Auto-leveling Rotating Laser (RL430G)

Congratulations on your choice of this DaveBell Auto-leveling Rotating Laser. For the purpose of long-term use of this instrument, we suggest you to read this instruction manual carefully before using it.

Contents

Features and Functions

RL430G auto-leveling rotating laser which could project visible horizontal laser plan. It could project the accurate laser slope by setting the accurate grade value. Its extensive functions bring great convenience to set accurate horizontal, vertical and plumb references for indoor and outdoor lay out and calibrations. This kind of product is featured by easy manipulation and wide applications.

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1. Features

Electronic leveling, laser stop rotating and sound indication when beyond range

- 360°rotating, could work vertically and horizontally.
- Adjustable rotating speed and scan angle.
- Slope scanning function could set the grade value for the axis accurately.
- TILT mode has the unleveled alarm function, the laser head stop rotating to insure the construction accuracy when the instrument is hit.
- Wind save function could set the instrument to be low sensitive, to insure the reliable wild working performance
- MAN mode could set the instrument into the enforcing rotating status.
- LCD display with backlight illumination
- Accuracy self-calibration function
- Sleep function
- Timing auto-off function
- Remote control operation function
- Connecting with the tripod through the 5/8” screw thread
- Various accessories of elaborate design can bring usage expansion
- Rainproof and dustproof

2. Usage safety

- Laser output sign lies near the output aperture.
- Do not stare into laser beam directly
- Do not disassemble the instrument or attempt to perform any internal servicing. Repairs and servicing could be performed only by authorized service centers.
- The instrument complies with the safety classification standards of laser radiation.

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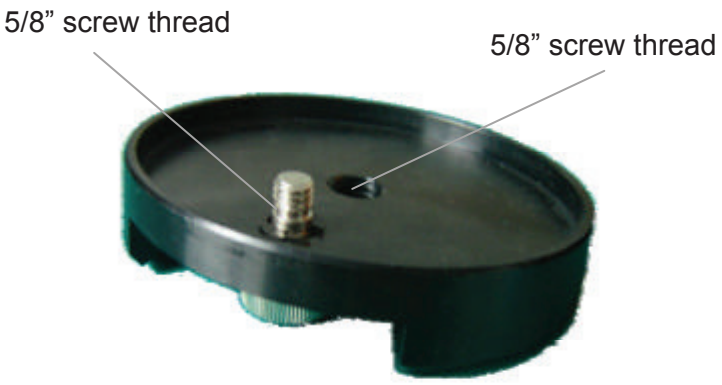
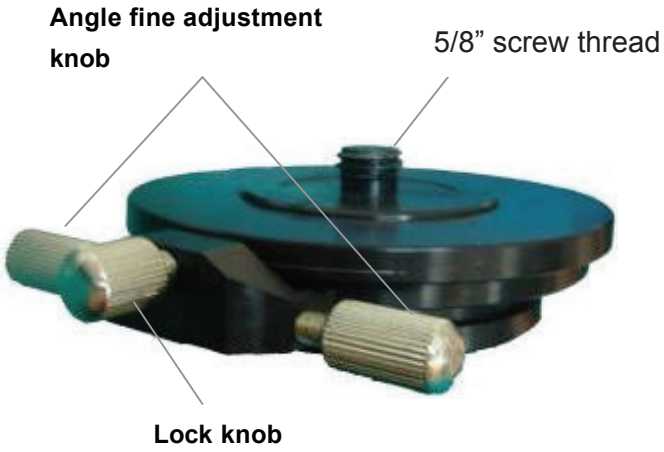
3. Nomenclature



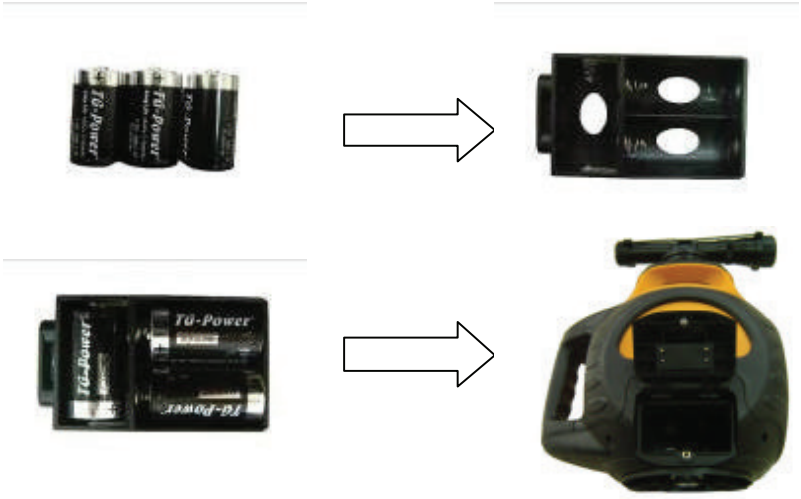


Angle adjusting bracket

4. Operation Instruction

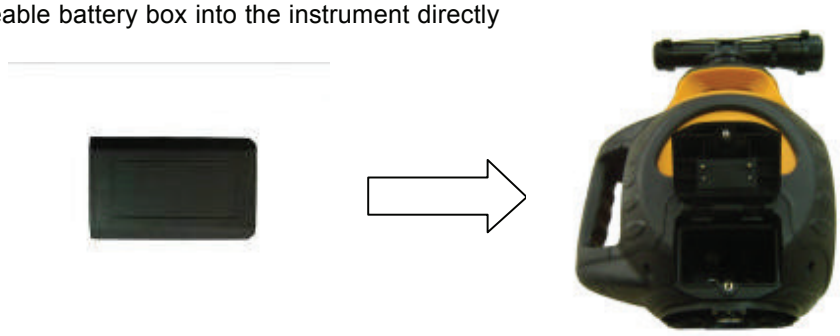
4.1 Battery installation

a) Put 3*D alkaline batteries into the battery box follow the marked polarity direction, and install the battery box to the instrument.



Installation of alkaline battery

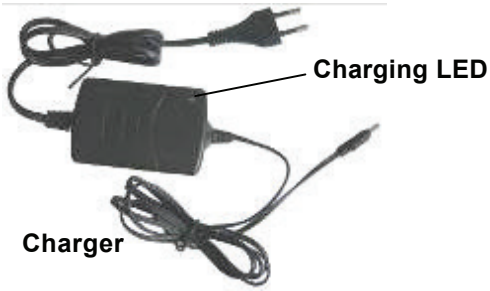
b) Install the rechargeable battery box into the instrument directly



Installation of rechargeable battery box

4.2 Charge the rechargeable battery

Charge the rechargeable battery directly by insert the charger into the charging jack. The LED is red during the charging process; the LED will turn green when the battery is full.



Charge the rechargeable battery box directly

Charge the rechargeable battery box on the instrument

Note:

a) Please charge the rechargeable battery when the battery is empty (the power supply LED flash mean the battery is already empty). That could extend the battery service life.

b) Please charge the rechargeable battery every 2-3 months, after get the instruments.

4.3 Instrument placement

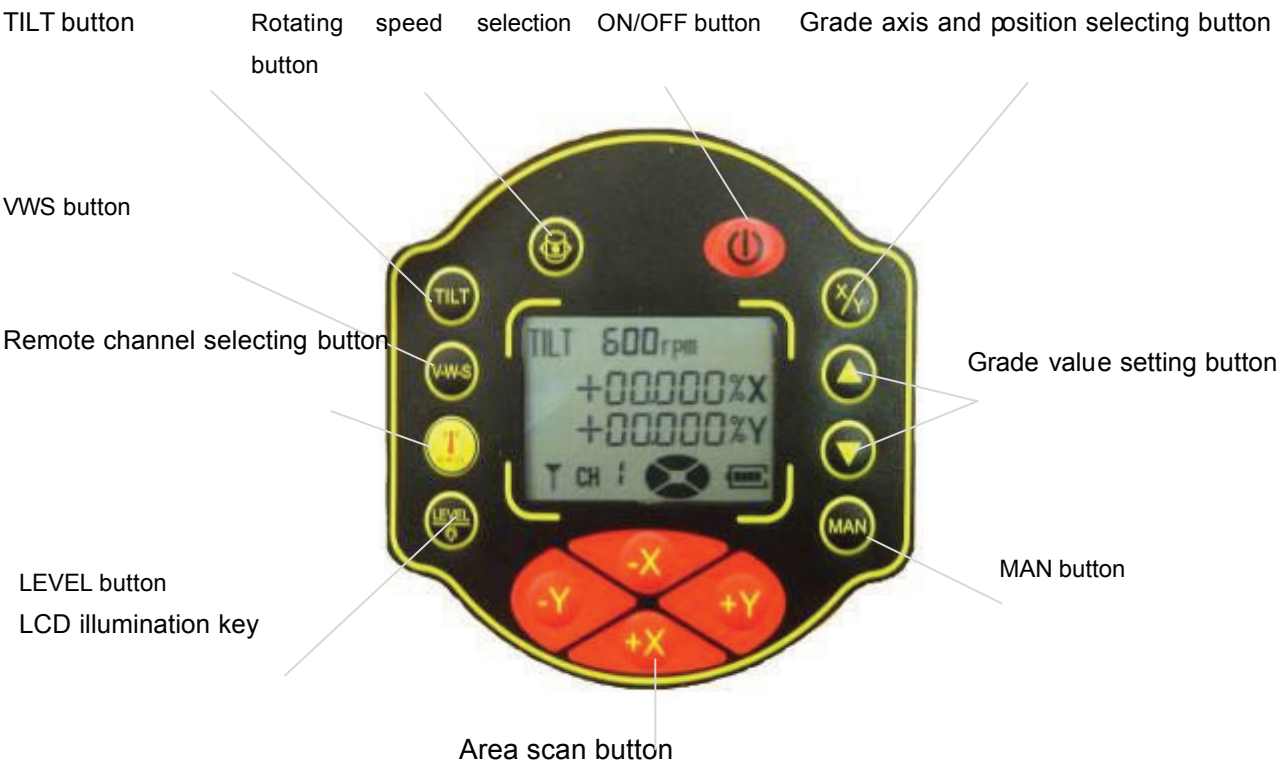
4.3.1 Place the instrument on the platform directly

4.3.2 Horizontal placement on the platform by vertical bracket (When the setting grade is more than 12%, you need to pre-tilt the instrument)

4.3.3 Set the instrument on the tripod by the 5/8" screw thread

4.3.4 Install the instrument on the tripod by the angle adjusting bracket (it could realize accurate collimation by the angle adjusting bracket)

4.4 Keypad


TILT button
Rotating speed selection button
ON/OFF button
Grade axis and position selecting button
VWS button
Remote channel selecting button
Grade value setting button
LEVEL button
LCD illumination key
MAN button
Area scan button
TILT
VWS
LEVEL
MAN
-X
-Y
+Y
+X
TILT 600rpm
+00.000%X
+00.000%Y
CH 1


TILT mode indication
Rotating speed indication
VWS mode indication
X axis grade value
MAN mode indication
Y axis grade value
Remote status indication
Remote channel indication
Area shield indication
Power indication
TILT 600rpm
VWS +00.000%X
MAN
+00.000%Y
CH 1

4.5 On/OFF button

4.5.1 Press the On/OFF  button, the instrument is on and the LCD display the current status.

4.5.2 After power on, the instrument check the battery power automatically and the LCD will display the battery power status accordingly.

4.5.3 After power on, the instrument is in auto-leveling status, the rotating speed is 600rpm after self-leveled.

4.5.4 After power on, the TILT mode is the preliminary status (TILT sign blinking slowly). If no shake in 30 sec after leveled, the TILT mode is effective.

4.5.5 After power on, the grade value will display +00.000%.

4.5.6 After power on, the remote channel will display CH1.

4.5.7 After power on, if there is a matched remote control which is power on, the remote status will display  , if there is not a matched remote, it will display  .

4.5.8 After power on, the VWS, MANA mode is not valid. The LCD will not display the VWS and MAN status.

4.6 Grade axis and position selecting button 

4.6.1 Long-press this button (hold more than 2 seconds), enter the X-axis grade setting mode, the X axis symbol (+) and axis direction symbol “X” will flash. Then shot-press this button could move the symbol. Press button  to change the symbol position and value, long-press this button to change continuously;

4.6.2 When X axis setting is down, long-press this button to enter the Y-axis grade setting mode, the Y axis symbol (+) and axis direction symbol “Y” will flash, setting method is same as X axis.

4.6.3 After Y axis grade setting is done, long-press this key to confirm the grade setting, instrument will quit the grade setting mode and start to work under the confirmed grade.

Note:

If there is no operation in 8 seconds in the grade setting mode, the instrument will confirm the current grade setting data.

4.7 Rotating speed selection button

Press this button to select the rotating speed to be 600rpm or 1100rpm;

4.8 Area shielding button 

Press this button could setting the area scan mode (4 area ---- +X、-X、+Y、-Y), when the corresponding area is blank in the display, this area is shielded.

Note:

There should leave one area which is not shielded. If there are 3 area are shielded, the last one could not be shielded.

4.9 TILT mode button

TILT mode is used for keep the construction accuracy. When instrument is in the TILT mode, if it shake a litte bit, the instrument will alarm to indicate user.

4.9.1 There are 3 status in TILT mode: TILT preparation, TILT working on, TILT touching off,

4.9.2 Press this button to enter the TILT preparation status or quit TILT mode.

4.9.3 When instrument is in TILT preparation, TILT symbol on the display will flash slowly, if there is no shaking in 30 seconds after instrument is leveled, TILT will start to work. That symbol on display becomes stable.

4.9.4 When TILT mode is working on, if the instrument shake, then TILT will be touched off. The laser head will stop rotating to flash, TILT symbol on the display flash quickly, instrument will not self-level again.

4.9.5 When the TILT mode is touched off, press TILT button to quit TILT mode, or press button to enter the self-leveling mode.

4.10 VWS Mode buuuton

VWS mode (anti-shake mode) is used for keeping the construction stable. When instrument is VWS mode, if instrument shake a little bit, instrument will not stop rotating and keep self-leveling, if the shake is big, instrument will start to alarm.

4.10.1 Press this button to enter the VWS mode or quit.

4.10.2 When instrument enter the VWS mode, it will turn on the TILT mode too.

4.10.3 When the shake is big in the VWS mode, instrument will stop rotating to flash, TILT symbol on the display flash quickly, instrument will not self-level again. User could press VWS button to quit this mode.

4.11 MAN mode button

Long-press (hold more than 2 seconds) this button to enter or quit MAN mode, when instrument is in the MAN mode, laser head keep rotating or shielding status, not self-leveling.

4.12 LEVEL/ LCD illumination

Short-press this button to let the instrument start self-leveling(unworkable in MAN mode); long-press (hold more than 2 seconds) this key to open or close **LEVEL/ LCD illumination.**

4.13 Remote channel selecting button

Press this button to swtich remote channel (from CH1 to CH F)

4.14 Power status

After power on, the instrument check the battery power automatically and the LCD will display the battery power status accordingly.

 Means full power

 Means normal power

 Means low power

 Means very low power, suggest charging the battery

 Means empty power, need to charge the battery

4.15 Remote (316Ⅱ)

After power on ,the remote enter CH1, display shows “CH1”, press this button to switch remote channel (from CH1 to CH F).

Remote the RL430G by DaveBell, when the display shows , that means remote function is turned on but can not connect with remote control.(causes:① RL430G is off , ② the remote is too far away from the instrument; ③ the signal is disturbed from remote to instrument; ④ The channel of remote and instrument is not correct)

When the display shows , that means remote connection is OK.

Note:

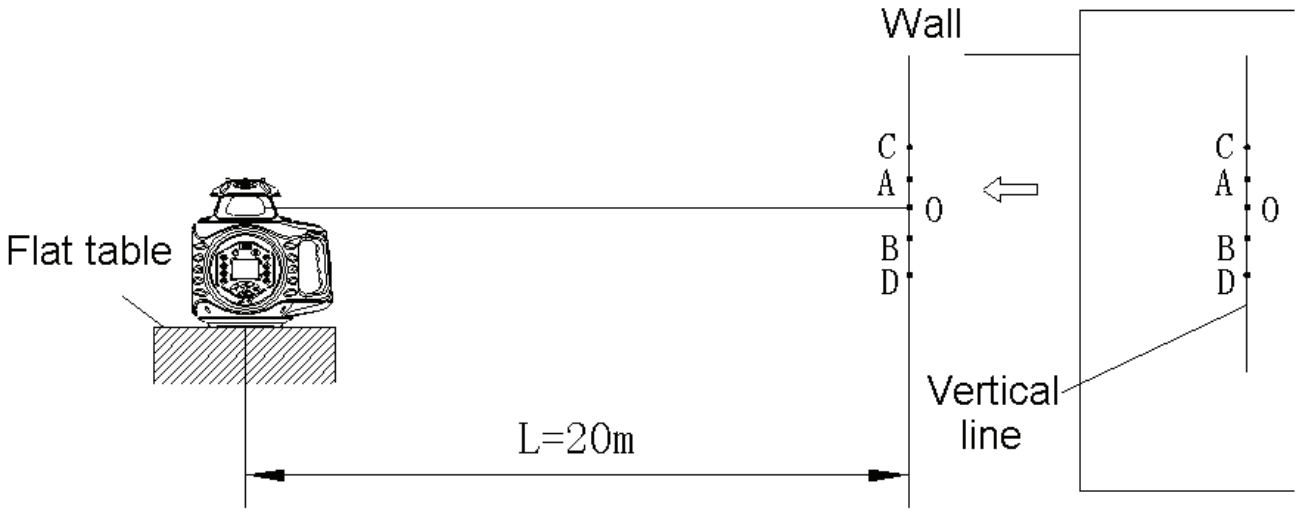
4.15.1 The battery symbol on the remote is used for showing the remote power, not the instrument power.

4.15.2 The difference from the remote button to the instrument button:

a) Long-press the button, open or close the remote LCD illumination.

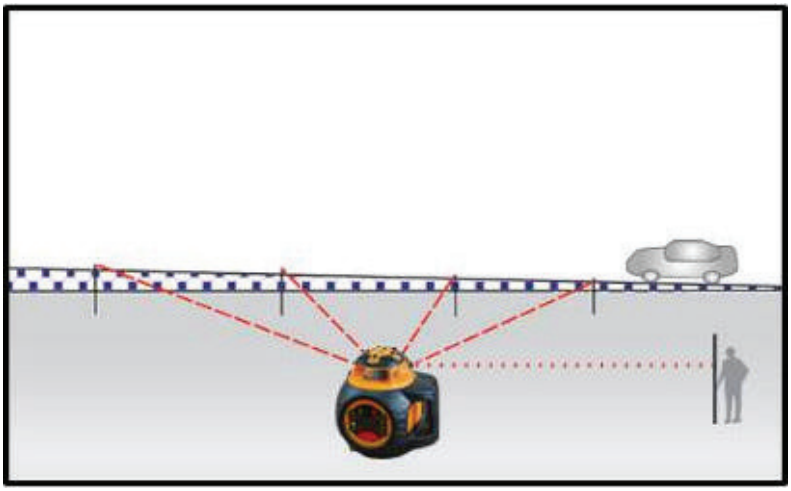
b) Short-press the button, enter or quit the sleep mode. In the sleep mode, the entire button are unworkable except button, the button on remote are all unworkable, except button. In the sleep mode, instrument stop working, when quit sleep mode, instrument return to work. If the instrument is not waked in 60 minutes after entering into sleep mode, the instrument will be power off automatically.

5. Self-check and Calibration



The instrument must be self-checked after service for a certain time or before operation in a major project. If the accuracy is found beyond tolerance, user makes some adjustment according to methods as follows.

5.1 X axis and Y axis accuracy calibration



5.1.1 Put a table 20m far away from a wall indoors, and place the instrument on the table with the X-axis to face the wall.

5.1.2 Power on the instrument, after self-leveling. Adjust rotating speed to make the output laser line clear and visible. Make a marking A at the position of the laser beam striking the wall.

5.1.3 Rotate the instrument 90°in turn, and after self-leveling, mark B,C,D respectively on the wall. Points B, C, D are at the same vertical line as point A.

5.1.4 Measure the vertical distance h between the highest and the lowest points among A, B, C, and D.

5.1.5 If h=2mm, accuracy is qualified. If 2=h=10mm, please adjust the accuracy by yourself. If h>10mm, please contact the authorized servicemen or dealers for repairs.

5.2 Accuracy calibration of the X and Y axis

5.2.1 Power off the instrument and make X-axis to face to the wall.

5.2.2 Press simultaneously, and then release while still pressing for ten seconds or so. Now the instrument enters self-calibration status, and the LCD is shown as the following figure.

5.2.3 Press the button hich on the remote to choose the axis direction which needs to be calibrated

5.2.4 Press the button which on the remote to move the laser line to up and down, until it is superposition reference point O.

5.3 Calibration confirm

Press the button to confirm the calibration value after calibration is done. Instrument quit the calibration mode.

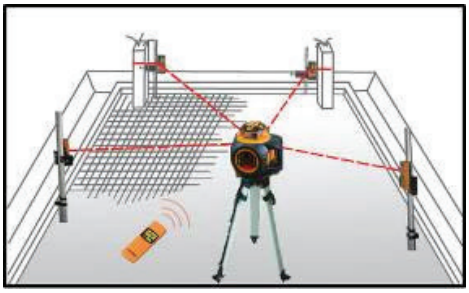
Note:

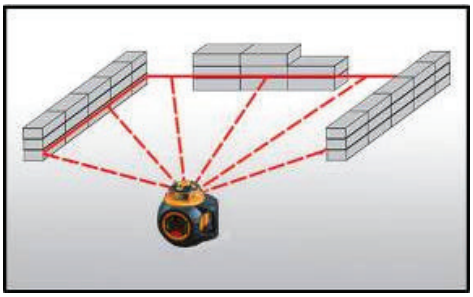
In the self-check and calibration mode, self-calibration coefficient is from 1600 to 2495, if user calibrate the instrument in this range, but the accuracy is still bad, please contact the authorized servicemen or dealers for repairs.

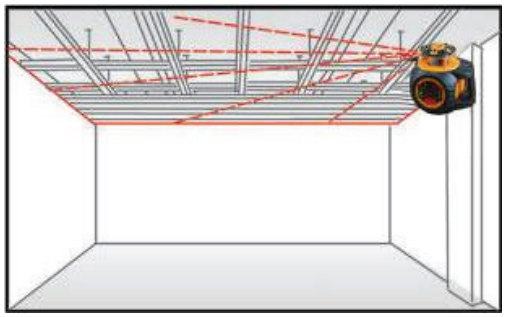
a) After calibration is done, user must to turn off the instrument, and then turn it on. After that the calibration is workable.

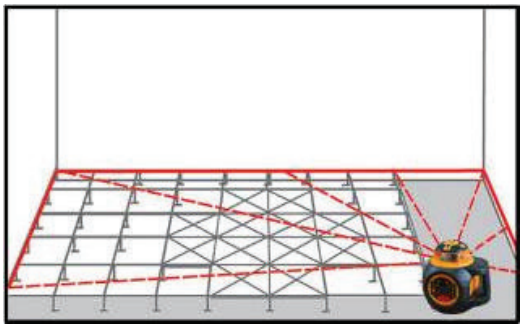
b) When calibrate the X, Y axis, user must check the Y axis accuracy after X axis calibration is done, and check the X axis accuracy after Y axis calibration is done. Until the accuracy is good.

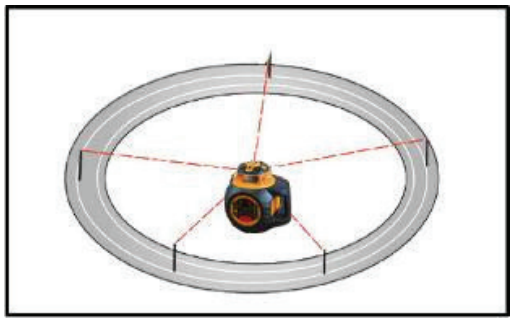
6. Application











7. Specification

Laser wave	RL430G: 532 - 635nm
Laser Class	class Ⅱ /Ⅲ
Working range	RL430G: 400 - 600m
Speed	600rpm 1100rpm
Horizontal accuracy	± 0.05mm/m
Grade accuracy	-5% ～ +5%： ± 0.1mm/m >+5% 或 <-5%： ± 0.2mm/m

Grade setting	X axis：-10%～+10% Y axis：-1%～+25% |X|+|Y|=20%
Self-leveling range	±8°
Working temperature	-10℃～+45℃
Storage temperature	-20℃～+70℃
IP class	IP66
Power	3 C alkaline battery or rechargeable battery box
Size	235× 180× 248mm
Weight	3.3Kg

8. Maintenance

- The instrument should be carefully operated and properly preserved, and any violent shock or falling will possibly result in the damage of instrument.
- Do not attempt to disassemble the instrument, and the unprofessional disassembly will result in the damage of instrument.
- Keep the cleanness of instrument, especially the laser output window, and remove dust by the gentle operation of soft clean cloth.
- Take the batteries out when the instrument is not in use for extended time, and keep the instrument in the carrying case when it is unused.
- Waterproof design, however, please don't make the instrument use in rainy day and wet environment as can as possible.