



NULINE
REFRIGERATION

A SIGN OF QUALITY

Set Up Instructions for Vaccine Refrigerators

Dear Customer,

Thank you for choosing our refrigerator, to ensure that cabinet is installed correctly please follow the following steps.

- a. Unpack the refrigerator and place in position
- b. Ensure that refrigerator is level, if not you may adjust front levelling feet only
- c. Ensure there is 60mm ventilation space at rear and 30mm on sides of refrigerator for proper air flow.
- d. Position shelves at the desired levels that you require.
- e. Plug refrigerator into your 240 volts outlet and let run for 2 hours during the period the refrigerator would have cycled a number of times. You are now ready to place your products on shelves.
- f. Cabinet temperature will vary form when the motor stops and starts. This is only air temperature and not product temperature.
- g. Temperature reading should only be done as follows, reset controller at end of day and do not open door again, next morning take your high and low read out before you open door.

Preventative Maintenance

It is important that condenser on back of cabinet is cleaned every 3 months, simply by brushing condenser in a vertical motion with a small brush or vacuum cleaner.

However this will also depend on how dusty the area is. You may be able to do it every 6 months.

Refrigeration is fan forced to even ensure temperature throughout the cabinet with auto defrost and water disposal.



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How to Check Min / Max Temp

- Press Hi/low button your max temperature will appear while flashing.
- Repeat process to obtain min temperature.

To RESET min/max temperature

- press hi/low button, hold in until beeps approx. 6-10 seconds and let go

Product sensor

Your refrigerator has been fitted with a product sensor inserted into an aluminum block, this represents product temperature.

- To see what temperature product is press the down arrow button and temperature will appear.

Alarm

- To silence alarm press down arrow button

If your cabinet is fitted with a power failure back up, it will be necessary to insert 4 batteries (provided) into the holder positioned at rear of cabinet prior to connecting of power to refrigerator.

You will need to change batteries at least once a year that will depend on power failures that you experience in your area.

Cabinet Settings

- Door ajar alarm set for 4 minutes
- Alarm reactivation: 10 minutes
- Alarm Points 2°C and 8°C
- Alarm delay 15 minutes.



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Alarm set points

Low alarm +2°C

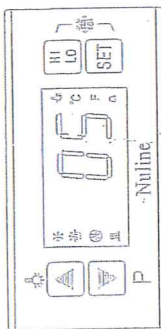
High alarm +8°C

Delay on alarm is 15 minutes

Temperature set point

4.5°C

Model: SE-618 Digital Temperature Controller



Features of Function

- Mini-sized and integrated intelligent control, applicable to the compressor of one HP.
- Temperature Display/ Temperature Control / Manual, automatic defrost/Time setting to-end defrost/ Highest and lowest temperature memorization/Alarm delay/Door switch/Value storing/Parameter locking/Self testing

Specifications:

- Power supply:240VAC 50/60Hz (6vdc,when electric supply disconnected, the controller could display normally and alarm)
- Temperature sensor: NTC, Double sensors (for cold room&product, temperature control),2m(L)
- Range of temperature displayed: -45~66.0°C Accuracy:±0.1°C Factory default:4.0°C
- Range of set temperature: -19.9~20.0°C
- Dimension:77(L)×35(W)×35(D)mm (Depth)mm
- Mounting hole dimension:71(L)×29(W)mm
- Minimum hole dimension:71(L)×29(W)mm
- Temperature of the operating environment: -10~60°C
- Relative Humidity:20%~90%(Non-condensing)
- Relay output contact capacity:
 - Compressor: N.O. 30A/250VAC (can directly connect LHP compressor, if more needs to connect an AC contactor)
 - Light: N.O. 5A/250VAC
 - Alarm: N.O. 5A/250VAC

Front Panel Operation

- Set temperature (down, time temperature) adjustment
Press button, the set temperature is displayed, then press or to store and memorized. Press button to exit the adjustment status and display the cold-room temperature. If no more buttons are pressed within 6 seconds, the cold room temperature will be displayed.
- Manually start / stop defrosting: press button then press button and hold for 6 seconds to enter defrost status or to stop defrost.
- Display the product sensor temperature: Press button, the product temperature will flash and display, after 6 seconds will resume cold room temperature normally.
- Light: Press button to turn on or off the light.
- Refrigeration LED: During refrigeration, the LED is on; When the temp. is constant, the LED is off; During the delay, the LED flashes.
- Defrost LED: during defrosting, the LED is on; During the delay display of defrost, the LED flashes.
- Parameter setup
Press button and hold for 6 seconds to enter the parameter setting (flash and display PAS), after enter the correct password, press button will display E1, E2, ... ~ do3, PAS in sequence. Press or button, the value of parameter will be displayed and can be modified and stored. If no more buttons are pressed within 6 seconds, it will exit and store the new value. Note: Only when enter the inner parameter menu (display PAS) enter the correct password, can adjust parameter value. If enter the incorrect password, will exit the parameter modification, the set temperature adjustment still active. If forget the password, need to resume the factory defaults.

SET POINT 4.5

| Parameter | Function | Set range | Default | Parameter | Function | Set range | Default |
|-----------|----------------------------|---|---------|-----------|--|---|---------|
| PAS | Password | 00~99 | 15 | C3 | Product temp.high temp. Alarm | -19.9~20.0°C | 20.0°C |
| E1 | Lower setpoint limit | -19.9°C~Set temp. | 2.0°C | C4 | Alarm hysteresis | 1.0~20.0°C | 2.0°C |
| E2 | Higher setpoint limit | Set temp.~20.0°C | 10.0°C | C5 | Starting up temp. alarm delay | 00~99min | 10min |
| E3 | Temp. Hysteresis | 0.1~20.0°C | 0.4 | C6 | Temp. Alarm delay | 00~99min | 15 |
| E40 | Turning on delay time | 00~10Min | 3min | C7 | Power off relay alarm | 00=do not alarm 01=alarm | 01 |
| E41 | Comp. Start delay time | 00~10Min | 3min | C8 | Alarm relay close after muffic, alarm relay switch | 00=open 01=close | 00 |
| E5 | Offset on room temp. | -19.9~20.0°C | 0.0°C | C9 | Restart time after buzzer mute | 00=do not restart 00~30min=Restart time | 10min |
| E6 | Offset on evap. Temp. | -19.9~20.0°C | 0.0°C | C10 | Comp. Force stop time | 01~99Min | 99min |
| F0 | Defrost type | 00=defrost by turning off comp. | 00 | C11 | Comp. Force running time | 00=comp. Stop 01~99min=starting time | 0min |
| F1 | Max defrost duration. | 01~60Min | 1min | | | | |
| F2 | Defrost interval time. | 00~24Hr | 00 | C12 | Alarm output type | 00=contact actuation when alarm 01=contact disconnect when alarm | 01 |
| F4 | Display during defrost. | 00=cold room temp. Display normally 01=last value before defrost 02=fixed display cold room temp. 03=display DEF | 00 | CF | Temperature unit | °C=Cel status | °C |
| C1 | Cold room high temp. Alarm | C2~20.0°C | 8 | Do1 | Door open alarm | 00=do not alarm .01~99min=delay alarm | 04 min |
| C2 | Cold room low temp. Alarm | -19.9°C~C1 | 2 | Do2 | Comp. Status when door open | 00=stop 01=original status | 01 |
| | | | | Do3 | Light status when door open | 00=stop 01=original status | 01 |

Instrument running alarm indication list

| Alarm type | Compressor running | Display flash |
|---|---------------------------------|-----------------------------|
| Cold room high temp. alarm | compressor on | H1 delay alarm |
| Cold room low temp. Alarm | compressor off | L0 delay alarm |
| Room temp. sensor short circuited | press C10, C11 to run the comp. | IH in time alarm |
| Room temp. sensor open circuited | press C10, C11 to run the comp. | IL in time alarm |
| Product temp. sensor short circuited | | 2H in time alarm |
| Product temp. sensor open circuited | | 2L in time alarm |
| Product temp. sensor high temp Over limit alarm | | H2 delay alarm |
| Electric supply off alarm | | EEP flash and alarm in time |
| Door open delay alarm | | dr flash and delay alarm |

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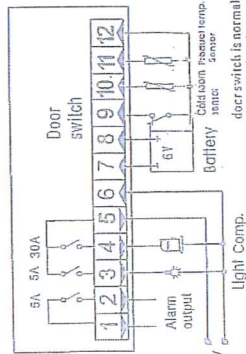
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- When the electric supply is off, flash and display EEL and alarm. When setting do1=00, do not alarm when door open. When setting do1>0, when reach the delay time, flash and display dr and alarm, press random button to mute.
- If setting C7=0, then relay do not alarm when power off.
- If setting C8=0, then after alarm mute, alarm relay do not close.
- If setting C9=0, then after button mute, the buzzer do not restart.
- If setting other numbers, then after reaching delay time, buzzer sounds one more time. (Under the condition of alarm not terminate)
- 4. Abnormal work mode
 - When cold room sensor is short-circuited or high temperature over limit (over 66°C), "1F" is displayed; when cold room sensor is open-circuited or low temperature over limit (lower than -45°C) "1L" is displayed. Compressor will enter the force running mode, according to C10;C11 set parameters running in sequence.
 - When product temperature sensor short circuited or high temperature over limit (over 66°C), alternate display 2H and cold room temperature, when product temperature sensor open circuited or low temperature over limit (lower than -45°C), alternate display 2L and cold room temperature.

Circuit diagram



Notes for Installation

1. Sensor leads must be kept separately from main voltage wires in order to avoid high frequency noise induced. Separate the power supply of the loads from the power supply of the controller.
2. When installation the sensor 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

1. Two temperature sensors
2. One installation stand
3. One door switch line
4. One cover panel

3. Highest and lowest temperature record: After turning on and C5 delay will start to record the highest and lowest temperature, the record will be refreshed at any time. 5 minutes in a group and enter in memory the once achieved highest and lowest value, permanent memorize still work when power off. Press **[H]** button, highest temperature will be displayed. Press again, the lowest temperature will be displayed. If **[H]** button for 6 seconds, will flash and display for 3 seconds, the buzzer sound, could clear previous highest and lowest temperature record, update to present cold room temperature and record again. (Highest and lowest temperature record instruction: When F4=0, can record highest and lowest temperature at any time. When F4=1, 2, 3, during defrost and delay locking 20 minutes, do not record highest and lowest temperature. When cold room sensor failure, do not record highest and lowest temperature).

Function details

1. Temperature Control
 - After turning on for the delay time (parameter E4G), the compressor starts operating when cold room temperature is higher than the (set temperature + hysteresis), and will be off when cold room temperature is lower than the set temperature.
 - To protect the compressor, it can not re-start unless the time when the compressor stops every time is longer than the delay time (Parameter E4I).
2. Defrost control
 - After working a defrost interval (parameter F2), will automatically enter the defrost status. Current defrost ends when pass parameter F1, after defrost need to pass 2 minutes dripping time can enter refrigeration status.
 - When defrost interval F2 is set to 00, the automatic defrost by turning off compressor will be cancelled.
 - When setting parameter F4=0, cold room temperature will displayed normally during defrost.
 - When setting parameter F4=1, cold room temp. is locked during defrost, and the last value before defrost is displayed. When defrost ends, normal display will be resumed after temperature display 20 minutes delay (or cold room temperature lower than the set temperature). The defrost LED flashes during delay.
 - When setting parameter F4=2, the set temperature will be displayed during defrost.
 - When defrost ends, normal display will be resumed after 20 minutes delay (or cold room temperature lower than the set temperature).
 - When setting parameter F4=3, DEF will be displayed during defrost. When defrost ends, normal display will be resumed after 20 minutes delay (or cold room temperature lower than the set temperature).

Alarm control

3. Alarm control
 - After turning on for the first time, need to pass C5 delay time, then the high low temperature alarm function can be triggered (C1, C2, C3). After passing C5 delay, when the cold room temperature is abnormal (for example more than high temperature alarm C1 or low temperature alarm C2) and duration more than alarm delay time C6, will enter alarm status, alarm start. When high temperature alarm alternate display H1 and cold room temperature, the compressor start to refrigerate. When low temperature alarm, will alternate display LO and cold room temperature, the compressor stop. When cold room temperature is higher than the (low temperature alarm value C2 + alarm hysteresis C4), the low temperature alarm ends. When cold room temperature is lower than (high temperature alarm value C1 - alarm hysteresis C4), the high temperature alarm ends.
 - When the product sensor temperature is higher than or equal to product temperature high temperature alarm C3 and duration more than alarm delay time C6, will enter alarm status and start alarm, alternate display H2 and cold room temperature. When product sensor temperature lower than (high temperature alarm value C3 - alarm hysteresis C4), the high temperature alarm ends.