User Manual

TRIPLETT

# LD70

## Laser Distance Meter


CE

Please read this manual before switching the unit on.
Important safety information inside.

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- The compact and handy base model was specifically designed for indoor applications.
- Shortcut and Soft grip keys for addition, subtraction, area and volume calculation make measuring fast and very reliable.

## 1.Safety Instruction

### 1-1.Permitted Use

- Measuring distances.
- Computing functions, e. g. areas and volumes.

### 1-2.Prohibited Use

- Using the instrument without instruction.
- Using outside the stated limits.
- Deactivation of safety systems and removal of explanatory and hazard labels.
- Opening of the equipment by using tools (screwdrivers, etc.), as far as not specifically permitted for certain cases.
- Carrying out modification or conversion of the product.
- Use of accessories from other manufacturers without the express approval of Technology.
- Deliberate or irresponsible behavior on scaffolding, when using ladders, when measuring near machines which are running, or near parts of machines or installations which are unprotected.
- Aiming directly into the sun.
- Inadequate safeguards at the surveying site (e.g. when measuring on roads, construction sites, etc.).

### 1-3.Laser Classification

- The produced a visible laser beam which emerges from the front of the instrument.

**Laser Class 2 products:**

- Do not stare into the laser beam or direct it towards other people unnecessarily.
- Eye's protection is normally afforded by aversion responses including the blink reflex.

### 1-4.Safety Symbols

**⚠ WARNING**

Looking directly into the beam with optical aids (e.g. binoculars, telescopes) can be hazardous.

**Precautions:**

Do not look directly into the beam with optical aids.

**⚠ CAUTION**

Looking into the laser beam may be hazardous to the eyes.

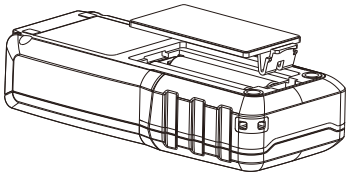
**Precautions:**

Do not look into the laser beam, Make sure the laser is aimed above or below eye level.

## 2.Inserting/Replacing Batteries

1.Remove battery compartment lid.
2.Insert batteries, observing correct polarity.
3.Close the battery compartment again.

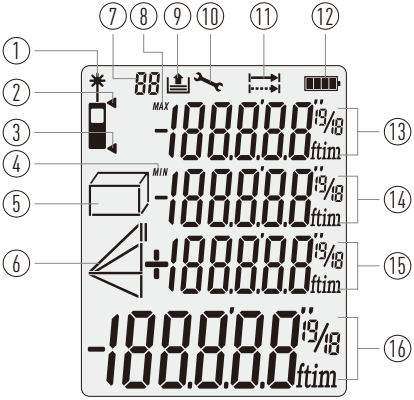
- Replace the batteries when the symbol "▭" flashes permanently in the display.
- Use alkaline batteries only.
- Remove the batteries before any long period of non-use to avoid the danger of corrosion.



## 3.Description

### 3-1.Symbols Used on LCD Display

1-Laser Active
2-Reference Level (Front)
3-Reference Level (Rear)
4-Min measurement
5-Area/Volume Measuring Functions
Area Measurement
Volume Measurement
6-Variable Indirect Measuring Functions
Single Pythagorean Measurement
Double Pythagorean Measurement
Double Pythagorean (Partial Height) Measurement
7-Record Index
8-Max measurement
9-Historical Indication
10-Instrument Error Warning
11-Single/Continuous Distance Measurement
12-Battery
13-Intermediate Line 1
14-Intermediate Line 2
15-Intermediate Line 3
16-Summary Line


1
2
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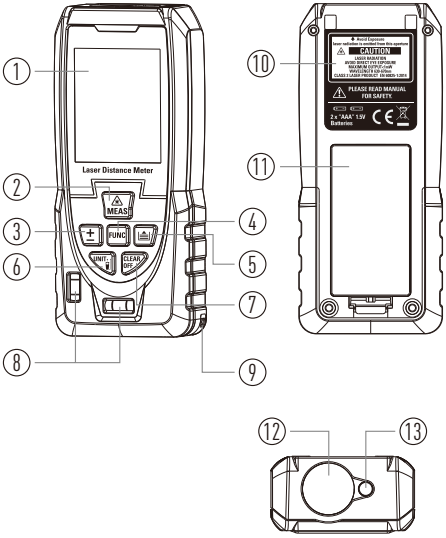
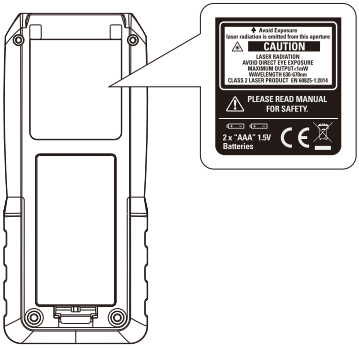
10
11
12
13
14
15
16
MAX
MIN
88
-188.8.8.8
+188.8.8.8
-188.8.8.8
-188'88"
i 3/8
ftim

### 3-2.Meter Description

1-LCD Display
2-ON/MEAS Button
3-Plus (+)/Minus (-) Button
4-Function Button
5-Storage Button
6-Reference/UNITS Button
7-Clear/OFF Button
8-Level Vial
9-Lanyard Hole
10-Label
11-Battery Compartment Lid
12-Laser Receiving Lens
13-Laser Emitter



## 3-3.Labelling



## 4.Initial Operation and Setting

### 4-1.Switching ON and OFF

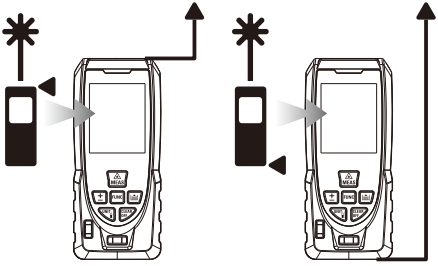
- ¨**MEAS**¨ Switches on the instrument and laser.
- ¨**Clear/OFF**¨ Press this button longer to switch off the instrument.
- The instrument switches off automatically after three minutes of inactivity.

### 4-2.Clear Button

- The last action is cancelled or the data display is cleared.
- If in the mode of history storage, press **Storage** Button and **Clear** Button simultaneously will clear all storage data in the memory.

### 4-3.Reference Level Setting

- The default reference setting is from the rear of the instrument.
- Press this button to take the selection from the front edge, a special beep sounds whenever the reference setting is changed.
- After a re-startup the reference returns automatically to the default setting (rear reference).



### 4-4.Distance Unit Setting For Instrument

- Click the **UNIT** Button longer to change the next type of unit.
- The following unit can be set:

| Distance | Area | Volume |
|---|---|---|
| 0.000m | 0.000$m^2$ | 0.000$m^3$ |
| 0.0in | 0.000$ft^2$ | 0.000$ft^3$ |
| 0 1/16in | 0.000$ft^2$ | 0.000$ft^3$ |
| 0.000ft | 0.000$ft^2$ | 0.000$ft^3$ |
| 0' 00" 1/16 | 0.000$ft^2$ | 0.000$ft^3$ |

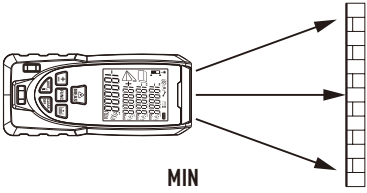
## 5.Measuring

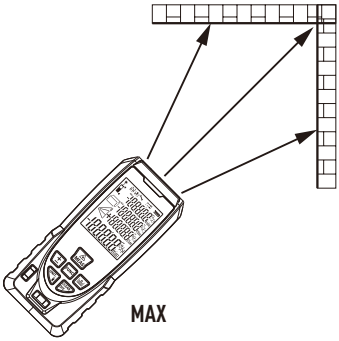
### 5-1.Single Distance Measurement

- Press **ON/MEAS** Button to trigger the distance measurement.
- The measured value is displayed immediately.

### 5-2.Continuous Measurement (Tracking) & Max and Min Measurement

- Press **ON/MEAS** Button longer to trigger continuous measurement function.
- You can press **Clear/OFF** Button to stop the continuous measurement and longer press will switch off the device.
- The continuous measurement function (tracking) is used for the transferring of measurements, e.g., from construction plans.
- In continuous measurement mode, the measuring tool can be moved to the target, whereby the measured value is updated approx, every 0.5 seconds in the third line.
- The corresponding minimum and maximum values are displayed dynamically in the first and second line.
- As an example, the user can move from a wall to the required distance, while the actual distance can be read continuously.
- The function is terminated automatically after continuous 500 times measurement.




MAX

## 6.Functions

### 6-1.Addition/Subtraction

Press **Plus(+)/Minus(-)** Button to switch the addition/ subtraction function.

**Distance Measuring**

- ¨**+**¨The next measurement is added to the previous one.
- ¨**-**¨The next measurement is subtracted from the previous one.
- ¨**Clear/OFF**¨ The last step is cancelled, press again will return to single distance measurement.

### 6-2.Area Measurement

- Press the **Function** Button until The ¨ ¨symbol appears in the display.
- Press **ON/MEAS** Button to take the first length measurement (e.g. length).
- Press **ON/MEAS** Button again to take the second length measurement (e.g. width).
- The result of the area measurement is displayed in the third line, the individually measured values are displayed in lines 1 and 2.

### 6-3.Volume Measurement

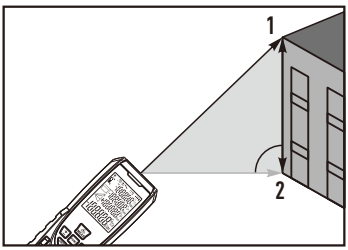
- For volume measurements, push **Function** Button until the ¨ ¨ indicator for volume measurement appears in the display.
- Press **ON/MEAS** Button to takes first distance measurement (e.g. length)
- Press **ON/MEAS** Button to takes second distance measurement (e.g. width)
- Press **ON/MEAS** Button to takes the third distance measurement (e.g. height), the value is displayed in the second line.

- The result of the area measurement is displayed in the third line, the three previously measured values in lines 1, 2 and 3.
- Long press **Function** Button will switch to the wall areas display mode, the corresponding Ceiling/floor area, Wall areas and the Circumference of floor are displayed in the lines 1, 2 and 3.
- Long press **Function** Button will switch back to the length, width and height display.

### 6-4.Indirect Measurement

- Indirect measurement-determining a distance using 2 auxiliary measurements.
- e.g. when measuring heights that require the measurement of two or three measurements as following step:

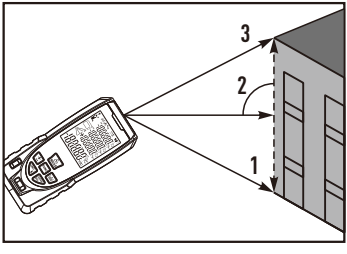
1.Press the **Function** Button until the display "⊿" shows, the distance to be measured flashes in the symbol.
2.Press **ON/MEAS** Button aim at the upper point (**1**) and trigger the measurement.
3.After the first measurement the value is adopted, keep the instrument as horizontal as possible.
4.Press **ON/MEAS** Button to measurement the distance result of the horizontal point (**2**).
5.The result of the function is displayed in the summary line.



### 6-5.Indirect Measurement-Determining a Distance Using 3 Measurements

- Press the **Function** Button until the display "◁" shows, the distance to be measured flashes in the symbol.

1.Press **ON/MEAS** Button aim at the lower point (**1**) and trigger the measurement, after the first measurement the value is adopted.
2.Keep the instrument as horizontal as possible.
3.Press **ON/MEAS** Button to measurement the distance result of the horizontal point (**2**).
4.Press **ON/MEAS** Button to measurement the distance result of the upper point (**3**).
5.The result of the function is displayed in the summary line.

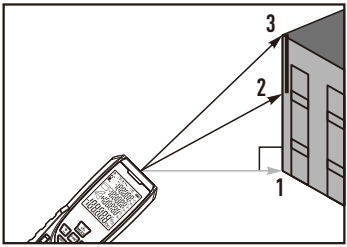



### 6-6.Indirect Measurement-Determining a Distance Using 3 Measurements

- Press the **Function** Button until the display shows "◿", the distance to be measured flashes in the symbol.

1.keep instrument as horizontal as possible, press **ON/MEAS** Button aim at the point (**1**) and trigger the measurement.
2.Press **ON/MEAS** Button to measurement the distance result of the middle point (**2**).
3.Press **ON/MEAS** Button to measurement the distance result of the upper point (**3**).

4.The result of the function is displayed in the summary line.




**6-7.Historical Storage**

- The previous 99 records (measurements or calculated results) are shown in the reverse order.
- Use the **+/-** and **Storage** Buttons to navigate through these records.
- You can clear all records by long press **Storage** Button and **Clear** Button simultaneously in historical storage mode.

## 7.Technical Data

| | |
|---|---|
| Range (Use target plate from about 30m) | 0.05 to 80m *<br>0.2 to 262ft * |
| Measuring accuracy up to 10m (2σ, standard deviation) | Typically: ±1.5mm **<br>(±1/16in **) |
| Measuring Units | m, in, ft |
| Laser Class | Class II |
| Laser Type | 635nm, <1mW |
| Smallest Unit Displayed | 1mm |
| Area, Volume Calculations | Yes |
| Indirect Measurement Using Pythagoras | Yes |
| Addition / Subtraction | Yes |
| Continuous Measurement | Yes |
| Min/Max Distance Tracking | Yes |
| Display Illumination and Multi-Line Display | Yes |
| Beep Indication | Yes |
| History Measurement Records | 99 |
| Keyboard Type | Super Soft-Touch (Long life) |
| Operating Temperature | -10 to 50°C (14 to 122°F) |
| Storage Temperature | -20 to 60°C (-4 to 140°F) |
| Batteries | Alkaline AAA x 2 |
| Battery Life | Up to 5,000 measurements |
| Auto Laser Switch-Off | After 30 seconds |
| Auto Instrument Switch-Off | After 3 min |
| Size | 115x48x29mm |
| Weight | 110g |

* Use a target plate to increase the measurement range during daylight or if the target has poor reflection properties!

** In favourable conditions (good target surface properties, room temperature) up to 10 m (33 ft). In unfavourable conditions, such as intense sunshine, poorly reflecting target surface or high temperature variations, the deviation over distances above 10 m (33 ft) can increase by ± 0.15 mm/m (± 0.0018 in/ft).

## 8. Troubleshooting-Causes and Corrective Measures

| Code | Cause | Corrective Measure |
|---|---|---|
| 204 | Calculation Error | Repeat Procedure |
| 208 | Received signal too weak, measurement time too long; Distance >50m | Use Target Plate |
| 252 | Temperature too High | Cool Down Instrument |
| 253 | Temperature too Low | Warm Up Instrument |
| 255 | Hardware Error | Switch on/off the device several times, If the symbol still appears, please contact your dealer for assistance. |

## 9.Conditions

### 9-1.Measuring Range

- The range is limited as technical specifications.
- At night or dusk and if the target is in shadow the measuring range without target plate is increased.
- Use a target plate to increase the measurement range during daylight or if the target has poor reflection properties.

### 9-2.Target Surfaces

- Measuring errors can occur when measuring toward colorless liquids (e.g. water) or dust free glass, styrofoam or similar semi-permeable surfaces.
- Aiming at high gloss surfaces may deflect the laser beam and lead to measurement errors.
- Against non-reflective and dark surfaces the measuring time may increase.

### 9-3.Care

- Do not immerse the instrument in water.
- Wipe off dirt with a damp, soft cloth.
- Do not use aggressive cleaning agents or solutions.
- Handle the instrument as you would a telescope or camera.

**Warranty Statement**

Triplett Test Equipment offers a one-year warranty to the original purchaser of its products. We guarantee that our products will be free from defects in workmanship and materials for one (1) year from the purchase date.

**This warranty does not cover:**

- Products purchased from unauthorized distributors.
- Items that have been repaired or altered by unauthorized individuals.
- Damage from misuse, abuse, misapplication, negligence, or accidents.
- Products with altered, defaced, or removed serial numbers.
- Accessories, including batteries.