Haier

Solar Direct Drive Refrigerator

Operation Manual

Model:

HTC-40

HTC-110

HTCD-90

- Please read the operation manual carefully before using your appliance.
- The company reserves the interpretation right to this instruction.
- The appearance of the refrigerator (freezer), please in kind prevail.
- Please appropriately keep this manual with the invoice.
- The technique or software of the refrigerator (freezer) will be updated without prior notice.

Haier

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Haier quality,
Your trust from beginning to end.

This refrigerator (freezer) is applicable to the drug store, the pharmaceutical factory, the quarantine station, the health center, the hospital and other locations to store the biological products and other items to be stored at the temperature of 2-8℃ or to be frozen.

Temperature control

Microprocesser control and the digital temperature display. The temperature display precision is 0.1℃accuracyand the temperature range is 2℃-8℃.

Safety system

- High-low temperature alarm and the sensor failure alarm;
- Alarm method(flashing indicator alarm);
- With the solar temperature display system, the inner-temperature display can be driven with the natural lights.

Refrigerating System

- Refrigerating system is optimized for efficiency performance. Meet a variety of operation demands at various atmospheric conditions;
- Provide the better refrigerating performance withhigh quality hermetically sealed compressor and other components;
- Achieve thebetter temperature uniformity with the refrigeration transmission patent of sealed pipeline.

User-friendly design

- User-friendly control design, intelligent and carefree
- High-performance thermal insulation
  Automatic evaporation of condensate water, lockable door design
- With USB portand be able to charge the cellphone, Ipad and other portable device under the sufficient sunlight

Technical information might be somewhat different on your refrigerator than published due to continuous improvement

Content:

Safety Precautions

Dear users,
Thank you for choosing Haier solar refrigerator (freezer), please make sure you have carefully read and observed the contents with following signs in the manual, for better understanding of this manual and better use of this product, so as to prevent personal injuries and refrigerator damage.

Actions or operations which are prohibited	Actions or operations which must be followed

- The solar panel must be used with the lightning rod and the ground lead of the solar panel mustn't be connected to the refrigerator (freezer).
- Only connect the refrigerator (freezer) with a dedicated power outlet or solar panel specified by the nameplate. This is to avoid fire or electric shock.
- If the refrigerator is to be decommissioned, unplug the power cord to avoid electric shock, current leakage, or fire caused by aged power lines.
- If the power cord needs to be lengthen, please refer to the manual for the specification.
- If the refrigerator (freezer) is left unused in area where supervision is unavailable for a long time, make sure children are not near the unit and the door cannot be completely closed and locked.
- The refrigerator (freezer) can be installed by the qualified worker or the after-sales service personnel only. The fire or the damage may be caused if it is installed by any unprofessional people.
- End of life disposal of a unit should only be performed by a professional. Remove the door to avoid accidents such as suffocation.
- Be sure to place the refrigerator (freezer) on the flat ground. If the ground is uneven, it may be fall or the injury or the abnormal noise may be caused.
- Please operate the refrigerator (freezer) in a safe area if it is used for keeping the toxic, harmful or radioactive items. The personal injury or the environment damage may be caused by the improper use.
- Please turn on the valves and open the doors and windows for ventilation immediately when there is any leakage of flammable gas. Do not turn off the refrigerator (freezer) or the connector.
- Be sure to turn off the refrigerator (freezer) switch before the repairing, to avoid the damage.
- Take measures to protect the inner part of the equipment against the surrounding drugs or the suspended solids in the maintenance and repair process. Otherwise, the health hazard may be caused.
- Stay the refrigerator (freezer) for 10 min after moving it to another location. Do not connect it to the power supply immediately after the displacement. Otherwise, the refrigerating system may be damage.
- Close the refrigerator (freezer) door cover by holding the door handle, to avoid the finger injury.

- Do not connect the refrigerator (freezer) onto the ground via the gas pipeline, water supply pipeline, phone line, lighting rod or etc. Otherwise, there is the risk of electric shock or others.
- Do not connect the anode and cathode of solar panel reversely.
- Do not place or operate the refrigerator (freezer) in the open air. There is the risk of electric shock or damage when it is soaked by the rainwater.
- Do not place the refrigerator (freezer) at the moist location or the location which is easily exposed to the spraying water. Otherwise, the electricity leakage or the electric shock may be caused due to the insulation reduction.
- Do not directly dump the water on the refrigerator (freezer). Otherwise, the electric shock or the short circuit may be cause.
- Do not install the solar panel on the tall building, in the tree or under any possible shield. This may affect the efficiency of solar panel.
- Do not keep the inflammable, the explosive or the volatile material in the refrigerator (freezer). Do not use any flammable spray around the same too. If not, the explosion or the fire disaster may be caused.
- Do not keep the acid, alkaline and other corrosive items in the refrigerator (freezer). Otherwise, the internal component or the electric parts of the refrigerator (freezer) may be damaged.
- Do not open any hole on the refrigerator (freezer) without permission. Otherwise, the insulation and refrigerating performance may be affected.
- Do not insert any metal items (as an iron nail or an iron wire) in any hole or gas of the refrigerator (freezer) without permission. Otherwise, the personal injury may be caused due to the contact of the moving parts with the above components.
- The users are not allowed to disassemble, repair or refit this refrigerator (freezer) without authorization. If the above operation is carried out by the unauthorized personnel, the fire disaster or damage to the refrigerator (freezer) may be caused due to the improper operation.
- Do not climb on the refrigerator (freezer) or place any goods on the same. Otherwise, the human injury may be caused or the refrigerator (freezer) may be damaged due to the turnover.
- For the refrigerator (freezer) with the freezing chamber, do not place any glass bottle or any canned goods in the freezing chamber. This may cause the personnel injury due to the frost crack.
- Keep the plastic packaging bag away from reach of the children. This is because the plastic bag may cause the suffocation accident.
- To avoid the personnel injury, do not try to extend the hand or any other body parts into the electric cabinet or the cabin hole.
- Keep the refrigerator (freezer) away from the children. Take measures to prevent the electric shock or any other unknown injury.

Application guidelines:

- Please check if the inner temperature reaches the setting value before placing the goods into the refrigerator (freezer). Then, place a few items into the former in batches.

- The displayed temperature value of the refrigerator (freezer) refers to the temperature of the temperature sensing probe in the display box. Although the displayed temperature may be different to the actual temperature of the refrigerator (freezer) center, but it will gradually reaches the actual one.

- Clean this refrigerator (freezer) with the diluted neutral detergent. Do not clean this refrigerator (freezer) with the brush, the acid, the gasoline, the soap power, the polishing power or the hot water. This is because such materials may damage the painting surface and the plastic and rubber parts. Be sure not to wipe the plastic and rubber parts with any volatile solvent, as the gasoline.

- Please disconnect the power supply when the refrigerator (freezer) will not be used for a long period.

- Please reduce the opening time of door for each access of the storage, to avoid the great fluctuation of inner temperature.

- When the door is opened, the inner temperature of the box will be increased sharply in a short time, which is normal. This phenomenon will be resumed within 1h after closing the door.

- The ambient temperature for using the refrigerator (freezer) of this series is +5℃ to +43℃. The temperature of the vaccine storage area in the box may be +2 to +8℃ higher in case the ambient temperature is lower or higher than the specified range.

- A storage basket is provided to this refrigerator (freezer). Please keep the items in the basket as much as possible.

- The displayed temperature/humidity of this refrigerator (freezer) may be different to the actual temperature/humidity inside the box due to the refrigerating inertia. This is normal.

- The USB 2.0 interface is only applicable to the equipment meeting the parameters (refer to the parameter description below). Please use the refrigerator (freezer) under the sufficient sunlight as much as possible.

Installation of refrigerator (freezer)

- Installation time: to check the refrigerating capacity of the product as soon as possible, please install the product under the good illumination.
- The ambient temperature is 5℃-43℃ and the good ventilation shall be provided. Use the air conditioning system, if necessary.
- Environmental humidity: less than85%Rh.
- Do not install the refrigerator (freezer) in the dusty condition.
- Take measures to avoid the rock or vibration.
  Working altitude of refrigerator (freezer): less than 2000m

Caution

- As this refrigerator (freezer) is very sensitive to the ambient temperature, it may fail to be run normally, in case it is installed in other environments except the above one. Please use the product after improving the environment.
- It is forbidden to install this refrigerator (freezer) in the open air. There is the risk of electric shock or electricity leakage when it is soaked by the rainwater.
- Please operate this refrigerator (freezer) under the ambient temperature not less than +5℃ or higher than 43℃.

Installation location

To normally run this refrigerator (freezer) and obtain the best performance, its installation locations shall meet the following requirements:

- Do not place the refrigerator (freezer) in a narrow and confined space. The door of the room shall not be narrower and lower than this refrigerator (freezer) and shall at least guarantee the normal access, to avoid the situations that the failed machine is difficult to be repaired on time and the stored goods are damaged.
- The installation ground must be firm and flat. The installation location shall have the good ventilation and shall not be exposed to the sunlight directly.
- A space greater than ≥1m³ shall be provided to each 8g refrigerant (R600a), to avoid the formation of flammable gas mixture when refrigerant is leaked by accident.

Warning

- Do not connect the refrigerator (freezer) onto the ground via the gas pipeline, water supply line, phone line, lightning rod. Otherwise, there is the risk of electric shock or safety accident.
- The main power line or the plug must be accessible after the installation, for timely disconnection of power supply in emergency. Do not cover the ventilation of refrigerator (freezer) with any item.

Preparation before use

1.Take off the packing material and the packaging tape

Take off all packing materials and packaging tapes for transportation.

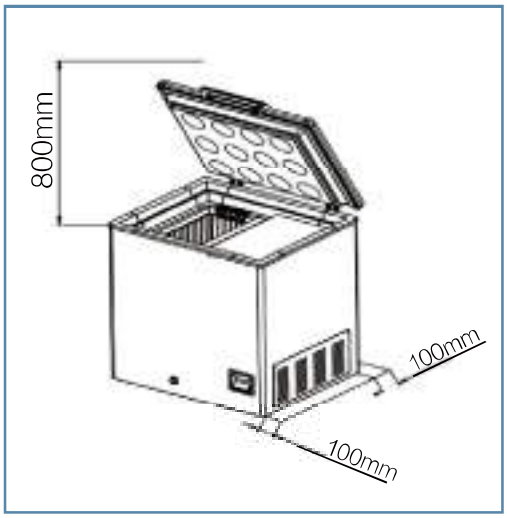
Caution keep the plastic bag away from the children.

2.Check of accompanying accessories

Please check the box contents as per the packing list.
If there is any mistake, please contact the after-sales department timely.

3.Storage condition

At least a 10cm gap shall be left around the storage box, to ensure the well air ventilation and to facilitate the heat radiation.

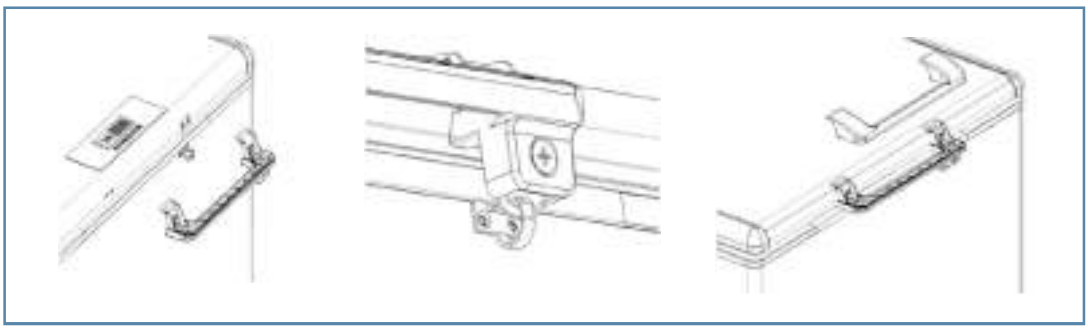


Caution

Sufficient space shall be kept at the engine-room grilling, to facilitate maintenance and ventilation.

4.Handle installation

a. Take out the handle;
b. Align the lower part of handle to the tapped hole of door cover;
c. Ensure that the lock hook is precisely cooperated with the hook on the box body;
d. Tighten the fastening screws one by one;
e. Fasten the handle cover



5.Standing

Do not connect to the power supply before placing, leveling and cleaning the machine body. Stay the storage box for more than 24h and connect to the power supply, to ensure the normal operation.

6.Cable selection

If the user prefers to choose the cable on his option, please refer to the table below for the appropriate cable diameter and cable length.

24VDC

Specification		Maximum Length	
Cross section area	AWG		
(mm²)[	Gauge]	(m)	(Inch)
41	1	10	32
69		15	49
88		20	65
10	7	25	82

7.Preliminary refrigeration verification

(1) Directly connect the solar panel connection wire to that of the refrigerator (freezer).
(2) When the wire harness is connected, the indication will be given by the temperature controller of the electric cabinet.
(3) Close the door cover and run the product for about 2h until the temperature value of the temperature displayer on the door cover is decreased. Meanwhile, the temperature display of the temperature controller on the electric cabinet will be dropped.

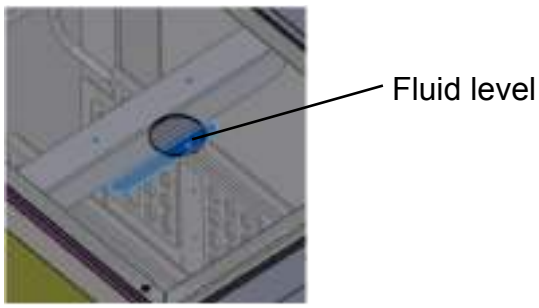
8.Water feeding of water tank (refer to the water tank guide)

(1) Open the water tank cover on the right side of the storage box and unscrew the cover nut.

Turn on the water tank cover on the right side of the cabin.

(2) Pour the complete bottle of corrosion inhibitor into the water tank of the refrigerator.
(3) Place the purified water container (about 50L) in the higher location (higher than the water tank) on one side of the refrigerator (freezer).

(4) Insert the suction hole of the water suction device into a water container and insert the water outlet into the water tank. Continuously squeeze the air cell of the water suction device with hands. In this way, the water flows from the container to the water thank. Stop to squeeze the air cell when the water begins to flow and the water will automatically flows into the water tank.

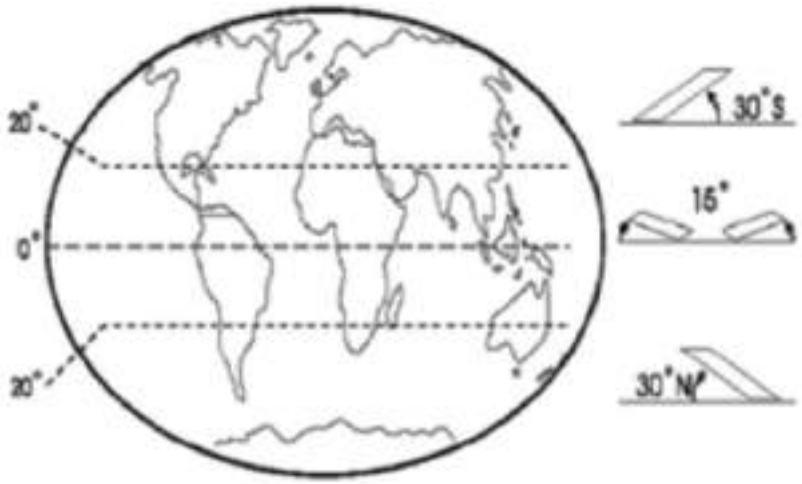


Stop injecting the water when the water level is flush to the liquid level.

(5) Observe the liquid level when injecting the water. When the liquid level is flush to the plane, stop adding the water.
(6) Please screw in the water injection opening plug.
(7) Cover the head cover and tighten the screw.

9.Selection of solar panel installation location

The solar panel shall face to the equator. Namely, it shall face toward the south direction in the Northern Hemisphere and toward the north in the Southern Hemisphere.
The dip angle of the solar panel is subject to the terrestrial latitude of the installation location. The general dip angle of the solar panel is as shown in the figure below.
The front of solar panel must be cleaned once per week or depending on the needs.



Recommended installation angle of solar panel

Caution

The solar panel installed near the equator shall face the equator and the installation angle shall be 10°-15°. In such way, the solar panel surface can be washed by the rainwater.

10.Installation of solar panel

Please attach the importance to the following items for the installation of solar panel:
(1).The solar panel rack shall be fixed on a firm and flat ground in such a way that it is accessible to the maintenance staff and the security is guaranteed;
(2).For the installation of the solar panel, the instruction of the supplier shall be followed, the fastener supplied or recommended by the supplier shall be adopted and the correct installation tool shall be used.
(3).Do not install the solar panel on the tall building, in the tree or under any possible shield. This may affect the efficiency of solar panel;
(4).The solar panel is fragile. Please do not place it in a place where possible to be hit by the falling items.
(5).The installation and use method of the solar panel shall follow the Installation and Operation Manual for Solar Panel.

11.Main power switch

Before check the following items before connecting to the power supply:
(1). Check if the solar panel is firmly fixed and appropriately installed;
(2). Acknowledge the cathode and anode of the input wire of solar panel and refrigerator (or freezer);
(3). Be sure to stay the refrigerator (freezer) for more than 24h for the first electric connection.
(4). Turn on the power switch on one side of the electric cabinet when the above items are satisfactory.

Switch

12.Equipment operation

(1).Check if the compressor and the fan are functional when the equipment is powered on and operated. The cooling time of each refrigerator (freezer) varies due to the service environment. Generally, the inner temperature of the refrigerator can be dropped to (+2℃ to +8℃) in 4-5 days. The vaccine can be stored in the refrigerator at such temperature and the vaccine must be loaded in the vaccine basket (or the rack).Cover the internal and the external door.
(2).Please observe the temperature change displayed on the freezing display of the refrigerator (freezer) with the freezer. When the temperature is reaches -5℃ and below, the ice raft can be loaded.

Caution

- This refrigerator (freezer) is powered by the solar energy. Once the sunlight reaches the specified intensity, the machine is driven. It can be normally operated after several starting attempts.
- The compressor can be started and stopped with the weather, in case the weather is variable.
- Do not connect to any unqualified power supply.
- The display on the door cover is also driven by the solar energy rather than any other power supply means. The temperature display or the screen flicker may be unavailable when the light is weak. The real-time inner temperature is displayed when the screen is radiated by a flashlight or other light sources for about 3s. The screen will recover to the original status when the light source is gone.

Initial power-on

Please follow the regulations below for the first start and the continuous operation:

Please connect the refrigerator (freezer) to the solar panel or the power supply of appropriate specification when the storage box is empty.

The temperature controller screen will be illumed after being connected to the power supply.

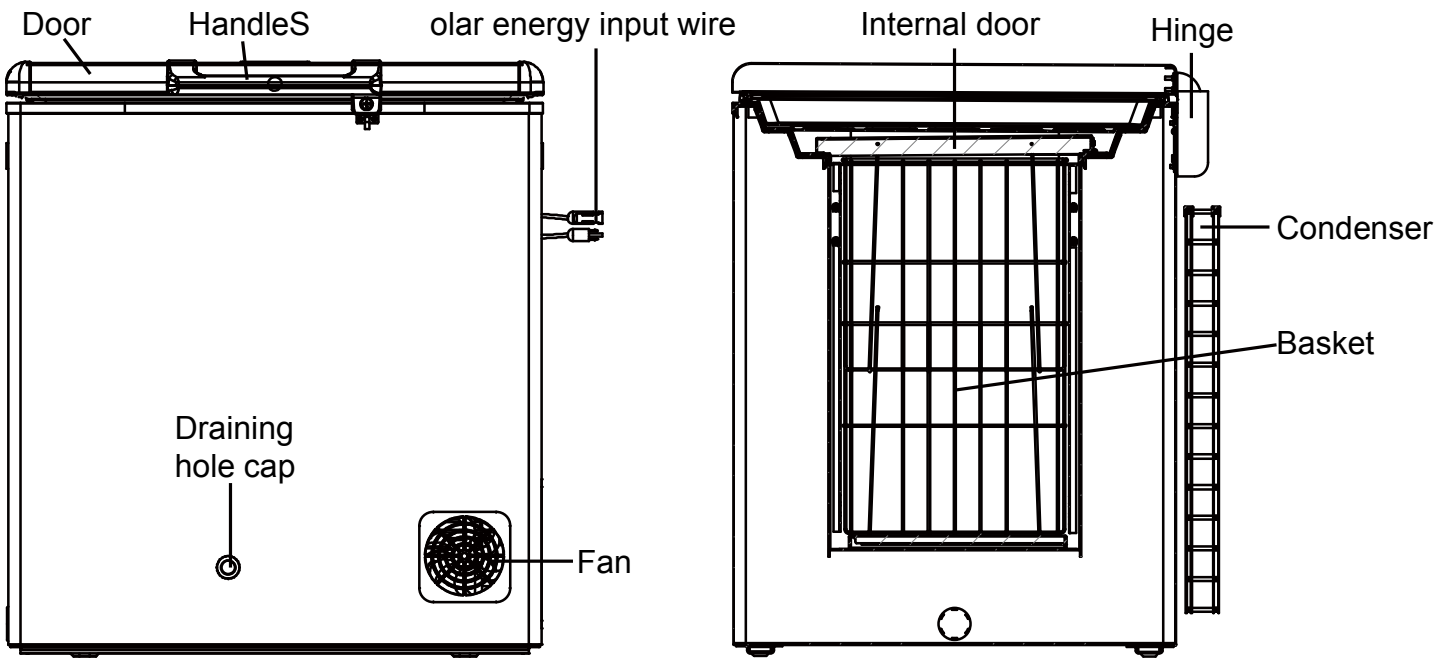
Corresponding parameters of this refrigerator (freezer) have been set before the deliver. There is no need for another setting.

Generally, when the refrigerator (freezer) is operated for 4-5 days, its temperature can reach the reasonable temperature range.

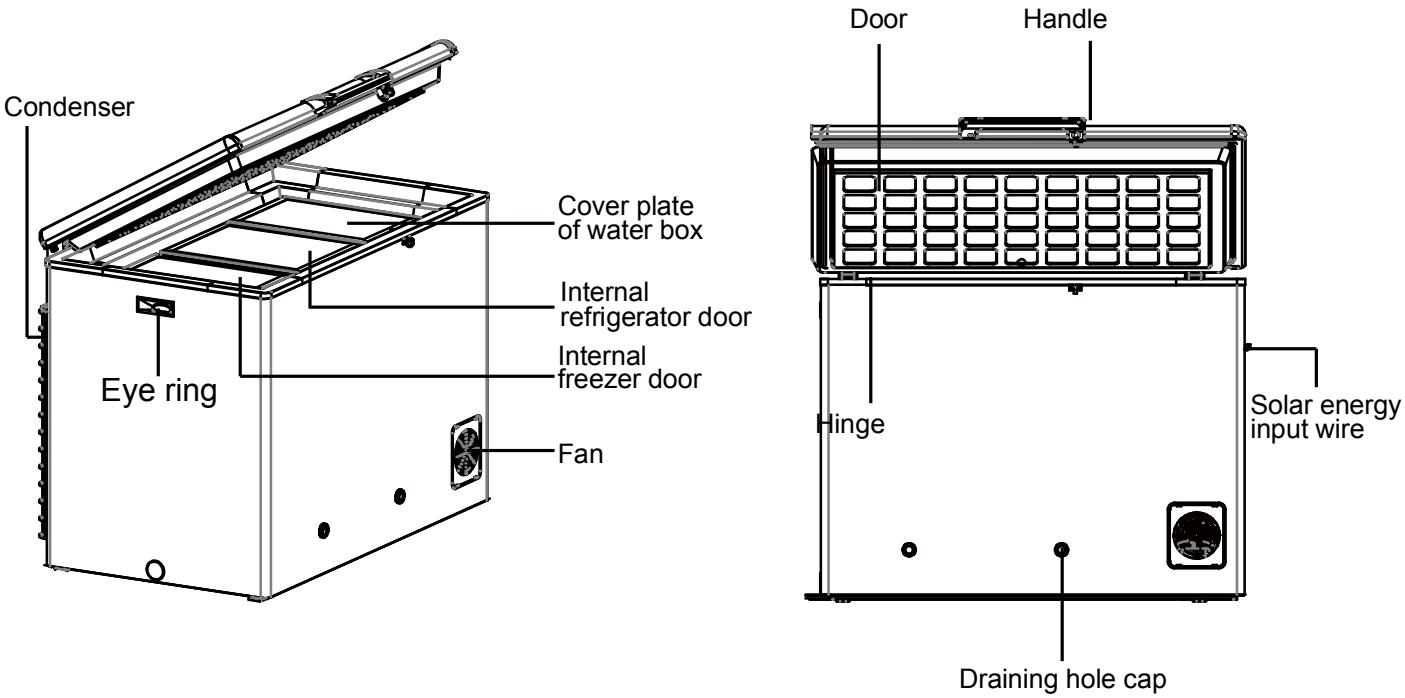
Please load the storage box with the items when the operation check of the refrigerator (freezer) is completed and the temperature is dropped to the reasonable range.

Component Name

HTC-40/110



HTCD-90



1.Vaccine Refrigerator

2.Solar power supply system (optional)

Solar panel

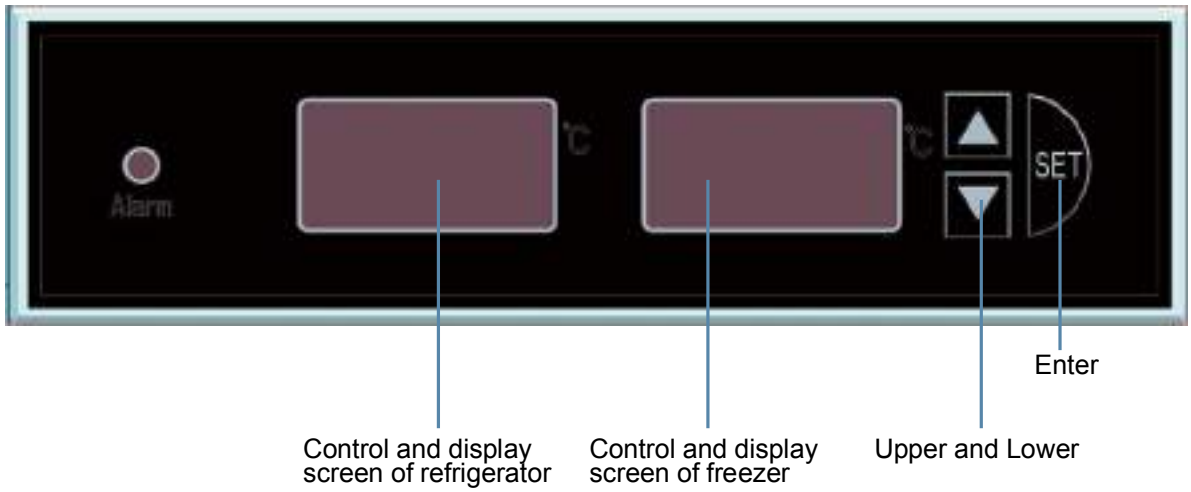
Solar panel mounting bracket

Ground rod and ground lead

Cable connecting solar panel and refrigerator (freezer)

Installation kits forsolar panel

Temperature controller

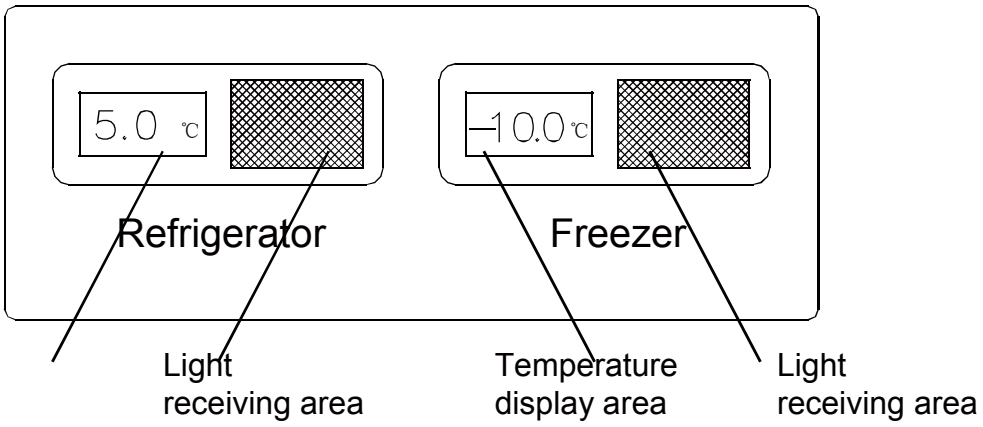


This controller is installed in the electric cabinet for control the work of compressor, fan and heater strip. The parameters have been set before the delivery, which cannot be changed by the user.

Introduction to alarm function (for reference of after-sales maintenance)

Display code	Code description	Display code	Code description
Er1	Ice storage sensor failure	AL1	Low temperature alarm for ice storage
Er2	Refrigerating sensor failure A	H2	High temperature refrigerating alarm
Er3	Freezing sensor failure	AL2	Low temperature refrigerating alarm
Er4	Ambient temperature sensor failure	AH3	High temperature freezing alarm
AH1	High temperature alarm for ice storage	AL3	Low temperature freezing alarm

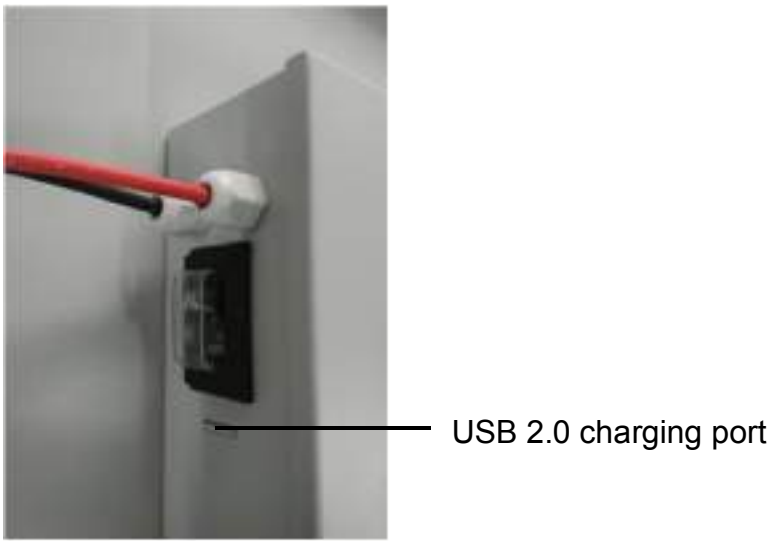
Temperature displayer



REFRIGERATOR---display the temperature of the vaccine storage area;
FREEZER---display the temperature of the ice raft refrigerating area; (applicable to HTCD-90)
This displayer has the solar energy power supply function that the additional circuit connection is not required. This displayer only indicates the internal temperature and is unable to control any refrigerating system and others of the product.
In the operation process, do not shield the solar energy receiving area. Otherwise, the temperature display area may fail to run.

Function of USB 2.0 charging port

The output voltage of USB 2.0 port is DC 5V and the current is 600mA. The USB 2.0 port is only applicable to the equipment meeting this parameter requirement. Charge the equipment as much as possible under the strong illumination, to avoid the influence to the power supply of the refrigerator (freezer).



Cleaning part

Warning

- Turn off the main switch and disconnect the power supply before cleaning the device.
- Be sure to dilute the detergent of the product. Otherwise, the plastic component or the housing surface may be faded.
- Please turn off the switch, disconnect the power supply and empty the storage box if the product will not be used for a long period.

Daily maintenance

- Wipe the four inner sides of the box, to protect the inner container against the corrosion of leaked drug or other fluids;
- For the product with the freezer, please timely clean the inner container when the frost on the inner sides of the freezer or the freezing bracket surface is thicker than 5mm, to avoid the excessive frost and the influence to the refrigerating capacity.

Monthly maintenance

- Take the de-dusting measures to the engine-room grilling, condensing fan and compressor base plate of the storage box, to avoid the influence to the radiation effect.
- Wipe the door gasket, to avoid the influence to the sealing performance by the dirt.
- Wipe off the dust from the product housing and the inner part with a dry cloth piece. If the product is very dirty, please wipe off the dirt with the clothing containing the neutral detergent, then wipe off the detergent residue with the wet cloth piece and finally wipe with a dry cloth piece.
- Clean the condenser, to avoid the deposited dust and the radiation influence.

Quarterly maintenance

Check the liquid level of water tank. When the liquid level is below the specified one, please add the water.

Maintenance of solar panel

Clean the solar panel once a week or clean it depending on the real needs.

Please fasten all bolts two weeks after the installation and then fasten the bolts again one year later.

To avoid the fire disaster and other potential hazards, check and clean the electric connection and the electric elements at least once per year. If necessary, please clean the former frequently.

Disposal treatment of refrigerator (freezer)

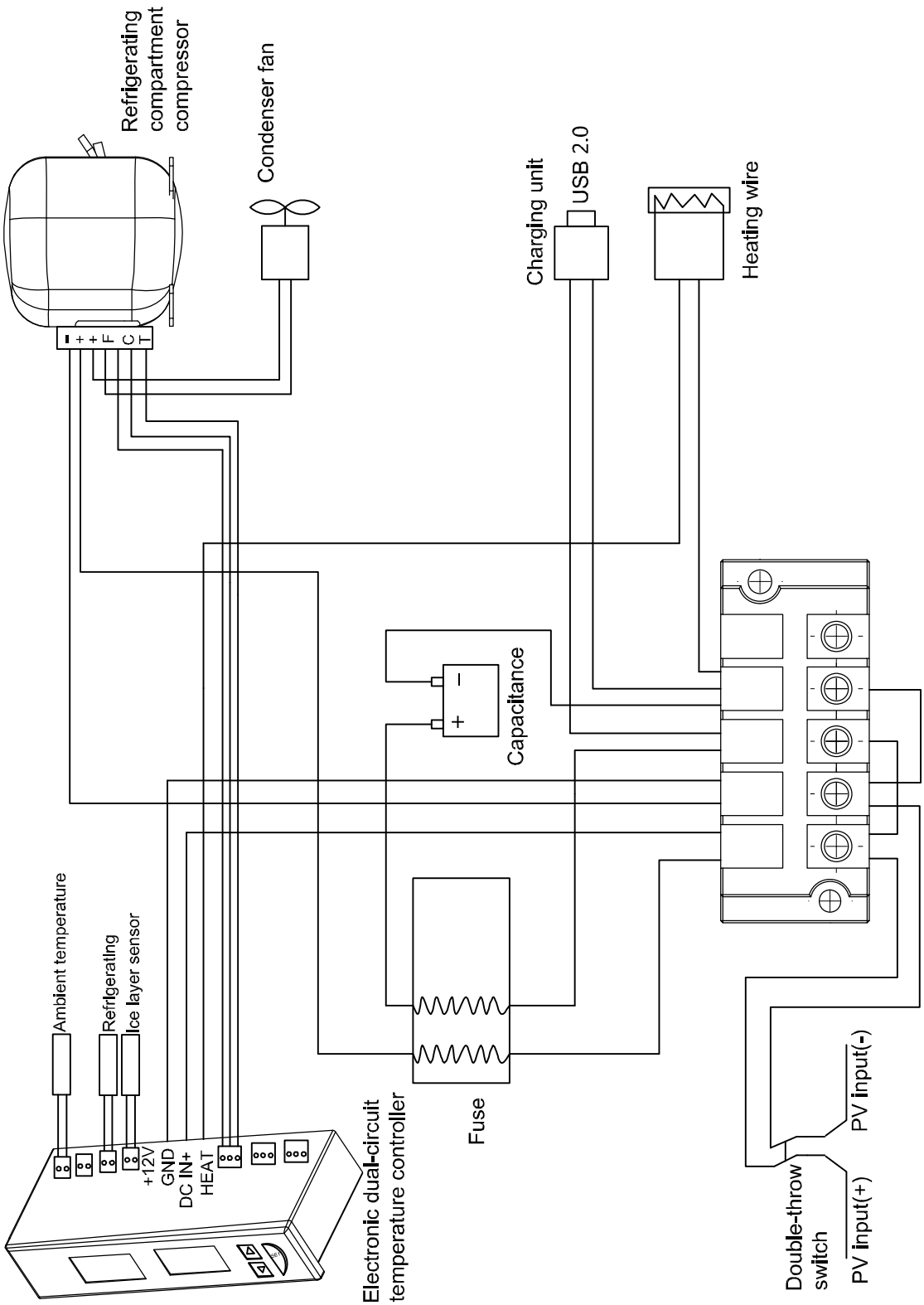
A symbol, indicating the used electric and electronic products and the used batteries cannot be deemed as the general household garbage, will be given on the refrigerator (freezer), the package as well as the accompanying documents. To reasonably treat, recycle and reuse the disused productsA, please observe the related national regulations, 2012/19/EC and 2006/66/EC and return these disused products to the specified recycling stations. To reserve the useful resources, to avoid the damage to the human health and the environment and to avoid the results caused by the inappropriate treatment of the disused products, please reasonably treat these products. For more information about the recycle and reuse, please contact the local authority, the waste disposal center or the sale point of the product. According to the national regulations, the punishment may be caused when the waste is inappropriately treated.

For the commercial user from EU, please contact the wholesaler and the supplier for further information about the disassembly of the electric and electronic equipment.

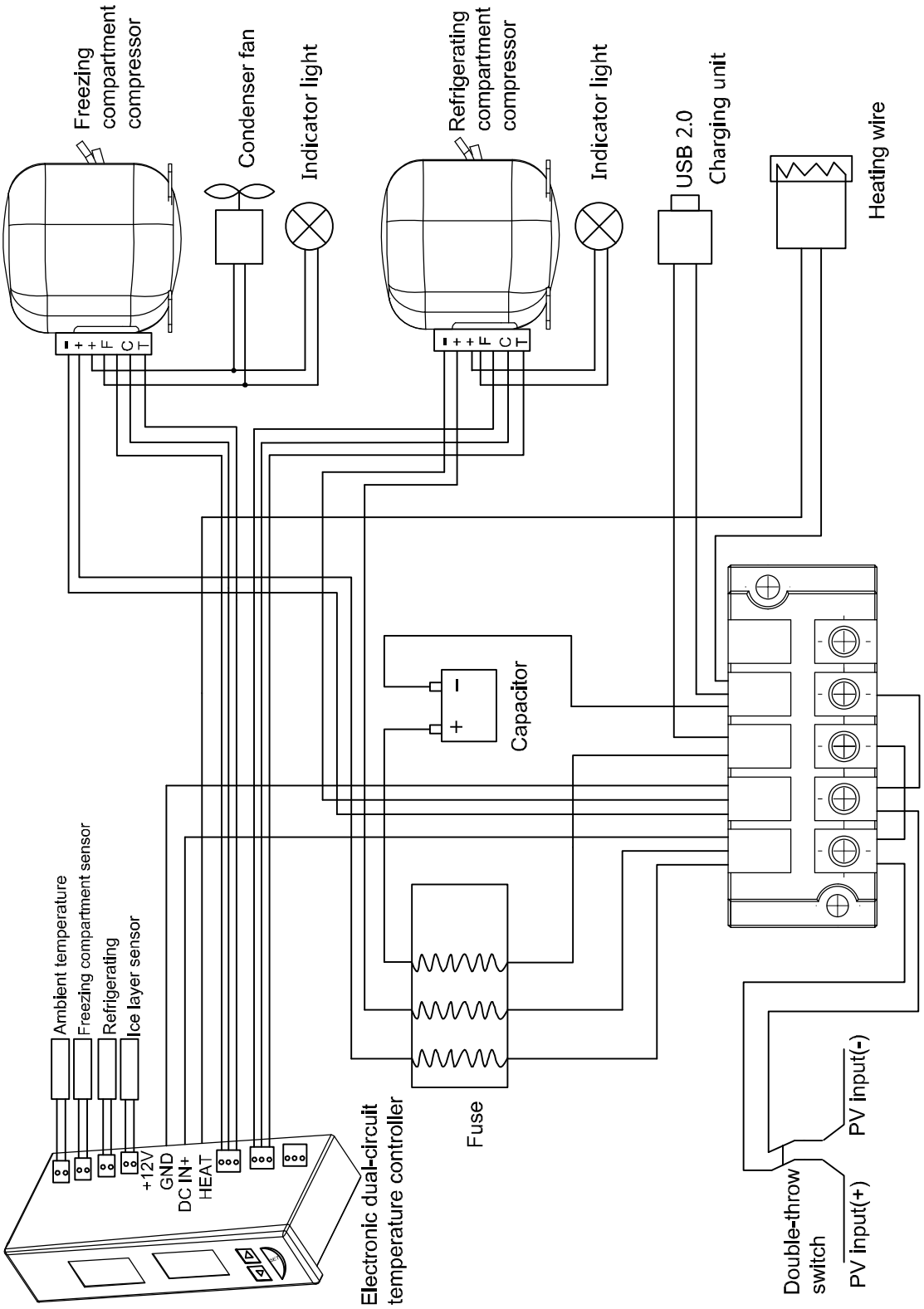
Information of waste treatment in countries other than the EU: these symbols are only valid in EU. If the refrigerator (freezer) is to be disassembled, please contact the local authority or the dealer for the correct treatment.

Circuit Diagram

HTC-40/HTC-110



HTCD-90


Freezing compartment compressor
Condenser fan
Indicator light
Refrigerating compartment compressor
Indicator light
USB 2.0 Charging unit
Heating wire
Capacitor
Ambient temperature
Freezing compartment sensor
Refrigerating
Ice layer sensor
+12V
GND
DC IN+
HEAT
Electronic dual-circuit temperature controller
Fuse
Double-throw switch
PV input(+)
PV input(-)

Specification

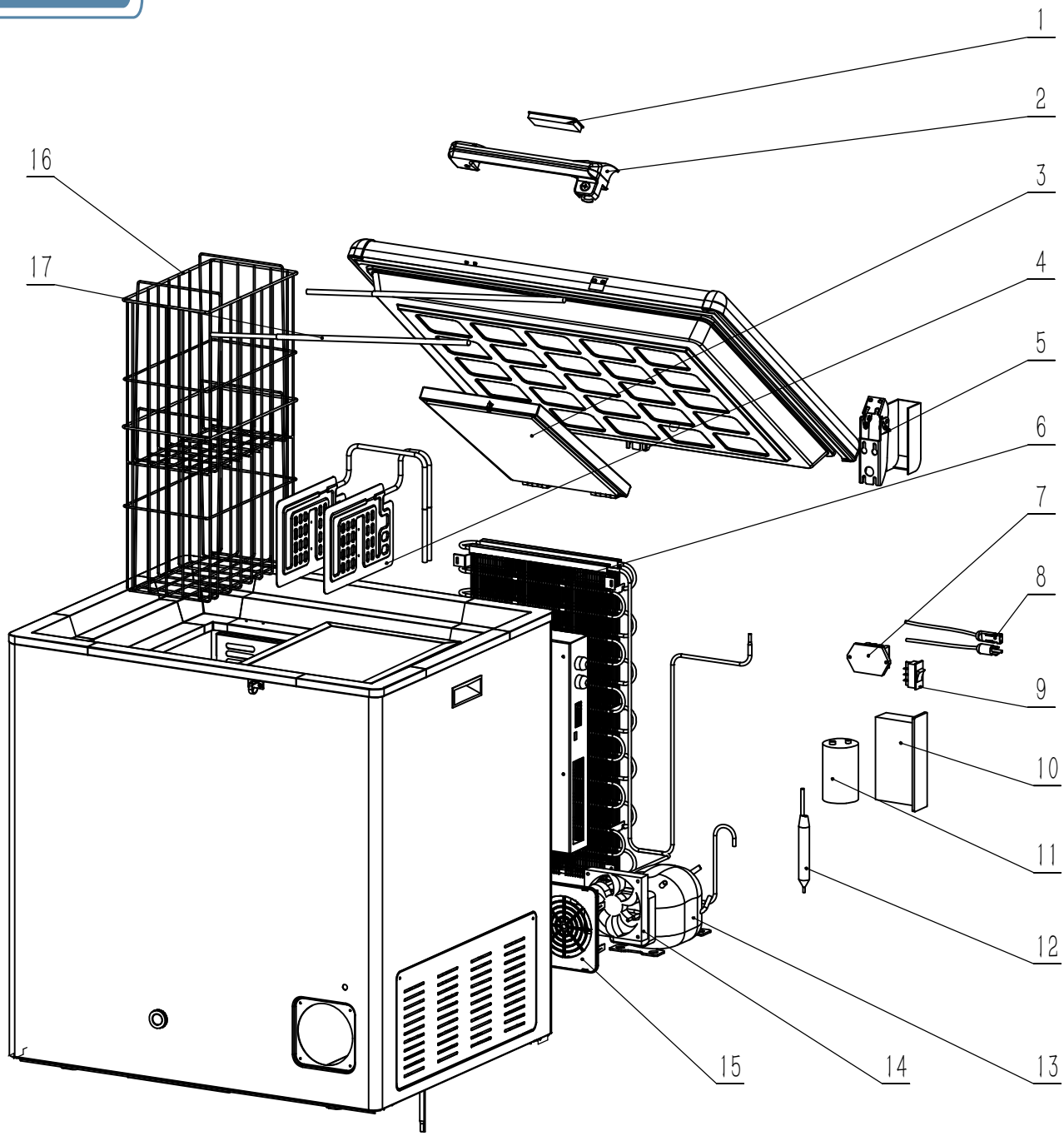
Technical parameter

Model	HTC-40	HTC-110	HTCD-90
Ambient temperature (℃)	+5 - +43	+5 - +43	+5 - +43
Temperature range of refrigerator (℃)	+2 - +8	+2 - +8	+2 - +8
Temperature range of freezer (℃)	/	/	≤-5
Gross volume (L)	40	110	58
Effective volume for vaccine (L)	22.5	75(without basket) 59 (with basket)	37.5
Freezing volume forice pack (L)	/	/	32
Freezing capacity forice pack (kg/24h)	/	/	2.43
Storage volume for ice pack (kg)	/	/	12.52
Refrigerant (g)	45	45	2×45
Voltage (VDC)	24	24	24
Rated power (W)	115	105	160
Exterior dimension (W×D×H) (mm)	788×654×875	1128×654×875	1128×654×875
Weight (kg)	55	69	83
Power of solar panel (W)	360	360	720
Solar radiation reference period:	3.5kWh/m²/24h		

Packing list

Model	HTC-40	HTC-110	HTCD-90
Operation Manual	1	1	1
Key	1	1	1
Handle kits	1	1	1
Water injector	1	1	1
Corrosion inhibitor	1	1	1
Ice scraper	/	/	1

HTC-40

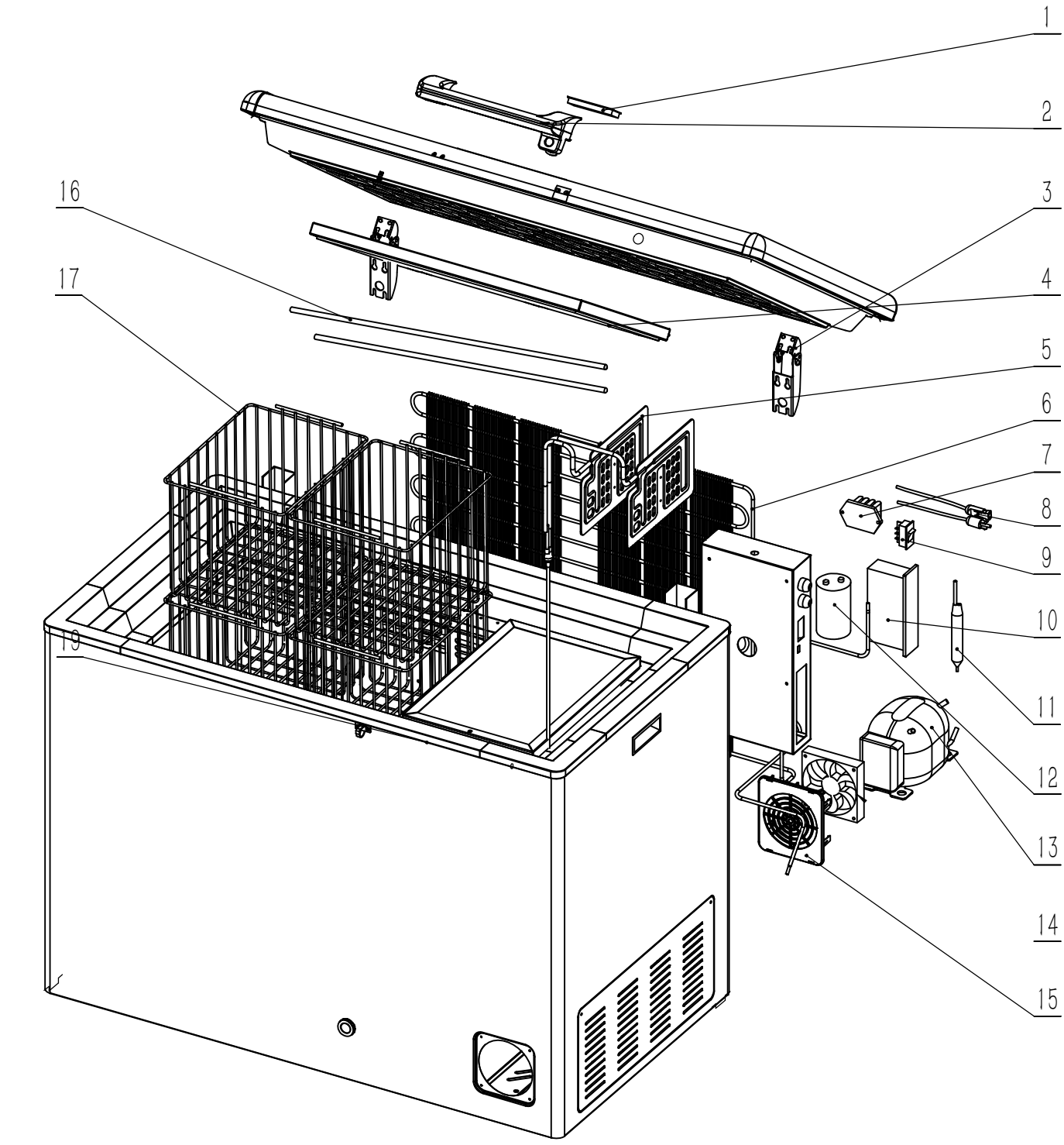


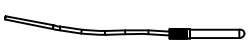
18	Refrigerator sensor	0274000358	Including the refrigerating control sensor and the display sensor
19	Ice layer sensor	0274000353	

Details of HTC-40 explosive view

No.	Private number	Name	Remark
1	0274000357	Solar screen	
2	0070814623	Handle assembly	
3	0270102485B	Internal refrigerating door	
4	0270700424	Evaporator	
5	0070816334	Hinge assembly-component	
6	0270700425	Back condenser	
7	0274000355	Fuse holder	
8	0274000206C	Solar energy input wire	
9	0274000354	Power switch	
10	0274000352	Temperature controller	
11	0274000356	Electrolytic capacitor	
12	0074180006	Dry filter	
13	0274000118A	Compressor	
14	0274000351	Fan	
15	0270200838	Fan shield	
16	0270102688D	Basket	
17	0270700429	Upper heat pipe	
18	0274000358	Refrigerator sensor	
19	0274000353	Ice layer sensor	

HTC-110





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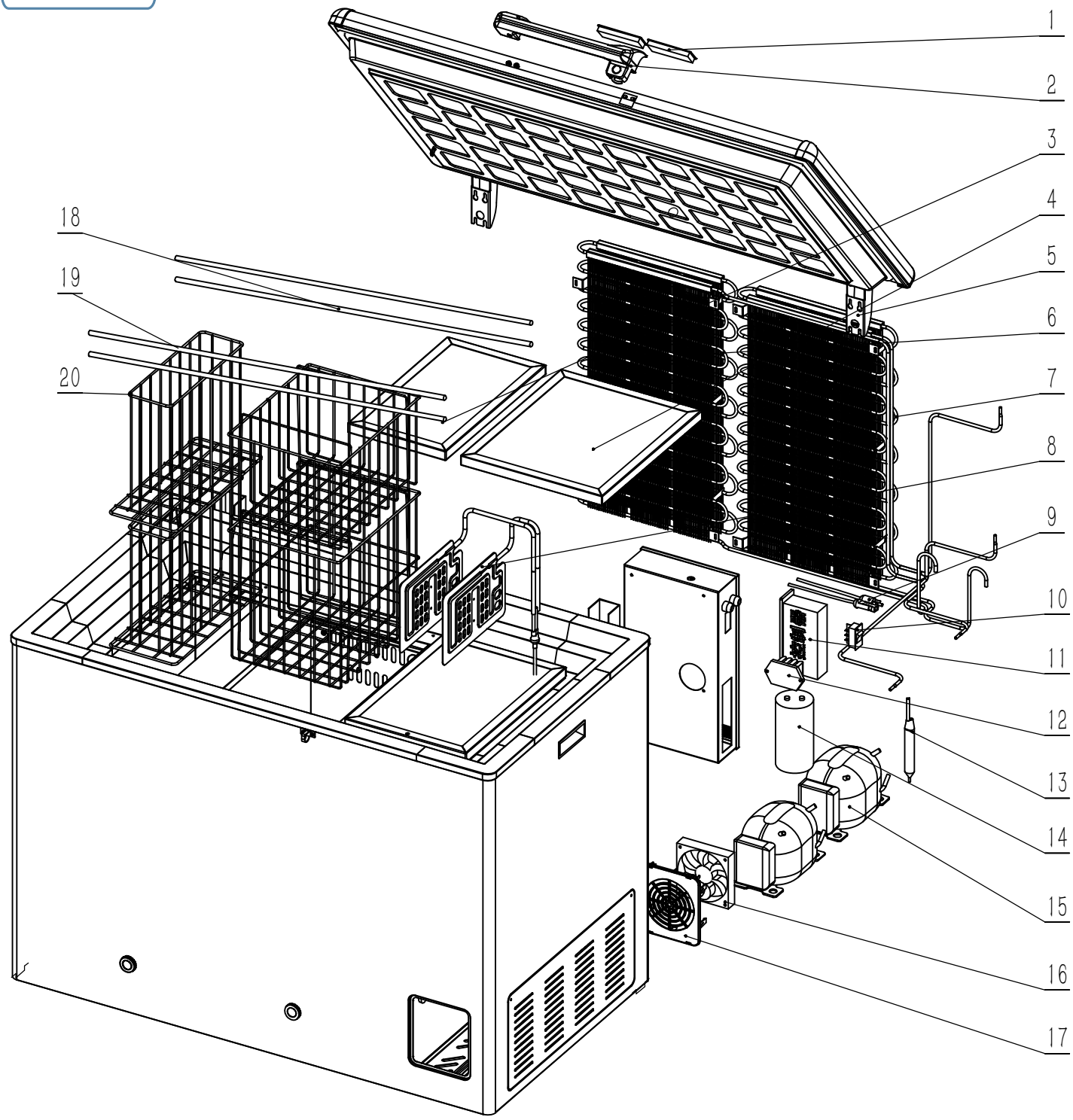
Details of HTC-110 explosive view

No.	Private number	Name	Remark
1	0274000357	Solar screen	
2	0070814623	Handle assembly	
3	0070816334	Hinge assembly-component	
4	0270102485A	Internal door of refrigerating area	
5	0270700424	Evaporator	
6	0270700421	Condenser	
7	0274000355	Fuse holder	
8	0274000206C	Solar energy input wire	
9	0274000354	Power switch	
10	0274000352	Temperature controller	
11	0074180006	Dry filter	
12	0274000356	Electrolytic capacitor	
13	0274000118A	Compressor	
14	0274000351	Fan	
15	0270200838	Fan shield	
16	0270700430	Heat pipe	Left center
	0270700431	Heat pipe	Right center
17	0270102688C	Large basket	
18	0274000358	Refrigerator sensor	
19	0274000353	Ice layer sensor	

HTCD-90



21	Refrigerator sensor	0274000358	Including the refrigerating control sensor and the display sensor
22	Freezer sensor	0274000357A	Including the freezing control sensor and the display sensor
23	Ice layer sensor	0274000353	

Details of HTCD-90 explosive view

No.	Private number	Name	Remark
1	0274000357	Solar screen	
2	0070814623	Handle assembly	
3	0270102484	Internal freezing door assembly	
4	0270102485	Internal refrigerating door assembly	
5	0070816334	Hinge assembly-component	
6	0270700425A	Condenser	Far-end compressor
7	0270700425	Condenser	Near-end compressor
8	0270700424	Evaporator	
9	0274000206C	Solar energy input wire	
10	0274000354	Power switch	
11	0274000352	Temperature controller	
12	0274000355	Fuse holder	
13	0074180006	Dry filter	
14	0274000356	Electrolytic capacitor	
15	0274000118A	Compressor	
16	0274000351	Fan	
17	0270200838	Fan shield	
18	0270700429	Heat pipe	Upper layer
19	0270700429A	Heat pipe	Lower layer
20	0270102688C	Basket	
21	0274000358	Refrigerator sensor	
22	0274000357A	Freezer sensor	
23	0274000353	Ice layer sensor	

Certificate of Quality

checker:

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