

深达威[®] 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



2024L136-44

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  **SNOWWAY** 深达威® 仪器 手持式激光测距仪系列产品！

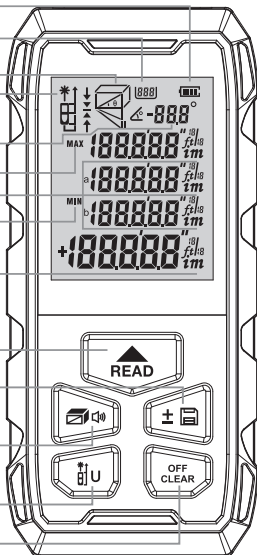
显示屏、键盘

● 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 850mAh 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 >0.8A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，仪器和激光同时启动，仪器进入待测模式。

开机状态下，长按  键3秒关闭仪器。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 ²	0.000 m ³
2	0.00 m	0.00 m ²	0.00 m ³
3	0.0 in	0.00 ft ²	0.00 ft ³
4	0 1/16 in	0.00 ft ²	0.00 ft ³
5	0'00" 1/16	0.00 ft ²	0.00 ft ³
6	0.00 ft	0.00 ft ²	0.00 ft ³

● 测量基准设置

短按  基准键进行设置前端基准、中端基准和末端基准的相互转换，系统默认为末端基准。

● 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

仪器提供人工语音播放功能，用户可根据语音提示来进行操作，使得仪器更加人性化。长按  键，关闭语音功能，仪器提示“语音关”，再长按  键，开启语音功能，仪器提示“语音开”。

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  键将校准值在现有基础上上调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  键将校准值在现有基础上下调3mm。

调整完毕后，按  键保存校准结果。

单次测量

待测模式下短按  键，仪器激光发射，锁定测量点。再按  键进行单次距离数据的测量，测量结果显示在主显示区。

连续测量

待测模式下长按  键，进入连续测量状态，屏幕上辅助显示区会显示此次连续测量过程中的最大测量值和最小值。

主显示区会显示当前测量值，短按  键或  键退出连续测量模式。

面积测量

按  键一次，屏幕会显示 ，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的测量值。

在测量过程中，还可以键入  清除本次测量结果重新测量。

按  键，退出面积测量状态，进入长度测量模式。

体积测量

按  键二次，系统进入体积测量状态，仪器进入体积状态，屏幕上会有一个立方体闪烁 ，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，还可以键入  清除本次测量结果重新测量。

按  键，退出体积测量状态，进入长度测量模式。

墙面面积测量

短按  三次，屏幕显示 ，根据提示完成下列操作：

按  测量键，测得墙面的高度；

按  测量键，测得墙面1的宽度1；

仪器会自动计算墙面的面积=高度×宽度1；

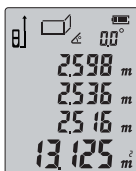
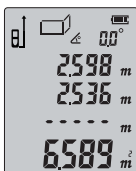
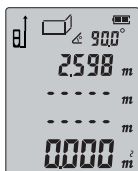
按  测量键，测得墙面2的宽度2；

仪器会自动计算墙面的面积总和

面积总和=高度×(宽度1+宽度2)

依次类推，按  测量键，测得墙面n的宽度n；

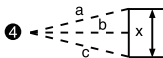
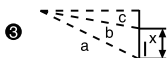
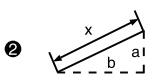
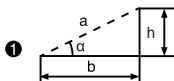
面积总和=高度×(宽度1+宽度2+.....+宽度n)；



在测量过程中，还可以键入  清除本次测量结果重新测量。

显示区无数据时，按  键，退出面积测量状态，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

仪器短按  键四次进入三角测角测高模式：
按  键依屏幕提示先测出虚线斜边的长度(a)
同时测出斜边与底边夹角 α 。

仪器自动计算水平距离b与垂直高度h。

② 测量直角三角形两直角边，间接测量斜边长度



点击  键五次，屏幕显示： 直角边闪烁
按  键依屏幕提示测出一条虚线的长度(a)
按  键测出另一条虚线角边的长度(b)
仪器自动计算实线斜边的长度(x)

③ 点击  键六次，屏幕显示： 斜边闪烁

按  键依屏幕提示先测出一条虚线的长度(a)

按  键测出中间一条虚线边的长度(b)

按  键测出另一条虚线边的长度(c)

仪器自动计算出实线三角形一条边的长度(x)

④ 点击  键七次，屏幕显示： 斜边闪烁

按  键依屏幕提示测出一条虚线边的长度(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，当屏幕测量主显示区出现“+”，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，当屏幕测量主显示区出现“-”，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：测量第一个面积，得到结果如下图1所示。然后按下  键，再测量第二个面积，得到结果如下图2所示，在左下角会显示一个加号。最后，按下  键得到两次面积求和的结果，结果如图3所示。



图1

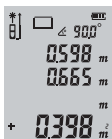


图2



图3

测量记录自动存储功能

测量模式下：当前数据有效时，测量数据自动存储到仪器内存中。

在面积，体积，三角形间接测量模式下，当所有测试结束后，也将自动存储。

存储满时，仪器会自动覆盖最早的记录。

● 浏览/删除记录：

长按  键，查询已储存的测量记录，用  或  键浏览记录。

在浏览记录过程中，长按  键清除所有记录。

短按  键或  键退出该状态。

● 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 $-90 \sim 90^{\circ}$ 。

提示信息

使用过程中，主显示区可能会出现如下提示信息：

信息	原因	解决方法
Err	超出距离测量范围	让仪器在量程范围内使用
Err1	信号过弱	测量反射能力强的目标点
Err2	信号过强	测量反射能力弱的目标点
Err3	电池电压过低	对电池进行充电
Err4	超出工作温度范围	让仪器在指定环境中使用
Err5	勾股测量违规	重新测量，确保斜边大于直角边
Err6	角度传感器错误	返厂进行维修

技术参数

项目	SW-50GT	SW-70GT	SW-100GT	SW-120GT
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	✓			
勾股测量功能	✓			
测角测高功能	✓			
加减测量功能	✓			
面积体积加减	✓			
最大/最小值	✓			
自助校准功能	✓			
语音播报	✓			
屏幕	段式LCD 2.2英寸			
激光等级	II			
激光类型	500-800nm, <1mW			
存储记录笔数	99笔			
自动切断激光	20秒			
自动关机	150秒			
满电工作时间	单次测量5000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	20%~80%RH			
电池规格	3.7V 850mAh锂电池			
充电规格	DC5V 0.8A Type-C			
充电时长	约1.5小时			
外形尺寸	118x54x25.7mm			

* “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	
9	反光板	个	1	仅100米以上有

检验员：

日期：



Safety Regulations

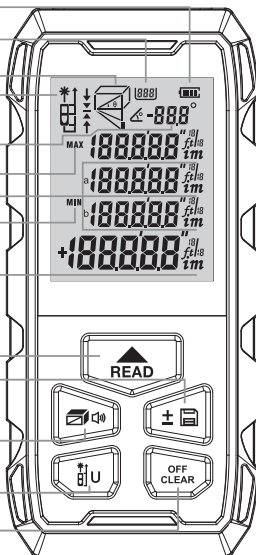
Please read the safety regulations and operation guide carefully before operating.

-  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 850mAh 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 >0.8A 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

Under off status, press button , device and laser get starting simultaneously and stand by for measurement.

Under on status, long press button  for 3 seconds 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 ²	0.000 m ³
2	0.00 m	0.00 m ²	0.00 m ³
3	0.0 in	0.00 ft ²	0.00 ft ³
4	0 1/16 in	0.00 ft ²	0.00 ft ³
5	0'00" 1/16	0.00 ft ²	0.00 ft ³
6	0.00 ft	0.00 ft ²	0.00 ft ³

● Changing Reference Point

Short press  to change the reference point .

System default reference point is bottom.

● 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 on or off the buzzer.

Self-Calibration

This function can keep the precision of the device. Instruction: Power off, Long press button , and then press . Release the button , then release button  till "CAL" and a figure under it display on the screen. User can adjust the figure with button   according to the accuracy of the meter. Adjusting range: -9 to 9mm, then, long press button  to save the calibration result.

Length Measurement & Calculation

● Single Distance Measuring:

Turn on the laser beam by short press of the button  under measuring mode, press the button  again for single measurement of length, then the measured results displayed in the major display area.

● Continuous Measuring:

Long press button  under measuring mode and enter into continuous measuring mode. Maximum measuring result displays in auxiliary display area, present result displays in major display area. Short press button  or  to exit continuous measuring mode.

● Area Measurement:

Press button  ,  shows on the screen. One of the side of rectangle blinking on the display, please follow the below.

instructions for area measuring:

Press  once for length

Press  again for width

The device calculates and shows the result in the major display area.

The resent measuring result of length is showed in the auxiliary display area. Press  , clear off the result and measuring again if necessary.

Press  again to exit the mode.

● Volume Measurement

Press button  twice to enter volume measurement mode. A  will shows on the top of screen. Please follow the below instruction for volume measuring:

Press  for Length

Press  again for Width

Press  thirdly for height

The device calculates and shows the result in the major display area.

Press  , clear off the result and measuring again if necessary.

Press  again to exit the mode.

● Painter Function

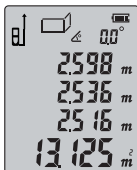
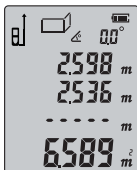
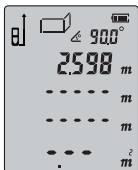
When the meter is in area mode, you can use the add / subtract function to total up the area of several surfaces.

Press button  three times till  showing in the display.

Press  to measure the height of the wall first;

Press  to measure the bottom edge of the first wall, get the first area in the major display area;

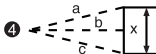
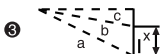
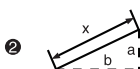
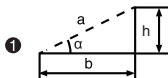
Press  to measure the bottom edge of another wall, get the sum of these two walls.



Repeat these operations for more walls. Press button  to clear the previous measuring result and start new measurement.

When there is no data in the Auxiliary Display area, press button  to exit the mode.

● Pythagoras



There are four Pythagoras modes in case that user gets hard to reach the target.

1. Calculate the length of two legs by measuring the hypotenuse and the angle.

Short press  four times, when the hypotenuse of  blinking,

Press , measure the length of hypotenuse (a), and calculates the angle (α) between the bevel and the bottom at the same time.

Device calculates the horizontal distance (b) and vertical height (h) .

2. Calculate the hypotenuse by measuring the length of two legs.

Short press  five times, when one leg of  blinking,

Press , measure the length of one leg (a)

Press , measure the length of another leg (b)

Device calculates the length of hypotenuse (x)

3. Press  six times till the one side of  blinking on the screen.
 Press  , measure the length of one side (a)
 Press  , measure the length of the median line (b)
 Press  , measure the length of another side (c)
 Device calculates the length of the leg in full line (x)
 4. Press  seven times till the hypotenuse of  blinking on the screen.
 Press  , measure the length of one hypotenuse (a)
 Press  , measure the length of another hypotenuse (b)
 Press  , measure the length of one leg (c)
 Device calculates the length of the leg in full line (x)
- Legs must short than hypotenuse, or there will be "Err" shows on screen. In order to guarantee the accuracy, please make sure all measurements are start from the same point.

● Addition / subtraction

The device can be used for length addition and subtraction. Press  to select the function once get the length measuring result.

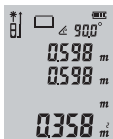
Short press  , "+" shows in the major display area, entering cumulation mode. Value of last measurement and the result of cumulation will be showed on the screen.

Press  again, "-" shows in the major display area, entering regressive mode. Value of last measurement and the result of cumulation will be showed on the screen.

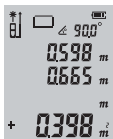
Do round-robin selection between continous addition and continuous subtraction by pressing button  .

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

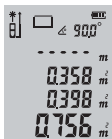
Area cumulative function: Measure the first area as showing in PIC1. Then press button , and measure the second area as showing in PIC2, there is a "+" in the left bottom. At last, press button  to get the summation result of these two areas which is showing in PIC3.



PIC1



PIC2



PIC3

Measurement Record Automatic Storage Function

In measurement mode: When the current data is valid, the measurement data is automatically stored in the instrument memory.

In area, volume, triangle indirect measurement mode: data will also be automatically stored when all tests are completed.

When the storage space is full, the instrument automatically overwrites the earliest records.

● Read / Delete the Record:

Long press  key to view the stored measurement record and browse the record with  or  key. While browsing the records, long press  key to clear all records. Short press  or  key to exit the state.

● Angle measurement

The angle information is displayed at the top of the screen, and the angle measurement range is -90.0° to 90.0° .

Tips

You may get some warning information as below:

Info message	Cause	Solution
Err	Out of distance measurement range	Use the device within the range
Err1	Signal is too weak	Chose the surface with stronger reflectance. Use the reflecting plate.
Err2	Signal is too strong	Chose the surface with weaker reflectance. Use the reflecting plate.
Err3	Low battery voltage	Charging the battery
Err4	The working temperature is out of working range	Use the device in the specified temperature.
Err5	Pythagoras measuring error.	Re-measure and ensure that Hypotenuse is bigger than Cathetus.
Err6	Angle sensor error	Depot Repair

Technology Specifications

ITEM	SW-50GT	SW-70GT	SW-100GT	SW-120GT
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	✓			
Pythagorean proposition measurement function	✓			
Add and subtract measurement function	✓			
Area measurement function	✓			
Wall area measurement	✓			
Min/Max value	✓			
Self-Calibration	✓			
Buttons/Keys sound	✓			
Display screen	2.2" segment LCD			
Laser level	II			
Laser type	500-800nm, <1mW			
Max storage	99 units			
Automatically cut off laser	20s (single measurement)			
Automatic shutdown	150s			
Operating times	Single measuring 5000 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	20%~80% RH			
Battery	3.7V 850mAh Li-ion			
Charging Specification	DC5V 0.8A Type-C			
Charging Time	About 1.5 hours			
Dimension	118x54x25.7mm			

Note:* "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.

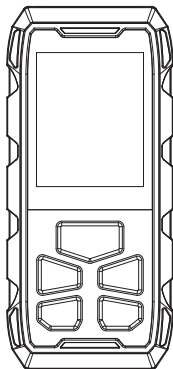
Instrument Maintenance

- 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	User Manual	pc	1	
5	Gift Box	pc	1	
6	Type-C Cable	pc	1	
7	Reflector	pc	1	Just available for 100m



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