

Automatic Self-leveling Rotary Laser LSL110

Operating Manual



WARNING AND CAUTION

Class 3R Laser Product
Wave length 630-680nm
Max Output Power of diode is 10mw
Laser Light: Avoid direct eye exposure
Conforms to IEC 60825-1

Introduction

Congratulations on the purchase of your Linesite LSL 110 Series Laser. Although simple to use, we recommend that you read this manual before operating the laser.

Description

The Linesite LSL110 is ideal for general construction, site preparation, vertical alignment and squaring. and other leveling applications. It automatically self-levels in horizontal and vertical modes can be used for manual grade as well.

1.Functions

This instrument is equipped with a semiconductor diode with a wavelength of 635nm, which produces a laser beam with excellent visibility. The laser will rotate freely to form a laser-scanning surface. Emitting the direction of rotary laser-beam depicted as follows:

Emitting direction of rotary laser-beam illustrated as follows:

Horizontal-setting



Vertical-setting



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When the instrument is set upright, it will emit laser-beam to form a horizontal scanning surface and a plumb line automatically. When set vertically, it will form a plumb scanning surface and a vertical line.

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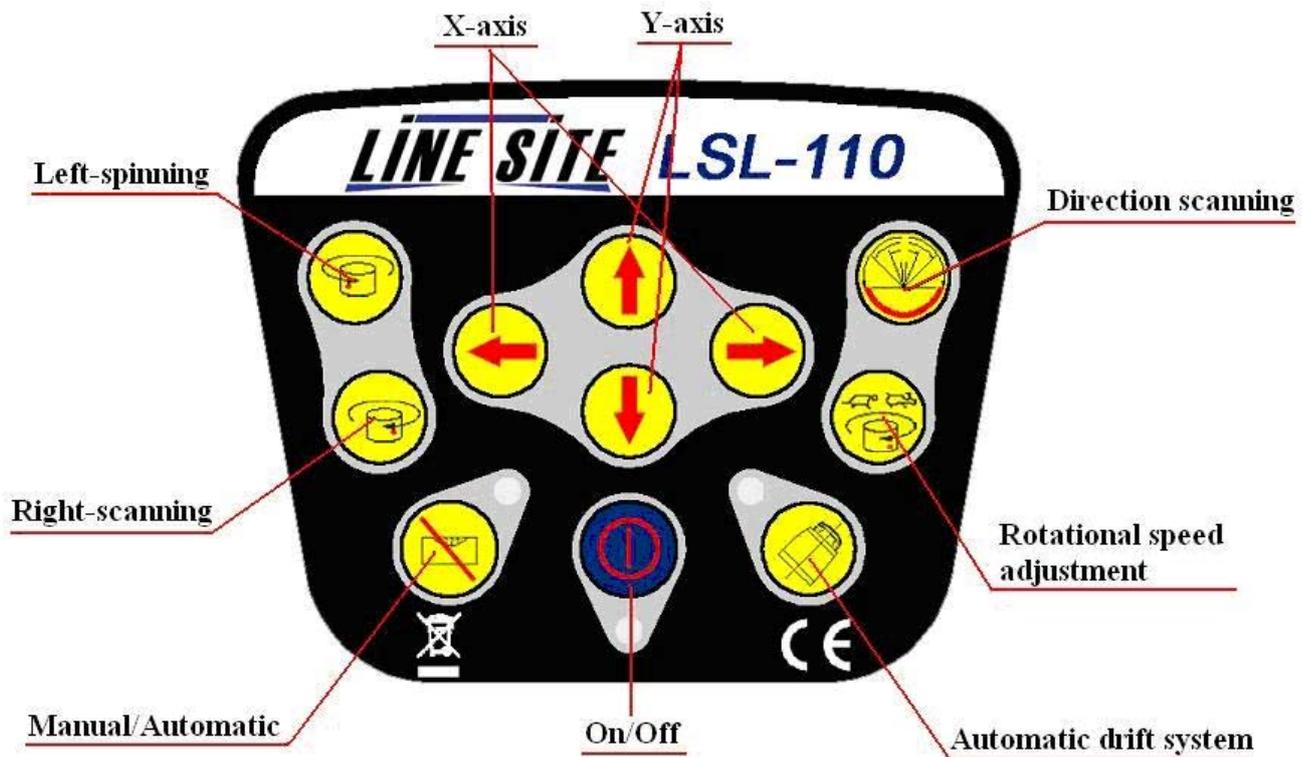
2. Introductions

2.1 Main body



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2.2 Panel



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2.3 Utilities of Panel

- (1) ON/OFF: Power control.
- (2) Power indicator: When lit, the instrument is starting up..
- (3) Mode indicator: When lit, the instrument is leveling manually. When it blinks, it is in alarm mode(The slope of the instrument is out of range).
- (4) Key of Automatic drift system model: Warning that the instrument is out of leveling range
- (5)Light of Automatic drift system model: When the light is blinking slowly, it is in Automatic Drift System model. When the light is blinking quickly, the laser level will not level when it is disturbed.
- (6)Rotational Speed Adjustment-up: Circling knob. Speed of scanning includes 5-knots:0-60-120-300-6000 r.p.m
- (7) Directional scanning: Circling knob. Angle of scanning includes 5 levels:0-10° -45° -90° -180°
- (8) Manual/Automatic: Controlling the mode of leveling.Either manual or automatic.
- (9) Left-spinning: Making the laser module step-move counter-clockwise, when the laser module is power off or it is scanning directionally.
- (10) Right-spinning: Making the laser module step-move clockwise, when the laser module is power off or it is scanning directionally.
- (11) X-axis: Adjusting the slope of X-axis, when the instrument stays in manual mode.

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- (12) Y-axis: Adjusting the slope of Y-axis, when the instrument stays in manual mode.

3. Directions:

3.1 Battery Installment

Rechargeable batteries or regular batteries can be used with this instrument.

- (1) Remove the cover of battery case at the bottom of the instrument.
- (2) Put the batteries into the case according to the correct power placement.
- (3) Place the cover back on the unit, and then tighten all the screws.

3.2 Instrument Placement

3.2.1 Horizontal scanning

Place the instrument on the tripod or stable flat surface, . Set the instrument upright, and keep the slope of instrument within the range from -5° to $+5^{\circ}$.

3.2.2 Vertical scanning

Place the instrument on a flat surface, and keep the slope of instrument within the range from -5° to $+5^{\circ}$.

3.3 Operations

3.3.1 Power

Press the Key ON/OFF to bring automatic leveling into function when the power indicator

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lights.

When Power indicator lights, it shows the voltage of the batteries is insufficient. Batteries need to be recharged or replaced.

Press the Key ON/OFF again to power down down the instrument when power indicator light is off.

3.3.2 Leveling

Press the Key ON/OFF to bring automatic leveling into function when the laser beam begins to blink. After automatic leveling, the laser module will rotate right at the speed of 600r.p.m.

If the instrument is placed improperly, or the slope of instrument exceeds the range from -5° to $+5^{\circ}$ then the mode indicator and the laser beam will blink at the same time. Then adjust the instrument to be in proper placement.

Notice: The instrument will close down automatically after five minutes of this alarm warning.

3.3.3 Spinning

(1) Continuous spinning

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Press the Key Speeding-up to control the spinning speed of the laser module. If you press the key repeatedly, the spinning speed of the laser module will continuously change as follows:0-60-120-300-600-0 r.p.m.

(2) Stopping spinning

Adjust the Key Speeding-up at 0 r.p.m, the laser module will stop spinning. And press the Key Right-spinning, the laser module will step-move clockwise. Then if press the Key Left-spinning, the laser module will step-move counter-clockwise.

3.3.4 Directional scanning

(1) Press the Key Directional scanning; the laser module will scan directionally. If you press the key repeatedly, the angle of scanning of laser module will continuously change as follows: 0° -10° 45° -90° 180° -0° .

(2) Press the Key Left-spinning or the Key Right-spinning to change the direction of scanning.

3.3.5 Slope Adjustment

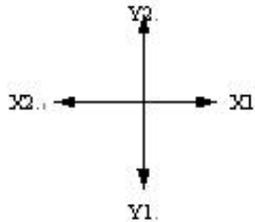
When the instrument is set horizontally to do horizontal scanning, the slope of X-axis

and Y-axis can be adjusted.

Press the Key Manual/Automatic when mode indicator lights, the instrument enters the mode of manual leveling.

(1) Slope of X-axis

a. Aim the X1-beam to the direction of the slope required to adjust, as depicted below:



b. Press the Key  or  to move the laser beam up or down.

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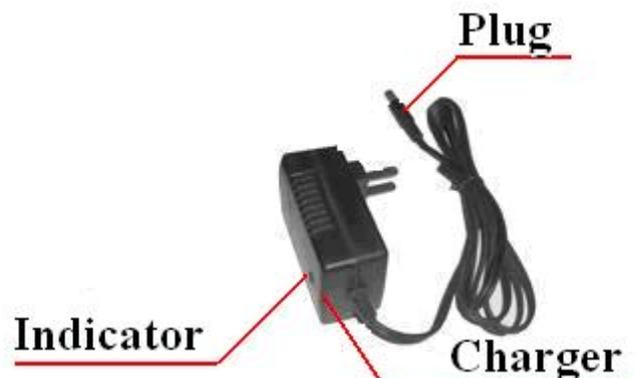
(2) Slope of Y-axis

a. Aim the Y1-beam to the direction of the slope required to adjust.

b. Press the Key  or  to move the laser beam up or down.

Notices: Press the Key Manual/Automatic again when mode indicator goes out, the instrument will enter automatic leveling mode.

4. Power



When the voltage indicator lights, the batteries need to be charged immediately. Connecting the charger with AC, insert the plug of charger into the plughole at the bottom of the instrument (As depicted above).

If the indicator of charger lights, it shows the batteries are being charged.

If the indicator light of the charger blinks, it shows the course of recharging has ended.

Notices:

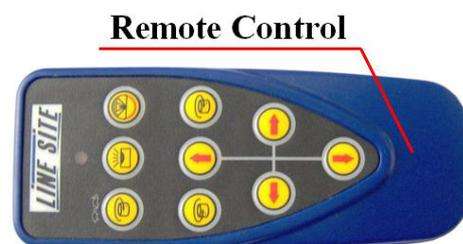
- (1) Using the standard rechargeable batteries of the instrument, recharging will be finished within 7 hours.**
- (2) Power required for the charger: Frequency: 50-60HZ; Voltage: 85-265V.**
- (3) Charging and use of the instrument can be done at the same time.**
- (4) When storing the instrument in (or if leaving the instrument unused for a long time), the batteries) need to be removed.**
- (5) Brand-new rechargeable batteries need to be recharged and discharged three times to obtain optimal battery capacity.**

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5. Remote

The remote control of the instrument uses infrared technology.

Aim the aperture of infrared ray to the instrument (as depicted below) to bring remote control into operation (Available distance: indoor: 30M; outdoor: 20M). The remote control panel includes 9 keys; the indicator on the device will blink to show the operating signal has been sent out once any key is pressed.



Functions of the remote control:

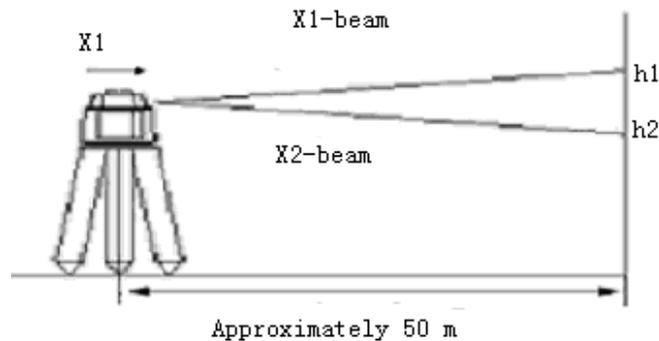
- (1) Spinning: Operating method referring to 3.3.3
- (2) Directional scanning: Operating method referring to 3.3.4
- (3) Slope adjustment: Operating method referring to 3.3.5

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6. Accuracy Checking

6.1 Horizontal-surface Checking

(1) Place the instrument 50m away from a wall (or set a scaleplate at the point of 50m away from the instrument), and then adjust the level of the base approximately to aim the X1 to the wall (or scaleplate), as depicted below:



(2) After switching on the power, use the laser detector measuring the h_1 of X1-beam on the wall or scaleplate.

(3) Loose the screw of the tripod, and then turn around the instrument 180° to measure the h_2 of X2-beam on the wall or scale-plate.

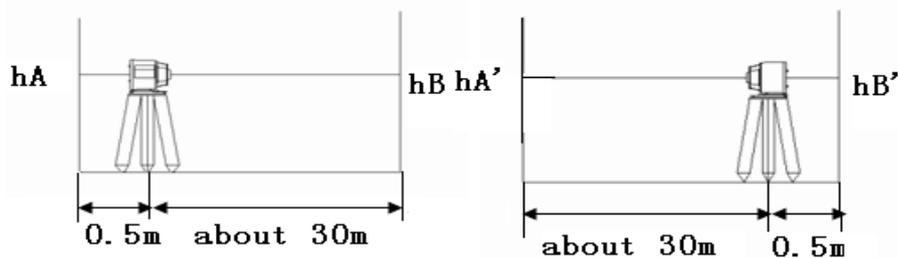
D-value between h_1 and h_2 ought to be less than 10mm.

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(4) Check the Y-beam in the same way.

6.2 Horizontal-line Checking

(1) Place the instrument between two walls with the distance of 30m (or two scaleplates with the distance of 30m).



(2) Place the instrument according to horizontal setting and then adjust the instrument.

(3) Switch on the power, and then measure the middle point of the laser beam on the wall (or scaleplate): h_A , h_B and $h_{A'}$, $h_{B'}$.

(4) $\Delta 1 = h_A - h_{A'}$, $\Delta 2 = h_B - h_{B'}$

D-value between $\Delta 1$ and $\Delta 2$ ought to be less than 6mm.

Attention: If the accuracy is out of range, please contact your dealer for further instructions

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7. Specifications

Leveling Accuracy	Horizontal: $\pm 20''$ Vertical: $\pm 20''$
Leveling Range	$\pm 5^\circ$
Measuring Range	Diameter: 500m (Using the laser detector)
Spinning Speed	0、 60、 120、 300、 600 r.p.m
Directional-Scanning Angle	0° 、 10° 、 45° 、 90° 、 180°
Slope-adjusting Range	$\pm 5^\circ$ (Bi-directional)
Light Source	Laser Diode, wavelength: 635nm
Down Point Diode	Accuracy: $\pm 1\text{mm}/1.5\text{m}$

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	Wavelength: 650nm
Remote controlling Distance	Approximately 20m
Working Temperature	-20°C -- $+50^\circ\text{C}$ (-4°F -- $+122^\circ\text{F}$)
Power Supply	DC 4.8-6V (4*1.5V Alkaline batteries or 4 section of NI-MH rechargeable batteries)
Hours in continuous use	Approximately 20 hours
Water-proof	IP 64
Dimension	160(L) \times 160(W) \times 185(H)mm
Weight	3.0kg

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8. Care and Handling

- A) The Linesite LSL110 is a precision instrument that must be handled with care. Avoid shock and vibrations.
- B) After use, it is recommended that you wipe the laser dry and store it in a dry place. Do not store the laser in its case if the lasers or the case is wet.
- C) Do not store the laser at temperatures below –20C or above 80C. The electronic components could be damaged.
- D) To maintain the precision of your laser, check and adjust it regularly.
- E) We recommend a yearly service check for your instrument. Contact your dealer for the nearest service center.
- F) Keep the glass lighthouse of the laser clean with a soft cloth and glass cleaner.

9. Warranty

Your Linesite LSL110 Laser is guaranteed to be free of manufacturing defects for a period of 1 year. Any abnormal usage, or if the instrument has been subjected to shock will void the warranty. The warranty will not apply to any damage resulting from negligence, accident or misuse. Under no circumstances will the liability of the manufacturer exceed the cost of repairing or replacing the instrument. Disassembling the laser by other than a qualified technician will void the warranty.

10. Distributor:

LINE SITE



Linesite Lasers are distributed by Trinitec Distribution Inc.

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BC, V3C 2M8: Toll Free 1-866-466-6633: Tel: 604-944-99889:

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