



Laboratory Equipment Pty Ltd

**INSTRUCTION MANUAL
FOR LABORATORY FREEZER**

Laboratory Equipment Pty Ltd
"Proudly Australian Owned and Operated."
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Introduction

Congratulations on choosing another quality product. Labec products are manufactured, tested and calibrated to meet published standard specifications under our strict quality assurance guidelines.

This Instruction Manual is for the guidance of operators of Labec Freezers and should be read before the Freezer is connected to the electricity supply.

It is hoped that this manual will supply all the information that the customer should require for satisfactory operation of this product. If, however, there are any questions that remain unanswered then the customer should contact our Service Department.

Unpacking

Remove all packing and protective wrapping from both the interior and exterior of the Freezer. Check the Freezer for any possible transit damage. Ensure all ordered accessories are present. If any physical damage or shortages are evident, do not discard the packaging material until the Freezer is inspected by the distributor, agent or manufacturer.

NOTE: All claims for shortage or damage must be made within fourteen days (14) from delivery.

Subject to our standard published conditions of sale, we have reasonable grounds to believe that we have ensured, so far as is reasonably practical, that the products listed in our catalogue and brochures have been designed and constructed so as to be safe and without risk to health when properly installed and used in their environment by appropriate and trained personnel, and where applicable, in accordance with our published instructions.

Installation-Electrical

This equipment must be tagged and tested according to AS/NZS 3760:2010 prior to use and thereafter on a regular basis dependent upon the environment.

It is preferable to locate the Freezer close to a powerpoint and recommend that double adaptors are not used. Check the total wattage if connecting to multipoint outlets. Check the rating plate for power requirements. Installation is to be carried out by a qualified electrician in accordance with the power requirements of the product specifications. The unit must be EARTHED.

DANGER: THIS Freezer MUST NOT BE CONNECTED TO DIRECT CURRENT SUPPLY

Alarm Output/BMS (If fitted)

If the Freezer has a safety alarm controller output fitted (BMS is a voltage free connection) the AUX alarm output connection can be connected to an external device such as a phone dialler or similar or building maintenance system to indicate temperature fluctuations. Do not set the alarm hysteresis too close to the set temperature or the alarm will activate too often.

Operation

1. Connect the chamber to an alternating current supply of voltage as specified on the rating plate mounted on the side or rear of the chamber. The main temperature controller will turn on automatically.
2. The temperature controller will switch the Freezer on and control temperature.
3. Set the alarm values if required.
4. Set the temperature controller at the required temperature using the up and down arrows on the keypad. See Appendix A for more details.
5. Final adjustment of the temperature controller may be required after the chamber has reached operating temperature and this should be checked with a suitable thermometer located in the chamber (A thermometer is not supplied with the chamber).
6. The shelves can carry around 20 kilograms each.

Temperature Controls

See Page 4

Maintenance

The cabinet is finished with stainless steel or painted epoxy and to maintain appearance should be wiped over with a non abrasive household cleanser. The chamber is manufactured from aluminium, stainless steel or formed plastic which may be cleaned with a gentle cleaner. If the door is also plastic lined it should only be cleaned with general purpose cleaners. Glass doors should be cleaned with glass cleaner. If a fan motor is fitted the fan motor is pre-lubricated with sealed bearings which should not require maintenance for some time depending upon the extent of usage. The shelves are manufactured from plastic coated steel or stainless steel and a non abrasive cleaner should be used. The magnetic door gasket should be cleaned with detergent only ensuring it is dried completely after washing.

Defrosting

Over a period of time the shelves will build up a layer of frost upon them which will affect the operation of the Freezer. We recommend defrosting when the ice frost layer is around 5mm thick and by scraping it off with a plastic or wooden scraper NOT METAL, otherwise turn the unit off for a period of 24 hours with the door opened to allow the frost to melt away.

Troubleshooting

SYMPTOM	REMEDY
No Power (Indicator Light is off)	<ol style="list-style-type: none">1. Check Freezer is plugged in and power switched on.2. Ensure the mains power supply point is functioning by using a test appliance on the power socket.3. Check internal RCD has not tripped
Failure to maintain temperature	<ol style="list-style-type: none">1. Ensure the temperature controller set point is above ambient.

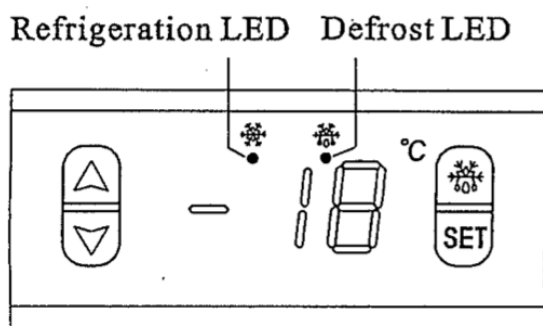
(Indicator light is on)	2. Check the safety controller fitted is above the main controller setting.
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If the fault cannot be found, call your distributor or the manufacturer quoting the serial number of the unit from the manufacturer's label.

Declaration of Conformity

Each product is thoroughly inspected and tested to not only ensure that it meets the specifications provided, but to also meet Australian Electrical Standard AS3820 and EMC Standard AS/NZ1044:1995, and therefore being accredited with a C Tick label.

Model: SF-101S Digital Temperature Controller



Features of Function

















- It is a mini-sized and integrated intelligent controller and applicable to the compressor of one HP. (Include 1HP)
- Temperature Display (°C & °F switchable)/ Temperature Control/ Manual, automatic defrost by turning off compressor / Time setting to end defrosting/ High, low temperature alarm/ Value Storing / Parameter Locking/ Self Testing

Specifications

1. Output of the outside sealed transformer: 12VAC (one transformer matched with one temp. controller)
2. Temperature sensor: NTC, one sensor (cold-room temp.), 2m(L), neither positive nor negative
3. Range of temperature display: -45 ~ +99°C (-49 ~ +210°F);
Accuracy: ±01°C(±02°F)
4. Range of set temperature: -45 ~ +45°C (-45 ~ +113°F);
Factory default: A1:04°C (39°F) A2:-18°C (00°F)
5. Dimension:77w x 35h x 30d mm Mounting hole dimension: 71w x 29d mm
6. Temperature of the operating environment: -10~60°C (14~140°F);
Relative Humidity: 20%~90% (Non-condensing)
7. Relay output contact capacity
8. Compressor: N.O. 30A/250VAC (applicable to one HP Compressor, if more it needs to connect an to AC contactor)

Front Panel Operation

1. Set temperature (compressor stop temperature) adjustment
 - a. Press **SET** button, the set temperature is displayed and flashes.
 - b. Press **▲** or **▼** button to modify and store the displayed value. Press **SET** button to exit the adjustment and display the cold-room temperature.
 - c. If no more button is pressed within 10 seconds, the cold-room temperature will be displayed. (Set temperature adjustment range: parameter E1-E2)

2. Manual start/stop defrost: Press  button and hold for 6 seconds to defrost or stop defrost.
3. Refrigeration LED: During refrigeration, the LED is on; When the cold room temp. is constant, the LED is off; During the delay, the LED flashes.
4. Defrost LED: during defrosting, the LED is on; During the delay time after defrosting, the LED flashes.
5. Parameter setup
 - a. Press  and  button and hold for 6 seconds to enter parameter type selection, at the same time CPA will be displayed and flashes. Press  or  button and enter the password, press  button to confirm, then press  or  button, will display A1,A2,CAP sequentially; press  button to confirm and parameter storing. If no more button is pressed within 6 seconds, it returns to normal operation. (When CAP is set to "00" the password will be cancelled.)
 - b. Press  button for 6 seconds to enter parameter setting, at the same time "PAS" will be displayed and flash; press  or  to enter the password and press  button. If it is correct, parameter code E1 will be displayed (when CPA is set to 00, the password will be cancelled).
 - c. Press again  button to select sequentially from the parameters: E2,E3-E5,F1,F2,F4, H1-CF,CPA,E1.
 - d. Press  or  button, the value of parameter will be displayed and can be modified and stored.
 - e. If no more button is pressed within 10 seconds, it will return to normal operation mode.

Parameter	Function	Set Range	Default
CPA	Menu Password	0~50~99	82
A1	A1 Type Parameter	A1 Type Parameter	
A2	A2 Type Parameter	A2 Type Parameter	
CAP	Change Menu Password	00~99 (If it is set to "00", it means locking is cancelled.	82

6. Parameter locking:

- a. Press button for 6 seconds, when "OFF" is displayed and flashes, it means the set temperature is locked, the set temperature just can be checked and can not be modified; when "ON" is displayed and flashes, it means unlocking. (The factory default "On") (A1, A2 control independently)
7. The factory default resumption: press button and button simultaneously for 6 seconds, "888" will be displayed. All parameters and set temperature will be resumed as same as factory defaults. After 6 seconds, it returns to normal operation.
8. Factory default modification: press button to adjust the set temp. well, after pressing button for 6 seconds to enter the parameters setting status, and adjust the parameters well, press button and hold for 6 seconds, "COP" will be displayed. All the revised and stored parameters and set temperature will be factory defaults.

A1 parameter form, Default: 04°C(39°F)

Parameter	Function	Set range	Default	Parameter	Function	Set range	Default
PAS	Menu Password	00~50~99	82	F4	Display during defrost	00=Normal display 01 = Last value before defrost 02=Defrost code: "dEF"	00
E1	Lower set point limit	-45°C ~ Set temp. -45°F ~	-05°C 23°F				
E2	Higher setpoint limit	Set temp. ~ 45°C 113°F	20°C 68°F	H1	Room sensor high temperature alarm	45°C ~H2 113°F ~H2	45°C 113°F
E3	Temp. hysteresis	01~20°C 02~36°F	05°C 09°F	H2	Room sensor low temperature alarm	H1 ~ -45°C H1 ~ -45°F	-40°C -40°F
E4	Comp.start delay time	00~10Min	3Min	H5	Power on alarm delay	00~180Min	60
E5	Offset on room temp.	-05~05°C -09~09°F	00 °C/°F	H6	Continuous alarm time	00~180Min	00
F1	Max. Defrost duration	01~60Min	20Min	CF	Temperature unit	Celsius=°C Fahr.= °F	°C
F2	Defrost interval time	00~24Hr	8Hr	CPA	Change menu password	00~99 (If it is set "00", it means cancelled)	82

A2 parameter form, Default: -18°C(00°F)

Parameter	Function	Set range	Default	Parameter	Function	Set range	Default
PAS	Password	00~50~99	82	F4	Display during defrost	00=Normal display 01 = Last value before defrost 02=Defrost code: "dEF"	00
E1	Lower set point limit	-45°C ~ Set temp. -45°F	-25°C -13°F				
E2	Higher set point limit	Set temp. ~ 45°C 113°F	20°C 68°F	H1	Room sensor high temperature alarm	45°C ~ H2 113°F ~ H2	45°C 113°F
E3	Temp. hysteresis	01~20°C 02~36°F	05°C 09°F	H2	Room sensor low temperature alarm	H1 ~ -45°C H1 ~ -45°F	-40°C -40°F
E4	Comp.start delay time	00~10Min	3Min	H5	Power on alarm delay	00~180Min	60
E5	Offset on room temp.	-05~05°C -09~09°F	-4°C -7°F	H6	Continuous alarm time	00~180Min	00
F1	Max. Defrost duration	01~60Min	1Min	CF	Temperature unit	Celsius=°C Fahr.= °F	°C
F2	Defrost interval time	00~24Hr	0Hr	CPA	Change menu password	00~99 (If it is set "00", it means cancelled)	82

Function details

1. Temperature Control

- a. After turning on for the delay time, the compressor starts operating when cold-room temperature > (set temperature + Hysteresis), and will be off when cold-room temperature < set temperature.
- b. To protect the compressor, it can not be re-started unless the time when the compressor stops every time is longer than the delay time (Parameter E4).

2. Defrosting Functions

- a. Operating after a defrost interval time (Parameter F2) it will automatically enter the status of defrost. The defrost LED will turn on and the compressor will stop. When defrost duration ends (Parameter F1), it will exit the defrost state and enter normal temperature control mode.
- b. When the defrost interval time is set to "00", the function of automatic defrost will be cancelled.

3. Cold-room temperature locking display during defrost

- a. When setting the parameter F4=1, the room temp. is locked during defrost, and the last value before defrost is displayed. When defrost ends, normal display will resume after a 20 minute delay of room temp. Display or room temperature < (set temperature + hysteresis). The defrost LED flashes during the delay.
- b. When setting the parameter F4=2, "dEF" will be displayed during defrost. When defrost ends, normal display will resume after a 20 minute delay of room temp. Display or room temperature < (set temperature + hysteresis). The defrost LED flashes during the delay and displays "dEF".

4. High, low temperature over limit alarm

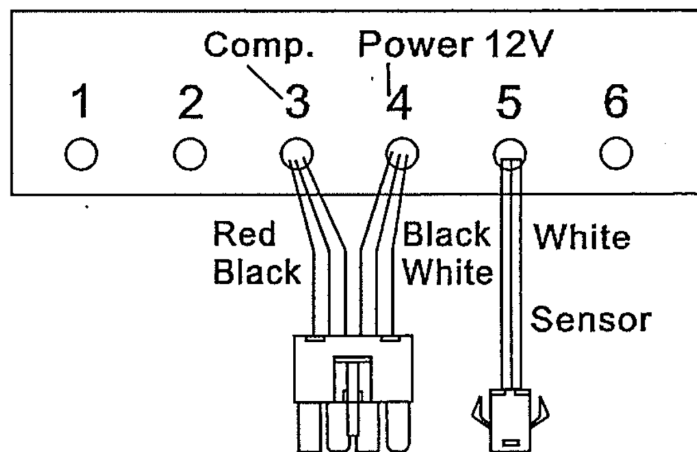
- a. When power on delay time is more than parameter H5, room temperature > H1 parameter set value, after alarm delay time (parameter H6) will flash and display room temperature and start the compressor. When room

temperature < H2 parameter set value, after alarm delay time (parameter H6) will flash and display room temperature and disconnect the compressor output control, at the same time the buzzer will sound, press any button to cancel.

5. Abnormal work mode

- a. When the room sensor is short-circuited or overheated (more than 99°C/210°F) "HH" is displayed; When the room sensor is open-circuited or temperature is too low (less than -45°C / -49°F) "LL" is displayed. At the same time the buzzer will sound, press any button to cancel and stop the flash. At that time the compressor enters the timing work mode automatically by the cycle of 30 minutes on and 15 minutes off.

Circuit Diagram



Notes for Installation

1. The sensor cable leads must be kept separately from main voltage wires to avoid high frequency noise induced. Separate the 12V Low-voltage wire from the controller's power supply.
2. When installing the sensor, it shall be placed with the head upward and the wire downward.
3. The temperature controller can not be installed in the area with water drops.

Accessories for the temperature controller

- One external transformer
- One relay
- One temperature sensor
- One wire with connector
- One installation stand