

INSTRUCTION MANUAL

ROTARY LASER LEVEL

GPR-R4 / R4H / G4

To help you use this instrument conveniently, we provide a specific operation manual for you. Please read the manual carefully before you use the instrument and keep it well.

FOR YOUR RECORD

Place Of Purchase :

Date Of Purchase :/...../.....

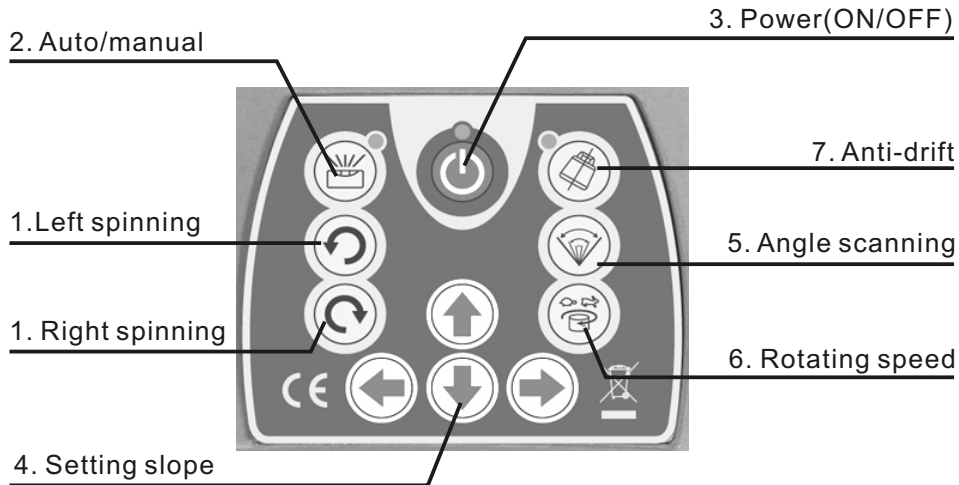
Contents

1.1	Main body	03
1.2	Panel	04
1.3	Operation instrument	05
2.	Directions	06
2.1	Battery Installment	06
2.2	Instrument Placement	06
2.2.1	Horizontal scanning (manual mode)	06
2.2.2	Vertical scanning (manual mode)	06
2.3	Operations	07
2.3.1	Power	07
2.3.2	Leveling	07
2.3.3	Spinning	08
2.3.4	Directional scanning	08
2.3.5	Slope Adjustment	09
3.	Recharge battery	10
4.	Remote	12
5.	Accuracy Checking	13
5.1	Horizontal-surface Checking	13
5.2	Horizontal-line Checking	14
6.	Specifications	16

1.1 Main body



1.2 Panel



1.3 Operation instrument

1. Left / right spinning: After the laser head speed is set on 0 r.p.m. the left/right button can change the laser position.
2. Auto/manual: Push button to switch manual or auto leveling.
3. Power(ON/OFF): Controlling the state of power.
4. Setting slope (manual mode): The arrow button for upper & down & left & right can adjust X and Y axis.(Touch panel direction is Y axis)
5. Angle scanning: Setting 5 sections angle scanning, 0° - 10° - 45° - 90° - 180° , the Left/right button can change the laser position.
6. Rotating speed: Setting 5 sections rotating speed, 0-60-120-300-600 r.p.m.
7. Anti-drift: The Anti-Drift System, when ON, will signal to the operator that the instrument has been moved out of level.
The ADS LED will blink slowly when instrument in Anti-Drift System.
The ADS LED will blink quickly when instrument moved out of level.

2. Directions

2.1. Battery Installment

- (1) Take down the cover of battery case at the bottom of the instrument.
- (2) Put the batteries into the case according to the right position.
- (3) Lay the cover on the box, and then tighten all screws.

2.2 Instrument Placement

2.2.1 Horizontal scanning (manual mode)

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

2.2.2 Vertical scanning (manual mode)

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

2.3 Operations

2.3.1 Power

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

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

Press the Key ON/OFF to close down the instrument.

2.3.2 Leveling

When turned on, the laser beam will start to blink, It will stop winking after finish leveling.

If the instrument is placed improperly, or the slope of instrument exceeds the range from -5° to $+5^{\circ}$, the mode indicator and the laser beam will wink at the same time. Then place the instrument properly.

2.3.3 Spinning

(1) Change speed

Press the rotating speed button 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. And press the Key Right- spinning, the laser head will step-move clockwise. If then press the key Left-spinning, the laser head will step-move counter-clockwise.

2.3.4 Directional scanning

1. Press the Key Directional scanning: the laser head will scan directionally. If press the key repeatedly, the angle of scanning of laser head will continuously changes 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.

2.3.5 Slope Adjustment

When the instrument is set upright 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.

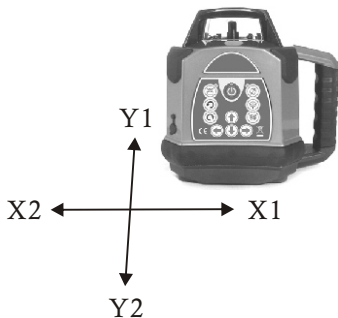
(1) Slope of X-axis

1. Aim the X1-beam to the direction of the slope required to adjust, as depicted below:
2. Press the key ← or → to move the laser beam up or down.

(2) Slope of Y-axis

1. Aim the Y1-beam to the direction of the slope required to adjust.
2. Press the key ↑ or ↓ to move the laser beam up or down.

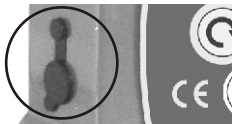
(3) Press the key Manual/Automatic again when mode indicator goes out, the instrument will enter mode of automatic leveling.



3. Recharge battery

When the batteries needs to be charged, connecting the charger with AC. Insert the plug of charger into the plug hole at the bottom of the instrument (As depicted below).

If the indicator of charger lights, it shows the batteries are being charged. If the indicator light of the charger winks, it shows the course of recharging has ended.



Plug hole



Charger

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) needs 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.

4. 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: 20M).

The tele controlling panel includes 9 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 as follows:

1. Spinning: Operating method referring to 2.3.3.
2. Directional scanning: Operating method referring to 2.3.4.
3. Slope adjustment: Operating method referring to 2.3.5.

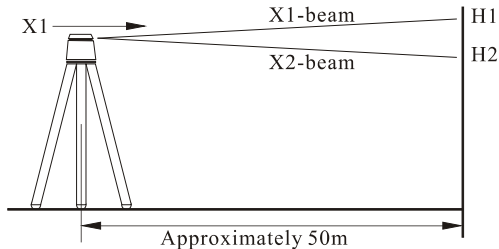


Remote

5. Accuracy Checking

5.1. Horizontal-surface Checking

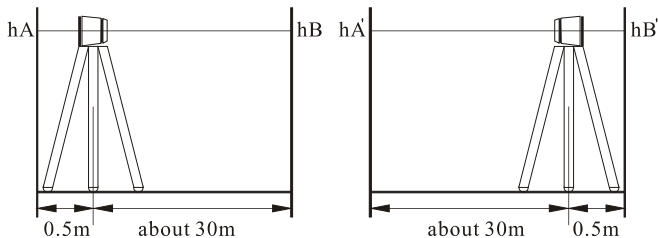
1. Place the instrument at the point of 50m in front of wall (or set a scale plate at the point of 50m away from the instrument), and then adjust the level of the base approximately to aim the X1 to the wall (or scale plate), as depicted below:



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, 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
4. Check the Y-beam in the same way.

5.2 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): 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

6. Specifications

Model no.	GPR-R4	GPR-R4H	GPR-G4
Light source	Red beam	Red beam-High power	Green beam
	laser diode, wavelength 635nm		Wavelength 532nm
Leveling accuracy	$\pm 10'' / \pm 20''$		
Self-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	0°, 10°, 45°, 90°, 180°		
Setting slope	$\pm 5^\circ$ (Dual axis)		
Down point	Accuracy: $\pm 1\text{mm}/1.5\text{m}$		
Remote controlling Distance	Approximately 20m		
Power Supply	DC 4.8-6V (NI-MH rechargeable)		
Working Temperature	-20°C~+50°C (-4°F~+122°F)		-10°C~+45°C (14°F~+113°F)
Water-proof	IP-56		
Dimension	160(L)x160(W)x185(H)mm		
Weight	2kgs		

目錄

1.1	主機	18
1.2	按鍵面板	19
1.3	按鍵功能及用途	20
2.	儀器的使用	21
2.1	安裝電池	21
2.2	安置儀器	21
2.2.1	水平掃描(手動模式)	21
2.2.2	垂直掃描(手動模式)	21
2.3	操作	22
2.3.1	電源開關	22
2.3.2	整平指示	22
2.3.3	旋轉	23
2.3.4	區間掃描	23
2.3.5	坡度調整	24
3.	電源	25
4.	遙控	26
5.	精度檢查	27
5.1	水平面的檢查	27
5.2	水平線的檢查	28
6.	技術指標	29

1.1 主機

雷射頭

雷射窗口

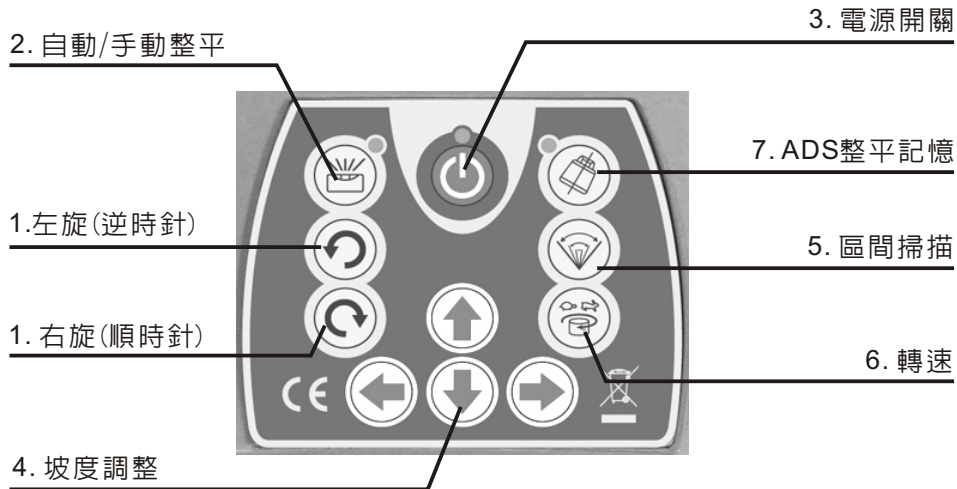
控制面板

防滑把手

充電器插孔



1.2 按鍵面板



1.3 按鍵功能及用途

1. 左旋(逆時針) / 右旋(順時針)：旋轉設定停止後，可以左右調整光點至指定位置。
2. 自動/手動整平：按下後儀器無法自動整平，此時就可以設定坡度調整。
3. 電源開關：儀器電源開關。
4. 坡度調整：上下左右箭頭可以調整雷射X軸、Y軸的坡度（面板方向為Y軸）。
5. 區間掃描：設定五段雷射區間掃描， 0° -10° -45° -90° -180° ，利用正轉/反轉按鍵可以轉到您所需的位置。
6. 轉速：設定五段雷射轉速，0-60-120-300-600r.p.m.
7. ADS整平記憶：防止儀器在整平狀態下，因受到震動而產生位移。燈慢閃時，處於防震動模式；燈快閃時，儀器因受到震動而處於不整平狀態。

2. 儀器的使用

2.1 安裝電池

- (1) 將位於儀器底部的電池盒蓋取下。
- (2) 按電池盒上指示的極性方向放入電池。
- (3) 將電池盒蓋壓上，旋緊所有的螺絲。

2.2 安置儀器

2.2.1 水平掃描(手動模式)

將儀器放置於腳架上，或置於一穩固的平面上，或懸掛在牆面上。儀器基本豎直，傾斜度不超過 $\pm 5^\circ$ 即可。

2.2.2 垂直掃描(手動模式)

將儀器放置於一穩固的平面上，傾斜度不超過 $\pm 5^\circ$ 即可。

2.3 操作

2.3.1 電源開關

按"電源開關鍵"，開機狀態指示燈亮，自動整平功能啓動。

當開機狀態指示燈閃爍，表示電池電量不足。此時，應對主機可充電電池充電。

若需關機，再按"電源開關鍵"，開機狀態指示燈滅，儀器關閉。

2.3.2 整平指示

按"電源開關鍵"，自動整平功能啓動，雷射光束閃爍，完成自動整平後，雷射光束停止閃爍，雷射頭按約600r.p.m.的速度右旋。

如果儀器安置不當，或由於其他原因造成儀器傾斜度超過 $\pm 5^\circ$ 時，自動/手動切換模式指示燈和雷射光束同時閃爍，此時應重新安置儀器。

2.3.3 旋轉

(1) 改變轉速

按"轉速鍵"可調節雷射頭旋轉速度。

連續按動此鍵，雷射頭按0-60-120-300-600r.p.m.迴圈變速。

(2) 單步轉動

按"轉速鍵"至 0r.p.m.，雷射頭停止旋轉，此時，按右旋鍵，雷射頭順時方向單步轉動；按左旋鍵，雷射頭逆時針方向單步轉動。

2.3.4 區間掃描

(1) 按"區間掃描鍵"，雷射頭作定向掃描。連續按動此鍵，雷射頭的掃描寬幅按 0° - 10° - 45° - 90° - 180° - 0° 迴圈變化。

(2) 按"右旋鍵"或"左旋鍵"，可轉動掃描方向。

2.3.5 坡度調整

本儀器豎直放置作水平掃描時，可在X、Y方向調整坡度。

按“自動/手動整平鍵”，自動/手動整平模式指示燈亮，進入坡度調整模式。

(1) X方向調整坡度

1.如右圖所示，將儀器的X1對準需要調整坡度的方向。

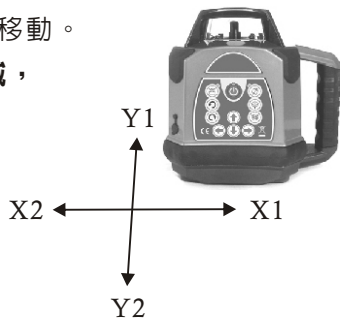
2.按“←”或“→”鍵，雷射光束向上或向下移動。

(2) Y方向調整坡度

1.將儀器的Y1對準需要設置坡度的方向。

2.按“↑”或“↓”鍵，雷射光束向上或向下移動。

(3)再按手動/自動安平模式鍵，設置指示燈熄滅，
退出坡度設置模式，進入自動安平模式。

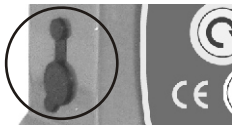


3. 電源

當控制板上的電源電壓指示燈亮時，應及時對電池充電。將充電器電源插頭插入交流電源中，充電器的充電插頭插入儀器底部的充電插孔中（如下圖所示）。

充電指示燈亮，表明正在對電池充電。

充電指示燈閃爍，表明充電完成。



Plug hole



Charger

注意：

- (1) 使用本儀器備用的可充電電池，大約7小時可完成充電。
- (2) 充電器交流電源電壓的適應範圍：頻率50-60HZ；電壓85V-265V。
- (3) 本儀器可邊充電，邊使用。
- (4) 儀器貯存（即較長時間不使用）時，應將電池（可充電電池）取出。
- (5) 新電池或較長時間未使用的電池，應反覆充放三次即可達到規定的容量。

4. 遙控

本儀器採用紅外線遙控(如圖)。

將遙控器的發射窗對準儀器方向，可實現遙控操作(遙控距離20m)。

遙控器面板共設9個鍵，每按其中一個鍵，面板上的指示燈都將閃亮一下，表示遙控信號已發出。

本遙控器可對儀器做下列功能遙控：

- (1) 旋轉，具體操作同2.3.3。
- (2) 區間掃描，具體操作同2.3.4。
- (3) 坡度調整，其操作同2.3.5

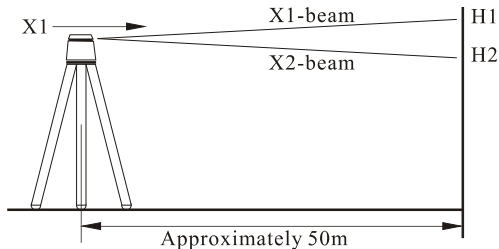


Remote

5. 精度檢查

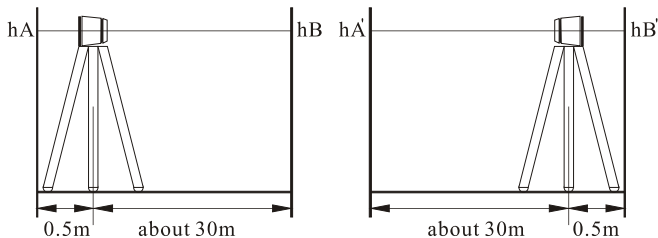
5.1 水平面的檢查

- (1) 如圖所示,離牆面約50m處安置儀器(或在距儀器約50m處豎一尺規),使儀器基座基本水準,X1朝向牆面(或尺規)。
- (2) 打開電源,用雷射接收器在牆面(或尺規)上測出X1方向雷射光束的位置 h_1 。
- (3) 鬆開腳架螺絲,將儀器轉過 180° ,X2方向朝向牆面(或尺規),測出X2方向雷射光束的位置 h_2 。
 h_1 與 h_2 的差值應小於10mm。
- (4) 用同樣方法檢查Y方向。



5.2 水平線的檢查

- (1) 在相距約30m的兩牆之間設置儀器，或在儀器的兩端設置尺規，尺規間的距離約30m。
- (2) 分別按圖示安置儀器(臥置)。調整儀器。
- (3) 打開電源，分別測量二牆面(或尺規)上雷射光束中點的位置， h_A 、 h_B 和 h_A' 、 h_B' 。
- (4) $\Delta 1 = h_A - h_A'$
 $\Delta 2 = h_B - h_B'$
 $\Delta 1$ 和 $\Delta 2$ 的差值應小於6mm。



6. 技術指標

型號	GPR-R4	GPR-R4H	GPR-G4
雷射光源	紅光	高功率紅光	綠光
	雷射二極體,波長635nm		波長532nm
精度	±10"/±20"		
自動整平範圍	±5°		
工作範圍	直徑: 500m (搭配接收器)		
轉速	0,60,120,300,600 r.p.m.		
掃描區間	0°, 10°, 45°, 90°, 180°		
坡度調整	±5° (雙軸)		
下點	精度:±1mm/1.5m		
遙控距離	約20m		
電源	DC 4.8-6V(NI-MH 可充式)		
工作溫度	-20°C~+50°C (-4°F~+122°F)		-10°C~+45°C (14°F~+113°F)
防水等級	IP-56		
尺寸	160(L)x160(W)x185(H)mm		
重量	2kgs		

Memo



ISO 9001:2000

R4-2010-01-13