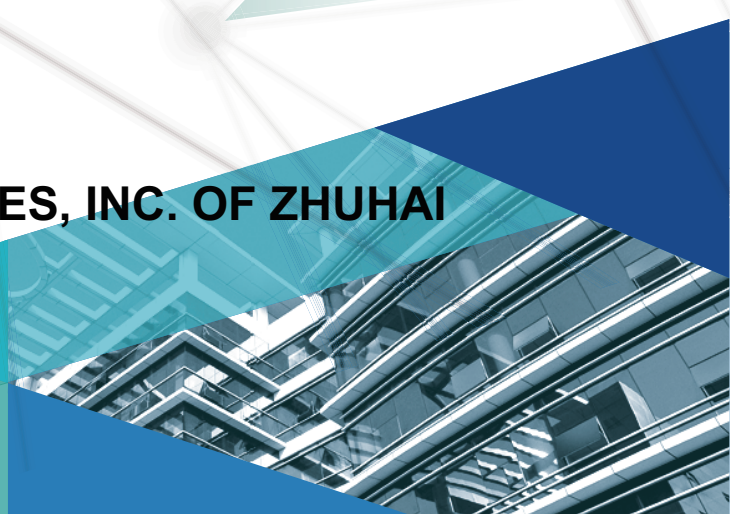
GREE
Change for life

Service Manual

Models:
GDN20AZ-K5EBA1B
GDN20AZ-K5EBA2A
GDN30BB-K5EBA2A
GDN40BA-K5EBA2A
(Refrigerant R290)

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI



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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 Costumer 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

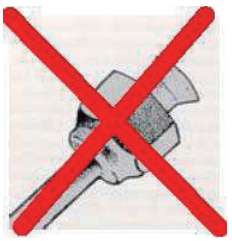
This is a specific remark and points out the importance of a specific section

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.

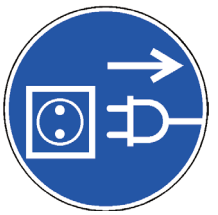
This is a general warning sign.

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) .

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

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.

Proceed according the manuals Instructions!

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.

Pay attention to the room size for indoor unit installation!

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

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

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

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 class 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 Lssues

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.

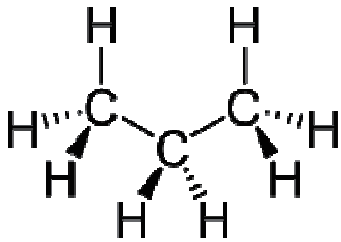
Basics

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	C3H8
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/m3]	8
Lower flammability level LFL [g/m3]	38
Lower flammability level LFL [%]	2,1
Upper flammability level UFL [g/m3]	171
Upper flammability level UFL [%]	9,5
Ignition temperature [°C]	470

Read More!

Guidlines for the safe use of hydro-carbon refrige-rants

GIZ—PROKLIMA

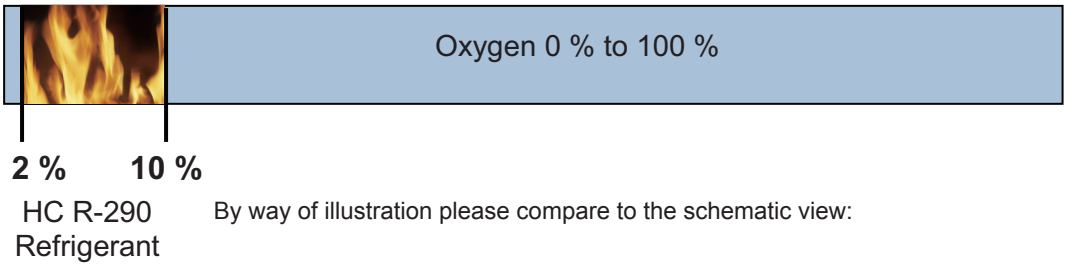
http://www.gtz.de/proklima

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.



By way of illustration please compare to the schematic view:

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

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

Safety Data

Hazard Identification

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

- 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.

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 allowto burn out.
- Use water spray to cool heat-exposed containers, and to protect surroundingareas and personnel effecting the shut off
- Every precaution must be taken to keep containers cool to avoid the possibilityof 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 collectin 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 were 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 flammable refrigerant occurs, and can immediately act upon the relevant emergency procedures.

Portable HC Gas Detector

Pressure—Temperature Chart

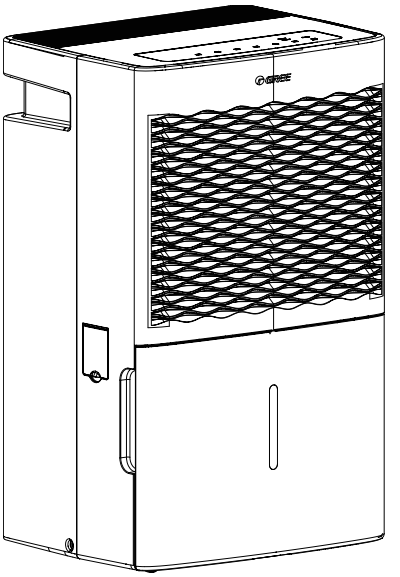
HC Refrigerant R-290							
Temperature		Absolute pressure			Gauge pressure		
°C	°F	kPa	bar	PSI	kPa(g)	bar(g)	PSI(g)
-40	-40	111,12	1,11	16,12	11,12	0,11	1,61
-39	-38,2	116,00	1,16	16,83	16,00	0,16	2,32
-38	-36,4	121,05	1,21	17,56	21,05	0,21	3,05
-37	-34,6	126,27	1,26	18,31	26,27	0,26	3,81
-36	-32,8	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

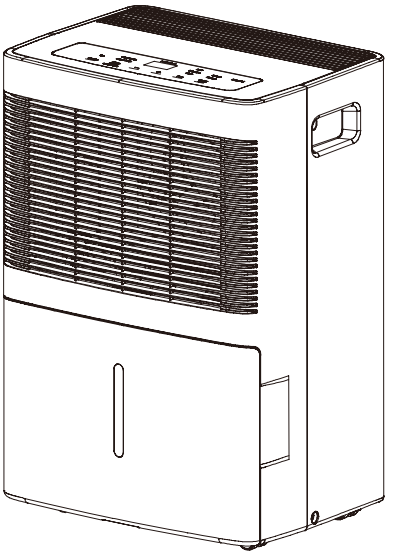
Part Ⅰ : Technical Information

1.Summary

Models:
GDN20AZ-K5EBA2A
GDN40BA-K5EBA2A
GDN30BB-K5EBA2A



GDN20AZ-K5EBA1B



Models List:

No.	Model	Product Code
1	GDN20AZ-K5EBA2A	CK051037400
2	GDN20AZ-K5EBA1B	CK051037900
3	GDN30BB-K5EBA2A	CK051040500
4	GDN40BA-K5EBA2A	CK051040600

2.Specifications

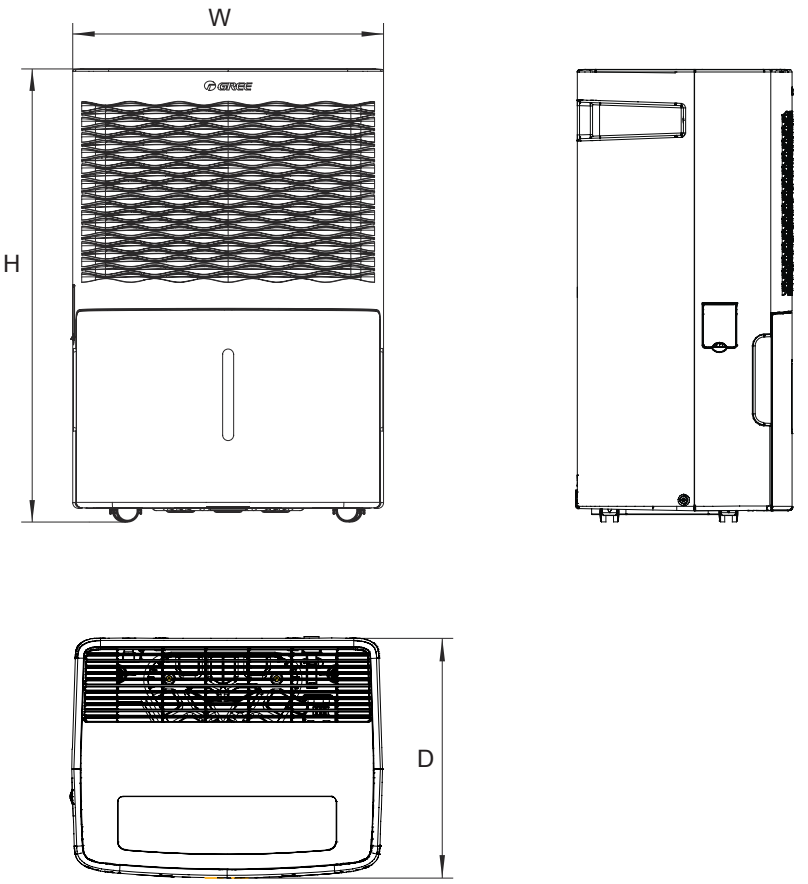
Model			GDN20AZ-K5EBA2A GDN20AZ-K5EBA1B	GDN40BA-K5EBA2A
Product Code			CK051037400 CK051037900	CK051040600
Power Supply	Rated Voltage	V~	220-240	220-240
	Rated Frequency	Hz	50	50
	Phases		1	1
Rated Dehumidification Capacity		Pint/D	25	51
Power Input		W	340	670
Current Input		A	1.6	3.5
Set Humidity Range		%	35/80	35/80
Air Flow Volume (H/M/L)		m^3/h	140/130/120	275/225/195
Fan Motor Speed (H/M/L)		r/min	960/890/840	900/780/680
Fan Motor Power Output		W	5	10
Fan Motor RLA		A	0.105	2
Fan Motor Capacitor		μF	1	1.5
Fan Type			Centrifugal	Centrifugal
Fan Diameter Length (DXL)		mm	Φ173.7X71.5	Φ207.4X84
Throttling Method			Capillary	Capillary
Fuse Current		A	3.15	3.15
Sound Pressure Level (H/M/L)		dB (A)	42/41/39	44/41/40
Sound Power Level (H/M/L)		dB (A)	52/51/49	54/51/50
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	340X495X250	375X610X289
Dimension of Carton Box (LXWXH)		mm	418X300X510	461X335X645
Dimension of Package (LXWXH)		mm	421X303X525	464X338X660
Application Area		m^2	30~36	60-72
Net Weight		kg	13	20
Gross Weight		kg	14.5	22
Refrigerant			R290	R290
Refrigerant Charge		kg	0.08	0.15
Bucket Capacity		L	3.2/3.7	7/7.6
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	2-1.4	2-1.4
	Evaporator Coil Length (LXDXW)	mm	245X25.4X190.5	260X25.4X228.6
Condenser	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ5	Φ5
	Condenser Rows-fin Gap	mm	2-1.4	3-1.4
	Condenser Coil Length (LXDXW)	mm	245X22.8X190.5	260X34.2X228.6
Compressor	Compressor Manufacturer		Shanghi Hitachi Electrical Appliances Co., Ltd.	ZHUHAI LANDA COMPRESSOR CO., LTD.
	Compressor Model		PSA586SV-R1DUN	QXD-A121L130D
	Compressor Type		Rotary	Rotary
	Compressor Power Input	W	327	620
	Compressor Overload Protector		USP-319-78 or equivalent	Internal(UP3-040)
	Compressor LRA.	A	7	13
	Compressor RLA	A	1.65	3.0

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

Model			GDN30BB-K5EBA2A
Product Code			CK051040500
Power Supply	Rated Voltage	V~	220-240
	Rated Frequency	Hz	50
	Phases		1
Rated Dehumidification Capacity		Pint/D	38
Power Input		W	520
Current Input		A	2.4
Set Humidity Range		%	35/80
Air Flow Volume (H/M/L)		m^3/h	220/195/170
Fan Motor Speed (H/M/L)		r/min	1080/1000/900
Fan Motor Power Output		W	12
Fan Motor RLA		A	0.15
Fan Motor Capacitor		μF	1
Fan Type			Centrifugal
Fan Diameter Length (DXL)		mm	Φ187.4X71
Throttling Method			Capillary
Fuse Current		A	3.15
Sound Pressure Level (H/M/L)		dB (A)	43/41/39
Sound Power Level (H/M/L)		dB (A)	53/51/49
Climate Type			T1
Isolation			I
Moisture Protection			IPX0
Permissible Excessive Operating Pressure for the Discharge Side		MPa	3
Permissible Excessive Operating Pressure for the Suction Side		MPa	1.5
Dimension (WXHXD)		mm	348X555X270
Dimension of Carton Box (LXWXH)		mm	390X317X605
Dimension of Package (LXWXH)		mm	393X320X620
Application Area		m^2	42~54
Net Weight		kg	15.5
Gross Weight		kg	17
Refrigerant			R290
Refrigerant Charge		kg	0.095
Bucket Capacity		L	4.5/5.5
Control Type			Electronic
Evaporator	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7
	Evaporator Row-fin Gap	mm	2-1.4
	Evaporator Coil Length (LXDXW)	mm	245X25.4X228.6
Condenser	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ5
	Condenser Rows-fin Gap	mm	3-1.4
	Condenser Coil Length (LXDXW)	mm	245X34.2X228.6
Compressor	Compressor Manufacturer		Shanghi Hitachi Electrical Appliances Co., Ltd.
	Compressor Model		PSA804SV-R3EUN
	Compressor Type		Rotary
	Compressor Power Input	W	488
	Compressor Overload Protector		Internal(URP-204-78)
	Compressor LRA.	A	8
	Compressor RLA	A	2.3

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

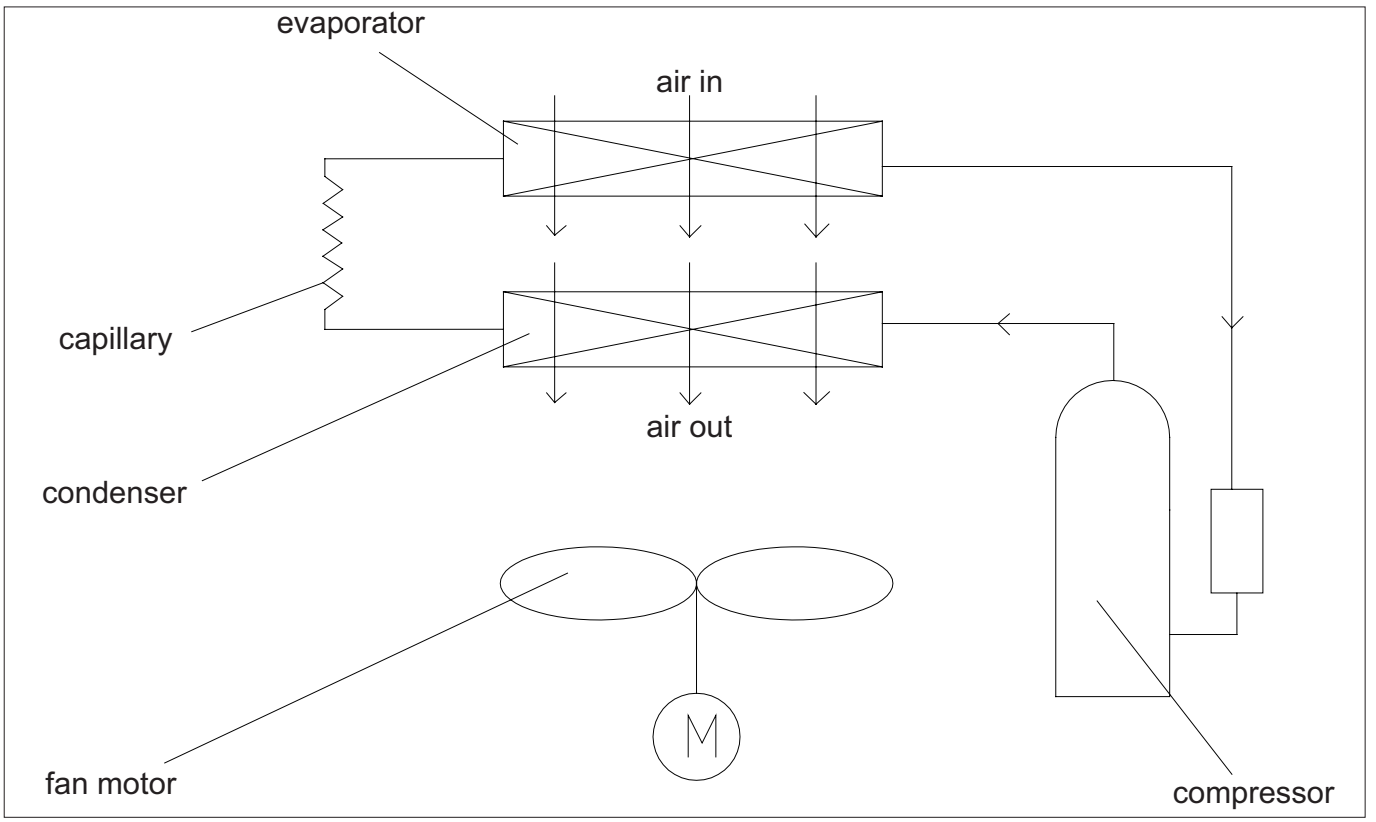
3.Outline Dimension Diagram



Unit:mm

Model	W	H	D
GDN20AZ-K5EBA1B GDN20AZ-K5EBA2A	340	495	250
GDN30BB-K5EBA2A	348	555	270
GDN40BA-K5EBA2A	375	610	289

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.

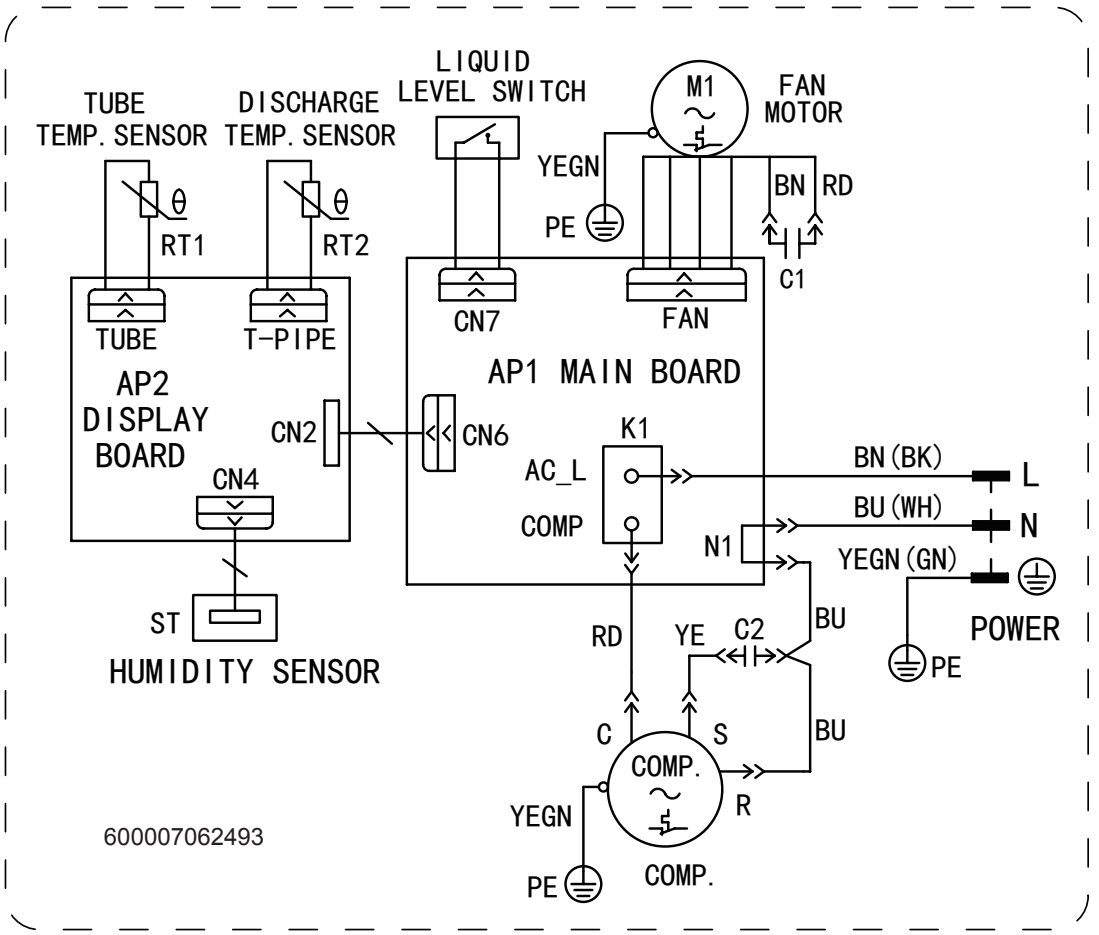
5. Electrical Part

5.1 Wiring Diagram

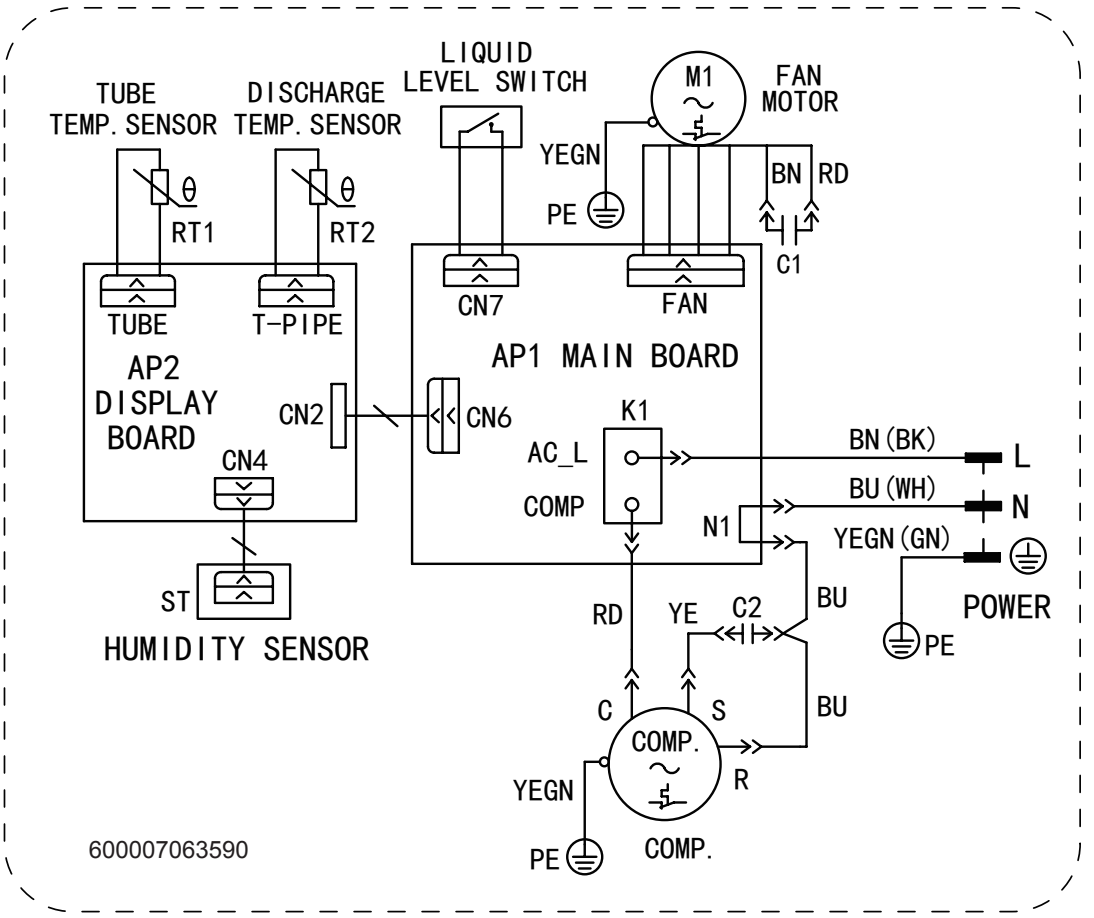
●Instruction

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

GDN20AZ-K5EBA2A GDN20AZ-K5EBA1B GDN40BA-K5EBA2A



GDN30BB-K5EBA2A

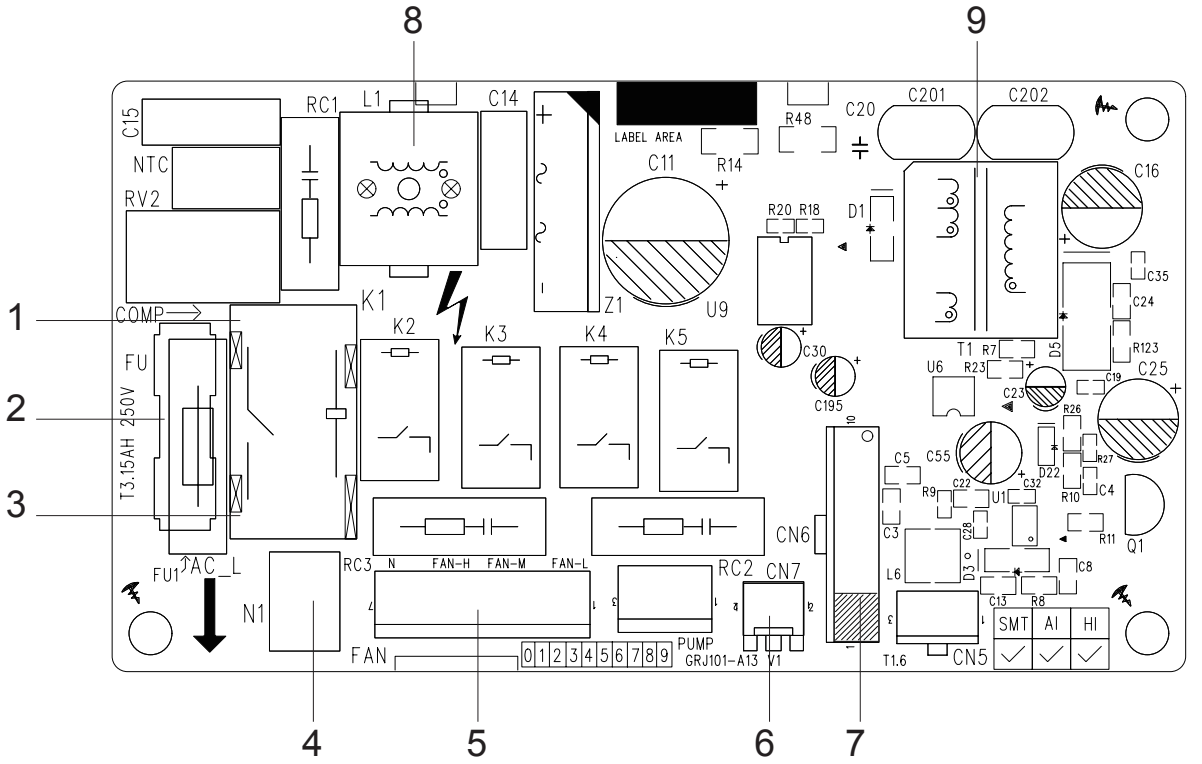


These circuit diagrames are subject to change without notice ,please refer to the one supplied with the unit.

5.2 PCB Printed Diagram

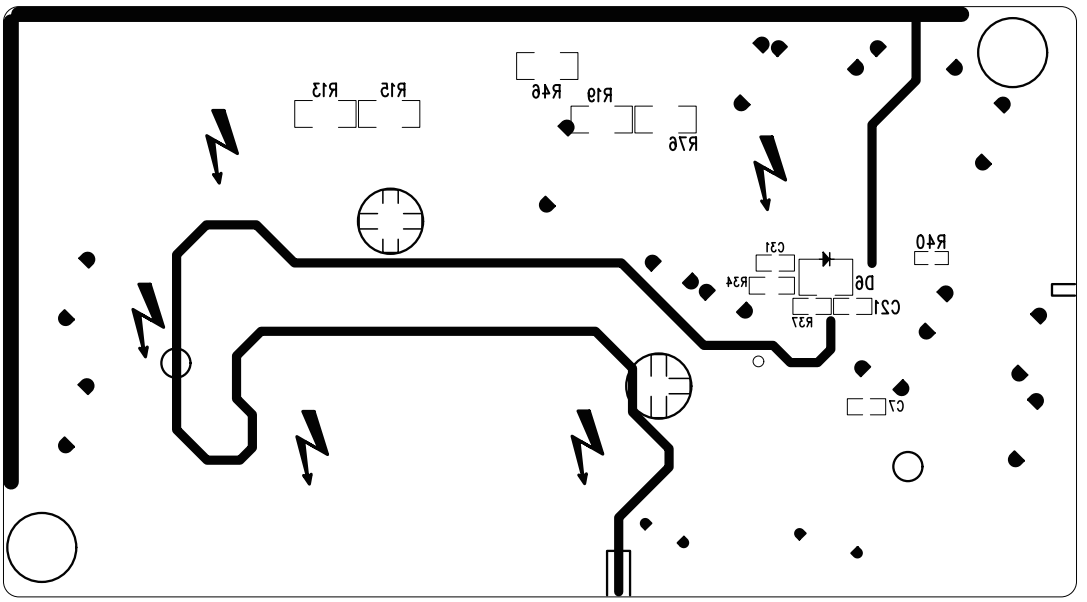
Silk Screen on Main Board

- **Top view**



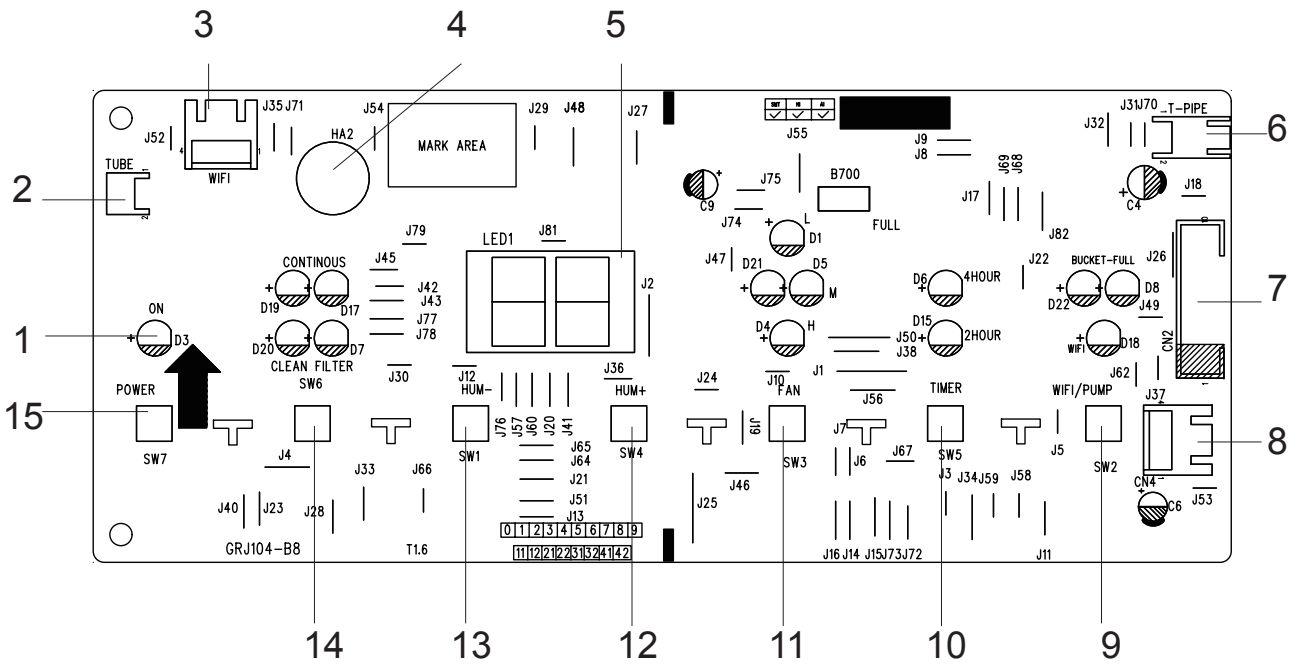
1	Wiring terminal of compressor	2	Fuse	3	Live wire terminal
4	Neutral wire terminal	5	Needle stand for fan	6	Water level inspection interface
7	Interface of display board	8	Common mode inductance	9	High Frequency Transformer

- **Bottom view**



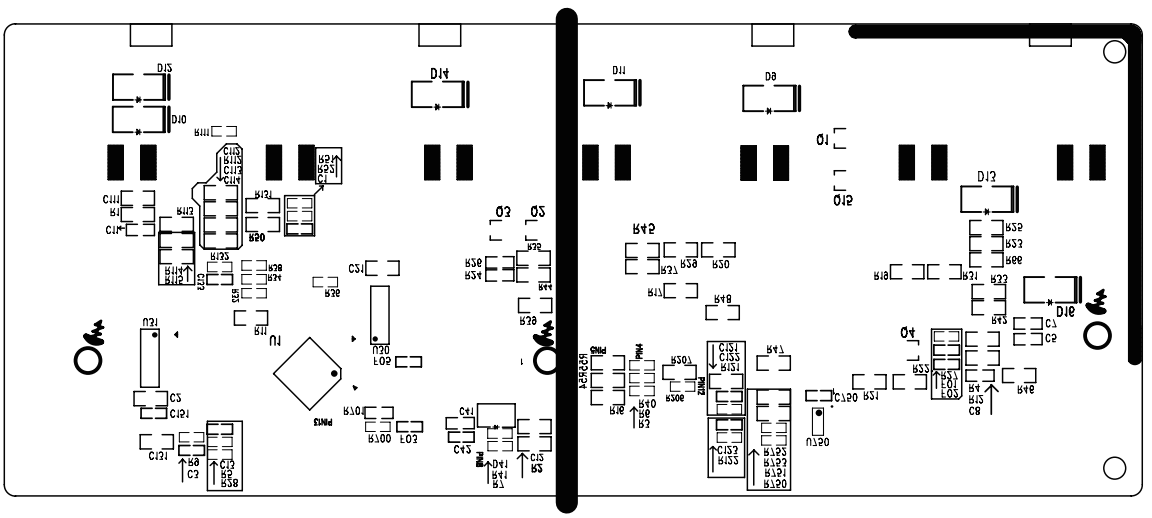
Silk Screen on Display Board

- **Top view**



1	The white luminous diode	2	Needle stand of tube temperature sensor	3	needle stand of wifi board
4	buzzer	5	dual-8 dligital display tube	6	Needle stand of pipe temperature sensor
7	Connection wire of main board	8	Needle stand of humidity and ambient temperature sensor	9	wifi/pump button
10	Timer button	11	FAN speed button	12	Humidity "+" button
13	Humidity "-" button	14	Mode button	15	ON/OFF button

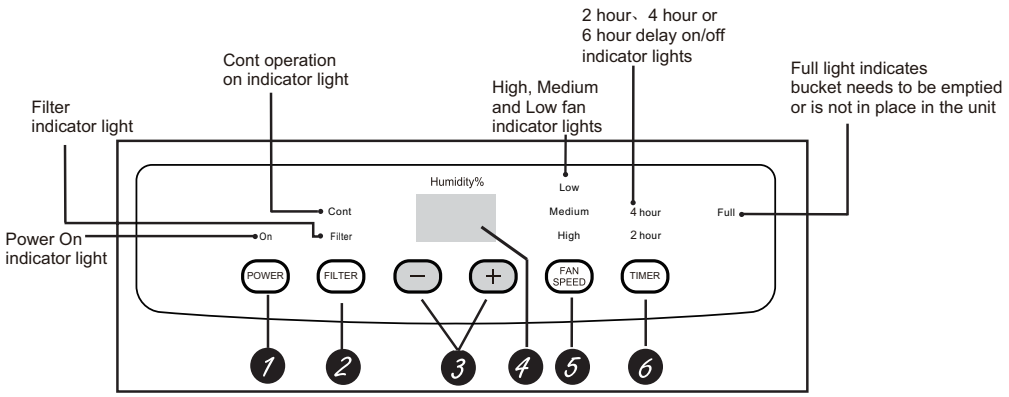
- **Bottom view**



6.Function and Control

6.1 Control Panel Instruction

Operation Method



NOTICE:

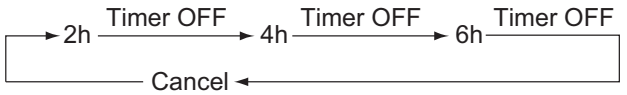
Water bucket must be correctly installed for the dehumidifier to operate.
Do not remove the bucket while unit is in operation.
If you want to use drain hose to drain water away, please install the hose according to section "Drainage option".
Each time pressing the effective button on the control panel will give out a "beep" sound.
When power is connected, power indicator on the control panel will be on and dehumidifier gives out a “beep” sound simultaneously.

Basic Functions of the Buttons

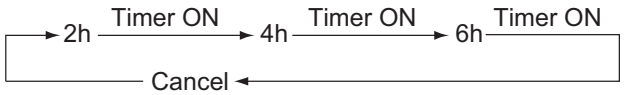
1.POWER Button
Press to turn the dehumidifier on and off.
2.FILTER Button
After 250 hours of operation, the Filter indicator light will glow to remind you to clean the filter. Remove the filter and clean it.
Press to rest to turn off the Filter light.See the.Clean and Maintenance.
3.-/+ Button
The humidity level can be set within a range of 80% RH (Relative Humidity) to. 35% RH (Relative Humidity) in 5% reduce or at continuous operation.To set the unit for continuous operation, press the - pad until the screen reads CO.
NOTE: If Cont 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.
4.Display
Shows the set % humidity level while setting, then shows the actual (± 5% accuracy) room % humidity level.
5.FAN Speed Button
Controls the fan speed.
Press to select either High, Medium 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 Medium or Low.

6.TIMER Button

Under ON status, press this button to select “Timer OFF” in 2h, 4h, 6h and cancel timer circularly in sequence.



Under OFF status, press this button to select “Timer ON” in 2h, 4h, 6h and cancel timer circularly in sequence.



When there is no setting or cancelling timer, the indicator of “2h” and “4h” will be off;
when setting timer on/off in “2h” or “4h”, the corresponding timer indicator will be on.
When setting timer on/off in “6h”, the indicators of both times will be on at the same time.

Other Instructions

1.Full Light

Glows when the bucket is ready to be emptied,or when the bucket is removed or not replaced in the proper position.

2.Alarm

If the bucket is full or missing for more than three minutes, an alarm will sound for about 10 seconds to remind you to empty and replace the bucket.

3.Auto Shut Off

The Water Level Control Switch shuts off the dehumidifier when the bucket is full, or when the bucket is removed or not replaced in the proper position.

4.Auto Defrost

When frost builds up on the evaporator coils,the compressor will cycle off and the fan will continue to run until the frost disappears.

5.Power Outage

In the case of a power outage or interruption,the unit will automatically restart,in the settings last used, after the power is restored.

6.2 Introduction of Basic Mode Function

1. Baisc control function: drying

1) Dry conditions and process: under operation status,

a. When set humifity≤ambient humidity-5%, compressor and fan will operate.

b. When set humidity≥ambient humidity+5%, compressor stop operation and fan will stop operation after 3min.

c. When ambient humidity-5%＜set humidity＜ambient humidity+5%, when compressor is operating, and it will operation with condition a; when compressor stops operation, it will operate with condition b. If it's under this condition when the unit is turned on, the compressor is at off status and fan will stop operation after 3min delay.

2) Humidity Range

a. 5% is one step, 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) Working temperature range

a. Detect the unit after energization, when 2℃(36℉) ≤Tamb.≤ 45℃(113℉), the unit operates normally; when Tamb. ＜2℃ (36℉) or Tamb.> 45℃(113℉), the compressor stops, and the fan will operates with the detected temperature humidity;

b. During operation, when Tamb. ＜2℃(36℉) or Tamb.> 45℃(113℉), the compressor stops, and the fan will operates with the detected temperature humidity; when 2℃(36℉) ≤ Tamb. ≤45℃ (113℉), the compressor will be started up.

(2) Compressor Protection

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

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

(3) Detection for temperature sensor malfunction

a. When the unit is energized, it is detected that the ambient temperature sensor is open or short circuit for 5s, compressor and fan stop operation. LED indicator is off, buttons are invalid, and the nixie tube displays "F1".

b. It is detected that the tube temperature sensor is open or short circuit for 5s, compressor and fan stop operation. LED indicator is off, buttons are invalid, and the nixie tube displays "F2".

c. If these two temperature sensor malfunction are detected, nixie tube will display "F1" and "F2" in turn to remind customer of repairing.

(4) Water overflow protection (off switch)

a. Under operation status, if there's water overflow protection or the water tank hasn't been installed well, compressor stop operation and the fan also stop operation after the fan operates continously for 3min. If water blow protection occurred for 3min, the buzzer will stop after it gives out a beep for 10s.Indicator of water overflow 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 water overflow 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.

b. When the unit is off, water overflow protection is occurred, water blow indicator blinks, compressor and fan stop operation, and all the buttons are invalid except on/off buttons. When the unit is on, water blow indicator blinks continously, buzzer will not give out a beep, compressor and fan stop operation.

3. Other Functions

(1) Power-off memory

Upon power failure, the unit will automatically start to operate according to memory content after power recovery.

(2) Nixie tube display

a. During operation of the unit, it will display current humidity. Set humidity will be adjusted by "+" or " - " button. It will resume to display current humidity after set humidity has been set for 5s.

(3) Front panel button

On/off button : turn on/off the unit

Timer button: use for timer setting

“+”button : Adjust humidity

“-”button: Adjust humidity

Fan speed button: adjust fan speed

Filter button: adjust filter function

(4) LED indicator

Cont indicator: when continous himidity is set, “Cont” indicator is on, and the nixie tube displays “CO”;

Power indicator: When the unit is energized, it is on after Press the POWER button to turn the dehumidifier on

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

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

6H timer indicator: both the 2H timer indicator and the 4H timer indicator are on after setting 6H timer;

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

Middle fan speed indicator: the indicator is on after the fan is set at middle fan speed;

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

Filter cleaning indicator: the indicator is on when the operation time of fan reaches to 250h totally.

Water overflow protection indicator: the indicator blinks if water overflow protection is occurred.

(5) Timer control

2h or 4h or 6h timer can be set. Timer off can be set under on status,Timer on can be set under off status,the buzzer will not give out a beep after timer setting reaches.

(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) Filter alarming function

a. After the fan operates for 250h totally, the filter indicator is on for reminding customer to clean filter.

b. When the unit is off, the filter indicator is off; the filter time can not be cleared when the unit is off.

6.3 Drainage Option

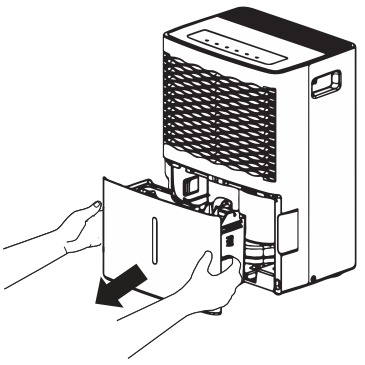
NOTICE:

● 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 .

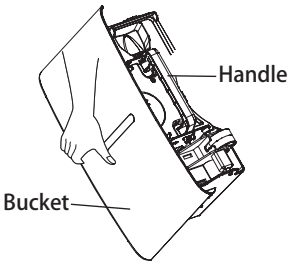
● Do not use the hose if using water bucket to collect water. When the hose is connected, water will be drained out through it instead of into the bucket.

Option 1 Emptying Manually

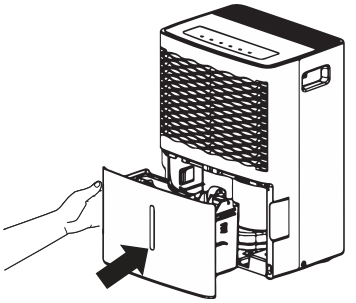
1. Hold the handles on both sides of the water bucket and pull it out following the arrow direction. (Attention: Pull out the bucket carefully in case the water may spill out from the bucket and onto the floor.)



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.



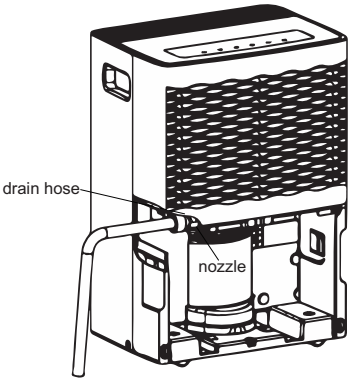
Option 2 Gravity Drain Hose

1.Hose is not provided, so user shall prepare it in advance.

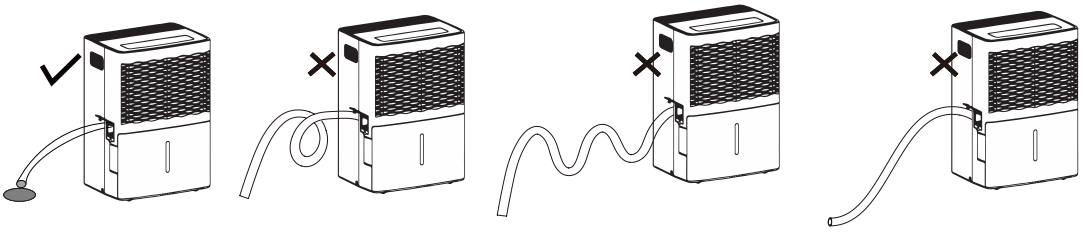
[Size: The hose thread should have an outer diameter of 11/16 inches (1.0625 inches or 27.0mm), and a pitch of 11.5 TPI.]

2. Remove bucket from the unit as instructed.

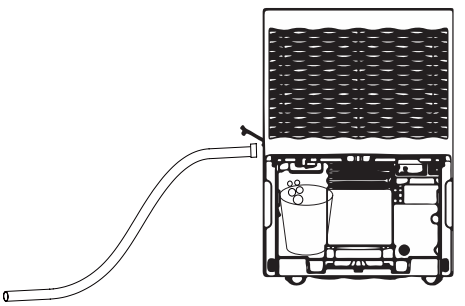
3. Thread the drain hose onto the nozzle and make sure it's securely locked.



4.Replace the bucket. Make sure the drain hose goes through the bucket's drain hole and is placed downward. Lead the hose to the floor drain and then cove the hole with a lid. Note that drain hose should not be pressed, otherwise water can not be drained out.



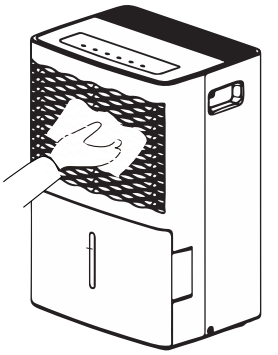
NOTICE :When you want to take off the drain house,prepare a receptacle to collect water from the nozzle.



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. Water Bucket

Every few weeks, clean the bucket to prevent growth of mold, mildew and bacteria. Use soft brush to clean the bucket and then rinse it.
To remove:
(1) Direct the rotor shaft of handle to the hole of buckle plate.Pull the bucket plate at the handle side by following the arrow direction. Remove the handle.(shown in Fig.1a)
(2) Press down all buckles around the water bucket. Lift up the drain lid.
(shown in Fig.2a)
Note:5 clasps marked with line on the right figure.

GDN20AZ-K5EBA2A GDN20AZ-K5EBA1B GDN30BB-K5EBA2A

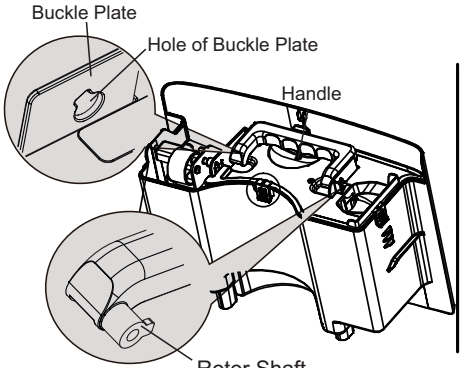


Fig. 1a

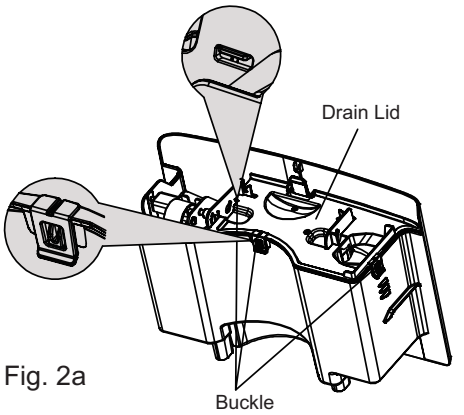


Fig. 2a

GDN40BA-K5EBA2A

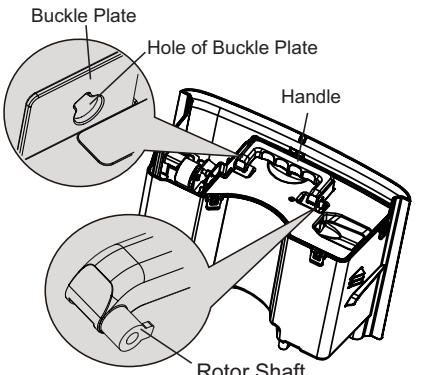


Fig. 1a

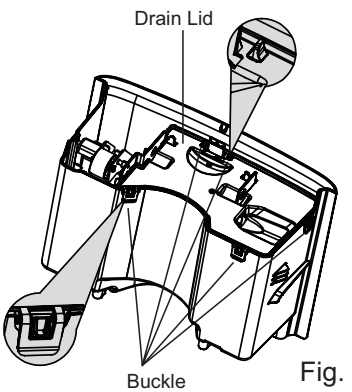
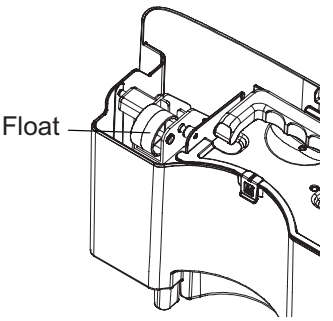


Fig. 2a

Note: Actual product may be different from above graphics, please refer to actual product.

(3) After cleaning, replace the drain lid and handle and make sure the float of water bucket is placed properly. The side with foam plastic should be beneath the drain lid. Do not remove the foam plastic on the float

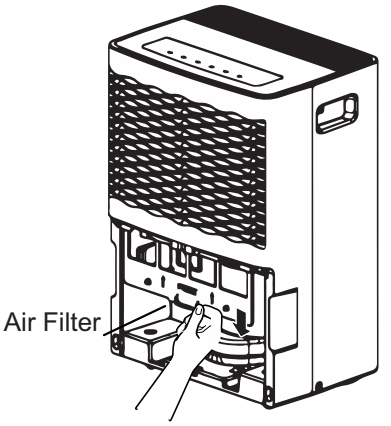


3. Air Filter

Dehumidifier will remind you to clean the air filter when it has been operating for 250 hours. If it is used in dusty places, clean the air filter more often.

To remove: Remove the bucket. Grasp the filter edge, and pull it straight down and out.

To clean: Clean the filter in warm, soapy water. Rinse it and let the filter dry before replacing it.



⚠ 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.

Check Before Use-season

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

Care After Use-season

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

Long-time Storage

If you won't 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.
- Unplug the dehumidifier and pack the power cord
- Clean the unit and wrap it well to prevent the gathering of dust.

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; dont replace it with a cooper 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.

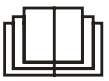
When refrigerant leaks or requires discharge during installation, maintenance, or disassembly, it should be handled by certified professionals or otherwise in compliance with local laws and regulations.

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.

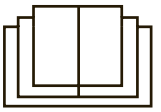

Before repair the appliance, read the service manual first.

The Refrigerant

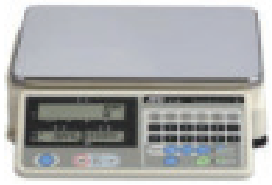
- To realize the function of the air conditioner unit, a special refrigerant circulates in the system. The used refrigerant is the fluoride R290, which is specially cleaned. The refrigerant is flammable and inodorous. Furthermore, it can leads to explosion under certain conditions.
- Compared to common refrigerants, R290 is a nonpolluting refrigerant with no harm to the ozonosphere. 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 m^2.
- 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

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

8.Maintenance

8.1 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 irrelated 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(CO_2 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".

8.2 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 resolvent 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.		

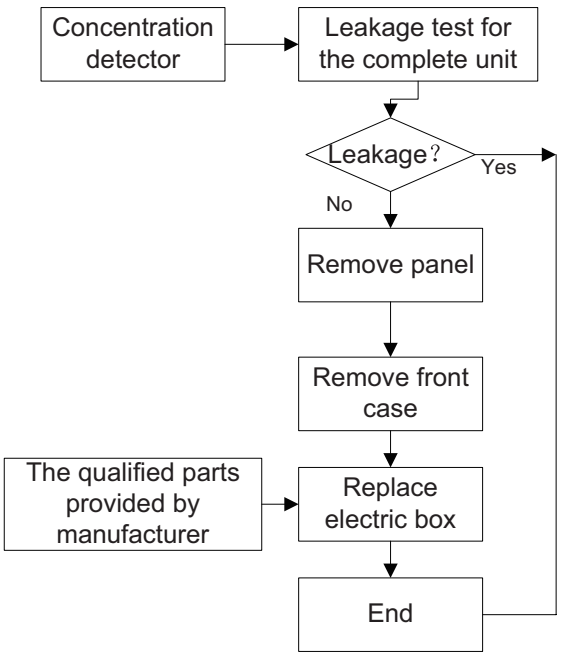
8.3 Maintenance Cautions

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 of 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 of 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 suppler.

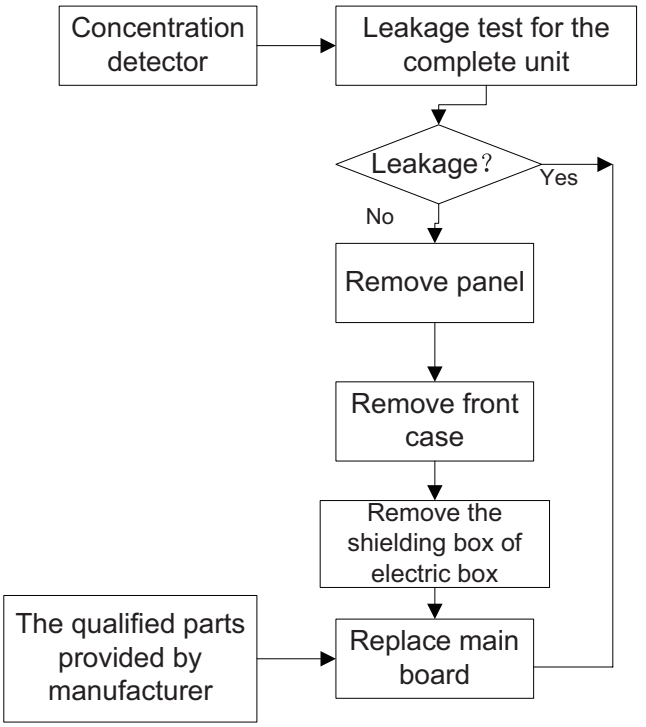
(1).Replace electric box



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

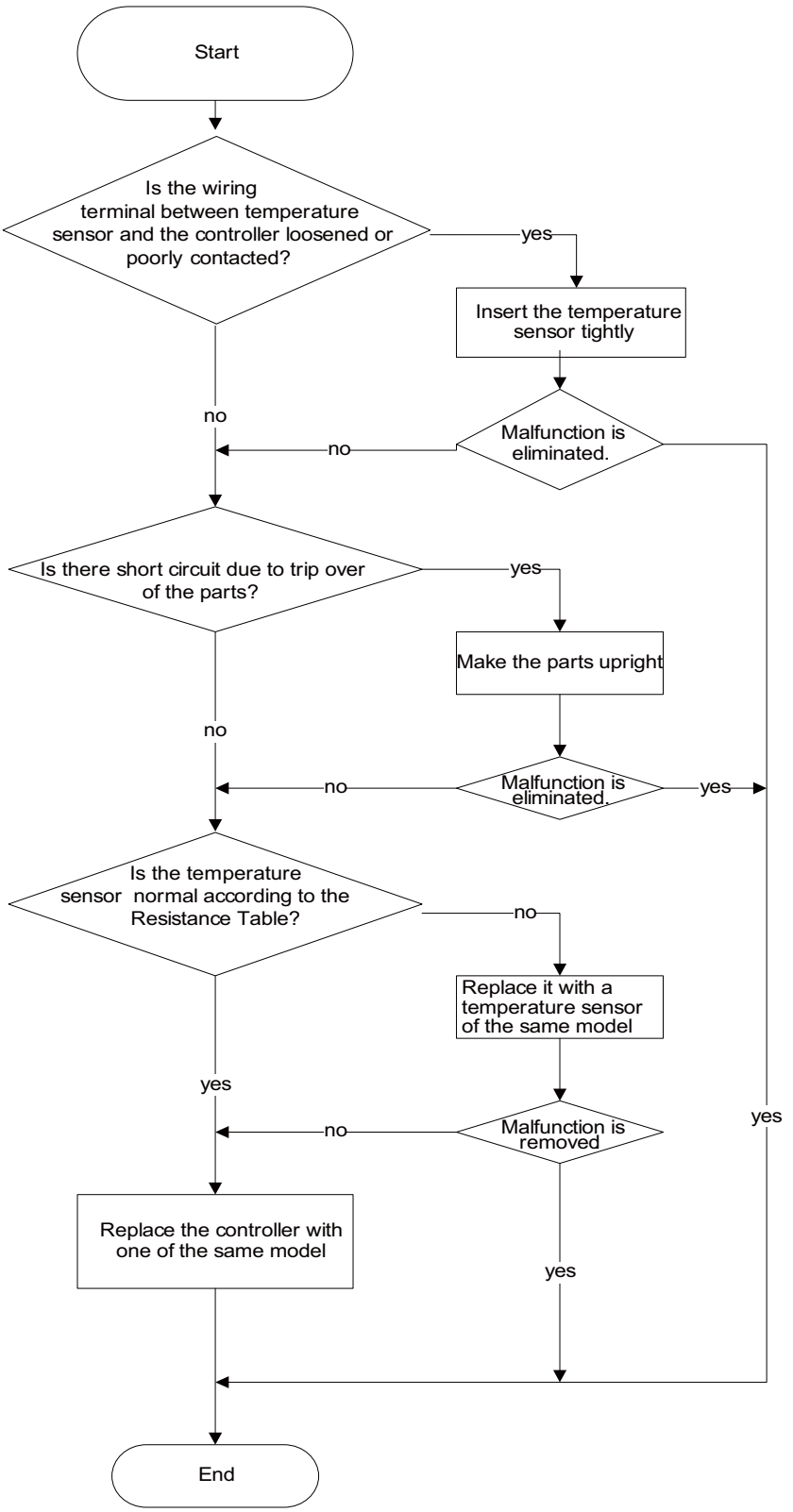


8.4 Error Code

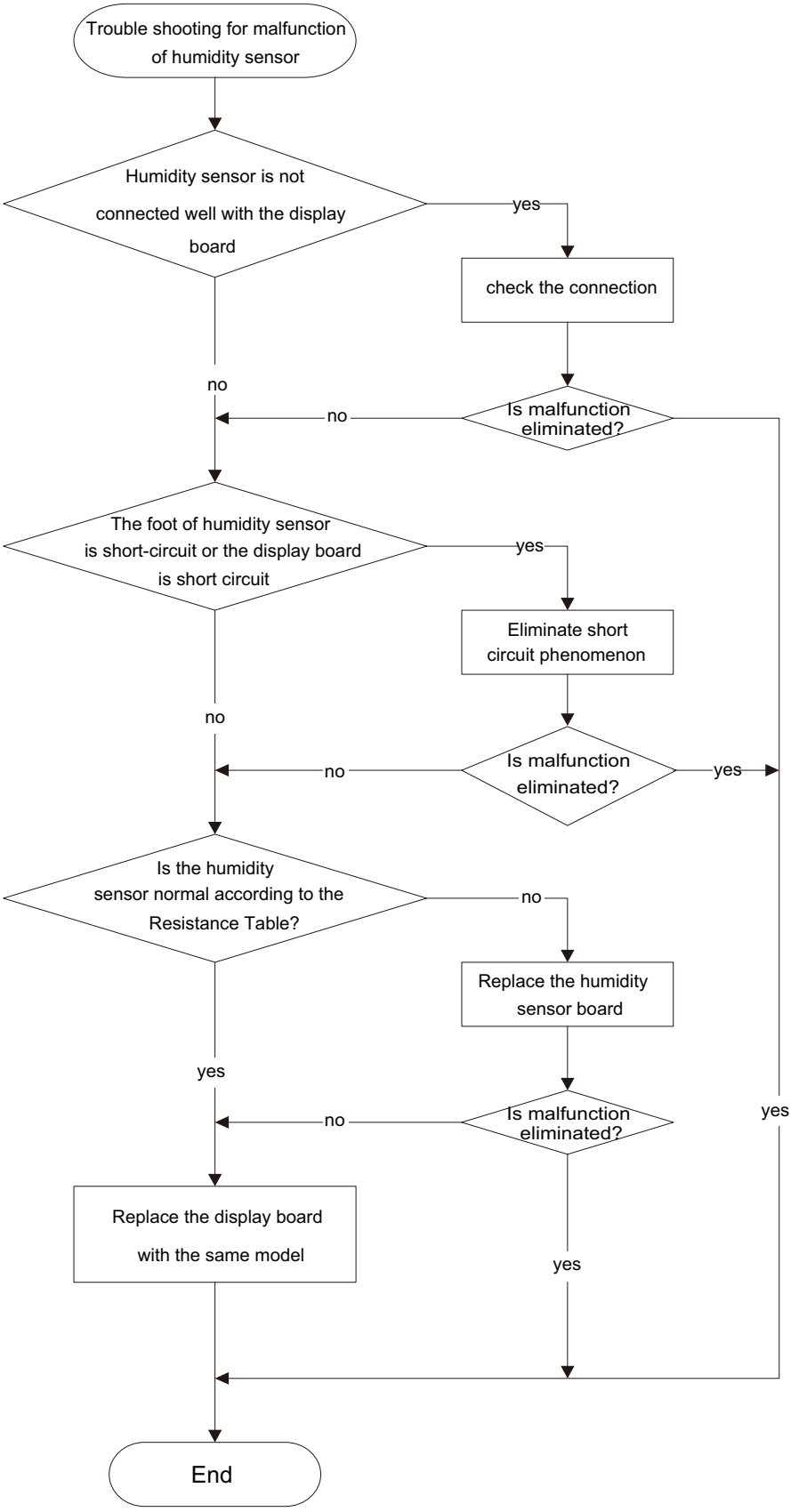
No.	Malfunction Name	Nixie Tube Display	Unit Status	Possible Causes
1	Ambient Temperature Sensor Malfunction	F1	The compressor and the fan motor stop; the buttons are invalid	1. Ambient temperature sensor is loosen or is poorly connected with the terminal of display board. 2. Some element of display board may have been put upside down and cause short circuit. 3. Ambient temperature sensor is damaged(Please refer to Checking Table for Temperature Sensor Resistance). 4. Display board is damaged.
2	Tube Temperature Sensor Malfunction	F2		1. Temperature sensor on the evaporator is loosen or is poorly connected with the terminal of display board. 2. Some element of display board may have been put upside down and cause short circuit. 3. Temperature sensor on the evaporator is damaged (Please refer to Checking Table for Temperature Sensor Resistance). 4. Display board is damaged.
3	Discharge Temperature Sensor Malfunction	F5		1. Temperature sensor on the evaporator is loosen or is poorly connected with the terminal of display board. 2. Some element of display board may have been put upside down and cause short circuit. 3. Discharge temperature sensor is damaged (Please refer to Checking Table for Temperature Sensor Resistance). 4. Display board is damaged.
4	Humidity Sensor Malfunction	L1		1. Humidity sensor is short-circuited. 2. Humidity sensor is broken; 3. Display board is broken.
5	Insufficient Refrigerant protection	F0	The compressor stops;the fan motor stops after 30 seconds	1. Refrigerant is leaking. 2. System is blocked
6	High temperature overload protection	H3		1. Ambient operation condition is bad; 2. The evaporator and condenser are blocked with filth. 3. The system is abnormal.
7	HighDischarge temperature Protection	E4		1. Abnormal system (e.g.: blockage, etc) 2. Abnormal rotation speed of the motor 3. Abnormal air intake 4. System is normal, but the compressor discharge temperature sensor is abnormal or poorly contacted.

8.5 Malfunction Detection Flowchart

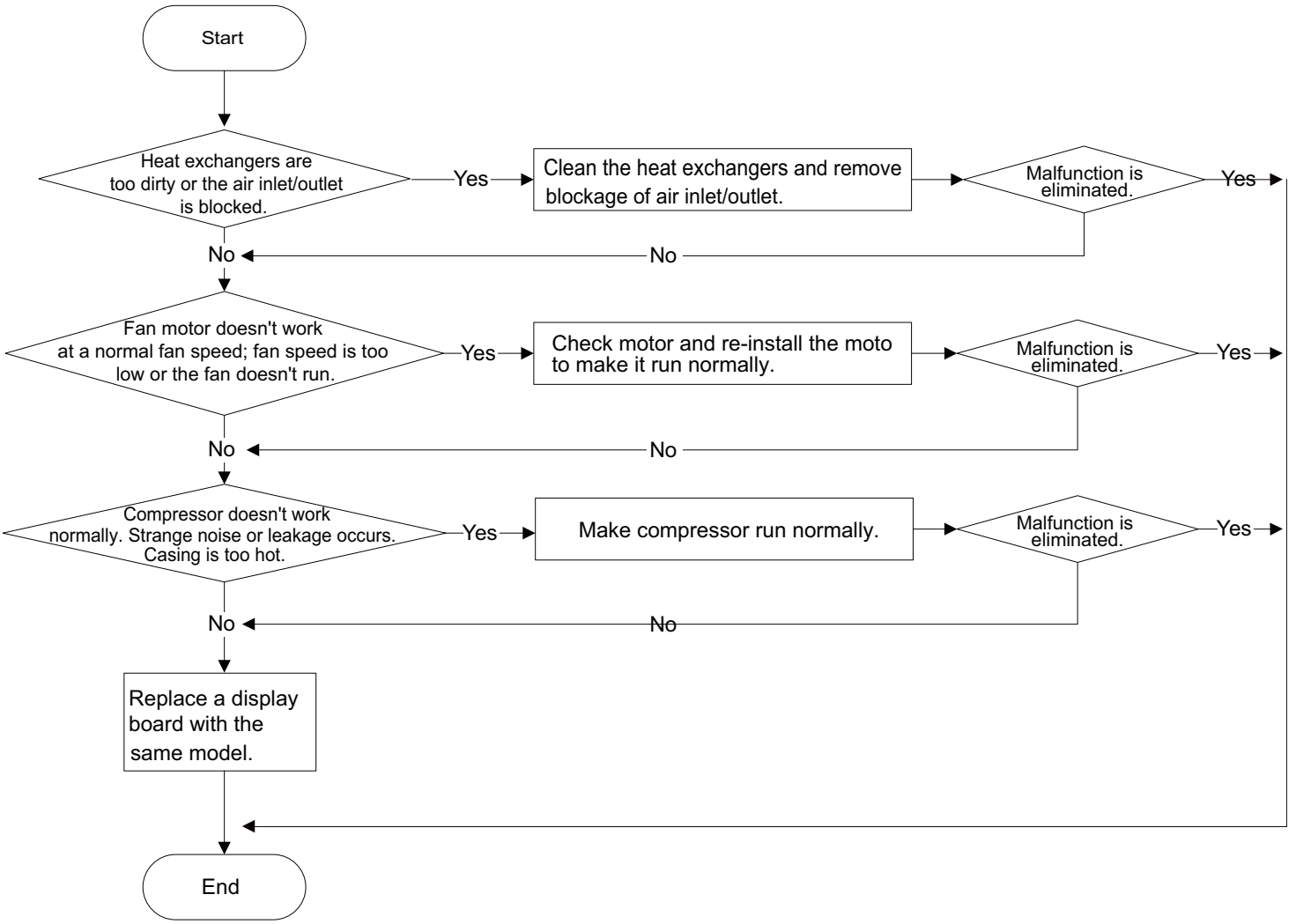
1. Malfunction of temperature sensor F1, F2,F5



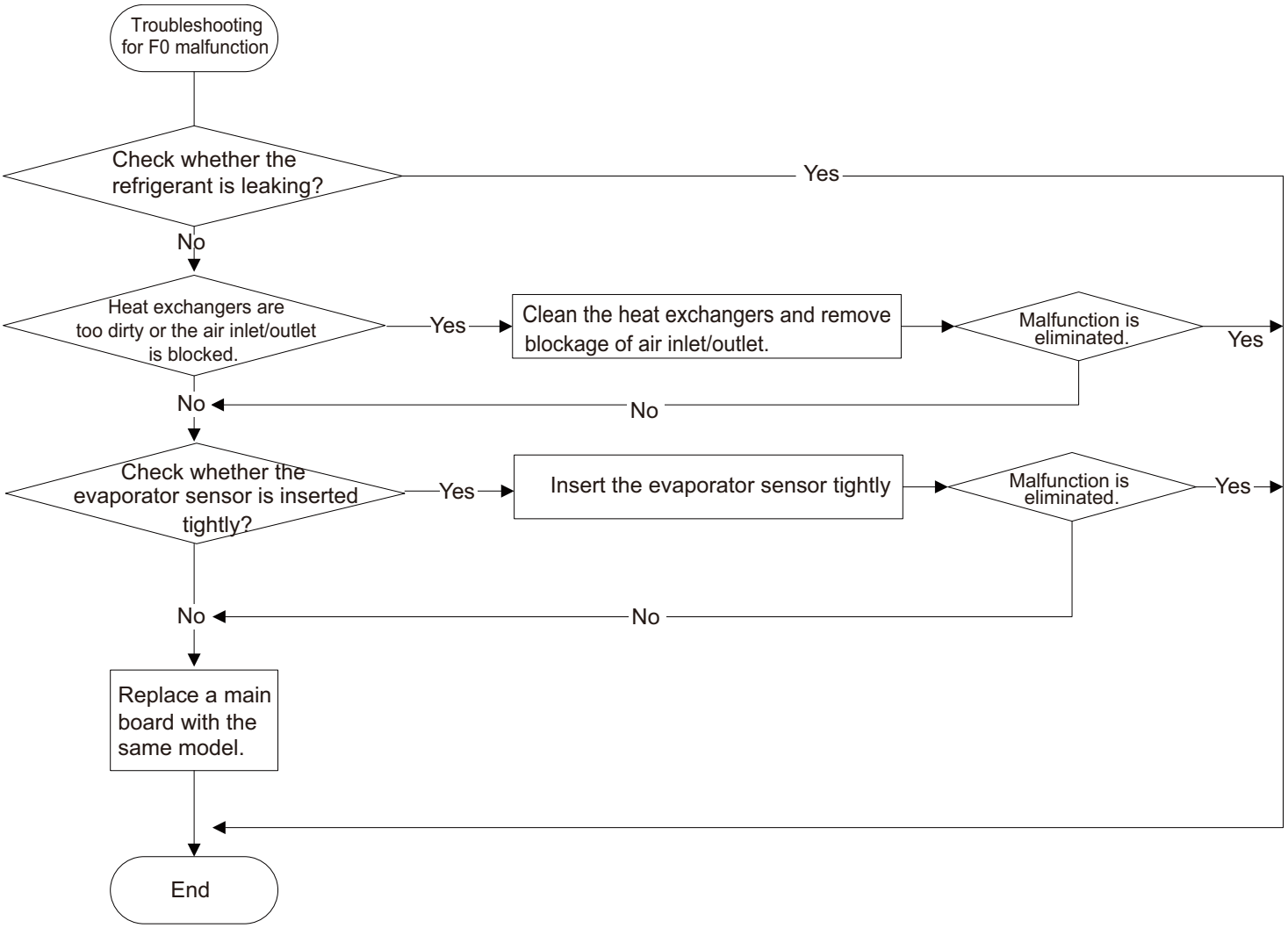
2.Malfunction of humidity sensor L1



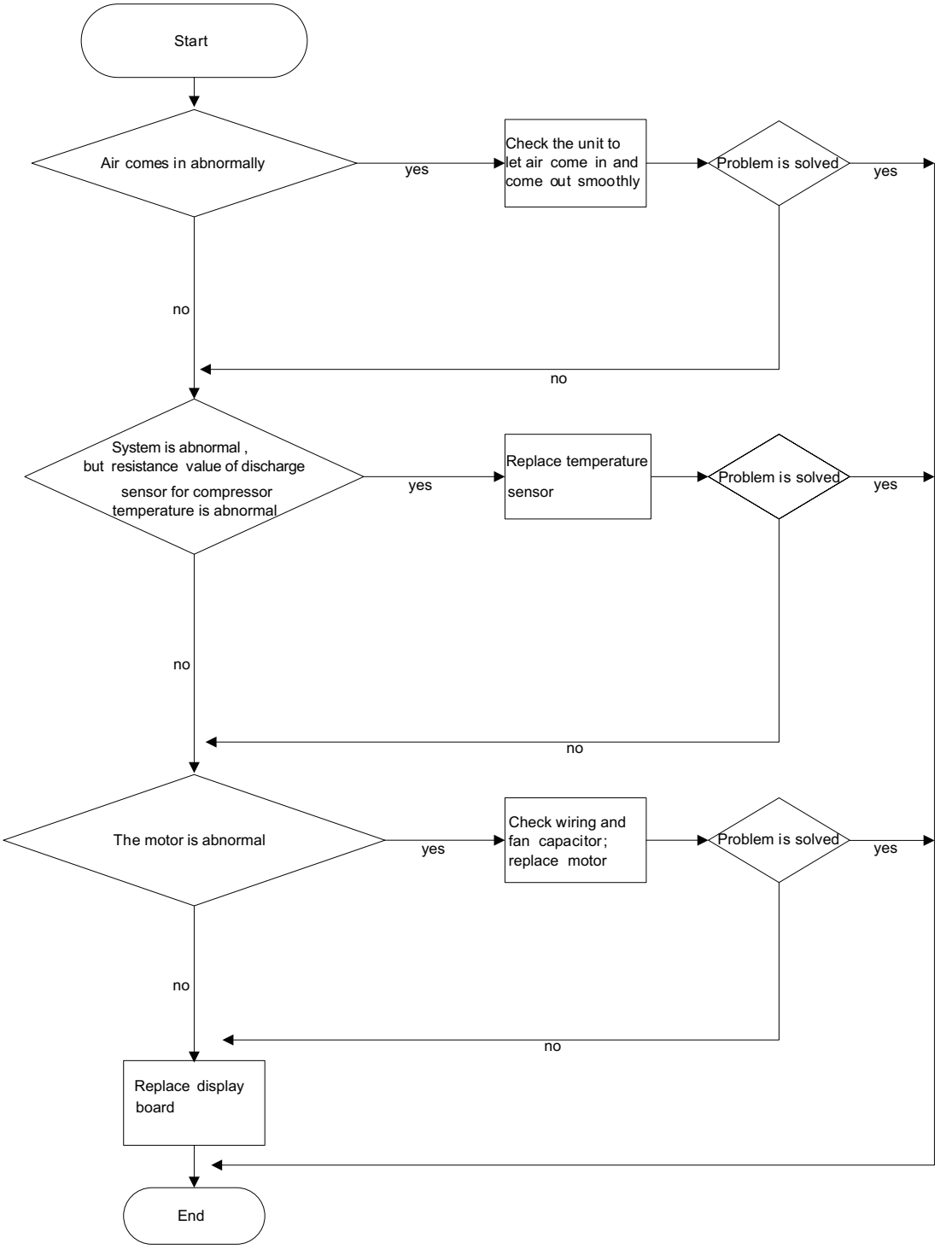
3. High-temperature overload protection H3



4. Malfunction of Insufficient Refrigerant protection F0



5. High discharge temperature protection of compressor (E4)



8.6 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 isnt bright and the buzzer can't give out sound	Confirm whether its 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 its blocked	Clean the filter
Placing position of water tank is improper.	Check whether therere obstacles around the dehumidifier blocked the air outlet.	Make sure therere 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 isnt 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

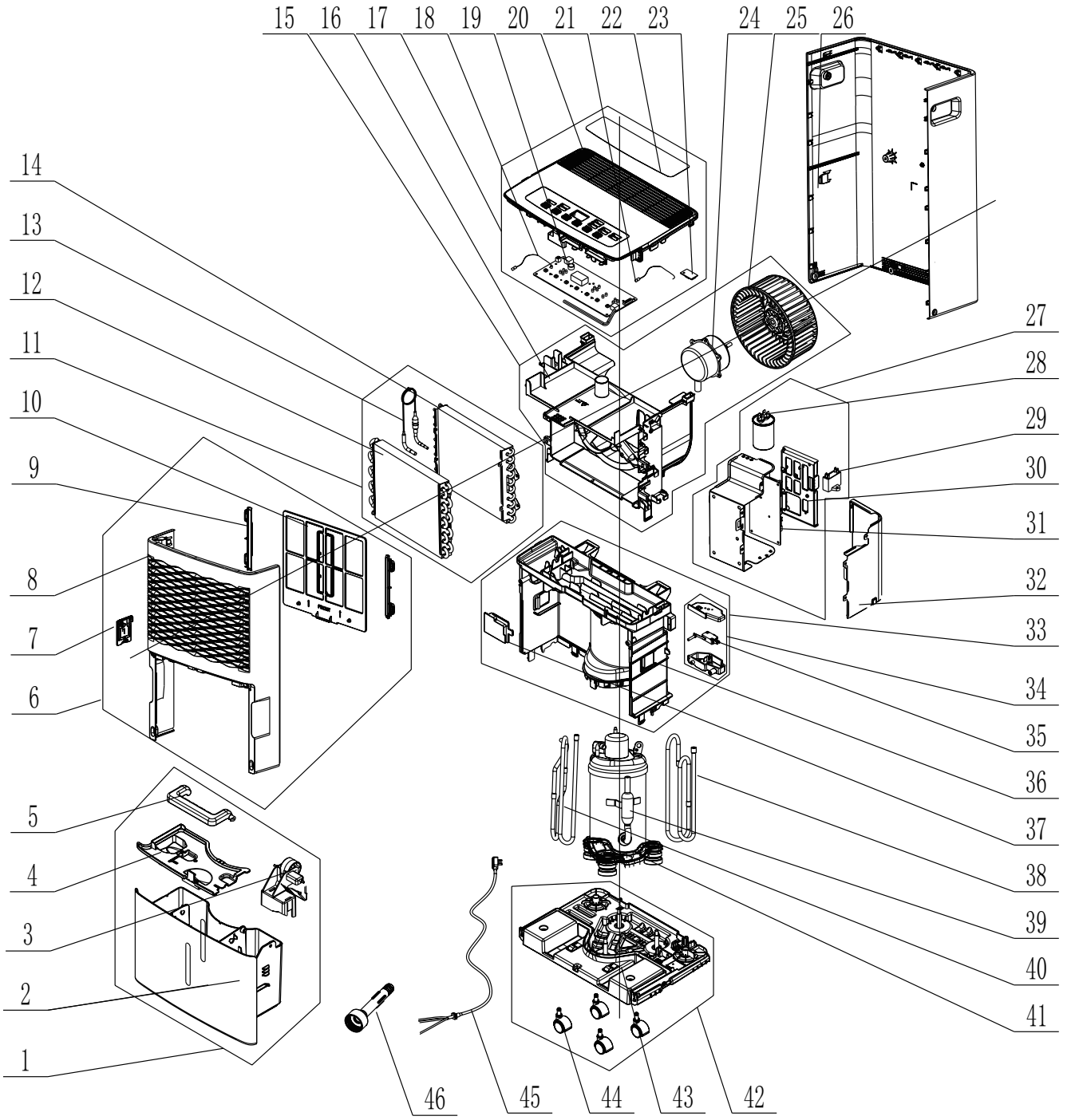
Possible causes	Discriminating method (dehumidifier status)	Troubleshooting
Drainage pipe hasnt been installed correctly.	Water is coming out from indoors.	Eliminate the blocking objects inside the drainage channel.

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.

9.Exploded View and Parts List

GDN20AZ-K5EBA2A GDN20AZ-K5EBA1B

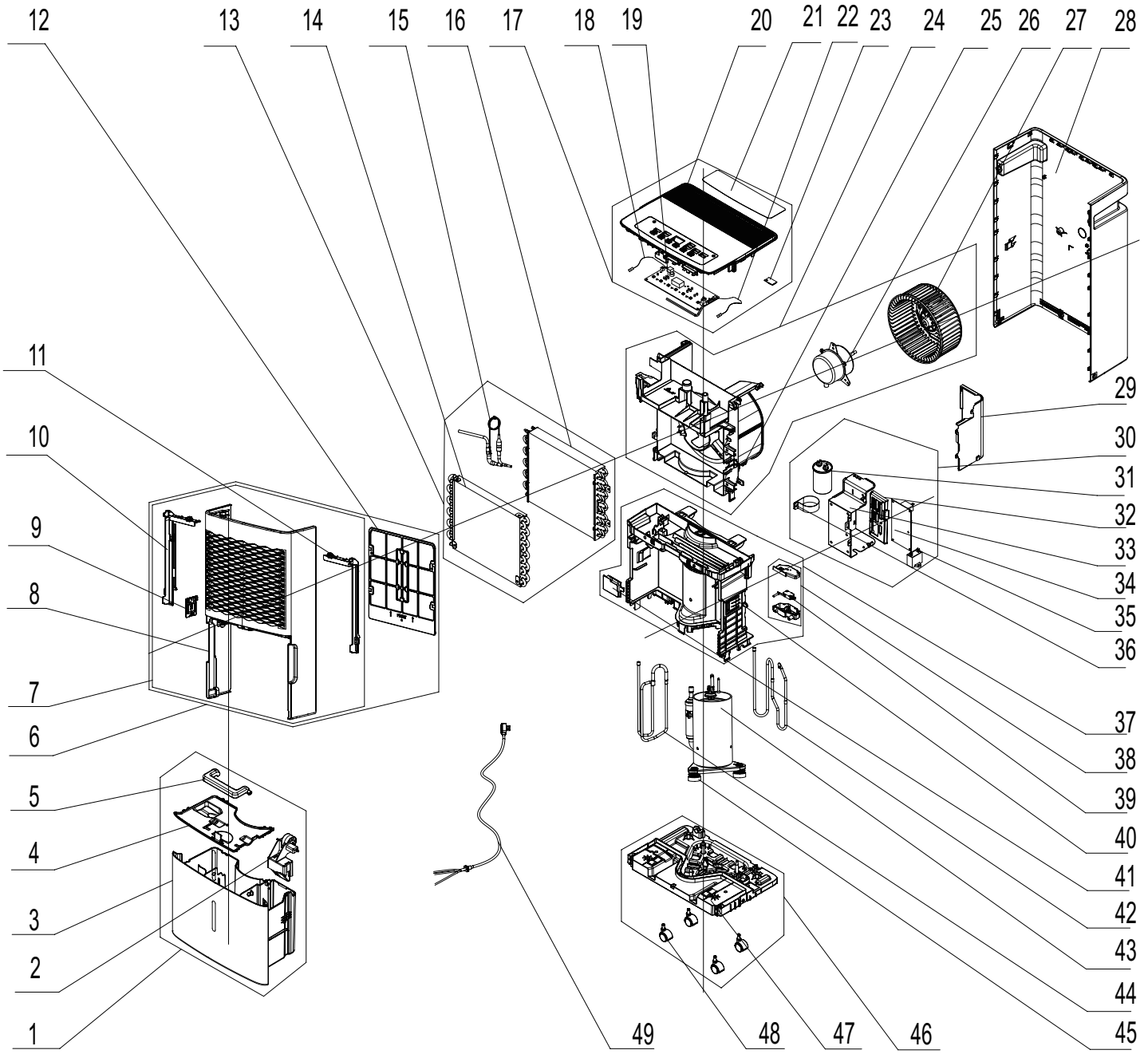


The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code		Qty
		GDN20AZ-K5EBA2A	GDN20AZ-K5EBA1B	
	Product code	CK051037400	CK051037900	
1	Water Tank Assy	015005000004	015005000004	1
2	Water Tank Sub-Assy	219001000004	219001000004	1
3	Float meter sub-assy	2611652105	2611652105	1
4	Water Tank Cover	200104000005	200104000005	1
5	Handle	2623601006	2623601006	1
6	Front Case Assy	00004200000701	000042060005	1
7	Cover Plate(Keep Draining)	20007600000301	20007600000301	1
8	Front Case	20008300001101S	20008300000201S	1
9	Guide Strip	20024000000701	/	2
10	Filter Sub-Assy	11126032	11126032	1
11	Heat-exchange Equipment	011004060023P	011004060023P	1
12	Evaporator Sub-Assy	01036123P	01036123P	1
13	Capillary Sub-assy	030006060588	030006060588	1
14	Condenser Sub-Assy	01136259P	01136259P	1
15	Air Flue Assy	000011060065	000011060065	1
16	Diversion Circle	20015000000401	20015000000401	1
17	Top Cover Assy	000097060192	000097060192	1
18	Temperature Sensor	39000077	39000077	1
19	Display Board	300001060525	300001060525	1
20	Coping	20010600000502	20010600000502	1
21	Temperature Sensor	39000077	39000077	1
22	Membrane	600006060147	600006060147	1
23	Detecting Plate	300018000034	300018000034	1
24	Fan Motor	1501605708	1501605708	1
25	Centrifugal Fan	10300300000401	10300300000401	1
26	Rear Case	20014100000102	20014100000102	1
27	Electric Box Assy	100002066726	100002066726	1
28	Capacitor CBB65	3300002237	3300002237	1
29	Capacitor CBB61	3301074716	3301074716	1
30	Fixed Support (Mainboard)	200115060002	200115060002	1
31	Main Board	300002061003	300002061003	1
32	Electric Box Cover	012020000057A	012020000057A	1
33	Water Tray Assy	000069060190	000069060190	1
34	Liquid Level Switch Sub-assy	00019400010	00019400010	1
35	Inching Switch	45010095	45010095	1
36	Water Tray	20006300000801	20006300000801	1
37	Baffle Plate (Water tray)	20001200000803	20001200000803	1
38	Inhalation Tube Sub-assy	030010060719	030010060719	1
39	Compressor and Fittings	00106546	00106546	1
40	Discharge Tube Sub-assy	030013060884	030013060884	1
41	Compressor Gasket	76716092	76716092	3
42	Chassis Assy	209058060187	209058060187	1
43	Chassis Sub-assy	20902000000403	20902000000403	1
44	Castor	24236017	24236017	4
45	Power Cord	4002028644	4002028644	1
46	Drainage Joint Sub-assy	2611608102	2611608102	1

The data above are subject to change without notice.

GDN40BA-K5EBA2A

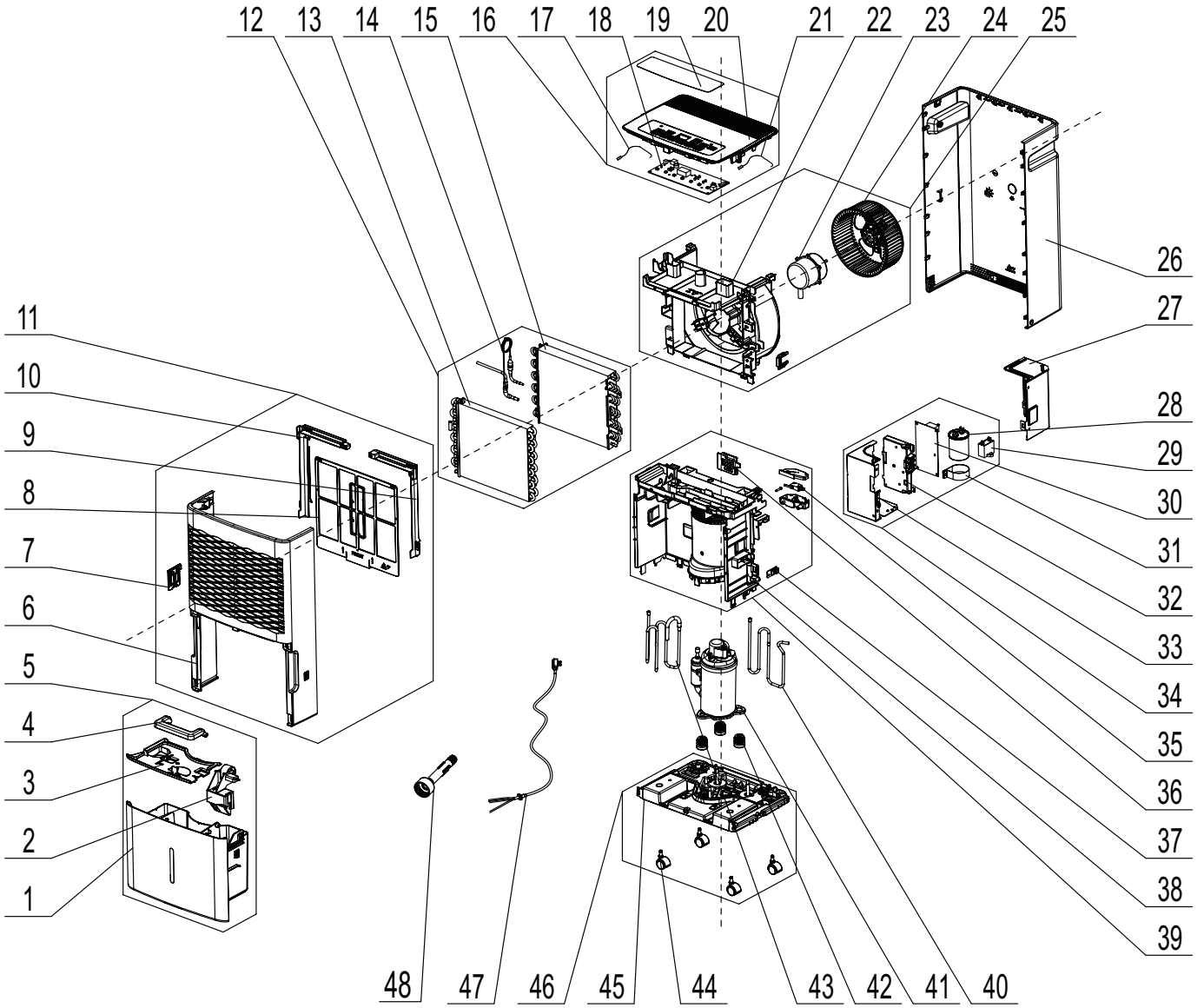


The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code	Qty
		GDN40BA-K5EBA2A	
	Product code	CK051040600	
1	Water Tank Assy	01500500000501	1
2	Float meter sub-assy	2611652105	1
3	Water Tank Sub-Assy	21900100000501	1
4	Water Tank Cover	20010400000401	1
5	Handle	2623601006	1
6	Front Case Assy	00004200000802	1
7	Shield Sub-assy	20903900000702	1
8	Front Case	20008300001002S	1
9	Cover Plate(Keep Draining)	20007600000404	1
10	Guide Strip	20024000000502	1
11	Guide Strip	20024000000602	1
12	Filter Sub-Assy	111001000033	1
13	Heat-exchange Equipment	011004060022P	1
14	Evaporator Sub-Assy	01036126P	1
15	Capillary Sub-assy	030006060587	1
16	Condenser Sub-Assy	01136260P	1
17	Top Cover Assy	000097060287	1
18	Temperature Sensor	390000595	1
19	Display Board	300001060524	1
20	Coping	20010600000608	1
21	Membrane	600006060192	1
22	Temperature Sensor	39000081	1
23	Detecting Plate	300018000034	1
24	Air Flue Assy	000011060064	1
25	Diversion Circle	20015006001301	1
26	Fan Motor	1501603811	1
27	Centrifugal Fan	10300300000701	1
28	Rear Case	20014106000603	1
29	Electric Box Cover	012020000057A	1
30	Electric Box Assy	100002066725	1
31	Capacitor CBB65	3300002241	1
32	fixed support (mainboard)	200115060002	1
33	Electric Box Sub-Assy	017007061164	1
34	Main Board	300002061003	1
35	Capacitor CBB61	3301074701	1
36	Capacitor Clamp	02141381	1
37	Water Tray Assy	000069060189	1
38	Liquid Level Switch Sub-assy	00019400010	1
39	Inching Switch	45010095	1
40	Water Tray	20006300000903	1
41	Baffle Plate (Water tray)	20001200000803	1
42	Discharge Tube Sub-assy	030013060883	1
43	Compressor and Fittings	009001060359	1
44	Inhalation Tube Sub-assy	030010060718	1
45	Compressor Gasket	76716097	3
46	Chassis Assy	209058060188	1
47	Chassis Sub-assy	20902000000504	1
48	Castor	24236017	4
49	Power Cord	4002028644	1

The data above are subject to change without notice.

GDN30BB-K5EBA2A



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

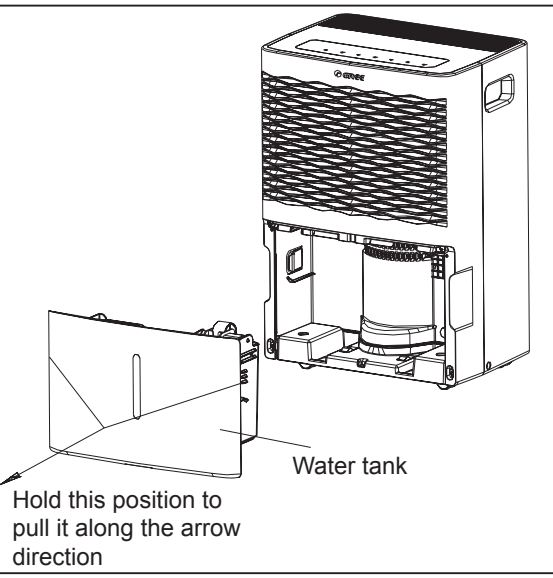
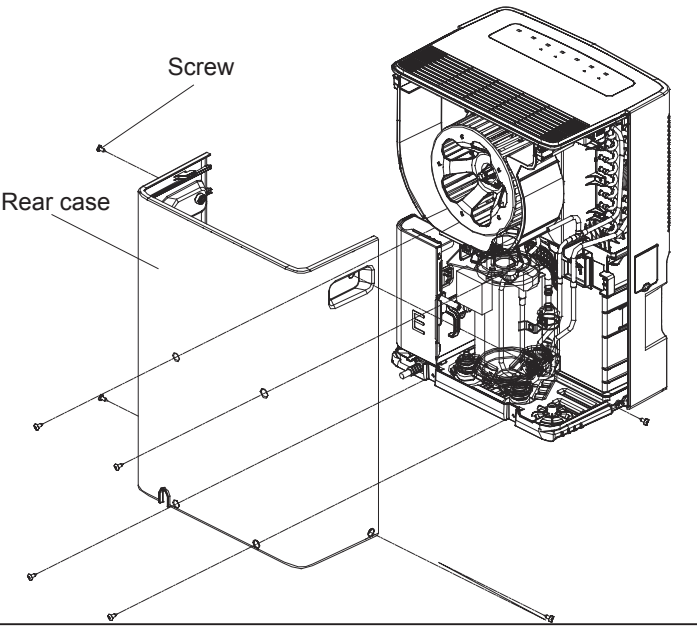
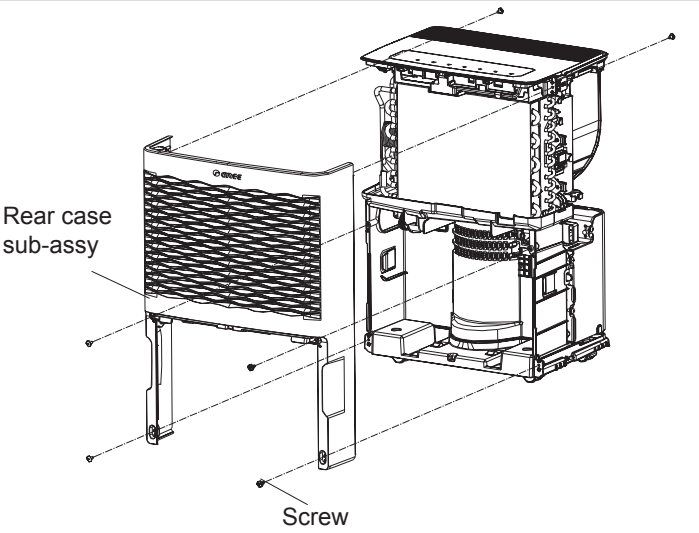
NO.	Description	Part Code	Qty
		GDN30BB-K5EBA2A	
	Product code	CK051040500	
1	Water Tank Sub-Assy	219001060001	1
2	Float meter sub-assy	2611652105	1
3	Water Tank Cover	200104060001	1
4	Handle	2623601006	1
5	Water Tank Assy	015005060004	1
6	Front Case	200083060003	1
7	Cover Plate(Keep Draining)	20007600000404	1
8	Filter Sub-Assy	111001060060	1
9	Guide Strip	200240060007	1
10	Guide Strip	200240060008	1
11	Front Case Assy	000042060002	1
12	Heat-exchange Equipment	011004060035P	1
13	Evaporator Sub-Assy	010001060162P	1
14	Capillary Sub-assy	030006060890	1
15	Condenser Sub-Assy	010002060246P	1
16	Top Cover Assy	000097060286	1
17	Temperature Sensor	390001060019	1
18	Display Board	300001060718	1
19	Membrane	600006060191	1
20	Coping	200106060012	1
21	Temperature Sensor	39000077	1
22	Diversion Circle	20015006000701	1
23	Fan Motor	15010106011901	1
24	Centrifugal Fan	103003060010	1
25	Air Flue Assy	000011060103	1
26	Rear Case	20014106000301	1
27	Electric Box Cover	012020060179	1
28	Capacitor CBB65	3300002241	1
29	Capacitor CBB61	3301074716	1
30	Main Board	300002061003	1
31	Capacitor Clamp	3300002241	1
32	fixed support (mainboard)	200115060034	1
33	Electric Box	01201706023501	1
34	Electric Box Assy	100002069415	1
35	Inching Switch	45010095	1
36	Baffle Plate (Water tray)	20001200000803	1
37	Humidity Sensor	'000069060189	1
38	Water Tray	20006306000201	1
39	Water Tray Assy	000069060320	1
40	Discharge Tube Sub-assy	030013061362	1
41	Compressor and Fittings	009001060539	1
42	Compressor Gasket	76716092	3
43	Inhalation Tube Sub-assy	030010061102	1
44	Castor	24236017	4
45	Chassis Sub-assy	20902006001602	1
46	Chassis Assy	209058060251	1
47	Power Cord	4002028644	1
48	Drainage Joint Sub-assy	2611608102	1

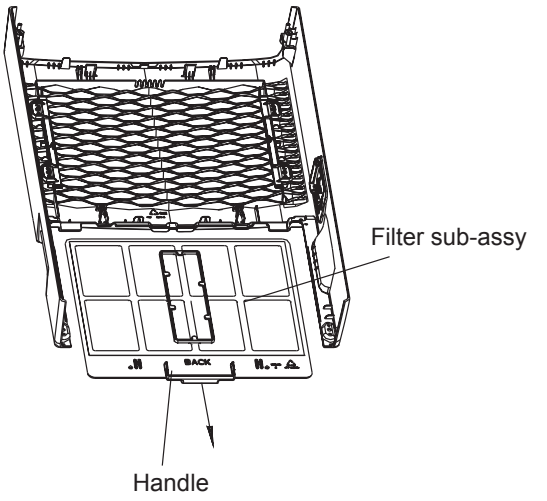
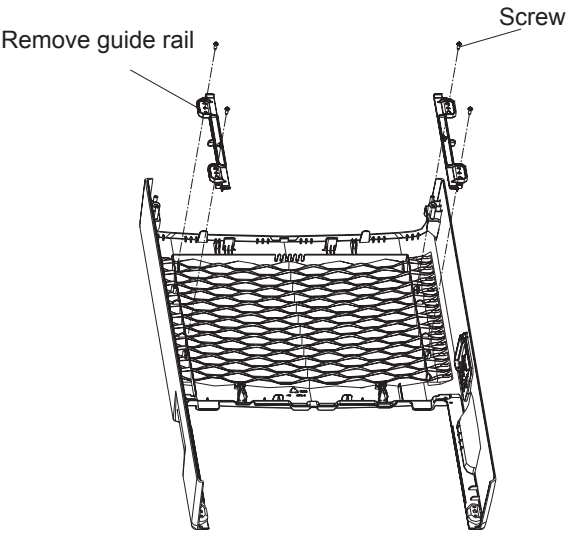
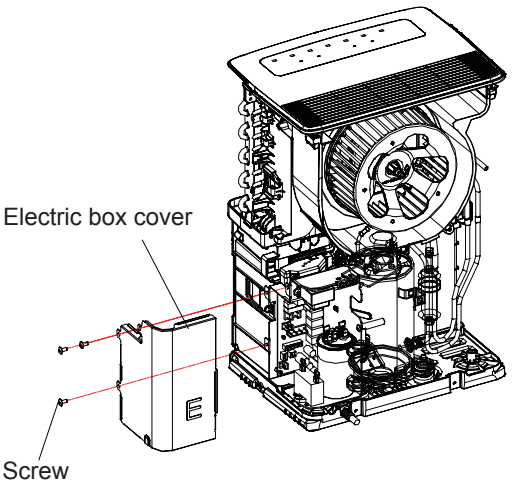
The data above are subject to change without notice.

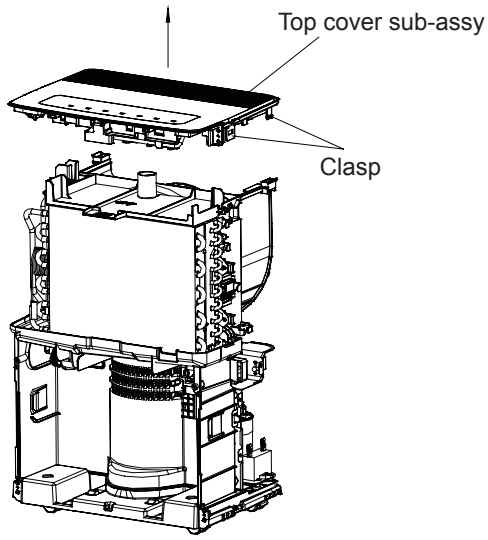
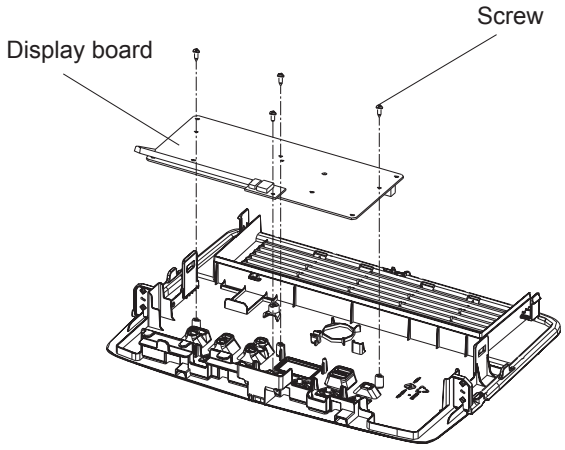
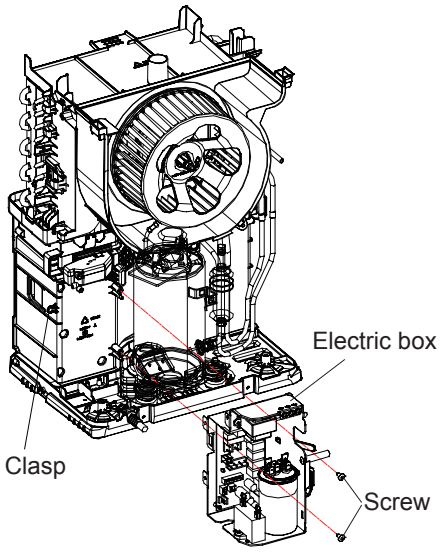
10. Removal Procedure

⚠ Prohibit disassembling and maintaining the refrigeration system pipeline and parts (include evaporator, condenser, compressor, capillary, 4-way valve, etc.)

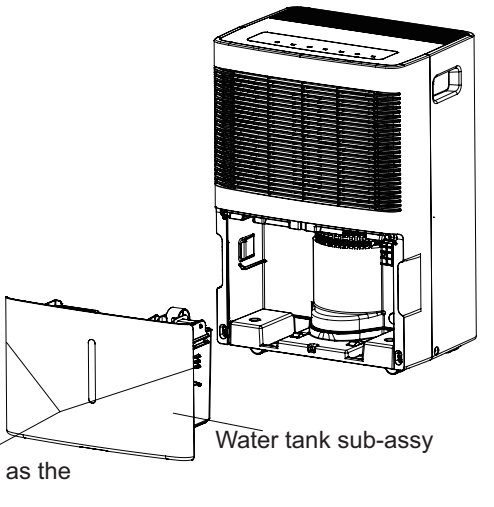
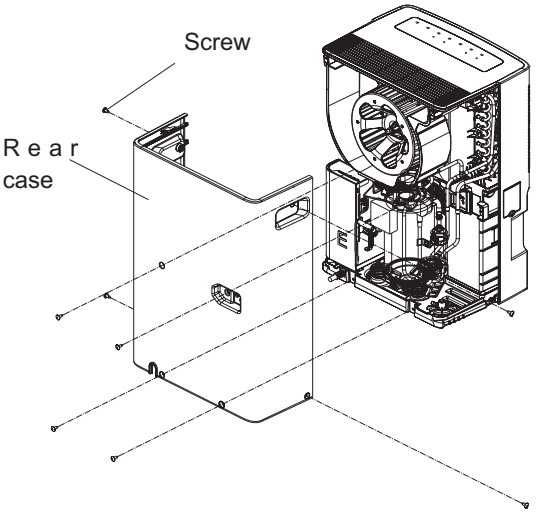
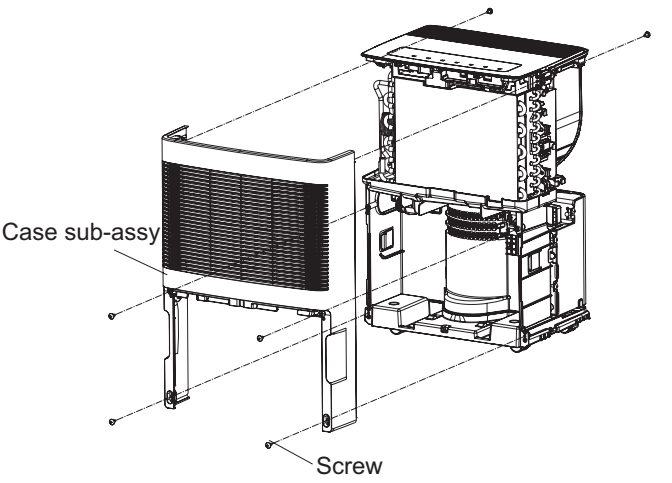
GDN20AZ-K5EBA2A GDN40BA-K5EBA2A
GDN30BB-K5EBA2A

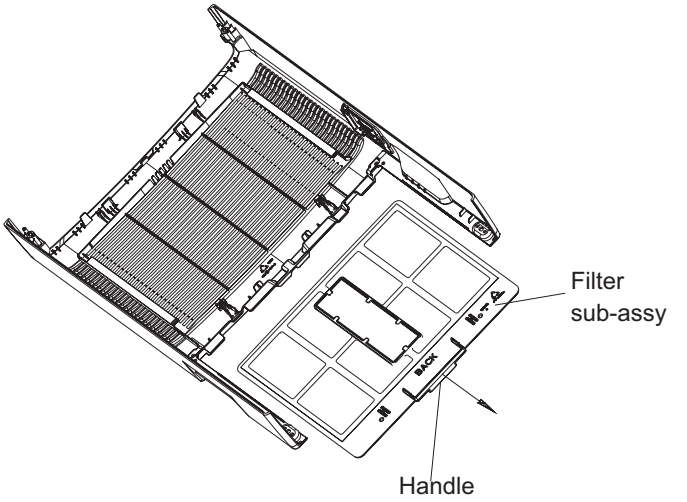
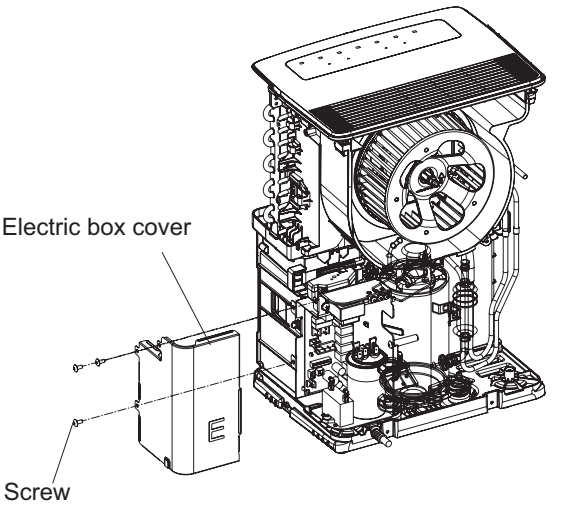
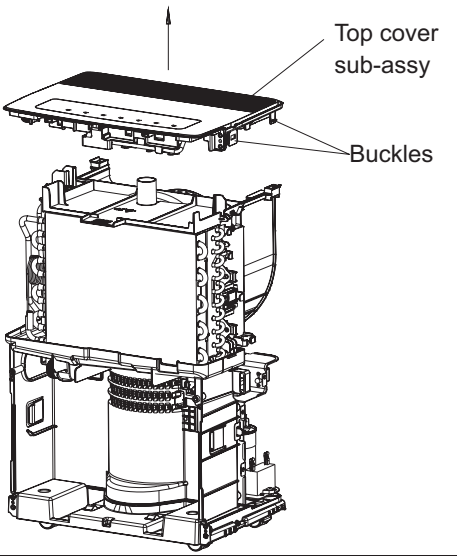
Step	Procedure	
1. Remove water tank		
	Hold the holding position at both sides of the water tank, pull the water tank (arrow direction) and then remove the water tank.	
2. Remove rear case		
	Remove 4 screws at the back of the case and 2 screws at both sides, hold the holding position of rear case, pull it outwards and then remove the rear case.	
3. Remove rear case sub-assy		
	Remove 4 screws at the front side of the case and 2 screws at the back side, hold the case and then pull it outwards to remove it.	

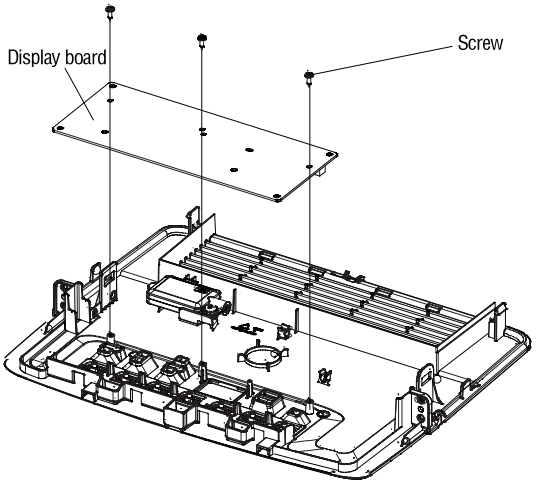
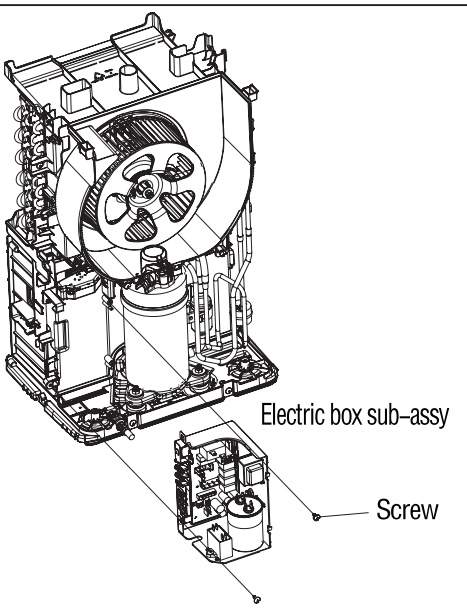
Step	Procedure
4. Remove filter sub-assy	
Hold the handle of filter sub-assy, pull it downwards to let it separate from these 2 grooves on the case, and then remove the filter sub-assy. case, and then remove the filter sub-assy.	
4.1 Remove guide rail	
Remove 4 screws and then remove the guide rail.	
5. Remove electric box cover sub-assy	
Remove 3 screws on the electric box cover and then remove the electric box cover.	

Step	Procedure
6. Remove top cover Take out the top cover sub-assy to loose 2 clasps at both sides of the top cover sub-assy, loose the connection wires of discharge temperature sensor and display board from all grooves, hold the both sides of top cover sub-assy, pull it upwards and then remove the top cover sub-assy.	
7. Remove display board Remove 3 screws used for fixing the display board and 2 screw used for fixing the humidity sensor, separate the display board from the clasps, and then remove the display board.	
8. Remove electric box Pull out all wires connected with the electric elements inside the electric box, remove 2 screws used for connecting the water tray inside the electric box, separate the electric box from the clasps and then remove the electric box.	

GDN20AZ-K5EBA1B

Step	Procedure
1. Remove water tank sub-assy	
Hold two hand-clasps in two sides of water tank, and then draw out the water tank sub-assy (as shown as the arrow direction), and remove it out.	
2. Remove the rear case	
Unscrew the 4 screws in the back of case and 5 screws in two sides, hold the handle of rear case, and then draw it out.	
3. Remove rear case sub-assy	
Unscrew 4 screws in the front of case and 2 screws in the back, hold the case and draw it out to remove it.	

Step	Procedure
4. Remove the filter sub-assy	
Hold the handle of filter sub-assy and draw it down to remove it from the two slots, and then remove it out.	
5. Remove the electric box cover	
Unscrew the 3 screws in the electric box cover, and then remove the cover.	
6. Remove top cover sub-assy	
Lift the top cover sub-assy and depart it from the two buckles in left and right sides, unwind the wires of air discharge temperature sensor and wires of display board from all the slots, and then hold the two sides of top cover and draw it out.	

Step	Procedure
7. Remove the display board	
Unscrew 2 screws in left and right sides of display board, unbuckle the buckle in the middle, and remove the display board.	
8. Remove electric box sub-assy	
Pull out all the wire connection of electric components inside the electric box, unscrew 2 screws inside the electric box for connecting water tray, and remove it from the buckle and take it down.	

Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

Conversion formula for Fahrenheit degree and Celsius degree: Tf=Tcx1.8+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 Ambient Temperature Sensor (15K)

Temp.(°F)	Resistance(kΩ)		Temp.(°F)	Resistance(kΩ)		Temp.(°F)	Resistance(kΩ)		Temp.(°F)	Resistance(kΩ)
-2.2	138.1		68.0	18.75		138.2	3.848		208.4	1.071
-0.4	128.6		69.8	17.93		140.0	3.711		210.2	1.039
1.4	121.6		71.6	17.14		141.8	3.579		212.0	1.009
3.2	115		73.4	16.39		143.6	3.454		213.8	0.98
5.0	108.7		75.2	15.68		145.4	3.333		215.6	0.952
6.8	102.9		77.0	15		147.2	3.217		217.4	0.925
8.6	97.4		78.8	14.36		149.0	3.105		219.2	0.898
10.4	92.22		80.6	13.74		150.8	2.998		221.0	0.873
12.2	87.35		82.4	13.16		152.6	2.896		222.8	0.848
14.0	82.75		84.2	12.6		154.4	2.797		224.6	0.825
15.8	78.43		86.0	12.07		156.2	2.702		226.4	0.802
17.6	74.35		87.8	11.57		158.0	2.611		228.2	0.779
19.4	70.5		89.6	11.09		159.8	2.523		230.0	0.758
21.2	66.88		91.4	10.63		161.6	2.439		231.8	0.737
23.0	63.46		93.2	10.2		163.4	2.358		233.6	0.717
24.8	60.23		95.0	9.779		165.2	2.28		235.4	0.697
26.6	57.18		96.8	9.382		167.0	2.206		237.2	0.678
28.4	54.31		98.6	9.003		168.8	2.133		239.0	0.66
30.2	51.59		100.4	8.642		170.6	2.064		240.8	0.642
32.0	49.02		102.2	8.297		172.4	1.997		242.6	0.625
33.8	46.6		104.0	7.967		174.2	1.933		244.4	0.608
35.6	44.31		105.8	7.653		176.0	1.871		246.2	0.592
37.4	42.14		107.6	7.352		177.8	1.811		248.0	0.577
39.2	40.09		109.4	7.065		179.6	1.754		249.8	0.561
41.0	38.15		111.2	6.791		181.4	1.699		251.6	0.547
42.8	36.32		113.0	6.529		183.2	1.645		253.4	0.532
44.6	34.58		114.8	6.278		185.0	1.594		255.2	0.519
46.4	32.94		116.6	6.038		186.8	1.544		257.0	0.505
48.2	31.38		118.4	5.809		188.6	1.497		258.8	0.492
50.0	29.9		120.2	5.589		190.4	1.451		260.6	0.48
51.8	28.51		122.0	5.379		192.2	1.408		262.4	0.467
53.6	27.18		123.8	5.197		194.0	1.363		264.2	0.456
55.4	25.92		125.6	4.986		195.8	1.322		266.0	0.444
57.2	24.73		127.4	4.802		197.6	1.282		267.8	0.433
59.0	23.6		129.2	4.625		199.4	1.244		269.6	0.422
60.8	22.53		131.0	4.456		201.2	1.207		271.4	0.412
62.6	21.51		132.8	4.294		203.0	1.171		273.2	0.401
64.4	20.54		134.6	4.139		204.8	1.136		275.0	0.391
66.2	19.63		136.4	3.99		206.6	1.103		276.8	0.382

Resistance Table of Tube Temperature Sensors (20K)

Temp.(°F)	Resistance(kΩ)		Temp.(°F)	Resistance(kΩ)		Temp.(°F)	Resistance(kΩ)		Temp.(°F)	Resistance(kΩ)
-2.2	181.4		68.0	25.01		138.2	5.13		208.4	1.427
-0.4	171.4		69.8	23.9		140.0	4.948		210.2	1.386
1.4	162.1		71.6	22.85		141.8	4.773		212.0	1.346
3.2	153.3		73.4	21.85		143.6	4.605		213.8	1.307
5.0	145		75.2	20.9		145.4	4.443		215.6	1.269
6.8	137.2		77.0	20		147.2	4.289		217.4	1.233
8.6	129.9		78.8	19.14		149.0	4.14		219.2	1.198
10.4	123		80.6	18.13		150.8	3.998		221.0	1.164
12.2	116.5		82.4	17.55		152.6	3.861		222.8	1.131
14.0	110.3		84.2	16.8		154.4	3.729		224.6	1.099
15.8	104.6		86.0	16.1		156.2	3.603		226.4	1.069
17.6	99.13		87.8	15.43		158.0	3.481		228.2	1.039
19.4	94		89.6	14.79		159.8	3.364		230.0	1.01
21.2	89.17		91.4	14.18		161.6	3.252		231.8	0.983
23.0	84.61		93.2	13.59		163.4	3.144		233.6	0.956
24.8	80.31		95.0	13.04		165.2	3.04		235.4	0.93
26.6	76.24		96.8	12.51		167.0	2.94		237.2	0.904
28.4	72.41		98.6	12		168.8	2.844		239.0	0.88
30.2	68.79		100.4	11.52		170.6	2.752		240.8	0.856
32.0	65.37		102.2	11.06		172.4	2.663		242.6	0.833
33.8	62.13		104.0	10.62		174.2	2.577		244.4	0.811
35.6	59.08		105.8	10.2		176.0	2.495		246.2	0.77
37.4	56.19		107.6	9.803		177.8	2.415		248.0	0.769
39.2	53.46		109.4	9.42		179.6	2.339		249.8	0.746
41.0	50.87		111.2	9.054		181.4	2.265		251.6	0.729
42.8	48.42		113.0	8.705		183.2	2.194		253.4	0.71
44.6	46.11		114.8	8.37		185.0	2.125		255.2	0.692
46.4	43.92		116.6	8.051		186.8	2.059		257.0	0.674
48.2	41.84		118.4	7.745		188.6	1.996		258.8	0.658
50.0	39.87		120.2	7.453		190.4	1.934		260.6	0.64
51.8	38.01		122.0	7.173		192.2	1.875		262.4	0.623
53.6	36.24		123.8	6.905		194.0	1.818		264.2	0.607
55.4	34.57		125.6	6.648		195.8	1.736		266.0	0.592
57.2	32.98		127.4	6.403		197.6	1.71		267.8	0.577
59.0	31.47		129.2	6.167		199.4	1.658		269.6	0.563
60.8	30.04		131.0	5.942		201.2	1.609		271.4	0.549
62.6	28.68		132.8	5.726		203.0	1.561		273.2	0.535
64.4	27.39		134.6	5.519		204.8	1.515		275.0	0.521
66.2	26.17		136.4	5.32		206.6	1.47		276.8	0.509

Resistance Table of Discharge Temperature Sensor (50K)

Temp.(°F)	Resistance(kΩ)		Temp.(°F)	Resistance(kΩ)		Temp.(°F)	Resistance(kΩ)		Temp.(°F)	Resistance(kΩ)
-20.2	853.5		50.0	98		120.2	18.34		190.4	4.754
-18.4	799.8		51.8	93.42		122.0	17.65		192.2	4.609
-16.6	750		53.6	89.07		123.8	16.99		194.0	4.469
-14.8	703.8		55.4	84.95		125.6	16.36		195.8	4.334
-13.0	660.8		57.2	81.05		127.4	15.75		197.6	4.204
-11.2	620.8		59.0	77.35		129.2	15.17		199.4	4.079
-9.4	580.6		60.8	73.83		131.0	14.62		201.2	3.958
-7.6	548.9		62.6	70.5		132.8	14.09		203.0	3.841
-5.8	516.6		64.4	67.34		134.6	13.58		204.8	3.728
-4.0	486.5		66.2	64.33		136.4	13.09		206.6	3.619
-2.2	458.3		68.0	61.48		138.2	12.62		208.4	3.514
-0.4	432		69.8	58.77		140.0	12.17		210.2	3.413
1.4	407.4		71.6	56.19		141.8	11.74		212.0	3.315
3.2	384.5		73.4	53.74		143.6	11.32		213.8	3.22
5.0	362.9		75.2	51.41		145.4	10.93		215.6	3.129
6.8	342.8		77.0	49.19		147.2	10.54		217.4	3.04
8.6	323.9		78.8	47.08		149.0	10.18		219.2	2.955
10.4	306.2		80.6	45.07		150.8	9.827		221.0	2.872
12.2	289.6		82.4	43.16		152.6	9.489		222.8	2.792
14.0	274		84.2	41.34		154.4	9.165		224.6	2.715
15.8	259.3		86.0	39.61		156.2	8.854		226.4	2.64
17.6	245.6		87.8	37.96		158.0	8.555		228.2	2.568
19.4	232.6		89.6	36.38		159.8	8.268		230.0	2.498
21.2	220.5		91.4	34.88		161.6	7.991		231.8	2.431
23.0	209		93.2	33.45		163.4	7.726		233.6	2.365
24.8	198.3		95.0	32.09		165.2	7.47		235.4	2.302
26.6	199.1		96.8	30.79		167.0	7.224		237.2	2.241
28.4	178.5		98.6	29.54		168.8	6.998		239.0	2.182
30.2	169.5		100.4	28.36		170.6	6.761		240.8	2.124
32.0	161		102.2	27.23		172.4	6.542		242.6	2.069
33.8	153		104.0	26.15		174.2	6.331		244.4	2.015
35.6	145.4		105.8	25.11		176.0	6.129		246.2	1.963
37.4	138.3		107.6	24.13		177.8	5.933		248.0	1.912
39.2	131.5		109.4	23.19		179.6	5.746		249.8	1.863
41.0	125.1		111.2	22.29		181.4	5.565		251.6	1.816
42.8	119.1		113.0	21.43		183.2	5.39		253.4	1.77
44.6	113.4		114.8	20.6		185.0	5.222		255.2	1.725
46.4	108		116.6	19.81		186.8	5.06		257.0	1.682
48.2	102.8		118.4	19.06		188.6	4.904		258.8	1.64

Resistance Table of Ambient Temperature Sensor (100K)

Temp(°F)	Resistance(kΩ)		Temp(°F)	Resistance(kΩ)		Temp(°F)	Resistance(kΩ)		Temp(°F)	Resistance(kΩ)
-4.0	925.998		64.4	136.845		132.8	28.638		201.2	7.918
-2.2	876.141		66.2	130.752		134.6	27.600		203.0	7.676
-0.4	829.261		68.0	124.961		136.4	26.606		204.8	7.443
1.4	785.155		69.8	119.456		138.2	25.652		206.6	7.218
3.2	743.636		71.6	114.221		140.0	24.737		208.4	7.000
5.0	704.532		73.4	109.242		141.8	23.858		210.2	6.790
6.8	667.688		75.2	104.506		143.6	23.016		212.0	6.587
8.6	632.956		77.0	100.000		145.4	22.207		213.8	6.391
10.4	600.201		78.8	95.711		147.2	21.430		215.6	6.201
12.2	569.300		80.6	91.629		149.0	20.684		217.4	6.018
14.0	540.135		82.4	87.742		150.8	19.697		219.2	5.842
15.8	512.601		84.2	84.041		152.6	19.279		221.0	5.671
17.6	486.596		86.0	80.515		154.4	18.617		222.8	5.505
19.4	462.029		87.8	77.155		156.2	17.981		224.6	5.346
21.2	438.812		89.6	73.954		158.0	17.370		226.4	5.191
23.0	416.865		91.4	70.902		159.8	16.782		228.2	5.042
24.8	396.114		93.2	67.993		161.6	16.217		230.0	4.898
26.6	376.487		95.0	65.218		163.4	15.673		231.8	4.758
28.4	357.918		96.8	62.572		165.2	15.150		233.6	4.624
30.2	340.348		98.6	60.017		167.0	14.646		235.4	4.493
32.0	323.717		100.4	57.637		168.8	14.141		237.2	4.367
33.8	307.972		102.2	55.337		170.6	13.695		239.0	4.245
35.6	293.062		104.0	53.141		172.4	13.245		240.8	4.127
37.4	278.941		105.8	51.043		174.2	12.813		242.6	4.012
39.2	265.562		107.6	49.040		176.0	12.396		244.4	3.902
41.0	252.886		109.4	47.126		177.8	11.995		246.2	3.795
42.8	240.871		111.2	45.296		179.6	11.608		248.0	3.691
44.6	229.482		113.0	43.548		181.4	11.235		249.8	3.591
46.4	218.684		114.8	41.876		183.2	10.876		251.6	3.494
48.2	208.443		116.6	40.276		185.0	10.530		253.4	3.400
50.0	198.729		118.4	38.747		186.8	10.196		255.2	3.309
51.8	189.514		120.2	37.283		188.6	9.874		257.0	3.221
53.6	180.769		122.0	35.882		190.4	9.564		258.8	3.136
55.4	172.469		123.8	34.541		192.2	9.265		260.6	3.053
57.2	164.590		125.6	33.257		194.0	8.976		262.4	2.973
59.0	157.109		127.4	32.027		195.8	8.697		264.2	2.896
60.8	150.005		129.2	30.849		197.6	8.428		266.0	2.821
62.6	143.256		131.0	29.720		199.4	8.169		267.8	2.748

Temp(°F)	Resistance(kΩ)		Temp(°F)	Resistance(kΩ)		Temp(°F)	Resistance(kΩ)		Temp(°F)	Resistance(kΩ)
269.6	2.678		323.6	1.312		377.6	0.705		431.6	0.384
271.4	2.610		325.4	1.284		379.4	0.691		433.4	0.376
273.2	2.543		327.2	1.256		381.2	0.677		435.2	0.369
275.0	2.479		329.0	1.229		383.0	0.664		437.0	0.362
276.8	2.417		330.8	1.203		384.8	0.650		438.8	0.355
278.6	2.357		332.6	1.178		386.6	0.637		440.6	0.348
280.4	2.229		334.4	1.153		388.4	0.625		442.4	0.341
282.2	2.242		336.2	1.129		390.2	0.612		444.2	0.335
284.0	2.187		380.0	1.105		392.0	0.600		446.0	0.328
285.8	2.134		339.8	1.082		393.8	0.588		447.8	0.322
287.6	2.082		341.6	1.060		395.6	0.576		449.6	0.317
289.4	2.032		343.4	1.038		397.4	0.565		451.4	0.311
291.2	1.983		345.2	1.017		399.2	0.553		453.2	0.305
293.0	1.936		347.0	0.996		401.0	0.542		455.0	0.300
294.8	1.890		348.8	0.975		402.8	0.531		456.8	0.295
296.6	1.846		350.6	0.956		404.6	0.521		458.6	0.290
298.4	1.803		352.4	0.936		406.4	0.510		460.4	0.285
300.2	1.761		354.2	0.917		408.2	0.500		462.2	0.281
302.0	1.720		356.0	0.899		410.0	0.490		464.0	0.276
303.8	1.680		357.8	0.881		411.8	0.480		465.8	0.272
305.6	1.642		359.6	0.863		413.6	0.470		467.6	0.269
307.4	1.605		361.4	0.845		415.4	0.461		469.4	0.265
309.2	1.568		363.2	0.828		417.2	0.451		471.2	0.261
311.0	1.533		365.0	0.812		419.0	0.442		473.0	0.258
312.8	1.499		366.8	0.796		420.8	0.433		474.8	0.255
314.6	1.466		368.6	0.780		422.6	0.425		476.6	0.253
316.4	1.433		370.4	0.764		424.4	0.416		478.4	0.250
318.2	1.402		372.2	0.749		426.2	0.408		480.2	0.248
320.0	1.371		374.0	0.734		428.0	0.400		482.0	0.246
321.8	1.341		375.8	0.719		429.8	0.392		/	/

Appendix 3: Resistance Value Table of Humidity Sensor

HIS-06 temperature and humidity characteristic 41°F~57.2°F

Relative humidity	Temperature(°F)									Unit:KΩ
%RH	41°F	42.8°F	44.6°F	46.4°F	48.2°F	50°F	51.8°F	53.6°F	55.4°F	57.2°F
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 59°F~75.2°F

Unit:KΩ

Relative humidity	Temperature(°F)									
%RH	59°F	60.8°F	62.6°F	64.4°F	66.2°F	68°F	69.8°F	71.6°F	73.4°F	75.2
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 77°F~93.2°F

Unit:KΩ

Relative humidity	Temperature(°F)									
%RH	77°F	78.8°F	80.6°F	82.4°F	84.2°F	86°F	87.8°F	89.6°F	91.4°F	93.2°F
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 95°F~113°F

Unit:KΩ

Relative humidity	Temperature(°F)										
%RH	95°F	96.8°F	98.6°F	100.4°F	102.2°F	104°F	105.8°F	107.6°F	109.4°F	111.2°F	113°F
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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For product improvement, specifications and appearance in this manual are subject to change without prior notice.