Mini Cooling Dry Bath Incubator (Mini Cooler)

Instruction Manual

Catalog No. MC-0203
(programmable cooling and heating capability)

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Version 05C
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Packing list

MC-0203

-1x Mini Cooler Incubator, cooling and heating
-1x Transparent Lid
-1x Power Cord
-1x Power Adapter
-1x 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.

Table of contents

Warning

Major Science Mini cooler Incubator has been tested and found to comply with safety limits for the CE regulation. Also, Mini cooler 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.
12. The instrument is intended for scientific research use only, and must be operated by qualified personnel who realize the potential risks of the use of this instrument. Major Science makes no claim that its instruments are designed or certified as medical device; no representation, promises, express warranty, or implied warranty will be made concerning the suitability of these instruments for any medical use. Major Science will not provide customers any notice or certification concerning its products being compliant as a medical device.

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 (non-condensing)
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.

Mini cooler 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 cooler 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.

Battery Replacement Notice

The product may contain an internal manganese dioxide.

There is risk of fire and burns if the battery pack is not handled properly.

To reduce the risk of personal injury:

1. Do not attempt to recharge the battery.
2. Do not expose to temperatures higher than 40℃(104℉).
3. Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
4. Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.
5. Replace only with the spare designated for this product.
6. Please understand the positive and negative mark. Do not use the battery positive and negative wrong.

Symbols

The symbols used on Mini cooler 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.

Potential Risk and Preventive Measure

1. Risk assessment table

Potential Risk / Frequency	**Frequent**	**Likely**	**Possible**	**Rare**	**Unlikely**
Bruise			√		
Burn			√		
Scald			√		
Aluminum block drop				√	

Power cord plug wrong				√	

2. Preventative measures of risk

Potential Risk	**Preventive measures**
Bruise	Do not put the machine near the table edge.
Burn	Cover the lid or wear insulated gloves.
Scald	Cover the lid to avoid spray water or wear insulated gloves.
Aluminum block drop	Tighten block lifter with aluminum block to move it.
Power cord plug wrong	Observe correct adapter plug.

Section 1 Introduction

The mini cooler 200 series is designed to meet the requirement of accurate temperature control, ease of data transferring and programming, small foot print and ease of use.

Mini cooler is capable of setting temperature between 100˚C to -10˚C depending on your application and usage. The microprocessor controller helps providing precise heating and cooling control, whether you need a PCR incubation or enzyme/sample storage, mini-cooler does it all.

The aluminum alloy block for mini cooler provides flexibility and convenience to share blocks in between mini cooler and mini dry bath.

Experiment-on-the-Go !
It gives you the flexibility to bring your experiments on the go. The 12V car-adaptor allows you to take your samples wherever you need with peace of mind on the transferring and transporting between 100˚C to -10˚C.

Small foot print
Personal lab incubation cooler, only a small lab bench space is needed

Quick start
Preset temperature allows one button operation start

Key features of Mini-cooler 200 series

- Small foot-print to fit spaced limited lab bench
- Alarm, timer and digital user temperature calibration
- Single molded chamber, no cracks or welds
- Preset temperature for ***Quick Start*** operation
- Temperatures programmable operation for sophisticated heating and cooling protocols
- PTFE coated chamber resists to stains and water mark
- Can be used as a mini water bath or bead bath

- Astounding heating and cooling rate for different application
- Small voltage consumption for low electricity consumption
- Variety sizes of aluminum alloy block for selection and customization
- USB and Bluetooth port for easy data logging, transfer and modification
- Optional car adaptor provides portability on the go
- Blocks interchangeable with mini- dry bath

Section 2 Product Specifications

Display	LCD
Maximum Heating / Cooling Power	60W
Controller	High performance Microprocessor
Dimension	L152 x W135 x H185mm
Temperature Control Range	30°C below ambient temperature (minimum -10°C) to 100°C.
Temperature Increment / Decrement	0.1°C
Temperature Calibration	Yes
Temperature Uniformity	±0.2°C @ 37°C
Temperature Accuracy	±0.25°C @ 37°C
Operating Temperature	Ambient to 40°C
Heating Rate	Max. 5°C / min
Cooling Rate	Max. 4°C / min
Heating Parts	PI (Polyimide) Film Heater
Cooling Parts	TEC (Thermoelectric Cooling)
Programing	a. Constant Mode: (1)Temperature: 30°C below ambient temperature (minimum -10°C) to 100°C. (2)Timer: 1- 9999 minutes. b. Program Mode: (1)Programmable: 1-4 steps and up to 9 cycles. (2)Timer: 1-9999 minutes for each step. c. Annealing program d. Quick Start: (1)Temperature: 4°C / 16°C / 37°C / 56°C / 95°C. (2)Timer: ∞ for each Temperature.
Timer	1 min. – 9999 min.
Block Type	Standard and customized upon request.
Heating / Cooling Chamber Material	Molded aluminum alloy chamber coated with PTFE.
Block Material	Aluminum alloy

Safety Device	Leakage proof for heating chamber Over Temperature protection
Rated Voltages	AC input 100V - 240V~; 2A, 50/60 Hz DC input: +12V / 5A, 60W max.
Weight	Approx. 1.3 kg
Feature	USB for data logger and control
Lid	Transparent Lid
Computer/laptop recommended specification	
Processor	1.8GHz Pentium® IV or equivalent AMD Athlon® processor
Memory	1GB
Storage	1GB available HD space
Media	CD-ROM drive
Connectivity	1 port USB 2.0
Display	1280x800 resolutions
Operating System	Windows® 7 SP1/ Windows® Vista SP1 / Windows® XP SP3/ Windows® 8
Microsoft .NET Framework	.NET Framework 2.0 or above

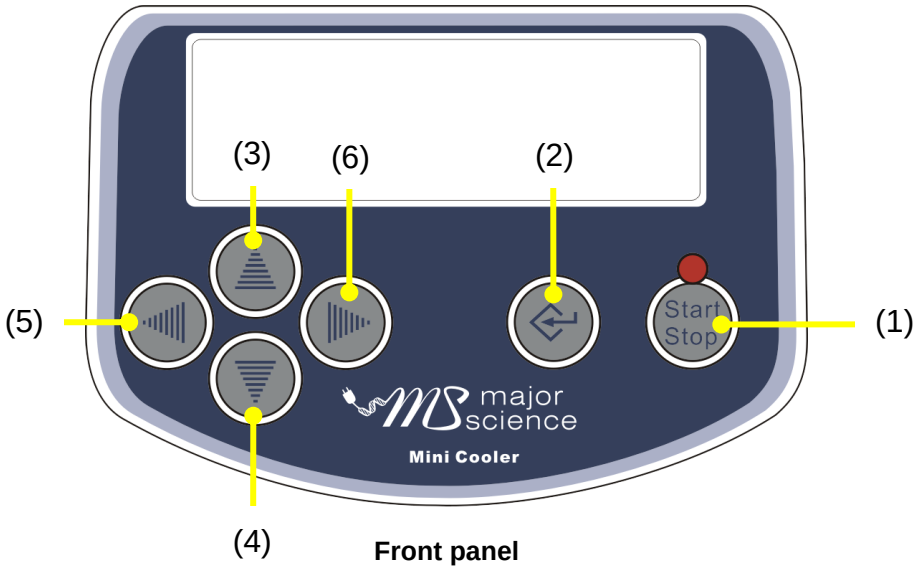
Section 3 Installation Instructions

The Mini cooler Incubator is actually a pre-installed instrument. As long as it is placed on a sturdy and level surface in a safe, dry place, and is inserted with one or two heating aluminum block(s) or simply water as a water bath, it is ready for operation.

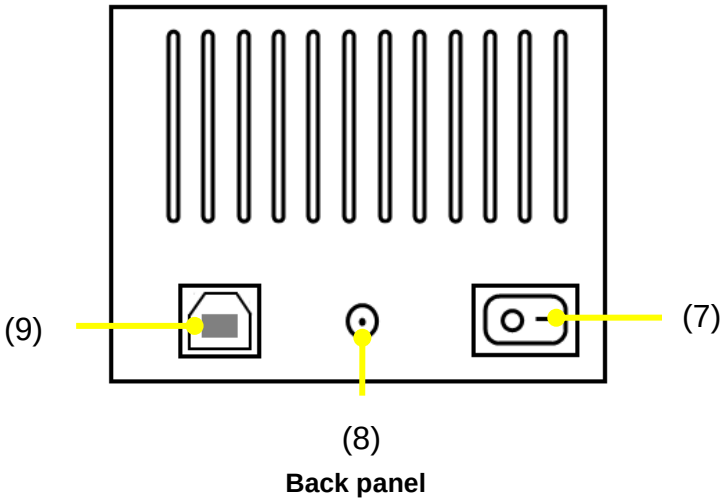
Section 4 Device Operation Instructions

4.1 Controls and Features

Please refer to below figures on the following page for the location of the different keys.



Front panel



Back panel

1. 

Start / Stop: Active and stop operation of the device.

2.  **Enter:** Enable the alteration of a selected value.

3.  **Up:** To increase temperature value or time value.

4.  **Down:** To decrease temperature value or time value.

5.  **Left:** Move cursor to the left. Return to previous step under the operation mode.

6.  **Right:** Move cursor to the right.

7.  **AC Power Switch:** The main power switch. Press " | " to switch on the device. Press "○" to switch off the device.

8.  **AC Power Cord:** For AC inlet and fuse holder.

9.  **B Type USB Port:** Connect computer to record data.

4.2 Turn On the Instrument

1. Place Programmable Mini cooler Incubator on a sturdy, level surface in a safe, dry place away from laboratory traffic.

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

3. Select a suitable module block or pour appropriate water volume into the Programmable Mini cooler Incubator.

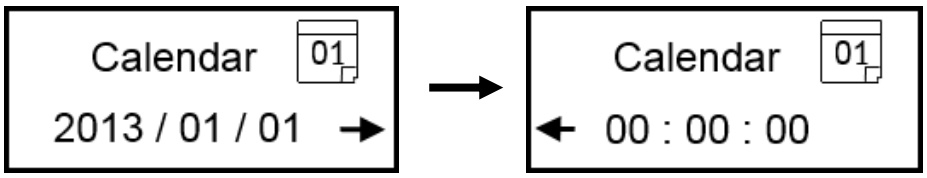
4. Switch the main power ON.

4.3 Setting Calendar

1. Please switch the main power ON and press 

key simultaneously until the display 1600 (range is: 1500~2000) appeared which is located on the up left area of display shown as below. And then release them immediately.

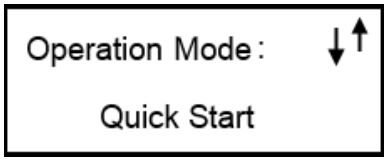
2. The Calendar Setting Screen is displayed. The parameters on the screen are flashing, and then use  key and  key to move cursor to the parameter that you want to changed. Use  key and  key to adjust the setting value, then press  key to store the updated value.



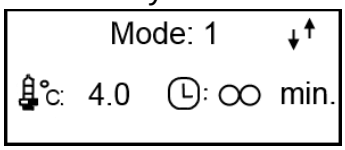
(Date) (Time)

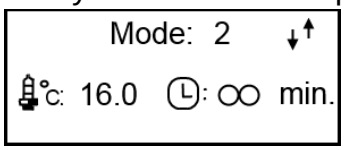
4.4 Operation Mode: Quick Start Mode

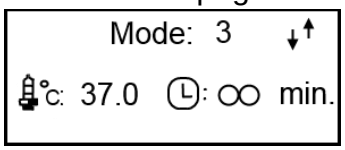
1. Switch the main power ON.
2. Use  key and  key to select "**Quick Start**" icon, then press  key to enter next screen.

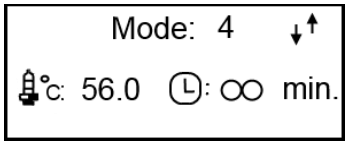


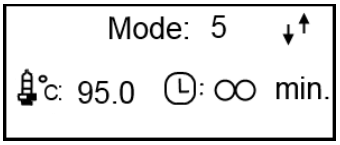
3. There are 5 modes of "Quick Start". Use  key and  key to select the mode that you want, and then press  key to store the upsated value. Those parameters of quick start's mode are settled by factory. Press  key return to select operation mode page.





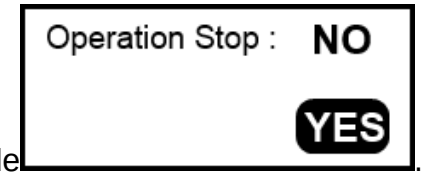






4. Press 

to start heating or cooling.
5. Press 

again to stop the device. A confirm page will pop out, select "YES" to leave the mode 

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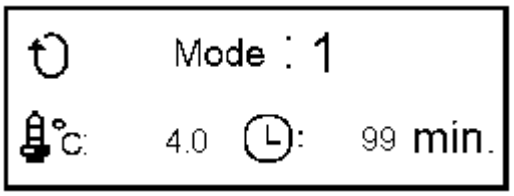
Note (1):



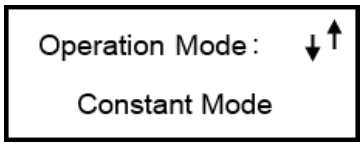
When running Quick Start Mode, the current temperature of block and the step settings will show on the screen.

The running time works in only one situation - starts counting up once reaching the set temperature.

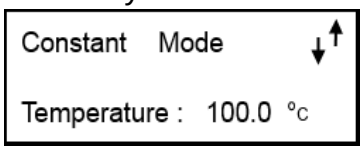
Press  key to display the set temperature and time. It will be kept on screen for 5 seconds or just press  key again to go back monitor screen immediately.

4.5 Operation Mode: Constant Mode

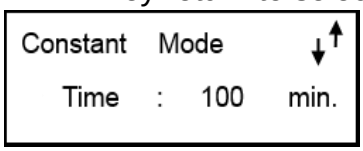
1. Switch the main power ON.
2. Use  key and  key to select "**Constant Mode**" icon, then press  key to enter next screen.



3. Press  key make the parameter become flashing, then use  key and  key to move cursor to the parameter. Use  key and  key to adjust the setting value, then press  key to store the updated value. Press  key return to select operation mode page.



4. Press  key make the parameter become flashing, then use  key and  key to move cursor to the parameter. Use  key and  key to adjust the setting value, then press  key to store the updated value. Press  key return to select operation mode page.

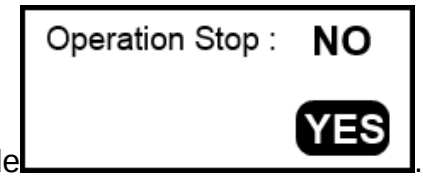


Note (1): 0 minutes means infinity.

5. Press 

to start heating or cooling.

6. Press 

again to stop the device. A confirm page will pop out, select "YES" to leave the mode 

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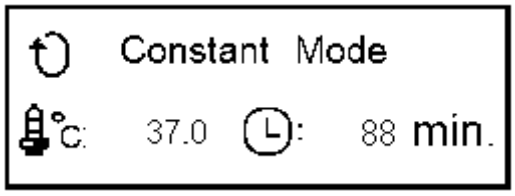
Note (2):

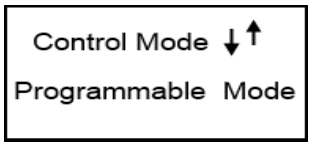


When running Constant Mode, the current temperature of block and the step settings will show on the screen.
There are two situations for running time:
Case 1: set time is zero, it will run continuously.
Case 2: set time is great then zero. Once the current block temperature reach the set temperature, the running time starts counting down to zero and stop temperature control.

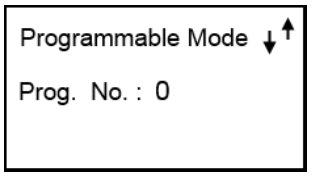
Press  key to display the set temperature and time. It will be kept on screen for 5 seconds or just press  key again to go back monitor screen immediately.

4.6 Operation Mode: Programmable Mode

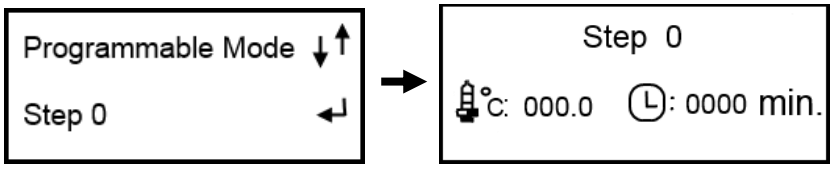
1. Switch the main power ON.
2. Use  key and  key to select "**Programmable Mode**" icon, then press  key to enter next screen.



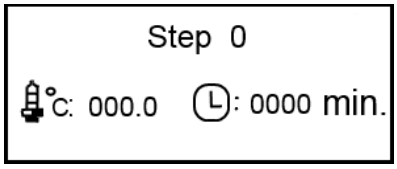
3. Press  key and then use  key and  key to set program number (It can maximum save 10 file from 0 ~ 9). Press  key again to store the program number. Press  key return to select operation mode page.



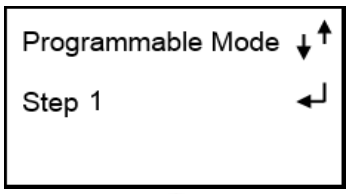
4. Press  key to next screen. There are 4 steps in a program: Step0 – Step3. Press  key to set the temperature and time parameters.



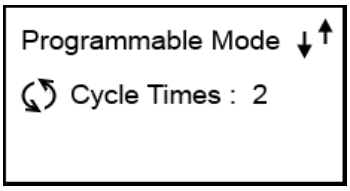
5. Use  key and  key to move cursor to the parameter. Use  key and  key to change the parameter. Press  key again to store the program number. Press  key return to select operation mode page.



6. Press  key to next screen. Repeat operating step 4~6 to set **Programmable Mode** Step 1-3.



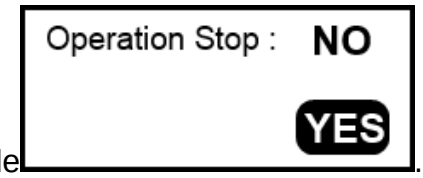
7. Press  key and then use  key and  key to increase or decrease value for cycle times (up to 9 cycles), then press  key to store the updated value.



8. Press 

key to start the program.

9. Press 

key again to stop the unit. A confirm page will pop out, select "YES" to leave the mode 

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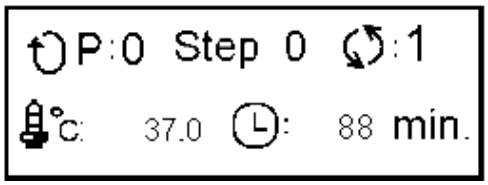
Note (1):
All the step parameters of Programmable Mode will be saved in the device until the next time you change them.

Note (2):

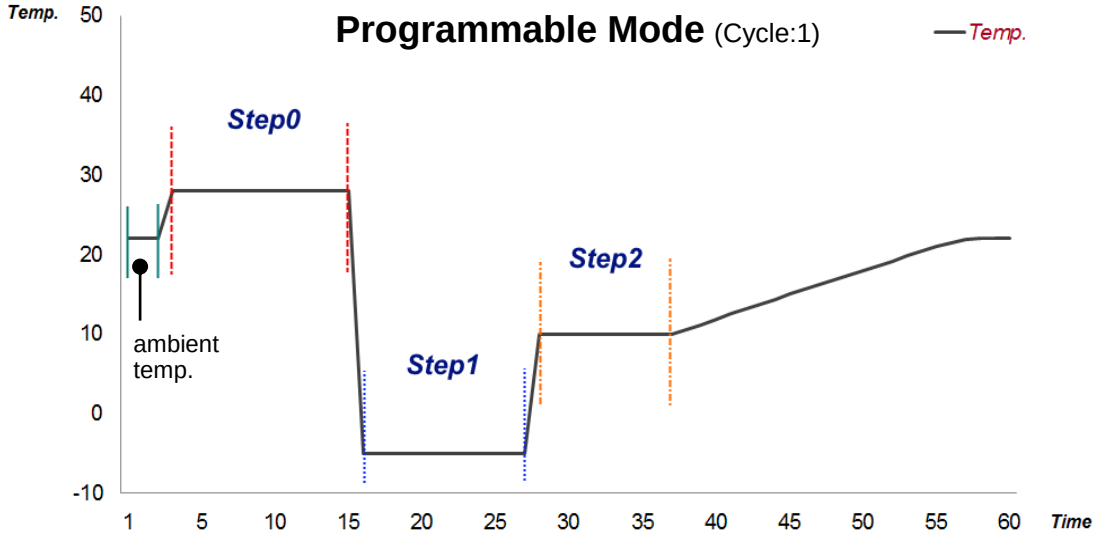


When running Programmable Mode, the current temperature of block and the step settings will show on the screen.

You can set up all 4 steps, or, for example, if you only need 3 steps (Step0 – Step2) in the program, set the running time in Step3 at 0 (zero). Then when the program finishes Step2, it will return to the first step or stop the temperature control (i.e., gradually return to the ambient temperature), depending on the numbers of cycles you set. The following charts are examples:

Program Setting	**Temp.**	**Time**
Step0	28	13
Step1	-5	12
Step2	10	10
Step3	0	0

☝ The temperature in Step3 can be set at any value. When the running time in one of steps is set at 0, the program will only run the previous steps.
And in this example, the running time in Step3 is 0, as a result, the system will recognize only 3 steps in this program.



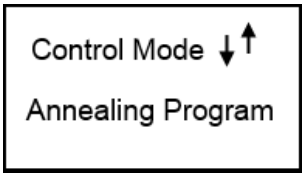
Block Temp.	22	22	22	28	28	28	28	28	28	28	28	28	28	28	28	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	10	10
Time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Step	*ambient temp.*			**Step0**													**Step1**												**Step2**	

Block Temp.	10	10	10	10	10	10	10	10	11	11	12	13	13	14	14	15	16	16	17	17	18	19	19	20	20	21	22	22	22	22
Time	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Step	**Step2**								*return to the ambient temp.*																					

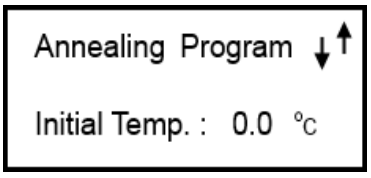
Press  key to display the set temperature and time. It will be kept on screen for 5 seconds or just press  key again to go back monitor screen immediately.

4.7 Operation Mode: Annealing Program

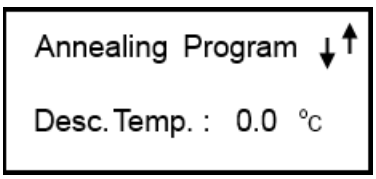
1. Switch the main power ON.
2. Use  key and  key to select "**Annealing Program**" icon, then press  key to enter next screen.



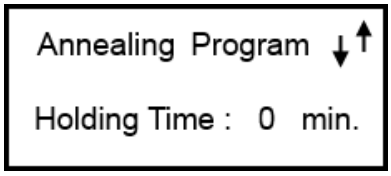
3. Use  and then press  key and  key to move cursor to the parameter. Use  key and  key to change the parameter. Press  key to store the updated value and use  to enter next screen. Press  key return to select operation mode page.
   a. Initial Temp.：Start reaction Temp.



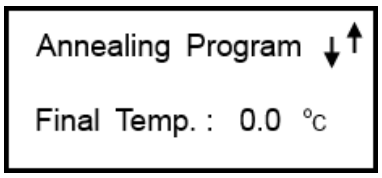
4. Use  and then press  key and  key to move cursor to the parameter. Use  key and  key to change the parameter. Press  key to store the updated value and use  to enter next screen. Press  key return to select operation mode page.
   b. Descending Temp.：To decrease Temp. on each step



5. Use  and then press  key and  key to move cursor to the parameter. Use  key and  key to change the parameter. Press  key to store the updated value and use  to enter next screen. Press  key return to select operation mode page.
   c. Holding Time：Holding time for each step



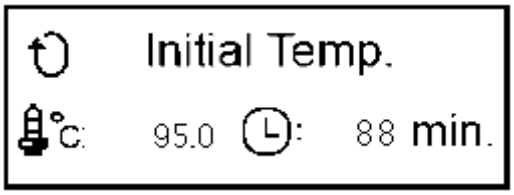
6. Use  and then press  key and  key to move cursor to the parameter. Use  key and  key to change the parameter. Press  key to store the updated value and use  to enter next screen. Press  key return to select operation mode page.
   d. Final Temp.：Temp. for end step



7. Press  key to start the program.

8. Press  key again to stop the unit. A confirm page will pop out, select “YES” to leave the mode.

Note (1):



When running Annealing Program Mode, the current temperature of block and the step settings will show on the screen

There are two situations for running time:

Case 1: set time is zero. Once the current block temperature reaches the set temperature, it will go to the next step immediately.

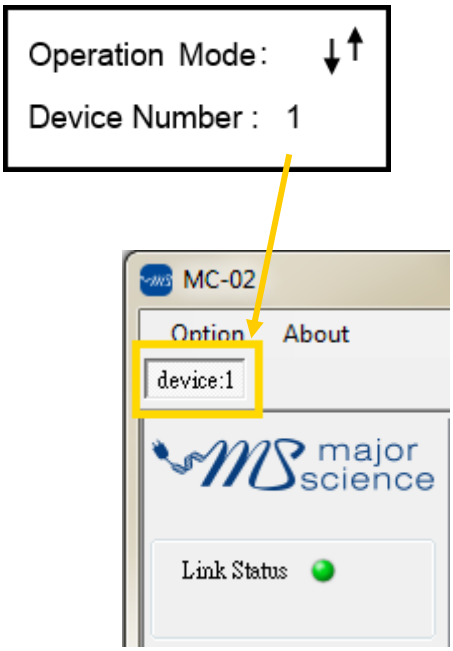
Case 2: set time is great then zero. Once the current block temperature reach the set temperature, the running time starts counting down to zero and stop temperature control.

Press  key to display the set temperature and time. It will be kept on screen for 5 seconds or just press  key again to go back monitor screen immediately.

Note (2): The final step in Annealing Mode step parameters will run 999 minutes unless stop by user.

4.8 Operation Mode: Setting Device Number

1. Switch the main power ON.
2. Use  key and  key to select "**Device Number**" icon, then press  key make the parameter become flashing. .Use  key and  key to change the step parameter then press  key to store the updated value (Device Number range is 1~99).



Section 5 Installation Software Instructions

***To start install the program, please log in as an administrator on the computer.**
Please refer to the Web link to change the account of computer:

a. For Windows® XP
http://www.microsoft.com/resources/documentation/windows/xp/all/proddocs/en-us/windows_security_runas.mspx?mfr=true

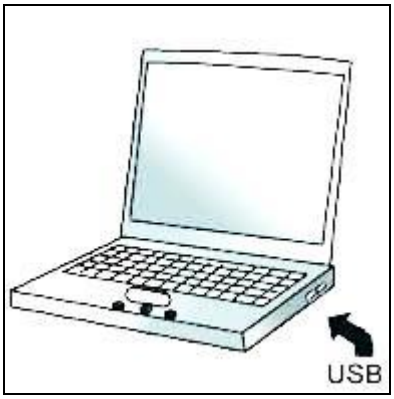
b. For Windows® 7
http://windows.microsoft.com/en-hk/windows7/installing-programs-frequently-asked-questions

c. For Windows® 8 and Windows® Vista

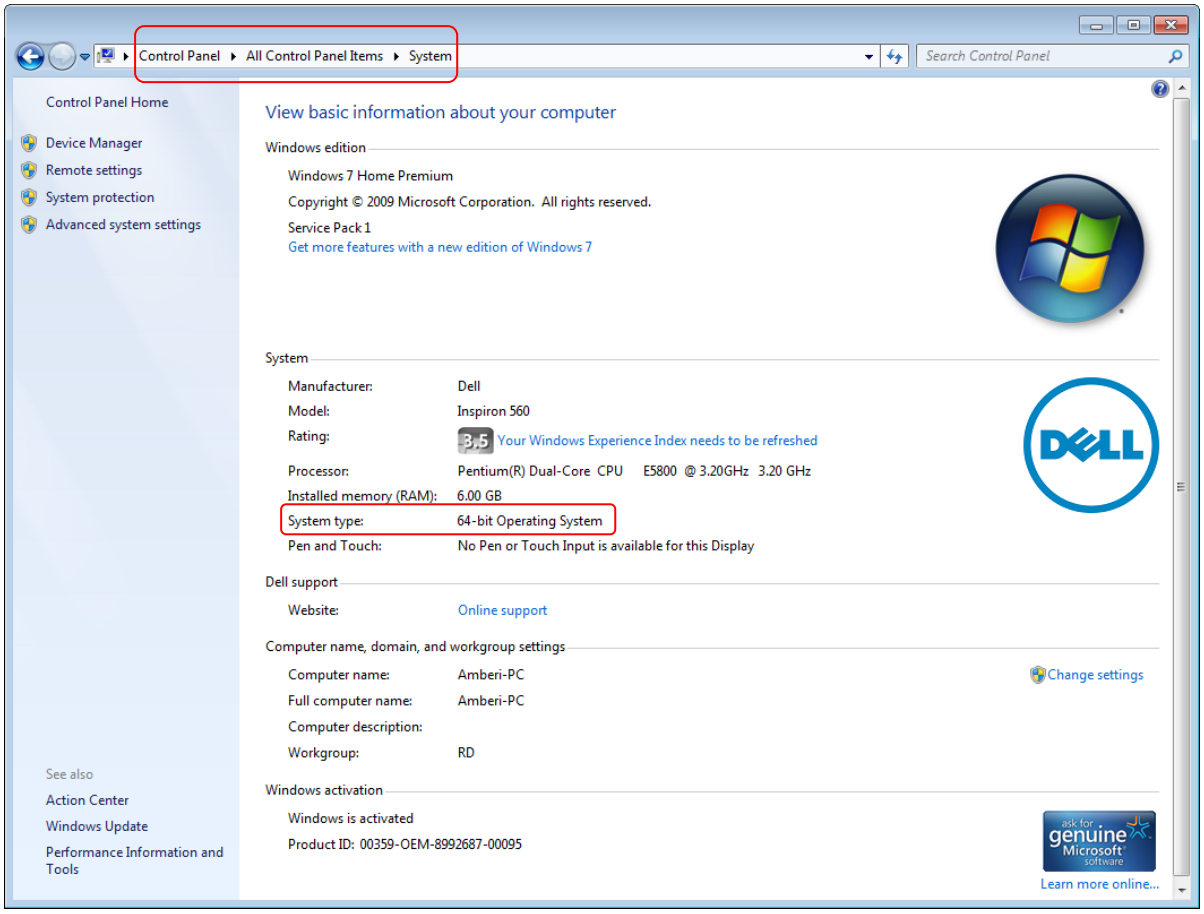
1. Go to the Search and type "Change User Account Settings" or Go to Control Panel > User Accounts and Family Safety > User Accounts.
2. Do one of the following:
   - To turn off UAC, move the slider to the Never notify position, and then click OK. If you're prompted for an administrator password or confirmation, type the password or provide confirmation. You will need to restart your computer for UAC to be turned off.
   - To turn on UAC, move the slider to choose when you want to be notified, and then click OK. If you're prompted for an administrator password or confirmation, type the password or provide confirmation

5.1 Install Mini cooler multi-device control software

Step1. Turn on the Mini cooler and connect the Mini cooler with the computer by USB wire.



Step2. Check computer system type.



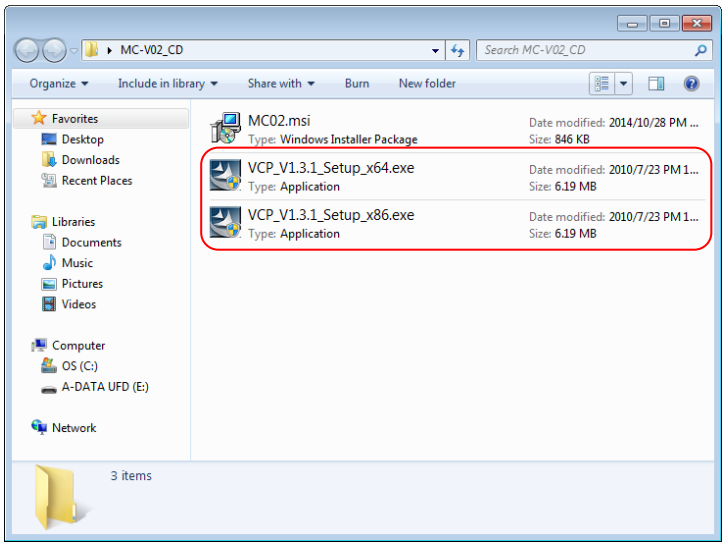
Step3. Install Mini cooler multi-device control software.

Note:

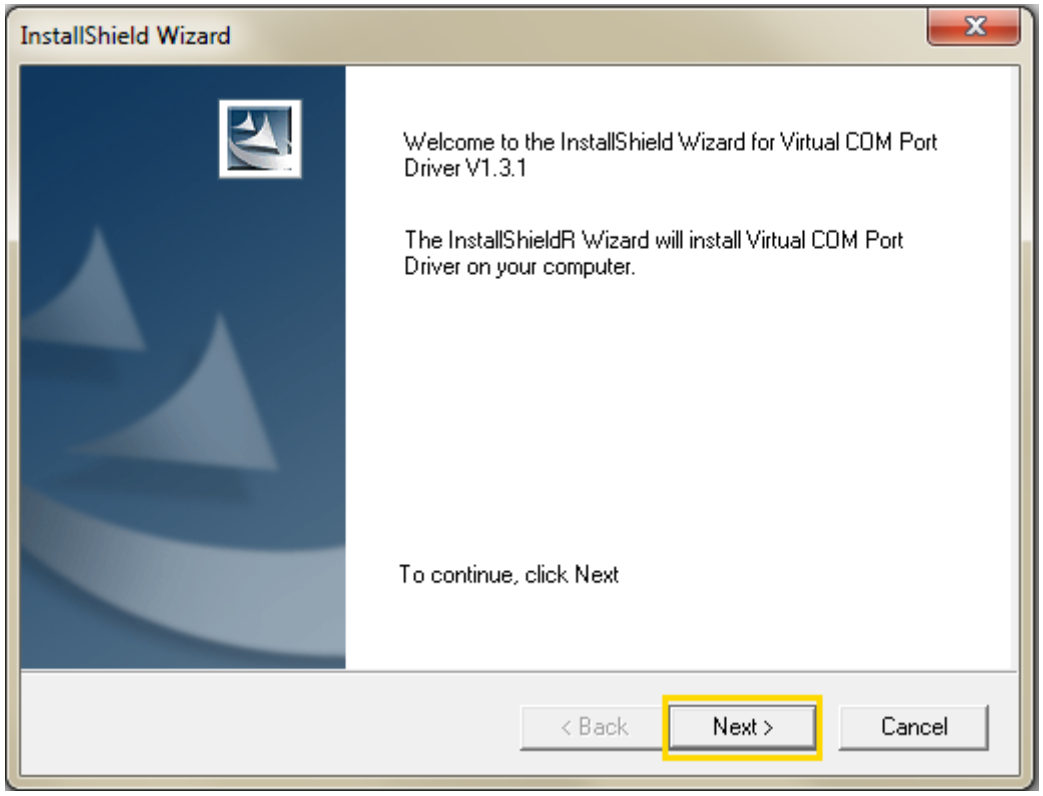
Six files are included in the software disk. Please install the corresponding software based on your computer system type.

System type A. 64 bit : use “VCP_V1.3.1_Setup_x64” (as box 1)

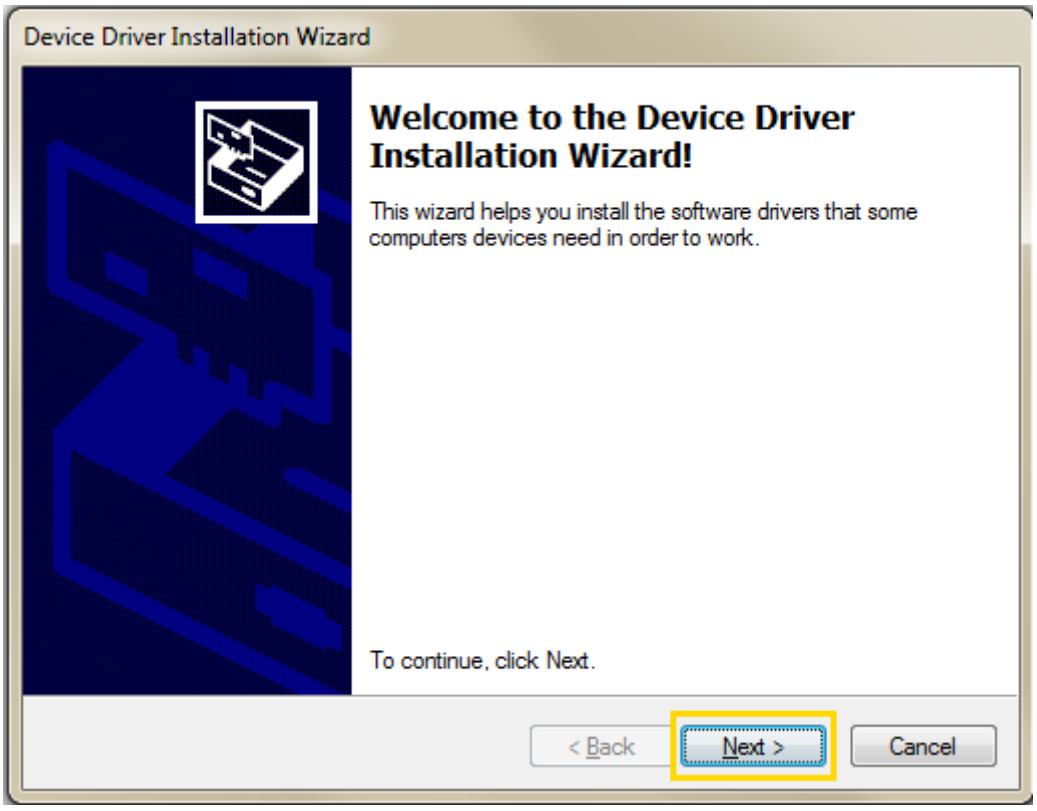
System type B. 32 bit : use “VCP_V1.3.1_Setup_x86” (as box 2).



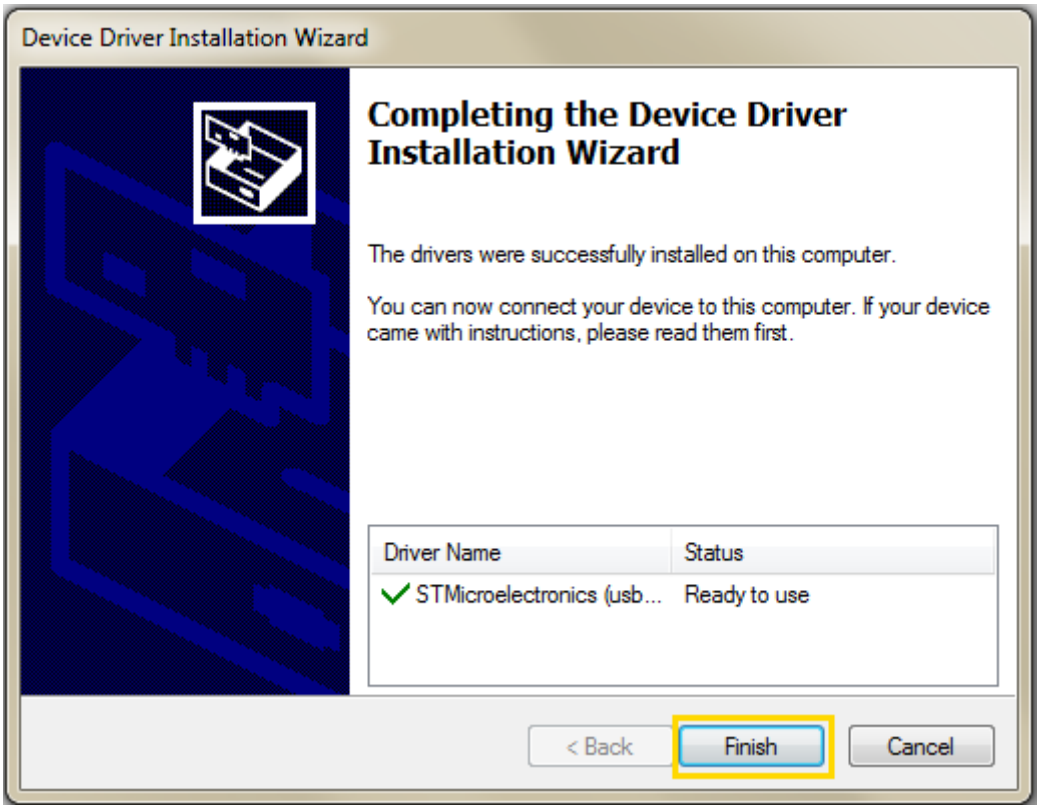
Step4. Click “next” to start installs the program.



Step5. Click “Next” to start installs the device in order to work program.

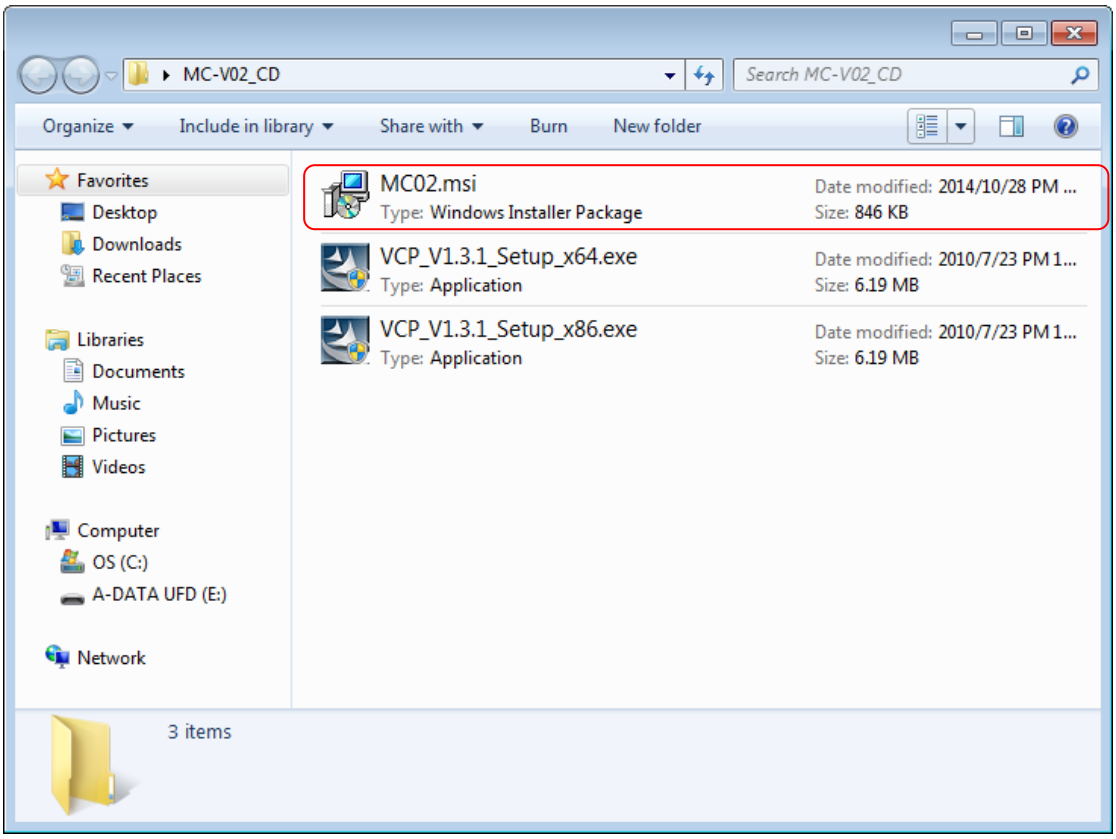


Step6. Complete the installation program.



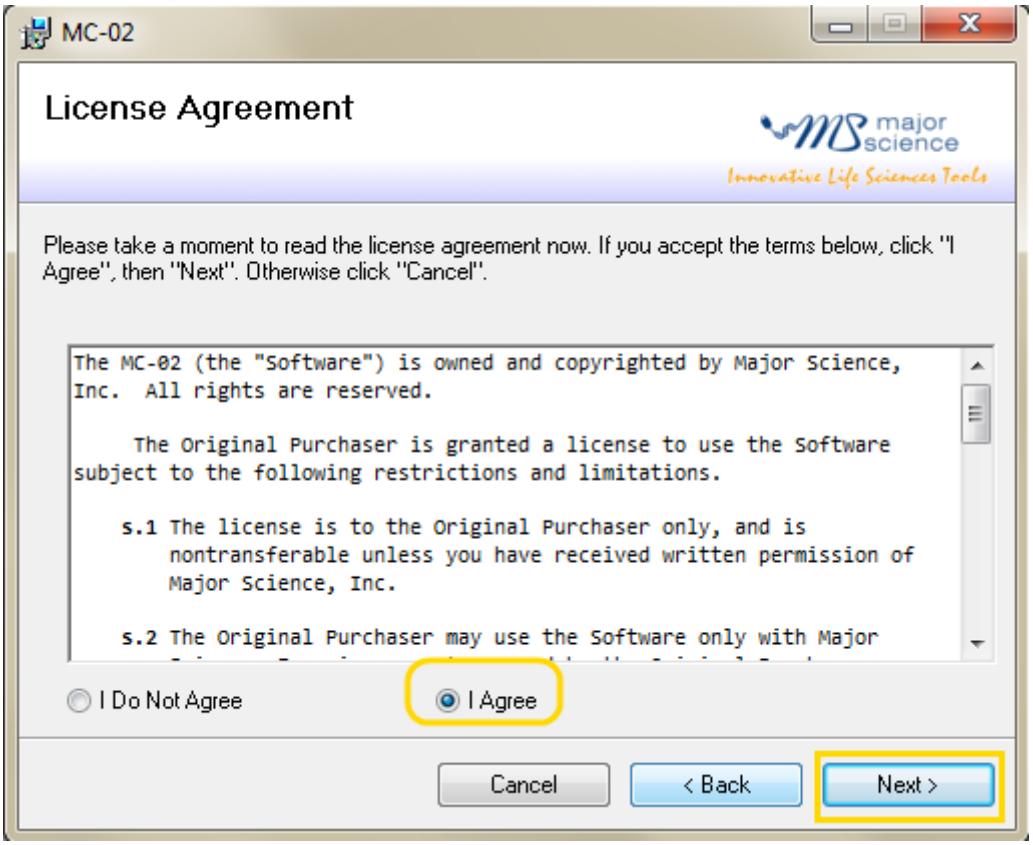
5.2 Install Mini cooler view chart software

Step1. Select MC-02 setup program.

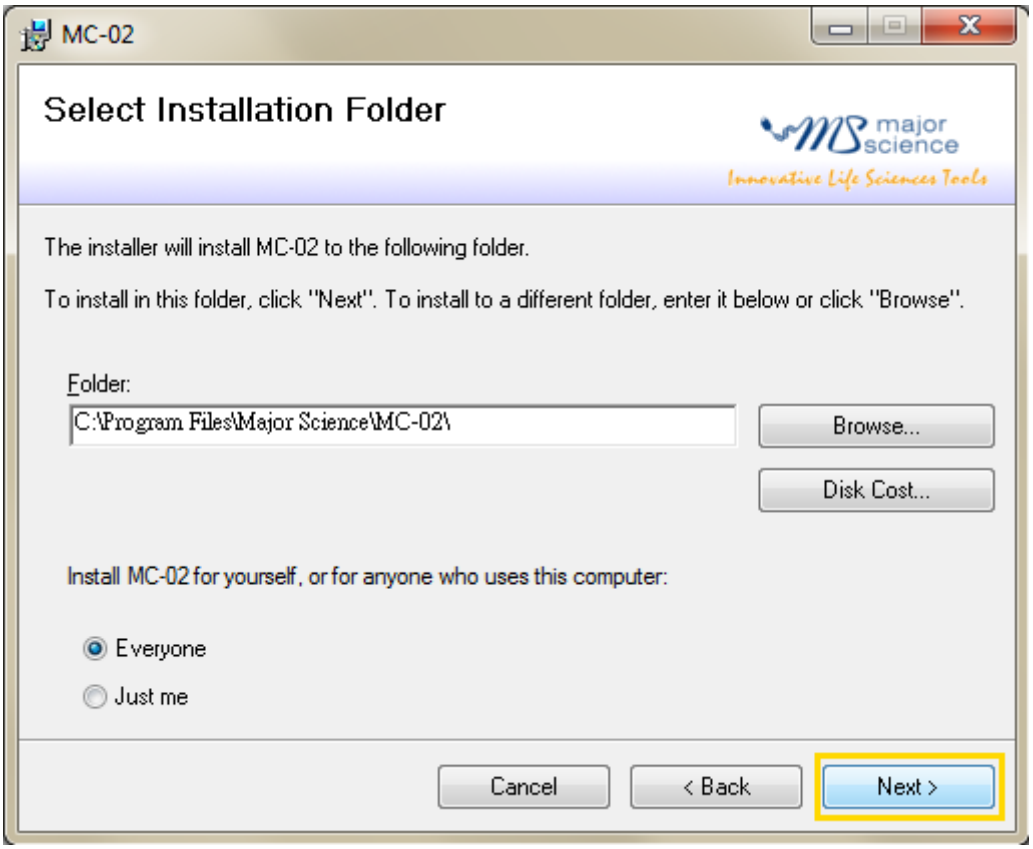


Step2. Install MC-02 setup program.

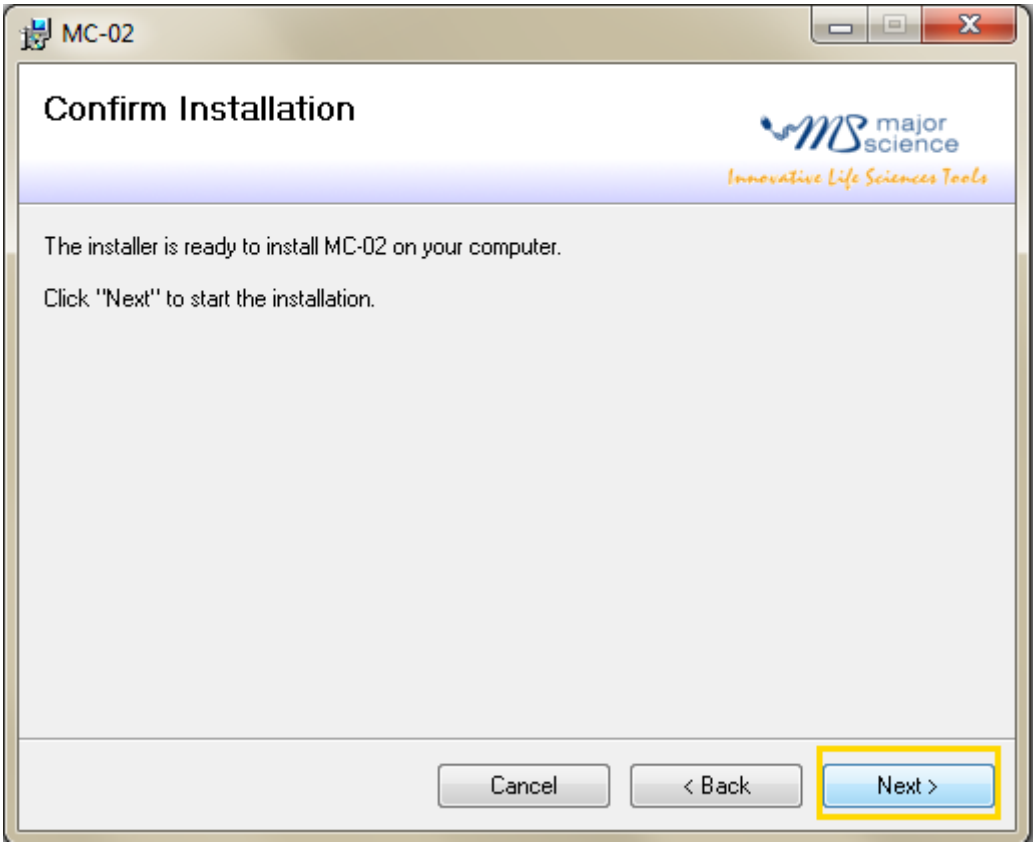
Step3. Accept the license agreement and then press the “Next” to proceed.



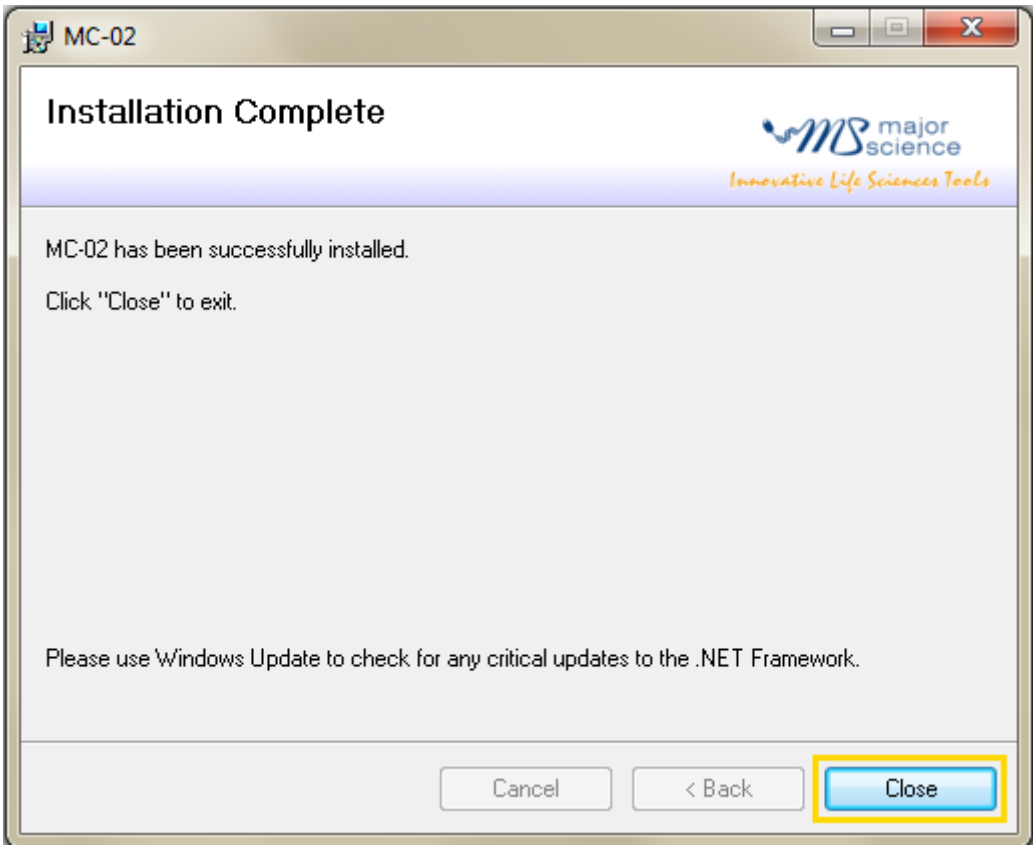
Step4. Save this program in your specifying location then press “Next” to proceed.



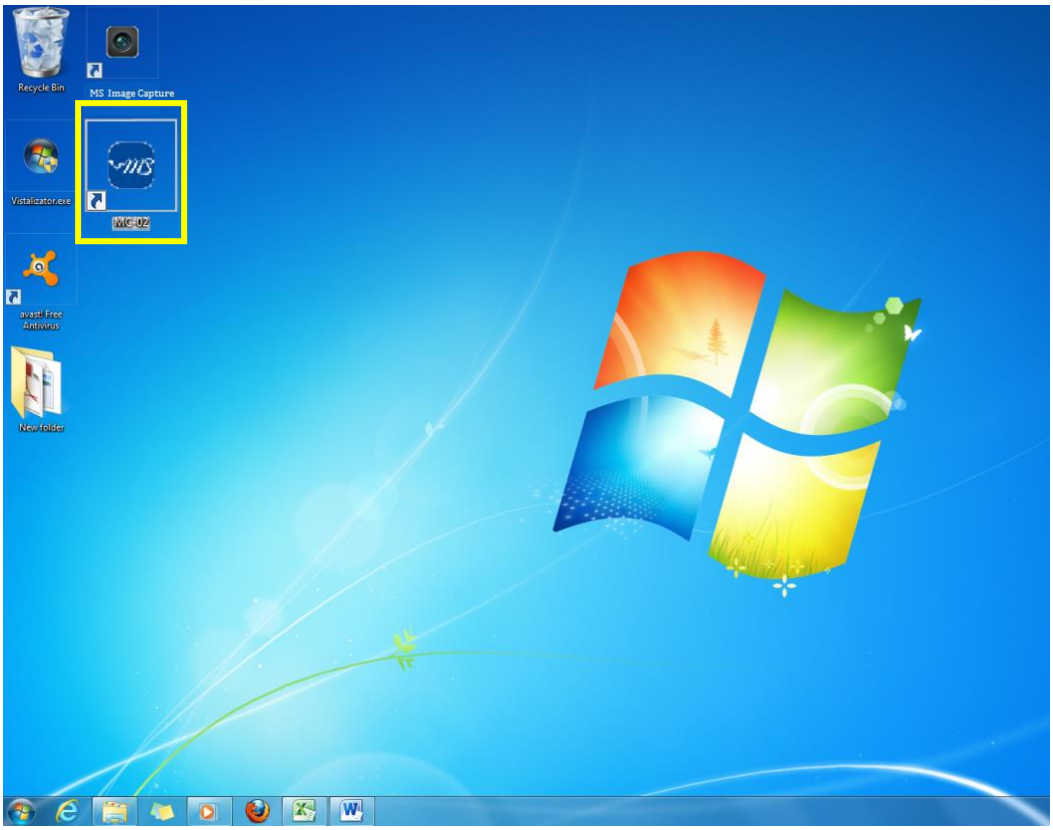
Step5. Click “Next” to begin the installation.



Step6. Press “Close” to complete the program installation.

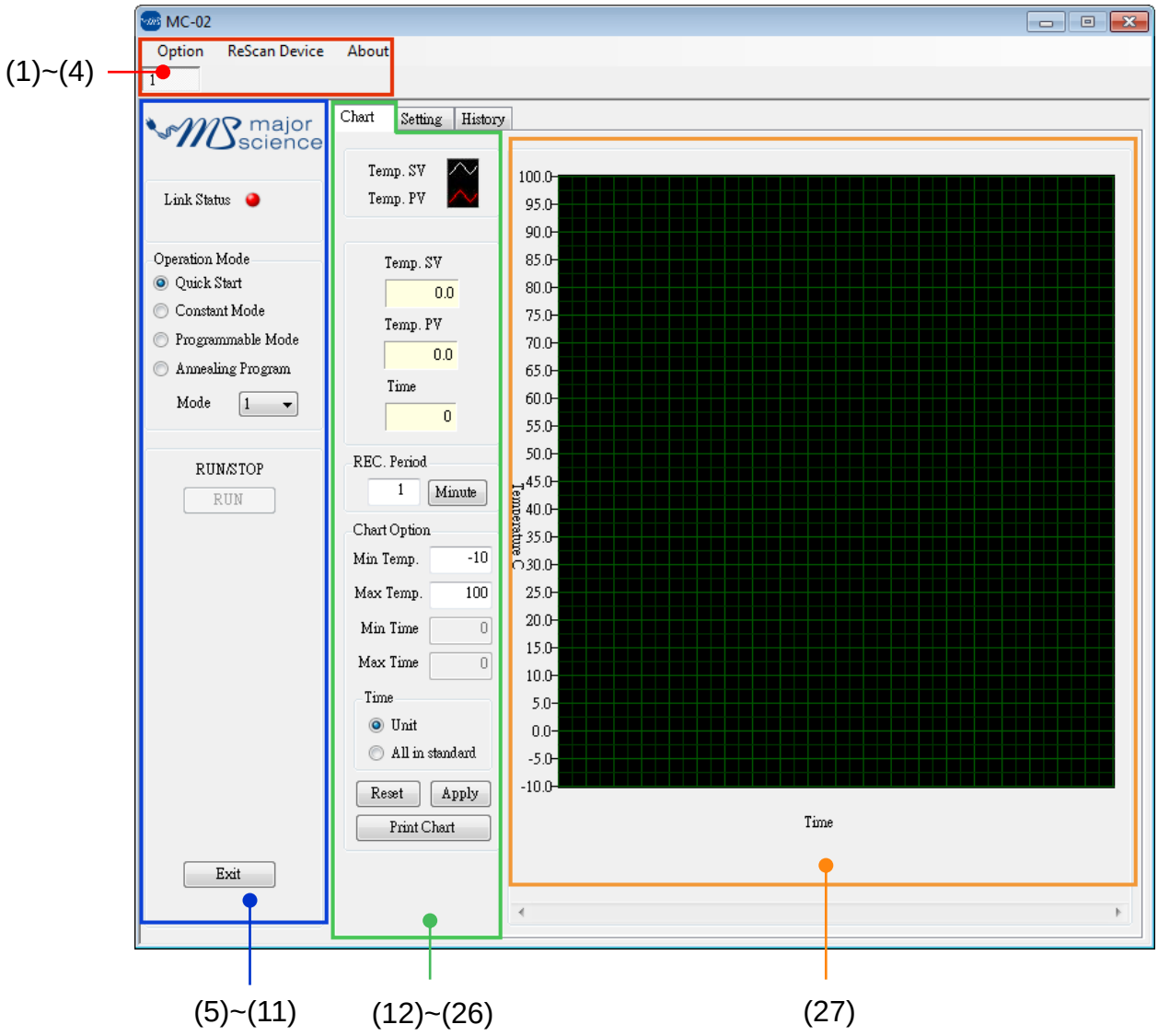


Step7. The short paths will be shown on desktop. Double click on MC-02 icon to open the software.



Section 6 Function Control Software Instructions

6.1 Temperature Monitoring Chart



System Setup Function

1. Option — **Option Setting**: Set up the file name format and record period.
2. ReScan Device — **ReScan Device**: Detect the connection of device.
3. About — **About Information**: MC-02 software version and patent information.

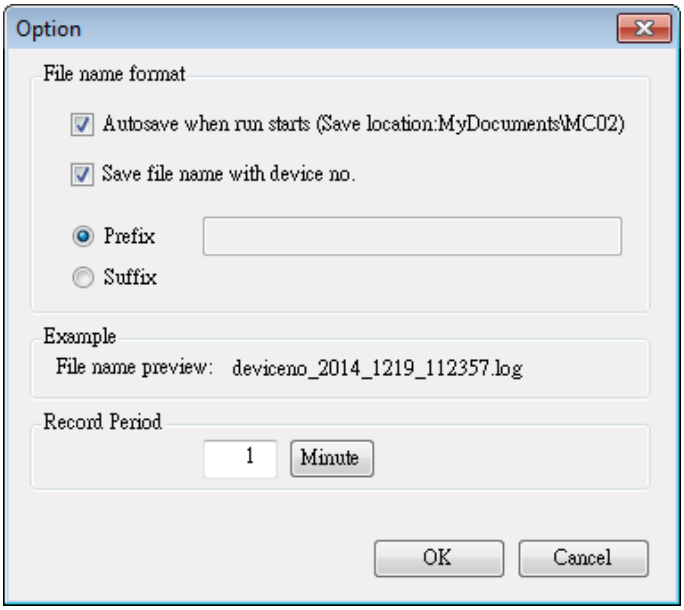
4. 

Device Number: Set device number (range: 1 – 99).

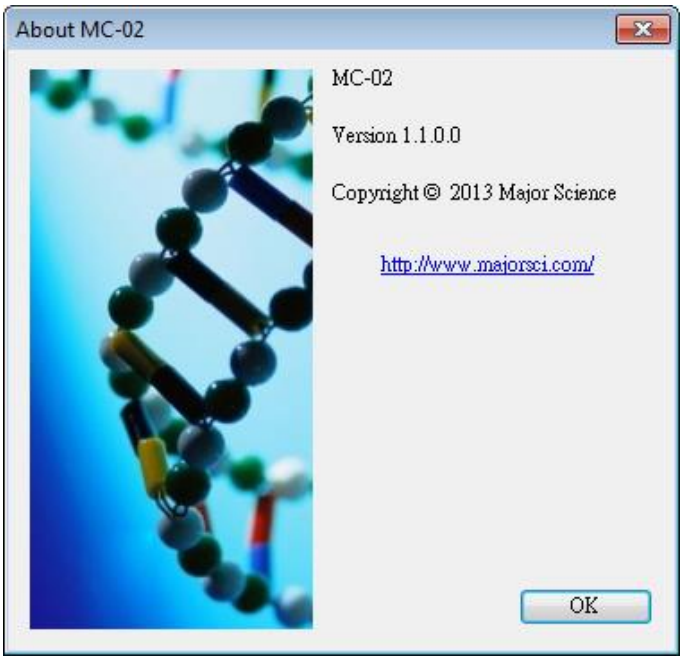
5. 

Link Status: The connection status of the device. Green light means the device is detected, while red light stands for disconnection or the device is undetected.

(1) **Option Setting**: Set the file name format



(2) **About Information**



Operation Mode:

6. Quick Start

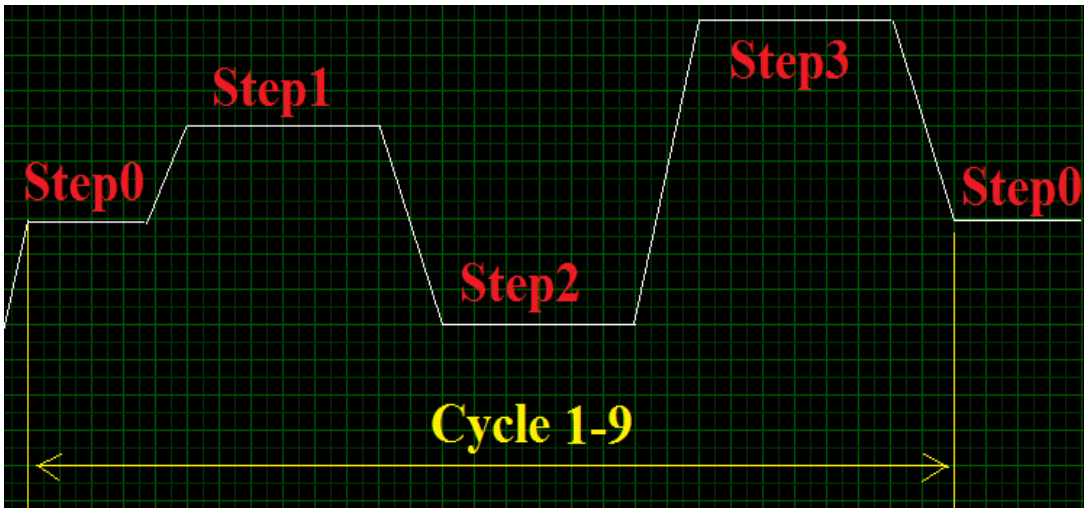
Quick Start: There are 5 default modes, to select the mode by scrollbar.

7. Constant Mode

Constant Mode: There are setting parameters for Temp. and Time.

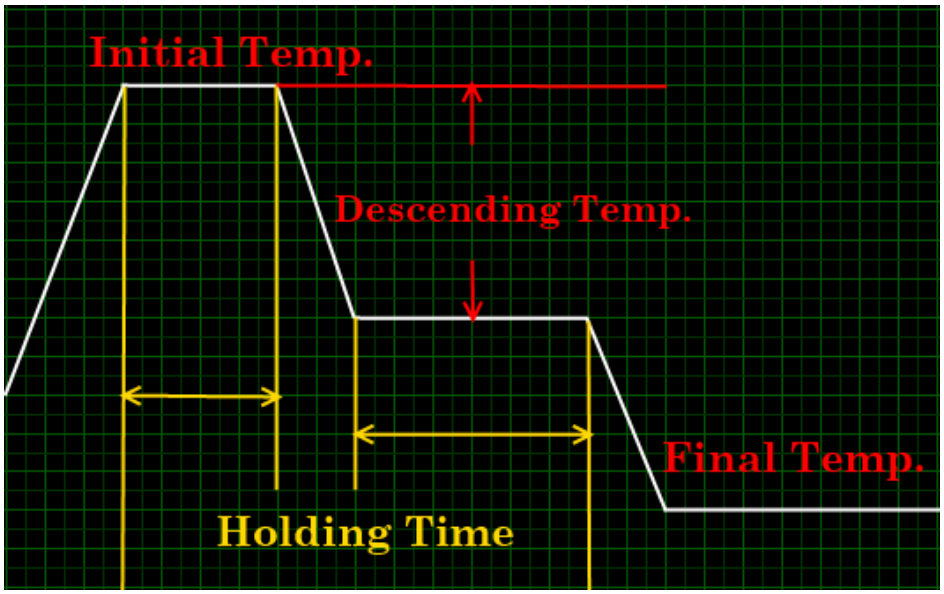
8. Programmable Mode

Programmable Mode: From Program 0 to Program 9, 10 programs for setting. To select the mode by scrollbar.



9. Annealing Program

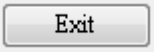
Annealing Program: There are setting parameters for Initial Temp., Descending Temp., Holding Time, and Final Temp.



Run / Stop Function:

10. 

Run: To start the operation mode.

11. 

Exit: To exit this software.

Temperature Curve Display

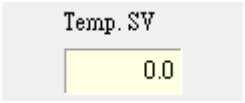
12. 

Temp. SV curve: The color of temperature set value curve is white.

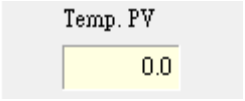
13. 

Temp. PV curve: The color of temperature real value curve is red.

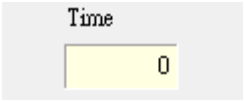
Temperature / Time Function

14. 

The set temperature value.

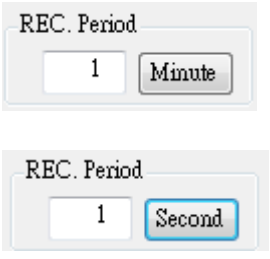
15. 

The real temperature value being measured.

16. 

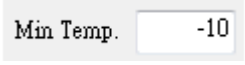
The set time value.

REC. Period

17. 

To set up how frequent the operation data is recorded. Press Minute or Second bottom, it can be set either in minute or in second.

Chart Option Function

18. 

To set the minimum temperature value on the chart.

19. 

To set the maximum temperature value on the chart.

20. 

To set the minimum time value on the chart.

21. 

To set the maximum time value on the chart.

Time Function

22. 

To show a part of time on the chart.

23. 

To show the current trend of the temperature.

Data Function

24. 

To reset all chart option parameters.

25. 

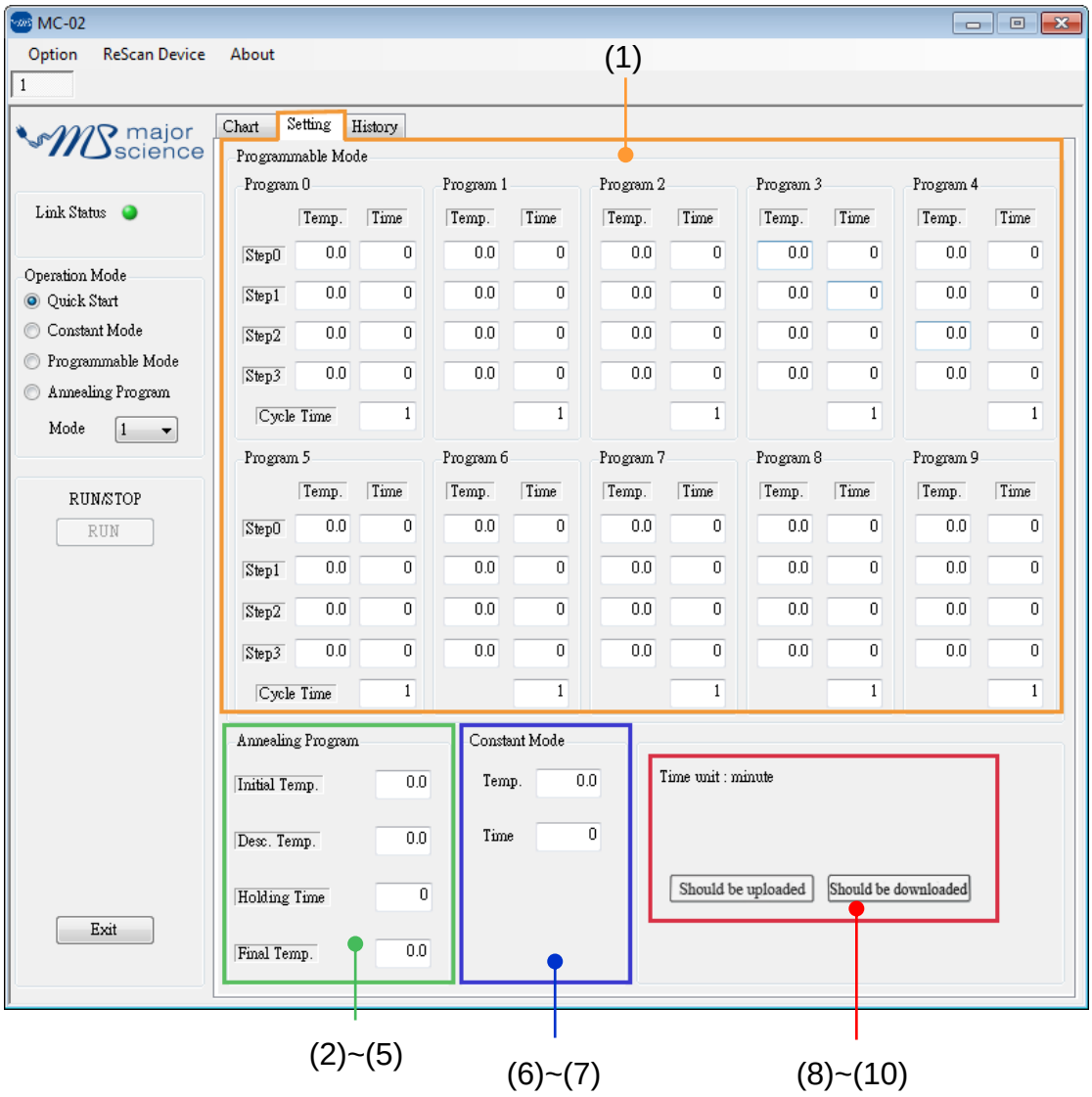
To apply the changes change the temperature value and time value by setting.

26. 

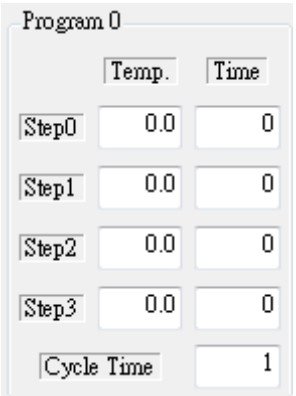
Print out the chart using the printer.

26. **Display Screen:** This area shows the real-time Temp. – Time curve.

6.2 Operation Mode Setting Table



Program Mode



1. There are 4 setting steps, from step 0 to step 3 for temperature (Temp.) and operation time (Time) setting, and also setting for Cycle Times.

Annealing Program

2. 

To set the initial temperature value.

3. 

To set descending temperature value.

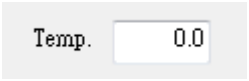
4. 

To set holding time value.

5. 

To set final temperature value.

Constant Mode

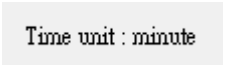
6. 

To set the target temperature value of constant mode.

7. 

To set the target time value of constant mode.

Time unit / Upload or Download Data

8. 

All set time parameters unit is minute.

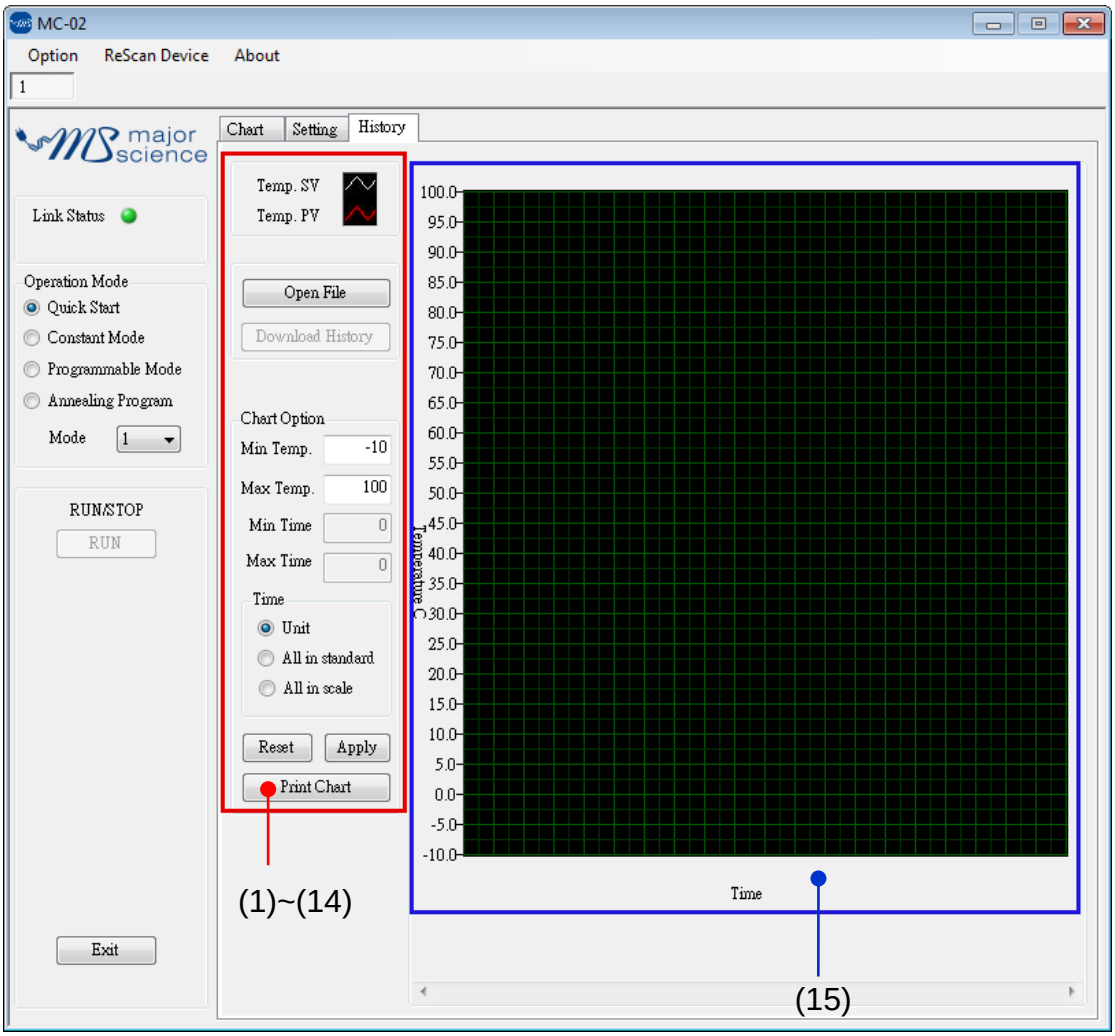
9. 

To upload the parameter in the software to Mini cooler.

10. 

To download the setting parameter from Mini cooler to the software.

6.3 View History



Temperature Curve Display

1. Temp. SV **Temp. SV curve:** The color of temperature set value curve is white.
2. Temp. PV **Temp. PV curve:** The color of temperature real value curve is red.

History Data

3. Open File To view historic record data.
4. Download History To download the historical data from Mini cooler to computer.

Chart Option Function

5. 

To set the minimum temperature value on the chart.

6. 

To set the maximum temperature value on the chart.

7. 

To set the minimum time value on the chart.

8. 

To set the maximum time value on the chart.

Time Function

9. 

To show a period of 20 minutes/seconds of the curve on the chart.

10. 

To show the whole curve on the chart.

11. 

To show a specific period of time of the curve on the chart. Input the desired minimum time and maximum time to the chart option.

Data Function

12. 

To reset all chart option parameters.

13. 

To change the temperature value and time value by setting.

14. 

Print out the chart using the printer.

15. **Display Screen:** This area shows the historical Temp. – Time curve.

Section 7 Troubleshooting Guide

Many operating problems may be solved by carefully reading and following the instructions in this manual accordingly. Some suggestions for troubleshooting are given below. Should these suggestions not resolve the problem, 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.

7.1 Problem and Solution

Problem	Recommendations
No signal on the screen	1. Check the **FUSE**
	2. Ensure that the AC power switch is ON
	3. Check the three-pronged power cord are properly plugged into a grounded three-prong AC outlet with the appropriate voltage
Fan Error	Contact our service department or a distributor in your region.

7.2 Maintenance

Mini cooler 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

7.3 Temperature Calibration

Mini Cooler with the optional block has been calibrated as a set. But, the different kinds of block, whose △T are not the same result different influences. For optimum accuracy temperature control or while changing with different kinds of block, Mini Cooler should be calibrated in accordance with the procedure outlined below.

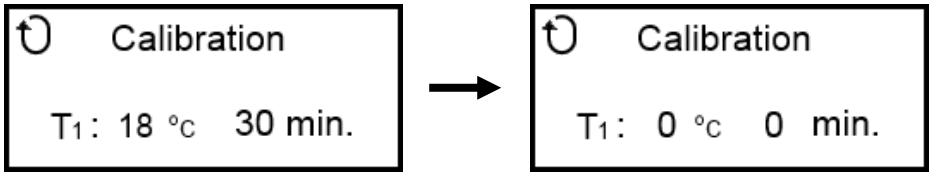
Note: This has been done in factory.

1. Insert a 300mm calibrated laboratory Thermometer into the Thermometer holding port on the block.

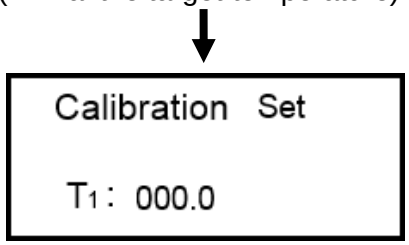
2. Please switch the main power OFF/ON and press 

key simultaneously until the display 1100 (range is: 1000~1500) appeared which is located on the up left area of display shown as below. And then release them immediately.

3. The Inner Calibration Screen is displayed. T1 default target temperature is 0℃. The device will start cooling from ambient to 0℃, when temperature arrival 0℃ and then to start countdown from 30 min to 0 min. The device will alarm “beep” while T1 0℃ and 0 min. T1 value is flashing, and then use  key and  key to enter the real temperature as thermometer. Press  key to store the updated value.

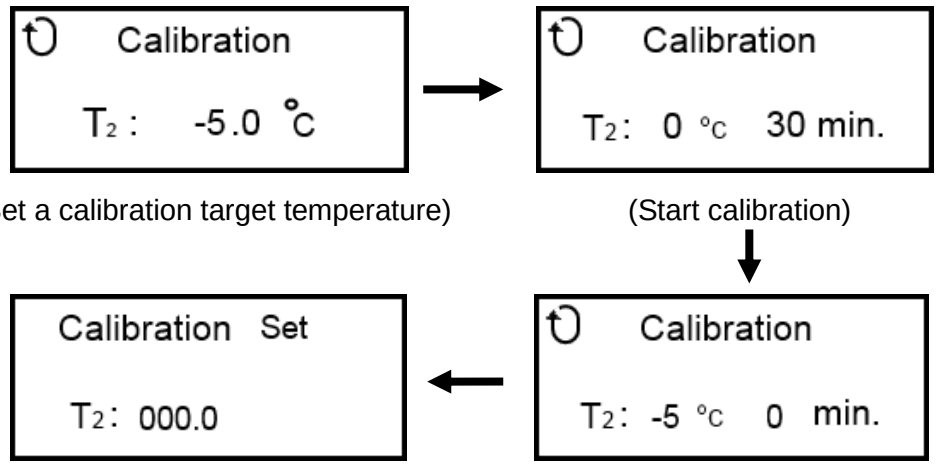


(Start calibration) (Arrival the target temperature)



(Key in the same value as thermometer)

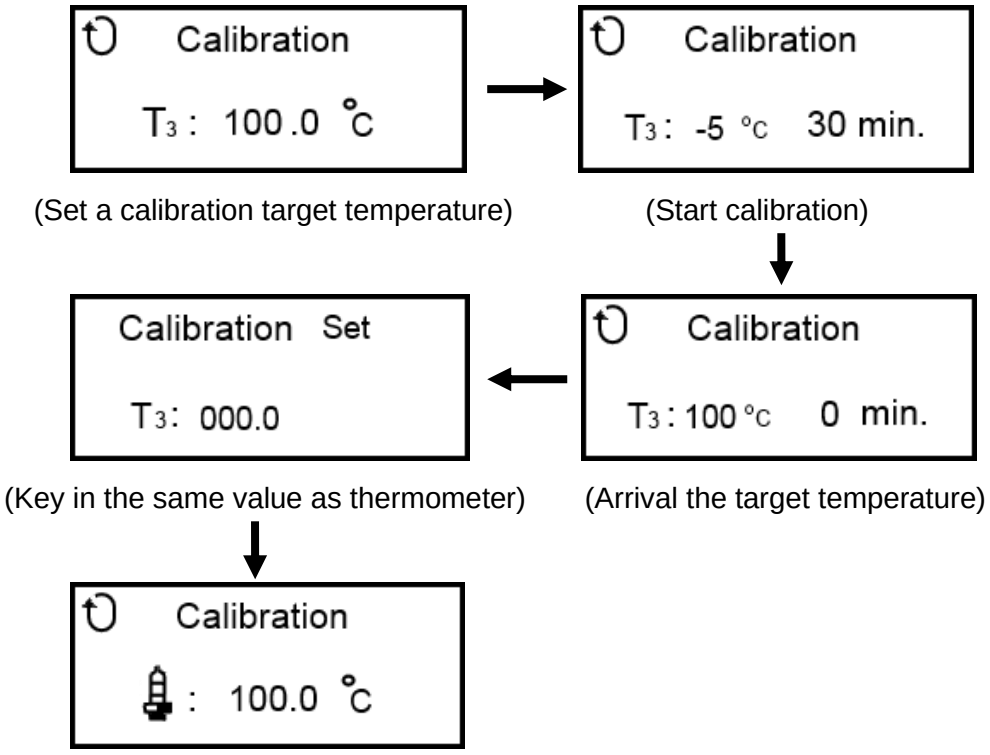
4. Use key and key to adjust the T2 value (temperature range is -5℃ ~ -10℃). The device will start cooling from 0℃ to -5℃, when temperature arrival -5℃ and then to start countdown from 30 min to 0 min. The device will alarm “beep” while T1 -5℃ and 0 min. T2 value is flashing, and then use key and key to enter the real temperature as thermometer. Press key to store the updated value.



(Set a calibration target temperature) (Start calibration)

(Key in the same value as thermometer) (Arrival the target temperature)

5. Use key and key to adjust the T3 value (temperature range is 37℃ ~ 100℃). The device will start heating from -5℃ to 100℃, when temperature arrival 100℃ and then to start countdown from 30 min to 0 min. The device will alarm “beep” while T3 100℃ and 0 min. T3 value is flashing, and then use key and key to enter the real temperature as thermometer. Press key to store the updated value.



6. Please wait for few more minutes that microprocessor will auto adjust temperature until display value is the same as thermometer.

Section 8 Ordering information

Cat. No.	Description
MC-0203	Mini Cooling Dry Bath Incubator, 200 series, programmable cooling and heating capability, without block

ACCESSORIES

MD-MINI-B01	For 0.2ml tube(PCR Strip tube), ø 6.35mm, 32 wells, L71xW47xH32, Depth 19mm
MD-MINI-B02	For 1.5ml tube, ø 10.8mm, 12 wells, L71xW47xH32mm, Depth 28.5mm
MD-MINI-B03	For 15ml tube, ø 17.3mm, 6 wells, L71xW47xH75mm, Depth 70mm
MD-MINI-B04	For 50ml tube, ø 29.2mm, 2 wells, L71xW47xH75mm, Depth 72mm
MD-MINI-B05	For 0.5ml tube, ø 8.0mm, 12 wells, L71xW47xH32mm, Depth 25mm
MD-MINI-B06	For 2.0ml or 1.5ml tube, ø 11.0mm, 12 wells, L71xW47xH32mm, Depth 30mm
MD-MINI-B07	For 2.0ml or 1.5ml tube, ø 10.9mm, 12 wells, L71xW47xH32mm, Depth 30mm
MS-BL95-E	Block lifter 95mm, with E-Type Retaining Rings
MD-MINI-CAR-ADAPTER	Car Adapter for Mini cooler, 1.5m
MD-MINI-LID	MD-MINI Lid, 58.5x83x31.5mm

Note: Customized Aluminum block is also available.

For more detailed Block information, please contact us at info@majorsci.com or visit our web-site, www.majorsci.com.

Section 9 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.

Manufacturer
Major Science Co., Ltd.

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