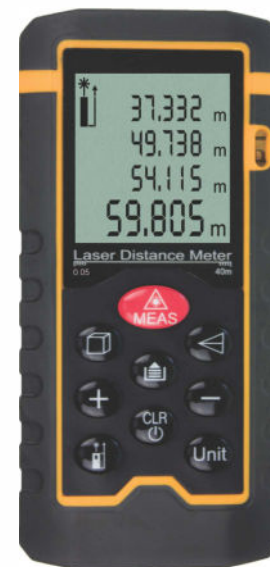




# Laser Distance Meter User Manual



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Laser Distance Meter  
Made in China

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HT-40  HT-60  HT-80  HT-100

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# 1. Overview

Thank you for purchasing the laser distance meter. This meter is a precision instrument designed to deliver very accurate distance, area and volume measurements. It can also measure height using the Pythagorean Theorem.

The laser distance meter is designed to meet the needs of professionals engaged in surveying, construction, traffic, real estate, urban planning, fire fighting, farm and garden. You will also find it incredibly useful for many home improvement projects.

## 1.1 Important Notes, Safety Considerations and Disclaimer – Please Read



Please read these safety instructions and this user manual carefully before using this instrument for the first time!

This meter is equipped with a single Class II infrared laser. Use extreme caution when the laser pointer is on. Do not stare into the beam. Never point the laser beam at anyone's eyes, it can cause permanent damage to the eyes. Do not reflect the laser beam off a reflective surface and into someone's eyes. Do not allow children to use the instrument as a toy.

Do not use the instrument in a flammable or explosive environment. Do not use this meter in areas where it is prohibited e.g. near airports and hospitals, or where it would be in violation of the law.

To ensure proper operation avoid using this instrument in areas with strong electromagnetic interference.

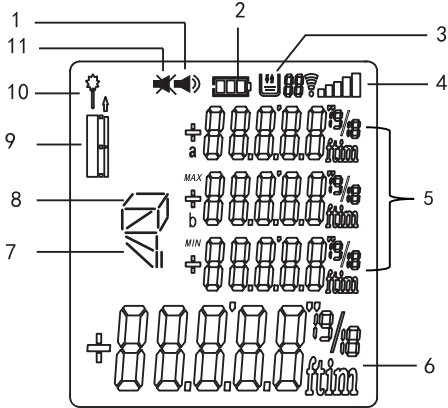
Do not open the instrument other than for the purpose of replacing batteries.

Store the instrument at a cool and dry location and do not expose it to high temperatures and humidity. Remove the batteries if the meter will be out of use for an extended period. Do not clean the instrument with corrosive or caustic cleaners. Treat the laser and focusing lens as you would the optical lens of a camera.



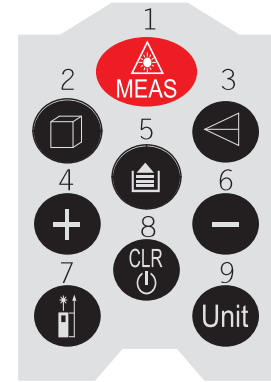
Location of Laser Warning Label

## 1.2 LCD Display



- 1 - Buzzer on
- 2 - Battery indicator
- 3 - Stored data indicator
- 4 - Signal strength indicator
- 5 - Secondary display area
- 6 - Main display area
- 7 - Indirect measurement mode
- 8 - Area/Volume measurement mode
- 9 - Measurement reference edge indicator
- 10 - Laser emission indicator
- 11 - Buzzer off

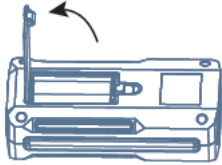
## 1.3 Keypad



- 1 - Power-on/Measurement key
- 2 - Volume/Area key
- 3 - Indirect Measurement (Pythagorean Theorem)
- 4 - Plus (+) key
- 5 - Historical data key
- 6 - Minus (-) key
- 7 - Reference key / Backlight key
- 8 - Cancel/Power-off key
- 9 - Units key


## 1.4 Battery Installation or Replacement


Open the battery cover on the back of the instrument and install three 1.5V AAA batteries according to polarity indicators (alkaline batteries are recommended).




## 1.5 How to Use Your Laser Distance Meter

### Power On/Off


 Long Press is switch on, Short Press is laser open.

 Hold down the CLR key to turn the instrument off. It will power off automatically after 8 minutes without use.

### Canceling an Operation / Clearing Display

 Press the CLR key to cancel the last operation or to clear the display.


### Switching Measurement Units

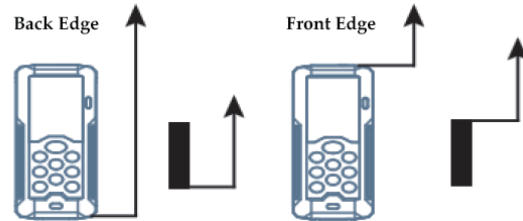
 Press the Unit key to cycle through the measurement units (meters, feet, and inches).

Setting	Distance	Area	Volume
Meters	0.000 m	0.000 m <sup>2</sup>	0.000 m <sup>3</sup>
Feet	0.00 ft	0.00 ft <sup>2</sup>	0.00 ft <sup>3</sup>
Inches	0.0 in	0.00 ft <sup>2</sup>	0.00 ft <sup>3</sup>


## Setting the Reference Edge of the Instrument for your Measurements

The default setting for the reference edge of the instrument is its back edge. This means that any distance measurements you take will be referenced to the back edge of the meter. You can choose to use the front edge of the meter as the reference edge instead.


To do so, simply press the  key, and the next measurement will use the front edge as the measurement reference edge. Pressing it again will change it back to the back edge. Changing of the measurement reference edge will be confirmed by a beep. Each time you turn the meter on, the measurement reference edge will be set to the default value (back edge).




### Backlight

Hold down the  key to turn the backlight on or off.

## The setting of function menu



At the power-off state, hold down  key for about 5 seconds to enter the setting state to set laser, data calibration, buzzer, backlight. The operation method is as follows:





In the interface, press  key to set the laser (the laser on the top left corner of the screen displays or disappears).

The laser symbol displays: indicate that the laser will start automatically after the machine is powered on.



The laser symbol disappears: indicate that the laser will not start automatically after the machine is powered on.

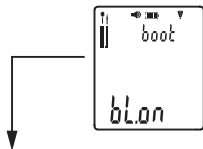
Hold down  key for about 2 seconds to enter the data calibration interface. Press  key to adjust the parameters from -7mm to +7mm.



Hold down  key for about 2 seconds to enter the buzzer setting interface. Press  key to select on or off.





Hold down  key for 2 seconds to enter the backlight setting interface. Press  key to select on or off.



Hold down  key for 2 seconds to exit from the setting state.


## Measurement Modes

### Distance Measurement

Press the  key once to activate the laser. Press the  key again to trigger the measurement.



The measurement result will be displayed as soon as the measurement is complete.

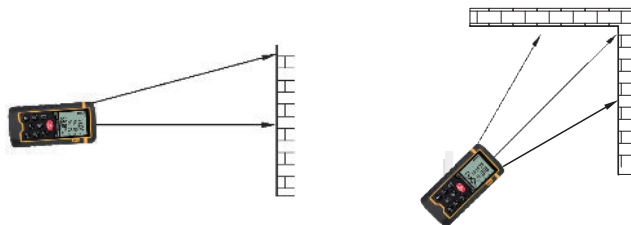
### Continuous Measurement and Maximum/Minimum Value

Hold down the  key until you hear the beeper. This will place the meter into continuous measurement mode. Use the laser to scan the target area, e.g. a corner.

The continuous measurement mode allows you to determine the maximum or minimum distance such as the measurement of a diagonal distance (maximum value) or vertical distance (minimum value) of a room.


The secondary display area will show the maximum and minimum values and the main display area will show the real-time measurement value.


Press the  or  key to cancel continuous measurement scanning.





Examples of continuous measurement

## Adding and Subtracting Multiple Distance Measurements



Addition: Take your first distance measurement. Then press the  key once. The first row of the secondary display area will now show your initial measurement and the “+” sign. Any subsequent measurements will now be added to the previous one(s).


Subtraction: Take your first distance measurement. Then press the  key once. The first row of the secondary display area will now show your initial measurement and the “-” sign. Any subsequent measurements will now be subtracted from the previous one(s).


Press the  key to cancel the last operation.

Press the  key again to exit the mode of distance measurement.

## Area Measurement



Press the  key once, you will see the  icon.


Press the  key to measure the first distance (e.g. length).

Press the  key again to measure the second distance (e.g. width).



The meter will calculate the area and show the result in the main display area. The individual measurement results will be displayed in the secondary display area.


## Adding and Subtracting Multiple Area Measurements


After one area measurement has been completed, press the  or  key and take another area measurement.


Then press the  key and the main display will show the sum (+) or difference (-) of the previous area measurement(s) and the last measurement that was taken. The values of previous area measurement(s) and last measurement will be shown in the secondary display area.

## Volume Measurement

Press the  key twice and the  icon will be displayed.

Press the  key to measure the first distance (e.g. length).

Press the  key again to measure the second distance (e.g. width).


Press the  key a third time to measure the third distance (e.g. height).

The meter will calculate the volume and show the result in the main display area. The individual measurement results will be displayed in the secondary display area.

## Adding and Subtracting Multiple Volume Measurements

After one volume measurement has been completed,

press the  or  key and take another volume measurement.



Then press the  key and the main display will show the sum (+) or difference (-) of the previous volume measurement(s) and the last measurement that was taken. The values of previous volume measurement(s) and last measurement will be shown in the secondary display area.



## Indirect Measurements

The instrument can calculate a distance with use of the Pythagorean Theorem automatically. The Pythagorean Theorem states that for a right triangle, the square of the hypotenuse (the side opposite the right angle) is equal to the sum of the squares of the other two sides. This function can be used to indirectly measure places that are either hard to access or difficult to measure directly with the meter (e.g. height of a building).

## Indirect Measurement Mode 1:

The measurement of distance using the sides of a triangle requires two measurements according to the following steps:

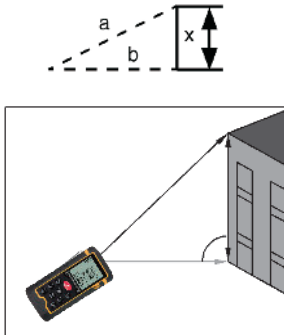
Press the  key once and the  icon will be displayed.

Follow the prompt of the flashing  icon: press the  key to first measure the hypotenuse and then press it again to measure the right-angle edge of the triangle.



(Note: when measuring the right-angle edge of the triangle, keep the instrument as horizontal as possible.)


After these two measurements have been completed, the Pythagorean calculation is performed automatically.


If the measurement results meet the requirements of the Pythagorean Theorem (the distance of the hypotenuse is longer than the distance of the right-angle edges), the calculated length of the third triangle side will be displayed in the main display area. The measurement values of the hypotenuse and right-angle edges will be displayed in the secondary display area.





## Indirect Measurement Mode 2:

Press the  key twice and the  icon will be displayed.

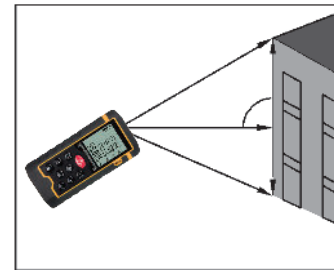
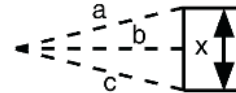
Follow the prompt of the flashing  icon:

Press the  key once to measure the hypotenuse of the first triangle (pointing upward).

Press the  key again to measure the common right-angle side of the two triangles. Keep the instrument as horizontal as possible.

Press the  key a third time to measure the hypotenuse of the second triangle (pointing downward).


If the measurement result meets the requirements of the Pythagorean Theorem, the calculated height  $x$  (see diagram below) will be displayed in the main display area. The individual measurement values of the hypotenuse and right-angle sides ( $a$ ,  $b$ , and  $c$ ) will be displayed in the secondary display area.







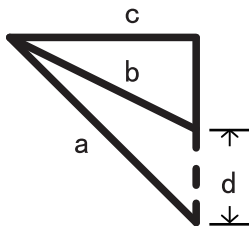
### Indirect Measurement Mode 3:

Press  for three times,  icon will display in the display screen. Measure the flashing edge of a triangle according to prompt.

PPress  key to measure the hypotenuse a of the triangle




Press  key to measure the hypotenuse b of the triangle

Press  key to measure the public right-angle edge of the triangle.



Note: when measurements are made in the Pythagorean mode, the length of the right-angle side must be less than that of the hypotenuse. Otherwise, the instrument will display a “calculation error” (Er.dE). Also, when using Pythagorean mode, ensure that all measurements are made from the same starting point. When measuring right-angle sides of triangles, make sure the right-angle side is perpendicular to the measured surface.

### Reviewing Historical Data

Press the  key to enter the history data mode where you can review the last 20 measurements (automatically stored). Press the  and  keys to cycle through the data of the last 20 measurements.

The latest measurement will automatically be added to the end of the data buffer at storage location 20. All other values will be shifted down by one storage location towards 1, so that the buffer always contains the last 20 measurements.

### SPECIFICATIONS

#### Technical Specifications

Model:	HT-40	HT-60	HT-80	HT-100
Measurement range	0.05 – 40m	0.05 – 60m	0.05-80m	0.05-100m
Measurement accuracy	± (3.0mm+5*10 <sup>-5</sup> *D)			
Measurement unit	Meters, Feet, Inches			
Laser class	Class II			
Laser type	620~670nm, <1mW			
Calculation of area and volume	√			
Measurement with Pythagorean Theorem	√			
Adding and subtracting measurements	√			
Maximum/minimum value measurement	√			
Continuous measurement	√			
Backlight	√			
Multiline display	√			
Beeper	√			
Standard function	√			
Historical data memory	20 measurements			
Operating temperature	0°C---40°C (32°F---104°F)			
Storage temperature	-20°C---60°C(-4°F--- 140°F)			
Battery:	2 x 1.5V AAA alkaline batteries			
Backlight auto power-off	10 seconds			
Instrument auto power-off	8 minutes			
Size	116 x 56 x 32 mm (4.6 x 2.2 x 1.3 in.)			
Weight	100g (3.5oz.)			

## Failure Causes and Solutions

Code prompt	Causes	Solution
Er.B.L	The battery voltage is too low.	Replace with new batteries.
Er.T.L	The temperature is too low	Increase the temperature of the instrument
Er.T.H	The temperature is too high.	Decrease the temperature of the instrument
Er.D.E	Exceed the measurement range or the measurement via pythagorean theorem is wrong.	Under the measurement mode with use of pythagorean theorem, the right-angle side must be less than the length of the hypotenuse.
No response for the measurement	<ol style="list-style-type: none"> <li>1. The environmental light is too strong.</li> <li>2. The target object is strong reflective.</li> <li>3. The distance is long. The surface reflective effect of the measured target objective is not good (the surface is very dark).</li> </ol>	Use reflect board.

## Measurement Conditions

Operating the instrument in extreme environmental conditions may cause substantial errors. Examples include bright sunshine, extreme temperatures, poor surface reflections and low batteries. Under these conditions applying a reflective sheet to the target surface may improve results.

Transparent or clear measurement target surface (such as water, clear glass, etc.) may lead to inaccurate measurements.

Inaccurate measurements can also result if the target surface reflects light strongly.

Very dark surfaces or surfaces that do not reflect light well can cause longer measurement times.

## Maintenance

Do not store the instrument in environments of high temperature and/or humidity. Remove the batteries if the meter will be out of use for an extended period and stored it in a cool and dry place.

Keep the instrument surface clean. Do not clean the instrument with corrosive or caustic cleaners. Treat the laser and focusing lens as you would the optical lens of a camera.