



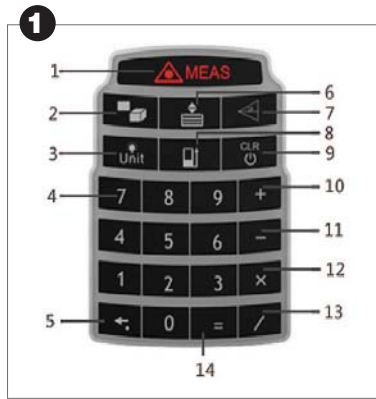
NW.i
Northwest Instrument



 **PRO TOOL
INNOVATION
AWARDS**
2013 WINNER

Laser Site Calculator

LSC60



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1. Brief Introduction

LSC60 Laser Site Calculator measures distances up to 60 meters in just one second with 1.5 millimeter accuracy. It's integrated with a worldwide unique feature:

Numeric Keypad.

LSC60 is the world's first laser site calculator which integrated the function of laser distance meter and calculator. It's efficient and convenient, saves your time and trouble for data processing and notes taking.

- 360° tilt measurement

LSC60 measures inclination up to 360° range, so that distance to inaccessible objects can be measured using trigonometric function.

In the box:

LSC60 Device*1

AAA Battery*2

Pouch*1

User Manual*1

Sling*1



Figure (A)

2. Safety Instructions

⚠ WARNING:

Failure to follow these safety instructions could result in fire, electric shock, or other injuries, or damage to LSC60 Laser Site Calculator or other property. Read all the safety information below before using LSC60.

Laser classification

LSC60 uses 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 protection is normally afforded by aversion responses including the blink reflex.

⚠ WARNING:

Looking directly into the beam with optical aids (e.g. binoculars, telescopes) can be hazardous. Do not look directly into the beam with optical aids.

Looking into the laser beam may be hazardous to the eyes. Do not look into the laser beam. Make sure the laser is aimed above or below eye level.

3. Buttons

1. Power On/Measuring/Laser on
2. Area/Volume/ Pythagoras
3. Units/Backlight
4. Numeric Keypad
5. Backspace/Decimal Point
6. Historical Data
7. Tilt/Auto Level/Auto Height
8. Reference
9. Power Off /Cancel/Back/Clear
10. Adding
11. Subtraction
12. Multiplication
13. Division
14. Equal Sign

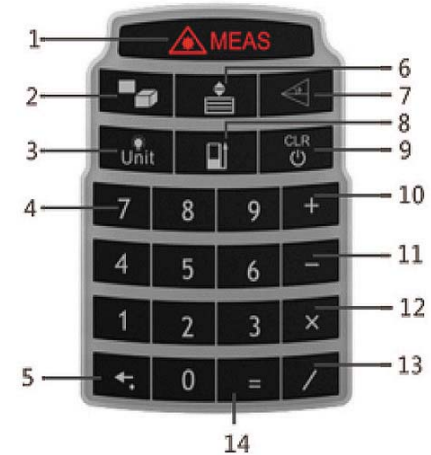



Figure (B)

4. Basics

Power On And Off


Long press  to power on the instrument and activate the laser. The display is on and shows the battery symbol until the next button is pressed.

Long press  to power off the instrument.

The instrument will be switched off automatically after three minutes of inactivity.

Reference Setup

See Figure (C)

Press  to switch reference point between the top, the bottom, tripod thread, and end-piece of the instrument. There is a beep warning tone when reference point is changed.

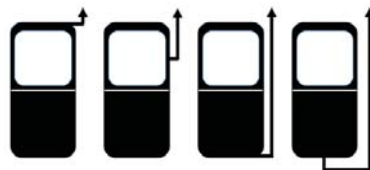




Figure (C)

The default reference setting is from the bottom of the instrument. The reference point will be set to default every time when it's powered off, i.e. the measuring reference point is from the bottom of the instrument every time when it's powered on.


Display Backlight

Press  to switch on or off the display backlight. User can trigger the function when he/she is in dark situation. The value is clearly visible on the display.

Distance Unit Setup

Long press  to change the distance unit between m, ft, in, ft+ /in. Long press again to continuously change the next unit.

Clear/Cancel


When measuring or calculating, user can press  to cancel the last action, until all data on display are cleared and go back to single distance measurement interface.

Historical Data

View

Press  to view historical data, including 50 measured results, shown in reversed order. Continuously press  to view the next record.

Jump to

Also user can jump to desired record. If user wants to go to the 13th record, user can press 1, then 3, and press  to confirm, to directly jump to the 13th record.

Delete

Long press  to delete the selected record.

Calculate

When viewing record, press $+$ $-$ \times \div to calculate another record or input number.



Quit

Press  to go back to single distance measurement interface.


5. Measurement



Single Distance MeasurementView

Follow the steps below to take single distance measurement.

- (1) Press  to activate the laser, and aim at the object which is to be measured.
- (2) Press  again to take measurement. Results will be seen on display immediately.

Continuous Measurement

Long press  button, until you hear beeps, to activate continuous measurement. Under this mode, minimum or maximum distance can be measured from a fixed measuring position by sweeping ideal points.

It's usually used to find the right angle and diagonal. As shown in Figure (D), user can press  or  to stop continuous measurement, and the values of minimum and maximum distances are shown in the display as well as the last measured value in the summary line.

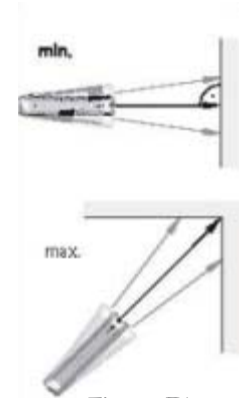


Figure (D)

Area Measurement

Press  once, the symbol  appears on display.


Press  to take the first distance measurement (e.g. Length).

Press  again to take the second distance measurement (e.g. width).

The results of length, width, perimeter and area will be seen on display orderly.

Volume Measurement

Press  twice, the symbol  appears on display.

Following the hint, press  to activate laser, and aim at the target, press again to take the first distance measurement (e.g. Length). Then measure the width, and then height, the result of volume will be seen in the summary line.

Indirect Measurement



This device can measure distance to inaccessible points, such as the distance to a wall which is blocked by obstacles, or the height of a tree, using trigonometric function.


To ensure measuring accuracy, indirect measurement should be based on the following conditions:


- (1) The measuring points of the object which is to be measured should be on the same horizontal or vertical line.
- (2) Put the device at a fixed but horizontally and vertically rotary tripod.

Indirect Measurement: Pythagoras Two PointsView

As shown in Figure (E), if user wants to measure the height of a building, he can use Pythagoras to calculate the height.

- (1) Press  three times, the symbol  appears on display.

- (2) Press  to activate laser and aim at the point which is to be measured.

- (3) Press  again to take the first measurement, and again to take the second measurement.

- (4) The height of building (third side of triangle), first and second distance value will be seen on display.

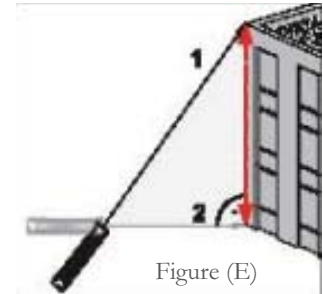






Figure (E)



Note:

- (1) The device will automatically determine the longer distance as triangle's hypotenuse, and shorter distance as right-angle side.
- (2) When measuring right-angle side (Distance 2 in Figure E), user should ensure laser beam is right-angled to the target line.
- (3) User can press  to delete any measured length and then press  to re-measure.

Indirect Measurement: Pythagoras Three Points

As shown in Figure (F), there is another function to measure the height of the building.

- (1) Press  four times, the symbol  appears on display.

- (2) Press  to activate laser and aim at the point which is to be measured.
- (3) Press  again to take the first measurement, and again to take the second and third measurement.
- (4) The height of building, first, second and third distance value will be seen on display.

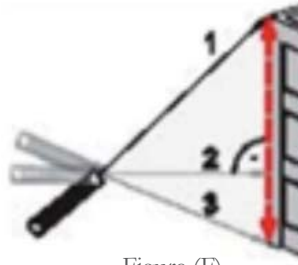






Figure (F)

Note:

- (1) The device will automatically determine the longer distance as triangle's hypotenuse, and shorter distance as right-angle side.
- (2) When measuring right-angle side (Distance 2 in Figure F), user should ensure laser beam is right-angled to the target line.
- (3) User can press  to delete any measured length and then press  to re-measure.

Tilt Measurement

Press  to activate tilt sensor, the symbol \angle appears on display.
 Press  to record the tilt on display, and take a distance measurement.

Note:

The tilt sensor measures inclination between $\pm 180^\circ$.

The accuracy of tilt sensor is 0.1° .

The device cannot measure from the left or right side.

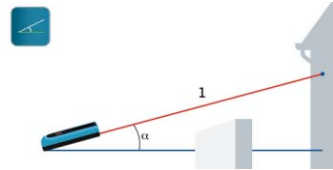




Figure (G)

Auto Horizontal Measurement

Press  twice, the symbol \angle appears on display. Press  to measure tilt and hypotenuse distance, results of tilt, distance of hypotenuse and two right-angle sides will be seen on display. Refer to Figure (G).

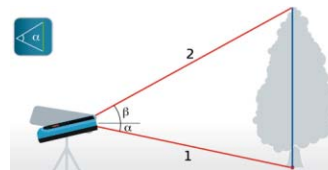











Figure (H)

Auto Height Measurement

Press  third times, the symbol  appears on display. Press  button to measure distance to the top and to the bottom of the object, distance of two hypotenuse, and height of object will be seen on display. Refer to Figure (H).

Addition / Subtraction

Press  to take a measurement, then press  button, and press  to take the second measurement, the second value will be automatically added to the first one.


Press  to take a measurement, then press  button, and press  to take the second measurement, the second value will be automatically subtracted from the first one.


Note:

This process can be repeated as required.

6. Numeric Keypad

Launch/Quit Calculator

Launch: When the device is in the mode of measurement, viewing historical data, or standby, press any numeric key, to enter Calculator, meanwhile a calculator icon  will be seen on display.

Quit: When the device is in calculator mode, press  to clear data, press again to quit calculator mode.

Keypad List

0~9: Numbers

 : Addition

 : Subtraction

 : Multiplication

 : Division



 : Decimal Point/Backspace (long press)

 : Equal Sign







Ordinary Calculator

When in calculator mode, user can use the device to do four arithmetic operations (Addition, Subtraction, Multiplication, and Division.), the figure is accurate up to four decimal places.

Calculator in Measuring



When a measurement was taken, and user enters into calculator mode, the device will use the measurement result as an original data to do calculation. User can also edit original data, such as long press backspace  to clear digital, or use numeric keypad to add digital, or even press  to re-measure.







When the original data was confirmed, user presses operational

character (, , , ), then use numeric keypad to input new digital or press  to take new measurement, the results of calculation will be seen on display after user presses the Equal Sign .

This process can be repeated as required.

Calculator in Viewing Historical Data

When viewing historical data, and user enters into calculator mode, the device will use the historical data as an original data to do calculation. User can also edit historical data, such as long press backspace  to clear digital, or use numeric keypad to add digital, or even press  to re-measure.

When the original data was confirmed, user presses operational character (, , , ), then use numeric keypad to input new digital or press  to take new measurement, the results of calculation will be seen on display after user presses the Equal Sign .

This process can be repeated as required.

7. Troubleshooting

Launch/Quit Calculator

All errors or failures will be shown as codes. The following table explains the meaning of codes and solutions.

Code	Cause	Corrective Measure
204	Calculation error	Refer to user menu, repeat the procedures.
208	Currency for LD out of range	If cannot be solved after several times of reboot, meaning the instrument is out of work, please contact your distributor.
220	Battery too low	Replace new batteries.
255	Receiver signal too weak, measurement time too long	Use target plate or change a good reflection.
256	Received signal too strong	Target too reflective, use target plate or do not aim at strong light objective.
Error	Hardware error and uncertainty error	Switch on/off the device several times. If the symbol still appears, then your instrument is defective. Please contact your distributor.

8. Icons

Launch/Quit Calculator

All errors or failures will be shown as codes. The following table explains the meaning of codes and solutions.

Icon	Function	Description (“___“ refers to the side to be measured)
	Battery status	Show the battery level
	Reference	Front:  ; Rear:  ; Tripod thread:  ; End-piece: 
	Area measurement	Step1: Length:  -> Step2: Width 
	Volume measurement	Step1: Length:  -> Step2: Width:  -> Step3: Height 
	Indirect (2 points) measurement	Step1: base-side:  -> Step2: hypotenuse 
	Indirect (3 points) measurement	Step1: first side:  ; -> Step2: second side  ; -> Step3: third side 
	Tilt measurement	Shows the inclination and hypotenuse
	Auto level	Step 1: shows inclination, hypotenuse and horizontal distance
	Auto height	Step 1: distance to top  ; Step 2: distance to bottom 
	Continuous measurement	First value display line: minimum value Second value display line: maximum value Third value display line: latest value
	Historical data	50 Records
	Calculator icon	Device is in calculator mode.

9. Function list and specifications

Specifications	LSC60
Measurement range	0.1~60m
Typical measuring accuracy	±1.5 mm
Area measurement	√
Volume measurement	√
Pythagorean two/three points	√
Min/max, continuous measurement	√
Add/subtraction	√
Tilt measurement	√
Tilt measurement range	±180°
Tilt measurement accuracy	0.1°
Calculator	√
Measuring units	m/in/ft/ft+in
Battery type	AAA*2
Battery life	5,000 measurement times
Display	4-line dot matrix
Backlight	√
Beeper	√
Historical data	50 sets
Operating temperature	0°C ~40°C
Storage temperature	-10°C ~60°C
Auto laser off	30 seconds

Specifications	LSC60
Auto instrument off	180 seconds
Laser class	Class 2
Laser type	635nm, <1mw
Ingress protection	IP54
Dimensions	120*54*32mm
Weight	156g

In favorable conditions (good target surface properties, room temperature), measuring range is up to 60m. In unfavorable conditions, such as intense sunshine, poorly reflecting target surface (black surface) or high temperature variations, the deviation over 10m distance may increase.

10. Warranty

Care

Do not use aggressive cleaning agents or solutions.

Warranty

The NWI LSC60 Laser Site Calculator comes with a one-year warranty from Northwest Instrument.

More detailed information at <http://www.nwinstrument.com>



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