



EN

DEHUMIDIFIER

ALICE 13
ALICE 17



SERVICE MANUAL

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Abbreviations Used Within this Manual:

Abbreviation	Clear Words
OFDN	Oxygen free and dry nitrogen
PPE	Personnel protective equipment
LFL	Lower flammability level
UFL	Upper flammability level
HC	Hydrocarbon

INTRODUCTION

ATTENTION



Please read this manual carefully before installing and operating the GREE Hydrocarbon Air-Conditioner unit.

Careless installation and operation could cause severe injuries to operators, workers and damage to the air-conditioner unit itself.

Keep this manual in a location for easy access as it is needed for reference during installation, maintenance, service and operation of the unit.

This manual does not cover all aspects of installation, maintenance and service of the chiller units; if additional information is needed, contact the GREE Customer Service or Sales Office.

General Information

Warning and cautions appear at appropriate locations throughout this manual book.

Notices

General Safety Instructions

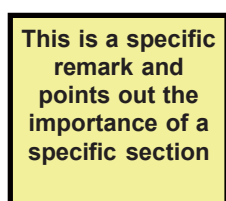
Please pay careful attention to these safety instructions, to avoid risks to people and property. Before starting work on maintenance read this manual thoroughly and pay particular attention to the relevant chapters.

Regardless of further requirements of the country, in which the equipment will be installed: assembly, first start up, technical service, maintenance and repair and as well as dismantling and disposal have to be carried out by authorised personnel only.

During every operation strictly follow the instructions within this manual. Pay attention to the specific rules of air conditioning, electrics and refrigerant handling of the country within which the equipment is installed.

Key sections and/or sentences are highlighted with specific icons and symbols to the right side of the page. Please pay particular attention to this information.

The Symbols Used in this Manual are as Follows



Information window highlighting important content of the specific section or additional information to consider.



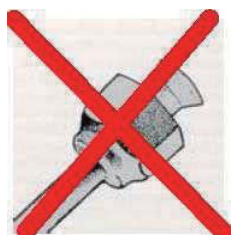
This sign will indicate that you are handling a flammable substance and the surrounding environment can possibly contain it.



This is a general warning sign.



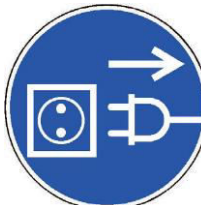
The Label is used to indicate that the flammable refrigerant is present within the application and service equipment.



Images that indicate something what you should strictly avoid.



Specific bans!



Specific commandments!



Instructions for first aid!



Fire protection!



Carefully read the instructions!

Working on components with safety-relevant functions jeopardise the safe operation of the installation. In case it is necessary to replace components, only use approved parts from GREE Electric, the Original Equipment Manufacturer(OEM) or Gree released or authorised components. The system contains the refrigerant R-290 (propane). This condition requires special safety precautions to be observed. Maintenance for the system is strictly prohibited. At the installation site, no matter what kind of activities are executed, smoking is strictly prohibited! Likewise, ensure the installation site is well ventilated. For further details as far as it concerns the handling of the refrigerant R-290 (propane) .

The Symbols Used in this Manual are as Follows

Electric operations (installation, repair, modification, maintenance, adjustment) have to be fulfilled by trained and authorised personnel only. When dealing with electrical issues, the specific rules of the country within which the equipment is installed must be followed, in addition to the instructions within this manual.

When working on the equipment or parts of it, the system has to be deenergised (by master switch, circuit breaker or separate cut-out) and made safe against restart of the system. Do not reconnect the system to the electric circuit until all work is done and all connections are tested. If handled unsafely or unprofessionally, severe electric shocks can occur. Consider the wiring diagram and follow the instructions of this manual very carefully whilst working on electrical parts. Wrong connections or incorrect grounding may lead to severe injuries and mortal danger.

Ground the system according to the particular requirements of the country within which the equipment is installed.
Connect all the wires properly and durably. Loose cables may lead to overheating or fire

Minimum Room Size

HC R290 is a flammable refrigerant and can form explosive mixtures in low concentrations. To minimise the risk of fire or explosion, the system must be installed in a room with a minimum floor area.

Unless there are further requirements, standards and legislation of the country within which the equipment is installed may apply. Any technicians that works on GREE hydrocarbon air- conditioners must be competent in the safe handling of flammable refrigerants, in addition to being in possession of knowledge and skills to maintain best refrigeration installation and servicing practices.

There are already training activities in place for engineers, technicians and sales staff to provide professional knowledge and skills for the handling of HC refrigerants and refrigeration systems operating with HCs.

**Get trained and have your
“HC Refrigeration Professional” certification!**

**ONLY original
GREE (OEM)
spare-parts are
permitted for
Service and Re-
pair!**



**Proceed
according to the
manuals
Instructions!**



**Pay attention to
the room size for
indoor unit
installation!**

**For specific in-
formation refer
page XXX of this
manual.**

**Get your Best
Practices
knowledge and
skills update for
HC refrigerants
and be
certificated for
these jobs!**



Basics in RAC

Knowledge of the basic SI standard units for temperature, pressure, mass, density, energy.

Understanding of the basic theory of refrigeration systems including the functions of the main components in the system (compressor, evaporator, condenser, thermostatic expansion valves).

Understanding how to read a refrigerant flow chart and an electrical circuit diagram.

The determination of non condensable gases in the refrigeration system and how to eliminate them.

The importance of the use of oxygen free dry nitrogen (OFDN) for system flushing, leak test and strength test.

The elimination of humidity from the refrigeration system and how to recover or vent HC refrigerant from a system.

Usage of tables and diagrams (log p/h diagram, saturation tables of a refrigerant, diagram of a single compression refrigeration cycle) and interpretation of these tables and diagrams.

Knowledge of the basic operation of the following components in a refrigeration system and their role and importance for refrigerant leakage prevention and identification:

- Temperature and pressure controls
- Sight glass and moisture indicators
- Defrost controls, reverse cycle operation
- System protectors
- Measuring devices such as the pressure gauge manifold
- Thermometer
- Leak detector
- Refrigerant charging devices
- Vacuum pump
- Oxygen free dry nitrogen cylinder and pressure regulator

Fault finding – analysis and repair.

- Knowledge of flammable refrigerants
- Risk analysis for the application of flammable refrigerant and properties of flammable refrigerants
- Electrical circuit assessment and repair

Read More!
SAFETY CODE
OF PRACTICE
FOR REFRIGERATING
SYSTEMS
UTILISING A2 &
A3 REFRIGERANTS

ISBN
1 872719 15 5

Checks before putting in operation, after a long period of nonuse, after maintenance or repair intervention or during operation.

Carry out a pressure and leak test to check the strength and the tightness of the system.

Usage of a vacuum pump.

Evacuation of the system to remove air and moisture according to standard practice.



Checks for Leakage

Knowledge of potential leakage points of refrigeration, air-conditioning and heat pump equipment. Making a visual and manual inspection of the whole system.

Carry out a check for leakage of the system using an indirect method and/or one of the direct methods.

Direct leak detection methods:

1. Fixed leakage detection systems
2. Portable electronic gas detectors
3. Ultraviolet (UV) indication fluids
4. Weak soapy water solution (bubble test) also in combination with OFDN
5. New installation tightness test for leakage detection procedure e.g. H2/N2
6. Operational system tightness test for leakage detection procedure

Indirect refrigerant detection methods:

1. Visual
2. Manual checks

HC R290 Refrigerant Issues

Please notice that the unit is filled with propane. Details to this refrigerant are found in chapter "refrigerant". Propane is highly flammable and leads to explosion under certain conditions. Inappropriate treatment of the unit involves the risk of severe damages of people and material.

Basics

HC R-290 (propane) is an odourless and colourless gas of the group of hydrocarbons.

HC R-290 is heavier than air and at high concentrations can cause narcotic effects and eventually asphyxiation.

R-290 is highly flammable within the range of 2,1% and 9,5% by volume, or 38 g/m³ to 170 g/m³ in air. The auto-ignition temperature is about 470°C.

Since R-290 is an odourless and colourless gas, it is difficult to perceive that it is present (as with most other refrigerants).

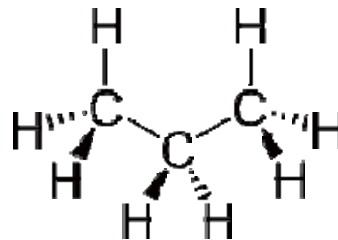
Propane is often used as a fuel such as for heating or barbecues. However, for use on refrigeration systems, fuel-grade propane is not suitable since it contains high levels of impurities, which would damage the refrigeration system and may not provide the desired refrigerating capacity or efficiency.



HC R-290 refrigerant has a high grade of purity.

Propane as a cooking gas is not useful for refrigeration purpose!

The structural formula of HC R-290 (propane)



Important Refrigerant Properties and Parameters:

Molecular formula	C ₃ H ₈
Melting point [°C]	-188
Boiling point under atmospheric pressure [°C]	-42
Molar mass [g mol ⁻¹]	44,10
Critical temperature [°C]	96,8
Critical pressure [bar]	42
Practical limit [g/m ³]	8
Lower flammability level LFL [g/m ³]	38
Lower flammability level LFL [%]	2,1
Upper flammability level UFL [g/m ³]	171
Upper flammability level UFL [%]	9,5
Ignition temperature [°C]	470

Read More!

Guidlines for the safe use of hydro-carbon refrigerants

GIZ—PROKLIMA

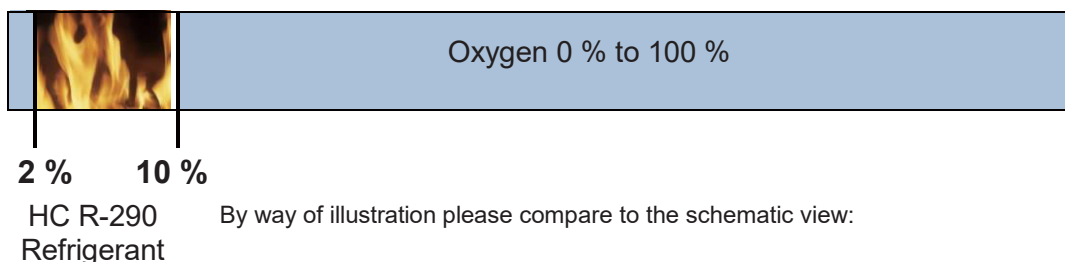
<http://www.gtz.de/proklima>

Flammability

Three components are needed simultaneously for causing fire:

1. Oxygen
2. Ignition source
3. The flammable concentration of HC

For ignition, the concentration of HC in air has to be between the lower and upper flammable limits. If the concentration is below the lower flammability limit (LFL) of about 2% by volume in air, there is not enough HC for combustion. If the concentration is above the upper flammability limit (UFL) of about 10% there is insufficient oxygen for combustion.



Possible ignition sources are:

1. A flame, for example from brazing torch, halide torch leak lamp, match or lighter, cigarette
2. A spark from an electrical component
3. Static electricity
4. Hot surfaces



To ignite HC R-290, three (3) components must exist at the same time at work area to cause the refrigerant burning!



Safety Data

Hazard Identification

- Extremely flammable (F+).
- Readily forms an explosive air-vapour mixture at ambient temperatures.
- Vapour is heavier than air and may travel to remote sources of ignition (e.g. along drainage systems, into basements etc).
- Liquid releases generate large volumes of flammable vapour (approx 250:1)
- Cold burns (frostbite) will result from skin / eye contact with liquid.
- Liquid release or vapour pressure jets present a risk of serious damage to the eyes.
- Abuse involving inhalation of high concentrations of vapour, even for short periods, which can produce unconsciousness or may prove fatal. Inhalation may cause irritation to the nose and throat, headache, nausea, vomiting, dizziness and drowsiness. In poorly ventilated areas unconsciousness or asphyxiation may result.

1 kg of liquid HC R-290 refrigerant creates about 250 litres of gas

Beside the flammability, most other safety properties are similar to other refrigerants!

Rely always on best service practices in refrigeration!

First Aid Measures

Inhalation:

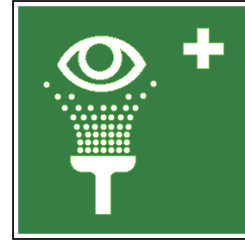
Remove the affected person to fresh air. If breathing has stopped, administer artificial respiration. Give external cardiac massage if necessary. If the person is breathing but unconscious, place them in the recovery position. Obtain medical assistance immediately.

Skin:

In case of cold burns: flush with water to normalize temperature. Cover the burns with sterile dressings. Do not use ointments or powders. Obtain medical assistance immediately.

Eyes:

Cold burns should be flushed with water to normalise temperature, cover the eye with a sterile dressing and obtain medical assistance immediately.



Fire Fighting Measures

HC R-290 is delivered, stored, and used at temperatures above their flash point. Avoid all naked flames, sparks, cigarettes etc.

- In case of fire, immediately alert fire brigade
- Ensure an escape path is always available from any fire
- If gas has ignited do not attempt to extinguish but stop gas flow and allow to burn out.
- Use water spray to cool heat-exposed containers, and to protect surrounding areas and personnel effecting the shut off
- Every precaution must be taken to keep containers cool to avoid the possibility of a boiling liquid expanding vapour explosion (BLEVE)

Extinguishing Media:

In case of a large fire:

Release must be stopped and container cooled by water spray.

Water mist should be used to assist approach to the source of the fire.

Large fires should only be handled by Fire Brigade.

DO NOT USE WATER JET

Small fire:

Use dry powder extinguisher



DO NOT USE WATER JET

Special protective equipment for fire fighters:

In confined spaces use self-contained breathing apparatus

Hazardous combustion products:

Incomplete combustion may form carbon monoxide.



Accidental Release Measures

Immediate emergency action:

- Clear people away from the area to a safe place
- Do not operate electrical equipment unless "Ex"-rated
- Summon the emergency services
- Treat or refer casualties if necessary

Further action (when release is made safe):

- Extinguish all naked lights – avoid creating sparks
- Position fire fighting equipment
- Cover drains and disperse vapour with water spray.

Note: vapour may collect in confined spaces.

Further actions:

- Stop release
- Use dry powder or carbon dioxide extinguishers
- Cool containers exposed to fire by using water / mist spray.

Accidental Release Measures

Due to the flammability of R-290 and the risk of fire or explosion during servicing, special safety rules must be followed during operation. In order to avoid damage for people and property, particular requirements are listed hereafter.

Before servicing the unit, the surrounding area where the work will be done must be clear of safety hazards to ensure safe working. Nevertheless it is required to carry out a risk assessment in order to minimise the risk of ignition of R-290.



The following safety measures must be followed:

1. Any employees and other present persons must be informed about the service and the way the service is done, first.
2. It is recommended to isolate the working environment in order to keep out any unauthorised personnel.
3. It is useful to set up signs such as „no smoking“ or „access denied“.
4. It is prohibited to store any combustible goods within the working environment.
5. Within two (2) metres radius, ignition sources are not allowed in the working area.
6. Fire extinguisher (dry powder) must be easily accessible at any time.
7. During service work, proper ventilation of the environment must be ensured.



The HC leak detector is indeed a Personal Protective Equipment (PPE) device!



Sign plate to protect and mark the working area.

Appropriate detectors, suitable for hydrocarbons, must be available and operational all the time. Appropriate tools and appliances must be available and ready for operation.

Any employees need to be instructed extensively about the safety measures and the possible safety hazard.

Gas Detection

While servicing the unit it is recommended for the whole period of work — before, during and after — to monitor the gas concentration in the air within the work environment. By monitoring the air within the work environment the danger of a possible formation of flammable atmosphere can be detected early.

The HC leak detector is indeed a PPE device!

Doing the monitoring, ensure that the gas detectors are suitable for hydrocarbon detection. Never use open fire or a device with an ignition source for the detection of gas or for leak detection.

Before operation of the gas detector the instruction manual must be read carefully. In case of any questions refer to the detector manufacturer. Furthermore ensure the detector is correctly calibrated. Instructions for calibration can be found in the instruction manual of the detector or upon request from the manufacturer.

A possible re-calibration must be done within an area which is free of refrigerants.

In case of a positive detection by the detector any work must be stopped immediately. Any open flames or ignition sources must be extinguished or removed. In addition to a suitable and approved HC gas detectors, portable gas detectors can be used.



Such a detector can be clipped to clothing or placed on the floor within the working area. It should be switched on for the duration of the work, and set to alarm at 15% of the lower flammability level (LFL), to warn that flammable concentration may be nearby. In this way, technicians can be alerted whenever an inadvertent release of refrigerant occurs, and can immediately act upon the relevant emergency procedures.



Portable HC Gas Detector

Pressure—Temperature Chart

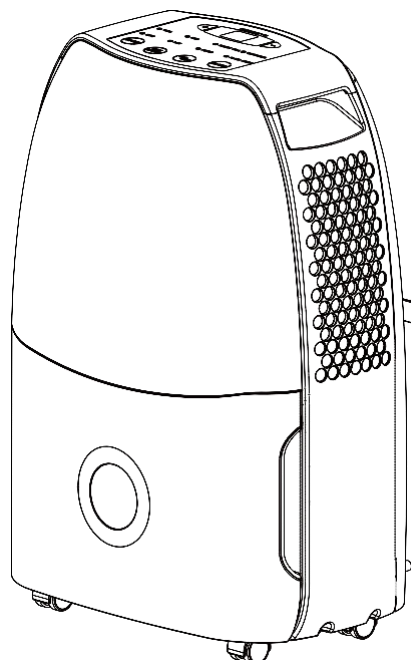
HC Refrigerant R-290							
Temperature		Absolute pressure			Gauge pressure		
°C	°F	kPa	bar	PSI	kPa(g)	bar(g)	PSI(g)
-40	-40	111,12	1,11	16,12	11,12	0,11	1,61
-39	-38,2	116,00	1,16	16,83	16,00	0,16	2,32
-38	-36,4	121,05	1,21	17,56	21,05	0,21	3,05
-37	-34,6	126,27	1,26	18,31	26,27	0,26	3,81
-36	-32,8	131,66	1,32	19,10	31,66	0,32	4,59
-35	-31	137,23	1,37	19,90	37,23	0,37	5,40
-34	-29,2	142,97	1,43	20,74	42,97	0,43	6,23
-33	-27,4	148,90	1,49	21,60	48,90	0,49	7,09
-32	-25,6	155,02	1,55	22,48	55,02	0,55	7,98
-31	-23,8	161,33	1,61	23,40	61,33	0,61	8,89
-30	-22	167,83	1,68	24,34	67,83	0,68	9,84
-29	-20,2	174,54	1,75	25,31	74,54	0,75	10,81
-28	-18,4	181,44	1,81	26,32	81,44	0,81	11,81
-27	-16,6	188,56	1,89	27,35	88,56	0,89	12,84
-26	-14,8	195,89	1,96	28,41	95,89	0,96	13,91
-25	-13	203,43	2,03	29,51	103,43	1,03	15,00
-24	-11,2	211,19	2,11	30,63	111,19	1,11	16,13
-23	-9,4	219,18	2,19	31,79	119,18	1,19	17,29
-22	-7,6	227,39	2,27	32,98	127,39	1,27	18,48
-21	-5,8	235,84	2,36	34,21	135,84	1,36	19,70
-20	-4	244,52	2,45	35,46	144,52	1,45	20,96
-19	-2,2	253,44	2,53	36,76	153,44	1,53	22,26
-18	-0,4	262,61	2,63	38,09	162,61	1,63	23,58
-17	1,4	272,03	2,72	39,45	172,03	1,72	24,95
-16	3,2	281,70	2,82	40,86	181,70	1,82	26,35
-15	5	291,62	2,92	42,30	191,62	1,92	27,79
-14	6,8	301,81	3,02	43,78	201,81	2,02	29,27
-13	8,6	312,27	3,12	45,29	212,27	2,12	30,79
-12	10,4	323,00	3,23	46,85	223,00	2,23	32,34
-11	12,2	334,00	3,34	48,44	234,00	2,34	33,94
-10	14	345,28	3,45	50,08	245,28	2,45	35,58
-9	15,8	356,85	3,57	51,76	256,85	2,57	37,25
-8	17,6	368,70	3,69	53,48	268,70	2,69	38,97
-7	19,4	380,85	3,81	55,24	280,85	2,81	40,73
-6	21,2	393,29	3,93	57,04	293,29	2,93	42,54
-5	23	406,04	4,06	58,89	306,04	3,06	44,39
-4	24,8	419,09	4,19	60,78	319,09	3,19	46,28
-3	26,6	432,45	4,32	62,72	332,45	3,32	48,22
-2	28,4	446,13	4,46	64,71	346,13	3,46	50,20
-1	30,2	460,13	4,60	66,74	360,13	3,60	52,23
0	32	474,46	4,74	68,82	374,46	3,74	54,31
1	33,8	489,11	4,89	70,94	389,11	3,89	56,44
2	35,6	504,10	5,04	73,11	404,10	4,04	58,61
3	37,4	519,43	5,19	75,34	419,43	4,19	60,83
4	39,2	535,10	5,35	77,61	435,10	4,35	63,11
5	41	551,12	5,51	79,93	451,12	4,51	65,43
6	42,8	567,49	5,67	82,31	467,49	4,67	67,80
7	44,6	584,22	5,84	84,74	484,22	4,84	70,23
8	46,4	601,31	6,01	87,21	501,31	5,01	72,71
9	48,2	618,77	6,19	89,75	518,77	5,19	75,24
10	50	636,60	6,37	92,33	536,60	5,37	77,83

HC Refrigerant R-290							
Temperature		Absolute pressure			Gauge pressure		
11	51,8	654,81	6,55	94,97	554,81	5,55	80,47
12	53,6	673,40	6,73	97,67	573,40	5,73	83,17
13	55,4	692,38	6,92	100,42	592,38	5,92	85,92
14	57,2	711,75	7,12	103,23	611,75	6,12	88,73
15	59	731,51	7,32	106,10	631,51	6,32	91,59
16	60,8	751,68	7,52	109,02	651,68	6,52	94,52
17	62,6	772,25	7,72	112,01	672,25	6,72	97,50
18	64,4	793,24	7,93	115,05	693,24	6,93	100,55
19	66,2	814,64	8,15	118,16	714,64	7,15	103,65
20	68	836,46	8,36	121,32	736,46	7,36	106,82
21	69,8	858,71	8,59	124,55	758,71	7,59	110,04
22	71,6	881,39	8,81	127,84	781,39	7,81	113,33
23	73,4	904,51	9,05	131,19	804,51	8,05	116,69
24	75,2	928,07	9,28	134,61	828,07	8,28	120,10
25	77	952,07	9,52	138,09	852,07	8,52	123,58
26	78,8	976,53	9,77	141,64	876,53	8,77	127,13
27	80,6	1001,45	10,01	145,25	901,45	9,01	130,75
28	82,4	1026,83	10,27	148,93	926,83	9,27	134,43
29	84,2	1052,68	10,53	152,68	952,68	9,53	138,18
30	86	1079,00	10,79	156,50	979,00	9,79	141,99
31	87,8	1105,79	11,06	160,38	1005,79	10,06	145,88
32	89,6	1133,08	11,33	164,34	1033,08	10,33	149,84
33	91,4	1160,85	11,61	168,37	1060,85	10,61	153,87
34	93,2	1189,12	11,89	172,47	1089,12	10,89	157,97
35	95	1217,88	12,18	176,64	1117,88	11,18	162,14
36	96,8	1247,16	12,47	180,89	1147,16	11,47	166,38
37	98,6	1276,94	12,77	185,21	1176,94	11,77	170,70
38	100,4	1307,24	13,07	189,60	1207,24	12,07	175,10
39	102,2	1338,07	13,38	194,07	1238,07	12,38	179,57
40	104	1369,42	13,69	198,62	1269,42	12,69	184,12
41	105,8	1401,31	14,01	203,25	1301,31	13,01	188,74
42	107,6	1433,73	14,34	207,95	1333,73	13,34	193,44
43	109,4	1466,71	14,67	212,73	1366,71	13,67	198,23
44	111,2	1500,23	15,00	217,59	1400,23	14,00	203,09
45	113	1534,31	15,34	222,54	1434,31	14,34	208,03
46	114,8	1568,96	15,69	227,56	1468,96	14,69	213,06
47	116,6	1604,18	16,04	232,67	1504,18	15,04	218,17
48	118,4	1639,97	16,40	237,86	1539,97	15,40	223,36
49	120,2	1676,34	16,76	243,14	1576,34	15,76	228,63
50	122	1713,30	17,13	248,50	1613,30	16,13	233,99
51	123,8	1750,86	17,51	253,94	1650,86	16,51	239,44
52	125,6	1789,02	17,89	259,48	1689,02	16,89	244,98
53	127,4	1827,79	18,28	265,10	1727,79	17,28	250,60
54	129,2	1867,17	18,67	270,81	1767,17	17,67	256,31
55	131	1907,17	19,07	276,62	1807,17	18,07	262,11
56	132,8	1947,80	19,48	282,51	1847,80	18,48	268,01
57	134,6	1989,07	19,89	288,49	1889,07	18,89	273,99
58	136,4	2030,98	20,31	294,57	1930,98	19,31	280,07
59	138,2	2073,54	20,74	300,75	1973,54	19,74	286,24
60	140	2116,75	21,17	307,01	2016,75	20,17	292,51

Part I : Technical Information

1. Summary

492000080
492000081

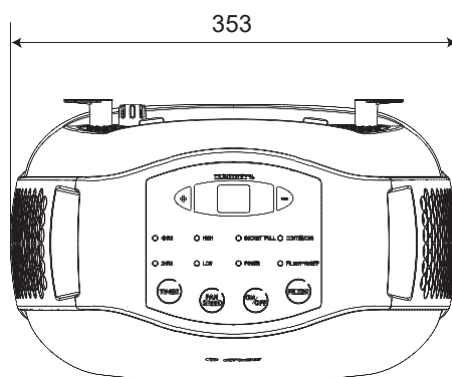
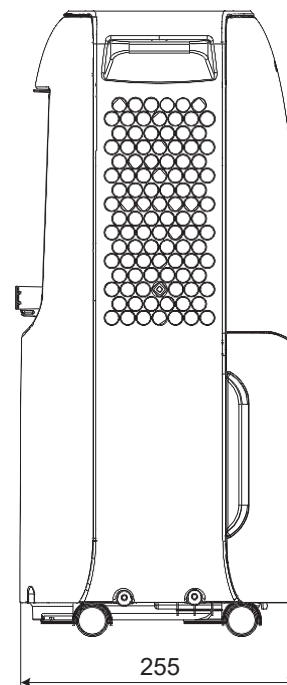
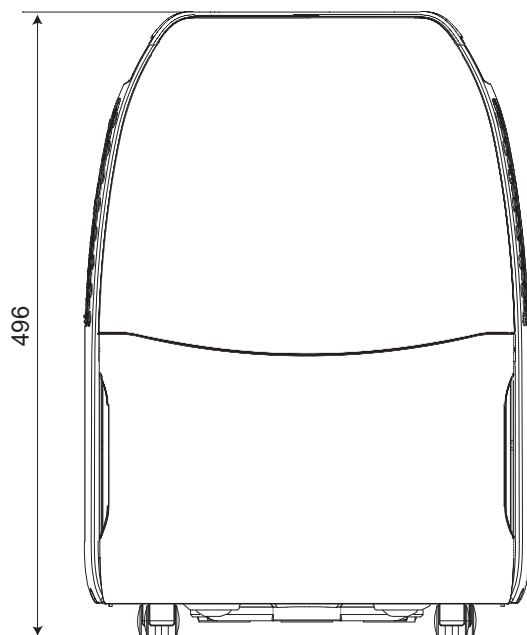


2. Specifications

Model				
Product Code			492000080	492000081
Power Supply	Rated Voltage	V~	220-240	220-240
	Rated Frequency	Hz	50	50
	Phases		1	1
Rated Dehumidification Capacity		Pint/D	12	20
Power Input		W	220	320
Current Input		A	1.1	1.7
Set Humidity Range		%	35/80	35/80
Air Flow Volume (H/M/L)		m ³ /h	115/-/100	115/-/100
Fan Motor Speed (H/M/L)		r/min	1100/-/950	1100/-/950
Fan Motor Power Output		W	4	4
Fan Motor RLA		A	0.14	0.14
Fan Motor Capacitor		μF	1.5	1.5
Fan Type			Centrifugal	Centrifugal
Fan Diameter Length (DXL)		mm	Φ180X54.5	Φ180X54.5
Throttling Method			Capillary	Capillary
Fuse Current		A	3.15	3.15
Sound Pressure Level (H/M/L)		dB (A)	44/-/42	45/-/43
Sound Power Level (H/M/L)		dB (A)	54/-/52	55/-/53
Climate Type			T1	T1
Isolation			I	I
Moisture Protection			IPX0	IPX0
Permissible Excessive Operating Pressure for the Discharge Side		MPa	3	3
Permissible Excessive Operating Pressure for the Suction Side		MPa	1.5	1.5
Dimension (WXHXD)		mm	353X496X255	353X496X225
Dimension of Carton Box (LXWXH)		mm	393X271X510	393X271X510
Dimension of Package (LXWXH)		mm	396X274X525	396X274X525
Application Area		m ²	15	15
Net Weight		kg	11.5	12
Gross Weight		kg	12.5	13
Refrigerant			R290	R290
Refrigerant Charge		kg	0.06	0.08
Bucket Capacity		L	3/3.5	3/3.5
Control Type			Electronic	Electronic
Evaporator	Evaporator Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7	Φ7
	Evaporator Row-fin Gap	mm	1-1.4	2-1.6
	Evaporator Coil Length (LXDXW)	mm	210X12.7X152.4	210X25.4X152.4
Condenser	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ5	Φ7
	Condenser Rows-fin Gap	mm	2-1.4	2-1.4
	Condenser Coil Length (LXDXW)	mm	210X22.8X152.4	210X25.4X152.4
Compressor	Compressor Manufacturer		Shanghai Hitachi Electrical Appliances Co.,Ltd	Shanghai Hitachi Electrical Appliances Co.,Ltd
	Compressor Model		PSA357SV-R1DUN	PSA520SV-R1DUN
	Compressor Type		Rotary	Rotary
	Compressor Power Input	W	198	289
	Compressor Overload Protector		URP-191-78 or equivalent	USP-319-78 or equivalent
	Compressor LRA.	A	4.1	5.0
	Compressor RLA	A	1.0	1.4

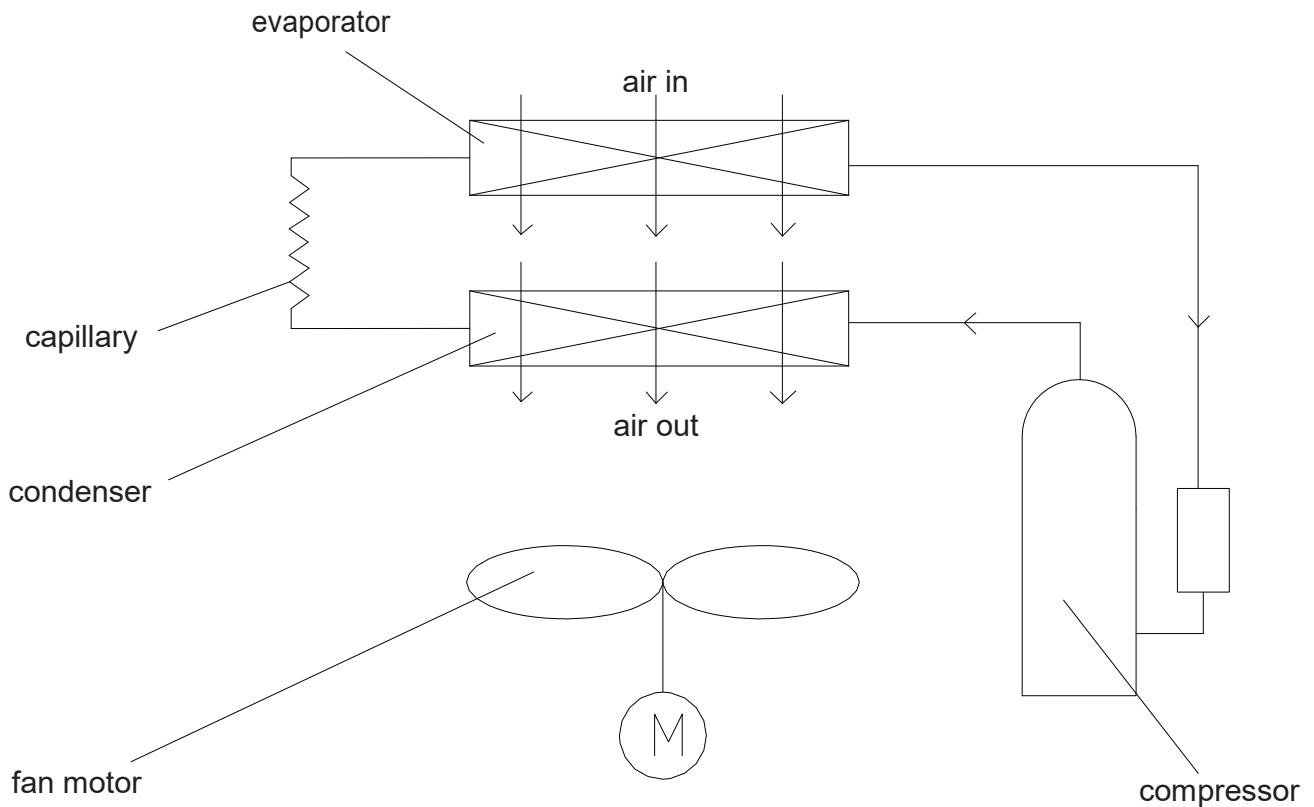
The above data is subject to change without notice; please refer to the nameplate of the unit.

3. Outline Dimension Diagram



Unit:mm

4. Refrigerant System Diagram



Dehumidifying principle of dehumidifier:

When temperature is decreased to the temperature point of dew, water vapor in humid air will condensate. Dehumidifier is dehumidifying the air by using this principle.

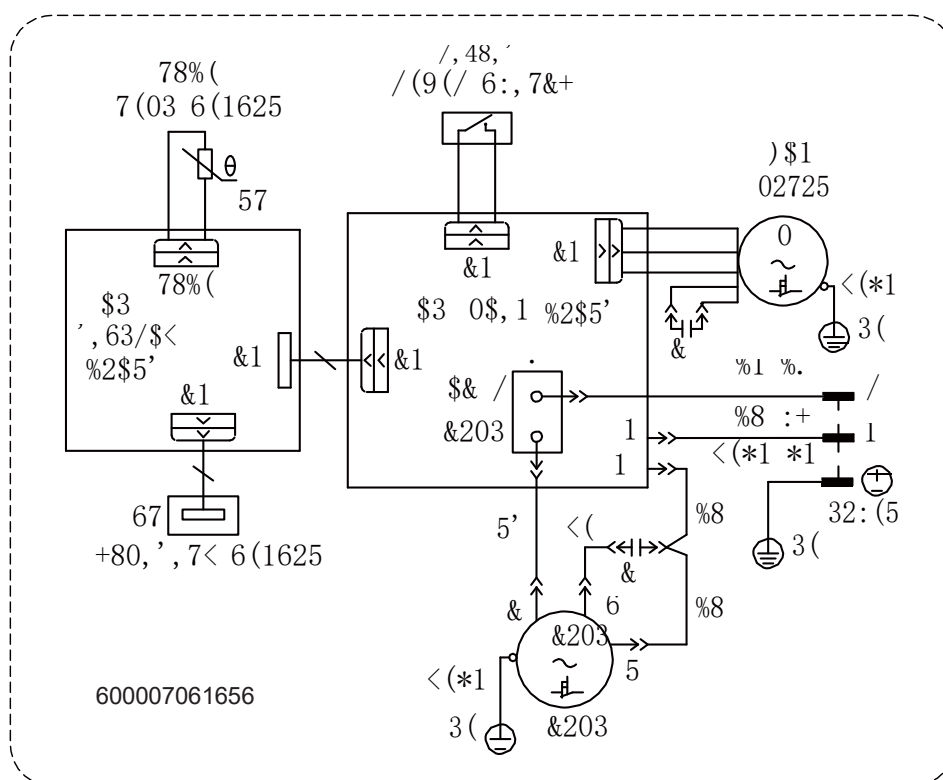
During operation of the system, air will pass through evaporator and condenser in turn and then be discharged due to centrifugal blade. When the air is passing through evaporator, refrigerant will absorb the heat in air to let its temperature decrease to the temperature point of dew, water vapor in air will condensate. Condensate water comes into water tank through water tray, or is discharged directly through drainage hose. The saturated low-temperature air passed through the evaporator will absorb the heat when flowing along the condenser, and then become the dry air. Under normal condition, the nearby air will become warm during operation of dehumidifier.

5. Electrical Part

5.1 Wiring Diagram

● Instruction

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	/	/

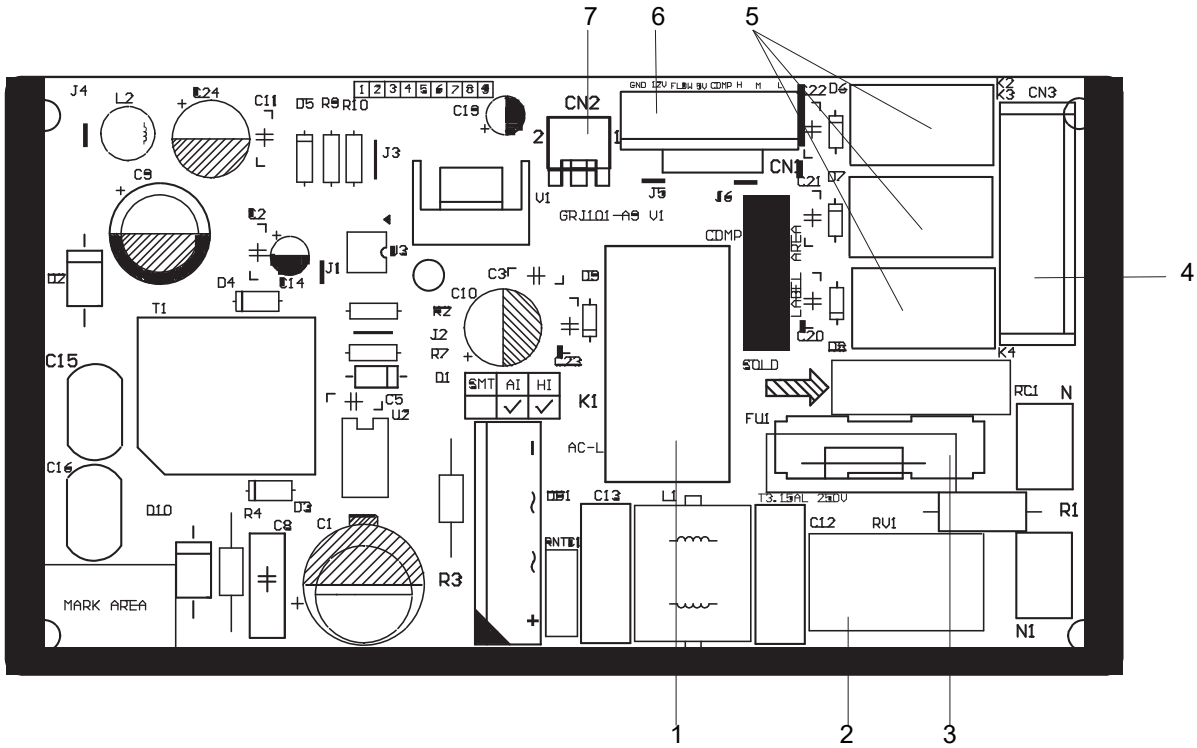


These wiring diagrams are subject to change without notice; please refer to the one supplied with the unit.

5.2 PCB Printed Diagram

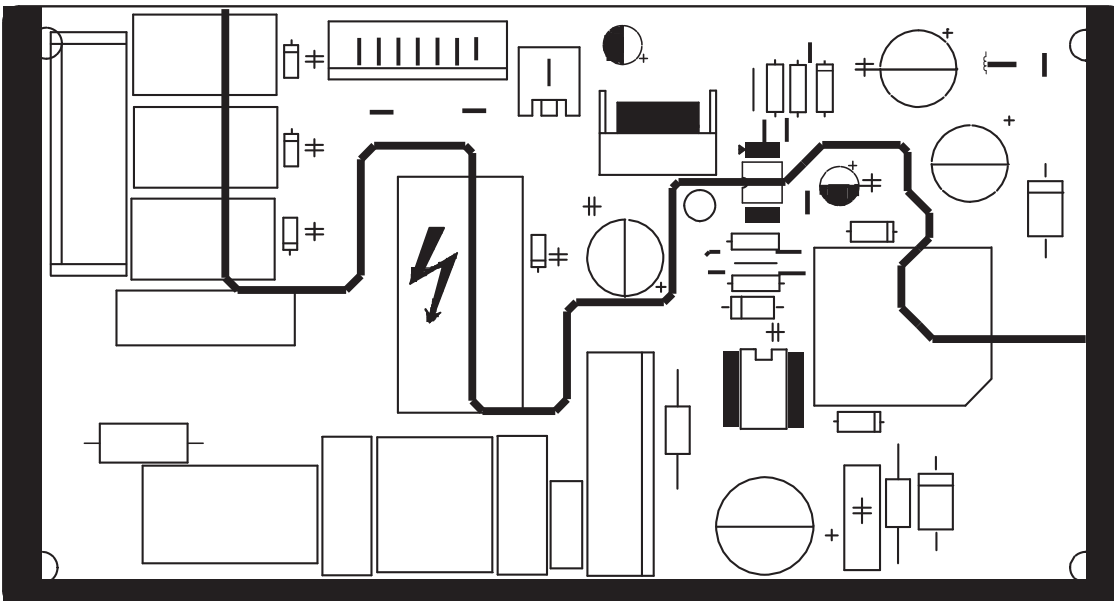
Silk Screen on Main Board

- Top view



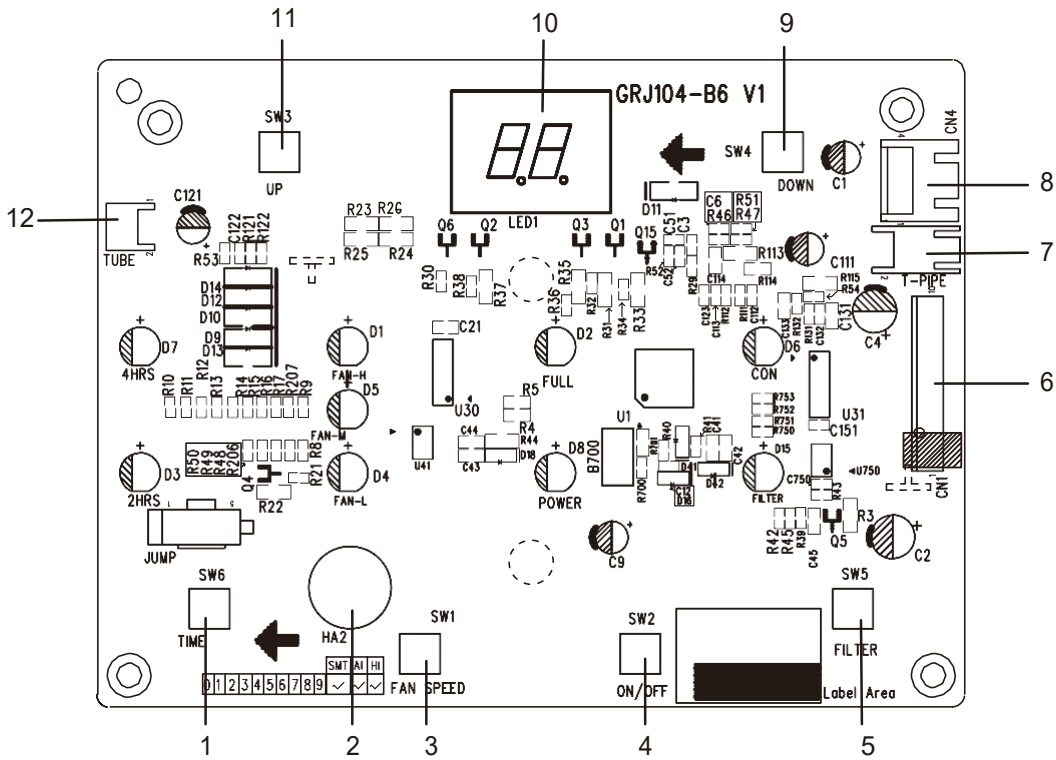
1	Compressor relay	5	Fan relay
2	Piezoresistor	6	Connecting wire of display panel
3	Fuse	7	Interface of water level switch
4	Interface of fan		

- Bottom view



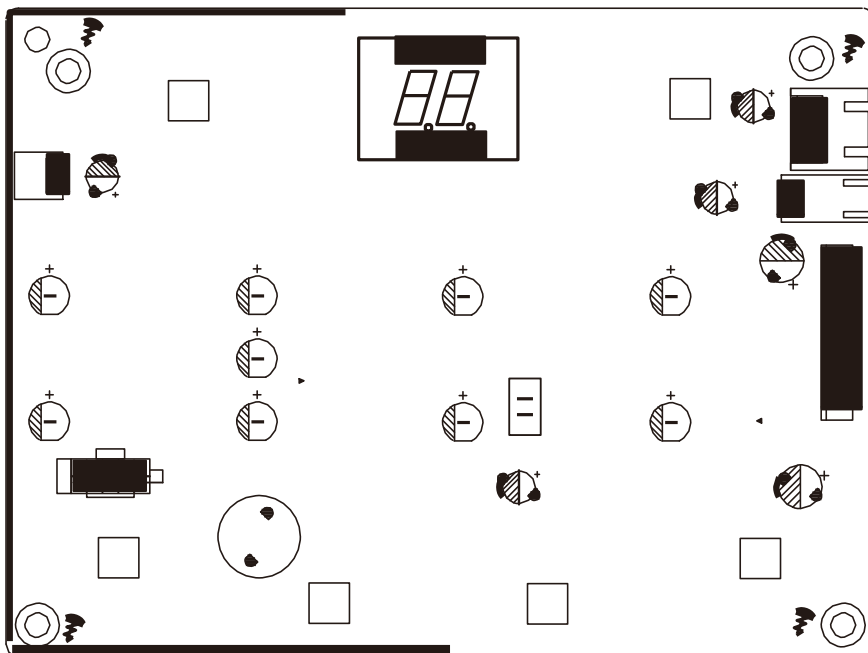
Silk Screen on Display Board

• Top view



1	Timer button	5	Reset button for filter	9	Button for setting humidity (-)
2	Buzzer	6	Wire connection	10	Dual-8 nixie tube
3	Fan speed button	7	Needle stand for ambient temperature sensor	11	Button for setting humidity (+)
4	ON/OFF button	8	Needle stand for room temperature and humidity sensor	12	Needle stand for tube temperature sensor

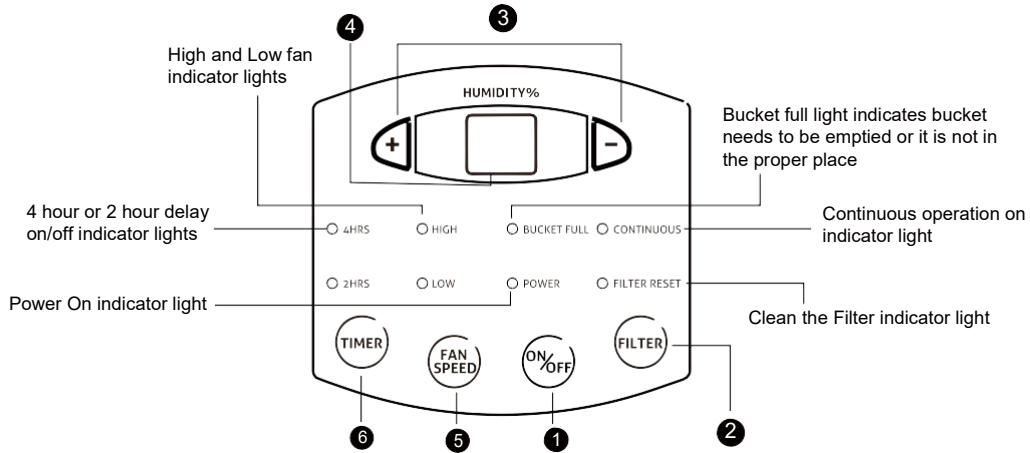
• Bottom view



6. Function and Control

6.1 Control Panel Instruction

- Notes: 1. Water bucket must be correctly installed for the dehumidifier to operate.
 2. Do not remove the bucket while unit is in operation.
 3. When the unit is connected to power, "POWER" indicator on control panel will be on and the unit will give out a sound.
 4. Each time pressing the effective button on the control panel will give out a "beep" sound.



- 1** ON/OFF Pad
 Press to turn the dehumidifier on and off.
- 2** FILTER Pad
 After 250 hours of operation, the Clean the Filter indicator light will glow to remind you to clean the filter. Remove the filter and clean it. Press to turn off the Clean the Filter light. See the Care and Cleaning section.
- 3** Humidity Set Control Pads
 The humidity level can be set within a range of 80% RH (Relative Humidity) to 35% RH (Relative Humidity) in 5% reduce or at CO for continuous operation. NOTE: If CO (Continuous) is selected, the dehumidifier will operate continuously at its maximum dehumidification settings if attached to a hose to drain or until the bucket is full. For drier air, press the - pad and set to a lower percent value (%). For damper air, press the + pad and set to a higher percent value (%). When you first use the dehumidifier, set the humidity control to 45% or 50%. Allow at least 24 hours for the dehumidifier to achieve the humidity level. If you still have damper air than desired, set the humidity level to a lower setting or select Continuous for maximum dehumidification. This unit has 3-min lag due to the device for protecting circuit. In order to prolong the compressor's working life, the compressor will not start until the unit has run for 3 minutes.
- 4** Display
 Shows the set % humidity level while setting, then shows the actual (+/- 5% accuracy) room % humidity level.
- 5** FAN SPEED
 Controls the fan speed. Press to select High or Low fan speed. Set the fan control to High for maximum moisture removal. When the humidity has been reduced and quiet operation is preferred, set the fan control to Low.
- 6** TIMER Pad
 If unit is turned on and running in timer mode for 2hr or 4hr, can turn off the unit. When unit stand by and running in timer mode for 2hr or 4hr can ture on the unit.

Other Instructions

1. Alarm Warning

If bucket is full or not locked into place for over 3min, buzzer will give out a beep for 10s to remind you to empty bucket or put it back into the correct place.

2. Auto Stop

When bucket is full, removed or not placed correctly or the humidity is 5% lower than the set humidity, unit will automatically stop.

3. Memory Function

If power is lost, all of the control settings are remembered. So when power is restored, the unit will start back up in the settings it was in when power was lost.

4. Bucket full light

This indicates that bucket is full or removed or not placed correctly.

5. Clean the Filter On indicator light

When dehumidifier has been operating for 250 hours, filter cleaning indicator will be lit up to user of filter cleaning.

6.2 Introduction of Basic Mode Function

1. Basic functions of system

(1) Drying mode

① Dry conditions and process: under operation status

- a. When set humidity \leq ambient humidity - 5%, compressor and fan will operate.
- b. When set humidity \geq ambient humidity + 5%, compressor stop operation.
- c. When ambient humidity - 5% $<$ set humidity $<$ ambient humidity + 5%, if compressor is operating, and it will operation with condition a; if compressor stops operation, it will operate with condition b.

② Humidity Range

- a. 5% is the first notch. It can be adjusted continuously from CO, 35%-80% (CO stands for dehumidify continuously).
- b. Adjust set humidity by "+" and "-" buttons.

2. Protection Function

(1) Compressor Protection

After energization, under any situation and after compressor stops, it will restart 3min delay at least.

Under operation state except there's malfunction of temperature sensor, when turn off unit by on/off button, water-blow protection, or after compress is starts up, the compressor will stop operation after it operates for 3min at least.

(2) Detection for temperature sensor malfunction

When there's malfunction for temperature sensor, compressor and fan stop operation. LED indicator is OFF and buttons are invalid.

Nixie tube displays F2. After the temperature is resumed normally, restart the unit.

(3) Bucket full protection (off switch)

Under operation status, if there's bucket full protection or the water tank hasn't been installed well, compressor stop operation and the fan also stop operation after the fan operates continuously for 3min. If water blow protection occurred for 3min, the buzzer will stop after it gives out a beep for 10s. Indicator of bucket full blinks and all the buttons are invalid except on/off button. When the water level or assembly of water tank resume to normal, signal of bucket full protection will cancelled. Indicator is off, buzzer stops to give out a beep and the fan resumes to normal operation state. Compressor resumes to operation normally after 3mins. When the unit is off, bucket full protection is occurred, water blow indicator blinks, compressor and fan stop operation, and all the buttons are invalid except on/off button.

(4) Freeze protection

If freeze protection is detected during operation, compressor stops operation, fan operates at compulsory high speed and the fan speed buttons are invalid. When freeze protection is completed, fan speed button are valid, fan operates at set status and the compressor can be restarted up after stopping for 3 minutes.

3. Other Functions

(1) Buttons on front panel

Timer button: use for timer setting

Fan speed button: adjust fan speed

+/- button : adjust humidity

Filter button: adjust filter function

Power button: turn on or turn off unit

(2) LED indicator

2H timer indicator: the indicator is on after setting 2H timer;

4H timer indicator: the indicator is on after setting 4H timer;

High fan speed indicator: the indicator is on after the fan is set at high fan speed;

Low fan speed indicator: the indicator is on after the fan is set at low fan speed;

CONTINUOUS indicator: After continue humidifying is set, continue humidifying indicator is on;

FILTER RESET indicator: the indicator is on when the operation time of fan reaches to 250h totally. After filter is cleaned, press

FILTER button and then this indicator is off.

BUCKET FULL indicator: the indicator blinks if bucket full protection is occurred or the water tank hasn't been installed well.

(3) Timer OFF control

2h or 4h timer OFF can be set. Timer off can be set under on status. Timer setting is recorded every 30min by memory function.

(4) Display of nixie tube (green)

Under on status, the nixie tube displays current humidity. Press "+" button or "-" button to display set humidity. After humidity is set for 5s, it resumes to display current ambient humidity. If "CO" is set, the nixie tube displays "CO";

When there's malfunction of temperature sensor, nixie tube displays "F2" and LED is OFF.

(5) Filter alarming function

a. After the fan operates for 250s totally, the filter indicator is on for reminding customer to clean filter. User presses "filter" button to clear time and then filter indicator is OFF.

b. Under off status, the filter indicator is off; the filter clean time is recorded every 1 hour.

(6) Buzzer

When the controller is energized or receives any command or signal from the buttons or the remote controller, the buzzer will give out a beep.

(7) Power-off memory function

System can memorize the operation status before power failure. The unit can operate at that status automatically when power recovery.

Part II : Maintenance

7. Notes Maintenance

Safety Precautions: Important!

Please read the safety precautions carefully before maintenance:

The following contents are very important for installation and maintenance.

Please follow the instructions below.

- The maintenance must accord with the instructions.
- Comply with all national electrical codes and local electrical codes.
- Pay attention to the warnings and cautions in this manual.
- Be caution during maintenance. Prohibit incorrect operation to prevent electric shock and other accidents.



Warnings

Electrical Safety Precautions:

1. Cut off the power supply before maintenance.
2. Specialized circuit must be applied; prohibit sharing the same circuit with other electric appliances; protection switch must be installed.
3. Have the unit adequately grounded. The grounding wire can't be used for other purposes.
4. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the dehumidifier.
5. The power cord can't be pressed by hard objects.
6. If the power cord or connection wire is not long enough, please get the specialized power cord or connection wire from the manufacture or distributor. Prohibit prolong the wire by yourself.
7. Replace the fuse with a new one of the same specification if it is burnt down; don't replace it with a copper wire or conducting wire.
8. Use the power supply with same voltage and frequency as shown in rating label.
9. Do not pull out the power plug when the unit is operating to avoid damaging the circuit.
10. Do not place anything at the top of dehumidifier; ensure the air outlet or air inlet is not blocked; do not use the unit near wall and curtain.
11. Do not use heating equipment around the unit.

Refrigerant Safety Precautions:

1. This unit adopts R290 refrigerant. System maintenance is strictly prohibited.
2. If the refrigerant leaks or the pipeline is damaged, it is forbidden to conduct the maintenance. The unit should be recycled and disposed according to local regulations.
3. It is strictly forbidden to cut or weld the refrigerant. Otherwise, it may lead to explosion.

Improper installation may lead to fire hazard explosion, electric shock or injury.



Appliance filled with flammable gas R290.



Before install and use the appliance, read the owner's manual first.



Before install the appliance, read the installation manual first.



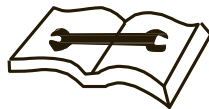
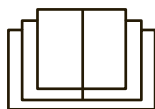
Before repair the appliance, read the service manual first.

The Refrigerant

- To realize the function of the air conditioner unit, a special refrigerant circulates in the system. The used refrigerant is the fluoride R290, which is specially cleaned. The refrigerant is flammable and inodorous. Furthermore, it can lead to explosion under certain conditions.
- Compared to common refrigerants, R290 is a nonpolluting refrigerant with no harm to the ozone layer. The influence upon the greenhouse effect is also lower. R290 has got very good thermodynamic features which lead to a really high energy efficiency. The units therefore need a less filling.
- Please refer to the nameplate for the charging quantity of R290.

WARNING :

- Appliance filled with flammable gas R290.
- Appliance shall be installed, operated and stored in a room with a floor area larger than 4 m².
- The appliance shall be stored in a room without continuously operating ignition sources. (for example: open flames, an operating gas appliance or an operating electric heater.)
- The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
- The appliance shall be stored so as to prevent mechanical damage from occurring.
- Keep any required ventilation openings clear of obstruction.
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- Servicing shall be performed only as recommended by the manufacturer.
- Should repair be necessary, contact your nearest authorized Service Centre. Any repairs carried out by unqualified personnel may be dangerous.
- Compliance with national gas regulations shall be observed.
- Read specialist's manual.



Main Tools for Maintenance

<p>1. Electroprobe</p> 	<p>2. Screw driver</p> 	<p>3. Open-end wrench, inner hexagon spanner</p> 
<p>4. Electronic leakage detector</p> 	<p>5. Vacuum pump</p> 	<p>6. Pressure meter</p> 
<p>7. Universal meter</p> 	<p>8. Soldering appliance, refrigerant container</p> 	

8. Operation and maintenance

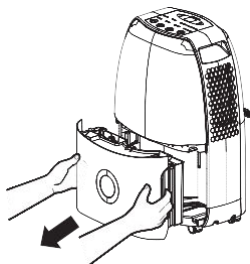
8.1 Drainage Option

Option 1 Emptying Manually

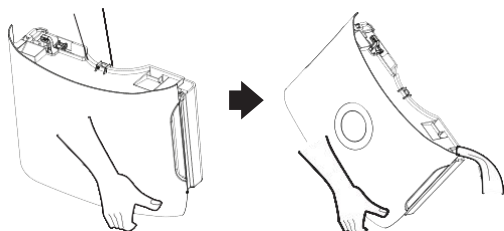
Note:

- Do not remove the bucket when unit is in operation or has just stopped. Otherwise it may cause some water to drip on the floor.
- Do not use the hose if using water bucket to collect water. When the hose is connected, water will be drained out through it instead of into the bucket.

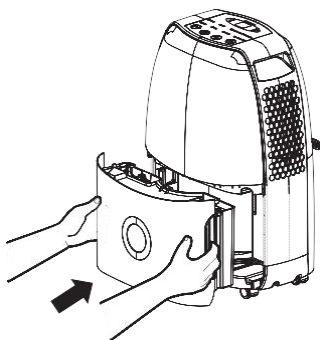
1. Hold the handles on both sides of the water bucket and pull it out following the arrow direction. (Attention: Pull out the bucket carefully in case the water may spill out from the bucket and onto the floor.)



2. Empty the bucket by grasping the handle on the top of bucket with one hand and grasping the bottom of bucket with the other hand.



3. Replace bucket in the dehumidifier according to the arrow direction.



Option 2 Gravity Drain Hose

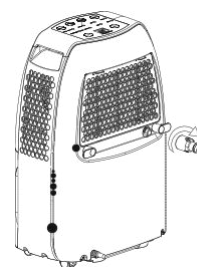
1. Hose is not provided, so user shall prepare it in advance. [Size: The hose should have an inner diameter of 14mm]

2. Use a hose. Water can be automatically emptied into a floor drain

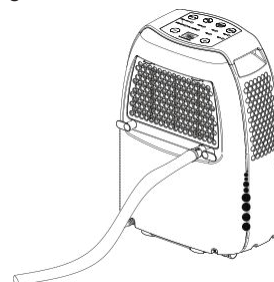
by attaching 14mm inner diameter hose (not included).

1) Remove the continuous drain cap 1 by turning it counter clockwise then remove the rubber stopper 2 from the spout.

2) Screw the drain connector to (included in the package) the spout by turning clockwise.

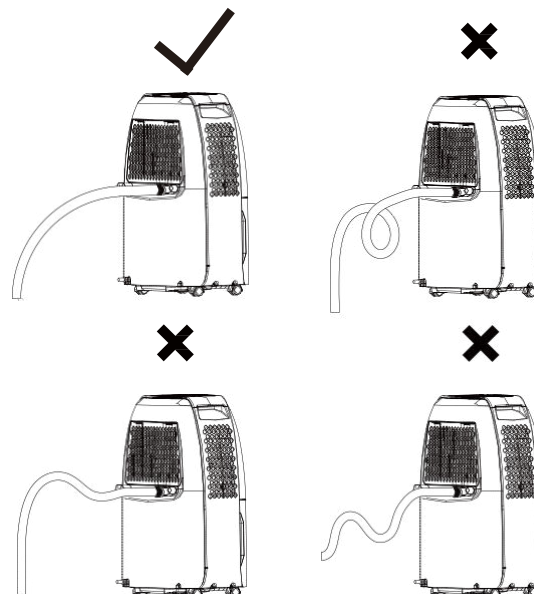


3) Insert the drainage hose into drain connector.

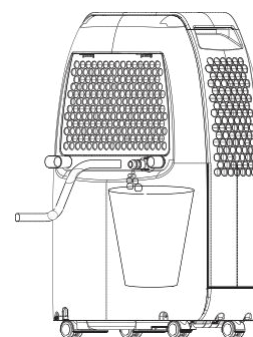


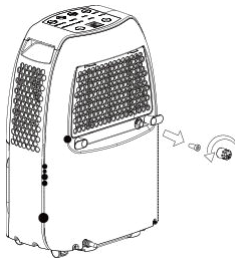
3. When using continuous drainage option, place dehumidifier on a level surface and make sure garden hose is clear of any obstructions and is directed downward. Press down drain door so it rests on top of the hose.

Placing dehumidifier on an uneven surface or improper hose installation may result in water filling up the bucket and causing the unit to shut off. Empty water bucket if shut off occurs, then check dehumidifier location and hose for proper setup.



Note: When you want to take off the drain hose, prepare a receptacle to collect water from the nozzle.





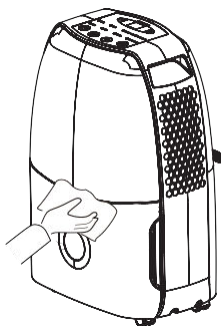
8.2 Clean and Maintenance

Warning:

- Before cleaning, turn off the dehumidifier and disconnect power. Otherwise it may lead to electric shock.
- Do not wash the dehumidifier with water, or it may lead to electric shock.
- Do not use volatile liquid (such as thinner or gasoline) to clean dehumidifier. Otherwise it will damage unit's appearance.

1. Grille and Case

To clean the case: When there is dust on the case, use soft towel to dust it off; When the case is very dirty (greasy), use mild detergent to clean it. To clean the grille: Use a dust catcher or brush.



2. Air Filter

At least every 250 hours of operation or more often. The air filter should be checked and cleaned if necessary. After 250 hours of operation, the Clean the Filter indicator light will glow to remind you to clean the filter. Remove the filter and clean it. Replace the filter and press the Filter RESET pad to turn off the Clean the Filter light.

To remove:

Press the two buttons, then pull out the filter.

To clean:

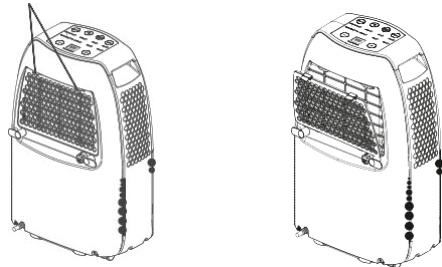
Clean the filter with warm, soapy water. Rinse and let the filter dry before replacing it.

To install:

Put the filter back into the dehumidifier.

NOTE: DO NOT rinse or put the filter in an automatic dishwasher.

Buttons



NOTE: Avoid using a dishwasher to clean the filter.

Warning:

- Do not operate the dehumidifier without a filter. Otherwise the evaporator will catch dust and affect unit's performance.
- Do not dry the air filter with fire or electric hair dryer. Otherwise the air filter may be unshaped or caught on fire.
- Don't use dust catcher or brush to clean the air filter. Otherwise the air filter may be destroyed.

8.3 Check Before Use-season

- Check whether power plug and power socket are in good condition.
- Check whether air filter is clean.
- Check whether drain hose is damaged.

8.4 Care After Use-season

- Disconnect power.
- Clean air filter and case.
- Clean dust and obstacle of the dehumidifier.
- Empty the water bucket.

8.5 Long-time Storage

If you want to use the dehumidifier for a long time, we suggest that you follow the steps below in order to maintain the unit in good condition.

- Make sure the bucket is clear of water and drain hose is removed.
- Clean the unit and wrap it well to prevent the gathering of dust.
- Bundle the tieline at the rear case. Use the tieline to collect the power cord, if there is a clasp in the groove, put the power plug into the clasp (As shown in fig.e). If there is no clasp in the groove, use the tieline to collect the power cord and the power plug doesn't need to be fixed by the clasp (As shown in fig.f).

9.Maintenance

9.1 Safety Principle of Maintenance

1. The maintenance spot must have good ventilation. Do not close the door or the window.
2. Do not use naked flame, including welding, smoking. Do not use power tools. Do not use mobile phone. Tell the user not to cook with naked flame.
3. Take antistatic measures, including wearing pure cotton clothes and gloves etc.
4. If flammable refrigerant leakage is found during maintenance, it is a must to reinforce ventilation and take effective protective measures.
5. During maintenance, it is necessary to keep the spot safe when fetching the lacked spare parts.
6. It is necessary to keep the case of the air conditioner grounded during maintenance.
7. The maintenance unrelated to refrigerant vessel, inner refrigerant pipe and cooling component can be performed in the user's place, including cleaning the cooling system and sludging.
8. Ensure that the density tester is working during maintenance.
9. Ensure there is necessary safety precaution and emergency measures on the spot. Put suitable fire extinguishers (CO₂ or dry powder) in the nearest area.
10. There must be natural ventilation in the maintenance spot.
11. The maintenance staff shall take safety actions.
12. Paste suitable signs such as "No Smoking" and "No Entry".

9.2 Preparation before Maintenance

1. Inspection of Environment
 - (1) Ensure that electric product with radiation is power off in the maintenance area. All the persons in the room shall turn off the mobile phone.
 - (2) Check if there is refrigerant leakage in the maintenance area. Ensure that all the leak testers are suitable for this air conditioner.
 - (3) Ensure that the room area reaches the requirement.
 - (4) Check if the maintenance area is ventilated. Keep the room ventilated.
2. Inspection of Air Conditioner
 - (1) Ensure that the air conditioner is reliably grounded.
 - (2) Ensure that the power supply of the air conditioner is cut off. Discharge the electricity of the capacitor. If power supply is necessary, perform leak test to prevent the potential danger.
3. Inspection of Maintenance Equipment
 - (1) Check if the maintenance equipment is suitable for the refrigerant. Only the special equipment recommended by the air conditioner supplier can be used.
 - (2) The set alarm density of the leak tester shall not be higher than 25% of the LEL. The tester must keep operating during maintenance.
4. Leak Test before Maintenance
 - (1) After cutting off the power supply, perform leak test with the recommended leak detector or density tester (pump suction type) (ensure the equipment is calibrated; leakage ratio of leak detector is 2g/year.)

Note: do not use solvent with chlorine in case causing corrosion of the steel pipe.

 - (2) If leakage is found, remove all fire source ensure good ventilation of the area.
5. Check List

No.	Check information	Result	Yes/No
1	Maintenance equipment is complete		
2	Persons in the maintenance area turn off the mobile phone.		
3	Power supply of tools is 2m away.		
4	Density tester can be used.		
5	Other tools are normal.		
6	Maintenance staffs are qualified.		
7	The spare parts are provided by the manufacturer and qualified.		
8	The air conditioner needed to be serviced is under safe state.		
9	The wire of power socket is reliably connected.		
10	There is natural ventilation in maintenance area.		
11	There is no operating electric appliance or naked flame within 2m of Maintenance area.		

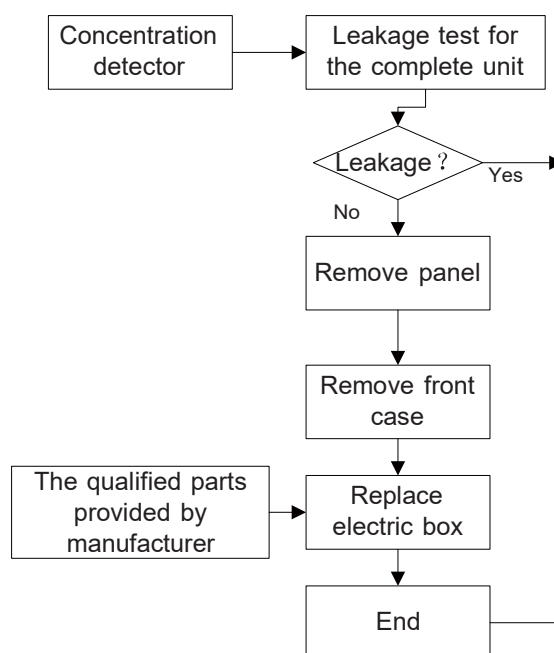
9.3 Maintenance Cautions

If it is necessary to replace components, all the components used shall be made by manufacturer. Otherwise, the supplier shall not bear the responsibility.

1. Maintenance of Electrical Parts

- (1) Replace the power cord and connecting wire with that of the same specification.
- (2) When inspecting the circuit with power on, check if there is electric leakage for the metal component such as evaporator or condenser. During inspection, do not touch the circuit so as to prevent electric shock.
- (3) When inspecting the capacitor, ensure that the maintenance area is well ventilated. After conforming there is no refrigeration leakage, discharge electricity of capacitor.
- (4) Before replacing the component, cut off the power supply of the air conditioner.
- (5) Cut off the power before disconnecting and connecting the wire. Disconnect the live wire first and then ground wire.
- (6) During maintenance, do not remove the protective component. Use the component of same supplier and specification.
- (7) When servicing the hermetic parts, cut off the power of the air conditioner before opening the sealing cover. If it is necessary to use power supply, perform leak test to prevent potential danger.
- (8) Do not replace the case which may affect the protective grade.
- (9) Ensure that the sealing material is not degraded and that it can prevent entry of flammable gas. The parts used for replacement must reach the requirement of the supplier.

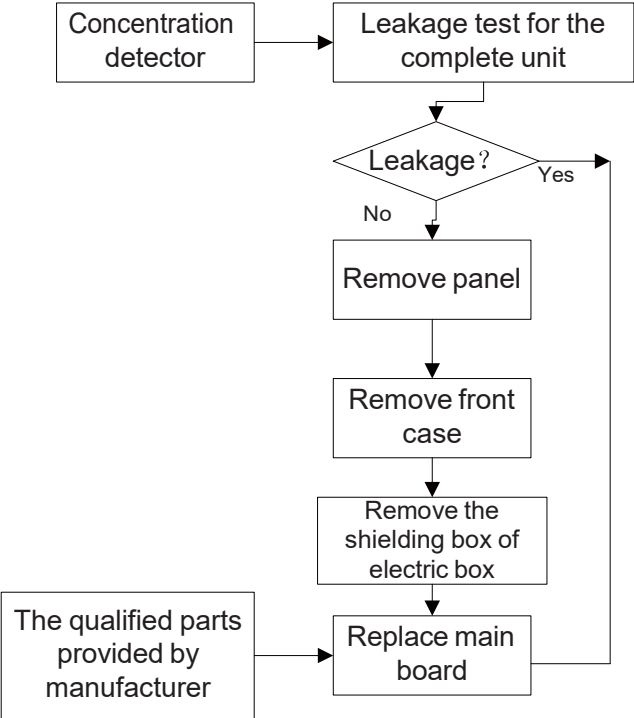
(1). Replace electric box



2. Maintenance of Refrigeration System

Before the maintenance, check whether there is any leakage or blockage in the refrigeration system. If yes, it is forbidden to conduct the maintenance. The unit should be recycled and disposed according to local regulations.

(2).Replace main board

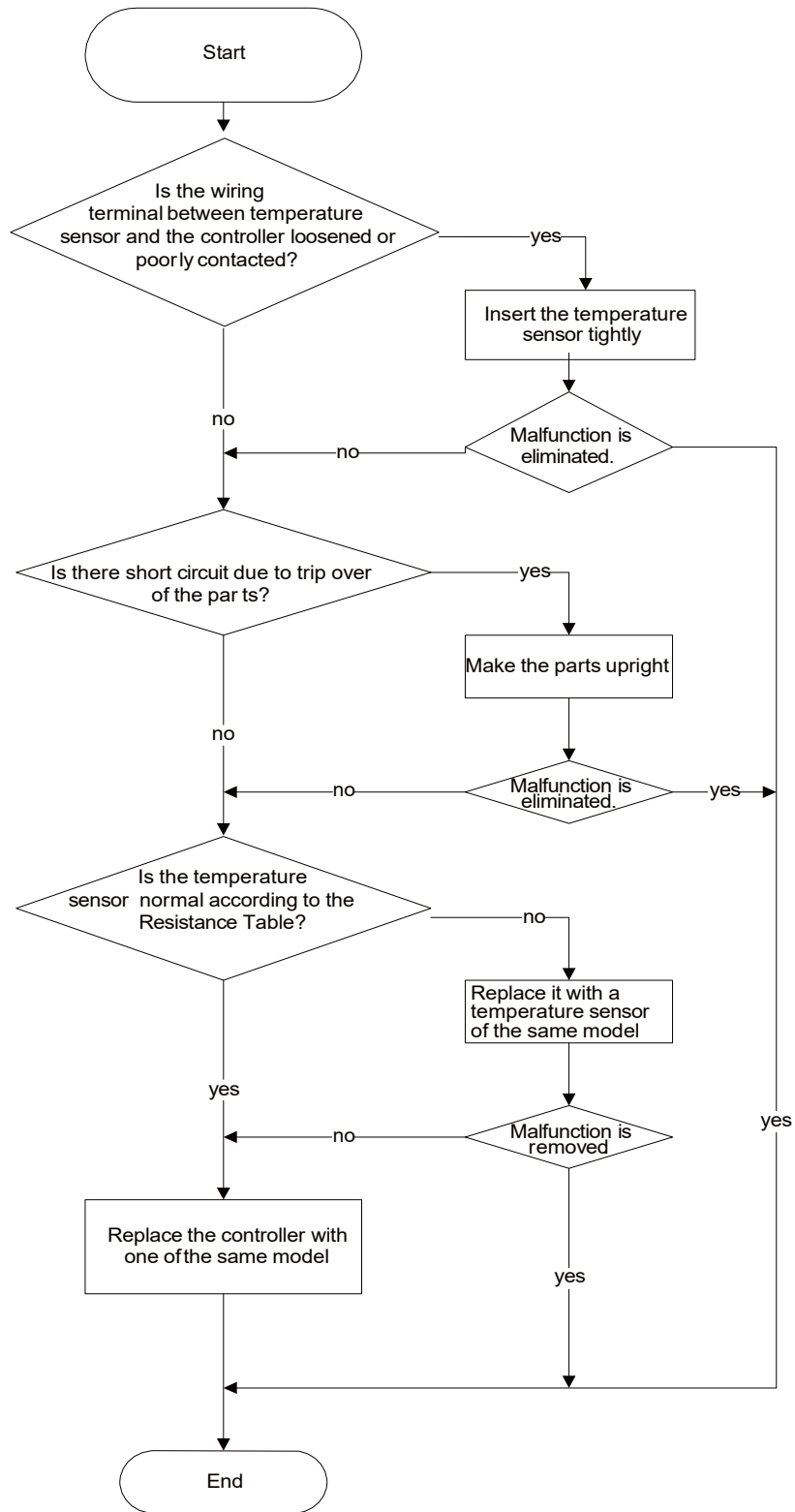


9.4 Error Code

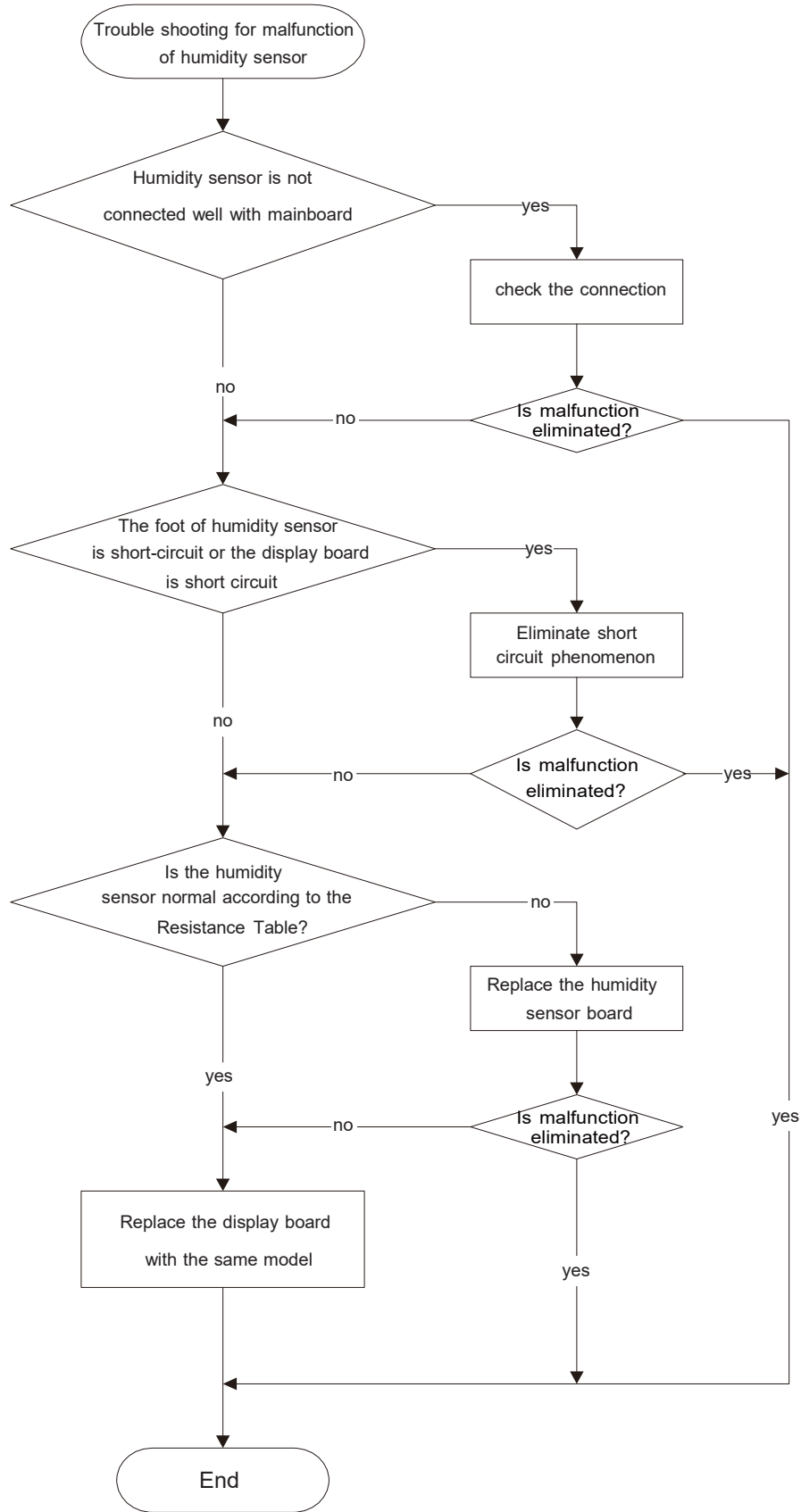
No.	Malfunction Name	DisplayCode	Unit status	Possible Causes
		Display Window		
1	Ambient Temperature Sensor Malfunction	F1	Compressor and fan motor stop. Buttons are invalid.	<ul style="list-style-type: none"> • Ambient temperature sensor is loose or is poorly connected with the terminal of display board. • Some element of display board may have been put upside down and cause short circuit. • Ambient temperature sensor is damaged (Please refer to Checking Table for Temperature Sensor Resistance). • Display board is damaged.
2	Tube Temperature Sensor Malfunction	F2	Compressor and fan motor stop. Buttons are invalid.	<ul style="list-style-type: none"> • Temperature sensor on the evaporator is loose or is poorly connected with the terminal of display board. • Some element of display board may have been put upside down and cause short circuit. • Temperature sensor on the evaporator is damaged (Please refer to Checking Table for Temperature Sensor Resistance). • Display board is damaged.
3	Humidity Sensor Malfunction	L1		<ul style="list-style-type: none"> • Humidity sensor is short-circuited. • Humidity sensor is damaged. • Display board is damaged.
4	Insufficient Refrigerant protection	F0		<ul style="list-style-type: none"> • Refrigerant is leaking. • System is blocked.
5	High-temperature overload protection	H3	The compressor stops.	<ul style="list-style-type: none"> • Ambient operation condition is bad. • The evaporator and condenser are blocked with filth. • The system is abnormal.

9.5 Malfunction Detection Flowchart

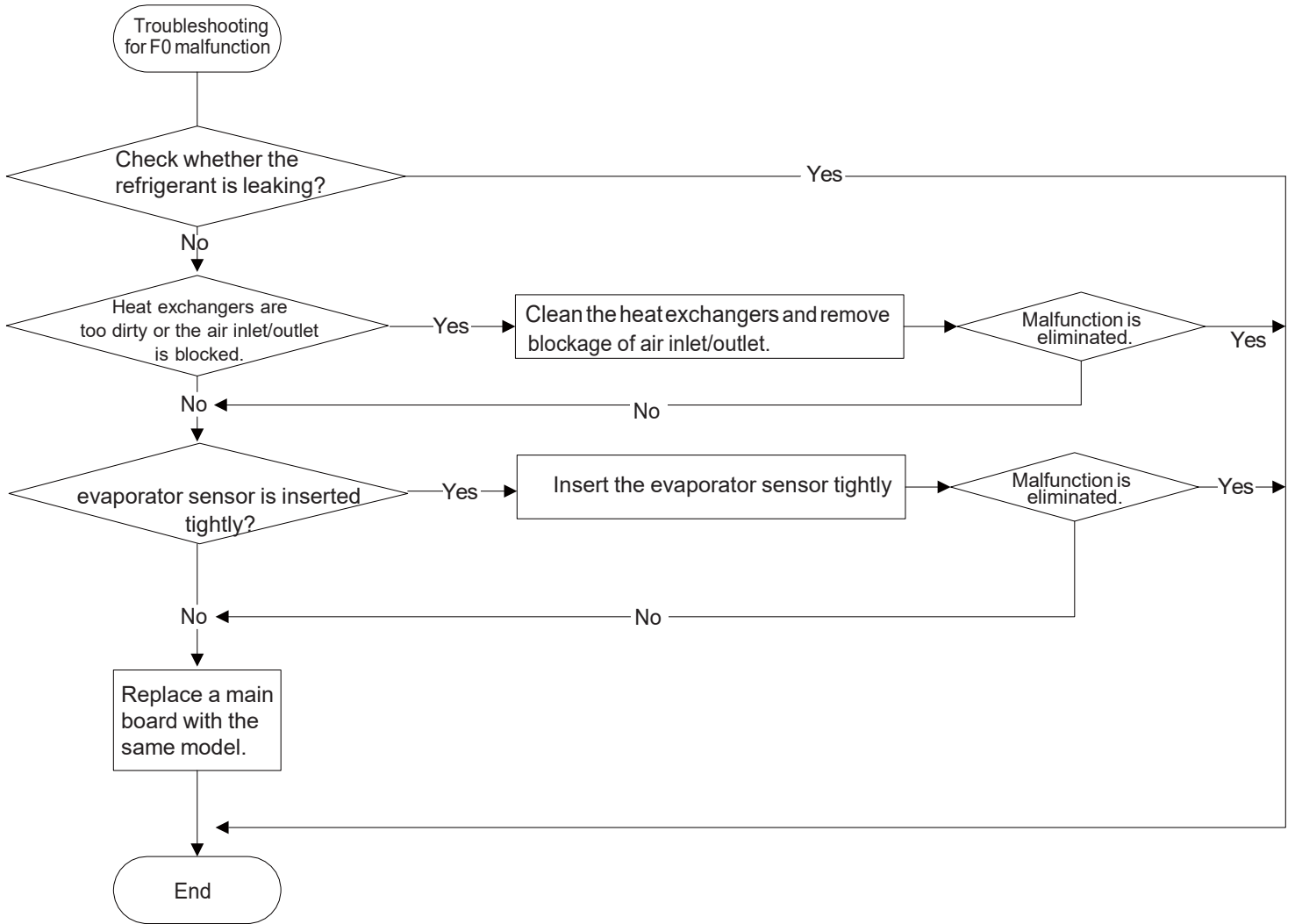
1. Malfunction of temperature sensor F1, F2



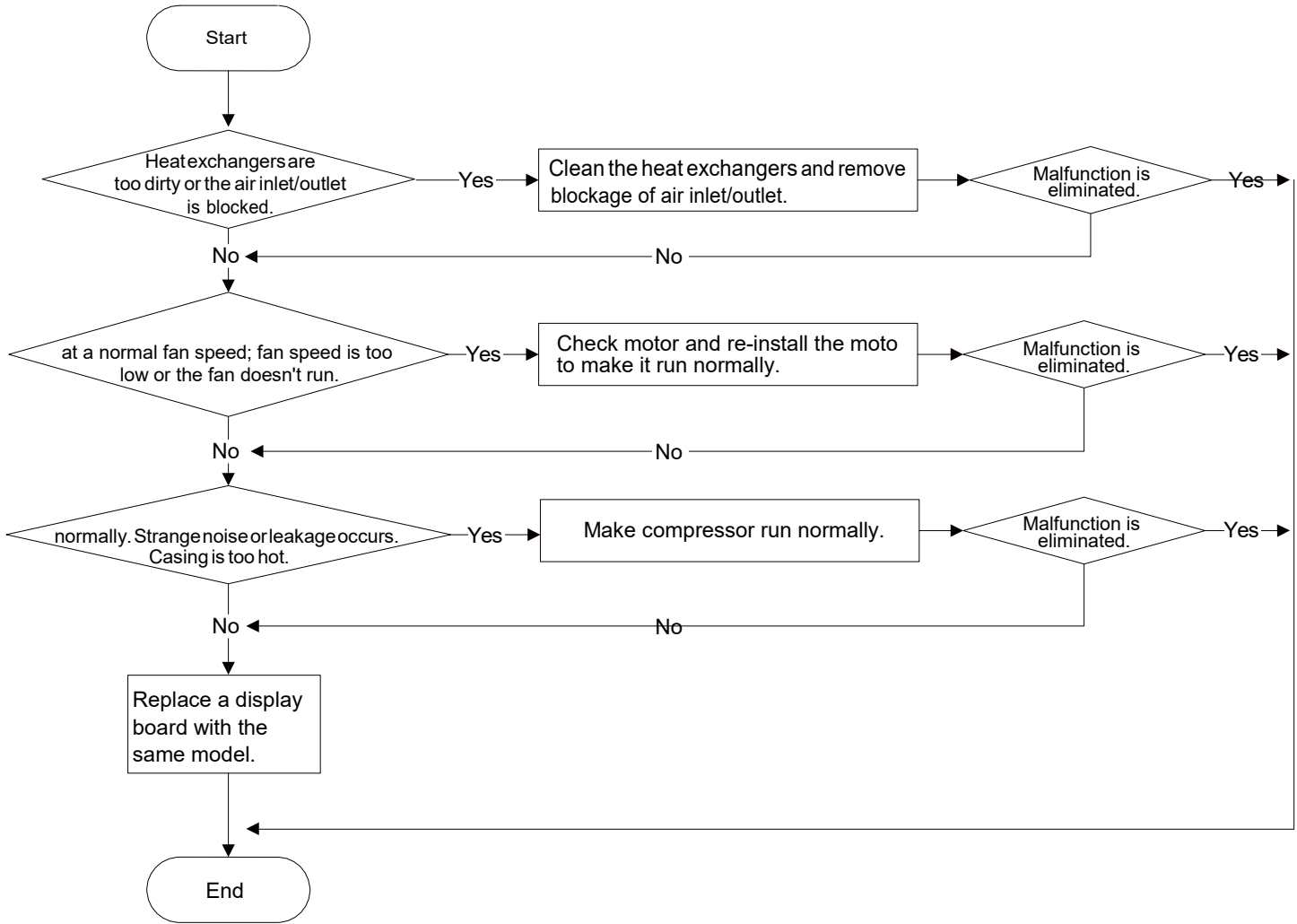
2.Malfunction of humidity sensor L1



(3) Malfunction of Insufficient Refrigerant protection F0



4. High-temperature overload protection H3



9.6 Maintenance Method for Common Malfunction

1. The Unit Can't Start Up

Possible causes	Discriminating method (dehumidifier status)	Troubleshooting
No power supply, or poor connection for power plug	After energization, operation indicator isn't bright and the buzzer can't give out sound	Confirm whether it's due to power failure. If yes, wait for power recovery. If not, check power supply circuit and make sure the power plug is connected well.
Poor connection between wiring terminals	Power indicator is not on after the unit is energized	Check the circuit according to wiring diagram and connect wire properly; ensure each wiring terminal contact firmly
There is electric leakage in the unit	Circuit breaker jump off immediately after the unit is energized	Make sure the unit is properly grounded; Make sure the wiring is correct; Check if the insulating layer of wires inside the unit and power cord is in good condition; if the layer is broken, please replace it.
Placing position of water tank is not correct. Water is removed or the water is full.	Wall-full indicator flashes.	Make sure the water tank is placed correctly.

2. Poor Dehumidifying Effect

Possible causes	Discriminating method (dehumidifier status)	Troubleshooting
Filter is blocked	Check the filter to see if it's blocked	Clean the filter
Placing position of water tank is improper.	Check whether there are obstacles around the dehumidifier blocked the air outlet.	Make sure there are no obstacles around the dehumidifiers.
Refrigerant is leaking	Air outlet temperature is lower than normal temperature during dehumidifying period.	Find out the cause of leakage and solve the problem; charge refrigerant
Malfunction of capillary	Air outlet temperature is lower than normal temperature during dehumidifying period. If the refrigerant isn't leaking, some parts of capillary is blocked.	Replace capillary
Malfunction of fan	Fan can't operate.	Refer to point 3 of maintenance method for details
Malfunction of compressor	Compressor can't operate	Refer to point 4 of maintenance method for details

3. Fan Can't Operate

Possible causes	Discriminating method (dehumidifier status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Needle stand of connection wire between mainboard and display board is loosened	Check if the needle stand is loosened	Reinsert the needle stand firmly
Fan capacitor is broken	Test the voltage between two ends of fan capacitor with universal meter and the value is 0	Replace fan capacitor
Power supply voltage is too low or too high	Test the power supply voltage with universal meter and the value is too high or too low	Apply voltage regulator
Fan is broken	The above situation is normal but the fan does not operate	Repair or replace the fan

4. Compressor Can't Operate

Possible causes	Discriminating method (dehumidifier status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Compressor relay on the mainboard is broken or the compressor needle stand is loosened	Check if the relay is sucked in cooling mode	Replace the mainboard with the same model
Power voltage is a little low or high	After turning on the unit, dehumidifying effect is poor or compressor is turned on or off frequently. Use universal meter to measure the power supply voltage directly	The fluctuation of voltage is 10% rated power. If the power is too low or too high, you are suggested to equip wit voltage regulator.

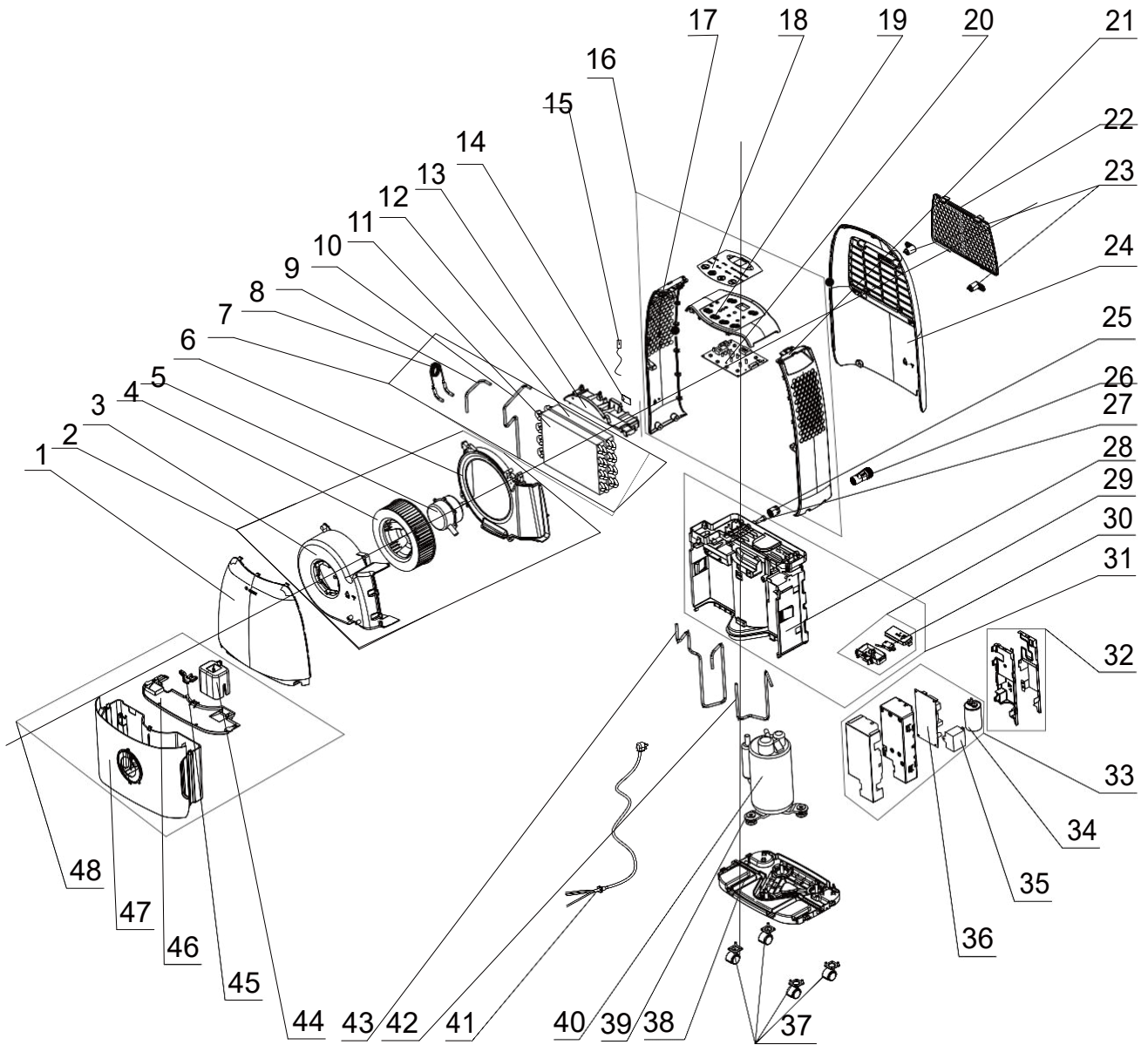
5. Water Leakage

Possible causes	Discriminating method (dehumidifier status)	Troubleshooting
Drainage pipe hasnt been installed correctly.	Water is coming out from indoors.	Eliminate the blocking objects inside the drainage channel.

6. Abnormal Sounds and Vibration

Possible causes	Discriminating method (dehumidifier status)	Troubleshooting
There is abnormal sound in some parts when just turning on or turning off the unit	Theres the sound of "PAPA"	Normal phenomenon. Abnormal sound will disappear after a few minutes.
There is abnormal sound of refrigerant flowing when just turning on or turning off the unit	Water-running sound can be heard	Normal phenomenon. Abnormal sound will disappear after a few minutes.
There is touching sound of foreign objects or parts inside the unit	The unit gives out abnormal sound	Take out the foreign objects; adjust the position of each part inside the unit; tighten the connection screws; apply some damping gum on the touching parts
Abnormal shake of compressor	Outdoor unit gives out abnormal sound	Adjust the support foot mat of compressor, tighten the bolts
Abnormal sound inside the compressor	Abnormal sound inside the compressor	If add too much refrigerant during maintenance, please reduce refrigerant properly. Replace compressor for other circumstances.

10. Exploded View and Parts List



The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code		Qty
	Product Code	492000080	492000081	
1	Front Panel	2000622102S	2000622102S	1
2	Centrifugal Fan sub-assy	00007200003	00007200003	1
3	Propeller Housing	22206232	22206232	1
4	Centrifugal Fan	10316065	10316065	1
5	Fan Motor	1501651506	1501651506	1
6	Diversion Circle	10376045	10376045	1
7	Heat-exchange Equipment	011004060017	011004060016	1
8	Capillary Sub-assy	030006060505	030006060506	1
9	Connecting Pipe(Condenser)	05016154	05016513	1
10	Connecting Pipe(Evaporator)	05016155	05016155	1
11	Condenser Sub-Assy	01136220P	01136224P	1
12	Evaporator Sub-Assy	01036095P	01036094P	1
13	Cover Plate	20126125	20126125	1
14	Detecting Plate	30070029	30070029	1
15	Temperature Sensor	390000594	390000594	1
16	Top Cover Assy	0000970000501	0000970000501	1
17	Left Side Plate	2005613205	2005613205	1
18	Membrane	63066527	63066527	1
19	Top Cover	2224609605	2224609605	1
20	Display Board	300001000267	300001000267	1
21	Right Side Plate	2005613305	2005613305	1
22	Filter Sub-Assy	1112610601	1112610601	1
23	Wire catch	7101600601	7101600601	2
24	Rear Case	2220621002	2220621002	1
25	Cover of drainage hole	2224609703	2224609703	1
26	Adaptor sub-assy	26116155	26116155	1
27	Rubber Plug	76716054	76716054	1
28	Water Tray	2018614302	2018614302	1
29	Liquid Level Switch Sub-assy	00019406000401	00019406000401	1
30	Inching Switch	4501009502	4501009502	1
31	Water Tray Assy	0000690006101	0000690006101	1
32	Electric Box Cover Sub-Assy	20126131	20126131	1
33	Electric Box Assy	1000020192301	1000020192301	1
34	Capacitor CBB65	3300002237	330000085	1
35	Capacitor CBB61S	3301074701	3301074701	1
36	Main Board	300002060695	300002060695	1
37	Castor	24236019	24236019	4
38	Chassis Sub-assy	2222607704	2222607704	1
39	Compressor Gasket	76716100	76716100	3
40	Compressor and Fittings	009001060320	009001060319	1
41	Power Cord	4002028617	4002028617	1
42	Discharge Tube Sub-assy	030013060739	030013060747	1
43	Inhalation Tube Sub-assy	030010060606	030010060606	1
44	Buoy	2611613101	2611613101	1
45	Press Plate	2611613002	2611613002	1
46	Water Tank Cover	2224609801	2224609801	1
47	Water Tank Sub-Assy	20186149	20186149	1
48	Water Tank Assy	20186540	20186540	1

The data above are subject to change without notice.

NO.	Description	Part Code		Qty
	Product Code	492000080	492000081	
1	Front Panel	2000622102S	2000622102S	1
2	Centrifugal Fan sub-assy	00007200003	00007200003	1
3	Propeller Housing	22206232	22206232	1
4	Centrifugal Fan	10316065	10316065	1
5	Fan Motor	1501651506	1501651506	1
6	Diversion Circle	10376045	10376045	1
7	Heat-exchange Equipment	011004060017	011004060016	1
8	Capillary Sub-assy	030006060505	030006060506	1
9	Connecting Pipe(Condenser)	05016154	05016513	1
10	Connecting Pipe(Evaporator)	05016155	05016155	1
11	Condenser Sub-Assy	01136220P	01136224P	1
12	Evaporator Sub-Assy	01036095P	01036094P	1
13	Cover Plate	20126125	20126125	1
14	Detecting Plate	30070029	30070029	1
15	Temperature Sensor	390000594	390000594	1
16	Top Cover Assy	0000970000503	0000970000503	1
17	Left Side Plate	20056132	20056132	1
18	Membrane	63066057	63066057	1
19	Top Cover	22246096	22246096	1
20	Display Board	300001000267	300001000267	1
21	Right Side Plate	20056133	20056133	1
22	Filter Sub-Assy	1112610601	1112610601	1
23	Wire catch	7101600601	7101600601	2
24	Rear Case	2220621002	2220621002	1
25	Cover of drainage hole	2224609703	2224609703	1
26	Adaptor sub-assy	26116155	26116155	1
27	Rubber Plug	76716054	76716054	1
28	Water Tray	2018614302	2018614302	1
29	Liquid Level Switch Sub-assy	00019406000401	00019406000401	1
30	Inching Switch	4501009502	4501009502	1
31	Water Tray Assy	0000690006101	0000690006101	1
32	Electric Box Cover Sub-Assy	20126131	20126131	1
33	Electric Box Assy	1000020192301	1000020192301	1
34	Capacitor CBB65	3300002237	33000085	1
35	Capacitor CBB61S	3301074701	3301074701	1
36	Main Board	300002060695	300002060695	1
37	Castor	24236019	24236019	4
38	Chassis Sub-assy	2222607704	2222607704	1
39	Compressor Gasket	76716100	76716100	3
40	Compressor and Fittings	009001060320	009001060319	1
41	Power Cord	4002028617	4002028617	1
42	Discharge Tube Sub-assy	030013060739	030013060747	1
43	Inhalation Tube Sub-assy	030010060606	030010060606	1
44	Buoy	2611613101	2611613101	1
45	Press Plate	2611613002	2611613002	1
46	Water Tank Cover	2224609801	2224609801	1
47	Water Tank Sub-Assy	20186149	20186149	1
48	Water Tank Assy	20186540	20186540	1

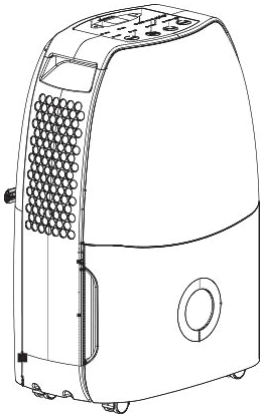
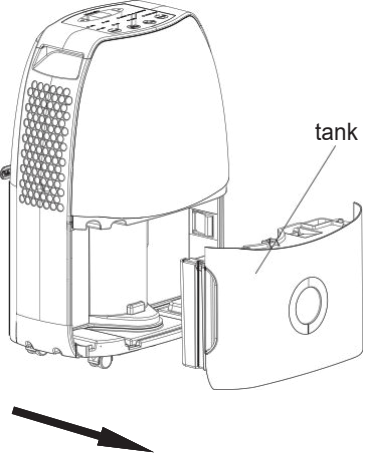
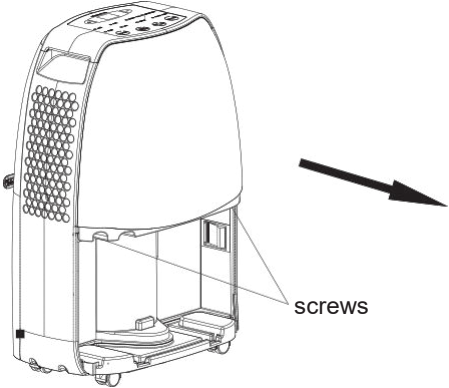
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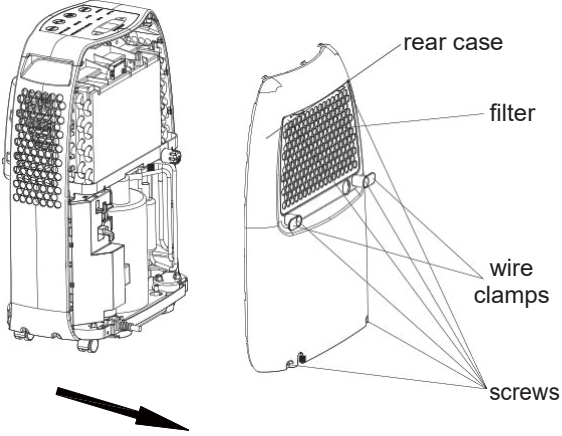
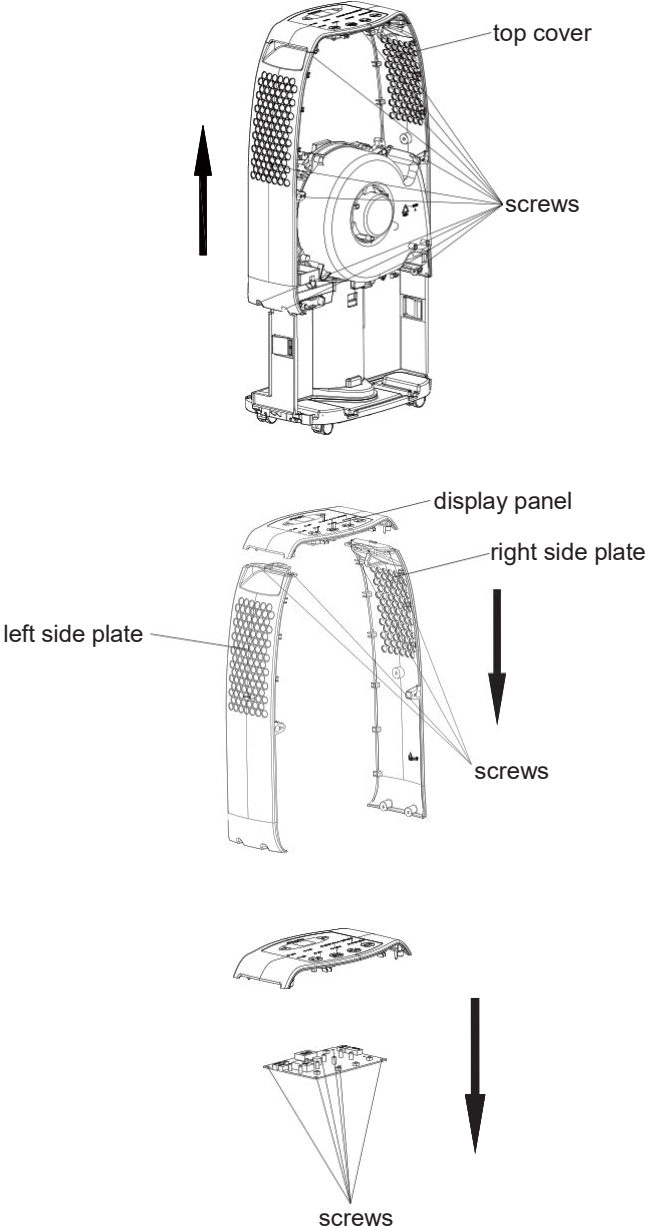
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3	Propeller Housing	22206232	22206232	1
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7	Heat-exchange Equipment	011004060017	011004060016	1
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11	Condenser Sub-Assy	01136220P	01136224P	1
12	Evaporator Sub-Assy	01036095P	01036094P	1
13	Cover Plate	20126125	20126125	1
14	Detecting Plate	30070029	30070029	1
15	Temperature Sensor	390000594	390000594	1
16	Top Cover Assy	0000970000502	0000970000502	1
17	Left Side Plate	2005613206	2005613206	1
18	Membrane	6306652701	6306652701	1
19	Top Cover	2224609606	2224609606	1
20	Display Board	300001000267	300001000267	1
21	Right Side Plate	2005613306	2005613306	1
22	Filter Sub-Assy	1112610601	1112610601	1
23	Wire catch	7101600601	7101600601	2
24	Rear Case	2220621002	2220621002	1
25	Cover of drainage hole	2224609703	2224609703	1
26	Adaptor sub-assy	26116155	26116155	1
27	Rubber Plug	76716054	76716054	1
28	Water Tray	2018614302	2018614302	1
29	Liquid Level Switch Sub-assy	00019406000401	00019406000401	1
30	Inching Switch	4501009502	4501009502	1
31	Water Tray Assy	0000690006101	0000690006101	1
32	Electric Box Cover Sub-Assy	20126131	20126131	1
33	Electric Box Assy	1000020192301	1000020192301	1
34	Capacitor CBB65	3300002237	33000085	1
35	Capacitor CBB61S	3301074701	3301074701	1
36	Main Board	300002060695	300002060695	1
37	Castor	24236019	24236019	4
38	Chassis Sub-assy	2222607704	2222607704	1
39	Compressor Gasket	76716100	76716100	3
40	Compressor and Fittings	009001060320	009001060319	1
41	Power Cord	4002028617	4002028617	1
42	Discharge Tube Sub-assy	030013060739	030013060747	1
43	Inhalation Tube Sub-assy	030010060606	030010060606	1
44	Buoy	2611613101	2611613101	1
45	Press Plate	2611613002	2611613002	1
46	Water Tank Cover	2224609801	2224609801	1
47	Water Tank Sub-Assy	20186149	20186149	1
48	Water Tank Assy	20186540	20186540	1

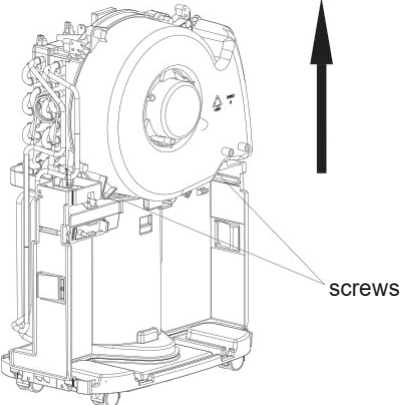
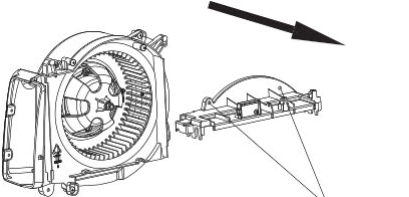
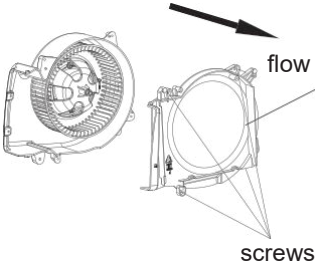
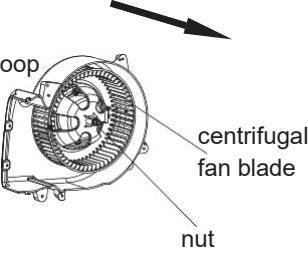
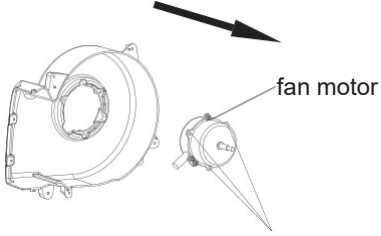
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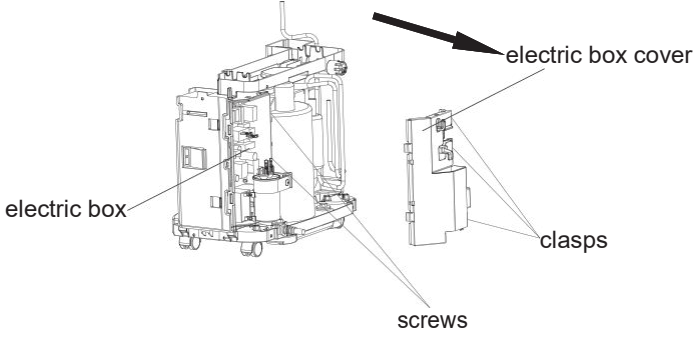
11. Removal Procedure

⚠ Warning: disconnect power supply before removal; Prohibit disassembling and maintaining the refrigeration system pipeline and parts (include evaporator, condenser, compressor, capillary, etc.)

Steps	Procedure	
1	Before disassembly	
2	Remove tank Draw the tank outwards to remove the tank.	
3	Remove front panel Remove 2 screws showing in the picture and hold the bottom to draw it. The front panel can be removed.	

Steps	Procedure	Procedure
<p>4</p>	<p>Remove rear case Loosen 2 clasps on the filter and then remove the filter. Remove 6 connection screws fixing rear case. Remove 2 wire clamps and then remove rear case.</p>	
<p>5</p>	<p>Remove top cover Remove connection screws fixing top cover (6 screws on the side, 5 screws on the front face). Lift the top cover to remove it. a. Remove side plates Remove connection screws fixing side plates (2 screws on each side). Then remove the right and left side plates. b. Remove display panel Remove 6 connection screws fixing display panel. Then remove display panel.</p>	

Steps	Procedure
<p>6</p> <p>Remove air duct</p> <p>Remove 2 connection screws between air duct and water tray. Lift the air duct up to remove it.</p> <p>a. Remove cover plate (air duct)</p> <p>Remove 2 connection screws and then remove the cover plate.</p> <p>b. Remove flow guide loop</p> <p>Remove 4 connections screws and then remove the flow guide loop.</p> <p>c. Remove centrifugal fan blade</p> <p>Remove nut fixing centrifugal fan blade. Then remove the fan blade.(as shown in fig3).</p> <p>d. Remove motor</p> <p>Remove 3 connection screws and then remove motor (as shown in fig 4).</p>	 <p style="text-align: right;">screws</p>  <p style="text-align: center;">fig.1</p>  <p style="text-align: center;">fig.2</p>  <p style="text-align: right;">centrifugal fan blade</p> <p style="text-align: right;">nut</p> <p style="text-align: center;">fig.3</p>  <p style="text-align: right;">fan motor</p> <p style="text-align: right;">screws</p> <p style="text-align: center;">fig.4</p>

Steps	Procedure	
7	<p>Remove electric box cover and electric box Loosen 5 clasps between electric box cover and electric box. Then remove electric box cover. Then remove 2 connection screws showing in fig 2 and remove electric box subsequently.</p>	 <p>The diagram illustrates the removal process. On the left, a line drawing of the electric box is shown with a line pointing to the label 'electric box'. On the right, a line drawing of the electric box cover is shown with a line pointing to the label 'electric box cover'. A thick black arrow points from the cover towards the box. Below the cover, two lines point to the label 'clasps', and two lines point to the label 'screws'.</p>

Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

Conversion formula for Fahrenheit degree and Celsius degree: $T_f = T_c \times 1.8 + 32$

Set temperature

Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)
61	60.8	16	69/70	69.8	21	78/79	78.8	26
62/63	62.6	17	71/72	71.6	22	80/81	80.6	27
64/65	64.4	18	73/74	73.4	23	82/83	82.4	28
66/67	66.2	19	75/76	75.2	24	84/85	84.2	29
68	68	20	77	77	25	86	86	30

Ambient temperature

Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)
32/33	32	0	55/56	55.4	13	79/80	78.8	26
34/35	33.8	1	57/58	57.2	14	81	80.6	27
36	35.6	2	59/60	59	15	82/83	82.4	28
37/38	37.4	3	61/62	60.8	16	84/85	84.2	29
39/40	39.2	4	63	62.6	17	86/87	86	30
41/42	41	5	64/65	64.4	18	88/89	87.8	31
43/44	42.8	6	66/67	66.2	19	90	89.6	32
45	44.6	7	68/69	68	20	91/92	91.4	33
46/47	46.4	8	70/71	69.8	21	93/94	93.2	34
48/49	48.2	9	72	71.6	22	95/96	95	35
50/51	50	10	73/74	73.4	23	97/98	96.8	36
52/53	51.8	11	75/76	75.2	24	99	98.6	37
54	53.6	12	77/78	77	25			

Appendix 2: Resistance Table of Temperature Sensor

Resistance table of temperature sensor (15K)

Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-19	138.1	20	18.75	59	3.848	98	1.071
-18	128.6	21	17.93	60	3.711	99	1.039
-17	121.6	22	17.14	61	3.579	100	1.009
-16	115	23	16.39	62	3.454	101	0.98
-15	108.7	24	15.68	63	3.333	102	0.952
-14	102.9	25	15	64	3.217	103	0.925
-13	97.4	26	14.36	65	3.105	104	0.898
-12	92.22	27	13.74	66	2.998	105	0.873
-11	87.35	28	13.16	67	2.896	106	0.848
-10	82.75	29	12.6	68	2.797	107	0.825
-9	78.43	30	12.07	69	2.702	108	0.802
-8	74.35	31	11.57	70	2.611	109	0.779
-7	70.5	32	11.09	71	2.523	110	0.758
-6	66.88	33	10.63	72	2.439	111	0.737
-5	63.46	34	10.2	73	2.358	112	0.717
-4	60.23	35	9.779	74	2.28	113	0.697
-3	57.18	36	9.382	75	2.206	114	0.678
-2	54.31	37	9.003	76	2.133	115	0.66
-1	51.59	38	8.642	77	2.064	116	0.642
0	49.02	39	8.297	78	1.997	117	0.625
1	46.6	40	7.967	79	1.933	118	0.608
2	44.31	41	7.653	80	1.871	119	0.592
3	42.14	42	7.352	81	1.811	120	0.577
4	40.09	43	7.065	82	1.754	121	0.561
5	38.15	44	6.791	83	1.699	122	0.547
6	36.32	45	6.529	84	1.645	123	0.532
7	34.58	46	6.278	85	1.594	124	0.519
8	32.94	47	6.038	86	1.544	125	0.505
9	31.38	48	5.809	87	1.497	126	0.492
10	29.9	49	5.589	88	1.451	127	0.48
11	28.51	50	5.379	89	1.408	128	0.467
12	27.18	51	5.197	90	1.363	129	0.456
13	25.92	52	4.986	91	1.322	130	0.444
14	24.73	53	4.802	92	1.282	131	0.433
15	23.6	54	4.625	93	1.244	132	0.422
16	22.53	55	4.456	94	1.207	133	0.412
17	21.51	56	4.294	95	1.171	134	0.401
18	20.54	57	4.139	96	1.136	135	0.391
19	19.63	58	3.99	97	1.103	136	0.382

Resistance table of temperature sensor (20K)

Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-19	181.4	20	25.01	59	5.13	98	1.427
-18	171.4	21	23.9	60	4.948	99	1.386
-17	162.1	22	22.85	61	4.773	100	1.346
-16	153.3	23	21.85	62	4.605	101	1.307
-15	145	24	20.9	63	4.443	102	1.269
-14	137.2	25	20	64	4.289	103	1.233
-13	129.9	26	19.14	65	4.14	104	1.198
-12	123	27	18.13	66	3.998	105	1.164
-11	116.5	28	17.55	67	3.861	106	1.131
-10	110.3	29	16.8	68	3.729	107	1.099
-9	104.6	30	16.1	69	3.603	108	1.069
-8	99.13	31	15.43	70	3.481	109	1.039
-7	94	32	14.79	71	3.364	110	1.01
-6	89.17	33	14.18	72	3.252	111	0.983
-5	84.61	34	13.59	73	3.144	112	0.956
-4	80.31	35	13.04	74	3.04	113	0.93
-3	76.24	36	12.51	75	2.94	114	0.904
-2	72.41	37	12	76	2.844	115	0.88
-1	68.79	38	11.52	77	2.752	116	0.856
0	65.37	39	11.06	78	2.663	117	0.833
1	62.13	40	10.62	79	2.577	118	0.811
2	59.08	41	10.2	80	2.495	119	0.77
3	56.19	42	9.803	81	2.415	120	0.769
4	53.46	43	9.42	82	2.339	121	0.746
5	50.87	44	9.054	83	2.265	122	0.729
6	48.42	45	8.705	84	2.194	123	0.71
7	46.11	46	8.37	85	2.125	124	0.692
8	43.92	47	8.051	86	2.059	125	0.674
9	41.84	48	7.745	87	1.996	126	0.658
10	39.87	49	7.453	88	1.934	127	0.64
11	38.01	50	7.173	89	1.875	128	0.623
12	36.24	51	6.905	90	1.818	129	0.607
13	34.57	52	6.648	91	1.736	130	0.592
14	32.98	53	6.403	92	1.71	131	0.577
15	31.47	54	6.167	93	1.658	132	0.563
16	30.04	55	5.942	94	1.609	133	0.549
17	28.68	56	5.726	95	1.561	134	0.535
18	27.39	57	5.519	96	1.515	135	0.521
19	26.17	58	5.32	97	1.47	136	0.509

Resistance table of temperature sensor (50K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-29	853.5		10	98		49	18.34		88	4.75
-28	799.8		11	93.42		50	17.65		89	4.61
-27	750		12	89.07		51	16.99		90	4.47
-26	703.8		13	84.95		52	16.36		91	4.33
-25	660.8		14	81.05		53	15.75		92	4.20
-24	620.8		15	77.35		54	15.17		93	4.08
-23	580.6		16	73.83		55	14.62		94	3.96
-22	548.9		17	70.5		56	14.09		95	3.84
-21	516.6		18	67.34		57	13.58		96	3.73
-20	486.5		19	64.33		58	13.09		97	3.62
-19	458.3		20	61.48		59	12.62		98	3.51
-18	432		21	58.77		60	12.17		99	3.41
-17	407.4		22	56.19		61	11.74		100	3.32
-16	384.5		23	53.74		62	11.32		101	3.22
-15	362.9		24	51.41		63	10.93		102	3.13
-14	342.8		25	49.19		64	10.54		103	3.04
-13	323.9		26	47.08		65	10.18		104	2.96
-12	306.2		27	45.07		66	9.83		105	2.87
-11	289.6		28	43.16		67	9.49		106	2.79
-10	274		29	41.34		68	9.17		107	2.72
-9	259.3		30	39.61		69	8.85		108	2.64
-8	245.6		31	37.96		70	8.56		109	2.57
-7	232.6		32	36.38		71	8.27		110	2.50
-6	220.5		33	34.88		72	7.99		111	2.43
-5	209		34	33.45		73	7.73		112	2.37
-4	198.3		35	32.09		74	7.47		113	2.30
-3	199.1		36	30.79		75	7.22		114	2.24
-2	178.5		37	29.54		76	7.00		115	2.18
-1	169.5		38	28.36		77	6.76		116	2.12
0	161		39	27.23		78	6.54		117	2.07
1	153		40	26.15		79	6.33		118	2.02
2	145.4		41	25.11		80	6.13		119	1.96
3	138.3		42	24.13		81	5.93		120	1.91
4	131.5		43	23.19		82	5.75		121	1.86
5	125.1		44	22.29		83	5.57		122	1.82
6	119.1		45	21.43		84	5.39		123	1.77
7	113.4		46	20.6		85	5.22		124	1.73
8	108		47	19.81		86	5.06		125	1.68
9	102.8		48	19.06		87	4.90		126	1.64

Appendix 3: Resistance Value Table of Humidity Sensor

HIS-06 temperature and humidity characteristic⁵°C~14°C

Unit:KΩ

Relative humidity	Temperature(°C)									
	5°C	6°C	7°C	8°C	9°C	10°C	11°C	12°C	13°C	14°C
90	5.35	4.92	4.55	4.23	3.95	3.70	3.47	3.25	3.05	2.87
89	5.80	5.33	4.93	4.58	4.27	4.00	3.74	3.51	3.29	3.09
88	6.29	5.77	5.33	4.95	4.62	4.32	4.03	3.78	3.54	3.32
87	6.82	6.25	5.77	5.36	4.99	4.66	4.35	4.08	3.82	3.58
86	7.40	6.78	6.25	5.80	5.40	5.04	4.70	4.40	4.11	3.85
85	8.03	7.35	6.78	6.28	5.84	5.45	5.09	4.75	4.45	4.16
84	8.71	7.97	7.35	6.81	6.33	5.91	5.50	5.14	4.80	4.49
83	9.44	8.65	7.97	7.39	6.87	6.41	5.96	5.56	5.19	4.84
82	10.25	9.39	8.65	8.02	7.46	6.96	6.47	6.03	5.62	5.24
81	11.13	10.19	9.40	8.71	8.10	7.56	7.03	6.54	6.09	5.68
80	12.09	11.07	10.21	9.46	8.80	8.21	7.62	7.08	6.59	6.13
79	13.14	12.03	11.09	10.28	9.57	8.93	8.28	7.70	7.16	6.66
78	14.27	13.07	12.05	11.17	10.40	9.70	8.99	8.35	7.75	7.20
77	15.50	14.20	13.10	12.14	11.30	10.55	9.78	9.07	8.43	7.83
76	16.84	15.43	14.24	13.21	12.30	11.48	10.64	9.87	9.16	8.51
75	18.31	16.78	15.49	14.37	13.38	12.50	11.58	10.75	9.98	9.26
74	19.91	18.25	16.85	15.64	14.57	13.62	12.62	11.72	10.89	10.12
73	21.67	19.87	18.35	17.04	15.88	14.84	13.71	12.67	11.72	10.84
72	23.61	21.66	20.00	18.57	17.31	16.18	14.98	13.90	12.89	11.96
71	25.78	23.64	21.84	20.27	18.89	17.66	16.35	15.16	14.06	13.05
70	28.15	25.82	23.85	22.15	20.65	19.30	17.91	16.63	15.46	14.37
69	30.78	28.24	26.10	24.24	22.60	21.13	19.60	18.19	16.91	15.71
68	33.69	30.92	28.58	26.55	24.76	23.16	21.48	19.94	18.53	17.22
67	36.90	33.88	31.33	29.11	27.16	25.42	23.56	21.86	20.29	18.85
66	40.45	37.16	34.37	31.96	29.84	27.93	25.83	23.92	22.15	20.52
65	44.38	40.78	37.74	35.11	32.78	30.70	28.42	26.34	24.42	22.65
64	48.75	44.81	41.48	38.59	36.05	33.77	31.24	28.93	26.80	24.83
63	53.64	49.31	45.65	42.48	39.68	37.17	34.34	31.74	29.36	27.15
62	59.14	54.36	50.32	46.82	43.73	40.97	37.83	34.96	32.32	29.87
61	65.31	60.02	55.55	51.68	48.26	45.20	41.70	38.51	35.58	32.86
60	72.27	66.40	61.43	57.13	53.33	49.94	46.07	42.53	39.28	36.27
59	80.13	73.58	68.04	63.25	59.01	55.23	50.94	47.03	43.43	40.10
58	88.92	81.61	75.43	70.08	65.36	61.14	56.40	52.08	48.11	44.43
57	98.86	90.68	83.77	77.78	72.50	67.78	62.49	57.67	53.23	49.12
56	112.59	102.79	94.50	87.33	81.00	75.33	69.42	64.03	59.07	54.48
55	122.69	112.51	103.91	96.45	89.88	84.00	77.42	71.41	65.88	60.76
54	137.09	125.76	116.19	107.89	100.57	94.03	86.69	79.99	73.82	68.11
53	153.46	140.88	130.25	121.03	112.91	105.64	97.26	89.61	82.58	76.06
52	172.19	158.19	146.35	136.10	127.05	118.96	109.52	100.90	92.97	85.63
51	193.69	178.04	164.81	153.36	143.25	134.21	123.35	113.43	104.31	95.86
50	218.48	200.85	185.94	173.02	161.63	151.44	139.14	127.90	117.57	108.01
49	247.23	227.16	210.19	195.49	182.52	170.92	156.84	143.98	132.15	121.20
48	278.74	256.20	237.15	220.64	206.08	193.06	177.34	163.00	149.80	137.58
47	315.50	289.95	268.35	249.64	233.14	218.37	200.56	184.30	169.34	155.49
46	357.93	328.94	304.43	283.20	264.47	247.72	227.57	209.18	192.25	176.59
45	406.44	373.72	346.05	322.08	300.94	282.03	259.22	238.40	219.24	201.51
44	463.66	426.44	394.96	367.70	343.66	322.14	296.25	272.62	250.87	230.74
43	531.25	488.59	452.53	421.28	393.73	369.08	339.44	312.38	287.50	264.45
42	611.22	562.01	520.40	484.35	452.55	424.11	390.24	359.31	330.86	304.52
41	707.78	650.29	601.68	559.58	522.44	489.21	450.38	414.92	382.31	352.11
40	823.98	756.22	698.93	649.30	605.53	566.37	521.46	480.46	442.74	407.81
39	962.72	882.62	814.90	756.23	704.48	658.19	604.79	556.03	511.18	469.66

38	1128.50	1033.61	953.39	883.90	822.61	767.78	704.83	647.37	594.51	545.56
37	1325.87	1213.40	1118.31	1035.94	963.29	898.30	823.48	755.17	692.34	634.16
36	1563.51	1430.14	1317.38	1219.71	1133.55	1056.48	967.04	885.39	810.28	740.74
35	1855.67	1695.83	1560.69	1443.63	1340.37	1248.00	1140.34	1042.06	951.64	867.93
34	2213.60	2020.33	1856.92	1715.37	1590.51	1478.82	1349.81	1232.04	1123.70	1023.39
33	2665.63	2426.92	2225.10	2050.27	1896.06	1758.12	1605.77	1466.69	1338.74	1220.28
32	3230.73	2933.36	2681.95	2464.17	2272.06	2100.23	1916.82	1749.39	1595.37	1452.76
31	3962.78	3585.59	3266.69	2990.44	2746.77	2528.80	2308.12	2106.66	1921.33	1749.74
30	4915.40	4431.65	4022.65	3668.35	3355.84	3076.30	2801.20	2550.06	2319.03	2105.13
29	6180.16	5548.66	5014.73	4552.22	4144.26	3779.32	3431.59	3114.13	2822.10	2551.72
28	7874.08	7035.10	6325.74	5711.27	5169.27	4684.43	4243.82	3841.57	3471.54	3128.95
27	10162.49	9029.08	8070.80	7240.70	6508.50	5853.53	5293.25	4781.75	4311.22	3875.57
26	13243.42	11702.63	10399.92	9271.46	8276.08	7385.69	6658.01	5993.68	5382.56	4816.75
25	17366.01	15270.67	13499.09	11964.48	10610.86	9400.00	8447.52	7577.98	6778.07	6037.48
24	22845.46	20023.30	17637.20	15570.26	13747.10	12116.22	10866.57	9725.72	8676.25	7704.59
23	30130.06	26367.98	23187.18	20431.85	18001.48	15827.43	14156.73	12631.50	11228.43	9929.38
22	39673.45	34712.87	30518.76	26885.65	23681.03	20814.39	18624.92	16626.08	14787.33	13084.91
21	51880.00	45447.42	40008.75	35297.56	31142.00	27424.72	24504.12	21837.82	19385.06	17114.16
20	68057.37	59623.21	52492.24	46315.10	40866.49	35992.53	32084.71	28517.14	25235.30	22196.79

HIS-06 temperature and humidity characteristic 15°C~24°C

Unit:KQ

Relative humidity	Temperature(°C)									
	15°C	16°C	17°C	18°C	19°C	20°C	21°C	22°C	23°C	24°C
90	2.70	2.56	2.43	2.31	2.19	2.08	1.99	1.91	1.83	1.75
89	2.91	2.76	2.61	2.48	2.35	2.23	2.13	2.04	1.95	1.86
88	3.12	2.96	2.80	2.66	2.52	2.39	2.28	2.18	2.08	1.98
87	3.36	3.18	3.01	2.85	2.70	2.56	2.44	2.33	2.22	2.12
86	3.61	3.42	3.23	3.06	2.90	2.75	2.62	2.50	2.38	2.27
85	3.90	3.69	3.49	3.30	3.12	2.95	2.81	2.67	2.54	2.42
84	4.20	3.97	3.76	3.55	3.36	3.18	3.03	2.88	2.74	2.61
83	4.52	4.28	4.05	3.83	3.63	3.43	3.26	3.10	2.94	2.79
82	4.89	4.63	4.38	4.14	3.92	3.71	3.52	3.33	3.16	2.99
81	5.29	5.00	4.73	4.48	4.24	4.01	3.80	3.60	3.42	3.23
80	5.70	5.39	5.10	4.83	4.57	4.33	4.10	3.88	3.68	3.48
79	6.19	5.85	5.53	5.22	4.94	4.67	4.41	4.17	3.94	3.72
78	6.69	6.32	5.96	5.63	5.32	5.02	4.75	4.49	4.24	4.01
77	7.27	6.85	6.46	6.09	5.74	5.41	5.11	4.83	4.56	4.31
76	7.90	7.44	7.00	6.59	6.20	5.83	5.51	5.21	4.92	4.65
75	8.60	8.08	7.60	7.14	6.71	6.30	5.95	5.62	5.30	4.99
74	9.40	8.82	8.28	7.77	7.29	6.83	6.45	6.09	5.74	5.41
73	10.02	9.44	8.89	8.38	7.89	7.43	7.01	6.60	6.21	5.84
72	11.10	10.43	9.79	9.19	8.63	8.09	7.62	7.17	6.74	6.33
71	12.10	11.36	10.67	10.02	9.40	8.82	8.31	7.82	7.36	6.92
70	13.36	12.52	11.72	10.98	10.27	9.60	9.03	8.49	7.97	7.48
69	14.60	13.67	12.79	11.97	11.19	10.45	9.82	9.23	8.66	8.11
68	16.00	14.96	13.99	13.07	12.20	11.37	10.68	10.02	9.39	8.78
67	17.50	16.35	15.27	14.26	13.30	12.39	11.61	10.86	10.15	9.47
66	19.00	17.76	16.60	15.51	14.47	13.49	12.64	11.83	11.05	10.31
65	21.00	19.59	18.26	17.01	15.82	14.70	13.76	12.86	12.01	11.19
64	23.00	21.43	19.96	18.57	17.25	16.00	14.98	14.00	13.06	12.16
63	25.10	23.38	21.77	20.24	18.80	17.44	16.31	15.24	14.22	13.24
62	27.60	25.66	23.84	22.13	20.51	18.97	17.73	16.55	15.42	14.34
61	30.33	28.17	26.14	24.23	22.42	20.71	19.37	18.10	16.88	15.72
60	33.47	31.05	28.78	26.64	24.62	22.70	21.24	19.84	18.50	17.23
59	37.00	34.31	31.77	29.39	27.13	24.99	23.37	21.83	20.36	18.95
58	41.00	38.00	35.18	32.52	30.00	27.61	25.82	24.11	22.47	20.90
57	45.30	41.99	38.88	35.95	33.18	30.54	28.59	26.72	24.94	23.24

56	50.20	46.55	43.12	39.89	36.83	33.93	31.76	29.69	27.71	25.82
55	56.00	51.92	48.08	44.47	41.05	37.80	35.35	33.02	30.79	28.65
54	62.80	58.20	53.88	49.80	45.95	42.29	39.51	36.87	34.34	31.92
53	70.00	64.95	60.21	55.74	51.51	47.50	44.33	41.31	38.42	35.65
52	78.80	73.12	67.79	62.76	58.00	53.49	49.86	46.40	43.10	39.94
51	88.00	81.79	75.97	70.47	65.27	60.34	56.11	52.08	48.23	44.54
50	99.10	92.12	85.57	79.39	73.55	68.00	63.15	58.52	54.10	49.86
49	111.00	103.28	96.04	89.20	82.74	76.61	70.94	65.54	60.38	55.44
48	126.20	117.27	108.88	100.97	93.48	86.38	79.89	73.71	67.79	62.13
47	142.60	132.48	122.97	114.00	105.52	97.48	90.16	83.18	76.51	70.12
46	162.00	150.38	139.46	129.16	119.43	110.19	101.62	93.45	85.64	78.17
45	185.00	171.49	158.81	146.85	135.53	124.80	115.00	105.66	96.74	88.20
44	212.00	196.23	181.41	167.45	154.23	141.70	130.18	119.19	108.69	98.64
43	243.00	224.65	207.41	191.15	175.78	161.19	148.03	135.48	123.49	112.01
42	280.00	258.38	238.08	218.93	200.82	183.64	168.64	154.32	140.65	127.56
41	324.00	298.37	274.29	251.59	230.12	209.75	192.53	176.11	160.43	145.41
40	375.30	344.95	316.43	289.55	264.12	240.00	220.30	201.52	183.57	166.39
39	431.00	395.97	363.07	332.05	302.71	274.87	251.94	230.08	209.19	189.19
38	500.00	458.51	419.54	382.80	348.04	315.07	289.04	264.21	240.49	217.78
37	580.00	531.11	485.18	441.88	400.92	362.06	332.09	303.52	276.21	250.07
36	676.00	618.14	563.79	512.55	464.08	418.09	383.52	350.57	319.07	288.92
35	790.00	721.80	657.74	597.34	540.20	486.00	445.77	407.41	370.75	335.66
34	930.00	848.96	772.84	701.08	633.19	568.78	521.38	476.19	433.01	391.66
33	1110.00	1011.10	918.19	830.60	747.75	669.14	613.58	560.59	509.97	461.49
32	1320.00	1201.45	1090.09	985.09	885.78	791.56	725.62	662.75	602.68	545.17
31	1590.00	1444.80	1308.40	1179.80	1058.15	942.75	863.43	787.81	715.55	646.36
30	1906.00	1731.91	1568.38	1414.20	1268.36	1130.00	1034.60	943.64	856.73	773.51
29	2300.00	2089.81	1892.37	1706.22	1530.13	1363.08	1244.55	1131.54	1023.56	920.17
28	2810.00	2550.31	2306.37	2076.38	1858.82	1652.43	1505.84	1366.07	1232.52	1104.65
27	3470.00	3144.23	2838.22	2549.70	2276.79	2017.87	1836.86	1664.27	1499.35	1341.45
26	4290.00	3885.50	3505.53	3147.28	2808.41	2486.92	2253.64	2031.21	1818.67	1615.18
25	5348.00	4843.01	4368.65	3921.40	3498.35	3097.00	2802.48	2521.66	2253.33	1996.42
24	6800.00	6152.28	5543.84	4970.19	4427.56	3912.77	3538.27	3181.20	2840.01	2513.33
23	8720.00	7888.61	7107.64	6371.32	5674.82	5014.05	4529.95	4068.38	3627.32	3205.04
22	11500.00	10371.38	9311.21	8311.65	7366.14	6469.15	5839.63	5239.39	4665.85	4116.71
21	15000.00	13512.80	12115.79	10798.65	9552.74	8370.76	7546.29	6760.17	6009.01	5289.82
20	19368.00	17441.37	15631.58	13925.26	12311.23	10780.00	9716.41	8702.31	7733.29	6805.52

HIS-06 temperature and humidity characteristic 25°C~34°C

Unit:KΩ

Relative humidity	Temperature(°C)									
	25°C	26°C	27°C	28°C	29°C	30°C	31°C	32°C	33°C	34°C
90	1.68	1.62	1.57	1.52	1.47	1.42	1.37	1.33	1.28	1.24
89	1.78	1.72	1.66	1.61	1.55	1.50	1.45	1.40	1.36	1.31
88	1.89	1.83	1.76	1.70	1.65	1.59	1.54	1.49	1.44	1.39
87	2.02	1.95	1.88	1.81	1.74	1.68	1.63	1.57	1.52	1.47
86	2.16	2.08	2.00	1.93	1.85	1.78	1.72	1.66	1.61	1.55
85	2.30	2.21	2.13	2.05	1.97	1.89	1.82	1.76	1.70	1.64
84	2.48	2.38	2.28	2.19	2.10	2.01	1.94	1.87	1.80	1.73
83	2.65	2.54	2.43	2.33	2.24	2.14	2.06	1.98	1.91	1.83
82	2.83	2.71	2.60	2.49	2.38	2.28	2.19	2.11	2.02	1.94
81	3.06	2.93	2.80	2.67	2.55	2.44	2.34	2.24	2.15	2.06
80	3.28	3.14	3.00	2.86	2.73	2.60	2.49	2.38	2.28	2.18
79	3.51	3.35	3.20	3.05	2.91	2.78	2.65	2.54	2.42	2.31
78	3.78	3.61	3.44	3.28	3.12	2.97	2.83	2.70	2.57	2.45
77	4.06	3.87	3.69	3.51	3.34	3.17	3.03	2.88	2.74	2.61
76	4.38	4.17	3.97	3.77	3.58	3.40	3.23	3.07	2.92	2.77
75	4.70	4.47	4.25	4.04	3.84	3.64	3.46	3.28	3.11	2.94
74	5.09	4.83	4.59	4.35	4.12	3.90	3.70	3.51	3.32	3.14

73	5.49	5.21	4.94	4.68	4.43	4.19	3.97	3.75	3.54	3.34
72	5.93	5.62	5.33	5.04	4.77	4.50	4.26	4.02	3.80	3.57
71	6.49	6.13	5.79	5.46	5.14	4.84	4.57	4.32	4.07	3.83
70	7.00	6.61	6.24	5.88	5.53	5.20	4.91	4.63	4.35	4.09
69	7.59	7.16	6.75	6.35	5.96	5.59	5.27	4.97	4.67	4.38
68	8.20	7.73	7.28	6.84	6.42	6.01	5.67	5.34	5.01	4.70
67	8.82	8.32	7.83	7.36	6.91	6.47	6.10	5.74	5.38	5.04
66	9.60	9.03	8.49	7.96	7.46	6.97	6.57	6.18	5.80	5.43
65	10.40	9.78	9.18	8.61	8.06	7.52	7.08	6.65	6.24	5.84
64	11.30	10.62	9.96	9.33	8.72	8.13	7.65	7.19	6.74	6.30
63	12.30	11.55	10.82	10.12	9.45	8.80	8.27	7.75	7.26	6.78
62	13.30	12.49	11.71	10.96	10.23	9.53	8.96	8.41	7.87	7.35
61	14.60	13.69	12.81	11.97	11.15	10.36	9.73	9.12	8.53	7.96
60	16.00	14.99	14.02	13.08	12.17	11.30	10.61	9.94	9.29	8.66
59	17.60	16.48	15.40	14.35	13.35	12.38	11.61	10.87	10.15	9.46
58	19.40	18.15	16.95	15.79	14.68	13.60	12.75	11.93	11.13	10.36
57	21.60	20.18	18.81	17.49	16.22	14.99	14.05	13.14	12.26	11.41
56	24.00	22.40	20.86	19.37	17.94	16.55	15.50	14.48	13.50	12.54
55	26.60	24.81	23.10	21.44	19.84	18.30	17.13	16.00	14.90	13.83
54	29.60	27.59	25.66	23.81	22.01	20.28	18.96	17.69	16.46	15.26
53	33.00	30.74	28.57	26.48	24.46	22.52	21.04	19.62	18.24	16.90
52	36.90	34.35	31.90	29.53	27.25	25.05	23.38	21.77	20.21	18.69
51	41.00	38.18	35.47	32.86	30.34	27.90	26.03	24.22	22.46	20.76
50	45.80	42.62	39.55	36.60	33.75	31.00	28.91	26.89	24.93	23.03
49	50.70	47.20	43.83	40.59	37.45	34.43	32.08	29.81	27.61	25.47
48	56.70	52.72	48.90	45.21	41.66	38.22	35.62	33.10	30.67	28.30
47	64.00	59.37	54.91	50.61	46.46	42.46	39.57	36.78	34.07	31.45
46	71.00	65.89	60.97	56.22	51.65	47.23	43.99	40.85	37.81	34.86
45	80.00	74.13	68.48	63.03	57.78	52.70	49.02	45.46	42.00	38.65
44	89.00	82.54	76.32	70.33	64.54	58.96	54.75	50.69	46.74	42.92
43	101.00	93.48	86.25	79.28	72.55	66.06	61.28	56.65	52.17	47.82
42	115.00	106.23	97.79	89.66	81.81	74.23	68.69	63.33	58.14	53.10
41	131.00	120.81	111.01	101.56	92.44	83.64	77.33	71.23	65.31	59.57
40	149.90	138.01	126.56	115.53	104.88	94.60	87.37	80.37	73.58	66.99
39	170.00	156.52	143.54	131.04	118.97	107.32	99.08	91.11	83.38	75.88
38	196.00	180.09	164.79	150.04	135.81	122.06	112.71	103.65	94.88	86.37
37	225.00	206.61	188.92	171.87	155.41	139.52	128.86	118.54	108.53	98.82
36	260.00	238.50	217.80	197.86	178.62	160.04	147.90	136.16	124.77	113.73
35	302.00	276.83	252.61	229.27	206.76	185.00	170.96	157.37	144.19	131.41
34	352.00	322.66	294.42	267.21	240.96	215.59	199.30	183.53	168.24	153.40
33	415.00	380.13	346.58	314.24	283.04	252.90	233.57	214.84	196.70	179.09
32	490.00	448.82	409.19	371.01	334.16	298.57	275.69	253.53	232.06	211.23
31	580.00	531.32	484.48	439.35	395.79	353.72	326.76	300.66	275.37	250.83
30	693.69	634.81	578.16	523.57	470.89	420.00	387.67	356.36	326.02	296.58
29	821.00	751.60	684.82	620.48	558.38	498.40	459.39	421.61	385.00	349.49
28	982.00	898.01	817.20	739.32	664.18	591.58	544.87	499.65	455.82	413.29
27	1190.00	1085.85	985.63	889.06	795.87	705.85	649.51	594.96	542.09	490.80
26	1420.00	1297.43	1179.49	1065.83	956.17	850.22	781.68	715.32	651.00	588.59
25	1750.00	1597.27	1450.30	1308.67	1172.02	1040.00	954.91	872.53	792.68	715.22
24	2200.00	2005.83	1818.99	1638.94	1465.21	1297.38	1189.66	1085.37	984.29	886.22
23	2800.00	2551.47	2312.32	2081.87	1859.50	1644.68	1506.06	1371.84	1241.75	1115.55
22	3590.00	3270.74	2963.54	2667.51	2381.86	2105.90	1925.97	1751.75	1582.89	1419.07
21	4600.00	4191.56	3798.54	3419.81	3054.38	2701.33	2467.06	2240.24	2020.39	1807.10
20	5915.63	5385.23	4874.84	4383.03	3908.47	3450.00	3152.84	2865.12	2586.25	2315.70

HIS-06 Characteristic of temperature and humidity 35°C~ 45°C

Unit:KΩ

Relative humidity	Temperature(°C)										
	%RH	35°C	36°C	37°C	38°C	39°C	40°C	41°C	42°C	43°C	44°C
90	1.20	1.17	1.14	1.11	1.08	1.05	1.02	1.00	0.98	0.95	0.93
89	1.27	1.23	1.20	1.16	1.13	1.10	1.07	1.05	1.02	1.00	0.97
88	1.34	1.30	1.26	1.22	1.19	1.15	1.12	1.09	1.07	1.04	1.02
87	1.42	1.37	1.33	1.29	1.25	1.21	1.18	1.15	1.12	1.09	1.06
86	1.50	1.45	1.40	1.36	1.31	1.27	1.24	1.20	1.17	1.14	1.11
85	1.58	1.53	1.48	1.43	1.38	1.33	1.29	1.26	1.23	1.19	1.16
84	1.67	1.61	1.56	1.50	1.45	1.40	1.36	1.32	1.29	1.25	1.21
83	1.76	1.70	1.64	1.58	1.52	1.47	1.43	1.39	1.35	1.31	1.27
82	1.86	1.79	1.73	1.66	1.60	1.54	1.50	1.45	1.41	1.37	1.33
81	1.97	1.90	1.82	1.75	1.69	1.62	1.57	1.53	1.48	1.44	1.40
80	2.08	2.00	1.93	1.85	1.78	1.71	1.66	1.61	1.56	1.51	1.46
79	2.20	2.12	2.03	1.95	1.88	1.80	1.74	1.69	1.64	1.59	1.54
78	2.33	2.24	2.15	2.07	1.98	1.90	1.84	1.78	1.72	1.67	1.61
77	2.48	2.38	2.28	2.18	2.09	2.00	1.94	1.87	1.81	1.75	1.69
76	2.62	2.51	2.41	2.31	2.21	2.12	2.05	1.98	1.91	1.84	1.78
75	2.78	2.67	2.56	2.45	2.34	2.24	2.16	2.09	2.01	1.94	1.87
74	2.96	2.84	2.71	2.60	2.48	2.37	2.29	2.20	2.12	2.04	1.97
73	3.14	3.01	2.88	2.75	2.63	2.51	2.42	2.33	2.24	2.15	2.07
72	3.36	3.21	3.06	2.92	2.78	2.65	2.55	2.46	2.36	2.27	2.18
71	3.60	3.44	3.28	3.12	2.97	2.82	2.71	2.61	2.50	2.40	2.30
70	3.83	3.65	3.48	3.32	3.16	3.00	2.88	2.77	2.65	2.54	2.43
69	4.10	3.91	3.73	3.55	3.37	3.20	3.07	2.94	2.82	2.70	2.58
68	4.40	4.19	3.99	3.79	3.60	3.41	3.27	3.13	2.99	2.86	2.73
67	4.71	4.49	4.27	4.06	3.85	3.65	3.49	3.34	3.19	3.05	2.90
66	5.08	4.83	4.59	4.36	4.13	3.91	3.74	3.57	3.41	3.25	3.09
65	5.45	5.19	4.93	4.68	4.44	4.20	4.01	3.83	3.65	3.47	3.30
64	5.88	5.59	5.31	5.04	4.78	4.52	4.31	4.11	3.91	3.72	3.53
63	6.31	6.00	5.70	5.41	5.13	4.85	4.63	4.41	4.20	4.00	3.80
62	6.84	6.50	6.17	5.84	5.53	5.22	4.98	4.75	4.52	4.30	4.09
61	7.40	7.03	6.66	6.31	5.97	5.63	5.37	5.12	4.88	4.64	4.41
60	8.05	7.64	7.24	6.86	6.48	6.11	5.83	5.55	5.28	5.01	4.76
59	8.78	8.33	7.89	7.46	7.05	6.64	6.33	6.02	5.72	5.43	5.14
58	9.61	9.10	8.61	8.13	7.66	7.20	6.86	6.52	6.19	5.87	5.56
57	10.58	10.00	9.43	8.88	8.34	7.82	7.44	7.08	6.72	6.36	6.02
56	11.61	10.96	10.33	9.71	9.11	8.53	8.11	7.70	7.30	6.91	6.53
55	12.80	12.07	11.36	10.68	10.00	9.35	8.88	8.42	7.97	7.53	7.10
54	14.10	13.29	12.50	11.73	10.98	10.25	9.72	9.21	8.70	8.21	7.73
53	15.60	14.68	13.78	12.90	12.05	11.22	10.63	10.06	9.50	8.96	8.42
52	17.22	16.18	15.18	14.20	13.24	12.31	11.66	11.02	10.40	9.79	9.19
51	19.10	17.93	16.79	15.68	14.59	13.54	12.81	12.10	11.40	10.72	10.05
50	21.18	19.87	18.60	17.36	16.15	14.97	14.14	13.33	12.54	11.77	11.01
49	23.40	21.97	20.57	19.21	17.89	16.60	15.65	14.73	13.82	12.94	12.08
48	26.00	24.35	22.75	21.20	19.68	18.20	17.17	16.16	15.18	14.21	13.27
47	28.90	27.06	25.28	23.54	21.85	20.20	19.03	17.88	16.77	15.68	14.61
46	32.00	29.95	27.96	26.03	24.14	22.30	21.00	19.74	18.50	17.29	16.11
45	35.40	33.16	30.99	28.87	26.81	24.80	23.33	21.90	20.50	19.14	17.80
44	39.20	36.71	34.29	31.93	29.64	27.40	25.79	24.21	22.67	21.17	19.70
43	43.60	40.77	38.02	35.35	32.74	30.20	28.45	26.73	25.06	23.43	21.83
42	48.20	45.06	42.00	39.02	36.13	33.30	31.40	29.55	27.74	25.97	24.25
41	54.00	50.43	46.97	43.59	40.30	37.10	34.98	32.92	30.90	28.93	27.00
40	60.60	56.63	52.78	49.02	45.36	41.80	39.36	36.98	34.66	32.39	30.17
39	68.60	64.04	59.61	55.30	51.10	47.00	44.23	41.53	38.89	36.31	33.78
38	78.10	72.70	67.45	62.33	57.35	52.50	49.44	46.45	43.54	40.69	37.90

37	89.40	82.99	76.75	70.68	64.76	59.00	55.58	52.24	48.98	45.80	42.68
36	103.00	95.43	88.06	80.89	73.91	67.10	63.17	59.33	55.59	51.93	48.35
35	119.00	110.35	101.94	93.75	85.77	78.00	73.18	68.47	63.88	59.39	55.00
34	139.00	129.32	119.90	110.73	101.80	93.10	86.80	80.66	74.66	68.80	63.07
33	162.00	149.97	138.28	126.90	115.81	105.00	98.24	91.63	85.19	78.89	72.73
32	191.00	176.44	162.29	148.50	135.08	122.00	114.10	106.40	98.87	91.52	84.34
31	227.00	209.28	192.04	175.27	158.93	143.00	133.62	124.46	115.52	106.79	98.25
30	268.00	247.75	228.05	208.88	190.20	172.00	160.04	148.37	136.97	125.83	114.95
29	315.00	291.16	267.97	245.41	223.43	202.00	187.96	174.26	160.88	147.81	135.03
28	372.00	342.25	313.32	285.16	257.73	231.00	215.94	201.25	186.90	172.88	159.17
27	441.00	404.50	369.01	334.45	300.80	268.00	251.39	235.18	219.35	203.88	188.76
26	528.00	484.54	442.27	401.13	361.06	322.00	301.66	281.81	262.43	243.49	224.98
25	640.00	590.21	541.79	494.65	448.75	404.00	375.91	348.49	321.72	295.57	270.00
24	791.00	735.73	681.97	629.64	578.68	529.00	486.67	445.36	405.02	365.60	327.08
23	993.00	926.97	862.74	800.23	739.35	680.00	621.22	563.85	507.84	453.11	399.61
22	1260.00	1171.18	1084.80	1000.72	918.82	839.00	766.05	694.86	625.34	557.42	491.03
21	1600.00	1476.79	1356.97	1240.33	1126.73	1016.00	929.53	845.14	762.74	682.23	603.53
20	2053.00	1880.43	1712.58	1549.22	1390.09	1235.00	1131.26	1030.03	931.17	834.59	740.18



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