

JDS010

Dry Bath



Safety code

For your safety, please read the operating manual carefully before starting the operation. Parts are subject to heat, humidity and biological changes that can cause functional degradation or even loss of safety and cause accidents!

Foreword

The copyright of this manual belongs to Our company, and no one may reprint or distribute any content related to this manual, including pictures and audio-visual products.

The device operator can copy some of the sections of this operating manual, but only for internal use, for example, to guide the user how to deal with emergencies.

The chapters are clearly marked in the manual's catalogue.

Magal is not responsible or liable for any damage to the instrument caused by the user's failure to use the "instrument environment" as stated in the manual.

Magal reserves the right to modify the contents of the operating manual at any time without proper notice.

Instrument use environment



To ensure the continued safety of the machine, the following factors may damage the centrifuge:

- chemical effects;
- environmental impacts, including natural UV radiation;
- Corrosion and wear of hood parts and other safety parts.

* indoor use;

* Altitude: $\leq 2000\text{m}$;

* The applicable ambient temperature range of the instrument is $+5\text{ }^{\circ}\text{C} \sim +40\text{ }^{\circ}\text{C}$;

* The working temperature range of the instrument is $\leq 80\%$;

* ***The working model of the instrument working power supply and its main technical parameters;***

* There must be sufficient ventilation in the room;

* There are no vibrations and airflows around the performance;

* There is no conductive dust in the surrounding air, explosive gas and corrosive gas;

Safety warning sign description



Note: Please read the instruction manual carefully before using the instrument!



Attention: Danger of high voltage! Risk of electric shock!



Meaning of the safety instructions

In order to avoid damage to surrounding people or damage to surrounding objects and the environment, please be sure to follow all safety instructions in this user manual.

In addition to accident prevention, environmental protection, and recognized professional rules in safety and occupation, including the country where the user is located and the local laws and regulations for the installation of the centrifuge, they must be carefully observed.

Neglecting the consequences of safe operating procedures

Any violation of safe operating procedures, laws, regulations and rules will lead to harm to people, objects and the environment.



Safety Precautions

- *It is strictly prohibited to plug and unplug the power plug and toggle the power switch and panel button when both hands are occupied with liquid!
- *It is forbidden to plug and unplug the power plug when the instrument is powered on!
- *It is strictly forbidden to maintain and scrub the instrument when it is powered on!
- *It is strictly prohibited to conduct high-temperature heating operation when the sample capacity exceeds 70% of the test tube capacity!
- *It is strictly prohibited to install the instrument on the uneven, shaking and vibrating worktable!
- *It is forbidden to touch the test tube module by hand when the instrument is in high temperature state!

1. Product Description:

Dry bath is an exquisite tabletop instrument integrating precise temperature control and high-quality design. The host and module are available in a variety of options to meet the needs of various experiments, with accurate temperature control, good reproducibility, fast and safe heating.

Basic use: sample thermostatic control, heating the liquid in the test tube to boiling;

Life science: cell digestion, dna/rna extraction, heating in vitro dna/rna/ protein samples, in vitro culture and digestion, DNA extraction in PCR real-time analysis, denaturation of nucleic acid protein samples;

Industry: Dissolution for chemical oxygen demand analysis, soil dissolution, constant temperature;

Biopharmaceutical: melting point determination;

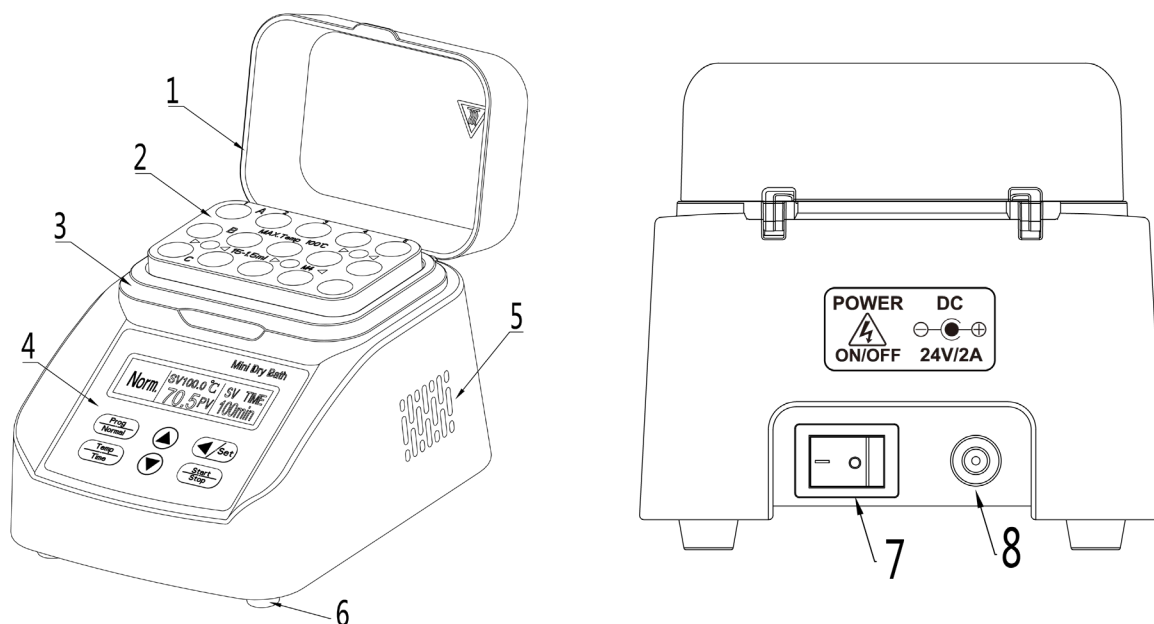
Clinical: acyl carnitine derivative, MRSA and pbp2 latex test, heating / washing during egg resuscitation, constant temperature control during egg collection;

2. Product main technical parameters and rotor parameter description:

Temperature setting range	0°C ~ 100°C
Temperature control range	RT+5°C~100°C
Temperature stability /37 °C	±0.3°C
Temperature uniformity /37 °C	±0.3°C
Setting accuracy	0.1°C
Display accuracy	0.1°C
control accuracy	±0.3°C
Display mode	OLED
Heating rate	25°C~37°C ≤4min; 25°C~100°C ≤15min;
Cooling mode	Fan cooling
Set time	1~999sec/1~999min/HOLD
Dimension mm	L114×W140×H107
Net weight kg	0.8
Input power supply	DC24V
power	48W
Security	Over temperature automatically disconnects the power supply and alarms

Note: Ambient temperature 23 ° C / at 23 ° C ambient temperature

3.Introduction to appearance and function of dry bath



(appearance diagram I)

- 1.Transparent insulation cover. 2.Test tube module.
 3.Mainframe. 4.Operation display panel. 5.Heat exchange duct.
 6.Non slip foot pad. 7.Power switch (o off / L on).
 8.DC24V power input socket

4.Operation instructions



Note: Before using the instrument, please ensure that the instrument is transported without damage!

- * Whether the appearance of the instrument is brand new!
- * The transparent cover pulls the cover lever to make it easy to open without any abnormal sound!
- * Whether the rotor elastic buckle is tightly fitted on the motor spindle!
- * Whether the edge of the cushion is firmly stuck on the main body casing!
- * The power switch and power cord are securely attached to the main body casing without looseness!

The instrument can be safely used without any of the above phenomena

4.1 [cover opening / closing]

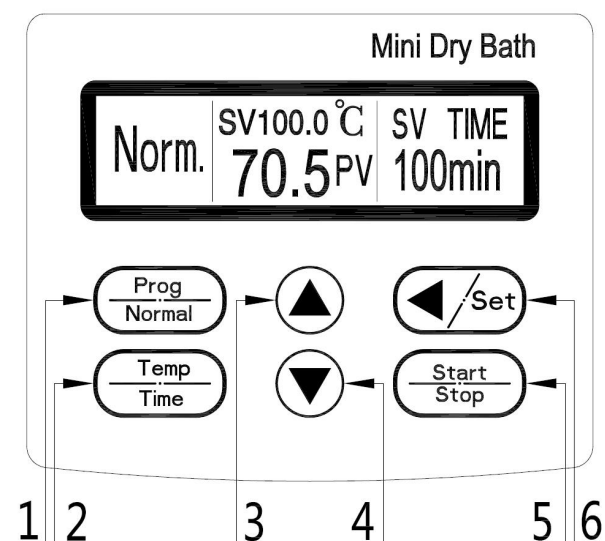
[cover opening] the transparent insulation cover in the appearance diagram 1 can be easily opened by turning it back;

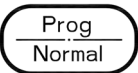
[close cover] the transparent insulation cover in the appearance diagram 1 can be easily closed by turning it forward;


4.2 [power on / off]


For the power switch button in the appearance diagram I, when it is turned to the "I" position, the power is turned on, and when it is turned to the "0" position, the power is turned off;




4.3 [operating panel key description]



1.  Composite key: switch the custom program storage / general operation mode (Prog/Normal) ; 1. prog custom program storage: a total of 10 groups of custom parameters from P.01 to p.10 are stored for the convenience of different user experiments;

2.  Composite key: switch temperature parameters / time parameters (temp/time);

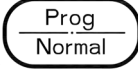
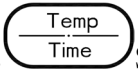

3.  composite key: increase the setting parameter value / at self-tuning temperature control parameter (long press this key for about 5 seconds in standby mode Enter or exit this function);



3.  Lower the set parameter value;
4.  Composite key: start/stop;
5.  composite key: parameter shift key / specific parameter mode (press and hold this key for about 5 seconds in standby mode
6. Enter or exit this function);

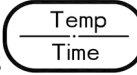
4.4 [start / stop the instrument]


Open the transparent insulation cover → place the test tube of the corresponding test tube module → turn on the power supply → close the transparent insulation cover;



Example: if the temperature is set to 100 °C and the time is 100min under normal mode of normal operation as follows:

Press  The display area flashes Norm., Press  SV setting temperature Digital flashing You can press  Shift key Quickly adjust

the corresponding hexadecimal units, Re pass   Adjust the value to 100,

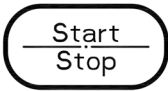
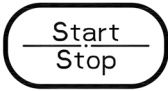
Re pass  SV TIME set time temperature Digital flashing You can

press  Shift key to quickly adjust the corresponding hexadecimal

unit, Re pass   Adjust the value to 100, At this time, the system flashes 3 times and defaults automatically;

After setting, see the following figure:



Press  start, The machine will stop according to the set time mode, Buzzer alarm prompt this timeSetting work completed; If the operation is interrupted You can press  stop;





How to perform AT self-tuning

When the instrument is started for the first time, the at self-tuning can be carried out due to the change of the operating environment or the unsatisfactory temperature control effect. The instrument will be set according to the current situation of the controlled system at this time.

A set of optimal PID parameter values is obtained*** This feature is recommended***

Example: it can be executed in normal mode or prog mode; In standby mode, set the target value of 100 °C;

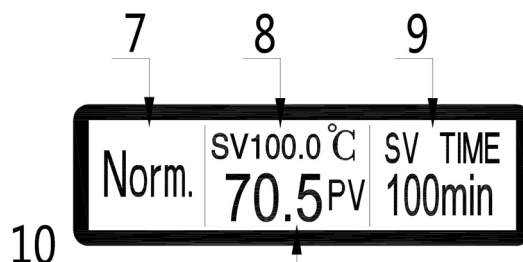
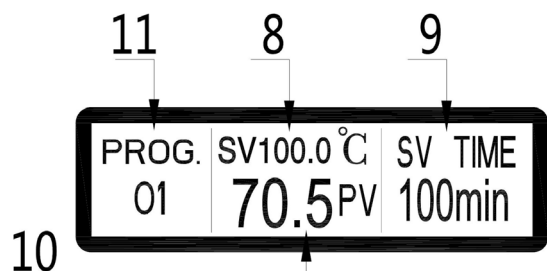
Make sure the transparent insulation cover is closed

Long press  More than 5 secondsThe at code will be displayed on the display screen. At this time, release the key, and the system will automatically run. During the setting process, the stability is high, but the setting time is long. After the setting, the system will automatically exit the function, **AT** Code disappears; At this point, you can press and hold  Enter the temperature control parameters and operation mode menu for more than 5 seconds to view the P, I and D parameter values after at self-tuning (the parameters at this time cannot be changed)

Norm.	SV100.0 °C	SV TIME
AT	70.5 PV	100min

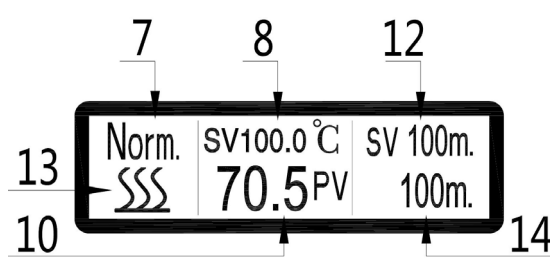
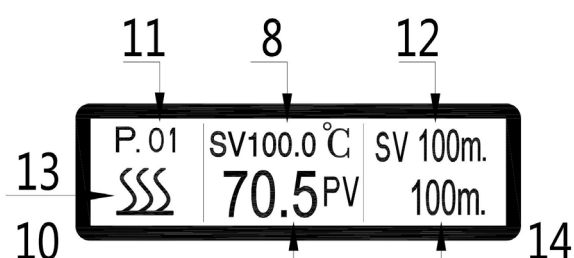
PROG.	SV100.0 °C	SV TIME
AT	70.5 PV	100min

4.5 [description of display interface]



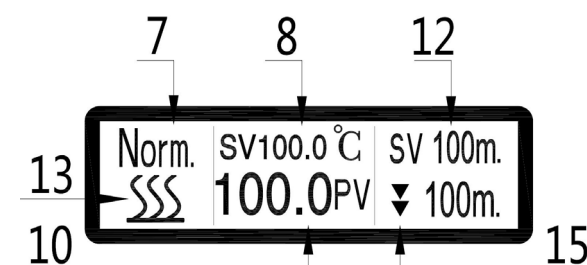
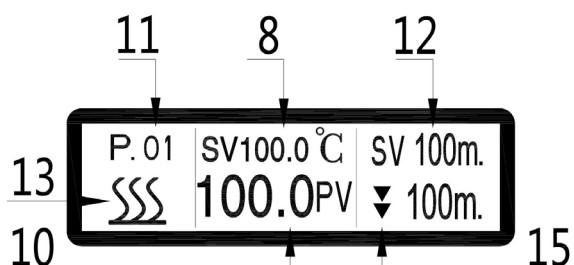
《PROG mode standby mode display》

《Normal mode standby mode display》



《PROG Mode temperature rise status》

《Normal Mode temperature rise status》



《PROG Constant temperature countdown status》

《Normal Constant temperature countdown status》

Definition Description:

7. Normal General operation mode display area;

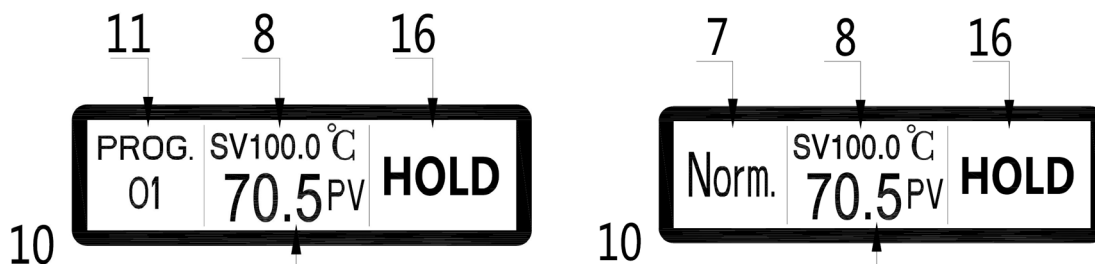
8. Set temperature display area;

9. Set time display area in standby mode;

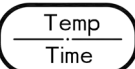
10. display area of actual measured temperature;



11. PROG Customize the display area of program storage mode;
12. set the time display area in the heating state;
13. Heating status display area;
14. Display area of actual time waiting mode in heating state;
15. Display area for countdown status of constant temperature reaching the set temperature time;
16. HOLD time hold status display area;

4.6 [operating instructions for hold mode]



Definition Description:

Press  SV TIME Set the time bar number to flash. At this time, you can

press  Shift key shifts left to the third digit flashing, Press again  Adjust

the value to HOLD. At this time, the system flashes 3 times and defaults

automatically;

4.7 [temperature calibration]

4.7.1 The temperature of the instrument has been calibrated before leaving the factory. The default display temperature of the instrument is the temperature of the test tube module. To display the liquid temperature in the test tube, please refer to the following instructions for calibration:

If there is a deviation between the actual temperature and the instrument

display temperature due to some reasons, the calibration function can be used to correct the temperature deviation;

The instrument adopts pb/ temperature zero calibration and pk/ temperature full calibration methods; (see specific parameter list for calibration range)




4.7.2 Select a thermometer with an accuracy of 0.1 °C that has passed the measurement and detection and put it into the measured liquid or test tube module to set the target temperature to be reached. When the temperature is reached, it must be kept constant for 3~5 minutes to read and record the actual temperature in the currently measured liquid or test tube module and the instrument display temperature;

Pb= actual temperature - instrument display temperature; (adjustment range





-5.0~5.0 °C)

PK=1000 × (actual temperature - instrument display temperature) /

instrument display temperature; (adjustment range -999~999)

4.7.3 Press  Stop heating constant temperature, press and hold for a long time  Enter specific parameter list for more than 5 seconds, Select Pb and pK values for calibration correction, exit long press and hold  Exit in more than 5 seconds;

[specific parameter setting]

In standby mode, long press and hold  Enter or exit specific parameter list for more than 5 seconds, adopt    These three keys are used to adjust the corresponding value;

5.Maintenance items

Do not try to clean the dry bath when the power cord is plugged in or the power switch is on. If the equipment or accessories are contaminated by pathogenic, toxic or radioactive substances, it is the user's responsibility to properly purify them, which shall be explained when formulating the "laboratory biosafety manual". When there are other

requirements for cleaning and decontamination other than those mentioned in this chapter, please contact our company to check whether they may damage the equipment. If you plan to return the equipment or accessories to our company or require maintenance, you must ensure that the equipment or accessories are clean and harmless to human body!

Do not use organic solvent because it can decompose the shell and key parts; During the cleaning process, do not let liquids, especially organic solvents, come into contact with the inside of the machine!

5.1 Regularly check the test tube module components (especially the bottom of the test tube hole) for corrosion spots, grooves and small cracks. If any of the above conditions are found, please stop using them and contact the production unit.

5.2 when cleaning the test tube module, please wet the sponge or cotton cloth with neutral detergent, and then wash the detergent with distilled water. Do not spray or spray the rotor with water, because the liquid may be left somewhere and cause corrosion. Allow to dry upside down after cleaning.

5.3 check the turnover of the transparent insulation cover and the main body shell, and whether the cover can be opened and closed smoothly.

5.4 carefully wipe the instrument surface with a soft cloth stained with neutral detergent, and then remove the detergent with a clean wet cloth.

5.5 if the instrument has major problems, such as the power supply can not be heated under normal conditions, and there is a burning smell inside the machine, please contact the manufacturer or the dealer authorized by the manufacturer in time, and do not repair it without the guidance of professional maintenance personnel!

6.Troubleshooting

The following table lists the relevant instrument failure phenomena, relevant failure causes and handling methods, which you can eliminate according to the prompts; If the user still cannot eliminate the fault after trying or the fault phenomenon is not included in the following list, the user should immediately contact the maintenance personnel of the production unit.



In case of abnormality, turn off the power supply first, unplug the plug, and start it

after troubleshooting.

System prompts fault significance and handling measures

Fault code	Code meaning	reason	Causes and Countermeasures
E-1	Temperature measurement fault in standby mode	Poor contact or damage of temperature sensor Board temperature measurement circuit fault;	Rewiring to make the wiring contact well or replace the temperature sensor;
E-2	Operating state temperature measurement fault	ditto	ditto
E-3 ALM	Overtemperature protection After entering the over temperature stable state, the measured temperature exceeds the set temperature by more than 5 degrees.	PID parameters are inappropriate, Control output is not controlled;	Conduct PID self-tuning again;

Table 1: fault phenomena, causes and troubleshooting

Fault phenomenon	Fault causes and troubleshooting
Instrument does not display	1. Check whether the power socket and wiring are in good condition and whether the power socket is powered.

	<p>2. Whether the power switch is in poor contact.</p> <p>3. If it cannot be eliminated, please contact the manufacturer's service personnel.</p>
No response to switch panel buttons	Please contact the manufacturer's service personnel!

7. Packing list

Dry Bath

Serial number	name	quantity	remarks
1	host	1	
2	Test tube module	Provided according to the order contract	
3	Tube module handle	1	
4	Test tube module Test tube module replacement Allen key	1	
5	Certificate of Conformity	1	
6	Quality assurance page	1	
7	Operating instructions	1	
8	The power adapter	1	



When unpacking, please check in time. In case of any discrepancy, please contact the production unit or the sales company authorized by the production unit in time.

