Haier Biomedical

Haier U+Blood
Automated Blood Management Network

IoT Management; Bedside Blood Usage; Immediate Access on Demand.

Haier Biomedical
Intelligent Protection of Life Science

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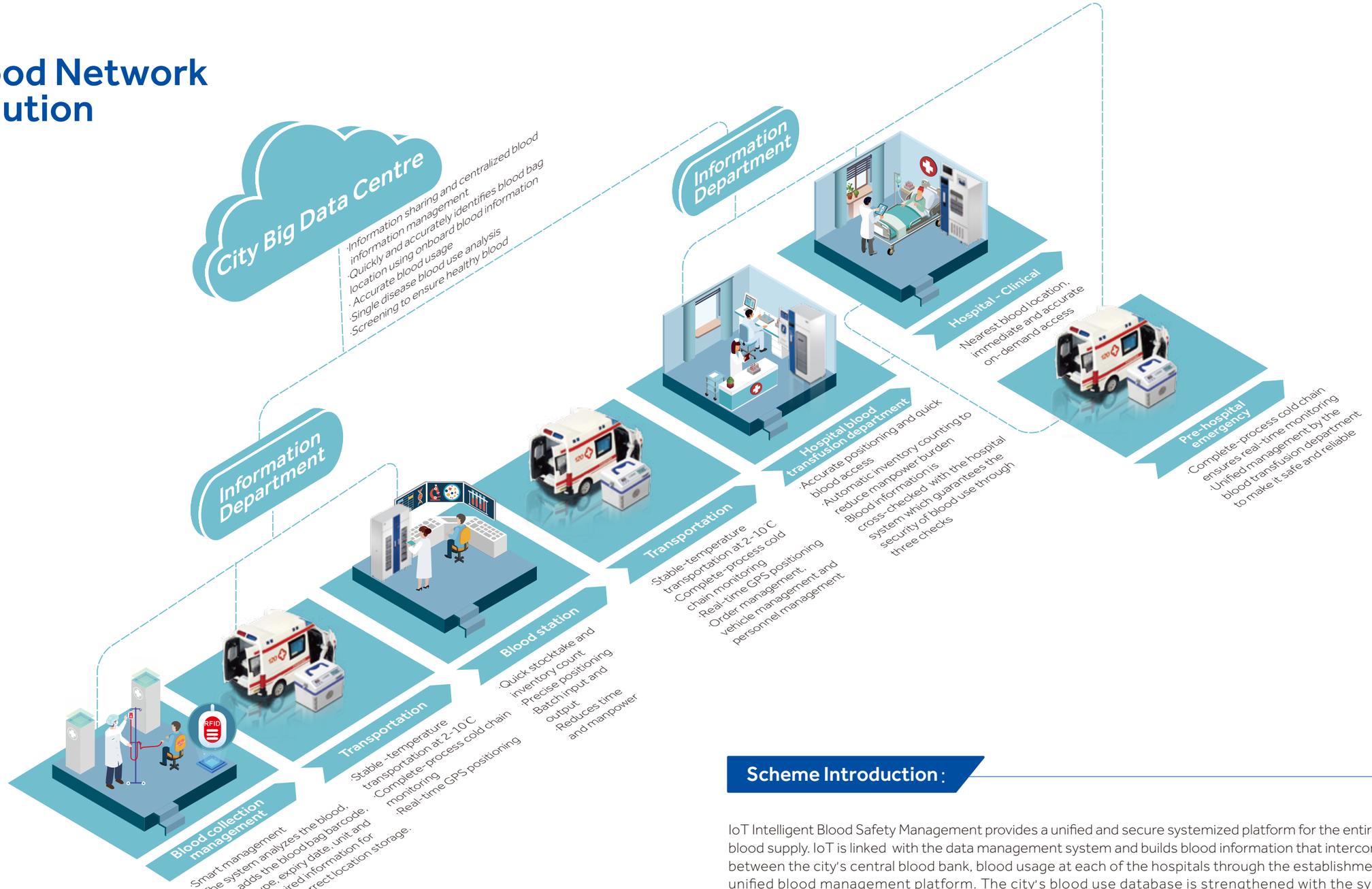
01. Blood Network Solution



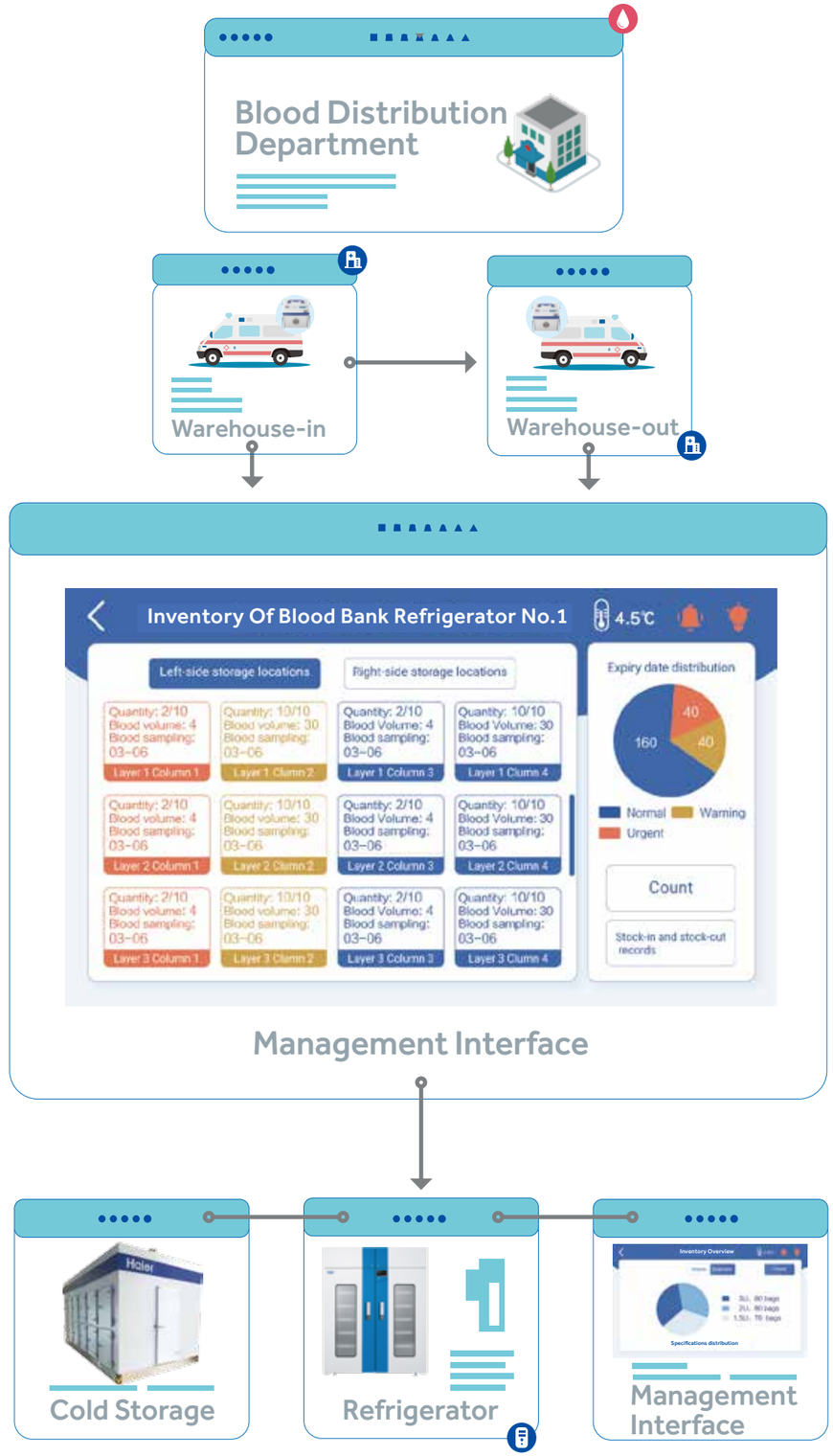
Scheme Introduction :

IoT Intelligent Blood Safety Management provides a unified and secure systemized platform for the entire city's blood supply. IoT is linked with the data management system and builds blood information that interconnects between the city's central blood bank, blood usage at each of the hospitals through the establishment of a unified blood management platform. The city's blood use database is strengthened with the systems surveillance, from blood collection to clinical use. IoT Intelligent Blood Safety Management guarantees through its blood management platform total blood quality and safety across the city's health network.

02. 2-1 Blood Station Working Solution Synopsis

Scheme Introduction :

- By adding RFID tags to the blood bags and either scanning or writing the information, this program ensures accurate positioning of blood products with the intelligent IoT information management system. From batch verification, quality information control, batch storage accuracy , transport of blood from collection to clinical transfusion, this system enhances the blood quality and safety across the entire health network.
- The main aim of the scheme is to strengthen the blood information management from collection to clinical infusion, enhancing blood quality and safety. It is achieved using RFID read-write device, RFID detector, RFID walk-in cold room, transfer boxes, blood bank refrigerators and other IoT leading equipment such as, blood products batch scanning, batch check information, quality information control, batch stock-in and stock-out, quick inventory count, accurate positioning, information statistics, cold chain information control, blood bank product movements and other intelligent functions.

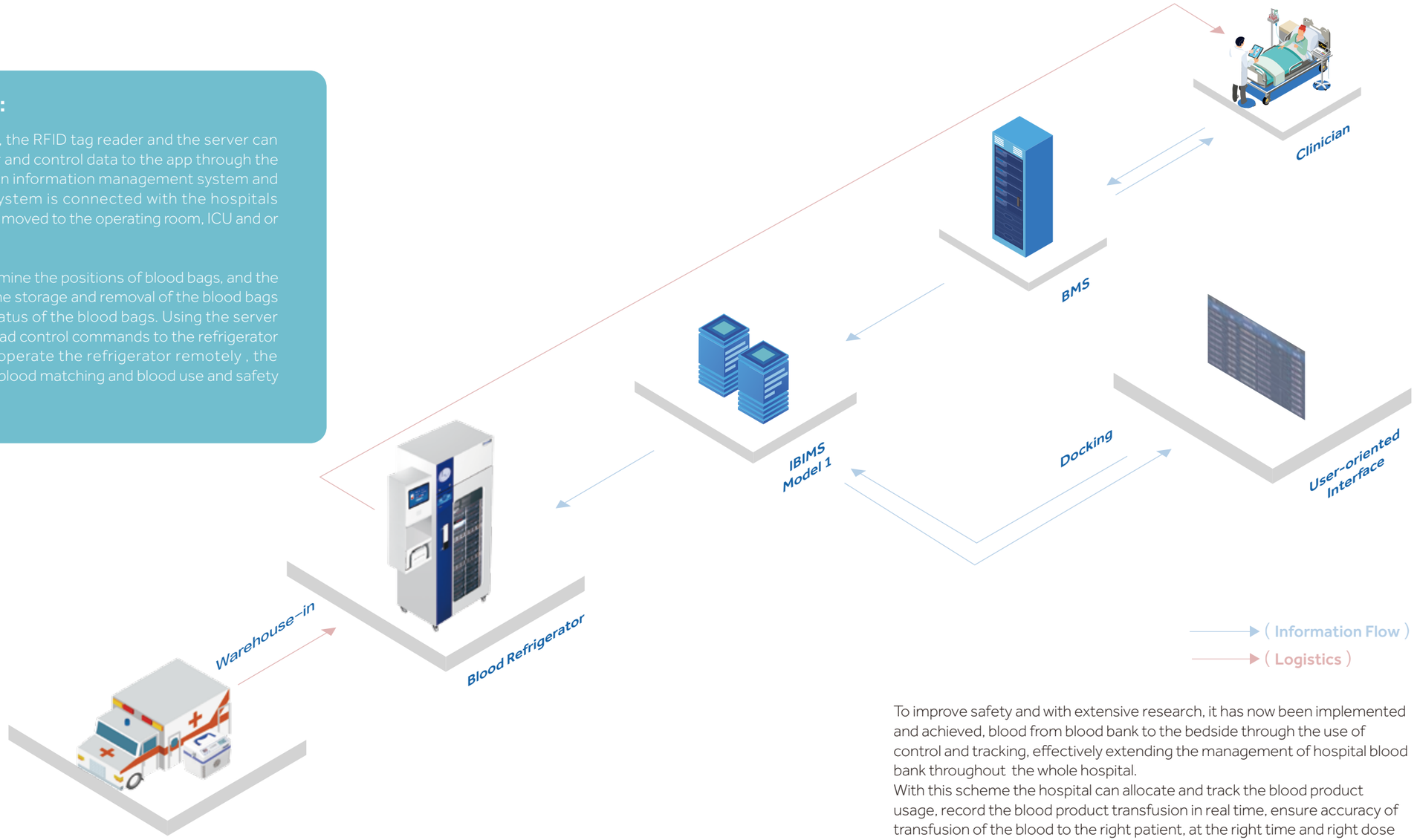


02. 2-2 Hospital Solution Summary

Scheme Introduction:

Connected to the refrigerator, the RFID tag reader and the server can also download the refrigerator and control data to the app through the network, The blood transfusion information management system and electronic blood matching system is connected with the hospitals intranet, the blood bank can be moved to the operating room, ICU and or emergency room.

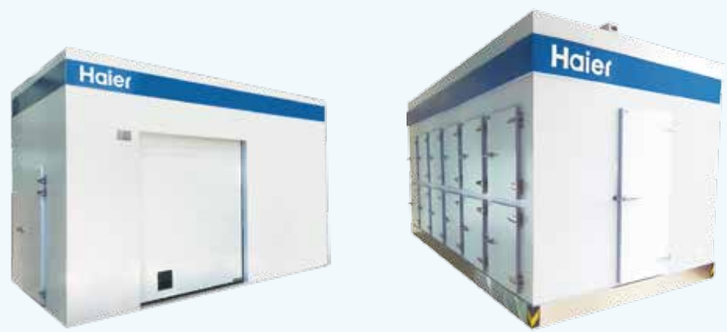
The RFID tag reader can determine the positions of blood bags, and the APP LCD screen can control the storage and removal of the blood bags and check the quantity and status of the blood bags. Using the server data, the user can also download control commands to the refrigerator APP through the network to operate the refrigerator remotely , the intelligent operation of clinical blood matching and blood use and safety is guaranteed.



To improve safety and with extensive research, it has now been implemented and achieved, blood from blood bank to the bedside through the use of control and tracking, effectively extending the management of hospital blood bank throughout the whole hospital.
With this scheme the hospital can allocate and track the blood product usage, record the blood product transfusion in real time, ensure accuracy of transfusion of the blood to the right patient, at the right time and right dose so as to obtain the best practice quality clinical transfusion and improve the efficiency of blood management and the blood use safety for blood recipients.

03. 3-1 Blood Station Product Overview

Cold Storage



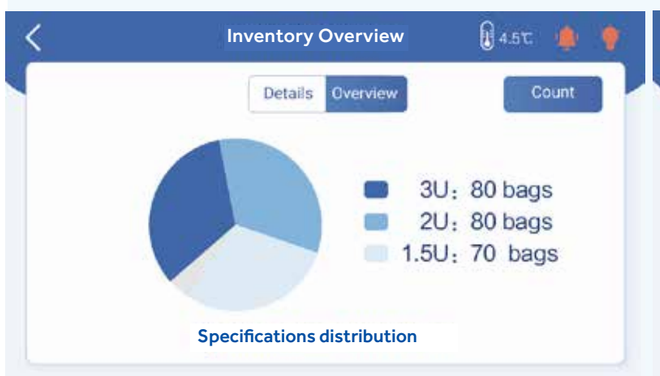
Functional Characteristics

- 10-inch large screen PLC intelligent control system to obtain fault self-diagnosis and notification;
- Air cooler stops automatically when the door is opened to ensure no leakage of cooling capacity; it is also equipped with a time sensor door opening alarm and power failure alarm;
- With the refrigerators rotating system, it can switch automatically in case of any faults and is equipped with a laminar air supply device to ensure the uniformity of the temperature inside the cabinet is stable between ±1 and1.5 ℃;
- Adopting liquid self-cooling technology, and cooling the liquid by more than 5 ℃ through use of the melted ice, to save energy by more than 5%;
- Adopting superheated exhaust pre-cooling technology to further ensure the high efficient heat transfer between the exhaust pre-cooling coil and the melted ice that has reduced the temperature of the super-cooled liquid. This decreases the exhaust pressure to have the power consumption reduced;
- A certified ISO13485 medical device quality management system;
- Conforming to the WHO PQS quality and safety certification.

Refrigerator

Functional Characteristics

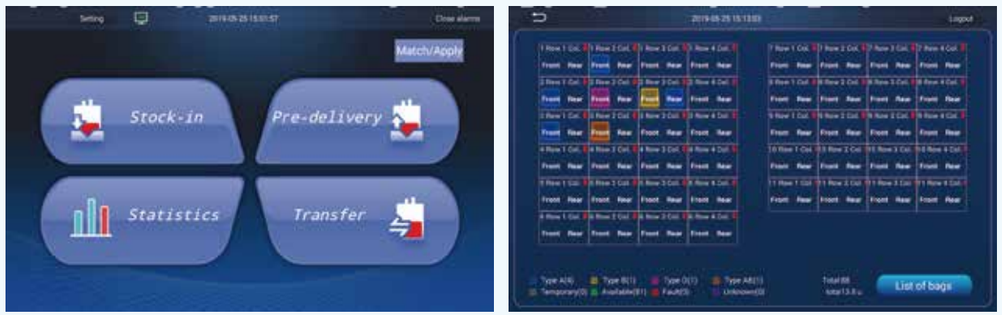
- Smart IoT scientific and intelligent inventory count: with blood inventory management APP to ensure real-time automatic;management of warehouse-in and warehouse-out information which makes inventory counting timely and accurate;
- RFID precise positioning and visual management: RFID automatic identification to ensure intelligent dynamic positioning of the blood bags and guide the user to accurate blood bag removal;
- Intelligent and fully interactive visual Blood Bank management: Supporting one-button statistics and query of the blood donation code, product code, blood type, blood volume, expiry date and other information of the blood bags in stock for the end user or refrigerator APP to clearly display the storage location of the blood with the closest expiry date that ensures first-in first-out management practices;
- The refrigerator or freezer has a built-in RFID read-write board to ensure state of the art inventory count using a one-button keyboard point procedure: in real-time the inventory information is displayed to fast track the bag from the blood bank to the required location;
- Accurate positioning: can quickly query and find the location of any blood bag stored at the blood bank;
- Information is accurate and reliable: The blood information stored in the RFID tag is encrypted with read-only available information ensures that such information cannot be deleted or tampered with, and thus is safe and reliable.



Software management interface

03. 3-2 Hospital- Blood Department Products

Refrigerator



Software management interface

Functional Characteristics

- The system ensures accurate blood positioning and one-stop blood access to reduce the door opening duration of the refrigerator, guaranteeing the blood storage environment and ensures blood quality and safety;
- No need for manual inventory counting; on each occasion when the refrigerator is closed, the automatic inventory counting mechanism will be activated to automatically count and update the inventory levels;
- Intelligent inventory management follows the first in first out principle to improve the efficacy of blood transfusions; the blood delivery process goes through three checks to ensure the security of the blood transfusion;
- The Blood bank is accessible within the operating room ensuring priority to blood matching from the refrigerator within the operating area, ensuring immediate blood collection and zero wastage.

Transport Cooler

Functional Characteristics

- Optimized semiconductor refrigeration, ensures energy savings and consumption reduction;
- Storage temperature is maintained at 2~6℃ after the cabinet has been fully powered and stabilized; with transfer temperature maintained at 2~10℃ during the power off and insulation time;
- Supporting NFC swipe card module for unlocking and to upload the information in real time to prevent random opening of the refrigerator;
- Equipped with cold chain monitoring module and temperature and humidity display to upload the data and information to the cloud platform for query through the WIFI or 4G module; equipped with GPS positioning to query the movement and track of the transfer box in real time; equipped with bluetooth printing function which supports connection to bluetooth printer and supports one-button printing; equipped with camera monitoring to automatically identify whether there are stored items in the cabinet as a reminder to users and to prevent stored items from being left behind;
- PCM ice icepacks for cold energy accumulation, effectively increasing the refrigeration area and extending the insulation time.