

深达威<sup>®</sup>手持式激光测距仪

**Laser Distance Meter**

**用户手册**

User's Manual













产品执行标准: GB/T 14267-2009




2016L197-44

## 安全条例

**初次使用仪器前，请先仔细阅读安全条款和操作指南**

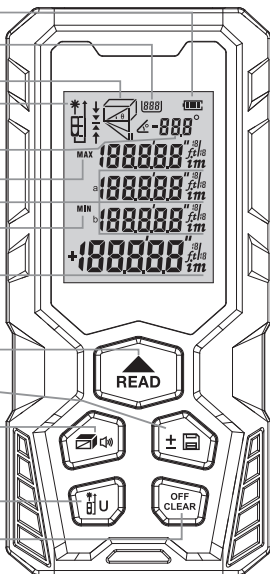
-  在使用仪器之前请仔细阅读本手册中的所有操作指南和安全条例，没有按照本手册所指引的操作方法使用仪器有可能会造成仪器的损害、影响测量精度、对使用者或第三者的人身伤害。
-  不要用任何方式自行打开或修理仪器，严禁非法改装或改变仪器激光发射器的性能。请妥善保管仪器，不要放置在儿童可以接触到的地方，避免无关人员的使用。
-  严禁用仪器激光器照射自己或他人的眼睛及身体其他部位，严禁将激光器照射在高反光的物体表面上。
-  仪器电磁辐射可能对其他设备和装置造成干扰，请不要在飞机或医疗设备附近使用本仪器，不要在易燃、易爆的环境中使用仪器。
-  仪器更换的废旧电池和报废的仪器不可与生活垃圾一同处理，请按国家或者当地的相关法律规定处理废旧电池和报废仪器。
-  仪器出现任何的质量问题，或对使用仪器有任何疑问时请及时联系当地经销商或深达威仪器厂家，我们将第一时间为您解决。

感谢您购买  **SNOWAY**  
深达威® 仪器 手持式激光测距仪系列产品!

## 显示屏、键盘

### ● 显示屏

- 电量指示
- 数据存储指示
- 长度/面积/体积/  
三角测量模式
- 激光发射指示
- 角度指示
- 最大值指示
- 辅显示区
- 最小值指示
- 主显示区





### ● 键盘

- 开机、测量键
- 累加/累减/  
存储键
- 面积/体积/  
三角模式/声音键
- 测量基准/  
单位选择
- 关机、清除键



## 锂电池

- 内置3.7V 600mAh 锂电池供电，不可拆装。仪器自带充电电路，具有明晰的欠压指示、充电指示。
- 电池充电：请使用具有安全认证的DC 5V >0.6A充电器，建议用手机充电器充电。
- 电池用过一段时间后容量不足时，开不了机或开机后，电池符号空白闪烁显示，需要及时充电。插入USB充电，电池符号条形柱滚动显示 ，充满电后会显示 ，且闪烁。


## 电池保养

长时间不使用时，先把产品充满电，并每半年再充电一次，以免电池放电损坏。

## 启动仪器、功能设置


### ● 启动仪器和关闭仪器

关机状态下，按  键，仪器开机进入待测状态。

开机状态下，长按  键关闭仪器。

150秒内未对仪器进行任何操作，仪器将自动关闭。


### ● 单位设定

长按  键，进入测量单位调整状态，可重置当前测量单位，本机默认的单位为：0.000m，该仪器提供了6种单位可供选择。

测量单位:

|   | 长 度        | 面积                   | 体积                   |
|---|------------|----------------------|----------------------|
| 1 | 0.000 m    | 0.000 m <sup>2</sup> | 0.000 m <sup>3</sup> |
| 2 | 0.00 m     | 0.00 m <sup>2</sup>  | 0.00 m <sup>3</sup>  |
| 3 | 0.0 in     | 0.00 ft <sup>2</sup> | 0.00 ft <sup>3</sup> |
| 4 | 0 1/16in   | 0.00 ft <sup>2</sup> | 0.00 ft <sup>3</sup> |
| 5 | 0'00" 1/16 | 0.00 ft <sup>2</sup> | 0.00 ft <sup>3</sup> |
| 6 | 0.00 ft    | 0.00 ft <sup>2</sup> | 0.00 ft <sup>3</sup> |

### ● 测量基准设置

短按  基准键进行前端基准、中端基准及末端基准的切换。

### ● 背光灯开启/关闭

本仪器背光灯为自动开和关。仪器在键入任一按键后，背光灯会持续打开15秒，15秒后，仪器无操作将自动关闭背光灯，以节省电源。

### ● 声音开启/关闭

长按  键可关闭或打开声音。








声音开



声音关


## 自助校准功能


为保证仪器的精准度，提供了自助校准功能。

校准方法：在关机状态下，持续按住  键，再按  键开机，松开  键，直到屏幕出现‘CAL’下端有闪烁的数字，进入自助校准模式。此时用户可根据仪器的误差用   键对这个数值进行调整。

调整范围为：-9~9mm。

例如：实际距离为3.780m

若本机测量值为3.778m，比实际值小2mm，则可进入校准模式，用  键将校准值上调2mm。

若本机测量值为3.783m，比实际值大3mm，则可进入校准模式，用  键将校准值下调3mm。

调整完毕后，按  键保存校准结果。


## 单次测量

操作步骤如下：

1. 待测模式下，短按  键，仪器激光发射。
2. 锁定测量目标，短按  键，仪器测得一次距离，并显示在屏幕的主显示区。在辅助显示区，会显示最近三次测得的历史数据，可短按  键清除。

## 连续测量



此模式方便用户找到某一距离点，而无需频繁的按键，即可得到需要的数据。操作步骤如下：


1. 待测模式下，长按  键，仪器进入连续测量模式，屏幕会显示最大值MAX和最小值MIN以及最大最小差值，主显示区会显示当前测量值。


2. 短按任意键，退出连续测量。

测量停止后，测量结果自动保存到存储介质中，以方便随时查阅。



## 面积测量

短按  键一次，屏幕显示 ，长方形一条边闪烁。根据提示完成下列操作：



按  键进行第一条边的测量（长）


按  键进行第二条边的测量（宽）

仪器会自动进行面积和周长运算，结果显示在主显示区。辅助显示区显示长方形的长和宽以及周长值。

在测量过程中，还可以短按  键清除本次测量结果重新测量。按  键两次，退出面积测量状态，进入长度测量模式。

## 体积测量



短按  键二次，屏幕显示 ，立方体一条边闪烁。根据提示完成下列操作：

按  键进行第一条边的测量（长）

按  键进行第二条边的测量（宽）

按  键进行第三条边的测量（高）

仪器会自动进行体积运算，结果显示在主显示区。辅助显示区显示立方体的长宽高的测量值。

在测量过程中，还可以短按  键清除本次测量结果重新测量。按  键两次，退出体积测量状态，进入长度测量模式。

## 墙面面积测量

短按  键三次，屏幕显示 ，墙面一条边闪烁。

根据提示完成下列操作：

按  键，测得墙面的高度；


按  键，测得墙面1的宽度1；

仪器会自动计算墙面的面积=高度x宽度1；

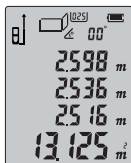
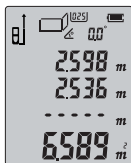
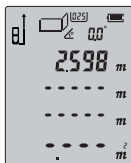
按  键，测得墙面2的宽度2；



仪器会自动计算墙面的面积总和

面积总和= 高度 x (宽度1+宽度2)；

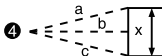
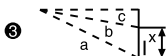
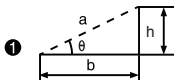
依次类推，按  键，测得墙面n的宽度n；

面积总和=高度 x ( 宽度1+宽度2+.....+宽度n) ；





在测量过程中，还可以短按  键清除本次测量结果重新测量。按  键两次，退出墙面面积测量状态，进入长度测量模式。

## 勾股定理间接测量




仪器预设有四种利用勾股定理测量三角形单边距离模式，方便用户在特定复杂环境下进行间接测量。


### ① 测角测高

短按 **Q4** 键四次，屏幕显示: ，三角形的斜边闪烁  
按  键依屏幕提示先测出虚线直角边斜边的长度(a)  
同时测出斜边与底边夹角  $\theta$ 。

仪器自动计算水平距离b与垂直高度h。

### ② 测量三角形两直角边，间接测量斜边长度


短按 **Q4** 键五次，屏幕显示: ，三角形的直角边闪烁

按  键依屏幕提示测出一条虚线直角边的长度(a)


按  键测出另一条虚线直角边的长度(b)

仪器自动计算实线斜边的长度(x)

### ③ 测量三角形三条虚线边，间接测量三角形一条边的长度

短按 **Q4** 键六次，屏幕显示: ，三角形的斜边闪烁



按  键依屏幕提示先测出一条虚线斜边的长度(a)

按  键测出中间一条虚线斜边的长度(b)

按  键测出另一条虚线底边的长度(c)


仪器自动计算出实线三角形一条边的长度(x)

#### ④ 测量三角形三条虚线边，间接测量直角边长度

短按  键七次，屏幕显示: ，三角形的斜边闪烁

按  键依屏幕提示测出一条虚线斜边的长度(a)

按  键测出如图虚线边的长度(b)



按  键测出如图另一条虚线斜边的长度(c)


仪器自动计算出实线直角边的长度(x)

勾股测量模式下，直角边必须小于斜边长度仪器才能计算，否则仪器会显示错误信号提示。在勾股测量模式下，为保证测量的精度，须确保从同一个起始点测量，并按斜边、直角边测量顺序测量。

### 加减测量功能

单段距离测量可通过加/减运算进行累加或累减操作。

用户在测量单段距离得到一次测量结果后，再通过  键进入累加累减功能选择，短按  键，当屏幕出现“+”，进入累加测量模式，屏幕显示上次测量值与当次测量值的累加值。

短按  键，屏幕出现“-”，进入累减测量模式，屏幕显示上次测量值与当次测量值的差值。

不仅距离可累加累减，面积和体积也可进行累加累减。下面举例说明面积的累加累减功能，体积的累加累减与此类似。

面积累加：

1. 测量第一个面积，得到结果如下图1所示。
2. 短按  $\pm$  键，进入累加模式，再测量第二个面积，得到结果如下图2
3. 短按  $\Rightarrow$  键，得到两次面积求和的结果，结果如图3所示。

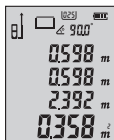


图1

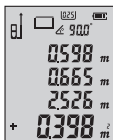


图2



图3

多次面积累加：

在面积累加第2步操作之后，继续测量，可再次累加下一个面积，重复该步骤，可进行多次累加，最后执行第3步求和。

面积累减：

短按  $\pm$  键，可切换累减模式。累减及多次累减操作和累加类似，请参考累加操作。

## 测量记录存储功能


测量得到最终结果时，仪器自动存储数据，记录号  $\text{L}88$  加一。存储满后，仪器从第1笔开始覆盖。

在面积，体积，三角形间接测量模式下，当所有测试结束后，也可进行存储，此时仪器会保存该测量模式下该次测量的完整记录。



## ● 浏览/删除记录

操作如下：

长按  键查看记录

短按   键切换记录

短按  键或者  键退出记录

长按  键删除单条记录

同时长按   键删除全部记录

## ● 角度测量

显示屏上方时刻显示有角度信息，角度的测量范围是  $-90^{\circ} \sim 90^{\circ}$ 。

## 错误信息

在仪器出现Err x 信息时，表示仪器可能无法进行正确测量，下面提出了可能会遇到的错误提示及解决办法。

| 错误信息  | 含义及解决办法         |
|-------|-----------------|
| Err 1 | 反射信号太弱，增加反光板    |
| Err 2 | 反射信号太强，测试不同的反射面 |
| Err 3 | 电池电压太低，对电池进行充电  |
| Err 4 | 存储器错误返厂进行维修     |
| Err 5 | 勾股定理错误重新测量      |
| Err 6 | 超出测量范围          |
| Err 8 | 角度传感器错误返厂进行维修   |

## 技术参数

| 项目     | SW-WR50                                  | SW-WR70  | SW-WR100  | SW-WR120  |
|--------|--|----------|-----------|-----------|
| 最大测量距离 | 0.05-50m                                 | 0.05-70m | 0.05-100m | 0.05-120m |
| 距离测量精度 | $\pm(2\text{mm}+D*1/10000)$              |          |           |           |
| 倾角测量范围 | $\pm 90^\circ$                           |          |           |           |
| 角度精度   | $\pm 1^\circ$                            |          |           |           |
| 连续测量功能 | ✓  |          |           |           |
| 面积体积测量 | ✓  |          |           |           |
| 测角测高功能 | ✓  |          |           |           |
| 勾股测量功能 | ✓  |          |           |           |
| 加减测量功能 | ✓  |          |           |           |
| 面积体积加减 | ✓  |          |           |           |
| 墙面面积测量 | ✓  |          |           |           |
| 最大/最小值 | ✓  |          |           |           |
| 自助校准功能 | ✓  |          |           |           |
| 按键提示音  | ✓  |          |           |           |
| 屏幕     | 段式LCD 2.0英寸                              |          |           |           |
| 激光等级   | II                                       |          |           |           |
| 激光类型   | 630-670nm, <1mW                          |          |           |           |
| 防水等级   | IP68                                     |          |           |           |
| 存储记录笔数 | 100笔                                     |          |           |           |
| 自动切断激光 | 20秒(单次测量)                                |          |           |           |
| 自动关机   | 150秒                                     |          |           |           |
| 满电工作时间 | 单次测量5500次                                |          |           |           |
| 存储温度范围 | $-20^\circ\text{C}\sim 60^\circ\text{C}$ |          |           |           |
| 工作温度范围 | $0^\circ\text{C}\sim 40^\circ\text{C}$   |          |           |           |
| 存储湿度   | 10%~90%RH                                |          |           |           |
| 电池规格   | 3.7V 600mAh锂电池                           |          |           |           |
| 充电规格   | DC5V 0.6A Type-C                         |          |           |           |
| 充电时长   | 约2小时                                     |          |           |           |
| 外形尺寸   | 118x55x26.8mm                            |          |           |           |

\* “d”表示实际距离

\*\* 在恶劣环境下如：阳光过于强烈，环境温度波动过大，反射面反射效果较弱，电池电量不足的情况下测量结果会有较大的误差，此种情况配合目标反射板使用效果更佳。

## 仪器日常保养

- 禁止将仪器长期放置在高温高湿的环境中储存，长期不使用仪器时，请把仪器放置在随机的仪器套内放在阴凉干爽处存放。
- 请保持仪器表面清洁，可用湿的软布擦拭表面灰尘，不可用带有腐蚀性洗液清洁仪器。可按照擦拭光学器件表面的方法擦拭激光器窗口和聚焦镜。

## 装箱清单

购买仪器时请按下列清单认真检查仪器所有附件是否完整？

| 项目 | 名称          | 单位 | 数量 | 备注    |
|----|-------------|----|----|-------|
| 1  | 主机          | 台  | 1  |       |
| 2  | 仪器便携包       | 个  | 1  |       |
| 3  | 挂绳          | 条  | 1  |       |
| 4  | 锂电池         | 块  | 1  | 内置不可拆 |
| 5  | 说明书         | 本  | 1  |       |
| 6  | 保修合格证       | 张  | 1  |       |
| 7  | 彩盒          | 个  | 1  |       |
| 8  | USB Type-C线 | 条  | 1  |       |







检验员：

日期：



## 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 may cause damage to the device, influence on measurement result or cause personal injury to the user or a third party.
-  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 being used by any irrelevant person.
-  It is strictly prohibited to shoot eyes or other parts of body with the laser. It is not allowed to take the laser to shoot the surface of any highly reflective objects.
-  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 meter device should not be processed just like household garbage, please handle it 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.

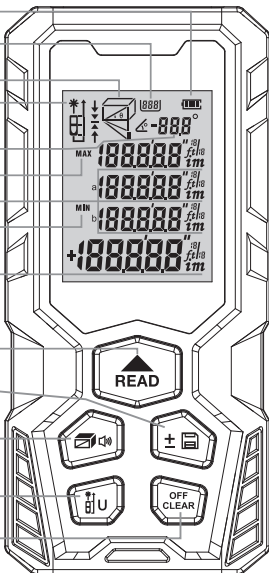
## Display / Keyboard

### ● Display



- Power Supply
- Record
- Length, Area, Volume and Pythagorean
- Laser on
- Angle
- Maximum
- Auxiliary Display
- Minimum
- Major Display

### ● Keyboard

- Turn on/Measuring
- Addition & Subtraction/Save
- Sound/Area/Volume/Pythagorean Mode
- Reference Point/Unit Switch
- Turn off/Remove



## Lithium Battery

- The built-in 3.7V 600mAh lithium battery is non-removable. The instrument has its own charging circuit, with clear undervoltage indication and charging indication.
- Battery charging: The charging head should be of good quality and DC5V >0.6A output. It is recommended to use the mobile phone charging head for charging.
- The instrument shall be charged in time when running out of battery or its battery symbol shows blank and flashes after being turned on due to its insufficient battery capacity. Insert USB to charge, and the battery symbol scrolls display . When fully charged, it will display  and flash.


## Battery Maintenance

Keep it with full power if no operations for a long time; and charge it once every half year to avoid the battery damage.


## Start the instrument/Menu Setting

### ● Turn on/off the Instrument

In off state, press  to power on and enter the standby mode.

Under on status, long press button  to turn the device off. The device can also be shut off without any operation for 150 seconds.

## ● Unit setting

Long press button  , reset current measurement unit, the default unit is: 0.000m.

There are 6 units for selection.

Units:

|   | Length     | Area                 | Volume               |
|---|------------|----------------------|----------------------|
| 1 | 0.000 m    | 0.000 m <sup>2</sup> | 0.000 m <sup>3</sup> |
| 2 | 0.00 m     | 0.00 m <sup>2</sup>  | 0.00 m <sup>3</sup>  |
| 3 | 0.0 in     | 0.00 ft <sup>2</sup> | 0.00 ft <sup>3</sup> |
| 4 | 0 1/16 in  | 0.00 ft <sup>2</sup> | 0.00 ft <sup>3</sup> |
| 5 | 0'00" 1/16 | 0.00 ft <sup>2</sup> | 0.00 ft <sup>3</sup> |
| 6 | 0.00 ft    | 0.00 ft <sup>2</sup> | 0.00 ft <sup>3</sup> |

## ● Changing Reference Point


Short press  to change the reference point.

## ● Back Light On/Off

The back light is set to turn on and off automatically.

The back light can be on for 15s while operating, and it will be shut off automatically in 15s when there is no operation to the device.

## ● Sound On/Off

Long press  button to turn Off or On the sound.








Voice On



Voice Off


## Self-Calibration


In order to ensure the accuracy of the device, self-calibration function is provided.

Calibration method: In the shutdown state, hold down , then press  to power on. Release  until the screen displays flashy number at the lower end of 'CRL', then the device enters the self-calibration mode. Then user can adjust the value with   according to the accuracy of the device.

Adjusting range: -9 to 9mm.

For example, the actual distance is 3.780m.




If the measured value is 3.778m, 2mm smaller than the actual value, the calibration value can be adjusted up by 2mm on the existing basis with  through the calibration function.

If the measured value is 3.783m, 3mm higher than the actual value, the calibration value can be lowered by 3mm on the existing basis with  through the calibration function.

After the adjustment, press  to save the calibration result.

## Single Distance Measurement


The steps are as follows:

1. In the measurement mode, press  and the instrument laser will be emitted.
2. Lock the measurement target, press , the instrument measures the distance once, and it is displayed in the main display area. In the auxiliary display area, the historical data of the last three measurements will be displayed, which can be cleared by pressing .





## Continuous Measurement

This mode is convenient for users to find a certain distance point. Without frequent pressing, you can get the required data. The steps are as follows:


1. In the measurement mode, long press , the instrument will enter the continuous measurement mode, the screen will display the maximum value MAX, minimum value MIN and the maximum and minimum difference, and the main display area will display the current measurement value.
2. Short press any button to exit continuous measurement mode.

After the measurement stops, the measurement results are automatically saved to the storage media for easy access at any time.


## Area Measurement


Press ,  shows on the screen. One of the side of rectangle blinking on the display. Follow the prompts to complete the following:

Press  to measure the first side (length);



Press  to measure the second side (width);

The instrument automatically performs area and perimeter calculations, and the results are displayed in the main display area. The auxiliary display area displays the length and width of the rectangle as well as the perimeter values.


In the measurement process, user can also press  to clear the measurement result and measure again.


Press  twice to exit the area measurement state and enter the length measurement mode.

## Volume Measurement


Press  twice,  shows on the screen. One of the side of cube blinking on the display. Follow the prompts to complete the following:


Press  to measure the first side (length);

Press  to measure the second side (width);



Press  to measure the third side (height);

The instrument automatically performs volume calculations and the results are displayed in the main display area. The auxiliary display area displays measurements of the length, width and height of the cube.

In the measurement process, user can also press  to clear the measurement result and measure again.


Press  twice to exit the volume measurement state and enter the length measurement mode.


## Wall Area Measurement

Short press  three times, the screen displays  , and one side of the wall is blinking.


Follow the prompts to complete the following:

Press  to measure the height of the wall first;

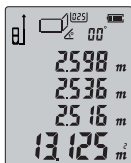
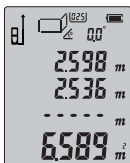
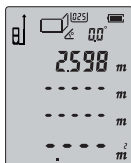
Press  to measure the width 1 of the wall 1, and the instrument automatically calculates the area of the wall = height x width 1;



Press  to measure the width 2 of wall 2, and the instrument calculates the total area of the walls automatically;

Sum of areas = height x (width 1+ width 2);

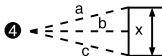
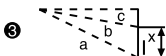
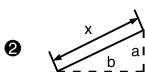
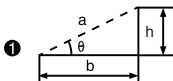
By analogy, press  to measure the width n of the wall n;

Sum of areas = Height x (width 1+ width 2+.....) + width n);






During the measurement process, user can short press  to clear the measurement result and measure again. Press  twice to exit the wall area measurement state and enter the length measurement mode.

## Pythagorean Measurement







There are four modes of measuring the triangular unilateral distance by means of Pythagorean theorem, which are convenient for users to measure indirectly in specific complex environments.

### ① Angle and Height Measurement.


Short press  four times,  shows on the screen, and the hypotenuse of the triangle flashes. Press  according to the screen prompt first measure the length of the hypotenuse of the right Angle of the dotted line (a) and measure the Angle between the hypotenuse and the bottom edge. The device automatically calculates the horizontal distance (b) and vertical height (h) .


### ② Calculate the hypotenuse by measuring the length of two sides.


Short press  five times,  shows on the screen, the right side of the triangle flashes. Press  to measure the length of the right Angle of a dotted line according to the screen prompt (a). Press  to measure the length of the right side of the other dotted line (b). The device automatically calculates the length of hypotenuse (x).

- ③ Measure the three dotted edges of the triangle, and indirectly measure the length of one side of the triangle.

Press  six times,  shows on the screen, the hypotenuse of the triangle flashes

Press  to measure the length of the hypotenuse of a dotted line (a).


Press  to measure the length of the hypotenuse of a dotted line in the middle (b).


Press  to measure the length of the bottom of the other dotted line (c).


The device automatically calculates the length of one side of the solid triangle (x).

- ④ Measure the three dotted edges of the triangle, and indirectly measure the length of one side of the triangle.

Press  seven times,  shows on the screen, the hypotenuse of the triangle flashes

Press  to measure the length of the hypotenuse of a dotted line (a).

Press  to measure the length of the dotted line as shown (b).


Press  to measure the length of the hypotenuse of the other dotted line in the picture (c).


The device automatically calculates the length of the right Angle side of the solid line (x).


In the Pythagorean Measurement Mode, the right Angle side must be less than the hypotenuse length of the instrument to calculate, otherwise the instrument will display an error signal prompt. In the Pythagorean Measurement Mode, to ensure the accuracy of the measurement, it is necessary to ensure that the measurement is taken from the same starting point and in the order of the hypotenuse and right Angle side measurements.

### **Addition / Subtraction Measurement**

Single distance measurement can be added or subtracted by adding/subtracting operations.



After measuring a single distance, the user can press  to enter the cumulative addition/subtraction.

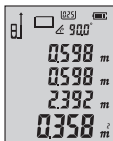
Press , when "+" appears on the screen, the user enters the cumulative addition measurement mode and the screen displays the summation value of the last measurement value and the current measurement value.

Press , When "-" appears on the screen, the system enters the cumulative subtraction measurement mode. The screen displays the difference between the last measurement and the current measurement.

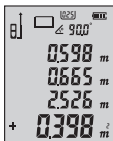
Not only distance can be calculated in addition and subtraction, but area and volume can do the calculation as well. Take area as sample:

Area cumulative function:

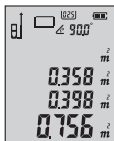
1. Measure the first area as shown in PIC1.
2. Short press  , and enter the cumulative addition mode, then measure the second area as shown in PIC2.
3. Short press  to get the summation result of these two areas which is showing in PIC3.



PIC1



PIC2




PIC3

Multiple Area Addition:

After the area accumulation step 2 operation, continue the measurement, you can add the next area again, repeat this step, you can do multiple accumulations, and finally perform the sum step 3.

Multiple Area Subtraction:

Press  to switch the cumulative subtraction mode. The cumulative subtraction and multiple cumulative subtraction operations are similar to cumulative addition operations. For details, see Cumulative Operations.


## Record Function

When the final measured result is obtained, the instrument will automatically store the data, continuously incrementing the record number [ 88 ]. Once the storage is full, it will start overwriting from the first entry.

In the area, volume, triangle indirect measurement mode, it can also be stored when all the tests are completed, at which time the instrument will save the complete record of the measurement in that measurement mode.

### ● Read / Delete the Record:



operation is as follows:

Long press  to view the records

Short press   to switch records

Short press  or  to exit the record

Long press  to delete a single record

Hold down  and  at the same time to delete all the records

### ● Angle Measurement

The angle information is displayed at the top of the screen, and the angle measurement range is  $-90.0^{\circ}$  to  $90.0^{\circ}$ .



## Error Information

When Err x information appears on the instrument, it indicates that the instrument may not be able to perform correct measurement. The following are possible error information and solutions.

| Error Information | Cause & Solution  |
|-------------------|---|
| Err 1             | The reflection signal is too weak. Use a reflector                      |
| Err 2             | The reflection signal is too strong. Test different reflective surfaces |
| Err 3             | Low battery voltage. Charge the battery                                 |
| Err 4             | Memory error. Return to factory for repair                              |
| Err 5             | Pythagoras error. Remeasure   |
| Err 6             | Out of measuring range  |
| Err 8             | Angle sensor error. Return to factory for repair                        |

## Technology Specifications

| ITEM   | SW-WR50   | SW-WR70  | SW-WR100  | SW-WR120  |
|--|---|----------|-----------|-----------|
| Working Range                                | 0.05-50m  | 0.05-70m | 0.05-100m | 0.05-120m |
| Distance measurement precision               | $\pm(2\text{mm}+d*1/10000)$ *                               |          |           |           |
| Angle Range                                  | $\pm 90^\circ$  |          |           |           |
| Angle accuracy                               | $\pm 1^\circ$   |          |           |           |
| Continuous measurement function              | ✓   |          |           |           |
| Area and Volume measurement function         | ✓   |          |           |           |
| Angle and Height measurement                 | ✓   |          |           |           |
| Pythagorean proposition measurement function | ✓   |          |           |           |
| Add and subtract measurement function        | ✓   |          |           |           |
| Area&Volume Addition/Subtraction             | ✓   |          |           |           |
| Wall area measurement                        | ✓   |          |           |           |
| Min/Max value                                | ✓   |          |           |           |
| Self-Calibration                             | ✓   |          |           |           |
| Buttons/Keys sound                           | ✓   |          |           |           |
| Display screen                               | 2.0" segment LCD  |          |           |           |
| Laser level                                  | II  |          |           |           |
| Laser type                                   | 630-670nm, <1mW   |          |           |           |
| Protection grade                             | IP68  |          |           |           |
| Max storage                                  | 100 units   |          |           |           |
| Automatically cut off laser                  | 20s (single measurement)                                    |          |           |           |
| Automatic shutdown                           | 150s  |          |           |           |
| Operating times                              | Single measuring<br>5500 times after one time full charging |          |           |           |
| Storage temperature                          | $-20^\circ\text{C}\sim 60^\circ\text{C}$                    |          |           |           |
| Working temperature                          | $0^\circ\text{C}\sim 40^\circ\text{C}$                      |          |           |           |
| Storage humidity                             | 10%~90% RH  |          |           |           |
| Battery                                      | 3.7V 600mAh Li-ion  |          |           |           |
| Charging Specification                       | DC5V 0.6A Type-C  |          |           |           |
| Charging Time                                | About 2 hours   |          |           |           |
| Dimension                                    | 118x55x26.8mm   |          |           |           |

\* "d" indicates the actual distance.

\*\* In harsh environment, such as: sunlight is too strong, the ambient temperature fluctuates excessively, the reflection effect of the object's surface is weak, the battery is low, the measurement results will have a large error, so a reflecting plate is needed.

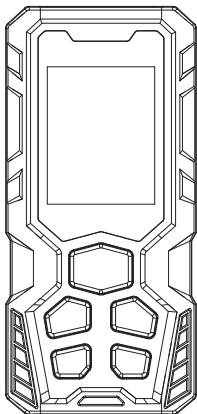
## Instrument Maintenance

- The meter should not be stored in high temperature and humid environment for a long time. If it is not used very often, please place the meter in the box and store it in cool and dry place.
- Please keep the device surface clean. Use a soft wet cloth to wipe the dust on the surface. Do not use corrosive liquid to clean the device. Use the same method as wiping optical devices to wipe the meter and focusing mirror.

## Packing List

Please check if the accessories are completed according to the below list.

| No. | Item            | Unit | QTY | Note                       |
|-----|-----------------|------|-----|----------------------------|
| 1   | Meter           | pc   | 1   |                            |
| 2   | Portable bag    | pc   | 1   |                            |
| 3   | Hand strap      | pc   | 1   |                            |
| 4   | Lithium Battery | pc   | 1   | Built-in and non-removable |
| 5   | User Manual     | pc   | 1   |                            |
| 6   | Gift Box        | pc   | 1   |                            |
| 7   | Type-C Cable    | pc   | 1   |                            |



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