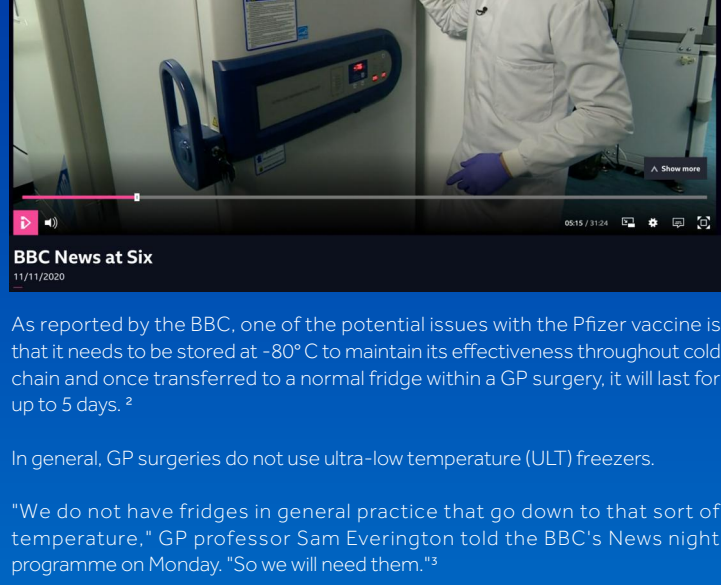


## Cold Chain Solutions to Meet Demand for Mass Vaccination by GPs

GPs have been asked to mass vaccinate the elderly from this coming December. The most likely vaccine available, at least initially, will be the Pfizer candidate which was found to be more than 90% effective in preventing COVID-19 in participants without evidence of prior SARS-CoV-2 infection in the first interim efficacy analysis.

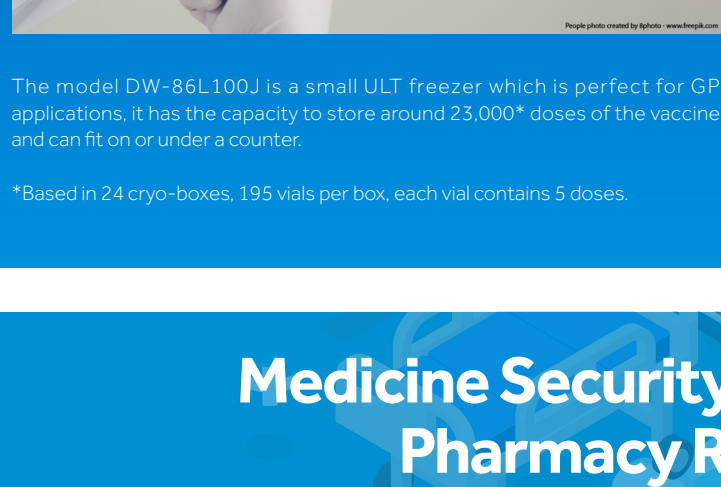


BBC News at Six 11/17/2020

As reported by the BBC, one of the potential issues with the Pfizer vaccine is that it needs to be stored at -80°C to maintain its effectiveness throughout cold chain and once transferred to a normal fridge within a GP surgery, it will last for up to 5 days.\*

In general, GP surgeries do not use ultra-low temperature (ULT) freezers.

"We do not have fridges in general practice that go down to that sort of temperature." GP professor Sam Everington told the BBC's Newsnight programme on Monday. "So we will need them."



The model DW-86L100J is a small ULT freezer which is perfect for GP applications. It has the capacity to store around 23,000\* doses of the vaccine and can fit on or under a counter.

\*Based in 24 cryo-boxes, 195 vials per box, each vial contains 5 doses.

NHS Scotland has already implemented some vaccine freezer storage in preparation for the up and coming COVID-19 vaccination programme. A number of Haier Biomedical ULT freezers have been installed at key sites across Scotland as the organisation gears up to potentially roll out a vaccine.

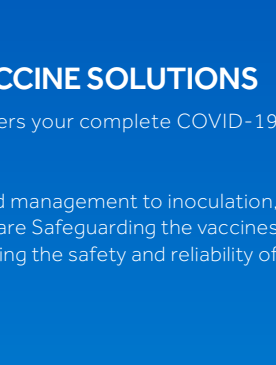
It is expected the other vaccine candidates, such as the one developed by Astra Zeneca and Oxford University, will be suitable for storage within a standard vaccine pharmacy refrigerator at between +2 to +8°C.

Cold chain logistics is another aspect to this problem: maintaining temperature during transportation. Passive and active cooler transport boxes are used to move refrigerated and frozen products from door to door.

Life-time monitoring of vaccine is equally important in ensuring potency and efficacy of vaccines. Haier Biomedical is already supporting a number of Hospitals and Medical Logistics Providers, delivering an MHRA compliant Remote Temperature Monitoring Solutions, leveraging the power of IoT.

### Remote Temperature Monitoring Device (RTMD)

The external temperature sensor measures the temperature, records and stores the measured temperature values automatically, and transmits the data to the platform through GPRS, the remote platform monitoring system provides the ultimate sample safety. It can be used for real-time monitoring of warehousing and distribution of food, medicine, vaccine, blood, reagents, biological products, biological sample tissue and other items as required.



### ABOUT HAIER BIOMEDICAL VACCINE SOLUTIONS

The truly worry free and only option that covers your complete COVID-19 vaccine cold chain requirements!

From vaccine transportation, preservation and management to inoculation, partnering with Haier Biomedical ensures you are Safeguarding the vaccines from manufacturer to the vaccinated by securing the safety and reliability of vaccines for millions of people.

### GET IN TOUCH

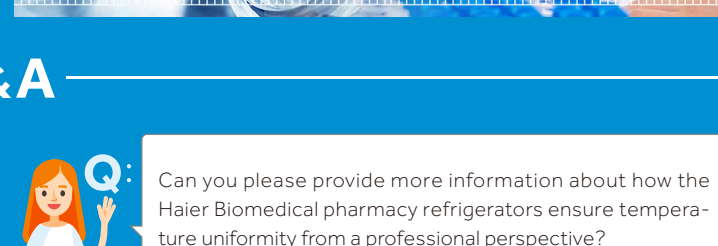
To request information about Haier Biomedical' s vaccine refrigerators and Freezers  
Email: xiangju.li@haierbiomedical.com  
Call: +86-532-88935593

- References:
1. <https://www.pfizer.com/uk/Update-albert-bourla-discusses-covid-19-vaccine-efficacy-res-ults>
  2. <https://www.bbc.co.uk/player/episode/m000p6v6/bbc-news-at-six-11-11-2020>
  3. <https://www.bbc.com/uk/cdn.ampproject.org/c/s/www.bbc.co.uk/news/amp/technology-54889084>
  4. <https://www.scotsman.com/health/scotland-has-bought-20-very-large-fridges-store-p-fizer-vaccine-nicola-sturgeon-confirms-3031480>
  5. <https://www.bbc.com/uk/news/health-35492693>

## Medicine Security Firewall - Medical Pharmacy Refrigerators

As the vaccine safety firewall of most medical institutions and pharmaceutical factories, medical pharmacy refrigerators shoulder the important responsibility of protecting medicines. At present, the medical pharmacy refrigerators on the market are mainly divided into two categories. One is the 2-8°C pharmacy refrigerator, which is mainly used to store medicines and biological products. It is usually suitable for pharmacies, pharmaceutical factories, hospitals, epidemic prevention stations and health centers as key examples; the other is the pharmacy refrigerator S freezer, which can provide 2-8°C refrigerated environment and -10~-40°C frozen environment simultaneously, the product is suitable for blood stations, hospitals, epidemic prevention stations, universities, scientific research institutes, electronic chemical enterprises to name a few.

Haier Biomedical's medical pharmacy refrigerators mainly include seven product series, which are comprehensively refined in four key areas of user requirements, they are: temperature, volume, function and appearance, that can provide the most suitable product solutions and optimized user experience according to the different needs. As the star product of Haier Biomedical pharmacy refrigerators, HYC-68/68A pharmacy refrigerators have been widely favored by the market due to their superior performance and compact body design. At the same time, many users have many queries about this product range. Recently we collected the most concerned questions about HYC-68/68A and have answered each of them as follows:



### Q & A

**Q:** Hello, my laboratory needs a medical refrigerator that can be placed under the test bench. I want to know what the height of the HYC-68/68A is?

**A:** The height of the HYC-68/68A is 670mm. Manufactured with an embedded design and can be placed under or on the test bench.

**Q:** What unique advantages does HYC-68/68A have?

**A:** Superior product quality, ultra-low energy consumption and ultra-quiet are the main features of HYC-68/68A. The unit uses an Embraco inverter compressor, and both the evaporating fan and the condensing fan are EBM high-efficiency fans to ensure the stable and efficient operation of the refrigeration system. The product quality and performance have been tested in the market for a long time and have an excellent reputation.

**Q:** In addition to temperature uniformity, what other measures do HYC-68/68A have to ensure sample safety?

**A:** Great question, the HYC-68/68A has multiple alarm functions. It has been manufactured with an upgraded sound and light alarms, high temperature alarm, sensor failure alarm, door ajar alarm, and power failure alarm. It is also equipped with a remote alarm interface, which can send real-time notification to users; Interfaced with dual DC fans that can be powered by 12V safe voltage; at the same time, it also has a series of user friendly designs, such as temperature display with two optional modes of real-time display and analog display and the door handle adopts an integrated design. Meanwhile, it is equipped with 1 test hole, which can provide users with more choices and more convenient operating experience.

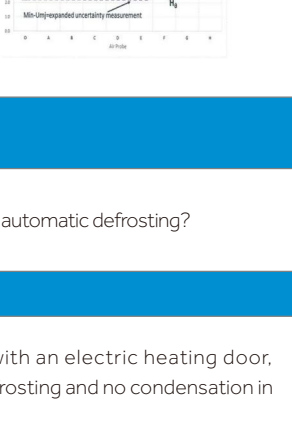
**Q:** Can you please provide more information about how the Haier Biomedical pharmacy refrigerators ensure temperature uniformity from a professional perspective?

**A:** Haier Biomedical pharmacy refrigerators guarantee temperature uniformity mainly through the following three aspects:

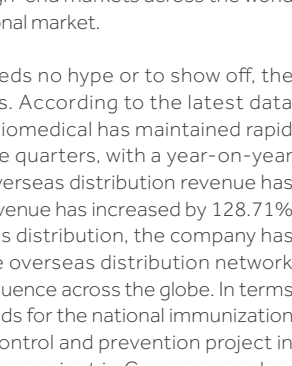
The product design refers to the French standard FD X15-140, which is superior to YY-0086-2007 standard and is universal worldwide, applicable in high-end biopharmaceutical laboratories, more authoritative, stricter and more precise.

The temperature test adopts 9-point limit testing points distribution, which is more comprehensive and does not leave any dead corners: According to French standards, a 9-point array is used to track the most extreme position in the cabinet, find the values of all measuring points, and visually mark the temperature changes at all positions.

**Q:** Compared with the conventional 5-point test from other products on the market (shown by the gray dots), it can avoid the dead ends of wind circulation.



We adopt a more scientific internationally common method for measuring the uniformity and fluctuation value, avoiding the hidden danger of false true temperature data, truly reflecting the temperature change of the air and directly tracking the maximum value of each point in the refrigerator. The method of calculating the fluctuation value can avoid the hidden danger of false real temperature, truly reflect the temperature change of the air, and directly track the maximum and minimum values of each point in the unit. At present, the conventional number is the average temperature of 5 central points (as shown by the green dots in the figure), and the maximum and minimum values are ignored, resulting in users not knowing that the temperature exceeds the standard.



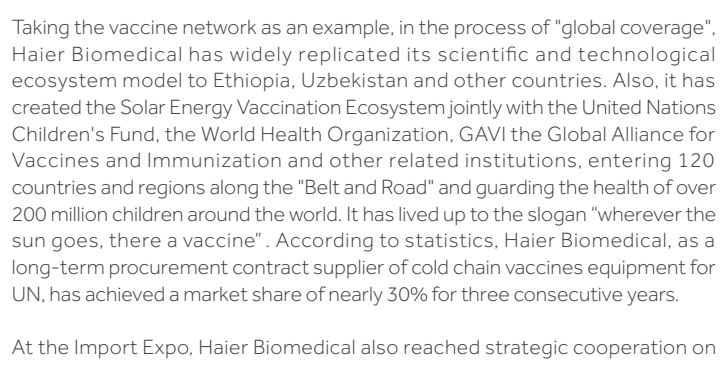
**Q:** Does the HYC-68/68A support automatic defrosting?

**A:** HYC-68/68A is equipped with an electric heating door, which ensures automatic defrosting and no condensation in harsh environments.

## Haier Biomedical @China International Import Expo!

### Let's take a look at Haier Biomedical while at the China International Import Expo from an International Perspective: Contributing Scientific and Technological Advances to Global Biosafety

From November 5 to 10, 2020, the highly anticipated 3rd China International Import Expo (hereinafter referred to as the "Import Expo") was held at Shanghai National Exhibition and Convention Center. Exhibitors from all over the world gathered together to connect, exchange, and discuss with each other their latest technologies, which has injected new impetus into the world's economic growth. Haier Biomedical, an overseas subsidiary of Haier Biomedical (the IoT biosafety brand under "Kingkong Life"), made its debut at the Import Expo and intensively demonstrated its innovative full-scenario IoT biosafety solutions, covering biobank solutions, vaccine network solutions, reagent network solutions, blood network solutions and laboratory network solutions.



### The Ecosystem-based Global Dual-wheel Driving Strategy Continues to be Upgraded

Haier Biomedical has further brought its new technologies and new concepts to the world at the Import Expo. In fact, long before the event, Haier Biomedical's innovative IoT solutions have been distributed to the world.

Taking the vaccine network as an example, in the process of "global coverage", Haier Biomedical has widely replicated its scientific and technological ecosystem model to Ethiopia, Uzbekistan and other countries. Also, it has created the Solar Energy Vaccination Ecosystem jointly with the United Nations Children's Fund, the World Health Organization, GAVI the Global Alliance for Vaccines and Immunization and other related institutions, entering 120 countries and regions along the "Belt and Road" and guarding the health of over 200 million children around the world. It has lived up to the slogan "wherever the sun goes, there a vaccine". According to statistics, Haier Biomedical, as a long-term procurement contract supplier of cold chain vaccines equipment for UN, has achieved a market share of nearly 30% for three consecutive years.



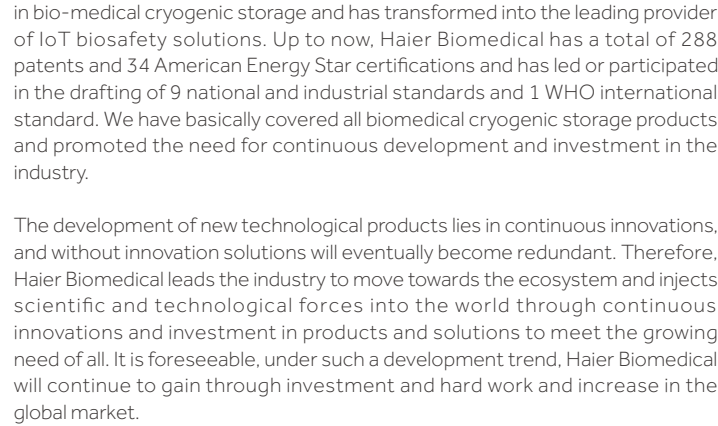
At the Import Expo, Haier Biomedical also reached strategic cooperation on "smart management and service of vaccines" with Sanofi Pasteur, a leading century-old French vaccine manufacturer. According to the agreement, the two parties will build a high-quality and efficient smart vaccine ecosystem together relying on the application of the Internet of Things plus digital technologies in the field of vaccine management to promote the construction of intelligent vaccine management and service models to constantly meet the sector's higher requirements, demands and expectations for safe, secure and assured vaccines.

Apart from vaccines expansion, Haier Biomedical has also successfully completed projects in the United States, the United Kingdom, Germany, the Netherlands, Denmark and other developed countries in terms of biological sample scenario solutions. In 2019, Haier Biomedical beat traditional European and American enterprises and won the bid for Denmark's public health and American with its ultra-low temperature sample freezer solutions. From "going out" to "going in" and then to "going up", Haier Biomedical has been constantly increasing product share in the high-end markets across the world and has gained a firm foothold in the international market.

A truly leading independent technology needs no hype or to show off, the market will give the recognition it deserves. According to the latest data released in the third-quarter report, Haier Biomedical has maintained rapid growth in overseas markets in the first three quarters, with a year-on-year growth of 86.83% in revenue. Among this, overseas distribution revenue has increased by 67.00% and overseas project revenue has increased by 128.71% on a year-on-year basis. In terms of overseas distribution, the company has been strengthening the construction of the overseas distribution network system and constantly increasing its brand influence across the globe. In terms of overseas projects, the company has won bids for the national immunization project in Myanmar, the center for disease control and prevention project in South Sudan, and the national immunization project in Cameroon as key examples. The dual-wheel drive strategy has effectively guaranteed the sustainable development of the company's international business.

### Global-leading Independent technologies help the company to seize and maintain its commanding growth in biomedical technology

Relying on its global-leading independent technologies, Haier Biomedical has secured full cooperation with many world-famous enterprises and has constantly expanded its Internet of Things science and technology ecosystem layout, becoming a new force in the construction of global biosafety.



In earlier years, as the biotechnology infrastructure was weak in China, low-temperature and cold chain equipment needed to be imported in large quantities. In this regard, Haier Biomedical took the lead in the industry and developed China's first cryogenic refrigerator and ultra-low temperature refrigerator through independent innovations and broke through the international monopolies to achieve import substitution.

On October 30, 2020, upon appraisal of more than 10 experts, including Academician Wang Jun and President Gu Zhen, Haier Biomedical's four scientific achievements, respectively as follows: the "IoT smart blood management system based on artificial blood matching and RFID technology, smart vaccine management system based on Internet of Things technology, development of dual-system air-cooled -30°C cryogenic incubator, application of the key technology of air flow field design in cryogenic cabinets" were all rated simultaneously as international leading products and solutions. On the racing track of biosafety, Haier Biomedical has constantly been rising in the sector as the leader and continues to reach commanding heights of biomedical technology by promoting the need for ongoing upgrades of the public health and biosafety industries.

From the beginning of establishment to now being the international leader in the biomedical sector, Haier Biomedical has become a global leading enterprise in bio-medical cryogenic storage and has transformed into the leading provider of IoT biosafety solutions. Up to now, Haier Biomedical has a total of 288 patents and 34 American Energy Star certifications and has led or participated in the drafting of 9 national and industrial standards and 1 WHO international standard. We have basically covered all biomedical cryogenic storage products and promoted the need for continuous development and investment in the industry.

The development of new technological products lies in continuous innovations, and without innovation solutions will eventually become redundant. Therefore, Haier Biomedical leads the industry to move towards the ecosystem and injects scientific and technological forces into the world through continuous innovations and investment in products and solutions to meet the growing need of all. It is foreseeable, under such a development trend, Haier Biomedical will continue to gain through investment and hard work and increase in the global market.

### Haier Biomedical Assists Nigeria 54Gene in Building Africa's First Gene Bank

Haier has the richest of genetic DNA, however, most of the genome data currently used for global medical development and research comes from Europe, the United Kingdom and North America with African genome data only accounting for less than 3% In-depth study of the African genome is of landmark meaning for global biomedical research. It is what 54Gene, a Nigerian technology start-up company has been striving to establish a complete African population gene bank.



Haier Biomedical has always been committed to providing comprehensive solutions and support services for intelligent biobank solutions, vaccine network solutions, reagent network solutions, blood network solutions and laboratory network solutions to Africa for a long time.

Knowing the importance of the African genome to the global biomedical industry, Haier Biomedical has been seeking trusted partners in Africa to jointly build an African gene bank. After discovering 54Gene's intentions, needs and based on the rich service experience in African and after the local co-operation team's field visits, Haier Biomedical has provided a comprehensive gene bank support solution. The products involved include the frequency conversion ULT freezer DW-86L959BPT, -30°C biomedical freezer DW-30L818, pharmacy refrigerator HYC-940, scanner, temperature monitor, freezer rack, 2D cryogenic vial box and other accessories. At present, this batch of products has been shipped, and the subsequent transportation, customs clearance, installation and after-sales work will be handled by the local partner of Haier Biomedical.

The Smart Frequency Conversion ULT Freezer DW-86L959BPT selected for the gene bank solution is based on the Internet of Things (IoT) technology, supports large-screen touch operations, equipped with real-time temperature and data monitoring functions, remote security alarms and other IoT functions, which can help users realize efficient and intelligent sample management. At the same time, high-efficiency frequency conversion compressor and hydrocarbon refrigerant are adopted to take into account the energy-saving and environmental protection performance.

The Haier Biomedical Freezer DW-30L818 and Pharmacy Refrigerator HYC-940 included in the solution undertake the task of storing samples with different temperature requirements, are both of high superior temperature stability, super thermal insulation precision and high-precision

temperature uniformity; the units are equipped with microprocessor control with display accuracy reaching up to 0.1°C. Simultaneously they both apply a hydrocarbon refrigeration system which is more environmentally friendly and energy-saving. From a comprehensive perspective, the gene bank solution is also the result of the R&D team to balance expenditures according to actual needs, so that the entire gene bank has a higher cost performance under the premise of meeting long-term needs of the customer.

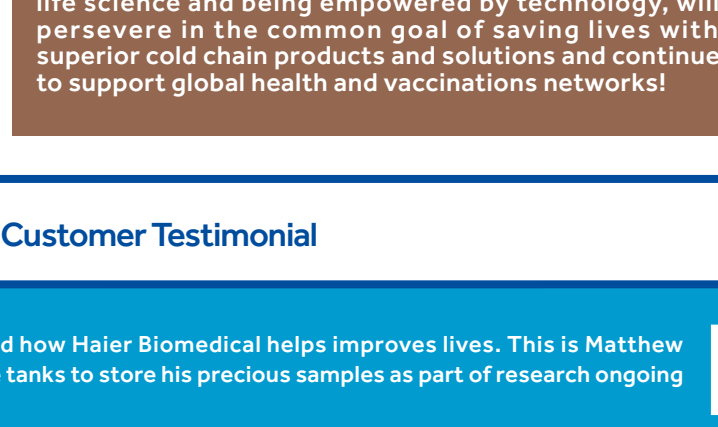
Haier Biomedical, insisting on intelligent protection of life and being empowered by technology, is committed to being the best provider of your biomedical cold chain comprehensive solutions!

### Haier Biomedical's Niger CCEOP Project Training Successfully Completed!

This year, Haier Biomedical and the United Nations cooperated once again for another CCEOP project, this time Haier Biomedical supplied 64 units of HBC-260 ice-lined vaccine refrigerators to Niger. These vaccine refrigerators will be used to improve the local vaccine cold chain and assist children's vaccination work in Niger.



During the delivery of the project and due to the COVID-19 epidemic, combined with the rainy season, many obstacles occurred during the transportation of equipment and installation. However, the local service providers actively overcame these difficulties and professionally completed the project with the delivery and installation tasks on time and on budget and schedule. The product training session was also successfully completed on the 19th of October.



A total of 36 executives from the United Nations and the local Ministry of Health were invited to participate in the training session. During the training, 8 technicians and engineers from Haier Biomedical gave comprehensive and systematic explanations on product advantages, installation and user methods, daily use precautions and maintenance. The training session and professional delivery was highly praised by the United Nations and the local Ministry of Health. After the session, Haier Biomedical also expressed its willingness to further expand the cooperation and reaffirmed its determination and commitment to provide better services to more areas in the future and to continue providing the products and solutions to ensure the safety and reliability of vaccines to the last mile.

Haier Biomedical, insisting on intelligent protection of life science and being empowered by technology, will always be in the forefront of saving lives with superior cold chain products and solutions and continue to support global health and vaccinations networks!

## Liquid Nitrogen Storage Customer Testimonial

We love to find out what our products are actually used for and how Haier Biomedical helps improve lives. This is Matthew Hutchings from King's College London, he uses our LN2 storage tanks to store his precious samples as part of research ongoing at the School of Biomedical Engineering & Imaging Sciences.

Matthew is using the YDS-140-216, one Haier Biomedical's series of medium-sized liquid nitrogen with advanced vacuum and super insulation technology which ensures ultra-low evaporation rates, to keep his team's samples as safe. This unit can store up to 4,800 x 2ml vials in 6 racks and has a static holding time of 151 days.

Matthew Hutchings, School Technical Officer, School of Biomedical Engineering & Imaging Sciences

You can find out more about the School of Biomedical Engineering and Imaging Sciences research and impact here.

Product Information



"It's a great little storage tank, we're been really happy with it and all the support that Harry and his team have provided to us. As we expand we're hoping to get another one"

**Haier Biomedical**

Intelligent Protection of Life Science

—November, 2020—

**Newsletter**