



Patent No. ... ZL 201830753146.2

V1.6

DIGITAL DISPLAY INCLINOMETER  
**RION DMI810/DMI820**  
TECHNICAL MANUAL

## **DMI810/DMI820 DIGITAL DISPLAY INCLINOMETER**



### **PRODUCTION EXECUTION STANDARD REFERENCE**

- Enterprise quality system standard: ISO9001: 2015 standard (certification No.: 128101)
- The intellectual property management system complies with the standard: GB / T 29490-2013 (Certificate No. : 18117IP1529R0S)
- High-tech enterprise (Certificate No. : GR201844204379)
- China National Intellectual Property Appearance Patent (Patent No.: ZL 201830753146.2)
- Revision time:2021-11-12
- Product functions, parameters, appearance, etc. will be adjusted with technology upgrades, please contact the company's pre-sales business to confirm when buying.

## DMI810/DMI820 DIGITAL DISPLAY INCLINOMETER



### ► GENERAL DESCRIPTION

DMI810/DMI820 is a digital display inclinometer which took RION company three years to develop professional for various industry angle controlling and measuring. The core of this product is using the micro-mechanical control principle, dual-core measurement unit, can use the Y-axis to compensate X-axis during the measurement process, and then to use RION patent interleaved and temperature compensation model algorithm to play absolute operation advantages of the micro-mechanical electronic principles, to ensure that the instruments measurement with the long-term stability and repeatability. Single and double axis measurement, measurement range  $\pm 30^\circ$  measurement, resolution  $0.001^\circ$ , highest accuracy  $< 0.005^\circ$  full value. fast response, stable data, products specially designed for the sides and bottom with magnetic adsorption installation, both sides of the benchmark can be measured and using normally, very convenient to use, DMI810 series has strong scalability, convenient & practical application and industrial reliability, has absolute cost advantage and has an absolute competitive advantage in the international market !

### ► FEATURES

- ★ Best accuracy:  $< 0.005^\circ$
- ★ Angle resolution:  $0.001^\circ$
- ★ User can set the alarm value by himself
- ★ Absolute/Relative measurement can switch
- ★ Double benchmark strong magnet installation
- ★ Auto-angle interleaved compensation function
- ★ User can calibrate ZERO by himself
- ★ Night vision four colors screen
- ★  $^\circ/\text{mm}/\text{m}$  Dual units switch function
- ★ Three kinds of measurement mode selectable (radian, angle, mm)
- ★ Repeatability:  $0.003^\circ$
- ★ Maximum measure range:  $\pm 30^\circ$
- ★ Data store function
- ★ Both sides and bottom can measure
- ★ Working Temperature :  $-10^\circ \sim +70^\circ\text{C}$
- ★ Auto temperature drift compensation
- ★ Built-in rechargeable industry batteries
- ★ IP54 protection class
- ★ Filter frequency optional

### ► APPLICATION

- ★ Building construction
- ★ Machinery installation
- ★ Turntable testing
- ★ Automobile four-wheel testing
- ★ Piping installation
- ★ Pan unit angle detection
- ★ Road slope
- ★ Industrial platform
- ★ Production jig

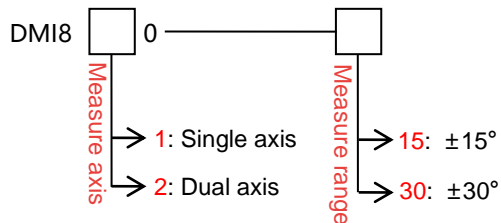


# DMI810/DMI820 DIGITAL DISPLAY INCLINOMETER

## ► TECHNICAL DATA

PARAMETER	DMI810		DMI820		UNIT
Measure Axis	Single Axis		Daul Axis		Axis
Angle Measure Range	$\pm 15^\circ$	$\pm 30^\circ$	$\pm 15^\circ$	$\pm 30^\circ$	$^\circ$
Angle Measurement Accuracy(Full Range)	<0.005	<0.01	<0.005	<0.01	$^\circ$
Angle Measure Resolution	0.001	0.001	0.001	0.001	$^\circ$
Mm/m Measure Range	267	577	267	577	mm/m
Mm/m Measure Accuracy	0.1	0.2	0.1	0.2	mm/m
Mm/m Measure Resolution	0.02	0.02	0.02	0.02	mm/m
Repeatability	0.003	0.003	0.003	0.003	$^\circ$
Measurement Mode	Angle、Degree/Minute/Second、Mm/m Three modes can be set				
Working Temperature	$-10^\circ \sim +70^\circ\text{C}$				
Working Humidity	85%RH				
Power Supply	3.7V Charging Lithium Battery				
Ideal Charging Time	5h				
Battery Continuous Working Time	11h				
Equipped With Pc Software	Vc Software				
Data Output Signal	Standard USB connector, rechargeable				
Connect Plug In	Standard Usb Connector, Rechargeable				
Shock Resistance	10g@11ms、3 Axial Direction (Half Sinusoid)				
Shock Impact	10grms、10~100Hz				
Waterproof Grade	IP54				
Material	Aluminum Alloy Anodizing				
Lcd	64 True Colors Night Vision Display Screen				
Lcd Visible Area Size	L57.6*W43.2mm				
Size	L107*W75*H27.1mm				
Weight	$\leq 350\text{g}$				

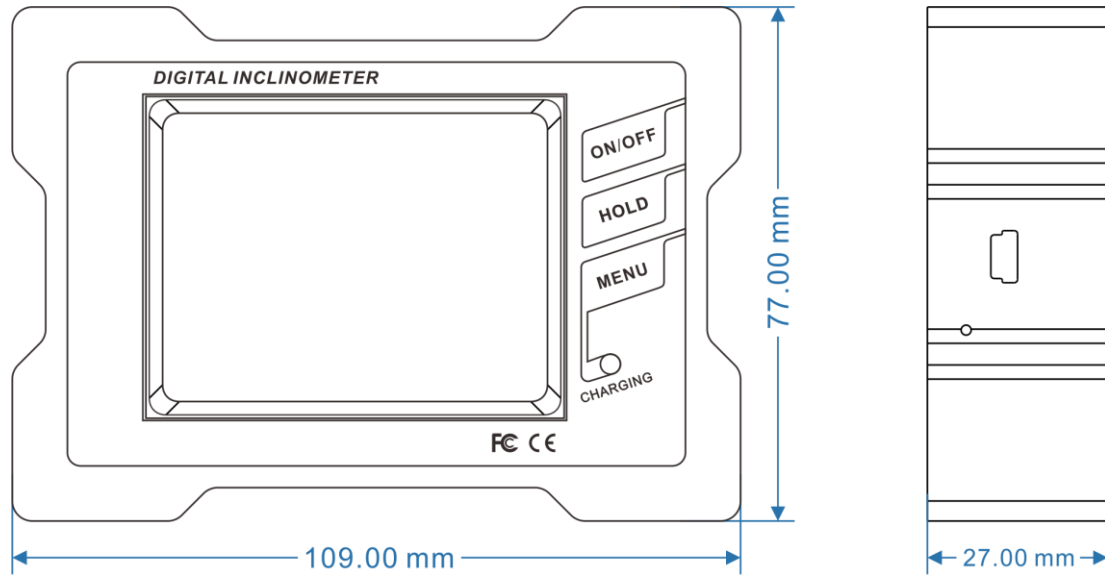
## ► ORDERING INFORMATION



E.g:DMI810-15:means Single axis / Measure range is  $\pm 15^\circ$ .

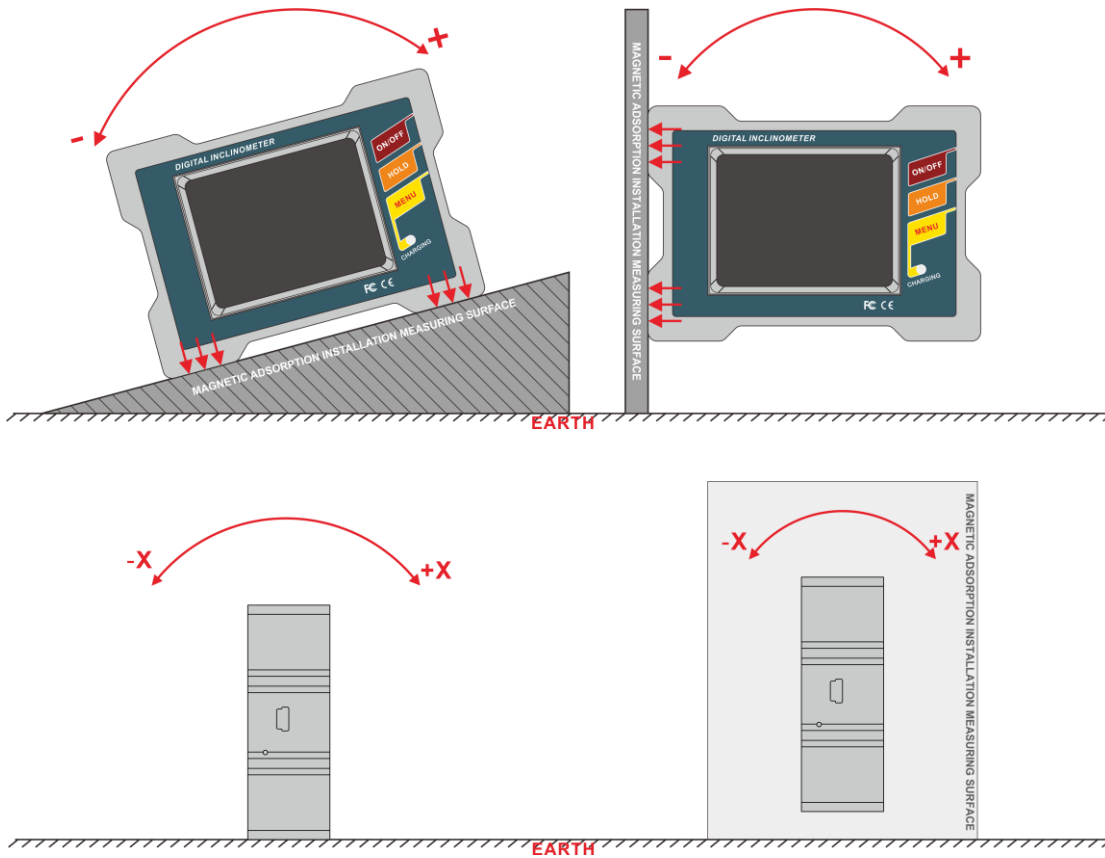
# DMI810/DMI820 DIGITAL DISPLAY INCLINOMETER

## ▶ PRODUCT DIMENSION DIAGRAM



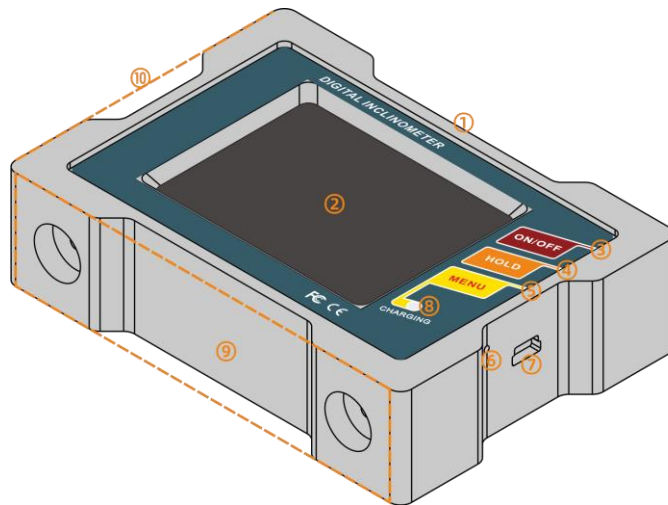
Shell size: L109\*H77\*W27mm  
 The left and bottom are the strong magnetic adsorption surface

## ▶ MEASURE DIRECTION



## DMI810/DMI820 DIGITAL DISPLAY INCLINOMETER

### ► PRODUCT FUNCTIONS



- ① Metal anti-wear structure
- ② Display area
- ③ ON/OFF
- ④ HOLD
- ⑤ MENU
- ⑥ Reset hole
- ⑦ USB jack
- ⑧ Charging indicator
- ⑨ Strong magnetic bottom
- ⑩ Side magnetic

① Anti-wear metal: metal shell, hard and durable;

② Display: touch screen display data and operate;

③ ON/OFF: press for 3 seconds to turn on or off;

④ HOLD: to lock the current data for recording;

⑤ MENU: Press to display MENU;

⑥ Reset hole: If it crashed, insert a small needle to reset;

⑦ USB jack: used for charging and data output;

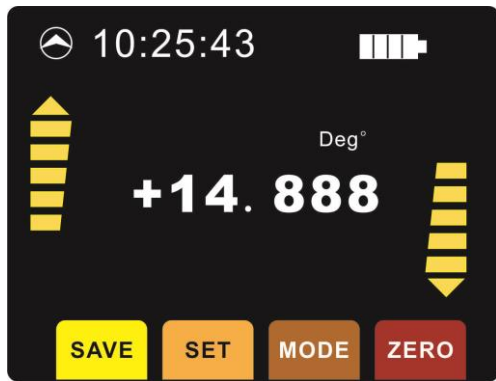
⑧ Charging light: light on when charging, light off when charged fully (do not recommend to use when charging.)

⑨ Strong magnetic base: strong magnet at the bottom measure surface;

⑩ Side strong magnet: strong magnet at the left side measure surface;

**Note: The USB driver can be downloaded from the RION website: "DMI Series Product USB Driver".**

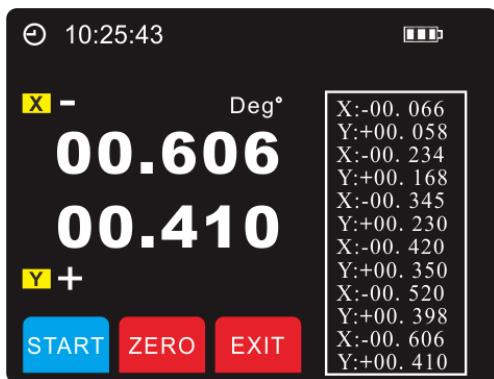
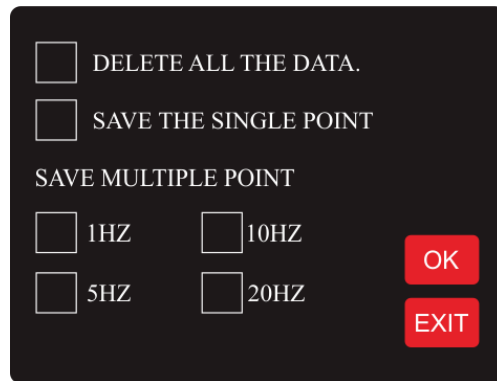
► **FUNCTIONAL MENU INSTRUCTIONS**



- 1.ON/OFF press 3 seconds or so, when heard "beep..."Let go,startup/shutdown .
- 2..Press "HOLD" button to lock , re-press to unlock , Upper right corner of the monitor icon display.
3. Press MENU menu disappears, then re-press appears.。
4. Press the " MENU" and "HOLD" keys at same time to enter the touch screen calibration.
  - 4.1 Click "OK" enter into next step ,click "EXIT" to Exit touchscreen calibration.
  - 4.2 Click the red dot with a small pen to move the red finish four points automatically exit calibration.

① Click the SAVE button to enter the touch screen save option

- A. DELETE ALL DATA
- B. SAVE THE SINGLE POINT
- C. SAVE MULTIPLE POINT
- D. Saved frequency selectable:  
1Hz/5Hz/10Hz/20Hz
- E. Click "OK "to choose "success"
- F. EXIT Give up selection to keep the original



**SAVE DATA**

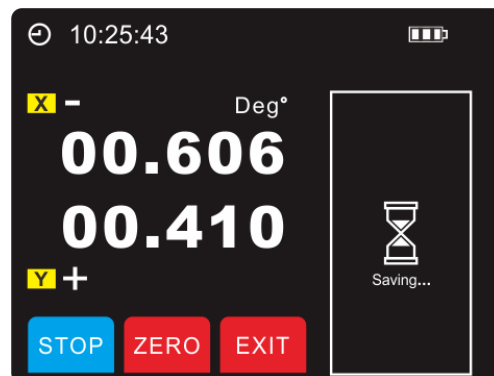
Click START to start saving the relevant data, and the data will be saved in the SD card;

Select single save, the data is displayed in the right frame of the interface, a single axis can display up to 6 groups of data, and a dual axis can display up to 12 rows of data;

Select consecutive multiple saves, the data will not be displayed and will be saved directly to the SD card. After the data collection is completed, click STOP to stop saving the data;

ABS/ZERO Switch keys ;

EIXT: Exit saving function.



## DMI810/DMI820 DIGITAL DISPLAY INCLINOMETER

② SET Click the SET button to enter the setup interface six button options and features:

- A. ALARM : Angle alarm value setting
- B. CALI. : Calibration setting
- C. FILTER : Filter frequency setting
- D. DATE : Date setting
- E. FAC.RESET : Factory default setting
- F. EXIT : Exit the setting interface

### A.ALARM

1. Click ON / OFF and open the angle alarm setting, display numbers, closed setting then shows“\_\_ . \_\_”.
2. Click on the X or Y axis data point select the appropriate axis angle setting.
3. Click ▲: change the data and symbol of the corresponding bit.

▶: Change the corresponding direction key.

The angle symbol is

+: alarm when greater than the corresponding angle

-: alarm when less than the corresponding angle

±: Alarm outside the range

For example:

Set X: +03.00 means when the X axis angle +3.3, is greater than 3 degrees then alarm;

Set Y: -04.00 means when the Y axis angle -4.6 ,is less than -4 degrees then alarm;

Set Y: ±05.00 angle when the Y axis angle -6, exceed -5 to +5 degrees then alarm.

4. Click “OK “ to save the setting angle, then to take effect.

5. EXIT: Exit set the angle saving .

**B. CALI** Click” OK” then to operate according to related action

(Zero calibration requires a high-precision platform, do not operate without this condition)

**C.FILTER** Default 20HZ

Select 1HZ : Output frequency after filtering

OK : Select success

EXIT : Exit selection

**D. DATE** Set date and time The time used to display and save data

▶: Select the year, month, and day of the time, the position of the hour, minute, and second, which can be cycled

▲: Increase the corresponding value

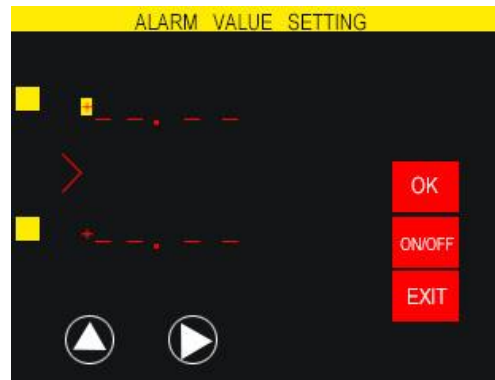
▼: Decrease the corresponding value

OK: save Settings

EXIT: quit Settings date interface, no save

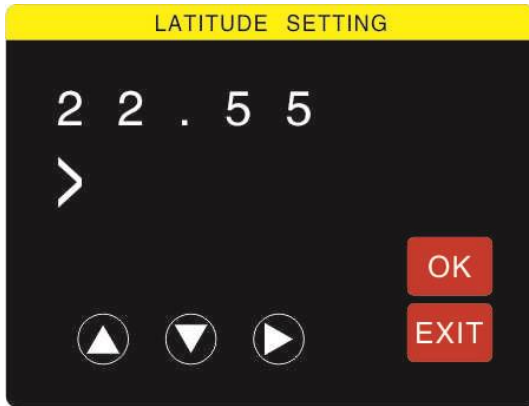
**E. FAC.RESET** Restore the factory Settings

The parameters of the recovery has alarm value, filtering frequency,calibration angle





## DMI810/DMI820 DIGITAL DISPLAY INCLINOMETER



### F. LATITUDE local latitude setting

Set the local latitude value. Because the gravity field of the earth varies from place to place, the customer only needs to set the local latitude, and the product automatically calculates the local gravity field to correct the accuracy error.

As shown on the right, click the latitude setting.

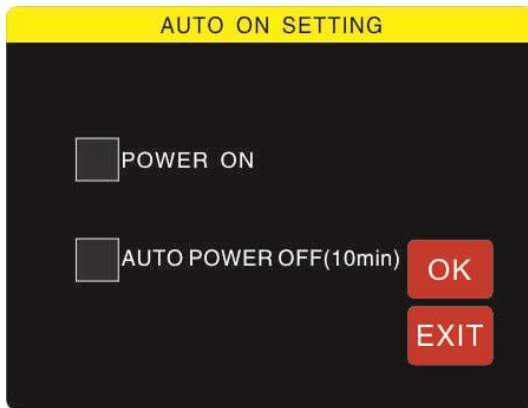
1. Click the "▲" button to increase the corresponding digit value 0-9
2. Click the "▼" button to decrease the corresponding digit value 0-9
3. Click the "▶" button to select the corresponding tens place, ones place, tenth place, percentile, and cycle to the right
4. Click OK: save the set latitude
5. Click EXIT: Exit the setting

### G. AUTO ON/OFF: Auto power off setting

As shown in the figure on the right, if you select "POWER ON", the product is kept on; if you select "AUTO POWER OFF(10min)" for 10 minutes without operation, the product will automatically shut down (the product defaults to this setting).

OK: save settings

EXIT: Exit without saving settings



### ③ unit mode selection

MODE Each time you press the displayed unit mode changes DEG, degrees, minutes, seconds, mm/m cycle switch

### ④ ZERO/ABS absolute relative

Zero: Click to set the current angle to zero

ABS: Click to switch to absolute zero

**DMI810/DMI820 DIGITAL DISPLAY INCLINOMETER**



Add: Building 1, COFCO (Fu'an) Robot Intelligent Manufacturing Industrial Park,

No. 90 Dayang Road, Fuhai Street, Bao'an District, Shenzhen, China

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

Fax: (86) 755-29123494

E-mail: [sales@rion-tech.net](mailto:sales@rion-tech.net)

Web: [www.rionsystem.com](http://www.rionsystem.com)