Airwell

Service Manual

HOD009/012/018/024

Indoor Units	Outdoor Units
AWSI-HOD009-H11	AWAU-YOD009-H11
AWSI-HOD012-H11	AWAU-YOD012-H11
AWSI-HOD018-H11	AWAU-YOD018-H11
AWSI-HOD024-H11	AWAU-YOD024-H11

REFRIGERANT

R410A

HEAT PUMP

SM HOD 1-A.1 GB

JUNE-2015

Version:1

LIST OF EFFECTIVE PAGES

Note: Changes in the pages are indicated by a “Revision#” in the footer of each effected page (when none indicates no changes in the relevant page). All pages in the following list represent effected/ non effected pages divided by chapters.

Dates of issue for original and changed pages are:

Original ..... 01 ..... 30-JUNE-2015

Total number of pages in this publication is **82** consisting of the following:

Page No.	Revision No. #	Page No.	Revision No. #	Page No.	Revision No. #

* Zero in this column indicates an original page.

Table of Contents

1. INTRODUCTION

1.1 General

HOD series is a monosplit DCI inverter air conditioner. This high-wall mounted type indoor are mainly designed for residential buildings.

The system uses 4D(DC compressor, DC indoor fan and outdoor fan, EEV) technology and generats high efficiency in operating seasonly. Specially, the syetem is designed for extreme cold zone where the ambient temperature can go down to -30C. (for model 12/18/24)

The whole series includes 4 models 09/12/18/24 in cooling capacity.

The indoor units HOD009/012/018 can also be compatable to multisplits outdoor YBZE series.

1.2 Main Features

The unit benefits from the most advanced technological innovations, namely:

- 4D technology. (DC compressor, DC indoor fan and outdoor fan, EEV)
- R410A models
- Microprocessor control and indoor LED display
- High SEER/SCOP , A++/A+ level with Average climate.(model 009 is A+++/A+++)
- Max allowing tubing distance of 25m(Model HOD018/024).
- Up to 10 m vertical high between indoor and outdoor units
- Cooling operation at outdoor temperature up to 54ºC.(Model 012/018/024)
- Heating operation at outdoor temperature down to -30ºC. (Model 012/018/024)
- Easy installation and service.
- Sleep mode from remote control to save energy
- ON/OFF timer and clock display
- Vertical auto swing with motorized flap (any position stop)
- Intelligent Deicing
- Memory from power failure
- Rapid cooling/heating
- I-Feel function
- Cold air prevention in heating
- Clean function (Blow dry)
- Self diagnosic (Error indications) for ease of maintenance
- 8 ºC constant temperture heating

1.3 Indoor Unit

The indoor unit is wall mounted, and can be easily fitted to many types of residential locations. It includes:

- LED display
- Variable speed with DC motor
- Motorized flap
- High efficiency filtration to ensure a best Air Quality : Advanced filtering combine mechanical, Photo-catalytic + Bi-anti bacterial and observe bad gaseous and smokes.

1.4 Control

The microprocessor indoor controller, and an infrared remote control, supplied as standard, provide complete operating function and programming.

Remote control RC 8A：
Compact and economically design, it offers excellent user comfort. Combining modern design with high technology, the RC8A remote control offers powerful functions of real considering of user comfort and energy saving of air-conditioner .

For detail of functions, please refer to Appendix 1

1.5 Outdoor Unit

The outdoor units can be installed as floor or wall mounted units by using a wall supporting bracket. The metal sheets are protected by anti- corrosion paint work allowing long life resistance. All outdoor units are pre-charged. For further information please refer to the Product Data Sheet, Chapter 2.
It includes :

- Compressor mounted in a soundproofed compartment :
- Axial fan.
- Outdoor coil with hydrophilic louver fins for RC units.
- Outlet air fan grill.
- Interconnecting wiring terminal block.

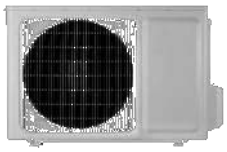
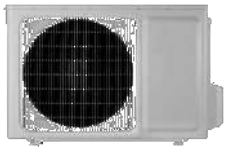
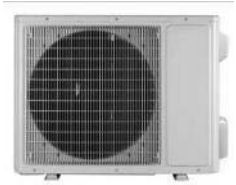
1.6 Tubing Connections

Flare type interconnecting tubing to be produced on site.
For further details please refer to the Installation Manual.

1.7 Inbox Documentation

Each unit is supplied with its own installation, operation and remote control manuals.

1.8 Matching Table

OUTDOOR UNITS	INDOOR UNITS			
	AWSI-HOD009-H11	AWSI-HOD012-H11	AWSI-HOD018-H11	AWSI-HOD024-H11
 AWAU-YOD009-H11	X			
 AWAU-YOD012-H11		X		
 AWAU-YOD018-H11			X	
 AWAU-YOD024-H11				X

2. PRODUCT DATA SHEET

Model Indoor Unit				AWAU-HOD009-N11			
Model Outdoor Unit				AWAU-YOD009-H11			
Installation Method of Pipe				Flared			
Characteristics			**Units**	**Cooling**	**Heating**		
					Average	**Warmer**	**Colder**
Capacity (1)			kW	2.5 (0.6-3.2)	2.9 (0.6-4.0)		
Power consumption			kW	0.577	0.629		
EER/COP			W/W	4.33	4.61		
Pdesign			kW	2.5	2.8	2.8	4.0
SEER / SCOP (2)			W/W	8.5	5.1	6.1	4.0
Energy efficiency class				A+++	A+++	A+++	A+
Annual energy consumption			kWh	103	769	643	2100
Power supply			V/Ph/Hz	220-240V/Single/50Hz			
Circuit breaker rating			A	10			
Rated power input (Maximum power input)			kW	1.6			
Rated current (Maximum current)			A	7.2			
INDOOR	Fan type & quantity			Cross flow fan x1			
	Fan speeds	SH/H/M/L/SL	RPM	1300/1050/1000/900/800/700/500	1300/1150/1080/1030/980/900/850		
	Air flow (3)	SH/H/M/L/SL	m3/hr	650/ 600/550/500/450/400/350	650/ 600/550/500/450/400/350		
	External static pressure	Min-Max	Pa	0			
	Sound power level (4)	SH	dB(A)	55			
	Sound pressure level (5)	SH/H/M/L/SL	dB(A)	43/34/30/26			
	Moisture removal		l/hr	0.8			
	Condensate drain tube I.D		mm	16			
	Dimensions	WxHxD	mm	866×292×209			
	Weight		kg	11			
	Package dimensions	WxHxD	mm	943×375×301			
	Packaged weight		kg	13			
	Stacking height		units	7 levels			
OUTDOOR	Refrigerant control			EEV			
	Compressor type, model			Rotary DC Inverter - 1GDY23AXD			
	Fan type & quantity			Axial x 1			
	Fan speeds	H/L	RPM	900			
	Air flow	H/L	m3/hr	2400			
	Sound power level(4)	H/L	dB(A)	63			
	Sound pressure level(5)	H/L	dB(A)	54			
	Dimensions	WxHxD	mm	899×596×378			
	Weight		kg	41			
	Package dimensions	WxHxD	mm	948×420×645			
	Packaged weight		kg	44			
	Stacking height		units	4 levels			
	Refrigerant type			R410A			
	Refrigerant charge (standard connecting tubing length)		kg(5m)	1.2			
	Additional charge per 1 meter		gr / 1m	5m<L<15m 20g/m			
	Connections between units	Liquid line	In.(mm)	1/4"(6.35)			
		Suction line	In.(mm)	3/8"(9.53)			
		Max.tubing length	m.	Max.15			
		Max.height difference	m.	Max.10			
Operation control type				Remote control RC08A			
Heating elements			kW				
Others							

(1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units).

(2) SEER / SCOP calculation accordance with EN14825.

Model Indoor Unit				AWAU-HOD012-N11			
Model Outdoor Unit				AWAU-YOD012-H11			
Installation Method of Pipe				Flared			
Characteristics			**Units**	**Cooling**	**Heating**		
					Average	**Warmer**	**Colder**
Capacity (1)			kW	3.4(1.15-4.0)	3.55(2.0-5.3)		
Power consumption			kW	0.865	0.874		
EER/COP			W/W	3.93	4.06		
Pdesign			kW	3.4	3.5	3.7	5.1
SEER / SCOP (2)			W/W	7.8	4.6	5.6	3.2
Energy efficiency class				A++	A++	A+++	B
Annual energy consumption			kWh	153	1065	925	3347
Power supply			V/Ph/Hz	220-240V/Single/50Hz			
Circuit breaker rating			A	10			
Rated power input (Maximum power input)			kW	1.9			
Rated current (Maximum current)			A	8.5			
INDOOR	Fan type & quantity			Cross flow fan x1			
	Fan speeds	SH/H/M/L/SL	RPM	1350/1070/1000/900/800/700/500	1350/1150/1080/1030/980/900/850		
	Air flow (3)	SH/H/M/L/SL	m3/hr	740/670/610/530/460/410/380	740/670/610/530/460/410/380		
	External static pressure	Min-Max	Pa	0			
	Sound power level (4)	SH	dB(A)	58			
	Sound pressure level (5)	SH/H/M/L/SL	dB(A)	45/36/34/32/30/28/26			
	Moisture removal		l/hr	1.4			
	Condensate drain tube I.D		mm	16			
	Dimensions	WxHxD	mm	866×292×209			
	Weight		kg	11			
	Package dimensions	WxHxD	mm	943×375×301			
	Packaged weight		kg	13			
	Stacking height		units	7 levels			
OUTDOOR	Refrigerant control			EEV			
	Compressor type, model			Rotary DC Inverter - QXAT-B096zE070			
	Fan type & quantity			Axial x 1			
	Fan speeds	H/L	RPM	850			
	Air flow	H/L	m3/hr	2000			
	Sound power level(4)	H/L	dB(A)	62			
	Sound pressure level(5)	H/L	dB(A)	55			
	Dimensions	WxHxD	mm	899×596×378			
	Weight		kg	43.5			
	Package dimensions	WxHxD	mm	948×420×645			
	Packaged weight		kg	46.5			
	Stacking height		units	4 levels			
	Refrigerant type			R410A			
	Refrigerant charge (standard connecting tubing length)		kg(5m)	1.3			
	Additional charge per 1 meter		gr / 1m	5m<L<20m 20g/m			
	Connections between units	Liquid line	In.(mm)	1/4"(6.35)			
		Suction line	In.(mm)	1/2"(12.7)			
		Max.tubing length	m.	Max.20			
		Max.height difference	m.	Max.10			
Operation control type				Remote control RC08A			
Heating elements			kW				
Others							

(1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units).

(2) SEER / SCOP calculation accordance with EN14825.

Model Indoor Unit				AWAU-HOD018-N11			
Model Outdoor Unit				AWAU-YOD018-H11			
Installation Method of Pipe				Flared			
Characteristics			**Units**	**Cooling**	**Heating**		
					Average	**Warmer**	**Colder**
Capacity (1)			kW	5.1(1.0-6.3)	5.3(1.0-6.8)		
Power consumption			kW	1.453	1.424		
EER/COP			W/W	3.50	3.72		
Pdesign			kW	5.1	5.3	5.3	5.3
SEER / SCOP (2)			W/W	6.5	4.0	4.6	3.3
Energy efficiency class				A++	A	A++	B
Annual energy consumption			kWh	275	1855	1613	3373
Power supply			V/Ph/Hz	220-240V/Single/50Hz			
Circuit breaker rating			A	16			
Rated power input (Maximum power input)			kW	2.5			
Rated current (Maximum current)			A	12.88			
INDOOR	Fan type & quantity			Cross flow fan x1			
	Fan speeds	SH/H/M/L/SL	RPM	1200/1150/1050/950/850/750/650	1350/1200/1100/1000/900/800/700		
	Air flow (3)	SH/H/M/L/SL	m3/hr	950/870/790/710/630/560/480	950/870/790/710/630/560/480		
	External static pressure	Min-Max	Pa	0			
	Sound power level (4)	SH	dB(A)	60			
	Sound pressure level (5)	SH/H/M/L/SL	dB(A)	46/44/42/40/38/36/34			
	Moisture removal		l/hr	1.8			
	Condensate drain tube I.D		mm	16			
	Dimensions	WxHxD	mm	1018×319×230			
	Weight		kg	14			
	Package dimensions	WxHxD	mm	1097×397×340			
	Packaged weight		kg	17			
	Stacking height		units	7 levels			
OUTDOOR	Refrigerant control			EEV			
	Compressor type, model			Rotary DC Inverter - QXAT-B121zF070			
	Fan type & quantity			Axial x 1			
	Fan speeds	H/L	RPM	780			
	Air flow	H/L	m3/hr	3200			
	Sound power level(4)	H/L	dB(A)	65			
	Sound pressure level(5)	H/L	dB(A)	56			
	Dimensions	WxHxD	mm	955×700×396			
	Weight		kg	51			
	Package dimensions	WxHxD	mm	1029×458×750			
	Packaged weight		kg	55.5			
	Stacking height		units	4 levels			
	Refrigerant type			R410A			
	Refrigerant charge (standard connecting tubing length)		kg(5m)	1.65			
	Additional charge per 1 meter		gr / 1m	5m<L<25m 20g/m			
	Connections between units	Liquid line	In.(mm)	1/4"(6.35)			
		Suction line	In.(mm)	1/2"(12.7)			
		Max.tubing length	m.	Max.25			
		Max.height difference	m.	Max.10			
Operation control type				Remote control RC08A			
Heating elements			kW				
Others							

(1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units).

(2) SEER / SCOP calculation accordance with EN14825.

Model Indoor Unit				AWAU-HOD024-N11			
Model Outdoor Unit				AWAU-YOD024-H11			
Installation Method of Pipe				Flared			
Characteristics			**Units**	**Cooling**	**Heating**		
					Average	**Warmer**	**Colder**
Capacity (1)			kW	6.85(2.0-8.6)	6.85(1.9-9.0)		
Power consumption			kW	1.89	1.841		
EER/COP			W/W	3.50	3.72		
Pdesign			kW	6.85	6.85	6.85	6.85
SEER / SCOP (2)			W/W	6.5	4.0	4.6	3.3
Energy efficiency class				A++	A	A++	B
Annual energy consumption			kWh	387	2085	2085	4359
Power supply			V/Ph/Hz	220-240V/Single/50Hz			
Circuit breaker rating			A	25			
Rated power input (Maximum power input)			kW	3.7			
Rated current (Maximum current)			A	16.4			
INDOOR	Fan type & quantity			Cross flow fan x1			
	Fan speeds	SH/H/M/L/SL	RPM	1450/1300/1200/1100/1000/900/800	1450/1300/1200/1100/1000/900/800		
	Air flow (3)	SH/H/M/L/SL	m3/hr	1200/1130/1060/990/920/850/780	1200/1130/1060/990/920/850/780		
	External static pressure	Min-Max	Pa	0			
	Sound power level (4)	SH	dB(A)	65			
	Sound pressure level (5)	SH/H/M/L/SL	dB(A)	51/50/46/44/42/40/37			
	Moisture removal		l/hr	2.0			
	Condensate drain tube I.D		mm	16			
	Dimensions	WxHxD	mm	1178×326×264			
	Weight		kg	17			
	Package dimensions	WxHxD	mm	1256×414×364			
	Packaged weight		kg	21			
	Stacking height		units	6 levels			
OUTDOOR	Refrigerant control			EEV			
	Compressor type, model			Rotary DC Inverter - QXAT-D20zF030			
	Fan type & quantity			Axial x 1			
	Fan speeds	H/L	RPM	820			
	Air flow	H/L	m3/hr	4000			
	Sound power level(4)	H/L	dB(A)	68			
	Sound pressure level(5)	H/L	dB(A)	58			
	Dimensions	WxHxD	mm	980×790×427			
	Weight		kg	65			
	Package dimensions	WxHxD	mm	1083×488×855			
	Packaged weight		kg	70			
	Stacking height		units	3 levels			
	Refrigerant type			R410A			
	Refrigerant charge (standard connecting tubing length)		kg(5m)	2			
	Additional charge per 1 meter		gr / 1m	5m<L<25m 50g/m			
	Connections between units	Liquid line	In.(mm)	1/4"(6.35)			
		Suction line	In.(mm)	5/8"(15.88)			
		Max.tubing length	m.	Max.25			
		Max.height difference	m.	Max.10			
Operation control type				Remote control RC08A			
Heating elements			kW				
Others							

(1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units).

(2) SEER / SCOP calculation accordance with EN14825.

3. RATING CONDITIONS

Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units).

Cooling:
Indoor: 27ºC DB 19ºC WB
Outdoor: 35 ºC DB

Heating:
Indoor: 20ºC DB
Outdoor: 7ºC DB 6ºC WB

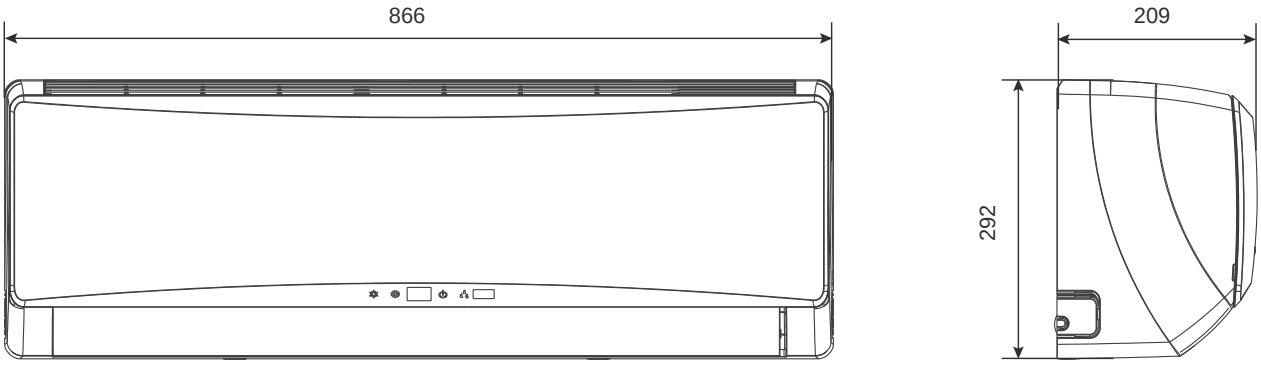
3.1 Operating Limits

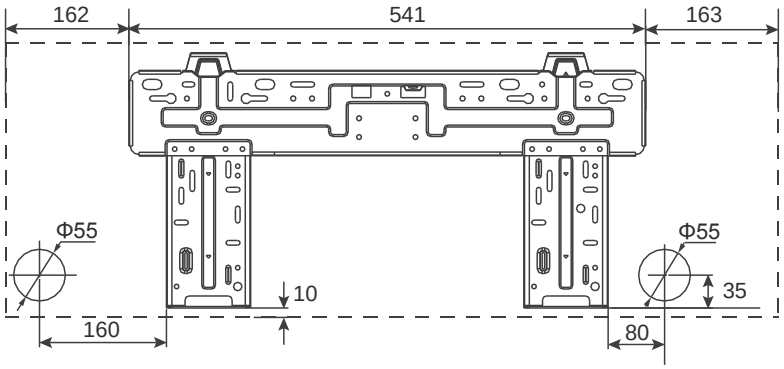
R410A

		Indoor	Outdoor
Cooling	Upper limit	32ºC DB 23ºC WB	48ºC DB (HOD009) 54ºC DB (HOD012/018/024)
	Lower limit	21ºC DB 15ºC WB	-15ºC DB
Heating	Upper limit	27ºC DB	24ºC DB 18ºC WB
	Lower limit	10ºC DB	-20ºC DB -21ºC WB (HOD009) -30ºC DB -32ºCWB (HOD012/018/024)
Voltage		1-PH 50Hz 198 – 264 V	

4. OUTLINE DIMENSION

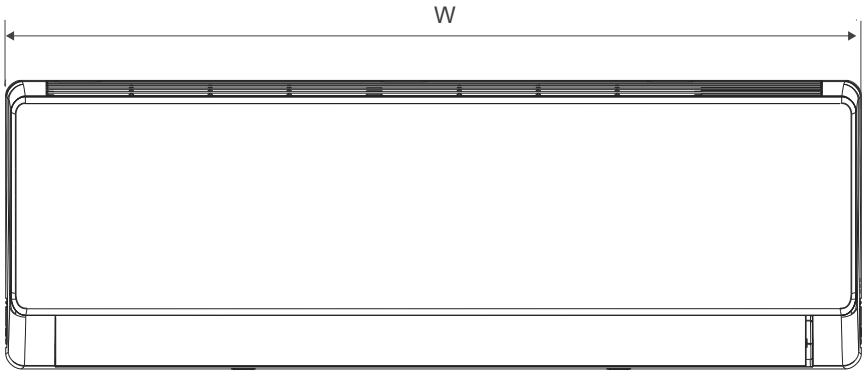
4.1 Indoor: HOD009,HOD012

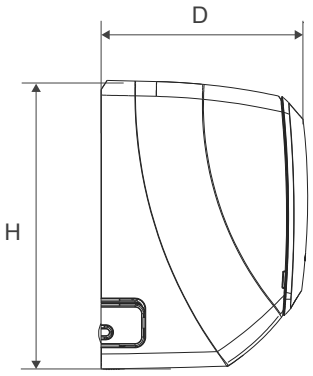


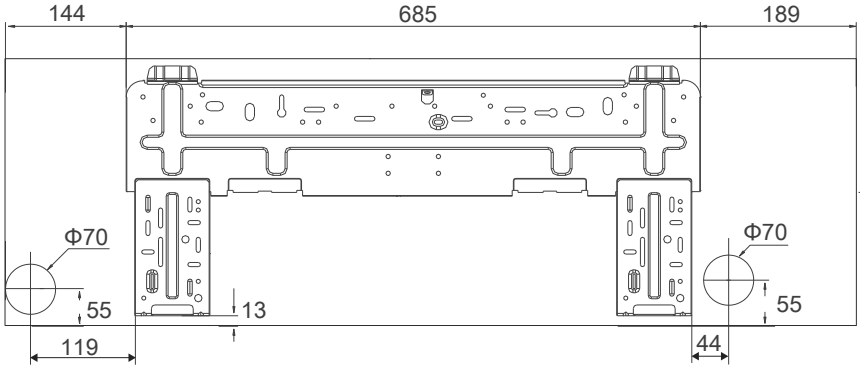


Unit:mm

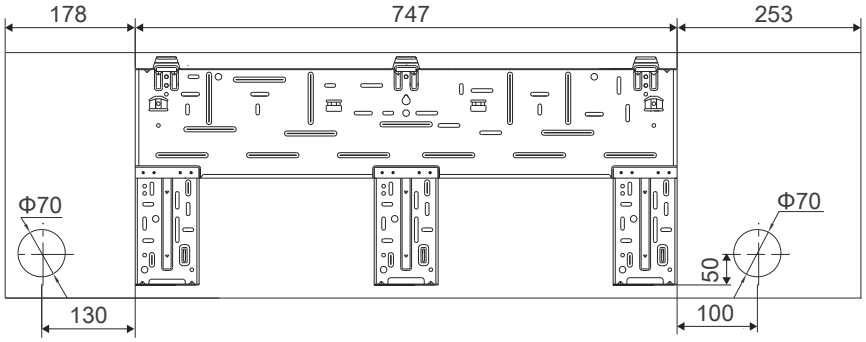
4.2 Indoor: HOD018,HOD024







18K

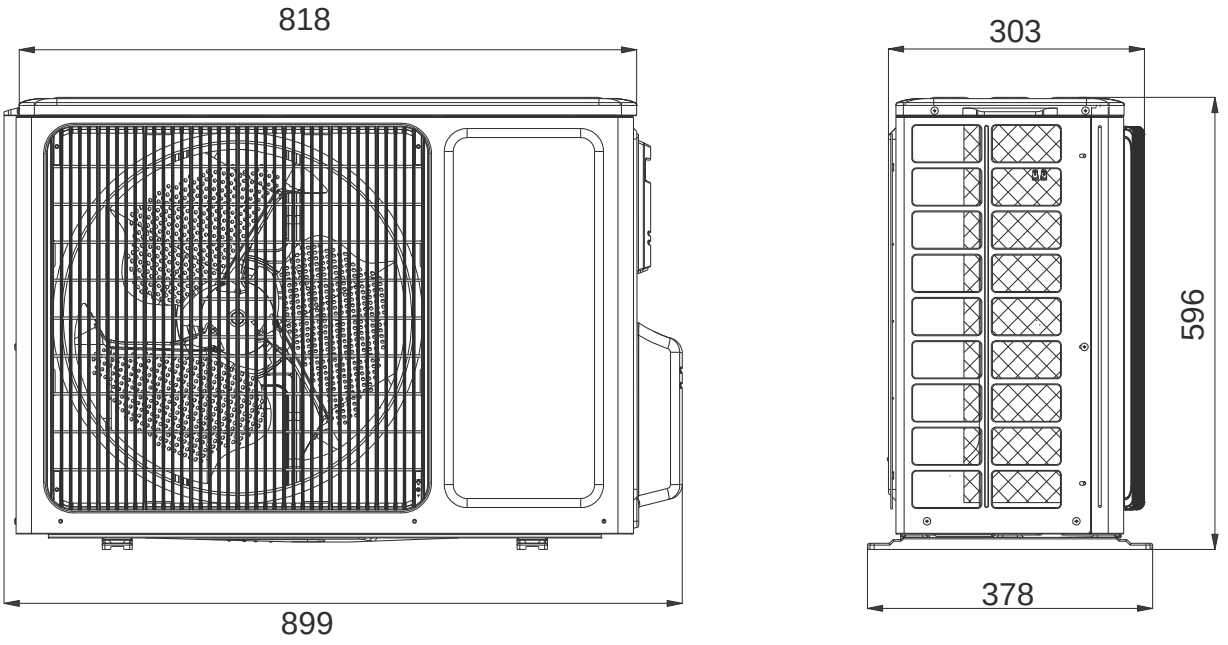


24K

Unit:mm

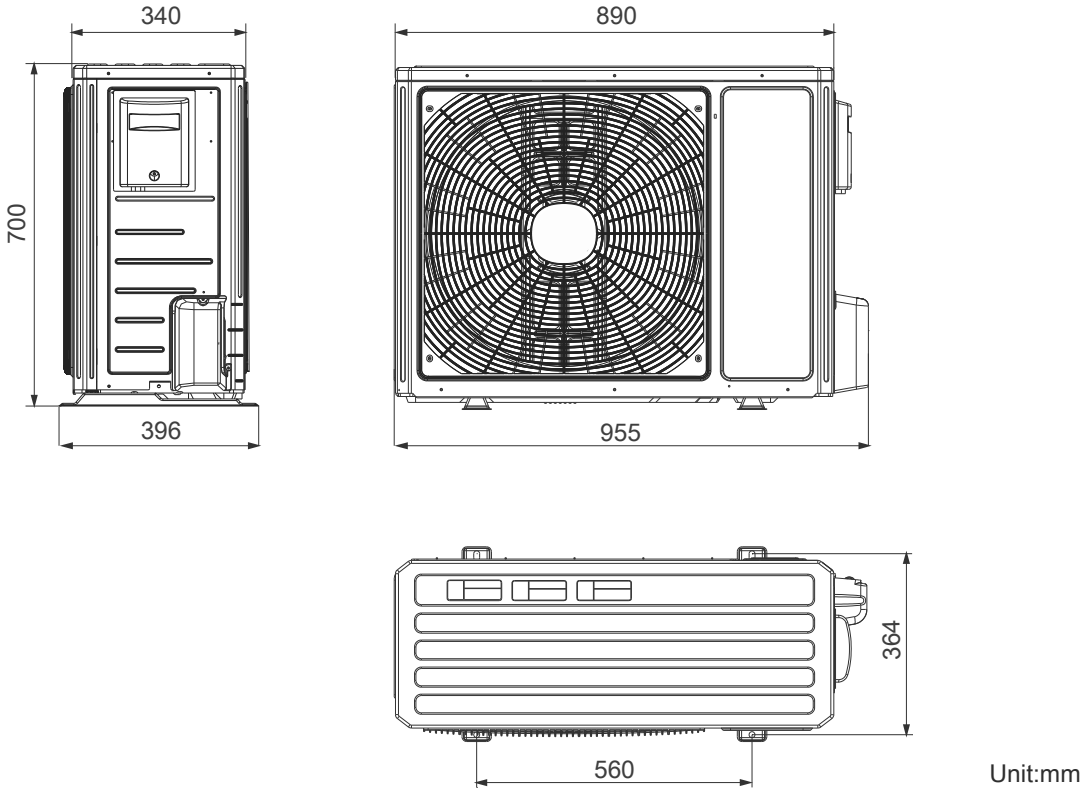
Model	W	H	D
18K	1018	319	230
24K	1178	326	264

4.3 Outdoor: YOD009/YOD012



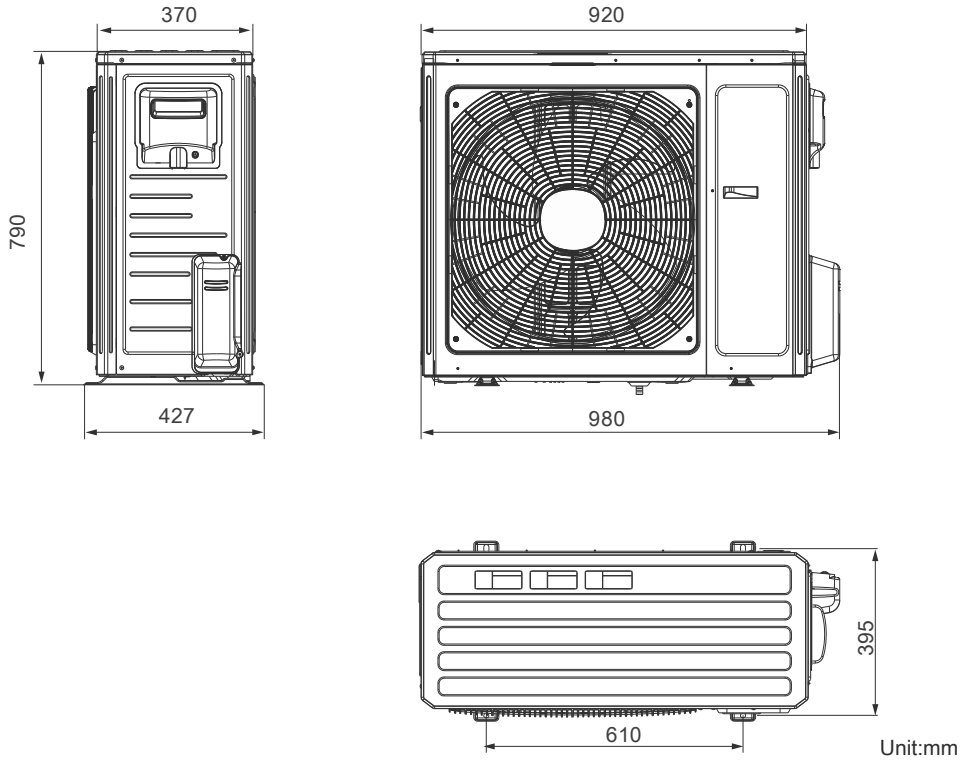
Unit:mm

4.4 Outdoor: YOD018



Unit:mm

4.5 Outdoor: YOD024



Unit:mm

5. PERFORMANCE DATA

6. PRESSURE CURVES

TBD

7. SOUND LEVEL CHARACTERISTICS

7.1 Sound Pressure Level

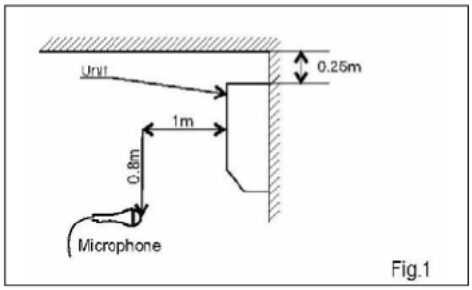


Figure 1. Wall Mounted

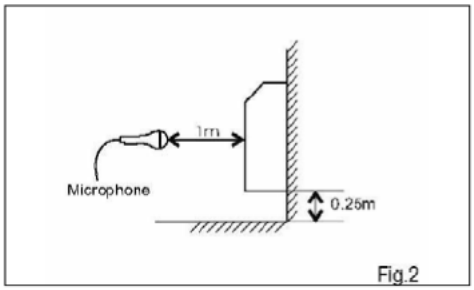


Figure 2. Floor Mounted

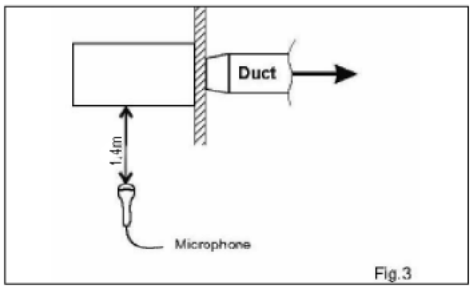


Figure 3. Ducted

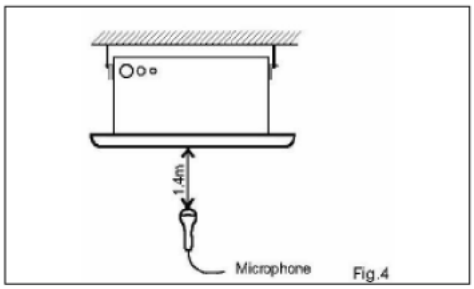


Figure 4. Cassette

7.2 **Soud Pressure Level Spectrum** (Measured as Figure 1)

TBD

8. ELECTRICAL DATA

MODEL	YOD009	YOD012	YOD018	YOD024
Power Supply	To Outdoor			
	1PH-220-240V-50Hz			
Max Current, A				
Circuit Breaker,A	10A	10A	16A	25A
Power Supply Wiring No. X Cross Section mm^2	3x1.5 mm^2	3x1.5 mm^2	3x2.5 mm^2	3x2.5 mm^2
Interconnecting Cable Model No. X Cross Section mm^2	4x1.0 mm^2	4x1.0 mm^2	4x1.0 mm^2	4x1.0 mm^2

NOTE

Power wiring cord should comply with local laws and electrical regulations requirements.

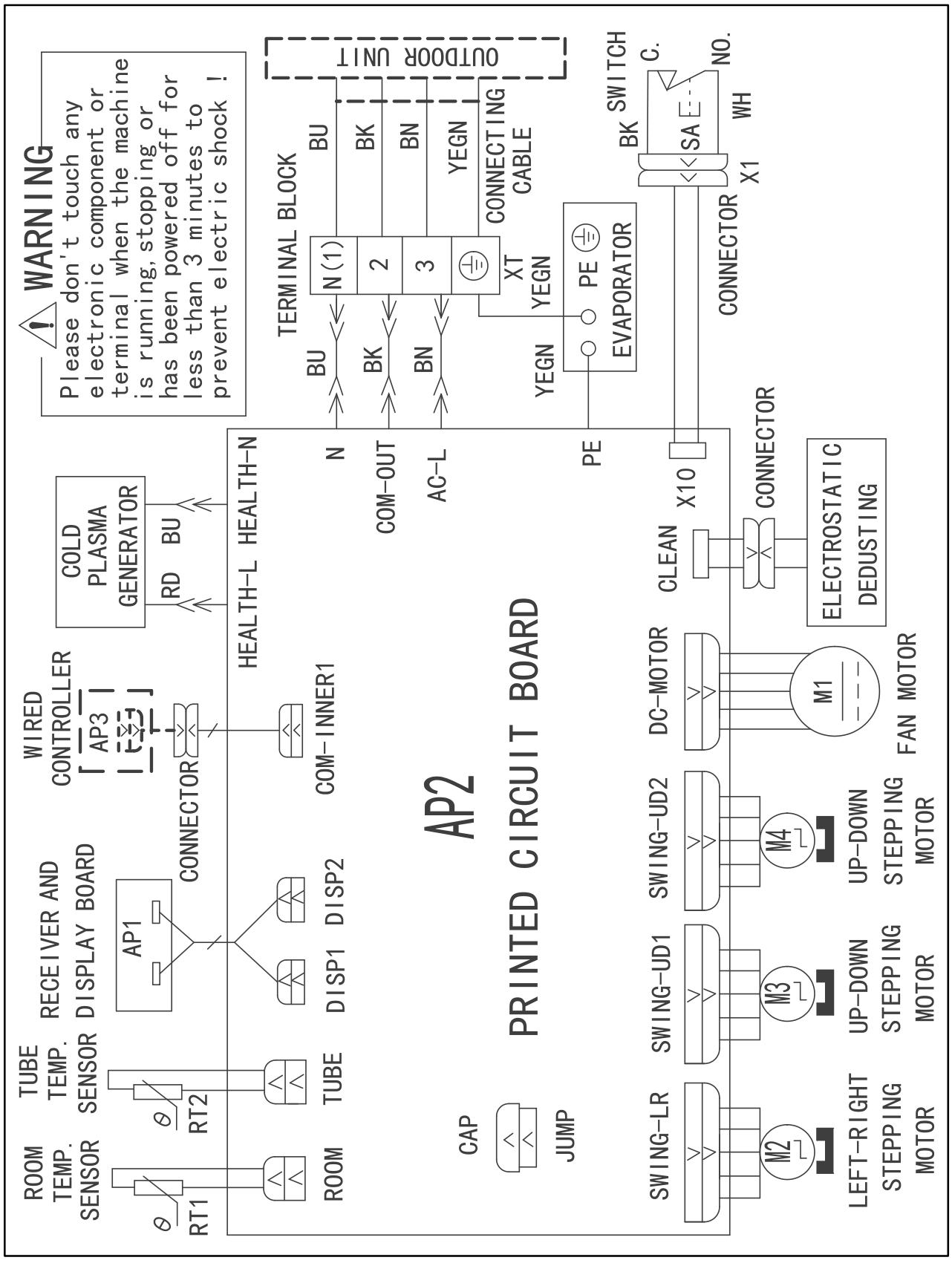
9. WIRING DIAGRAM

Abbrivation

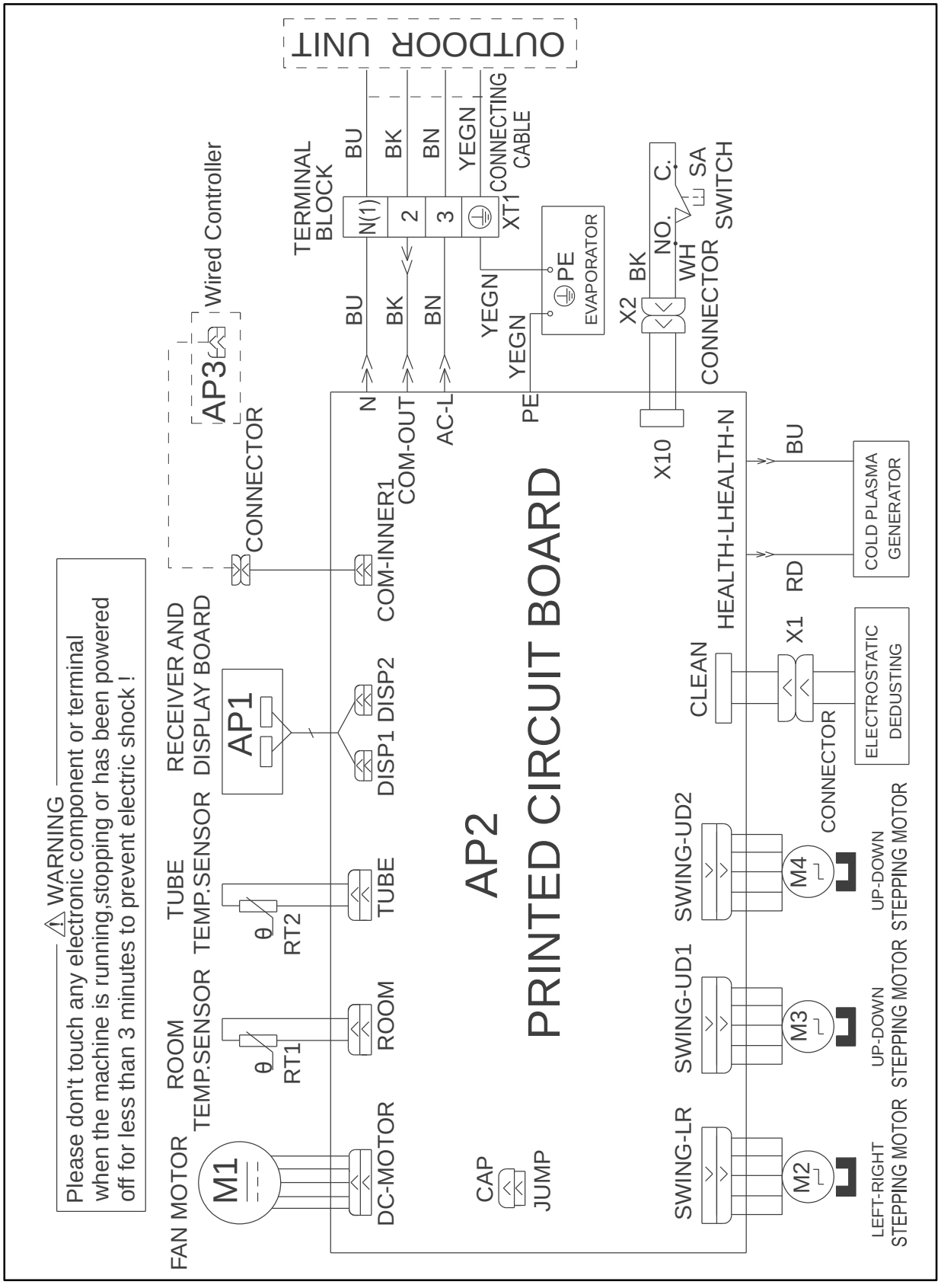
Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue	⏚	Grounding wire
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

Note: Jumper cap is used to determine fan speed and the swing angle of horizontal lover for this model.

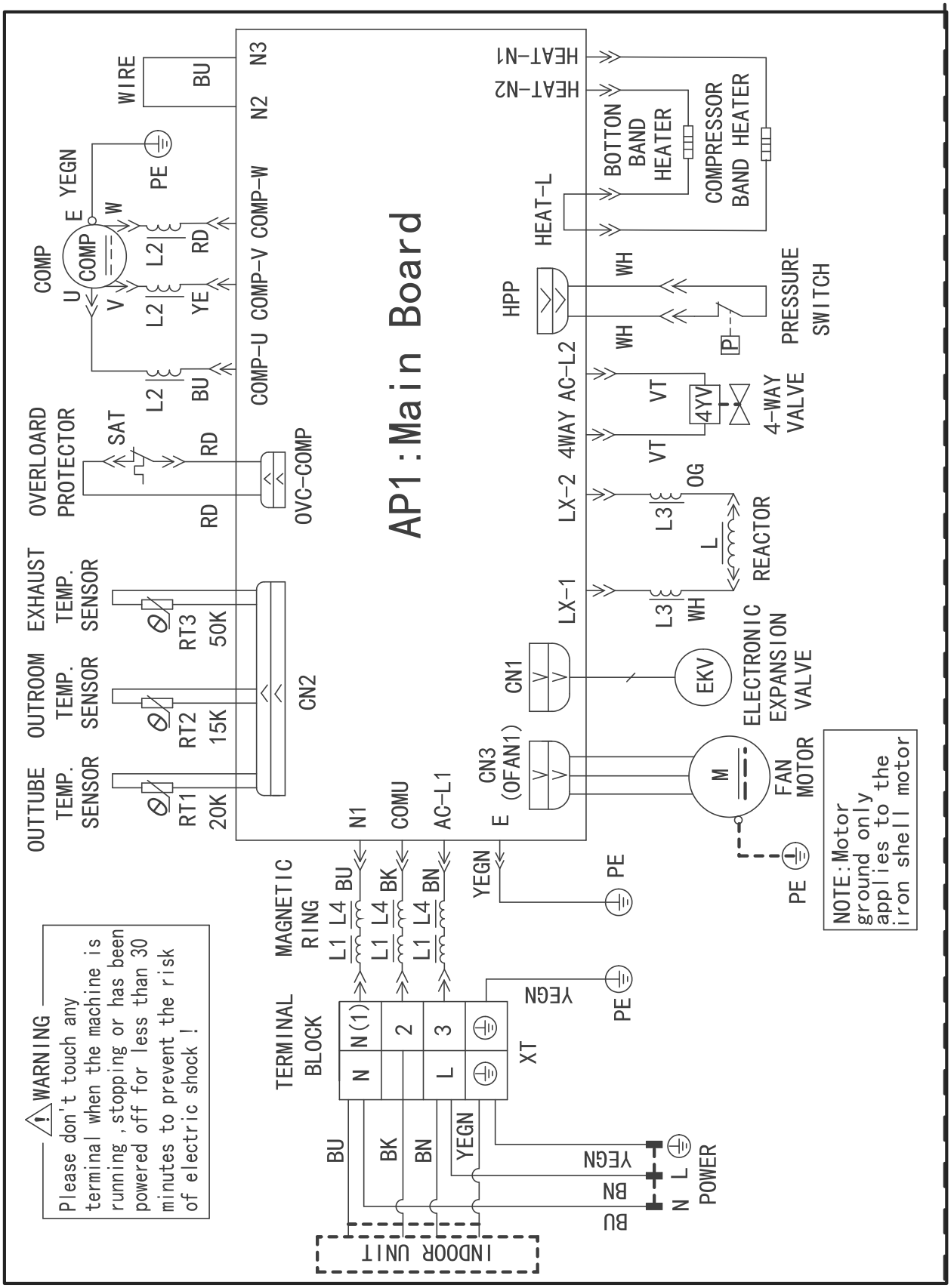
9.1 HOD009,HOD012



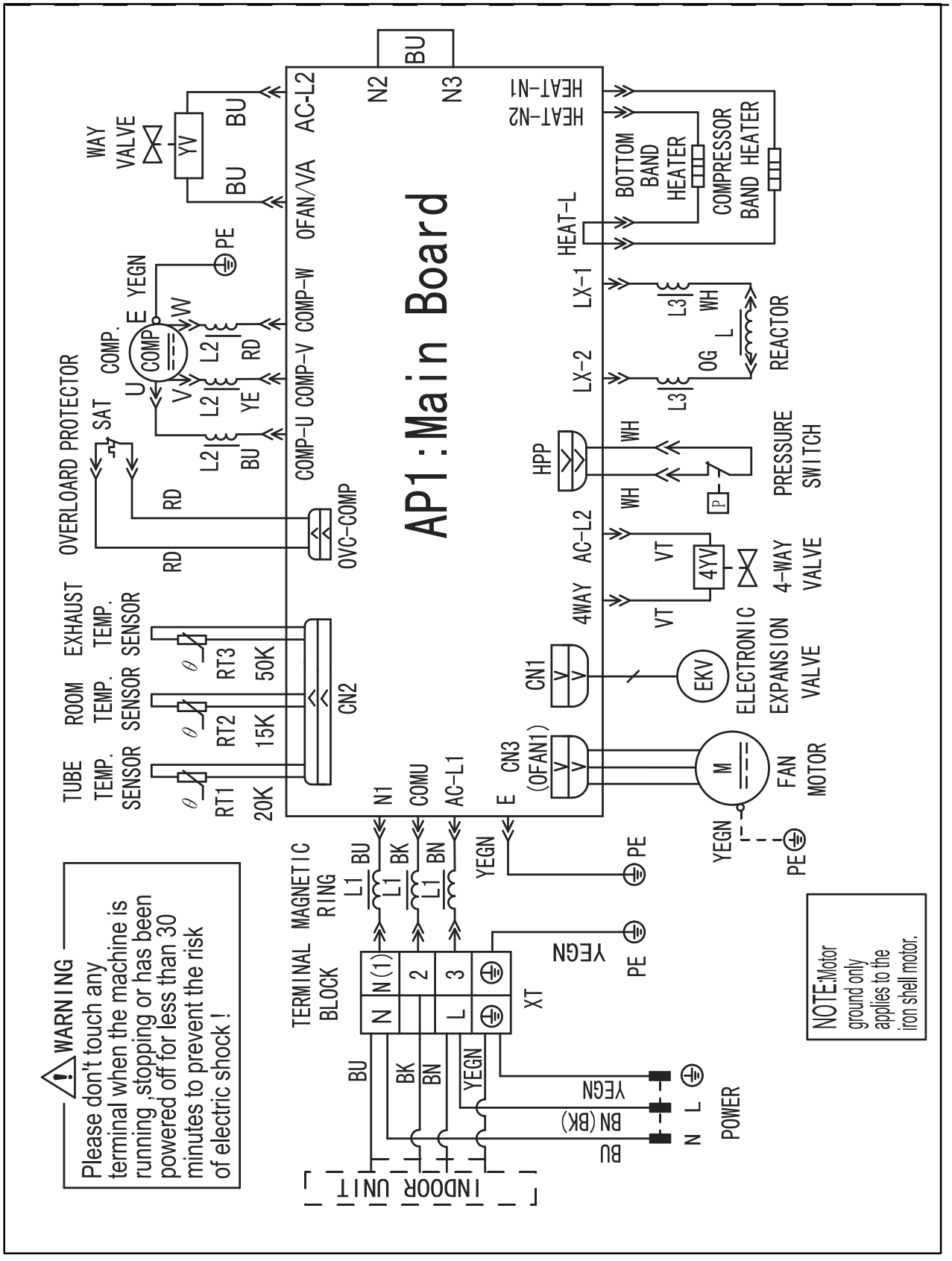
9.2 HOD018/HOD024



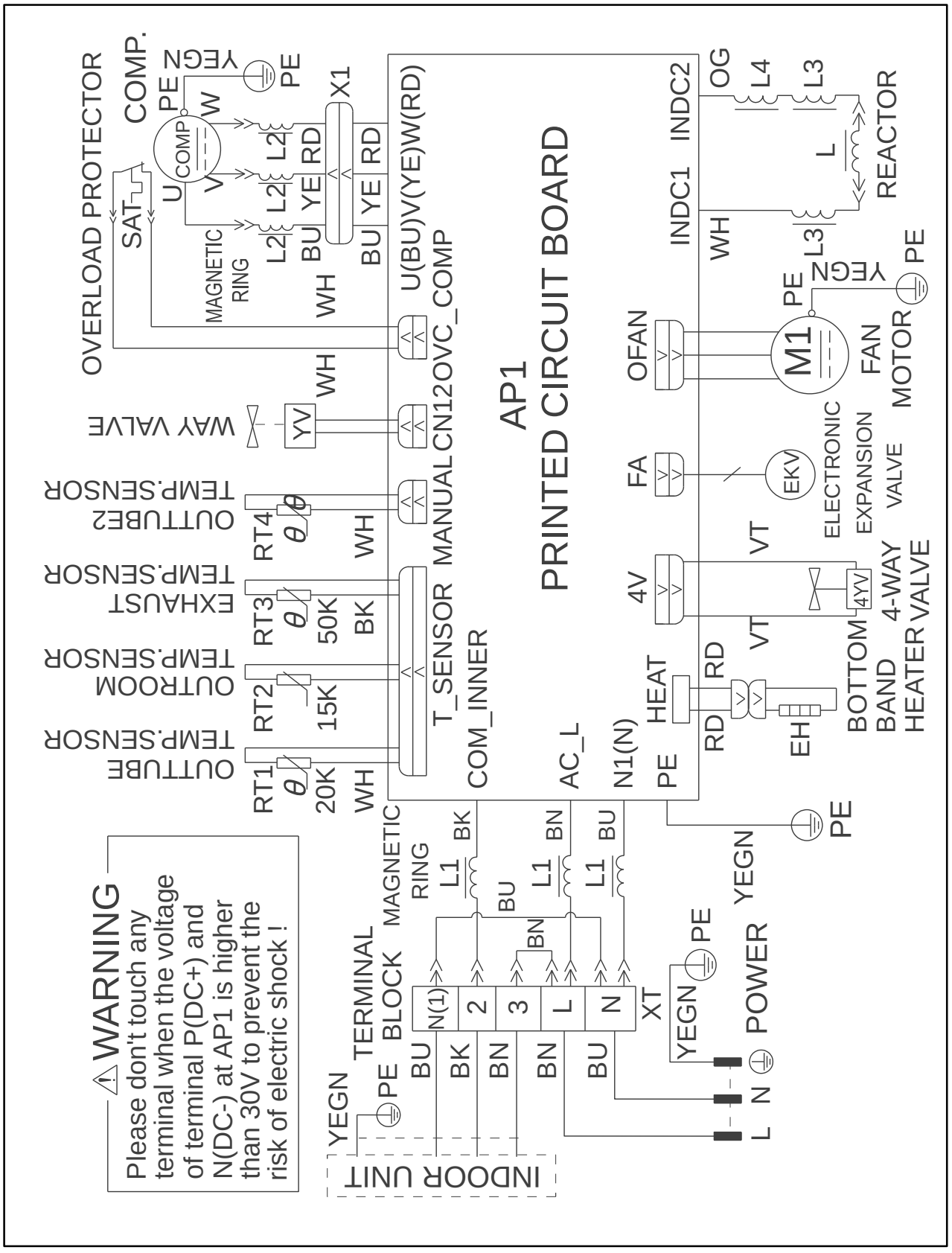
9.3 YOD009


AP1:Main Board
WIRE
BU
N3
N2
N1
COMP-U
COMP-V
COMP-W
HEAT-N1
HEAT-N2
COMP
U
V
W
E
YEGN
PE
L2
RD
YE
BOTTON BAND HEATER
COMPRESSOR BAND HEATER
HEAT-L
HPP
WH
PRESSURE SWITCH
OVERLOARD PROTECTOR
SAT
OVC-COMP
4WAY
AC-L2
LX-2
LX-1
VT
4YV
4-WAY VALVE
L3
OG
L
REACTOR
ELECTRONIC EXPANSION VALVE
EKV
CN1
CN2
CN3 (OFAN1)
OUTTUBE TEMP. SENSOR
RT1 20K
OUTROOM TEMP. SENSOR
RT2 15K
EXHAUST TEMP. SENSOR
RT3 50K
FAN MOTOR
M
NOTE:Motor ground only applies to the iron shell motor
COMU
AC-L1
MAGNETIC RING
L1 L4 BU
L1 L4 BK
L1 L4 BN
TERMINAL BLOCK
N
N(1)
2
3
L
XT
INDOOR UNIT
POWER
BU
BK
BN
YEGN
WARNING
Please don't touch any terminal when the machine is running,stopping or has been powered off for less than 30 minutes to prevent the risk of electric shock !

9.4 YOD012

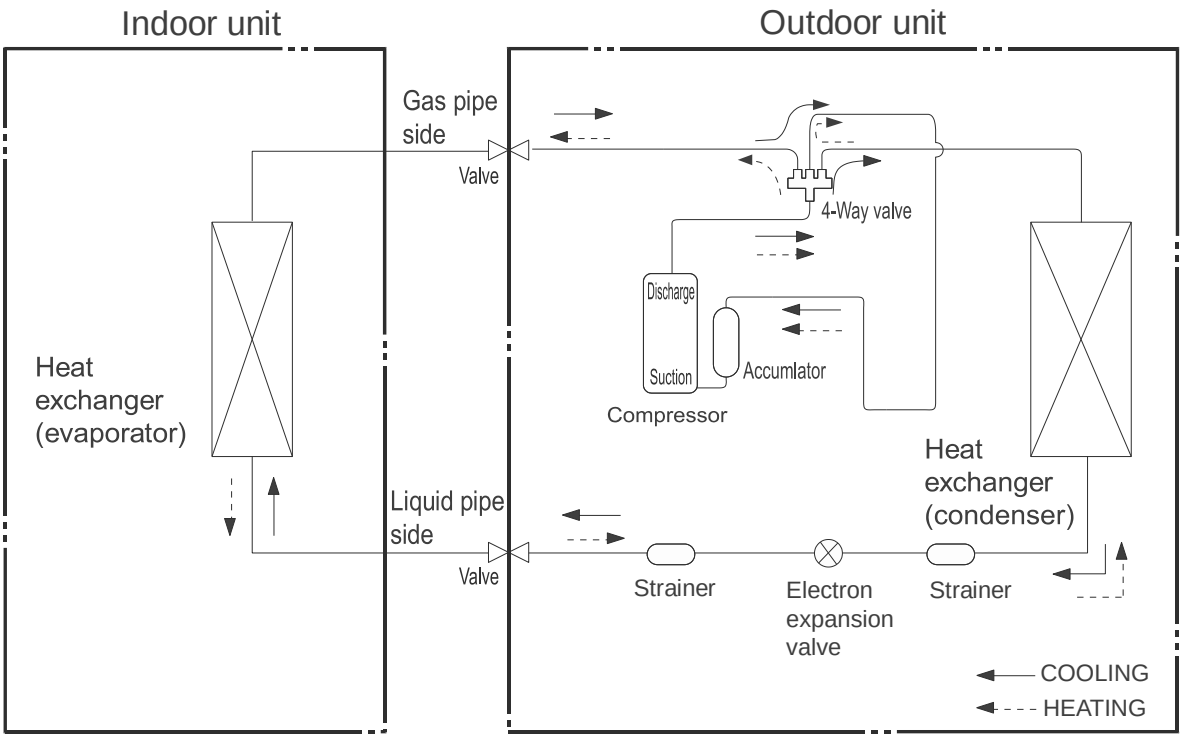

AP1:Main Board
WARNING
Please don't touch any terminal when the machine is running ,stopping or has been powered off for less than 30 minutes to prevent the risk of electric shock !
NOTE:Motor ground only applies to the iron shell motor.
INDOOR UNIT
POWER
TERMINAL BLOCK
MAGNETIC RING
XT
N
L
N(1)
2
3
N1
COMU
AC-L1
E
CN1
CN2
CN3
(OFAN1)
AC-L2
OFAN/VA
COMP-W
COMP-V
COMP-U
N2
N3
HEAT-N1
HEAT-N2
HEAT-L
LX-1
LX-2
4WAY
HPP
OVC-COMP
SAT
OVERLOARD PROTECTOR
COMP.
TUBE TEMP. SENSOR
ROOM TEMP. SENSOR
EXHAUST TEMP. SENSOR
RT1
RT2
RT3
20K
15K
50K
WAY VALVE
YV
BOTTOM BAND HEATER
COMPRESSOR BAND HEATER
REACTOR
PRESSURE SWITCH
4-WAY VALVE
4YV
ELECTRONIC EXPANSION VALVE
EKV
FAN MOTOR
M
PE
YEGN
BU
BK
BN
RD
WH
VT
OG
YE
L1
L2
L3
U
V
W

9.5 YOD018/YOD024

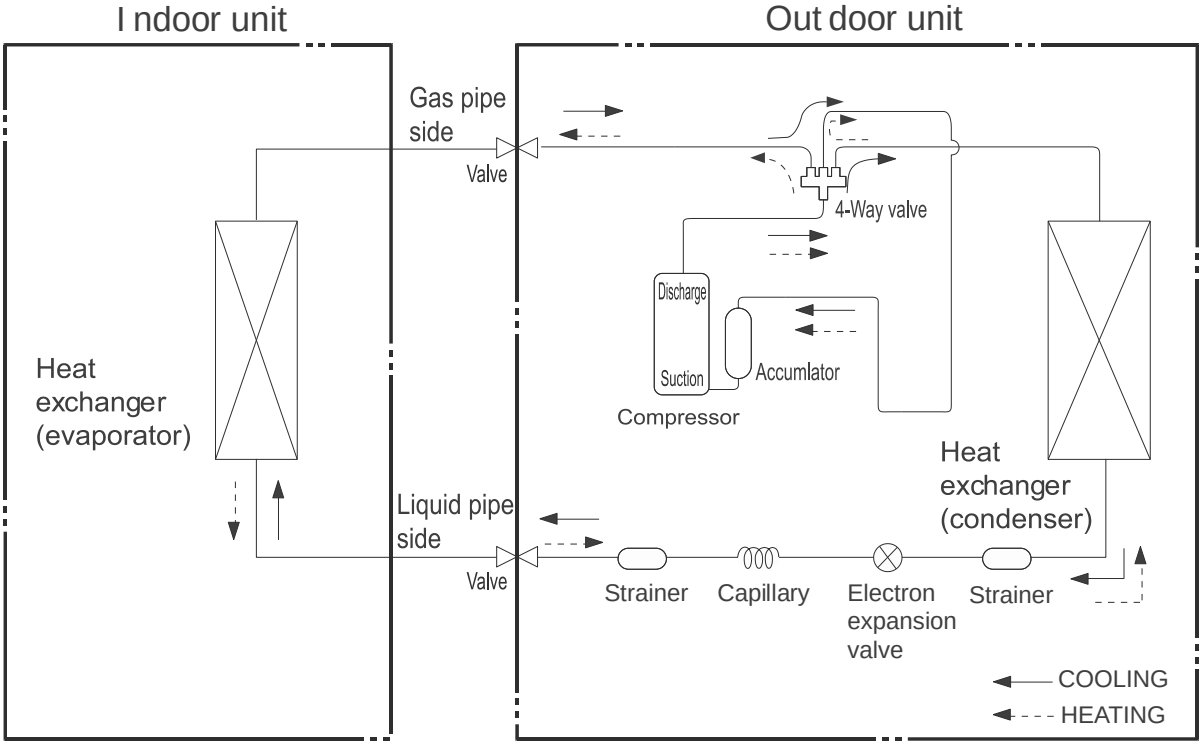


10. REFRIGERATION DIAGRAMS

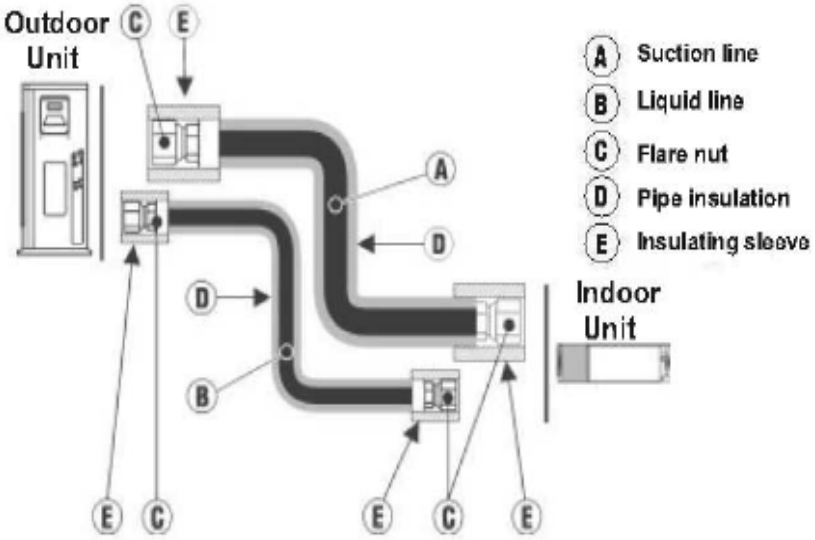
10.1 HOD009+YOD009

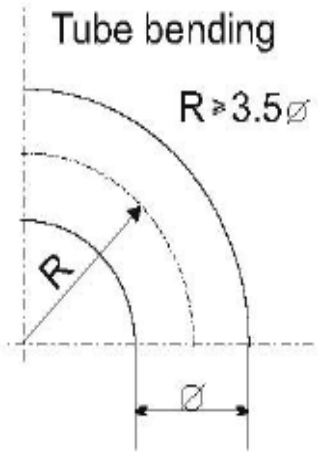


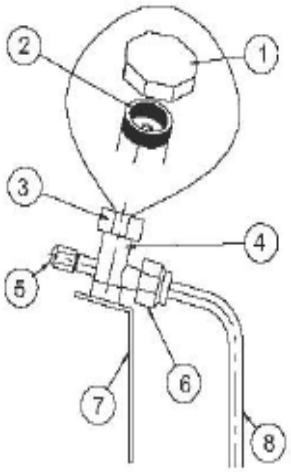
10.2 HOD012+YOD012,HOD018+YOD018, HOD024+YOD024



11. TUBING CONNECTIONS







TUBE (Inch) / TORQUE (Nm)	1/4"	3/8"	1/2"	5/8"	3/4"
Flare Nuts	15-18	40-45	60-65	70-75	80-85
Valve Cap	13-20	13-20	18-25	18-25	40-50
Service Port Cap	11-13	11-13	11-13	11-13	11-13

1. Valve Protection Cap-end
2. Refrigerant Valve Port (use Allen wrench to open/close)
3. Valve Protection Cap
4. Refrigerant Valve
5. Service Port Cap
6. Flare Nut
7. Unit Back Side
8. Copper Tube

When the outdoor unit is installed above the indoor unit an oil trap is required every 5m along the suction line at the lowest point of the riser. In case the indoor unit is installed above the outdoor, no trap is required.

12. CONTROL SYSTEM(TO BE FINISHED)

12.1 Electronic Control

12.1.1 Abbreviations

Abbreviation	Definition
A/C	Air Condition
BMS	Building Management System
PWR	System Power
CTT	Compressor Top Temperature sensor
DCI	DC Inverter
EEV	Electronic Expansion Valve
HE	Heating Element
HMI	Human Machine Interface
HST	Heat Sink Temperature sensor
Hz	Hertz (1/sec) – electrical frequency
ICT	Indoor Coil Temperature (RT2) sensor
IDU	Indoor Unit
MCU	Micro Controller Unit
OAT	Outdoor Air Temperature sensor
OCT	ODU Coil Temperature sensor
ODU	Outdoor Unit
OFAN	Outdoor Fan
PFC	Power Factor Corrector
RAC	Residential A/C
RAT	Room Air Temperature sensor
RC	Reverse Cycle (Heat Pump)
RCT	Remote Control Temperature sensor
RGT	Return Gas Temperature sensor
RPS	Rounds per second (mechanical speed)
RV	Reverse Valve
SB,STBY	Stand By
SUCT	Compressor Suction Temperature sensor
S/W	Software
TBD	To Be Defined
TMR	Timer

12.1.2 System Operation Concept

The control function is divided between indoor and outdoor unit controllers. Outdoor unit is the system ‘Master’, requesting the indoor unit for cooling/heating capacity supply. The indoor unit is the system ‘Slave’ and it must supply the required capacity unless it enters into a protection mode avoiding it from supplying the requested capacity.
Target frequency is transferred via indoor to outdoor communication, and the caculation is based on room temperature and set point temperature.

12.1.3 Compressor Frequency Control

The Compressor Frequency Control is based on the PI scheme.

When starting the compressor, or when conditions are varied due to the change of the room condition, the frequency must be initialized according to the **ΔD** value of the indoor unit and the **Q** value of the indoor unit.

Q value: Indoor unit output determined from indoor unit capacity, air flow rate and other factors.

1. P control

Calculate **ΔD** value in each sampling time (20 seconds), and adjust the frequency according to its difference from the frequency previously calculated.

2. I control

If the operating frequency is not change more than a certain fixed time, adjust the frequency up and down according to the **ΔD** value.

Obtaining the fixed **ΔD** value

When the **ΔD** value is small- decrease the frequency

When the **ΔD** value is large- increase the frequency

3. Frequency management when other controls are functioning

When frequency is drooping;

Frequency management is carried out only when the frequency droops.

For limiting lower limit

Frequency management is carried out only when the frequency rises.

4. Maximum and minimum limits of frequency by PI control

The frequency upper and lower limits are set depending on indoor unit.

When low noise commands come from the indoor unit or when outdoor unit low noise or quiet commands come from indoor unit, the upper limit frequency must be lowered than the usual setting. (see 12.1.3.1)

12.1.3.1 Frequancy range

The compressor frequency limitation is set by the following table

Mode	Minimum Frequency(MinFreq)				Maximum Frequency(MaxFreq)			
	09	12	18	24	09	12	18	24
Cooling	*TBC*	*TBC*	*TBC*	*TBC*	*TBC*	*TBC*	*TBC*	*TBC*
Heating	*TBC*	*TBC*	*TBC*	*TBC*	*TBC*	*TBC*	*TBC*	*TBC*

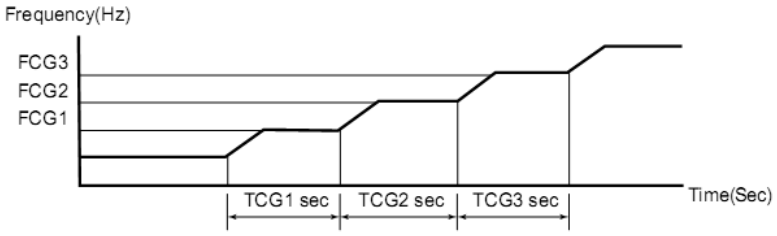
12.1.3.2 Frequency Changes Control

Frequency change rate is 1 Hz/sec.

12.1.3.3 Compressor Starting Control

When turning the compressor from OFF to ON, the upper limit of frequency must be set as follows. (The function must not be used when defrosting.)

FCG3	88
FCG2	64
FCG1	48
TCG1	240
TCG2	360
TCG3	180



12.1.3.4 Minimum On and Off Time

Prohibit to turn ON the compressor for 3 minutes after turning it off.(except during deicing protection)

12.1.4 Indoor Fan Control

Indoor fan can be set by remote control within the range of Mute, Low(F1),Low-Med(F2), Med(F3) , Med-High(F4), High(F5) and Turbo accordingly.

Remote control RC08A has sepcial settings to select 4-speed or 7 speed. (Refer to User manual of RC08A)
Under 4 speed setting, only Turbo – High – Med – Low can be selected.
Under 7 speed setting, can select Silent, F1~F5, and Turbo fan speed.

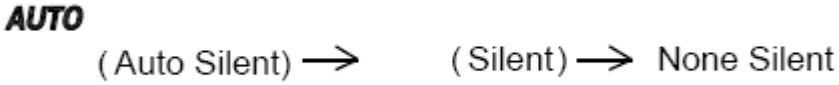
Unit Model	Mode	Turbo	High (F5)	Med-High (F4)	Med (F3)	Low-Med (F2)	Low (F1)	Silent
09	Cooling	1300	1050	1000	900	800	700	500
	Heating	1300	1150	1080	1030	980	900	850
12	Cooling	1350	1070	1000	900	800	700	500
	Heating	1350	1150	1080	1030	980	900	850
18	Cooling	1200	1150	1050	950	850	750	650
	Heating	1350	1200	1100	1000	900	800	700
24	Cooling	1450	1300	1200	1100	1000	900	800
	Heating	1450	1300	1200	1100	1000	900	800

Auto-Fan user setting:
In AutoFan user setting, fan speed will be adjusted automatically according to the difference between actual room temperature(RAT) and user set point temperature(SPT).

Indoor Fan speed		High	Medium	Low	Silent
RAT-SPT	Cooling Mode Fan Mode	>=3	(0,3)	(-2,0]	<=-2
	Heating Mode	<-3	[-3,2)	[2,4)	>=4

There is no Auto fan mode under Dry mode.

Silent mode / Auto Silent mode:
To select the silent mode, hold down the Fan Speed button for at least 5 seconds and then you can switch between Automatic Silent – Silent – Non Silent modes



Auto silent: the fan speed will be adjusted according to change of ambient temperature; when temperature meets the requirement of the setting, the unit will operate at lowest speed.
Silent: When selecting fan speed of mute, the unit will directly operate at lowest fan speed.

12.1.4.1 Turbo Speed

In COOL and HEAT mode (not available in AUTO, DRY, FAN mode), press the Turbo button, the super high fan speed is selected on Remote control and the indoor fan rotates at super high speed.

12.1.5 Outdoor Fan Control

12.1.5.1OFAN Speed Type

The outdoor fan motor is a DC motor and with multiple speeds.

12.1.5.2General rules

1. The outdoor fan is ON when compressor ON during cooling, dring and heating mode.
2. Outdoor fan OFF will delay 30sec when compressor is OFF during cooling and heating mode.
3. Outdoor fan control under outdoor deicing please refer to 12.11.7

12.1.6 Refrigerant control

12.1.6.1 EEV was used in model 09 and 12

1. EEV operation after power-on: When power on, EEV will open 240 steps and then move back with 540steps. This position will be recognized as 0. Then EEV will open to 480 steps and be ready for system operating.
2. EEV open loop: depends on OAT,RAT,SPT and compressor frequency after compressor starts to operate.
3. Target CTT control: will be performed after compressor operates for 5min.The EEV opening will be updated every 5s.

12.1.6.2 Capiliary is used in model 18 and 24

12.1.7 Reversing Valve (RV) Control

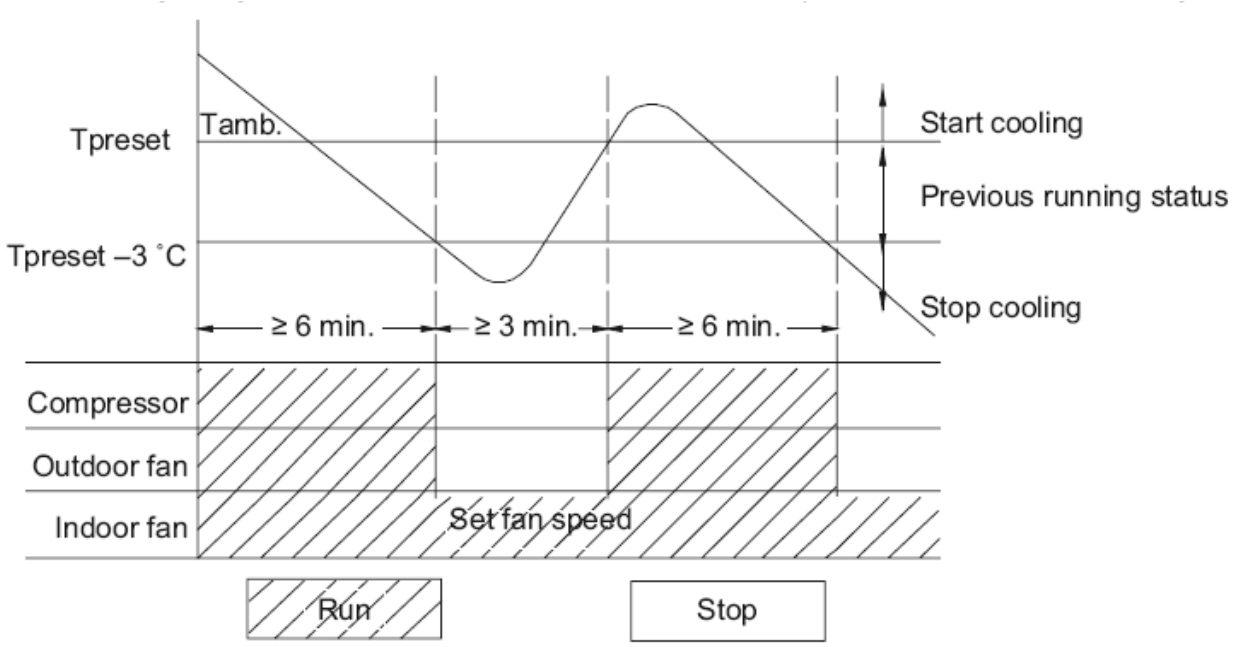
Reversing valve is on in heat mode.
Switching of RV state is done only after compressor is off for over 2 minutes.

12.2 Fan Mode

In this mode, the indoor fan may run at high,medium,low and automatic speed. The compressor, outdoor fan and 4-way valve will be OFF.
In this mode, the range of setting temperature is 16~30 ºC

12.3 Cool Mode

If RAT≥SPT, the unit starts cooling operation. In this case, the compressor and outdoor fan will operate and the indoor fan will run at the setting speed.
If RAT≤SPT-3, the compressor will stop operation and the outdoor fan will stop. While the indoor fan will run at the setting speed.
If SPT-3＜RAT＜SPT, the unit will maintain the previous status.



12.3.1 Indoor Fan operation under Cool Mode

When SPT-RAT<0, if indoor fan motor operates at high speed, the fan motor will operate at medium speed. The medium speed or low speed will be maintained; (this condition should be executed when compressor starts up); this function will be excluded in the super high speed; When (RAT-SPT) ≥1 , the fan will return to the setting fan speed.

In AutoFan user setting, fan speed will be adjusted automatically according to the SPT and RAT, rerfer to 12.1.4

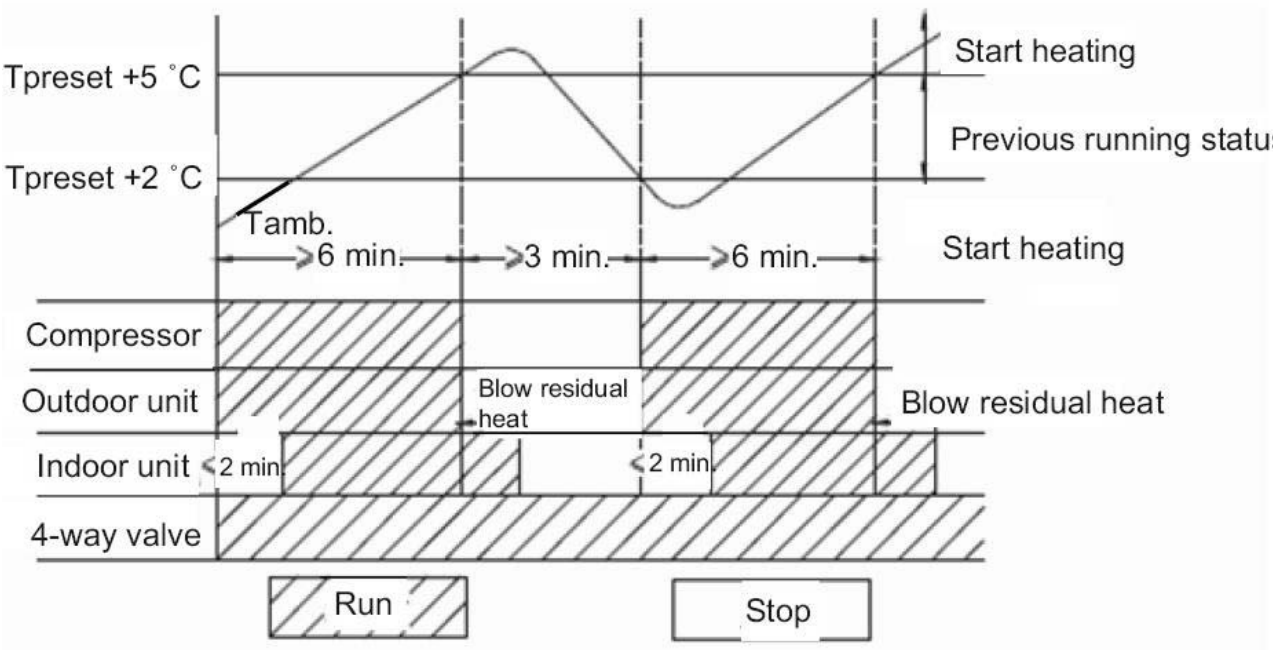
12.3.2 Energy saving mode

In cooling mode, press “ECO” button, the unit will enter into energy saving mode. The IDU display will display “SE”
Under this mode, when compressor operates, The fan speed will work according to RAT and SPT.

Indoor Fan speed	High	Medium	Low
RAT	<=31	(31,SPT+3)	<=SPT+1

12.4 Heat Mode

If RAT≤SPT+2, the unit will operate in heating mode. The compressor, outdoor fan and 4-way valve will operate and the indoor fan operates at cold air prevention mode.
If SPT+2≤RAT≤SPT+5,the unit will maintain the previous status.
If RAT≥SPT+5, the compressor and outdoor fan will stop and the indoor fan blows residual heat. During this period, the fan speed can't be switched.



12.4.1 Indoor Fan Control in Heat Mode

Indoor fan speed depends on the indoor coil temperature

Anti-cold air function
When starting the heating mode, anti-cold air function will be activated and indoor fan can run at low speed or stop running. This function will terminate after the unit runs for 3min or the ICT reaches 42 degree.

Residual heat blowing function
In heating mode, when temperature reaches the set temperature, the compressor and outdoor fan will stop. The horizontal louver (big one) will rotate to the default position for cooling and the other one (small one) will close. Indoor unit will operate at set speed for 60s and then stop operation.

When the unit is in heating mode or auto heating mode, and also the compressor and indoor fan are operating, if turning off the unit, compressor and outdoor fan will stop. Horizontal louver (big one) will rotate to the position where gentle wind is blown out (default position for cooling) and the other horizontal louver (small one) will close. Indoor unit will operate at low speed for 10 seconds and then the unit will be turned off.

12.4.2 8- ºC heating mode

Under heating mode, press button “ECO”, the 8 ºC heating function will be activated and “cold air prevention” will be shield.
8 ºC heating function can not co-exist with Sleep mode and Turbo mode, and the fan speed can not be changed manually. The fan speed will work according to RAT temperature.

Indoor Fan speed	High	Medium	Low
RAT	<=9	(9,11)	>=11

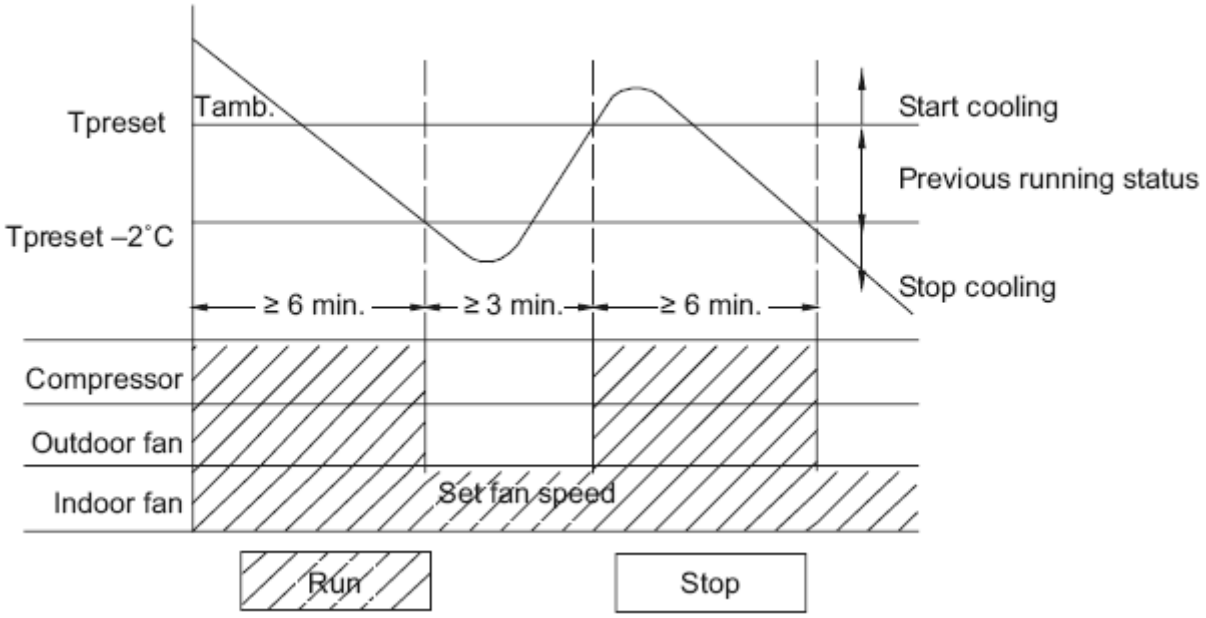
12.5 Auto Cool/Heat Mode

In AUTO mode, the system selects the running mode (COOL/HEAT/FAN) automatically according to the room temperature. The display shows the actual running mode and setting temperature. There will be 30s delay for mode conversion.
The protection function is as the same as that under each mode.

1. When RAT≥26 ºC, the unit will operate at cooling mode, the default set temperature is 25 ºC
2. When RAT≤21 ºC, the unit will operate at heating mode, the default set temperature is 20 ºC
3. When 22 ºC <RAT< 25 ºC, upon initial startup, the unit will enter auto mode and run in automatic fan mode. If the other mode changes into auto mode, the previous running mode will remain.

12.6 Dry Mode

If RAT>SPT, the unit starts drying operation. Indoor fan, outdoor fan and compressor will operate and the indoor fan will run at low speed, Silent speed or Auto silent speed.
If SPT-2≤RAT≤SPT, the unit will keep running in the original mode.
If RAT<SPT-2, the compressor will stop running and the outdoor fan will stop. While the indoor fan will run at low speed, Silent speed or Auto silent speed.
In this mode, the Reverse Valve will be OFF and the temperature setting range is 16~30.



12.7 Clean function

Clean function enables dring the indoor coil after Cool or Dry mode to avoid mould.

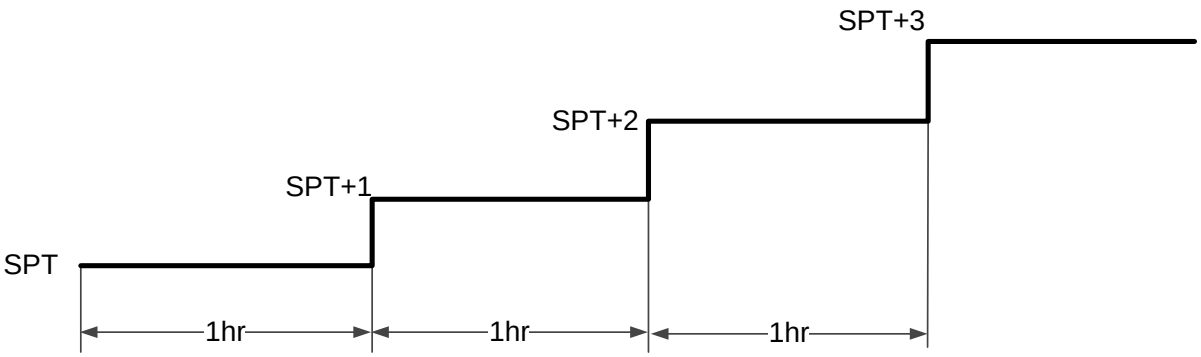
Press CLEAN button in Cool or Dry mode, and the will be shown on remote control.
Under clean function, the indoor fan will continue operation for 10 min at low speed after the unit is turned OFF.

Clean function is defaulted as OFF after unit is Power ON.
Clean function is not available in Auto, Fan or Heat mode.

12.8 Sleep function

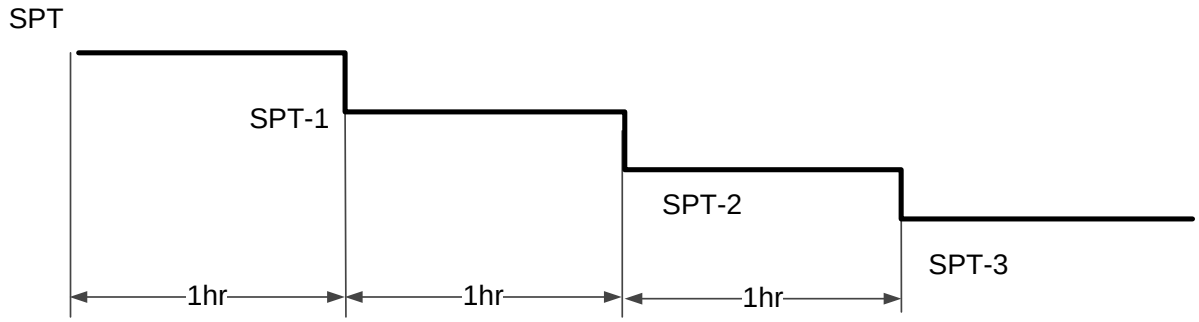
Pressing SLEEP button will enable the Sleep function. will be shown on remote control.

Sleep function in Cool and Dry mode:
The SPT will be adjusted according to following chart.



Sleep function in Heat mode:

The SPT will be adjusted according to following chart.



Press either Sleep button or ON/OFF button can cancel the Sleep function.
Sleep function will not be available in Auto mode or Fan mode.

12.9 I-Feel function

I-Feel function maintains the room temperature by comparing the RCT on remote control.

Pressing IFEEL button will enable the I-Feel function. 

will be shown on remote control.

Under I-Feel funtion, remote control sends I-Feel data every 10 min to IDU controller. If the IDU controller does not received I-Feel data after 11 min. I-Feel function will be interrupted and then the AC will work according to RAT on the IDU.

I-Feel function can not be remembered after power failure.

12.10 8-degree heating

12.11 Protections

There are 4 protection codes.
Normal (Norm) – unit operate normally.
Stop Rise (SR) – compressor frequency can not be raised but does not have to be decreased.
HzDown – Compressor frequency is reduced by 2Hz/s
Stop Compressor (SC) – Compressor is stopped.

12.11.1 Locked protection to Indoor Fan Motor

If the indoor fan motor keeps low rotation speed for a continuous period of time after startup, the unit will stop operation and display “H6”.

12.11.2 Indoor Coil Defrost Protection

Conditions for Start Controlling
Judge the controlling start with the ICT (Indoor Coil Temperature) after 2 sec from operation start.

During cooling operation, the signals being sent from the indoor unit allow the operating frequency limitation and then prevent freezing of the indoor heat exchanger.

Compressor will stop when ICT <= 0 ºC for continuous 3 mins.

If the unit stops as such protection for 6 times, it can not resume running automatically and display error code **E2**, it can resume by pressing ON/OFF.
During the operating, If compressor operates for more than 10min, the counter of stop operation due to protection will be cleared.

12.11.3 Compressor over Heating Protection

The Discharging temperature is used as the compressor's internal temperature. If the discharge temperature rises above a certain level, the operating frequency upper limit is set to keep this temperature from going up further.

Model 09/12 : Compressor will stop when CTT >110C
Model 18/24 : Compressor will stop when CTT >115C

If the unit stops as such protection for 6 times, it can not resume running automatically and display error Code **E4**, it can be resumed by pressing ON/OFF.
During the operating, If compressor operates for more than 10min, the counter of stop operation due to protection will be cleared.

12.11.4 Indoor Coil over Heating Protection(Heat Mode)

Conditions for Start Controlling
Judge the controlling start with the ICT after 2 sec from operation start.

During heating operation, the signals being sent from the indoor unit allow the operating frequency limitation and prevent abnormal high pressure.

Compressor will stop when ICT reaches 62C

If the unit stops as such protection for 6 times, it can not resume running automatically and display the error code **E8**, it can resume by pressing ON/OFF.
During the operating, If compressor operates for more than 10min, the counter of stop operation due to protection will be cleared.

12.11.5 Outdoor Coil Overheating protection (Cool/Dry Mode):

During heating operation, the ODU Coil Overheating Protection is detected by temperature sensor OCT.

Compressor will stop when OCT reaches 62C

If the unit stops as such protection for 6 times, it can not resume running automatically and display the error code **E8**, it can resume by pressing ON/OFF.
During the operating, If compressor operates for more than 10min, the counter of stop operation due to protection will be cleared.

12.11.6 Compressor over Current Protection

Detect an input current by the CT during the compressor is running, and set the frequency upper limit from such input current. In case of heat pump model, this control is the upper limit control function of the frequency which takes priority of the lower limit of four way valve activating compensation.

Compressor will stop when AC current reaches 17.0A (22 A for Model 24) for continuously 2.5s.

If the unit stops as such protection for 6 times, it can not resume running automatically and display error Code **E5**, it can resume by pressing ON/OFF.
During the operating, If compressor operates for more than 10min, the counter of stop operation due to protection will be cleared.

12.11.7 Outdoor Coil Deicing Protection

This protection is for Heat Pump Only
This protection is carried out by the cooling cycle (reverse cycle). The defrosting time or outdoor heat exchanger temperature must be more than its setting values when finishing the deicing protection.
In the deicing protection, IFAN is forced OFF.

12.11.7.1 Deicing Starting Conditions

This protection is for Heat Pump Only
This protection is carried out by the cooling cycle (reverse cycle). The defrosting time or outdoor heat exchanger temperature must be more than its setting values when finishing the deicing protection.
In the deicing protection, IFAN is forced OFF.

12.11.7.2 Deicing Protection Procedure

Deicing Starting Conditions:

The starting conditions is a function of OAT and (OCT). Under the conditions that the system is in heating operation for 3 min (Accumulated time)

After the deicing starting condition is detected for continuous 3minutes, the de-icing will start.

Start deicing:

Compressor stops and starts up 55S later (for 12K is 90s)

Outdoor fan stops operation after compressor stops for 50s.

Finish Deicing:

Compressor stops and starts up 55S later(for 12K is 90s)

When the compressor stops operation, the outdoor fan operates.

12.11.7.3 Exiting Deicing

$OCT >= T_{\text{quit temperature 1}}$

Or Maximum deicing time reaches the Max Deicing Time.

12.11.8 Compressor Overload Protection:

The Discharging temperature is used for detecting the comp' temp'. If the discharge temperature rises above a certain level, the operating frequency upper limit is set to keep this temperature from going up further.

Model 09/12 : Compressor will stop when CTT >110C
Model 18/24 : Compressor will stop when CTT >115C

If the unit stops as such protection for 6 times, it can not resume running automatically and display error Code **E4**, it can be resumed by pressing ON/OFF.
During the operating, If compressor operates for more than 10min, the counter of stop operation due to protection will be cleared.

12.11.9 AC Voltage Drop:

During compressor operation, the system will stop in case of an AC voltage malfunction the unit will resume its operation automatically after 3min.

12.11.10 Communication malfunction:

If the unit does not receive correct signal from indoor unit for 3min continuously, the unit will stop and will show communication malfunction protection (**E6**);
if the communication malfunction had been resumed and the compressor had stopped for a period of 3min, the unit will restart its operation.

12.11.11 Overload protection of compressor

The Over Load Protector (OLP) is equipped to have the protection by compressor shell temperature.
If OLP is detected OPEN for 3s successively, the system will stop operation.
it OLP is detected CLOSE, and compressor has stopped for 3min, the AC can go back to normal operation.
If the unit stops operation due to overload protection of compressor for 3 times successively, the unit can't resume operation automatically and will show **H3** error code, except pressing ON/OFF button.
* The counter can be cleared if compressor operates for 30min.

12.11.12 IPM module protection

After compressor is turned on, Once IPM modular protection signal (by its current or temperature)is detected, the unit will stop operation immediately.
If modular protection is resumed and compressor has stopped for 3min, the complete unit can then be allowed to resume operation.
If the unit stops operation due to modular protection for 3 times successively, the unit can't resume operation automatically and show error code **H5**, except pressing ON/OFF button.
* If compressor has operates for more than 10 min successively, the counter will be cleared.

12.11.13 Modular overheating protection (HST overheating protection)

Protect the IPM modular by reducing compressor frequency or stop compressor according to the Module temperature (HST)
When HST>=80C, compressor frequency will be decreased or stopped increasing.
When HST>=95C, the unit will stop. (Back to normal when HST>87C and Comp OFF time >3mins.)
If the unit stops operation for 6 times, the unit can't resume its operation and show error code **P8** . Only press ON/OFF button can resume the operation.
* If compressor has operates for more than 10 min successively, the counter will be cleared.

12.11.14 Sensor Failure

When the temperature sensor is detected short circuit or open circuit for 5s successively, the unit will stop operation, and error code will be shown accordingly.

Error code of Sensor:

F1 – RAT Sensor Failure
F2 – ICT Sensor Failure
F3 – OAT Sensor Failure
F4 – OCT Sensor Failure
F5 – CTT Sensor Failure

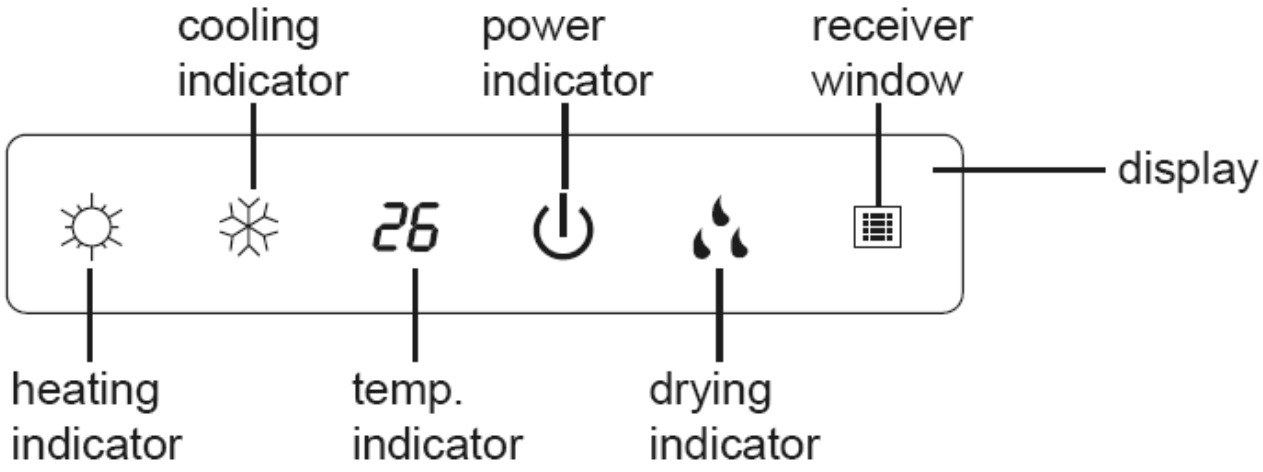
ICT sensor failure will not be detected during ODU deicing stage. It starts detecting the sensor failure after deicing is finished for 5 mins.
Other sensor failure will be detected at any other time.

12.12 Operating the Unit from the ON/OFF Button

The ON/OFF button allows to operate the unit in AUTO mode, the microcomputer will monitor the room temperature and select the (COOL, HEAT, FAN) mode automatically, and temperature/Fan speed settings can not be changed.

12.13 Indoor Unit Controllers and Indicators

The following is schematic drawing for the display:



Power indicator	1. Lights up when the Air Conditioner is connected to power.
Cooling indicator Drying indicator Heating indicator	1. Lights up during specified operation mode (COOL/DRY/HEAT).
Temp. indicator (2* 7 segments)	1. In normal situation, the setting temperature is displayed. 2. Shows outdoor temperature or indoor temperature when receiving the corresponding demand from controller. It resumes displaying setting temperature 5s later 3. Shows the alarm code whenever there is an alarm.(Refer to Diagonostic part)
Unit ON/OFF Button	**Short pressing(Less than 5s)** : Unit will swich between Auto mode and STBY. System will select the COOL/HEAT/FAN mode automatically and temperature/Fan speed settings can not be changed. **Long pressing (5~10s):** System will enter into Force cooling operating

12.14 Test Mode

TO BE CONFIRMED

13. TROUBLESHOOTING

13.1 ELECTRICAL & CONTROL TROUBLESHOOTING

13.1.1 Precautions before Performing Inspection or Repair

Be cautious during installation and maintenance. Do operation following the regulations to avoid electric shock and casualty or even death due to drop from high attitude.

* **Static maintenance** is the maintenance during de-energization of the air conditioner. For static maintenance, make sure that the unit is de-energized and the plug is disconnected.

***Dynamic maintenance** is the maintenance during energization of the unit. Before dynamic maintenance, check the electricity and ensure that there is ground wire on the site. Check if there is electricity on the housing and connection copper pipe of the air conditioner with voltage tester. After ensure insulation place and the safety, the maintenance can be performed.

Take sufficient care to avoid directly touching any of the circuit parts without first turning off the power. At time such as when the circuit board is to be replaced, place the circuit board assembly in a vertical position. Normally,diagnose troubles according to the trouble diagnosis procedure as described below.(Refer to the check points in servicing written on the wiring diagrams attached to the indoor/outdoor units.)

Precautions when inspecting the control section of the outdoor unit:
A large-capacity electrolytic capacitor is used in the outdoor unit controller (inverter).Therefore,if the power supply is turned off, charge(charging voltage DC280V to 380V)remains and discharging takes a lot of time. After turning off the power source,if touching the charging section before discharging, an electrical shock may be caused.
The outdoor unit can not be started up until the unit is de-energized for 20min

13.1.2 Confirmation

13.1.2.1 Confirmation of Power Supply Confirm that the power breaker operates(ON) normally;

13.1.2.2 Confirmation of Power Voltage Confirm that power voltage is AC220~240V +/- 10%. If power voltage is not in this range, the unit may not operate normally.

13.1.3 Judgment by Indoor/Outdoor Unit Diagnostics

If the malfunction still exists 4min later after stop of unit due to compressor protection, error code will be directly displayed though indoor display.

NO.	Malfunction Name	Display Method of Indoor Unit				Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
1	High pressure protection of system	E1	OFF 3s and blink once						During cooling and drying operation, except indoor fan operates, all loads stop operation. During heating operation, the complete unit stops.	Possible reasons: 1. Refrigerant was superabundant; 2. Poor heat exchange (including filth blockage of heat exchanger and bad radiating environment); Ambient temperature is too high.
2	Antifreezing protection	E2	OFF 3S and blink twice			OFF 3S and blink 3 times			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates.	1. Poor air-return in indoor unit; 2. Fan speed is abnormal; 3. Evaporator is dirty.
3	System block or refrigerant leakage	E3	OFF 3S and blink 3 times				OFF 3S and blink 9 times		The Dual-8 Code Display will show E3 until the low pressure switch stop operation.	1.Low-pressure protection 2.Low-pressure protection of system 3.Low-pressure protection of compressor
4	High discharge temperature protection of compressor	E4	OFF 3S and blink 4 times			OFF 3S and blink 7 times			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Please refer to the malfunction analysis (discharge protection, overload).
5	Overcurrent protection	E5	OFF 3S and blink 5 times			OFF 3S and blink 5 times			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	1. Supply voltage is unstable; 2. Supply voltage is too low and load is too high; 3. Evaporator is dirty.
6	Communi-cation Malfunction	E6	OFF 3S and blink 6 times					OFF	During cooling operation, compressor stops while indoor fan motor operates. During heating operation, the complete unit stops.	Refer to the corresponding malfunction analysis.
7	High temperature resistant protection	E8	OFF 3S and blink 8 times			OFF 3S and blink 6 times			During cooling operation: compressor will stop while indoor fan will operate. During heating operation, the complete unit stops.	Refer to the malfunction analysis (overload, high temperature resistant).
8	EEPROM malfunction	EE			OFF 3S and blink 15 times	OFF 3S and blink 11 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
9	Limit/ decrease frequency due to high temperature of module	EU		OFF 3S and blink 6 times	OFF 3S and blink 6 times				All loads operate normally, while operation frequency for compressor is decreased	Discharging after the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.
10	Malfunction protection of jumper cap	C5	OFF 3S and blink 15 times						Wireless remote receiver and button are effective, but can not dispose the related command	1. No jumper cap insert on mainboard. 2. Incorrect insert of jumper cap. 3. Jumper cap damaged. 4. Abnormal detecting circuit of mainboard.

NO.	Malfunction Name	Display Method of Indoor Unit				Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
11	Gathering refrigerant	F0	OFF 3S and blink 1 times	OFF 3S and blink 1 times					When the outdoor unit receive signal of Gathering refrigerant ,the system will be forced to run under cooling mode for gathering refrigerant	Nominal cooling mode
12	Indoor ambient temperature sensor is open/short circuited	F1		OFF 3S and blink once					During cooling and drying operation, indoor unit operates while other loads will stop; during heating operation, the complete unit will stop operation.	1. Loosening or bad contact of indoor ambient temp. sensor and mainboard terminal. 2. Components in mainboard fell down leads short circuit. 3. Indoor ambient temp. sensor damaged.(check with sensor resistance value chart) 4. Mainboard damaged.
13	Indoor evaporator temperature sensor is open/short circuited	F2		OFF 3S and blink twice					AC stops operation once reaches the setting temperature. Cooling, drying: internal fan motor stops operation while other loads stop operation; heating: AC stop operation	1. Loosening or bad contact of Indoor evaporator temp. sensor and mainboard terminal. 2. Components on the mainboard fall down leads short circuit. 3. Indoor evaporator temp. sensor damaged.(check temp. sensor value chart for testing) 4. Mainboard damaged.
14	Outdoor ambient temperature sensor is open/short circuited	F3		OFF 3S and blink 3 times			OFF 3S and blink 6 times		During cooling and drying operating, compressor stops while indoor fan operates; During heating operation, the complete unit will stop operation	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
15	Outdoor condenser temperature sensor is open/short circuited	F4		OFF 3S and blink 4 times			OFF 3S and blink 5 times		During cooling and drying operation, compressor stops while indoor fan will operate; During heating operation, the complete unit will stop operation.	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
16	Outdoor discharge temperature sensor is open/short circuited	F5		OFF 3S and blink 5 times			OFF 3S and blink 7 times		During cooling and drying operation, compressor will sop after operating for about 3 mins, while indoor fan will operate; During heating operation, the complete unit will stop after operating for about 3 mins.	1.Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor) 2.The head of temperature sensor hasnt been inserted into the copper tube
17	Limit/ decrease frequency due to overload	F6		OFF 3S and blink for 6 times			OFF 3S and blink 3 times		All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)
18	Decrease frequency due to overcurrent	F8		OFF 3S and blink 8 times			OFF 3S and blink once		All loads operate normally, while operation frequency for compressor is decreased	The input supply voltage is too low; System pressure is too high and overload

.

NO.	Malfunction Name	Display Method of Indoor Unit				Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
19	Decrease frequency due to high air discharge	F9		OFF 3S and blink 9 times			OFF 3S and blink twice		All loads operate normally, while operation frequency for compressor is decreased	Overload or temperature is too high; Refrigerant is insufficient; Malfunction of electric expansion valve (EKV)
20	Limit/ decrease frequency due to antifreezing	FH		OFF 3S and blink 2 times	OFF 3S and blink 2 times		OFF 3S and blink 4 times		All loads operate normally, while operation frequency for compressor is decreased	Poor air-return in indoor unit or fan speed is too low
21	Voltage for DC bus-bar is too high	PH		OFF 3S and blink 11 times		OFF 3S and blink 13 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 265VAC, turn on the unit after the supply voltage is increased to the normal range. 2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1)
22	Voltage of DC bus-bar is too low	PL			OFF 3S and blink 21 times	OFF 3S and blink 12 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 150VAC, turn on the unit after the supply voltage is increased to the normal range. 2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1)
23	Compressor Min frequence in test state	P0		(during blinking, ON 0.25s and OFF 0.25s)	(during blinking, ON 0.25s and OFF 0.25s)					Showing during min. cooling or min. heating test
24	Compressor rated frequence in test state	P1		(during blinking, ON 0.25s and OFF 0.25s)	(during blinking, ON 0.25s and OFF 0.25s)					Showing during nominal cooling or nominal heating test
25	Compressor maximum frequence in test state	P2		(during blinking, ON 0.25s and OFF 0.25s)	(during blinking, ON 0.25s and OFF 0.25s)					Showing during max. cooling or max. heating test

NO.	Malfunction Name	Display Method of Indoor Unit				Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
26	Compressor intermediate frequence in test state	P3		(during blinking, ON 0.25s and OFF 0.25s)	(during blinking, ON 0.25s and OFF 0.25s)					Showing during middle cooling or middle heating test
27	Overcurrent protection of phase current for compressor	P5		OFF 3S and blink 15 times					During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
28	Charging malfunction of capacitor	PU			OFF 3S and blink 17 times				During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Refer to the part three—charging malfunction analysis of capacitor
29	Malfunction of module temperature sensor circuit	P7			OFF 3S and blink 18 times				During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
30	Module high temperature protection	P8			OFF 3S and blink 19 times				During cooling operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	After the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.
31	Decrease frequency due to high temperature resistant during heating operation	H0			OFF 3S and blink 10 times				All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)
32	Static dedusting protection	H2			OFF 3S and blink twice					
33	Overload protection for compressor	H3			OFF 3S and blink 3 times	OFF 3S and blink 8 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Wiring terminal OVC-COMP is loosened. In normal state, the resistance for this terminal should be less than 1ohm. 2.Refer to the malfunction analysis (discharge protection, overload)

NO.	Malfunction Name	Display Method of Indoor Unit				Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
34	System is abnormal	H4			OFF 3S and blink 4 times	OFF 3S and blink 6 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (overload, high temperature resistant)
35	IPM protection	H5			OFF 3S and blink 5 times	OFF 3S and blink 4 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
36	Module temperature is too high	H5			OFF 3S and blink 5 times	OFF 3S and blink 10 times				
37	Internal motor (fan motor) do not operate	H6	OFF 3S and blink 11 times						Internal fan motor, external fan motor, compressor and electric heater stop operation,guide louver stops at present location.	1. Bad contact of DC motor feedback terminal. 2. Bad contact of DC motor control end. 3. Fan motor is stalling. 4. Motor malfunction. 5. Malfunction of mainboard rev detecting circuit.
38	Desynchro-nizing of compressor	H7			OFF 3S and blink 7 times				During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
39	PFC protection	HC			OFF 3S and blink 6 times	OFF 3S and blink 14 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis
40	Outdoor DC fan motor malfunction	L3	OFF 3S and blink 23 times				OFF 3S and blink 14 times		Outdoor DC fan motor malfunction lead to compressor stop operation,	DC fan motor malfunction or system blocked or the connector loosed
41	power protection	L9	OFF 3S and blink 20 times			OFF 3S and blink 9 times			compressor stop operation and Outdoor fan motor will stop 30s latter , 3 minutes latter fan motor and compressor will restart	To protect the electronical components when detect high power
42	Indoor unit and outdoor unit doesn't match	LP	OFF 3S and blink 19 times			OFF 3S and blink 16 times			compressor and Outdoor fan motor can’t work	Indoor unit and outdoor unit doesn't match
43	Failure start-up	LC			OFF 3S and blink 11 times				During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis

NO.	Malfunction Name	Display Method of Indoor Unit				Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
44	Malfunction of phase current detection circuit for compressor	U1			OFF 3S and blink 13 times				During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
45	Malfunction of voltage dropping for DC bus-bar	U3			OFF 3S and blink 20 times				During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Supply voltage is unstable
46	Malfunction of complete units current detection	U5		OFF 3S and blink 13 times					During cooling and drying operation, the compressor will stop while indoor fan will operate; During heating operating, the complete unit will stop operation.	Theres circuit malfunction on outdoor units control panel AP1, please replace the outdoor units control panel AP1.
47	The four-way valve is abnormal	U7		OFF 3S and blink 20 times					If this malfunction occurs during heating operation, the complete unit will stop operation.	1.Supply voltage is lower than AC175V; 2.Wiring terminal 4V is loosened or broken; 3.4V is damaged, please replace 4V.
48	Zero-crossing malfunction of outdoor unit	U9	OFF 3S and blink 18 times						During cooling operation, compressor will stop while indoor fan will operate; during heating,the complete unit will stop operation.	Replace outdoor control panel AP1
49	Frequency limiting (power)						OFF 3S and blink 13 times			
50	Compressor is open-circuited					OFF 3S and blink once				
51	The temperature for turning on the unit is reached						OFF 3S and blink 8 times			
52	Frequency limiting (module temperature)						OFF 3S and blink 11 times			

NO.	Malfunction Name	Display Method of Indoor Unit				Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
53	Normal communica-tion							continously		
54	Defrosting				OFF 3S and blink once (during blinking, ON 10s and OFF 0.5s)	OFF 3S and blink twice			Defrosting will occur in heating mode. Compressor will operate while indoor fan will stop operation.	Its the normal state

13.1.4 Checking the refrigeration system

Checking system pressures and other thermodynamic measures should be done when system is in Test Mode (in Test mode, system operates in fixed settings). The performance curves given in this manual are given for unit performance in test mode when high indoor fan speed is selected.
Entering test mode please refer to section 12- Control system.

13.2 Simple procedures for checking the Main Parts

13.2.1 Checking Mains Voltage.

Confirm that the Mains voltage is between 198 and 264 VAC. If Mains voltage is out of this range, abnormal operation of the system is expected. If in range check the Power (Circuit) Breaker and look for broken or loosed cable lugs or wiring mistake(s).

13.2.2 Checking Power Input.

If Indoor unit power LED is unlighted, power down the system and check the fuse of the Indoor unit. If the fuse is OK replace the Indoor unit controller. If the fuse has blown, replace the fuse and power up again.
Checking Power Input procedure for the Outdoor unit is the same as with the Indoor unit.

13.2.3 Checking the Outdoor Fan Motor.

For AC motor
Check the voltage between two pins Hi and N of connector OFAN on controller, normal voltage is 220~240VAC.

For DC Motor
Check the voltage between any two pins of connector OFAN on controller, normal voltage is 280~380VDC

13.2.4 Checking the Compressor.

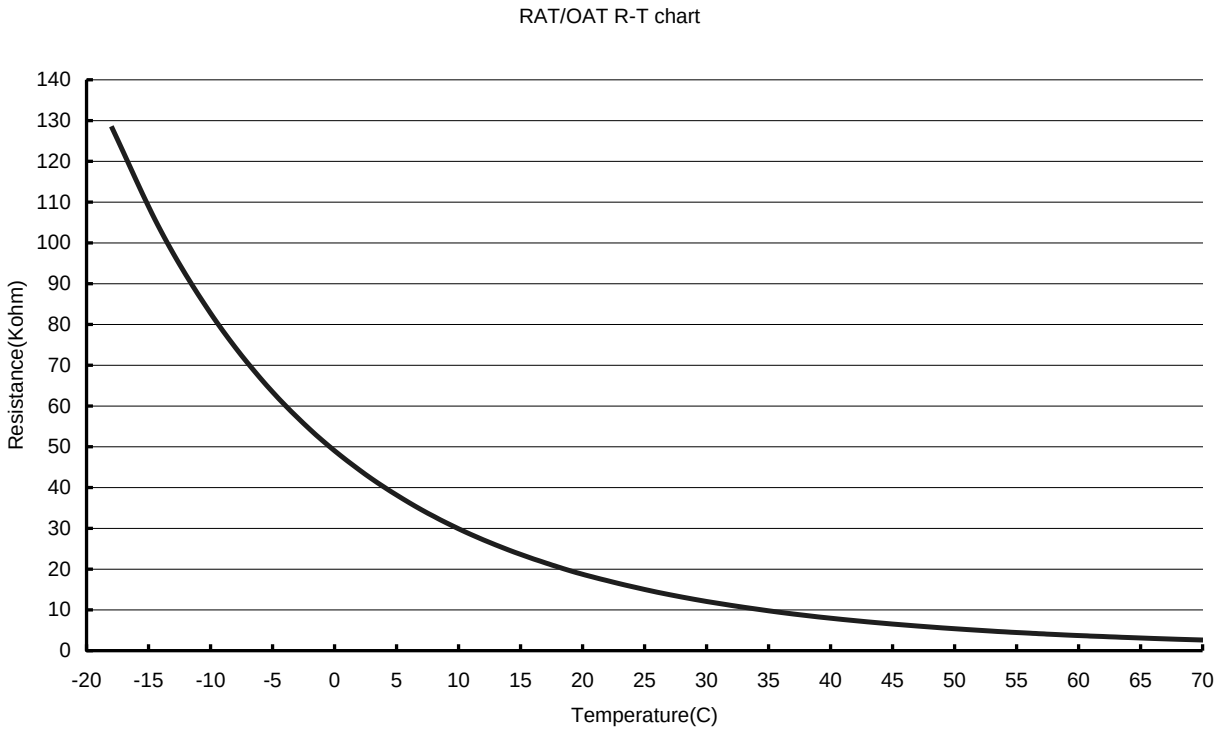
The compressor is brushless permanence magnetic DC motor. Three coil resistance is same. Check the resistance between three poles. The normal value should be with the almost same value. Pay attention U,V, W are respective to connect to RED,YELLOW,BLUE wires.

13.2.5 Checking the Reverse Valve (RV).

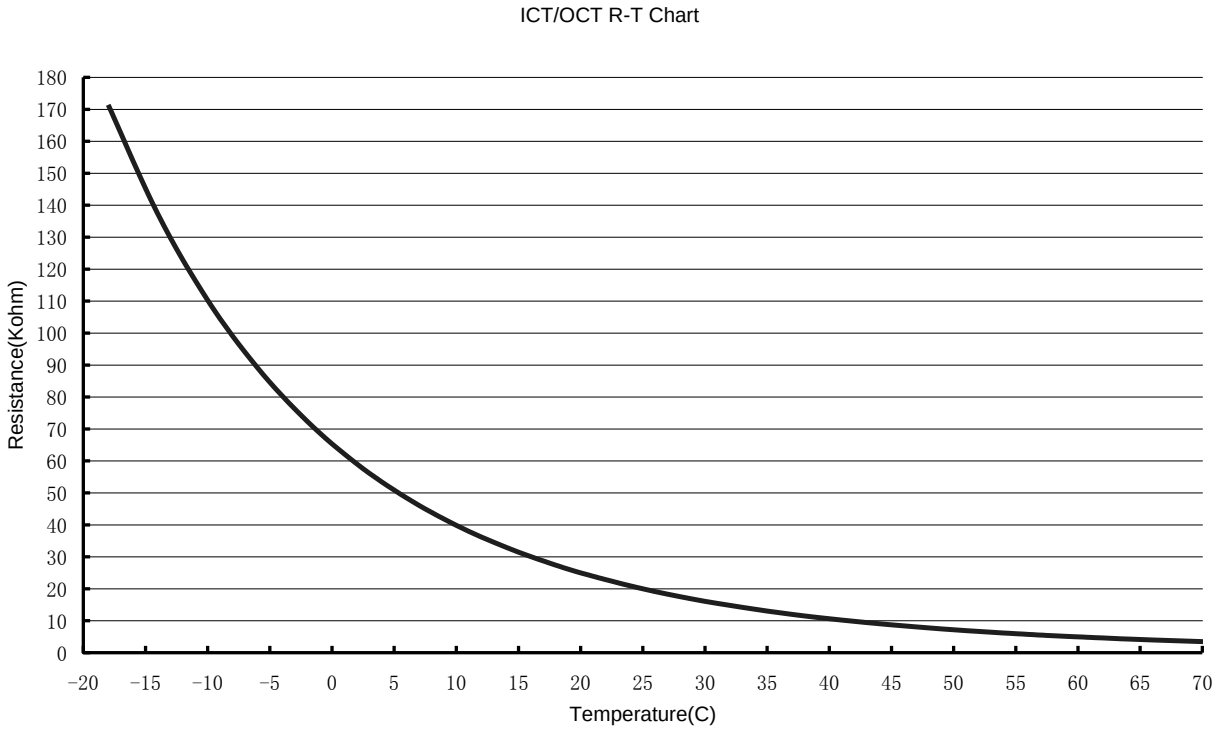
Running in heating mode, check the voltage between two pins of reverse valve connector, normal voltage is 220~240VAC.

14. CHARACTERISTICS OF SENSOR

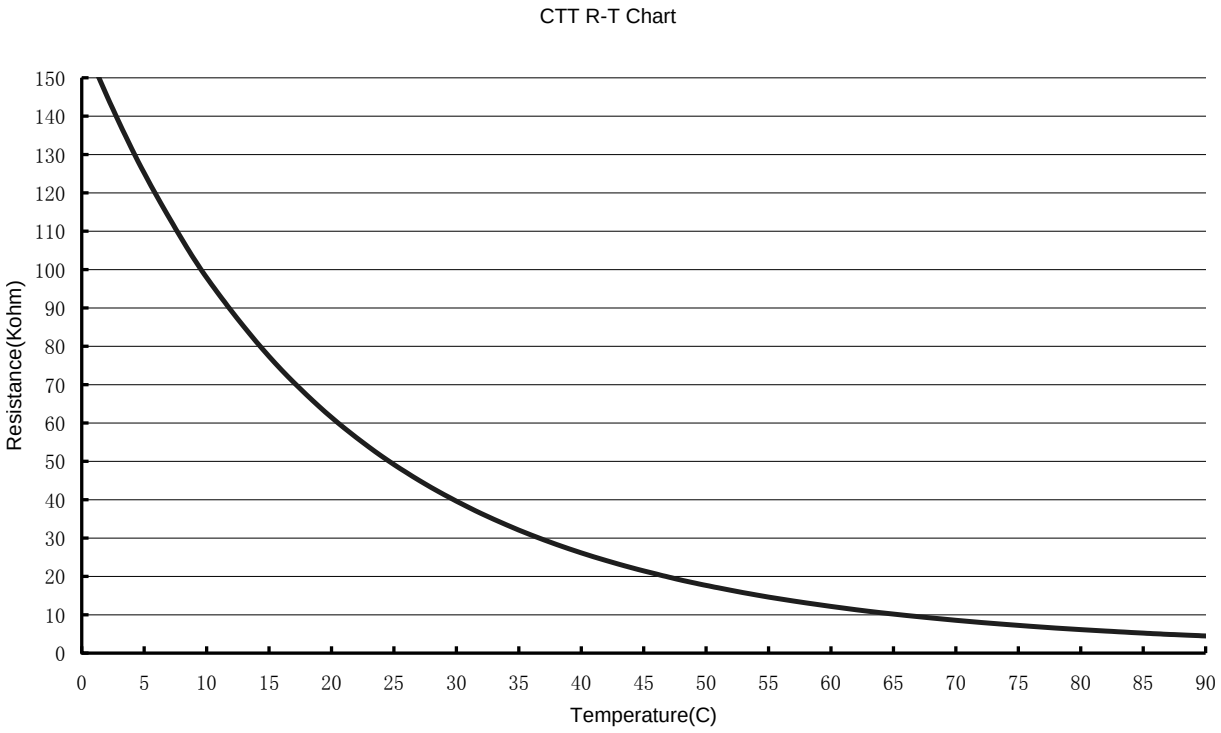
14.1.1 RAT/OAT



14.1.2 ICT/OCT

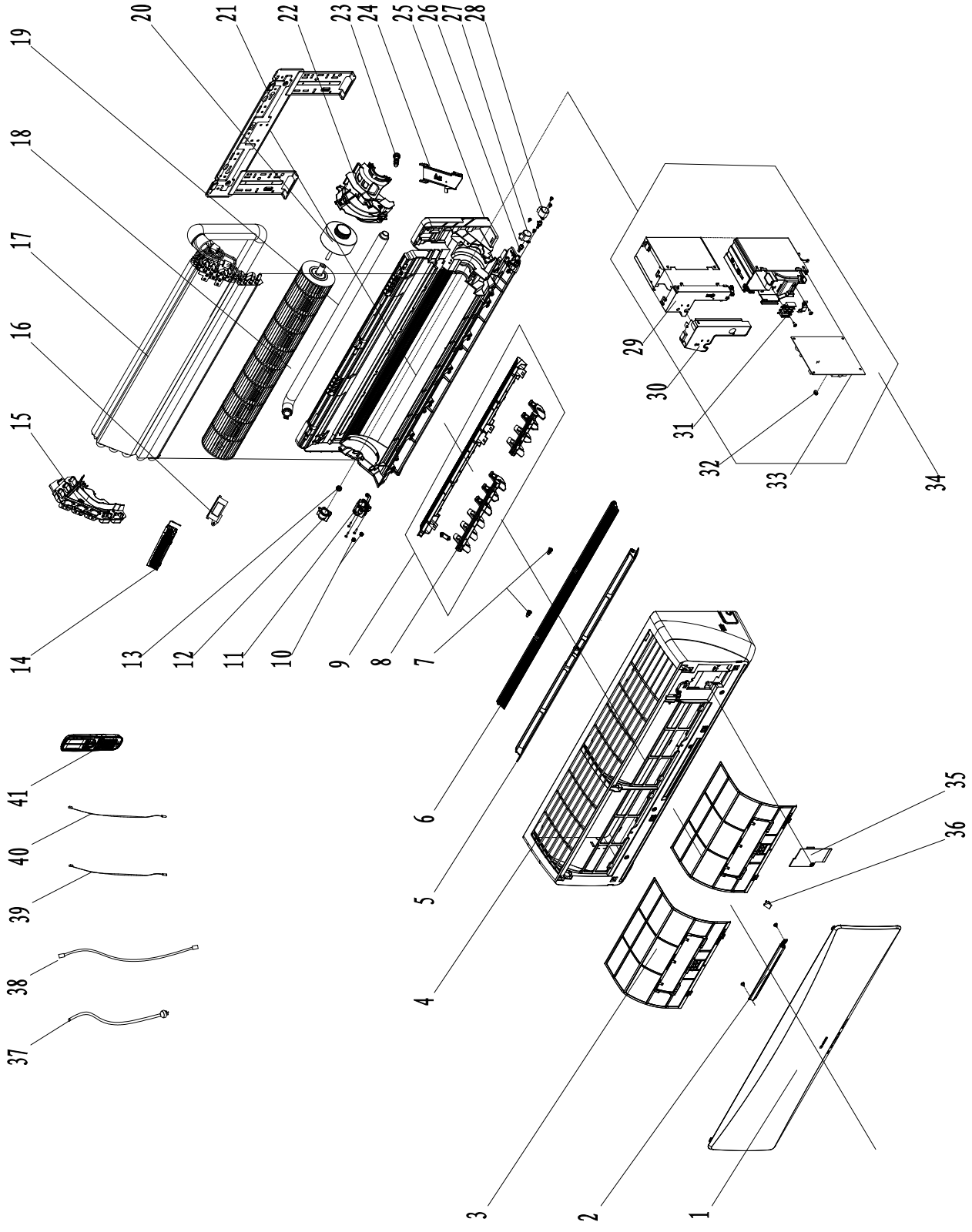


14.1.3 CTT


CTT R-T Chart
Resistance(Kohm)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
Temperature(C)

15. EXPLODED VIEW & SPARE PART LIST

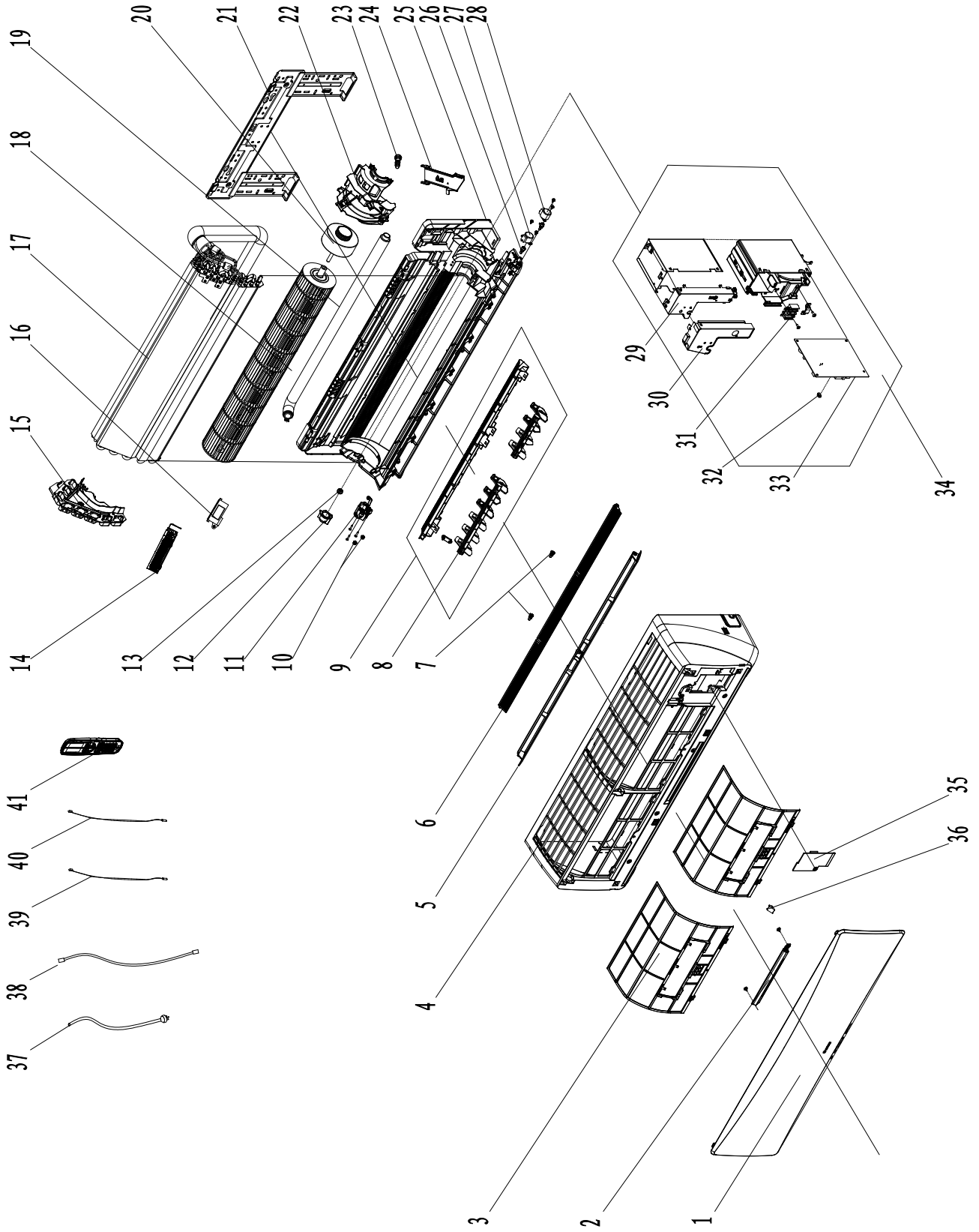
15.1 Exploded view of indoor unit: HOD009



15.2 Spare part list of indoor Unit: HOD009

NO.	Part Code	Part Description	qty
1	27230003621	Front Panel	1
2	30565140	Display Board	1
3	1112211602	Filter Sub-Assy	2
4	2001288901	Front Case Sub-assy	1
5	10512147	Guide Louver	1
6	10512127	Guide Louver (small)	1
7	10542036	Axial Bush	2
8	10512232	Air Louver (left)	1
9	2611224401	Helicoid Tongue sub-assy	1
10	10512037	Left Axial Bush	2
11	15212123	Stepping Motor	1
12	1054202101	Propeller Axile Bush	1
13	76512210	Fan Bearing	1
14	11012027	Electrostatic Duster	1
15	24212114	Evaporator Support	1
16	1114001601	Cold Plasma Generator	1
17	0100294511	Evaporator Assy	1
18	10352033	Cross Flow Fan	1
19	05230014	Drainage Hose	1
20	15012510	Fan Motor	1
21	01252484	Wall Mounting Frame	1
22	26112209	Motor Press Plate	1
23	76712012	Rubber Plug (Water Tray)	1
24	2611216402	Connecting pipe clamp	1
25	2220216104	Rear Case assy	1
26	10582070	Crank	1
27	15212125	Stepping Motor	1
28	15212126	Stepping Motor	1
29	2012240901	Electric Box Cover	1
30	01592084	Shield Cover of Electric Box	1
31	42011233	Terminal Board	1
32	4202300102	Jumper	1
33	30138000636	Main Board	1
34	10000201684	Electric Box Assy	1
35	20122075	Electric Box Cover2	1
36	24252016	Screw Cover	1
39	390000598	Temperature Sensor	1
40	390000451	Temperature Sensor	1
41	30510460_L34658	Remote Controller	1

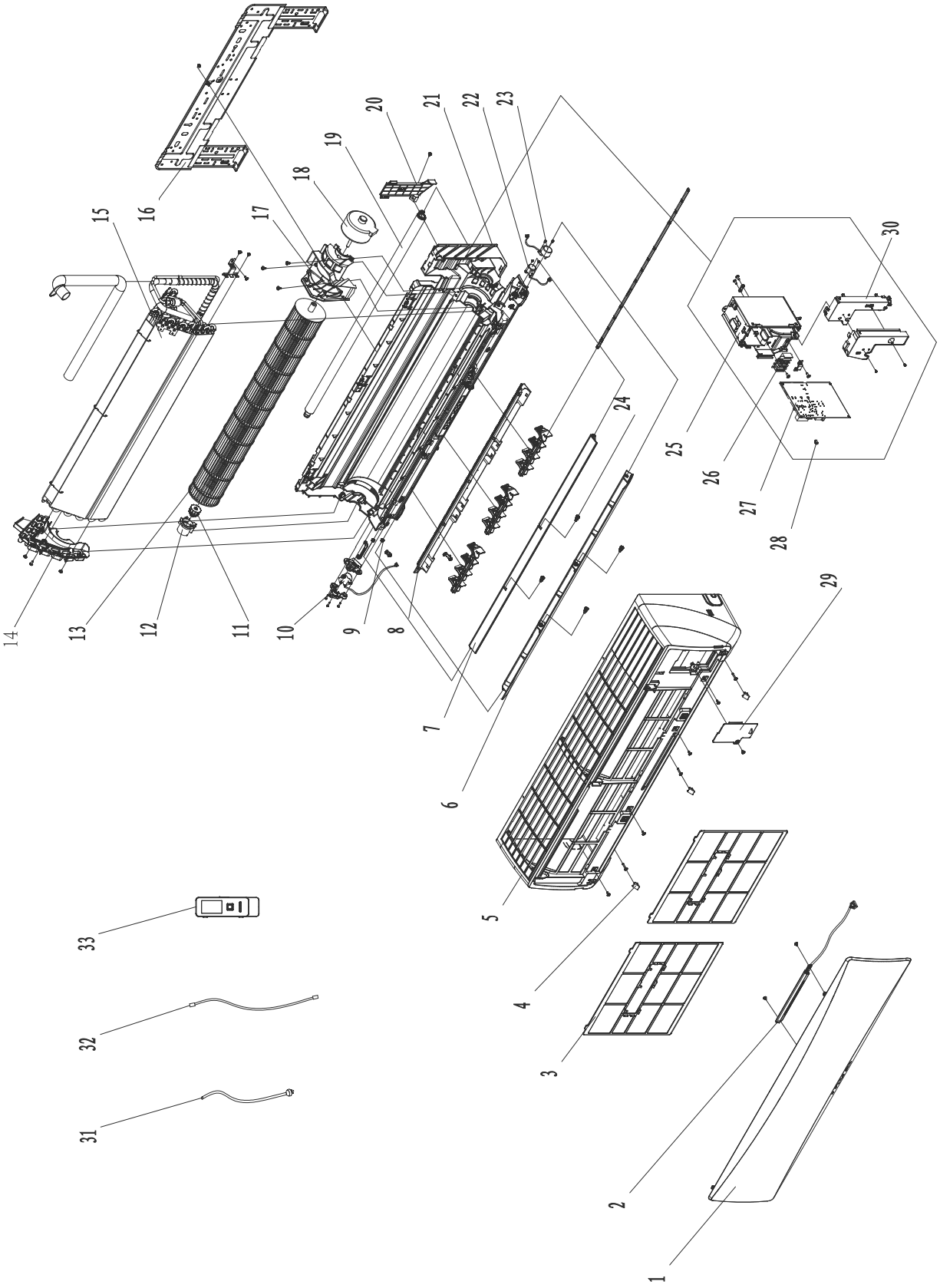
15.4 Exploded view of indoor unit: HOD012



15.5 Spare part list of indoor Unit: HOD012

NO.	Part Code	Part Description	qty
1	27230003621	Front Panel	1
2	30565140	Display Board	1
3	1112211602	Filter Sub-Assy	2
4	2001288901	Front Case Sub-assy	1
5	10512147	Guide Louver	1
6	10512127	Guide Louver (small)	1
7	10542036	axial Bush	2
8	10512232	Air Louver (left)	1
9	2611224401	Helicoid Tongue sub-assy	1
10	10512037	Left axial Bush	2
11	15212123	Stepping Motor	1
12	1054202101	Propeller Axile Bush	1
13	76512210	Fan Bearing	1
14	11012027	Electrostatic Duster	1
15	24212114	Evaporator Support	1
16	1114001601	Cold Plasma Generator	1
17	01002641	Evaporator Assy	1
18	10352033	Cross Flow Fan	1
19	05230014	Drainage Hose	1
20	15012510	Fan Motor	1
21	01252484	Wall Mounting Frame	1
22	26112209	Motor Press Plate	1
23	76712012	Rubber Plug (Water Tray)	1
24	2611216402	Connecting pipe clamp	1
25	2220216104	Rear Case assy	1
26	10582070	Crank	1
27	15212125	Stepping Motor	1
28	15212126	Stepping Motor	1
29	2012240901	Electric Box Cover	1
30	01592084	Shield Cover of Electric Box	1
31	42011233	Terminal Board	1
32	4202300103	Jumper	1
33	30138000636	Main Board	1
34	10000201696	Electric Box Assy	1
35	20122075	Electric Box Cover2	1
36	24252016	Screw Cover	1
39	390000598	Temperature Sensor	1
40	390000451	Temperature Sensor	1
41	30510460_L34658	Remote Controller	1

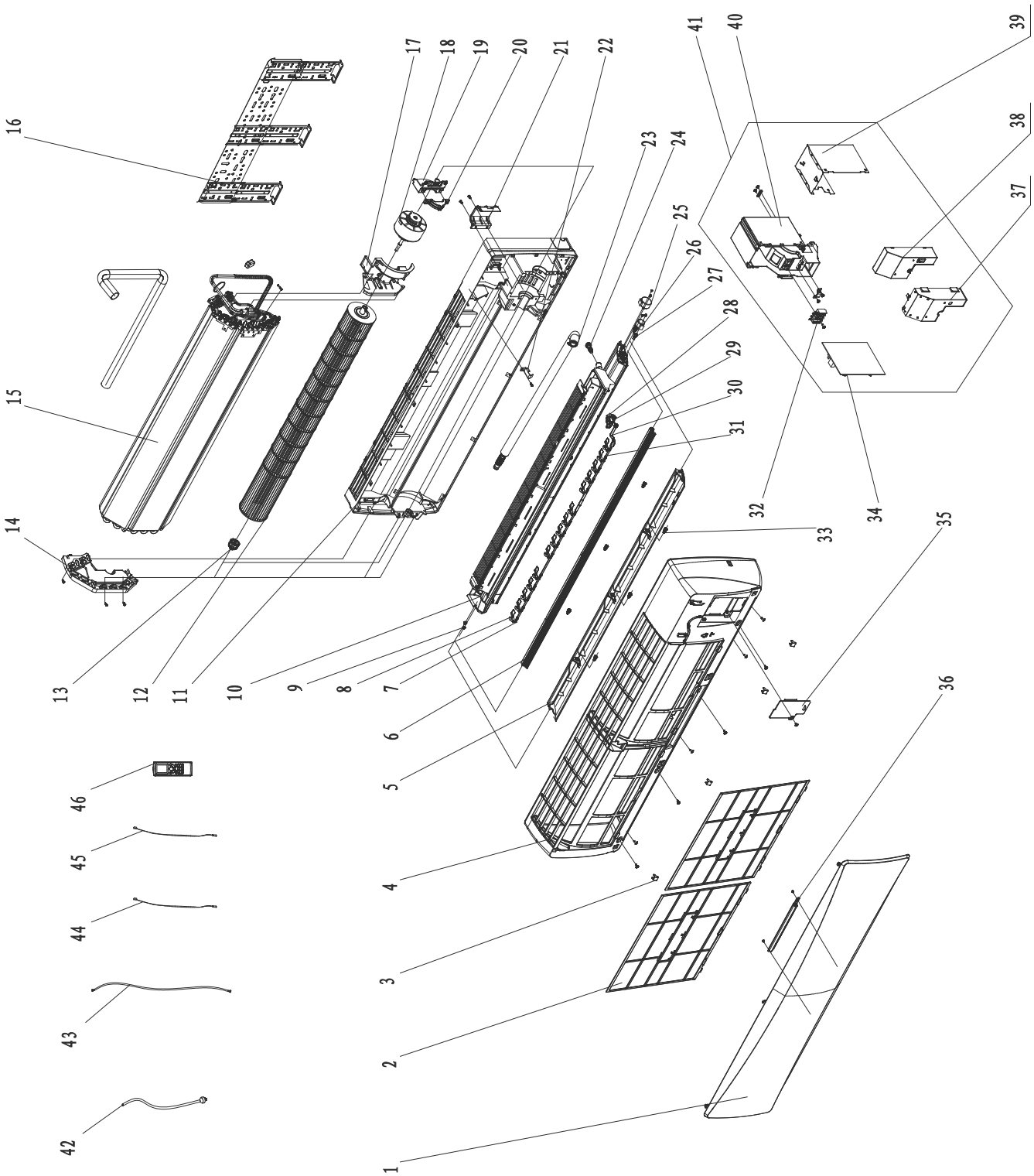
15.6 Exploded view of indoor unit: HOD018



15.7 Spare part list of indoor Unit: HOD018

NO.	Part Code	Part Description	qty
1	27230004504	Front Panel	1
2	30565141	Display Board	1
3	1112209105	Filter Sub-Assy	2
4	24252016	Screw Cover	3
5	20012821	Front Case	1
6	10512225	Guide Louver	1
7	1051222601	Guide Louver (small)	1
8	2611236701	Helicoid Tongue	1
9	1051203701	Left axial Bush	2
10	1501208602	Stepping Motor	1
11	76512203	O-Gasket of Cross Fan Bearing	1
12	26152025	Ring of Bearing	1
13	10352045	Cross Flow Fan	1
14	24212139	Evaporator Support	1
15	0100238601	Evaporator Assy	1
16	01252123	Wall Mounting Frame	1
17	26112330	Motor Press Plate	1
18	1501212701	Fan Motor	1
19	0523001406	Drainage Hose	1
20	26112188	Connecting pipe clamp	1
21	22202361	Rear Case assy	1
22	1501208603	Stepping Motor	1
23	1521212901	Stepping Motor	1
24	10542036	axial Bush	2
25	20112181	Electric Box	1
26	42011233	Terminal Board	1
27	30138000635	Main Board	1
28	4202300112	Jumper	1
29	20122142	Electric Box Cover2	1
30	2012240901	Electric Box Cover	1
33	30510460_L34658	Remote Controller	1

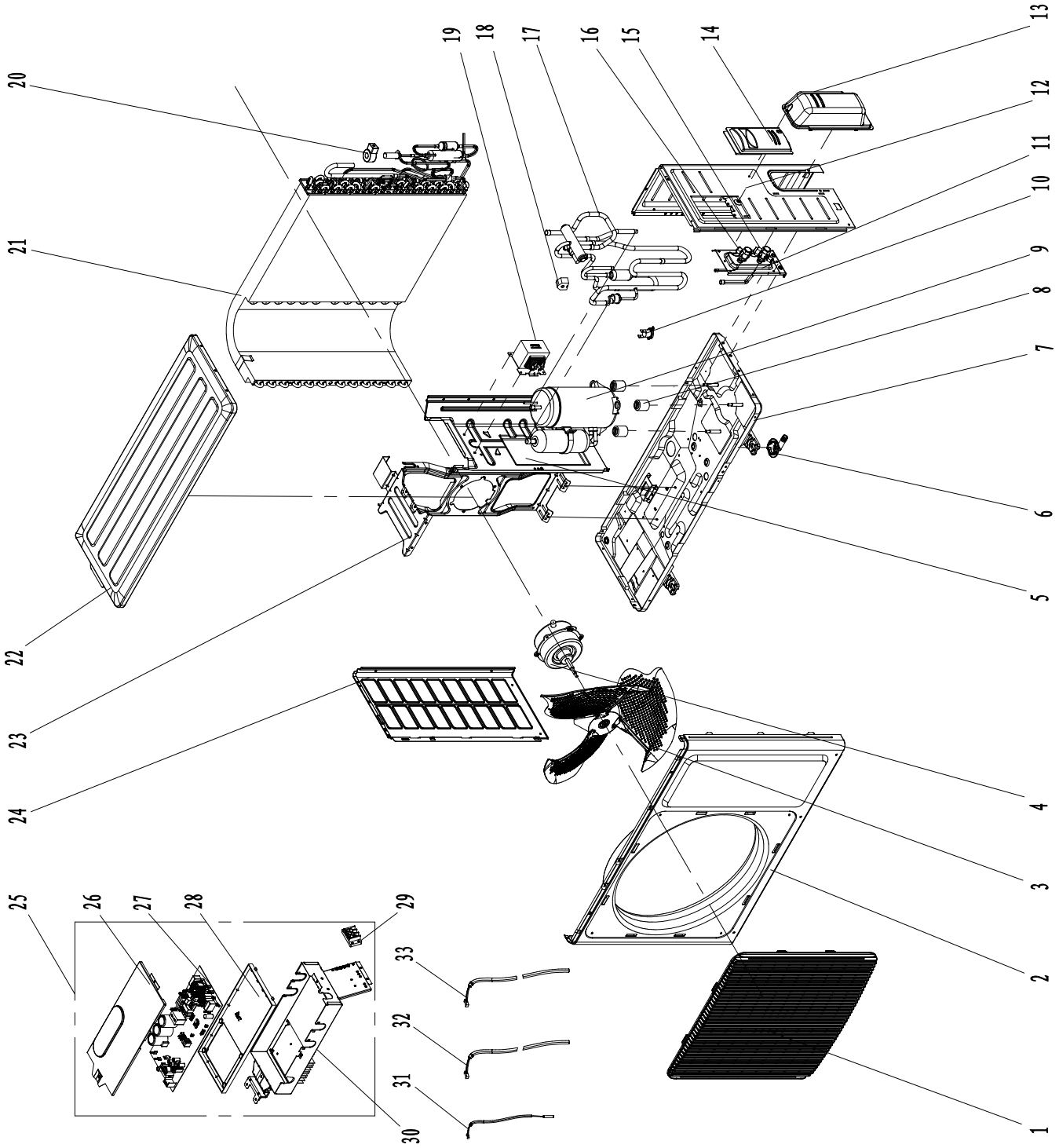
15.8 Exploded view of indoor unit: HOD024



15.9 Spare part list of indoor Unit: HOD024

NO.	Part Code	Part Description	qty
1	27230004506	Front Panel	1
2	11122136	Filter Sub-Assy	2
3	242520053	Screw Cover	4
4	20022004	Front Case Sub-assy	1
5	10512236	Guide Louver	1
6	1051223701	Small Guide Louver	1
7	1058211601	Swing Lever2	1
8	10512252	Air Louver	15
9	1051203701	Left Axile Bush	2
10	20182148	Water Tray Assy	1
11	22202498	Rear Case Sub-Assy	1
12	10352420	Cross Flow Fan	1
13	76512203	O-Gasket of Cross Fan Bearing	1
14	24212041	Left Evaporator Support	1
15	01002000013	Evaporator Assy	1
16	01252398	Wall Mounting Frame	1
17	2421204201	Right Support of Evaporator	1
18	15012134	Fan Motor	1
19	26112324	Motor Fixed Clip 1	1
20	26112325	Motor Fixed Clip 2	1
21	26112071	Pipe Clamp	1
22	02112009	Fixed Clip (Evaporator)	1
23	0523001403	Drainage Hose	1
24	76712012	Rubber Plug (Water Tray)	1
25	1521240208	Stepping Motor	1
26	1521212602	SteppingMotor	1
27	73012021	Crank	2
28	1521212301	SteppingMotor	1
29	26152046	Motor Holder	1
30	1058211701	Swing Lever 3	1
31	1058211501	Swing Lever 1	1
32	42011233	Terminal Board	1
33	10542036	Axile Bush	3
34	30138000635	Main Board	1
35	20122142	Electric Box Cover2	1
36	30565141	Display Board	1
37	01592108	Shield Cover of Electric Box Cover	1
38	20122164	Electric Box Cover	1
39	01592107	Shield Cover of Electric Box	1
40	2011214001	Electric Box	1
41	10000201537	Electric Box Assy	1
44	390000451	Temperature Sensor	1
45	390000598	Temperature Sensor	1
46	30510460_L34658	Remote Controller	1

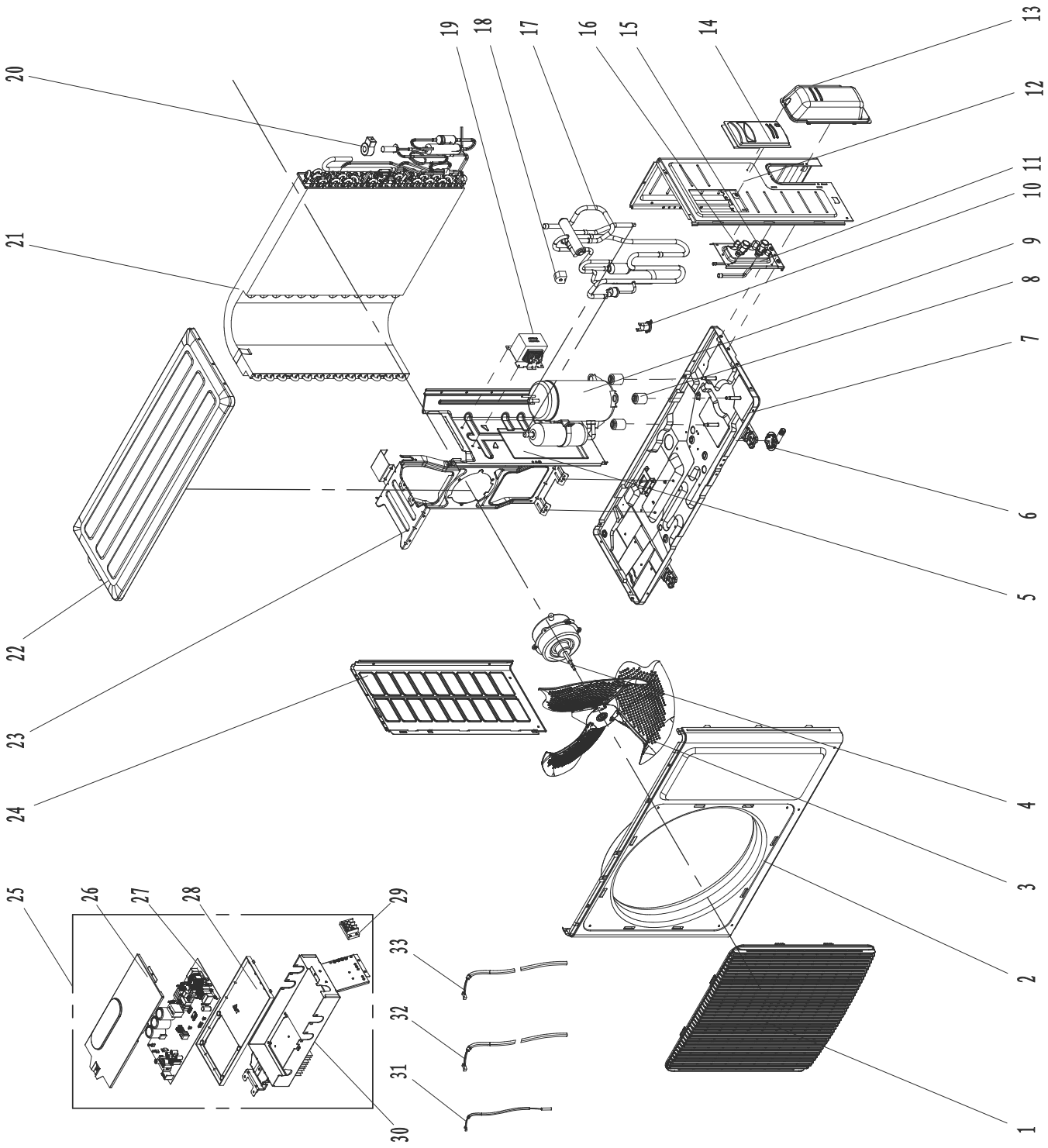
15.10 Exploded view of outdoor unit: YOD009



15.11 Spare part list of outdoor Unit: YOD009

NO.	Part Code	Part Description	qty
1	22413046	Front Grill	1
2	0153305105	Front Panel Assy	1
3	10333011	Axial Flow Fan	1
4	1501308507	Fan Motor	1
5	01233125	Clapboard	1
6	26113009	Drainage Joint	1
7	02803345P	Chassis Sub-assy	1
8	76713027	Compressor Gasket	3
9	00103892	Compressor and Fittings	1
10	00183111	Compressor Overload Protector(External)	1
11	01703242P	Valve Support Sub-Assy	1
12	0130324403P	Right Side Plate	1
13	22243005	Valve Cover	1
14	2623343106	Big Handle	1
15	03005700089	Cut off Valve Sub-Assy	1
16	03005700082	Cut off Valve Sub-Assy	1
17	03073291	4-Way Valve Assy	1
18	4300040022	Magnet Coil	1
19	43130178	Reactor	1
20	4300034401	Electric Expand Valve Fitting	1
21	01103000204	Condenser Assy	1
22	01253034P	Coping	1
23	01703180	Motor Support Sub-Assy	1
24	01303169P	Left Side Plate	1
25	10000100299	Electric Box Assy	1
26	0260309601	Electric Box Cover Sub-Assy	1
27	30138000639	Main Board	1
28	20113005	Electric Box 1	1
29	42010313	Terminal Board	1
30	0140300022701	Electric Box Sub-Assy	1
31	3900030903	Temperature Sensor	1
32	76513004	Electrical Heater(Compressor)	1
33	76510004	Electrical Heater (Chassis)	1

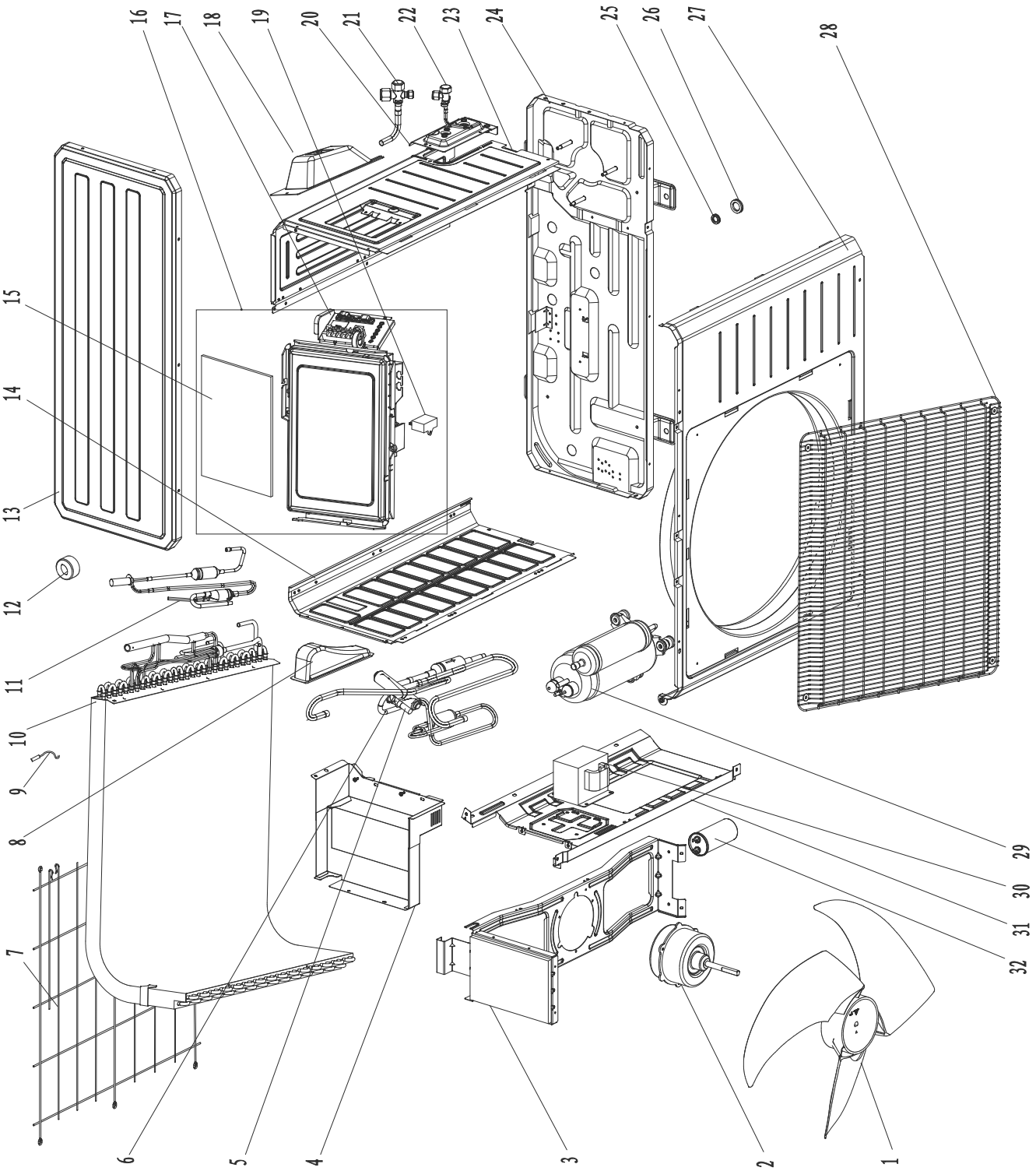
15.12 Exploded view of outdoor unit: YOD012



15.13 Spare part list of outdoor Unit: YOD012

NO.	Part Code	Part Description	qty
1	22413046	Front Grill	1
2	0153305105	Front Panel Assy	1
3	10333417	Axial Flow Fan	1
4	15013717	Fan Motor	1
5	01233125	Clapboard	1
6	26113009	Drainage Joint	1
7	01700000060P	Chassis Sub-assy	1
8	76710236	Compressor Gasket	3
9	00205212	Compressor and fittings	1
10	00180002	Compressor Overload Protector	1
11	01703242P	Valve Support Sub-Assy	1
12	0130324403P	Right Side Plate	1
13	22243005	Valve Cover	1
14	2623343106	Big Handle	1
15	03005700088	Cut off Valve Sub-Assy	1
16	03005700082	Cut off Valve Sub-Assy	1
17	03073351	4-Way Valve Assy	1
18	4300040022	Magnet Coil	1
19	43130184	Reactor	1
20	4300876717	Electric Expand Valve Fitting	1
21	01100200254	Condenser Assy	1
22	01253034P	Coping	1
23	01703398	Motor Support Sub-Assy	1
24	01303169P	Left Side Plate	1
25	10000100298	Electric Box Assy	1
26	0260309601	Electric Box Cover Sub-Assy	1
27	30138000645	Main Board	1
28	20113005	Electric Box 1	1
29	42010313	Terminal Board	1
30	02603616	Electric Box Sub-Assy	1
31	3900030903	Temperature Sensor	1
32	76513004	Electrical Heater(Compressor)	1
33	76510004	Electrical Heater (Chassis)	1

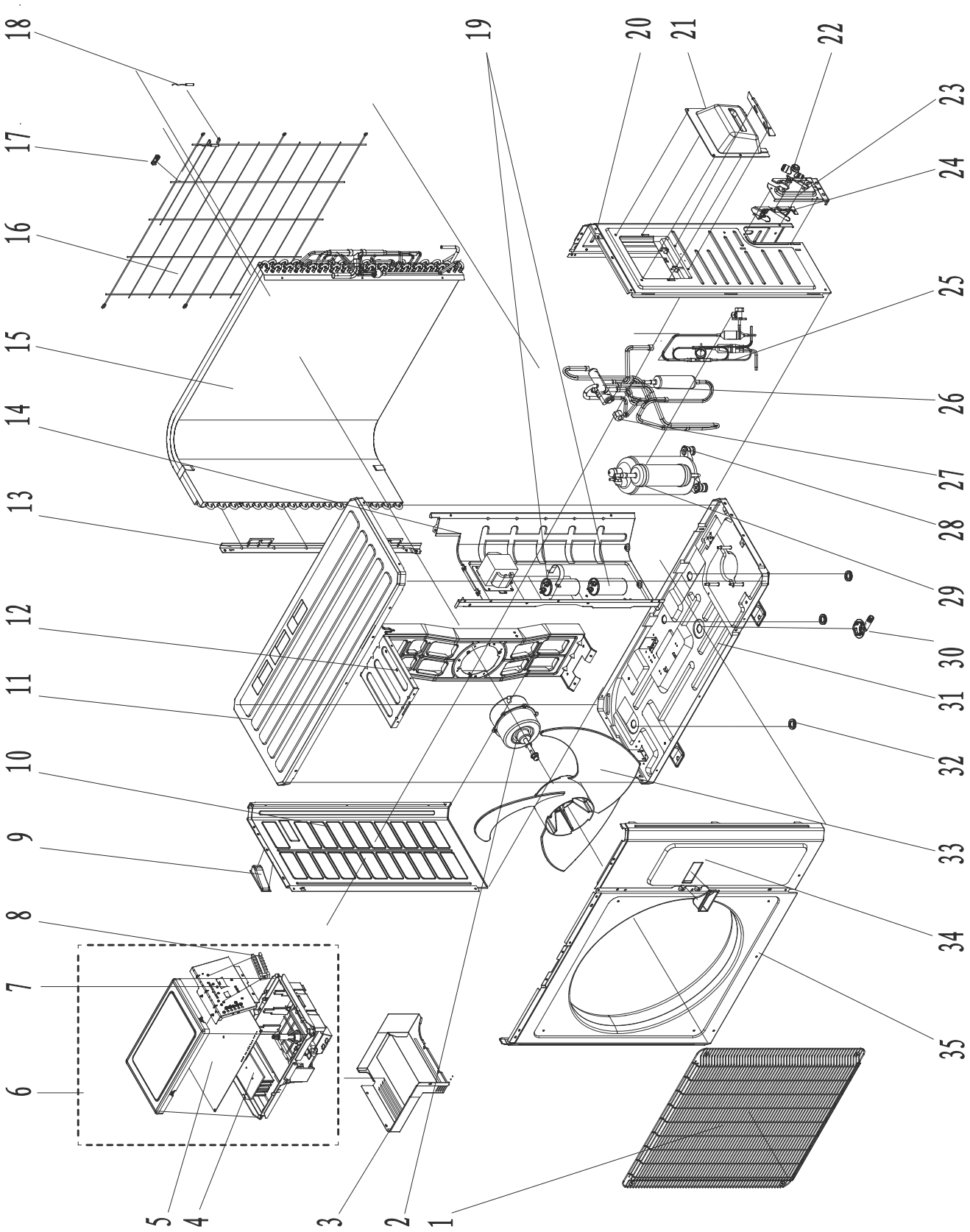
15.14 Exploded view of outdoor unit: YOD018



15.15 Spare part list of outdoor Unit: YOD018

NO.	Part Code	Part Description	qty
1	10335008	Axial Flow Fan	1
2	1501506402	Fan Motor	1
3	0170512001	Motor Support Sub-Assy	1
5	4300040045	Magnet Coil	1
6	03073213	4-Way Valve Assy	1
7	01473043	Rear Grill	1
9	3900030901	Temperature Sensor	1
10	01113609	Condenser Assy	1
11	03017400015	Electronic Expansion Valve assy	1
12	4300876704	Electric Expand Valve Fitting	1
13	01255005P	Coping	1
14	01305093P	Left Side Plate	1
15	20113003	Insulated Board (Cover of Electric Box)	1
16	10000100239	Electric Box Assy	1
17	420101943	Terminal Board	1
18	26233053	Handle	1
20	01713098P	Valve Support Sub-Assy	1
21	07133157	Cut off Valve	1
22	07130239	Cut off Valve	1
23	0130329201	Right Side Plate Assy	1
24	02803310P	Chassis Sub-assy	1
25	06123401	Drainage Connecter	1
27	0000030002402	Front Panel Assy	1
28	22415010	Front Grill	1
29	00105249G	Compressor and Fittings	1
31	01233153	Clapboard Assy	1

15.16 Exploded view of outdoor unit: YOD024



15.17 Spare part list of outdoor Unit: YOD024

NO.	Part Code	Part Description	qty
1	22415011	Front Grill	1
2	1501403402	Fan Motor	1
4	49010252	Radiator	1
5	30138000647	Main Board	1
6	10000100250	Electric Box Assy	1
7	01715016	Terminal Board Support sub-assy	1
8	420101943	Terminal Board	1
10	01305043P	Left Side Plate	1
11	01255006P	Coping	1
12	01705437	Motor Support Sub-Assy	1
13	01175092	Condenser Support Plate	1
14	01233182	Clapboard Sub-Assy	1
15	01100200313	Condenser Assy	1
16	01475013	Rear Grill	1
17	26115004	Wiring Clamp	1
18	3900030901	Temperature Sensor	1
20	0130504401P	Right Side Plate	1
21	26235001	Big Handle	1
22	07133157	Cut off Valve	1
23	0171501201P	Valve Support Sub-Assy	1
24	01365435P	Baffle(Valve Support)	1
25	03700200476	Capillary	1
26	03073214	4-Way Valve Assy	1
27	4300040045	Magnet Coil	1
28	76713066	Compressor Gasket	3
29	0010505701	Compressor and Fittings	1
30	06123401	Drainage Connecter	1
31	0280319602P	Chassis Sub-assy	1
33	10335014	Axial Flow Fan	1
34	01303249P	Front Side Plate Sub-Assy	1
35	02200200001	Front Panel Assy	1

APPENDIX