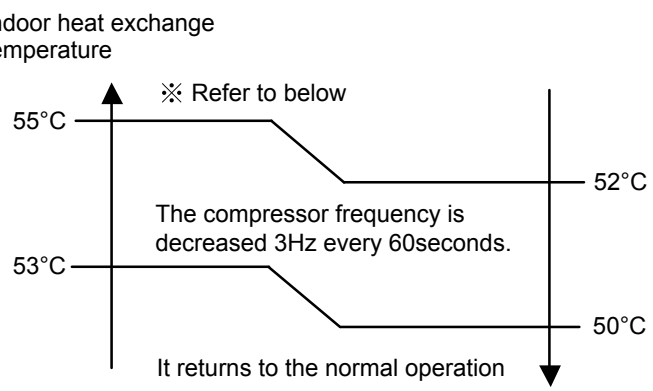
4. COOLING PRESSURE OVERRISE PROTECTION

When the outdoor unit heat exchange sensor temperature rises to 67°C or greater, the compressor is stopped and trouble display is performed.

5. HIGH TEMPERATURE RELEASE CONTROL (HEATING MODE)

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

[Control System]



※ Compressor Operation

[AS*A07/ 09LGC]
52Hz or greater → 49Hz
43～49Hz → Frequency down every 120 sec
34～40Hz → 28Hz
22～28Hz → OFF

[AS*A12LGC]
48Hz or greater → 45Hz
39～45Hz → Frequency down every 120 sec
27～36Hz → 18Hz
25Hz → OFF

[AS*A14LGC]
42Hz or greater → 38Hz
30～38Hz → Frequency down every 120 sec
21～27Hz → 20Hz
18～20Hz → OFF

Refrigerant
R410A

WALL MOUNTED type
INVERTER

6 . REFRIGERANT CAUTION -R410A-

1. R410A TOOLS

This air conditioner used R410A.
For installation and servicing, it is necessary to prepare the tools and machines that are different from the previous refrigerant.

◎ Mark shows the exclusive use for R410A.

◎ Gauge manifold . . . . . (Fig.4-1)
The specification of the gauge is different due to higher pressure.
The size of connection pipe is also different to prevent mis-use.

◎ Charge hose . . . . . (Fig.4-2)
Since the normal pressure is high, the connection pipe size is also different.

◎ Refrigerant cylinder . . . . . (Fig.4-3)
Confirm the refrigerant type before charging. Always charge liquid-phase refrigerant.

Electronic balance for refrigerant charging . . . . . (Fig.4-4)
Electronic balance is recommended as in the case of R410A.

◎ Vacuum pump with adapter to prevent reverse flow . . . . . (Fig.4-5)
Conventional pump can be used.

Vacuum holder . . . . . (Fig.4-6)
Conventional pump can be used if adapter for preventing vacuum pump oil from flowing back is used.

◎ Gas leakage tester . . . . . (Fig.4-7)
Exclusive for HFC

Refrigerant cleaner . . . . . (Fig.4-8)
Brown paint as designated by the ARI, USA

◎ Flare tool . . . . . (Fig.4-9)
The shape of flare is different for high pressure condition.

◎ Torque wrench . . . . . (Fig.4-10)

◎ Refrigerant recovering equipment (Collector) . . . . . (Fig.4-11)
The type which can be used for any refrigerant is available

Nitrogen cylinder . . . . . (Fig.4-12)
This prevents an oxide film from forming in the pipe silver-alloy brazing work by turning the air out of the pipe and preventing the inside combustion.

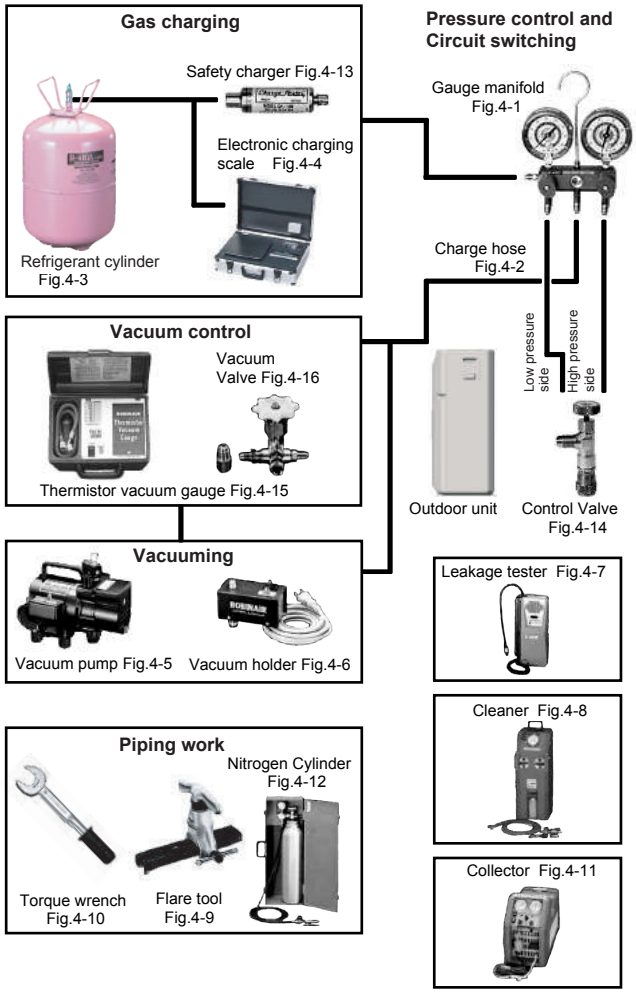
◎ Safety charger . . . . . (Fig.4-13)
It is always compulsory to change the liquid, because R410A is a mixed refrigerant and there is some fear that a mixing ratio changes. In order to avoid the refrigerant from returning to the compressor in a liquid state, the refrigerant can be charged instead of giving a load to the compressor with a safety charger.

Control valve . . . . . (Fig.4-14)
The control valve prevents the refrigerant from spouting when it is removed, as the charging hose side and the service port side are possible to open and close at the same time.

Thermistor vacuum gauge . . . . . (Fig.4-15)
To remove moisture from the refrigerating cycle completely, it is necessary to perform appropriate vacuum drying. For that reason, vacuum conditions can be confirmed certainly.

Vacuum valve . . . . . (Fig.4-16)
This valve builts in a check valve, and it is easily possible to vacuum a refrigerating cycle or check for degree of vacuum with it.

TOOLS AND EQUIPMENT (R410A)



＊1 Gauge Manifold

	R410A	R22, R407C
High pressure gauge	-0.1～5.3 Mpa	-0.1～3.5 Mpa
Compond gauge	-0.1～3.8 Mpa	-0.1～1.7 Mpa
Port size	1/2UNF 5/16"	7/16UNF 1/4"

＊2 Charge hose

	R410A	R22, R407C
Normal pressure	5.1 Mpa	3.4 Mpa
Breaking pressure	27.4 Mpa	17.2 Mpa
Port size	1/2UNF	7/16UNF

2. PRECAUTION FOR INSTALLATION

Precaution for installation

Pipe diameter, recommended material and wall thickness

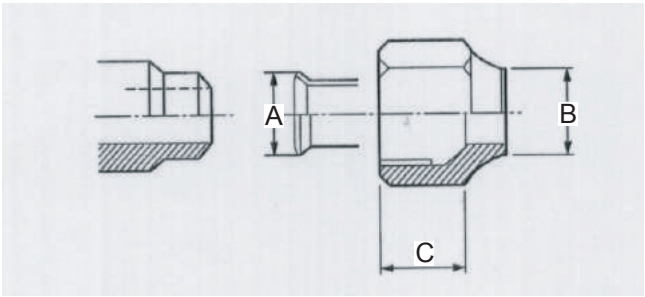
Nominal diameter (in)	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"
Outside diameter (mm)	6.35	9.52	12.70	15.88	19.05	22.22	25.40	28.58	31.75	34.92	38.10
Material	COPPER JIS H3300-C1220T-O or equivalent [1]					COPPER JIS H3300-C1220T-H or equivalent [2]					
Wall thickness [3] (mm)	0.8	0.8	0.8	1.0	1.2	1.0	1.0	1.0	1.1	1.2	1.3

1) Allowable tensile stress ≧ 33 (N/mm^2); 2) Allowable tensile stress ≧ 61 (N/mm^2); 3) Design pressure 4.2MPa.

The pipe must be properly pressure rated for R410A
The pipe must be an air-conditioning refrigerant pipe.

Flare and flare nuts

Diameter	1/4"(6.35mm)		3/8"(9.52mm)		1/2"(12.7mm)		3/8"(15.88mm)		3/4"(19.05mm)	
Refrigerant	R410A	R22 /R407C	R410A	R22 /R407C	R410A	R22 /R407C	R410A	R22 /R407C	R410A	R22 /R407C
A	9.1	9.0	13.2	13.0	16.6	16.2	19.7	19.4	24	23.7
B	13	12	20	15	13	20	25	23	29	29
C	12	11	16	12.5	19	16	22	20	24	24
Nut width	17		22		26	24	29	27	36	



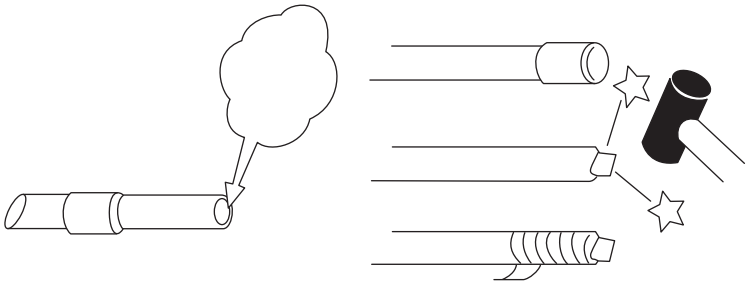
Always use the flare nut that is packed with the product.

Do not use existing (for R22) pipes

- Be sure to use new pipes when replacing conventional (R22) model with HFC (R407C, R410A) model.

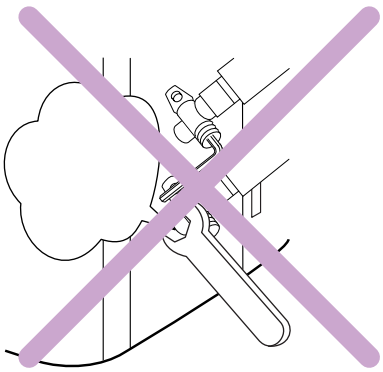
- If you use existing pipes, it may cause resolution of compressor oil by remaining mineral oil.

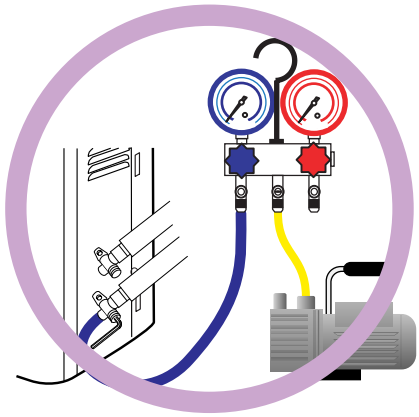
Be careful not to mix moisture and contamination into the pipe



Moisture and contamination in the pipe is a cause of trouble.

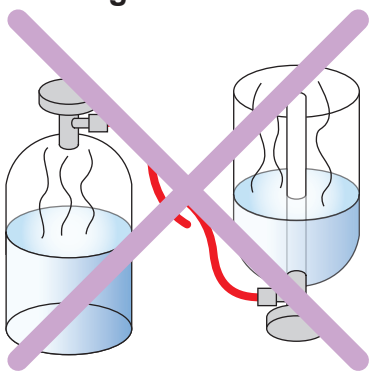
Air purge



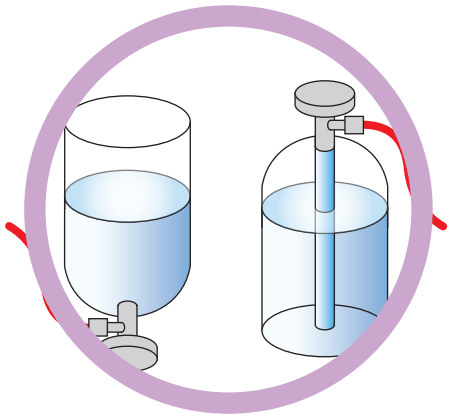


Always use a vacuum pump to purge air.

Refrigerant charge



Don't charge from the gas phase side.



Do it always from the liquid phase side.

Compressor oil is changed

- We developed new synthetic oil, since HFC refrigerant doesn't dissolve in mineral (for R22)oil.
- Be careful to handle synthetic oil, since it resolves easily by moisture and contamination.
- Don't mix new synthetic oil and mineral oil. It may cause trouble.

3. PRECAUTION FOR SERVICING

Feature 1 Refrigerant oil is different from before.

Refrigerant oil for New Refrigerant	Different point from previous one	Precaution on Tools
Synthetic oil **Ether** **Esther** ※ Previously it was mineral oil.	• **Absorbent character is high.** • **Contamination occurs when mixed withe other kind of oil.**	• **Use the gauge manifold and charge hose for New Refrigerant(HFC), which shall be segregated from those of R22.** • **Attach the stop valve on the vacuum pump and avoid the oil from reverse frow.** • **It is necessary to use the vacuum pump which can obtain the high vacuum condition.**

Feature 2 New Refrigerant has Approx 1.6 times higher pressure than previous refrigerant.

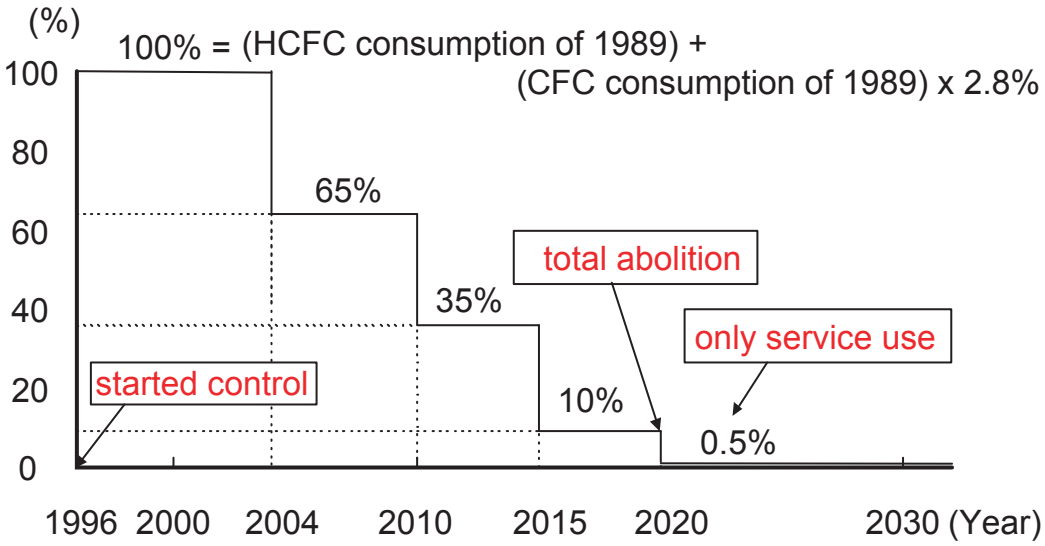
R410A **R22**

R410A	Different point from previous one	Precaution on Tools
High Pressure ※ 1.6 times of R22.	• **Diameter of Service port has been changed from 1/4 Flare to 5/16 Flare.** • **JIS standard of flare process It became lager** • **To keep thethickness of copper tube. (1/4,3/3=more than 0.8mm)**	• **It requires the gauge manifold and charge hose exclusively for R410A.** • **It requires the flare tool and torque wrench that satisfies New JIS standard.** ※ Previous flare tool + flare adapter can be used as well.

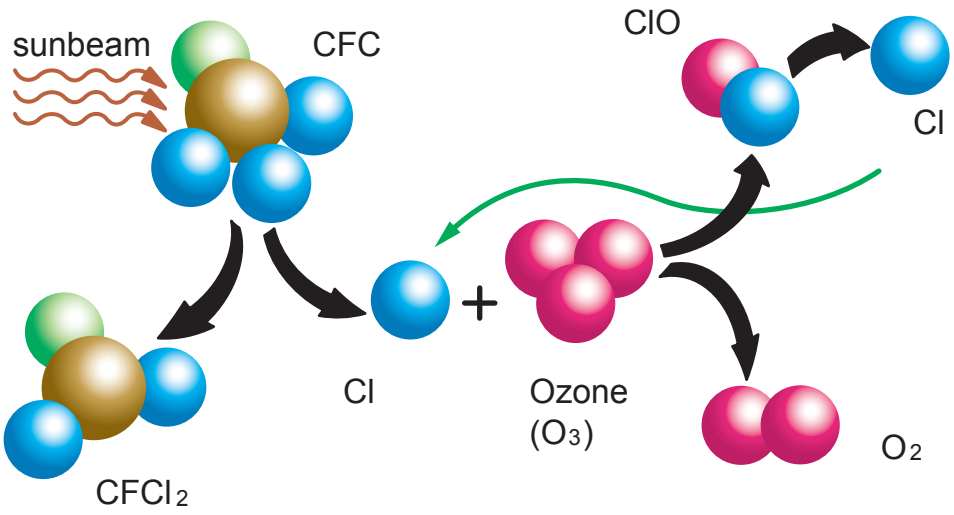
4. NEW REFRIGERANT R410A

∗What is HFC ?

Phase-out schedule of HCFC according to Montreal protocol



Ozone Layer depleting mechanism



What is CFC and HCFC?

CFC : Chloro-Fluoro-Carbon

High ODP(ozone depletion potential) chemical compound, including chlorine. (ODP:0.6-1.0)
For example : R12 (for refrigerator and car air-conditioner)

HCFC : Hydro-Chloro-Fluoro-Carbon

Low ODP chemical compound, including chlorine and hydrogen. (ODP:0.02-01)
For example : R22 (for air-conditioner)

HFC_3 : Hydro-Fluoro-Carbon

R134a (for Car air conditioner)
R407C (for air conditioner)

Refrigerant characteristics

	R410A	R407C	R22
Composition (wt%)	R32/R125 (50/50)	R32/R125/R134a (23/25/52)	R22 (100)
Boiling Point	- 51.4	- 43.6	- 40.8
Behavior	near azeotrope	zeotrope	---
Pressure at 54.5°C (kPa)	3,406	2,262	2,151
Temperature Glide (deg)	0.11	5.4	0
ODP	0	0	0.055

Summary of R407C and R410A characteristics

	R410A	R407C
Advantage	• higher system performance • Near-Azeotropic refrigerant	• similar pressure as R22 (possible to design large equipment)
Disadvantage	• 1.6 times higher pressure than R22 (difficult to design against pressure resistance)	• Zeotropic refrigerant (handle with care)
Suitable for	• Small Air-Conditioners	• Large Air-Conditioners

* Desighed pressure of R410A refrigerant

Relation between R410A condensing temperature and saturated pressure.

< Pressure → Temp >

Pressure (Mpa)	Temp (℃)
2.20	37.9
2.25	38.7
2.30	39.6
2.35	40.5
2.40	41.3
2.45	42.1
2.55	43.8
2.60	44.6
2.65	45.3
2.70	46.1
2.75	46.8
2.80	47.6
2.85	48.3
2.90	49.0
2.95	49.8
3.00	50.5
3.05	51.2
3.10	51.9
3.15	52.6
3.20	53.2
3.25	53.9
3.30	54.6
3.35	55.3
3.40	55.9
3.45	56.5
3.50	57.1
2.55	57.8
3.60	58.4
3.65	59.0
3.70	59.6
3.75	60.2
3.80	60.8
3.85	61.4
3.90	52.0
3.95	62.5
4.00	63.1
4.05	63.6
4.10	64.2
4.15	64.8

< Temp → Pressure >

Temp (℃)	Pressure (Mpa)
39	2.27
40	2.32
41	2.38
42	2.44
44	2.57
45	2.63
46	2.69
47	2.76
48	2.83
49	2.90
51	3.04
52	3.11
53	3.18
54	3.26
56	3.41
57	3.49
58	3.57
59	3.65
61	3.82
62	3.90
63	3.99
64	4.08

5. DEFFERENCE FROM CONVENTIONAL MODEL (R22) AND PRECAUTIONS

OIL

- Use new synthetic oils such as ester because HFC series refrigerant has less solubility with mineral oils conventionally used for R22.
- As these new synthetic oils are easily influenced by moisture and dusts, they must be treated more carefully than the conventional lubricating oils.

CAUTION

For installation/servicing, take more precautions than the case of conventional refrigerants to avoid moisture and dusts entering the refrigerant circuit. Also, for storing parts, more precautions must be taken.

COMPRESSOR

- Use better grade of material for sliding parts for securing good lubrication of sliding part as HFC refrigerant does not contain chloride.
- Review insulating materials
- Increase pressure resistance strength

CAUTION

Check if the compressor is suitable for the refrigerant (model) when replacing. Complete welding within 15 minutes after opening the cap when replacing.

HEAT EXCHANGER

- Review the water,contaminants controlling level
- Use thinner tube to increase pressure Increase capacity for resistance strength (only outdoor unit) improving performance

CAUTION

During storage, due care must be taken so that foreign matters such as dust and water do not enter.

4-WAY VALVE

- Review materials

CAUTION

Check if the valve is suitable for the refrigerant (model) when replacing.

2, 3-WAY VALVE

- Review material O-ring, valve core seal for securing suitability with oil.

CAUTION

Check if the valve is suitable for the refrigerant (model) when replacing.

Refrigerant
R410A

WALL MOUNTED type
INVERTER

7 . TROUBLE SHOOTING

1. When the unit does not operate at all (Operation lamp and Timer lamp do not light up)

2. Self Diagnosis Function (Either Operation lamp or Timer lamp is blinking)
   * How to operate the self-diagnosis function
   * Self- diagnosis table and Check points

3. Trouble shooting method
   * Serial signal check
   * IPM protection check
   * Refrigeration cycle diagnosis

Does not operate at all (Operation Lamp and Timer Lamp do not light up)

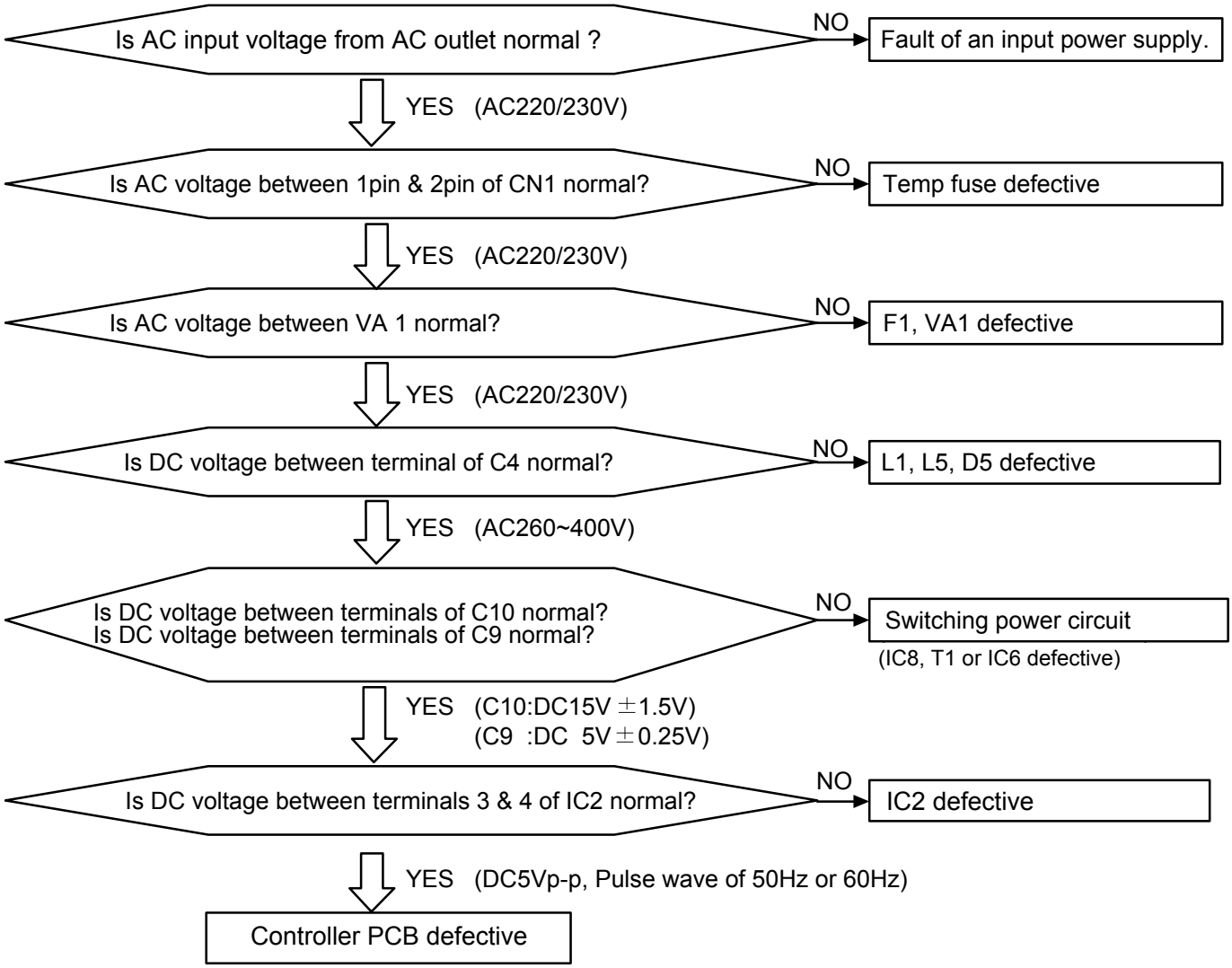
[Notes in service]

This model is non-insulated PCB that doesn't take the insulated structure on the PCB from this fiscal year.
Be careful that it is likely to get a hock when it touches the charge part when checking.
Moreover, there is a possibility of getting a shock even if it touches the secondary circuit of the display PCB or the stepping motor, etc.

[Check Point]

(1) Is the input power voltage from the exclusive circuit AC outlet normal?
(2) Is the AC plug inserted to the AC outlet securely and not loose?
(3) Does not connected cable do wrong wiring?
(4) Check if each connector is inserted securely.

[Checking Flow Chart]



SELF-DIAGNOSIS FUNCTION

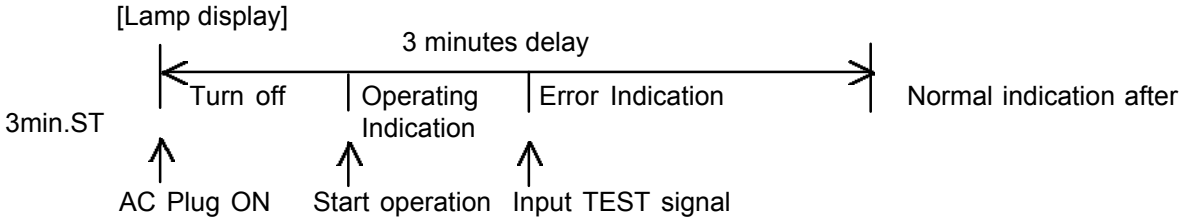
This function memorizes the self-diagnosis function (lamp display) in the in door control P.C.Board when trouble occurs.
(The memory contents are not destroyed even when the power cord is unplugged from the AC outlet.)
The self-diagnosis function (lamp display) can also be switched between major classification display and minor classification display and precise diagnosis can be made.

Self-diagnosis function [lamp display] (memory reading)

(1) When error occurs, it is indicated by blinking [Operation lamp (Green)] and [Timer lamp (Orange)].

(2) Upon pulling out and inserting the AC plug, the starts to operates from remote control.
(At this state, a normal operation indication is performed.)

(3) By pressing [TEST] button of remote control, [Error Indication] is indicated only during [3 minutes ST].
(3 minutes ST : 2 minutes 20 seconds from the timing AC plug is ON)



How to erase Memory

(1) While [Error indication] is ON by the self-diagnosis function, the memorized contents can be erased by pressing [Forced Auto Button] on the main unit.
(Indoor unit buzzer beeps 3 seconds.)

Self - diagnosis function and Checking points

Error Indication		Error (Protection)	Diagnosis Method
Operation (GREEN)	Timer (ORANGE)		
OFF	0.5 sec 2 times	Serial reverse transfer error at starting up operation	At the start up, the indoor unit does not receive the signal for 10 consecutive seconds from the time when the power relay was ON. >Permanent stop after 30 seconds. [Diagnosis Point] • Check the indoor /outdoor cable connection (in order). If the cable wiring is not abnormal, measure the voltage of the outdoor unit terminals and diagnose the defective location. (Refer to the after mentioned [Serial Signal Diagnosis] for the voltage measuring method and diagnosis method.)
	0.5 sec 3 times	Serial reverse transfer error during the operation	When the indoor unit does not receive the signal for 10 consecutive seconds during the operation >Permanent stop after 30seconds. [Diagnosis Point] • Check the indoor /outdoor cable connection (in order). If the cable wiring is not abnormal, measure the voltage of the outdoor unit terminals and diagnose the defective location. (Refer to the after mentioned [Serial Signal Diagnosis] for the voltage measuring method and diagnosis method.)
	0.5 sec 4 times	Serial forward transfer error at starting up operation	The outdoor unit does not receive the signal for 10 consecutive seconds from the time when the power relay was ON. >Outdoor unit stops. [Diagnosis Point] • Check the indoor /outdoor cable connection (in order). If the cable wiring is not abnormal, measure the voltage of the outdoor unit terminals and diagnose the defective location. (Refer to the after mentioned [Serial Signal Diagnosis] for the voltage measuring method and diagnosis method.)
	0.5 sec 5 times	Serial forward transfer error during the operation	When the outdoor unit does not receive the signal for 10 consecutive seconds during the operation > Outdoor unit stops. [Diagnosis Point] • Check the indoor /outdoor cable connection (in order). If the cable wiring is not abnormal, measure the voltage of the outdoor unit terminals and diagnose the defective location. (Refer to the after mentioned [Serial Signal Diagnosis] for the voltage measuring method and diagnosis method.)
	0.5 sec 8 times	Wired remote controller error	When the communication is cut off longer than 1 minutes upon connection. > Compressor , Outdoor fan : OFF (If the communication becames normal, they automatically resume operation. [Diagnosis Point] • Check wiring • Controller PCB failure
0.5 sec 2 times	0.5 sec 2 times	Room temperature therm-istor defective	The room temperature thermistor detective a abnormai temperature when the power was turned on. > Remote control does not operate. [Diagnosis Point] • Check thermistor resistance value (Refer to "Themistor characteristics table"). • Controller PCB defective.
	0.5 sec 3 times	Indoor heat exchanger thermistor error	The detection value of the indoor heat exchanger thermistor is either open or shoted when the power is ON. > Remote control does not operate. [Diagnosis Point] • Check thermistor resistance value (Refer to "Thermistor characteristic table"). • Controller PCB defective.

Self - diagnosis function and Checking points

Error Indication		Error (Protection)	Diagnosis Method
Operation (GREEN)	Timer (ORANGE)		
0.5 sec 3 times	0.5 sec 2 times	Discharge thermistor error	The detection value of the discharge thermistor is either open or shorted. > Compressor, outdoor fan : OFF (It automatically releases when the normal value is detected.) [Diagnosis Point] • Check thermistor resistance value (Refer to "Themistor characteristics table"). • Controller PCB defective.
	0.5 sec 3 times	Outdoor heat exchanger thermistor error	The detection value of the outdoor heat exchanger thermistor is either open or shorted. > Compressor, outdoor fan : OFF (It automatically releases when the normal value is detected.) [Diagnosis Point] • Check thermistor resistance value (Refer to "Themistor characteristics table"). • Controller PCB defective.
	0.5 sec 4 times	Outdoor temperature thermistor error	The detection value of the outdoor temperature thermistor is either open or shorted. > Compressor, outdoor fan : OFF (It automatically releases when the normal value is detected.) [Diagnosis Point] • Check thermistor resistance value (Refer to "Themistor characteristics table"). • Controller PCB defective.
0.5 sec 4 times	0.5 sec 2 times	Forced auto switch error	Forced auto switch becomes ON for 30 consecutive seconds. > It indicates the error but the operation continues. [Diagnosis Point] • Check if forced auto switch is kept pressed. • Forced auto switch defective. • Controller PCB defective.
	0.5 sec 3 times	Main relay error	After 2 minutes 20 seconds of stopping operation, the signal from outdoor unit is received even though the main relay is OFF. > Main relay OFF continues (outdoor unit OFF command) [Diagnosis Point] • Main relay defective • Controller PCB defective.

Self - diagnosis function and Checking points

Error Indication		Error (Protection)	Diagnosis Method
Operation (GREEN)	Timer (ORANGE)		
0.5 sec 5 times	0.5 sec 2 times	IPM protection	Abnormal current value of IPM is detected. > Permanent stop. [Diagnosis Point] • Heat radiation is blocked (inlet/outlet). • Check if outdoor fan is defetcive (does not rotate). • Controller PCB defective (Refer to after mentioned "IPM diagnosis"). • Refrigeration cycle defective (Refer to after mentioned "refrigeration cycle diagnosis").
	0.5 sec 3 times	CT error	The current value during the operation after 1 minute from starting up the compressor is 0A. > permanent stop. [Diagnosis Point] • Controller PCB defective.
	0.5 sec 5 times	Compressor location error	The compressor speed does not synchronze with the control signal. (Including start up failure of the compressor). > permanent stop. [Diagnosis Point] • Check if 2-way valve or 3-way valve is left open. • Check the compressor (Winding resistance value, loose lead wire). • Refrigeration cycle defective (Refer to after mentioned "refrigerant cycle diagnosis")
	0.5 sec 6 times	Outdoor fan error (DC motor)	Either the outdoor fan motor abnormal current or location error was detected. > Permanent stop. [Diagnosis Point] • Fan motor connector loose/ defective contact. • Fan motor defective. • Controller PCB defective.
0.5 sec 6 times	0.5 sec 2 times	Indoor fan lock error	The indoor fan speed is 0 rpm after 56 seconds from starting operation or from the time the fan mode was changed. > Operation stop. (It releases by sending the operation stop signal from the remote controller). [Diagnosis Point] • Fan motor connector loose /defective contact. • Fan motor defective • Controller PCB defective.
	0.5 sec 3 times	Indoor fan speed error	The indoor fan speed is 1/3 of the target frequency after 56 seconds from starting operation or from the time the fan mode was changed. > Operation stop. (It releases by sending the operation stop signal from the remote controller). [Diagnosis Point] • Fan motor connector loose /defective contact. • Fan motor defective • Controller PCB defective.

Self - diagnosis function and Checking points

Error Indication		Error (Protection)	Diagnosis Method
Operation (GREEN)	Timer (ORANGE)		
0.5 sec 7 times	0.5 sec 2 times	Discharge temperature error	The discharge temperature error is activated. > Permanent stop. [Diagnosis Point] • Check if 2-way valve or 3-way valve is left open. • Heat radiation is blocked (Inlet /outlet). • Check if outdoor fan is defective (does not rotate). • Refrigeration cycle defective (Refer to after mentioned "refrigerant cycle disagnosis").
	0.5 sec 3 times	Excessive high pressure protection on cooling	Excessive high pressure protection on cooling mode has been activated. > Compressor, outdoor fan : Off (It releases after 3 minute ST). [Diagnosis Point] • Heat radiation is blocked (Inlet /outlet). • Check if outdoor fan is defective (does not rotate). • Refrigeration cycle defective (Refer to after mentioned "refrigerant cycle disagnosis").
0.5 sec 8 times	0.5 sec 2 times	Active Filter Error (Permanent Stop)	Output voltage error of Active filter is detected. > Permanent stop. [Diagnosis Point] • Check the wiring connection (Connector is loose/open, Choke coil) • Controller PCB defective (Refer to after mentioned “Active Filter diagnosis”)
	0.5 sec 3 times	Active Filter Error	Active filter error or instantaneous cut off error is detected. > Compressor, Outdoor Fan : OFF [Diagnosis Point] • Check the wiring connection (Connector is loose/open, Choke coil) • Controller PCB defective (Refer to after mentioned “Active Filter diagnosis”) <CAUTION> Even if the unit is normal, it may detect error depending on the power supply voltage condition.
	0.5 sec 4 times	PFC circuit error	Excessive voltage of DC voltage on PFC circuit in inverter PCB is detected, or the excessive current in the circuit is detected. > Permanent stop. [Diagnosis Point] • Controller PCB defective (Refer to after mentioned "PFC circuit diagnosis")

Serial Signal Receiving Error

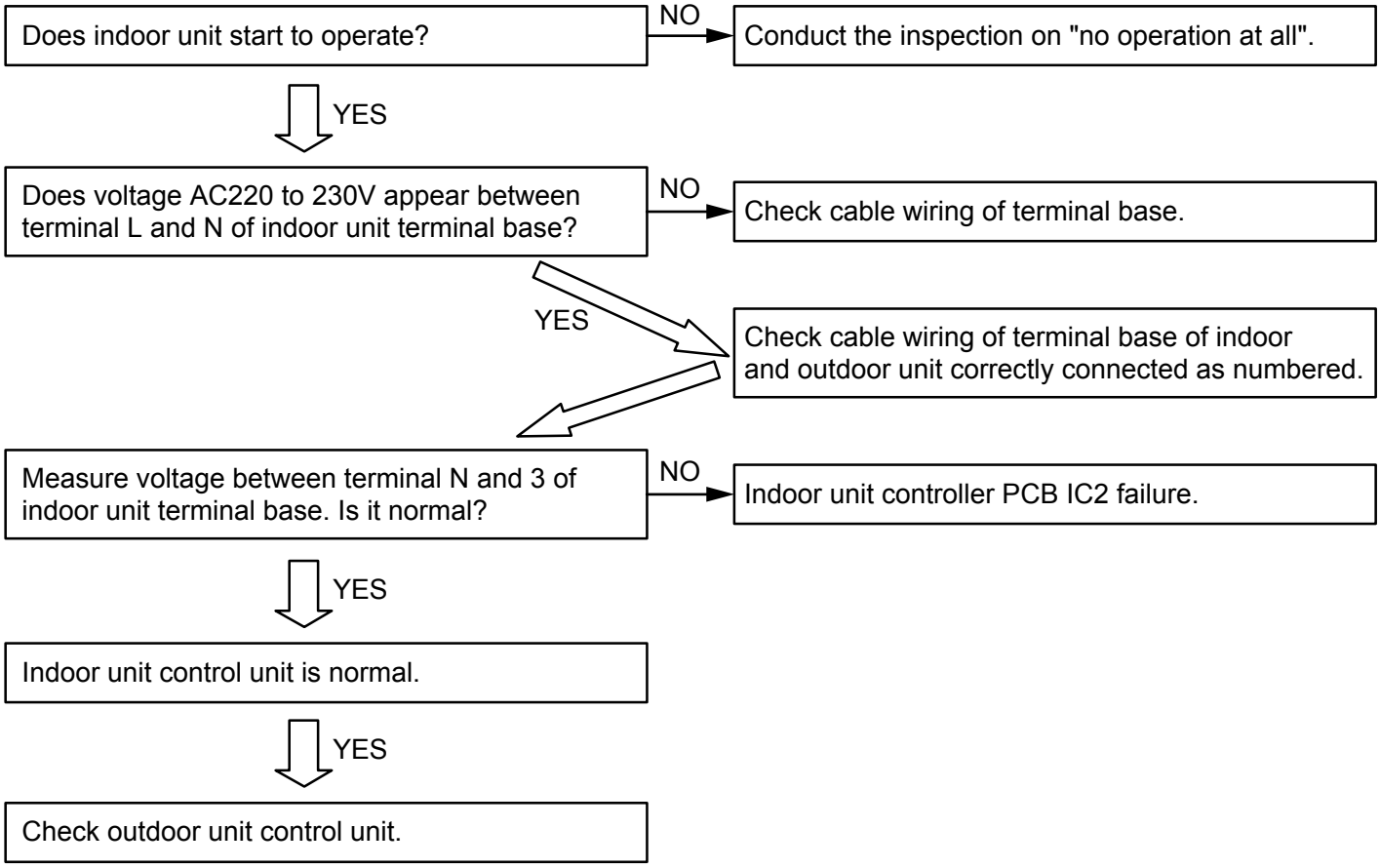
[Check Point] Check which has a cause of error, either Indoor unit or Outdoor unit.

* Remove indoor unit front panel and cable clampers and keep the terminal block clear so that it can be measured with a meter.
* Remove AC power and reset the power, and press Test Operation switch on remote control.

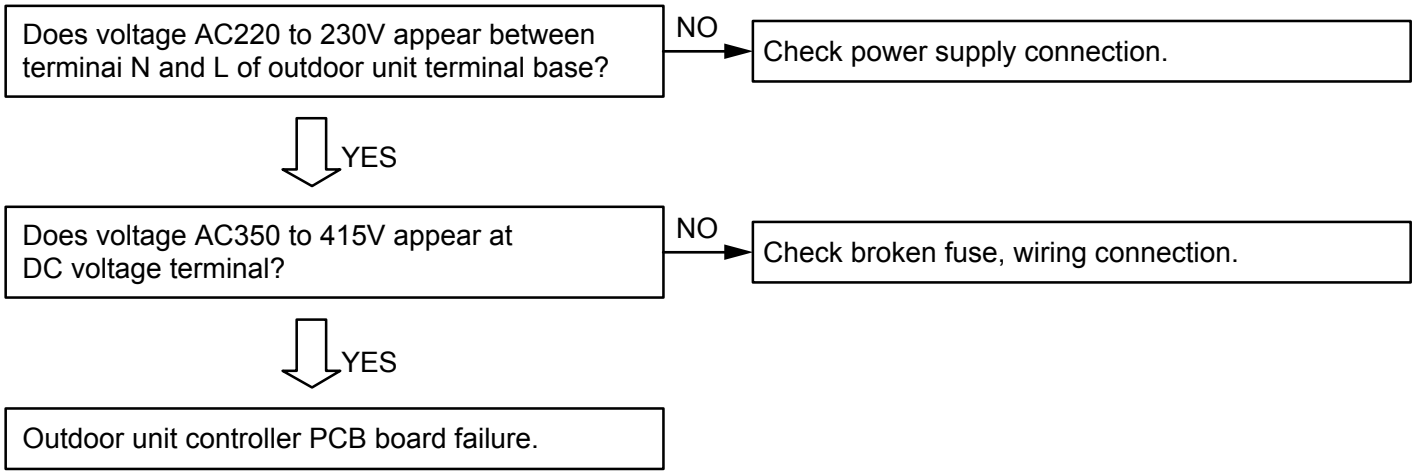
[Check Procedure]

> **CAUTION: Keep out hands from terminal base and electrical components. Voltage is applied on them and you may get electric shock.**

[Indoor Unit Check]



[Outdoor Unit Check]



IPM Protection

[Checking Points]

Check the following points and locate the cause in the outdoor unit.

[Cause]

(1) Compressor failure
(2) Refrigeration cycle failure
(3) PC Board defective
(4) IPM defective
(5) Incorrect wiring

[First step]

Measure the DC voltage at terminals (between Electrolytic Capacitor and discharge resistance) in the Inverter Controller Assy, and make sure it is lower than DC5V.
If it is higher than 5V, wait until the discharging is over.

Check point (1)

Open the Inverter Controller Assy and check if there is abnormal points.

No(Abnormal) ⇨ Incorrect wiring > Correct and recheck
Parts touched > Correct and recheck
Parts broken > Change the broken part

⇩ Yes(Normal)

Check point (2)

1, Remove the lead of compressor.
2, Connect the P to minus and measure the U, V and W.
3, Check the balance of resistance. (+/- 10%)
4, Connect the N to plus and measure the U, V and W.
5, Check the balance of resistance. (+/- 10%)
*0Ω is failure even when resistance is the same

No(Abnormal) ⇨ IPM defective

⇩ Yes(Normal)

Check point (3)

Turn on the power and press TEST button on Remote Control.
Is the outdoor fan rotating?

No(Not rotating) ⇨ PCB or Compressor defective

⇩ Yes(Rotating)

Check point (4)

Operate the unit for certain time and check if the compressor is operating.

No(Not operating) ⇨ IPM or PCB defective > Replace PCB

⇩ Yes(Operating)

Check point (5)

Recheck, is compressor normal?

No(Not operating) ⇨ Please redo from the start.
(Refrigerant cycle has the possibility of abnormalities.)

⇩ Yes(Operating)

The unit is normal.

Trouble Shooting of Refrigerant Cycle

[Diagnosis Table for Defective Component]

○ : Item of most possible cause

	IPM Protection	Compressor Location error	Discharge Temperature Error	Cooling High Pressure Protection
Refrigerant leak			○	
Compressor failure(*)	○	○		
EEV failure (*)	○	○	○	○
Thermistor failure (*)	○	○	○	○

(*) Trouble Shooting Method

(1) Checking method of the compressor failure

Insert the AC plug and start up the cooling operation. Input Test operation signal and check if the compressor operates.
If it does not operate, measure the resistance value of compressor windings between U-V, V-W, W-U.
If any of the resistance value between U-V, V-W, W-U is not same as others, the compressor is defective.

Compressor Failure

	NORMAL
AS*A07/ 09LGC	Compressor Case Temperature at 20°C: 0.740 ohm
AS*A12LGC	Compressor Case Temperature at 20°C: 0.710 ohm
AS*A14LGC	Compressor Case Temperature at 25°C: 0.477 ohm

(The above resistance value is a typical value. There is some distribution. As it also changes by the compressor temperature, the measured value may be much different from the above table when measured right after stopping operation.)

(2) Checking method of EEV failure

Insert the AC plug and start up the operation. Check if the EEV operates just before compressor is turned on. (Touch EEV by hand and check it.)
If it does not operate, check if the coil or connector of EEV is removed or loose.
If it operates, check the discharge thermistor / outdoor heat exchanger thermistor / indoor heat exchanger thermistor. (Refer to (3) for checking method.)

(3) Checking method of Thermistor

Check each thermistor if it is removed or the connector is loose.
If there is no problem, remove the connector of the thermistor from the PCB and check the resistance value. (refer to the thermitor characteristics table).

Refrigerant
R410A

WALL MOUNTED type
INVERTER

8 . APPENDING DATA

1. Function setting
2. Jumper setting of Outdoor unit
3. Outdoor unit Pressure Value and Total Electric Current Curve
4. Thermistor Resistance Values
5. Capacity/ Input Data

8-1. FUNCTION SETTING

8-1-1 INDOOR UNIT

- Follow the instructions in the Local Setup Procedure, which is supplied with the remote control, in accordance with the installed condition.
  After the power is turned on, perform the Function Setting on the remote control.
- The settings may be selected between the following two: Function Number or Setting Value.
- Settings will not be changed if invalid numbers or setting values are selected.

1-1. Setting the Cooler Room Temperature Correction

Depending on the installed environment, the room temperature sensor may require a correction.
The settings may be selected as shown in the table below.

(◆. . . Factory setting)

	Setting Description	Function Number	Setting Value
◆	Standard	30	00
	Lower control		01

1-2. Setting the Heater Room Temperature Correction

Depending on the installed environment, the room temperature sensor may require a correction.
The settings may be changed as shown in the table below.

(◆. . . Factory setting)

	Setting Description	Function Number	Setting Value
◆	Standard	31	00
	Lower control		01
	Slightly warmer control		02
	Warmer control		03

1-3. Setting Other Functions

The following settings are also possible, depending on the operating conditions.

Auto Restart (◆. . . Factory setting)

	Setting Description	Function Number	Setting Value
◆	Yes	40	00
	No		01

8-1-2 Procedures to change the Function Setting for wireless RC

- This procedure changes to the function settings used to control the indoor unit according to the installation conditions. Incorrect settings can cause the indoor unit malfunction.
- After the power is turned on, perform the "FUNCTION SETTING" according to the installation conditions using the remote controller.
- The settings may be selected between the following two: Function Number or Setting Value.
- Settings will not be changed if invalid numbers or setting values are selected.

Entering the Function Setting Mode

- While pressing the FAN button and SET TEMP.(▲) simultaneously, press the RESET button to enter the function setting mode.

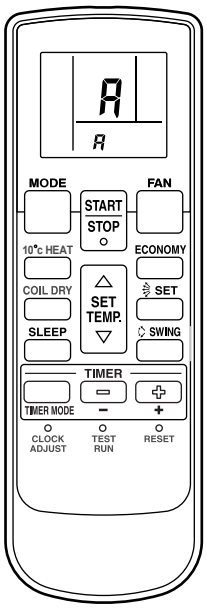
STEP 1
Selecting the Remote Control Unit Signal Code

Use the following steps to select the signal code of the remote control unit.
(Note that the air conditioner cannot receive a signal code if the air conditioner has not been set for the signal code.)
The signal codes that are set through this process are applicable only to the signals in the FUNCTION SETTING.
For details on how to set the signal codes through the normal process, refer to SELECTING THE REMOTE CONTROL UNIT SIGNAL CODE.

(1) Press the SET TEMP. (▲) (▼) buttons to change the signal code between A→b→C→d .
Match the code on the display to the air conditioner signal code. (initially set to A)
(If the signal code does not need to be selected, press the MODE button and proceed to STEP 2.)

(2) Press the TIMER MODE button and check that the indoor unit can receive signals at the displayed signal code.

(3) Press the MODE button to accept the signal code, and proceed to STEP 2.



The air conditioner signal code is set to A prior to shipment.
Contact your retailer to change the signal code.

The remote control unit resets to signal code A when the batteries in the remote control unit are replaced. If you use a signal code other than signal code A, reset the signal code after replacing the batteries.
If you do not know the air conditioner signal code setting, try each of the signal codes (A→b→C→d) until you find the code which operates the air conditioner.

STEP 2

Selecting the Function Number and Setting Value

(1) Press the SET TEMP. (▲) (▼) buttons to select the function number.
(Press the MODE button to switch between the left and right digits.)

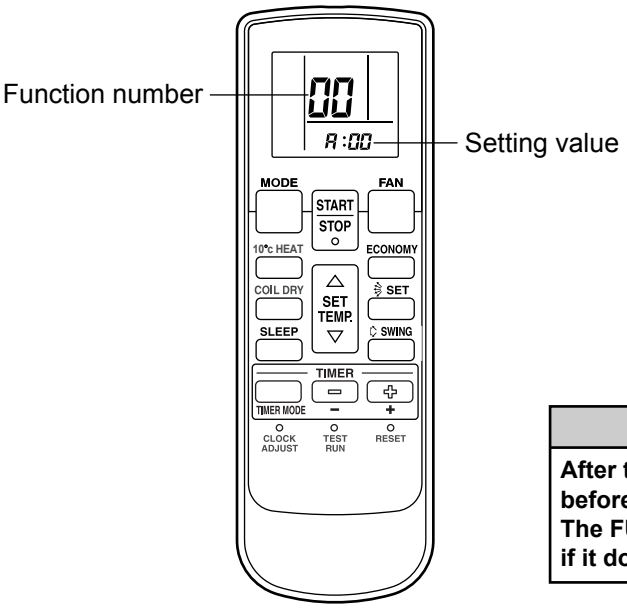
(2) Press the FAN button to proceed to setting the value.
(Press the FAN button again to return to the function number selection.)

(3) Press the SET TEMP. (▲) (▼) buttons to select the setting the value.
(Press the MODE button to switch between the left and right digits.)

(4) Press the TIMER MODE button, and START/STOP button, in the order listed to confirm the settings.

(5) Press the RESET button to cancel the function setting mode.

(6) After completing the FUNCTION SETTING, be sure to turn of the power and turn it on again.



⚠ CAUTION

After turning off the power, wait 10 seconds or more before turning on it again.
The FUNCTION SETTING doesn't become effective if it doesn't do so.

8-2. JP(Jumper) SETTING

[Outdoor Unit]

		JP			
		JM2	JM103	JM102	JM101
07LGC	Normal Preheat	○	×	×	×
	Higher Preheat	×	×	×	×
09LGC	Normal Preheat	○	×	×	○
	Higher Preheat	×	×	×	○
12LGC	Normal Preheat	○	×	○	×
	Higher Preheat	×	×	○	×

		JP			
		JM500	JM103	JM102	JM101
14LGC	Normal Preheat	○	○	×	×
	Higher Preheat	×	○	×	×

- it is possible to select the higher or standard level of preheating function.
- When it is set up at the higher level of preheat, the magnetic noise of the compressor becomes higher.

8-3. Outdoor unit Pressure Value and Total Electric Current Curve

8-3-1 Cooling operation

Model Name : AS*A07/ 09/ 12LGC

[Condition]

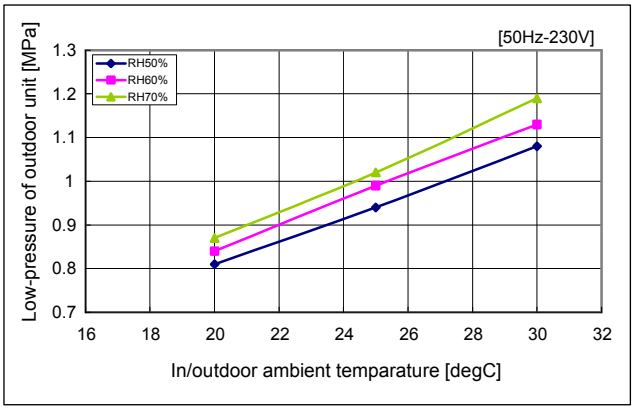
Ambient temperature	Indoor / Outdoor - Same temperature
Refrigerant amount	Standard amount
Piping length	5.0m (Height difference 1m)
Power voltage	50Hz - 230V
Operation condition	TEST mode (Cooling), Hi Fan, Horizontal direction, Front air flow
Measuring method	Measure the low pressure with the pressure meter at the service valve. Measure the outdoor unit overall current with the current clamp meter at Power Cable.

[Constant Frequency Operation Method (Test mode)]

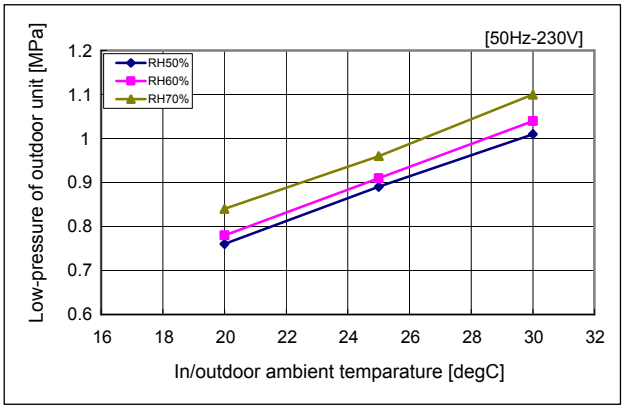
1. Operate on Colling mode, and press TEST button of remote control.
2. Operate continuously for 30 minutes. (After 60 minutes of operation, Test mode is released automatically.)

(1) Indoor/Outdoor Temperature - Outdoor Low Pressure Curve

AS*A07/ 09LGC

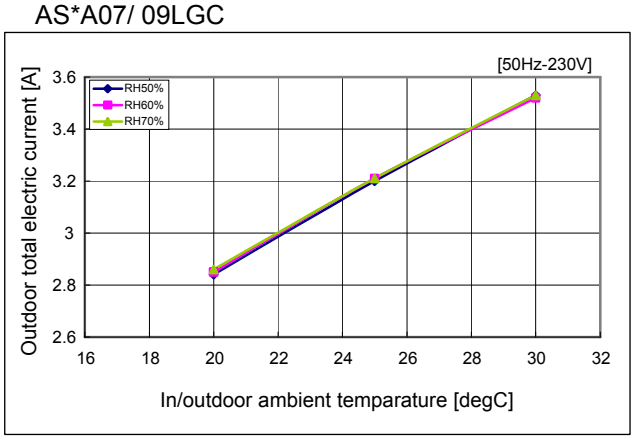


AS*A12LGC

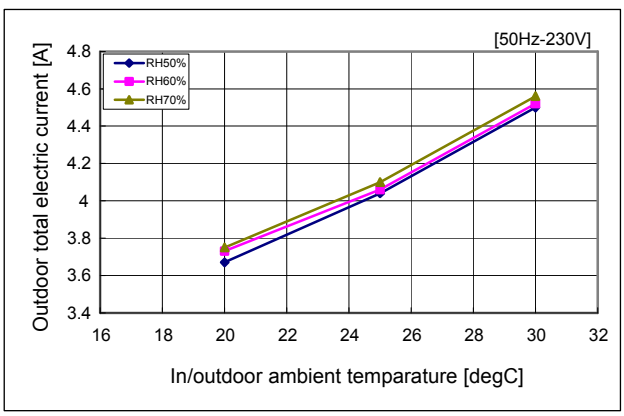


(2) Indoor/Outdoor Temperature - Outdoor Total Electric Current Curve

AS*A07/ 09LGC



AS*A12LGC



Model Name : AS*A14LGC

[Condition]

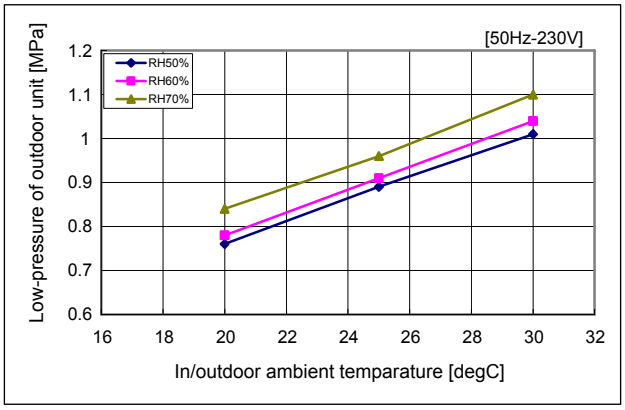
Ambient temperature	Indoor / Outdoor - Same temperature
Refrigerant amount	Standard amount
Piping length	5.0m (Height difference 1m)
Power voltage	50Hz - 230V
Operation condition	TEST mode (Cooling), Hi Fan, Horizontal direction, Front air flow
Measuring method	Measure the low pressure with the pressure meter at the service valve. Measure the outdoor unit overall current with the current clamp meter at Power Cable.

[Constant Frequency Operation Method (Test mode)]

1. Operate on Colling mode, and press TEST button of remote control.
2. Operate continuously for 30 minutes. (After 60 minutes of operation, Test mode is released automatically.)

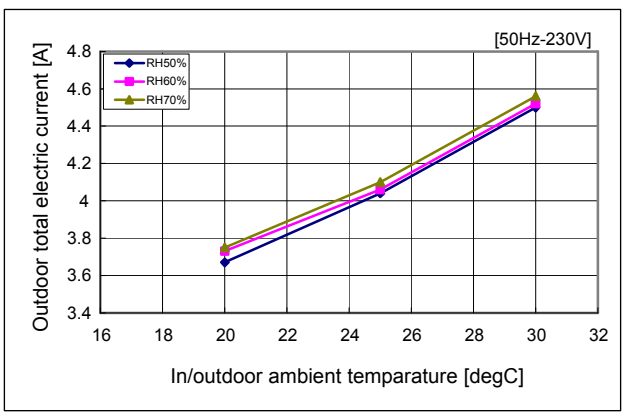
(1) Indoor/Outdoor Temperature - Outdoor Low Pressure Curve

AS*A14LGC



(2) Indoor/Outdoor Temperature - Outdoor Total Electric Current Curve

AS*A14LGC



8-3-2 Heating operation

Model Name : AS*A07/ 09/ 12LGC

[Condition]

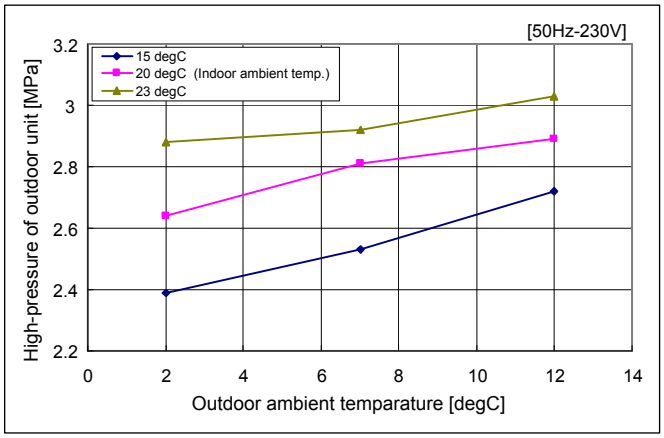
Ambient temperatur	Indoor 15, 20, 23degC, Outdoor 2, 7, 12degC
Refrigerant amount	Standard amount
Piping length	5.0m (Height difference 1m)
Power voltage	50Hz - 230V
Operation condition	TEST mode (Heating), Hi Fan, Lower direction, Front air flow
Measuring method	Measure the high pressure with the pressure meter at the service valve. Measure the outdoor unit overall current with the current clamp meter at Power Cable.

[Constant Frequency Operation Method (Test mode)]

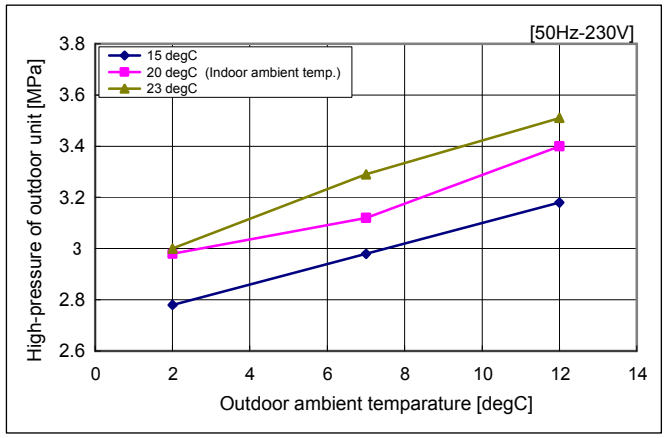
1. Operate on Heating mode, and press TEST button of remote control.
2. Operate continuously for 30 minutes. (After 60 minutes of operation, Test mode is released automatically.)

(1) Indoor/Outdoor Temperature - Outdoor High Pressure Curve

AS*A07/ 09LGC

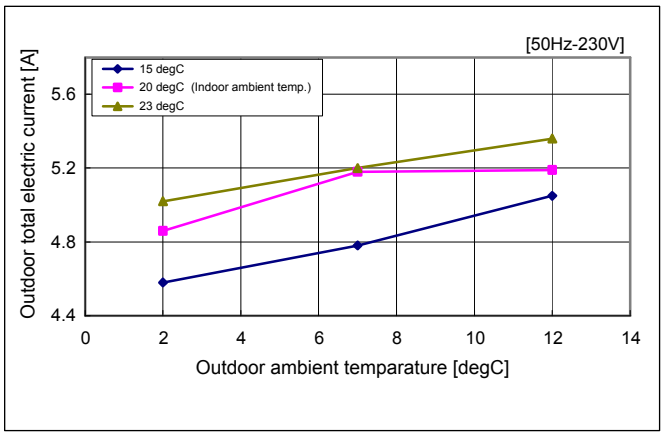


AS*A12LGC

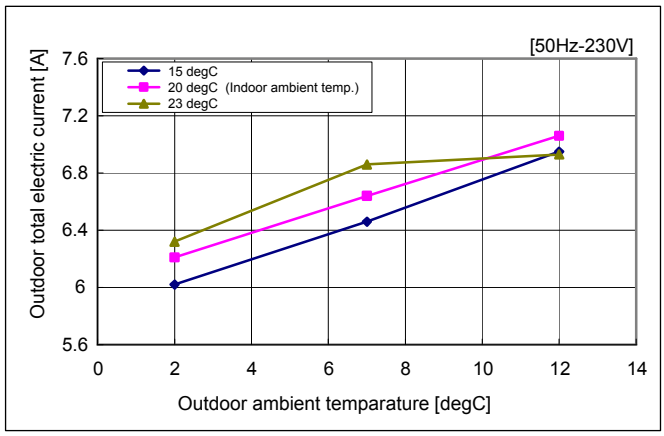


(2) Indoor/Outdoor Temperature - Outdoor Total Electric Current Curve

AS*A07/ 09LGC



AS*A12LGC



Model Name : AS*A14LGC

[Condition]

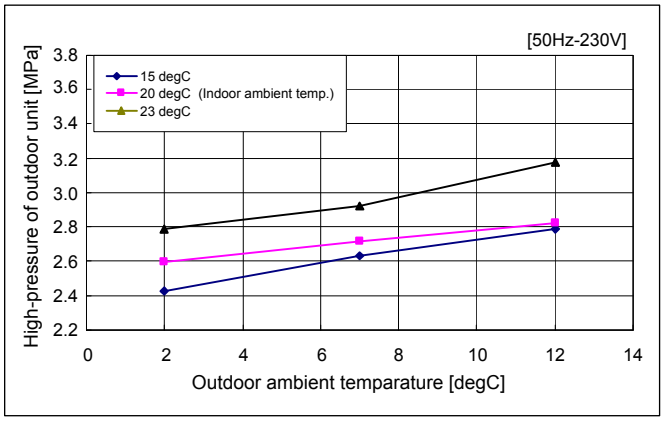
Ambient temperatur	Indoor 15, 20, 23degC, Outdoor 2, 7, 12degC
Refrigerant amount	Standard amount
Piping length	5.0m (Height difference 1m)
Power voltage	50Hz - 230V
Operation condition	TEST mode (Heating), Hi Fan, Lower direction, Front air flow
Measuring method	Measure the high pressure with the pressure meter at the service valve. Measure the outdoor unit overall current with the current clamp meter at Power Cable.

[Constant Frequency Operation Method (Test mode)]

1. Operate on Heating mode, and press TEST button of remote control.
2. Operate continuously for 30 minutes. (After 60 minutes of operation, Test mode is released automatically.)

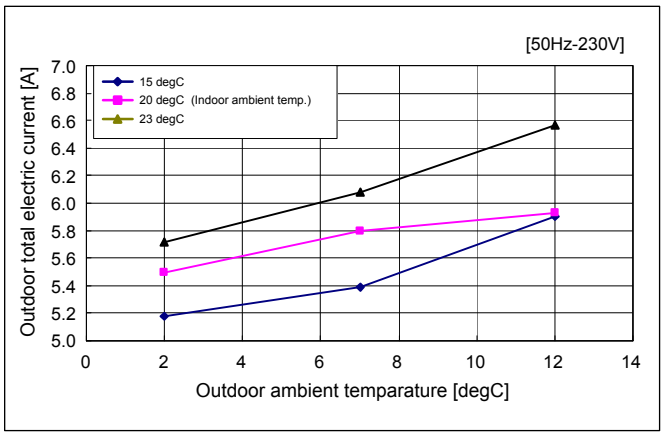
(1) Indoor/Outdoor Temperature - Outdoor High Pressure Curve

AS*A14LGC



(2) Indoor/Outdoor Temperature - Outdoor Total Electric Current Curve

AS*A14LGC



8-4. Thermistor Resistance Values

8-4-1 INDOOR UNIT

Room temperature thermistor		
Temp (℃)	Resistance(kΩ)	Voltage(V)
0.00	33.62	1.15
5.00	25.93	1.39
10.00	20.18	1.66
15.00	15.84	1.94
20.00	12.54	2.22
25.00	10.00	2.50
30.00	8.04	2.77
35.00	6.51	3.03
40.00	5.30	3.27
45.00	4.35	3.48
50.00	3.59	3.68
55.00	2.98	3.85
60.00	2.47	4.00
65.00	2.09	4.14
70.00	1.76	4.25
75.00	1.49	4.35
80.00	1.27	4.44
85.00	1.09	4.51
90.00	0.93	4.57
95.00	0.81	4.63
100.00	0.70	4.67

Indoor heat exchanger thermistor		
Temp (℃)	Resistance(kΩ)	Voltage(V)
0.00	176.03	1.10
5.00	134.23	1.36
10.00	103.34	1.63
15.00	80.28	1.92
20.00	62.91	2.21
25.00	49.70	2.51
30.00	39.57	2.79
35.00	31.74	3.06
40.00	25.64	3.30
45.00	20.85	3.53
50.00	17.06	3.73
55.00	14.10	3.90
60.00	11.64	4.55
65.00	9.69	4.19
70.00	8.12	4.30
75.00	6.83	4.40
80.00	5.78	4.48
85.00	4.91	4.55
90.00	4.19	4.61
95.00	3.59	4.66
100.00	3.09	4.71

8-4-2 OUTDOOR UNIT

Discharge thermistor		
Temp (℃)	Resistance(kΩ)	Voltage(V)
0.00	168.6	0.36
5.00	130.7	0.45
10.00	102.2	0.56
15.00	80.51	0.70
20.00	63.89	0.85
25.00	51.05	1.01
30.00	41.07	1.20
35.00	33.26	1.41
40.00	27.09	1.62
45.00	22.20	1.85
50.00	18.29	2.08
55.00	15.15	2.31
60.00	12.62	2.54
65.00	10.56	2.76
70.00	8.878	2.97
75.00	7.498	3.17
80.00	6.361	3.36
85.00	5.419	3.53
90.00	4.635	3.69
95.00	3.980	3.83
100.00	3.430	3.96
105.00	2.967	4.07
110.00	2.575	4.17
115.00	2.243	4.26
120.00	1.960	4.34

Outdoor heat exchanger thermistor		
Temp (℃)	Resistance(kΩ)	Voltage(V)
-20.00	48.13	0.45
-15.00	36.07	0.58
-10.00	27.29	0.74
-5.00	20.84	0.93
0.00	16.05	1.14
5.00	12.45	1.38
10.00	9.736	1.64
15.00	7.672	1.91
20.00	6.090	2.19
25.00	4.869	2.47
30.00	3.918	2.74
35.00	3.173	3.00
40.00	2.586	3.24
45.00	2.120	3.46
50.00	1.747	3.66
55.00	1.448	3.83
60.00	1.206	3.99
65.00	1.009	4.12
70.00	0.849	4.24
75.00	0.717	4.34
80.00	0.608	4.43
85.00	0.518	4.51
90.00	0.444	4.57
95.00	0.381	4.63
100.00	0.328	4.68

Outdoor temperature thermistor		
Temp (℃)	Resistance(kΩ)	Voltage(V)
-20.00	101.7	1.37
-15.00	76.31	1.67
-10.00	57.73	1.99
-5.00	44.01	2.33
0.00	33.80	2.66
5.00	26.14	2.97
10.00	20.35	3.27
15.00	15.96	3.53
20.00	12.59	3.76
25.00	10.00	3.96
30.00	7.990	4.14
35.00	6.423	4.28
40.00	5.192	4.40
45.00	4.222	4.50
50.00	3.451	4.59
55.00	2.836	4.66
60.00	2.343	4.71
65.00	1.945	4.76
70.00	1.623	4.80
75.00	1.361	4.83
80.00	1.146	4.85
85.00	0.970	4.88
90.00	0.824	4.89
95.00	0.703	4.91
100.00	0.602	4.92

8-5. Capacity/ Input Data

■ MODEL : AS*A07LGC

● COOLING

AFR	12.5

	°CDB	18			21			23			25			27			29			32		
	°CWB	12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	20	1.97	1.40	0.33	2.19	1.41	0.34	2.26	1.53	0.34	2.41	1.54	0.34	2.49	1.66	0.34	2.64	1.65	0.35	2.79	1.76	0.35
	25	1.87	1.33	0.37	2.08	1.34	0.38	2.15	1.45	0.38	2.29	1.46	0.38	2.36	1.58	0.38	2.50	1.57	0.39	2.65	1.67	0.39
	30	1.76	1.26	0.41	1.97	1.26	0.42	2.03	1.37	0.42	2.17	1.38	0.42	2.23	1.49	0.43	2.37	1.48	0.43	2.50	1.58	0.44
	35	1.66	1.18	0.45	1.85	1.19	0.46	1.91	1.29	0.46	2.04	1.30	0.47	2.10	1.40	0.47	2.23	1.39	0.47	2.35	1.49	0.48
	40	1.48	1.05	0.45	1.65	1.06	0.46	1.70	1.15	0.46	1.82	1.16	0.47	1.87	1.25	0.47	1.98	1.24	0.47	2.10	1.32	0.48
	43	1.37	0.98	0.45	1.53	0.98	0.46	1.58	1.07	0.46	1.68	1.07	0.47	1.74	1.16	0.47	1.84	1.15	0.47	1.94	1.23	0.48

AFR : Air flow rate (m^3/min)
TC : Total capacity (kW)
SHC : Sensible Heat capacity (kW)
PI : Power Input (kW)

● HEATING

AFR	12.5

			Indoor temperature									
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	2.25	0.99	2.19	1.01	2.14	1.03	2.09	1.05	2.03	1.07
	-10	-11	2.56	1.02	2.50	1.04	2.43	1.06	2.37	1.08	2.31	1.11
	-5	-7	2.93	1.05	2.86	1.07	2.79	1.10	2.72	1.12	2.65	1.14
	0	-2	3.47	1.09	3.39	1.12	3.31	1.14	3.23	1.16	3.14	1.19
	5	3	4.05	1.15	3.96	1.17	3.86	1.19	3.76	1.22	3.67	1.24
	7	6	4.41	1.17	4.31	1.20	4.20	1.22	4.10	1.25	3.99	1.27
	10	8	4.64	1.19	4.53	1.21	4.42	1.24	4.31	1.26	4.20	1.29
	15	10	4.81	1.18	4.69	1.20	4.58	1.23	4.46	1.25	4.35	1.27

AFR : Air flow rate (m^3/min)
TC : Total capacity (kW)
PI : Power Input (kW)

■ MODEL : AS*A09LGC

● COOLING

AFR	12.5

	°CDB	18			21			23			25			27			29			32		
	°CWB	12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	20	2.34	1.60	0.44	2.61	1.61	0.45	2.70	1.75	0.45	2.87	1.76	0.46	2.96	1.90	0.46	3.14	1.89	0.46	3.32	2.01	0.47
	25	2.22	1.52	0.50	2.48	1.53	0.50	2.56	1.66	0.51	2.73	1.67	0.51	2.81	1.80	0.51	2.98	1.79	0.52	3.15	1.91	0.53
	30	2.10	1.44	0.55	2.34	1.44	0.56	2.42	1.57	0.56	2.58	1.58	0.57	2.66	1.70	0.57	2.82	1.70	0.58	2.98	1.81	0.58
	35	1.98	1.35	0.61	2.20	1.36	0.62	2.28	1.48	0.62	2.43	1.48	0.63	2.50	1.60	0.63	2.65	1.59	0.64	2.80	1.70	0.64
	40	1.76	1.20	0.61	1.96	1.21	0.62	2.03	1.32	0.62	2.16	1.32	0.63	2.23	1.43	0.63	2.36	1.42	0.64	2.50	1.51	0.64
	43	1.63	1.12	0.61	1.82	1.12	0.62	1.88	1.22	0.62	2.00	1.22	0.62	2.07	1.32	0.63	2.19	1.32	0.63	2.31	1.40	0.64

AFR : Air flow rate (m^3/min)
TC : Total capacity (kW)
SHC : Sensible Heat capacity (kW)
PI : Power Input (kW)

● HEATING

AFR	12.5

			Indoor temperature									
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	2.25	0.99	2.19	1.01	2.14	1.03	2.09	1.05	2.03	1.07
	-10	-11	2.56	1.02	2.50	1.04	2.43	1.06	2.37	1.08	2.31	1.11
	-5	-7	2.93	1.05	2.86	1.07	2.79	1.10	2.72	1.12	2.65	1.14
	0	-2	3.47	1.09	3.39	1.12	3.31	1.14	3.23	1.16	3.14	1.19
	5	3	4.05	1.15	3.96	1.17	3.86	1.19	3.76	1.22	3.67	1.24
	7	6	4.41	1.17	4.31	1.20	4.20	1.22	4.10	1.25	3.99	1.27
	10	8	4.64	1.19	4.53	1.21	4.42	1.24	4.31	1.26	4.20	1.29
	15	10	4.81	1.18	4.69	1.20	4.58	1.23	4.46	1.25	4.35	1.27

AFR : Air flow rate (m^3/min)
TC : Total capacity (kW)
PI : Power Input (kW)

■ MODEL : AS*A12LGC

● COOLING

AFR	12.5

	°CDB	18			21			23			25			27			29			32		
	°CWB	12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	20	3.18	2.20	0.61	3.55	2.21	0.62	3.67	2.41	0.63	3.91	2.41	0.63	4.03	2.61	0.64	4.27	2.60	0.64	4.51	2.77	0.65
	25	3.03	2.09	0.70	3.37	2.11	0.71	3.49	2.29	0.71	3.72	2.30	0.72	3.83	2.48	0.72	4.06	2.47	0.73	4.29	2.63	0.74
	30	2.86	1.98	0.78	3.19	1.99	0.79	3.30	2.17	0.79	3.52	2.17	0.80	3.63	2.35	0.81	3.84	2.34	0.81	4.06	2.49	0.82
	35	2.69	1.86	0.86	2.99	1.87	0.88	3.09	2.03	0.88	3.30	2.04	0.89	3.40	2.20	0.895	3.60	2.19	0.90	3.81	2.33	0.91
	40	2.27	1.57	0.80	2.53	1.58	0.82	2.62	1.72	0.82	2.79	1.72	0.83	2.87	1.86	0.83	3.05	1.85	0.84	3.22	1.97	0.85
	43	2.09	1.45	0.80	2.33	1.45	0.82	2.41	1.58	0.82	2.57	1.59	0.83	2.65	1.71	0.83	2.81	1.71	0.84	2.96	1.82	0.85

AFR : Air flow rate (m^3/min)
TC : Total capacity (kW)
SHC : Sensible Heat capacity (kW)
PI : Power Input (kW)

● HEATING

AFR	12.5

			Indoor temperature									
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	3.40	1.72	3.32	1.76	3.24	1.80	3.16	1.83	3.07	1.87
	-10	-11	3.76	1.72	3.67	1.76	3.58	1.79	3.49	1.83	3.40	1.86
	-5	-7	4.18	1.72	4.08	1.76	3.98	1.79	3.88	1.83	3.78	1.87
	0	-2	4.68	1.72	4.57	1.76	4.46	1.80	4.35	1.83	4.24	1.87
	5	3	5.05	1.52	4.93	1.55	4.81	1.58	4.69	1.61	4.57	1.64
	7	6	5.36	1.51	5.23	1.54	5.10	1.57	4.97	1.60	4.85	1.63
	10	8	5.55	1.51	5.42	1.54	5.29	1.57	5.16	1.60	5.02	1.63
	15	10	5.54	1.41	5.41	1.44	5.28	1.47	5.15	1.50	5.01	1.53

AFR : Air flow rate (m^3/min)
TC : Total capacity (kW)
PI : Power Input (kW)

■ MODEL : AS*A14LGC

● COOLING

AFR	13.3

	°CDB	18			21			23			25			27			29			32		
	°CWB	12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	20	3.72	2.58	0.75	4.14	2.60	0.76	4.29	2.83	0.77	4.57	2.83	0.78	4.71	3.06	0.78	4.99	3.05	0.79	5.28	3.25	0.80
	25	3.55	2.46	0.85	3.95	2.48	0.86	4.08	2.69	0.87	4.35	2.70	0.87	4.49	2.92	0.88	4.76	2.91	0.89	5.03	3.10	0.90
	30	3.36	2.34	0.94	3.75	2.35	0.96	3.87	2.55	0.96	4.13	2.56	0.97	4.26	2.77	0.98	4.51	2.76	0.99	4.77	2.94	1.00
	35	3.16	2.19	1.04	3.52	2.21	1.06	3.64	2.40	1.06	3.88	2.41	1.07	4.00	2.60	1.08	4.24	2.59	1.09	4.48	2.76	1.10
	40	2.78	1.93	1.03	3.09	1.94	1.04	3.20	2.11	1.05	3.41	2.12	1.06	3.51	2.28	1.06	3.73	2.28	1.08	3.94	2.42	1.09
	43	2.53	1.76	1.01	2.82	1.77	1.03	2.91	1.92	1.03	3.11	1.93	1.04	3.20	2.08	1.05	3.39	2.07	1.06	3.59	2.21	1.07

AFR : Air flow rate (m^3/min)
TC : Total capacity (kW)
SHC : Sensible Heat capacity (kW)
PI : Power Input (kW)

● HEATING

AFR	13.3

			Indoor temperature									
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	3.26	1.69	3.19	1.72	3.11	1.76	3.03	1.79	2.95	1.83
	-10	-11	3.72	1.77	3.63	1.81	3.54	1.84	3.45	1.88	3.36	1.92
	-5	-7	4.21	1.85	4.11	1.89	4.01	1.93	3.91	1.97	3.81	2.01
	0	-2	4.85	1.97	4.74	2.02	4.62	2.06	4.51	2.10	4.39	2.14
	5	3	5.33	1.91	5.21	1.95	5.08	1.99	4.95	2.03	4.83	2.07
	7	6	5.57	1.92	5.43	1.96	5.30	2.00	5.17	2.04	5.04	2.08
	10	8	5.66	1.83	5.53	1.87	5.39	1.91	5.26	1.95	5.12	1.99
	15	10	5.72	1.77	5.59	1.81	5.45	1.85	5.31	1.88	5.18	1.92

AFR : Air flow rate (m^3/min)
TC : Total capacity (kW)
PI : Power Input (kW)