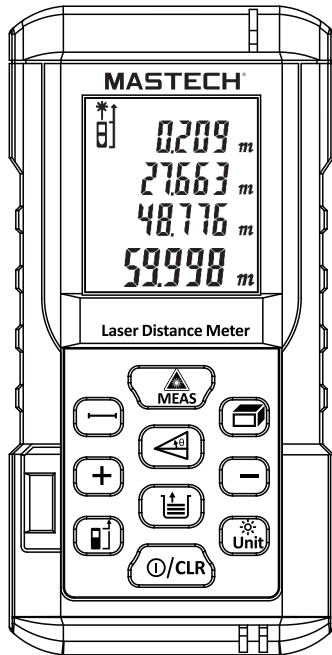


# MASTECH®

M56414  
Series

## LASER DISTANCE METER

M56414/M56416/M56418/M564100





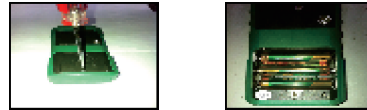
## Safety regulations

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 guided could cause damage to the device, influence on measurement result or bodily injury to the user.
- ⚠ 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 using by any irrelevant personnel.
- ⚠ It is strictly prohibited to shoot eyes or other parts of body with the laser; it is not allowed take the laser to shoot any objects' surface with strong reflecting.
- ⚠ 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 batteries or meter device shall not processed just like household garbage, please handle them 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.

## Installation for batteries, display screen and keyboard

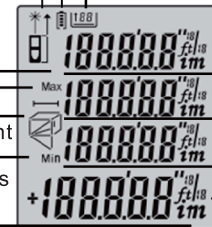
### Installation and replacement of battery



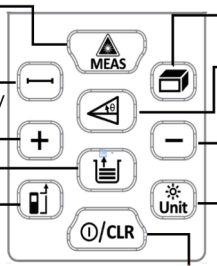
- Discharge the battery door on the back of device, and place battery according to correct polarity, then cover the battery door.
- Only 1.5 V AAA alkaline battery is applied to the meter.
- If not used for a long time, please take out the battery to avoid battery corrosion to meter body

## Display Screen



- Laser emission on
- Measurement
- Maximum instructions
- Instructions of area, Volume, Pythagorean proposition and indirect measurement
- Minimum instructions
- The Lord measurement display
- Battery power instructions
- Store data/check stored data
- Auxiliary display
- Measure-ment unit instructions




## Keyboard

- 
- Laser emission on
  - Linear distance measurement key
  - + key
  - Storage/Storied date read key
  - Measurement benchmark select key
  - Area/Volume Measuring key
  - Pythagorean proposition indirect measurement
  - -key
  - Unit Conversion / Backlight Conversion Button
  - Off/Remove key

## Start the instrument/Menu Setting Start and shut off the meter

- Under off state, press  key, instrument and laser get starting simultaneously and stand by for measurement.
- Under on state, long press  key for 3 seconds to make the device off. The instrument will be shut off without any operation for 150 seconds

## Unit setting

- Press  key, reset current unit of measurement, the machine default unit is: 0.000m


## Backlight Setting

- Long press the  key to set on and off of the backlight

## Optional units as below




Length	Area	Volume
0.000m	0.000m <sup>2</sup>	0.000m <sup>3</sup>
0.00m	0.00m <sup>2</sup>	0.00m <sup>3</sup>
0.0in	0.00ft <sup>2</sup>	0.00ft <sup>3</sup>
0.00ft	0.00ft <sup>2</sup>	0.00ft <sup>3</sup>

## • Measurement benchmark setting



- Press  key to enter into setting of switching between front benchmark and end benchmark. System usually takes end benchmark as default.

## Measurement for distance, area, Volume; Pythagorean proposition indirect measurement, adding & subtracting






### Single Measurement

- Press  key under measuring mode, the laser is emitted to shoot measuring location.
- Re-Press  key for single measurement of distance, then the measured results displayed on main display. In the other mode, Press  key to return to single measurement.







### Continuous Measurement

- Long press  key under measuring mode to enter into continuous measurement state, and maximum and minimum measurement results in the process of continuous measurement will display on the screen.
- The main display screen indicates the very measured result, press  key to exit continuous measurement state.






## Area Measurement

- Press  key and you will see , on the display screen, that is Rectangle with one edge flashing. Complete the following operations according to screen tips:
- Press  key to measure the first edge (length).
- Press  key to measure the second edge (width) Area will be calculated automatically by the meter, and the results showed on main display screen.
- Press  key to remove previous measured result and get ready for the next measurement.

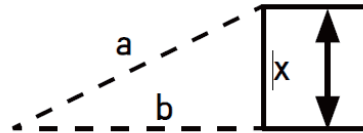
## Volumetric Measurement:





- Double press  key and you will see , on the display screen, that is cube with one edge flashing. Complete the following operations according to tips:
- Press  key to measure the first edge (length).
- Press  key to measure the second edge (width).
- Press  key to measure the third edge (height).
- Volume will be calculated automatically by the meter, and the results showed on main display screen.
- Press  key to remove previous measured result and get ready for the next measurement.

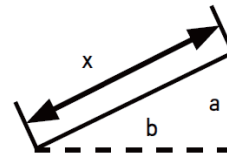
## Pythagorean proposition indirect measurement:






- There are kinds of pre-designed measuring mode to get unilateral distance of triangle by ways of Pythagorean proposition. This is convenient for users to do indirect measuring in certain complex environment. Press  key to make mode selection:
- Press  key and you will see  on the display screen that is triangle with hypotenuse flashing.
- Press  key to firstly measure the length (a) of dotted line hypotenuse according to screen prompt.
- Press  key to measure the length (b) of the dotted line right side.

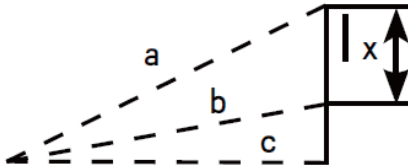
- Length (x) of the solid line right side will be calculated automatically by the meter.



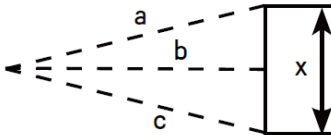
- Double press  key and you will see  on the display screen, that is triangle with vertical leg flashing.
- Press  key to firstly measure the length (a) of dotted line right side according to screen prompt.
- Press  key to measure the length (b) of the other dotted line right side.
- Length(x) of the solid line hypotenuse will be ,Calculated automatically by the meter.



- Press  key 3 times and you will see  on the display screen, that is triangle with hypotenuse flashing.
- Press  key to firstly measure the length (a) of dotted line hypotenuse according to screen prompt.
- Press  key to measure the length (b) of dotted line hypotenuse (shown as in the figure).
- Press  key to measure the length (c) of another dotted line hypotenuse (shown as in the figure).
- Length (x) of the solid line right side will be Calculated automatically by the meter.



- Press key 4 times and you will see on the display screen that is triangle with hypotenuse flashing.
- Press key to firstly measure the length (a) of dotted line right side according to screen prompt.
- Press key to measure the length(b) of the dotted line right side.
- Press key to firstly measure the length (C) of dotted line right side according to screen prompt.
- Length (x) of the solid line right side will be Calculated automatically by the meter.



Under Pythagorean proposition measurement mode, length of right side must be shorter than hypotenuse length so that instrument can make out calculation, otherwise the instrument will display error signal. Under Pythagorean proposition mode, to ensure the accuracy of measurement, it must be measured from the same starting point with a measuring order of first hypotenuse, and then right side.

## Add And Subtract Measurement:

- Single distance measurement can be done through adding/subtracting to get accumulated add or subtract operation;
- Press key, and "+" appears on main measurement screen, then enter into accumulated adding measurement mode, accumulative value of previous measured value and the very measurement results will be displayed on the screen.
- Press key, and "-" appears on main measurement screen, then enter into accumulated subtracting measurement mode, differences between previous measured value and the very measurement value will be displayed on the screen.

## Storage and Browse

### Store Measurements

- Under measuring mode, as the exiting data is effective, long press key for 3 seconds, the very measurement data will be automatically stored into the instrument memory stick.

### Browse Measurements

- Press key to check stored measurement data.
- Press key or key to browse forward or backward. Long press key can remove all stored records.

## Tips

During operation, tip information may appear on the main display screen as follows:

Information	Causes	Solutions
Err1	Signal too weak	Measure target locations which are with stronger reflecting capability
Err2	Signal too strong	Measure target locations which are weaker reflecting capability
Err3	Battery voltage is too low	Replace battery
Err4	Beyond working temperature	Carry out measurement with the meter in the specified scope
Err5	Improper Measurement on Pythagorean proposition	Re-measure, and ensure the length of hypotenuse is longer than that of right-side
Err6	Memory damage	Please contact the supplier

## Technology specifications:

ITEM	MS6414	MS6416	MS6418	MS64100
The maximum distance measurement	40m	60m	80m	100m
Distance measurement precision	±1.5mm			
Measurement unit options	mm/in/ft			

Continuous measurement function	yes
Outdoor target reflection board	no
Area measurement function	yes
Volume measurement function	yes
Pythagorean proposition measurement function	Full mode
Add and subtract measurement function	yes
Min/Max value	yes
Max storage	99 units
Automatic backlight	yes
Buttons/Keys sound	yes
Laser level	II
Laser type	635nm, <1mW
Automatically cut off laser	20s
Automatic shutdown	150S
Storage temperature	-20°C-60°C
Working temperature	0°C-40°C
Storage humidity	Rh85%
Battery	1.5V 3 x AAA
Weight (including battery)	180g
Dimension	120x60x28mm

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Note: There will be a bit of greater differences of measurement results in harsh environment, such as strong sunlight, excessive temperature fluctuations, weak reflective surface, low battery. As to this, target reflection board as auxiliary will assist you to get a better result.

## Instrument maintenancements:

- The meter should not be stored in high temperature and strong humidity environment for long-term; if not used for long time, please take out the battery and place the meter in the allocated portable bag and store in cool and dry place.
- Please keep the device surface cleaning. Wet soft cloth is applied to clean dust, but erosion liquid is never allowed to use for the meter maintenance. Laser output window and its focus lens can be maintained according to maintenance procedures for optical device.

## Packing list

Please carefully check instruments and attachments are complete in line with below list.

NO.	ITEM	Unit	QTY	Note
1	Laser Distance Meter master body	Unit	1	
2	Instrument portable bag	piece	1	
3	AAA battery	set	3	
4	Manual	copy	1	
5	Gift box	set	1	
6	Reflector	piece	1	Only for MS64100

