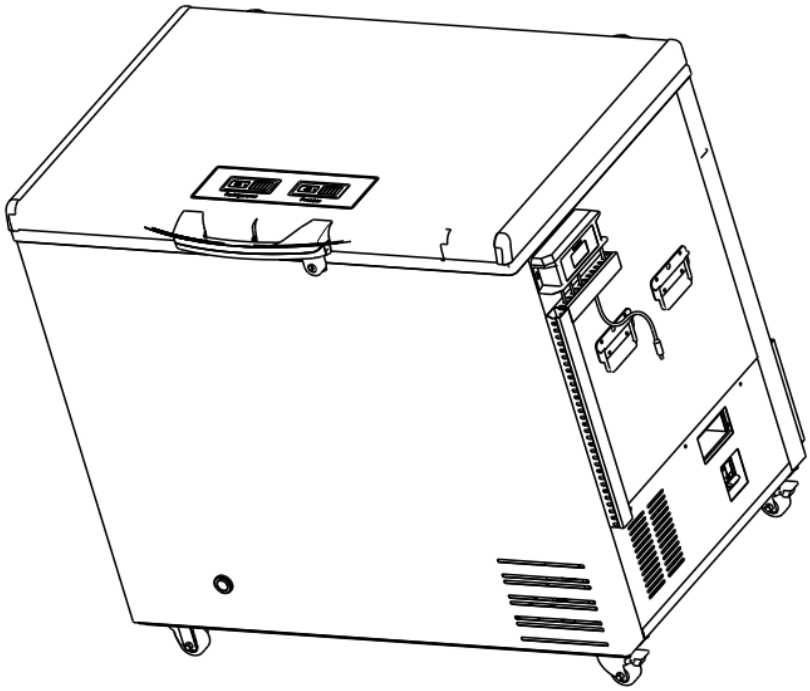
TCD-100 User Manual



Please read the manual carefully before use.
Keep the manual in a safe place for future reference.

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1 Product Description

TCD-100 is powered by a solar power array only. It is a WHO/PQS certified combined vaccine refrigerator and water-pack freezer that maintains a temperature between 2-8 °C with multi-day holdover/autonomy during extended power outages or low-light conditions, and It can freeze and storage some frozen water packs for medical staff under sunny conditions. It includes USB data interface and USB charging interface, it can showing 30 days of temperature and alarm history, and the USB memory module can store temperature data for 10 years.

This unit is factory-equipped with the Beyond EMS, an integrated high-precision temperature monitoring and data logging solution designed exclusively for vaccine cold chain equipment. The Beyond EMS consists of Beyond Com Unit(Ice3), Power sensor, power cord, sensors, etc. Beyond's device box(BCU) will be placed in a sealed bag, which will be attached to the refrigerator compartment for transportation. Before leaving the factory, all cables connected to Beyond device box will be pre-installed in place and placed inside a wiring box to avoid inadvertent repositioning, damage, or monitoring disruption.

TCD-100 standard features:

- 48L vaccine storage chamber volume; 38L water pack freeze chamber volume;
- Grade A anti-freeze protection;
- Top-opening for easy user access to vaccines and water packs;
- The product has a built-in USB memory module, It can store temperature data for 10 years;
- 180 hours of holdover at constant ambient temperature of 43 °C ;
- 2.0kg daily Water-pack freezing capacity, 10.7kg water-pack storage compartment capacity;
- Query the daily maximum temperature and minimum temperature and alarm information in the past 30 days through the temperature control panel;
- Inner cover design prevents the loss of cooling capacity
- With USB charging interface, its electrical parameters is 5V / 0.5A;
- Rated voltage range: 18-28V DC;
- First freezing time at 43 degrees loop temperature is 12 days;
- 10-years design maintenance life apart from routine defrosting, cleaning and solar array cleaning and shading prevention;
- M2M interface：Type-C female receptacle be used for data download by external devices and power supply from external devices to the logger in the event the logger’s energy storage is depleted; The function of a barrel shaped cable is to supply power to external devices，Its rated voltage and current are 5V/1A.

2 TCD-100 Components

Components of the TCD-100 are labeled below. Refer to the Technician Manual chapter 10 for more information and how to order spare parts.

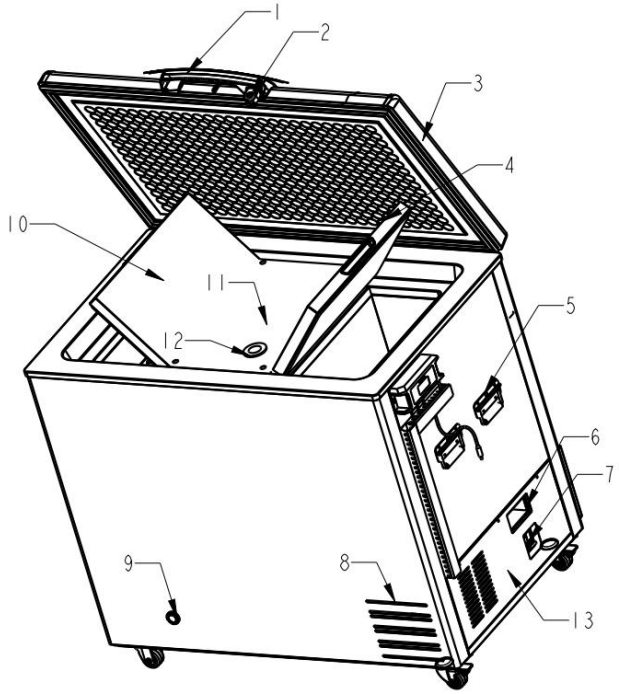


Figure 1

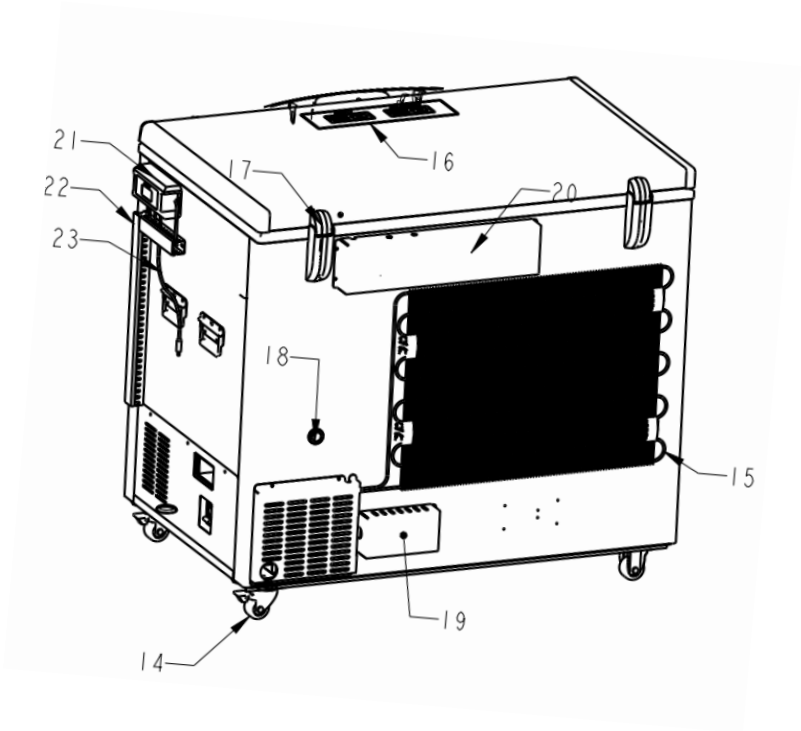


Figure 2

1:Handle	2: Lock	3: Outer cover
4: Freezing Compartment	5: Operating handle	6: Thermostat
7: Circuit breaker	8: Air vent	9: Refrigerator compartment drain hole
10: Refrigerator compartment	11: Energy storage compartment	12: Water filling hole
13: Compressor compartment（contains compressor, fan）	14: Wheel	15: Condenser
16: Thermometer	17: Hinge	18: Freezing compartment drain hole
19: Power sensor cover	20: Batteryr cover	21：BeyondCom Unit (BCU)
22：wiring box	23：M2M Power cable	

3 Transport and Handling Instructions

⚠Heavy object warning. To avoid injury, use lifting aids and proper lifting techniques when moving the TCD-100.

a. Leave the TCD-100 in its protective packaging as long as possible to protect from damage.

• Cutouts in the cardboard allow access to the manufacturer's label for inspection and to the handles for lifting without removing the packaging.

b. Transport the TCD-100 vertically when possible:

• If transport on the side is necessary, pay attention to "This side up" markings on the packaging and make sure package is in the correct orientation to prevent damage.

c. Keep top lid closed and latched when moving theTCD-100 .

d. If the TCD-100 needs to be moved after initial installation, **remove the water from the water tank using a siphon hose before moving.**

e. When using the handles for lifting, keep one hand towards the top of the unit to prevent tipping.

f. Avoid excessive force to prevent damage to the TCD-100.

• Avoid any excessive force especially towards the door and lid to prevent damage.

• Do not lift the TCD-100 from the doors, grates, or condenser guards.

g. The ambient temperature range during transport and storage is -30°C < +70°C.

The ambient humidity range during transport and storage is 5% < 95%.

h. TCD-100 is designed to allow for manoeuvring through corners, corridors and doorways，the overall dimension of the product is : 1050 W * 750 D * 975 H mm.

4 Installation

4.1 Preparation

a. Read the instruction manual carefully.

b. Remove all packaging materials, including foam base and tape.

• Discard plastic wrappers and bags safely, to avoid suffocation of children.

c. Inventory accessories and installation tools to make sure there are no missing parts.

Each TCD-100 should include the following parts shipped inside the vaccine chamber:

• 2 baskets.

• 2 plastic vaccine trays (additional trays can be ordered).

• 1 funnel for filling the water tank to commission the TCD-100.

• 2 sets of key.

• 1 BeyonCom Unit(Ice3).

• 1 Backup M2M power cord.

• 2 BCU fixing screws+1 screwdriver.

• User manual and Technician manual for TCD-100.

• Technician Manual and ColdCloud Administrator Manual for Beyond EMS.

If any parts are missing, please contact the manufacturer or service provider.

If you need the electronic version, please download the TCD-100 <user manual >、TCD-100< technician manual>,and Beyond <Technician Manual>,Beyond <ColdCloud Administrator Manual> from this website:http://www.aucmamedicalglobal.com.

4.2 Installation of Photovoltaic (Solar) Array

• Install solar array at the site, the solar array can be provided by Aucma or other approved solar array. If the solar array of Aucma is used, you can install the solar array according to the TCD-100 Solar Power Kit Installation Manual.

• During solar array installation, route wiring to the location where the TCD-100 is to be located

4.3 Positioning the TCD-100

a. Place the TCD-100 on a flat and solid ground and **ensure the unit is level.**

b. Position the TCD-100 at the location where the solar array wiring is routed.

c. Position the TCD-100 **away from direct sunlight and any source of heat** (e.g. gas stove, fireplace, etc.).

d. TCD-100 must not be placed in or around flammable or corrosive gases that could cause an explosion or electric shock.

e. In order to prevent rust or electrical leakage, the TCD-100 should not be placed in a high humidity environment or in a location where it could be splashed with water or rained upon.

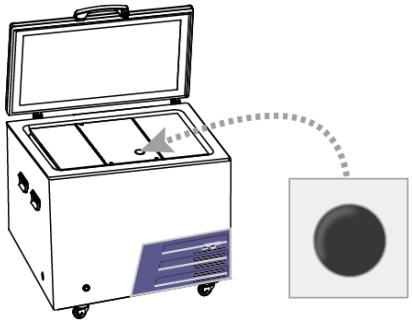
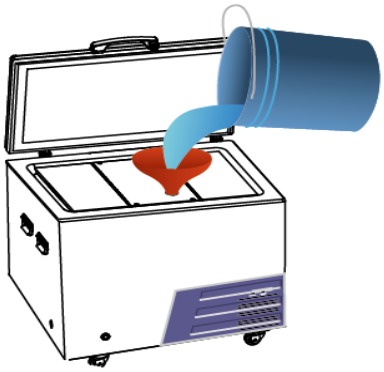
f. Position the TCD-100 in a well ventilated area and make sure there is a minimum of 10 cm of empty space around the sides and back of the unit.

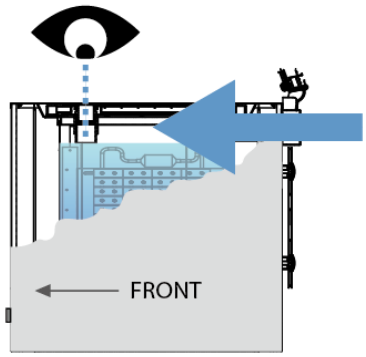
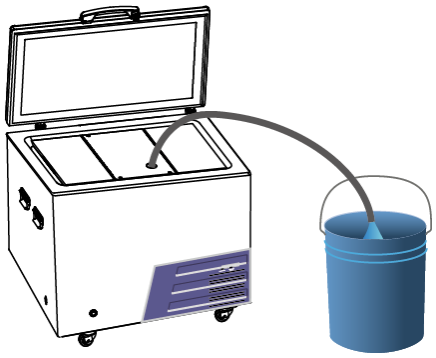
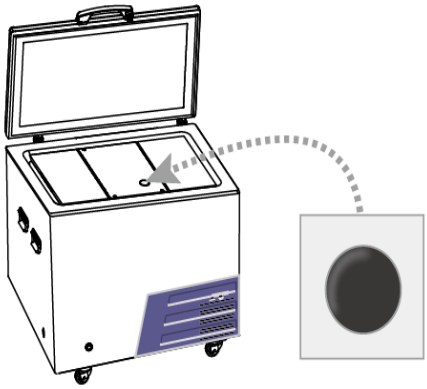
h. Allow a minimum of 70 cm clearance above the TCD-100 for accessing the water tank lid.

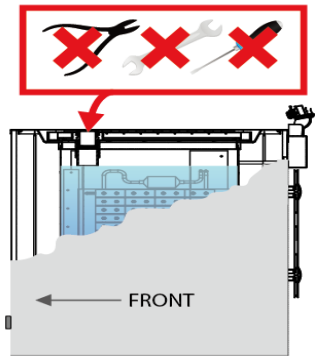
4.4 *Filling Instructions*

⚠ TCD-100 must be properly filled with clean drinking water before operation and use. During the filling process, use care and common sense and follow all local safety precautions.

Filling instructions can be also be found on the surface of the water tank lid.

	Step 1: Remove the water fill plug.
	Step 2: Install the funnel. Fill a bucket with clean drinking water.
	Step 3: Pour 56 liters of clean drinking water into the tank. You must look down into the fill tube while adding water so you can check the level.

	Step 4: Fill the tank until the water is just touching the bottom of the fill tube. DO NOT INSERT SHARP OBJECTS INTO THE FILL TUBE.
	Step 5: To remove excess water, or to empty the tank, use a siphon hose.
	Step 6: Replace and fix the water fill plug.

	**WARNING:** **DO NOT INSERT SHARP OBJECTS**
WARNING: Drain REFRIGERATOR BEFORE MOVING	Empty the water from the tank as in Step 5. Be sure to refill the refrigerator with clean drinking water according to the steps above BEFORE plugging refrigerator into the power source
WARNING: CHECK WAETR LEVEL EVERY YEAR	Access the water tank and check the water level as in Step 4. If the water is low, add more.

Do not overfill the TCD-100. Remove excess water if overfilling occurs.

4.5 Installation of BeyondCom Unit and M2M Power cable

The hardware of Beyond EMS consists of the device box(Ice3 BCU), Power Sensor, and related cables. There are installation holes reserved on the machine for the Beyond Com Unit.

Before leaving the factory, all cables connected to the Beyond device box (BCU) will be installed in advance and wired out from the BCU attachment. All cables are placed inside the junction box to avoid accidental repositioning, damage, or monitoring interruption.

a. Take the Beyond Com Unit out of the machine,

b. Align the fixing holes on the Beyond Com Unit with the installation holes reserved on the machine, and tighten two screws to fix it.

c. After fixing the Beyond Com Unit, insert the sensor cable and power cable into the corresponding interfaces.





d. As shown in the figure above, The network cable with an RJ45 connector is the data cable., the wire with a yellow label is the temperature sensor wire, and The wire without any marking is the door switch wire.. Insert the temperature sensor cable into interface ①, insert the door switch sensor cable into interface D1, and insert the data line into the interface on the right side of Beyond Com Unit. Insert the wire with the blue marking into the ② interface of Ice3.

e. M2M power cable: The M2M power cable is fixed before leaving the factory, users can use it directly.

NOTE: The above is only a schematic diagram. The actual power cord, sensor cord, and M2M power cord are all fixed to the Beyond Com Unit accessory through cable trays.

The other end of the blue power cord is connected to the Power sensor, which is fixed inside the compressor chamber at the bottom of the machine to supply power to the

Beyon Com Unit. The other end of the temperature sensor wire and the door switch sensor wire are pre embedded in the foam box.
These wires (including the M2M power wires not mentioned here) all come out of the refrigerator compressor room, then go up, reach the installation height of the Beyond Com Unit, pass through the cable tray, and reach the vicinity of the Beyond Com Unit.

4.6 Startup and Cool down

> ⚠ Ensure that the water tank has been filled to the correct level before plugging in the TCD-100.

Step 1: Power-on the TCD-100 by connecting the MC4 solar power connectors from the solar array, and turning on the switch/circuit breaker at the back of the refrigerator. If enough solar power is available, the refrigeration compressor will start after a delay of 5 minutes， the freezing compressor will start after a delay of 10minutes.
Step 2: Once powered on, the battery will turn on automatically， and the temperature display will show the temperature of the vaccine chamber and freezing chamber.

Step 3: Beyond EMS: Long press the  key and the  key for 8 seconds to start Beyond com Unit, It will automatically start recording data.
Step 4: If solar power is available, wait until compressor has started (indicated by green LED next to the temperature display) and verify that the rear condenser of the TCD-100 become warm to the touch after a few minutes of running.
Step 5: If solar power is available, wait for the compressor to start (indicated by the green LED next to the temperature indicator), and verify that the rear condenser of the TCD-100 becomes hot after a few minutes of operation.

a. If solar power is not available, close the circuit breaker and follow up the next day in person or by phone to verify the installation.

b. If compressor run LED does not come on or sides of the unit do not become warm after compressor has run for several minutes, consult troubleshooting section of the technician manual.

Step 6: Do not use the vaccine compartment until the display indicates that the vaccine chamber temperature is below 8 °C, which might take more than eight sunny days to achieve.

If solar power is sufficient， the freezer compartment is available, don't put too much water packs at one time.

> ⚠ In the case of intermittent solar availability and high ambient temperature environment, the TCD-100's vaccine compartment may require more than 12 days after initial installation to reach full holdover capability.

5 Use of the TCD-100

• Check the temperature display daily and make sure the vaccine chamber temperature is between 2-8 °C before using, and the freezing chamber temperature is lower than 0 ℃ after solar power on 3h.

• TCD-100 has three displays, Solar thermometer and Electronic Thermostat and Beyond EMS. The temperature displayed by the electronic thermometer is the control temperature, which is used to control the operation of the compressor. Both the Solar thermometer and Beyond Com Unit can provide high-precision temperature data and 30 DTR reports.

If the display data of different displays are different, this is normal, because different sensors have accuracy errors, and the accuracy is theoretically within±0.5℃.In addition, when the displayed data is different, the value displayed by Beyond EMS should prevail.

• Do not overfill the vaccine chamber. Leave gaps between vials and boxes to enable cold air circulation within the chamber. Use trays to organize vaccines and keep boxes from touching the walls or sitting directly on the floor of the vaccine chamber.

• Don't put too much water packs to freezer compartment at one time.

• Keep TCD-100 cover tightly closed and latched when not in use to maintain the storage temperature inside.

• The thermostat has a password. It is not necessary to adjust the thermostat under normal conditions.

• Designate a person to inspect and record the daily operation to ensure the safe use of the TCD-100.

• Basket are not essential for Grade A freeze protection but only supplied as an accessory for ease of use.

• Only approved vaccines or medical supplies should be stored in the vaccine compartment. Do not store any foods, beverages, or flammable, explosive, volatile items (such as alcohol or gasoline) or other dangerous items in TCD-100.

Note:

5.1 Vaccine Chamber and Freezer Chamber

All parts of the vaccine chamber are controlled between 2-8 °C and are suitable for vaccine storage.

Loose vials should be stored in the provided trays on shelves inside the vaccine chamber. Secondary packaging may be placed directly on shelves or in trays. Do not place secondary packaging directly on the bottom of the vaccine chamber to avoid contact with any excess condensation. Also avoid leaving secondary packaging in direct contact with the chamber walls.

In humid environments condensation may collect on the sides and back of the vaccine chamber, and run down the walls into the drip channel surrounding the bottom of the chamber. Any accumulated condensation will flow to the back of the chamber and out through the drain hole.

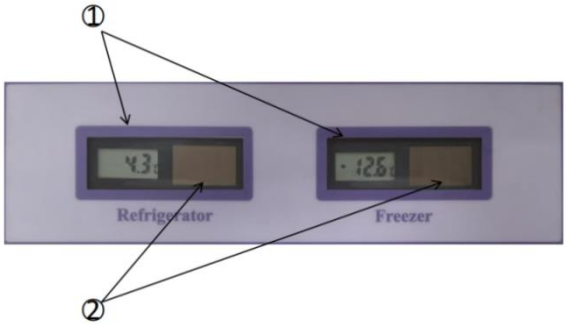
The temperature of the freezing chamber is controlled below -5 ℃,and it’s daily

water-pack freezing capacity is 2.0kg/day.

5.2 Use of the TCD-100 Solar thermometer and Electronic Thermostat

5.2.1 Solar thermometer

The solar thermometer on the cover shows the temperature of the TCD-100, it can provide permanent temperature display, The temperature it displays is named solar thermometer temperature. The temperature sensor and thermostat are factory calibrated and set. The user does not need to adjust any temperature settings. It was power by integrated solar panel.



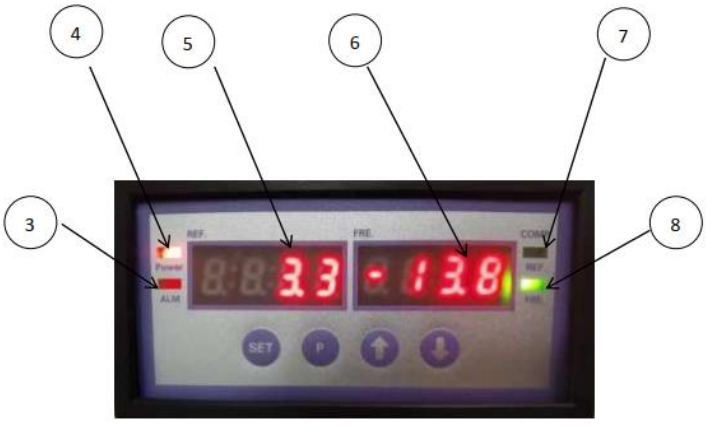
Current temperature and status

1. Current chamber temperature	The left side shows the temperature of the vaccine chamber. The right side shows the temperature of the freezer chamber.
2. Integrated solar panel	Power the thermometer

5.2.2 *Electronic Thermostat*

The thermostat on the compressor room side control the appliance, and the temperature displayed by the electronic thermostat named control temperature.The thermostat has a password protection function, and there is no need to adjust parameters under normal circumstances. If necessary, please contact your local dealer.

5.2.2.1 Temperature display and Status LED



3. ALM indicator	The alarm indicator blinking red during alarms
4. Power indicator	When the light is sufficient, the indicator light is on. The indicator blinks when powered by the back battery.
5.Vaccine chamber temperature	Under normal conditions, the vaccine chamber temperature is displayed. Please press "SET"+" ⬆ "one second, and display cold storage chamber temperature.
6.Freezer temperature	Under normal conditions, the Freezer temperature is displayed. Please press" SET"+" ⬇ "one second, and Display ambient temperature.
7.Vaccine chamber compressor working indicator	When the vaccine chamber compressor is working, the indicator light flashes green.
8.Freezer compressor working indicator	When the freezer compressor is working, the indicator light flashes green.

Note: Within 6 minutes, if there is no button operation, the controller will automatically turn off the display, and the colons on the left and right digital tubes will flash. Press any key to activate the display.

5.2.3 Alarms

Display symbols	Symbol description
E1	Ice layer sensor failure
E2	Refrigerator storage sensor failure
E3	Freezing sensor failure
E4	Ambient temperature sensor failure
AH1	High temperature alarm for ice
AL1	Low temperature alarm for ice
AH2	High temperature alarm in vaccine chamber
AL2	Low temperature alarm in vaccine chamber
AH3	Freezer high temperature alarm
AL3	Freezer low temperature alarm
bAt	Battery undervoltage alarm

After an alarm condition is triggered the Active Alarm screen will show, the red LED will blink and the audible buzzer will sound. Pressing any button will silence the audible alarm, but the red LED will continue flashing until the alarm condition has ended.

5.2.4 Battery for thermostat

The temperature controller are powered by a Li-ion battery installed in the electronics enclosure. A new battery will allow the system to continue to display temperatures for 1 week without solar or mains power. Over time, the battery will degrade and lose capacity and will need to be replaced. Replacement batteries are available from Aucma or service providers; refer to technician manual for battery replacement instructions.

5.3 Use of the Beyond EMS and M2M Power cable

The Beyond EMS consists of BeyondCom Unit（Ice3）, Powersensor, power cord, sensors, etc. Before leaving the factory, all cables connected to Beyond device box will be pre-installed in place and placed inside a wiring box to avoid inadvertent repositioning, damage, or monitoring disruption.

The Power Board of the appliance supplies to the Power Sensor, and the Power Sensor supplies power to Ice3 BCU through a Data line and transmits data simultaneously.

The M2M DC power is controlled by an independent M2M power board, which is powered by the appliance's power board. The M2M power board be located in the power enclosure with the appliance's power board.

5.3.1 Connections



Ch.	Input type	Example
D1	Potential free digital input*	Door contact
D2	Potential free digital input**	Relay contact
①	Temperature probe / Potential free digital input***	NTC temperature probe / Door contact
②	Temperature probe / Potential free digital input***	NTC temperature probe / Door contact
③	Temperature probe / Potential free digital input****	NTC temperature probe / Door contact
④	Temperature probe / Potential free digital input***	NTC temperature probe / Door contact

* Either D1 or 1 can be used

** Either D2 or 2 can be used

*** Both inputs are available with the optional splitter unit (see ‘Spare parts andaccessories’).

**** D3 is internally used to monitor power supplied to the BCU. Should anexternal digital channel be required, then the BCU hardware will need to bemodified.

USB port:

The USB-C port allows the download of data directly from the Ice3 internal memory. Further details can be found in the next section.

Power module:

It is important that the supply voltage and current is within the specification detailed in this document. Make sure all required connections are made before connecting power.

Connect the power module plugging the one side of the ethernet cable into the Power module, and the other side into the RJ45 plug on the side of the of the BCU.

Plug the kettle plug from the other side of the power module into an AC supply plug (100 – 240 VAC).

How to connect / remove sensors:

All channel input sensors have RJ9 modular plugs (commonly used in old telephones). These can only be inserted in one way. With the clip facing the rear of the unit, push the connector in until you hear a click.

To remove, squeeze the clip towards the cable, and while squeezing pull the cable /connector out:

Connect:



Remove:

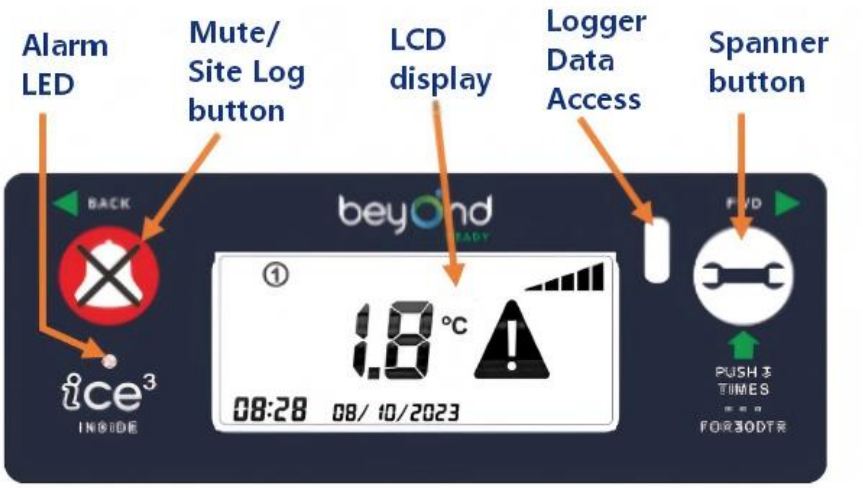


5.3.2 Operating instructions

The following operating instructions pertain solely to the BeyondCom unit hardware. Information regarding the online portal and smartphone application is not included in this document. Certain configurable features are factory-preset prior to delivery and can only be modified via the ColdCloud portal.

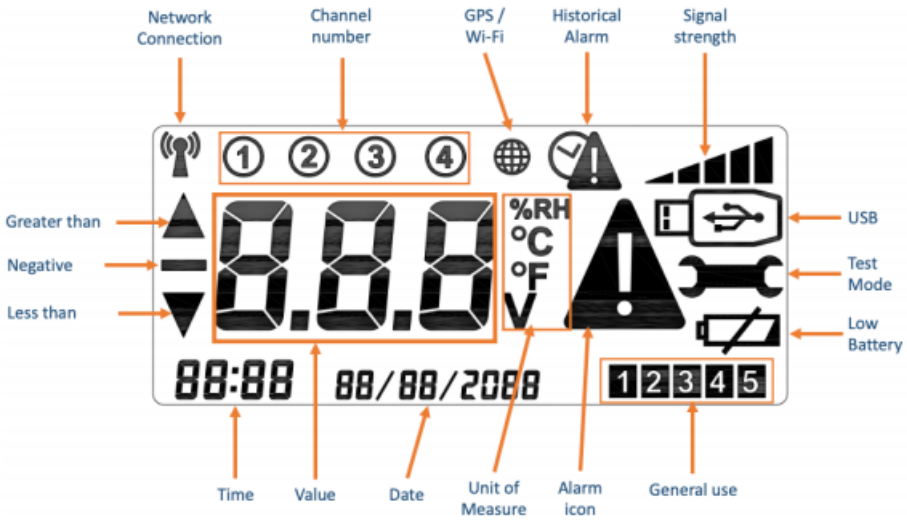
Membrane keypad, USB interface and alarm LED:

There are 2 buttons and a USB interface for downloading data. The Mute button will silence the buzzer for active alarms for the duration set on the ColdCloud portal. It will also log a record as a ‘Site Log’ proving that someone was at the unit and effectively acknowledged being there. The spanner button has various purposes including ‘Test Mode’ which is explained below.



LCD Display:

The LCD screen scrolls through different screens, depending on the relevant setup. The following table shows different scenarios with detailed explanations:



Buttons:

FUNCTION	Mute: 	Spanner: 	NOTES:
Buzzer Mute	Push for about 1 second.		• When there is an active alarm and the buzzer is sounding, the Mute function silences the buzzer for the buzzer mute duration. • A site log is created when Mute button is pushed.
Site log	Push for about 1 second.		• If no alarm is active, the unit will record a site log.
Test mode / force upload		Hold for at least 5 seconds (until you hear a beep).	• The spanner icon will display on the LCD to confirm unit is in test mode. • Since this mode forces an upload, the network connection icon will also illuminate.
30 DTR	Requires both buttons. See details below for full operational details.		
Switch unit ON / OFF	Hold both buttons simultaneously for at least 8 seconds.		• When switching on, the greater than and less than arrows will illuminate to indicate the unit is on and booting up. • When switching off, the unit will emit a single beep to confirm the action.
Switch Wi-Fi module on	Push both buttons momentarily and release.		• This function will only be available on units with Wi-Fi capabilities. • A short beep will confirm Wi-Fi has been enabled. • The Wi-Fi will be active for 5 minutes. • The icon flashes to indicate Wi-Fi is active.

Alarms and Mute:

When there is a warning or alarm condition (based on the thresholds setup on the ColdCloud portal), the red LED will flash and the buzzer will sound. The buzzer pattern will be as per the setup on the ColdCloud portal, for which “Disable buzzer” is one of the options.To Mute the buzzer, push the Mute button once. The duration of the Mute will be as per the setup on the ColdCloud portal.When the Mute button is pushed, this will be logged and sent to the ColdCloud portal as an alarm acknowledgement. Should the alarm still be active after the mute duration, the buzzer will resume sounding, unless the mute button is pushed again.

Test Mode:

To test the functionality of the system, it is recommended that alarms are periodically simulated. This is achieved by forcing any of the channels to go into an alarm state by exposing the input to values outside of the alarm threshold values set on the ColdCloud portal e.g. placing a temperature probe into hot water if the alarm is set to activate if

temperature goes above say 8° C.When these tests are performed, the system processing the alarm as per the setup.

BUT data is flagged as being in test mode to highlight that a test was being performed, and that the asset being monitored was not actually in alarm. To activate the Test Mode, push the spanner button for approximately 3 seconds.

The spanner icon will display on the LCD and will remain there for the duration of the Test Mode (which is set on the portal setup for the site. After this duration, the icon will automatically switch off on the display.

5.3.3 30 DTR

The 30DTR feature is a 30-Day Temperature Recorder which allows a user to view historical Min / Max / Ave temperatures and alarms. There are 2 ways to access this information:

Scan QR code:

This provides a chart referred to as a Temperature Monitoring Chart (TMC). The QR code is supplied with the unit, and is also downloadable from the ColdCloud portal.

Most smartphones will automatically open the web link when the QR code is scanned using the camera. If not, a QR scanning app may be required.

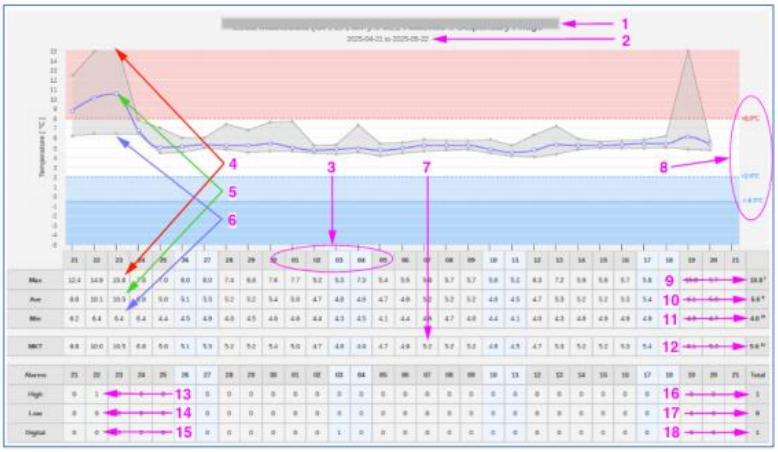
Note:Ensure the serial number on the QR code is the same as that on the BCU.

When this option is selected, a report with the previous 30 days will be downloaded. This includes:

- A graph showing Min/Max/Ave temperatures.
- A table with the same data, along with any alarms that occurred each day.
- Min/Max/Ave and MKT values for the 30-day period.

Note:

- **Only temperature data is available for this report.**
- **If the BCU is configured to monitor multiple assets, a separate chart will be generated for each asset.**



Item	Description
1	Region / Site / Asset name
2	Date range of report
3	Day of month (weekends shaded in light blue)
4	Day Max temperature (highest temperature recorded on that day)
5	Day Average temperature (average temperature for that day)
6	Day Min temperature (lowest temperature recorded on that day)
7	MKT (Mean Kinetic Temperature)
8	Alarm thresholds (as per sensor configuration for the asset)
9	Maximum recorded temperature over 30-day period
10	Average of recorded temperatures over 30-day period
11	Minumum recorded temperature over 30-day period
12	MKT for the month
13	Quantity of High temperature alarms on that day
14	Quantity of Low temperature alarms on that day
15	Quantity of Digital temperature alarms on that day e.g. Door or Power
16	Quantity of High temperature alarms in the 30-day period
17	Quantity of Low temperature alarms in the 30-day period
18	Quantity of Digital temperature alarms in the 30-day period e.g. Door or Power

Read data from LCD screen:

To read this historical temperature data directly from the BCU, an internet connection is not required. Proceed according to the following:

To go into 30DTR mode:

Push spanner button 3 times in succession, a beep will be heard to confirm the unit has successfully acknowledged each button press. The 3-button pushes must be done within 20-seconds. Display shows spanner icon flashing every second to indicate unit is in 30DTR / historical mode.

To exit 30DTR mode:

If no buttons are pressed within 30 seconds, the unit will automatically return to normal mode.

Note:

- **Only once this mode had been exited will the spanner button be available for the normal 'Test mode'.**

Viewing historical data:

To select channel:

Once in 30DTR mode, select channel by pushing the spanner button. The selected channel will be illuminated (not flashing). Press the Mute button to accept your selection.

Note:

- **A number 5 on the bottom right of the screen indicates the built-in ambient temperature sensor (channel A5).**
- **The %RH icon indicates the built-in ambient relative humidity (channel A6).**

To show Previous day(s):

To scroll back through historical data, press the 'Mute/Back' button. Each press moves the display back by one day, up to a maximum of 30 days. Data older than 30 days is not

accessible via this method.

To show Next day(s):

To scroll forward through historical data, press the ‘Spanner/FWD’ button. Each press advances the display by one day. Once the current day is reached, the display will return to the channel selection menu.



- **The bottom of the display will show Hd:xx where xx is how many days ago you are viewing.**
- **The date will be the specific day that you have navigated to.**

5.3.4 USB port

The USB port facilitates communication with external devices, such as computers, via a USB-C cable. The functionality differs depending on whether the BCU is fitted with an optional Logic board.

For models equipped with the Logic Board:

The Ice3 is recognized as a standard USB Mass Storage device when connected to a computer. To access the USB port, gently remove the protective sticker—applied only to units requiring a higher IP rating—by pulling on the tab that covers the USB port. The sticker must be reapplied after use to maintain the unit’s protective rating.The following functionality is available through the USB interface:

- Downloadable 60-day PDF summary report:

Plug one end of the USB-C cable (not supplied) into the USB port, and the other end into a computer. The Ice3 will present itself as a flash drive. Navigate to the root directory from your computer and you will see a PDF file with a 60DTR summary report.

- Historical raw data files:

Up to a year’s worth of history is available for active channels in the “DATA HISTORY” folder.

- USB Synchronisation file:

A synchronisation data file can be found in the root folder which will contain the last available data record of certain parameters.

For models without the Logic Board:

Historically logged data from Ice3 (active channels only), can be downloaded onto a computer via a standard USB cable. This requires software available for download on the ColdCloud portal.

The root directory contains the following files/folders:

File/folder	Contents
0123456789_60DTR_SUMMARY_PnDTnHnMnS.pdf	60 day summary report (including temperature, door switch, compressor operation data, etc.)
0123456789_CURRENT_DATA_PnDTnHnMnS.j	The raw data from the past 60 days (in JSON format,

son	compliant with WHO/PQS/E006/DS01 standards).
0123456789_SYNC_PnDTnHnMnS.json	Containing the relative timestamp at time of mount, RTC Wakeup value (RTCW), present door opening data objects
0123456789_DATA_PnDTnHnMnS.json	All historical data

Where 0123456789 is to be replaced by the alphanumeric logger unique identifier, and PnDTnHnMnS is to be replaced by the relative timestamp as of the time of USB mount in ISO 8601 duration format.

5.3.5 M2M interface

The data logger of CFD-50 SDD adopts Beyond EMS, and the BCU has a USB Type-C interface. In addition, there is an M2M power cord arranged near the USB Type-C interface for recording data and interacting with external devices.

The M2M DC power is controlled by an independent M2M power board, which is powered by the appliance's power board.

The M2M power cord has a quick plug connector, which is plugged into the power board inside the press room at the bottom of the machine. When replacing, unplug the M2M power cord plug from the power board and plug the spare power cord plug into the power board.

The Ice3 has a built in rechargeable Li-Ion battery that will be charged when there is appliance power but will work without appliance power for greater than 2 weeks. In the event the Ice3 internal battery is depleted, the Ice3 can be powered up through the USB-C connection and extarct data.

5.3.5.1 Health and Safety Guidelines

Electrical Safety: Ensure the device is connected to a power supply that complies with local electrical standards. Avoid operating the device in humid environments.

Device Operation: When operating the device, avoid inserting hands or other objects into the device's vents or mechanical components.

Data Access: When connecting external devices (such as laptops or mobile phones) to access logger data, ensure the device is stable and avoid moving it during operation.

5.3.5.2 Basic Operations

Device Startup: Connect the device to the power supply, ensuring the voltage meets the device's requirements. Once powered on, the logger will automatically start recording data.

Data Access:

Use a USB Type-C cable to connect an external device (such as a laptop or mobile phone) to the USB Type-C interface on BCU.

The external device will recognize the logger as a USB Mass Storage device, allowing users to access the data files stored in the logger.

Barrel Power:The M2M barrel power connection plug is for powering monitoring devices and not for the charging of mobile phones or other devices.

NOTE：The barrel-type male plug of power cable is protected by a waterproof cap, which needs to be removed when in use and plugged back in when not in use。

5.3.5.3 Routine Maintenance

The interface has a dust-proof and waterproof design to reduce daily maintenance work, but the following should also be noted.

Cleaning: Regularly clean the interface surface to prevent dust and dirt buildup. Use a soft, dry brush to wipe the interface, avoiding corrosive cleaning agents.

Note：There is a stuttering sensation when inserting the interface correctly.

Inspection: Periodically check the device's power and connection cables to ensure there is no damage or looseness.

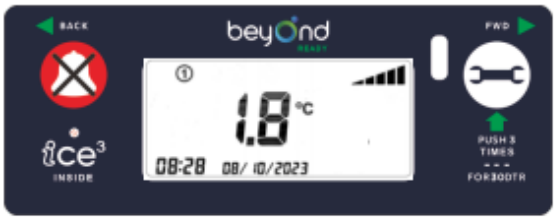
5.3.5.4 Troubleshooting

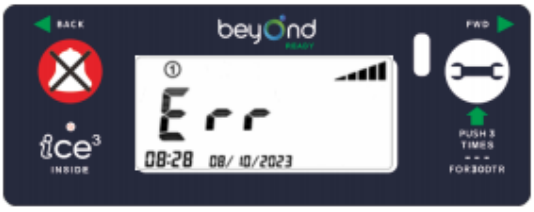
Unable to Access Data: Ensure the external device is properly connected to the M2M interface and check if the USB cable is damaged. If the issue persists, contact technical support.

Abnormal Data Recording: If abnormal data (e.g., inaccurate temperature readings) is found, check if the sensors are functioning properly and contact a technician for replacement if necessary.

5.3.6 Examples of display modes

Note:Not all scenarios are shown and it is possible to have a combination of the below examples.

No.	Display	Meaning
1		Normal operating mode showing current temperature on channel 1. Time: This is the local time based on the timezone set on the ColdCloud portal. Date: This is the local date based on the timezone set on the ColdCloud portal. Signal strength: Full signal (5 bars).
2	 AI识图	Current Alarm on temperature channel 2. The unit is currently uploading to the portal. Red LED is flashing as there is an active alarm.
3		Current Alarm on digital channel D3 (usually power to Ice³) e.g. supply power is OFF.
4		Historical alarm: Unit is no longer in an active alarm state; but a previous alarm on this channel was not acknowledged. Press the **Mute** button to clear the historical alarm indicator and log the event on the portal.

5		Test mode: hold spanner button (for at least 5 seconds) until you hear a beep. **Note**: If a unit is in Test Mode, then ALL channels on the units will be in test mode.
6		Low battery
7		Probe error on channel A1.

5.3.7 List of Error Codes

a. The following is an explanation of the ALRM code:

Code	Symbol description
HEAT/ HEATACK	Heat alarm/ Confirm
FRZE/ FRZEACk	Freeze alarm/ Confirm
DOOR /DOORACk	Door open alarm/ Confirm
POWR/ POWRACk	Power outage alarm/ Confirm
DCNT /DCNTACk	EMD disconnect alarm/ Confirm

b. See below error codes reported on the 60 day performance report.

Error Code Number	Description
16	Connect to server timeout
17	Failed to connect to IP address
18	Tried to connect to server 3 times without success
19	SIM card not detected
20	SIM card not registered
21	Both SIMs not registered
22	Problem disconnecting from the server
23	Watchdog reset
33	Start/ restart
35	Format EEPROM
36	Brown out restart

38	Power on reset

c. When the temperature sensor experiences an open circuit or a probe error, the code "Err" will be displayed on the screen, as well as in the PDF and JSON files.

5.3.8 Ice3 configuration data

The Logic Board includes a built-in Wi-Fi module, enabling the Ice3 to connect to Wi-Fi-enabled devices such as smartphones, computers, and tablets via a web browser. Through its integrated web server, users can access key information including summary KPI (Key Performance Indicator) reports, connectivity status, and battery level. The interface also provides basic configuration options—such as setting the system time and enabling or disabling alarms—and supports firmware updates for the Logic Board.

To access the web server:

- Enable Wi-Fi on the Ice3 by following the button sequence described above.
- On your smartphone, tablet, or computer, open the **Wi-Fi settings** and select the network **ICE3_xxxxx** (where *xxxxx* is the serial number of the Ice³).
- When prompted, enter the password: **Beyond123**.

Note:

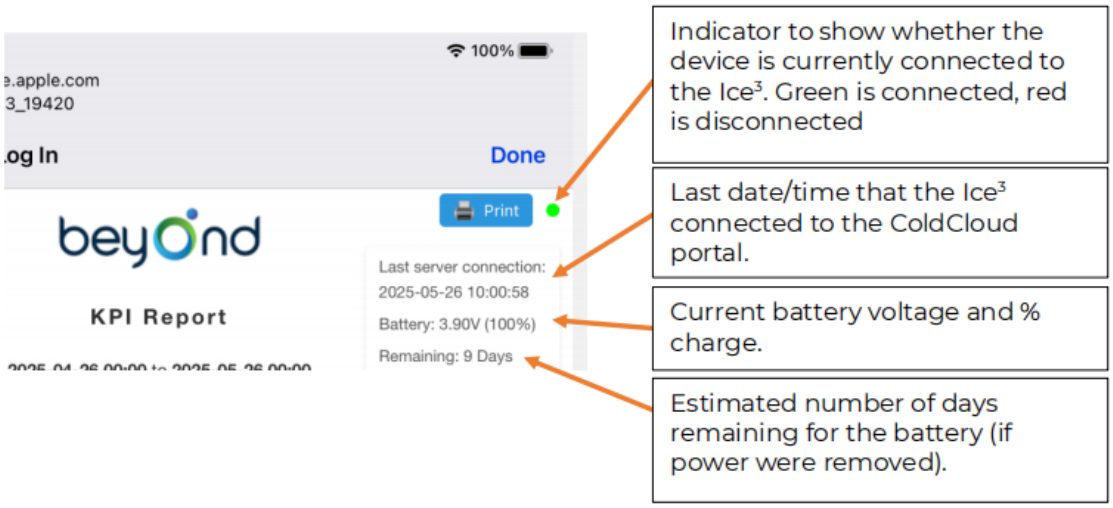
- **You will not be prompted for the password if the device has previously connected to this Ice3 unit.**

- Launch an internet browser. The Ice3 web server interface should automatically open.

Note:

- **Display screens may vary slightly depending on your device.**

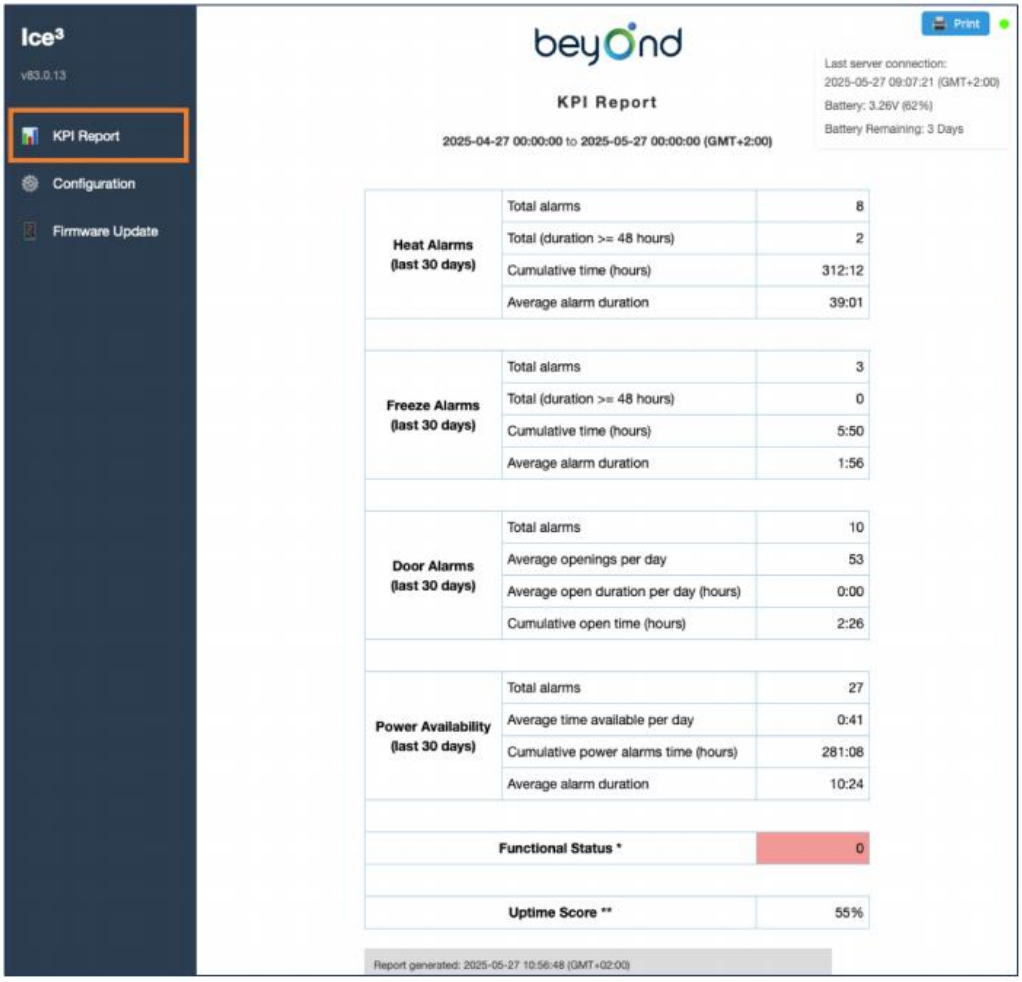
- At the top of the web interface, the following information is displayed:



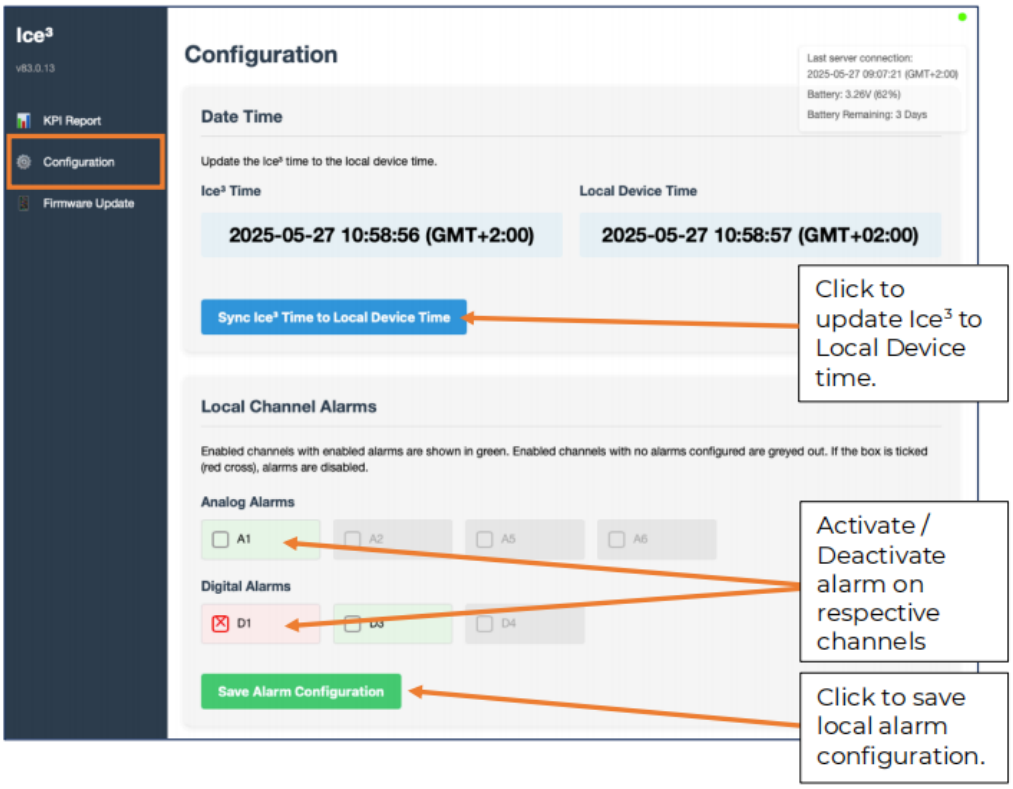
Menu options:

On the left side of the browser page, there are 3 menu items available. Select the menu item by clicking on the respective option:

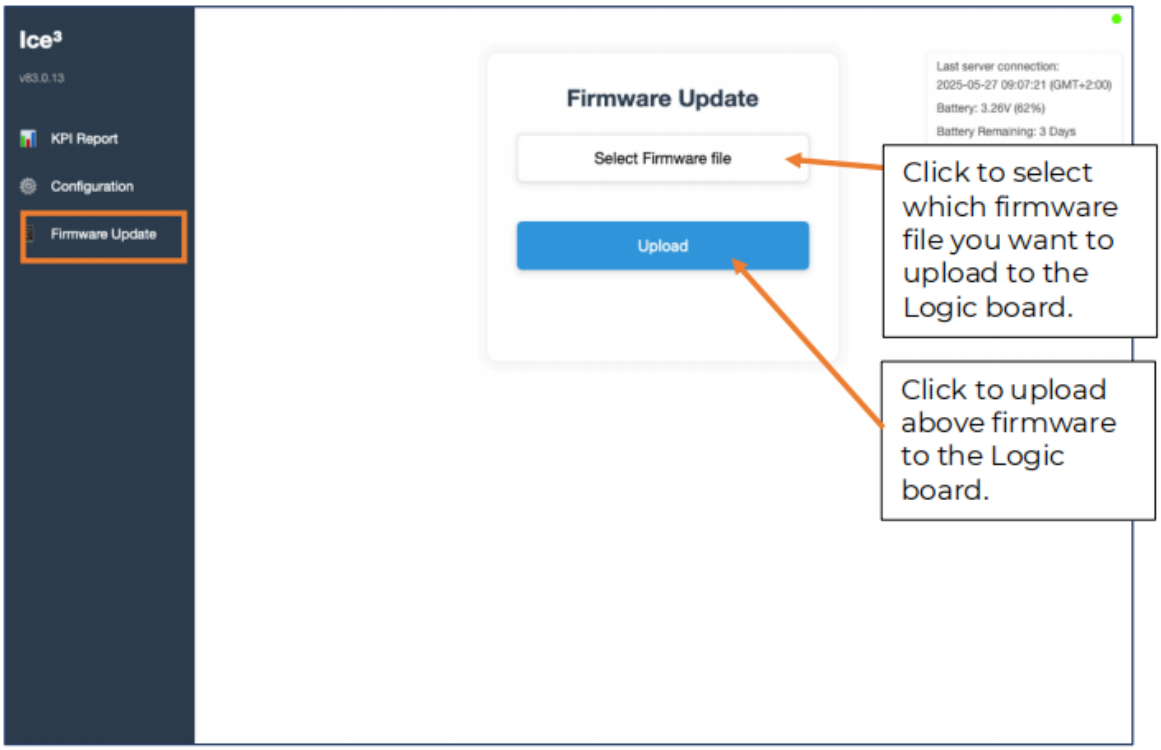
a. KPI (Key Performance Indicator) Report:



b. Configuration:



c. Firmware update:



Note: Users can configure administrative data on-site through the firmware update function, Any firmware file must be provided by the manufacturer. Please do not upgrade it privately unless notified by the manufacturer to upgrade the firmware

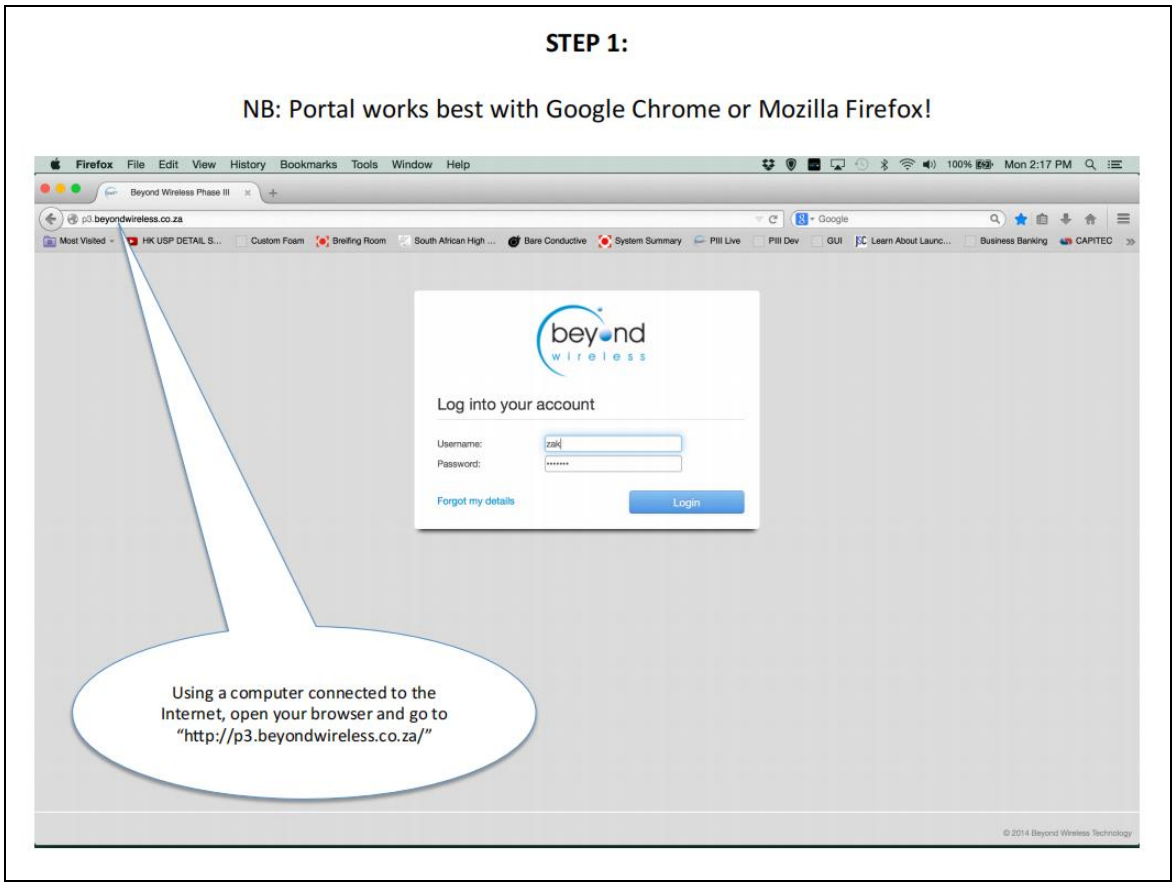
Note:If a unit is rebooted, then locally disabled alarms will return to their default setup state i.e. as per ColdCloud initial setup.

Note:For detailed operation, please refer to Technician Manual - Ice3 BC141，or refer to the Beyond Coldcloud Administrator Manual.

5.3.9 Beyond Coldcloud

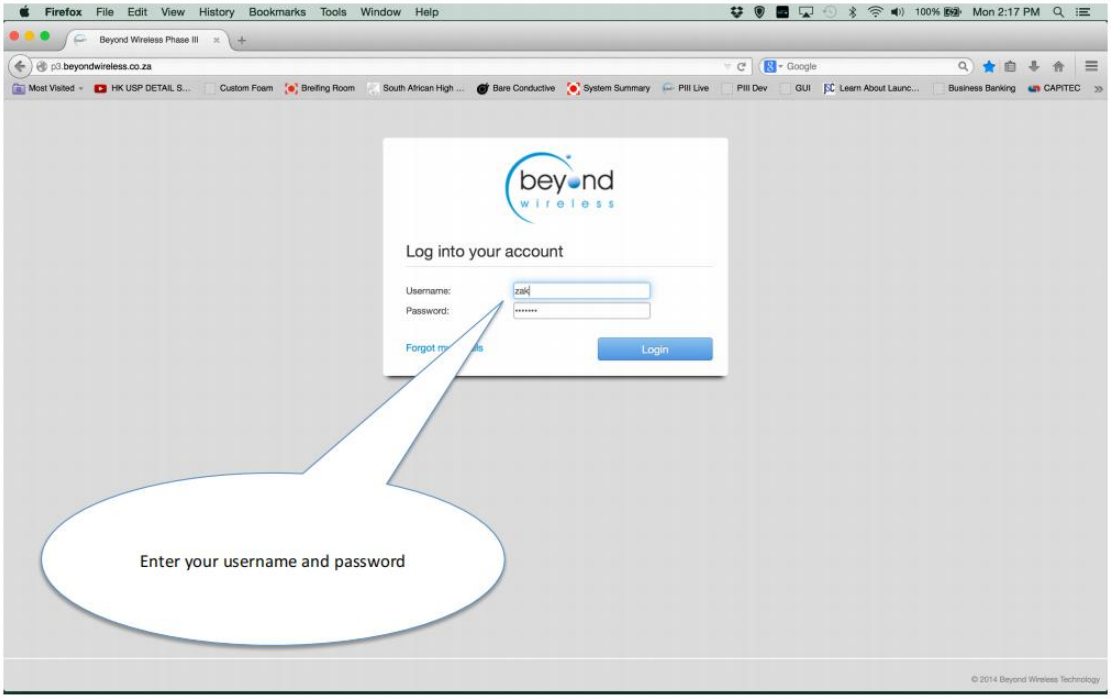
Here is only a detailed introduction on how to access your temperature data and alarm data. For other information about Beyond Cold cloud, please refer to the Beyond Cold cloud Administrator Manual.

5.3.9.1 How To Access Your Temperature Data



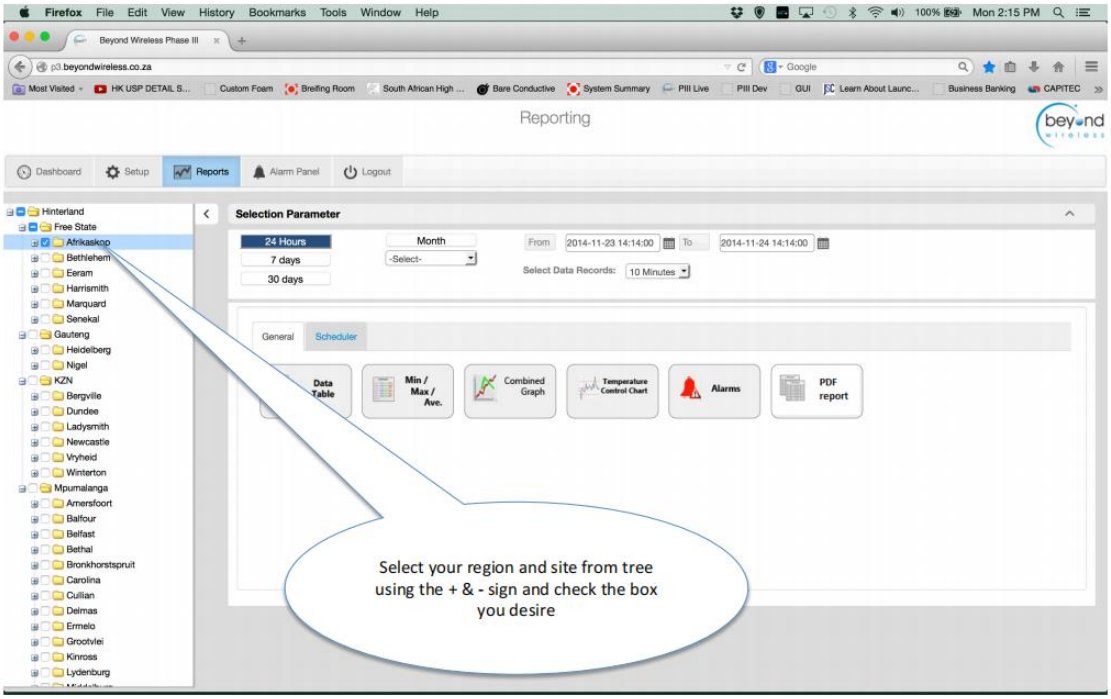
STEP 2:

NB: Portal works best with Google Chrome or Mozilla Firefox!



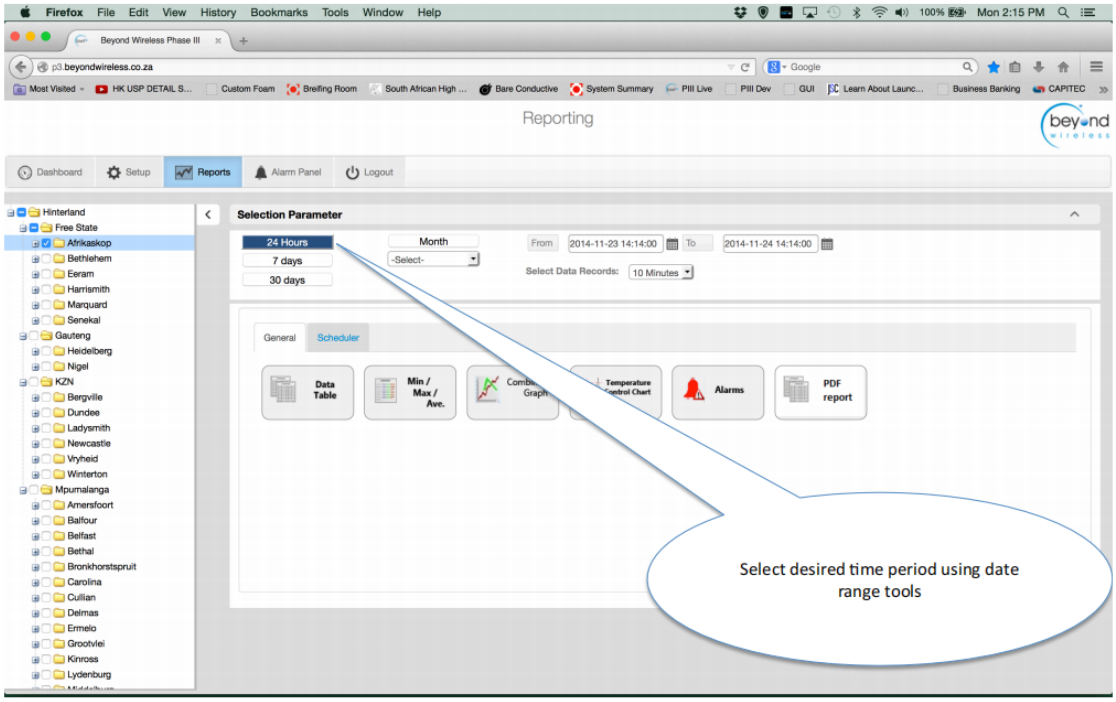
STEP 3:

NB: Portal works best with Google Chrome or Mozilla Firefox!



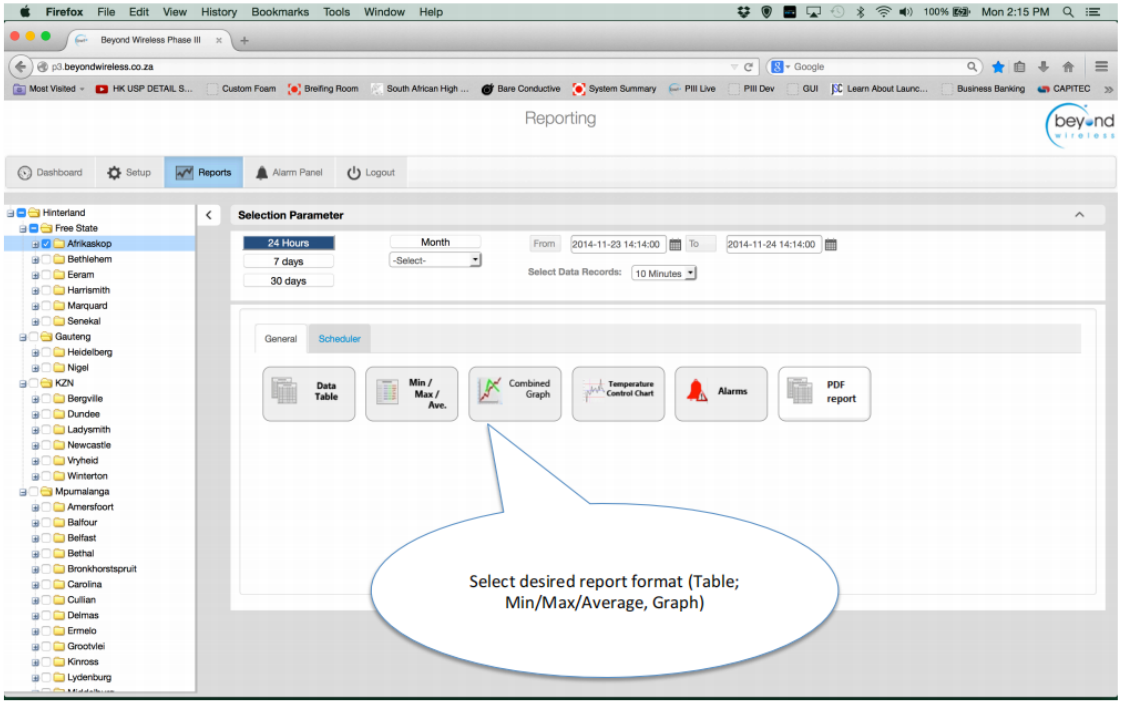
STEP 4:

NB: Portal works best with Google Chrome or Mozilla Firefox!



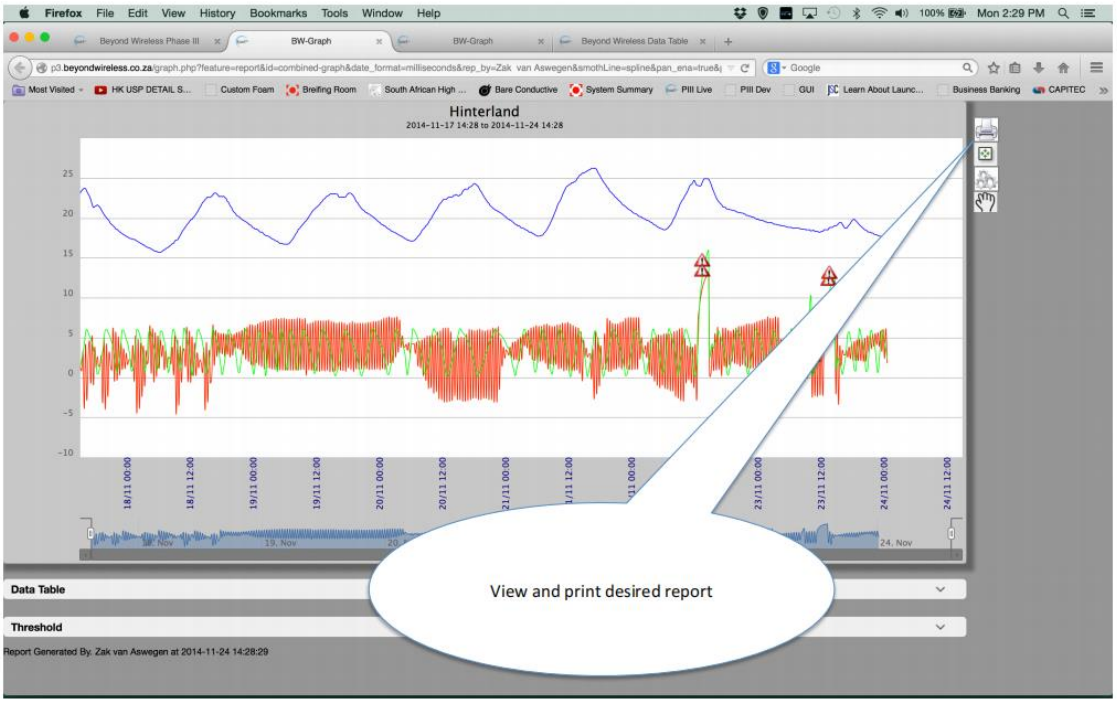
STEP 5:

NB: Portal works best with Google Chrome or Mozilla Firefox!



STEP 6:

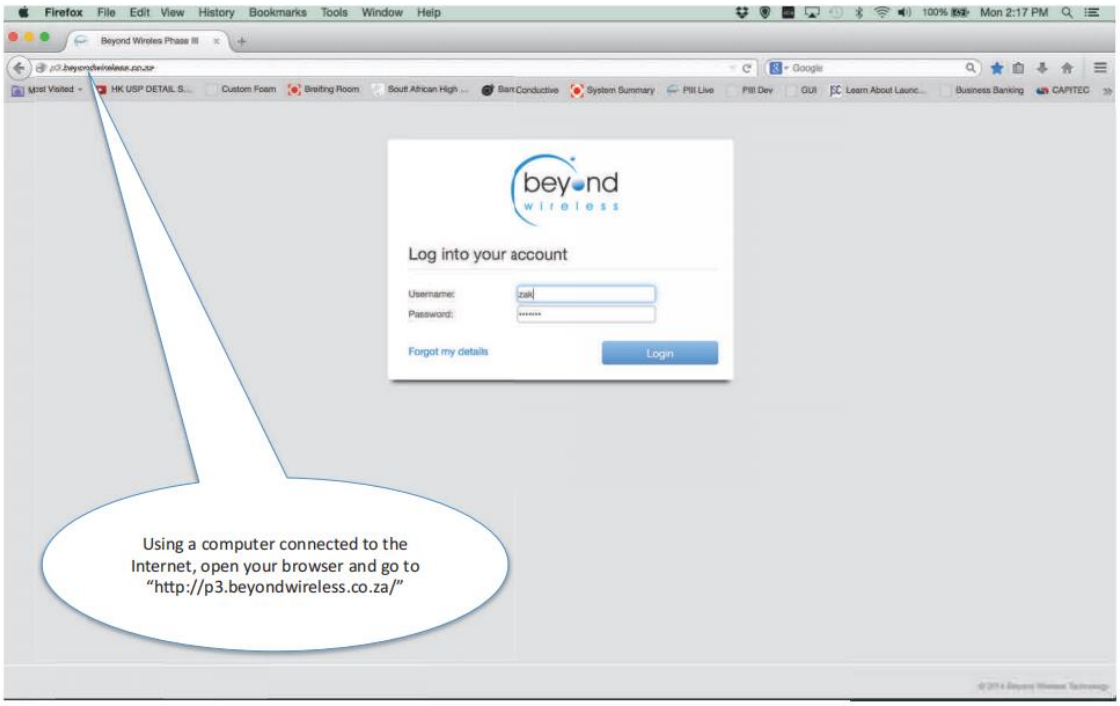
NB: Portal works best with Google Chrome or Mozilla Firefox!



5.3.9.2 How To Access Your Alarm Data

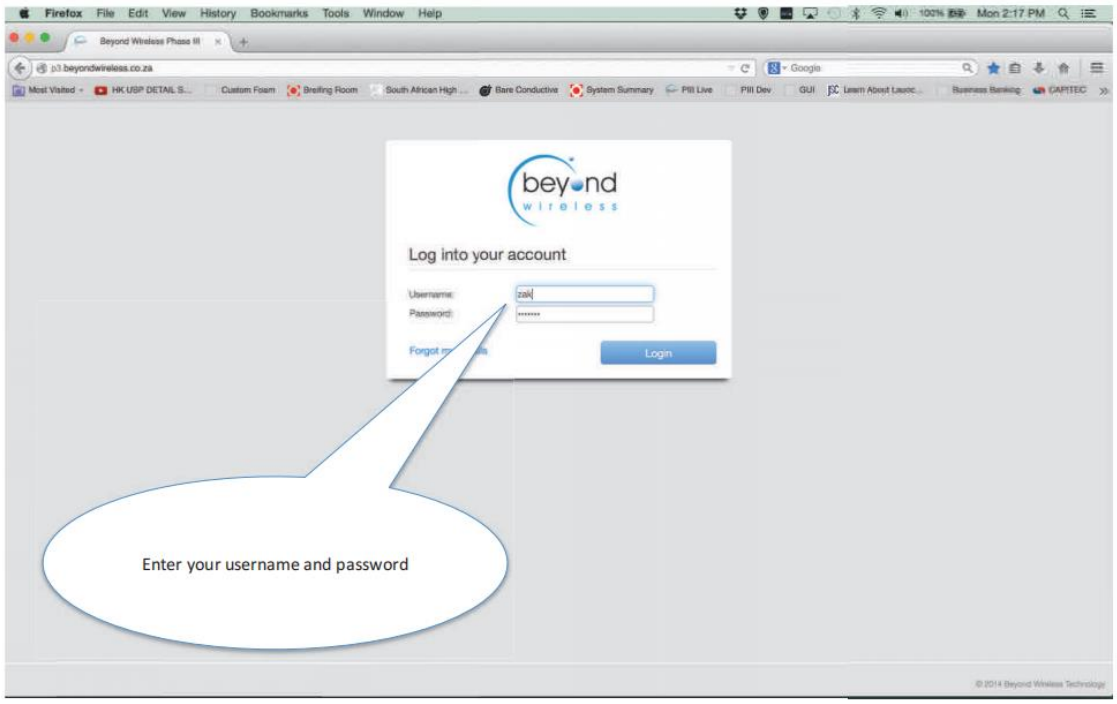
STEP 1:

NB: Portal works best with Google Chrome or Mozilla Firefox!



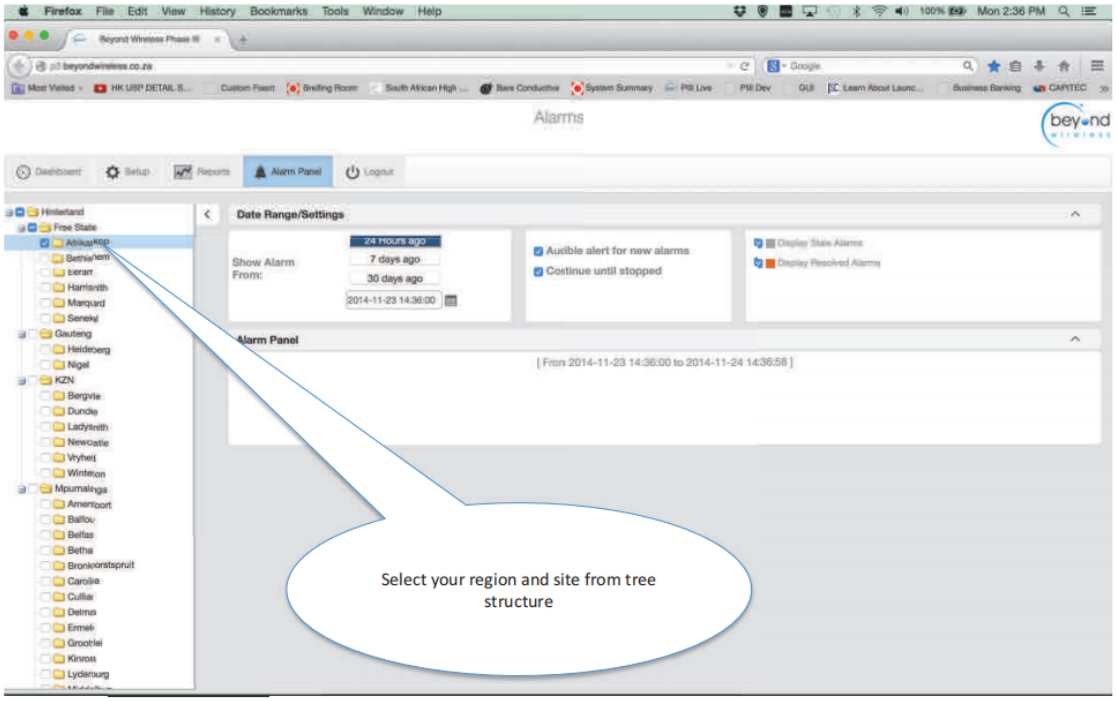
STEP 2:

NB: Portal works best with Google Chrome or Mozilla Firefox!



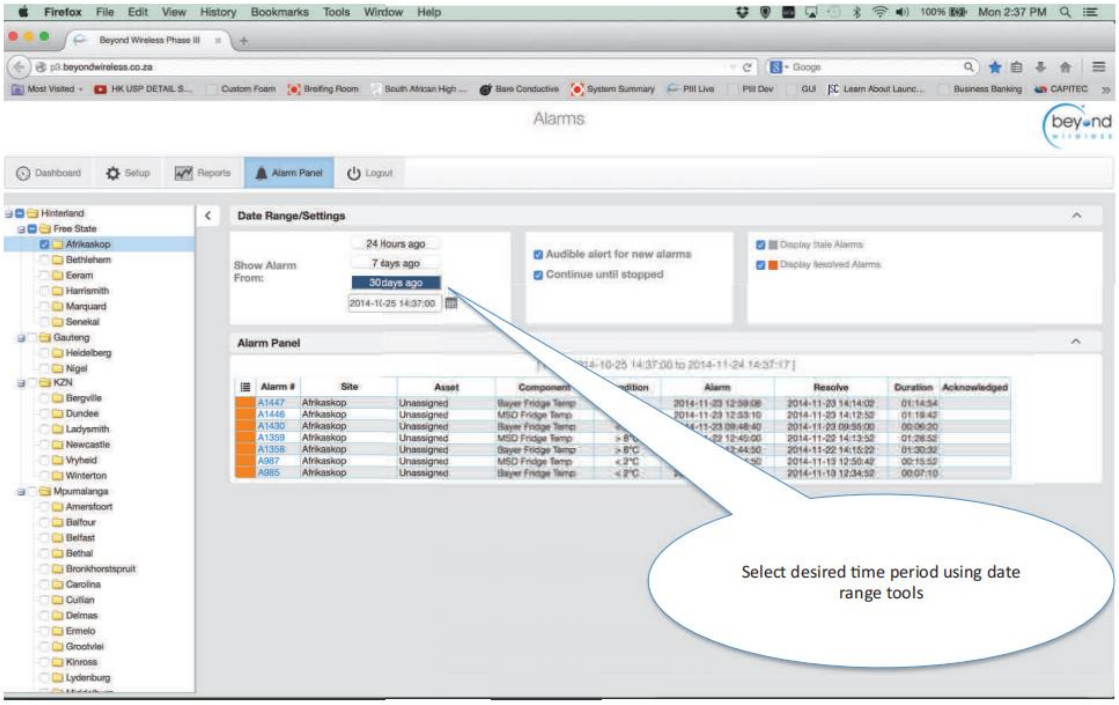
STEP 3:

NB: Portal works best with Google Chrome or Mozilla Firefox!



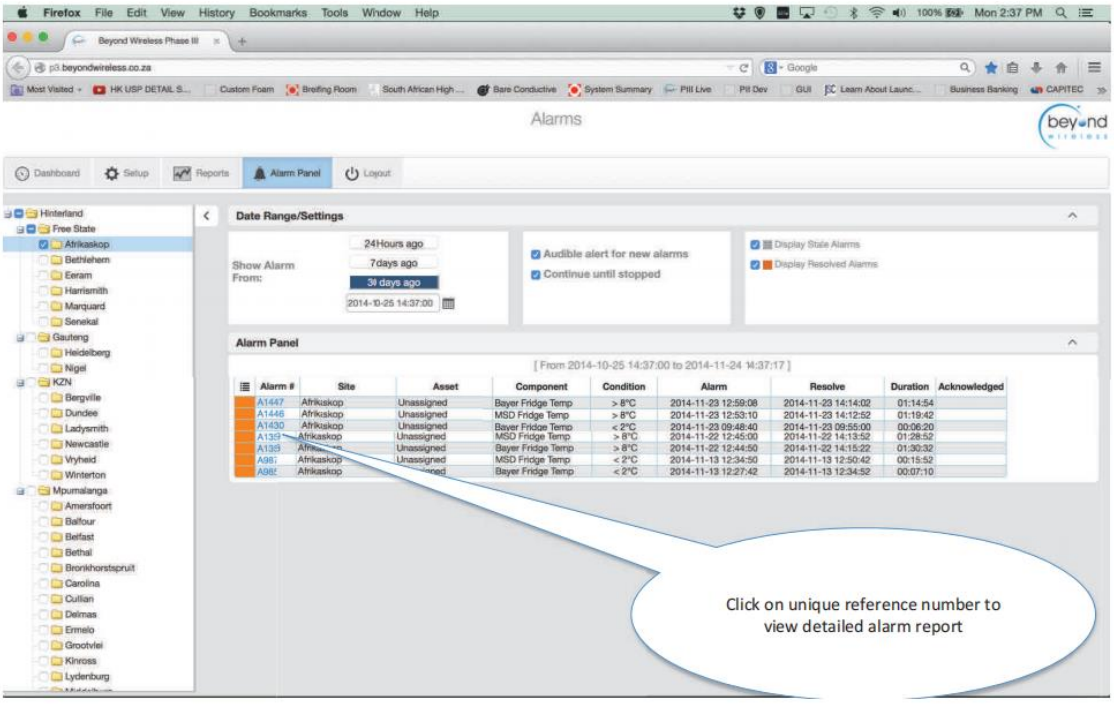
STEP 4:

NB: Portal works best with Google Chrome or Mozilla Firefox!



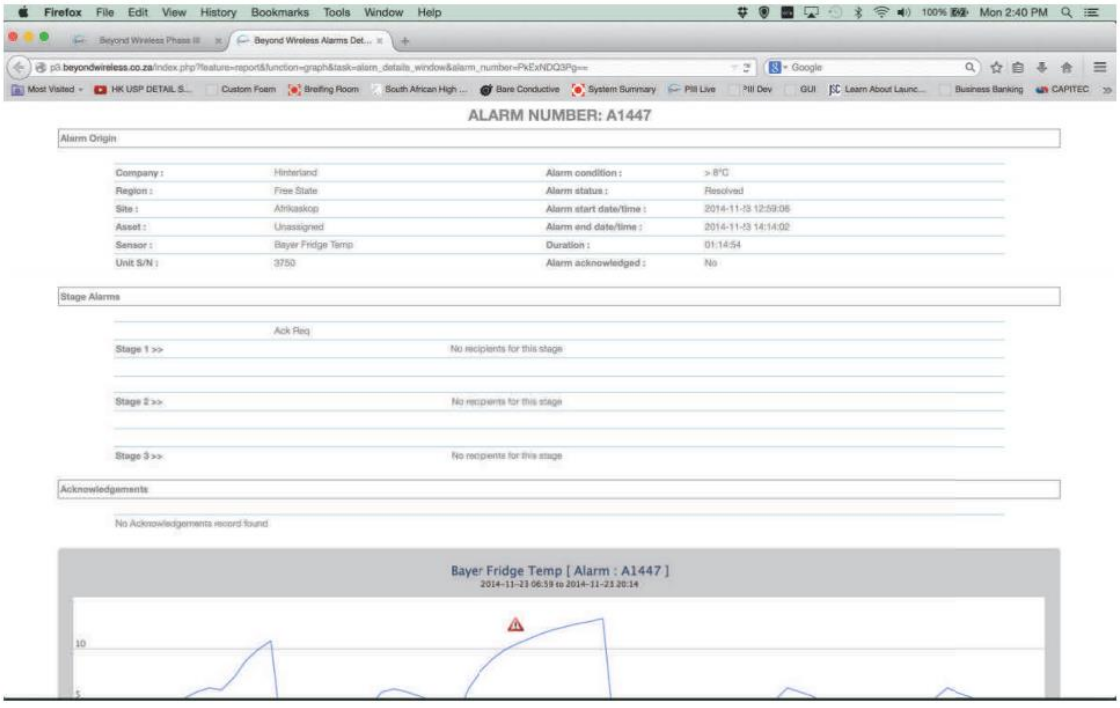
STEP 5:

NB: Portal works best with Google Chrome or Mozilla Firefox!



STEP 6:

NB: Portal works best with Google Chrome or Mozilla Firefox!



5.3.10 Other

•All spare parts are provided by Aucma. Before the logger recorder leaves the factory, we will reconfigure all administrative information according to the appliance without the need for on-site configuration.

•NOTE:If the user needs to configure it themselves, they can refer to Section 5.3.8. We do not recommend self-configuration to avoid affecting the normal use of the product. Additionally, the relevant software required for configuration will be provided by Aucma or the local distributor.

•Beyond has passed the WHO prequalification（E006-036e）, As legal manufacturer，AUCMA and Beyond will not share collected datas with any third parties.

•For other instructions or operations related to BCU, please refer to the Technician Manual - Ice3 BC141.

6 Maintenance

6.1 Daily maintenance tasks

Confirm that the vaccine chamber is within acceptable temperature range (2°C to 8°C) and remaining holdover is at least 2 days. If temperatures are out of range or holdover is low, follow troubleshooting steps in Chapter 8.

Ensure that door is fully closed and latched. Avoid unnecessary door openings.

6.2 Monthly maintenance tasks

• Wipe down any condensation inside the vaccine chamber.

• Remove any surrounding objects around the TCD-100 that might obstruct airflow.

• Clean external condensers at the back of the TCD-100.

• Clean both front and back compressor ventilation covers.

• Clean vaccine chamber door inner and outer gaskets with a soft wet cloth to maintain flexibility and elasticity. Rub the door gasket with talcum powder to prolong its use. Check gaskets for any cracks or gaps that allow airflow through the door. Order spare parts and replace if necessary.

6.3 Annual maintenance tasks

Inspect water level to ensure that water reaches the bottom of the fill tube; top off with clean drinking water if needed. It is normal for ice to be present in the bottom of the fill tube.

6.4 Cautions during maintenance

•Wipe both inner and outer surfaces using a soft cloth. Do not use any brushes, acidic or alkali detergents.

• In order to avoid water leakage to electric components and damage to the exterior, do not pressure-wash or use any hard scrub to clean the TCD-100.

• Before decommissioning or storing the TCD-100, unplug the unit, drain all water, clean the inside thoroughly, use a dry cloth to wipe the interior and leave the door and top lid open for 2 to 3 days until the inside is completely dry.

6.5 Cautions during maintenance

6.5.1 Cleaning

To clean the BCU, gently wipe the surface with a soft, damp lint free cloth. If required, a small amount of non-abrasive, mild soap solution can be used.

Warning:

- **Do not allow water or any other liquids to get into the equipment.**
- **Ensure mains power is removed before cleaning.**
- **Do not use any chemical detergents, abrasives or other chemical agents to clean the BCU or any peripherals or accessories.**

6.5.2 Preventative maintenance

Weekly checks:

- Check that the BCU is showing readings on its display
- Inspect the BCU for physical damage, and any error indicators
- Inspect the power and sensor cables for physical damage

Monthly checks:

- Verify data integrity by viewing the LCD screen to see if the values look reasonable, and checking on the portal to see that data is uploading.
- Observe whether the battery indicator is showing 'low battery' and replace the battery if required.
- Check that the unit is clean and dust free. If not, clean with a damp cloth and a mild soap solution if necessary.

6.5.3 Corrective maintenance

The only user serviceable parts are the battery in the Ice3, the fuse in the Power Module, and damaged cables / probes. Any other repairs or damage to the BeyondCom Unit must be done by an authorised supplier.

Battery replacement:

The battery should be replaced if it:

- Discharges rapidly, for example, goes flat within a day of being fully charged.
- Fails to reach full charge within 1–2 days, with sufficient supply power.
- Charges intermittently or not at all, despite a functioning cable and power supply (Power Module or external DC supply).
- Becomes abnormally hot during normal use or while charging.

If battery replacement is required, follow the procedure outlined below:

- Switch the mains power off and unplug the mains kettle plug from the power module.
- Remove the ethernet cable from the BCU by gently squeezing the clip and pulling it straight out.
- Open the back cover by prying open with a flat screwdriver.



- Gently hinge the back cover open, ensuring you don't pull on the looms connecting the PCB on the back cover to the motherboard.
- Cut the cable tie holding the battery with a pair of scissors or wire cutters.



- Unplug the battery connector from the PCB on the back cover by firmly pulling on the plug with two fingers. DO NOT pull on the wires.
- Gently pull the battery off the foam and totally remove from the unit.
- Replace the battery with a new one by following the above procedure in reverse.
- Insert a new cable tie under the PCB, and gently hand tighten.
- Replace the back cover and screw the self-tapping screws in.

Warning:

- **Take care to ensure that you don't pierce or damage the battery.**
- **Only use a battery supllied by Beyond or one of their designated agents.**
- **Do not over tighten the cable tie as this could be a safety risk if the battery does not have sufficient space for expansion.**
- **Do not over tighten the screws. Dispose of the battery in accordance with the 'Disposal' details in this manual.**

Fuse replacement (Power Module):

Should the fuse blow and need replacement, follow the steps below:

- Switch the mains power off and unplug the mains kettle plug from the power module.
- Remove the ethernet cable from the BCU by gently squeezing the clip and pulling it straight out.
- Unscrew the screws on either side of the Power Module.
- Open the back cover by prying open with your fingernail and pull the pieces apart.
- Gently pull the fuse cover and remove the fuse by twisting sideways (see below), and replace the fuse with the type and rating of fuse specified in the Technical Specification of this manual. It is recommended that you check the new fuse is not blown before use, by checking for continuity using a multi-meter.





- Replace the back cover and screw the screws back in.
- Reconnect the ethernet cable and power cord, switch the mains on, and verify that the power modules power LED is ON.

Damaged probe / cables:

- If the sensors are damaged, these will need to be replaced and cannot be repaired. Cables may be able to be repaired by a technician who has been specifically trained.
- To remove a sensor, unplug the RJ plug at the bottom of the unit by squeezing the tab and gently pulling downwards (see Connections section).
- The plugs on cable extensions can be disconnected in the same way.
- To re-install, push the cable back into the unit until you hear a click. (Similarly for extensions).

Note:

- **The removal and reinstallation of sensors and cables may not be covered in this manual, as the routing and method used depend on the specific equipment being monitored.**

Resetting the unit:

- To reset the unit, it needs to be switched off and then back on. To switch off, press and hold the Mute and Spanner buttons at the same time for 10 seconds. Once the unit is switched off, the LCD display will be blank. To switch the unit on, press and hold the Mute and Spanner buttons at the same time for 10 seconds. The LCD display will go on, and once successfully connected to the portal, the date / time on the bottom left of the display will be correct (as per the time zone setup on the portal).

Note:

- **The setup of the time zone that the unit operates in is done on the ColdCloud portal. The correct date and time will only display on the unit following successful communication with the portal.**

Firmware updates:

- Firmware updates are done remotely and can only be done by Beyond or one of their designated suppliers.
- If you suspect that your unit is not working properly, please contact Beyond support, or your account manager or sales representative to assess.

7 Safety Precautions

a. Connect the TCD-100 to an approved solar array.

b. Use reliable grounding that is tied to the earth; not connected to any grid, heating pipe, gas pipe, etc.

c. Turn off the circuit breaker at the right of the TCD-100 before unplugging or plugging in the connectors to the solar array.

d. To disconnect mains power, hold the plug firmly and pull. Do NOT pull on the cord to disconnect power.

e. For safety reasons, conduct any repair work by unplugging the unit before starting the work.

f. Do not use wet cloth to wipe any electrical parts.

g. Do not place or operate the TCD-100 near any inflammable, explosive, corrosive materials, any volatile gases, liquids, and any inflammable gases.

h. Do not touch any electrical components (such as plugs, switches, etc.) with wet hands in order to avoid electric shock.

i. Do not damage or break the power wires and connectors, in order to prevent fire and electric shock. Replace any damaged wires or connectors immediately by qualified maintenance personnel.

j. Do not place any water containers or heavy objects on the top of the TCD-100 to avoid any damage to the top, any injury due to falling objects, or any electric leakage or electric shock due to splashing water on any electric components.

k. Do not climb onto or lean on the TCD-100, which may cause injury due to tilting or falling of unit.

l. Do not touch the compressor when the TCD-100 is plugged in to avoid being burned or injured.

m. Do not allow children to play in inside of the TCD-100, which may cause damage or injury.

n. Remove the door when the TCD-100 is no longer in use so children cannot be trapped inside.

8 Troubleshooting

If TCD-100 does not work properly, please proceed as described in the troubleshooting guide below.

If the problem cannot be resolved, please contact the manufacturer or the service provider.

Symptom	Possible Cause	Remedy
Vaccine chamber temperature above 8 °C	Prolonged door opening or door ajar	Avoid prolonged door openings and make sure door is fully closed and latched after use. Vaccine chamber may take some time to cool down again after extended door openings.
	Warm objects placed in the vaccine chamber	Do not place food, beverages, or other non-medical items inside the refrigerator.
	Door gasket not sealing properly	Check gasket condition; adjust door or replace gasket if necessary.
	Improper air flow around condensing unit	Re-arrange to allow proper air circulation; relocate the refrigerator away from heat-generating equipment, direct sunlight, or direct path of air conditioning or heating ducts.
	Power cord unplugged	Plug in power cord.
	Insufficient mains or solar power	Check solar array and facility wiring or contact electricity supplier.
	Improper voltage supplied to refrigerator	Connect to approved solar panels. For power connection, correct the power supply voltage and ensure that the power outlet voltage meets the voltage input requirements of TCD-100.
Vaccine chamber temperature is below 2°C	Ambient temperature is below 5 °C	Move the TCD-100 to a warmer location. Note that the TCD-100 is rated from 5 °C to 43 °C.
	Malfunctioning control board or mechanical thermostat.	If vaccine chamber temperature is below 2 °C while ambient temperature is above 5 °C, call for service.

Symptom	Possible Cause	Remedy
Popping sound	Thermal contraction and expansion of the refrigeration system may cause occasional popping sound.	Normal phenomenon, no action required.
Clicking sounds	Occasional clicking sounds may be generated by relay or other electrical parts during compressor's starts and stops.	Normal phenomenon, no action required.
Holdover time not enough	Power cord unplugged	Plug in power cord.
	Insufficient mains or solar power unavailable	Check solar array and facility wiring or contact electricity supplier.
	Improper voltage supplied to refrigerator	Connect to an approved solar array. For mains connections, correct supply voltage and ensure the power outlet voltage matches the TCD-100's voltage input requirements.
	Not enough water in the water tank	Check water level and if needed, add water until level reaches bottom of the fill tube.
Compressor does not start (green light will turn on when compressor is running) when the power indicator is always on	Refrigerator is in its normal operating cycle	Compressor only runs occasionally to keep the ice lining fully frozen; every 1 hours to every 24 hours, depending on ambient temperature. If good solar energy is available for multiple days and holdover continues to decrease, refer to technician manual or call for service.
Compressor does not start when green compressor run light is on.	Refrigeration system or control malfunction	Refer to technician manual or call for service.

Symptom	Possible Cause	Remedy
Cover won't close tightly	Latch is blocking the door	Make sure latch is not caught in the door, adjust tension of latch to hold door tightly closed.
	Refrigerator is not level	Level refrigerator by shimming underneath TCD-100.
	Gaskets are not installed properly.	Make sure gaskets are pressed firmly into door and lie flat.
	Damaged or leaking door gasket(s)	Replace damaged gasket(s).
Condensation on the body of the refrigerator	High ambient humidity.	Wipe down the condensation with a clean dry cloth.
Excess condensation water in the vaccine chamber	Clogged drain hole.	Clean drain hole at the back of the vaccine chamber and tubing down to the drain pan, and empty drain pan.
	Prolonged door opening or door ajar.	Avoid long door openings and ensure door is closed after use.
	Refrigerator is not positioned on a leveled and stable floor.	Position the refrigerator on a stable floor and level it so that condensate flows to the drain in the back of the chamber
Buzzing or dripping sound of liquid	Refrigerant flows within the TCD-100 or condensate flowing to drain pan.	Normal phenomenon, no action required.
Popping sound	Thermal contraction and expansion of the refrigeration system may cause occasional popping sound.	Normal phenomenon, no action required.
Clicking sounds	Occasional clicking sounds may be generated by relay or other electrical parts during compressor's starts and stops.	Normal phenomenon, no action required.
External EMD unable to supply power	The polarity of the barrel interface is reversed or the voltage is insufficient	1. Check the polarity of the interface (positive inside and negative outside). 2. Replace hardware or DC power cord.

Beyond EMS Troubleshooting

The following possible problems may be encountered, with suggested remedies. Please contact your supplier should you require any assistance.

Diagnostic procedure:

PROBLEM	POSSIBLE CAUSE and SOLUTION
Display / unit not on:	**Mains circuit has tripped (MAINS units only):** • Check circuit breaker / fuse on mains supply and that power is available from power point. **Battery not connecting properly:** • Open back cover and connect battery. **Battery flat / faulty:** • Verify power supply connected via ethernet cable • Check mains power is available (MAINS units only) • Check fuse in Power Module (MAINS units only) • Check fuse in DC Power cable (SOLAR/TRUCK units only)
Unit not uploading:	**SIM card not communicating:** • Check with your account manager or service provider that the SIM card is activated. **Unit not set up correctly on portal:** • Verify setup on ColdCloud portal as per ColdCloud manual.
Incorrect readings on the display or portal:	**Unit not set up correctly on portal:** • Verify setup on ColdCloud portal as per ColdCloud manual. **Calibration is out:** • Calibrate probes and enter calibration factors on ColdCloud portal.
Electrical interference:	**Screen on cables not used:** • Connect screen on sensor cables. **Electrical interference from mains supply:** • Buy external filter or plug power module into 'clean' power source. **Interference from other equipment:** • Relocate BCU and cables away from equipment.

Display shows "Probe error"	**Probe not connected:** • Plug probe into active channel. **Probe faulty:** • Replace faulty probe.
Display shows "Low battery" indicator	**Battery is less than 80% of the capacity of a fully charged battery:** • Recharge battery by ensuring power is available from power module i.e., Power LED is illuminated, and ethernet cable is connected to both Power Module and BCU. **Power supply is not connected or working:** • Ensure ethernet or DC power cable is connected to both the power module or DC supply, as well as the BCU. • Ensure the mains cable is plugged in to a wall socket and that the wall socket is supplying power as per the specification in this manual. • Ensure there is the specified DC supply voltage and current available for DC and Solar applications.
Unit is beeping	**Unit is in alarm:** • Resolve alarm by rectifying asset alarm condition.
Red alarm LED flashing, but unit is not beeping	**Unit is in alarm but the portal is setup with buzzer disabled:** • Change setting on portal to required conditions for the buzzer. **Buzzer faulty:** • Contact your account manager or sales representative for technical assistance.
Unit does not go into alarm when thresholds are exceeded	**Unit has not received alarm parameters:** • Parameters not received yet – do a forced upload.

For detailed information on Maintenance, Please refer to Technician Manual-Ice3 BC141.

9 TCD-100 Specification

Model		TCD-100
Ambient Operating Temperature and Humidity Range		5 ℃ - 43 ℃; Relative Humidity ≤ 95%
Vaccine Chamber Temperature Range		2 ℃ - 8 ℃
Freezer Chamber Temperature Range		≤-5℃
Holdover Time @ +43 °C		180-hrs
Autonomy Time @ +43 °C		180-hrs
Water-pack freezing capacity @ +43 °C		2.0kg/24h
water-pack storage compartment capacity @ +43 °C		10.7kg
Vaccine Gross Capacity		59L
Vaccine Storage Capacity		48L
Freezer Gross Capacity		38L
Solar Array Voltage Range / Rated peak current		18~28VDC / 29A （at24VDC）
Power (DC)		190W
Charging Interface		5V/0.5A
Refrigerant	**Vaccination Compartment**	R290/55g
	Freezer Compartment	R290/45g
External Dimensions		1050W * 750 D * 975 H mm
Net Weight		100kg

10 TCD-100 Disposal and Recycling Guidelines

• Remove the door and top lid when the TCD-100 is no longer in use.

• Disposal of the TCD-100 must be made according to local appliance disposal and recycling regulations.

• Contact your local TCD-100 distributor and service provider for any questions not covered in this manual.

Part name	Hazardous substances content					
	Pb	Hg	Cd	Cr（VI）	PBB	PBDE
Cabinet and door	≤0.1%	≤0.1%	≤0.01%	≤0.1%	≤0.1%	≤0.1%
Thermal insulation material	≤0.1%	≤0.1%	≤0.01%	≤0.1%	≤0.1%	≤0.1%
Compress and electrical parts	>0.1%	≤0.1%	≤0.01%	≤0.1%	>0.1%	>0.1%
Refrigeration parts and refrigerants	≤0.1%	≤0.1%	≤0.01%	≤0.1%	≤0.1%	≤0.1%
Packaging and printing	<0.1%	≤0.1%	≤0.01%	≤0.1%	≤0.1%	≤0.1%
Disposal of the appliance must be made according to local appliance disposal and recycling regulations.						

11 Warranty

To facilitate inquiries, please copy the model number and serial number in the following table.

Model		SN.

To avoid losing the invoice, you can affix it to this page.

(Paste or staple your invoice here.)

Warranty Information

Thank you for using the TCD-100. Per the warranty card and invoiced date of sale (refer to the invoice), we will provide the following coverage to you.

1. **Three-year warranty on the device, beginning on the date of shipment from AUCMA, included at no extra cost.**

2. Under warranty coverage, the manufacturer will repair or replace device components that have failed in the use of the device for its designed intent.

Free warranty coverage does not include the following cases:

(1) Damage caused by improper use or improper maintenance.

(2) Damage caused by attempted repairs done by a non-designated repair department.

(3) Damage caused by force majeure.

(4) *Damage occurring after the warranty period has expired.*