

# Solar Direct Drive Combined Refrigerator/Freezer



## HTCD-160/220

### Scope of Application:

The combined refrigerator with freezer is designed to store vaccines, reagents and to freeze ice packs. Suitable for remote and sunny regions where power shortages are common.

### Innovative Design

- Superior Thermal Insulation Performance
- EMS Monitoring System, 4.3-inch Color Screen Supports Multiple Language
- Safe, Secure and Reliable
- Environmentally-friendly Solar powered Drive System
- Ergonomic Design
- Intelligent Control

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HTCD-220



HTCD-160B





### Dual Zone and Dual System Design for Refrigeration and Freezing

- Designed with a dual zone of refrigeration and freezing, with refrigerated storage for vaccines and frozen icepack
- The effective capacity of refrigeration is 100L, equipped with 2 shelves (HTCD-160B)
- The effective capacity of refrigeration is 146L, equipped with 3 shelves (HTCD-220)
- Freezer Gross volume 40L, freezing capacity per 24h is 2kg (HTCD-160B)
- Freezer Gross volume 40L, freezing capacity per 24h is 2.4kg (HTCD-220)



### Security Guarantee

- Compliant with WHO PQS (WHO/PQS/E003/RF05-VP.6, WHO/PQS/E003/RF05.8) and Vaccine freeze protection classification: Grade A, ensuring that the vaccines inside the refrigerator are within the qualified range;
- Compliant with CE standard (IEC 60335-1-2020, IEC 60335-2-24-2020, EN 61000-6-1:2016, EN 61000-6-3:2011) to meet electrical safety design requirements.



### Superior Reliability

- The whole machine has passed a 10-year accelerated aging test. The outer shell is made of powder coated steel plate, and the inner lining is made of 1.0mm corrosion-resistant alumina



### Efficient Insulation Design

- The 140mm insulation and double sealing strip door design have excellent insulation performance. The temperature inside the cabin will not be lower than 0 °C to prevent vaccine freezing



### Control System

- The refrigeration and freezing areas adopt two independent control systems. Digital electronic temperature controller with an accuracy of 0.1 °C and temperature control range of 2-8 °C; Optional humidity control system can be used to achieve no condensation inside the cabin and prevent the vaccine box from getting wet.



### Ergonomic Design

- EMS system can achieve wireless remote monitoring of temperature, compressor operation, and door opening and closing status; Equipped with a 4.3-inch color LCD screen; Adjustable shelf height, convenient for accessing to vaccines; Equipped with status indicator lights, convenient to operator confirm the operation status in 3 meters; USB interface and MC4 photovoltaic connection port.

## ► Detail Introduction: EMS

### ● Comprehensive Monitoring to Ensure Safety

- Temperature monitor: Real time monitoring of the temperature in the vaccine area to ensure that vaccines are stored at an appropriate temperature.
- Door status monitor: Detect the status of the refrigerator door to prevent temperature fluctuations caused by the door not being tightly closed.
- Power outage monitor: Monitor the power status, promptly detect power outages, and ensure the continuous operation of equipment.
- Voltage and current monitor: Real time monitoring of voltage and current
- Compressor running time monitor: Record the running time of the compressor to provide real-time status of the compressor.
- Multiple alarm : Provide sound and light alarms, SMS alarms, email alarms.
- Operation recording: Record all operation for easy auditing and traceability.

### ● Data Analysis with Optimized Management

- Data recording and analysis: Record historical data, generate KPI statistics.
- Visual interface: Provides intuitive charts and reports for users to easily view temperature and other data trends.

### ● Remote Control

- Wireless data download: In non-subscription situations, it supports wireless transmission and download of data between mobile phones and devices through device WIFI hotspots.
- Remote monitoring and operation: After subscribing, remote access is provided to view device status, set parameters, and configure settings.
- Global SIM card: supporting over 180 countries and regions worldwide.
- Support to replace local SIM cards.

### ● Reliable and Stable Temperature Sensor with High Precision Sensor

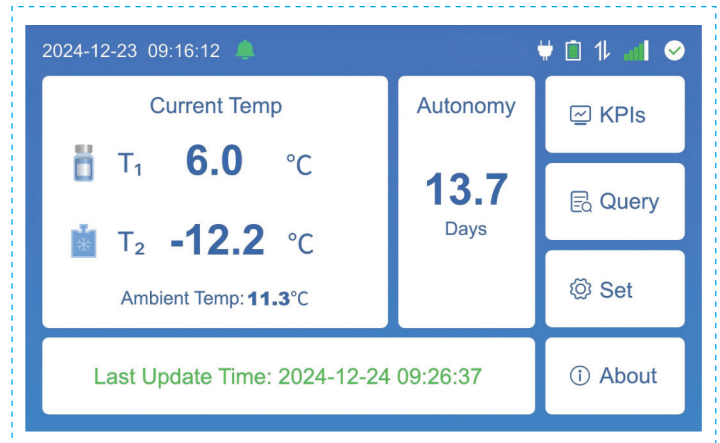
- Wide measurement range ( $-50^{\circ}\text{C}\sim+80^{\circ}\text{C}$ ), high accuracy ( $\pm 0.5^{\circ}\text{C}$ ), fast response time.
- Door sensor: Quickly detect the of the door status switch.

### ● Data Storage and Transmission

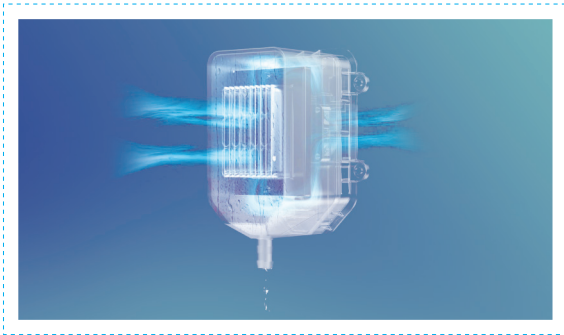
- Non volatile storage: Storage time up to 1 year (default collection frequency state)
- Multiple communication protocols: Supports 2G/3G/4G and other communication methods to ensure stable and reliable data transmission.

### ● OTA Update

- EMS meets Level 2 requirements as standard and can be upgraded to Level 3 through remote operation without the need for any additional hardware.



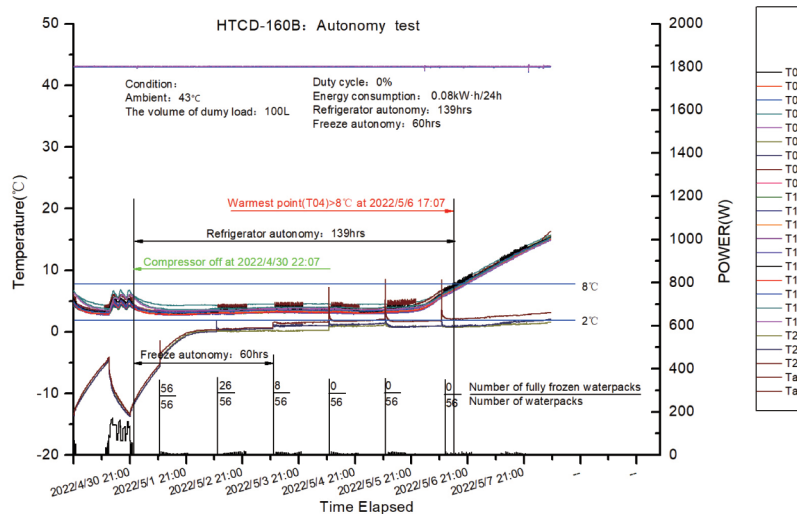
## ► Detail Introduction: Optional Humidity Control System



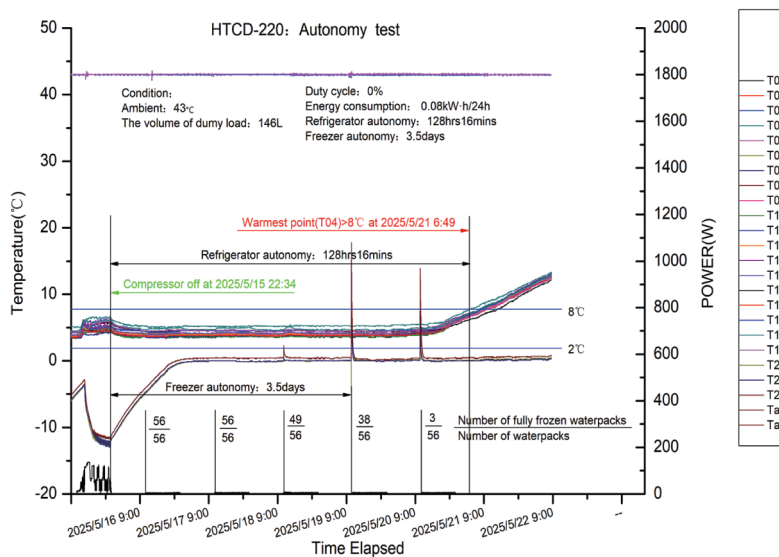
### ● Humidity Control System (Optional)

Optional humidity control system, using semiconductor condensation and fan circulation system, to achieve no condensation inside the cabin and prevent the vaccine box from getting wet.

## ► Autonomy Test



**HTCD-160B**



**HTCD-220**

## » Specifications

Model		HTCD-160B	HTCD-220
Technical Data	Cabinet Type	Upright	Upright
	Climate Type	H	H
	Cooling Type	Direct Cooling	Direct Cooling
	Defrost Mode	Manual	Manual
	Refrigerant	R600a	R600a
	Sound Level (dB(A))	≤43	≤43
	Temperature Range (°C)	Freezer: ≤-10 Refrigerator: 2-8	Freezer: ≤-10 Refrigerator: 2-8
Control	Controller	Microprocessor	Microprocessor
	Display	4.3-inch LCD Screen	4.3-inch LCD Screen
Electrical Data	Power Supply (V)	24VDC	24VDC
	Maximal Current (A) (24VDC)	6	6
	Energy Consumption: Stable Running (kWh/24h)	0.99	0.9
	Energy Consumption: Cool Down Test (kWh/24h)	1.1	1.1
	Autonomy Time at 43°C	139	128.3
	Solar Radiation Reference Period (kWh/m <sup>2</sup> /day)	3.5	3.5
Construction	Vaccine Storage Capacity (L)	100	146
	Gross Volume (L)	120	180
	Net/Gross Weight (kg)	181/221	195/234
	Interior Dimensions (W*D*H) (mm)	Refrigerator: 545*500*530 Freezer: 560*520*150	Refrigerator: 545*500*650 Freezer: 560*520*150
	Exterior Dimensions (W*D*H) (mm)	920*915*1740	920*915*1860
	Packing Dimensions (W*D*H) (mm)	970*950*1910	970*950*2015
	Container Load (20'/40'/40'H)	12/24/24	12/24/24
	Solar Panel Dimensions (W×D×H) (mm)	1640*990*35	1640*990*35
Alarm	High/Low Temperature	Y	Y
	Power Failure (Y/N)	Y	Y
	Sensor Error (Y/N)	Y	Y
Accessory	Basket	/	/
	Shelf	2	3
Others	Certificate	CE	CE
	Vaccine Freeze Protection Classification	Grade A	Grade A
	Freeze Gross Volume (L)	40	40
	Water Pack Storage Capacity in kg	22.4	22.4
	Freezing Capacity Per 24h in kg	2	2.4