



GDS850 High precision handheld electronic level

Product manual

V1.9-20250918

Technical Highlights

- ❖ Measurement range: $\pm 30^\circ$;
- ❖ Optimal accuracy: $< 0.002^\circ$;
- ❖ Angular resolution: 0.0005° ;
- ❖ Capable of recording key measurement data;
- ❖ Customers can calibrate the zero point themselves;
- ❖ Dual strong magnetic measuring surfaces on the bottom left.

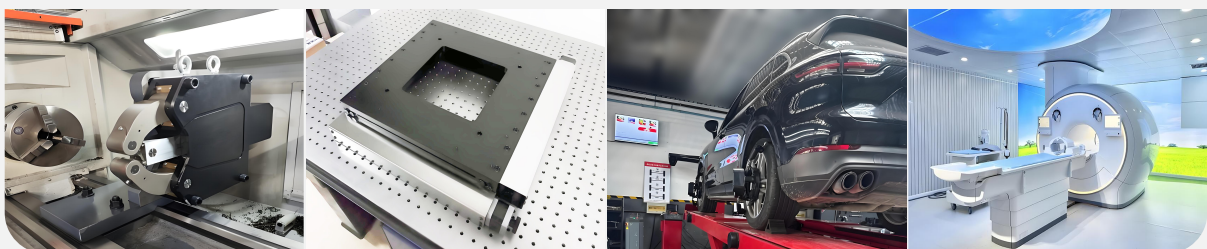


Product Introduction

The GDS850 is a level gauge developed by RUICOM Technology based on a high-precision tilt measurement platform. It uses a built-in MEMS sensor to sense the Earth's gravitational field, thereby obtaining the horizontal tilt angle of an object. Its built-in 32-bit microprocessor can perform high-resolution sampling of the weak current and tilt angle ratio signals from the front end, achieving an accuracy of 0.002° and a resolution of 0.0005° . The device supports on-site data saving and playback, is suitable for leveling and measuring on high-precision platforms, and features good scalability, ease of operation, industrial-grade reliability, and a competitive price-performance ratio, making it competitive in the international market.

Application Scope

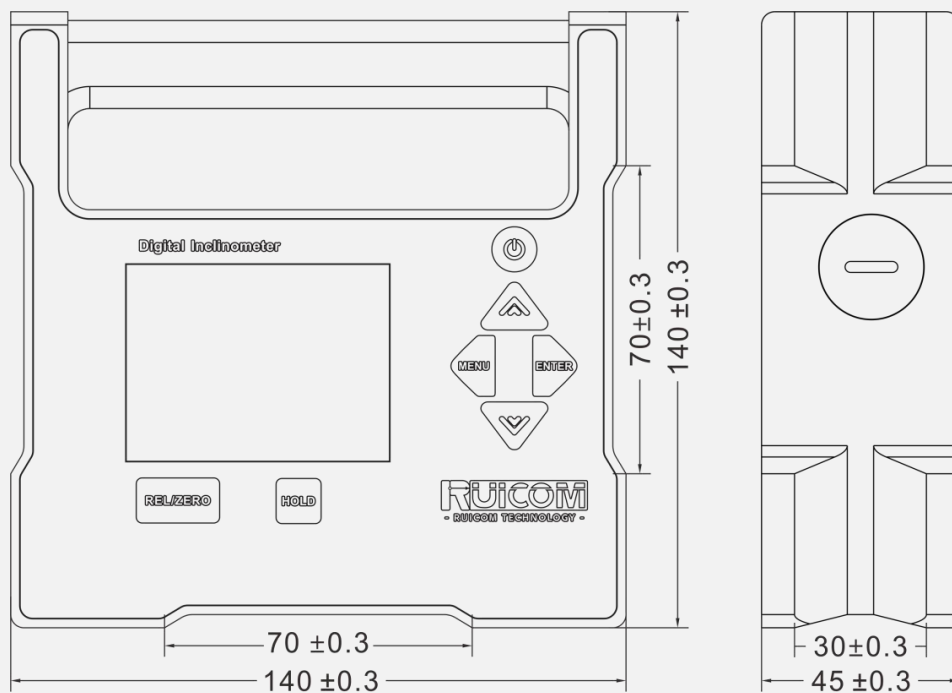
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| ❖ Architectural surveying | ❖ Vehicle alignment and four-wheel calibration |
| ❖ Road and slope gradient detection | ❖ Medical equipment attitude measurement |
| ❖ Tooling and fixture leveling and control | ❖ Camera pan-tilt head angle calibration |
| ❖ Mechanical equipment installation and leveling | ❖ Pipeline laying and angle control |



Specifications

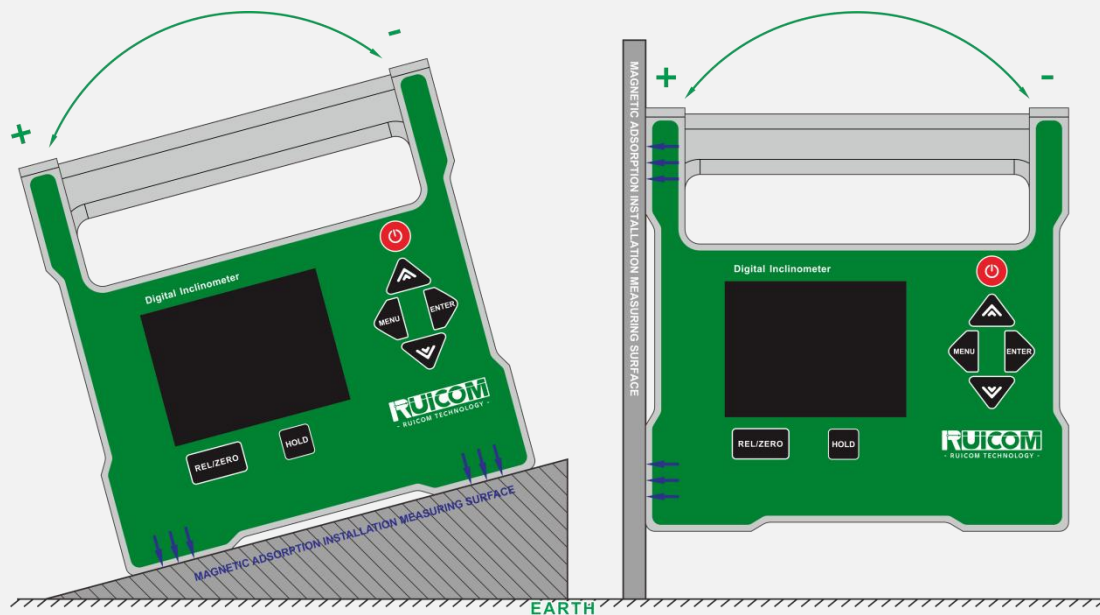
GDS850	Parameter	Unit
Angle Measurement Range	± 30	$^{\circ}$
Measuring Axis	Single axis	
Maximum Measurement Accuracy	<0.002 ($< 5^{\circ}$) <0.003 ($5^{\circ}-30^{\circ}$)	$^{\circ}$ (RMS)
Angle Measurement Resolution	0.0005	$^{\circ}$
Measurement Mode	degrees, millimeters/meters Two modes can be set	/
LCD	64-color true-color luminous display screen	/
LCD Viewable Area Size	L60*W45	mm
Operating Temperature	$-10^{\circ}\sim +70^{\circ}\text{C}$	$^{\circ}/^{\circ}\text{C}$
Operating Humidity	85	%RH
Power Supply	2A AA batteries	/
Battery Continuous Working Time	6	h
Vibration Resistance	10g@11ms, triaxial (half-sine wave)	g
Shock Resistance	10grms / 10~100Hz	g
Weight	1200g	g
Waterproof Rating	IP54	/
Material	Anodized aluminum alloy	/
Dimensions	L140*W140*H45mm	mm

Product Dimensions

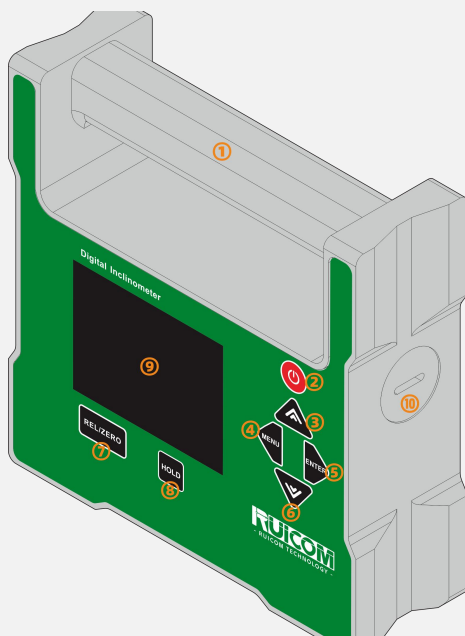


Housing: 140×140×45mm

✓ Magnet measuring surface



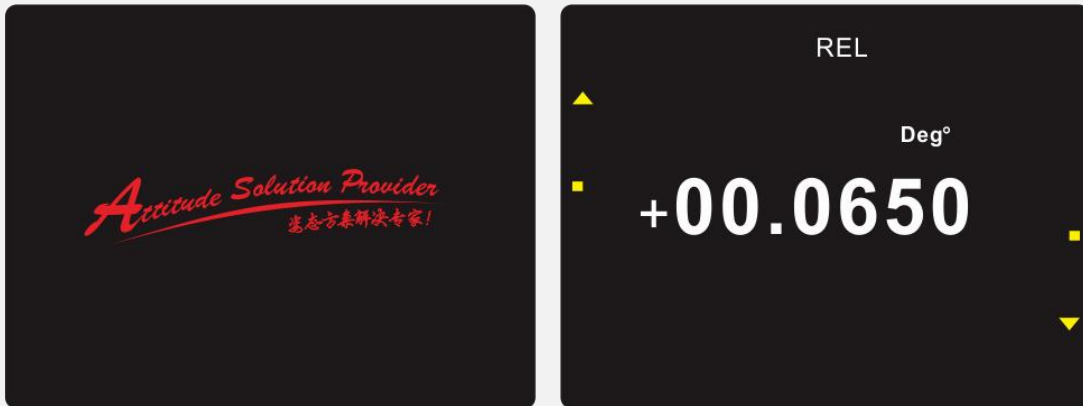
✓ Function Description



- ①Handle: Aluminum alloy metal handle and casing;
- ②ON/OFF Button: Power on/off button, press and hold for 3 seconds until a beep sounds to power on/off;
- ③Up Button: Selection button;
- ④MENU Button: Menu key, menu display button;
- ⑤ENTER Button: Enter key, confirmation button;
- ⑥Down Button: Selection button;
- ⑦REL/ZERO Button: Switch/Zero button, absolute zero/relative zero/zero button;
- ⑧HOLD Button: Data lock button;
- ⑨Display Area: 64-color true-color luminous display screen;
- ⑩Battery Slot: Requires two AA batteries.

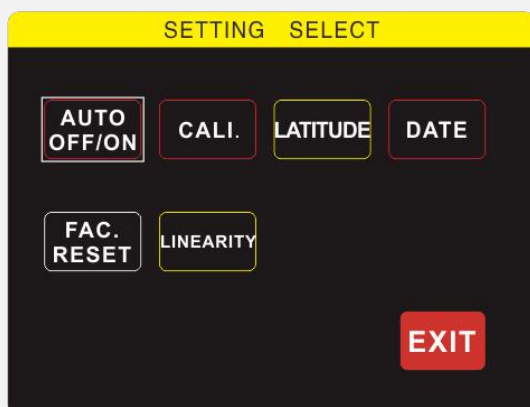
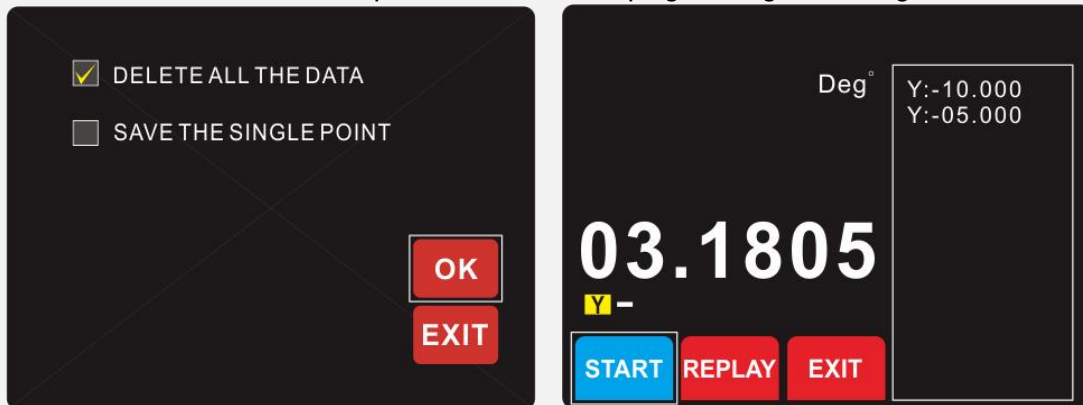
Operating Instructions

1. Press and hold the power button for three seconds. After a beep, the screen will display the boot screen, and then you will enter the product data interface;



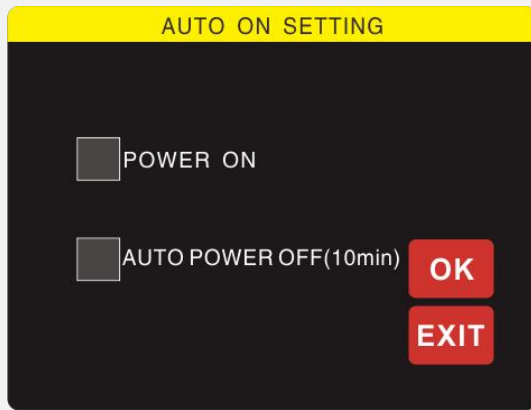
2. Press the MENU button to display the menu bar, then press the SAVE button to access the save option;

1. DELETE ALL DATA Delete saved data;
2. SAVE THE SINGLE POINT Save the data in one go;
 - a. Click OK to select success,
 - b. Click START to save. The data displayed on the right side of the interface (up to ten sets of data can be saved) will be saved to the SD card. When ten sets are reached, MEMORY FULL will be displayed. Clear the data to continue saving.
 - c. REPLAY: Replay the saved data; EIXT: Exit the save function;
 - d. Click EXIT to cancel the operation and exit, keeping the original settings;



3. Click SET to enter the software function settings;

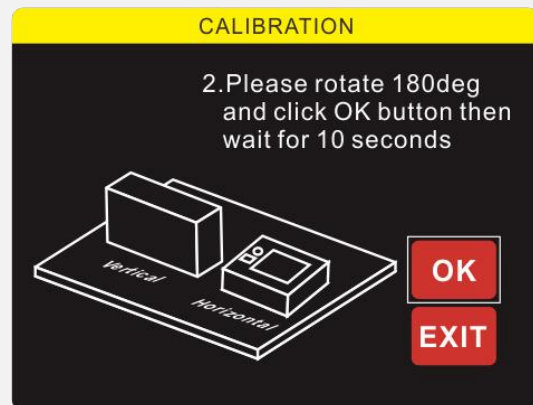
- 1) AUTO ON/OFF: Automatic power-off setting
- 2) CALI. : Zero-point calibration setting
- 3) LATITUDE: Local latitude setting
- 4) DATE : Date setting
- 5) FAC.RESET : Factory reset
- 6) LINEARITY: Linearity correction setting



1) AUTO ON/OFF: Automatic shutdown settings

Selecting "power on" keeps the product powered on; selecting "AUTO POWER OFF (10min)" will automatically power off the product after 10 minutes of inactivity (this is the default setting for the product).

2) CALI.: Absolute zero calibration settings (Zero-point calibration requires a high-precision platform; please do not proceed if this is not available.)

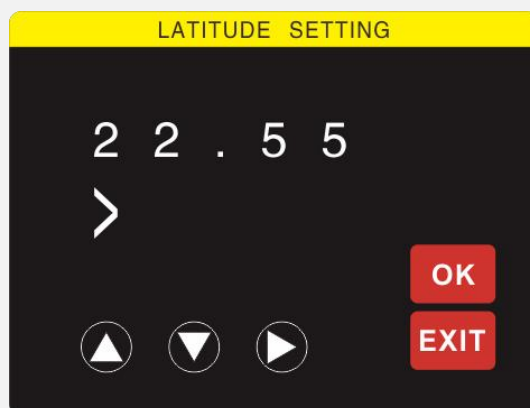


a. Vertical Zero Point Calibration:

b. Place the product vertically on a flat surface (e.g., a glass surface), click CALI to enter product calibration mode; (as shown in the upper left image), place the product as indicated, click OK to start the first point calibration (do not move the product at this time), wait 10 seconds, then rotate the product horizontally 180° (as shown in the upper right image), click OK to enter the second point calibration; wait 10 seconds for calibration to complete.

c. Horizontal Zero Point Calibration:

d. Place the product horizontally on a flat surface (e.g., a glass surface), click CALI to enter product calibration mode; (as shown in the upper right image), place the product as indicated, click OK to start the first point calibration (do not move the product at this time), wait 10 seconds, then rotate the product horizontally 180° (as shown in the upper left image), click OK to enter the second point calibration; wait 10 seconds for calibration to complete.



3) LATITUDE: Local latitude setting

To set the local latitude value, due to differences in Earth's gravitational field across different locations, please set the latitude of your local city to achieve high measurement accuracy. The product will automatically calculate the local gravitational field and correct for accuracy errors. As shown in the left image, 22.55 is the latitude of Shenzhen. Click on Latitude Settings.

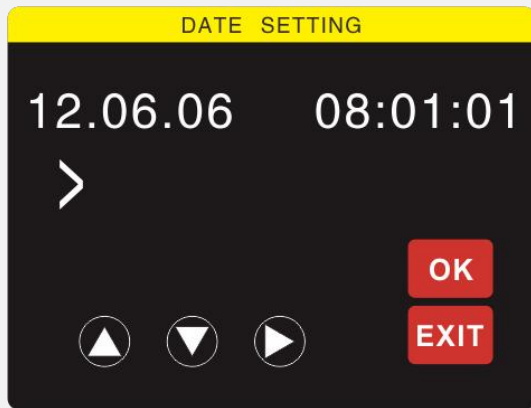
1. Click the "Up" button to increase the corresponding digit value by 0-9;

2. Click the "Down" button to decrease the

corresponding digit value by 0-9;

3. Click the "Right" button to select the corresponding digit: tens place, units place, tenths place, hundredths place, and cycle;

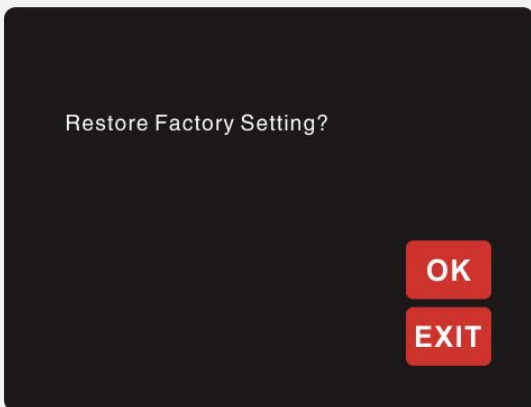
4. Click OK to save the latitude settings and automatically exit the interface;
5. Click EXIT to exit the interface (without saving);



4) DATE: Date setting

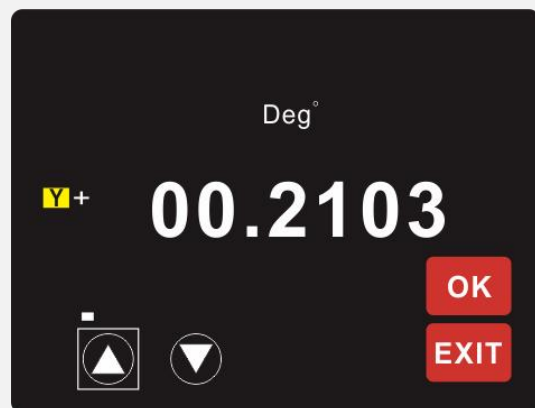
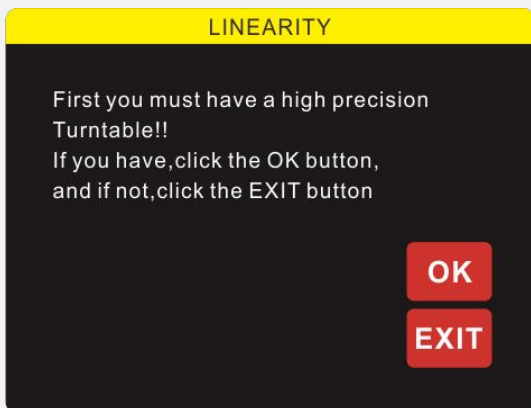
Set the date and time for displaying and saving data;

- a: Click the "Left" button: Select the year, month, day, hour, minute, and second position of the time, 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 settings;
- e: EXIT: Exit without saving settings;



5) FAC.RESET Factory reset

Clicking OK restores the parameters for alarm angle, filter frequency, and calibration angle; clicking EXIT exits the process.

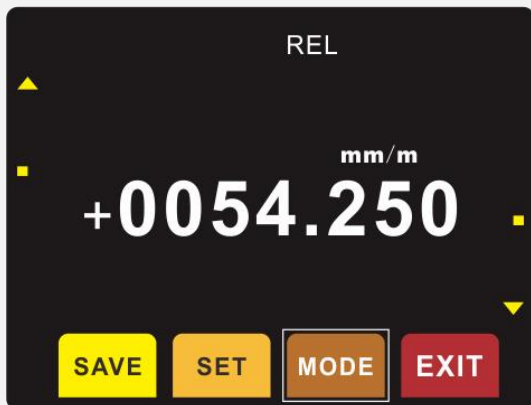
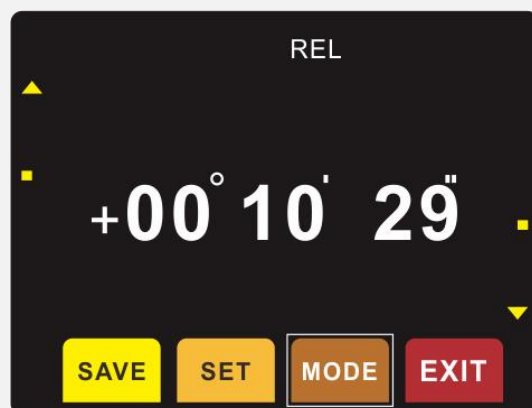
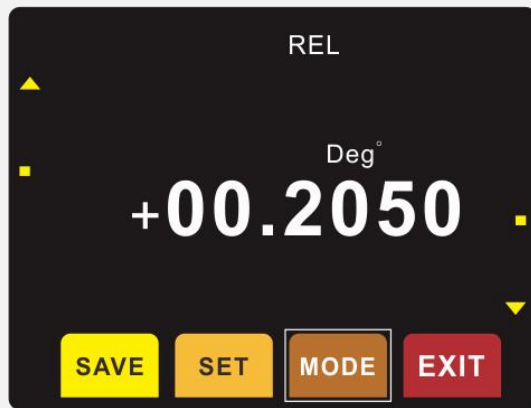


6) LINEARITY: Linearity Correction Settings

Linearity Correction Settings: Generally, customers do not need to operate this function; use with caution!! It will affect accuracy and must be used with a high-precision rotary table;

1. Single axis must be installed vertically:
 - a: Click the "Up" button: Increase the current linearity;
 - b: Click the "Down" button: Decrease the current linearity;
 - c: Click the "OK" button: Save the current linearity settings;
 - d: Click the "EXIT" button: Exit without saving settings;

4. Data Unit Mode Settings



Click the MODE button to switch the product unit mode. As shown in the figure, the unit modes are "degree" mode, "degree, minute, second" mode and "mm/m" mode in sequence; the three modes can be switched in a cycle.

Product Maintenance

1. The digital angle meter uses two AA batteries (2A).
2. If there is no digital display when the power switch is turned on, please check if the batteries have power or if they are installed incorrectly.
3. This instrument is highly reliable and can be used in vibrating environments, but please do not drop it from a height, as this will cause permanent damage.
4. If you find any damage to the instrument, please do not disassemble it yourself. Please contact our company immediately for professional guidance and repair. Any instrument disassembled by an individual will be refused repair by the manufacturer.

Warning

1. This product contains high-precision sensors and information processing circuits. Dropping, impacts, or unauthorized disassembly are strictly prohibited; any consequences arising from such actions will be the sole responsibility of the user.
2. Do not press multiple buttons simultaneously, as this may shorten the product's lifespan.
3. This product should be placed in a safe location out of reach of children.