USER'S MANUAL

MODEL
HD-100B
HD-192B

HARISON

INDUSTRIAL DEHUMIDIFIER

CONTENTS

Thanks for your purchasing our dehumidifier

- Please read the manual carefully before using it, and keep it in a suitable storage for reference.
- Please entrust professionals to install the unit in order to guarantee operating the unit correctly and safely.
- The unit must be earthed reliably.

1. GENERAL

1.1. Introduction

Harison dehumidifiers provide an effective and efficient solution to humidity control. Harison HD-series dehumidifier are designed for large airflow of 900 and 1800m3/h.

Model HD-series computer-control dehumidifier, meticulously designed by our company, is the most advanced one in the range. They are used to remove water content from the air and decrease the humidity automatically. They have elegant appearance, compact structure and complete functions. They are widely used in scientific research, industry, communication, medical health centers, commodity storage, underground engineering and reference room, archive establishment, warehouses, etc. For preventing instruments, meters, communication equipment, commodity, reference materials from getting damp, rusty, mildew, rot and causing damage.

The equipment has a computer-control, it is sensitive to the relative humidity, can controls the humidity accurately. User can select as the requirement to the relative humidity by which the power consumption is minimised. Besides, it can defrost automatically thus can be used normally in low temperature environment, and can be operated easily.

Suitable environment-temperature : $5^oC \sim 32^oC$, relative humidity $\leq 90\%$

1.2 Warranty

The warranty period is 12 months from the date of equipment commissioning.

The warranty is limited to free replacement and shipping of any faulty part, or sub-assembly which has failed due to poor quality or manufacturing errors. All claims must be supported by evidence that the failure has occurred within the warranty period, and that the unit has been operated within the designed parameters specified.

All warranty claims must specify the unit/type number and the serial number. These details are printed on the unit identification plate.

1.3. Responsibility for safety

Every care has been taken in the design and manufacture of HD-series dehumidifier to ensure that they meet the safety requirements listed by federal codes. However, the individual operating or working on any machinery is primarily responsible for:

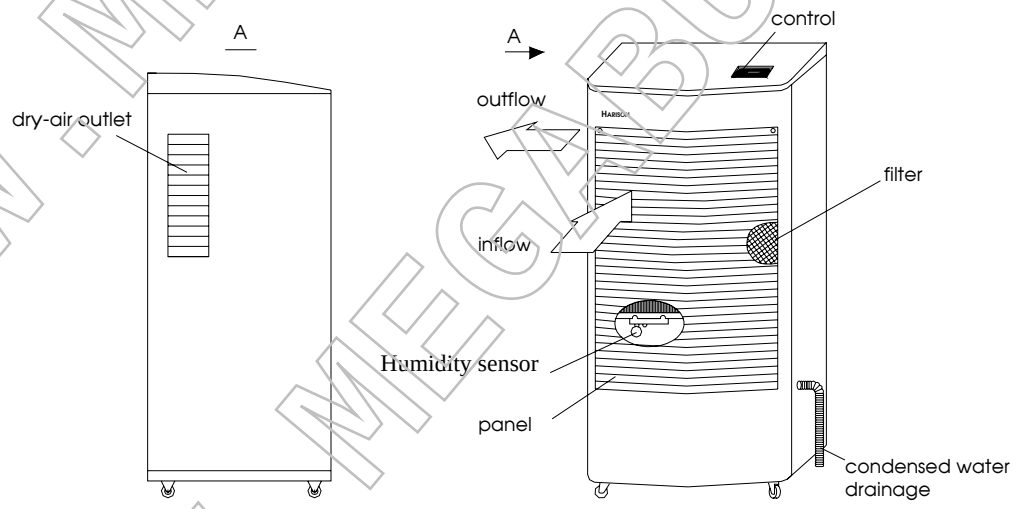
* Personal safety, safety of other personnel, and the machinery.
* Correct utilisation of the machinery in accordance with relevant procedures.

The contents of this manual include suggested best working practices and procedures. These are issued for guidance only, they do not take precedence over the above stated individual responsibility and/or local safety regulations.

2. PRODUCT DESCRIPTION

2.1 OUTER COMPONENT IDENTIFICATION

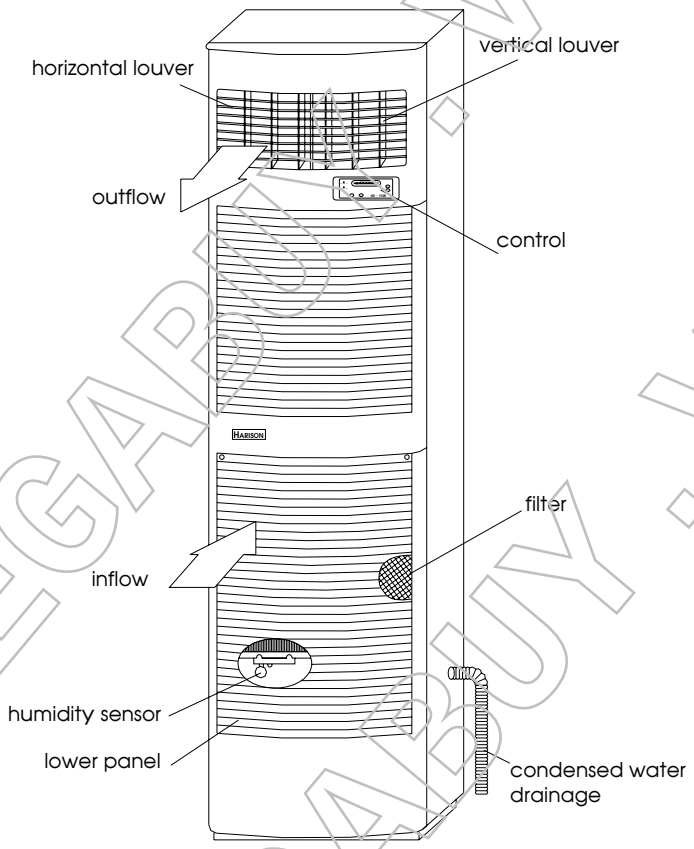
HD-100B



- Dry-air outlet: supplying dry-air to room or duct (on-side of the unit)
- Control (panel): used to set working parameter for the unit.
- Air filter: used to prevent dust particle to enter coil.
- Humidity sensor: used to control unit operation on or off.
- Condensed water drainage: used to drain condensed water out

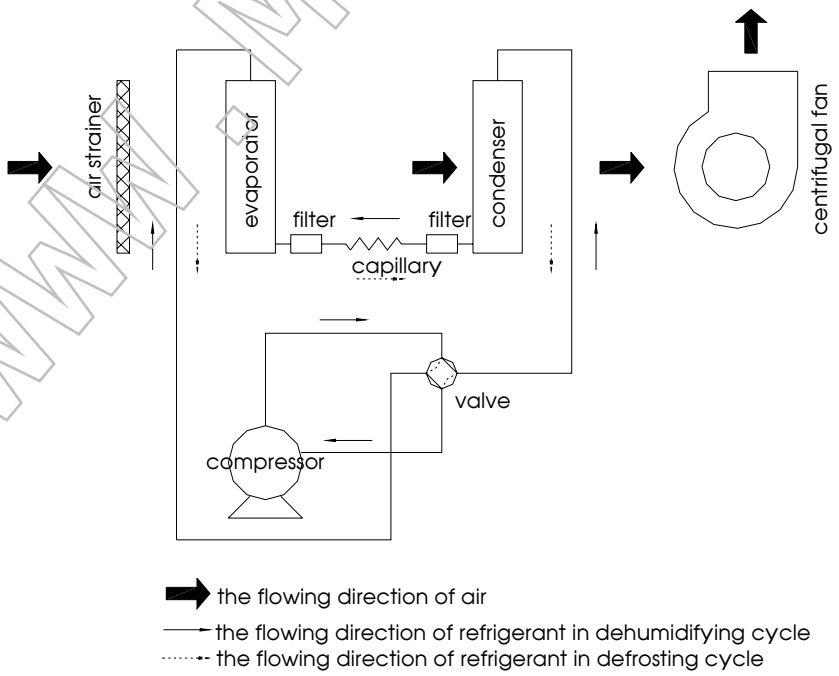
HD-192B

- Horizontal louver: used to adjust dry air outflow to be blown upward or downward.
- Vertical louver: used to adjust dry air outflow to be blown on right-side or left-side.
- Other components has the same function as those of HD-100B above.

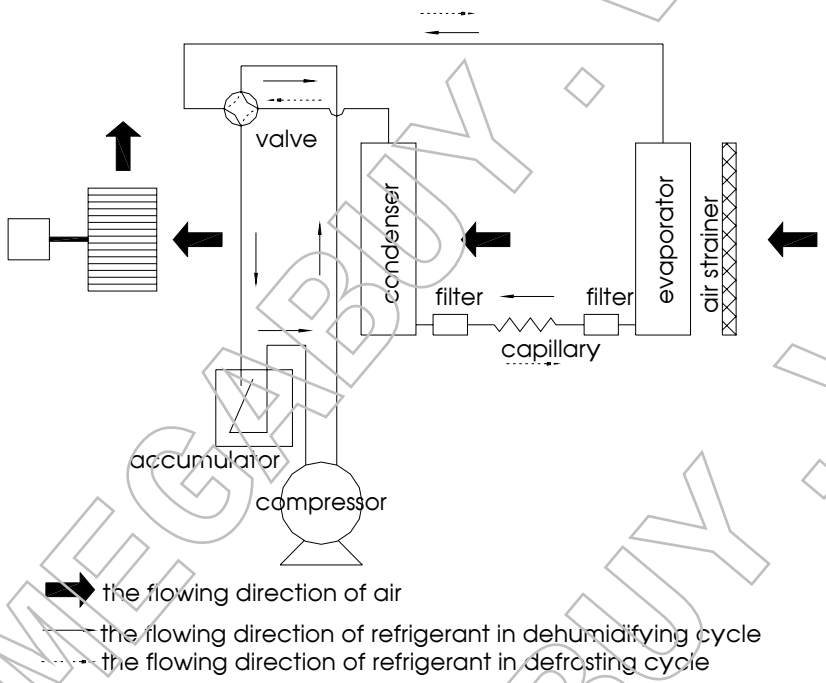


2.2. INNER COMPONENT IDENTIFICATION AND WORKING PRINCIPLE

HD-100B



HD-192B



Other main working components are: high efficient compressor, accumulator, magnetic flow control valve, evaporator coil, condenser coil, capillary tube, centrifugal fan, temperature sensor, humidity sensor and electrical wiring.

a. Main working principle

When dehumidifier is switched on, the compressor starts to work. The compressor draws in low-pressure and low-temperature refrigerant stream from evaporator, and compresses it into high-temperature and high-pressure gas. The gas enters into condenser and is condensed into liquid, giving out heat. Then through capillary, the liquid is throttled into the evaporator, absorbs heat from the air and is evaporated into gas. The gas is drawn into the compressor through air intake pipe. Just in this way the refrigeration cycle is completed. Such a cycle repeats time and again, and refrigeration is achieved.

b. Dehumidifying cycle

The centrifugal fan makes wet air entering into the evaporator through air filter, then the air is cooled down. When the surface temperature of the evaporator is lower than the dew-point temperature of the air, the water content in the air is condensed and drained from the machine. The dehumidified air is then heated by the condenser and is discharged into the room by the centrifugal fan. Thus, the air goes through the cycle and the water in the air gets condensed so as to achieve dehumidification.

c. Defrosting cycle

hen the environment temperature is lower ($5^{o}C$ - $18^{o}C$) during running, the surface of the evaporator will be frosted due to lower temperature. The computer will judge and send the defrosting command automatically as the situation. After defrosting, the dehumidifier will

turn back to run normally. In the way of " dehumidifying-defrosting-dehumidifying ", the machine can work normally in lower temperature environment.

d. Safety devices and function

In order to protect the unit from severe damage during operation the unit is equipped with such a safety features such as: low pressure cut-off, compressor overload protection, defrost cycle, main short-circuit fuse.

e. Main technical parameters

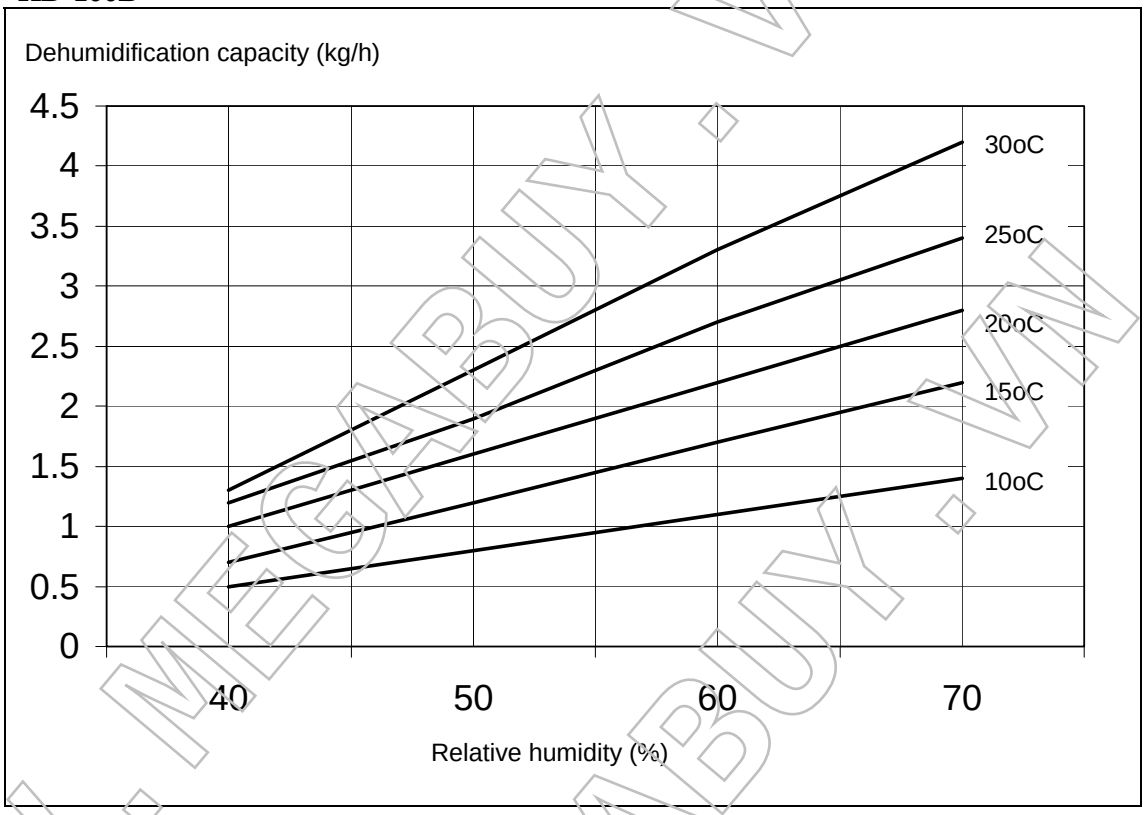
Model		HD-100B	HD-192B
Nominal dehumidification volume Kg/h	RH 60%	3.2	6.3
	RH 70%	4.2	8
Power source	V	220 ± 10% / 1 phase	380 ± 10% / 3 phases
Frequency	Hz	50	50
Rated current	A	8.6	7.0
Rated input power	kW	1.85	3.8
Max input power	kW	2.2	4.36
Air flow	m^3/h	900	1800
Suction pressure	MPa	0.53	0.60
Discharge pressure	MPa	1.87	1.88
Noise level	dB(A)	≤ 59	≤ 60
Refrigerant / Charge	Kg	R22 / 1.1	R22 / 1.9
Overall dimensions (D x W x H)	mm	439 x 540 x 1023	430 x 600 x 1920
Mass	Kg	64	132
Main switch / fuse	A	15/15	≥ 25 / 15

Note :
Nominal working condition : 27.0°C (DB), 21.2°C (WB)
Low temperature working condition : 5.0°C (DB), 2.1°C (WB)

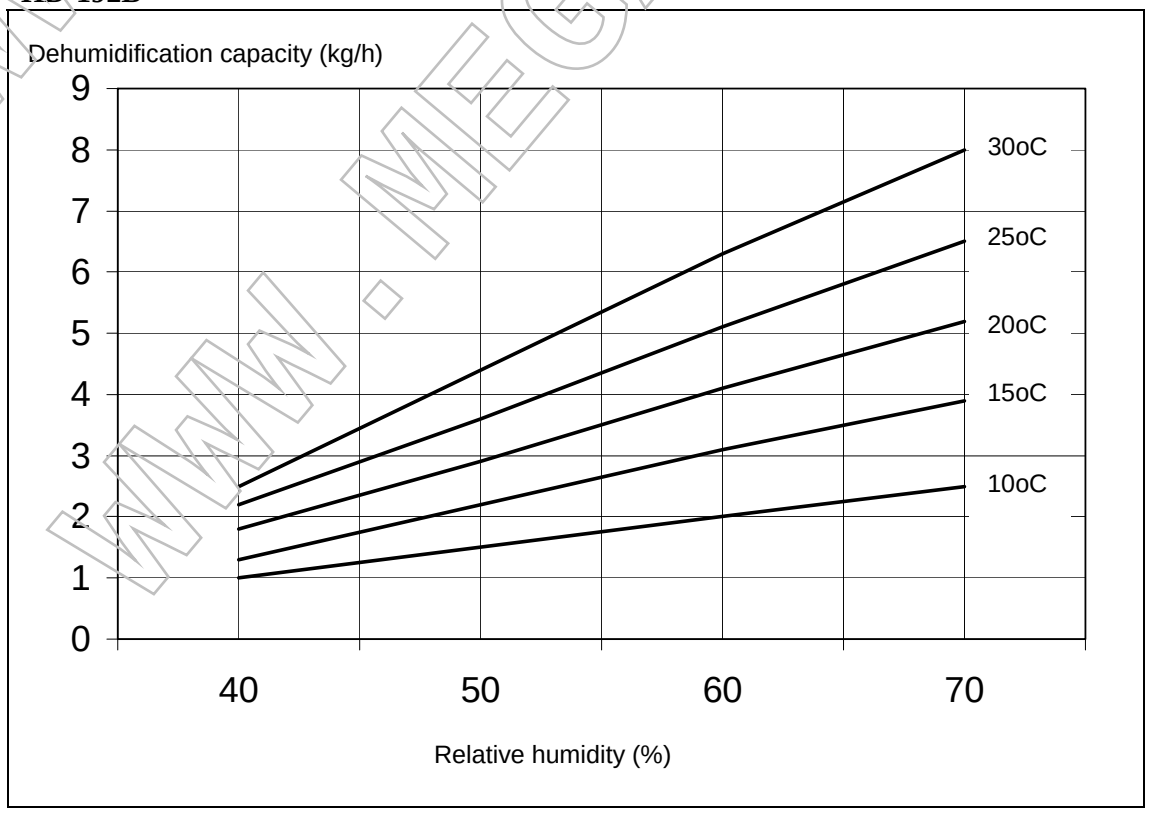
Notice :
Please use this unit under the specified environment and temperature condition strictly. The use life will be shorten if exceeding the working condition for a long time in using.

f. Dehumidifying capacity curve

HD-100B



HD-192B



3. INSTALLATION

3.1. Delivery and storage

To ensure consistent quality and maximum reliability, each dehumidifier is inspected prior to leaving the factory. If the dehumidifier is to be put into storage, prior to installation, the following precautions should be observed:

- The dehumidifier must be protected from physical damage
- The dehumidifier must be stored under cover and protected from dust, frost and rain.

Inspection
Remove the shipment packing and inspect unit to ensure that no damage has occurred during transportation and storage. Any visible damage must be reported to nearest Harison representative.

3.2 Installation Environment

(1) The unit should be installed stably. There should be one meter of space in front of the inflow and outflow. There should be no large obstacle around it.
(2) The machine set should be far from heat source and inflammable gas.
(3) The condensed water could be drained out of the room or into a pail.
(4) It is advisable to not to install it in a place of heavy dust or serious pollution.

3.3. Power source

(1) The power should be supplied with a special wire.
(2) Provide automatic air-break switch.
(3) There should be reliable electrical grounding.

3.4. Installing

(1) Skilled professional personnel should perform maintenance of the unit.
(2) Parking inclination of the unit should not exceed 10^{o}.

4. OPERATION

Switch on the power source

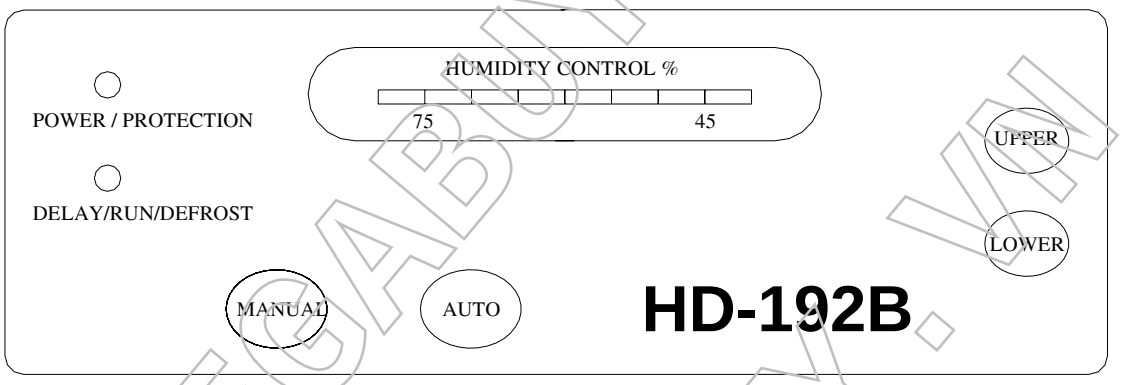
After the power source is switched on, the "POWER" light (red) is on; the unit is in the standby mode.

"MANUAL" operation :

Press "MANUAL" switch, the delay light (red) is on. After 3 minutes, the run light (green) is on, the compressor and the fan begin to work, and the unit is in the state of dehumidifying. Press "MANUAL" switch again, the run light is off, the unit stops working, the unit is in the standby mode.

" AUTO " operation :

Press " AUTO " switch, the upper and lower limit lights (green) of the humidity are on, and the humidity control indicates the scope of the humidity. The unit is in the auto run mode.



Control panel (for both HD-100B & HD-192B)

Select the ventilating direction

Turning the louver of the outflow, you can adjust the sir direction to make the airflow distributing evenly in the room.

Select the scope of the humidity

Selecting " AUTO " switch, the upper and lower limit lights (green) of the humidity are on, and the humidity control indicates the scope of the humidity. At this time, you can press " UP " or " LOWER " to select the suitable humidity as your requirement. When the environment humidity exceeds the upper limit, the computer will judge automatically and send the command of dehumidifying; when the environment humidity falls to the lower limit, the computer will check automatically and send the command of stopping. In this way of cycle, the environment humidity will be under the scope of humidity control.

Compressor can be protected automatically

When discontinuous starting or switching on of the power is not more than 3 minutes, and the " DELAY " light is on, then the compressor can not work in 3 minutes. When the " DELAY " light is off after 3 minutes, the compressor can work again.

The unit can defrost automatically

When defrosting, the " DEFROST " LIGHT (orange) is on.

Attention

(1) As the switch for the electrical control of the unit is the touch type, please do not knock hard on any key.

(2) Please clean by blowing (for example : clean by ear-cleaning ball) with low-pressure air periodically in the more dust place to ensure the precision because the humidity sensor is the sensitive component. Please correct or replace if the sensor is failed.
(3) Please switch off the power source if stopping using.

5. MAINTENANCE

Switch off the power source before maintenance. Pull out the plug from the socket.

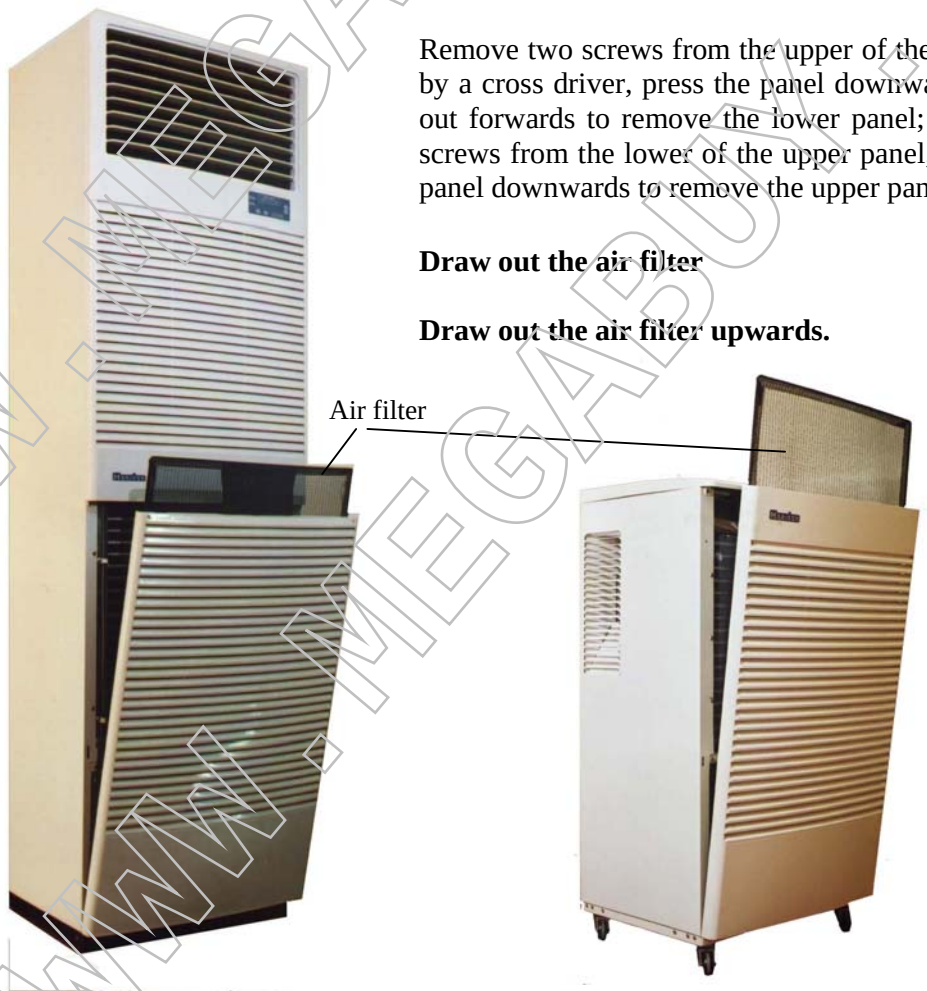
Due to the accumulation of dusts, the air filter should be cleaned to avoid effecting dehumidifying and going wrong periodically, at least once a month. If the dusts are more in the environment, it should be cleaned every week, even every day.

Remove the inflow panel.

Remove two screws from the upper of the lower panel by a cross driver, press the panel downwards and pull out forwards to remove the lower panel; remove two screws from the lower of the upper panel, pull out the panel downwards to remove the upper panel.

Draw out the air filter

Draw out the air filter upwards.



Clean the air filter

When cleaning, gently tap the air filter or remove the dust with a vacuum cleaner, or you can put the air filter in warm water ($\leq 40^{o}$C, add a little neutral detergent) to wash it or to brush it, and then wash with clear water.

Attention

a. The air filter should not be exposed directly to sun of fire, to avoid deforming.
b. The air filter should be fixed before starting the dehumidifier.

Warning :

The use life will be prolonged if checking, maintaining periodically. Please send professional person to damage.

6. TROUBLES AND COUNTERMEASURES

Phenomenon	**analysis of causes**	**Countermeasures**
Machine does not run.	Power failure Power source is not switched on not well plugged Fuse is broken	 Switch on the power source plug in Replace the fuse after removing troubles
Machine can not dehumidify or the effect is bad.	Air filter dusted Air inlet and outlet obstructed door or window is open Refrigerant leakage	Clean the air filter Remove the obstacle Close the door and the window, shade the sun with curtains, etc. Contact dealer and repair it
Water leakage	Machine inclined backward Drain pipe is blocked	Level the unit Remove the front panel and wipe off dirt from the pipe
"POWER/PROTECTION" light flashes.	The temperature sensor is open circuit or short circuit.	Replace the temperature sensor
Machine can not defrost	The temperature sensor is loosening. The valve is damaged.	Fix the temperature sensor well Replace the valve

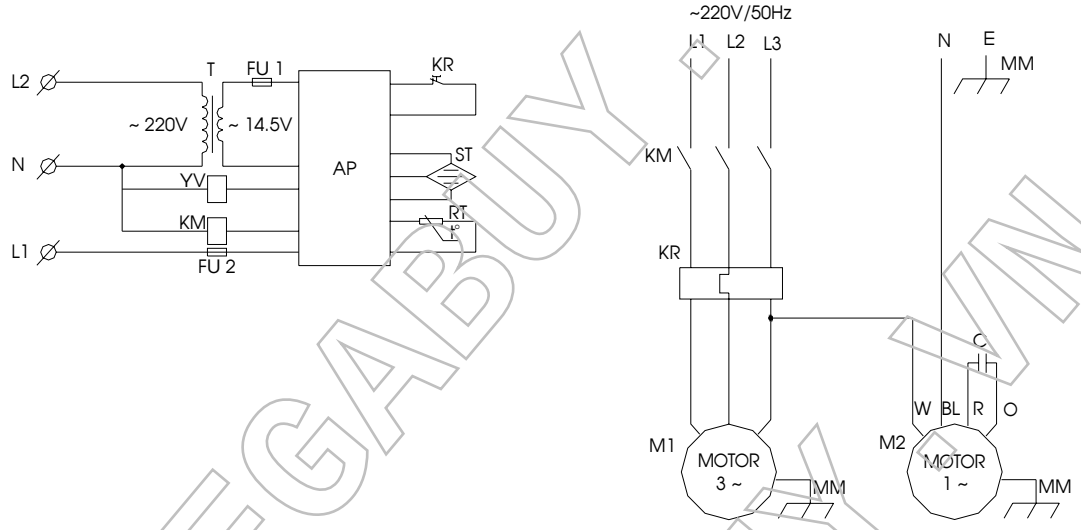
If the troubles have not been removed yet, please contact the dealer.

When the dehumidifier is starting or stopping, the sound of the cycling of refrigerant does not mean a trouble.

It is normal that hot wind is discharged the air outlet.

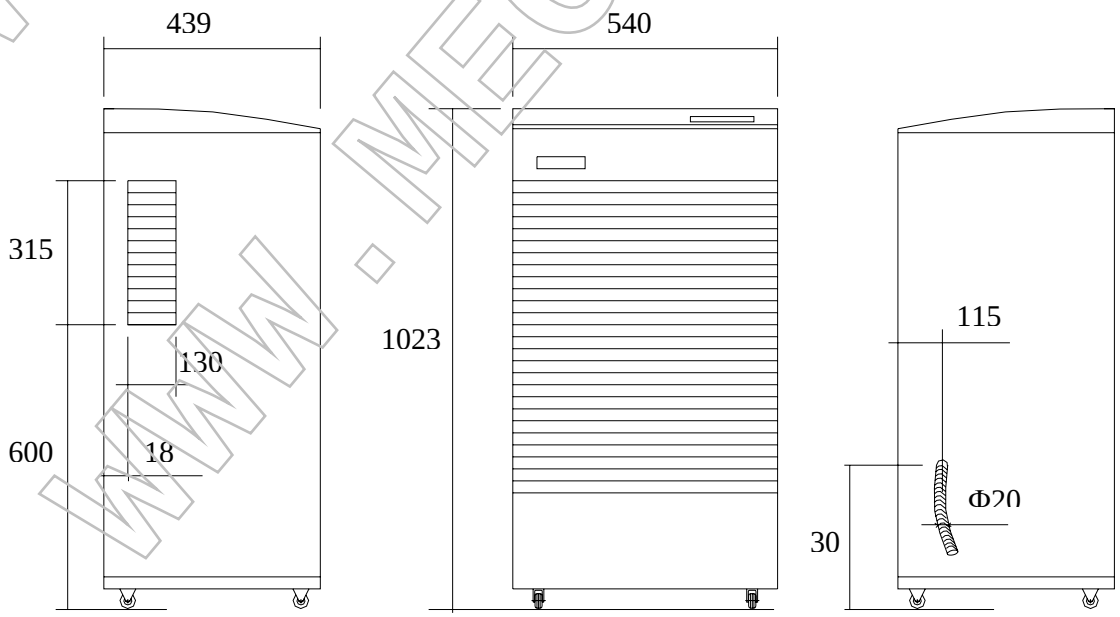
Notice
Please switch off the power source after stopping.
Must be grounded reliably when installing.
Please keep this manual in a suitable storage for reference.

APPENDIX 1: ELECTRICAL DRAWING HD-100B



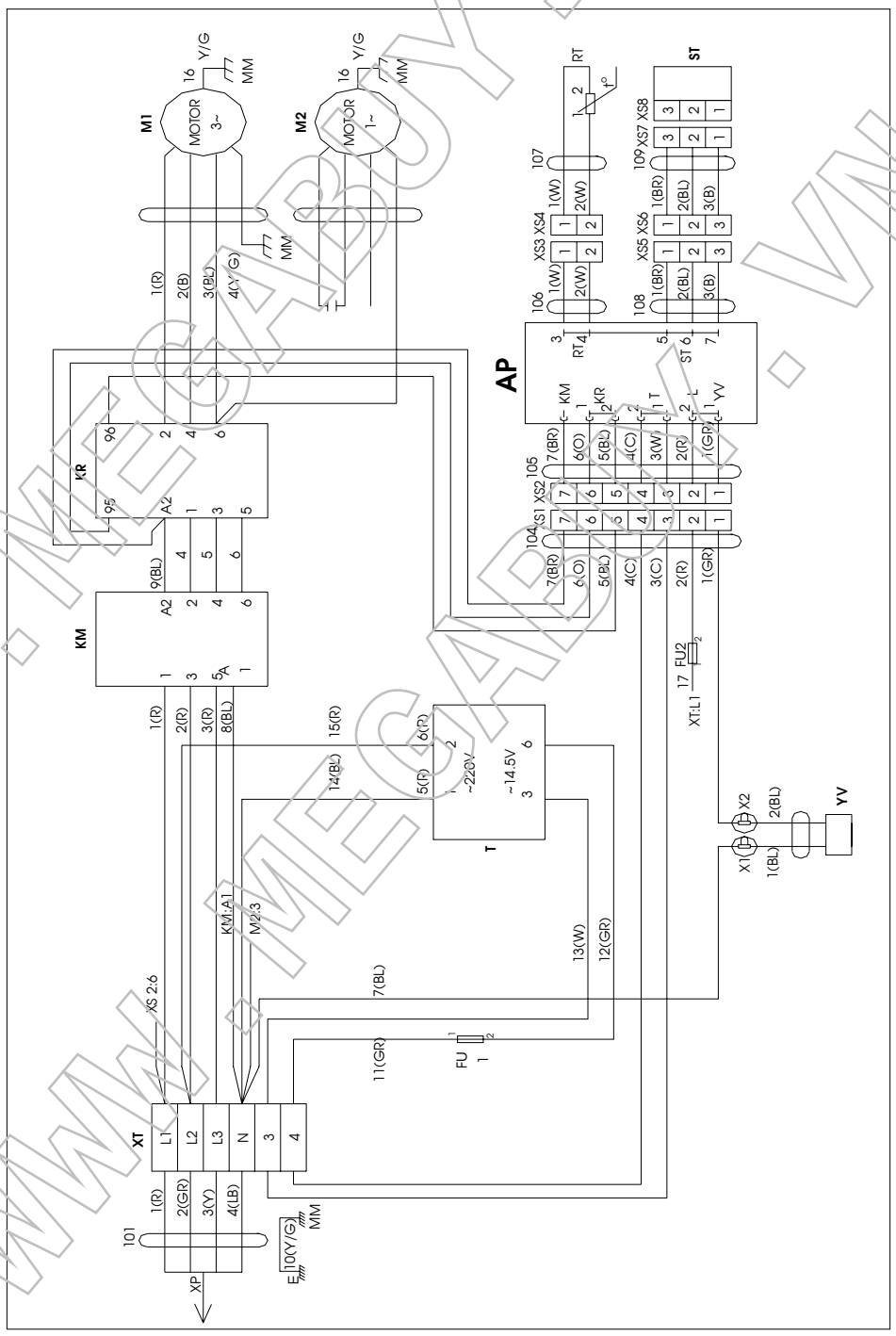
M1 : compressor; T : transformer ; AP : main control board; M2 : fan motor
FU 1 : fuse box (0.75A); YV : electromagnetic defrost valve; KR : hot relay
KM : AC contactor; C : fan capacitor; RT : defrost temp. sensor; ST : humidity sensor
FU 2 : fuse box (2A); Bl - black O - orange R - red W - white

APPENDIX 2: DIMENSION DRAWING HD-100B



note: dimension measured in mm

APPENDIX 3: ELECTRICAL DRAWING HD-192B



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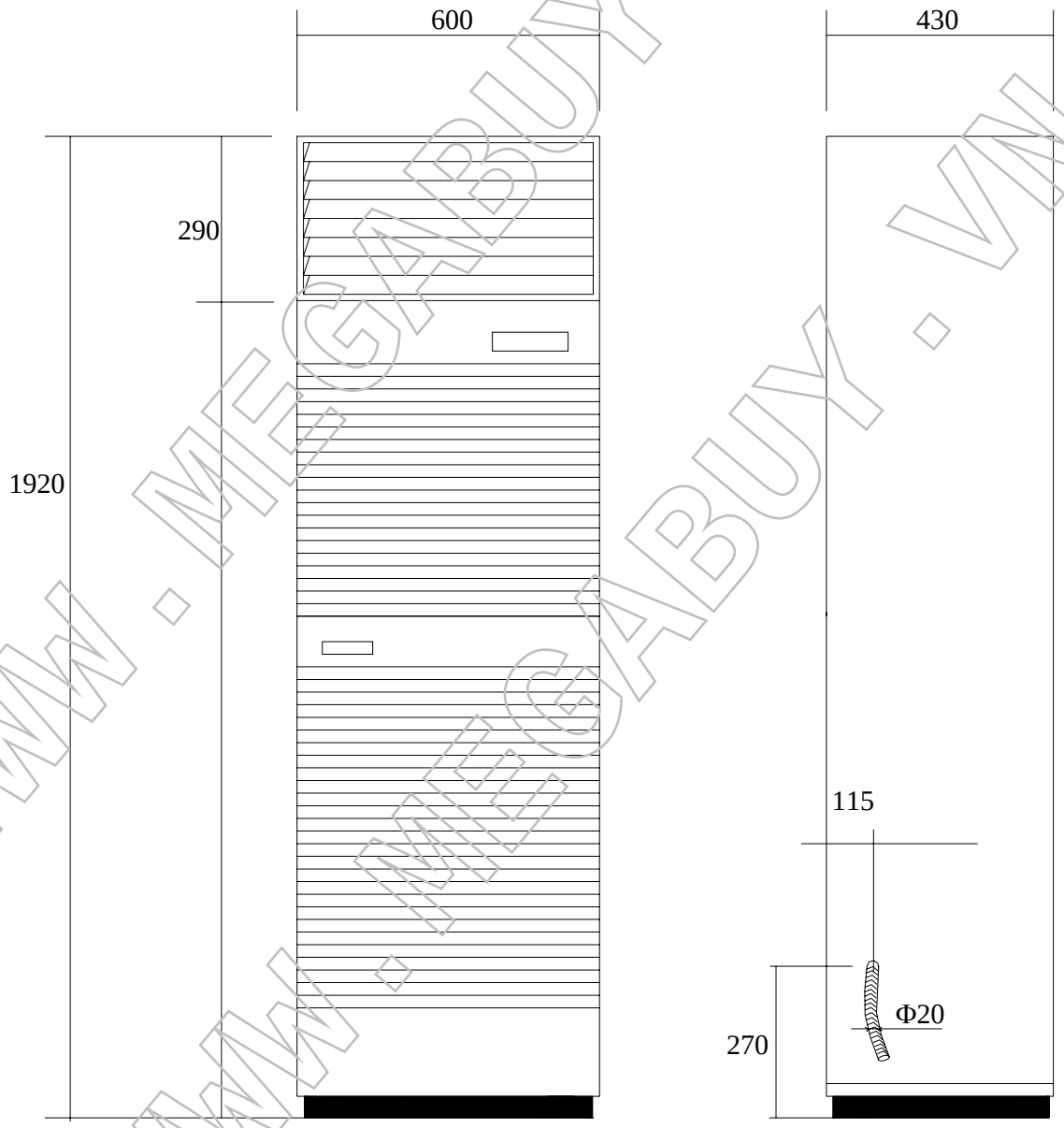
APPENDIX 4: DIMENSION DRAWINGHD-192B



note: dimension measured in mm

HARISON

Assembled in Thailand (ไทย)