

Self-levelling rotary laser

Operating Manual



WARNING AND CAUTION

- * While the instrument is operating, be careful not expose your eyes to the emitting laser beam . exposure to a laser beam for along timer may be hazarddous to your eyes (laser beam : equivalent to class 2 laser lever
- * Do not try to dismantle the instrument . Have it repaired by your dealer or supplier . Dismantling it by yourself may worsen the problem.
- * When attsching the instrument to a tripod, make s ure 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, beware of the tripod shoes wich are sharp. These sharp points allow tripod to be securely positioned on the ground.
- * Operate this laser this laser product with the height 0 laser voiding 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 mesure by removing the batteries so that the laser will not be emitted

PRECAUTION

- * The instrument should not be store or used in extreme temperature or job on place subject to rapid change of temperature. The instrument may not function properly if use in out of the ambient temperature range.
- * Store inside the carrying case and place in a dry area, not subjet to vibration . dust or high moisture .
- * When storage and usage temperature are widely different , leave the instrument in the case unit it can adjust to the surronding temperature.
- * The instrument should be transported or carried carefully to avoid impact and vibration
- * The instrument should be stored in the carrying case and packed with cushionning material .Always handle the item with care.
- * Be sure to observe the items in the instruction manual for proper use of the instrument

1. FUNCTIONS

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

Up right-setting



Horizontal-setting



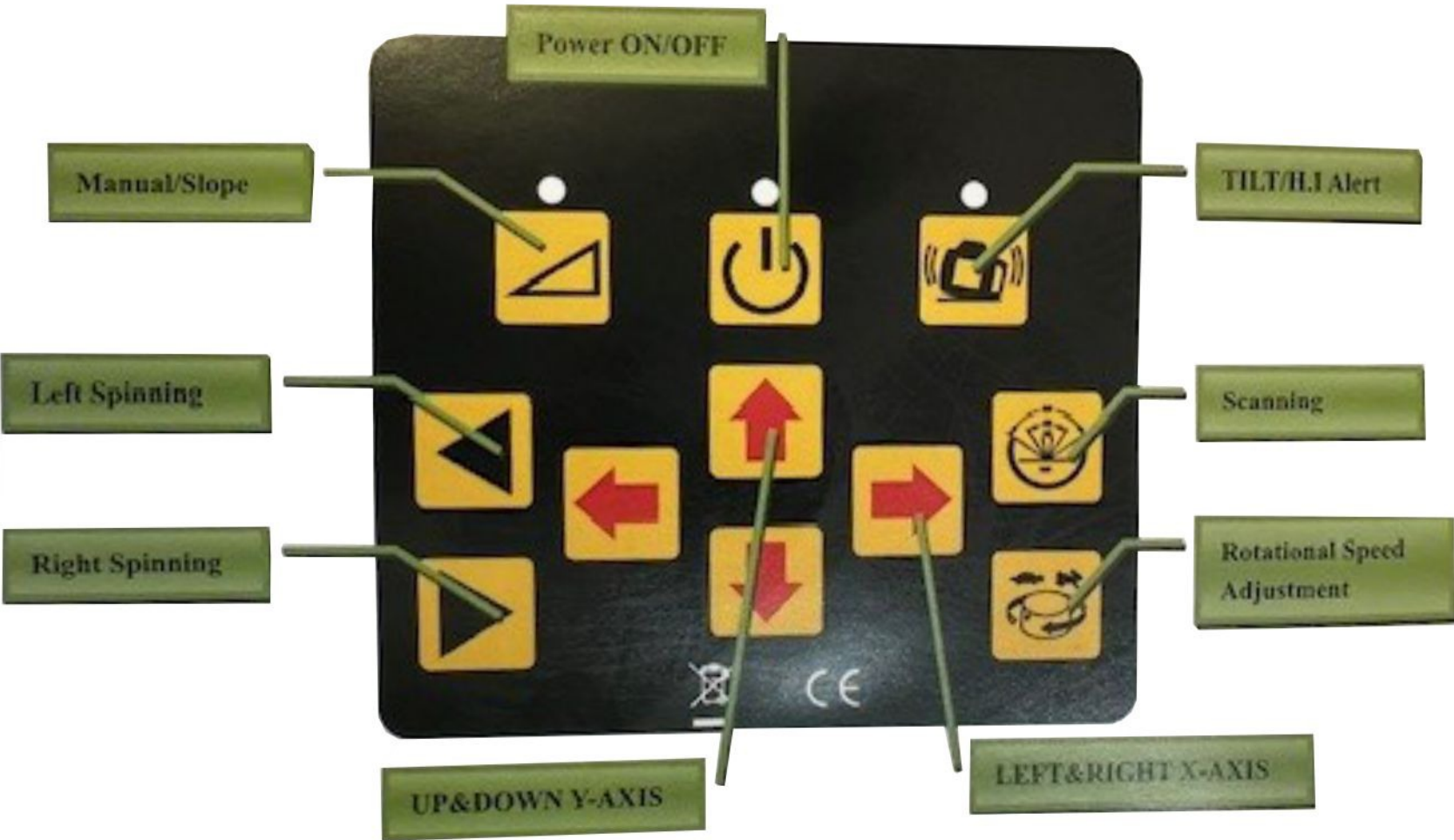
When this instrument is set upright, it will emit laser-beam to form a horizontal scanning surface and a plumb line automatically. When its horizontally, it will form a plumb scanning surface and a vertical line :

2. Introductions

2.1 Main body



2.2 KEYPAD PANEL



2.3 UTILITIES OF PANEL

- (1) ON/ OFF : Controlling the state of power.
- (2) TILT /H1 Alert :Warns the user for a misaligned device
- (3) Manual / Automatic : Controlling the mode of levelling .
- (4) Indicator of automatic drift system model: when the light is twinkling slowly, it is in Automatic Drift system model. When the light is twinkling quickly, the laser level will not level.
- (5) Speeding-up : Circling knob : Speed of scanning 5- knots : 0-60-120-300-600 R.P.M.
- (6) Directional scanning : Circling knob. Angle of scanning includes 5 levels : 0-10-90-180
- (7) Left-spinning: Making the laser module step-move counter-clockwise, when the laser module is power off or it is scanning directionally.
- (8) Right-spinning : Making the laser module step-move clockwise, when the laser is power off or it is scanning directionally.
- (9) X-axis: Adjusting the slope of X-axis,when the instrument stays in manual mode .
- (10) Y-axis : Adjusting the slope of Y-axis when the instrument stays in manual mode

3.DIRECTIONS :

3 .1 Battery Installment

4X C size Ni-MH Rechargeable batteries can be used in laser

Please put the battery pack which is supplied specialized by manufacturer.
Please put the battery pack into the fixed place at the bottom of the laser. Then
tight all screws.

3.2. Instrument Placement

3.2.1 Horizon 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.

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

3.3 Operation :

3.3.1 Power

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

When power and indicator lights, it shows the voltage of the 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 goes out .

3.3.2. Leveling

Press the ON /OFF to bring automatic leveling into function when the laser beam begin to wink. After automatic leveling, the laser module will rotate at the speed of 600R.P.M

.
If the instrument is placed improperly , or the slope of instrument exceeds the range of +- 5 degree, at that moment mode indicator and the laser beam will wink together. then place the instrument properly .

3.3 Operation :

3.3.3 Spinning

(1) Continuous Spinning

Press the Key " Rotationnal speed adustment " To control the spinning speed of the laser module.If press the key repeatedly , the spinnig spees of the laser module will continuously change as follows : 0-60-120-300-600-0 RPM

(2) Stepping spinnig

Locate the key Speeding-up at speed of 0 rmp the laser module will stop spinning. And press the key Right-spinning , the laser module will step move counter-clockwise.Then if press the key Left-Spining will step-move -counter-clockwise.

3.3.4 Directional scanning

(1) Locate the key Speeding-Up - at speed of r.p.m , the laser module will stop spinnig. Press the key-directionnal scanning : the laser module will scan directionnally. If press the key repeattedly, the angle of scanning of lasermodule will continuously change as follows : -0-10 45 90 180 -0 .

(2) Press the Key Left-sinning or the key right-spinning to change the direction of

scanning .

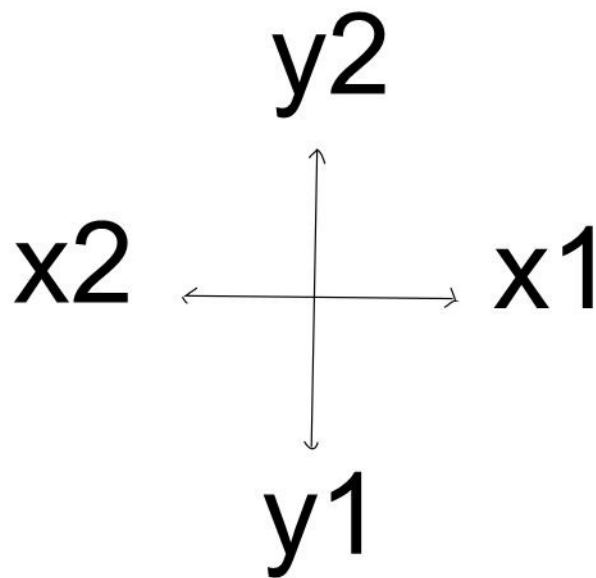
3.3.5 Slope adjustment

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

Press the key Manual /Automatic when mode indicator lights the instrument enters the mode of manual levelling .

(1) Slope of X-axis

a. Aim the x1-beam to 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

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

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

(3) Quick 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-levelling 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 (Charge jack at the battery pack .)

If the red indicator lights, it shows the batteries are in charging.

If the green lights, it shows the course of 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: 50-60 HZ: 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

5 Remote .

The remote control of instrument adopts the infrared technique.

Aim the aperture of infrared ray to the instrument (as depicted below) to bring remote controlling into a function (Available distance : indoor : 30m ; outdoor 20m. The keypad panel includes 9 keys ; the indicator on the RC will wink to show the operating signal has been sent out once pressing any key .



Remote control

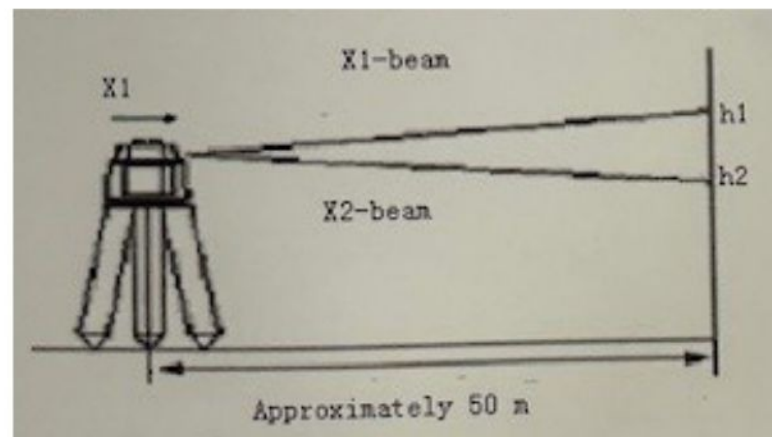
Functions fulfilled by the remote as follows :

- (1) Rotating : 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

6. Accuracy Checking

6.1 Horizontal -surface-Checking

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



- (2) After switchin on the power , use the laser detector measuring the H1 of X1-beam on the wall or scaleplate.
- (3) Loose the screw of the tripod, turn around the instrument for 180degree to mesure

h2 of X2-beam on the wall plate or scale plate . the method should be the same with h1.

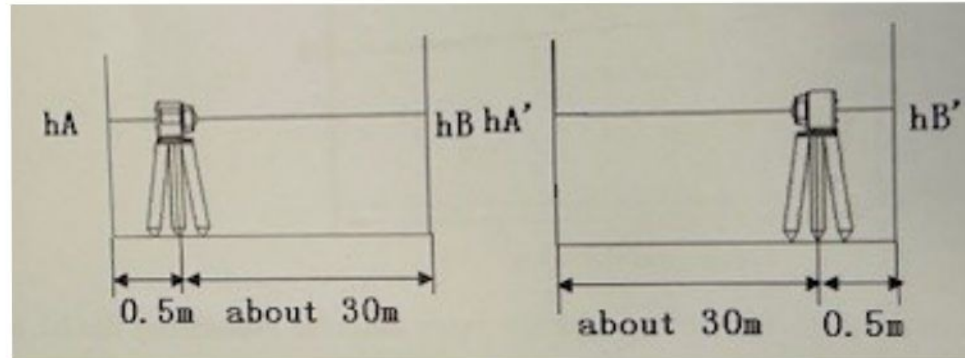
D value between h1 and h2 ought to be less than 10mm

:

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

6.2 Horizontal -line Checking

(1) Place the instrument between 2 walls with the distance of 30 m (or two scaleplate 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 be less than 6mm

.

7. Specifications

Levelling Accuracy	Horizontal & vertical : +/- 20" +/- 1mm @10m
Levelling Range	+/- 5 degree
Mesuring Range	Diameter 500m (with laser detector)
Spinning Speed	0, 60, 120, 300 , 600 RPM
Directionnal - scanning Angle	0 deg. 10deg. 45deg 90deg 180deg
Slope adjusting Range	+/- 5deg (Bi-directional)
Light-Source	10MW red diode,wavelength:635nm 7MW green diode,wavelength:520nm

Down Point Diode	Accuracy +-1mm /1.5m:
Remote controlling Distance	Approximately 20m
Working temperature	-20 deg -cel + 50 deg Cel (4 deg.F. - + 122 deg. F)
Power Supply	DC 4.8-6V 4 section of C size Rechargeable alkaline batteries
continuous working time	Aprox : 18 hours
Waterproof	IP-54
Dimension	160 (l) x 160(w) x 185(H)mm
Weight	3.0 kg