

User's Manual

hand-held laser distance meter



Safety Regulations

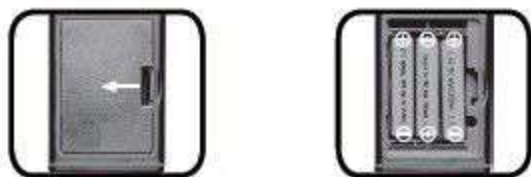
Please read the safety regulations and operation guide carefully before operating.

- ⚠ Please read all of the operational guide and safety regulations in this manual before operation. Improper operations without complying with this manual guided could cause damage to the device, influence on measurement result or bodily injury to the user.
- ⚠ The instrument is not allowed to disassemble or repair in any ways. It is forbidden to do any illegal modification or performance change for laser emitter. Please keep it out of reach of children and avoid using by any irrelevant personnel.
- ⚠ It is strictly prohibited to shoot eyes or other parts of body with the laser; it is not allowed take the laser to shoot any objects' surface with strong reflecting.
- ⚠ Due to electromagnetic radiation interference to other equipment and devices, please don't use the meter in the plane or around medical equipment, don't use it in inflammable, explosive environment.
- ⚠ Discarded batteries or meter device shall not be processed just like household garbage, please handle them in line with related law and regulations.
- ⚠ Any quality issues or any questions on the meter, please contact local distributors or manufacturer in time, we are ready to offer solutions for you.

Professional casts quality and good quality gets reputation

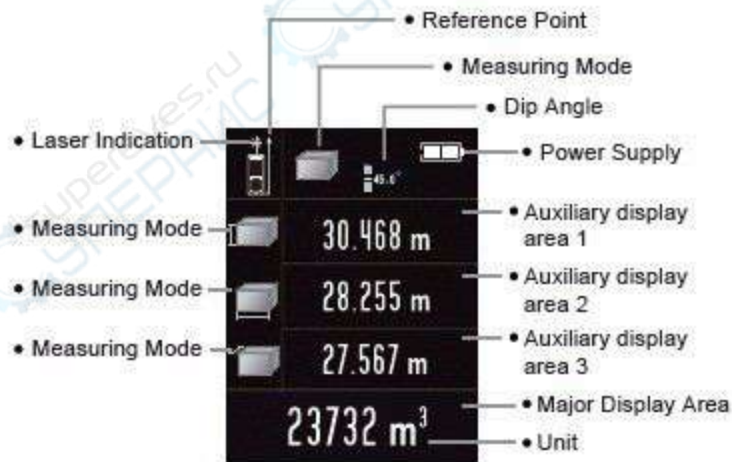
Battery Installation, Display, Keyboard

● Installation & Replacement Battery

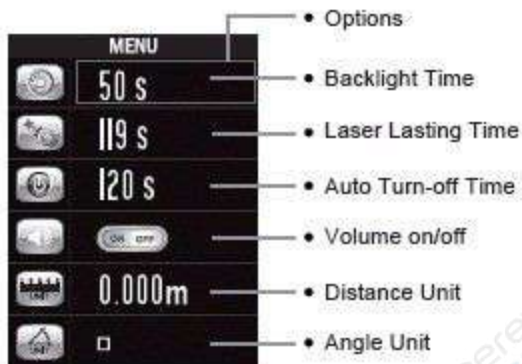


- Discharge the battery door on the back of device, and place battery according to correct polarity, then cover the battery door.
- 1.2V 1000mAh AAA Ni-mh battery is recommended. A charger and cable is included in the accessories bag. User can charge with mini USB, when the power is low.

● Display

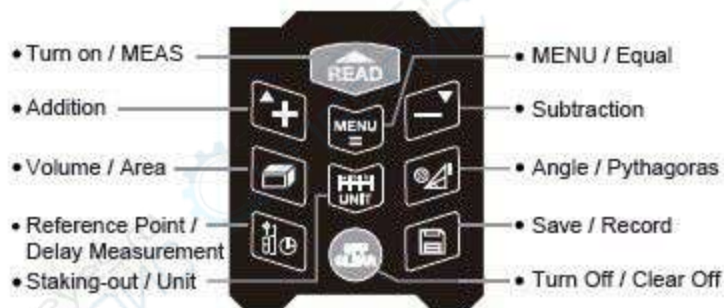


PIC 1 Major Interface



PIC 2 MENU


● Keyboard




PIC 3 Keyboard


Turn on & Basic Setting

● Turn on/off

Press button  under on status, device and laser get starting simultaneously and stand by for measuring.

Turn off the device by long pressing button  for 3 seconds under on status. When there is no operation, the device will be shut off in 150s. (Users can set this limited time in the device, any other setting you can refer the <menu>)


● Unit setting

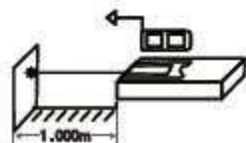
Press button  to reset current unit, the default unit is 0.000m, there has eight units for selection.

Unit:

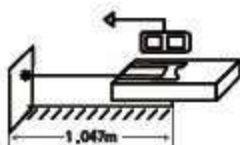
	Range	area	volume
1	0.000m	0.000m ²	0.000m ³
2	0.00m	0.00m ²	0.00m ³
3	0.000ft	0.00ft ²	0.00ft ³
4	0.0in	0.00ft ²	0.00ft ³
5	0 1/16 in	0.00ft ²	0.00ft ³
6	0'00' 1/16	0.00ft ²	0.00ft ³
7	0.000米	0.000米 ²	0.000米 ³
8	0.00米	0.00米 ²	0.00米 ³

● Reference point setting

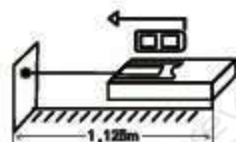
The device get three reference points. System default reference point is bottom. Press  to select the reference point.



Front Point




Middle Point
(Screw Hole)





Bottom Point

Distance, Area, Volume & Pythagoras

● Single Measurement


Press button  under measuring mode, laser shoots and focus the target.

Press button  again for single measurement, result will be shown in the major display area.

The latest 3pcs of records will be shown in the auxiliary display area. Short press button  to delete the history data.

● Continuous Measurement

The user can use this mode to find the target distance without frequent operation.

Long press button  under measuring mode and enter continuous measuring mode.



Maximum and Minimum value will be shown on the screen. Present result displays in major display area.

Short press button  or  to quit.



● Area Measurement



$$S=ab$$

Press button  ,  shows on the screen.
Please follow the below instructions for area measuring:

-  Press button  once for length;
-  Press button  again for width.







The device calculates and shows the result in the major display area. Short press  to clear off last result and measure again if necessary. Long press button  to save the result.



● Volume Measurement



$$V=abc$$

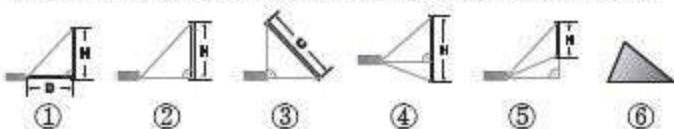
Short press button  twice , screen shows .
Please follow the below instructions for area measuring:

-  Press button  for one edge (H)
-  Press button  for the second edge (L)
-  Press button  for the third edge (W)

It is unnecessary for user to measuring according to this order. Device calculates the volume after measuring the third edge. Short press  to clear off the last result and measuring again when you make a wrong operation. Long press button  to save the result.


● Pythagoras Measurement

There are six triangle measurement methods:




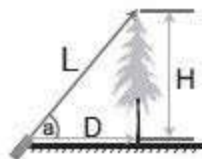
They are:

- ① Calculate the length of two legs by measuring hypotenuse and angle.
- ② Calculate the other leg by measuring the hypotenuse and base leg of a right triangle.
- ③ Calculate the hypotenuse by measuring two legs of a right triangle.
- ④ Calculate the third side of a triangle by measuring the other two sides and the altitude.
- ⑤ Calculate the length of the highlight side by measuring hypotenuse, auxiliary line and base leg of the right triangle.
- ⑥ Calculate area of an irregular triangle by measuring the length of its three sides.

Press button  to select the proper mode among these six.



Pythagoras Measurement must follow the instructions' order strictly.



1. Calculate two legs in a right triangle. 



$$D = L \times \cos a$$

$$H = L \times \sin a$$



Press button  once, screen shows ;

 Press button  for hypotenuse and dip angle. The results of H and D will be shown after measuring.



2. Calculate the other leg of a right triangle 




$$H = \sqrt{L_1^2 - L_2^2}$$

Short press button  twice, screen shows ;

 Press button  for length of hypotenuse L1;


 Press button  for length of one leg L2;

Device calculates the length of the other leg H.


3. Calculate the hypotenuse of right triangle 





$$c = \sqrt{a^2 + b^2}$$


Short press button  three times, screen shows

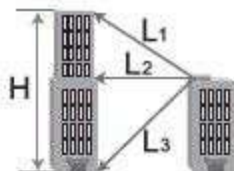
 ;

 Press  , measure the length of one leg a;

 Press  , measure the length of the other leg b;







Device calculates the length of hypotenuse c.

4. Calculate the third side of a triangle 

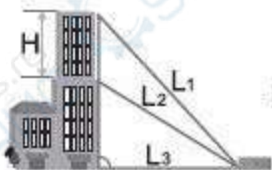


$$H = \sqrt{L_1^2 - L_2^2} + \sqrt{L_3^2 - L_2^2}$$

Press button  four times, screen shows 







-  Press , measure the length of one side L1;
 -  Press , measure the length of another side L2;
 -  Press , measure the length of the altitude L3;
- Device calculates the length of the third side H.


5. Calculate the highlight side H in one leg of a right triangle 

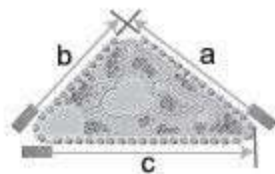


$$H = \sqrt{L_1^2 - L_3^2} - \sqrt{L_2^2 - L_3^2}$$

Press button  five times, screen shows 

-  Press , measure the length of hypotenuse L1;
 -  Press , measure the length of the auxiliary line L2;
 -  Press , measure the length of another leg L3;
- Device calculates the length of the highlight line H.

6. Calculate the area of an irregular triangle 



$$S = \sqrt{Lx(L-a)x(L-b)x(L-c)}$$

$$L = (a+b+c)/2$$

Press button  six times, screen shows  ;



 Press button  for first leg a;

 Press button  for second leg b;

 Press button  for third leg c;

The result of area S will be shown after measuring.


ATTN: If the device shows "ERR 5" while measuring, that means the previous measuring results are not accompany to the rule of triangle. For example, the hypotenuse is shorter than a leg. When there are results mistakes, the device will show "ERR 5" to alarm. In that case, users need to measure again.

If user gets a wrong result in last measurement, short press button  to return to the last measurement and measure again. Long press button  to save the result.


Calculation


Distance Addition


Step 1 Press button  when you get the first distance result;

Step 2 Press button  to get the second result;
The SUM shows in the major display area.
Repeat Step 1 and Step 2 to continue the summation.

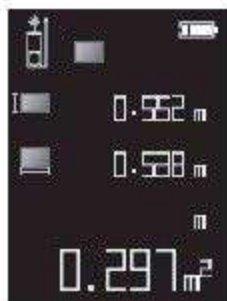
Distance Substration

Step 1 Press button  when you get the first distance result;

Step 2 Press button  to get the second result;
The difference shows in the major display area.
Repeat Step 1 and Step 2 to continue the substration.

ATTN: User can short press button  to cancel the last movement while addition or sustration.
Short press twice the button  to exit.

Area Addition and Substration




PIC 4 First Area Result



PIC 5 Second Area Result



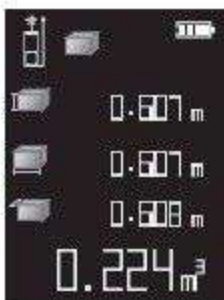
PIC 6 SUM

- Step 1** Get first area result as PIC 4.
- Step 2** Short press button , and then repeat the area measurement movement to get the second result of area as PIC 5.
- Step 3** Short press button , device calculates the SUM and shows in the major display area as PIC 6.

Repeat the movement of step 2 for more areas addition before step 3, device will calculates SUM for all areas.

The movements of Substration are similar to Addition.

Volume Addition and Substration





PIC 7: First Volume Result



PIC 8: Second Volume Result



PIC 9: SUM

- Step 1** Get first volume result as PIC 7.
- Step 2** Short press button , and then repeat the volume measurement movement to get the second result of volume as PIC 8.
- Step 3** Short press button , device calculates the SUM and shows in the major display area as PIC 9.

Repeat the movement of step 2 for more areas addition before step 3, device will calculates SUM for all areas.

The movements of Substration are similar to Addition.

Multi-direction Electronic Level Bubble, Delay Measurement, Staking-out and Angle Measurement

● Multi-direction Electronic Level Bubble





Long press button , screen shows:



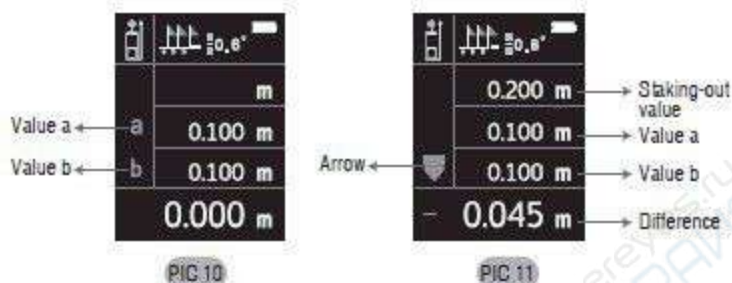
Vertical Angle
Level Angle

Press button  to exit.

Delay Measurement

Long press button , delay time shows on the top of screen in Seconds. Short press  and  to adjust the time. Max value is 60s, Min value is 5S. Then short press button  to start the delay measuring function.




● Staking-out






User can use staking-out function to find the position which match the setting distance.

1. Long press button , the device shows as PIC 10;


2. Set the value:


Press  and  to adjust the value of a. Press button  when a is confirmed.


Press  and  to adjust the value of b. Press button  when b is confirmed.

3. Arrows:

: Please move back;

: Please move on;

: Match the position.

4. Short press button  to exit.

5. Detail instructions

Setting Value= $a+n*b$ ($n=0,1,2,\dots$)

For example: $a=1.000\text{m}$, $b=2.000\text{m}$

1) Recent distance Dist=2.9:

Setting Value= $a+1*b=3.000\text{m}$,

Difference=Dist-3.000=-0.100m

2) Recent distance Dist=3.1:

Setting Value= $a+1*b+3.000\text{m}$,

Difference=Dist-3.000=0.100m



1)Dist=2.9



2)Dist=3.1

● Angle value shows on the top of the screen.

The range of angle is $-90.0^\circ \sim 90.0^\circ$

Two Units of Angle: $^\circ$ and % (Slope)



Vertical Angle

- **Connect to Computer (Just for 100m)**

User can transfer the records from the device to the computer with USB connector. User need to install the software "LDM Studio" from the disc which is offered with the device. Then user can upload the records to EXCEL. The software interface is as below:



PIC 12

The device is offered with opened USB HID for users to do further development. Please check the disc for the whole agreement.


DOC: SW-S100USBHID ORDER LIST.docx



- **Software Installation:**

- 1) Open the folder "LDMStudio_setup" in the disc. Double click "setup.exe" to install the software. Operate following the instructions in chapter 2 "One-Key Installation" in "readme.docx" or "readme.pdf".

2) Connect the device to the computer with USB after installation. When open the software, it shows the interface of PIC 12. If it is successfully connected, it will show "Connected" at the left bottom of the interface.



3) Click  or  to control or clear the records.


4) Click  to upload the records to the computer.

Click  to get the records in EXCEL. Click  to print the records.

MENU Setting



Enter and Exit the MENU


Press button  to enter the Menu Setting interface. User can exit by short press , the alteration can be taken effect but not recorded.



User can also exit by short press , the alteration can be taken effect and recorded.

Baic Operation

There is a red option frame to show your selection. (PIC 2).





Move the red option frame up and down by button  and .

Short press , then the red frame become green.

Press  or  to adjust the parameter of your selected item.




Items and Options


There are totally 7 items in 2 pages in the MENU.

Item	Description	Options
	Backlight	5s~60s
	Laser Lasting	20s~120s
	Auto Power-off	100s~300s
	Tone	
	Distance Unit	1: 0.000m 2: 0.00m 3: 0.0in 4: in 1/16 5: 0'00"1/16 6: 0.00ft 7: 0.000米 8: 0.00米
	Angle Unit	1: ° : degree 2: 100% : Slope
	Calibration	-0.009m ~ +0.009m

ATTN: Calibration function may affect precision of the device, so this item cannot be adjust under default state. User need to follow the below steps for the calibration:



Step 1 Turn off the device;

Step 2 Press the button  and hold. Short press button , then release it. Release the button  till the device enter the main interface;

Step 3 Short press button  for MENU setting.
Now it is free for the calibration.

Battery

The device is accompanied with rechargeable batteries and charger. Please check the batteries before charging to make sure the batteries in the device are rechargeable. It is forbidden to charge nonrechargeable batteries.

The icon  will roll on the right top of the screen while charging. When the charging is finished, the icon  will turn green.

ATTN: We suggest the user to use our standard charger for charging.

Instrument Maintenance:

- 1) The meter should not be stored in high temperature and strong humidity environment for long time;
- 2) If it is not used very often, please take out the battery and place the meter in the allocated potable bag and store in cool and dry place.
- 3) Please keep the device surface cleaning. Wet soft cloth is applied to clean dust, but erosion liquid is never allowed to use for the meter maintenance.
- 4) Laser output window and its focus lens can be maintained according to maintenance procedures for optical device.

Delivery Package

Please check if the accessories are matched the below list before buying.

Item	Contents	Unite	QTY	Remark
1	Laser distance meter	pc	1	
2	Pouch	pc	1	
3	Hand Strap	pc	1	
4	Rechargeable Battery	pc	3	
5	Charger	pc	1	
6	USB Connector	pc	1	
7	Disc	pc	1	Only for 100m
8	Reflector	pc	1	Only for 100m
9	User' s manual	pc	1	
10	Giftbox	pc	1	

Tips

You may get some warning information as below:

Info message	Cause & Solution
ERR 1	Received signal is too weak. Chose the surface with stronger reflectance. Use the reflector.
ERR 2	Received signal is too strong. Chose the surface with weaker reflectance. Use the reflector.
ERR 3	Low power. Change or recharge the batteries.
ERR 4	Fail of memorizer. Please contact the manufacturer.
ERR 5	Pythagoras measuring error. Please re-measure.
ERR 6	Exceed the measuring range.
ERR 8	Fail of tilt. Please contact the manufacturer.