

Level Sensor LS-80X

Thank you for selecting Topcon product.

- The specifications and general appearance of the instrument, and the content of this manual are subject to change without notice.
- Some of the diagrams shown in this manual may be simplified for easier understanding.
- Always keep this manual in a convenient location and read it when necessary.
- Please read the Instruction manual of the paired instrument in conjunction with this manual.

PRECAUTIONS FOR SAFE OPERATION

For the safe use of the product and prevention of injury to operators and other persons as well as prevention of property damage, items which should be observed are indicated by an exclamation point within a triangle used with WARNING and CAUTION statements in this operator's manual. The definitions of the indications are listed below. Be sure you understand them before reading the manual's main text.

DEFINITION OF INDICATION

	WARNING	Ignoring this indication and making an operation error could possibly result in death or serious injury to the operator.
	CAUTION	Ignoring this indication and making an operation error could possibly result in personal injury or property damage.

- This symbol indicates items for which caution (hazard warnings inclusive) is urged. Specific details are printed in or near the symbol.
- This symbol indicates items which are prohibited. Specific details are printed in or near the symbol.
- This symbol indicates items which must always be performed. Specific details are printed in or near the symbol.
- WARNING**
- Do not use the unit in areas exposed to high amounts of dust or ash, in areas where there is inadequate ventilation, or near combustible materials. An explosion could occur.
- Do not perform disassembly or rebuilding. Fire, electric shock or burns could result.
- To prevent shorting of the dry battery in storage, apply insulating tape or equivalent to the terminals. Otherwise shorting could occur, resulting in fire or burns.
- Do not use dry batteries other than those designated. An explosion could occur, or abnormal heat generated, leading to fire.
- Do not heat or throw dry batteries into fire. An explosion could occur, resulting in injury.
- Do not use the dry battery if its terminals are wet. Resultant poor contact or shorting could lead to fire or burns.
- CAUTION**
- Do not touch liquid leaking from dry batteries. Harmful chemicals could cause burns or blisters.

PRECAUTIONS

Vibration and Impact Protection

- When transporting the instrument, provide protection to minimize risk of severe vibration or impact. Severe vibration or impacts may affect beam accuracy.

EXCEPTIONS FROM RESPONSIBILITY

- The manufacturer, or its representatives, assumes no responsibility for any damage, or loss of profits (change of data, loss of data, loss of profits, an interruption of business etc.) caused by use of the product or an unusable product.
- The manufacturer, or its representatives, assumes no responsibility for any damage, or loss of profits caused by usage different to that explained in this manual.
- The manufacturer, or its representatives, assumes no responsibility for consequential damage, or loss of profits due to heavy rain, strong wind, high-temperature and humidity, or storing or use of the product under unusual conditions.
- Product failures caused by rebuilding are out of warranty.
- Cautions and warnings included in this manual do not cover all the possible events.

REGULATION

[U.S.A.] FCC Compliance (FCC-Class B)

WARNING:

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE:

This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

[California, U.S.A.] Proposition65

WARNING:

This product can expose you to chemicals including Lead, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

[EU/UK] EMC NOTICE (EMC-Class B)

In industrial locations or in proximity to industrial power installations, this instrument might be affected by electromagnetic noise. Under such conditions, please test the instrument performance before use. Declaration of conformity is available depending on your request. Contact your local dealer

Manufacturer

Name: TOPCON CORPORATION
Address: 75-1, Hasunuma-cho, Itabashi-ku, Tokyo, 174-8580 JAPAN

Europe Representative and Importer

Name: Topcon Europe Positioning B.V.
Address: Essebaan 11, 2908 LJ Capelle a/d IJssel, The Netherlands

UK Importer

Name: Topcon Positioning (Great Britain) Ltd.
Address: Unit 2 Sandy Hill Park, Sandy Way, Tamworth, Staffordshire B77 4DU U.K.

[EU] WEEE Directive

[UK] The Waste Electrical and Electronic Equipment Regulations

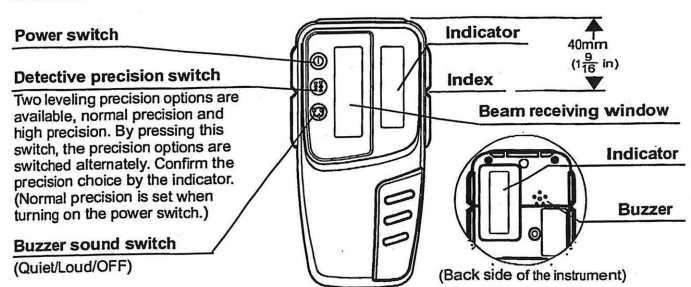
The use of the symbol indicates that this product may not be treated as household waste. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. For more detailed information about the take-back and recycling of this product, please contact your supplier where you purchased the product or consult.

[EU] EU Battery Directive

[UK] The Waste Batteries and Accumulators Regulations 2009

Battery users must not dispose of batteries as unsorted general waste, but treat properly. If a chemical symbol is printed beneath the symbol shown above, this chemical symbol means that the battery or accumulator contains a heavy metal at a certain concentration. This will be indicated as follows:
Hg: mercury(0.005%), Cd: cadmium(0.002%), Pb: lead(0.004%)
These ingredients may be seriously hazardous to human and the global environment.

NOMENCLATURE



DISPLAY

Height alert warning of rotating laser*1
A flash and a buzzer sound signifies that the height alert function of rotating laser is operating. Level sensor can detect the signal of height alert warning of the rotating laser. (This function is not usable to the rotating laser which does not have the height alert and the function to output alarm signal.)

Rotating laser battery warning*2
A flash shows that the rotating laser power is low. The level sensor can detect the rotating laser battery warning. (This function is not usable to the rotating laser which does not have the function to output alarm signal.)

Note: The warning displays *1 and *2 are the functions that the level sensor detects alarm signal from the rotating laser. The level sensor can be canceled the alarm detection from the rotating laser. To cancel the detection, press the power switch while pressing the buzzer sound switch. The detecting function will start normally by pressing the power switch again.

High precision mode

Normal precision mode

Higher than datum position
(Buzzer sound: High frequent beep sound)
Move the sensor downward.

Datum position
(Buzzer sound: Continuous beep sound)

Lower than datum position
(Buzzer sound: Low frequent beep sound)
Move the sensor upward.

Battery remaining display
Indicates the battery remaining of level sensor as follows.

- Dry battery is sufficient.
- The power is low, but sensor is still usable.
- Dead battery. Replace the dry battery with new one.

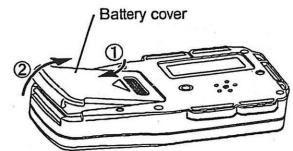
AUTO-CUT OFF FUNCTION

The power will be turned off automatically after detecting no laser beam for more than approx. 30 minutes. (To turn on the level sensor, press the power switch again.)

*1, 2 For more information about the warning displays of above *1 and *2, refer to instruction manual of each rotating laser.

REPLACING BATTERY

- Push and slide the battery cover in direction of arrow 1.
 - Open the cover in direction of arrow 2 to remove it.
 - Remove the old dry batteries and replace with new two dry batteries (AA alkaline batteries), matching [+] and [-] as shown in the figure. Dry batteries are sold separately.
 - Insert the tab of the battery cover, and push the cover down until it snaps into place.
- When attaching the battery cover, make sure that the rubber packing inside the battery box is in the right place.
 - Do not use a low dry battery. Switches or displays may not work correctly.



- Replace all 2 dry batteries with new ones at the same time.
- Do not mix used and new dry batteries, and do not mix different types of dry batteries together.
- Generally, performances of dry battery deteriorate temporarily in low temperature, but recover in normal temperature.

DETECTIVE RANGE

Display	Precision
	High $\pm 1\text{mm}$ (2mm width)
	Normal $\pm 2\text{mm}$ (4mm width)
	$\pm 5\text{mm}$ (10mm width)
	$\pm 10\text{mm}$ (20mm width)
	$\pm 15\text{mm}$ (30mm width)
	$\pm 15\text{mm}$ (more than 30mm width)
	Level sensor is moved upward or downward from laser beam.

EXAMPLE OPERATIONAL



SPECIFICATIONS

- Beam detection range**
50mm (2.0 in)
 - Beam detection precision**
High precision $\pm 1\text{mm}$ (± 0.04 in)
Normal precision $\pm 2\text{mm}$ (± 0.08 in)
 - Beam detection indication**
Liquid crystal : Both sides
Buzzer
 - Power source**
2xAA size dry batteries (alkaline)
 - Operating time (at 20°C)**
Approx. 120hours (alkaline dry batteries)
 - The time for auto-cut off**
Approx. 30 minutes without beam detection
 - Dust and water resistance**
IP66 (IEC 60529:2001)
 - Operating temperature range**
 -20°C to $+50^{\circ}\text{C}$ (-4°F to $+122^{\circ}\text{F}$)
 - Storage temperature range**
 -30 to 60°C (-22 to 140°F)
 - Dimensions**
146 (L) x 76 (W) x 25 (H) mm
(5.7 (L) x 2.9 (W) x 1.0 (H) in)
 - Weight**
Approx. 200g (0.44lbs) (including dry batteries)
- About measuring range, refer to instruction manual of each rotating laser.

TOPCON CORPORATION (Manufacturer)

75-1 Hasunuma-cho, Itabashi-ku, Tokyo 174-8580, Japan <http://www.topcon.co.jp>

Please see the following website for contact addresses.

GLOBAL GATEWAY <http://global.topcon.com>