i.C³® User Guide

For i.Series® Ultra-Low Freezers

Legacy i.Series

iUF116
iUF118
iUF124
iUF126

i.Series

iUF118-GX
iUF126-GX

360175-A/E

Document History

Revision	Date	CO	Supersession	Revision Description
A	18 APR 2014*	9275	n/a	Initial release.
B	12 DEC 2014*	10128	B supersedes A	Correct product changes made prior to initial product launch.
C	7 FEB 2017	12601	C supersedes B	Reformat content for ease of use. Updated and added content to display features, system settings, and data transfer as required by software platform changes.
D	15 NOV 2018	14035	D supersedes C	Updated screenshots and Application Icons table to show the addition of the CSV and PDF download buttons. Added PDF Download section and details regarding enhanced Mute Duration option. *(Changes/additions reflect software updates included in DP Version 12.48.)*
E	6 FEB 2024	26928	E supersedes D	Updated cover to reflect the addition of the ULT-GX models. Added notes to identify models without RS-232 port.

* Date submitted or change order review. Actual release date may vary.

Document Updates

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Support Information

Operation and Service Manuals provide additional product information. Manuals are available at www.helmerinc.com.

Notices and Disclaimers

The i.C³® User Guide provides information about use of the i.C³ as it pertains to Helmer Ultra-low freezers. Refer to the product operation or service manual for general information. Refer to the product service manual for additional information about the equipment on which the i.C³ is installed.

Copyright and Trademark

Confidential / Proprietary Notices

The i.C³® utilizes open source components. For a list of the specific open source programs, their associated licenses and copies of the applicable program in source code format, please contact Helmer Scientific at 14400 Bergen Blvd, Noblesville, Indiana 46060 USA; phone 317.773.9073; email techservice@helmerinc.com.

Disclaimer

This manual is intended as a guide to provide the operator with necessary instructions on the proper use and maintenance of certain Helmer Scientific products.

Any failure to follow the instructions as described could result in impaired product function, injury to the operator or others, or void applicable product warranties. Helmer Scientific accepts no responsibility for liability resulting from improper use or maintenance of its products.

The screenshots and component images appearing in this guide are provided for illustrative purposes only, and may vary slightly from the actual software screens and/or product components.

Contents

1 About this User Guide

This User Guide provides information on how to operate the i.C³ interface as it relates to the Helmer Ultra-Low freezer. Refer to the product operation or service manual for general information.

Safety Precautions and Symbols

The following symbols are used in the user guide to emphasize certain details for the user.

Task Indicates procedures which need to be followed.

Note Provides useful information regarding a procedure or operating technique when using Helmer Scientific products.

NOTICE Advises the user against initiating an action or creating a situation which could result in damage to equipment; person injury is unlikely.

2 Overview

NOTICE

- To avoid injury, before using the i.C³ User Information Center, read all instructions in the associated product operation manual.
- To avoid damage to the i.C³ unit, read all instructions provided in this user guide.

Features

The i.C³® consists of an intuitive user interface and icon-driven touchscreen. The touchscreen is contained within the instrument bezel, as are additional features.

Touchscreen

The interface to the i.C³ system.

USB Port

Connect a flash memory device to download temperature data or upload firmware.

Ethernet/RJ45 Connection *(Not shown)*

Allows the system to provide and receive data or commands to and from external devices.

Audio Speaker

Provides an audible signal when alarm conditions are met. Also provides audible signal when screen icons and buttons are touched.

Using the Touchscreen

The touchscreen and touch techniques make the i.C³ easy to use. Icons, status indicators,and navigation buttons let the user see and respond to i.C³ system conditions and events.

Note

Anything that touches the screen is understood as a command. Do not let anything touch the screen unintentionally.

Touch Techniques

Touch-select	Touch once to select an item.
Touch-drag	To move an item, touch-hold to select the item and drag it to a new location. Use a deliberate touch-drag motion (without lifting)
Touch-scroll	To scroll, slide finger slowly across the screen (horizontal or vertical). Stop before lifting. For more control while scrolling, keep your finger in contact with the screen.
Touch-hold	To accelerate, touch-hold to select the item. Continue to hold the item for accelerated scrolling.

Icons, Indicators, and Buttons

For a complete list of all icons and indicators, see the *Icon Reference Guide* at the end of this user guide.

Application icons serve as navigation buttons to the associated application screen.

Status indicators alert the user to a change of status.

Navigation buttons return the display the previous screen or the Home screen.

Care of the i.C³ Screen

NOTICE

The i.C³ screen uses a sensitive touch technology.

- To avoid damage to the touchscreen, do not apply pressure on the front of the display bezel or around the screen borders.
- To preserve optimal touch sensitivity, keep the screen clean of foreign objects. Avoid excessive dust accumulation on the screen.
- Do not expose the i.C³ screen to liquids or a harsh environment that contains excessive dust, heat or humidity.
- Clean the i.C³ screen with a clean, dry cotton cloth.

3 Initial Setup

The Calibration screen is displayed when the i.C³ is first powered on. Using a soft pointing tool (such as the eraser end of a pencil), touch the screen at each crosshair.

Notes

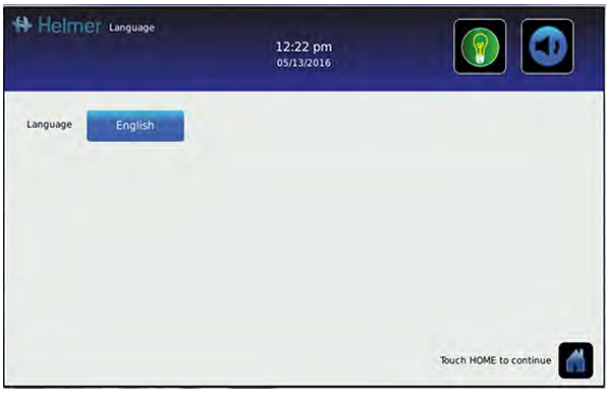
- The Calibration screen is not displayed on subsequent power on events.
- Refer to the instructions included with the calibration file for details on calibrating the i.C³ screen.

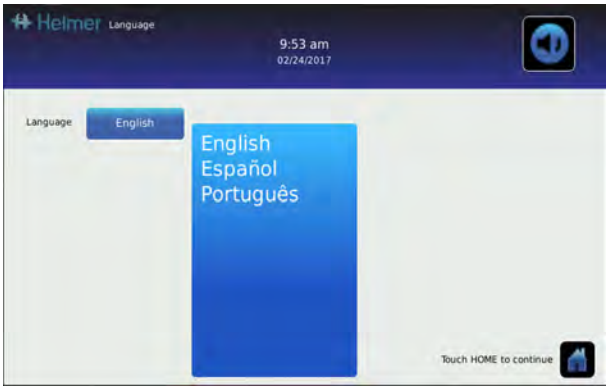
Start Screen

The Start screen is displayed when the i.C³ is powered on. The i.C³ will take approximately three minutes to power up.

Language Configuration

The Language screen is displayed when the i.C³ is powered on. Use the Language screen to select the i.C³ display language.





Choose language

1. Touch the **Language** button. The language drop-down list is displayed.
2. Touch the language to be displayed. The selected language is displayed in the **Language** button.
3. Touch to confirm language selection, or to cancel.
4. Touch the **Home** icon to continue to the Home screen.

Note

English is the default language.

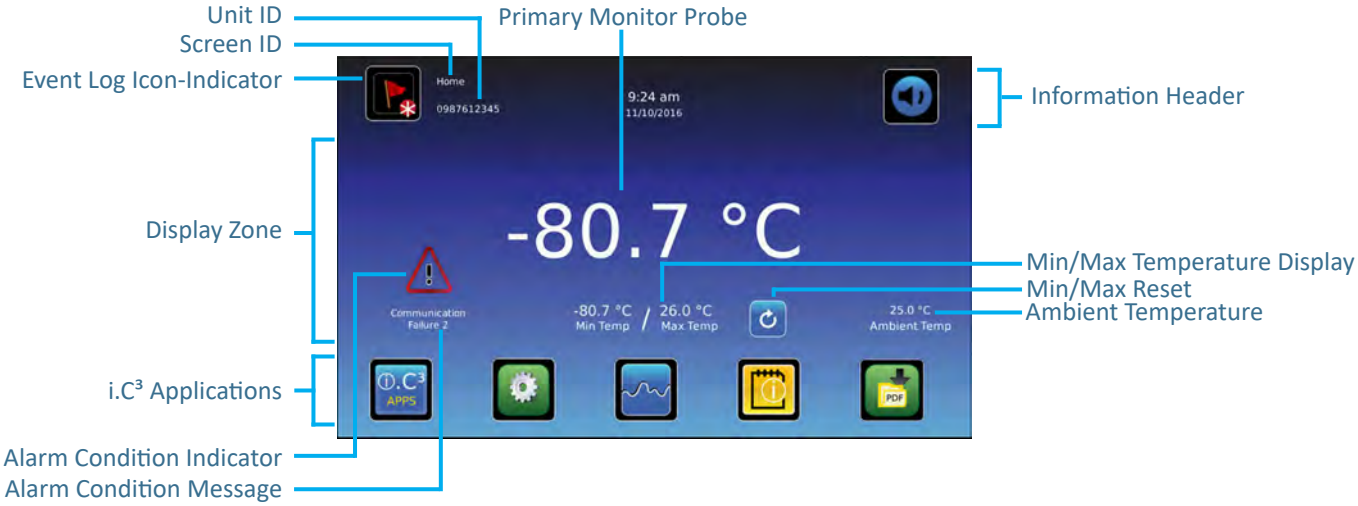
Settings Configuration

Basic configuration parameters have been set for the i.C³ at the factory. If factory default settings need to be adjusted refer to *i.C³ Settings*.

4 Home Screen Basics

Note

To temporarily silence active alarms, touch the **Mute** icon in the top right corner of the screen.



Home Screen Layout

The i.C³ Home screen is comprised of three information areas:

Information header - The dark blue horizontal band across the top of the Home screen. This header is displayed on all i.C³ screens. From left to right it includes: the Event Log icon, Screen ID, Unit ID, Date/Time, Battery indicator (displayed only during AC power loss), and Mute icon.

Display zone - The middle band of the screen which includes information indicators and messages. From left to right, they are: Status display; Alarm Conditions indicator and Alarm Conditions message; Primary Monitor Probe display; Min/Max Temperature Display; and Ambient Temperature display (if enabled).

Notes

- **Primary Monitor Probe** (formerly Chamber Temperature probe) refers to the monitoring probe.
- **Ambient Temp** refers to the temperature of the environment where the freezer is located.
- **Min/Max** temperature display shows the highest and lowest Primary Monitor probe temperature occurrence within a given period of time.
- DP Version 12.48 and later will display the PDF Download icon. Prior versions will display the Download icon.

Application icons - Icons located at the bottom of the screen which include five factory-preset application icons. From left to right the preset icons are: i.C³ Applications (APPS), Settings, Temperature Graph, Information Logs, and PDF Downloads. These icons can be changed or rearranged through the Icon Transfer feature. For more information refer to *Icon Transfer*.

Notes

- After two minutes of no interaction, the Temperature Graph screensaver is displayed (if enabled).
- Additional applications are available on the i.C³ APPS screen.

Home Screen Icons and Indicators

Touch the **Event Log** icon to navigate to the Event Log screen.

Look for the **New Event** indicator (red asterisk).

Touch the **Mute** icon to temporarily silence alarm sound.

Touch the **Reset** icon to reset the Min/Max display. Time since last reset will be displayed.

5 i.C³ Applications

All i.C³ Applications can be reached from the i.C³ APPS screen.

Notes

- i.C³ Applications screen icons are interchangeable with those found on the Home screen.
- Primary Monitor probe reading and alarm conditions are displayed on the left side of the screen.
- DP Version 12.48 and later will display the CSV and PDF Download icons.

Using i.C³ Applications

To navigate to an application screen, touch the associated application icon.

Contacts

View product support information including the firmware revision numbers.

Brightness Settings

Adjust monitor screen brightness.

Information Logs

Access all available data log applications.

Download

Download information log(s). *(Prior to DP Version 12.48)*

CSV Download

Download information log(s). *(DP Version 12.48 and later)*

PDF Download

Download historical information as a PDF. *(DP Version 12.48 and later)*

Uploads

Upload firmware updates.

i.C³ Settings

All i.C³ system settings are configured and other preferences selected from the i.C³ Settings screen.

> **Note**
> The i.C³ Settings screen is password protected, unless password protection is turned Off (from the i.C³ Settings screen). If accessing the i.C³ for the first time, use the factory-originated password (1234)

Icon Transfer

Reposition application icons on the Home and Applications screens.

Temperature Graph

View current and historical probe temperature data and alarm events.

Access Control

Display keypad for freezer access.

6 Min/Max Temperature Monitoring

The Min/Max temperature display shows the highest and lowest Primary Monitor probe temperature occurrence since the last system reset (power-on event) or manually-initiated reset.

Notes

- The Min/Max temperature display can be turned on or off. Refer to *Display Settings* for more information.
- Once the time reaches the maximum display of 999 hours and 60 minutes, the message will display ">999:60", but minimum and maximum temperatures will continue to be tracked.

Reset Min/Max temperature

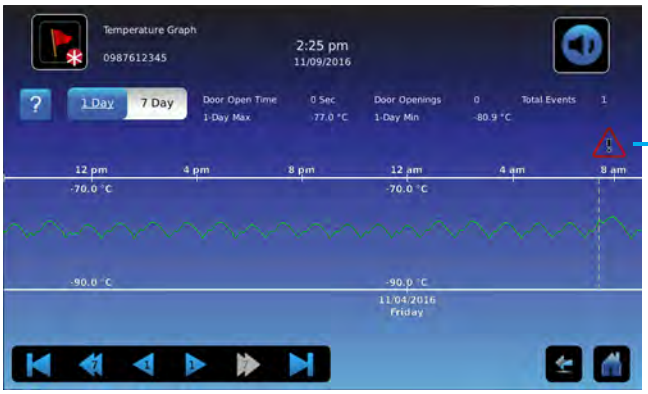
1. Touch the **Reset** icon. The message "Reset min/max temperature memory?" is displayed along with the time (in hours and minutes) since the last reset.
2. Touch to confirm. The timer is reset to 000.00 and the minimum and maximum recorded temperature is cleared.
   Or, touch to cancel.

7 Temperature Graph

The Temperature Graph screen shows current and historical primary monitor probe temperature data and temperature events.

Note

Up to 62 days of temperature data can be viewed on the graph.



Viewing the Temperature Graph

1. Toggle the graph **Time Span** button to select a 1-day or 7-day time span.

Note

To view all graph features,including Alarm Condition, select the 1-day time span.

Date, day and time information for the selected time span is displayed on the graph line.

- Upper line represents high alarm limit.
- Lower line represents low alarm limit.
- Temperature graph line turns green when unit is within alarm limits and red when outside alarm limits.
- Graph is displayed in strip chart form. A black, dashed vertical line appears on the graph where there is a change in the date or time. A white, dashed vertical line appears on the graph where there is a change in the high alarm limit or low alarm limit. A gray, dashed vertical line appears on the graph where the unit is powered on.

Notes

- If the time or date are changed, the stored temperature data will not be reformatted with the new time configuration. Logged events may be duplicated in the downloaded event database if the time or date is changed.
- The temperature graph displays 62 days of data.
- If the high alarm limit or low alarm limit are changed, a dashed vertical black line will appear on the temperature graph, corresponding to date and time when the change was made.

Event Data

Door Open Time	Total time (in minutes) that the unit door was left open during the selected time span.
Door Openings	Total number of times the unit door was opened during the selected time span.
Total Events	Total number of logged events that occurred during the selected time span.

Viewable with the 1-Day Time Span

Graph Display of Alarm Condition

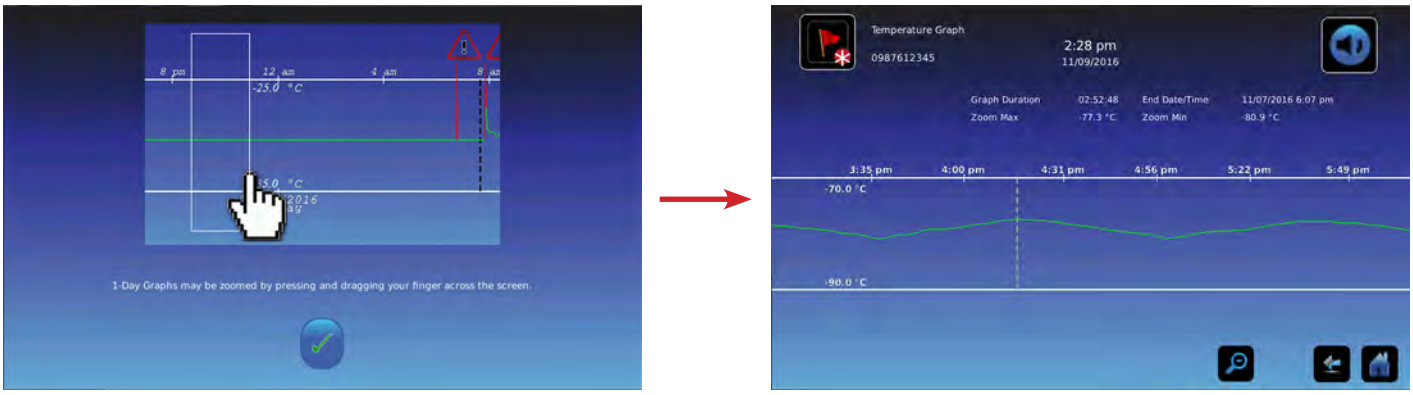
Alarm condition events are shown on the graph by a small Alarm Condition icon when an alarm has been activated. Data and events are shown in 4-hour segments.

View detailed event data

1. Touch the Alarm Condition icon to navigate to the Event Log screen.
2. Touch the Event to view detailed event data.

Graph Display Zoom Feature

The zoom feature may be used to allow a more detailed view of a particular segment of the temperature graph.

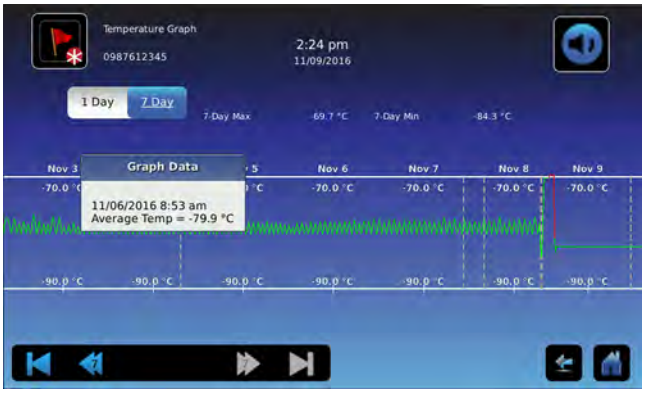


Using zoom feature

1. Touch to draw a box around the desired area on the temperature graph. The selected area will appear in the display.
2. Touch the to return to the expanded view.

One Touch Quick Information Feature

The one touch quick information feature allows the user to view specific temperature information at any point on the graph.



Using one touch

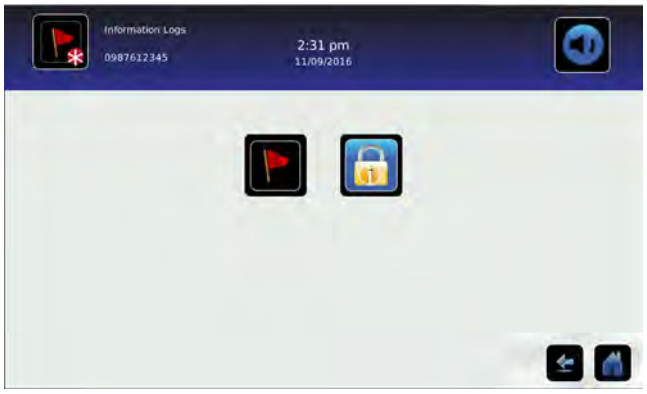
1. Touch the desired point on the graph. A dialog box will appear providing selected date, time and temperature data.

Note

The one touch feature should be used for reference only. The temperature displayed may vary from actual by 0.1 - 0.2 °C.

8 Information Logs

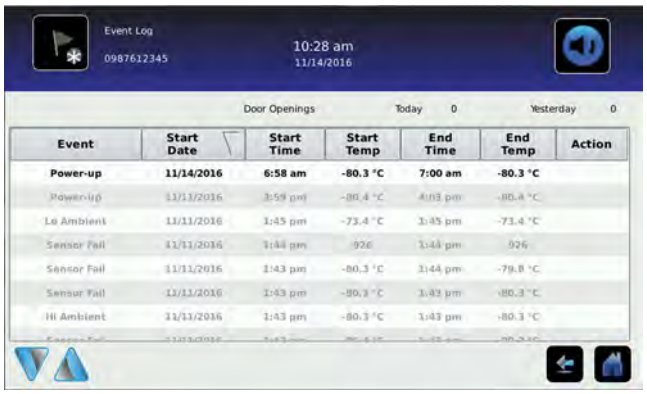
All available data logs are accessed from the Information Logs screen.



Event Log

>

The Event Log shows information from alarm events. A maximum of 100 (most recent) events can be viewed on the Event Log screen. Refer to *Data Transfer, Downloading Temperature and Event Data* for more information.



Viewing the Event Log

1. Touch and hold the bidirectional arrows to scroll through the log.
2. Touch the desired Event to navigate to the Event Detail screen.

Information Found in the Event Log

- Type of event that occurred
- Date event occurred
- Time event condition began
- Temperature at start of alarm event
- Time event condition ended
- Temperature at end of alarm event
- Indicator of corrective action recorded

Event Log Formatting

Bold text Not yet viewed

Normal text Viewed

Dimmed text Downloaded

Green check mark Event acknowledged on Event Detail screen

Event Log Detail Screen

The Event Log Detail provides additional temperature information for primary monitor probe, ambient temperature probe, and high stage compressor discharge probe for an alarm event. The cause of an alarm event and the corrective action taken can be acknowledged.

Note

The Event Log Detail screen may also be accessed by touching the active alarm on the home screen.

Information Found in the Event Detail Log

- Type of alarm
- Start date/time of alarm
- End date/time of alarm
- Primary monitor probe start/end, maximum/minimum temperatures
- High stage compressor discharge probe start/end, maximum/minimum temperatures
- Ambient probe start/end, maximum/minimum temperatures

Event Acknowledgement

Use the Event Acknowledgement buttons to select the cause of an alarm event and the corrective action taken.

Acknowledge an event

Note

If **Other** is selected for the event cause or action taken, the alphanumeric keyboard is displayed. Enter the cause or action taken in the space provided.

1. Touch the **Event Cause** button. The Event Cause drop-down list is displayed.
2. Select and touch the cause of the alarm event *(Door Open; Inventory; Dirty Filter; Other)*.
3. Touch the **Action Taken** button. The Action Taken drop-down list is displayed.
4. Touch the action taken to correct the alarm event *(Closed Door; Removed Contents; Cleaned Filter; Other)*.
5. Touch the **Signature** button to display the alphanumeric keyboard and enter the user name or user initials.
6. Touch the **Save** icon. The message "Save?" is displayed.
7. Touch the to save the event information. A green check mark is displayed in the event row on the Event Log screen. The date and time of the event acknowledgement is automatically added to the Signature button and the event information can no longer be edited, or touch the to cancel the Save operation.

Note

All three fields must be completed for data to be saved. If the Home or Back icons are touched prior to touching the Save icon, no information will be saved.

Access Control Log

The Access Control Log screen contains a record of each user-authenticated access event. A maximum of 100 (most recent) events can be viewed on the Access Control Log screen. The Access Log shows information from controlled access chamber entries.

Refer to *Access Control* for more information.

Viewing the access control log

1. Touch and hold the bidirectional arrows to scroll through the log.

Information Found in the Access Control Log

- User (Name of user, Denied, or Override)
- Date of access
- Time of access
- Length of time door remained open
- Method of access (PIN or Key)

Access Log Formatting

Bold text New data since the last time the log was viewed

Normal text Viewed

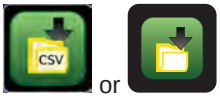
Dimmed text Downloaded

Red text Incorrect PIN entered, access denied, or key override was used

Black text Key override was used; or normal PIN entry was used, which has been viewed but not downloaded

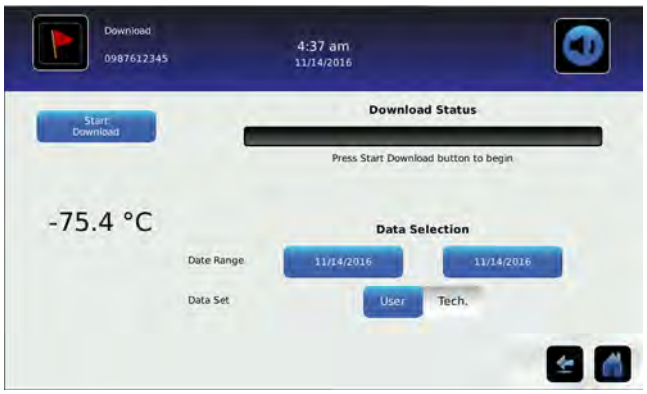
9 Data Transfer

Downloading Temperature, Access Logs, and Event Data to CSV



or

Use the Download screen to download information.



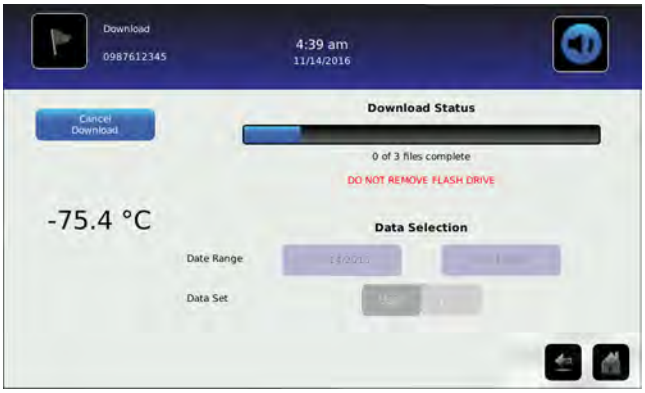
Download Data

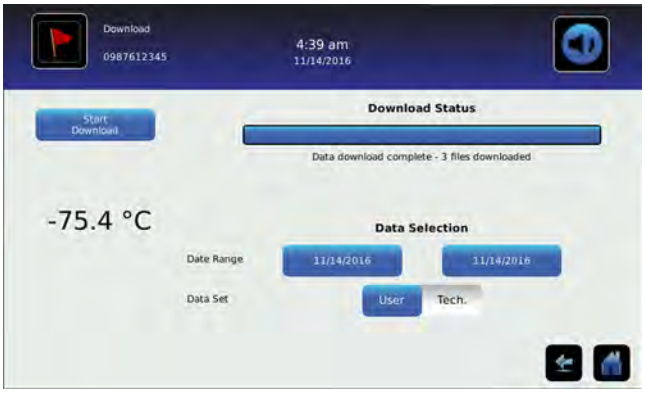
1. Insert a memory device into the USB port located on the right of the i.C³ monitor bezel. When the memory device is detected, the message *"Insert USB Flash Drive"* clears. The **Start Download** button is no longer grayed and the Data Selection buttons become active.
2. Touch the **Date Range** buttons to select the desired beginning (left) and ending (right) dates. The Data Report Calendar screen is displayed for each date.
3. Touch the desired date on the calendar, then touch the to confirm, or the to cancel.

4. Select **User** to download a single log or data set, or **Tech** for all log files.
5. Touch the **Start Download** button to begin data transfer. The download progress bar is displayed. When finished, the message "Data download complete - # files downloaded" will appear below the progress bar.

Notes

- Up to 3 months of data may be downloaded at a time.
- If an invalid date range has been entered, the message "The Date range must not exceed 3 months. Please select beginning and end dates that encompass 3 months or less." will appear.





6. Remove the memory device from the USB port. The CSV file may be viewed, saved, and manipulated on a PC. If the memory device is removed before the data download is complete, or the memory device is full, or if the memory device is corrupt a statement will appear in red text below the cancel operation status.

Notes

- The data is best viewed with an application used to create spreadsheets or databases. If Microsoft® Excel™ is used to view data, version 2009 or newer is required.
- If the USB is disabled in the Auxiliary Setting screen, the message "USB port is currently disabled" is displayed. Refer to *i.C³ Settings*, *Auxiliary Systems* for information regarding enabling the USB port.
- The Download screen can not be closed during a data download unless an error occurs.
- A download should be completed in less than twenty minutes. If the download has not completed in twenty minutes, contact Helmer Technical Service.

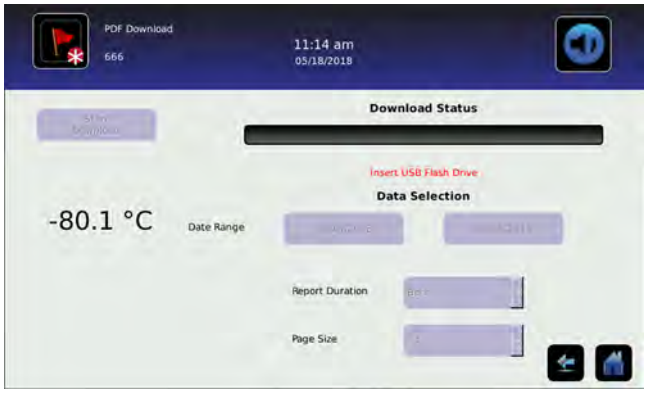
Downloaded data is saved to the memory device in CSV (comma separated values) file format. When set to User, the following four files can be saved each time.

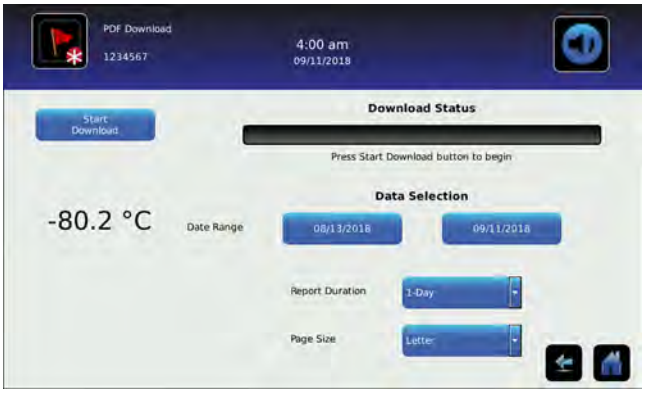
- Primary Monitor Probe temperature data (Data is sampled once per minute)
- Event log data
- Access log data
- Unit ID and date/time of the download

Setting the toggle to Tech allows download of additional diagnostic files. After the files are transferred, the read/write properties of the downloaded files should be set to read-only by the user.

Downloading Temperature Graphs and Alarm Event Data PDF Files
(DP Version 12.48 and later)

Use the PDF Download screen to download information in Portable Document Format .





1. Insert a memory device into the USB port located on the right of the i.C³ monitor bezel. When the memory device is detected, the message *"Insert USB Flash Drive"* clears. The **Start Download** and **Data Selection** buttons are no longer shaded.
2. Touch the **Date Range** buttons to select the desired beginning (left) and ending (right) dates. The Data Report Calendar screen is displayed for each date.
3. Touch the desired date on the calendar, then touch the ☑ to confirm, or the ☒ to cancel.

4. Select the desired Report Duration.

- 1-day duration selects all applicable one-day graphs and Alarm Event Data reports for the product and date range.
- 7-day duration selects all applicable seven-day graphs and Alarm Event Data reports for the date range.
- All duration selects all the applicable one-day and seven-day graphs and Alarm Event Data reports for the date range.

5. Select the paper size.
6. Touch the **Start Download** button to begin the download. The Download Status bar becomes active showing the progress of the download. When finished, the message *"Data download complete"* along with the number of files downloaded. A date and time stamp will appear below the completion message.
7. Remove the memory device from the USB port. The PDF file may be saved or printed from a PC. If the memory device is removed before the download is complete, the message *"Flash drive has been removed"* will appear below the progress bar. If the memory device is full, the message *"Flash drive is full"* will appear below the progress bar.

Note

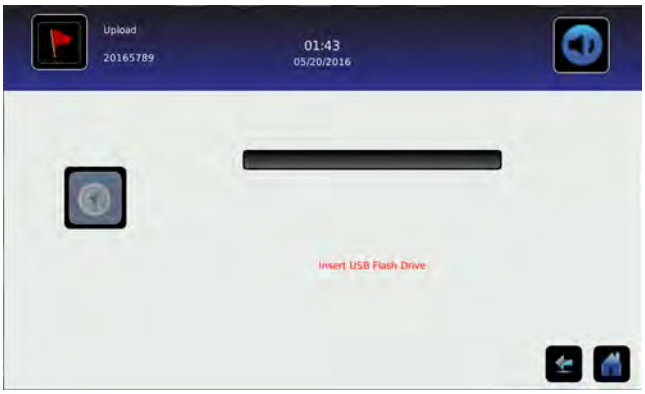
- If the PDF Download icon is touched before a memory device is inserted, the message "Insert USB Flash Drive" is displayed until a memory device is inserted.
- When reports are generated and stored on the i.C³ according to the automatic schedule, the selected Page Size setting will cause any new reports to be generated and stored using this setting. When reports are later downloaded, they retain the paper size that was active at the time of generation and storage, regardless of the setting at the time of the download.

Uploading Firmware Updates

Use the Upload screen to upload firmware updates.

Notes

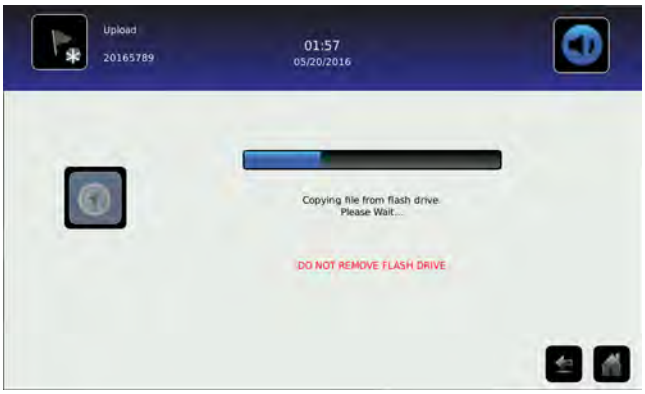
- Record the display processor and control processor firmware version number before uploading a firmware update. These numbers will be referenced after the update to ensure the update was successful.
- The Upload screen can not be closed during a data upload unless an error occurs.
- If the USB is disabled in the Auxiliary Setting screen, the message "USB port is currently disabled" is displayed. Refer to *i.C³ Settings*, *Auxiliary Systems* for information regarding enabling the USB port.



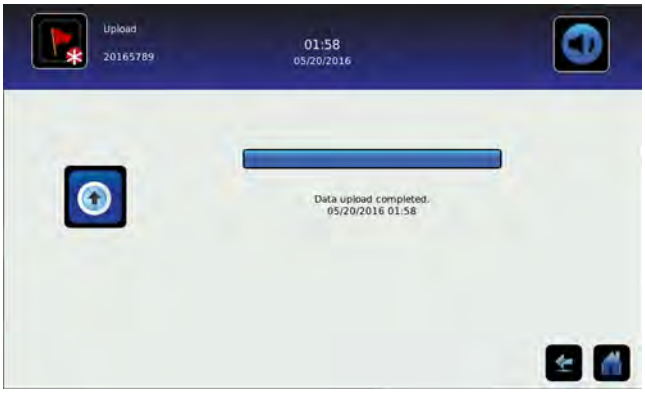
Upload Firmware

1. Insert a memory device into the USB port located on the right of the i.C³ monitor bezel. When the memory device is detected, the message *"Insert USB Flash Drive"* clears and the **Upload** icon is no longer shaded. The message *"Press upload button to begin."* is displayed below the status bar.

2. Touch the **Upload** icon to begin data transfer. The upload progress bar is displayed and the message *"Copying file from flash drive. Please wait..."* is displayed below the status bar.



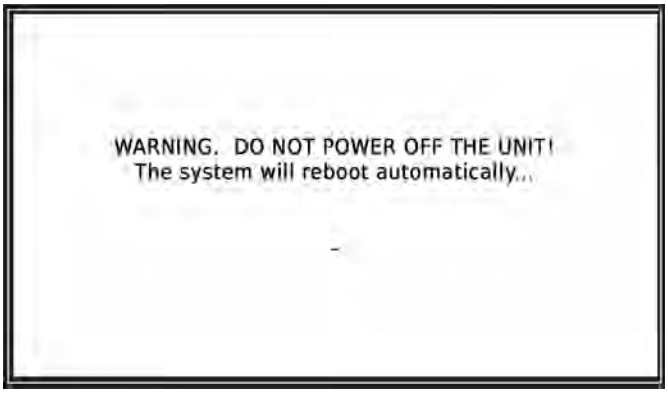
3. When finished, the *"Data upload completed"* message and the date and time are displayed.



4. After the *"Data Upload Completed"* screen is displayed, the screen refreshes to display *"WARNING. DO NOT POWER OFF THE UNIT!"*. The system automatically powers down and restarts.

Note

A rotating dash character is displayed below the warning statement to indicate the i.C³ system is still running.



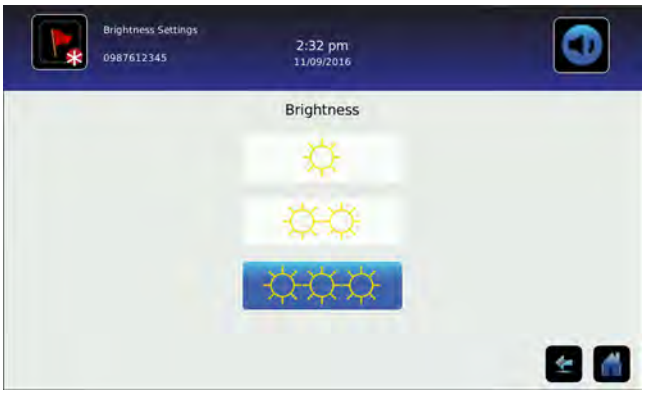
5. Remove the memory device from the USB port after the i.C³ system has fully rebooted. Updated firmware is loaded to the i.C³ memory.
6. After the i.C³ system restarts, verify the display processor (DP) and/or control processor (CP) firmware version number have been updated. If neither firmware version number has been updated from the recorded version number, contact Helmer Technical Service.

10 Customizing the i.C³ Screen

Brightness Setting

>

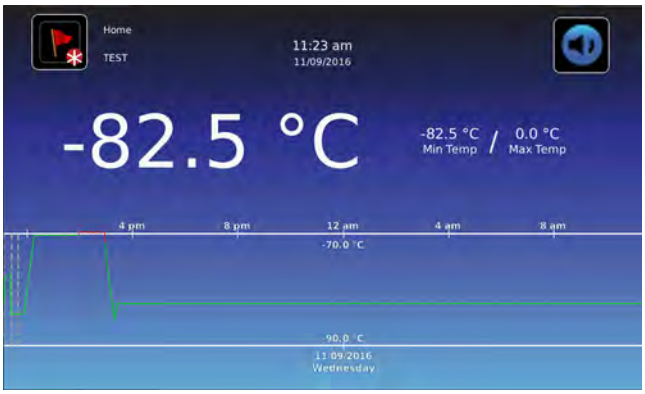
The backlight on the i.C³ monitor has three brightness settings. Touch any button to select a different brightness setting.



Home Page Screensaver

>

The Home screen is equipped with a screensaver that displays a 24-hour temperature graph. If enabled, the screensaver is automatically displayed after two minutes of inactivity on the Home screen. Touch anywhere on the screensaver to return to the Home screen.



Notes

- The screensaver can be enabled on the Settings screen.
- Inactivity of two minutes duration on any i.C³ screen results in automatic return to the Home screen.
- If a numeric keypad overlay, alphanumeric keyboard screen or Download screen is displayed, inactivity will not cause the Home screen Temperature Graph Screensaver to be displayed.
- If the Device Status and History screen, a selection overlay, Sensor Calibration screen, Download screen, Upload screen, or any screen in the technician-level settings is displayed, inactivity will not cause the Home screen Temperature Graph Screensaver to be displayed until one (1) hour has passed.

11 i.C³ Settings

Configure i.C³ system settings and other preferences via i.C³ Settings.

Note

The i.C³ system requires up to 30 seconds to save configuration changes. Do not turn the power off until 30 seconds have elapsed.

Password Protection of the i.C³ Settings Screen

Password protection is set to **ON** at the factory and can be turned **OFF** through the settings menu. A password protects i.C³ settings from unauthorized changes.

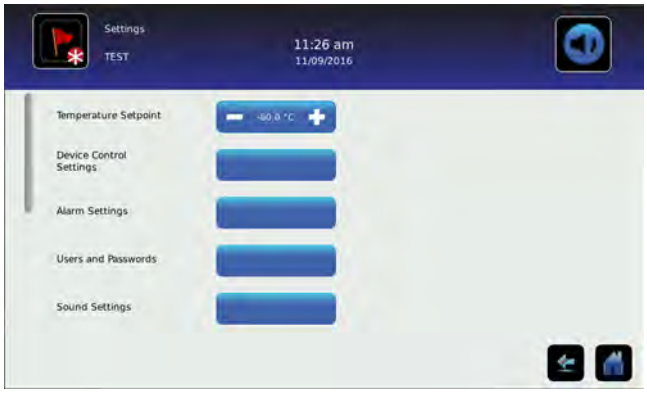
Note

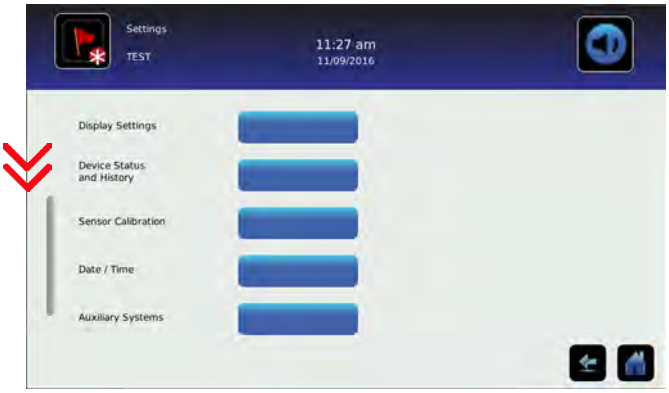
Helmer recommends password protection remain ON.

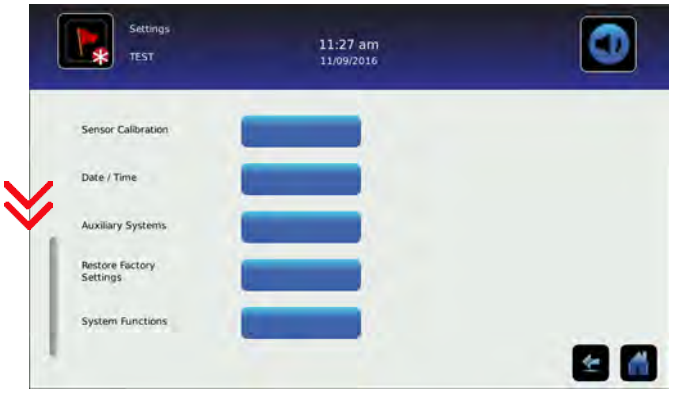
Accessing Settings

If password protection is turned ON, touch the i.C³ Settings icon to bring up a numeric keypad and enter the current password. If accessing the i.C³ for the first time, use the factory-originated password (1234).

If password protection is turned OFF, touch the i.C³ Settings icon to navigate directly to the i.C³ Settings screen.







Temperature Setpoint

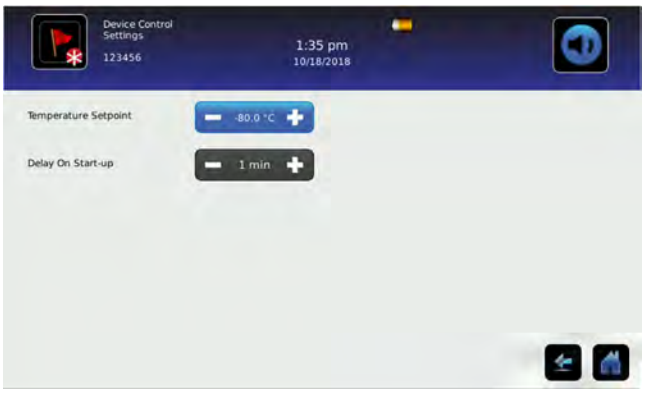
The Temperature Setpoint specifies the desired temperature for product stored inside the unit.

Change temperature setpoint

Touch the minus (-) or plus (+) on the spin box to adjust the temperature setpoint.

Device Control Settings

The Device Control Settings screen displays the current settings used to control the unit.



View settings

Touch the **Device Control Settings** button to view the following settings:

- Temperature Setpoint - the temperature at which the unit operates
- Delay on Start-up - delays the compressor startup in the event of a power interruption

Note

Temperature Setpoint can be adjusted through the main Settings screen and Device Control Settings.

Alarm Settings

Parameters for activating an alarm may be set through Alarm Settings.

User Configurable Alarm Settings

Settings for Primary Monitor Probe, Power Failure, Probe Failure, Door Open, and Ambient Probe can be changed by the operator. The setpoint for temperature alarms may be changed, as well as the time delay between when the alarm condition commences and when the visual and audible alarms are initiated.

Set alarm parameters

1. Touch the **Alarm Settings** button.
2. Touch the minus (-) or plus (+) on the corresponding **Setpoint** spin box to change an alarm setpoint.
3. Touch the minus (-) or plus (+) on the corresponding **Time Delay** spin box to change the time delay duration.

Non Configurable Alarm Settings

Alarms indicating operational conditions which require the attention of the operator or service technician include: Clean Filter; CO_2/LN_2 Active, Low Battery, No Battery, Refrigerator System, Communication Failure messages, and Emergency Mode. For details regarding the non-configurable alarms, refer to *Appendix B, Non-Configurable Alarms*.

Audible Alarm Failure

Audible alarm failure is indicated by a mute icon with an X in a red circle. If an audible alarm failure occurs, no alarms will be heard. However, visual and remote alarms will continue to operate normally. If this condition occurs, please contact Helmer Technical Service.

Users and Passwords

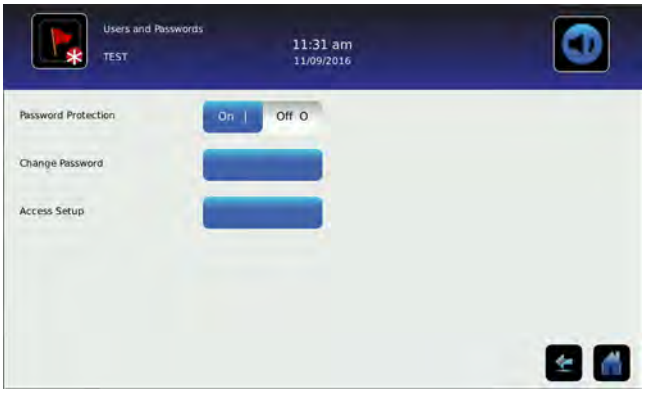
Set up user access and passwords, or turn password protection on or off through Users and Passwords.

Enable/disable password protection

1. Touch the **Users and Password** button.
2. Toggle the **Password Protection** button to turn password protection On or Off.

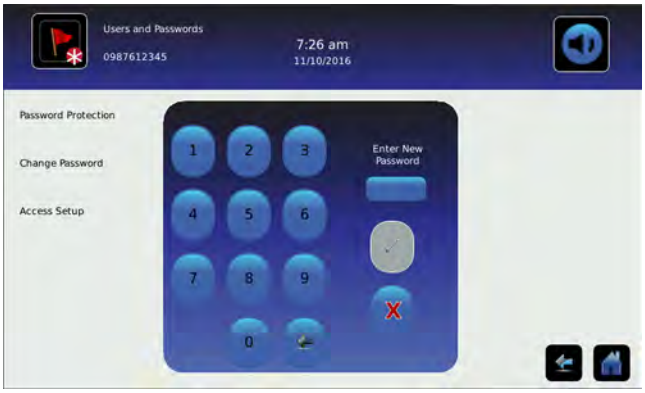
Note

Helmer recommends password protection remain On.



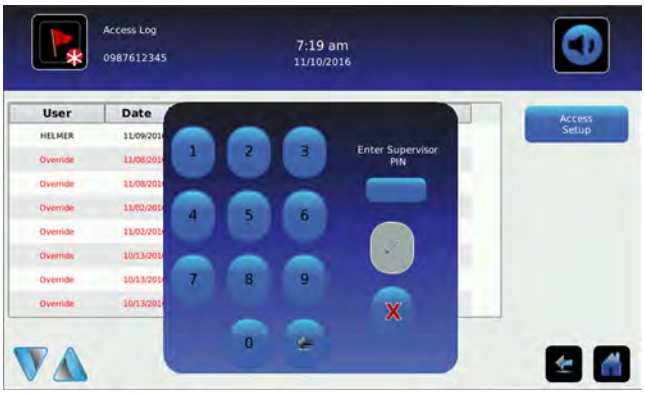
Change password

1. Touch the **Users and Password** button.
2. Touch the **Change Password** button, a numeric keypad appears.
3. Enter a new 4-digit password.
4. Touch ✓ to save or ✗ to cancel.



Establishing user access

1. Touch the **Users and Password** button.
2. Touch the **Access Setup** button, the Access Setup numeric keypad appears.
3. Refer to *Access Control* for instructions regarding Access Control setup and operation.



Sound Settings

Turn sounds on or off, control volume and select an alarm tone through Sound Settings.

Enable/disable sounds

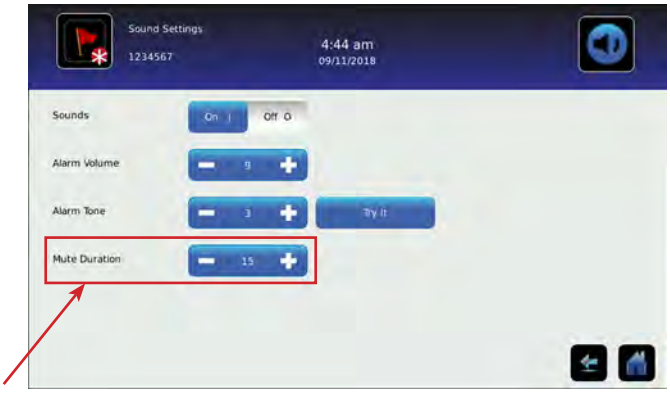
1. Touch the **Sounds Settings** button.
2. Toggle the **Sounds** button **On** or **Off** to select desired setting

Set alarm volume

1. Touch the **Sounds Settings** button.
2. Touch the minus (-) or plus (+) on the **Alarm Volume** spin box to select desired volume.

Select alarm tone

1. Touch the **Sounds Settings** button.
2. Touch the plus minus (-) or plus (+) on the **Alarm Tone** spin box to select desired tone.
3. Touch the **Try It** button to hear the selected tone.



Select mute duration *(DP Version 12.48 or later)*

1. Touch the **Mute Duration** button.
2. Touch the minus (-) or plus (+) on the **Mute Duration** spin box to select desired delay time. *(duration may be set from 1-60 mins)*

Note

The mute timer duration is increased by touching Mute icon repeatedly in software versions prior to DP Version 12.48.

Display Settings

Control how information appears on the i.C³ display through Display Settings.

Change language

1. Touch the **Language** button. The language drop-down list is displayed.
2. Touch the language to be displayed. The selected language is displayed in the Language button.
3. Touch ☑ to confirm language selection, or ☒ to cancel.
4. Touch the **Home** icon to continue to the Home screen.

Select date format

1. Touch the **Display Settings** button.
2. Toggle the **Date Format** button to select the desired format.

Select time format

1. Touch the **Display Settings** button.
2. Toggle the **Time Format** button to select the desired format.

Select temperature units

1. Touch the **Display Settings** button.
2. Toggle the **Temperature Units** button to select the desired format.

Enable/disable Ambient Temperature Display

1. Touch the **Display Settings** button.
2. Toggle the **Ambient Temperature Display** button **On** or **Off** to select desired setting.

Enable/disable Temperature Graph Screensaver

1. Touch the **Display Settings** button.
2. Toggle the **Temperature Graph Screensaver** button **On** or **Off** to select desired setting.

Change unit ID

1. Touch the **Display Settings** button.
2. Touch the **Unit ID** button. An alphanumeric keyboard appears.
3. Enter desired ID (maximum 10 characters).
4. Touch ☑ to save, or ☒ to cancel.

Enable/disable Min/Max display

1. Touch the **Display Settings** button.
2. Toggle the **Min/Max Display** button **On** or **Off** to select desired setting.

Enable/disable Access Control as home screen

Note

If **Off** is selected, the standard Home screen is displayed and keypad access is obtained by touching the Access Control icon.

1. Touch the **Display Settings** button.
2. Toggle the **Access Control as Home Screen** button **On** or **Off** to select desired setting.

Device Status and History

The Device Status and History screen allows users to view current and historical sensor readings, as well as the status of the back-up battery, condensing unit fan, compressor(s), door, and door lock (if enabled).

View historical sensor readings

1. Touch the **Device Status and History** button.
2. Touch the desired status button to view the historical sensor readings. A sensor history graph appears.

Device Status Data

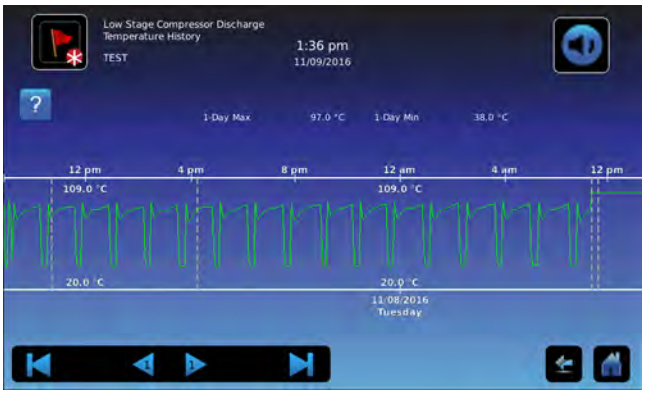
Battery Voltage (DC)	Displays the voltage level being read from the i.C³ system back-up battery.
Condensing Unit Fan State	Displays the current state of the condensing unit fan, as read by the i.C³ system.
High Stage Compressor State	Displays the current state of the high stage compressor, as read by the i.C³ system.
Low Stage Compressor State	Displays the current state of the low stage compressor, as read by the i.C³ system.
Door Status	Displays the current state of the door, as read by the i.C³ system.
Door Lock	Displays the current state of the door lock, as read by the i.C³ system *(when Access Control is enabled)*.

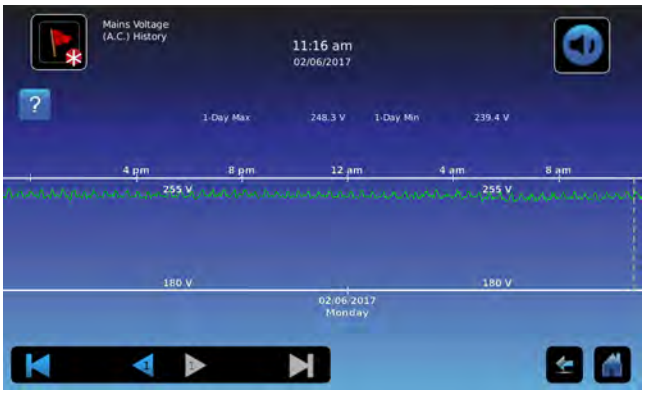
History Graph Features

Temperature and voltage graphs display temperature for specific sensors or system voltage over the previous 7-day period in a 1-day format. The zoom feature may be used to allow a more detailed view of a particular segment of a graph. Refer to *Temperature Graph, Graph Display Zoom Feature* for more information.

Historical graphs are available for the following temperature sensors and voltage:

- Ambient (at Intake) Temperature
- Low Stage Compressor Discharge
- Cascade Heat Exchanger
- High Stage Compressor Discharge
- High Stage Condenser Discharge
- Voltage - electrical power voltage applied to the freezer





Date, day, time, and min/max information are displayed on the graph.

- Upper line represents high alarm/control limit.
- Lower line represents low alarm/control limit.
- The graph line appears green when in-range and red when out-of-range.
- A black, dashed vertical line appears on the graph where there is a change in the date or time, such as when returning to standard time from daylight savings time.
- A white, dashed vertical line appears on the graph where there is a change in the high alarm/control limit or low alarm/control limit.
- A gray, dashed vertical line appears on the graph where the freezer is powered on.

Sensor Calibration

Calibration adjusts temperature setpoints so the value displayed matches the actual temperature, as measured by an independent thermometer. View temperature probe readings and adjust offsets through Sensor Calibration.

Sensor Reference

Indicates probe location on the control board.

Current Reading (+ Offset)

View the real-time temperature reading which includes offset calculation.

Offset

The spin boxes are used to calibrate the temperature probe readings using the offset values. Touch the minus (-) or plus (+) on the adjacent spin box until the correct value is displayed.

Adjust temperature setpoint

1. Touch the **Sensor Calibration** button.
2. Touch the minus (-) or plus (+) on the corresponding probe spin box to adjust the offset.

Notes

- The control temperature sensor may require periodic calibration. Refer to the product service manual for instructions regarding calibrating the control temperature sensor.
- The Low Stage Compressor Discharge, Cascade Heat Exchanger, High Stage Compressor Discharge and High Stage Condenser Discharge offsets are set at the factory. Contact Helmer Technical Service for information regarding changing the offset values.

Date/Time

Date and time values can be changed through the Date/Time screen.

Change/set date and time

1. Touch the **Date/Time** button.
2. Touch the minus (-) or plus (+) on the corresponding **Date** or **Time** spin box to select the appropriate value.
3. Toggle the **AM/PM** button to select AM or PM.
4. Touch to save.

Notes

- An event (Date/Time change) is entered in the Event Log when the date or time is changed.
- If the date or time is changed, a dashed black vertical line will appear on the temperature graph corresponding to the date and time the change was made.

Auxiliary Systems

The Auxiliary Systems screen provides a way to turn the USB port, LN_2 / CO_2 Backup System Input, Ethernet port, or the RS232 port on or off, as well as set up an Ethernet connection.

Enable/disable USB, Ethernet or RS232 ports

1. Touch the **Auxiliary Systems** button.
2. Toggle the corresponding port button **On** or **Off** to select desired status.

Notes

- Contact Helmer Technical Service for Ethernet API information to utilize this interface.
- GX models do not have an RS232 port.

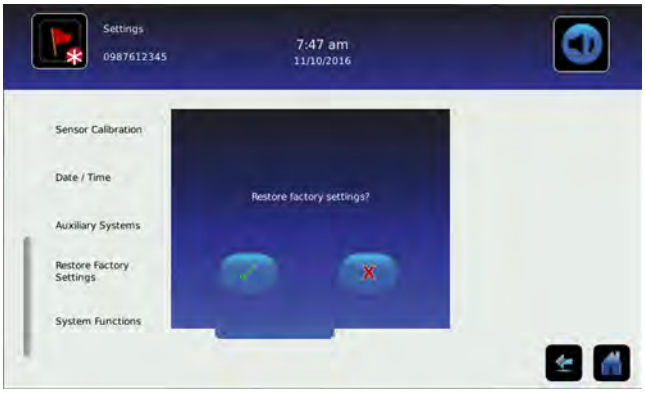
Enable/disable LN_2 / CO_2 Backup System Input

(appears only when Technical Level password is entered)

1. Touch the **Auxiliary Systems** button.
2. Toggle the corresponding button **On** or **Off** to select desired status.

Restore Factory Settings

Settings will be restored to their factory default through Restore Factory Settings.



Restore factory Settings

1. Touch the **Restore Factory Settings** button. The Restore Factory Settings confirmation box appears.
2. Touch ✓ to confirm, or ✗ to cancel.

Note

- Restoring factory settings will result in the loss of any changes made to Alarm Settings, Temperature Setpoints, or Time Delay settings.
- The Language setting and Unit ID will not be overridden when restoring factory settings.

System Functions

Restart or shut down the i.C³ display through System Functions.

Restart i.C³ display

1. Touch the **System Functions** button.
2. Touch the **Restart Display** button. The confirmation box appears.
3. Touch ✓ to confirm, or ✗ to cancel.

Shut down i.C³ display

1. Touch the **System Functions** button.
2. Touch the **Shut Down Display** button. The confirmation box appears.
3. Touch ✓ to confirm, or ✗ to cancel.

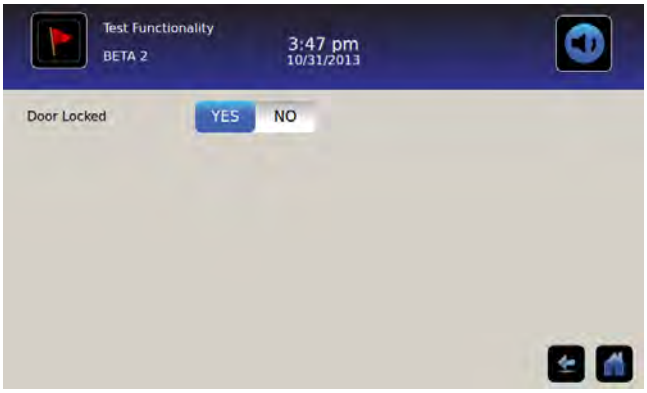
Notes

- The i.C³ display should be shut down prior to shutting down the entire unit.
- If only the i.C³ display is shut down, the unit will continue to run based on the last settings. No temperature data other than Min/Max will be recorded.

Test Functionality

> > **Technician password**

Test the functionality of the door lock feature on the freezer controlled or monitored by the i.C³. Unlock the electronic lock on the door for a pre-determined time interval.



Unlock Door

1. Touch the Test Functionality button.
2. Toggle the Door Locked button to **NO**.

Note

After the pre-determined time interval has elapsed, the setting is automatically reset to **YES** (locked). This feature prolongs the life of the lock.

12 Access Control

Integrated Electronic Access Control limits user access, providing secure storage. A valid personal identification number (PIN) must be entered to open the unit.

Note

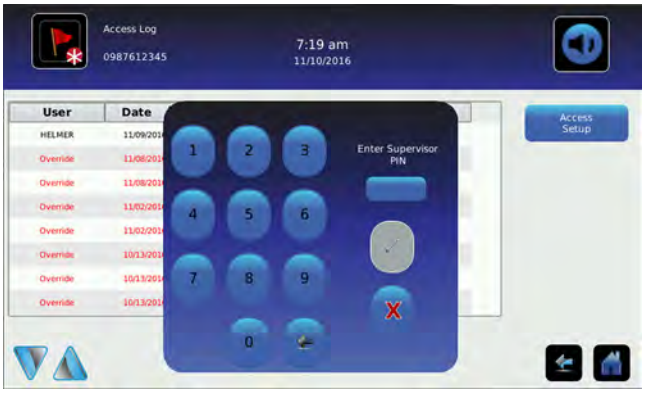
Refer to the product operation manual for detailed instructions on using the Access Control lock under normal conditions and during an AC power failure.

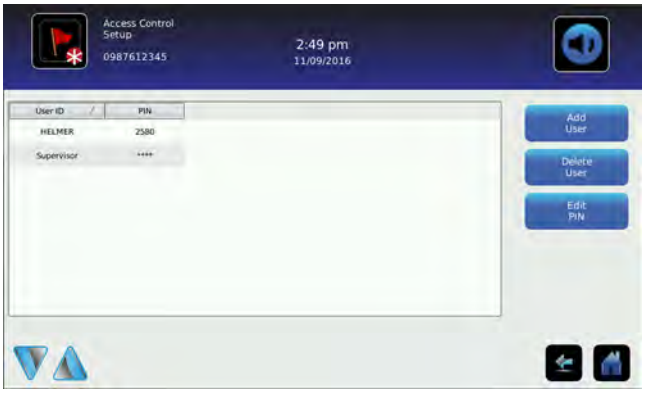
Access Control Setup

The Access Control Setup screen allows management of multiple user profiles. Up to 100 user profiles can be created.

Notes

- The Supervisor PIN must be used to set up user profiles.
- The Supervisor PIN does not allow access to the unit. At least one user ID must be set up to gain access to the unit.
- The Supervisor PIN should be changed to prevent unauthorized user ID setup. The Supervisor PIN can not be deleted.
- In the event the Supervisor PIN is unavailable, contact Helmer Technical Service to reset the Supervisor PIN.





Note

The **Access Setup** button can be found on the *Users and Passwords* screen or the *Access Log* screen.

Entry into Access Control Setup

1. Touch the **Access Setup** button. A numeric keypad is displayed.
2. Enter the supervisor PIN *(if entering for the first time, use the factory supervisor PIN = 5625)*.
3. Touch ☑ to confirm. The keypad closes and the Access Control Setup screen is displayed.

Add a user profile

1. Touch the **Add User** button. An alphanumeric keyboard is displayed.
2. Enter the User ID for the new user profile.
3. Touch the ☑ to store the user ID. The alphanumeric keyboard is displayed.
4. Enter a 4-digit PIN for the new user profile.
5. Touch the ☑ to store the user PIN. The User ID and PIN for the new user profile are displayed in the table.

Delete a user profile

1. Touch the data row of the user profile to be deleted. The data row is highlighted in blue.
2. Touch the **Delete User** button. The message *"Delete User?"* is displayed.
3. Touch to confirm, or to cancel.

Edit a user profile

1. Touch the data row of the user profile to be edited. The data row is highlighted in blue.
2. Touch the **Edit PIN** button. The numeric keypad is displayed.
3. Enter a new 4-digit PIN.
4. Touch to confirm. The numeric keypad closes and the new PIN is displayed in the table, or touch to cancel.

Access Control Screen

>

Temperature and Alarm Conditions are displayed on the left side of the keypad. When the screen is first displayed, the Closed Padlock indicator is displayed. "Enter PIN" is displayed above the locked indicator.

Using Access Control to unlock the door

1. Enter unique 4-digit PIN.
2. If a valid PIN is entered, the Padlock indicator appears open and the door is unlocked.

Access Control as the Home Screen

The Access Control Home Screen can be substituted for the standard Home Screen

Notes

- It is recommended the Access Control icon be moved to the Home screen if the Access Control Home screen is disabled. Refer to *Icon Transfer* for more information.
- If the Access Control Home Screen is disabled, the keypad is accessed by touching the Access Control icon.

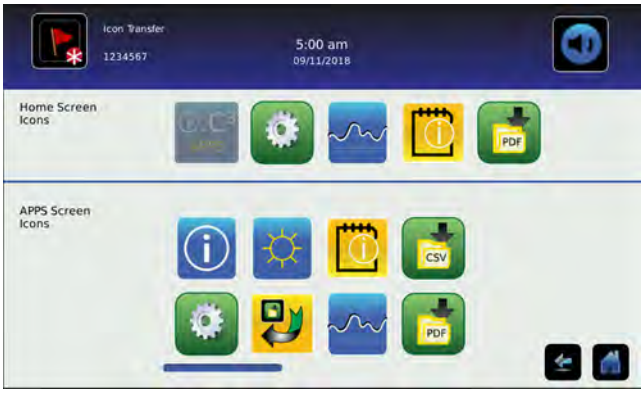
Enable/disable Access Control Home Screen

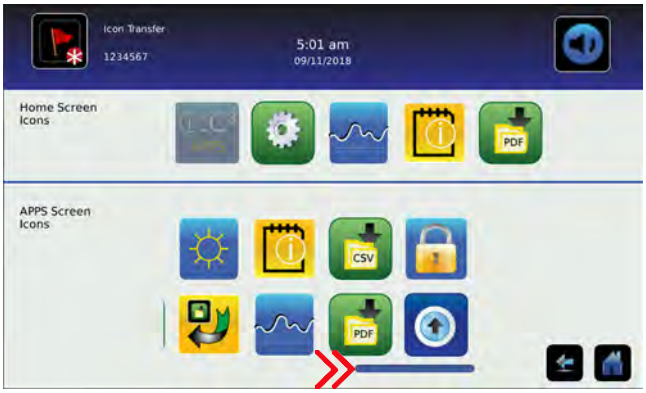
1. Touch the **i.C³ APPS** icon.
2. Touch the **Settings** icon.
3. Touch the **Display Settings** button.
4. Toggle the **Access Control as Home Screen** button **On** or **Off** to select desired setting.

13 Icon Transfer

>

The Icon Transfer allows icons to be moved between the Home screen and the i.C³ Applications screen, or repositioned on the i.C³ APPS screen. A maximum of five icons can be displayed on the Home screen.





Reposition icons

Drag icons with a touch-drag motion of the finger. Drag the selected icon directly over the icon that is currently located in the targeted position.

Notes

- The i.C³ APPS icon appears dimmed because it must remain in the first position (top left) on the Home screen and cannot be transferred.
- DP Version 12.48 and later of the i.C³ software display the CSV and PDF Download icons.

Appendix A - Icon Reference Guide

Common Buttons

Buttons are included to adjust settings or navigate to a different "App". Alphanumeric keyboard buttons for text entry, editing, save/cancel functions, and uppercase and lowercase keyboards are included for all languages. The extended character keyboard and symbol keyboard are included for U.S./international languages only.

Notes:

- When the Extended Character button is touched, the uppercase extended character keyboard is displayed by default. To display the lowercase extended character keyboard, touch the Lowercase button.
- Touch and hold the Back button to delete multiple characters.

i.C³ Apps Buttons

Toggle box

Spin box

Navigation or Setting button

Alphanumeric Keyboard Buttons

Toggle the **Uppercase/Lowercase** button to navigate between the lowercase and uppercase character keyboard.

Touch the **Extended Character** button to navigate to the extended character keyboard.

Touch the **Symbol** button to navigate to the symbol keyboard.

Touch the **Space** button to insert a space after a character

Touch the **Back** button to delete a character from the text window.

Application Icons

All i.C³ Apps icons are included in this guide. Contact Helmer, Inc. for information about optional applications.

Image	Name	Function
	Home	• Navigate to the Home screen
	Event Log (icon-indicator)	• Navigate to the Event Log • Red asterisk indicates new event
	Mute On/Off (button)	• Touch once to temporarily silence an active alarm • Touch repeatedly to increase the mute timer duration *(prior to DP Version 12.48)*
	Reset	• Touch to reset Min/Max temperature display • Touch to reset temperature graph view
	Zoom Information	• Touch to view instructions for using the temperature graph zoom feature
	Zoom Out	• Touch to zoom out to full size graph
	i.C³ Applications (APPS)	• Navigate to the i.C³ APPS screen
	i.C³ Settings	• Navigate to the i.C³ Settings screen
	Temperature Graph	• Navigate to the Temperature Graph screen
	Information Logs	• Navigate to the Information Logs
	Contact Helmer	• Navigate to the Helmer Contact Information screen
	Display Brightness	• Navigate to the Display Settings screen
	Icon Transfer	• Navigate to the Icon Transfer screen

Image	Name	Function
	CSV Download *(DP Version 12.48 and later)*	• Navigate to the CSV Download screen • On the CSV Download screen, start a data transfer
	PDF Download *(DP Version 12.48 and later)*	• Navigate to the PDF Download screen • On the Download screen, start a data transfer
	Download *(prior to DP Version 12.48)*	• Navigate to the Download screen • On the Download screen, start a data transfer
	Upload	• Navigate to the Upload screen • On the Upload screen, start a data transfer
	Access Control	• Optional feature • Navigate to the Access Control Login screen
	Access Log	• Optional feature • Navigate to the Access Control Log
	Alarm Conditions (icon-indicator)	• Indicates alarm event occurred • Navigate to the Event Log
	Save	• Touch to save entry or change
	Cancel	• Touch to cancel entry or change
	Back Arrow	• Navigate to the previous screen
	Scroll Arrows	• Indicates additional information is available by scrolling
	Temperature Graph Forward/ Back Arrows	• Navigate forward or backward to view temperature graph data
	Battery Power (indicator)	• Indicates i.C³ is running on battery

Appendix B - i.C³ Reference Guide

General Settings

>

Note

All i.C³ settings are shown in this guide. Contact Helmer, Inc. for information about settings as they pertain to optional applications.

Setting	Description	Default Value
Temperature Setpoint	Set unit operation temperature	-80 °C
Alarm Settings	Access alarm setpoint settings	Refer to Alarm Settings table
Password Protection	Protect i.C³ Settings from unauthorized changes	On
Change Password	Change password used to access i.C³ Settings	1234
Access Setup	Prevent chamber access without entry of a valid PIN	On
Sounds	Turn sound on or off (does not include alarms)	On
Alarm Volume	Audible alarm volume	9
Alarm Tone	Audible alarm tone	3
Mute Duration *(DP Version 12:48 and later)*	Length of time audible alarm can be muted	15
Language	Language displayed on the i.C³ screen	English
Date Format	Date display format	MM/DD/YYYY
Day	Calendar day	Set at the factory
Month	Calendar month	Set at the factory
Year	Calendar year	Set at the factory
Time Format	Time display format	12-hour
Minute	Minute value	Set at the factory
Hour	Hour value	Set at the factory
AM/PM	AM or PM	Set at the factory
Temperature Units	Temperature units in °C or °F	°C
Temperature Graph Screensaver	Display temperature graph as Home screen	On
Alternate Screensaver	Display alternate screensaver as Home screen	Off
Ambient Temperature	Display temperature of the freezer environment	On
Unit ID	Unique identification number for the i.C³ system	i.C³ serial number
Min/Max	Minimum and Maximum Primary Monitor Probe readings	Off
Access Control as Home Page	Display Access Control keypad on the Home screen	Off
Brightness	i.C³ display screen brightness	3 (brightest)
Sensor Calibration	Set probe temperature values to match measured temperature values	Refer to product Service Manual
Control Sensor Offset	Offset value used to adjust temperature reading of the Control sensor	-10.0 to 10.0 °C
Ambient Sensor Offset	Offset value used to adjust temperature reading of the Ambient sensor	-10.0 to 10.0 °C
Low Stage Compressor Discharge Offset	Offset value used to adjust temperature reading of the Low Stage Compressor Discharge sensor	-10.0 to 10.0 °C
Cascade Heat Exchanger Offset	Offset value used to adjust temperature reading of the Cascade Heat Exchanger sensor	-10.0 to 10.0 °C
High Stage Compressor Discharge Offset	Offset value used to adjust temperature reading of the High Stage Compressor Discharge sensor	-10.0 to 10.0 °C
High Stage Condenser Discharge Offset	Offset value used to adjust temperature reading of the High Stage Condenser Discharge sensor	-10.0 to 10.0 °C

Setting	Description	Default Value
USB Port	Turn USB port on or off	On
Ethernet Port	Turn Ethernet Port on or off	Off
RS232 Port*	Turn RS232 Port on or off	On
LN_2 / CO_2 Back-up System Input	Enable/disable liquid nitrogen/carbon dioxide system input	Off
Restore Factory Settings	Change all settings to factory default values	Refer to product Service Manual

* *RS232 Port is not available on GX models*

Alarm Settings

>  **Alarm Settings**

Setting	Description	Default Value	Range
Primary Monitor Probe High Temp (setpoint)	High temperature at which alarm condition occurs	-70 °C	-40 to -100 °C
Primary Monitor Probe High Temp (time delay)	Time after high temperature alarm condition occurs until alarm sounds	0 minutes	0 - 99
Primary Monitor Probe Low Temp (setpoint)	Low temperature at which alarm condition occurs	-90 °C	-40 to -100 °C
Primary Monitor Probe Low Temp (time delay)	Time after low temperature alarm condition occurs until alarm sounds	0 minutes	0 - 99
Ambient Probe High Temp (setpoint)	High ambient temperature at which alarm condition occurs	30 °C	5.0 to 40 °C
Ambient Probe High Temp (time delay)	Time after high ambient temperature alarm condition occurs until alarm sounds	15 minutes	0 - 99
Ambient Probe Low Temp (setpoint)	Low ambient temperature at which alarm condition occurs	15 °C	5.0 to 40 °C
Ambient Probe Low Temp (time delay)	Time after low ambient temperature alarm condition occurs until alarm sounds	15 minutes	0 - 99
Power Failure	Time after power failure occurs until alarm sounds	1 minute	0 - 99
Probe Failure	Time after probe failure occurs until alarm sounds	0 minutes	0 - 99
Door Open (Time)	Time door remains open until alarm sounds	1 minute	0 - 5

Non-Configurable Alarms

Alarm	Description	Alarm Displayed As
Clean Filter	Indicates high stage condenser temperature is too high, relative to ambient temperature. Prior to DP Version 12.48, the alarm also indicates filter cleaning interval is reached.	Clean Filter
CO_2/LN_2 Active	Indicates CO_2/LN_2 back-up system has been activated.	CO_2/LN_2 Active
Low Battery	Triggered after approximately 18 hours of battery use.	Low Battery
No Battery	Indicates battery has been removed or battery voltage has dropped below pre-determined level.	No Battery
Refrigeration System	Indicates refrigerant pressure is too high; high or low stage compressor temperature is too high; or high or low stage compressor fails.	Refrig System
Communication Failure	1. Communication Failure 1 • Triggered if communication is lost between i.C³ display board and control board • Unit will continue to run with previously saved settings • Screen will not display temperature changes or alarm conditions • i.C³ system will continue to reset until connection is re-established • No data is logged until the alarm is cleared 2. Communication Failure 2 • Triggered if communication is lost between i.C³ display board and internal system memory • Unit will continue to run with previously saved settings 3. Communication Failure 3 • Triggered if the database is corrupted • The database is archived and a new database is automatically created • Unit will continue to run with previously saved settings	Communication Failure 1 Communication Failure 2 Communication Failure 3
Emergency Mode	Triggered if the control probe temperature sensor fails *(alarm is only displayed on Home Screen)*.	Emergency Mode

Notes

- The Clean Filter alarm can only be cleared by going to the Event Log Detail screen and acknowledging the event.
- The battery must be allowed to charge at least 72 hours after the last Low Battery alarm event in order to provide approximately 18 hours of battery life before the Low Battery alarm is triggered.
- When the freezer is in Emergency Mode it will continue to operate with the high stage compressor operating at 100% duty cycle and the low stage compressor operating normally, unless one or both of the following conditions are met: an over-pressure condition exists in the high stage refrigeration system; a second Sensor Failure alarm (compressor temperature, condenser temperature, or heat exchanger temperature) is active, beyond the duration specified in the Sensor Failure time delay setting. If one or both of the conditions above are met, the high stage and low stage compressors will be automatically powered off.
- Emergency Mode alarm message may only be cleared by cycling AC power off then on.
- Emergency Mode alarm event is not recorded in the Event Log.
- Prior to DP Version 12.48, the Clean Filter alarm also appears to indicate timed cleaning intervals.

Event Log Codes

In the downloaded CSV data file, each event name is identified by an event code number.

Note

Communication Failure 2 is not included in the downloaded CSV data file.

Event Code	Event Description	Event Displayed As
-1	Unknown Error Type	-
1	Clean Filter	Clean Filter
2	CO_2/LN_2 Back-up System Active	CO_2/LN_2
4	Communication Failure 1 (1)	Comm Fail
5	Communication Failure 2 (2)	Comm Fail
6	Communication Failure 3 (3)	Comm Fail
7	Date/Time Change	Date/Time
8	Door Open	Door Open
9	High Ambient Temperature	Hi Ambient
10	High Temperature (Primary Monitor Probe)	Hi Temp
11	Low Ambient Temperature	Lo Ambient
12	Low Battery	Lo Battery
13	Low Temperature (Primary Monitor Probe)	Lo Temp
14	No Battery	No Battery
16	Power Failure: High Voltage	Power Fail
17	Power Failure: Low Voltage	Power Fail
18	Power Failure: No AC	Power Fail
19	Power-Up	Power-Up
21	Refrigeration System: High Refrigerant Pressure	Refrig Sys
22	Refrigeration System: High Stage Compressor Temperature	Refrig Sys
23	Refrigeration System: Low Stage Compressor Temperature	Refrig Sys
25	Sensor Failure: Ambient Temperature	Sensor Fail
26	Sensor Failure: Chamber Temperature Control	Sensor Fail
27	Sensor Failure: Heat Exchanger Temperature	Sensor Fail
28	Sensor Failure: High Stage Compressor Temperature	Sensor Fail
29	Sensor Failure: High Stage Condenser Temperature	Sensor Fail
30	Sensor Failure: Low Stage Compressor Temperature	Sensor Fail
34	Refrigeration System: Low Stage Compressor Failure	Refrig Sys
35	Refrigeration System: High Stage Compressor Failure	Refrig Sys
98	SD Card Drive Space Low	Drive Space Low
99	SD Card Drive Space Full	Drive Space Full

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