

Operating Manual

LINE SITE ***LSL-210***

WARNING AND CAUTION

- While the instrument is operating, be careful not to expose your eyes to the emitting laser beam. Exposure to a laser beam for a long time may be hazardous to your eyes (laser beam: equivalent to Laser Class 2 Standard).
- Do not try to dismantle the instrument. Have it repaired by your dealer or supplier.

Self-Dismantling may worsen the problem.

- When attaching the instrument to a tripod, make sure the instrument is securely fixed to the tripod and the tripod leg clamps should be securely fastened. If not securely fastened or tightened, the main unit could fall off or the tripod could fall over.
- When setting the tripod, be aware of the tripod shoes which are sharp. These sharp points allow tripod to be securely positioned on the ground.

Operate this laser product with the height of laser avoiding that of eyes of vehicle drivers or pedestrians. Avoid putting the laser on a highly reflective material such as mirror. When disposing of this instrument, take a measure by removing the batteries so that the laser will not be emitted.

Introduction

Congratulations on the purchase of your Linesite LSL 210 Series Laser. Although simple to use, we recommend that you read this manual before operating the laser.

Description

The Linesite LSL210 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.

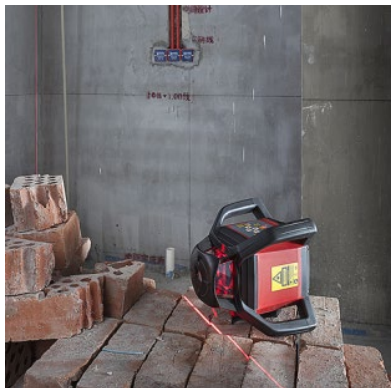
1. Functions

This instrument is equipped with the red semiconductor diode with wavelength of 635nm. And the laser module of instrument will rotate freely to form a laser-scanning surface. Emitting direction of rotary laser-beam illustrated as follows:

Horizontal Position



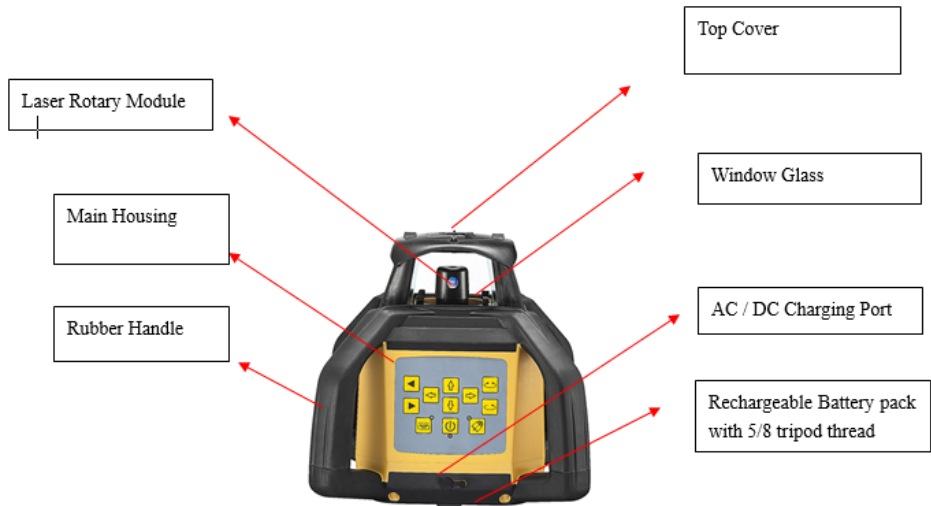
Vertical Position

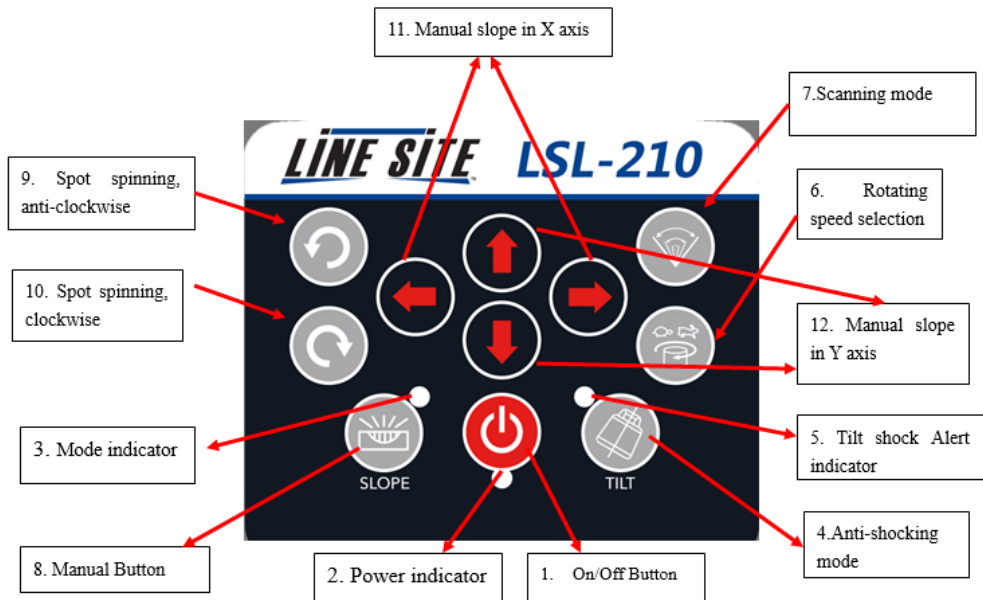


When the instrument is set upright, it will emit laser-beam to form a 360-degree horizontal scanning surface and a plumb dot automatically. When set horizontally, it will form a 360-degree plumb scanning surface and a plumb dot.

2. Introductions

2.1 Main body





2.3 Main Panel Explanation

- (1) ON/OFF: Controlling the state of power.
- (2) Power indicator: When on, the instrument is starting up. Otherwise it is shutting down.
- (3) Mode indicator: When on, the instrument is leveling manually. When it blinks, it stays in alarm. (The slope of the instrument is out of range).
- (4) Key of Automatic drift system model: Warns the user for a misaligned device
- (5) Anti-shocking Alert indicator: When the indicator is blinking slowly, it is in Automatic Drift System model. When the light is twinkling quickly, the laser level will not level.
- (6) Rotary Speed: Adjustment. Speed of scanning includes 5 Speeds:
0-60-120-300-600 RPM

2.3 Main Panel Explanation - Continued

(7) Directional scanning: Circling knob.

Angle of scanning includes 5 levels: 0-10° -45° -90° -180°

(8) Manual/Automatic: Controlling the mode of leveling.

(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.

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

3. Directions:

3.1 Battery

Please Note - Ni-MH Rechargeable battery pack is pre-installed

4x Alkaline (Size C) pack is included in the case

3.2 Instrument Placement

3.2.1 Horizontal scanning

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

3.2.2 Vertical scanning

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

3.2 Operations

3.3.1 Power

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

When Power indicator lights, it shows the voltage of the batteries is insufficient. Then the rechargeable batteries need to be charged.

Press the Key ON/OFF again to switch off the instrument and power indicator will go out.

3.3.2 Leveling

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

If the instrument is placed improperly, or the slope of instrument exceeds the range of $\pm 5^\circ$, at that moment mode indicator and the laser beam will wink together. Then place the instrument properly.

3.3.3 Spinning

(1) Continuous spinning

Press the Key “Rotational speed adjustment” to control the spinning speed of the laser module. If press the key repeatedly, the spinning speed of the laser module will continuously change as follows:0-60-120-300-600-0 RPM

(2) Stepping spinning

Locate the Key Speeding-up at speed of 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) Locate the Key Speeding-up at speed of 0 RPM, the laser module will stop spinning. Press the Key Directional scanning; the laser module

will scan directionally. If 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.

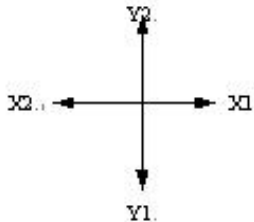
3.3.5 Slope Adjustment



When the instrument is set upright to do horizontal scanning, the slope of X-axis and Y-axis can be set.

Press the Key Manual/Automatic when mode indicator lights, the instrument enters the mode of manual leveling. When the instrument is set upright to do horizontal scanning, the slope of X-axis and Y-axis can be set. 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 then to adjust.



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

(2) Slope of Y-axis

(3) Quit slope adjustment mode

Press Manual/Automatic key again. After mode indicator goes off, the instrument then will quit the slope adjustment mode and will self-leveling again.

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

If the green indicator of charger lights, it shows the recharging has finished.

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 using of the instrument can progress simultaneously.
- (4) If keeping the instrument in storage (or Leave the instrument unused for a long time), the batteries (dry battery or rechargeable battery) need to be taken out.
- (5) Brand-new rechargeable batteries or long-time unused rechargeable batteries need to be recharged and discharged three times to attain the capacity required.

5. Remote

The remote control of the instrument adopts the infrared technique.

Aim the aperture of infrared ray to the instrument (as depicted below) to bring remote controlling into function (Available distance: indoor: 20M; outdoor: 15M).

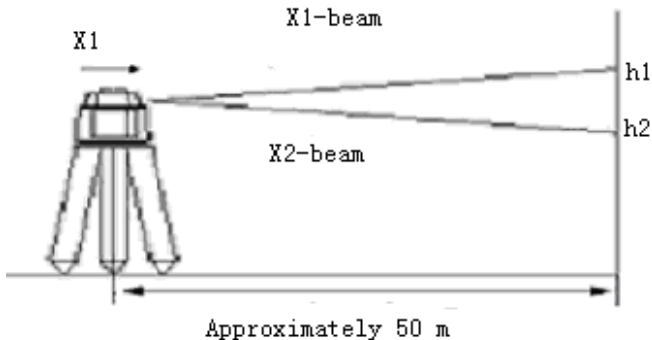
The keypad panel includes 9 keys; the indicator on the RC will blink to show the operating signal has been sent out once pressing any key.



6. Accuracy Checking

6.1 Horizontal-surface Checking

- (1) Place the instrument at the point of 50m in front of wall (or set a scale plate 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 scale plate), as depicted below:



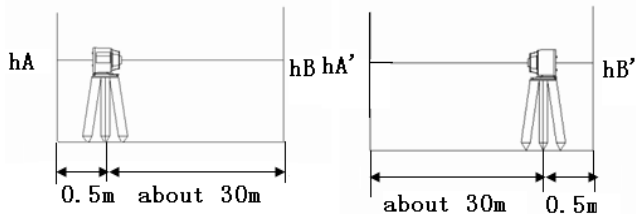
- (2) After switching on the power, use the laser detector measuring the h_1 of X1-beam on the wall or scale plate.

- (3) Loose the screw of the tripod, turn around the instrument for 180° to measure the h_2 of X2-beam on the wall or scale- plate. The method should be the same with h_1 .
D-value between h_1 and h_2 ought to be less than 10mm.

- (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 scale plates 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 scale plate).

7. Specifications

Leveling Accuracy (H/V)	±2.4mm at 30m / ±3mm at 30m
Leveling Range	±5°
Working Range with Receiver (Diameter) depending on working environment	Diameter:650m
Visible Working Range depending on working environment	40m
Spinning Speed	0、 60、 120、 300、 600 r.p.m
Directional-Scanning Angle	0°、 10 °、 45 °、 90 °、 180 °
Slope-adjusting Range	±5°(Bi-directional)
Light Source	Laser Diode, Class 2 (IEC60825-1,2014) wavelength: 635-650nm
Remote controlling Distance	Approximately 30m
Working Temperature	-5°C-- +50°C
STORAGE Temperature	-15°C-- +60°C
RL Power Supply	DC 4.8-6V (4 section of NI-MH rechargeable batteries) / 4 Cell Alk-battery

RL Charging Time	No less than 5hrs (Do not charge Alkaline battery)
Hours in continuous use	Approximately 34 hours (Rechargeable) / 25 hrs (Alkaline)
RL IP	IP 65
Dimension	220mm x 220mm x 210mm
Weight	3.1kg
Remote IP	IP 54
Remote Power Supply	2AA
Laser Detector Precision	Rough Band: 3mm/ Precise Band: 1mm
Laser Detector IP	IP55
Laser Detector Power Supply	9V

8. Item check list

Item	LSL-210
Rotary Laser level	*
Hard carry case	*
Rechargeable battery pack	*
4 x C cell alkaline batteries	*
4 x C cell – battery holder	*
Remote Control	*
Laser receiver with clamp	*
Laser target	*
Wall / Ceiling Mount	*
Red safety glasses	*
Rechargeable Battery Charger	*
User manual	*



Notes :

