



# Laser Distance Meter

## LD70 User Manual



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## Introduction

This meter measures distance up to 70m (229.6') and calculates Area, Volume, and Indirect readings using the Pythagorean Theorem ( $a^2+b^2=c^2$ ). It also includes a laser pointer, tripod mount and 20 point historical data group function. Please visit [www.triplett.com](http://www.triplett.com) for the latest version of this User Guide, Product Updates, and Customer Support.

## Safety Instructions

This meter has been designed for safe use, but must be operated with caution.

## Laser classification (Class 2)

The meter produces a visible Class 2 laser beam from the top of the instrument.



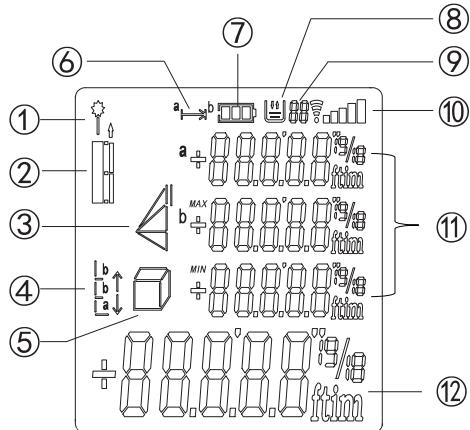
COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO. 50 DATED JUNE 24, 2007.

**WARNING: Do not directly view or point the laser at an eye.** Do not look directly into the beam using an optical aid such as binoculars. This can create a hazard. Low power visible lasers do not normally present a hazard, but may present some potential for hazard if viewed directly for extended periods of time.

Please read all safety instructions carefully before using this instrument  
Do not use this device in flammable or explosive environments  
Do not use this device near aircraft or medical equipment  
Do not use this device near strong electro-magnetic interference  
Do not aim the meter directly into sunlight

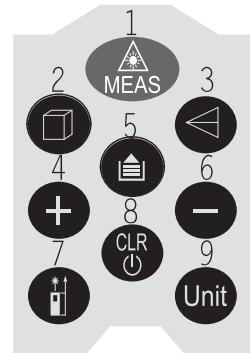
Do not dis-assemble or modify the instrument  
Do not store in areas of high temperature/humidity  
Remove the batteries when storing the instrument for long periods

## Display Description



- ① Laser indication
- ② The reference edge of measurement (Pythagorean Theorem)
- ③ Indirect measurement
- ④ Setting-out measurement
- ⑤ Area/volume measurement
- ⑥ Length measurement
- ⑦ Battery level indication
- ⑧ Stored data indication
- ⑨ Angle indication
- ⑩ Signal strength Indication
- ⑪ Auxiliary display area
- ⑫ Main display area

## Keypad description



- 1. Power on/measurement key
- 2. Area/volume key
- 3. Indirect measurement key
- 4. “+” Key
- 5. Historical record key
- 6. “-” Key
- 7. Reference edge key
- 8. Clear/power off key
- 9. Unit key

### LIMITED WARRANTY

The manufacturer warrants to the original consumer that this product is in good working order for a period of one year from the date of manufacture or the date of purchase. During This period, the product will be repaired or replaced without charge for either parts or labor. Repair or replacement as provided under this warranty is the exclusive remedy of the Purchaser.

# Initial operation and setting

## 1. Install/replace the battery

- ◆ Open the battery cover.
- ◆ Install two battery AAA batteries provided by the manufacturer; it is suggested to use alkaline battery in the future); pay attention to the polarity and don't install reversely.
- ◆ Put the battery cover in place

## 2. Power on

Hold down **【MEAS】** key for about 2 seconds to power on and enter the length (distance) measurement mode automatically.

## 3. Power off

Manual power off: hold down **【CLR】** key to power off at any mode.

Automatic power-off: the instrument will power off automatically if there is no key operation within 46 seconds.

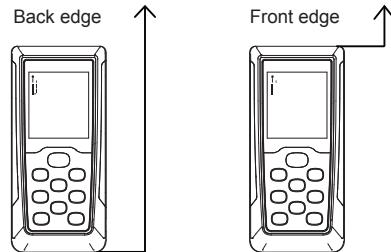
## 4. Clearing functions

Press **【CLR】** key to cancel the last instruction or clear the display.

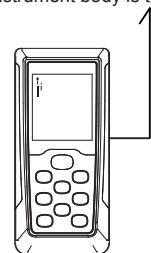
## 5. Setting of the reference edge

The default reference edge of the instrument is back side. And the measurement starting point is the tail end. If the reference edge is set as front edge, the measurement starting point is the top of the instrument.

Press **【】** key to select reference edge: back side/front edge/positioning hole. The reference edge returns to the default state (back edge) after powering on the instrument again.

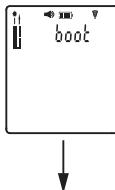


The positioning hole of the tripod on the back of the instrument body is the benchmark.



## 6. Setting of function menu

At the power-off state, hold down **【MEAS】** for about 5 seconds to enter setting state and set laser, data calibration, buzzer.



The operating method is as follows:

In the interface, press **【MEAS】** key to set the laser (the laser symbol on top left of the screen displays or disappears).

The laser symbol appears: indicate that the laser will open automatically after powering on.

The laser symbol disappears: indicate that the laser will not open automatically after powering on.

Hold down **【MEAS】** key for about 2 seconds and it enters data calibration interface. press **【MEAS】** key to adjust the parameters from -7mm to+7mm.



Hold down **【MEAS】** key for about 2 seconds and it enters buzzer setting interface. press **【MEAS】** key to select on or off.



Hold down **【MEAS】** key for 2 seconds to exit from the setting state.

## 7. Check historical record

The instrument saves 20 groups of latest data automatically. The new data overwrites the old data in proper order. In the length measurement mode, press **【REC】** key to enter historical record mode. Press **【+】** and **【-】** key to check the data. Press **【CLR】** to exit.

## 8. Unit setting

Press **[ Unit ]** key to switch the unit.

# Measurement

## 1. Single measurement

In the length measurement mode, press **【MEAS】** key to open the laser.

After the laser aims at the object, press **【MEAS】** key to carry out measurement. The measurement result is displayed at main display area. The auxiliary display area displays the distanced measured last time.

## 2. Continuous measurement

The continuous measurement function may enable users to start from one measurement point and find a distance point or measure the minimum or maximum distance. For example, measure the diagonal distance (maximum value) or vertical distance (minimum value) of a room.

In the length measurement mode, hold down **【MEAS】** key to enter the continuous measurement mode and the buzzer sounds. The auxiliary display area on the screen displays the measured maximum value (MAX) and minimum value (MIN). The main display area displays the currently measured distance. Press **【CLR】** key to exit from the continuous measurement mode.

## 3. Area measurement

Press **【REC】** key once and the screen displays **REC**. The edge to be measured flashes to prompt. Press **【MEAS】** key to complete measurement of length and width respectively and the instrument calculates the area automatically.

## 4. Volume measurement

Press **【REC】** key twice and the screen displays **REC**. The edge to be measured flashes to prompt. Press **【MEAS】** key to complete measurement of length and width and height respectively and the instrument calculates the volume automatically.

## 5. Accumulation/ subtraction function

For measurement of distance, area and volume, accumulation/subtraction operation may be conducted through operation of addition and subtraction. Press [  $+$  ] key to carry out additive operation and press [  $-$  ] key to carry out subtraction.

Accumulation/ subtraction of distance: At the length measurement mode, press [  $\triangle$  MEAS ] key to measure and obtain a distance. For additive operation, press [  $+$  ] key and the left side of the screen displays “+” (for subtraction, press [  $-$  ] key and the left side of the screen displays “-”). Press [  $\triangle$  MEAS ] key again to measure the distance to be added (it is to subtract for subtraction). The result of accumulation (or subtraction) is displayed on the main display area.

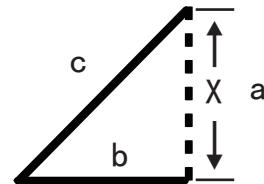
Accumulation/ subtraction of area/volume: At the area/volume measurement mode, carry out the measurement to obtain an area/volume. For additive operation, press [  $+$  ] key and the left side of the screen displays “+” (for subtraction, press [  $-$  ] key and the left side of the screen displays “-”). Continue to press [  $\triangle$  MEAS ] key to measure and obtain the area/volume to be added (it is to subtract for subtraction). At last, press [  $\triangle$  MEAS ] key again, the result of accumulation (or subtraction) is displayed on the main display area.

## 6. Indirect measurement with Pythagorean Theorem

(1). As illustrated in following figure, measure the bottom edge and hypotenuse to calculate the height of the triangle.

At the length measurement mode, press [  $\triangleleft$  ] once and the screen displays  $\triangle$ . The edge to be measured flashes to prompt. Press [  $\triangle$  MEAS ] key to complete measurement of hypotenuse c and right-angle side b of a triangle. The instrument calculates the height of the triangle automatically (edge a).

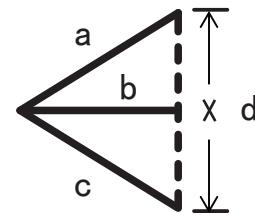
Note: when the bottom edge b of a triangle is measured, keep instrument horizontal as possible.



(2). As illustrated in following figure, measure hypotenuse a, hypotenuse c and common right-angle edge b of a triangle to calculate the length of edge d of the triangle.

At the length measurement mode, press [  $\triangleleft$  ] key twice and the screen displays  $\triangleleft$ . The edge to be measured flashes to prompt. Press [  $\triangle$  MEAS ] key to complete measurement of hypotenuse a, hypotenuse c and common right-angle side b of a triangle. The instrument calculates the length of edge d of the triangle automatically.

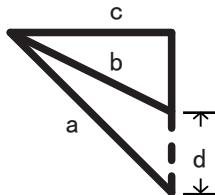
Note: when the common right-angle side b of a triangle is measured, keep the instrument horizontal as possible.



(3). As illustrated in following figure, measure hypotenuse a, hypotenuse b and common right-angle edge c of a triangle to calculate the length of edge d of the triangle.

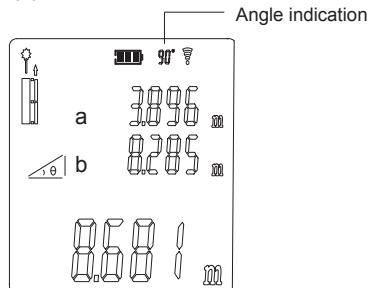
In the length measurement mode, press [  ] key three times and the screen displays  . The edge to be measured flashes to prompt. Press  key to complete measurement of hypotenuse a, hypotenuse b and common right-angle side c of a triangle. The instrument calculates the length of edge d of the triangle automatically.

Note: when the common right-angle side c of a triangle is measured, keep the instrument horizontal as possible.



## 7. Angle measurement function

The angle and length of the hypotenuse are known, calculate the length of right-angle side a and b.



## Measurement condition

The measurement result will have large error under the condition of extremely strong sunshine, large fluctuation of temperature, weak reflection of reflector, etc. The effect will be better if objective reflect sheet is used under such condition.

When the measured objects are colorless liquid (such as water), clean glass, etc or objects with transparent surfaces, mistaken measurement may take place. When the measured objects can reflect light strongly, the laser may be reflected. Accordingly, mistaken measurement may take place. When surface without reflection or very dark surface is measured, the measurement time is increased or error may be reported. Under such condition, the objective reflector sheet is used together.

## Product maintenance

Don't place the instrument at a high temperature and high humidity environment for storage. Please take out the battery if it is out of use for a long time to avoid corrosion to the instrument by battery leakage.

Please keep the instrument clean. Use soft and wet cloth to wipe the instrument shell. Please use cleanser for optical lens to wipe sensor lens and screen. Don't use corrosive cleansers.

## Failure prompt

Code hint	Causes	Code hint	Causes
Er.b.L	The battery voltage is too low.	Er.H.F	Hardware error
Er.b.H	The battery voltage is too high.	Er.A.L	Internal error
Er.t.L	The temperature is too low.	Er.A.H	Internal error
Er.t.H	The temperature is too high.	Er.A.d	Internal error
Er.d.H	Data overflow	Er.F.E	Storage error
Er.d.E	Data error	Er.R.o	Excessive fluctuation
Er.L.H	Ambient light is too strong	Er.U.L	Hardware error (the internal voltage is low)
Er.S.L	Too weak signal	Er.U.H	Hardware error (the internal voltage is high)
Er.S.H	Too strong signal		

## Technical parameters

Product type	HT-191
Measurement range	0.05~70M
Weight	100g (battery not included)
Measurement accuracy	$\pm(3.0\text{mm}+5*10^{-5}*\text{D})$
Measurement unit	Feet, inch and meter
Laser grade	Grade II
Laser parameters	620-670nm, <1mW
Continuous measurement	✓
Addition/subtraction measurement:	✓
Area/volume measurement	✓
Measurement with Pythagorean Theorem	✓
Maximum/minimum value measurement	✓
Angle measurement	✓
Historical measurement record	✓
Setting-out function	✓
Calibration function	✓
Multiline display	✓
Buzzing prompt	✓
Operation temperature	0~40°C
Storage temperature	-20~60°C
Power supply	2 AAA. 1.5V alkaline batteries
Laser automatic off	1 minute
Automatic power off	3 minutes
Size	112.3mm×51.6mm×28.8mm