



10308002
Boreas Pagoma
Freezer

User Manual

Table of Contents

I. Disclaimer	4
LIMITED WARRANTY & DISCLAIMER	4
LIMITATION OF LIABILITY	7
II. Safety	8
2.1. Proper Use	9
III. After Sales Support	9
IV. Boreas Pagoma Freezer Introduction	10
V. Technical Specifications	11
VI. Standards and Conformity	12
VII. Inspection	13
VIII. Installation and Operating Instructions	14
8.1 Installation Warning	16
8.2 Location	16
8.3 Install Wall Bumpers	16
8.4 Install Shelves	17
8.5 Remote Alarm Contacts	17
8.6 Attach Power Cord	18
8.7 Preparing for Start-up	18
8.8 Parameter Setting	19
8.9 Start-Up	25
8.10 Data/Information Retrieval	25
8.11 BOT Mode	28
IX. Calibration	29
9.1 Calibrate Control Probe	29
9.2 Temperature Stabilization Periods	29
X. Alarms	30
XI. Fault Diagnosis	31
XII. Maintenance and Cleaning	32
12.1 Cleaning the Exterior Cabinet	32
12.2 Cleaning the Air Filter	32
12.3 Cleaning the Condenser	32
12.4 Defrosting the Chamber	33

12.5	Cleaning the Door Gasket.....	33
12.6	Vacuum Relief Port.....	33
12.7	Replacing the Battery.....	34
12.8	Preparing a Unit for Storage	35
12.9	Preventative Maintenance.....	35
12.9.1	Freezers.....	35
12.9.2	Maintenance Checklist	36

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For claims under the warranty please contact your local supplier. You may also send the instrument directly to manufacturer, enclosing the invoice copy and by giving reasons for the claim.

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II. Safety

IMPORTANT Safety Items to be Observed.

! DANGER (may cause serious damage to property and or casualties)

1. Please carefully read this User Manual prior to operating the instrument and observe the instructions on safe operation.
2. The power source must be grounded reliably and away from any sources of electromagnetic interference.
3. Confirm that the voltage and frequency of the power supply matches the specified voltage and frequency specified prior to use.
4. The instrument should be operated on an independent power outlet.
5. Do not allow the instrument to be plugged in or unplugged whilst the power switch is in the on position.
6. Do not modify the power cord.
7. The working environment must be free of any flammable, explosive, volatile or corrosive substances.
8. The instrument is deenergised only when the power cable is disconnected from the power source.
9. This instrument is for indoor use only.
10. The instrument should be operated in a low humidity, well ventilated, dust, and water free environment, without direct sunshine or an intense magnetic, light or heat source. Ensure that the instrument and its accessories are free of any potential defects.
11. Ensure that the instrument is secured tightly, and only standard accessories supplied by the manufacturers are used with this instrument.

! WARNING (may cause property damage or personal injury)

12. Prevent water from splashing on the electrical elements of this instrument.
13. Before assembly, disassembly, cleaning or maintenance, the power source must be disconnected.

! ATTENTION (may affect operational performance or service life)

14. When pulling the power plug out from a power source, do not pull out using the power cord directly.
15. Only accredited and qualified professional repair technicians can open the instrument or conduct required repairs. Persons performing repairs on the instrument other than those selected or approved by the Company shall operate to void any warranty contained hereinabove for the product
16. Do NOT operate this instrument immediately after transport, due to the Compressor await 1-2 days before operating. The instrument must be used in accordance with this User Manual.
17. Only accredited and qualified professional repair technicians can open the instrument or conduct required repairs. Persons performing repairs on the instrument other than those

selected or approved by the Company shall operate to void any warranty contained hereinabove for the product

18. Do NOT operate this instrument immediately after transport, due to the Compressor await 1-2 days before operating. The instrument must be used in accordance with this User Manual.

2.1. Proper Use

The instrument is designed for non-residential use and to be used in conjunction only with accessories recommended within this manual and by the manufacturer.

III. After Sales Support

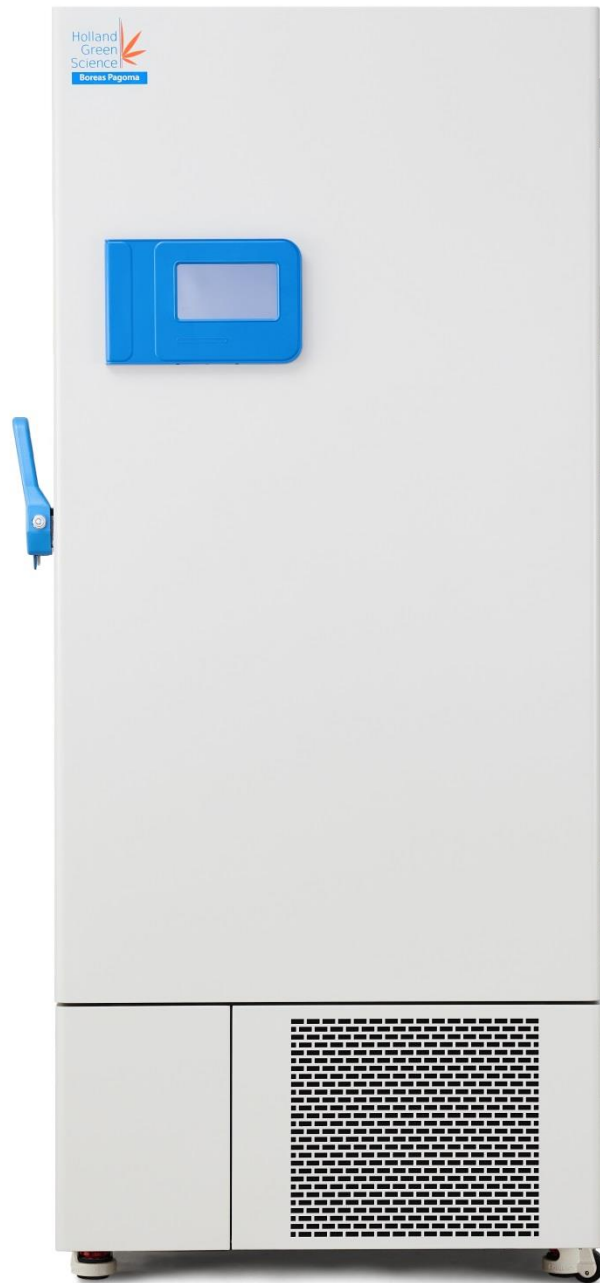
If problems are encountered or technical support is required when installing or using the instrument, please contact serviceusa@hollandgreenscience.com

The Company may provide technical assistance and information regarding the instrument or equipment or service without charge at its sole discretion. Buyer assumes sole responsibility for any reliance on or use of such assistance and information, and the Company makes no warranty thereon.

Upon contact the following information is required:

- Product serial number (located on the instrument nameplate)
- Description of issue or problem
- Method and or operating steps you have undertaken towards resolution.
- Your contact details inclusive of telephone number and email address.

IV. Boreas Pagoma Freezer Introduction



V. Technical Specifications

Model	10308002
Product Name	Boreas Pagoma
Power Specifications	120V 60Hz 1ph – 1500W
Capacity	390 litres
Temperature Range	-50°C (-58°F) to -86°C (-123°F) in @ 32°C (89.6°F) ambient
Exterior Dimensions	35.8" W x 78.3"H x 31.4" F-B (90.9cm x 199cm x 79.7cm)
Interior Dimensions	23.2"W x 51.6"H x 19.9" F-B (58.9cm x 131 cm x 50.5cm)
Insulation	Non-CFC, foamed-in-place urethane
Noise Level	≤ 53dB
Cool Down Time	≤ 8 h
Temperature Uniformity	≤ 6 °C
Minimal Temperature	-86 °C
Location	Indoor Use only
Altitude	<2,000m
Humidity	<80% RH
Inner Doors	2/4
Shelves	3
Levels	4
Racks	16(240)
Refrigerant Type	Non HCFC R404A, R508B + R290

VI. Standards and Conformity

Construction in Accordance with the following Safety Standards:

UL 61010-1:2012

CSA C22.2#61010-1-12:2012

UL 61010-2-011:2021

CSA C22.2#61010-2- 011:2019

Construction in Accordance with the following EMC Standards:

EN 61010-1:2010

EN 61326-1:2013

VII. Inspection

Unpack the equipment carefully and check for any damage which may have arisen during transport. In the event of identified damage, please contact

serviceusa@hollandgreenscience.com

The package includes the following items

Part Number	Description	Quantity	Part Number	Description	Quantity
1	Key	2	6	M4 screw cap	6
2	Power cord	1	7	Screw trim cap	6
3	Positioning bracket	2	8	Fuse	1
4	M4X10 countersunk head screw	6	9	Remote Alarm Connector (WS16-3)	1
5	M4 washers	6	10	Backup system Connector (WS16-2)	1
			11	Deicing shovel	1

VIII. Installation and Operating Instructions

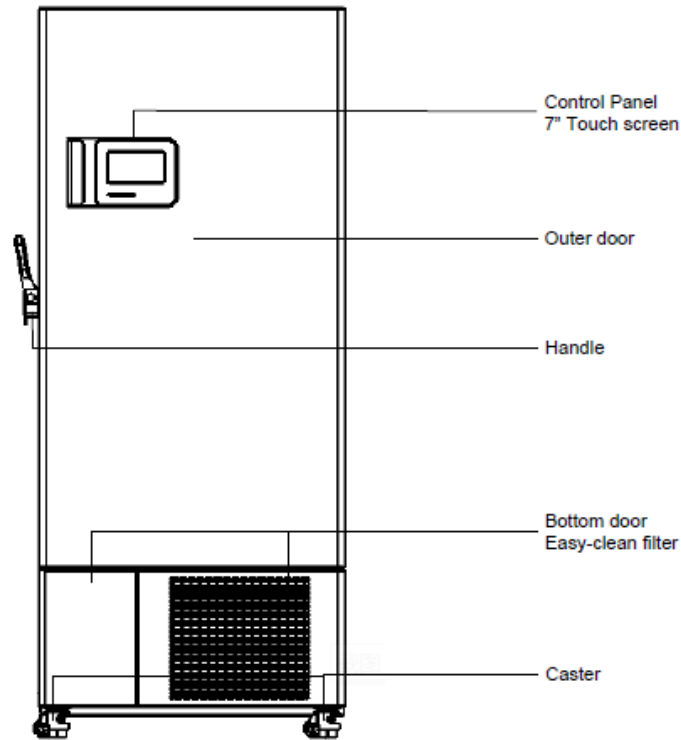


Figure 1-1. Freezer Front View Components

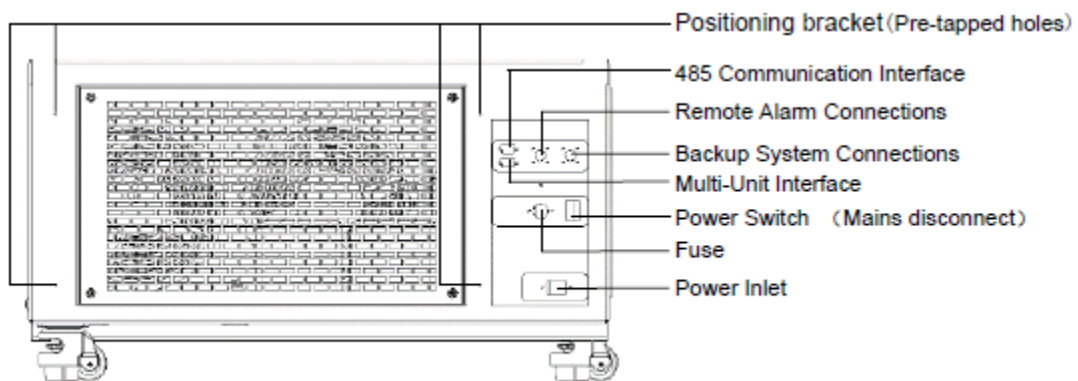


Figure 1-2. Freezer Rear View Components

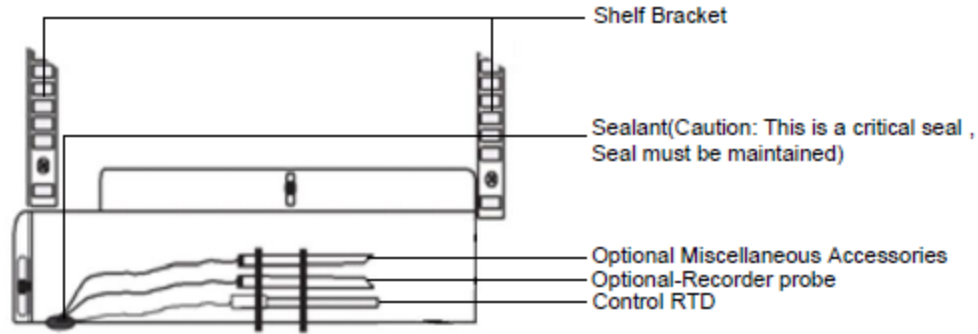


Figure 1-3. Chamber Probe

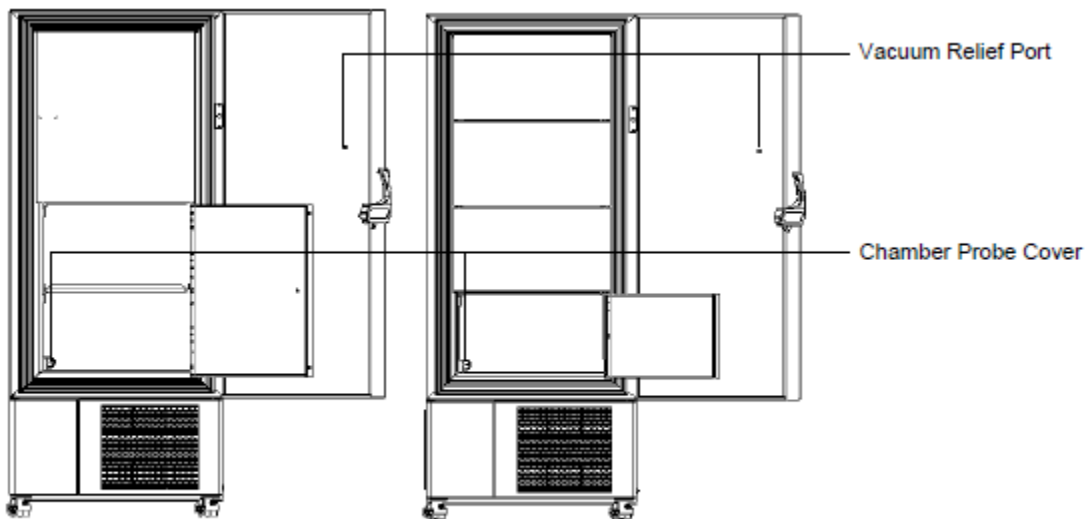


Figure 1-4. Vacuum Relief and Probe Cover Location (2 and 4 inner doors)

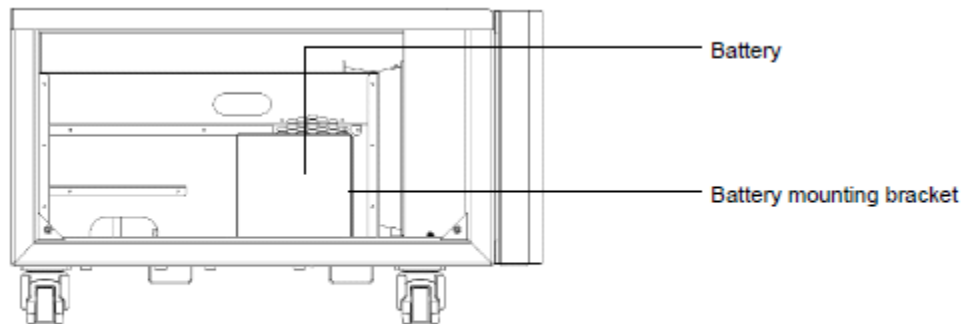


Figure 1-5. Battery location

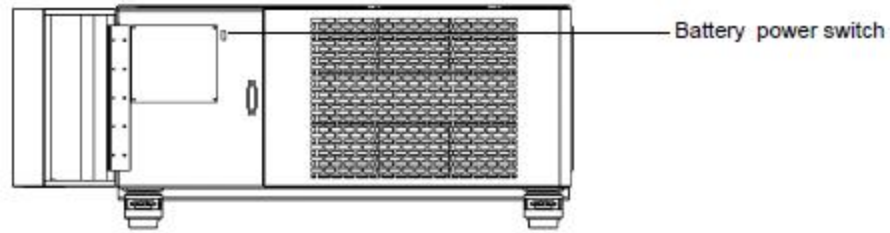


Figure 1-6. Battery switch

8.1 Installation Warning

Allow the unit to sit upright for 24 hours before starting up.

8.2 Location


When the freezer is in position, set the front caster brakes. The freezer must not be moved with product loaded inside.

Note:

For proper ventilation and airflow, a minimum clearance of 12cm at the rear and top and a clearance of 20cm on the side of the freezer is required. Allow adequate space in the front of the freezer for door opening. Locate the freezer on a firm, level surface in an area with an ambient temperature between 18°C and 32°C. Provide ample room to reach the mains disconnect switch (power switch) located on the rear of the freezer.

8.3 Install Wall Bumpers

Open the right bottom door, take out the key and open the outer door of the freezer. The parts bag, located inside the cabinet, contains the following parts.

Quantity	Description		Purpose
2	Positioning bracket		Location
6	M4X10 countersunk head screw & M4 washers		fixed
6	M4 screw cap		Decorative/protective screws

Use M4X10 countersunk head screw and M4 washers to install the positioning bracket into the pre-drilled hole behind the base of the unit (See Figure 1-2 for the location of the hole) , install the screw cap on each screw, as shown in Figure 1-7.



Figure 1-7. Positioning bracket installation

8.4 Install Shelves

Install the shelf clips into the shelf rails (front and back) at the desired shelf level, as shown in Figure 1-8.

Install the shelves in the cabinet onto the clips, as shown in Figure 1-9.

Note: *Maximum shelf load is 50 kg per shelf.*



Figure 1-8. shelf clips installation



Figure 1-9. shelves installation

8.5 Remote Alarm Contacts

The remote alarm connector is in the parts bag provided with the manual. If you need to connect to an independent alarm system, connect the alarm system to the aviation plug, insert the remote alarm interface, and lock the nut clockwise.

The remote alarm connector is equipped with a normally open (NO) output, a normally closed (NC) output and a common end (COM).

8.6 Attach Power Cord

Open the right bottom door, take out the power cord.
Insert the power plug into the power socket at the back of the unit.

8.7 Preparing for Start-up

Prior to first start-up, please refer to the following steps:

1. Check the location of the external components of the product to ensure that the external components of the product are not damaged.
2. See the serial tag on the side of the unit for electrical specifications or refer to the electrical schematics in this manual. The freezer should be operated on a dedicated grounded service. Check the voltage rating on the serial tag of the unit and compare it with the outlet voltage. Then, with the power switch turned off, plug the line cord into the wall outlet.
3. Check whether the power switch of the unit is in the OFF state. If not, please set to the OFF position, ON—" I ", OFF—" O "(as shown in Figure 1-10), insert the power cord into the power socket and turn on the power switch (I).
4. Check whether the battery switch is in the ON state. If not, please set to the ON position. ON—" I ", OFF—" O "(as shown in Figure 1-11), (If you hear an alarm, press the buzzer silence button (BUZZER) to stop the alarm)。



Figure 1-10. Power switch



Figure 1-11. Battery switch

Note:

Make sure the battery switch is set to standby mode. "Low battery" alarm will occur when the battery is low. Should a power failure occur during the initial start-up period, the electronics will have limited operation.

8.8 Parameter Setting

1. After the product is powered on, the display will automatically enter the screen saver, and the temperature in the freezer will be displayed in real time. As shown in Figure 1-12.



Figure 1-12.

2. Touch anywhere on the screen to enter the home page. As shown in Figure 1-13.

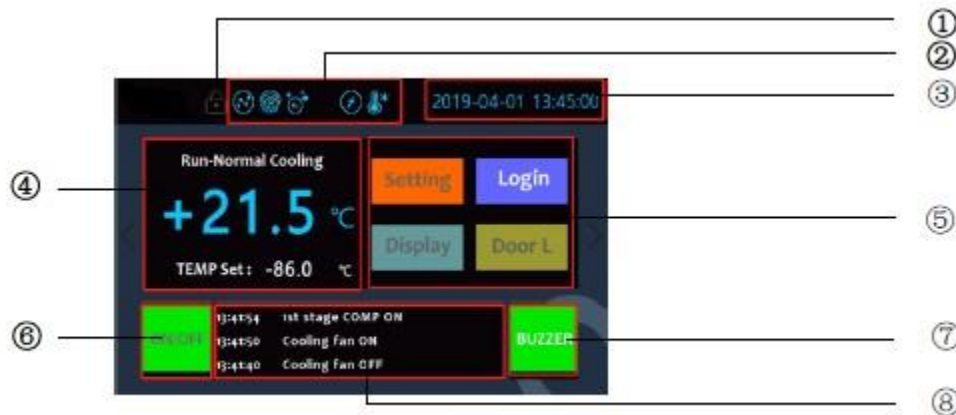


Figure 1-13.

Home Page:

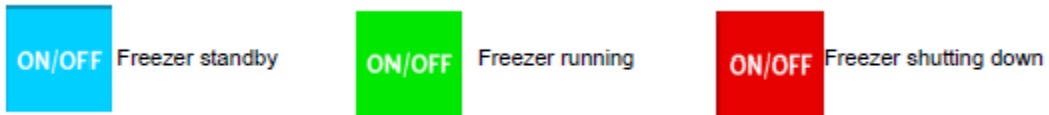
- ① —Log in / Log out icon, blue after log in and grey after log out, as shown in Figure1-13 and Figure 1-15.
- ② —Options icon, from left to right are Multi-Unit Constraint, Fingerprint Module, N₂/CO₂ Back- up System, Volt Stabilizer and Spare TEMP
- ③ —Time display area.
- ④ —Chamber temperature display area.



- ⑤ —Main operating area including (4) four buttons.



⑥ —Freezer “ON/OFF” button.



⑦ —“BUZZER” button

⑧ —Running records display area, display the latest three records.

Touch the “Login” button and put in the login username “admin” and password “8888”, as shown in Figure 1-14. all buttons are activated after the user logs in, as shown in Figure 1-15.

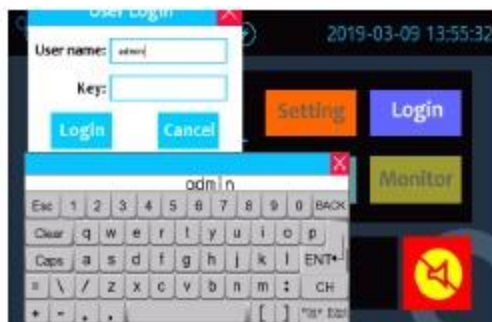


Figure 1-14.



Figure 1-15.

Touch the temperature display area from the home page to enter the temperature setting page, as shown in Figure 1-16.

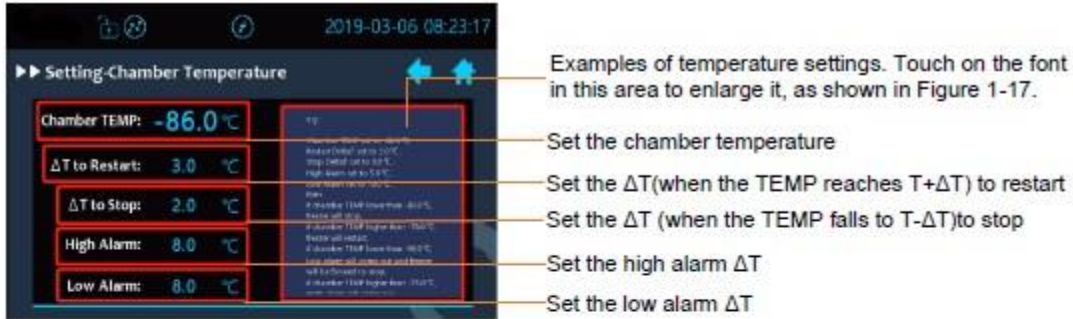


Figure 1-16.



Figure 1-17.

5. Touch the running record display area from the home page to enter the running record page, as shown in Figure 1-18.



Figure 1-18.

The running history of the freezer are displayed in the running record page, slide the right scroll bar to view more history.
Insert USB storage device into the right interface of the control panel. Touch the " Data Download " button, the history data will be saved to the USB disk, the file format is .csv

6. Touch the time display area from the home page to enter the data/time modification page, as shown in Figure 1-19.



Figure 1-19.

In the data/time modification page, digital keyboard pops up by touching on the numbers. Put in the corresponding time to change the date or time.

7. Touch the “Setting” button from the home page to enter the setting page, as shown in Figure 1-20.



Figure 1-20

8. Touch the “User Management” button from the setting page to enter the user management page, as shown in Figure 1-21.



Figure 1-21.

The current registered users can be viewed in the user management page. There are two buttons on the right side, "Add user" and "Delete User". The "Add User" window pops up by touching the "Add User" button. In this window you can add users and set the current user's usage rights, as shown in Figure 1-22.

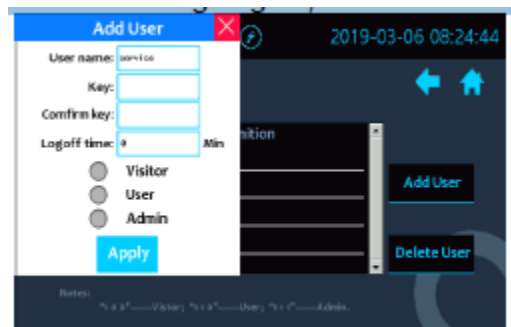


Figure 1-22.

The "Delete User" window pops up by touching the "Delete User" button. The user will be deleted after putting in the user name and the password in this window, as shown in Figure 1-23.

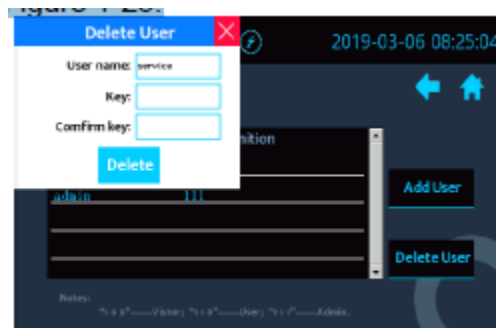


Figure 1-23.

9. Touch the “System settings” button from the setting page to enter the system settings page, as shown in Figure 1-24.



Figure 1-24.

System language can be switched by touching the “Chinese” or “English” button in the System settings page.

Digital keyboard pops up by touching the number location of “Screen saver” / “Backlight”. Put in the number to set the time of “Screen saver” / “Backlight”

The backlight intensity can be adjusted by click the “+” or “-” or slide the scroll bar of “Backlight intensity”. The click tone can be set up by click the “ON” or “OFF” or slide the scroll bar of “Click tone”.

10. Touch the “Delay settings” button from the setting page to enter the delay settings page, as shown in Figure 1-25.



Figure 1-25.

Digital keyboard pops up by touching the number location of “Door open” (the blue number is editable). Input the number to set the delay time.

8.9 Start-Up

Freezer will run by touching the “ON/OFF” button in the home page after the parameter settings.

8.10 Data/Information Retrieval

1. Touch the “Display” button from the home page to enter the display page, as shown in Figure 1-26.



Figure 1-26.

2. Touch the “Operating Log” button from the display page to enter the operating log page, as shown in Figure 1-27.



Figure 1-27.

The operation records of the current user can be viewed in the operating log page. Touch the left button of “Search” button to put in the target date, then touch the “search” button to view the operation records of the user in certain day.

3. Touch the "Temp Log" button from the display page to enter the temperature log page, as shown in Figure 1-28.



Figure 1-28.

The trend of the chamber temperature can be viewed in the temperature log page. TEMP Limit window pops up by touching the ordinates, the TEMP Limit can be adjusted in this window, as shown in Figure 1-29. Touch on the display area of the curve to see the corresponding temperature values at the point.

Double-click on the display area of the curve to zoom in the display curve. Press the display area of the curve and slide on the screen to enlarge a section of the temperature curve. Touch the circle button on the right to display or hide the corresponding temperature curve. Insert U disk into the right interface of the control panel. Touch the "Data Download " button, the history data will be saved to the U disk, the file format is .csv, and they can be opened by Excel to view.



Figure 1-29.

4. Touch the “Alarm Event” button from the display page to enter the alarm log page, as shown in Figure 1-30.

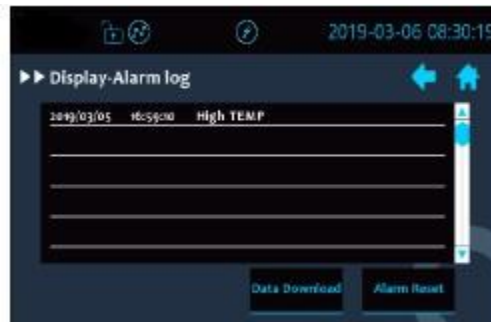


Figure 1-30.

Alarm histories in the operation of products can be viewed in the alarm log page. Click the " Data Download " button, the history data will be saved to the U disk, the file format is .csv, and they can be opened by Excel to view. The history alarm information will be cleared and only the current alarm message will be retained by touching the “Alarm reset” button.

5. Touch the “Cycle Monitor” button from the display page to enter the Cycle Monitor page, as shown in Figure 1-31.

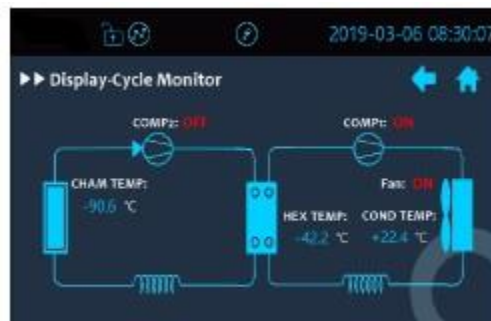


Figure 1-31.

The running states of the freezer and temperature values at various locations can be viewed in the Cycle Monitor page.

6. Touch the “Device Info” button from the display page to enter the device information page, as shown in Figure 1-32.



Figure 1-32.

The main information and the software version of the freezer can be viewed in the device information page.

8.11 BOT Mode

Touch the “BOT” button from the setting page to enter the BOT page, as shown in Figure 1-33.



Figure 1-33.

Digital keyboard pops up by touching the blue numbers.

Put in the number to set the BOT running time. The grey numbers after the “remaining” represents the remaining time of BOT Mode and it is non-editable.

Commands to be performed by the freezer after the BOT Mode can be set up by turning the right block icon into blue.

IX. Calibration

Once the freezer has stabilised, the control probe may need to be calibrated. Calibration frequency is dependent on use, ambient conditions and accuracy required. A good laboratory practice would require at least an annual calibration check. On new installations, all parameters should be checked after the stabilisation period.

Caution: Before making any calibration or adjustments to the unit, it is imperative that all reference instruments be properly calibrated.

9.1 Calibrate Control Probe

Connect the thermocouple used for calibration to the data recorder. Then place it in the same position as the temperature sensor that needs to be calibrated. Compare two temperature display values.

Touch the “Calibration” button from the setting page to enter the calibration page, as shown in Figure 2-1.

Digital keyboard pops up by touching the corresponding number location. Put in the number to set the adjustment value.

Parameter setting instructions window pops up by touching the “Cham TEMP”, “HEX TEMP”, “Cond TEMP” or “Spare TEMP”, as shown in Figure 2-2. Complete the calibration referring to the instructions.



Figure 2-1.



Figure 2-2.

9.2 Temperature Stabilization Periods

Startup - Allow 12 hours for the temperature in the cabinet to stabilise before proceeding.

Already Operating - Allow at least 2 hours after the display reaches set point for temperature to stabilise before proceeding.

X. Alarms

The Boreas Pagoma alarms are displayed on the freezer control panel. When an alarm is active, the alarm message will be displayed in the alarm record screen and there will be an audible alarm in the Home Page screen.

Press the “BUZZER” key to disable the audible alarm.

The alarms are momentary alarms only.

When an alarm condition occurs and then returns to normal, the freezer automatically clears the alarm condition.

** All alarm delays have a deviation of ± 5 seconds.*

** Battery detection will be carried out automatically immediately after the unit is powered on.*

XI. Fault Diagnosis

Fault	Possible Reasons	Solution
Door Open	<ul style="list-style-type: none"> · Damage to door switch · The door was not fastened 	<ul style="list-style-type: none"> · Replace the door switch · Close the door and handle
Power Supply Failure	<ul style="list-style-type: none"> · Power input does not meet the requirements · Main switch of the power supply is not on · Power failure 	<ul style="list-style-type: none"> · Check the power supply is normal
Low Battery	<ul style="list-style-type: none"> · Disconnected battery switch · Low battery 	<ul style="list-style-type: none"> · Set battery switch for charging
Abnormal Chamber TEMP	<ul style="list-style-type: none"> · Disconnection of line · Chamber temperature sensor is damaged 	<ul style="list-style-type: none"> · Check for detached or loose wiring · Replace the temperature sensor
Abnormal HEX TEMP	<ul style="list-style-type: none"> · Disconnection of line · Damaged heat exchanger temperature sensor 	<ul style="list-style-type: none"> · Check for detached or loose wiring · Replace the temperature sensor
Abnormal COND TEMP	<ul style="list-style-type: none"> · Disconnection of line · Condenser temperature is too high · Condenser temperature sensor is damaged · Dust accumulated in the filter of the condenser 	<ul style="list-style-type: none"> · Check for detached or loose wiring · Improve the ambient temperature · Replace the temperature sensor · Clean the filter
1st Stage Pressure Switch Not Closed	<ul style="list-style-type: none"> · 1st stage pressure is too high · Disconnection of line 	<ul style="list-style-type: none"> · Wait for 1st stage pressure to drop · Check for detached or loose wiring
2nd Stage Pressure Switch Not Closed	<ul style="list-style-type: none"> · 2nd stage pressure is too high · Disconnection of line 	<ul style="list-style-type: none"> · Wait for 2nd stage pressure to drop · Check for detached or loose wiring
High TEMP	<ul style="list-style-type: none"> · Actual chamber temperature is larger than the pre-set allowable temperature range. 	<ul style="list-style-type: none"> · Check if the high temperature Alarm value is too low
Low TEMP	<ul style="list-style-type: none"> · The actual chamber temperature is less than the pre-set allowable deviation temperature. 	<ul style="list-style-type: none"> · Check if the low temperature alarm Value is too low.

XII. Maintenance and Cleaning

12.1 Cleaning the Exterior Cabinet

Wipe down the freezer exterior using only soap and water and a general use laboratory disinfectant. Rinse thoroughly with clean water and dry with a soft cloth.

Caution:

Avoid excessive use of water around the control area due to the risk of electrical shock. Damage to the controls may also result.

12.2 Cleaning the Air Filter

The air filter should be cleaned four (4) times a year, minimum.

1. Open the right bottom door by pulling its bottom left corner.
2. Locate the grille on the door. See Figure 4-1.
Grasp the middle of the grille material and gently pull out to remove.
3. Wash the filter material and gently pull out to remove.
4. Dry by pressing between two towels.
5. Install the filter back into the grille and attach the grille.

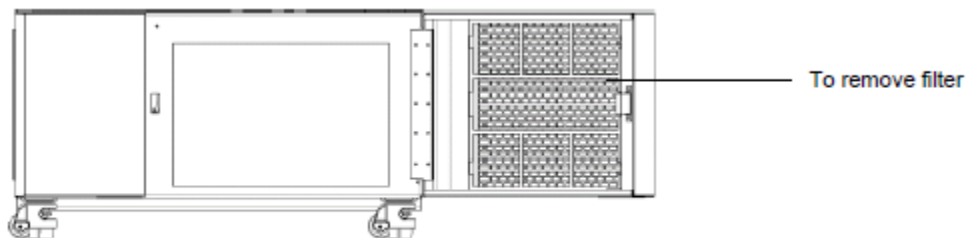


Figure 4-1.Location of Grille and Filter

12.3 Cleaning the Condenser

The condenser should be cleaned once (1) per year, minimum.

1. Open the right bottom door by pulling its bottom left corner.
2. Using a vacuum cleaner, exercising care to not damage the condenser fins, clean the condenser.

Depending upon environmental conditions, the condenser may need to be cleaned more frequently.

12.4 Defrosting the Chamber

1. Remove all product and place in another freezer.
2. Turn the unit off and disconnect from the power source.
3. Open all doors and place towels on the chamber floor.
4. Allow the frost to melt and become loose.
5. Remove the frost with a soft cloth.
6. After defrosting is complete, clean the interior with a non-chloride detergent. Rinse thoroughly with clean water and dry with a soft cloth.
7. Plug unit in and turn power switch on
8. Allow the freezer to operate empty overnight before reloading the product.

12.5 Cleaning the Door Gasket

The door gasket should be cleaned monthly.

Using a soft cloth, remove any frost build-up from the gasket and door(s).

The door gasket may need to be cleaned more frequently if dirt or excessive frost build-up prevents the door from closing properly.

12.6 Vacuum Relief Port

The exterior door gasket provides an excellent seal to protect product, provide an energy efficient thermal barrier to keep cold air in and room temperature air out, and reduce frost build up on the inner doors.

Because the door gasket seals so well, a vacuum can be created after a door opening. Warm air enters the cabinet, cools and contracts, creating a vacuum that pulls the door in tightly against the seal.

To equalise the pressure inside the cabinet after a door opening requires 1.5-3.0 cu.ft. of ambient air to be drawn into the cabinet. The amount of air required to equalise the pressure varies depending on the cabinet size, cabinet temperature, duration of door opening, inventory volume and the temperature/humidity of the ambient air.

The unit is designed with a “vacuum relief port” that allows the pressure to be equalised.

The time required to draw 1.5-3.0 cu.ft. of air into the cabinet depends on two factors:

1. the size and number of paths available for the air to enter the cabinet, and
2. the pressure difference between the internal cabinet and the ambient room.

Cabinets with the vacuum relief port operating normally, (i.e. vacuum relief port is not iced over) will require a minimum of 30 seconds up to a maximum of 120 seconds for the cabinet to equalise. This is also a good indication that the exterior door is well sealed.

The vacuum relief port requires routine maintenance. It will ice over unless preventive measures are taken. If the vacuum relief port becomes iced over, the freezer will take several hours to equalize pressure.

Warning:

Do not leave the freezer unattended while the door is open.

Observe the inner side of port periodically for frost and ice build-up. Remove any frost with a soft dry cloth. If the tube should become clogged with ice, it must be cleaned.

Make sure during cleaning that the vacuum relief tube is completely free of ice to prevent rapid ice formation.

Factors that can affect the performance of the vacuum relief port include, high ambient temperature and high humidity conditions and frequent door openings.

Maintenance should be performed weekly or as needed.

Warning:

Failure to maintain the vacuum relief port may result in excessive ice build-up inside the tube, clogging the port, and inability to open the door. The vacuum relief port may need to be cleaned more often with frequent door openings and high humidity environments.

12.7 Replacing the Battery

1. See Figure 1-6 for the location of the battery power switch, turn the battery power switch to the off position (O).
2. Remove the left side plate fixing screw with a screwdriver to remove the left side plate, Remove the battery mounting bracket.
3. Disconnect the battery connections.
4. Remove the old battery and install the new battery.
5. Reconnect the battery.
6. Turn the battery switch to standby mode (I)
7. Re-install left side plate.

Warning:

The % of charge can vary depending on the age, usage and condition of the battery. For a consistent and dependable charge, replace the battery every 2 years. Replacement batteries must be rechargeable and are available from Being. Refer to the parts list for stock number and description of the replacement batteries. Dispose of the used batteries in a safe manner and in accordance with good environmental practices.

12.8 Preparing a Unit for Storage

Defrost the unit as described in 'Defrost Freezer'. This will prepare the unit for storage. Turn off the battery power switch (O). Turn off the freezer power switch. Disconnect power to the battery(s) and to the freezer.

Warning: If the unit has been in service, turn it off and disconnect the power cord connector before proceeding with any maintenance.

12.9 Preventative Maintenance

12.9.1 Freezers

Your equipment has been thoroughly tested and calibrated before shipment. Regular preventive maintenance is important to keep your unit functioning properly. The operator should perform routine cleaning and maintenance on a regular basis. For maximum performance and efficiency, it is recommended that the unit be checked and calibrated periodically by a qualified service technician.

The following is a condensed list of preventive maintenance requirements. See the specified section of the instruction manual for further details.

Tips:

- Fill by starting at the left side near the probe. Filling with room temperature racks will result in a prolonged cool down time.
- Fill unit with frozen product to help overall performance, frozen water jugs, for example.
- Always make certain the vacuum relief port is free of frost and ice, to allow for timely re-entry into the freezer after a door opening.

12.9.2 Maintenance Checklist

Action	Monthly	Yearly	Every 2 Years
Verify Ambient Temperature, <32.2°C		√	
* Adjust door handle for firm latching, as needed		√	
Check and clean probe cover, gaskets, hinges and door(s) of ice and snow. See Figure 1-4 for probe location. See "Cleaning the Door Gasket".		√ <i>More frequent cleaning may be required, depending on use and environmental conditions.</i>	
Check air filter. Clean or replace as needed. See "Cleaning the Air Filter".		√	
Check alarm back-up battery. See "Connecting the unit to Electrical Power" in Section 1 and "Replacing the Battery" Refer		√	** Replace
Check condenser fan motor for unusual motor noise or vibration.		√	
* Verify and document calibration, at the minimum, annually. See Section 2 Calibration		√	
* Clean condenser compartment and wipe off condenser See "Cleaning the Condenser" in Section 4		√	

* *Qualified Service Technician only*

** *Dispose of properly, according to all state and federal regulations.*

To minimize ice build-up inside of freezer:

- Locate the freezer away from drafts or heating/cooling vents
- Keep the number of door openings to a minimum
- Minimize the length of time door is open
- Make sure door latches securely after opening