

# Genius Dry Bath Incubator

## Instruction Manual

Catalog No. MD-01N-110 / 220  
MD-02N-110 / 220  
MD-01N-T-110 / 220  
MD-02N-T-110 / 220



[www.majorsci.com](http://www.majorsci.com)  
[service@majorsci.com](mailto:service@majorsci.com)

Version 02D  
Revision on:2015.08.12

## Packing list

**MD-01N-110 / 220 *or***

**MD-02N-110 / 220:**

- 1 × Single Block Genius Dry Bath Incubator *or*  
1 × Dual Block Genius Dry Bath Incubator
- 1 × Power Cord
- 1 × Genius Dry Bath Incubator Instruction Manual

**Note:**

You may not install the external temperature probe by yourself if purchasing MD-01N-110 / 220 or MD-02N-110 / 220. Consider carefully before purchasing.

**MD-01N-T-110 / 220 *or***

**MD-02N-T-110 / 220:**

- 1 × Single Block Genius Dry Bath Incubator *or*  
1 × Dual Block Genius Dry Bath Incubator
- 1 × External Temperature Probe
- 1 × Power Cord
- 1 × Genius Dry Bath Incubator 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

---

<b>Packing list</b> .....	<b>1</b>
<b>Warning</b> .....	<b>3</b>
<b>Section 1 Introduction</b> .....	<b>7</b>
1.1 Overview .....	7
1.2 Control and Features.....	7
<b>Section 2 Product Description</b> .....	<b>9</b>
<b>Section 3 Product Specifications</b> .....	<b>10</b>
<b>Section 4 Installation Instructions</b> .....	<b>11</b>
<b>Section 5 Operation Instructions</b> .....	<b>12</b>
Temperature Calibration .....	13
<b>Section 6 Function Control Software Instructions</b> .....	<b>15</b>
6.1 Installation Instruction.....	15
6.2 Operation Instruction .....	15
<b>Section 7 Troubleshooting &amp; Maintenance</b> .....	<b>18</b>
Troubleshooting Guide .....	18
Error Detection .....	18
Maintenance.....	19
<b>Section 8 Ordering Information</b> .....	<b>20</b>
<b>Section 9 Warranty</b> .....	<b>21</b>

## Warning

Major Science Genius Dry Bath Incubator has been tested and found to comply with safety limits for the CE regulation. Also, Genius 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 handling 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 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](mailto:service@majorsci.com)

### **Environmental Conditions**

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

1. Indoor use only
2.  $\leq 95\%$  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  $\pm 10\%$  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.
5. 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 Genius 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

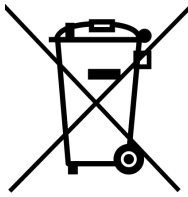
The symbols used on Genius Dry Bath Incubator are explained below.



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

---

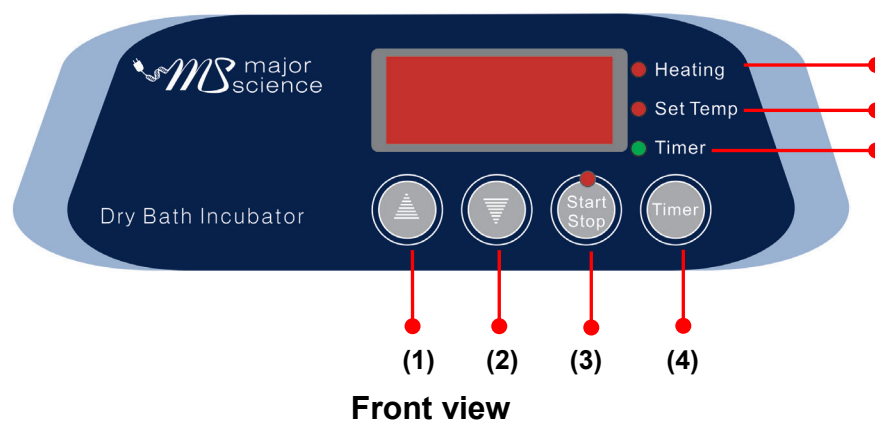
### 1.1 Overview

Major Science's single and dual block Genius Dry Bath Incubators 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. Genius Dry Bath Incubators are also space compact instruments with competitive pricing offerings. It is a user friendly unit that comes with great value. More importantly, Genius Dry Bath Incubators are RoHS compliant and designed to comply with the CE regulation.

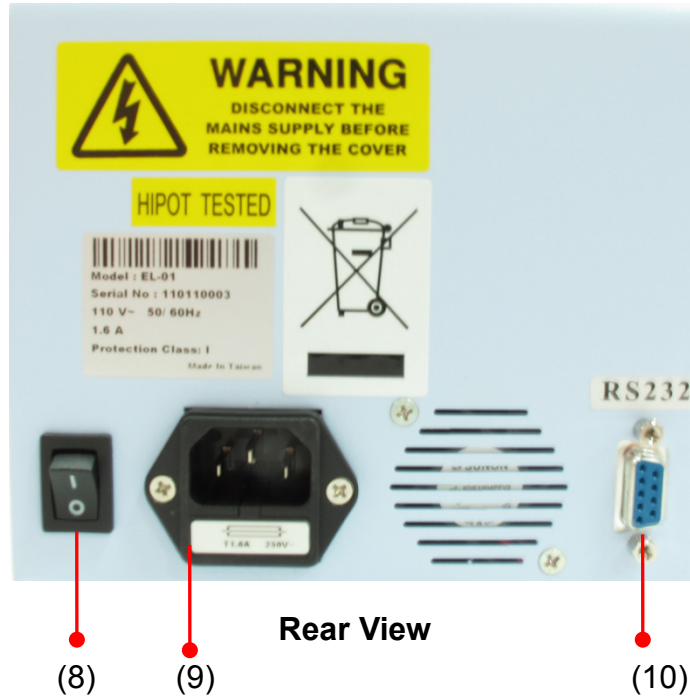



### 1.2 Control and Features


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









(1)  Key – to increase temperature or time value

(2)  Key – to decrease either temperature or time value

(3)  Key – activate or stop the unit.

(4)  Key – set or select timer mode

(5) TIMER – This LED light indicates running Timer Mode

(6) Set Temp - This LED light indicates temperature is on setting value

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

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

(9) AC Power Cord and Fuse Holder – Power Cord Socket and Fuse Holder

(10) RS232 Connected Port – for Data Log

## Section 2 Product Description

---

Both single and dual block Genius Dry Bath Incubators use interchangeable heating block modules for a variety of applications, including restriction enzyme digestion, denaturing DNA, BUN, 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 150°C. An optional temperature probe is available for placing directly in samples. A timer equipped within the unit may be set from 1 to 999 min for user's convenience. In addition to Function Control software package which controls the dry bath incubator through a computer is also a comprehensive design for your experiment.

### Features:

Microprocessor controller with digital display

User temperature calibration

Leakage proof for molded aluminum alloy heating chamber

Single and Dual block modes

Optional external temperature probe is available

Optional Function Control software package is available

### Section 3 Product Specifications

---

Controller	Digital microprocessor controller
Display	LED display
Heating Power	125W for MD-01N 200W for MD-02N
Power Rating	1.0A for MD-01N 1.6A for MD-02N
Temperature Control Range	5°C above ambient to 150°C
Temperature Increment	0.1°C
Temperature Calibration	Yes
Temperature Uniformity	± 0.2°C @ 37°C
Temperature Accuracy	± 0.2°C @ 37°C
Timer	1- 999 min, continuous
Safety Device	Leakage proof for heating chamber Over Temperature protection SSR failure detection
Operating Temperature	Ambient to 40°C
Heating Chamber Material	Molded aluminum alloy chamber
Chamber Dimension	104.5 x 79.5 x 50 mm (W x L x H) for MD-01N 159.5 x 104.5 x 50 mm (W x L x H) for MD-02N
Block Material	Aluminum
Block Type	Standard and customized types are available
Data Log	RS-232 (Max. 2.5 meter long)
Rated Voltages	110V~ or 220V~; 50/60Hz
Unit Dimension	200 x 298 x 80mm (W x L x H)
Weight	Approx.2.6 kg for MD-01N Approx.2.8 kg for MD-02N
Operating System	Windows XP(32-bit)/ Windows Vista(32-bit)/ Windows 7(32/64bit) / Windows 8(64bit)

## **Section 4 Installation Instructions**



---




Genius Dry Bath 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 5 Operation Instructions


---

1. Place Genius Dry Bath Incubator on a sturdy and level surface in a safe, dry place, away from laboratory traffic.
2. Ensure that the AC power switch is OFF, then plug the three-pronged power cord into a grounded three-prong AC outlet of the appropriate voltage (115V or 220V as indicated on the rating sticker near the AC cord on the back of the unit).
3. Select suitable module block(s) or appropriate water volume and put it / them into the Genius Dry Bath Incubator.
4. Turn the AC power ON.
5. Run temperature calibration procedure when using the instrument for the first time (see page 12).

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

7. If setting heating time is required, 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. If to reset timer is required during heating, press  Key to deactivate heating.

10. If the optional external temperature probe is used, plug it into the connector located on the rear panel.

### Note:



If you'd like to have an additional external temperature probe, please contact with Major Science and send the instrument back to our factory.

11. Press  Key again to stop the unit.

## Temperature Calibration




Genius Dry Bath Incubator with the optional block(s) 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, Genius Dry Bath Incubator should be calibrated in accordance with the procedure outlined below.

1. Insert a 300mm calibrated laboratory thermometer into the thermometer holding port, which is on the block, or in the middle of chamber when water is filled.


2. Switch the main power ON and press  Key simultaneously. The Genius Dry Bath will beep and the LED display (bottom left segment) will start flashing. This indicates the unit being under Calibration Mode. Release the  Key.



**This Segment will be flashing**

3. Press  or  Key to adjust display value to the temperature you want to control accurately, and then press  Key.

4. Wait for approximately 40~50 min until “all LED figure” is flashing.

5. Adjust the display value to the same value as thermometer. And then press  Key.

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

## Section 6 Function Control Software Instructions

---

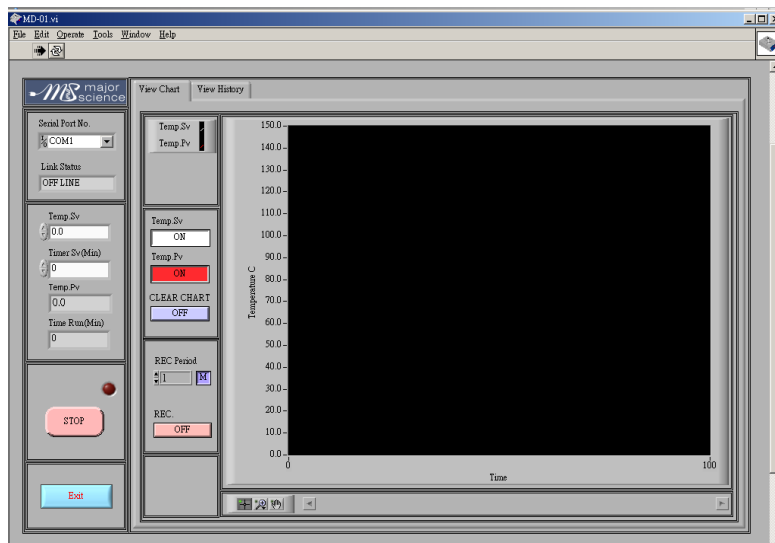
NOTE: All rights reserved by Major Science co., Ltd.

### 6.1 Installation Instruction

1. Insert the CD into CD ROM and press the setup.exe in the Installer Folder for installation.
2. Follow up the instructions shown on the computer display screen to complete the installation.

### 6.2 Operation Instruction



1. Start MD-01 software program. The screen below will be displayed. There are two main sections in the software: View Chart, and View History.



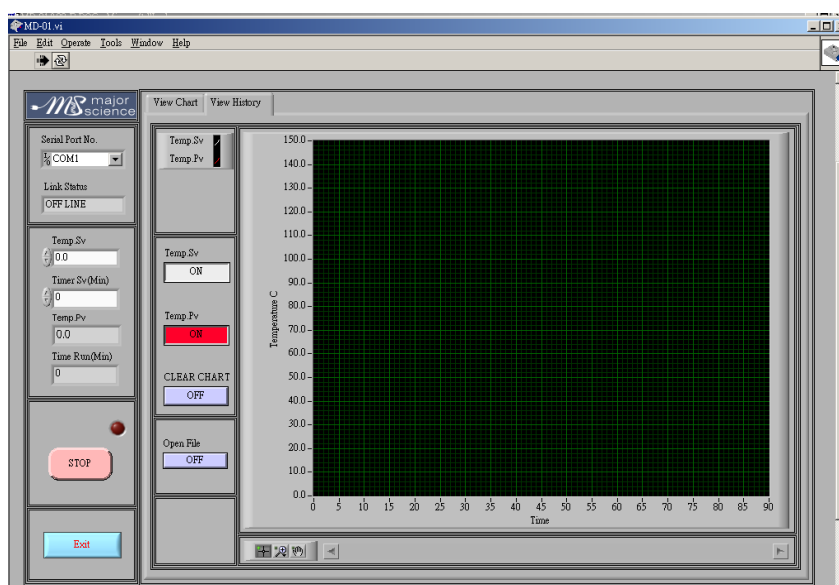
2. View Chart Section:

Serial Port No.	Communication port selections between computer and Genius Dry Bath Incubator
Link Status	Indication whether Genius Dry Bath Incubator is linked with computer or not
STOP	For Genius Dry Bath Incubator ON / OFF control
EXIT	To exit this software
Temp. SV	The set temperature value





Temp. PV	The real temperature value being measured
Timer SV (Min)	To set operation time
Time RUN (Min)	To indicate how many minutes Genius Dry Bath Incubator is being operated
Temp. SV ON / OFF	To show the temp set value on the table or not
Temp. PV ON / OFF	To show the real time temp value on the table or not
REC. period	To set up how frequent the operation data is recorded
REC. period ON / OFF	To start or stop recording
	Enlarge the record table
	Move the record table

### 3. View History Section:



Serial Port No.	Communication port selections between computer and Genius Dry Bath Incubator
Link Status	Indication whether Genius Dry Bath Incubator is linked with computer or not
STOP	To stop the software and instrument
EXIT	To exit this software
Temp. SV	The set temperature value
Temp. PV	The real temperature value being measured
Timer SV (Min)	To set operation time
Time RUN (Min)	To indicate how many minutes Genius Dry Bath Incubator is being

	operated
Temp. SV ON / OFF	To show the temp set value on the table or not
Temp. PV ON / OFF	To show the real time temp value on the table or not
CLEAR CHART OFF	To clear up the curves in the table
Open File	ON: to view historic record data OFF: No historic record data is shown
	Enlarge the record table
	Move the record table

## Section 7 Troubleshooting & Maintenance

---

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, 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.

### Troubleshooting Guide

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

### Error Detection

Error Types	Description	Solution
Err1	If the actual temperature is over 5°C than the set temperature value during operation, "Err1" will be displayed along with alarm, and the instrument will shut down automatically.	Turn off the device and restart it. Check if the problem still exists. If yes, please contact the service department of Major Science or your local distributor for further assistance.
Err2	If temperature value rises automatically without pressing the START Key to start heating after powering on the unit, "Err2" will be displayed with alarm. This problem is due to SSR failure.	Please contact the service department of Major Science or your local distributor for service.
Err3	If internal temperature sensor is broken or connection problem occurs during operation, "Err3" will be displayed with alarm, and the instrument will shut down automatically.	Please contact the service department of Major Science or your local distributor for service.

## Maintenance

Genius Dry Bath Incubator 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).

**The heating chamber surface contains a PTFE coating.  
Please avoid contact with sharp objects.**

## Section 8 Ordering Information

---

Cat. No.	Description
MD-01N-110/220	GENIUS Dry Bath Incubator (one block unit); without block
MD-02N-110/220	GENIUS Dry Bath Incubator (dual block unit); without block
MD-01N-T-110/220	GENIUS Dry Bath Incubator (one block unit) with an External Temp Probe
MD-02N-T-110/220	GENIUS Dry Bath Incubator (dual block unit) with an External Temp Probe

### ACCESSORIES

MD-RS232	RS 232 cable
MD-P01	Thermocouple, optional temp probe for MD-01N / MD-02N
MD-PCSW	Function Control software package
MD-PCSW-R	Function Control software package, including a RS 232 cable
MS-BL95	Block Lifter
MD-MP01-S	For Microplate; Titerplate (Plane bottom for single block unit only)
MD-MP02-S	For 96 wells Deep Microplate or PCR plate (for single block unit only)
MD-MP01-D	For Microplate; Titerplate (for dual block unit only)
MD-MP02-D	For 96 wells Deep Microplate or PCR Plate (for dual block unit only)
MD-B0.2	For 0.2 ml tube, 64 wells (or 0.2 ml PCR Strip tube for 8 wells x 8)
MD-B0.5	For 0.5 ml tube, 20 wells
MD-B1.5	For 1.5 or 2.0 ml tube, 20 wells
MD-B1.5V	For 1.5 V-shaped tube only, 20 wells
MD-B0.5/1.5	Double Side Block: One side for 1.5 or 2.0 ml tube, 20 wells; another side for 0.5 ml tube, 30 wells on the opposite side
MD-B0.5+1.5.	Combination: 1.5 or 2.0 ml tube, 12 well and 0.5 ml tube, 12 wells (On the same side)
MD-B13	Well size: 13 mm, 20 wells
MD-B17	Well size: 17 mm, for 15 ml centrifuge tube, 12 wells
MD-B20	Well size: 20 mm, 12 wells
MD-B25	Well size: 25 mm, 6 wells
MD-B29	For 50 ml Centrifuge tube, 4 wells

#### Note:

1. Dimension of Standard Aluminum Block is approximately W104 × L79 × D50 mm.
2. Customized Aluminum block is also available.

## 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.

Address:

No.37, Wuguan 5<sup>th</sup> Rd.,  
Wugu Dist., New Taipei City 24888,

Taiwan

T/ 886-2-2298-1055

F/ 886-2-2299-7871

Contact Information

Address

19959 Sea Gull Way  
Saratoga, CA 95070

U.S.A

T/ 1-408-366-9866

F/ 1-408-446-1107

MEMO

Lined area for writing the memo content, consisting of approximately 45 horizontal lines.

