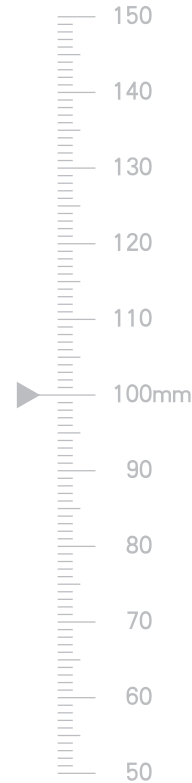


Gatum DUO

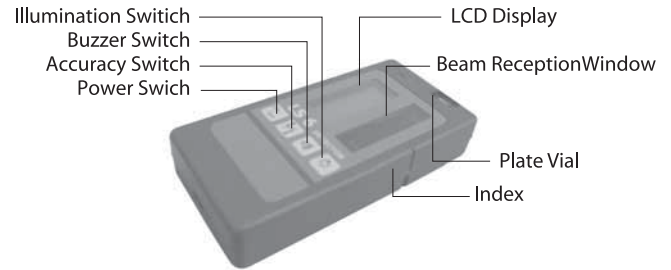
Automatic Self-leveling Laser



Instruction
Instruction Manual
Manual



Top emitting beam aperture



Illumination Switch
Buzzer Switch
Accuracy Switch
Power Switch

LCD Display

Beam Reception Window

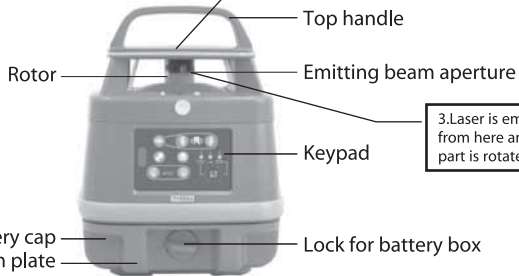
Plate Vial

Index

1. Use the laser instrument in strict compliance with the instructions printed on the warning label for safe handling. See the illustration for locations of the warning labels.

2. Laser warning label
The label is put on the ceiling.

3. Laser is emitted from here and this part is rotated.



Top handle

Rotor

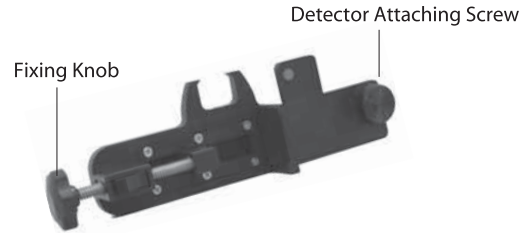
Emitting beam aperture

Keypad

Battery cap
Bottom plate

Lock for battery box

Rod Adapter LA-6Q



Fixing Knob

Detector Attaching Screw

Safety Precautions (must be followed)

Items listed below should be strictly abided by to avoid possible injury to the user or other people and/or damage to the laser instrument. To ensure safe operation of this product, the safety concerns should be borne in mind all the time.

• *Distinctive Displays*

The below safety signs are employed to distinguish the degree of injury or damage which may lead to consequence if they are ignored.



WARNING

This sign may imply that consequence of death or injury may occur if ignored.



CAUTION

Items indicated by this indication are precautions which, if ignored, may result in injury or material damage.

- The term 'injury' here refers to injuries such as cuts, burns or electric shock, the treatment of which will not likely require hospitalization or long-term attention.
- 'Material damage' refers to damage to facilities, buildings, acquired data, etc.



WARNING

- While the instrument is operating, be careful not to expose your eyes to the emitting laser beam (red light source). Exposure to a laser beam for a long time may be hazardous to your eyes. (Laser beam: Equivalent to class 2 Laser level)
- Do not try to dismantle the instrument. Have it repaired by your dealer or authorized repair shop. Dismantling it by yourself may worsen the trouble.



CAUTION

- Do not stand on the carrying case. The case could turn over causing the person standing on it to fall.
- When attaching the instrument to a tripod, make sure the instrument is securely fixed to the tripod and then securely tighten the tripod leg clamps. If not securely fastened and/or tightened, the main unit could fall off or the tripod could fall over.
- When carrying the tripod, be careful so that the tripod shoes do not strike anyone.
- When setting the tripod, make sure not to stab someone's hand or foot with the tripod shoes.
- Operate this laser product with the height of laser avoiding that of eyes of car drivers and pedestrians. Avoid putting the laser on a highly reflective material such as mirror. When disposing of this instrument, take a measure such as breaking the battery cap so that the laser will not be emitted.

Precautions

- The instrument should not be stored or used in extreme temperatures or job on a place subject to rapid change of temperature. (Refer to the ambient temperature range) The instrument may not function properly if used out of the ambient temperature range.
- Put into the carrying for storage and place in a dry area not subject to vibration,dust or high moisture.
- When stroage and usage temperatures are widely different,leave the instrument in the case until it can adjust to the surrounding temperature.
- The detector (option) may react to the Laser beam and further react to the Flurescent lamp,Site lamp,modulated light or and electric wave (in or near the airport etc.)and so correct measurement is sometimes not performed near these places.In these cases,please measure again after stopping or cutting these modulated light or wave etc.
- The instrument should be transported or carried carefully to avoid impact or vibratio.
- The instrument should be stored in the carrying case and packed with cushioning material and handled with care as'Fragile'.
- Check the'check and adjustment of the datum point'of page 27 in this manual and be sure to check to see if error exists before the instrument is used.After the instrument has been stored a long time or it has suffered an impact or vibtation.be sure to check to see if trouble exists before use. If any trouble exists,adjust or have it repaired.
- Be sure to observe the items in the instruction manual for proper use of the instrument.
- Please replace attached batteries with new ones before you work because their voltage may be low.

CONTENT

Safety Precautions Precautions

- **1. For proper use of the instrument** **5**
 - 1.1 Standard configuration
 - 1.2 Unpacking
 - 1.3 Battery insertion
- **2. Display and Keypad** **9**
 - 2.1 Role of the Unit's keys
 - 2.2 LEDs display
 - 2.3 Role of the Remote control's keys
- **3. Prepartion for measurement** **12**
 - 3.1 Settiong up the tripod
 - 3.2 Setting up the instrument
 - 3.3 Arraing the detector
- **4. How To Use DUO Laser** **16**
 - 4.1 Operating the instrument :DUO
 - 4.2 Horizontal operation
 - 4.3 Vertical operation
 - 4.4 Power operation
 - 4.5 Operating the detector:LS6
- **5. Maintenance and adjustment** **26**
 - 5.1 Maintenance after use
 - 5.2 Check and adjustment of the datum point
- **6. Specifications** **32**
- **7. Notice to the user of this product** **33**

1. For proper use of the instrument

1.1 Standard configuration

- ① The instrument (DUO)
- ② Detector (LS6)
- ③ Remote control (RL50)
- ④ Rod Adapter (LA-6Q)
- ⑤ Charger
- ⑥ Rechargeable Ni-MH battery built in the body
- ⑦ TP-3 Target
- ⑧ Carrying Case
- ⑨ Instruction Manual

1.2 Unpacking

Taking the instrument out of the carrying case

- ① Gently set down the carrying case so that its cover is upward.
- ② Unlock and open the case.
- ③ Remember how the instrument is placed in the case before removing it.



Putting the instrument into the carrying case

- ① Set down the carrying case and open the cover
- ② Gently put the instrument into the case
- ③ Close the case and secure the latch

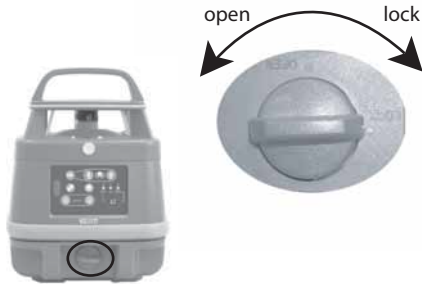
NOTE:

- When taking out the instrument, be sure to secure it with your hands.
- When putting the instrument into the case, be sure to turn the power switch off.
- If the case cover is difficult to close, check again whether or not the instrument is properly inside the case.

1.3 Battery insertion


Battery insertion for the instrument

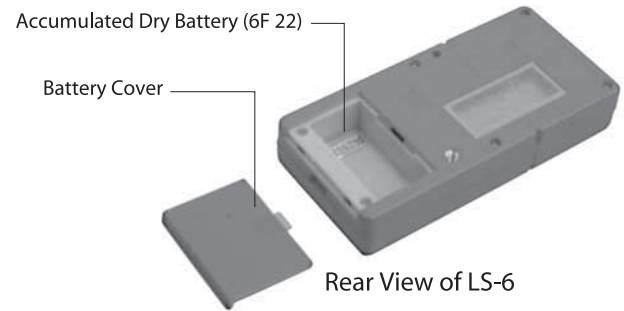
- ① Insert the rechargeable NI-MH batteries with body into the battery box
- ② While holding the instrument with one hand, push the battery Box into the base box and attach it by turning the knob clockwise.



Battery insertion for the detector

LS-6 Detector

- ① Slide the battery cover while pushing its  mark and remove it.
- ② Insert the accumulated dry battery into the battery holder according to its (+) and (-) marks.
- ③ Slide the battery cover to reinsert it.

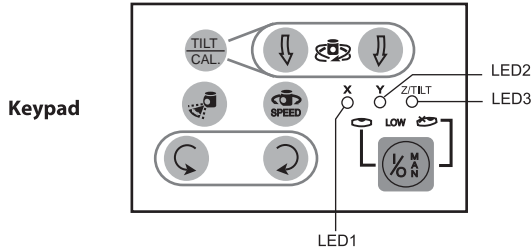


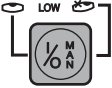

CAUTION:





- Pay attention to the battery holder's (+) and (-) marks for proper battery insertion.
- Batteries must be of the same type. Do not use a combination of batteries whose remaining capacity differs.

2. Display and Keypad

2.1 Role of the Unit's keys(DUO)



Key	Function Description	Comments
	<p>Key Operation: I/O/MAN Key</p> <ul style="list-style-type: none"> • ON/OFF Control Key. • After and during Auto-leveling, press and hold the key for more than 3 seconds to change to manual mode. 	
	<p>Speed Key</p> <ul style="list-style-type: none"> • Speed selection key, 4grades: 600rpm, 300rpm, 5rpm, 0rpm, Circulating in above sequence by each pressing. • In CAL.mode, 2 grades: shift between 0rpm and 600rpm 	

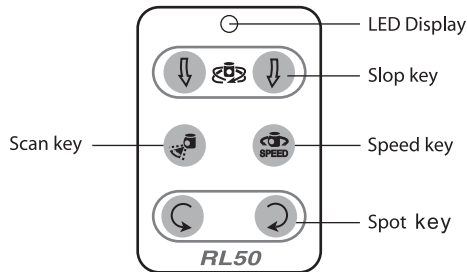
Key	Function Description	Comments
	<p>Scan Key</p> <ul style="list-style-type: none"> • Scan angle changing key, press the key to enter scan mode, 3 grades of angles: 10°, 30°, 60° circulating in turn. 	
	<p>TILT CAL. Key</p> <ul style="list-style-type: none"> • Press the key and LED3 will blink in green light, and TILT mode will work. • Press and hold the key for more than 5 seconds to change to calibration mode. • In CAL mode, serve the purpose of X/Y/Z direction accuracy calibration, shift and confirmation. 	
	<p>Slope Key (two)</p> <ul style="list-style-type: none"> • In manual mode, Press and hold the key, the laser beam or point will be left/right tilted along X axis direction • In CAL mode, press either of the key briefly to calibrate the accuracy of X/Y direction. 	
	<p>SPOT Key (two)</p> <ul style="list-style-type: none"> • When the speed is at 0 rpm. Press this key briefly to quick move the laser point. Press and hold the key to move the rotor slowly. • In scan mode, press and hold either of the key to change the scan line to point which moves slowly. After releasing the key, the unit will be back to scan mode, and the scan line will be repositioned accordingly 	

DUO

2.2 LEDs display

- ① In the leveling process, LED1 blinks in red and laser beam blinks; After leveling, LED1 turns green and is lit constantly, laser beam keeps emitting, the rotor keeps rotating.
- ② In manual mode, LED1 and LED3 are constantly lit in green.
- ③ In CAL mode, LED1 blinks fast in green to indicate X axis direction accuracy calibration is in progress, after that, press CAL key to change to Y axis direction calibration and LED2 blinks fast in red. After having done those steps, press CAL key again to return to auto-leveling mode.
- ④ When the working voltage of batteries gets down to 5.5V-5.8V, LED2 blinks slowly in red, if it is less than 5.5V, LED2 will be lit constantly in red, buzzer will give out alarm and the laser beam will shut off in 10 seconds.
- ⑤ The unit will give out alarm automatically when Self-leveling is out of the specified range, LED1 will be lit constantly in red, meanwhile the unit will give out alarm and laser beam will shut off in 10 seconds.
- ⑥ Enter CAL mode with the unit turned over for Z direction application. LED3 will blink in green.
- ⑦ In tilt mode, LED1 will be in green, LED2 will be in red, LED3 will blink in green, if the instrument is interrupted or even if it is tilted or repositioned, the instrument will shut off the laser beam with alarm. The instrument has to be readjusted and switched on again.

2.3 Role of the Remote control's keys (RL50)



DUO

3. Preparation for measurement

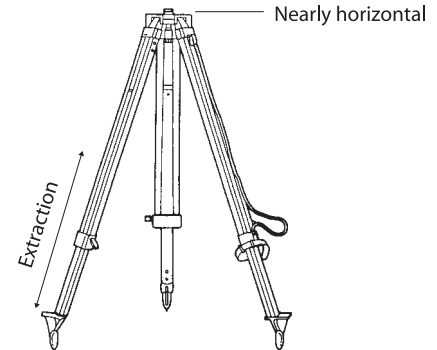
3.1 Setting up the tripod

[Arranging the tripod]

- ① Prepare the standard tripod for the instrument.
- ② The dome head type and elevation type tripod for the instrument can be used.

[Selection of the place to set up the tripod]

Be sure to select a place where the job will not be interrupted and the instrument can be set to have almost same distance to each point to be measured.



[Setting up the tripod]

- ① For an extension tripod, adjust the legs to a suitable length and secure the leg clamps.
- ② Spread the legs to a proper extent for the tripod head to be nearly level and push them into the ground.
- ③ Should the tripod head be off level, adjust it by expanding the legs accordingly.

NOTE:

- For a tripod setting place, be sure to select a place where the ground or floor has less vibration and there is no fear of upset.
- To set the tripod on a slippery floor, the legs must be secured. Use a chain (or similar) to keep the legs from spreading.

3.2 Setting up the instrument

[Mounting on the tripod]

Mount the instrument on the tripod head and while supporting the instrument with one hand, secure it using the tripod center screw.



[Mounting on the wall mount]



NOTE:

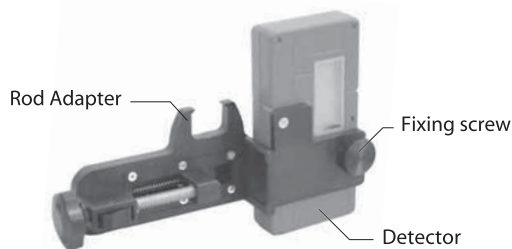
- Also when removing the instrument from the tripod, loosen the center screw while supporting the instrument with one hand.
- Do not leave the instrument mounted on tripod without the center screw being tightened. It may cause the instrument to fall and be damaged.

3.3 Arranging the detector

[Installing the rod adapter LA-6Q]

LS-6 detector

- ① Mount the instrument on the rod adapter so that the guide pin of the rod adapter is inserted into the guide hole in the back of the detector.
- ② Tighten the attaching screw of the rod adapter into the detector.



NOTE:

- The rod adapter is to be used when the detector is used together with a staff or plain rod.

4. How to use DUO Laser

The laser does a self-test when turned on. The beam blinks while the laser is self-leveling. After it has leveled, the rotor head will start to rotate and the laser beam will start emitting. All the operation state can be estimated by the LED's color on the keypad.

4.1 Operating the instrument

[I/O]: Power supply & Auto mode

Default mode when the DUO is switched on.

[MAN]: Manual use

- ① The DUO is always in the automatic self-leveling mode(auto) when turned on. Once the DUO has self-leveled, the rotor head will start rotating and the laser beam will start emitting. Then press and hold the I/O key more than 3 seconds, it will enter manual mode.
- ② This way, the beam will rotate even if the DUO is not leveled. For safety, LED1&LED3 will be in green light above the I/O key to advise the user that the laser is in manual mode.
- ③ In this mode, the slope function can be operated.
- ④ When it is necessary for working on inclined planes, manual mode will be required.

4.2 Horizontal Operation

- ① Press the power supply key[I/O] to switch the unit on.
- ② Automatic self-leveling function works and leveling begins automatically. When leveling is completed, the rotor begins to rotate and emits visible laser beam.
- ③ To select the Manual mode, press and hold this key for more than 3 seconds.
- ④ To press the speed key to select the speed of rotor. 4 grades: 600rpm, 300rpm, 5rpm, 0rpm, Circulating in above sequence by each pressing. In CAL. Mode, speed will shift between 0rpm and 600rpm.

DUO

- ⑤ Press the scan key to enter scan mode, 3 grades of angles:10°,30°,60° Circulating in above sequence by each pressing. In scan mode, press and hold Spot key to change the scan line to point which moves slowly . After releasing the key , the unit will be back to scan mode, and the scan line will be repositioned accordingly.
- ⑥ When the unit is in auto self-leveling , press & hold the I/O Key after 3seconds into MAN mode, moving the laser beam to the X axis direction, then press and hold the Slope key, the unit left/right titling along X axis direction. The titling angle range is less than $\pm 5.7^\circ$.
- ⑦ To turn the DUO off, press the I/O key.

4.3 Vertical Operation

No accessories are needed for this position. The DUO can be used directly on the ground. However, it can be used on the Wall Mount for a better setup.

- ① Place the Unit in vertical position, resting on the support point, Use the adjustable feet to rough level the laser by the bubble vial.
- ② Turn on the I/O key for short time.
- ③ Automatic self-leveling function works and leveling begins automatically. When leveling is completed, the rotor begins to rotate and emits visible laser beam.
- ④ In vertical automatic mode, the rotor can be moved along the right and left direction by pressing Slope key. The unit will be auto self-leveled continually while operating this step.(see the Fig.)
- ⑤ After self-leveling, the operation is same as the [4.2] operation.
- ⑥ After turn on the unit, press and hold the I/O key for more than 3 seconds, it will enter manual mode. The operation is same as the[4.2] operation.

DUO



NOTE:

- Before operating the instrument, perform the 'Check and adjustment of the datum point 'specified in. 5.2
- In the manual mode, (LED1&LED3 are lit in green) please be noted that the horizontal accuracy of emitted laser beam is not guaranteed.
- After turn on the unit, the unit will give off alarm if it is out of the compensating range, and 10 seconds later, the unit power supply will be shut off automatically and the unit will be in "Sleep" state. Because DUO is an instrument with high precision, it is preferable to use remote controller to perform functions.
- While performing various functions, the corresponding indications will be interpreted by LEDs.
- When the unit is in horizontal automatic mode, the slope function will not be available.
- When change between horizontal work and vertical work, be sure to first to turn the unit off. otherwise the unit will not work properly.



WARNING

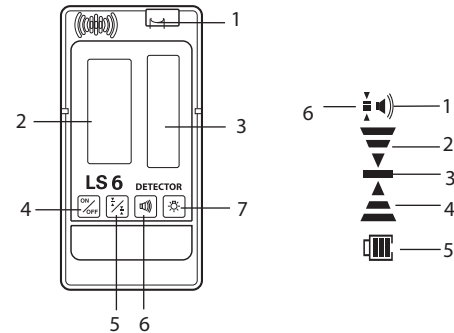
- While the instrument is in operation, be careful not to expose your eyes to the emitting laser beam (red light source). Exposure to a laser beam for a long time may be hazardous to your eyes. (Laser beam: Equivalent to class II Laser level)

4.4 Power Operation

[Using the rechargeable batteries]

- ① Before first-time use, the rechargeable batteries must be recharged for 4 hours by its charger.
- ② Insert the charger plug into the jack located on the battery pack.
- ③ Plug the charger into an electrical outlet (110 volts or 220 volts, depending on charger and country).
- ④ After charge for 4 hours, the LED on the charger will be changed the color.
- ⑤ When the battery's power is low, removed the battery pack from the Unit and charge it.
- ⑥ For optimum life of the battery, it is recommended to charge the battery after fully discharged. To assure battery life, do not charge over 10 hours.
- ⑦ The battery and the charger can be damaged if damp. Always store and charge the unit in a dry and covered place.

4.5 Operating the detector :LS 6



Detector Mode

1. Bubble vial
2. LCD display
3. Capture window
4. on/off
5. Coarse/Fine
6. Sound switch (high, low, mute).
7. illumination

LCD Display

1. Indication of sound level
2. Lower the detector
3. Level
4. Raise the detector
5. Battery level
6. Coarse/Fine mode

DUO

[Power switch]

- ① Push the power switch to turn on the power to the detector.
- ② Pushing the power switch again turns off the power



NOTE:

- The liquid crystal displays all light up as shown in the above figure with the power switch pressed. This permits checking for any defects in the liquid crystal display.
- The battery's remaining capacity is always indicated with the power turned on. Check when to replace the battery, referring to the figure on the above.
- The power turns off automatically if no laser beam is received and any key not operated for about ten minutes. To turn on the power again, push the power key once again.

[Selecting the reference level detecting accuracy]

Push the detection accuracy selection switch to select the needed detection accuracy.

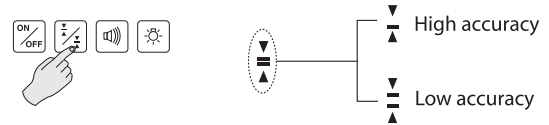
High accuracy detection:

To be selected for detecting the reference level with accuracy.

Low accuracy detection:

To be selected if high accuracy is not needed or when stable reference level cannot be obtained due to slight vibration at job site.

DUO

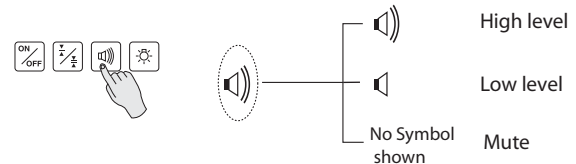


NOTE:

- For the detection accuracy to be selected, check with the mark in the liquid crystal display (see the figure on the above).
- The detection accuracy alternates each time the detection accuracy selection switch is pressed.
- High detection accuracy is initiated when the power turns on.
- If the point to be measured is distant, the reference level may not be displayed stably by the influence of heat waves shimmering or the instrument slightly vibrating. Under such conditions, select 'Low detection accuracy'.

[ON or OFF of the beam reception buzzer]

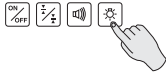
Push the beam reception buzzer switch to select either the buzzer sounding or silenced.



DUO

[Illuminating the display]

- ① Push the illumination switch to illuminate the display.
- ② Pushing the switch again turns off the illumination.



NOTE:

- For either the buzzer sounding or silencing to be selected, check with the mark in the liquid crystal display (see the figure on the above).
- The buzzer's high level sounding/low level sounding/silencing can be switched accordingly each time when the buzzer key is pressed.
- The buzzer's high level sounding is initiated when the power turns on.
- The illumination turns off automatically if no laser beam is received and any switch is not operated for about one minute.
To illuminate the display again, push the illumination switch once more.

[Detecting the reference level]

At the measuring point, set the position of the detector nearly to the height of the beam emitting aperture of the instrument.
Position the detector where the buzzer sound (or the beam reception display appears) by directing the detecting display nearly toward the instrument and moving the detector up and down.
Move the detector up and down again according to the beam reception display (or the buzzer) and obtain the reference level.



Move the detector down as it is positioned high.
The buzzer sound beeps at short intervals.



This is the reference position.
The buzzer sound beeps continuously.



Move the detector up as it is positioned low.
The buzzer sounds lasting beeps intermittently.

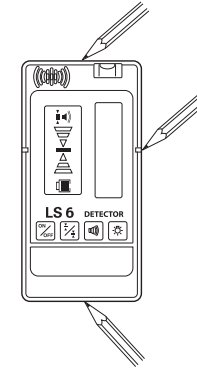
DUO

NOTE:

When detecting the reference level, the detector should face the instrument in the range of about 40°, to the right and left from the front.

[Direct marking]

After the reference level has been detected, mark a line along the detector's index, or its top or bottom end.



[Plain rod marking]

After the reference level has been detected, mark a line along the plain rod's top or bottom end.

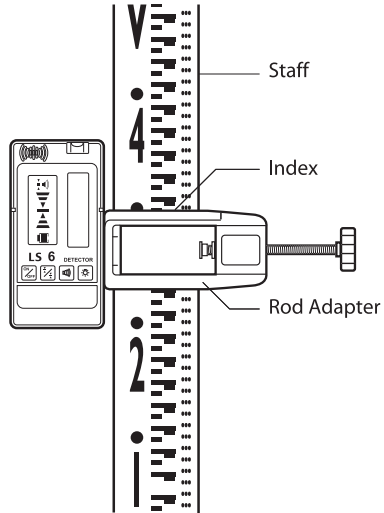
NOTE:

If a line was marked along the detector's top or bottom end, be sure to make measurement compensation as described on the back of the detector.

The detector should previously be positioned correctly on the plain rod according to the reference mark.

[Reading the staff]

After the reference level has been detected, read the staff, using the index on the rod adapter.



NOTE:

- When detecting the reference level, slightly loosen the fixing screw for the rod adapter and move the detector up and down along the staff.

5. Maintenance

5.1 Maintenance after use

[Stains on the main body]

- ① Brush dust off and wipe off moisture with tissue paper.
 - ② Clean off any stains with a soft, dry cloth.
 - ③ Excessive stains should be removed with a soft cloth soaked in a water diluted neutral detergent and squeezed dry.
- Do not use benzene, thinner, gasoline or chemicals.

[Stains on the glass surface]

Brush dust off

Gently wipe off stains with a silicone cloth or a cleaning cloth for eye glass lenses.

Excessive stains should be wiped off with soft cotton cloth impregnated with a cleaning liquid for eye glass lenses.

[Handling the battery]

If the instrument is not to be used for a long time, be sure to remove the batteries from the instrument and the detector and store them.

NOTE:

- Be sure not to use chemicals such as benzene, thinner or gasoline.
- Be careful not to scratch the glass surface.
- Leaving the batteries in the instrument for extended period may cause power consumption even if it is not in use.
- If used battery is left in the battery holder, the instrument or the detector may be damaged by the battery fluid leakage.

DUO

5.2 Check and adjustment of the datum point

THIS CHAPTER IS VERY IMPORTANT:

Here are a few simple instructions to check the DUO for calibration.

Remember that the DUO is a precision instrument and that it is important that you keep it calibrated and in proper condition.

The accuracy of your work is completely your responsibility and you should regularly check your instrument especially prior to important jobs.

5.2.1 Horizontal Check & Calibration (X & Y Axis)

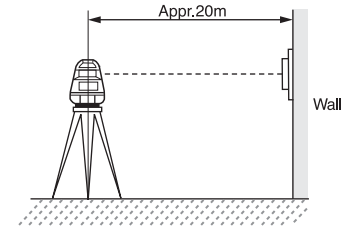
Horizontal Checking

- 1 Set up the instrument on the tripod 20m away from one wall so that the 'X 1 side' of the instrument faces the Wall and turn it on or auto-levelling.
- 2 Turn on the detector. Keep adjusting its position for appropriate level mark on LCD display and mark the reference point (A) at the moment.
- 3 Loosen the center screw of the tripod to turn the instrument 180° to let X2 face the wall.
- 4 Readjust the detector position for appropriate level mark on LCD display and mark the reference point (B) at the moment.
- 5 There's no need to adjust the unit if the distance between point A and B is not more than 3mm.



DUO

- 6 If the distance more than 3 mm, please refer to the following adjustment method.
- 7 The method for Y direction check is same as X direction check, which requires you to replace X1 & X2 with Y1 & Y2 facing the wall.



5.2.2 Horizontal Calibration

The DUO must be calibrated to bring beam to the center of the two marks.

The calibration is easily done using the laser keypad or remote control.

[X Axis calibration]

- 1 Turn I/O key on before switching to calibration mode, and the unit will be self-leveled, at the same time, the rotor is rotating.
- 2 Press and hold the CAL. Key for more than 5seconds, then release this key, the rotating head will be stopped. LED1 will blink fast to indicate in X axis direction.
- 3 Press Slope key [↕] or [↗] on the unit or Slope key on the remote control to move the beam up or down to the center of the reference point A and B.

- ④ After appropriate adjustment on X direction,press CAL.key again to enter into Y direction calibration,LED2 will blink fast,press Slope key to move the beam to the center of reference point A and B.
- ⑤ Press CAL. key again,the adjustment will be saved and calibration is finished.The unit will return to self-leveling working .
- ⑥ Press Slope key every 5 times,the laser beam 20m away can be moved up or down by 1mm.

NOTE:

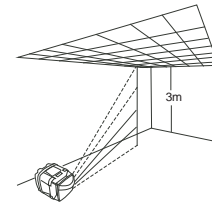
- To ensure that the accuracy is in good condition, repeating horizontal check is suggested, if error still exist please do horizontal calibration procedure again.
- If the instrument is not returned to normal, even through these measures, connect your dealer or authorized shop.

5.2.3 Checking Calibration of the Z (Vertical) Axis

To check vertical calibration, you need a plumb bob with at least 3m of string, checking and calibration of Axis Z (vertical)

[Checking of the Axis Z (Vertical)]

- ① Hang the plumb bob from the ceiling of a room whose ceiling is at least 3m high off the floor.
- ② Set up the laser in vertical position by turning it over and make the speed setting at 0 rpm.
- ③ Use the SPOT key, guide the beam from the top of the string to the bottom of it.
- ④ Check for any deviation in the beam from the top of the string to the bottom of it.
If the deviation is more than 3mm(1/8 in.), the vertical axis needs calibrating.



[Calibration of the Axis Z (Vertical)]

- ① Before switching to calibration mode, press I/O key.
- ② Then press CAL key for more than 5 seconds, and release it to bring the rotation head to a stop.
- ③ LED3 will blink in green, which indicates the Axis Z calibration is in progress.
- ④ Aim the laser point at the upper section of plumb string just by positioning the instrument accordingly, then use SPOT key to aim the laser point to the lower section of the plumb string, check the deviation (H) from the plumb string to the current laser point. Use either left SLOPE key or right SLOPE key to adjust to its half deviation.
- ⑤ After the adjustment, do the process of Axis Z checking again.
- ⑥ After confirmation of desirable calibration, press CAL key to save the calibration data and exit the calibration mode.

6. Specifications

MODEL	DUO BASIC	DUO STANDARD	DUO GREEN BEAM
Horizontal accuracy:	+/-10"	+/-10"	+/-10"
Vertical accuracy:	unavailable	+/-20"	+/-20"
Top plumb accuracy:	+/-15"	+/-15"	+/-15"
Measuring range:	Radius 0.5m~200m	Radius 0.5m~200m	Radius 0.5m~250m
Self-levelling range:	+/-10%(+/-5.7°)		
Laser Source:	635nm laser diode	635nm laser diode	532nm green laser diode
Rotation speed:	0,5,300,600rpm(can be switched)		
Battery:	NI-MH rechargeable batteries		
Operation time:	20 hours	20hours	8hours
Battery charging time:	4h		
Waterproof:	IPX6 watertight type		
Working temperature:	-10°C~+40°C	-10°C~+40°C	-5°C~+35°C
Tripod attaching screw:	ISO type(5/8"×11 thread)		
Dimension:	170W×170D×225Hmm		
Weight:	2.5KG(w/battery)		

DETECTOR LS-6/LS-6G

Detection Accuracy:	HIGH ±1mm LOW ±2.5mm
Beam reception indicator:	Liquid crystal display / buzzer
Sensitivity of vial:	30/ 2mm
Power supply voltage:	DC9V battery(6F22 or 6LF22)
Operation time:	Approx 40 hours on alkaline battery (6LF22)
Autopower off:	Power supply:Approx.10 min.
Illumination:	Approx.1 min
Dimensions:	140w x 68H x 25L mm
Weight:	200g

NOTE:

LS-6: For DUO BASIC and DUO STANDARD

LS-6G: For DUO GREEN BEAM

7. Notice to the user of this product

To assure compliance with the Safety Standard 21 CFR, Chapter I, Subchapter J. The U.S. bureau of Radiological Health requires the following information to be provided to the user:

1) Specifications of Laser Radiation.

- A. This laser system is designed and built to have a GaAlAs laser diode radiating at $635\text{nm} \pm 5\text{nm}$.
- B. Radiant power
This laser product is designed and built to radiate a maximum average radiant power of 10mW as scanning beam during functional operation. The user may be subject to this radiation as a scanned beam while the rotor is rotating until such time that the instrument is turned off.
 - For a period of less than 10 seconds during the operation the user may be subjected to this radiation.

2) The following labels are affixed to and must remain attached to this laser product.

- A. Certification Label
This laser product conforms to the provisions of 21 CFR 1040.10 and 1040.11. For a class 2 laser product. Located on the surface of the base of top-handle.
- B. Caution Label 'Laser beam, do not look into the laser beam source directly'. Located near to exit aperture, facing upward.

3) Caution to maintain the safety in compliance with the standard.

- To maintain the safety standard, refrain from any operation, maintenance or adjustment other than described in this instruction manual.
- Operation, maintenance or adjustment other than those specified in this instruction manual may result in hazardous radiation exposure.
- Maintenance and repair not covered in this manual must be done by an authorized dealer.