MEDIGUARD

Constant Temperature Incubator

MG-H30L

User Manual

Content

1. Installation & Debugging

1.1 Safety Operation & Precautions

1.1.1 This manual contains important safety regulations, which should be followed by users.

All the items and rules introduced here are designed to enable users to use the device correctly and safely, and to protect users and others from possible harm.

1.1.1.1 Danger (possibly causing serious property damage or casualties)

i. This product must be reliably grounded and away from electromagnetic interference sources.
ii. The power supply of this product is AC220V/50Hz. Three-core socket must be used and grounded effectively.
iii. No sundries shall be inserted into any orifice of the equipment in order to avoid affecting the air duct or causing electric shock or injury to personnel due to the movement of the above-mentioned objects.
iv. It is not allowed to unplug or plug the power plug at will during operation.
v. Do not damage power plugs and wires. If you unplug the plug from the power socket, you should hold the power plug tightly instead of pulling the lead of the power plug. Avoid using the loose power plug, and do not extend or cut the power wire at will, in order to avoid causing fire or electric shock.
vi. Users are not allowed to disassemble, repair or refit the equipment on their own to avoid fire or injury caused by improper operation.
vii. The equipment shall not be placed in flammable or corrosive gases. Volatile or flammable articles shall not be stored in the equipment. Otherwise, it may cause explosion or fire.

1.1.1. Warning (possibly causing serious property damage or casualties)

i. To operate the equipment, users must fully read and understand the contents of the user manual in advance.
ii. 304 stainless steel liner is not acid-proof, please pay attention to taking corrosion protection measures, do not use acid medium in the cabinet.
iii. When performing the following operations, the power supply wire of this product must be unplugged:
   a) Replacement of fuses;
   b) The product breaks down and needs to be checked and repaired.
   c) The product is out of use for a long time.
   d) Movement of the equipment

1.1.1.3 Note (possibly causing the product to fail to work properly or affect its service life)

i. Care should be taken when handling the product to avoid damage.
ii. The equipment should be installed on a solid ground to keep it in a horizontal state, so as to avoid injuries to personnel caused by overturning of the equipment.
iii. After each test, the liner of the product should be dried to avoid the corrosion of the liner affecting its service life.
iv. Do not open or close the door by gravity, otherwise it will easily cause the door to fall off and the product to be damaged.
v. Do not apply extra pressure on the glass door or scratch the glass surface with sharp objects, otherwise it will easily lead to glass breakage or scratches.

vi. Do not place containers with water or heavy objects on the product to avoid short circuit or electric shock hazards caused by water splashing on products, or avoid the heavy objects from slipping.

vii. This product should not be used outdoors to prevent equipment from being splashed by rainwater, which may cause leakage or electric shock.

1.1.2 Use Environment

In order to prevent contamination of incubator, please select a suitable installation site and sterilize the components in incubator completely.

1.1.2.1 Places that cannot be affected by high temperature and high humidity

Places that cannot be affected by high temperature, high humidity and heat source. If necessary, air conditioning should be installed in the room to keep the ambient temperature around 25-27°C. Ensure that the difference between ambient temperature and setting temperature of the incubator is not less than 5-7℃.

1.1.2.2 Avoid over-ventilated places and places where many people pass by

Avoid locations near doors, air conditioners, fans, etc., because the breeze in such locations may make bacteria easy to enter the incubator.

1.1.2.3 Installed in clean, sterile room

In order to achieve better incubation effect, please place the equipment in the clean, sterile room.

1.1.2.4 Use clean containers

Pollution is mainly caused by containers such as Petri dishes or bottles stored in the cabinet. Be sure to keep the container clean.

1.1.2.5 Ensure the air circulation around the product

In order to ensure the air circulation around the instrument, at least 35 cm of gap should be left in the back and side.

1.2 Installation

1.2.1 Remove packaging material and tape

Remove all transport packaging materials and tapes, open the door and ventilate the equipment. If the outer panel is dirty, remove the dirt with neutral detergent and clean up the residual neutral detergent with clean water. (Undiluted detergent will destroy the composition of the plastic, please refer to the instructions of the detergent to dilute the detergent.) After cleaning, wipe the panel with a wet cloth firstly, and then wipe it with a dry cloth.

1.2.2 Grounding

⚠ Warning

Please use a power socket with grounding wire to prevent electric shock. If the power socket is not grounded, grounding wire must be installed by qualified engineers or technicians.

Do not ground the equipment through gas pipe, power supply pipe, telephone line or lightning rod, which may cause electric shock because of incomplete circuit.

Do not place the equipment in a wet place or where it may splashed by water, otherwise it will cause leakage or electric shock due to reduced insulation.

2. Instructions for Use

2.1 Overview

This series of products can be used in laboratories of scientific research, colleges and universities, biology, agriculture and other units for storage of bacteria, biological culture, etc.

Technical Parameters

Model	**MG-H30L**
Type	LCD liquid-crystal display
Nominal volume（L）	30
Rated power（W）	150
Temperature control range	Rt+5--85℃
Temperature fluctuation（℃）	±0.2（@37）
Temperature uniformity（℃）	±0.5（@37）
Ambient temperature（℃）	5-30，Recommendation25±2
Working chamber size mm W×H×D	310×310×310
Out size（mm）W×H×D	432×538×570
Number of shelves	2
Power supply	AC 220V/50Hz

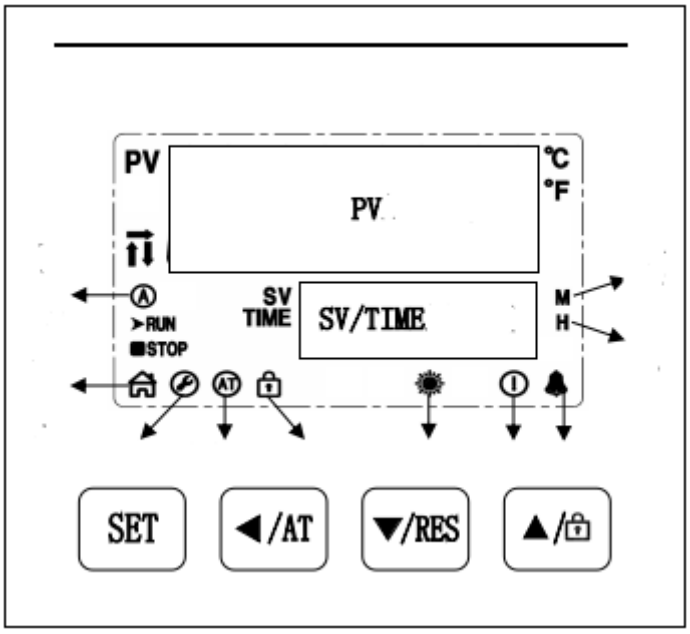
Note:

1. Relevant data are measured at ambient temperature of 25 ℃ and relative humidity of less than 85%.

2.2 Structure

1. The incubator is made of high-quality cold rolled steel plate, the coating is hard and firm, with strong rust prevention ability.
2. The inner liner is made of high-quality stainless steel, smooth and reliable welding joints, good corrosion resistance, and prolong the performance of the product.
3. Between the cabin body and the working area, filled with high density insulation cotton, has good insulation function, effectively ensure the stability of the temperature in the box and the impact on the use environment.
4. Using advanced motor and wind blade, reasonable air duct and circulation system, make the indoor temperature uniform change small.

2.3 Operating panels



2.3.1 Button description:

1. [SET] button: under the main interface display state, chick this button to enter the temperature and time target value setting state, press and hold this button for 3s to enter the internal parameters setting state.

2. ◀/AT button: click this button under the setting state to make the setting value shift and flash to modify.

3. ▼/RES button: press or hold this button under the setting state to decrease the setting value.

In the main interface and the running is over, press and hold this button for 3 seconds to restart the running.

4. ▲/🔒 button: Click or long press this button in the setting state to increase the setting value

If you choose the lock screen function, when the main interface is displayed, click this button to lock or unlock the screen

1. [Main interface]&[Set] indicator lamp: the main interface state, the main interface lamp is lit, and the setting lamp is extinguished; in the key operation state, the main interface indicator lamp is extinguished.
2. Lock screen indicator: light in the lock screen state, otherwise extinguished.
3. [AT] indicator: This light flashes during temperature self-tuning and vice versa.
4. [Alarm] indicator light: This light is lit when there is a temperature deviation alarm or abnormal temperature measurement. When there is a temperature deviation alarm, the light flashes and the goes out in normal condition.
5. [Heating] indicator light: When there is a heating output, the light is lit vice versa.
6. [A] light: This light flashes during the appointment and goes out.
7. [!] Indicator: When there is a water shortage alarm, the light flashes and vice versa.
8. [RUN /STOP] indicator: STOP light only after the end of the timing, and RUN light in other states.
9. [↑/→/↓] indicator: respectively in the heating, constant temperature, cooling flashing.

2.3.2 Operation instructions

2.3.2.1 controller on display

PV area display [P (K)-E9] SV area display version number 3 seconds after entering the normal display state.

2.3.2.2 Temperature and Time Reference and Setting

Under the main interface display state, click [set] key, enter temperature setting state, PV area display prompt SP,SV area display temperature setting value, modify method as above; then click [set] key, enter time setting state, PV area display prompt ST,TIME area display time setting value; then click [set] key, exit this setting state, set value automatically save.

When the set time is "0", it represents continuous running. When the setting time is not "0", before the timing starts, if the timing direction is countdown, the TIME area displays the timing time, if the timing is positive, the TIME area displays "0". The TIME area displays End, buzzer beeps for EST seconds.

Note: the "symbol" is "time unit ";

2.3.2.3 Appointment function

When an appointment time is set, the instrument automatically disconnects the heating output.

When appointment timing process, the A indicator lights flicker, TIME area countdown shows the reservation running time.

2.3.2.4 temperature measurement abnormal alarm

If the PV area shows "-", indicating that the temperature sensor fault or temperature exceeds the measurement range or the controller itself fault, the controller automatically disconnects the heating output, the buzzer calls continuously, the alarm lamp is always on, please check the temperature sensor and its wiring carefully.

2.3.2.5 deviation overtemperature alarm

In the course of operation, when the upper deviation overtemperature alarm occurs, the buzzer beeps, the alarm lamp is always on, and the heating output is disconnected. When the lower deviation overtemperature alarm occurs, the buzzer beeps and the alarm lamp flashes. If the temperature setting value is changed, the alarm lamp is lit, but the buzzer does not call.

2.3.2.6 lock screen function

Provides three kinds of lock screen mode, password unlock operation mode: in the lock screen state, click [add] key, PV area displays input password prompt PA, SV area displays password value, enter the correct password, then click [set] key to unlock.

2.3.2.7 when the buzzer calls, press any key to mute.

2.3.3 Self-tuning system

When the temperature control effect is not ideal, the system self-tuning can be carried out. In the process of self-tuning, the temperature will be overcharged. Please take this factor into account before the user self-tuning the system.

Under the running state and the main interface display state, press the shift key for 6 seconds to

enter the system self-tuning selection state, PV area display self-tuning prompt AT,SV area display "0", click [add] or [decrease] key to select display "1", then click [set] key, instrument into system self-tuning state, AT lamp flicker, after self-tuning, AT lamp stop flashing, controller will get a better set of PID parameters and save automatically. In the system self-tuning process, long press [shift] key 6 seconds to stop the self-tuning program.

In the process of system self-tuning, if there is an overtemperature alarm, the alarm lamp is not on, the buzzer does not call, but the alarm relay will automatically disconnect. The [set] key is invalid during system self-tuning.

2.3.4 Reference and setting of internal temperature parameters

Under the main interface display state, long press [set] key for 3 seconds, PV area display password prompt Lc,SV area display password value, modify to required password value by [add],[subtract] and [shift], then click [set] key, if password value is incorrect, instrument automatically return to main interface display state, if password value is correct, then enter internal parameter setting state, then click [set] key to modify each parameter in turn.In this process, long press [set] key for 3 seconds, you can exit this state, parameter values are automatically saved, see the following table. The temperature setting value is referred to as SP, temperature measurement value is referred to as PV.

Internal parameters table-1

Parameter	Parameter Name	Function Description of Parameters	Ex-factory value
Lc	Password	Lc=3 can view and modify parameter values.	0
ALH	Upper deviation Overtemperature alarm	When PV>SP+ALH, there is a deviation overtemperature alarm.	(0～100.0℃) 20.0
ALL	Lower deviation Overtemperature alarm	When PV<SP-ALL, there is a lower deviation overtemperature alarm. Explanation: when ALL =0, the lower deviation alarm is invalid.	(0～100.0℃) 0
Pb	Measurement temperature deviation correction	Used to correct errors in temperature measurement. Pb = actual temperature - PV	(-50.0～ 50.0℃) 0
PL	Measurement of temperature slope correction	Usually used to correct errors in high temperature measurements. PL =1000*(actual temperature - PV) PL =PV	(-999～999) 0
ndT	Timing mode	0： no timing 1: constant temperature timing 2: running timing	(0～2) 1
Tdn	Timing direction	0： timing 1: countdown	(0～1) 0
Hn	timing unit	0： minutes ;1 hour	(0～1) 0
SPd	Constant temperature deviation	And when SP-SPd≤PV≤SP+SPd, Enter a constant temperature state.	(0.1～50.0℃) 0.5

EST	Timing ends Prompt time	When the timing is over, the buzzer prompts the time. Note: when EST=9999, it means permanent prompt.	(0～9999s) 60
EH	Timing ends Constant temperature control	Turn off the heating output after the end of the 0： timing; Continue constant temperature control after 1： timing.	(0～1) 0
LF	Lock screen function	0： unlocked screen function; 1： has a lock screen function, no need to unlock the password, 2： has lock screen function, must unlock the password.	(0～2) 0
LdT	Lock screen delay	If the delay LdT time is not pressed, the controller automatically locks the screen. Explanation: when LdT=600, the delay lock screen function is invalid.	(10～600s) 30
PAd	Unlock Password	This password must be entered to unlock.	(0～9999) 1
Add	postal address	Local address	(1～32) 1

Parameters-2

Parameter	Parameter Name	Function Description of Parameters	ex-factory value
Lc	Password	Can view and modify parameter values when Lc=6.	0
dP	cut-off point	High and low temperature PID control boundary point. When SP≤dP, it is low temperature control and vice versa.	(0～M℃) M
T	control cycle	Heating control cycle.	(1～30s) 5
P1	Proportional band 1	The regulation of time ratio during low temperature control. Description: bit control at P1=0.	(0～300.0℃) 35.0
I1	Integral time 1	The integral action of low temperature control is adjusted.	(1～2000s) 300
d1	Differential time 1	Differential action regulation in low temperature	(0～1000s)
nP1	Power output 1	The maximum power percentage of the heating output at low temperature control.	(0～100%) 100
nH1	Heating Turnoff Deviation 1	At low temperature control, if PV≥SP+nH1, turn off heating. Note: please use this parameter carefully!	(0～50.0℃) 50.0

P2	Proportional band 2	The time ratio of high temperature control is adjusted. Description: bit control at P2=0.	(0～300.0℃) 35.0
I2	Integral time 2	The integral action of high temperature control is adjusted.	(1～2000s) 300
d2	Differential time 2	Differential action adjustment during high temperature control.	(0～1000s) 200
nP2	Power output 2	The maximum power percentage of the heating output during high temperature control.	(0～100%) 100
nH2	Heating Turnoff Deviation 2	At high temperature control, if PV≥SP+nH2, turn off heating. Note: please use this parameter carefully!	(0～50.0℃) 50.0

2.4 Instructions

1. Open the door, put the items on the shelf and close the door.
2. When the power supply is turned on, the instrument appears in a digital display, indicating that the device enters the working state.
3. Set the temperature in the box that you need by operating the temperature controller on the control panel.
4. The instrument starts to work, the temperature in the box gradually reaches the set value, after the required culture and treatment time, the processing work is completed; the instrument is in normal working condition.
5. During the training period, it is best not to open the inner glass door, especially not to open the inner door for a long time to avoid affecting the temperature; if the door is opened too long under special circumstances, the temperature in the box fluctuates temporarily after closing the door, which is a normal phenomenon.
6. Turn off the power supply. When the temperature in the box approaches the ambient temperature, open the door and remove the items. If you do not remove the items immediately, please do not open the door.

2.5 Precautions

2.5.1 Special Notes

Before culturing the cells, wait until the incubator reaches the corresponding temperature environment, and then put the cells into the incubator!

2.5.2 The equipment should be placed in a dry, flat, no toxic or harmful, no strong electromagnetic field and radiation energy room place, and should avoid direct sunlight, there should be some space around the equipment, for maintenance.

2.5.3 Set a minimum temperature of at least 5℃ above the ambient temperature when used. When the setting temperature is lower than (RT + 5℃), the air conditioning should be applied to reduce the ambient temperature to ensure the accuracy of the temperature control of the incubator.

2.5.4 In units with unstable power supply, it is best to equip them with high-performance voltage regulator appliances (UPS) to reduce faults caused by voltage instability.

2.5.5 Under normal use, abnormal shutdown or artificial shutdown before the need to wipe the water vapor of the tank, and open the glass door for ventilation and dry.

2.5.6 If the equipment is not used in the manner specified in the instructions, the protection

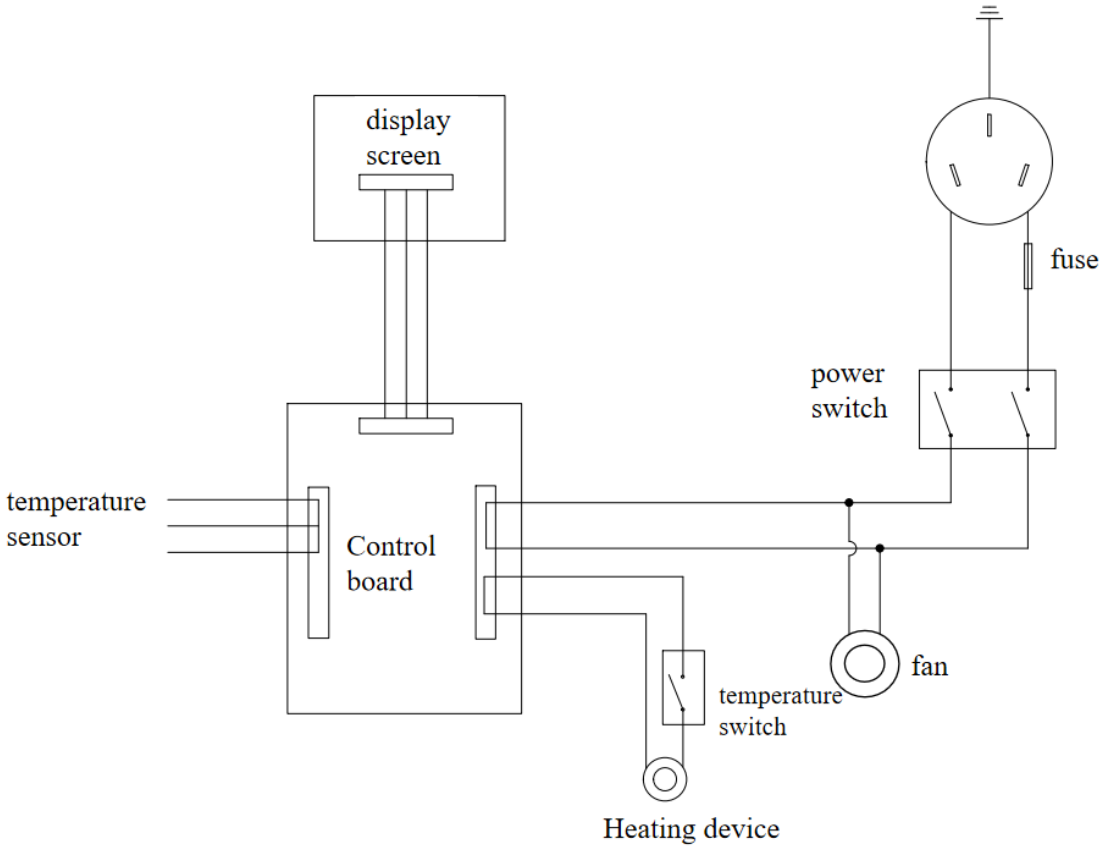
provided by the equipment may be damaged.
Solemnly stated: for the provisions of not according to the risk caused by the operation, the company does not assume its responsibility!

2.6 Maintenance

Frequency	Operation
Every day	Clean the inner chamber and shelves, perspective window glass
Every week	Cleaning door seals
Every 1-3 year(s)	Replacement of door seals

2.6.1 Clean the machine regularly to prevent dust blocking the airway.
2.6.2 The incubator should be stored in a room with relative humidity not exceeding 80%, without corrosive gas, with good indoor conditions.
2.6.3 There should be shockproof, moisture-proof and other necessary protective measures in transportation. Do not transport upside down. Handle with care.

2.7 Circuit Diagram



3. Common Fault Analysis

Please confirm whether the power is connected or not, whether the power cord is damaged, whether the fuse is good or not.

Fault	Checking site	Solution
Button doesn’t work well	Control panel	Make sure the power connects well and the fuse is good
		Make sure the buttons are not damaged
		Make sure the connecting wire is connected well
		Replace it
The fan doesn’t work	Fan	If blower is damaged, replace it
	Circuit	Check the circuit
	Control panel	Replace it
Temperature is abnormal	Sensor	Use the built-in temperature tester to test the temperature of the working chamber
	Ambient temperature	Ensure that the ambient temperature is at least 5°C below the set temperature
Door cannot be closed tightly	Door lock	Check whether the door lock is loose
	Sealing strip	Check if the sealing strip is tilted or aging
No electricity in equipment	Power supply	Power supply is not connected
	Power cord	Check if power cord is damaged
	Fuse	Check if the fuse is good
	Control panel	Replace it
Display screen doesn’t work well	Display screen	Check if the display screen is good
	Control panel	Replace it

1.The above electrical parts must be operated by a qualified electrician in safety conditions (cutting off power supply). The other parts are not allowed to remove; otherwise the user should take responsibility by them;

2.When faults cannot be found above, and the operator can’t solve, please notify our maintenance department immediately. For your safety, please do not maintain equipment by yourself;

3.The maintenance of this equipment is undertaken by trained and recognized technicians;

4.If you need to order parts, contact our technical service department, and please indicate the model and serial number of the incubator you purchased.

Note: If the user can't solve any fault, please contact the agent engineer as soon as possible.

Don't deal with it by yourself, otherwise it will not be guaranteed.

4. Warranty

1. Warranty is 12 months from EX-factory date (excluding fuse).
2. We will take no responsibility for risks caused by improper operation and man-made damages during the warranty.
3. After the expiration of warranty, our company is also responsible for repairs, but the corresponding maintenance cost should be charged.
4. Life time of the incubator is 6 years from production date on the label.
5. We can provide equipment drawings and necessary technical data for maintenance unite or personnel trained by our company.

For technical support please contact our friendly team on 1300 459 140 or
send us an email sales@eurochill.com.au