MD-MINI Dry Bath

Instruction Manual

Catalog No. MD-MINI

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Version 01C
Revision on: 2023.06.28

Packing list

MD-MINI:

1x MD-MINI Dry Bath
1x MD-MINI Lid
1x Power Cord
1x Power Adapter
1x MD-MINI Dry Bath Instruction Manual

Signed by:
Date:

Major Science is liable for all missing or damaged parts / accessories within 7 days after customer received this instrument package. Please contact Major Science immediately regarding this issue. If no response within such time period from consignee party, that will be consignee party's whole responsibility.

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Warning

Major Science MD-MINI Dry Bath has been tested and found to comply with safety limits for the CE regulation. Also, MD-MINI Dry Bath Incubator is RoHS compliant to deliver confident product which meets the environmental directive. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their expense. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. It is strongly recommended for the user to read the following points carefully before operating this equipment.

1. Read and follow carefully the manual instructions.
2. Do not alter the equipment. Failure to follow these directions could result in personal and/ or laboratory hazards, as well as invalidate equipment warranty.
3. Use a properly grounded electrical outlet with correct voltage and current handing capacity.
4. Disconnect from power supply before maintenance and servicing. Refer servicing to qualified personnel.
5. Never use this instrument series without having the safety cover correctly in position.
6. Do not use the unit if there is any sign of damage to the external tank or cover. Replace damaged parts.
7. Do not use in the presence of flammable or combustible material; fire or explosion may result. This device contains components which may ignite such materials.
8. Refer maintenance and servicing to qualified personnel.
9. Ensure that the system is connected to electrical service according to local and national electrical codes. Failure to properly connection may create fire or shock hazard.
10. Use appropriate materials and operate correctly to avoid possible hazards of explosion, implosion or release of toxic or flammable gases arising from overheated materials.
11. Always use the block lifter to remove hot blocks, and wear appropriate

protection to avoid burning your hand.

 ATTENTION: Hot surface!

12. The unit shall be operated only by qualified personnel.

Safety Information

Use high level of precaution against any electrical device. Before connecting the electrical supply, check to see if the supply voltage is within the range stated at the rating label, and see to it that the device be seated firmly. Place the unit in a safe and dry location; it must NOT touch the surrounding. Follow the safety precautions for chemicals / dangerous materials. If needed, please contact qualified service representative or service@majorsci.com

Environmental Conditions

Ensure the instrument is installed and operated strictly in the following conditions:

1. Indoor use only
2. ≤95% RH
3. 75 kPa – 106 kPa
4. Altitude must not exceed 2000 meters
5. Ambient to 40°C operating temperature
6. Pollution degree: 2
7. Mains supply voltage fluctuations up to ±10% of the normal voltage

Avoiding Electrical Shock

Follow the guidelines below to ensure safe operation of the unit.

Genius Dry Bath Incubator has been designed to use with shielded wires thus minimizing any potential shock hazard to the user. Major Science recommends against the use of unshielded wires.

To avoid electrical shock:

1. In the event of solution accidentally spilled into the instrument, it must be dried out for a period of time, at least 2 hours, and restored to NORMAL CONDITION before each operation.
2. NEVER connect or disconnect wire leads from the power jacks when the power is on.
3. WAIT at least 5 seconds after stopping a run before handling output leads or connected apparatus.
4. ALWAYS make sure that hands, work area, and instruments are clean and

dry before making any connections or operating the equipments.
5. ONLY connect the power cord to a properly grounded AC outlet.

Avoiding Damage to the Instrument

1. Do not attempt to operate the device if it is damaged.
2. Protect this unit from physical damage, corrosive agents and extreme temperatures (direct sunlight, etc.).
3. For proper ventilation and safety concerns, keep at least 10 cm of space behind the instrument, and at least 5 cm of space on each side.
4. Use high level of precautions against the damages on the unit.
5. Do not operate the unit out of environmental conditions addressed above.
6. Prior to apply any cleaning or decontamination method other than manufacturer's recommendation, users should check with the manufacturer's instruction to see if the proposed method will damage the equipment.

Equipment Operation

Follow the guidelines below to ensure safe operation of the unit:
1. Check the displayed temperature figure and external temp. probe to see if it is overheating, and check if it will function in the case of a single fault at least once per day.
2. NEVER access dangerous chemicals or other materials to prevent possible hazard of explosion and damage.
3. Do not apply lids or covers on the tube heated inside Mini Dry Bath Incubator to prevent possible hazards of explosion and damages.
4. A temporary conductivity caused by condensation might occur even though this series is rated Pollution Degree 2 in accordance with IEC 664.

Symbols

The symbols used on Mini Dry Bath Incubator are explained below.

Indicates an area where a potential shock hazard may exist. Consult the manual to avoid possible personal injury or instrument damage.

ATTENTION: Hot surface!

Indicates disposal instruction.
DO NOT throw this unit into a municipal trash bin when this unit has reached the end of its lifetime. To ensure utmost protection of the global environment and minimize pollution, please recycle this unit.

Section 1 Introduction

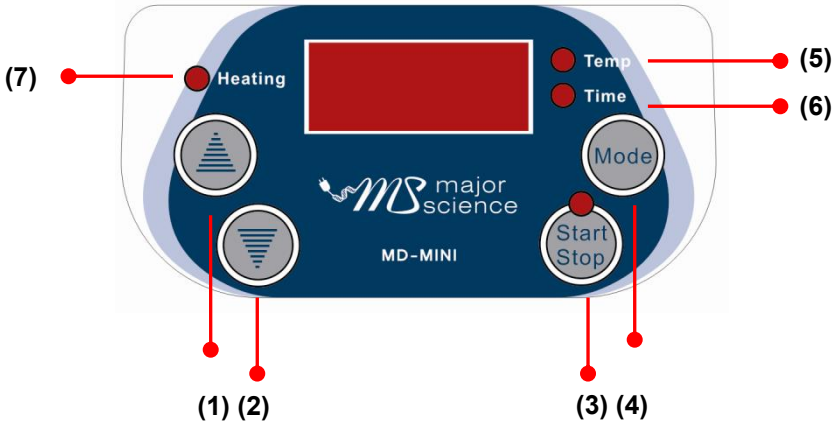
1.1 Overview

Major Science's single block dry bath MD-MINI provides comprehensive designs for a wide variety of applications. Excellent temperature control figures can deliver accurate and reliable experimental results from one experiment to another. MD-MINI Dry Bath provides great values in term of space as well as the price. More importantly, MD-MINI Dry Bath is RoHS compliant and designed to comply with the CE regulation.

MD-MINI

1.2 Control and Features

Please refer to the following page for the location of the following controls and features.



Front view

(8) (9)

Rear View

(1)  Key – to increase temperature or time value

(2)  Key – to decrease temperature or time value

(3) 

Key – to start or stop the program

(4) 

Key – switch between temp or timer mode

(5) Temp – This LED lights up when the unit is operating under temperature setting mode.

(6) Time – This LED lights up when the unit is operating under the Timer Mode

(7) Heating –This LED light indicates the temperature is increasing.

(8) AC Power Switch – to switch the unit power ON/OFF

(9) AC Power Cord – Power Cord Socket

Section 2 Product Description

This single block MD-MINI Dry Bath uses interchangeable heating block modules for a variety of applications, includes restriction enzyme digestion, denaturing DNA, Blood Urea Nitrogen, melting agar, coagulation studies, hybridization, and Hot Start thermo-cycled reaction. Due to its molded aluminum alloy chamber, it can be applied as a mini water bath. All models incorporate a PID controller for easy temperature selection, rapid heat up and excellent stability. Temperature may be set in 0.1°C increments from 5°C above ambient to 100°C. A timer equipped within the unit may be set from 1 to 9999 min for user's convenience.

Features:

Microprocessor controller with digital display
User temperature calibration
Leakage proof for molded aluminum alloy heating chamber
Single block modes

Section 3 Product Specifications

Controller	Digital microprocessor controller
Display	LED display
Heating Power	50 W
Power Rating	AC input : 100-240V~, 2A, 50/60 Hz DC input: +12V/5A, 60W max.
Temperature Control Range (Dry Bath)	5°C above ambient to 100°C
Temperature Control Range (Water Bath)	5°C above ambient to 90°C
Temperature Increment	0.1°C
Temperature Calibration	Yes
Temperature Uniformity @37°C	± 0.2°C
Temperature Accuracy @37°C	± 0.25°C
Timer	1- 9999 min, continuous
Safety Device	Leakage proof for heating chamber Over Temperature protection
Operating Temperature	Ambient to 40 °C
Heating Chamber Material	Molded aluminum alloy chamber coated with PTFE
Block Material	Aluminum alloy
Block Type	Standard and customized types are available
Unit Dimension	153 x125 x 97 mm (W x L x H)
Weight	Approx. 0.6 kg

Section 4 Installation Instructions

Mini Dry Bath Incubator is actually a pre-installed instrument. As long as it is placed on a sturdy and leveled surface in a safe, dry place, as well as inserted with one aluminum block or simply add water as a mini-water bath, it is ready for operation.

Section 5 Operating Instructions

1. Place MD-MINI Dry Bath on a sturdy and leveled surface in a safe, dry place, away from laboratory traffic.

2. Ensure that the power switch is OFF, then plug the three-pronged power cord into a grounded three-prong AC outlet of the appropriate voltage.

3. Select suitable module block or appropriate water volume and put it / them into the MD-MINI Dry Bath.

4. Turn the DC power ON.

5. Run temperature calibration procedure when using the instrument for the first time (see 5.2).

6. Press  or  Key to adjust to the desired temperature.

7. To set the timer for the heating process, press  Key, and then press  Key or  Key to adjust timer upon your request. The unit will stop with alarm when timer is up.

8. Press the  Key to start heating.

9. To reset timer during heating, simply press  Key to deactivate heating.

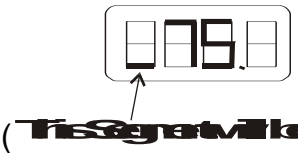
10. Press  Key again to start the heating after setting.

Note: Please don't use Lid in water bath mode.

5.1 Temperature Calibration

MD-MINI Dry Bath with the optional block has been calibrated as a set. However, different block types or different water source may have different influences and may cause different results. For optimum accurate temperature control, or while changing with different kinds of block or water, MD-MINI Dry Bath should be calibrated in accordance with the procedure outlined below.

1. Insert a calibrated laboratory thermometer into the thermometer holding port, which is located on the block or in the middle of the chamber when water is filled.
2. Press and hold the 

Key while switching the main power ON. The Mini Dry Bath will beep and the LED display () will start flashing. This indicates the unit is under the Calibration Mode.
3. Press  or  Key to adjust display value to the temperature you want to control accurately, and then press 

Key.
4. As the unit reaches the Target Temperature, the timer will be start to count down. Wait for approximately 30 mins, you should be hearing the “beeping” sound.
5. Adjust the display value according to the value as thermometer. And then press 

Key, the screen will display 

. (saving the calibrate value)
6. The calibrated procedure is now finished. Please wait for a few more minutes for the microprocessor to automatically adjust displayed temperature value to the same value with thermometer measured.

5.2 Power Recover function

1. If MD-mini was turned off during the heating state and then turned back on again. It will buzz and display countdown from 10 to 0, then it will recover back to the last state. The timer will resume from last state as well.
2. Press the 

during the countdown period to terminate the buzz and the timer. MD-mini is then ready for operating.

5.3 Operation protection mechanism

Problem	Cause	Solution
 Alarms with short buzz sound	Overheating: When the current temperature reaches above 5 degrees than the set value.	System will automatically return to normal
 Alarms with long buzz sound	Overheating: When the temperature reaches above 110° C.	Restart the unit. If AL1 and Er1 occur simultaneously, Restart the unit as Er1 takes priority. If problem persist, please contact Major Science for immediate assistance.
 Alarms with long buzz sound	MD-MINI temperature sensor is abnormal,	Restart the unit. If problem persist, please contact Major Science for immediate assistance.

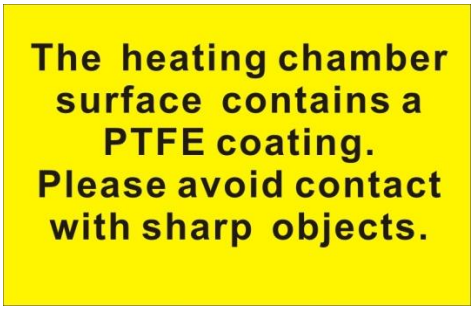
Section 6 Troubleshooting Guide

Many operating problems may be solved by carefully reading and follow the instructions in this manual accordingly. Some suggestions for troubleshooting are given below. Should these suggestions not resolve the problems, please contact our SERVICE DEPARTMENT or a distributor in your region for assistance. If troubleshooting service is required, please include a full description of the problem.

Problem	Recommendations
LED does not light up	Check the FUSE
	Ensure that the AC power switch is ON
	Check the three-pronged power cord are properly plugged into a grounded three-prong AC outlet of the appropriate voltage

Maintenance

MD-MINI Dry Bath may be cleaned with a moist cloth containing a mild soap solution. The chamber and blocks are constructed of aluminum alloy and may be cleaned with any of the commercial aluminum cleaners on the market.
The heating surface contains a PTFE coating. Please avoid contact with sharp objects (Label shown below).



Section 7 Ordering Information

Cat. No.	Description
MD-MINI	Mini Heating Dry Bath without block
ACCESSORIES	
MD-MINI-B01	For 0.2ml tube(PCR Strip tube), ø 6.35mm, 32 wells, L71xW47xH32, Depth 17mm
MD-MINI-B02	For 1.5ml tube, ø 10.88mm, 12 wells, L71xW47xH32, Depth 30mm
MD-MINI-B03	For 15ml tube, ø 17.3mm, 6 wells, L71xW47xH75, Depth 70mm
MD-MINI-B04	For 50ml tube, ø 29.0mm, 2 wells, L71xW47xH75, Depth 70mm
MD-MINI-B05	For 0.5ml tube, ø 7.9mm, 12 wells, L71xW47xH32, Depth 25mm
MD-MINI-B06	For 2.0ml or 1.5ml tube, ø 11.0mm, 12 wells, L71xW47xH32, Depth 30mm
MD-MINI-B07	For 2.0ml or 1.5ml tube, ø 11.0mm, 12 wells, L71xW47xH32, Depth 30mm
MS-BL95-E	Block lifter 95mm, with E-Type Retaining Rings
MD-MINI-CAR-ADAPTER	Car Adapter for MD-MINI, 1.5m
MD-MINI-LID	MD-MINI Lid, 58.5x83x31.5mm

Note:

1. Customized Aluminum block is also available.

Section 8 Warranty

Major Science warrants apparatus of its manufacture against defects in materials and workmanship, under normal service, for ***one year from the shipping date to purchaser***. This warranty excludes damages resulting from shipping, misuse, carelessness, or neglect. Major Science's liability under the warranty is limited to the receipt of reasonable proof by the customer that the defect is embraced within the terms of the warranty. All claims made under this warranty must be presented to Major Science within one year following the date of delivery of the product to the customer.

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