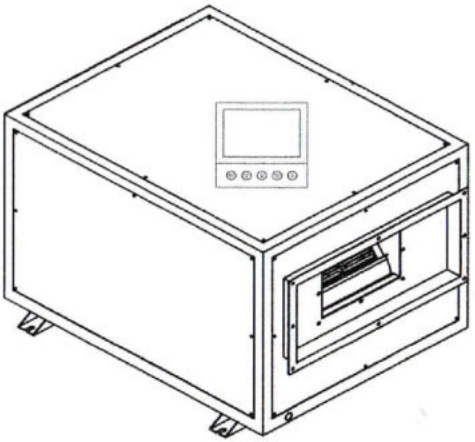
HARISON®

CEILING DUCTED DEHUMIDIFIER

USER Manual



KEEP THESE INSTRUCTIONS FOR FUTURE REFERENCE

Thank you for choosing our dehumidifier. This owner's manual will provide you with valuable information necessary for the proper care and maintenance of your new dehumidifier. Please take a few moments to read the instructions thoroughly and familiarize with all the operational aspects of this dehumidifier.

Table of Contents

Foreword

Purpose

This manual provides all the information about this precise dehumidifier, including the structure, installation, principle, work process and the detailed operating instruction is provided.

Content

Dehumidifying control system, operating ways, maintain, and regular failure and failure elimination

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Warning!

All electrical connections works must be done by local professionals, according to relevant provisions to operate, or some loss of life, personal injury, property loss may be happen. Do please read through the manual before electrical works, avoiding any fault operation that causing loss of life or property. Please contact the supplier or the manufacturer if there are any issues arises that are not stated in this manual.

1 SAFETY INTRODUCTION

1.1 Safety

This series of dehumidifier is in conformance with all provisions of European security requirements and standards, the safety of worker and equipment are taken into care while in design and manufacture process. In each section of the manual, there are safety information and explicitly pointed out operation that may causes danger. And it is mark with "Danger" as a warning sign.
This manual provides information on the appropriate ways of operating the dehumidifier. It shall serve as a guideline only and are not liable for any personal responsibility or meeting local safety regulations.
During the installation and operation of the equipment, everyone shall bear the liability as listed below:

- To ensure the equipment in good condition according the description provided in this manual;
- Do care the safety of yourself and others;
- Dehumidifier should be operated and maintenance by related qualification professionals;
- Do not install dehumidifier around the explosive protection devices;
- Cut off the power before open any cover in the housing;
- When the operation ended, please allow the equipment to cool down at least 15 minutes before begin the maintenance service;
- The machine panel should be closed at all time if maintenance work is not carried out;
- Dehumidifier is limited to atmospheric pressure condition to dehumidify;
- Filter device must be installed before using the dehumidifier;
- Removing or deleting the marks/declares/notes in the dehumidifier is prohibited;
- The manual should be kept well for using in the future;
- Original spare parts should be used for any replacement;
- The written permission from manufacture must be needed before repairing the dehumidifier;

1.2 Applications:

The dehumidifiers are widely used in hotels, office buildings, hospitals, commercial, research institutions and other applicable places. Its working principle is to remove excess moisture by drying the air under normal atmospheric pressure. Its working humidity range is from 30%-90% (the humidity can be reduced down to 35% at most), and working temp range is 5 °C to 35 °C, if it works beyond these ranges, the dehumidify capacity will be affected, this problem does not reflect to the quality of the equipment itself.

1.3 Manual Content

This manual content includes most info about installation, operation, maintenance, and failure analysis and others.
Note: this manual is applicable to other precise dehumidifiers of the same range.

2 INTRODUCTIONS OF DEVICE

2.1 Standards

The design meets IEC protection class IP 45 requirements.

2.2 Structure

2.2.1 Housing and body

- Adopts steel frame structure, compact, strong, corrosion resistance, and the anti-frozen technology, effectively preventing the "frozen" phenomenon;
- Removable flush seamless access panels;
- Patent defrosting tech, effectively guarantee a reliable capacity;
- Water tray equipped ensures that all condensate water drain out, preventing water stagnation;

2.2.2 Inlet / Outlet Air Panel

- Removable filter is equipped in each air inlet;
- Centrifugal fan with steel volute and blades, high efficiency and low noise.

2.2.3 Refrigeration system

- The design of the dehumidifier use energy-saving heat exchanger by integrating a liquid separator reservoir and heat exchangers. It can effectively regulate the fluid flow volume, maximizing freezing capacity, and ensuring compressor operate well. Meanwhile, dry filter was introduced in this system to prevents clogging/impurities in expansion valve or capillary
- Patented defrosting structure, it brings stable operation of refrigeration system

- Hydrophilic membrane fin (heat exchanger), heat transfer efficiency increases by 20%. Good insulation material also increases insulating effect by 15%

2.2.4 Compressor

Compressor is the core part of this dehumidifier. It directly impacts dehumidifier's performance. It is the heart of this dehumidifier, provides powers for whole system. We only use the international well-known brand compressors.

2.2.5 Throttling device system

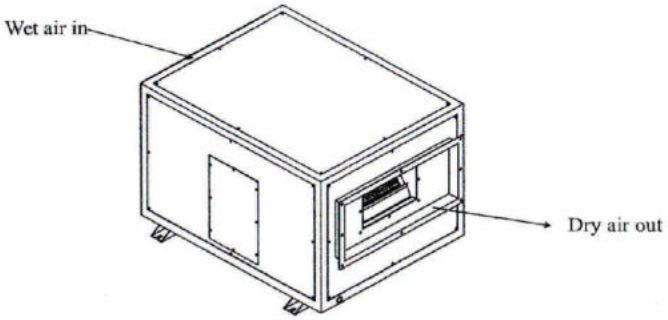
- Throttling device system is one of four vital items in the refrigeration systems. It will reduce the liquid refrigerant (coming from condenser) high pressure, make the refrigerant absorb heat under low pressure (low temp) while vaporization happen. It's ensuring high pressure in condenser and low pressure in evaporator. As a result of this direct expansion, loss of cooling

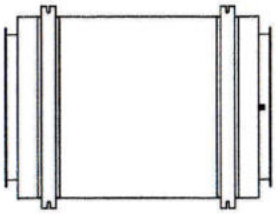
- capacity is reduced thus ensuring higher efficiency. It also prevents over-heating on the compressor.

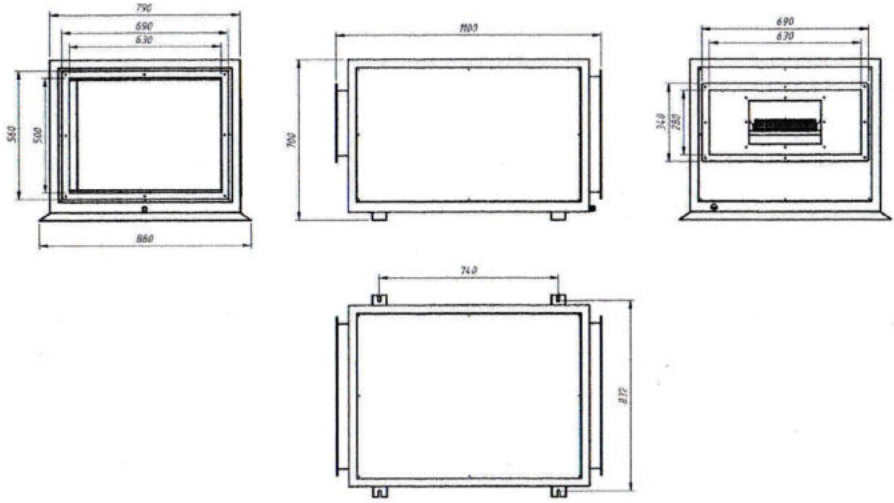
2.2.6 Protection devices

- Dehumidifier controller is specially designed according the operation of the dehumidifier that meant for, powerful and overall high-performance operation. Motor overload and short circuit protection is introduced too;
- Starting-up delay protection: If the dehumidifier is cut off during operation, it will take 3 minutes to turn it on again;
- Shutdown delay protection: When the dehumidifier is cut off during operation, fans will keep running for 3 minutes, to cool down the dehumidifier thus reducing the internal heat of the dehumidifier.
- Fans operation mode: Fan can stop/keep running while the setting RH is reached, customer can set it according to their requirements.
- High temperature protection: Prevent the compressor running continuously at high temperatures;
- Low pressure protection: Prevents the dehumidifier running without refrigerant to avoid compressor from being burned.

2.2.7 Product structure


Wet air in
Dry air out

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3 INSTALLATIONS

3.1 Brief introduction

Ceiling Mounted dehumidifier can be installed in many places, depending on the requirements of owners. It can also integrate with current ventilation system via duct system. This chapter records info about preparation work, and installation work and etc. Please serve it as a guide before installation.

3.2 Delivery and storage

To ensure the quality and reliability of each dehumidifier, it has been thoroughly tested in factory.
If dehumidifier has to be stored for a while prior to installation, please take notes of the following:
①Keeping transport package in good condition;
②Avoiding physical damage;
③Dehumidifier should be stored indoor and covered properly to prevent dust, frost and rain intrusion.

3.3 Inspection before installation

Unpack package and check machine: If any damage is found, please contact supplier manufacturer.

3.4 Moving machine

Please check the dehumidifier weight before any loading / unloading. For moving the unit of a longer distance, it is advice to use proper equipment (trolley or forklift) to move the goods. It should be take note that the dehumidifier shall be lifted up properly and the lifting point should be away from the motor, control system and exposed pipe to avoid any damages onto the equipment.

3.5 Installation Location

For best operation and maintenance service, it is advice to install the dehumidifier indoor / inside of room with extra space for routine maintenance/checking in order to prevent condensation inside

the dehumidifier, the unit should not be exposed to environment where temperature is below the process air's dew point. Please place the device near to power source.

NOTE: Please provide enough space around the dehumidifier for troubleshooting and maintenance service purpose.

3.6 Ground/Base

Dehumidifier must be installed horizontally with well-balanced level. Please use horizontal ruler to measure the level during installation.

3.7 Ducting Connection

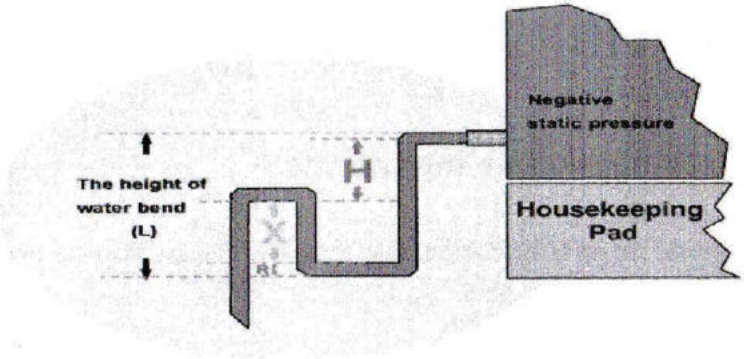
The dimension of ducting for inlet and outlet air should be in line with ISO7807 recommended values. Ducting should be connected with the connection part on flange, meanwhile, the screw bolt is limited to within 20mm. While connecting the ducting, some notes as below:

- In order to reduce loss of static pressure, do the best to shorten the length of the ducting;
- To ensure performance of machine, all rigid (galvanized) ducting fittings are required to have air-tightness;
- The ducting should have a good capacity of thermal insulation, then the phenomenon of moisture condensation inside pipe wall will be avoided, and the pipeline won't be corroded;
- To reduce noise and vibration transmitted along the pipes, the good quality, soft and strong airtight adapting pieces should be used in the joint parts;

3.8 Condensate Drain pipe connection

• Condensate pipe of the horizontal pipe slope should be ≥8%, the riser must be vertical,drainage experiments after the installation to ensure smooth drainage, condensate plate without excessive water, no leakage.

• Condensate pipe outlet should be provided with water bends, water seal height H(minimum 50 mm), H is related to internal pressure and atmospheric pressure P, $H \geq 1.25x\ (P/10)$, as shown below (the curvature radius R of the water bend should be greater than 1.5 times of the pipe diameter). The L=H+X+R.



3.9 Electrical connection

Be careful! All electrical connection works must meet local electrical equipment installation standards, done by qualified professionals.

- It is forbidden to connect the power supply beyond the specified voltage and frequency;
- Before the connecting the power supply, the electrical point should be checked to ensure that its voltage and frequency fluctuation does not go beyond ±10%;
- Unit must be grounded and turn off power during checking work.

3.10 Sensitive elements connection

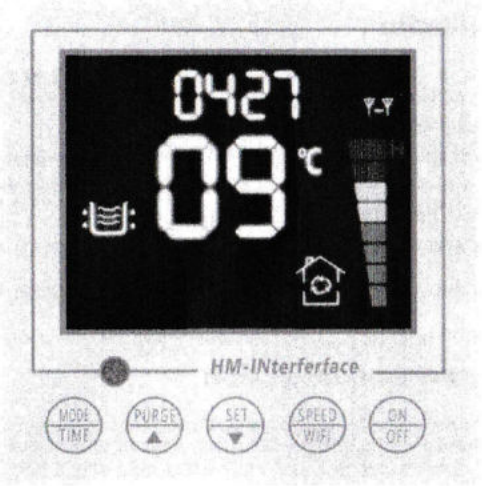
The installation of temperature and humidity detection devices should follow the requirements as below:

- Temperature and humidity detection devices should be installed above ground 1m - 1.5m, to ensure the device can detect the humidity of the dehumidifying area;
- Detection device should be installed away from dry air or wet air or airflow from outside;
- Temperature and humidity detectors should stay away from cooling equipment,
- do not directly exposed to sunshine place, as the change of the temperature will affect the actual assessment;
- External control system must be compatible with the low voltage control circuit of dehumidification equipment.

4 OPERATIONS

4.1 Controlling module introduction

Automatic control system is introduced, easy to operate. Please read the manual carefully before operation.



This touched type controller can monitor indoor temperature and humidity in real time.Please read the manual carefully before operation.

	Button	Description
1		Tum on and tum off machine

<table>
<tr><td rowspan="3">2</td><td rowspan="3">  </td><td rowspan="2">First press is dehumidifying mode</td><td>  </td><td>Increse setting humidity</td></tr>
<tr><td>  </td><td>Decrease setting humidity</td></tr>
<tr><td>Second press is ventilation mode</td><td colspan="2">Compressor stop working, fan is running</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">  </td><td rowspan="2">Fan speed setting</td><td>  </td><td>Increase fan speed</td></tr>
<tr><td>  </td><td>Decrease fan speed</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">  </td><td colspan="3">Press this button once,the humidity increase 1%,long press to increase humidity continuously.</td></tr>
<tr><td colspan="3">Press this button once,the time increase 1 minute.</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">  </td><td colspan="3">Press this button once,the humidity decrease 1%,long press to decrease humidity continuously.</td></tr>
<tr><td colspan="3">Press this button once,the time decrease 1 minute.</td></tr>
<tr><td rowspan="4">6</td><td rowspan="4">  </td><td colspan="3">Long press this button for 5 seconds to enter into set time.The initial value of the colock is 00:00.</td></tr>
<tr><td colspan="3">Short press this button once to enter into power-on by alarm setting,at the same time,there is "ON" display on the left.Then press the  to adjust the time.</td></tr>
<tr><td colspan="3">Short press this button twice to enter into power-off by alarm setting,at the same time,there is "OFF" display on the left.Then press the  to adjust the time.</td></tr>
<tr><td colspan="3">Cancel the timer switch,it needs to adjust to 24(the time is invalid),and the mark of "ON" or "OFF" disappear.</td></tr>
</table>

Pis note: Before setting humidity, must press  button to be in dehumidifying mode firstly.

4.2 Security

Dehumidifier has high-speed moving parts. Before running, make sure panel is closed correctly and no debris present at the exterior. Do not use force to open the machine during operation otherwise, it will cause serious consequences to dehumidifier.

A. Temperature and humidity sensors are sensitive components, do not touch the components;
B. All wires are distinguished by colors, please let professionals do the wiring work;
C. Temperature and humidity control should be placed in clean environment. Acetone, chlorine or high concentrations smoke and will cause damage;
D. Humidistat is sensitive to ambient humidity. Do not place in dusty area.
E. If some problem happened to the dehumidifier, it will stop. Please check the machine first before turn in on again.
F. Don't move dehumidifier or unplug until the fan stops;

5 MAINTENANCES

5.1 Maintenance introduction

The Ceiling Mounted dehumidifier can last for long with proper maintenance. Maintenance frequency depends on operating conditions of dehumidifier. Therefore, maintenance cycle can be determined according to the actual situation. Improper maintenance may reduce dehumidification performance.

5.2 Filter

Dehumidifier equips separated filter in process air inlet hole. It clean the air entering dehumidification equipment, Prohibited running dehumidifier in the absence of filter. Recommend to clean/replace filter per month.

5.3 Motor

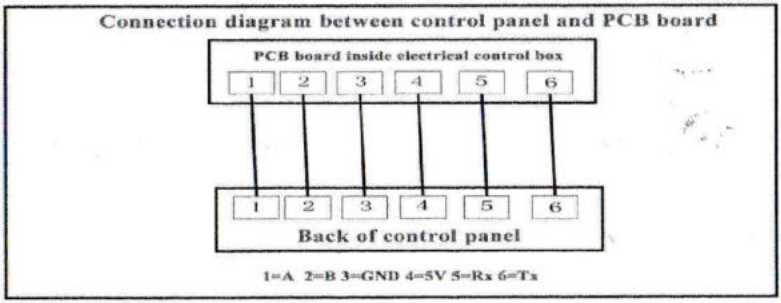
The motor is equipped with bearings, which has same lifetime with motor, so no additional maintenance require. Just inspecting them annually.

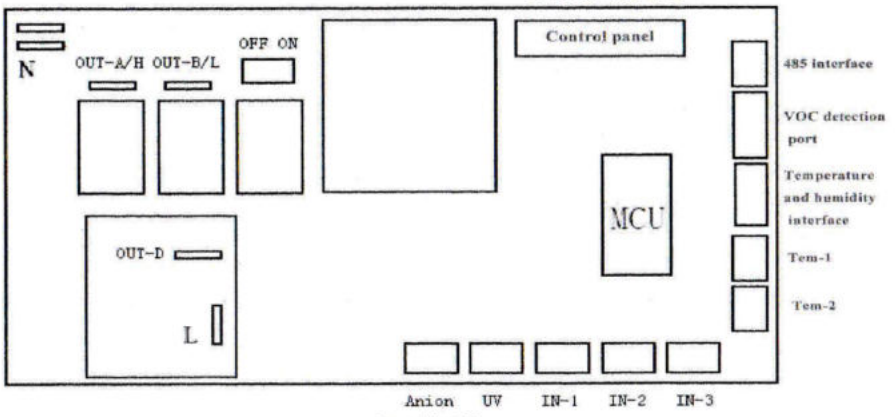
5.4 Maintenance program

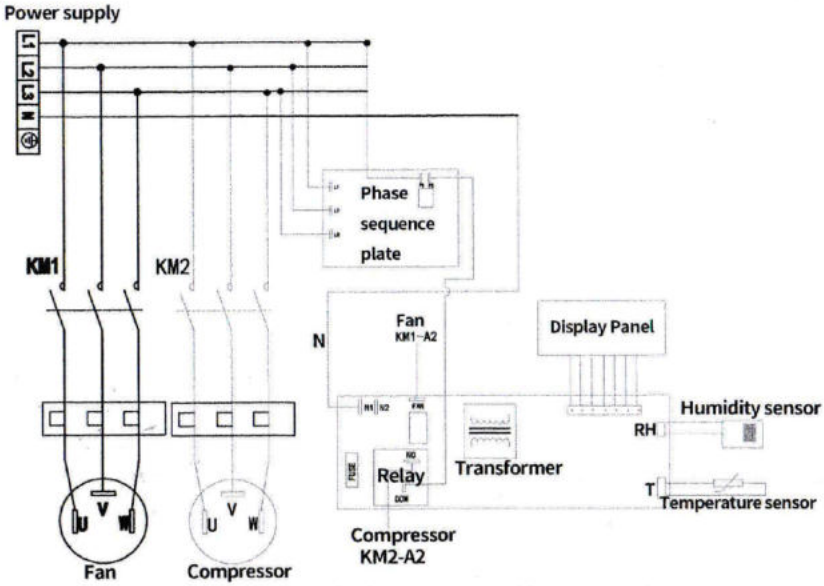
Table (below) lists the routine maintenance procedures for normal components. If necessary, refer to other relevant information provided by manufacturer

Malfunction	Possible cause of trouble	Corrective action
None, or reduced dehumidification capacity	Filter clogged	Clean or replace filters
	Electrical heater faulty	Check fuses
	Airflow reduced	Check openings and dampers
	Internal leakage in unit	Check springs
	Altered air volumes	Measure and check air volumes
	Air leakage	Check panel and casing
Main fuse faulty	Fan faulty	Check fans and motors
	Too large air volume	Check air volumes and dampers
	No power supply	Check main fuse
Dehumidifier does not start	No control circuit	Check control fuses
	Faulty control circuit	Check external start/stop signal
	Fuse for controls faulty	Check electrical components
No dry- or wet air volume	Filter clogged	Clean or replace filters
	Fan faulty	Check fan, motor and impeller
	Ducts blocked	Check dampers and ducts

5.5 Electrical Wiring Diagram







NOTE

Oprate according to instructions,in strict accordance with the product wiring diagram wiring,wiring must be cut off power supply,any instructions not mentioned in the instructions, please cut off the power and contact with the manufacturers.

Oprate by professionals,so as to avoid danger!

5.6 Instruction on Code of Failure

This dehumidifier is able to automatically judge failure. If there is any failure, there will be failure code displayed on the humidity display window.

Failure Display	Problem
E1	Coil temperature sensor failure
E2	Humidity sensor failure

6.COMMON TROUBLESHOOTING

Problem	Reason	Solution
Machine can not work	1.Power failure 2.The power switch is not turned on 3.The power cord is not connected 4.Fuse blown 5.Circuit board is broken	1.Restore power 2.Turn on the power switch 3.Connect the power cord 4.Replace the fuse 5.Replace the circuit board
Compressor is not running	1.Defective capacitor of compressor 2.Loose connection in compressor circuit 3.Defective compressor	1.Replace the capacitor of the compressor 2.Connect the circuit of the compressor 3.Replace the compressor
Dehumidifying performance is not good	1. Air filter is too dirty 2. The machine air inlet and outlet has something blocked 3. The doors and windows are open 4. The refrigerant gas is leaked	1.Clean the air filter 2.Remove obstructions 3.Close the doors and windows, use curtains to shade 4.Contact supplier or dealer to repair
Water leaking	1.The machine is tilted 2.The draining hose is blocked 3.It doesn't have done the water bends when install the units	1.Adjust the machine to be horizontal 2. Remove the obstructions 3.It muse do the water bends of the drain pipe when install the unit
Abnormal sound	1. The ceiling machine is not steady 2. The air filter is blocked	1.Adjust the machine to be steady 2.Clean the air filter

NOTE

1、Please contact supplier or dealer if there happen following:

- Hearing harsh sounds during operation
- Air switch or leakage protection switch is often disconnected
- The power cord and plug are hot

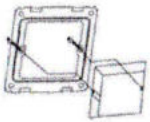
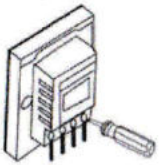
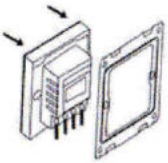
2、It is normal that you hear the noise during machine working, that is system refrigerating

3、It is normal that there is hot air from the air outlet

7.TECHNICAL PARAMETERS

Model	HCD-192B
Voltage/frequency	380V/50Hz/3Ph
Dehumidity capacity (30℃, 70%)	192L/D
Power input	3200W
Air volume	2800m³/h
Working temperature	5~38℃
Air filter	G4
Diameter of inlet/outlet	630*500mm/630*280mm
Compressor	Hitachi
Refrigerant/Charge	R407C/1650g
Suction pressure	2.5MPa
Discharge pressure	4.0MPa
Dimension	1100*880* 700mm
Weight	115kg

8.CONTROL PANEL INSTALLATION

			
1.Take out screws and metal frame, make the wire pass through the metal frame, then mount on the wall	2.Do the correct connect according to electrical wiring diagram	3.Make the control panel insert into the metal frame	4.Make sure that metal frame is tightly installed to finish installation