

SPLIT TYPE
AIR CONDITIONER
DUCT TYPE (50Hz)

SERVICE MANUAL



Indoor unit	Outdoor unit
ARYC45LCTU	AOYA45LCTL
ARYC54LCTU	AOYA54LCTL

CONTENTS

SPECIFICATIONS	1
DIMENSIONS	2
REFRIGERANT SYSTEM DIAGRAM . . .	4
CIRCUIT DIAGRAM	5
INDOOR PCB CIRCUIT DIAGRAM	6
OUTDOOR PCB CIRCUIT DIAGRAM . . .	7
ERROR DETECTION	12
PARTS (INDOOR UNIT)	16
PARTS (OUTDOOR UNIT)	18
ACCESSORIES	21

SPECIFICATIONS

ELECTRICAL DATA

TYPE		Cooling & Heating	
INDOOR UNIT		ARYC45LCTU	ARYC54LCTU
OUTDOOR UNIT		AOYA45LCTL	AOYA54LCTL
COOLING CAPACITY		12.5 kW	13.4 kW
HEATING CAPACITY		14.0 kW	16.0 kW
POWER SOURCE		230 V, 50 Hz	
RUNNING CURRENT	Cooling	18.9 A	20.9 A
	Heating	16.7 A	20.5 A
INPUT WATTS	Cooling	4.30 kW	4.77 kW
	Heating	3.80 kW	4.69 kW
EER	Cooling	2.91 kW/kW	2.81 kW/kW
COP	Heating	3.68 kW/kW	3.41 kW/kW
MOISTURE REMOVAL		1.5 L/hr	2.0 L/hr
AIRCIRCULATION, Indoor		3,350 m3/hr	
AIRCIRCULATION Outdoor	Cooling	6,750 m3/hr	
	Heating	6,200 m3/hr	6,850 m3/hr
MAXIMUM CURRENT		22.5 A	23.5 A

FAN MOTOR

INDOOR UNIT, Discrimination		MFA-60TTFS	
INDOOR UNIT	High	1,300 r.p.m.	
	Medium	1,150 r.p.m.	
	Low	1,000 r.p.m.	
OUTDOOR UNIT, Discrimination		MFE-45VVT	
OUTDOOR UNIT, Upper fan	Cooling	850 r.p.m.	850 r.p.m.
	Heating	780 r.p.m.	800 r.p.m.
OUTDOOR UNIT, Lower fan	Cooling	800 r.p.m.	800 r.p.m.
	Heating	750 r.p.m.	830 r.p.m.

NOISE LEVEL

INDOOR UNIT	High	47 dB	
	Medium	43 dB	
	Low	40 dB	
OUTDOOR UNIT	Cooling	55 dB	55 dB
	Heating	55 dB	57 dB

COMPRESSOR AND REFRIGERANT

TYPE		Hermetic type, Inverter, 6 poles, 3 phase, DC motor, Twin Rotary	
DISCRIMINATION		N-TF30HD1A	
WEIGHT (with oil)		15.4 kg	
REFRIGERANT TYPE		R410A	
PRECHARGED REFRIGERANT		3,350 g	
MAX PIPE LENGTH		50 m	
MAX PIPE HEIGHT		30 m	
FULL CHARGE	Pipe length	20 m	3,350 g
		30 m	3,750 g
		40 m	4,150 g
		50 m	4,550 g
ADDITIONAL CHARGE		40 g/m	

DIMENSIONS

INDOOR UNIT	H x W x D	400 x 1,050 x 500 mm
OUTDOOR UNIT	H x W x D	1,290 x 900 x 330 mm

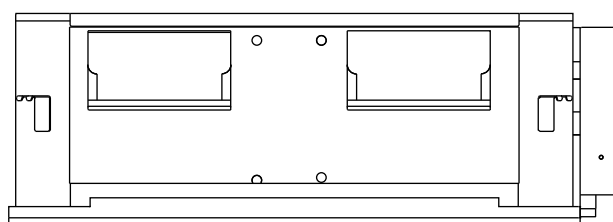
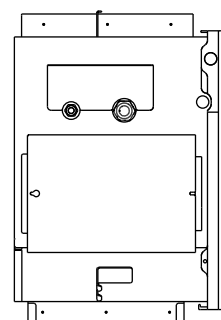
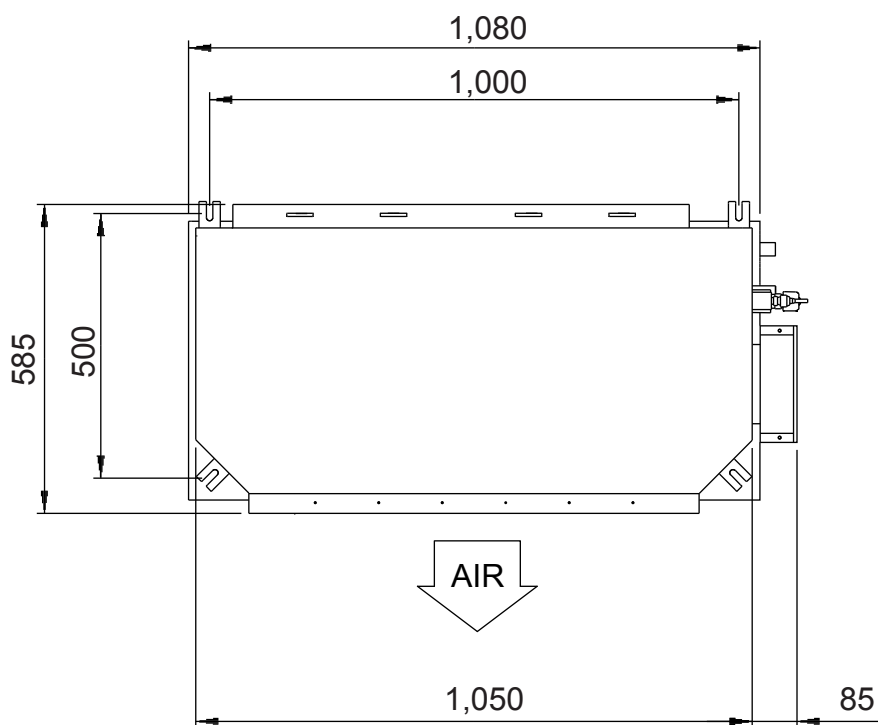
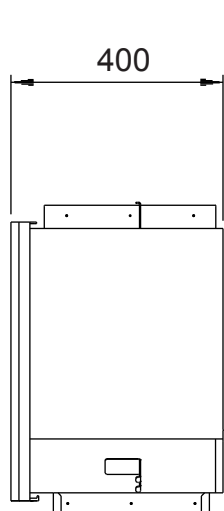
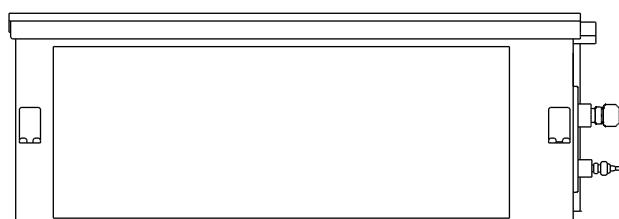
WEIGHT

INDOOR UNIT	Net / Shipping	51 kg / 46 kg
OUTDOOR UNIT	Net / Shipping	94 kg / 86 kg

DIMENSIONS

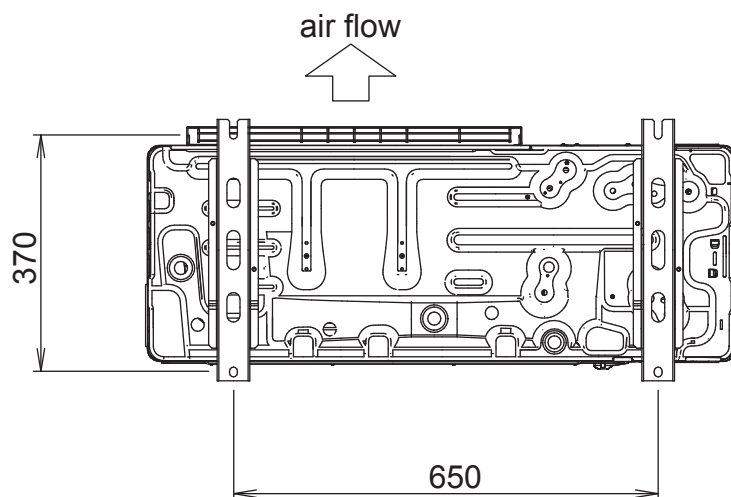
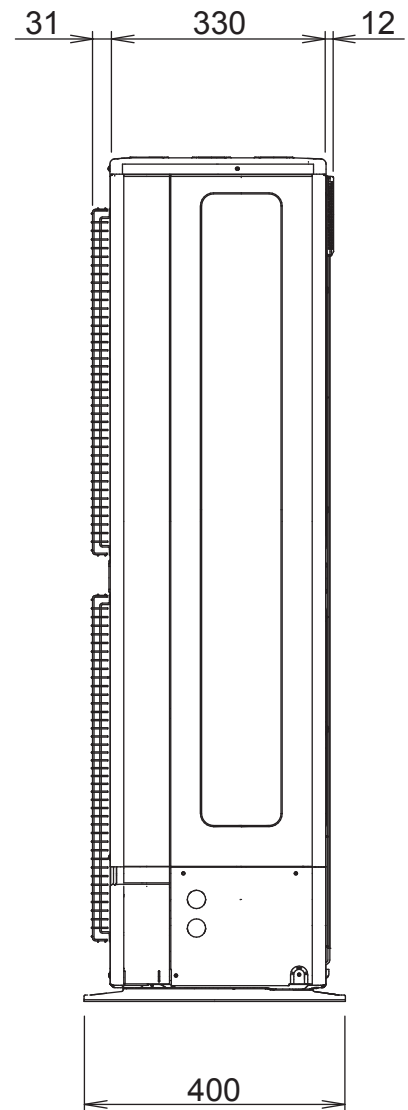
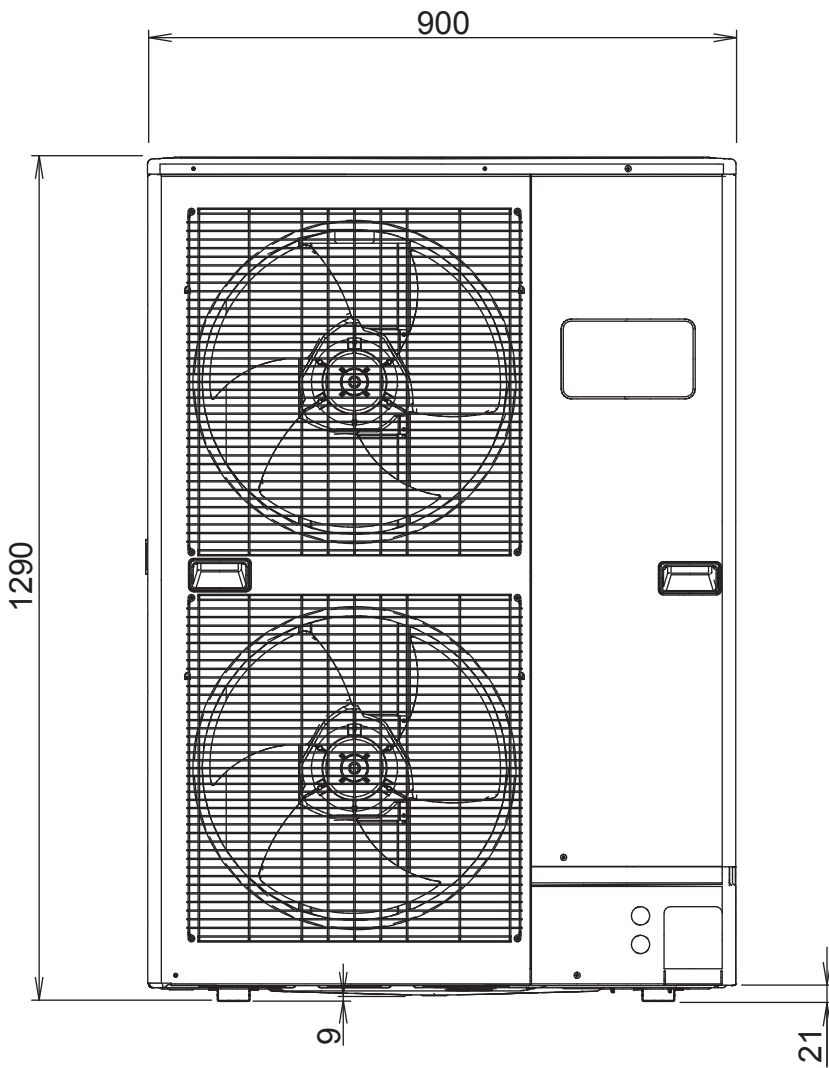
INDOOR UNIT

(Unit : mm)

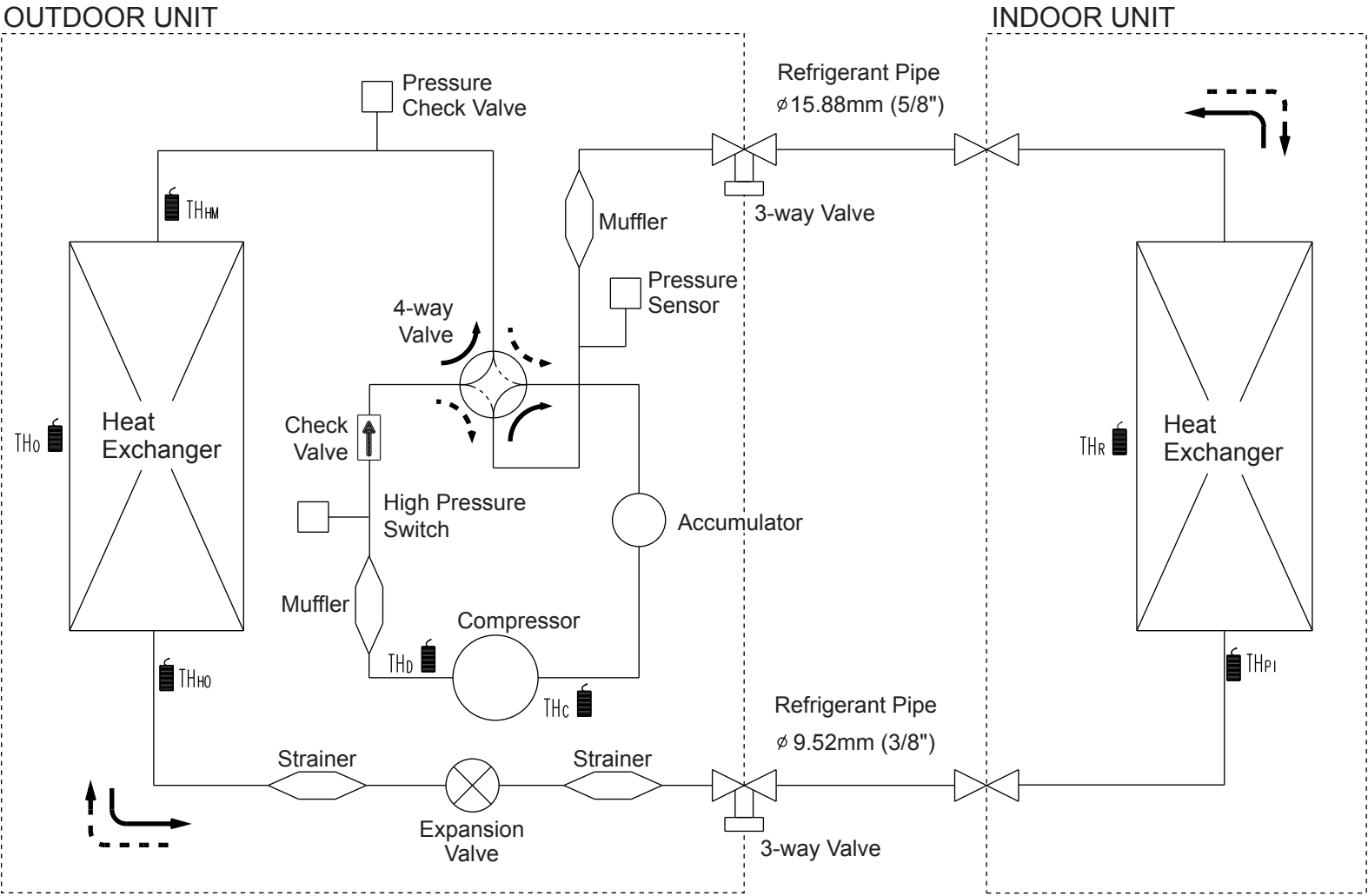




OUTDOOR UNIT
(unit : mm)



REFRIGERANT
SYSTEM DIAGRAM



Refrigerant direction

—→ Cool

- - -→ Heat

TH_c : Thermistor (Compressor)

TH_d : Thermistor (Discharge)

TH_{HM} : Thermistor (Heat Exchanger Med)

TH_{HO} : Thermistor (Heat Exchanger Out)

TH_o : Thermistor (Outdoor)

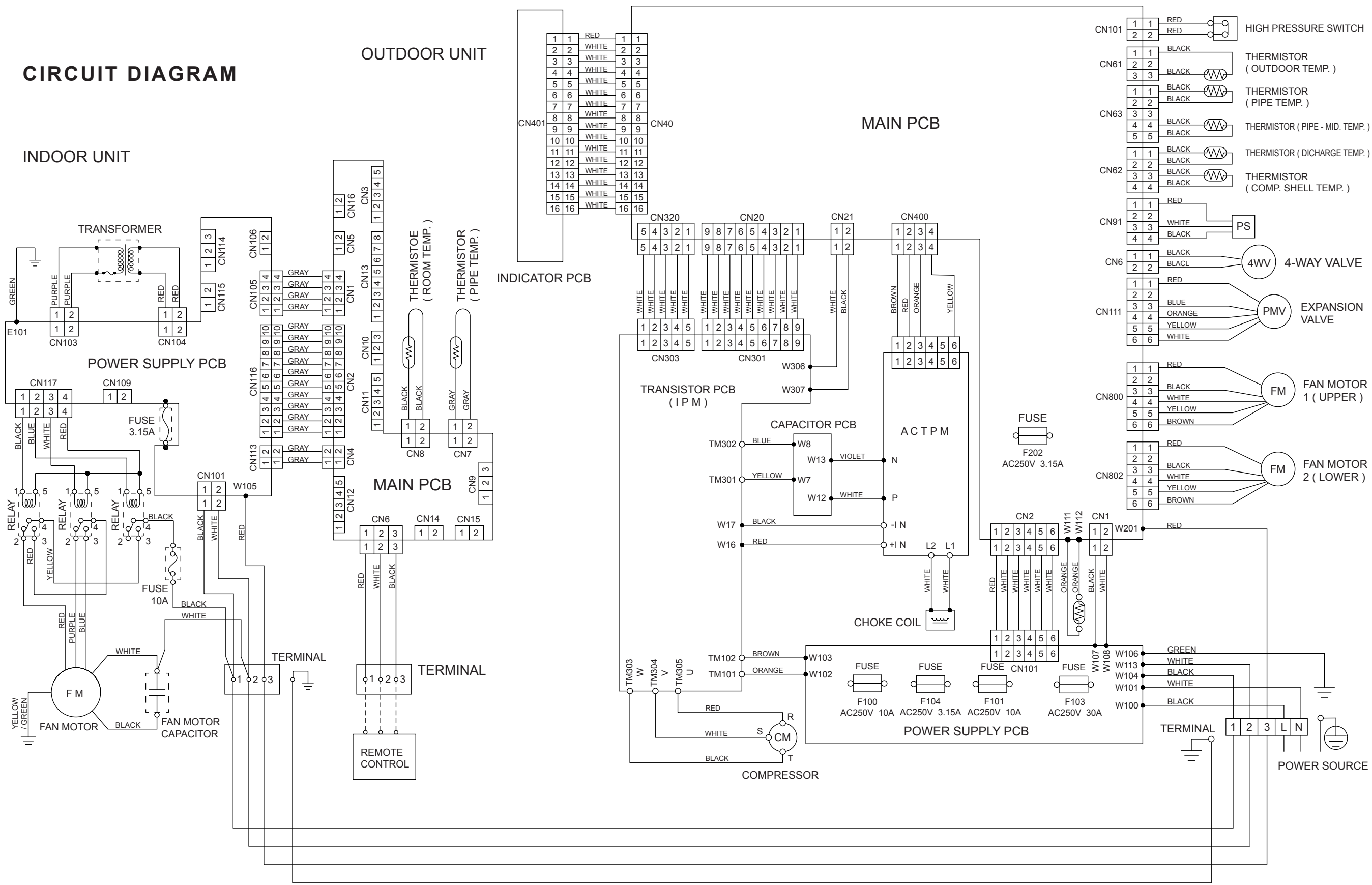
TH_R : Thermistor (Room)

TH_{PI} : Thermistor (Pipe)

CIRCUIT DIAGRAM

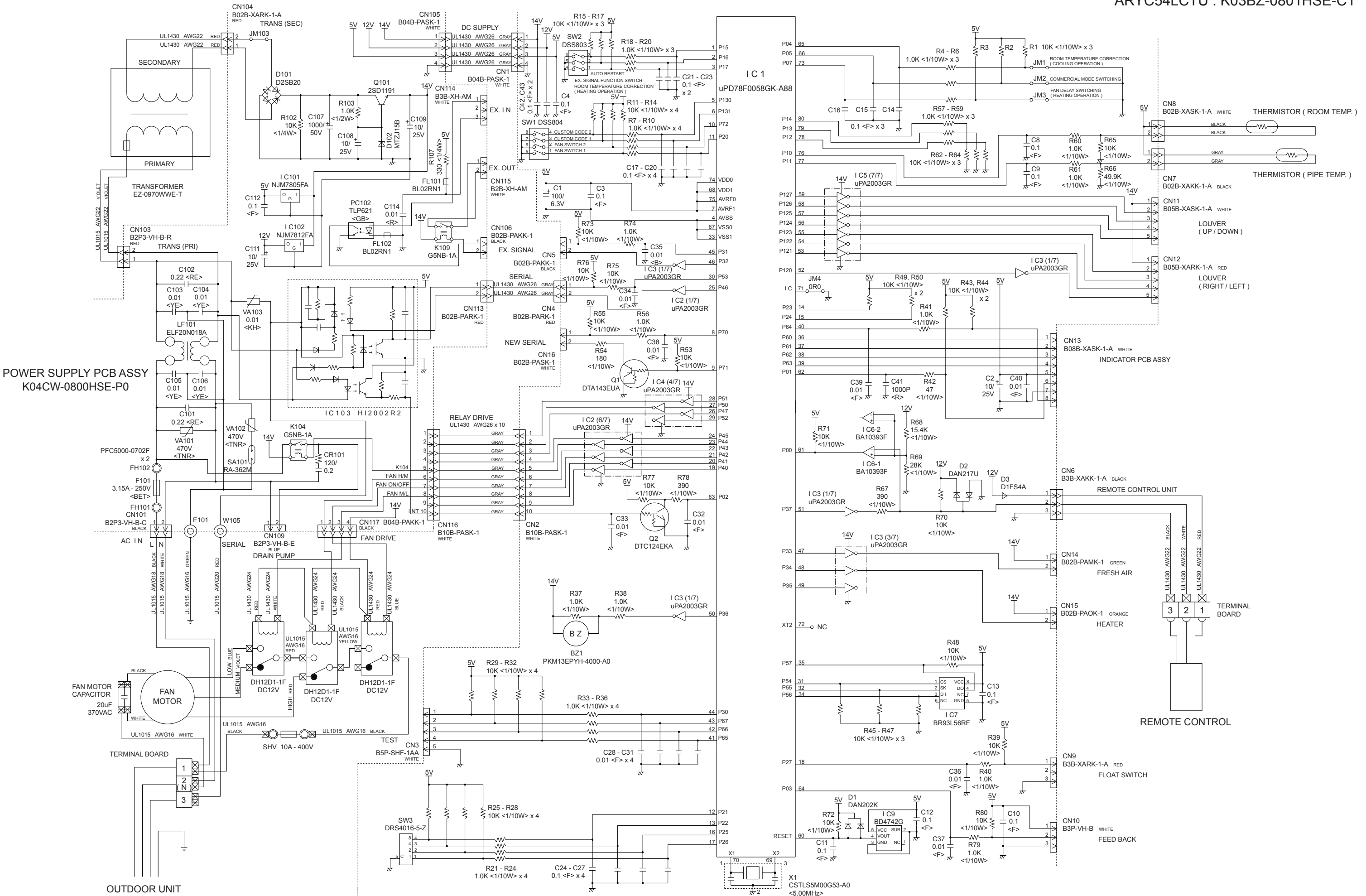
OUTDOOR UNIT

INDOOR UNIT

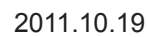


INDOOR PCB CIRCUIT DIAGRAM

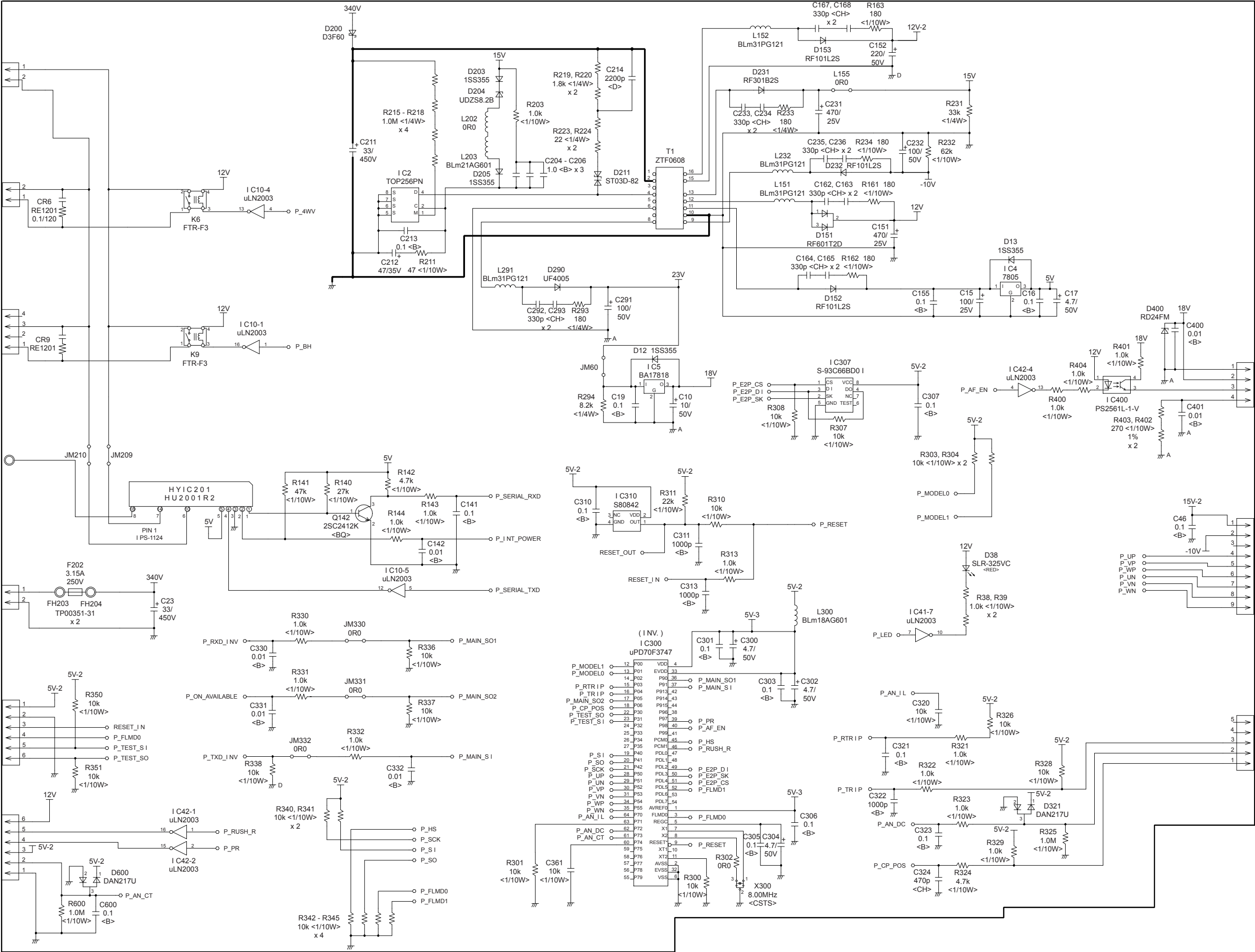
MAIN PCB
ARYC45LCTU : K03BZ-0802HSE-C1
ARYC54LCTU : K03BZ-0801HSE-C1



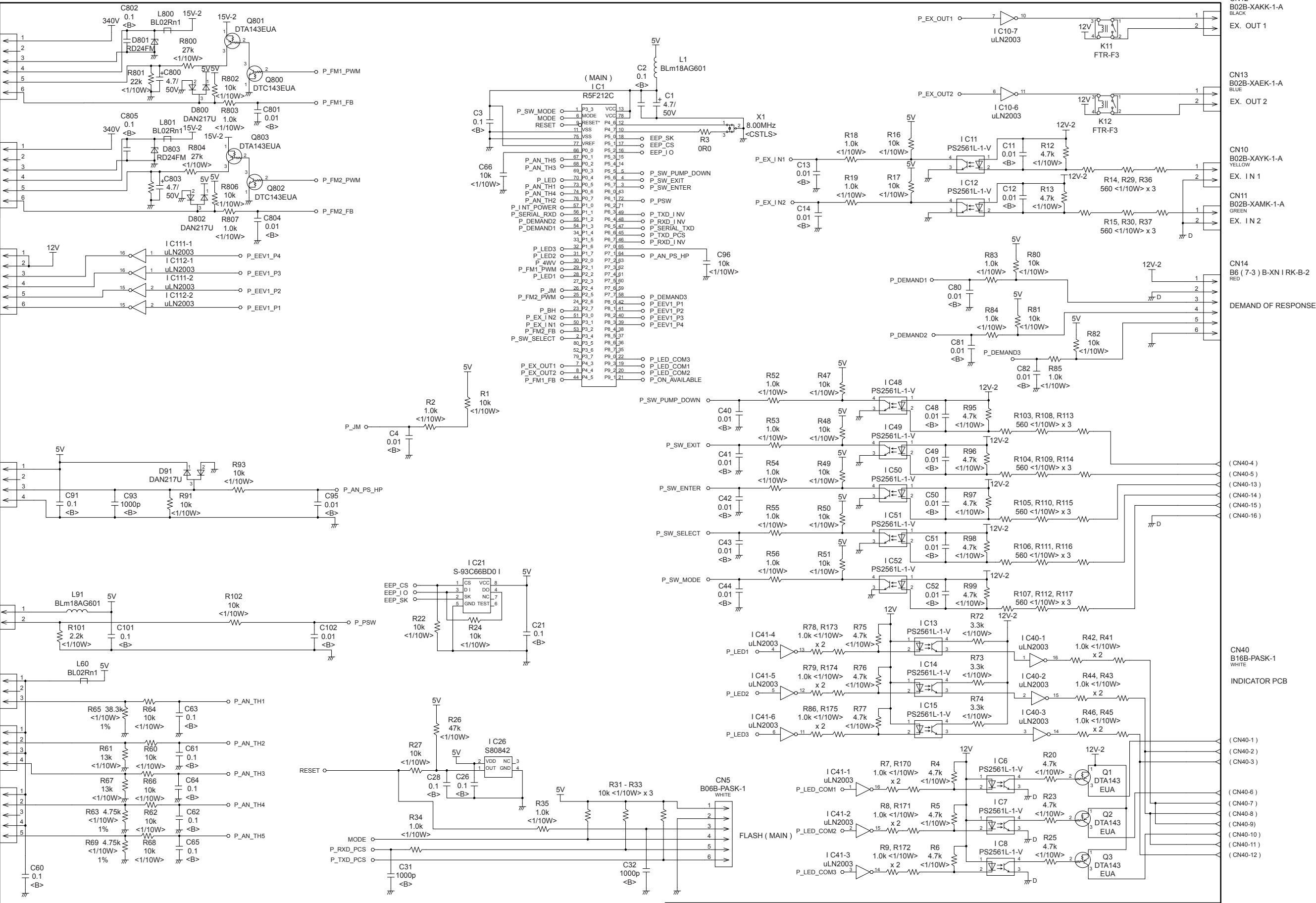
INVERTER ASSEMBLY
AOYA45LCTL : EZ-0101SHUE
AOYA54LCTL : EZ-0101THUE



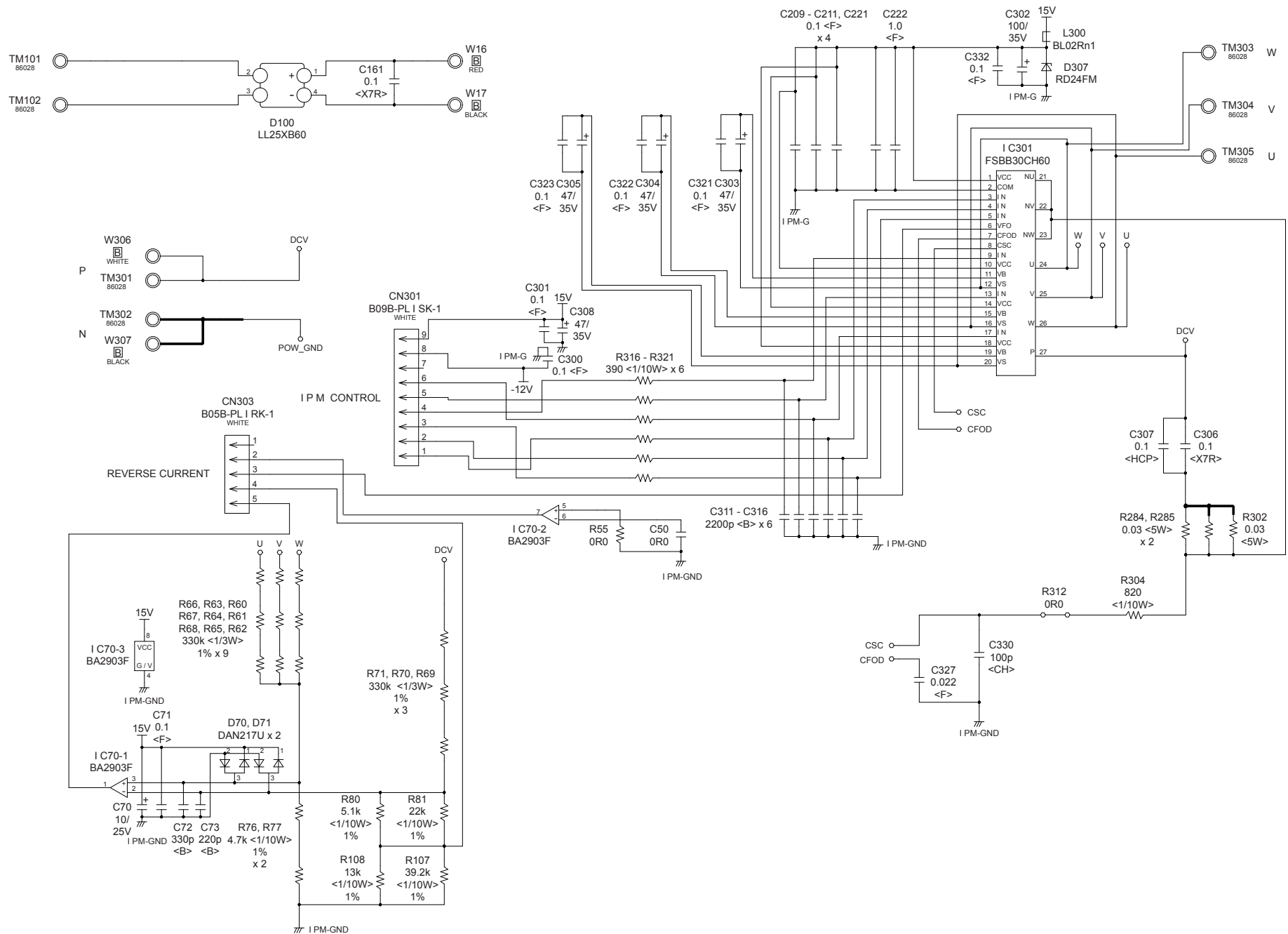
OUTDOOR UNIT
MAIN PCB - 1
AOYA45LCTL : K10BS-1005HUE-C1
AOYA54LCTL : K10BS-1006HUE-C1



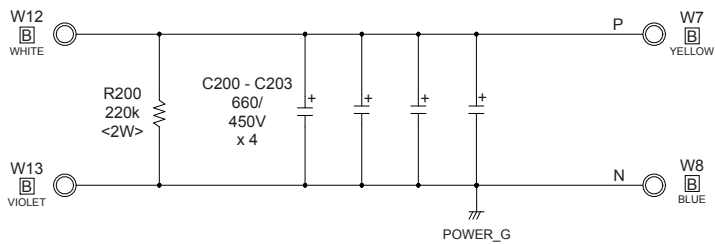
OUTDOOR UNIT
MAIN PCB - 2
AOYA45LCTL : K10BS-1005HUE-C1
AOYA54LCTL : K10BS-1006HUE-C1



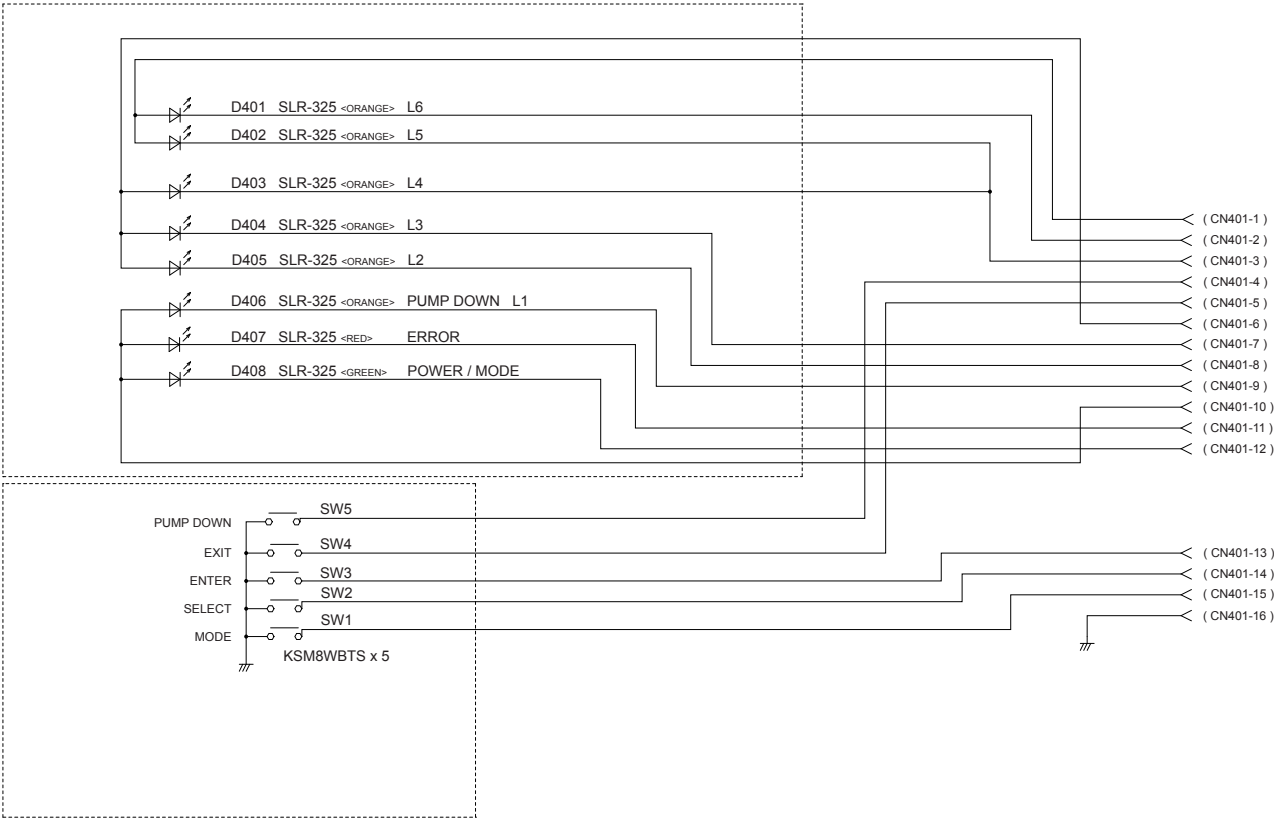
OUTDOOR UNIT TRANSISTOR PCB (I P M) K10AY-1003HUE-TR0



OUTDOOR UNIT
CAPACITOR PCB
K05FB-1000HUE-P0



OUTDOOR UNIT
INDICATOR PCB
K10BC-1000YUE-D0



ERROR DETECTION

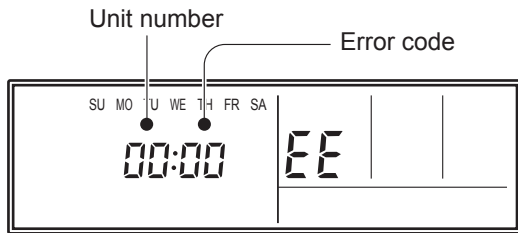
REMOTE CONTROL

Troubleshooting at the remote control LCD

This is possible only on the wired remote control.

Self-diagnosis

If an error occurs, the following display will be shown.
("EE" will appear in the set room temperature display.)



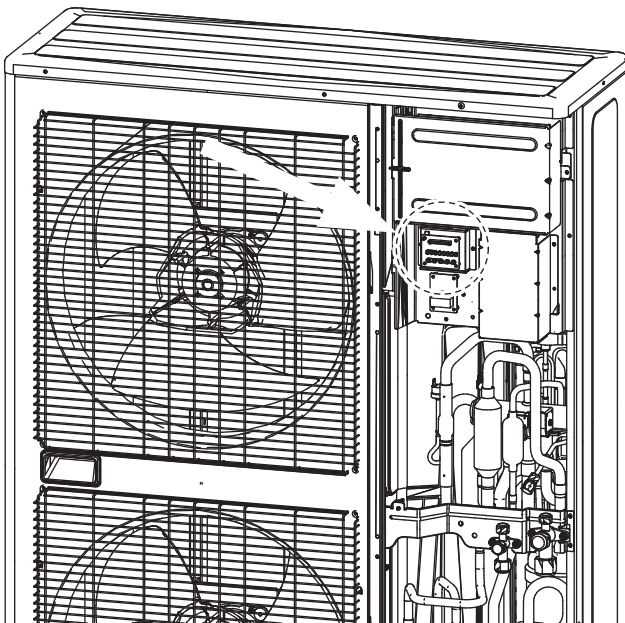
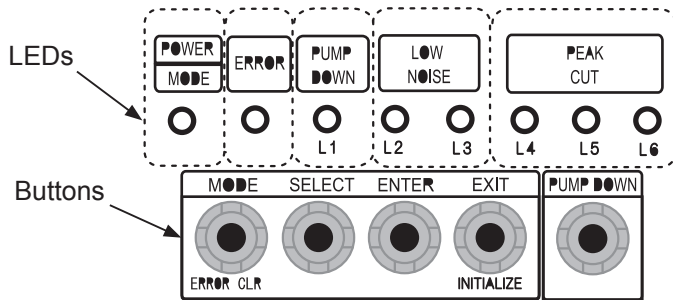
Ex. Self-diagnosis

If "CO" appears in the unit number display, there is a remote control error.
Refer to the installation instruction sheet included with the remote control.

Error code	Error contents
01 13 26 27	Indoor signal error
00	Wired remote control abnormal
02	Indoor room temperature sensor error
04	Indoor heat exchanger thermistor (middle) error
28	Indoor heat exchanger thermistor (inlet) error
09	Float switch operated
0c	Outdoor discharge pipe thermistor error
06	Outdoor heat exchanger thermistor (outlet) error
0A	Outdoor thermistor error
0E	Heat sink thermistor (Inverter) error
15	Compressor thermistor error
1d	2-way valve thermistor error
1E	3-way valve thermistor error
29	Outdoor heat exchanger thermistor (middle) error
2d	Heat sink thermistor (P.F.C.) error
20	Indoor manual auto switch abnormal
2A	Power supply frequency detection error
17	IPM protection
18	CT error
1A	Compressor location error
1b	Outdoor fan error
1F	Connected indoor unit abnormal
1c	Outdoor unit computer communication error
2E	Inverter error
12	Indoor fan abnormal
0F	Discharge temperature error
24	Excessive high pressure protection on cooling
2c	4-way valve abnormal
16	Pressure switch abnormal, Pressure sensor abnormal
2b	Compressor temperature error
2F	Low pressure error
19	Active filter abnormal
25	P.F.C. circuit error
30	Refrigerant circuit address set-up error
31	Master unit, Slave unit set-up error
32	Connected the indoor number set-up error
33	P.F.C. PCB error

ERROR DETECTION

OUTDOOR UNIT Indicator PCB



Display when an error occurs.

POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
On	Blink (Hi speed)	Off	Off	Off	Off	Off	Off

Check that the "ERROR" LED blinks, then press the [Enter] button once.

The "POWER MODE" LED will blink twice and the "ERROR" LED will blink several times.

Display while an error code is checked.

POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
Blink (Hi speed)	Blink	Off	Off	Off	Off	Off	Off

The number of blinks of the "ERROR" LED shows the type of error as follows.

Number of blinks (LED)	Error type
1	Serial forward transfer error
2	Discharge thermistor error
3	Heat-exchange thermistor (outlet) error
4	External temperature thermistor error
5	Heat-exchange thermistor (intermediate) error
6	Discharge temperature protection (permanent stoppage)
7	Compressor thermistor error
8	Heatsink thermistor (inverter) error
9	Pressure switch (sensor) error
10	Compressor temperature protection (permanent stoppage)
11	Connection with indoor unit error
12	Current trip (permanent stoppage)
13	Detection of compressor position error (permanent stoppage)
14	Compressor start up error (permanent stoppage)
15	Fan motor (1) error (permanent stoppage)
16	Fan motor (2) error (permanent stoppage)
18	Inverter error
20	Low pressure error
21	Indoor unit abnormality condition
23	Outdoor unit PCB model information error
24	Trip terminal L error
25	Current sensor error

OUTDOOR UNIT TEST RUN

Before the test run, refer to the figure and check the following items.

☐	Is the outdoor unit securely installed?
☐	Have you performed gas leakage inspection? (Connection joints of various pipes (flang connection, brazing))
☐	Is the heat insulation done completely? (Gas pipe, liquid pipe, drain hose extension on indoor unit side etc)
☐	Is the water discharging from drain without any problems?
☐	Are the cables connected correctly?
☐	Are the cables as per specifications?
☐	Is the earth wire connected accurately?
☐	Are there any obstacles blocking the suction gate, and outlet of the indoor/outdoor units?
☐	Have you filled the specified amount of refrigerant?
☐	Are the stop valves of gas pipe and liquid pipe fully open?
☐	Has the power been supplied to crankcase heater for more than 6 hours?

If there are problems, adjust immediately and recheck.

Test run method

Be sure to configure test run settings only when the outdoor unit has stopped operating.

Depending on the communication status between the indoor and outdoor units, it may take several minutes for the system to start operating after settings for the test run are complete.

After the test run settings are complete, the outdoor units and the connected indoor units will start operating. Room temperature control will not activate during test operation (continuous operation).

If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the crank case heater for a sufficient length of time before restarting the operation.

Test run setting method (it can be performed in the following two ways)

Set with test run setting (refer to installation instructions manual of indoor unit for further details) available in the remote control.

Cooling Operation" and Heating Operation" can be set using , SELECT button and ENTER button available on the board of display unit.

(*Make sure to perform the first test run with cooling operation.)

Set as per the procedure given below.

Check items during test run

☐	Is the outdoor unit making any abnormal noise or vibrating significantly?
☐	Is the cold air or hot air blowing from indoor unit according to the operation mode?
☐	Check that the "ERROR" LED blinks If, it has displayed, check the error content as per 12.2. described later.
☐	Operate the unit according to the operating manual provided with the indoor unit, and check that it is operating normally.

Setting method

- (1) Turn on the power of the outdoor unit and enter standby mode.

POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
On	Off	Off	Off	Off	Off	Off	Off

- (2) Press the ENTER button for more than 3 seconds.

POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
Blink	Off	Off	Off	Blink	Off	Off	Off

- (3) Press the SELECT button,
LED of the test run mode Switched between "COOL" and "HEAT".

Cooling test mode

POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
Blink	Off	Off	Off	Blink	Off	Off	Off

Heating test mode

POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
Blink	Off	Off	Blink	Off	Off	Off	Off

- (4) After confirming the operation mode, Press ENTER button.
The display changes as follows, and Air conditioner starts operation.

Cooling test mode

POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
Blink	Off	Off	Off	On	Off	Off	Off

Heating test mode

POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
Blink	Off	Off	On	Off	Off	Off	Off

- (5) Press [ENTER] button.
Air conditioner stopped operation.

POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
On	Off	Off	Off	Off	Off	Off	Off

OUTDOOR UNIT PUMP DOWN

WARNING

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

During the pump-down operation, make sure that the compressor is turned off before you remove the refrigerant piping.

Do not remove the connection pipe while the compressor is in operation with 2-way or 3-way valve open. This may cause abnormal pressure in the refrigeration cycle that leads to breakage and even injury.

CAUTION

Perform the pump down operation before disconnecting any refrigerant pipe or electric cable.

Collect refrigerant from the service port or the 3-way valve if pump down cannot be performed.

In case of a group control system installation, do not turn the power off pump down is completed in all outdoor units.
(Group control system installation described in SPECIAL INSTALLATION METHODS" in the installation manual of the indoor unit.)

- Operate [PUMPDOWN] button on the display board in the manner described below.

Preparation for pump down
Confirm that the power is off,
and then open the service panel.

Procedure

- Check the 3-way valves (both the liquid side and gas side) are opened.
- Turn the power on.

POWER	ERROR	PUMP DOWN	LOW NOISE			PEAK CUT	
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
On	Off	Off	Off	Off	Off	Off	Off

- Press [PUMP DOWN] button for 3 seconds or more after 3 minutes after power on.

POWER	ERROR	PUMP DOWN	LOW NOISE			PEAK CUT	
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
On	Off	On	Off	Off	On	On	On

LED display lights on as shown in the above figure and the fans and the compressor start operating.

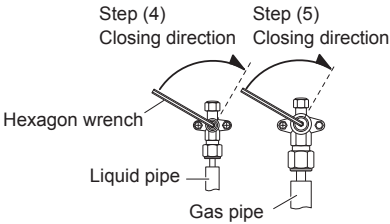
- If the [PUMP DOWN] button is pressed while the compressor is operating, the compressor will stop, then start again in about 3 minutes.
- LED display will change as shown below about 3 minutes after the compressor starts. Fully close the 3-way valve on the liquid pipe side at this stage.

POWER	ERROR	PUMP DOWN	LOW NOISE			PEAK CUT	
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
On	Off	On	Off	Off	Off	On	On

- ☐ If the valve on the liquid pipe side is not closed, the pump down cannot be performed.
- ☐ When LED display changes as shown in the below figure close the 3-way valve on the gas pipe side tightly.

POWER	ERROR	PUMP DOWN	LOW NOISE			PEAK CUT	
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
On	Off	On	Off	Off	Off	Off	On

- if the valve on the gas pipe side is not closed, refrigerant may flow into the piping after the compressor stops.



- ☐ LED display changes after 1 minute as shown in the figure below.

POWER	ERROR	PUMP DOWN	LOW NOISE			PEAK CUT	
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
On	Off	On	Off	Off	Off	Off	Off

Fans and compressor stop automatically.

- ☐ If the pump down is successfully completed (the above LED display is shown), the outdoor unit remains stopped until the power is turned off.
- Turn the power off.

POWER	ERROR	PUMP DOWN	LOW NOISE			PEAK CUT	
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
Off	Off	Off	Off	Off	Off	Off	Off

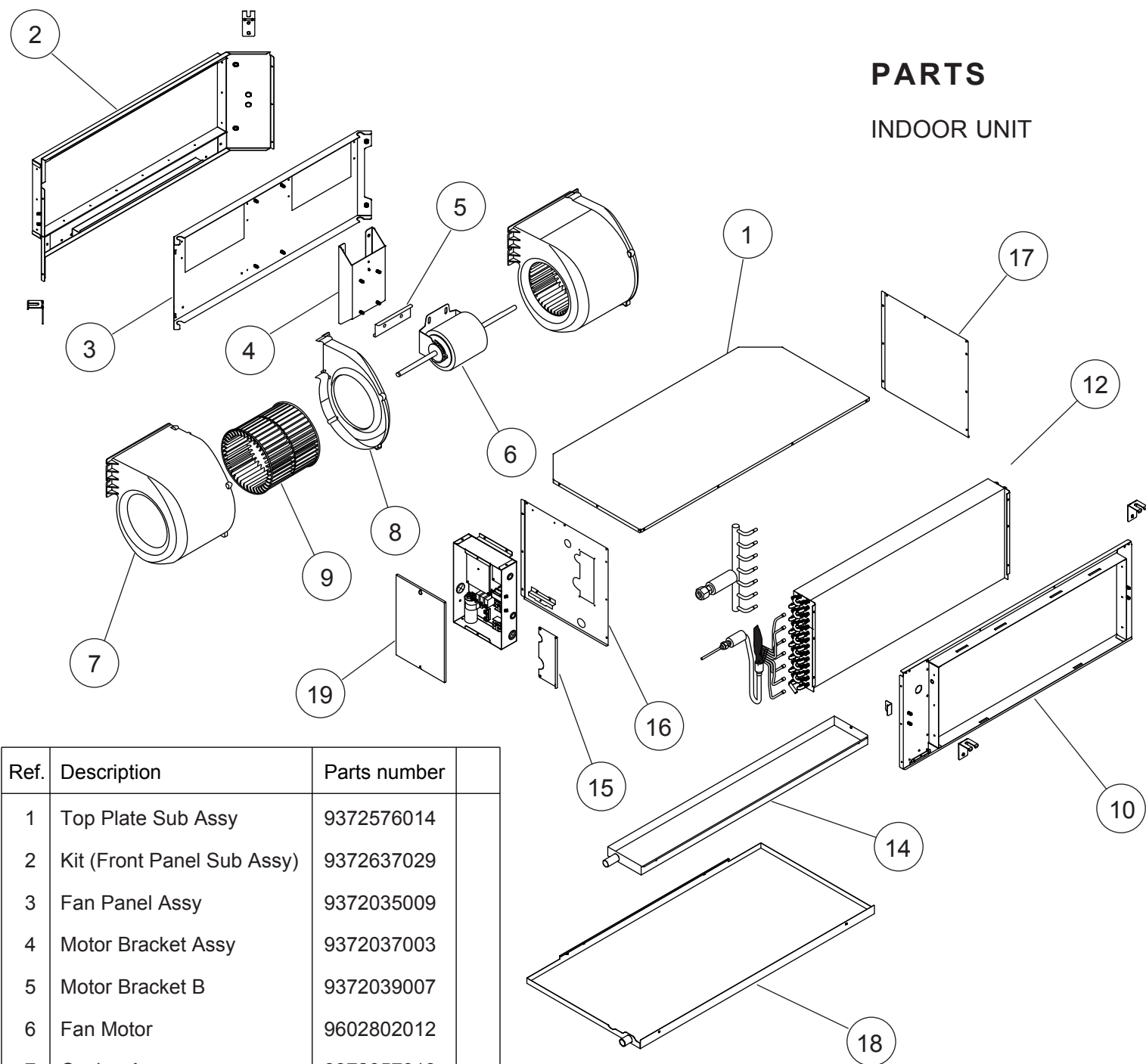
PUMP DOWN is completed.

(Note)

- ☐ To stop pump down, press the [PUMP DOWN] button again.
- ☐ To start the pump down again after the compressor is automatically stopped due to an error, turn the power off and open the 3-way valves. Wait 3 minutes, turn the power on and start the pump down again.
- ☐ When starting the operation after completion of the pump down, turn the power off, and then open the 3-way valves. Wait 3 minutes, turn the power on and perform a test run in the "COOL" operation mode.
- ☐ If an error occurs, recover the refrigerant from service port.

PARTS

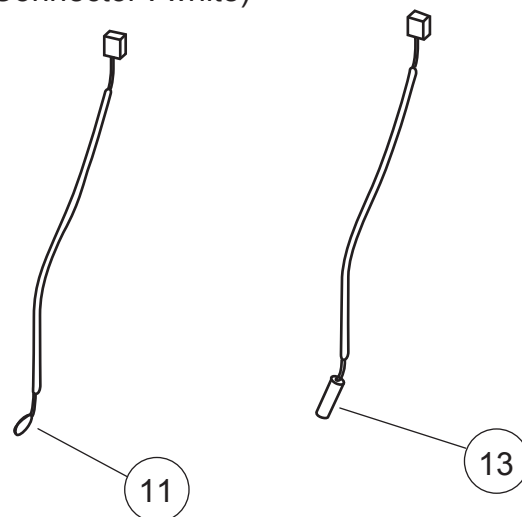
INDOOR UNIT



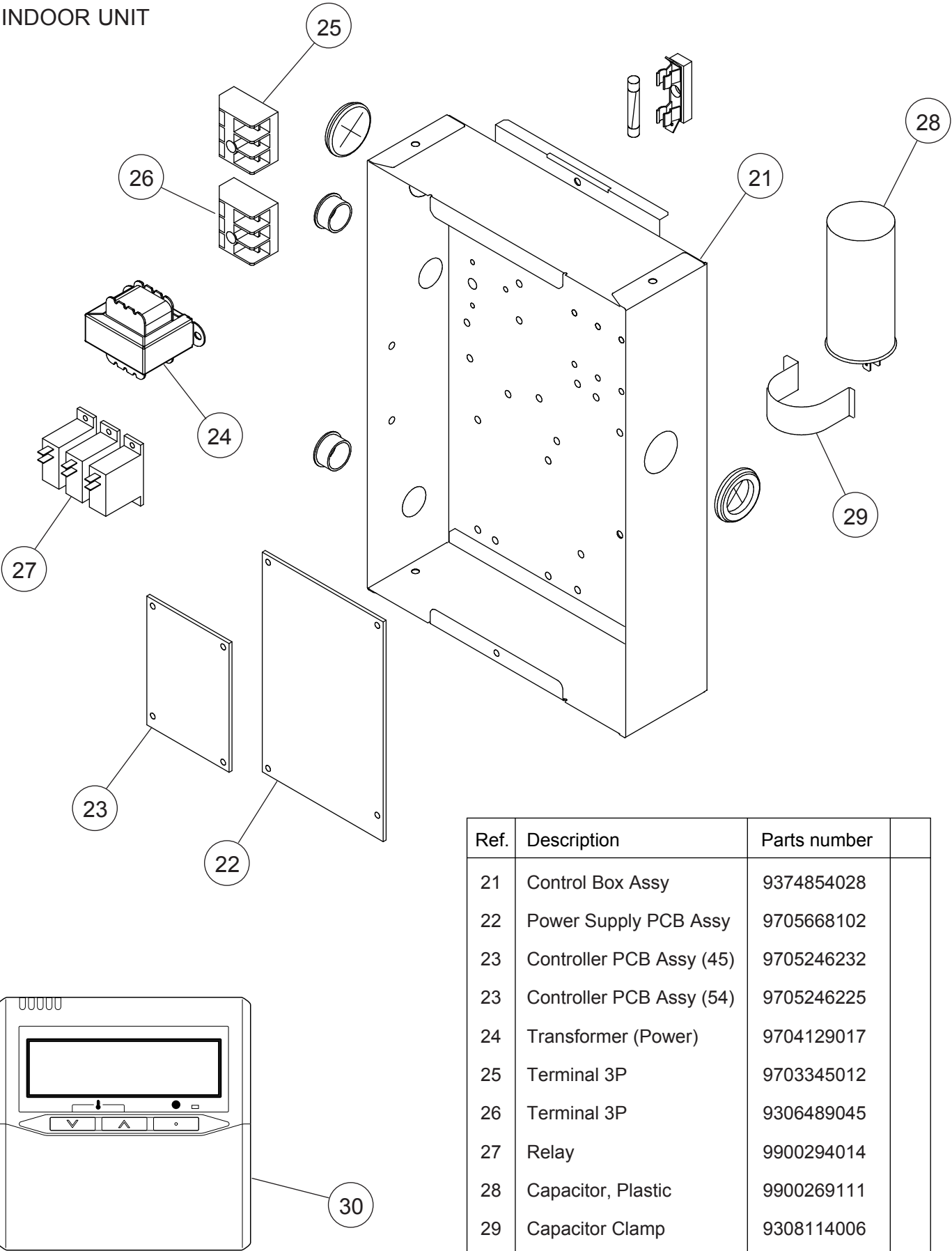
Ref.	Description	Parts number
1	Top Plate Sub Assy	9372576014
2	Kit (Front Panel Sub Assy)	9372637029
3	Fan Panel Assy	9372035009
4	Motor Bracket Assy	9372037003
5	Motor Bracket B	9372039007
6	Fan Motor	9602802012
7	Casing A	9372057018
8	Casing B	9372058015
9	Sirocco Fan	9372059029
10	Kit (Rear Panel Sub Assy)	9372636022
11	Room Thermistor	9703299216
12	Evaporator Sub Assy	9372584057
13	Pipe Thermistor	9703297113
14	Drain Pan Sub Assy	9372579015
15	Kit (Panel Mainte Sub Assy)	9372583012
16	Kit (Right Panel Sub Assy)	9372916025
17	Kit (Left Panel Sub Assy)	9372581018
18	Drain Pan S Sub Assy	9372582015
19	Box Cover	9372061008

(Connector : white)

(Connector : black)



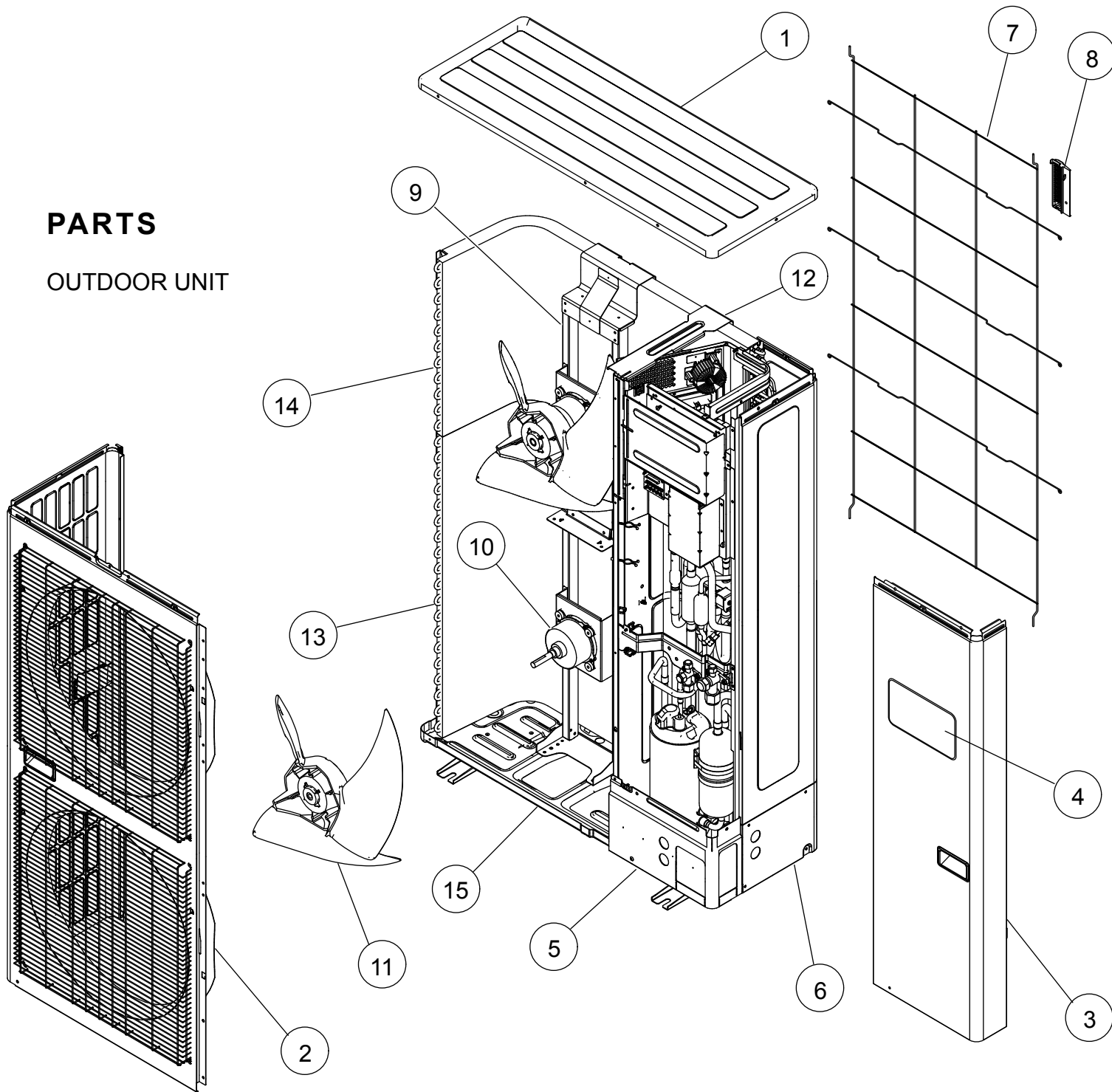
INDOOR UNIT



Ref.	Description	Parts number	
21	Control Box Assy	9374854028	
22	Power Supply PCB Assy	9705668102	
23	Controller PCB Assy (45)	9705246232	
23	Controller PCB Assy (54)	9705246225	
24	Transformer (Power)	9704129017	
25	Terminal 3P	9703345012	
26	Terminal 3P	9306489045	
27	Relay	9900294014	
28	Capacitor, Plastic	9900269111	
29	Capacitor Clamp	9308114006	
30	Remote Control	9372266199	

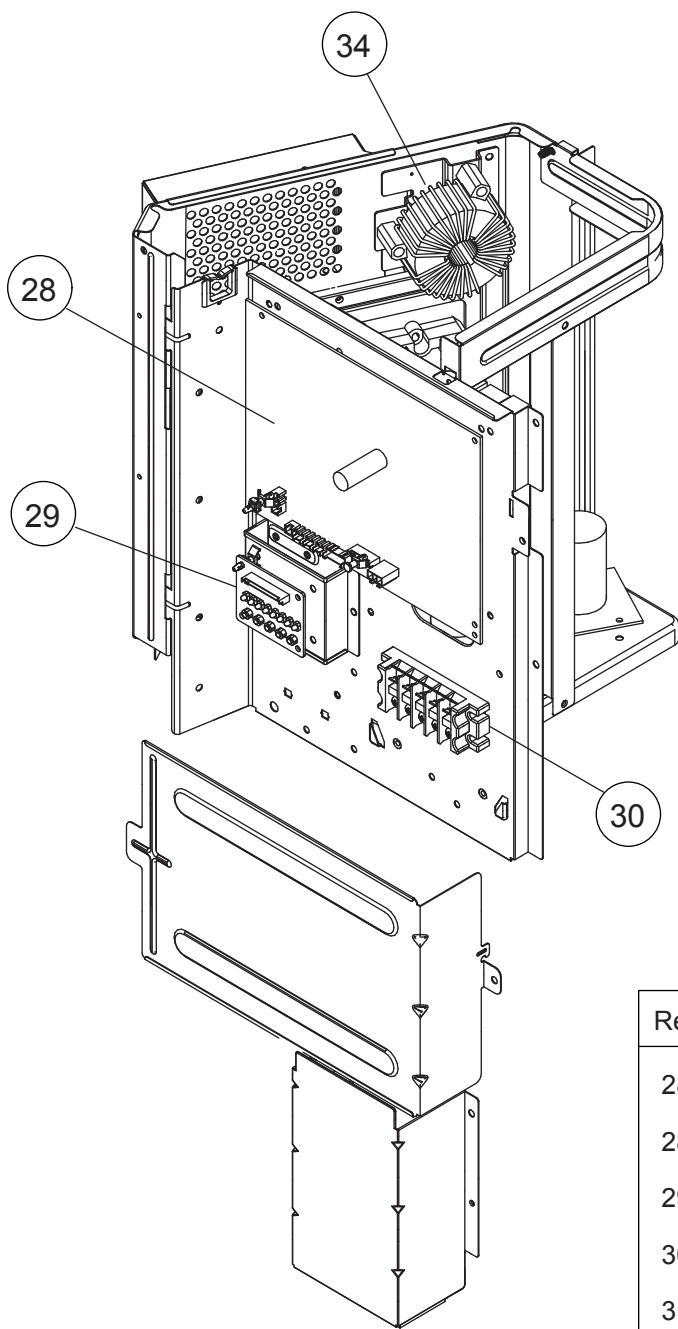
PARTS

OUTDOOR UNIT

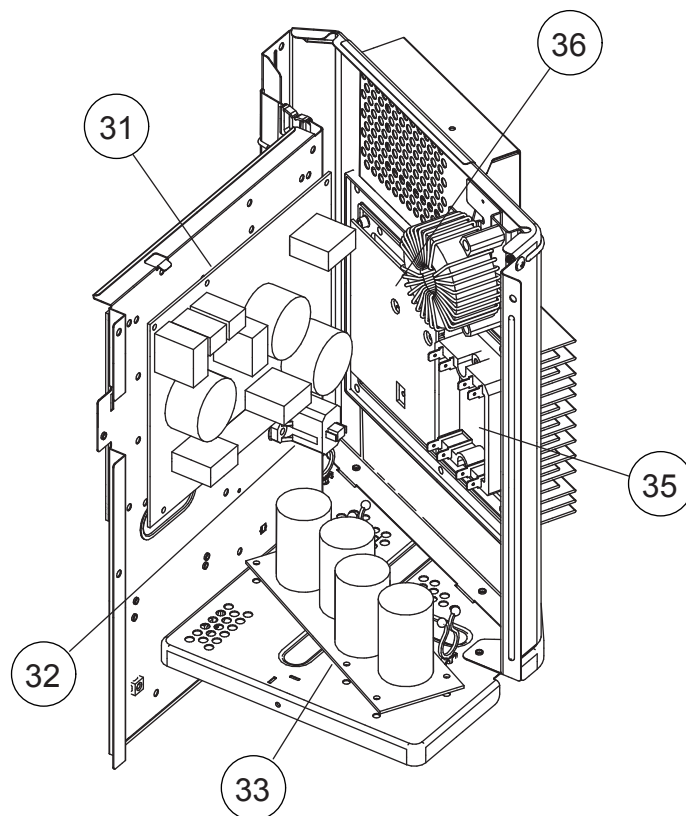


Ref.	Description	Parts number	
1	Top Panel Sub Assy	9374417056	
2	Front Panel Sub Assy	9374414109	
3	Sevice Panel Sub Assy	9374415090	
4	Rear Emblem	9351355005	
5	Pipe Cover Front	9378861015	
6	Right Panel Sub Assy	9374416189	
7	Protective Net	9375381042	
8	Thermo Holder	9375211011	
9	Motor Bracket Sub Assy	9374418169	

Ref.	Description	Parts number	
10	Motor, DC Brushless	9602843039	
11	Propeller Fan Assy	9366378020	
12	RFM Top Assy	9380420002	
13	Condenser A Sub Assy	9374420261	
14	Condenser B Sub Assy	9374422081	
15	Base Assy	9374166220	
--	Drain Assy	9303029015	
--	Drain Cap	313166024302	

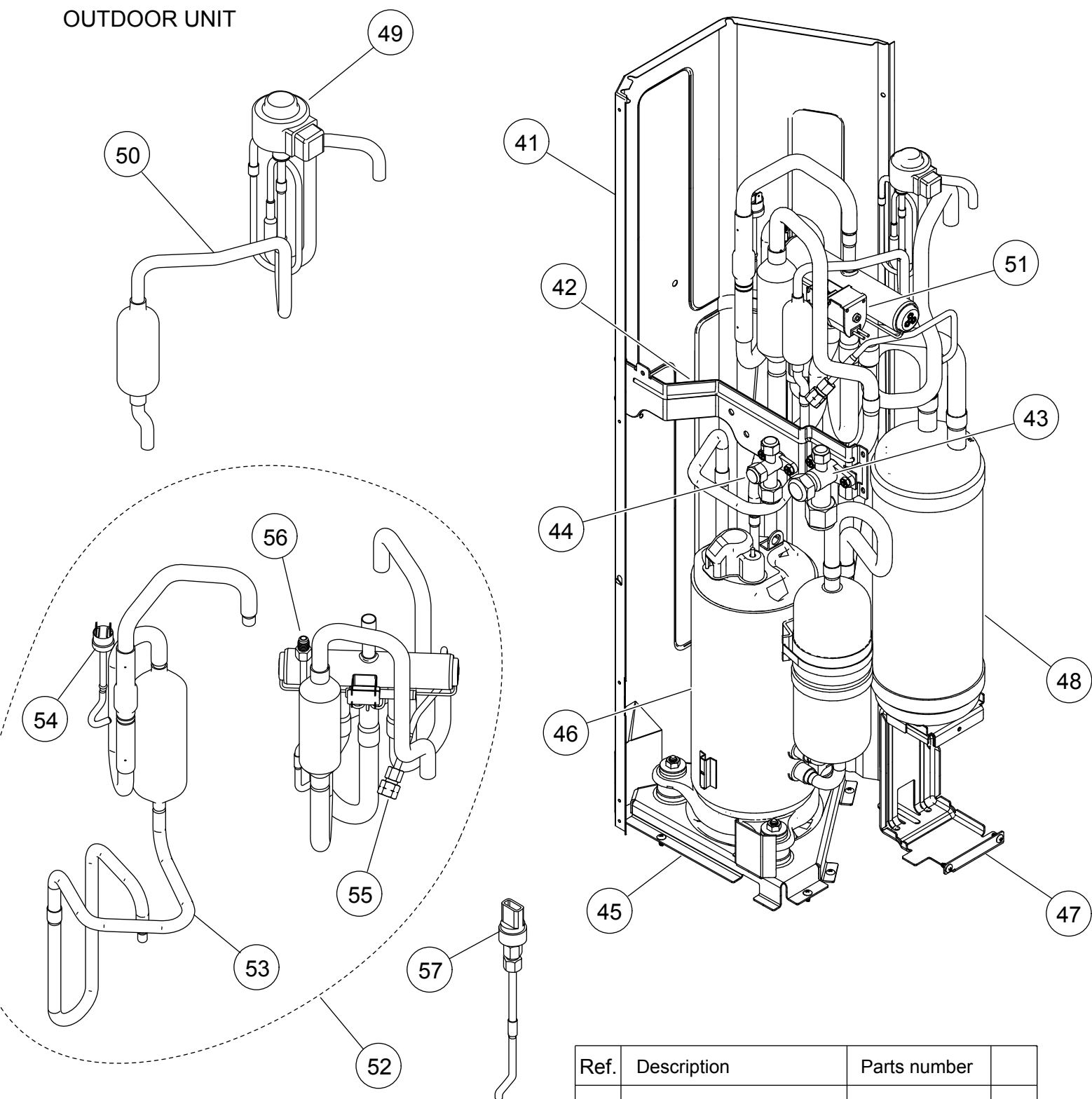


OUTDOOR UNIT
Control box



Ref.	Description	Parts number	
28	Main PCB (45)	9708690063	
28	Main PCB (54)	9708690070	
29	Indicator PCB	9708678016	
30	Terminal	9900203023	
31	Power Supply PCB	9708688015	
32	Thermistor	9704265012	
33	Capacitor PCB	9707257083	
34	Choke Coil	9900624019	
35	ACTPM	9707592016	
36	Transistor PCB Assy	9708647043	
--	Thermistor (Outdoor)	9900210069	
--	Thermistor Assy	9900599027	
--	Thermistor Assy	9900598013	

OUTDOOR UNIT

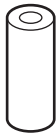
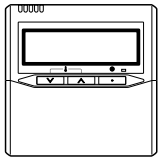
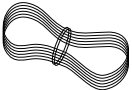


Ref.	Description	Parts number	
51	Solenoid	9970055072	
52	4-way Valve Assy	9374425235	
53	Discharge Pipe Assy	9371581248	
54	Pressure Switch	9900186012	
55	Check Joint Assy	9372802038	
56	Union joint Assy	9379068000	
57	Sensor	9900505080	

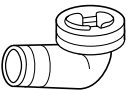
Ref.	Description	Parts number	
41	Separate Wall Sub Assy	9374413218	
42	Valve Plate	9378804012	
43	3-way Valve Assy	9379079006	
44	3-way Valve Assy	9379077002	
45	Compressor Plate Assy	9380344001	
46	Compressor	9810153005	
47	Accumulator Holder	9378800014	
48	Accumulator	9379014021	
49	Expansion Valve Coil	9970096044	
50	Expansion Valve Assy	9370947243	

ACCESSORIES

INDOOR UNIT

Name and Shape	Q'ty	Application	Part number
Special nut A (large flange) 	4	For suspending the indoor unit from ceiling	313005446653
Special nut B (small flange) 	4		313005446759
Coupler heat insulation (large) 	1	For indoor side pipe joint (large pipe)	9378173569
Coupler heat insulation (small) 	1	For indoor side pipe joint (small pipe)	9378173521
Binder 	1	Fixing the remote cord	313361275805
Remote control 	1	For air conditioner operation	9372266199
Remote control cord 	1	For connecting the remote control	9372714010
Tapping screw (ø4 × 16) 	2	For installing the remote control	0700181108

OUTDOOR UNIT

Name and Shape	Q'ty	Application	Part number
Drain pipe 	1	For drain piping work	9303029015
Drain cap 	2		313166024302
Binder 	3	For binding power supply cable and connection cable	9374688012
One-touch bush 	2	For power supply cable and connection cable installation	9378779013

1202G4027