



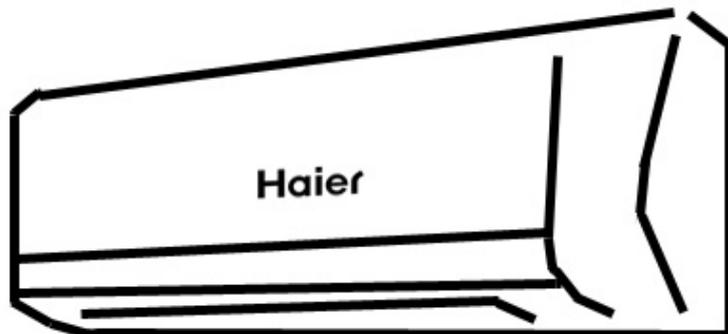
Domestic Air conditioner

SERVICE MANUAL

HSU-12HA03/Z1

CAUTION

- READ THIS MANUAL CAREFULLY TO DIAGNOSE TROUBLE CORRECTLY BEFORE OFFERING SERVICE.
- THIS MANUAL IS USED BY QUALIFIED APPLIANCE TECHNICIANS ONLY.
- HAIER DOES NOT ASSUME ANY RESPONSIBILITY FOR PROPERTY DAMAGE OR PERSONAL INJURY FOR IMPROPER SERVICE PROCEDURES DONE BY ONE UNQUALIFIED PERSON.



CONTENTS

1. GENERAL INFORMATION.....	3
2. SPECIFICATION.....	5
3. ELECTRICAL CONTROL.....	7
4. TROUBLE SHOOTING.....	13
5. INSTALLATION.....	15
6. WIRING DIAGRAM.....	23
7. THERMISTER RESISTANCE CHART.....	24
8. COMPRESSOR PERFORMANCE DIAGRAM.....	30
9. SCHEMATIC DIAGRAM OF PCB.....	31

1. General information

This Service Manual describes the operation, disassembly, troubleshooting, and repair of Haier Room Air Conditioners, etc. It is intended for use by authorized services who troubleshoot and repair these units.

It is assumed that users of this manual are familiar with the use of tools and equipment used to troubleshoot and repair electrical, mechanical, and refrigeration systems; and understand the terminology used to describe and discuss them.

Haier urges you read and follow all safety precautions and warnings contained in this manual. Failure to comply with safety information may result in severe personal injury or death.

Related Publications

This is a base service manual, covering a range of similar models. It is intended to be used in conjunction with the Parts Manual and Technical Sheet covering specific model being serviced.

NOTE: General Precautions and Warnings

WARNING

To avoid risk of personal injury or death due to electrical shock, disconnect electrical power to unit before attempting to service the unit.

WARNING

To avoid risk of personal injury or death due to electrical shock, DO NOT, under any circumstances, alter the grounding plug .Air conditioner must be grounded at all times. Do not remove warning tag from power cord. If a two-prong (non-grounding) wall receptacle is encountered, contact a qualified electrician and have the receptacle replaced with a properly grounded wall receptacle in accordance with the National Electrical Code.

WARNING

To avoid risk of heat exposure, which may cause death or severe illness, air conditioner must be monitored when failures or shuts down.

WARNING

To avoid risk of personal injury or death due to electrical shock, grounding wires and wires colored like grounding wires are NOT to be used as current carrying conductors. The standard accepted color coding for ground wires is green or green with a yellow stripe. Electrical components such as the compressor and fan motor are grounded through an individual wire attached to the electrical component and to another part of the air conditioner. Grounding wires should not to be removed from individual components while servicing, unless the component is to be removed and replaced. It is extremely important to replace all removed grounding wires before completing service.

IMPORTANT INFORMATION



● Features

- Comfortable: wide-angle airflow
- health air purifying
- quiet operation
- super energy efficient

MODEL: HSU-12HA03/Z1

● Main Specification

- Cooling Capacity : 3450W
- Rated Power/Current(cooling) : 1250W/6.0A
- EER: 2.76
- Heating Capacity : 3650W
- Rated Power/Current(heating): 1280W/6.1A
- COP: 2.85
- Air Volume(Indoor/outdoor): 445/----- m³/h
- Power: 1PH 220V~ 50 Hz

2. Specification

Item		Model Unit	HSU-12HA03/Z1
Power		PH, V, Hz	1, 220, 50
Climate Type			T1
Starting Current		A	
Cooling	Cooling Capacity	W	3450
	Rated Power	W	1250
	Rated Current	A	6.0
	Max Power	W	1600
	Max Current	A	7.0
	EER	W/W	2.70
Heating	Heating Capacity	W	3650
	Rated Power	W	1280
	Rated Current	A	6.1
	Max Power	W	1650
	Max Current	A	7.1
	COP	W/W	2.85
Operating temp. range	Cooling	℃	14~21
	Heating	℃	12~19
Indoor fan Velocity	H	rpm	1290
	M	rpm	1150
	L	rpm	1000
Outdoor fan Velocity		rpm	1060
Indoor Air Volume (High)		m ³	450
Max. pressure at warm side		MPa	2.65
Moisture Removal		10 ⁻³ m ³ /h	1.7
Noise Level	Indoor (H/M/L)	dB(A)	44/40/37
	Outdoor	dB(A)	53
Indoor Weight	Net	Kg	8.6
	Gross	Kg	10.6
Outdoor Weight	Net	Kg	32
	Gross	Kg	34
Indoor Dimension	Net	mm	795*182*265
	Package	mm	863*277*339
Outdoor Dimension	Net	mm	700*250*430
	Package	mm	823*363*505
Compressor	Manufacture		RECHI
	Type		48R313NL-5ESF
	Oil Charge	CC	-----
Refrigerant	Type		R22
	Net Charge	g	970
	Charge if over standard pipe length	g/m	35

Refrigerant Pipe	Liquid pipe Diameter	mm	6.35
	Gas pipe Diameter	mm	12.7
	Standard length	m	3
	Max length	m	15
Drain Hose	Length	mm	580
	Diameter	mm	25.5
Drainage pipe material diameter		mm	25.5
Remote Controller Model			YR-M07
Class of electric Shock Protection			I
Class of Water Proof			IP 24
Power Cord (Model × Sectional Area)			3G2.5mm ²

3. Electrical control

1. Basic Function

No.	Function	Description of function
1	Cooling	Set temperature 16°C-30°C
2	Drying	Set temperature 16°C-30°C
3	Heating (heat pump type)	Set temperature 16°C-30°C
4	Emergency run	Over 23°C cooling and set 26°C less 23°C heating and set 23°C
5	Test run	Set force cooling
6	Anti-cold wind (heat pump type)	When temperature of the heating pipe coil is low, low fan speed or without airflow
7	Fan speed adjustment	Auto, high, middle, low four level fan speeds
8	Timer switch	24hours timer on, timer off, on-off, off-on
9	High load protection (heat pump type)	When heating in high ambient temperature to protect compressor
10	Anti-freezing of the indoor unit	When heating in low ambient temperature to protect system
11	Defrosting run (heat pump type)	When heating in low ambient temperature to defrost for the outdoor unit in order to make the system have a better efficiency
12	Self trouble shooting	Check the system trouble and give an alarm
13	Over current protection(heat pump type)	When working in high power to protect system

2. Introduction to electrical control function

Including brief introduction to air conditioners of series models and electric control function.

Brief introduction to electric control function

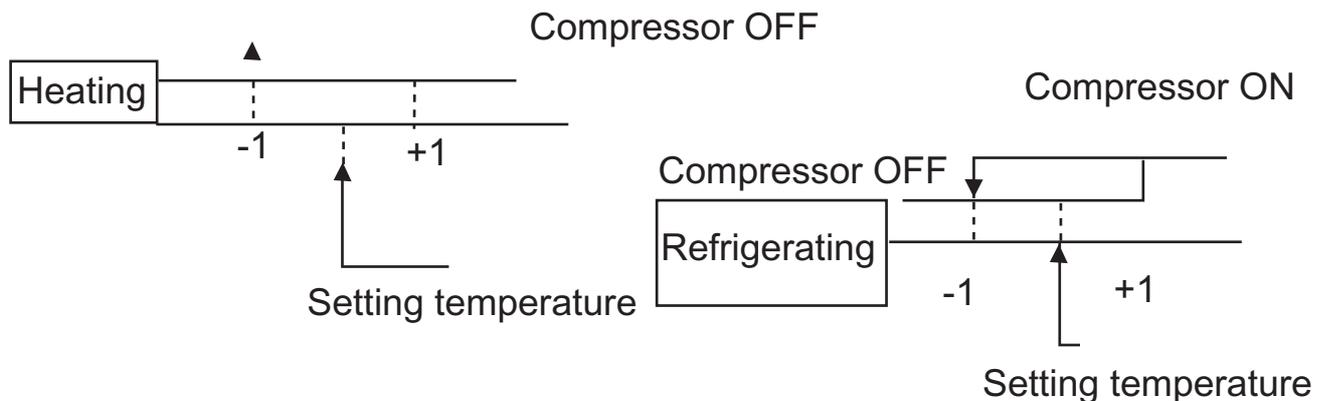
(1) Automatic running (applicable to fan-coil model)

When the running mode is turned to automation after starting the system, the system will first determine the running mode according to the current room temperature and then will run according to the determined mode. T_r in the following selection conditions means room temperature, T_s means setting temperature, T_p means temperature of indoor coil pipe

- a. $T_r > 23^\circ\text{C}$ running refrigerating mode $T_s = 26^\circ\text{C}$
- b. $T_r < 23^\circ\text{C}$ running heating mode $T_s = 23^\circ\text{C}$

After turning to the automation mode, the running mode can be switched between refrigerating mode, fan mode and heating mode according to the change of the indoor ambient temperature. But the automatic conversion between refrigerating mode and heating mode must be conducted after 15 minutes.

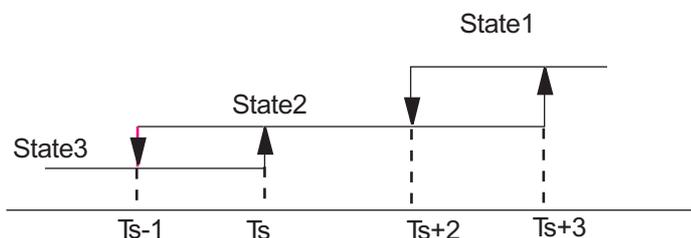
(2) Indoor temperature control



(3) Dehumidification running

The compressor, outdoor fan and indoor fan will run as per the following working pattern so as to realize the refrigerating running of dehumidification:

- a. $T_r > T_s + 2^\circ\text{C}$, compressor, outdoor fan run continuously, indoor fan runs as per setting wind speed (State 1);
- b. $T_s + 2^\circ\text{C} > T_r > T_s$, compressor, outdoor fan run intermittently with 10 minutes ON, 6 minutes OFF. (Compressor and outdoor fan are synchronous) indoor fan runs in fixed lower wind speed, and will cease at the stand-by time of 3 minutes (State 2)
- c. $T_r < T_s$, compressor, outdoor fan ceases, indoor fan runs in lower wind speed after 3 minutes ceases. (State 3)



(4) Warm start (preventing cold wind when heating running begins, applicable to fan-coil model))

When heating running begins, indoor fan will conduct the following fan control:

- a. If the temperature of indoor coil pipe is $>23^{\circ}\text{C}$, start lower wind speed;
- b. If the temperature of indoor coil pipe is $>38^{\circ}\text{C}$ or the running time of compressor > 4 minutes, turn to setting wind speed.

(5) Control of indoor fan under heating OFF state (applicable to fan-coil model)

Under heating state, and the compressor cease; if the indoor coil pipe is temperature $T_p > 23^{\circ}\text{C}$, indoor fan will run in lower wind speed.

(6) Defrosting control (applicable to fan-coil model)

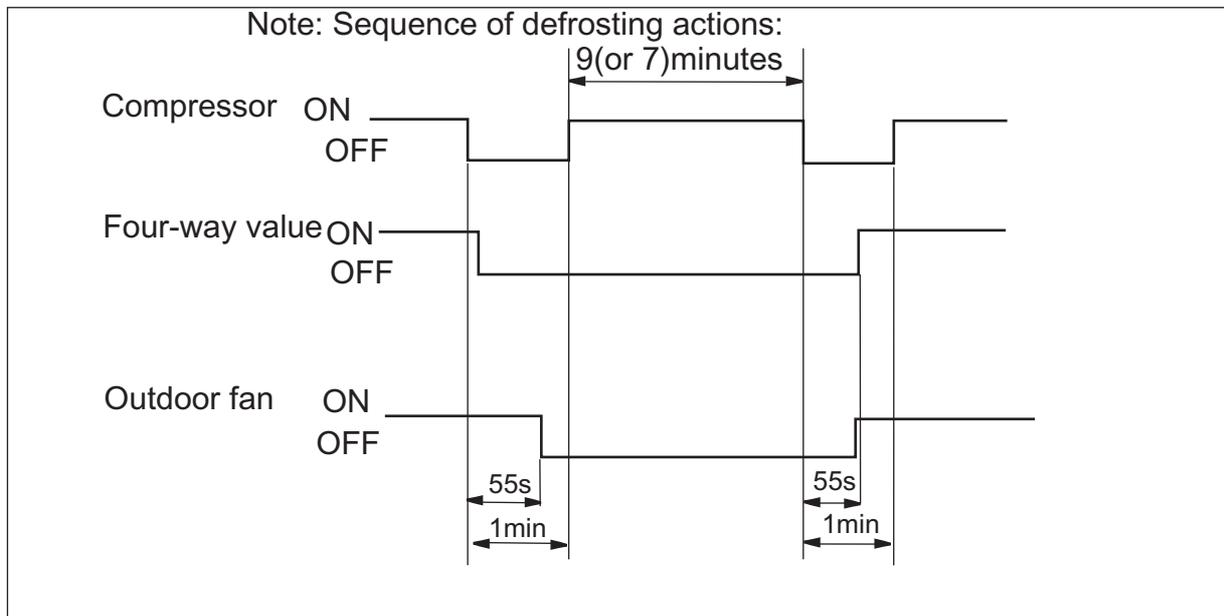
(1). Defrosting beginning condition:

- a. After the state of $T_p - T_r < 18^{\circ}\text{C}$ is continued for 5 minutes, the accumulated running time of the compressor exceeds 45 minutes, the continuous running time of the compressor exceeds 20 minutes;
- b. The accumulated running time of the compressor exceeds 3 hours, the continuous running time of the compressor exceeds 20 minutes, indoor unit is $T_p < 38^{\circ}\text{C}$;
- c. The continuous running time of the compressor exceeds 20 minutes, the temperature of indoor coil pipe decreases 1 every 6 minutes, which lasts for more than 3 times, indoor unit is $T_p < 38^{\circ}\text{C}$;
- d. When the indoor unit is in the state of overload protection and the outdoor unit ceases, when the rerunning time of outdoor unit exceeds 10 minutes, the accumulated running time of the compressor exceeds 45 minutes, the continuous running time of the compressor is over 20 minutes, and $T_p < 38^{\circ}\text{C}$;

Defrosting will begin if one of the above conditions is met.

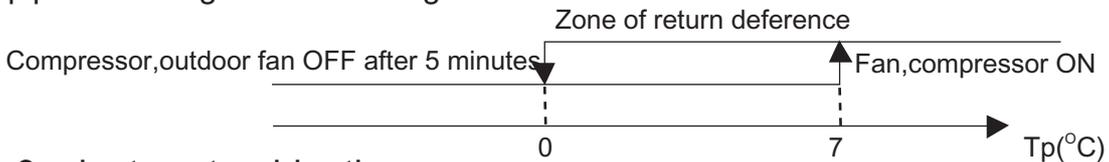
(2). Defrosting finishing condition:

- a. If the defrosting time exceeds 9 (for 12 models) or 7 (for 07, 09 models) minutes, the original heating state will be resumed;
- b. If the current of outdoor unit is compressor exceeds $x.x\text{A}$ (different models have different currents); defrosting will be finished if either a or b is met.



(7) Freezing prevention function

Under refrigerating and dehumidifying state, the air conditioner will control the outdoor fan as per the temperature T_p of the indoor coil pipe according to the following conditions:



(8) 3 minutes stand-by time

When the compressor ceases due to the sensor OFF, unit On or OFF or fault, it will maintain pause for 3 minutes.

(9) Overload protection during heating running

1. Temperature protection of indoor coil pipe: Under heating state, the air conditioner will control the running of the fan as per the temperature T_p of the indoor coil pipe and according to the following conditions:

- a. $65^{\circ}\text{C} < T_p$, outdoor fan ceases; $T_p < 60^{\circ}\text{C}$, outdoor fan resumes; the time from ceasing to resuming is about 45 seconds;
- b. $72^{\circ}\text{C} < T_p$, outdoor fan of compressor ceases after 5 seconds; $T_p < 64^{\circ}\text{C}$, compressor resumes after 3 minutes.

2. Current protection (different models have different protection currents):

- a. When $\langle \text{current of compressor} \rangle > (1)$, outdoor fan ceases; current of compressor $< (2)$, outdoor fan resumes;
- b. When current of compressor $> (3)$, compressor ceases.

(1) for 07 models the value is 3.6A, for 09 models the value is 4.0A, for 12 models the value is 5.2A
 (2) for 07 models the value is 3.3A, for 09 models the value is 3.5A, for 12 models the value is 4.6A
 (3) for 07 models the value is 5.8A, for 09 models the value is 7.5A, for 12 models the value is 10.5A

(10) Compensatory function of power failure

If the unit is suddenly off during running due to power failure, or closed for maintenance or troubleshooting, it will restart to run after the power resumes with the original condition before the unit is off

- Note: 1. Function setting: Pressing the SLEEP button on the remote control unit for 10 times within 5 seconds until hearing 4 sounds from the buzzer on the panel.
2. Memory content: Running mode, setting wind speed, setting temperature, sleep state, flap state.
3. Cancellation of function: Pressing the SLEEP button on the remote control unit for 10 times with in 5 seconds until hearing 2 sounds from the buzzer on the panel.

(11) Trial run function

When the air conditioner is in OFF state, press the emergency switch for 5 seconds till hearing 2 sounds of click from the buzzer, then the air conditioner will turn to the trial run state. The unit will run in the refrigerating mode and the indoor fan will run in high wind speed mode.

(12) Emergency running mode

When the air conditioner is in stand-by state, press the emergency switch till hearing a sound from the buzzer, then the air conditioner will turn to the emergency run state. The rules of emergency run are as follows:

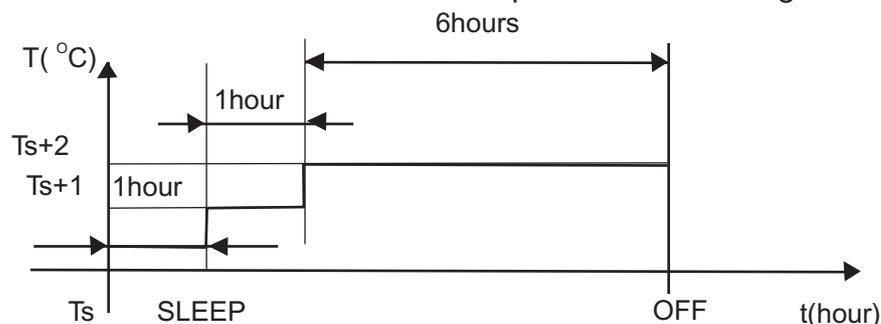
- a. $T_r > 23^{\circ}\text{C}$, running refrigerating mode, $T_s = 26^{\circ}\text{C}$;
- b. $T_r < 23^{\circ}\text{C}$, running heating mode, $T_s = 23^{\circ}\text{C}$.

(13) Temperature compensation

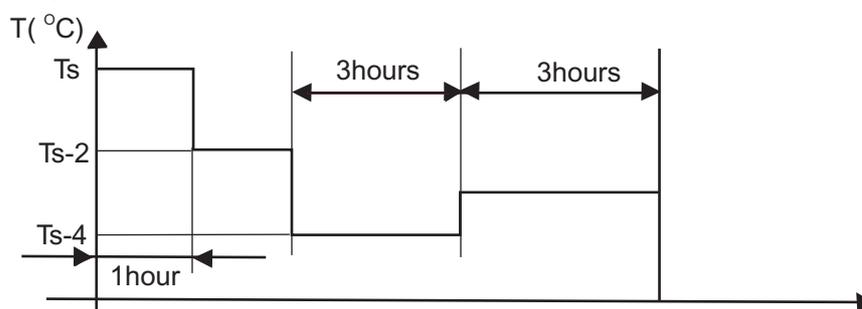
There is the function of automatic temperature compensation when heating, with heating temperature setting = $T_s(\text{remote setting}) + 4^{\circ}\text{C}$

(14) Sleeping function

- a. After setting the sleeping function, the refrigerating mode and dehumidification mode will run as per the following rules:



- b. After setting the sleeping function, the heating mode will run as per the following rules:



As shown in the above diagram, after running for 1 hour under refrigerating mode and dehumidification mode, the setting temperature will increase 1 °C; after another 1 hour, it will increase 1 °C again, and after 6 hours, it will cease; after running for 1 hour under heating mode, the setting temperature will decrease 2 °C, after another 1 hour, it will decrease the 2 °C again, and after 3 hours, it will increase 1 °C, and after other 3 hours, it will cease.

MODEL	PCB	The SW2 select "25"OR "35"
HSU-12HD03/R2	0010404012	35
HSU-09HD03/R2	0010404012	25
HSU-07HD03/R2	0010403257A	25

4. Trouble shooting

Before asking for service, check the following first.

	Phenomenon	Cause or check points
Normal Performance inspection	<p>The system does not restart immediately.</p> 	<ul style="list-style-type: none"> ● When unit is stopped, it won't restart immediately until 3 minutes have elapsed to protect the system. ● When the electric plug is pulled out and reinserted, the protection circuit will work for 3 minutes to protect the air conditioner.
	<p>Noise is heard.</p> 	<ul style="list-style-type: none"> ● During unit operation or at stop, a swishing or gurgling noise may be heard. At first 2-3 minutes after unit start, this noise is more noticeable. (This noise is generated by refrigerant flowing in the system.) ● During unit operation, a cracking noise may be heard. This noise is generated by the casing expanding or shrinking because of temperature changes. ● Should there be a big noise from air flow in unit operation; air filter may be too dirty.
	<p>Smells are generated.</p>	<ul style="list-style-type: none"> ● This is because the system circulates smells from the interior air such as the smell of furniture, cigarettes.
	<p>Mist or steam is blown out.</p>	<ul style="list-style-type: none"> ● During COOL or DRY operation, indoor unit may blow out mist. This is due to the sudden cooling of indoor air.
Multiple check	<p>Does not work at all.</p>	<ul style="list-style-type: none"> ● Is power plug inserted? ● Is there a power failure? ● Is fuse blown out?
	<p>Poor cooling</p> 	<ul style="list-style-type: none"> ● Is the air filter dirty? Normally it should be cleaned every 15 days. ● Are there any obstacles before inlet and outlet? ● Is temperature set correctly? ● Are there some doors or windows left open? Is there any direct sunlight through the window during the cooling operation?(Use curtain) ● Are there too much heat sources or too many people in the room during cooling operation?

Light indication			Reason	Ways and means	Solution	Tools
Power	Time	Run				
★	■	■	The sensor of indoor ambient temperature is abnormal	Examine the sensor of indoor ambient temperature, if the resistance value is 0 , or ∞ , the sensor is abnormal.	Replace the sensor.	Multimeter
★	□	□	The temperature sensor of indoor coil pipe is abnormal	Examine the temperature sensor of indoor coil pipe, if the resistance value is 0 , or ∞ , the sensor is abnormal.	Replace the sensor.	Multimeter
■	□	★	Optical SCR or indoor PC board is abnormal	Check whether indoor motor has 80~170V voltage, if it has, wiring bund is normal, then check whether the optical SCR is good, replace it if it is has flaw; else check whether there are something wrong with connecting line, indoor motor capacitor and coil assembly.	Replace the optical SCR, indoor PC board, or indoor motor capacitor.	Multimeter
★	□	★	EEPROM is abnormal	Check whether the EEPROM is installed properly.	Replace the EEPROM.	Electric iron and Multimeter

5. Installation

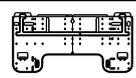
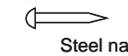
- Read this manual before installation
- Explain sufficiently the operating means to the user according to this manual.

Necessary Tools for Installation

- | | | | |
|---------------------------|---------------------------------|--|-----------|
| 1.Driver | 5.Torque wrench(17mm,22mm,26mm) | 9.Nipper | 12.Reamer |
| 2.Hacksaw | 6.Pipe cutter | 10.Gas leakage detector or soap-and-water solution | |
| 3.Hole core drill | 7.Flaring tool | 11.Measuring tape | |
| 4.Spanner(17,19 and 26mm) | 8.Knife | | |

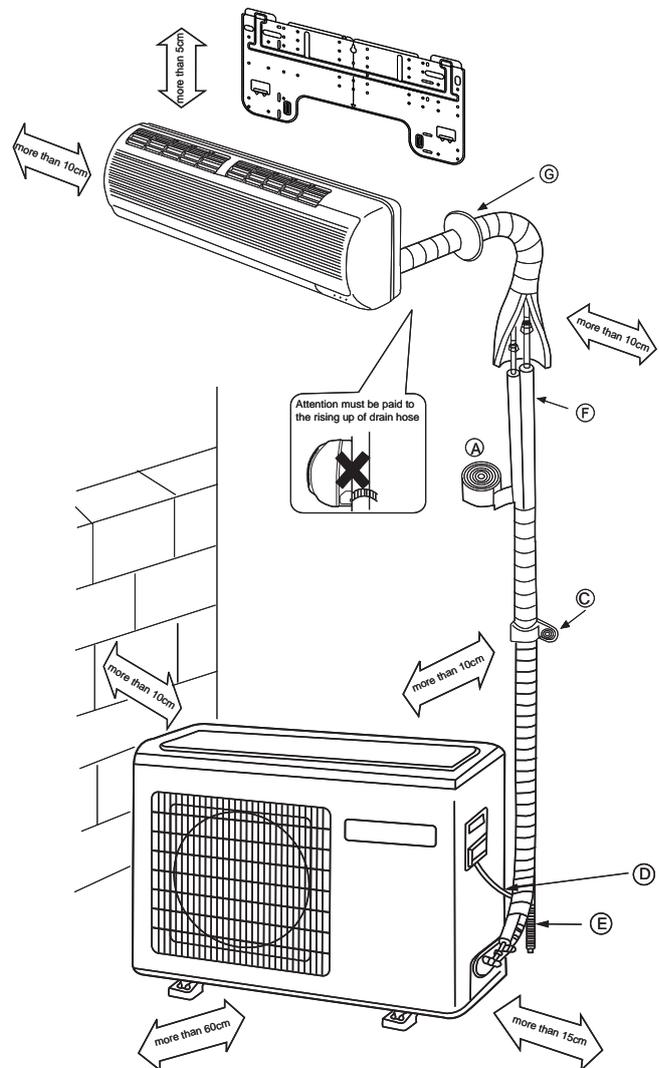
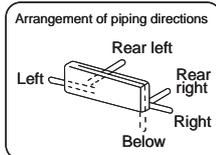
Drawing for the installation of indoor and outdoor units

Accessory parts

No.	Accessory parts	Number of articles
①	Remote controller	1
②	 R-03 dry battery	2
③	 Mounting plate	1
④	 Drain hose	1
⑤	 ϕ 4X50 Steel nail, cement	6
⑥	 ϕ 4X25 Screw Plastic cap	4
⑦	 Drain-elbow	1
⑧	 Cover	1
⑨	 Cushion	4
⑩	 Pipe supporting plate	1

Optional parts for piping

Mark	Parts name
(A)	Non-adhesive tape
(B)	Adhesive tape
(C)	Saddle(L.S) with screws
(D)	Connecting electric cable for indoor and outdoor
(E)	Drain hose
(F)	Heating insulating material
(G)	Piping hole cover



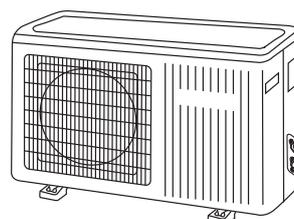
Note: Cooling only units don't have Drain-elbow

- ※ The marks from (A) to (G) in the figure are the parts numbers.
- ※ The distance between the indoor unit and the floor should be more than 2m.

INSTALLATION



Floor fixing dimensions
of the outdoor unit
(Unit:mm)



- 9.Nipper
10.Gas leakage detector or
soap-and-water solution
11.Measuring tape
12.Reamer

Fixing of outdoor unit

- Fix the unit to concrete or block with bolts($\phi 10$ mm) and nuts firmly and horizontally.
- When fitting the unit to wall surface, roof or rooftop, fix a supporter surely with nails or wires in consideration of earthquake and strong wind.
- If vibration may affect the house, fix the unit by attaching a vibration-proof mat.

Indoor Unit

Selection of Installation Place

Outdoor Unit

- Place, robust not causing vibration, where the body can be supported sufficiently.
- Place, not affected by heat or steam generated in the vicinity, where inlet and outlet of the unit are not disturbed.
- Place, possible to drain easily, where piping can be connected with the outdoor unit.
- Place, where cold air can be spread in a room entirely.
- Place, nearby a power receptacle, with enough space around. (Refer to drawings).
- Place where the distance of more than 1m from televisions, radios, wireless apparatuses and fluorescent lamps can be left.
- In the case of fixing the remote controller on a wall, place where the indoor unit can receive signals when the fluorescent lamps in the room are lightened.
- Place, which is less affected by rain or direct sunlight and is sufficiently ventilated.
- Place, possible to bear the unit, where vibration and noise are not increased.
- Place, where discharged wind and noise do not cause a nuisance to the neighbors.
- Place, where a distance marked \Leftrightarrow is available as illustrated in the above figure.

Power Source

- Before inserting power plug into receptacle, check the voltage without fail. The power source is the same as the corresponding name plate.
- Install an exclusive branch circuit of the power.
- A receptacle shall be set up in a distance where the power cable can be reached. Do not extend the cable by cutting it.

Selection of pipe

- To this unit, both liquid and gas pipes shall be insulated as they become low temperature in operation.
- Use optional parts for piping set or pipes covered with equivalent insulation material.
- The thickness of the pipe must be 0.8 mm at least.

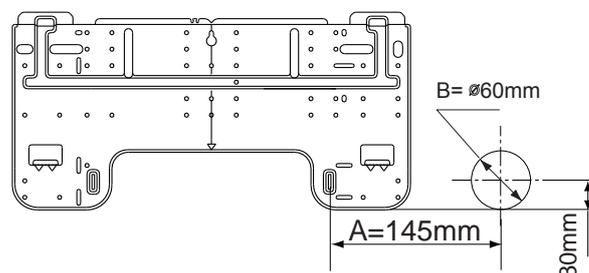
	HSU-12HA03/Z1
Liquid pipe(ϕ)	6.35mm(1/4")
Gas pipe(ϕ)	12.7mm(1/2")

Indoor unit

1. Fitting of the Mounting Plate and Positioning of the wall Hole

When the mounting plate is first fixed

1. Carry out, based on the neighboring pillars or lintels, a proper leveling for the plate to be fixed against the wall, then temporarily fasten the plate with one steel nail.
2. Make sure once more the proper level of the plate, by hanging a thread with a weight from the central top of the plate, then fasten securely the plate with the attachment steel nail.
3. Find the wall hole location A using a measuring tape

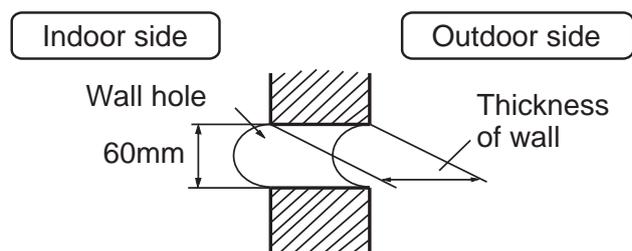


When the mounting plate is fixed side bar and lintel

- Fix to side bar and lintel a mounting bar, which is separately sold, and then fasten the plate to the fixed mounting bar.
- Refer to the previous article, " **When the mounting plate is first fixed** ", for the position of wall hole.

2. Making a Hole on the Wall and Fitting the Piping Hole Cover

- Make a hole of 60 mm in diameter, slightly descending to outside the wall.
- Install piping hole cover and seal it off with putty after installation



(Section of wall hole) © Piping hole pipe

3. Installation of the Indoor Unit

Drawing of pipe

[Rear piping]

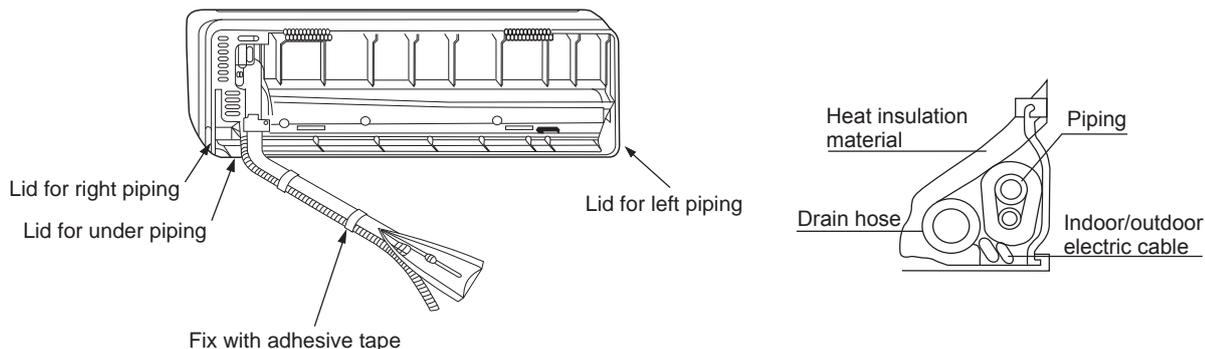
- Draw pipes and the drain hose, then fasten them with the adhesive tape

[Left • Left-rear piping]

- In case of left side piping, cut away, with a nipper, the lid for left piping.
- In case of left-rear piping, bend the pipes according to the piping direction to the mark of hole for left-rear piping which is marked on heat insulation materials.

Indoor unit

1. Insert the drain hose into the dent of heat insulation materials of indoor unit.
2. Insert the indoor/outdoor electric cable from backside of indoor unit, and pull it out on the front side, then connect them.
3. Coat the flaring seal face with refrigerant oil and connect pipes.
Cover the connection part with heat insulation materials closely, and make sure fixing with adhesive tape



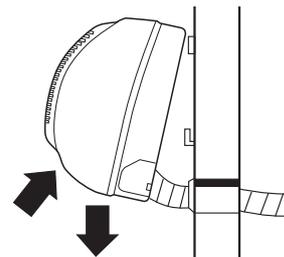
- Indoor/outdoor electric cable and drain hose must be bound with refrigerant piping by protecting tape.

[Other direction piping]

- Cut away, with a nipper, the lid for piping according to the piping direction and then bend the pipe according to the position of wall hole. When bending, be careful not to crash pipes.
- Connect beforehand the indoor/outdoor electric cable, and then pull out the connected to the heat insulation of connecting part specially.

Fixing the indoor unit body

- Hang surely the unit body onto the upper notches of the mounting plate. Move the body from side to side to verify its secure fixing.
- In order to fix the body onto the mounting plate, hold up the body aslant from the underside and then put it down perpendicularly.



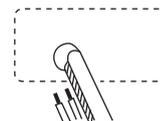
4. Connecting the indoor/outdoor Electric Cable

Removing the wiring cover

- Remove terminal cover at right bottom corner of indoor unit, then take off wiring cover by removing its screws.

When connecting the cable after installing the indoor unit

1. Insert from outside the room cable into left side of the wall hole, in which the pipe has already existed.
2. Pull out the cable on the front side, and connect the cable making a loop.



INSTALLATION

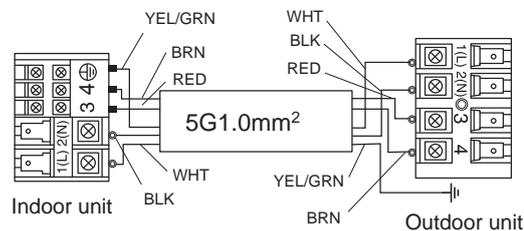
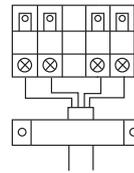
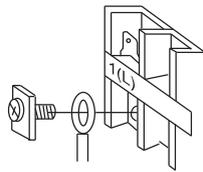
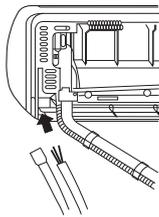
Indoor unit

When connecting the cable before installing the indoor unit

- Insert the cable from the back side of the unit, then pull it out on the front side.
- Loosen the screws and insert the cable ends fully into terminal block, then tighten the screws.
- Pull the cable slightly to make sure the cables have been properly inserted and tightened.
- After the cable connection, never fail to fasten the connected cable with the wiring cover.

Note: When connecting the cable, confirm the terminal number of indoor and outdoor units carefully. If wiring is not correct, proper operation can not be carried out and will cause defect.

1. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similar qualified person. The type of connecting wire is H05RN-F or H07RN-F.
2. If the fuse on PC board is broken please change it with the type of T. 3.15A/250V.
3. The wiring method should be in line with the local wiring standard.
4. After installation, the power plug should be easily reached.
5. A breaker should be incorporated into fixed wiring. The breaker should be all-pole switch and the distance between its two contacts should be not less than 3mm.



INSTALLATION

Outdoor unit

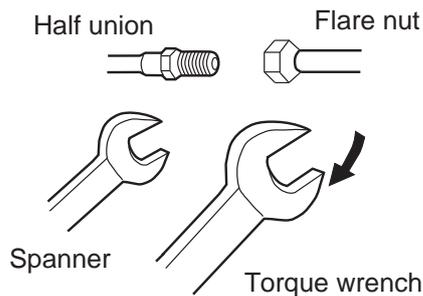
Outdoor unit

1. Installation of Outdoor Unit

Install according to Drawing for the installation of indoor and outdoor units

2. Connection of pipes

- To bend a pipe, give the roundness as large as possible not to crush the pipe
- Connecting the pipe of gas side first makes working easier.
- The max vertical distance between the indoor unit and the outdoor unit is 5 m.



Forced fastening without careful centering may damage the threads and cause a leakage of gas.

Pipe Diameter (ϕ)	Fastening torque
Liquid side 6.35mm(1/4")	18N.m
Gas side 9.52mm(3/8")	40N.m
Gas side 12.7mm(1/2")	55N.m
Gas side 15.88mm(5/8")	60N.m

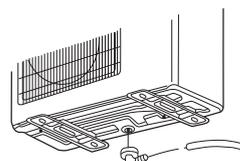
Be careful that matters, such as wastes of sands, etc. shall not enter the pipe.

3. Connection

- Use the same method on indoor unit. Loosen the screws on terminal block and insert the plugs fully into terminal block, then tighten the screws.
- Insert the cable according to terminal number in the same manner as the indoor unit.
- If wiring is not correct, proper operation can not be carried out and controller may be damaged.
- Fix the cable with a clamp.

4. Attaching Drain-Elbow

- If the drain-elbow is used, please attach it as figure. (Note: Only for heat pump unit.)



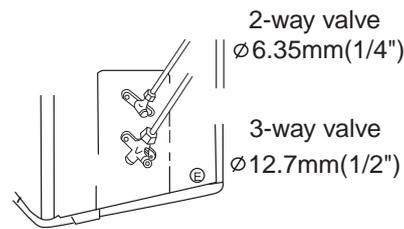
INSTALLATION

Outdoor unit

5.Purging Method:

Push the air out of the indoor unit and piping as follows:

- (1) Remove the valve cap on 2-way valve in outdoor unit.
- (2) Loosen by 1/2 turn the flare nut of gas pipe, which is connected to 3-way valve.
- (3) Loosen 2-way valve by 90° using hexagon wrench, and after approx. 10 sec tighten it up. Gas comes out through flare nut on wide pipe. If no gas is discharged, tighten flare nut with specified torque.
- (4) Open 2-way and 3-way valves using specified torque.
- (5) Tighten the caps on the valves with specified torque.



HSU-12HA03/Z1

	Tighten torque N.m
Valve rod	7-9
Valve cap	20-25

- When connecting pipe exceeds 5 meters, 16g refrigerant shall be added per exceeding meter. Charge according to the following list.

Piping length	5m	7m	10m
Additional amount	No need	32g	80g

- Note: When extending piping, air inside piping shall be removed by using external refrigerant gas, charge according to the following list.

Brand new outdoor unit is charged 50g more refrigerant than regulated weight. Only for first installation, this extra 50g can be used to purge air in pipes.

- ★ 1 During this procedure, 50g refrigerant will be discharged in piping.
(This must be strictly controlled within 90° and 10 sec.)

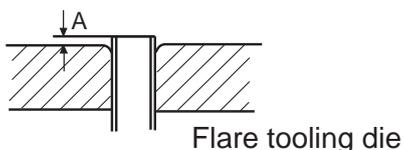
INSTALLATION

1. Power Source Installation

- The power source must be exclusively used for air conditioner. (Over 10A)
- In the case of installing an air conditioner in a moist place, please install an earth leakage breaker.
- For installation in other places, use a circuit breaker as far as possible.

2. Cutting and Flaring Work of Piping

- Pipe cutting is carried out with a pipe cutter and burs must be removed.
- After inserting the flare nut, flaring work is carried out.

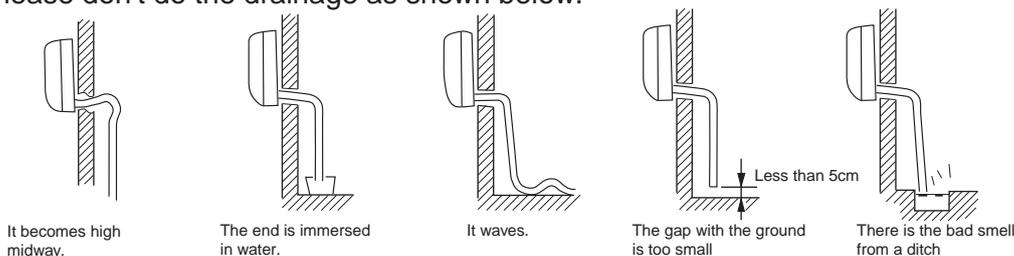


	Pipe diameter(ϕ)	Size A(mm)
Liquid side	6.35mm(1/4")	0.8~1.5
Gas side	9.52mm(3/8")	1.0~1.8
Gas side	12.7mm(1/2")	1.2~2.0
Gas side	15.88mm(5/8")	1.4~2.2

Correct	Incorrect				
	Lean	Damage of flare	Crack	Partial	Too outside

3. On Drainage

Please install the drain hose so as to be downward slope without fail.
Please don't do the drainage as shown below.



- Please pour water in the drain pan of the indoor unit, and confirm that drainage is carried out surely to outdoor.
- In case that the attached drain hose is in a room, please apply heat insulation to it without fail.

Check for Installation and Test Run

- Please kindly explain to our customers how to operate through the instruction manual.

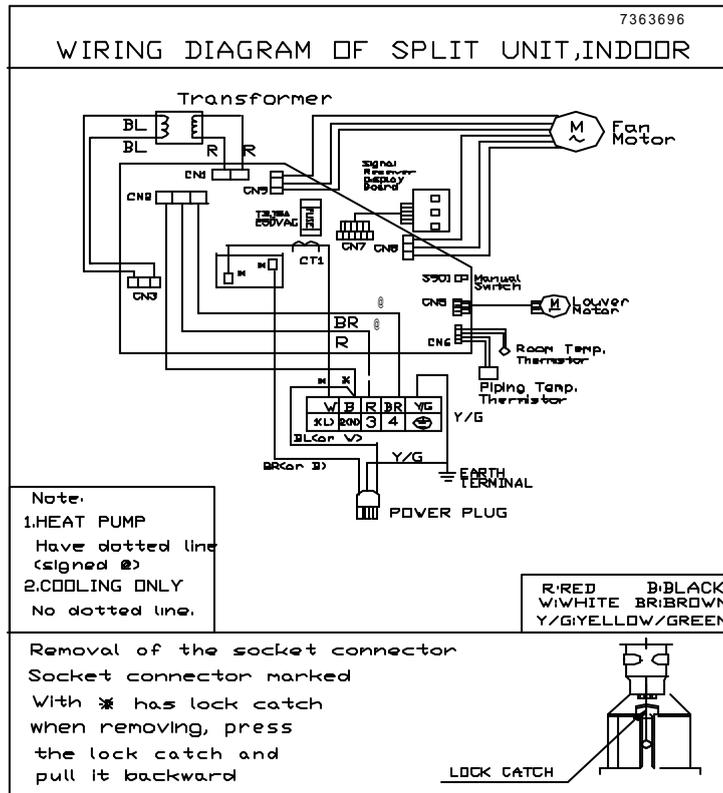
Check Items for Test Run

Put check mark \checkmark in boxes

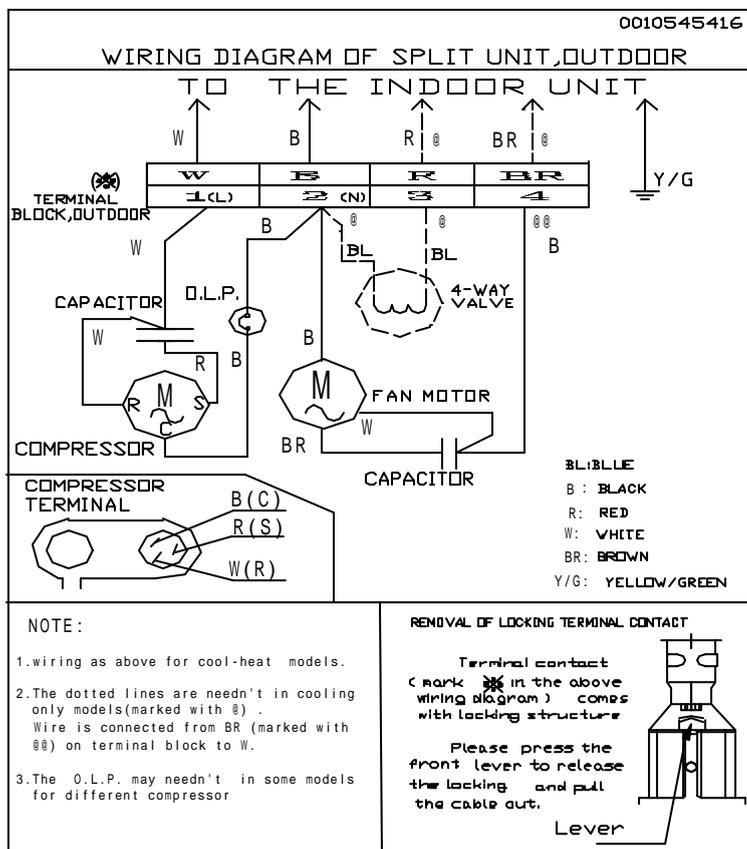
- | | | |
|--|--|--|
| <input type="checkbox"/> Gas leak from pipe connecting? | <input type="checkbox"/> Is drainage securely carried out? | <input type="checkbox"/> Is the lamp normally lighting? |
| <input type="checkbox"/> Heat insulation of pipe connecting? | <input type="checkbox"/> Is the earth line securely connected? | <input type="checkbox"/> Are cooling and heating (when in heat pump) performed normally? |
| <input type="checkbox"/> Are the connecting wirings of indoor and outdoor firmly inserted to the terminal block? | <input type="checkbox"/> Is the indoor unit securely fixed? | <input type="checkbox"/> Is the operation of room temperature regulator normal? |
| <input type="checkbox"/> Is the connecting wiring of indoor and outdoor firmly fixed? | <input type="checkbox"/> Is power source voltage abided by the code? | |
| | <input type="checkbox"/> Is there any noise? | |

6. WIRING DIAGRAM

WIRING DIAGRAM FOR INDOOR UNITS ;



WIRING DIAGRAM FOR OUTDOOR UNITS ;



7. Thermistor resistance chart

Room temperature sensor

T(°C)	R(KΩ)
-20	251.8
-19	236.9
-18	223.1
-17	210.1
-16	197.9
-15	186.5
-14	175.9
-13	165.9
-12	156.5
-11	147.7
-10	139.5
-9	131.8
-8	124.5
-7	117.7
-6	111.3
-5	105.3
-4	99.63
-3	94.3
-2	89.3
-1	84.58
0	80.14
1	75.96
2	72.02
3	68.31
4	64.81
5	61.51
6	58.39
7	55.45
8	52.68
9	50.06
10	47.58
11	45.24
12	43.02
13	40.93
14	38.95
15	37.08
16	35.31
17	33.63

18	32.04
19	30.53
20	29.1
21	27.75
22	26.47
23	25.25
24	24.1
25	23
26	21.96
27	20.97
28	20.03
29	19.14
30	18.3
31	17.49
32	16.73
33	16
34	15.3
35	14.65
36	14.02
37	13.42
38	12.85
39	12.31
40	11.79
41	11.3
42	10.83
43	10.39
44	9.96
45	9.553
46	9.165
47	8.794
48	8.441
49	8.103
50	7.78
51	7.472
52	7.178
53	6.897
54	6.628
55	6.371
56	6.125
57	5.889
58	5.664
59	5.449
60	5.243
61	5.046

62	4.857
63	4.676
64	4.502
65	4.336
66	4.177
67	4.024
68	3.878
69	3.738
70	3.603
71	3.474
72	3.35
73	3.231
74	3.117
75	3.008
76	2.903
77	2.802
78	2.705
79	2.611
80	2.522

Indoor pipe temperature sensor

T(°C)	R(KΩ)
-30	155.4
-29	146.4
-28	138.1
-27	130.2
-26	122.9
-25	116
-24	109.5
-23	103.5
-22	97.77
-21	92.44
-20	87.42
-19	82.71
-18	78.29
-17	74.12
-16	70.21
-15	66.52
-14	63.06
-13	59.79
-12	56.71
-11	53.81
-10	51.08

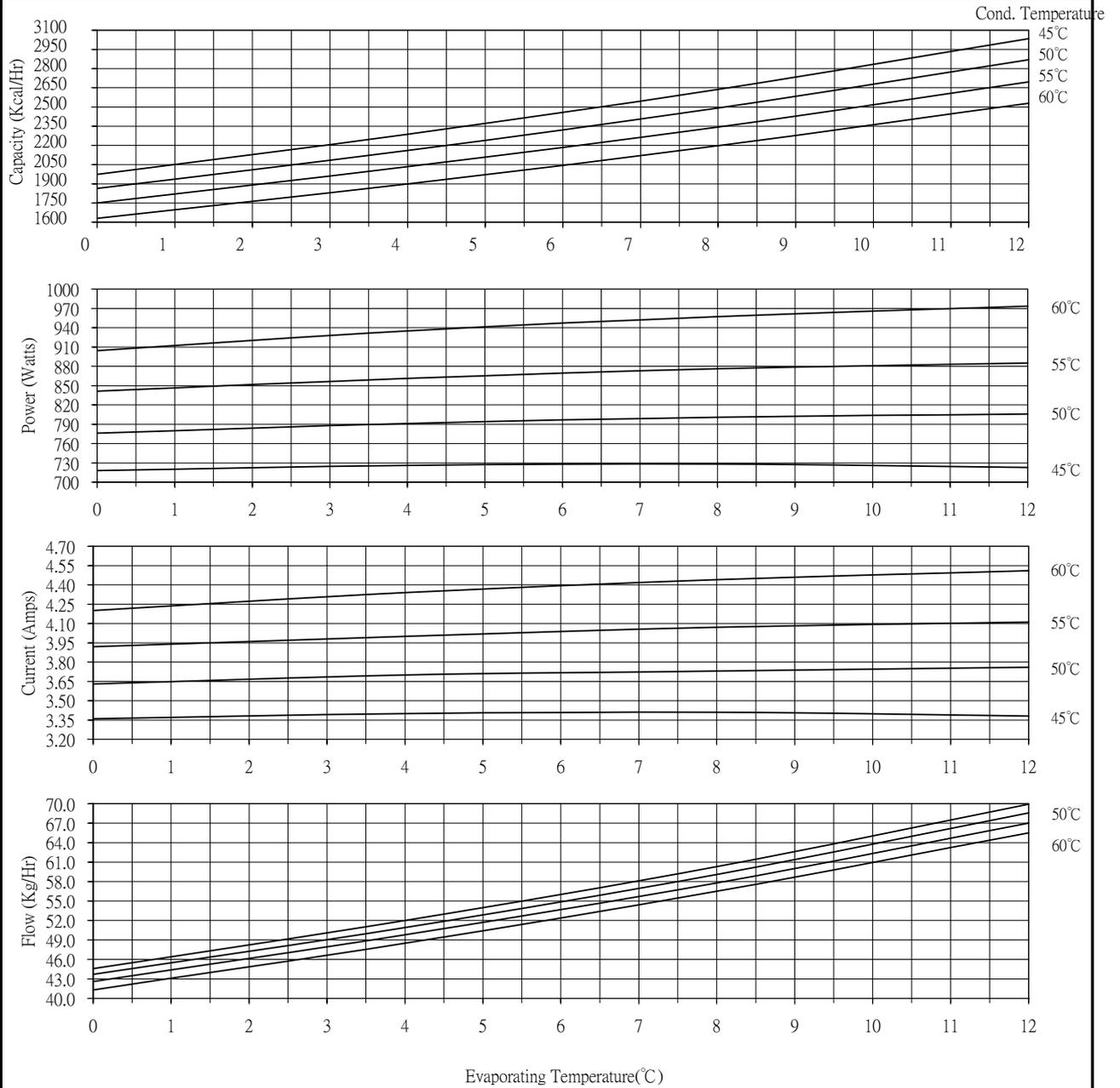
-9	48.5
-8	46.07
-7	43.77
-6	41.6
-5	39.55
-4	37.62
-3	35.79
-2	34.06
-1	32.43
0	30.88
1	29.42
2	28.03
3	26.72
4	25.48
5	24.3
6	23.18
7	22.12
8	21.12
9	20.17
10	19.26
11	18.4
12	17.59
13	16.81
14	16.08
15	15.38
16	14.71
17	14.08
18	13.48
19	12.91
20	12.36
21	11.84
22	11.35
23	10.88
24	10.43
25	10
26	9.592
27	9.204
28	8.833
29	8.479
30	8.141
31	7.819
32	7.511
33	7.217
34	6.936

35	6.668
36	6.411
37	6.166
38	5.931
39	5.707
40	5.492
41	5.287
42	5.09
43	4.902
44	4.722
45	4.549
46	4.383
47	4.225
48	4.073
49	3.927
50	3.788
51	3.654
52	3.525
53	3.402
54	3.283
55	3.17
56	3.061
57	2.956
58	2.855
59	2.759
60	2.666
61	2.577
62	2.491
63	2.408
64	2.329
65	2.253
66	2.179
67	2.108
68	2.04
69	1.975
70	1.912
71	1.851
72	1.193
73	1.737
74	1.682
75	1.63
76	1.58
77	1.531
78	1.484

79	1.439
80	1.395
81	1.353
82	1.313
83	1.274
84	1.236
85	1.2
86	1.164
87	1.13
88	1.098
89	1.066
90	1.035

8. COMPRESSOR PERFORMANCE DIAGRAM

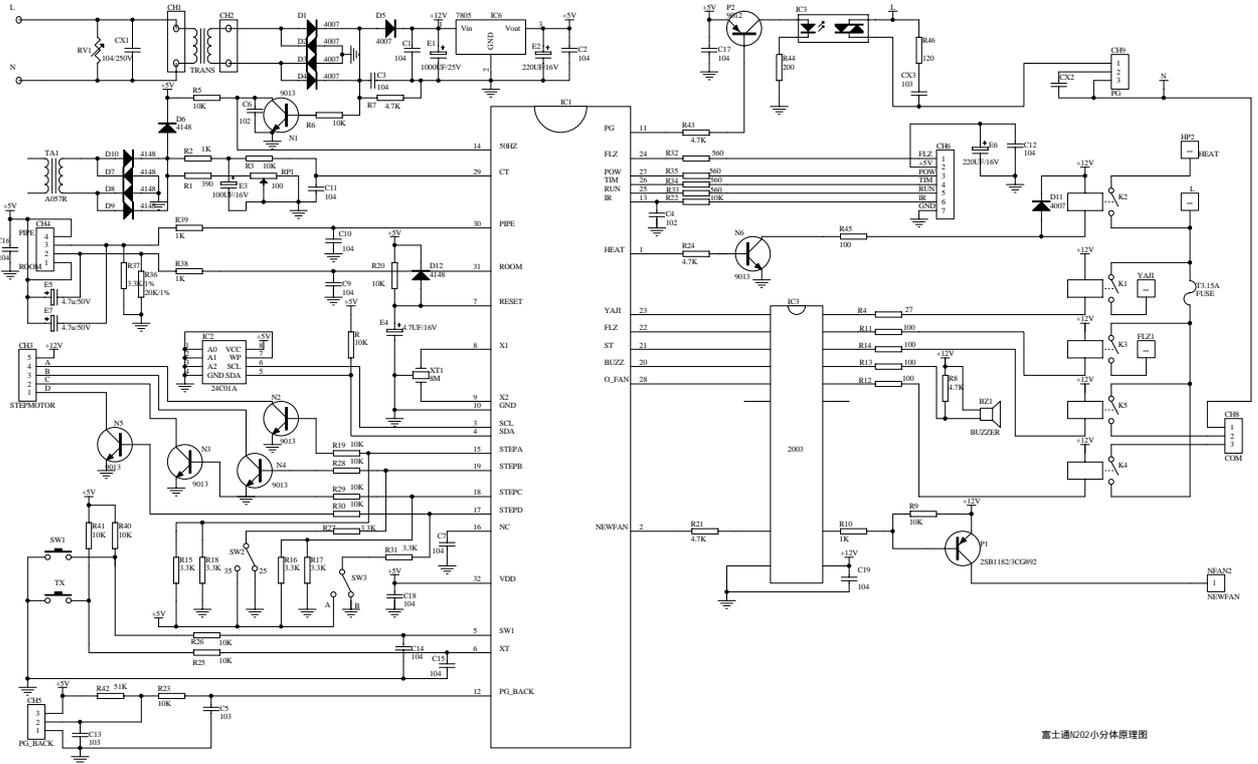
Performance Curve		Return Gas Temperature	35 °C
Model	48R313N	Subcooling	8.3 °C
Power Supply	220-240V / 50Hz / 1PH	Ambient Temperature	35 °C
Run Capacitor	30 μF / 370 VAC		



		Dwg. Name	Dwg. No.
		Curves OF Compressor	48R313N

9. Schematic diagram of PCB

CIRCUIT DIAGRAM



Sincere Forever

Haier Group

Haier Industrial Park, No.1, Haier Road

266101, Qingdao, China

<http://www.haier.com>