



GRL-L340 SELF-LEVELING ROTARY LASER OPERATION MANUAL

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Introduction

The self-leveling rotary laser is mainly used in construction and interior decoration fields, for example:

- ◆ Laying foundations.
- ◆ Wall and fence construction.
- ◆ Laying sloped water and sewage lines.
- ◆ Laying flooring.
- ◆ Hanging acoustic ceilings.
- ◆ Installing partitions and drywall.

It can provide a 360 degree horizontal laser scanning surface and two sets of laser points up and down . It has advantages of high precision, good stability and convenient carrying.

The instrument uses a semiconductor laser with a wavelength of 530nm, and the visibility of the emitted laser beam is better. The laser beam can rotate. When the instrument is placed vertically, it can automatically generate a horizontal laser scanning surface and an upward laser plumb point. When the instrument is lying down, a vertical laser scanning surface and a horizontal laser point to the right can be automatically generated.

Safety Instructions

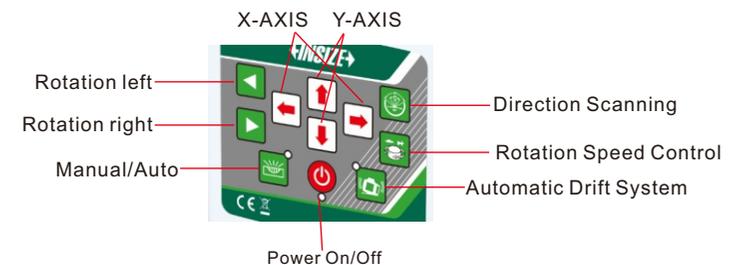


This product is emitting radiation that is classified as class II. The laser radiation can cause serious eye injury.

- ◆ Do not point the laser beam at people or animals. Do not stare into the laser beam. It disrupts vision and causes accidents or damage eyes.
- ◆ Do not operate the laser scanner around children, and do not allow children to use the laser device.
- ◆ Do not use a magnifying glass or telescope to observe the laser beam.
- ◆ Laser identification glasses should not be used as protective glasses. Wearing a laser mirror can help you identify the laser, but it does not protect you from laser radiation.
- ◆ Do not use laser identification glasses as sunglasses, and do not wear laser identification glasses on the street

Product Description

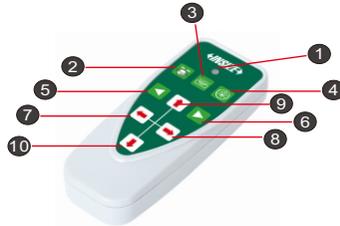
- ◆ Do not operate the instrument in an explosive environment, such as flammable liquids, gases or dust.
- ◆ Keep the device away from the heart pacemaker.
- ◆ Keep the device away from magnetic data carriers and machines that are susceptible to magnetic field interference.



Host machine key function:

- 1 Press the "Power ON/Off" button to start or shut down, and the indicator under the button will light up. After starting, the automatic peace indicator flashes, and the light turns off after the peace is over.

- 2 Press the "Automatic Drift System" button to enter the anti-drift vibration mode. At the same time, the indicator light in the upper left corner of the key flashes slowly. When the instrument detects vibration, the indicator light flashes quickly.
- 3 When the device is plugged into the charger, the USB indicator lights up.
- 4 The four battery indicators on the right of the panel are 100% to 75% to 50% to 25% from the top down.



Remote Control

1. Remote Signal Indicator
2. Rotation speed control button
3. Manual/Automatic mode button
4. Scanning mode control button
5. Rotation left button
6. Rotation right button
7. 8. X-AXIS
9. 10. Y-AXIS

Remote control function

- 1 Press any key of the remote control, the signal indicator light 1 would flash accordingly.
- 2 Press button 3 to switch between automatic leveling and manual leveling mode. The slope function can be operated in manual leveling mode.
- 3 Press the key 4 to enter the directional scan settings, and the cycle is 600rpm~10°~25°~50°~600rpm.
- 4 The key 7/8 is used to set the instrument for slope function in manual leveling mode, moving up/down in the forward and

- 5 The key 9/10 has two functions:
 1. To move left or right under the directional scan mode;
 2. To set the instrument left and right under the slope function in manual leveling mode.

Operation Instruction

Horizontal Plane (Automatic Mode)

- 1 Place the Rotary Laser on a dry, flat, vibration free surface or on a standard 5/8" tripod (not included) or ceiling to floor leveling pole (not included) or on any wall mount accessory (not included).
- 2 Set up the Rotary Laser approximately level; the instrument can compensate for up to ±5° from the horizontal plane.
- 3 Press the On/Off button. The power indicator will light up and the laser beam will blink. If the instrument is set up outside the ±5° limit, the manual indicator will blink and rotation will not begin.
- 4 Verify that the Rotary Laser is in automatic mode - the manual indicator must be unlit.
- 5 The Rotary Laser is ready to work when the laser beam no longer flashes. The instrument is now level and the laser head will rotate at 600 rpm.
- 6 To make the beam more visible, change the rotating speed (see page 7), change scanning mode (see page 7), or use the Laser Detector to detect the laser beam (see page 9).
- 7 You can use the remote control to control the Rotary Laser (see page 3). This option is very useful for trench work or when laying concrete.
- 8 To turn the Rotary Laser off, press the On/Off button.

Inclined Plane

- 1 The Rotary Laser can be set up to create a single or dual directional Laser inclined planed at ±5° from the horizontal plane. This is very helpful for laying inclined concrete surfaces, ensuring run-off pathways as well as laying water and sewage lines.

- 2 Set up the Rotary Laser approximately level; the instrument can compensate for up to $\pm 5^\circ$ from the horizontal plane.
- 3 Press the On/Off button. The power indicator will light up and the laser beam will blink. If the instrument is set up outside the $\pm 5^\circ$ limit the manual indicator will blink and rotation will not begin.
- 4 The Rotary Laser is ready to work when the laser beam no longer flashes. The instrument is now level and the laser head will rotate at 600 rpm.
- 5 Press the Manual/Automatic button to change the rotating laser to Manual Mode.
- 6 Verify that the Manual indicator is lit.
- 7 For X direction slope:
Position X axis parallel to plane requiring slope setup. Press to raise X1 and lower X2.
Press to raise X2 and lower X1.
For Y direction slope:
Position Y axis parallel to plane requiring slope setup.
Press to raise Y2 and lower Y1. Press to raise Y1 and lower Y2.
- 8 To make the beam more visible, change the rotating speed (see page 7), change scanning mode (see page 7), or use the Laser Detector to detect the laser beam (see page 9).
- 9 You can use the remote control to control the Rotary Laser (see page 3). This option is very useful for trench work or when laying concrete.
- 10 To turn the Rotary Laser off, press the On/Off button.



Manual Mode

If the Manual/Auto button is pressed and the LED indicator, next to it, is lit then the self-leveling is disabled and the laser beam will rotate regardless of the position of the level. The level can be set as required and used to mark the line at any angle.

Vertical Setup

- 1 The Rotary Laser can be set up to create a vertical laser line, to check the vertical alignment of a wall or fence pole.
- 2 Position the Rotary Laser on its side on a dry, flat, vibration free surface or on a standard 5/8" tripod (not included) or ceiling to floor leveling pole (not included) or on any wall mount accessory (not included). Set up the Rotary Laser approximately level; the instrument can compensate for a variance of up to $\pm 5^\circ$.
- 3 Press the On/Off power button to turn the Rotary Laser on. The power indicator will light up and the laser beam will start to blink.
- 4 Verify that the Rotary Laser is in Automatic mode - the manual indicator must not be lit.
- 5 The Rotary Laser is ready to work when the laser beam has stopped flashing. The instrument is now level and the laser head will rotate at 600 rpm.
- 6 If the laser beam is not sufficiently visible, adjust the rotation speed (see page 7), or use the Laser Detector to detect the laser beam (see page 9).
- 7 You can use the remote control to control the Rotary Laser (see page 3). This option is very useful when working at heights or on scaffolding.
- 8 To turn the Rotary Laser off, press the On/Off button.



Plumb Down

- 1 The Plumb Down feature enables you to center the Rotary Laser onto a selected point. It is much easier to use this feature if you set up the Rotary Laser on a tripod with a hollow connecting bolt.
- 2 Set up the Rotary Laser on a tripod.

- 3 Move the tripod and Rotary Laser so that they are approximately above the selected point.
- 4 Level the Rotary Laser as in Horizontal Setup.
- 5 Turn the Rotary Laser On.
- 6 Move the Plumb Down beam onto the selected point on the ground by raising and lowering the tripod legs.
- 7 Level the Rotary Laser again and adjust the Plumb Down beam with the tripod legs as in step 5.
- 8 Repeat step 6 until the Plumb Down beam is sufficiently accurate for your purposes.
- 9 If you wish to transfer a point to the ceiling, use the Plumb Up beam once the Rotary Laser is accurately centered.

Changing Rotation Speed

The laser beam is more visible when the rotation speed is slower. Change the speed of the rotating laser head by pressing the Speed control button. The default option is 600 rpm. Pressing on the Speed control button moves the speed cycle a step forward (600 0 60 120 300 600 rpm).

To transfer a level mark over long distances or in poor visibility, the rotation can be stopped (speed = 0 rpm). The laser beam can then be accurately positioned using the Rotation Left and Rotation Right buttons.

Scan Function

The Scan function is used to limit the area covered by the laser beam, for safety reasons or to improve visibility and sensitivity. A smaller scan segment will be more visible than a larger one. The default mode is a 360° rotation, which provides a horizontal or inclined beam throughout the work area or room. The scan button changes the mode from a 360° rotation to a 0° 10° 45° 90° 180° scanning. Press the scan button until the laser is set at the desired scan mode. The scan mark can then be accurately positioned using the clockwise and counterclockwise rotation controls.

Manual Rotation

When the laser beam is at 0° rpm or in scan mode you can manually rotate the beam using Rotation left and Rotation right keys.

Automatic Drift System

Use this function to prevent misaligning the laser level while in automatic mode. Press the Automatic drift system key after turning the laser level on automatic mode. The LED indicator, near the key, will flash, and automatic drift system will turn on. The laser level will not re-level itself or spin again after any displacement while on automatic mode. If the laser level does not rotate while the LED indicator near the Automatic drift system key flashes more frequently, then the level was shifted during its operation. Check the position of the laser beam and readjust it, if needed, before turning it on again. Disengage the automatic drift system, check / readjust the position of the device and turn it on again.

Laser Detector

The GRL-L340 is effective up to 300m (980ft) when used together with the Laser Detector. Use the Laser Detector when it is hard to see the light beam, such as outdoors or in bright rooms.

Attach the Laser Detector to a rod if the laser unit is positioned above head height.

Using the Laser Detector

- 1 Press the On/Off button.
- 2 Press to select the fine or coarse detection mode (a symbol appears on the right of the LCD, displaying which mode was selected).
- 3 Select the sound or mute mode. The sound symbol appears on the display when you select the sound option. No symbol, indicates that you are in mute mode.

- 4 Turn the detection window towards the laser beam and move the detector up and down following the direction of the arrow on the LCD.
- ◆ Lower the Laser Detector if the arrow points down (beeping sound).
- ◆ Raise the Laser Detector if the arrow points up (beeping sound).

The level marks on the sides of the Laser Detector are level with the laser beam when the horizontal beam is displayed on the LCD (continuous sound).

1. Sound/mute mode
2. On/Off button
3. Fine adjustment button



POWER SUPPLY

Rotary Laser

The GRL-L340 is supplied with on-board internal rechargeable batteries and a battery charger (AC/DC Converter).

Note: A bracket and a set of four regular type C batteries are also supplied for optional use.

- 1 Recharge the batteries when the power indicator on the control panel starts to flash.
- 2 Plug the battery charger into a power source.
- 3 Insert the plug of the battery charger into the socket on the laser level or on the battery pack.

1. Sound/mute mode
2. Bottom of laser
3. Rechargeable batteries



Note: You can charge the rechargeable battery pack inside or outside of the laser level. The Rotary Laser can be operated while recharging. It takes approximately seven hours to fully charge the batteries. Brand new or unused rechargeable batteries require three recharge / discharge cycles to attain full capacity.

- 4 The indicator LED on the battery charger lights steady red while charging and steady green when fully charged. The indicator LED will flash if not connected to the batteries.
- 5 The battery pack can be removed from the Rotary Laser by unscrewing the locking nut, holding the battery pack in place.

Note: If the laser level is not in use for a long period of time, remove the battery pack from the battery compartment. This will prevent leakage or/and corrosion damage.

Laser Detector

- 1 Press the battery compartment lock and open the battery compartment cover.
- 2 Remove the 9V alkaline battery.
- 3 Replace with a new 9V alkaline battery.
- 4 Close the cover.

Remote Control

- 1 Slide off the battery compartment cover.
- 2 Remove the spent batteries.
- 3 Replace them with two "AAA" batteries.
- 4 Close the cover.

External Power Supply

The GRL-L340 can use an external DC power source. This will minimize the risk of battery failure during operation.

Use only the combined Battery Charger-AC/DC Converter supplied with the Rotary Laser, otherwise irreparable damage will be caused to the instrument and your warranty will be invalid. The suitable power range of the combined Battery Charger-AC/DC Converter is 50 - 60Hz, 100VAC-240VAC.

Care And Maintenance

Preventative Maintenance

- 1 Store in a clean dry place.
- 2 Make sure the safety lock is closed before moving the instrument.
- 3 If the rotary laser gets wet, dry it before storage.
- 4 Do not use a fire or electric dryer to dry the instrument.
- 5 Avoid dropping the instrument, do not perform private maintenance on the instrument, and avoid continuous vibration of the instrument to clean the instrument.
- 6 Please calibrate the instrument regularly.
- 7 Please do not use strong detergents or chemicals to clean the instrument, you can use water or water and a small amount of soap to clean the instrument.
- 8 Please wipe the glass window with a soft cloth to keep it clean.
- 9 If you do not use the instrument for a long time, please remove the battery.
- 10 Make sure the device is locked and off before removing the battery.

Repairs

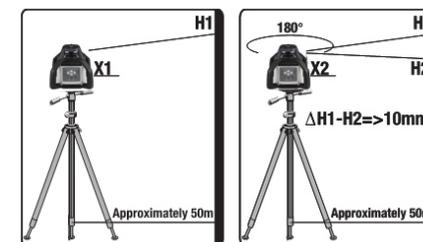
- 1 Please ensure that the repair is within the scope specified in the manual.
- 2 Please do not repair the instrument without permission. The damage of the instrument due to manual operation is not covered by the warranty.

Field Calibration Test

The Rotary Laser leaves the factory fully calibrated. Insize recommends that the level be checked regularly and especially after the unit has been dropped or mishandled.

Horizontal Plane Calibration Test

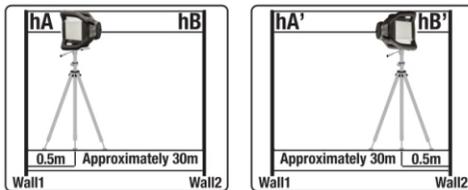
- 1 Set up the Rotary Laser approximately 50m (165ft) from a wall or measuring staff.
- 2 Position the Rotary Laser so that the X-axis is pointing in the direction of the measuring staff or wall.
- 3 Turn on the Rotary Laser.
- 4 Mark the height of the laser beam on the wall or measuring staff (h1).
- 5 Rotate the Rotary Laser 180°.
- 6 Mark the height of the laser beam on the wall or measuring staff (h2). The difference between the heights should not exceed 10mm (3/8 inch).
- 7 Repeat the procedure for the Y-axis.



Horizontal Line Calibration Test

- 1 Set up the Rotary Laser on a level surface, between two walls or measuring staffs that are about 30m (100ft) apart.
- 2 Position the laser about 0.5m (1.5ft) from 1st wall/staff.

- 3 Position the laser on vertical leveling side.
- 4 Turn on the Rotary Laser, with the Plumb up/Plumb down projecting onto walls. Check and mark points (hA and hB) on both walls.
- 5 Reposition the laser 0.5m (1.5ft) from 2nd wall/staff, pointing in opposite direction. Check and mark points (hA' and hB') on both walls.
- 6 $\Delta 1 = hA - hA'$
 $\Delta 2 = hB - hB'$
- 7 The difference between $\Delta 1$ and $\Delta 2$ should be less than 6mm (1/4 inch).



Specification

Working range: indoor 50m, outdoor 300m(with detector)

Self leveling range: $\pm 5^\circ$

Horizontal/vertical beam accuracy: $\pm 0.1\text{mm/m}$

Main laser type : 520~540nm, class 2, <1mW

Auxiliary laser type: 645~655nm, class 2, <1mW

Rotating speed: 0/60/120/300/600rpm

Scanning range: 0/10/45/90/180/360°

Setting slope: X axis: $\pm 5^\circ$, Y axis: $\pm 5^\circ$

Operation temperature: $-20\sim 50^\circ\text{C}$

Maximum remote control distance: 20m

Remote controller Power: 2x1.5V AAA batteries

Main unit Power: NI-MH batteries or 4x1.5V C batteries

Detector Power: 1x9V battery

Dimension: 210x210x213mm

Weight: 2.5kg