



V1.5

DIGITAL DISPLAY INCLINOMETER

RION DMI850
TECHNICAL MANUAL



PRODUCTION AND EXECUTION STANDARD REFERENCE

- Enterprise Quality System Standard : ISO9001:2008 standard (Authentication number : 128101)
- Intellectual property management system meets the standard : GB/T 29490-2013(certificate number : 18117IP1529R0S)
- High-tech enterprises (certificate number : GR201844204379)
- Patent of China National Intellectual Property (Patent No.: ZL 201730609544.2)
- GJB 585A-1998Inertial technical terminology
- Software development reference standard : GJB 2786A-2009
- Standard for environmental testing of products. : GJB150
- Electromagnetic anti-interference test standard : GB/T 17626
- Revision date : 2019-08-01

Note: Product functions, parameters, appearance, etc. will be adjusted as the technology upgrades.
Please contact our pre-sales business to confirm when purchasing.

DMI850 DIGITAL DISPLAY INCLINOMETER



► PRODUCT DESCRIPTION

DMI850 is one Single axis Digital Inclinometer developed by RION company based on high precise angle measurement platform, it adopts the quartz pendulum slice of the earth's gravity induction component to solve the object level tilt angle. The built-in 32 bit microprocessor and collocation 32 bit high precision analog-to-digital converter, can highly subdivision sampling for the front weak current current and signal ratio of inclination , can meet the highest level accuracy of 0.001 degrees, the resolution is up to 0.0005 degrees. It can perform on-site data playback and chart analysis, and is the best instrument for high-precision platform leveling and measurement.

► KEY FEATURES

- ★ Best accuracy : $<0.002^\circ$
- ★ IP54 protection class
- ★ Absolute / relative measurement switchable
- ★ Both side and bottom can be measured
- ★ Double benchmark strong magnet installation
- ★ Automatic angle interpolation compensation function
- ★ Customers can calibrate the zero point by themselves
- ★ Angle or length double unit switch
- ★ 2 kinds of measurement mode selectable
- ★ angular resolution : 0.0005°
- ★ Maximum measurement range : $\pm 30^\circ$
- ★ data storage function
- ★ working temperature $-10^\circ\text{C} \sim +70^\circ\text{C}$
- ★ Alarm angle can be set
- ★ Night vision four color screen

► APPLICATION RANGE

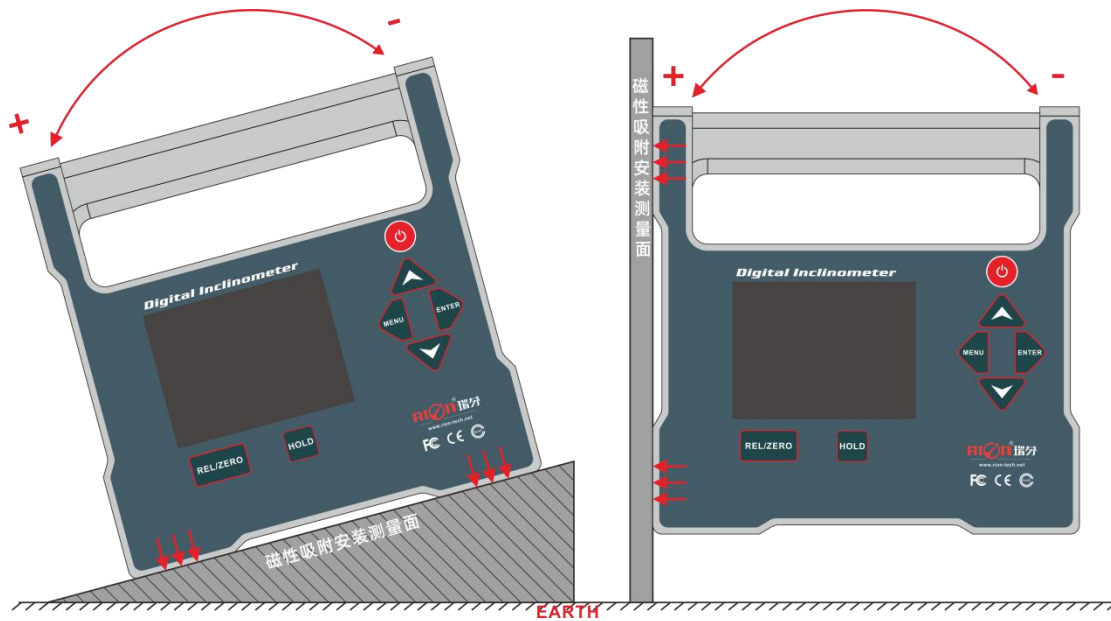
- ★ Building construction
- ★ Automotive four-wheel inspection
- ★ Mechanical installation
- ★ Pipe installation
- ★ Industrial platform
- ★ Road slope
- ★ Pan-tilt angle detection
- ★ Turntable detection
- ★ Production fixture
- ★ Medical instruments



► **PARAMETER**

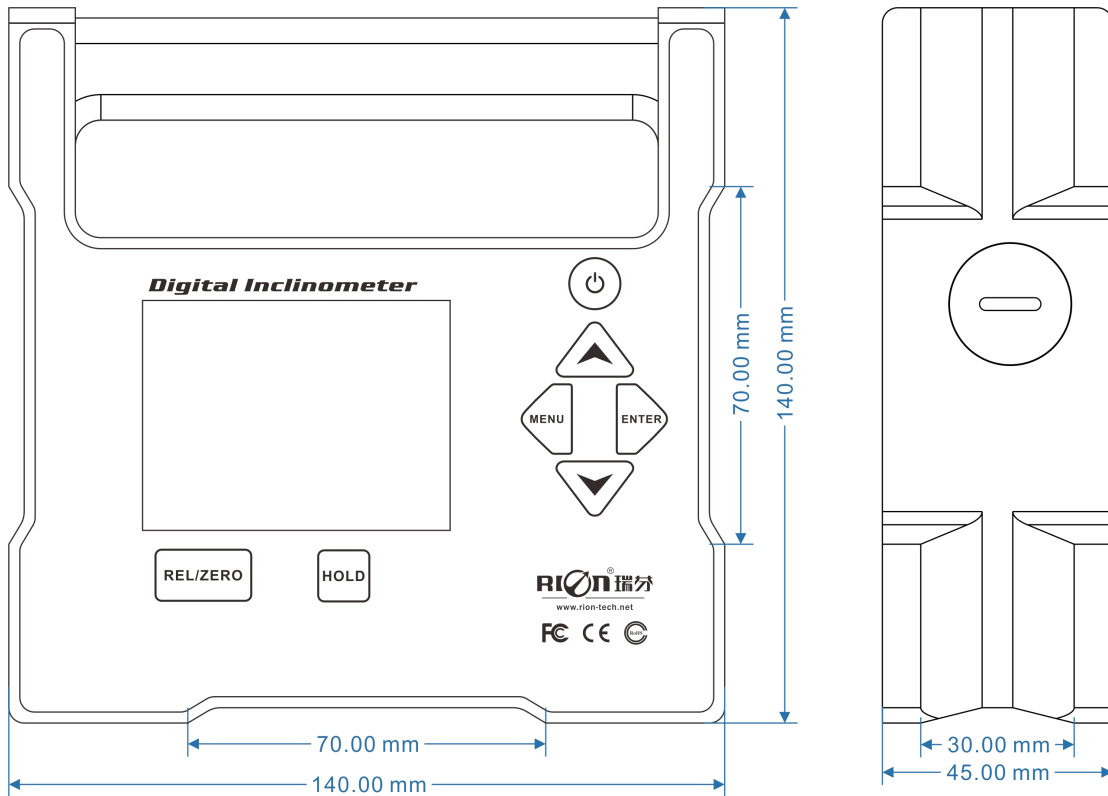
DMI850	PARAMETER	unit
Measurement Range	±30	°
Measuring Axis	Single-axis	
Best Accuracy	<0.002 (< 5°), <0.003 (5°-30°)	°(RMS)
Resolution	0.0005	°
Measurement Mode	Two modes can be set: degree, mm / m	/
Lcd	64 color true color luminous display	/
Lcd Visible Size	L60*W45	mm
Operating Temperature	-10° ~ +70°C	°/°C
Working Humidity	85	%RH
Power Supply	2A No.5 battery	/
Battery Continuous Working Time	6	h
Anti-Vibration	10g @ 11ms, triaxial and same (half sine wave)	/
Impact Resistance	10grms, 10 ~ 100Hz	/
Weight	1200	g
Protect Class	IP54	/
Material	Anodizing of aluminum alloy	/
Size	L140*W140*H45mm	mm

► **DIRECTION OF MEASUREMENT**



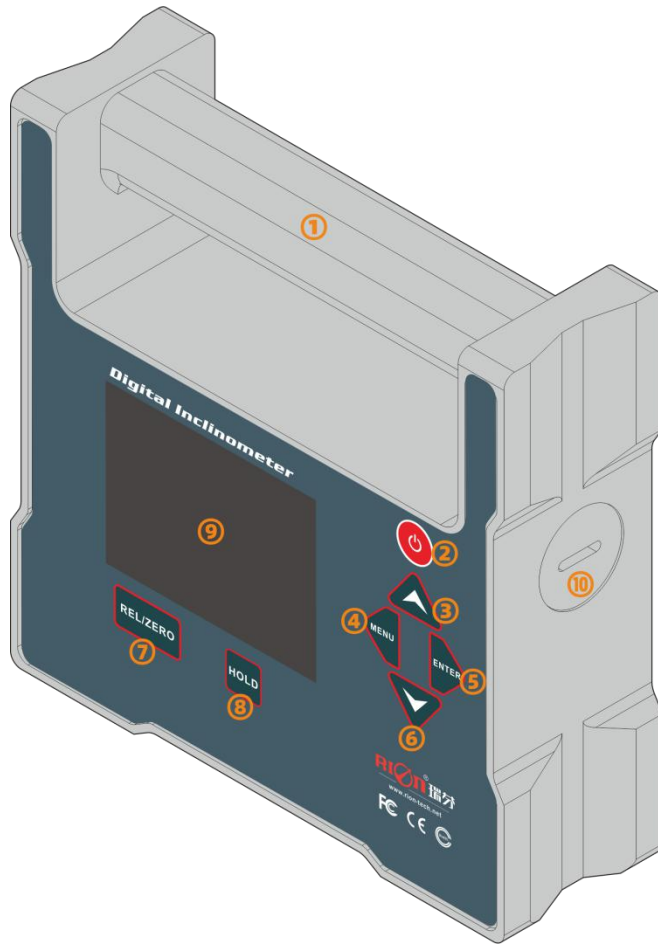
DMI850 DIGITAL DISPLAY INCLINOMETER

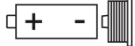
► PRODUCT SIZE



Shell size: L140*H140*W45mm
The left, bottom and back are
strong magnetic adsorption surfaces

► **PRODUCT FUNCTION INTRODUCTION**



- ①手柄
 - ②开/关机按钮
 - ③向上按钮
 - ④菜单
 - ⑤进入
 - ⑥向下按钮
 - ⑦切换/清零
 - ⑧数据锁定
 - ⑨显示区域
 - ⑩电池槽(2A 5号电池)
- 

- 1. **Aluminum alloy metal** handle and shell;
- 2. **ON / OFF button**, switch button, press and hold for 3 seconds, the machine will turn on and off after a beep sound;
- 3. **Up button**, select button;
- 4. **MENU button**, the menu bar display button;
- 5. **ENTER button**, confirm to press the button;
- 6. **Down button**, select button;
- 7. **REL / ZERO button**, absolute zero / relative zero / clear button;
- 8. **HOLD button**, data lock button;
- 9. **Display screen**, 64-color true color luminous display;
- 10. **The battery compartment** needs two 2A and AA batteries.

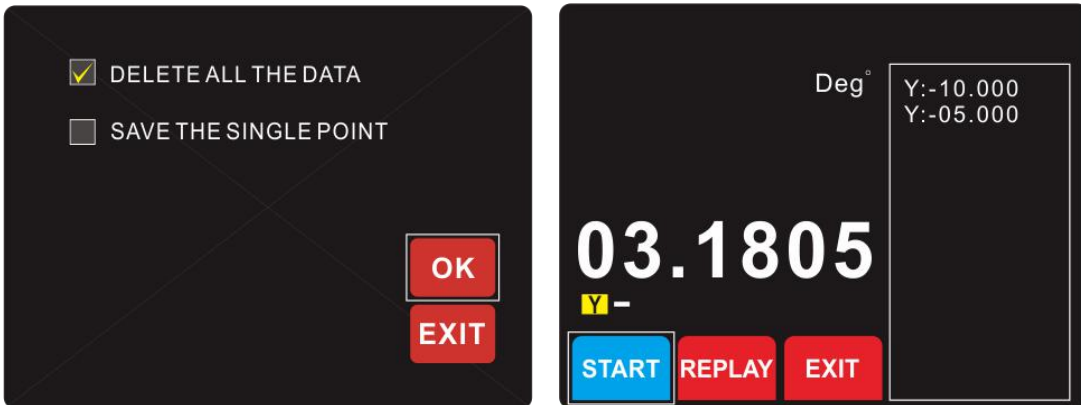
► OPERATING STEPS

1. Press and hold the power button for three seconds. After the beep, the screen displays the power-on interface, and then enter the product data interface;

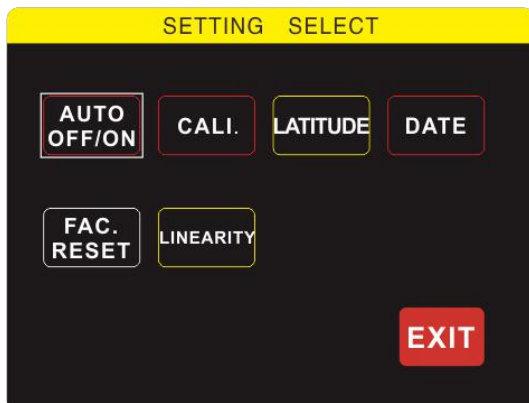


2. Press the MENU button once to display the menu bar, then press the SAVE button to enter the save option;

1. DELETE ALL DATA Delete saved data;
2. SAVE THE SINGLE POINT Single save;
 - a. Click OK and select Success.
 - b. Save and click START. The data displayed on the right side of the interface (ten sets of data can be saved) will be saved on the SD card. When ten sets are reached, MEMORY FULL will be displayed. After clearing the data, you can continue saving.
 - c. REPLAY key, you can play back the saved data; EIXT exits the save function;
 - d. Click EXIT to abandon the operation and exit, keeping the original settings;

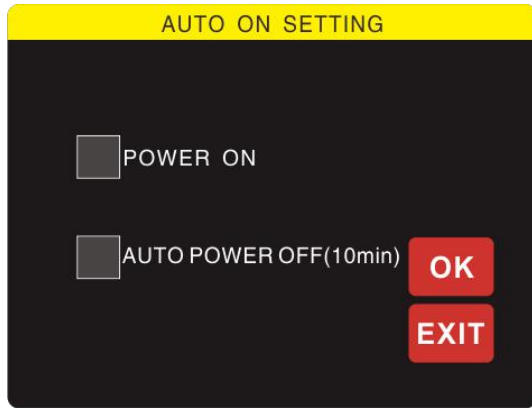


3. Click SET to enter the software function settings;



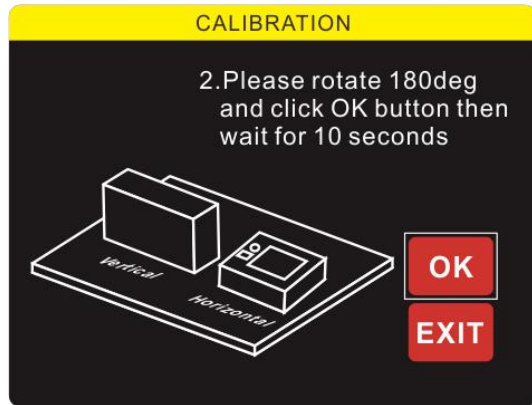
1. AUTO ON / OFF: Automatic shutdown setting
2. CALI .: Zero calibration setting
3. LATITUDE: local latitude setting
4. DATE: Date setting
5. FAC. RESET: Restore factory settings
6. LINEARITY: Linearity correction setting
7. AUTO ON / OFF: Auto power off setting

1) AUTO ON/OFF: Auto power off setting



Select "power on" to keep the product stay on; select "AUTO POWER OFF (10min)" for 10 minutes without operation, the product will automatically power off (the product defaults to this setting)

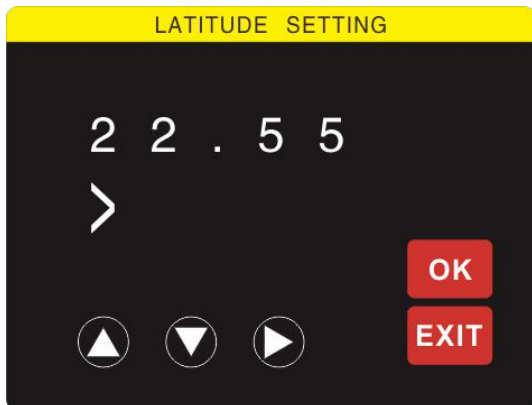
2) CALI.: Absolute zero calibration setting



a. Vertical zero calibration:Place the product vertically on a plane (such as a glass plane), click CALI. To enter the product calibration mode; (as shown in the left figure above), place the product as shown, click OK to start the first point calibration (the product cannot be moved at this time) After waiting for 10s, the product level turns 180 ° (as shown in the left figure above), click OK to enter the second point calibration; wait for 10s to complete the calibration.

b. Horizontal zero calibration:Place the product horizontally on a plane (such as a glass plane), click CALI. To enter the product calibration mode; (As shown in the right figure above), place the product as shown, click OK to start the first point calibration (the product cannot be moved at this time), wait 10S, and the product level is turned 180 ° (as shown in the right figure above), click OK, Enter the second point calibration; wait for 10S to complete the calibration.

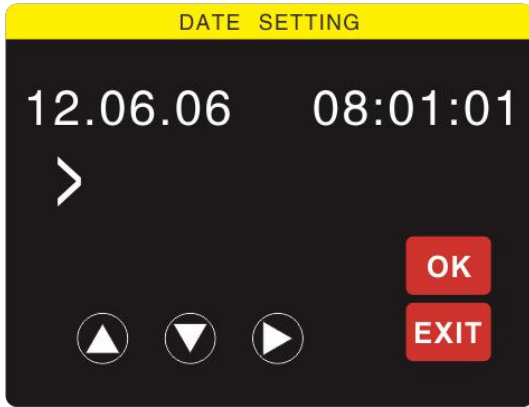
3) LATITUDE: Local Latitude Setting



Set the local latitude value. Because the earth's gravity field is different in each place, in order to achieve high auto-coupling measurement accuracy, please set the local city latitude information. The product automatically calculates the local gravity field to correct the accuracy error. As shown on the left, 22.55 is the latitude of Shenzhen. Click the latitude setting.

1. Click the "Up" button to increase the corresponding digit value 0-9;
2. Click the "Down" button to decrease the corresponding digit value from 0-9;
3. Click the "Right" button and select the corresponding digit to the right.
4. Click OK to save the setting latitude and exit the interface automatically;
5. Click EXIT: to exit the interface (without saving);

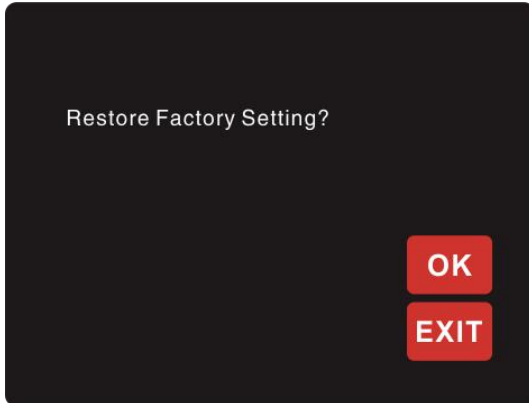
4) DATE : Date setting



Set the date and time, the time for displaying and saving data;

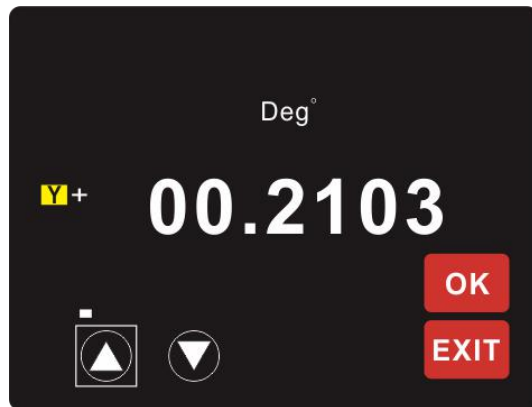
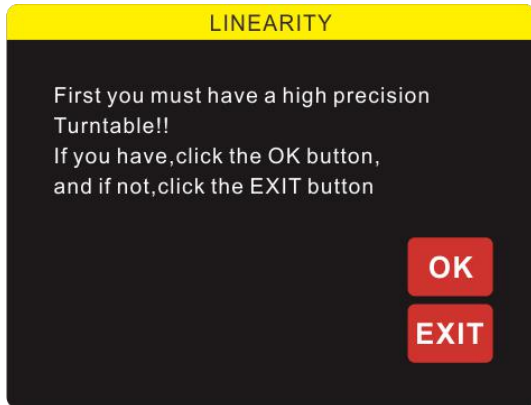
- a: Click the "Left" button: select the time of year, month, day, hour, minute, and second, which can be cycled;
- b: Click the "Up" button: increase the corresponding value;
- c: Click the "Down" button: decrease the corresponding value;
- d: OK: save the settings;
- e: EXIT: Exit without saving settings;

5) FAC.RESET Restoration of factory setting



The parameters restored by clicking OK include alarm angle, filter frequency, and calibration angle; click EXIT to exit.

6) LINEARITY : Linearity correction setting



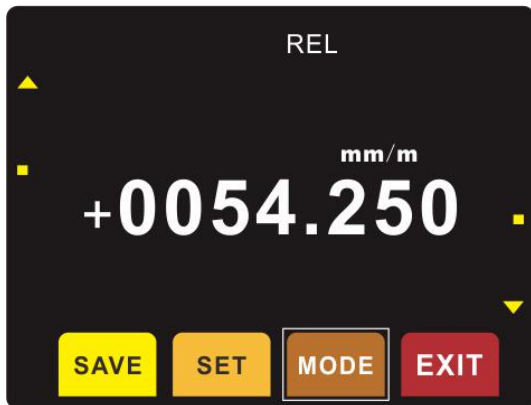
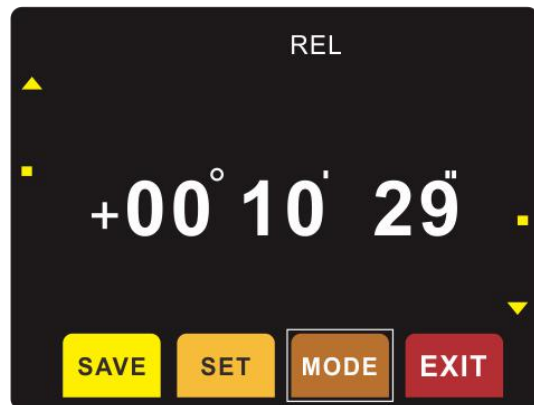
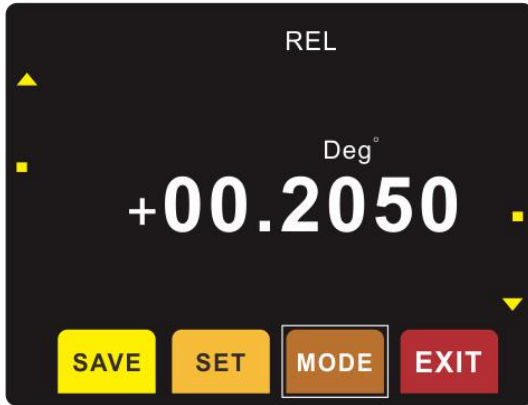
Linearity correction setting: Under normal circumstances, the customer does not need to operate; this function is used with caution! !! Will affect the accuracy, must be used with high-precision turntable;

1. The single axis must be installed vertically:
 - a: Click the "Up" button: increase the current linearity;
 - b: Click the "Down" button: reduce the current linearity;

c: Click the "OK" button: Save the current linearity setting;

d: Click the "EXIT" button: Exit without saving settings;

4. Data unit mode setting



Click the MODE button to switch the product unit mode.

As shown in Figure 4-13, the unit mode is "degree" Mode, "degrees, minutes, seconds" mode and "mm / m"

Mode; three modes can be switched cyclically.

► Product maintenance

1. Digital display angle meter uses two 2A AA batteries.
2. If the power switch is turned on without a digital display, please check whether the battery is charged or installed in the wrong way.
3. This instrument is highly reliable and can be used in a vibrating environment, but do not drop the instrument at high altitude, it will cause permanent damage.
4. If you find that the instrument is damaged, please do not disassemble it by yourself. Please call our company for professional guidance and repair at the first time.

► Warning

1. This product has high-precision sensors and information processing circuits. It is strictly forbidden to drop or impact or disassemble it by yourself, otherwise you will bear the consequences.
2. Do not press multiple keys at the same time, this will easily affect the product life.
3. This product should be placed in a safe place where children cannot reach it



Add : 4th Floor Block 1, COFCO(FUAN) Robotics Industrial Park , Da Yang Road No. 90,

Fuyong Distict, Shenzhen City, China

Tel : (86) 755-29657137 (86) 755-29761269

Fax : (86) 755-29123494

E-mail : sales@rion-tech.net

Web : www.rion-tech.net