

Automatic Self-Leveling Rotary Laser FRE-202

Operating Manual



1. Functions

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



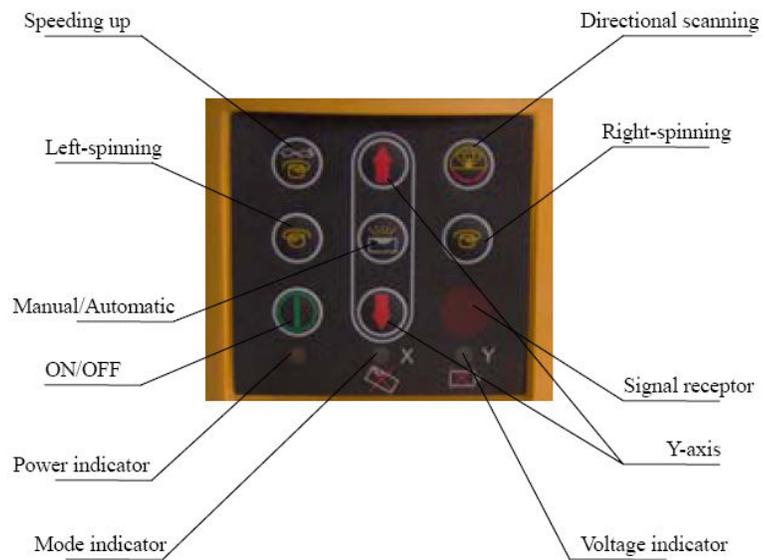
1. Introductions

2.1 Main body



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2.2 Panel



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2.3 Utilities of Panel

- (1) Voltage indicator: when it lights, the rechargeable batteries of instrument need to be charged or #5 dry batteries to be renewed.
- (2) Power indicator: when it lights, the instrument is starting up. Otherwise it is closing down.
- (3) Mode indicator: when it lights, the instrument is leveling manually. When it winks, it stays in alarm. (The slope of instrument is out of leveling-range).
- (4) On/Off: Controlling the state of power.
- (5) Speeding-up: Circling knob. Speed of scanning includes 5 stages:
0-60-120-300-600 r.p.m.
- (6) Directional scanning: Circling knob. Angle of scanning includes 5 levels: 0° - 10°
 45° -90° -180°
- (7) Manual/Automatic: Controlling the mode of leveling.
- (8) Left-spinning: Making the laser head step-move counter-clockwise, when the laser head is power off or it is scanning directionally.
- (9) Right-spinning: Making the laser head step-move clockwise, when the laser head is power off or it is scanning directionally.
- (10) Y-axis: Adjusting the slope of Y-axis, when the instrument is working in manual mode.

3. Directions

3.1 Battery Installment

Rechargeable batteries or #5 dry batteries are all available for this instrument.

- (1) Take down the cover of battery case after loosening the screw on it.
- (2) Put the batteries into the case according to the right electrode.
- (3) Put back the cover on the case then tighten the cover screw.

3.2 Instrument Placement

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

3.3 Operations

3.3.1 ON/OFF

Press the Key ON/OFF, when power indicator lights and mode of automatic leveling starts up.

When Voltage indicator lights, it shows the voltage of batteries is insufficient. Then the rechargeable batteries of instrument need to be charged or #5 dry batteries to be renewed.

Press the key ON/OFF again to close down the instrument when power indicator goes 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 head 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 $+5^{\circ}$, when mode indicator and the laser beam will wink at the same time. Then place the instrument properly.

Notices: Instrument will close down automatically after five minutes alarm.

3.3.3 Spinning

(1) Continuous Spinning

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

(2) Stepping spinning

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

3.3.4 Directional scanning

(1) Press the key Directional scanning, and then the laser head will scan directionally.

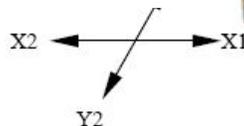
If press the key repeatedly, angle of scanning of the laser head will continuously change as follows: 0° - 10° 45° - 90° 180° - 0°

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

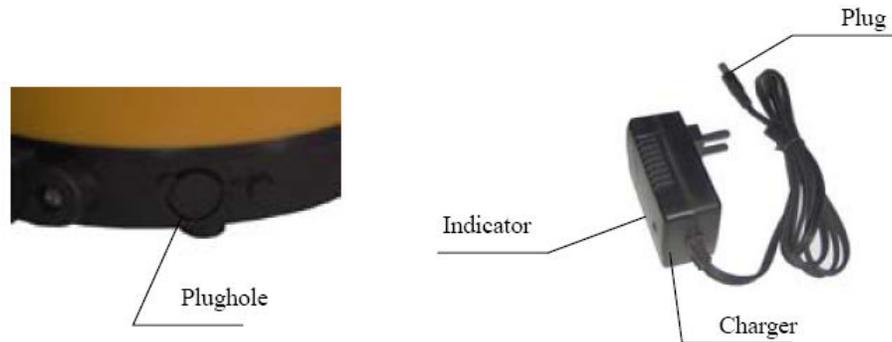
3.3.5 Slope Adjustment

Press the Key Manual/Automatic when mode indicator will light; the instrument enters the mode of manual leveling.

OR
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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 of charger winks, it shows the course of recharging has ended.

Notices:

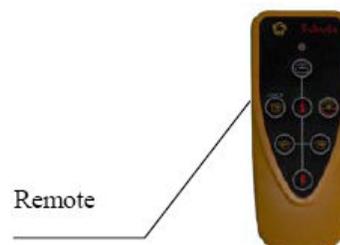
- (1) Using the standard rechargeable batteries of the instrument, recharging will be finished within 7 hours.
- (2) Power required for the charger: Frequency: 50-60HZ, Voltage: 85-265V.
- (3) Charging and using of the instrument can progress simultaneously.
- (4) If keeping the instrument in storage (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 batteries need to be recharged and discharged three times to attain the capacity required.

5. Remote

The remote 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: 30M; outdoor: 20M).

The remote panel includes 7 keys; the indicator on the device will wink to show the operating signal has been sent out once pressing any key.

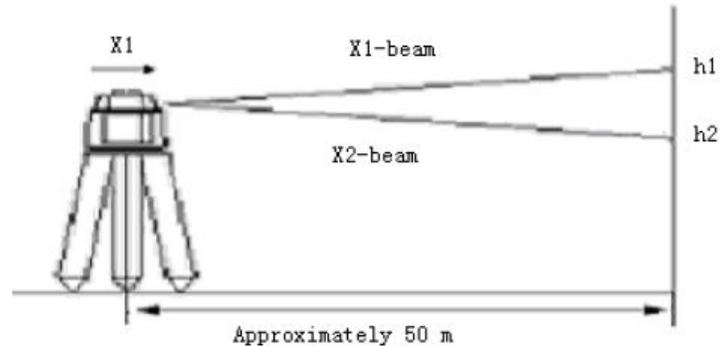


Functions fulfilled by the remote listed as follows:

- (1) Spinning: Operating method referring 50 3.3.3
- (2) Directional scanning: Operating method referring to 3.3.4

6. Accuracy 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:



- (3) After switching on the power, use the laser detector measuring the h1 of X1-beam on the wall or scale plate.

D-value between h1 and h2 ought to be less than 10mm.

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

7. Specifications:

Leveling Accuracy	$\pm 20''$
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	$\pm 5^\circ$ (Y-axis)
Light Source	Laser Diode, wavelength: 635nm
Remote Distance	Approximately 20m
Working Temperature	-20°C -- $+50^\circ\text{C}$ (-4°F -- $+122^\circ\text{F}$)
Power	DC 4.8-6V(4 section of NI-MH batteries or 4 section of 2# dry batteries)
Hours in continuous use	Approximately 15 hours
Water-proof	IP 64
Dimension	120 (D) \times 135 (H) mm
Weight	1.1kg