



## Ultra Low Temperature Freezer Manual

*Thank you for your purchase.*

*This manual contains: set-up instructions, unit specs, safety information, controller operation and maintenance steps.*

## **K210ULT, K221ULT, & K226ULT**



### **IMPORTANT:**

#### **Your Unit is Preprogrammed**

Place your unit in the desired location. Plug the unit in and allow it to cool and become stable for a minimum of 24 hours before logging temperature or stocking products.

#### **Be Careful When Setting or Changing Temperatures**

WARNING: Changing some controller parameters can result in potentially damaging your unit and/or losing your products. K2 will not be held responsible for losses due to improper controller programming.

#### **Unfamiliar with the operation of a K2 controller?**

Use the video tutorials on our website resources page or call us for assistance with special parameters.

*Some K2 units can be changed from Celsius to Fahrenheit. We do not recommend changing your unit to Fahrenheit. Your controller has operational parameters that rely on data in Celsius to maintain proper function.*

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## 1 Warnings



Important operating and/or maintenance instructions. Read the accompanying text carefully.



Hot surface(s) present which may cause burns to unprotected skin or to materials which may be damaged by elevated temperatures.



Potential electrical hazards. Only qualified persons should perform procedures associated with this symbol.



Extreme temperature hazards, hot or cold. Use special handling equipment or wear special, protective clothing.

## Safety Information

- All internal adjustments and maintenance must be performed by qualified service personnel.
- Do not use this appliance for other than its intended use.
- Do not cover the front grille or block the rear air entry by placing object up against the cabinet. Ensure adequate ventilation.
- If the main supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified and skilled persons in order to avoid hazard.
- Do not store explosive substances, such as aerosol cans with flammable propellant.
- Do not use mechanical devices or other means to accelerate the defrosting process.
- Disconnect the main power supply before attempting any cleaning, removal of any covers, or maintenance work.

## 2 Installation and Operation

### Assembly

- Remove the appliance from the packaging and peel off any protective film from all surfaces.
- Ensure that this product is positioned on a level surface, so as to allow the door(s) to shut and seal correctly, as well as to allow proper drainage from the evaporator tray, to prevent any overflow.

### Ventilation

- All models must have clear and unobstructed ventilation from the entire surface area of the front grille.

## 3 Temperature Controller

The refrigerator/freezer is equipped with a latest generation Electronic Controller, with a LCD alphanumeric display, to display temperature and working operations with an accuracy of 0.1°C. The controller gives maximum safety in case of alarms and fault conditions, signaling critical conditions and recording every event in order to help the service engineer to speed up the analysis and thus the fixing of any problems. Safety is at the highest level with alarms for High and Low temperature, power-failure, door open as well as auto-test. What is more, the STANDARD Control is equipped with an internal clock to catalogue all the events.



To Enter and Esc from the menu



Inner temperature date log



Alarm Indicator



Event log



Setting



Running state: Cooling, defrosting

## 4 Standard Controls

### Switching On

- After positioning the equipment, let stand for at least 12 hours (we recommend 24), then connect the power cord and turn on the switch of backup battery.

### Temperature Settings

- The Ultra Low Temperature Freezer set point ranges from -40C to -86C. The default factory temperature set point is -80C.
- To change temperature settings, you need to access SETTINGS menu. All menu options under SETTINGS menu are used to configure the settings for temperature chamber only.

## 5 Operating the Freezer

### Product Loading

- Loading of warm product into the freezer should be done in batches. Do not fill the freezer with product of more than 20 percent of the volume at one time as this process might introduce too much heat load into the freezer. Allow freezer to stabilize. Once the temperature of the freezer returns to the set point, another batch of product can be loaded in.
- Fill an upright freezer by starting at the bottom near the temperature probe and add products to shelves, one shelf at a time. Allow freezer to recover to set point or temperature between shelves.
- Fill empty shelves with pre-cooled samples to help reducing the temperature rise during loading. At any time, to ensure not more than 10 kg product be loaded in at one time.
- Always make sure the vacuum relief port is free of frost and ice, to allow for timely re-opening of the main door.

### Opening and Closing Doors

- Main door and inners doors should be closed tightly at all times. When taking the samples out, open the main door and then open only one inner door at a time.
- "DOOR OPEN" message will be displayed as soon as the main door is open. If the main door is left open for more than the pre-determined time (MAIN MENU > ADMIN > DOOR ALARM TIME), the audible alarm will ring to remind user to close the door.

### Locking the Main Door

- Main door can be locked with the standard set of keys required.

## 6 Alarms

### High/Low Temperatures

This alarm is activated when the actual temperature inside the chamber has reached the temperature set point and for some reason exceeds high/low alarm temperature set point. The message "HIGH ALARM" or "LOW ALARM" will be displayed on the 4th row of the LCD. The High/Low Temp LED indicator will light and an audible alarm will ring. The audible alarm can be muted by pressing the MUTE key.

### Low Battery

This alarm is activated whenever the battery voltage is lower than 11.5 VDC or the battery switch behind the right bottom door is turned off or the battery is not properly installed. "LOW BATTERY" message will appear on the 4th row of the main display of the LCD. Low Battery LED indicator will light. Audible alarm will ring. The audible alarm can be muted by pressing the MUTE key.

### Sensor Failure

This alarm is activated when the sensor for chamber temperature (CHAMBER) is defective or not properly connected. The compressor will not start to cool down the chamber. "XX SENSOR FAILURE" message will appear on the 4th row of the LCD. Audible alarm will ring. The audible alarm can be muted by pressing the MUTE key.

### High Ambient

"HIGH AMBIENT" message will appear on the 4th row of the LCD as soon as the ambient temperature displayed on the LCD is above 32°C. Audible alarm will ring immediately. The audible alarm cannot be muted. This alarm will not stop the freezer operation.

### Hot Condenser

This alarm is activated when the sensed temperature at condenser outlet is 15°C higher than the sensed ambient temperature displayed on LCD. The message "HOT CONDENSER" will be shown on the 4th row of the LCD. No audible alarm will ring but the Hot Condenser LED indicator will light. This alarm will not stop the freezer operation.

### Power Failure

This alarm is activated whenever there is a power failure and the Refrigerator/Freezer control system is still running on battery power. "POWER FAILURE" message will appear on the 4th row of the LCD. Audible alarm will ring. The audible alarm can be muted by pressing the MUTE key.

### Door Open

"DOOR OPEN" message will appear on the 4th row of the LCD as soon as the main door is opened. Audible alarm will ring after pre-determined time set in the menu DOOR ALARM TIME under ADMIN menu. The audible alarm can be muted by pressing the MUTE key. Please refer to section 3.5.4 to set the ALARM TIME.

## 7 Product Description

Model		K205ULT	K210ULT	K221ULT
Technical Data	Cabinet Type	Chest	Vertical	Vertical
	Climate Class	N	N	N
	Cooling Type	Direct Cooling	Direct Cooling	Direct Cooling
	Defrost Mode	Manual	Manual	Manual
	Refrigerant	CFC-Free / Blend	CFC-Free / Blend	CFC-Free / Blend
Performance	Temperature Range (C°)	-40 to -86	-40 to -86	-40 to -86
Control	Temperature	Microprocessor Control		
Material	Display	LED	LCD	LCD
	Interior	Galvanized steel powder coating / Stainless Steel		
	Exterior	Galvanized steel powder coating		
	Shelf	Stainless Steel		
Electrical Data	Voltage/Frequency	110/60Hz		
Dimensions	Capacity (L)	140	280	590
	Ext. Dimensions (W/D/H)	32.25" x 39.25" x 28.75"	83.5" x 27.0" x 32.0"	75.60" x 36.22" x 30.71"
Accessories	Shelf	None	4	4
	Datalogger Port	Y	Y	Y
	Racks and Boxes	Optional	Optional	Optional

## 8 Maintenance

Fault	Probable Cause	Action
The appliance is not working	The unit is plugged in correctly	Check the unit is plugged in correctly
	Plug or lead is damaged	Call our agent or qualified technician
	Power supply	Check power supply
	Internal wiring fault	Call our agent or qualified technician
The appliance turns on, but the temperature is too high or too low	Filter or condenser blocked with dust	Clean filter or condenser
	Doors are not shut properly	Check doors are shut and seals are not damaged
	Appliance is located near a heat source or air flow to the condenser is being interrupted	Move the appliance to a more suitable location
	Ambient temperature is too high	Increase ventilation or move appliance to a Low Temperature Freezer position
	Insufficient airflow to the fans	Remove any blockages to the fans

The appliance turns on, but the temperature is too high or too low	Appliance is overloaded	Reduce the amount stored in the appliance
	Factory default parameters adjusted	Call our agent or qualified technician
The appliance is unusually loud	The appliance is touching a neighboring object	Check installation position and change if necessary
	The appliance has not been installed in a level or stable position	Check installation position and change if necessary

## 9 Temperature Logging

When storing vaccines you may be required to preform a field validation test. A NIST callibrated external data logger may be used for this purpose. A logger with text, email or online access is an added layer of protection for your product load in the event of a temperature excursion. K2 offers NIST calibrated data loggers to match your unit at a very affordable rate.

### Service

K2 Scientific want to make sure you are happy with your purchase. There are several ways for you to contact us with questions or service needs. Be sure to include your four digit order number or at least your model number handy to speed up the process.

- 1: Contact us via our chat feature at [www.k2sci.com](http://www.k2sci.com)
- 2: Email [support@k2sci.com](mailto:support@k2sci.com)
- 3: Call 800-218-7613