



**K2 Scientific K210ULT  
& K221ULT Series Ultra  
Low Temperature  
Freezer Manual**

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*Thanks for selecting K2 Scientific Ultra Low Temperature Freezer. We would provide the best product and service to you. Failure to read, understand and follow the instructions in this manual may result in damage to the unit, injury to operating personnel, and poor equipment performance.*



**CAUTION!**

*All internal adjustments and maintenance must be performed by qualified service personnel.*

*This appliance can be used by persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.*

*Children shall not play with the appliance.*

*Cleaning and user maintenance shall not be made by children without supervision.*



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



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



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



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

***Always use the proper protective equipment (clothing, gloves, etc).***

***Always use dissipate extreme cold or heat and wear protective clothing.***

***Always follow good hygiene practices.***

***Each individual is responsible for his or her own safety.***

**1. Installation and operation**

**2. Standard Control System**

**3. Product description**

**4. Cleaning**

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**6. Disposal**

If the user's manual is lost or damaged, you can through our website to download or contact us by E-mail.

## 1. Installation and operation

### 1.1 Safety Information

All electrical work must be executed by suitably qualified persons. When using any electrical appliance, safety precautions must always be observed.

- ◆ Do not use this appliance for other than its intended use. This product is intended for use as a beverage Low Temperature Freezer. Consult your supplier for alternatives.
- ◆ Do not cover the front grille or block the rear air entry by placing object up against the cabinet.
- ◆ Please close attention, when used by or near children, infirm persons.
- ◆ Ensure adequate ventilation.
- ◆ Do not probe any openings.
- ◆ Do not touch any moving parts or hot surfaces.
- ◆ Regulations require that all electrical work be carried out by authorized persons. For your own safety and that of others please ensure this is done.
- ◆ Do not overload the power supply. Always ensure on the rating label. The rating label is located.  
If have any problem, please consult a qualified electrician. Caution: Never use extension leads or multiple adaptors.
- ◆ If the mains 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.
- ◆ Disconnect the mains power supply before attempting any cleaning, removal of any covers, or maintenance work.
- ◆ Do not store explosive substances, such as aerosol cans with flammable propellant.
- ◆ Warning: Do not use mechanical devices or other means to accelerate the defrosting process. Defrosting is performed automatically.
- ◆ Warning: Do not damage the refrigeration circuit.
- ◆ Warning: Do not use electrical appliances inside the storage compartment of this appliance.

### 1.2 Assembly

- ◆ Remove the appliance from the packaging and peel off any protective film from all surfaces.
- ◆ Fit the shelf support clips onto the shelf support strips, making sure that the clips for each shelf are of the same height and that they are securely engaged on the support strip.
- ◆ Unwrap each shelf carefully, to prevent damaging their protective coating or surface finish.
- ◆ Position the shelves onto the clips.



Please dispose of all waste packaging appropriately and in accordance with all local recycling laws.



### **WARNING**

Do not overload the power supply. Always ensure that the power supply is adequate for the electrical requirements specified on the rating label and never use extension leads or multiple adaptors.

*K2 Scientific ULT Series*.....Installation and operation


### **1.3 Positioning the product**

- ◆ Please position the cabinet carefully being careful not to bump it.
- ◆ The power supply flex exits the product at the bottom right hand side (as viewed from the front). For ease of access; the flex should be retrieved prior to positioning the product in its final location.
- ◆ The maximum recommended ambient temperature for this product is 32°C
- ◆ Avoid positioning the appliance in direct sunlight or damp areas.
- ◆ Allow adequate space for the door(s) to fully open.
- ◆ 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. If necessary, adjust the screw feet of the appliance to make it level.

**Note:** The refrigerator is not with close contact the wall; the need to maintain a gap of 50mm to wall. This is conducive to the freezer cooling.


### **1.4 Ventilation**

- ◆ All models must have clear and unobstructed ventilation from the entire surface area of the front grille.
- ◆ The 2 and 3 door models may be built into an enclosure without the need for ventilation other than at the front.
- ◆ The single door Low Temperature Freezers must have a minimum ventilation space of 50mm at sides and rear.
- ◆ Dimensions of the space to be provided for the appliance are referenced on page 12 of this manual.
- ◆ Dimensions and position of the means for supporting and fixing the appliance within this space are referenced on page 12 of this manual.

- ◆ **WARNING:**  Failure to provide the minimum ventilation space will harm the performance of your Low Temperature Freezer could cause fire and will invalidate the warranty.

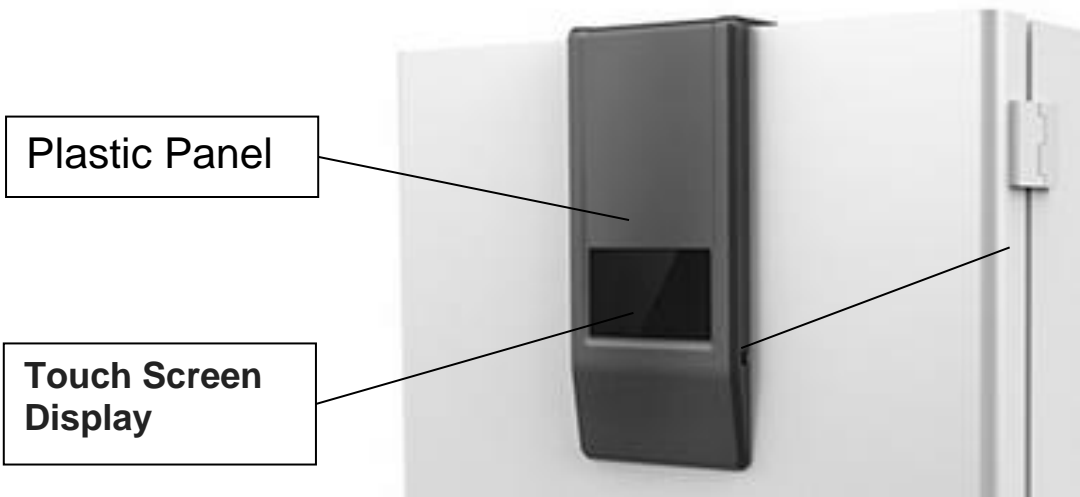
- ◆ **WARNING:**  Keep clear of obstruction all ventilation openings in the appliance

enclosure or in the structure for building in.

◆ **WARNING:**  You are must not store volatile, flammable and explosive materials inside this Refrigerator.

Setting Temperature

## 2. Standard Control System



**Control Panel**



**7" LCD touch screen, Main interface**

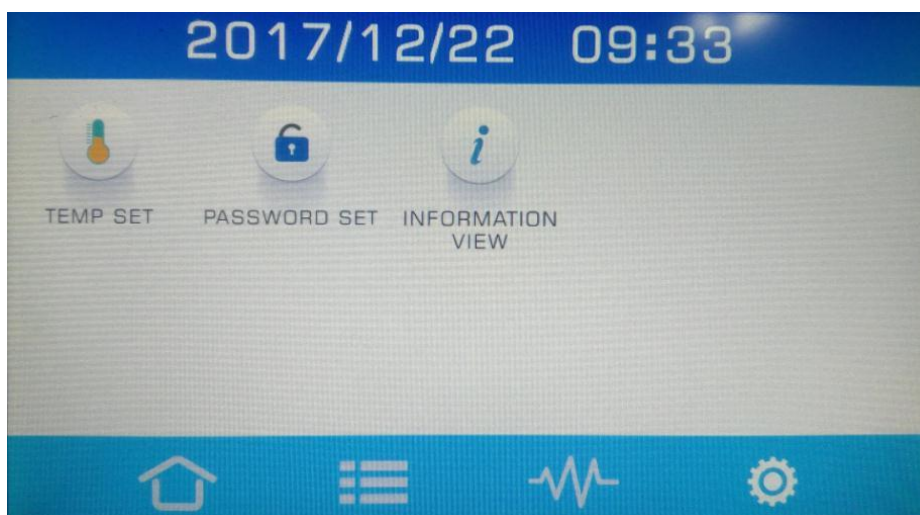
2017/12/16 16:05

Date Time	Event	Status
2017/12/16 15:38	HIGH AMBIENT	OK
2017/12/16 15:43	HIGH AMBIENT	WARN
2017/12/16 15:48	HIGH AMBIENT	OK
2017/12/16 15:52	HIGH AMBIENT	WARN
2017/12/16 15:59	HIGH AMBIENT	OK
2017/12/16 16:03	HIGH AMBIENT	OK

**7" LCD touch screen, Event information**



**7" LCD touch screen, Data information Record**

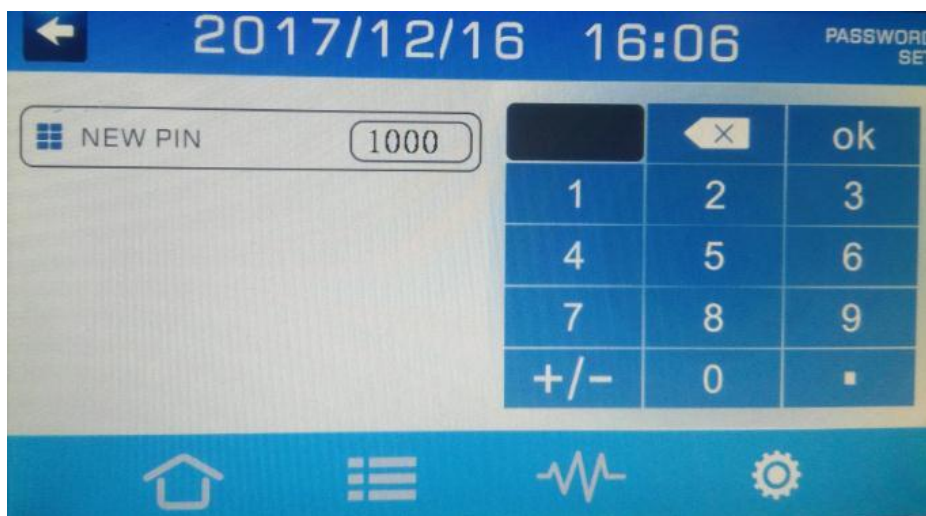


**7" LCD touch screen, Setting Options**

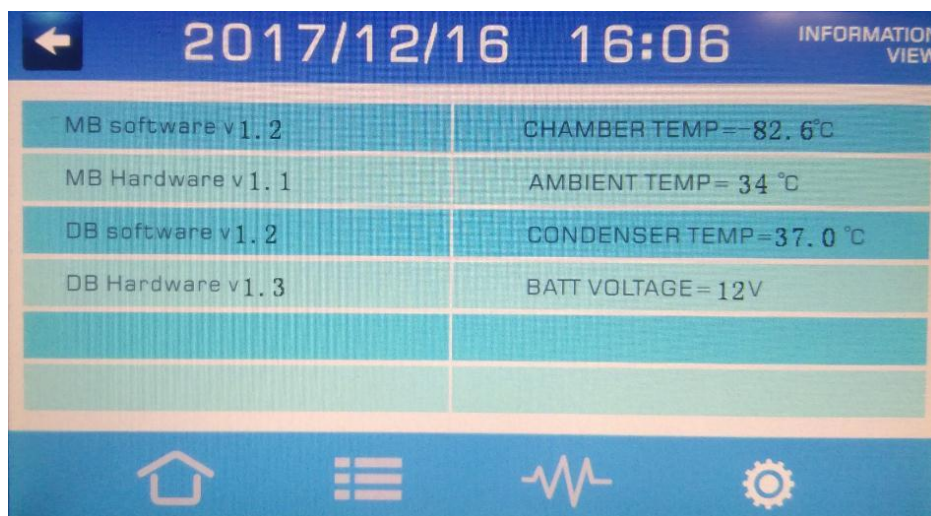




**7" LCD touch screen, Temp set**









**7" LCD touch screen, Password set (Initial password 1000)**



**7" LCD touch screen, Information view**

## 2.1 DESCRIPTION CONTROL BOARD

Control Panel	1		To Enter and Esc from the menu
	2		Event log
	3		Inner temperature date log
	4		Setting
	5		Alarm Indicator
	6		Running state: Cooling, defrosting

## 2.2 FUNCTIONING STANDARD CONTROL

### Introduction

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.

### 2.2.1 SWITCHING ON\*

\*After positioning the equipment, stand for it at least 12 hours, then connecting the power cord of the equipment, and turn on the switch of backup battery.

### 2.2.2 SWITCHING OFF\*

Turn power off.

### 2.2.3 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.

**Note:** *If the set point is changed, the high and low alarm limit will change automatically. For example: initial temperature set point: -30°C; low alarm limit: -40°C; high alarm limit: -20°C. If the temperature set point is subsequently changed to - 33°C, then the high and low alarm limit will adjust automatically to -23°C and -43°C.*

## 2.3 Operating the Freezer

### 2.3.1 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.

The Refrigerator/Freezer are designed for long term storage. It is recommended that only pre-frozen products be placed in the unit as it will reduce the amount of heat load that must be absorbed by the freezer at one time.

### **2.3.2 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.

### **2.3.3 Locking the Main Door**

Main door can be locked with the standard key set provided.

## **2.4 Alarm**

### **2.4.1 High/Low Temperature**

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.

### **2.4.2 Hot Condenser**

This alarm is activated when the sensed temperature at condenser outlet is 15oC 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.

### **2.4.3 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.

### **2.4.4 Other Alarms**

All of the below alarms will cause Other Alarms LED indicator to light.

#### **2.4.4.1 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.

#### **2.4.4.2 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.

#### 2.4.4.3 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.

#### 2.4.4.4 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 o C. Audible alarm will ring immediately. The audible alarm cannot be muted. This alarm will not stop the freezer operation.

*DW-86L Series.....Product description*

### 3.Product description

Model		K210ULT	K214ULT	K218ULT	K21ULT
Technical Data	Cabinet type	Vertical	Vertical	Vertical	Vertical
	Climate Class	N	N	N	N
	Cooling Type	Direct Cooling	Direct Cooling	Direct Cooling	Direct Cooling
	Defrost Mode	Manual	Manual	Manual	Manual
	Refrigerant	CFC-Free,Mixing	CFC-Free,Mixing	CFC-Free,Mixing	CFC-Free,Mixing
Performance	Temperature Range (°C)	-40~-86	-40~-86	-40~-86	-40~-86
Control	Temperature Control	Microprocessor Control Board			
	Display	LCD + Dual LED			
Material	Interior	Galvanized steel powder coating/Stainless Steel			
	Exterior	Galvanized steel powder coating			
	Shelf	Stainless steel			
	Door	Solid Door			
Electrical Data	Voltage/Frequency	110V/60Hz			
Dimensions	Capacity (L)	280	360	480	590
	External Dimension (W/D/H)	620*650*1920 (mm)	620*780*1920 (mm)	780*780*1920 (mm)	920*780*1920 (mm)
Accessories	Shelf	4	4	4	4
	Test Hole	Y	Y	Y	Y
	Racks&Boxes	Optional	Optional	Optional	Optional

*K2 Scientific ULT Series.....Cleaning and Maintenance*

### 4.Cleaning



- ◆ **WARNING:** You must disconnect the plug before cleaning or maintenance.
- ◆ Do not use abrasive cleaning agents which may scratch and harm the delicate interior finishes of your appliance.
- ◆ Always wipe dry after cleaning.
- ◆ The agent or qualified technician must carry out repair if required.

#### 4.1 Clean the filter of single door Low Temperature Freezer

- ◆ The filter must be kept clean and free of dust at all times. It is recommended that the cleaning routine be conducted at intervals appropriate to the speed of accretion of dust on the filter and in any event at least every month. Failure to keep the filter clean will damage the refrigeration system and invalidate the warranty.
- ◆ Pull the filter upwards to remove it from its locating place under the glass door.
- ◆ Use a vacuum cleaner, preferably with a rush attachment, to remove built up dust.
- ◆ Refit the filter to its original location to ensure continual efficient operation is maintained.

#### 4.2 Clean the condenser

- ◆ The condenser must be kept clean and free of dust at all times. It is recommended that the cleaning routine be conducted at intervals appropriate to the speed of accretion of dust on the condenser. Failure to keep the condenser clean will damage the refrigeration system and invalidate the warranty.



- ◆ **WARNING:** The condenser is a delicate component and is easily damaged. Never use a stiff brush or sharp objects to clean it. Never use water.

### 5. Maintenance

If your appliance develops a fault, please check the following table before making a call to the helpline.

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



	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

*K2 Scientific ULT Series.....Disposal*

**6. Disposal**

*If in any doubt, please consult your Local Authority, contact us or contact the reseller from whom you purchased the appliance.*

