

深达威® 手持式激光测距仪

Laser Distance Meter

用户手册

User Manual



SW-M30A



SW-M30B

中 文	-----	01~14
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English	-----	15~26
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产品执行标准：GB/T 14267-2009



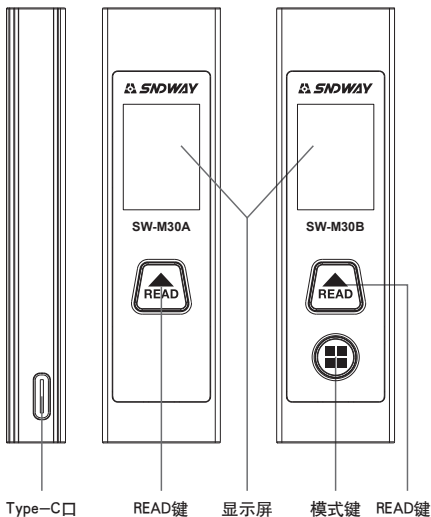
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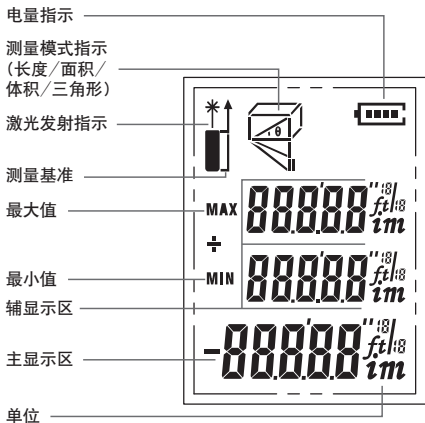
安全条例

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。
- △ 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。
- △ 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仪器生产厂家，我们将第一时间为您解决。

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锂电池


- 内置3.7V 220mAh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 >0.5A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。




启动仪器和关闭仪器、功能设置

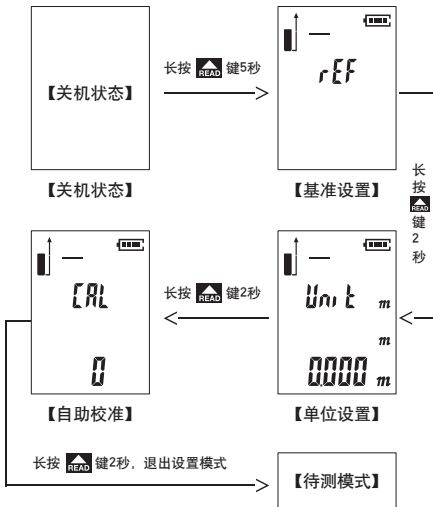
● 启动仪器和关闭仪器

启动仪器：关机状态下，短按  键，仪器启动，仪器进入待测模式。

关闭仪器：150秒内未对仪器进行任何操作，仪器将自动关闭。或者长按  键5秒以上，仪器关机。

● 功能设置

1. 进入基准设置：关机状态下，长按  键5秒。
2. 切换设置选项：长按  键2秒，切换设置选项顺序：
【基准设置(rEf)】 -> 【单位设置(Unit)】 -> 【自助校准(CAL)】 -> 退出设置，进入待测模式。
3. 修改设置参数：短按  键修改当前选项参数。



● 基准设置

在基准设置状态，短按  键进行前端基准和末端基准的相互转换，仪器出厂默认位末端基准。




● 单位设置

在单位设置状态，短按  键可重置当前测量单位，该仪器提供了6种单位可供选择。


	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


● 自助校准

为保证仪器的精准度，提供了自助校准功能。



校准方法：在自助校准状态下，通过短按  键调整自助校准数值，仪器出厂默认为0，当数值调到9，再按  键会变为-9，调整范围-9~9mm，调整完毕后，长按  键2秒保存校准结果。

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。



单次长度测量

待测模式下，按  键，仪器激光发射，锁定测量点，再按  键进行单次长度数据的测量，测量结果显示在主显示区。


连续长度测量


待测模式下，长按  键2秒，进入连续测量模式，屏幕上辅助显示区会显示测量过程中的最大测量值和最小测量值。

面积测量(仅限于SW-M30B)

待测模式下，短按  键一次，切换到面积测量功能，屏幕显示 ，长方形一条边闪烁。



根据提示完成测量：

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，结果在屏幕显示。


体积测量(仅限于SW-M30B)

待测模式下，短按  键两次，切换到体积测量功能，屏幕显示 ，立方体长边闪烁。

根据提示完成测量：

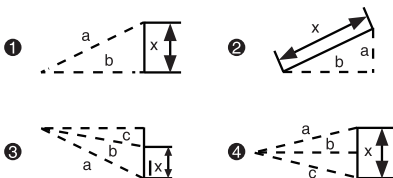
按  键进行第一条边的测量（长）；

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，结果在屏幕显示。


勾股定理间接测量(仅限于SW-M30B)




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 直角三角形高的测量



待测模式下，短按  键三次，切换到直角三角形高的功能，屏幕显示 ，三角形斜边闪烁。根据提示完成测量：


按  键进行第一条边a的测量；


按  键进行第二条边b的测量；

仪器会自动进行直角三角形高x的运算，结果在屏幕显示。

② 直角三角形斜边的测量



待测模式下，短按  键四次，切换到直角三角形斜边测量功能，屏幕显示 ，三角形底边闪烁。根据提示完成测量：


按  键进行第一条边a的测量；


按  键进行第二条边b的测量；


仪器会自动进行直角三角形斜边x的运算，结果在屏幕显示。

③ 三角形辅助线高度测量

待测模式下，短按  键五次，切换到三角形辅助线高度测量功能，屏幕显示 ，三角形斜边闪烁。根据提示完成测量：


按  键进行第一条边a的测量；


按  键进行第二条边b的测量；

按  键进行第三条边c的测量；


仪器会自动进行三角形辅助线高度x的运算，结果在屏幕显示。

④ 求非直角三角形的第三边


待测模式下，短按  键六次，切换到求非直角三角形的第三边功能，屏幕显示 ，根据提示完成测量：

按  键，测得三角形的一条边a；



按  键，测得三角形的高b；

按  键，测得三角形的另一条边c；

仪器在测量结束后，自动计算三角形的第三边x，结果在屏幕显示。

在面积、体积、三角测量状态下，长按  键，退回直线距离测量模式。

提示信息

若屏幕显示 ，说明此次测量失败，再次按下  键，即可重新测量。出错提示信息见下表：

信息	原因	解决方法
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	请在指定温度范围内使用
Err5	勾股测量违规	重新测量，确保斜边大于直角边
Err6	超出距离测量范围	请在量程范围内使用

技术参数

项目	SW-M30A	SW-M30B
距离测量范围	0.05-30m	
距离测量精度	$\pm(5\text{mm}+d*1/10000)$ (注1)	
最小显示单位	0.001m	
连续测量功能	✓	
面积体积测量	✗	✓
勾股间接测量	✗	✓
最大/最小值	✓	
自助校准功能	✓	
激光类型	2级 630-670nm, <1mW	
自动切断激光	20秒	
自动关机	150秒	
存储温度范围	-20°C~60°C	
工作温度范围	0°C~40°C	
存储湿度	20%~80% RH	
电池	3.7V 220mAh锂电池	
充放电次数	500次	
充电规格	DC 5V >0.5A, Type-C USB接口	
满电工作次数	5000次	
显示屏	段式LCD	
外形尺寸	85x23x11.5mm	

注1：“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或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盒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	说明书	本	1	内含保修合格证
3	彩盒	个	1	
4	Type-C线	根	1	

保修条例

1. 顾客自购买产品之日起本公司提供1年保修服务。
2. 以下情况不在保修之列：
 - ◎ 人为损坏或使用保管不当引起的损坏
 - ◎ 非经本公司授权的服务机构私自维修、改装或拆卸而导致的故障或损坏
 - ◎ 私自涂改购机凭证、合格证/保修卡
 - ◎ 显示屏（LCD）损坏
 - ◎ 机身编号被删改的产品
3. 保修时必须提供填有产品型号、机身编号、购买日期的保修卡。
4. 本保修卡只适用于中国境内，维修时请出示保修卡。
5. 保修卡遗失恕不补发，敬请妥善保管。
6. 对维修是否享受本公司承诺的服务，最终裁决权在本公司指定的各地维修中心。

合格证

执行标准：GB/T 14267-2009

检验结果：_____


检 验 员：_____

合格

QC02

售后保修卡

本证请于购机后向经销单位盖章方为有效，过期作废，谢谢合作！

产品型号		经销单位盖章
产品名称		
经销单位		
使用单位		
地 址		
发票日期		







维修部分填写

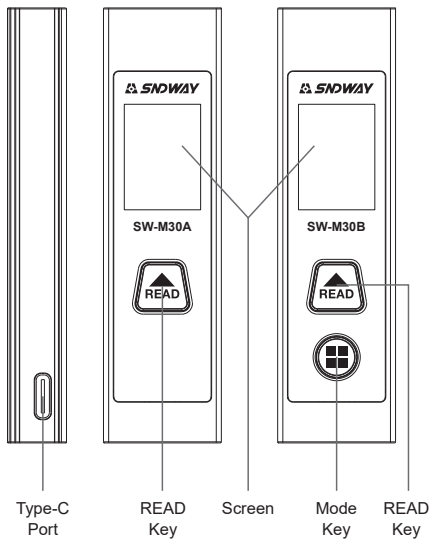
日 期	
保修项目	
摘 要	
维 修 员	

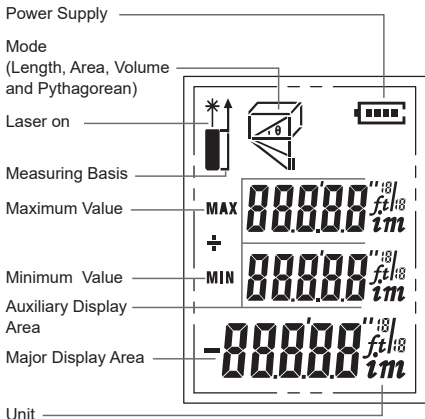


Safety Regulations



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.





Lithium Battery


- The built-in 3.7V 220mAh 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 >0.5A 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

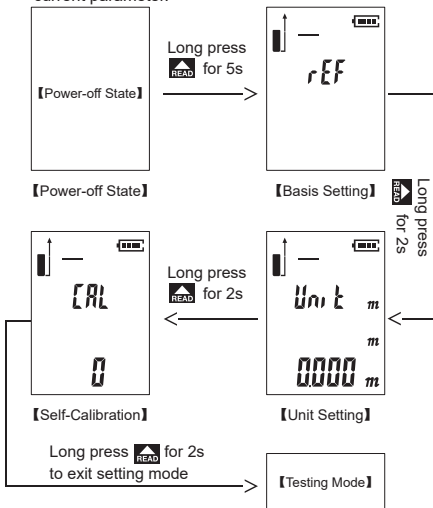
● Turn on/off the Instrument

Turn on: Under off state, short press  , device and laser get started simultaneously and the device enters the measurement mode.


Turn off: If no operation is performed within 150s, the instrument will shut down automatically. Or long press  for more than 5s to turn off it.

● Function Setting


1. Enter baseline Settings: In the shutdown state, long press  for 5s.
2. Switch setting options: Long press  for 2s to switch setting options order: **【Basis Setting (ref)】** -> **【Unit Setting (Unit)】** -> **【Self-Calibration (CAL)】** -> Exit the setting and enter the testing mode.
3. Modify the setting parameters: Press  to modify the current parameter.



● Changing Reference Point

In the basis setting state, short press  to change the reference point. The default reference point is the terminal baseline.




● Unit Setting

In the unit setting state, short press  to switch the measurement unit. There are 6 units for selection.

	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

● Self-Calibration

To ensure the precision of the instrument, a self-calibration function is provided.



Calibration method: In the self-calibration state, press  to adjust the self-calibration value. The default self-calibration value of the instrument is 0, when the value is adjusted to 9, then press , it will become -9, the adjustment range is -9~9mm. After adjustment, long press  2s to save the calibration result.

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 larger than the actual value, the calibration value can be lowered by 3mm on the existing basis with  through the calibration function.



Single Distance Measurement

Under the test mode, press , and the instrument emits laser to lock the measuring point. Press  again for single distance measurement, and the measurement result will be displayed in the major display area.


Continuous Measurement

In the testing mode, long press  for 2s to enter the continuous measurement mode. The auxiliary display area will show the maximum and minimum measurement values during the measurement process.

Area Measurement(Only SW-M30B)


In the testing mode, press  once to switch to the area measurement function. The screen displays , and one side of the rectangle flashes. Follow the prompts to complete the measurements:

Press  to measure the first side (length);

Press  to measure the second side (width);


The instrument will automatically calculate the area and the result is displayed on the screen.

Volume Measurement(Only SW-M30B)

In the testing mode, press \square twice to switch to the volume measurement function. The screen displays , and one side of the cubic flashes.

Follow the prompts to complete the measurements:

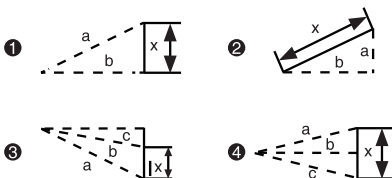
Press  to measure the first side (length);

Press  to measure the second side (width);

Press  to measure the third side (height);

The instrument will automatically calculate the volume and the result is displayed on the screen.


Pythagoras(Only SW-M30B)




There are four Pythagoras modes which is convenient for indirect measurement in a specific complex environment.

① Measurement of the height of right triangle

Under test mode, press  three times to switch to the height measurement function of right triangle.

The screen displays  and the hypotenuse of triangle flashes. Follow the prompts to complete the measurements:


Press  to measure the first side a;

Press  to measure the second side b;

The instrument will automatically calculate the height of the right triangle x, and the result will be displayed on the screen.

② Measurement of the hypotenuse of the right triangle

Under test mode, press  four times to switch to the hypotenuse measurement function of right triangle.

The screen shows , and the bottom edge of the triangle flashes. Follow the prompts to complete the measurements:


Press  to measure the first side a;

Press  to measure the second side b;

The instrument will automatically calculate the hypotenuse x of the right triangle, and the result will be displayed on the screen.

③ Measurement of the height of triangular auxiliary lines

Under test mode, press  five times to switch to the height measurement function of triangle auxiliary line.

The screen shows , and the hypotenuse of the triangle flashes. Follow the prompts to complete the measurements:



Press  to measure the first side a;


Press  to measure the second side b;

Press  to measure the third side c;


The instrument will automatically calculate the height x of the triangular auxiliary line, and the result will be displayed on the screen.

④ Measurement of the third side of a non-right triangle


Under test mode, press  six times to switch to the function of measuring the third side of a non-right triangle. The screen shows , complete the measurement according to the prompts:

Press  to measure the side a of the triangle;



Press  to measure the height b of the triangle;

Press  to measure the other side c of the triangle;

After the measurement, the instrument automatically calculates the third side x of the triangle, and the result is displayed on the screen.

In the state of area, volume and pythagorean measurement state, long press  to return to the straight-line distance measurement mode.

Tips

If  is displayed on the screen, it indicates that the measurement failed. Press  again to measure again. The error messages are shown in the following table:

Prompt	Cause	Solution
Err1	Signal is too weak	Choose the surface with stronger reflection. Use the reflecting plate.
Err2	Signal is too strong	Choose the surface with weaker reflection.
Err3	Low battery voltage	Charge the battery
Err4	Beyond working temperature	Use the device in the specified temperature.
Err5	Pythagoras measuring breaks the rules	Re-measure and ensure that hypotenuse is longer than legs.
Err6	Out of the measurement range	Use the device within the measurement range

Specification

ITEM	SW-M30A	SW-M30B
Measurement Range	0.05-30m	
Precision	$\pm(5\text{mm}+d*1/10000)$ (Note 1)	
Minimum Unit	0.001m	
Continuous Measurement	✓	
Area/Volume Measurement	✗	✓
Pythagorean Measurement	✗	✓
Max/Min Value	✓	
Self-Calibration	✓	
Laser Type	Class II 630-670nm, <1mW	
Automatically Cut off Laser	20s	
Auto Power-off	150s	
Storage Temperature	-20°C~60°C	
Working Temperature	0°C~40°C	
Storage Humidity	20%~80%RH	
Battery	3.7V 220mAh lithium battery	
Charge and Discharge Times	500 times	
Charging Specification	DC 5V >0.5A, Type-C USB interface	
Full Charge Measurement Times	5000 times	
Screen	Segment LCD	
Dimension	85x23x11.5mm	

Note 1: "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 all accessories are complete according to the following list.

No.	Item	Unit	QTY	Note
1	Meter	pc	1	
2	User Manual	pc	1	
3	Gift Box	pc	1	
4	Type-C Cable	pc	1	

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