CONTRACTORS-TOOLS.COM

SURVEY EQUIPMENT AND SUPPLIES

AUTHORIZED TOPCON DISTRIBUTOR

LS-110D laser receiver

Manufacturer documentation

Sold, shipped and supported by Contractors-Tools.com

Family owned and operated | Free shipping | Same-day shipping

Real people who set these up - not a call centre

1-877-866-5721

Contractors-Tools.com

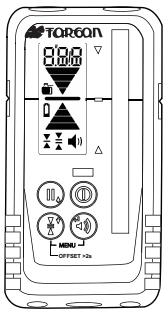
Experience the value of Great Customer Service!

Contractors-Tools.com | 1-877-866-5721

TOPCON

INSTRUCTION MANUAL
Level Sensor

LS-110D



1085956-01-A

FOREWORD

Thank you for purchasing the TOPCON Level Sensor LS-110D.

For the best performance of the instruments, please read these instructions carefully and keep them in a convenient location for future reference.

HANDLING PRECAUTIONS

- When transporting the instrument, provide some protection using cushioning to minimize risk of shock. Heavy shock may affect the performance of the instrument or cause a failure.
- In the case where the instrument is not used for a long time, remove the dry battery from the instrument.
- Any part other than the supplied accessories shall not be used or cannot be attached.
- The fixing screws for the holder, etc. are designed to bear normal uses, but if they are tightened with an excessive force, they may be damaged.
- The rotating laser to be used is RL-HV series, RL-200 series or RL-H5 series. For other lasers, the operation is not ensured.

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.

1. 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 instruction manual.

The definitions of the indications are listed below. Be sure you understand them before reading the manual's main text.

⚠ **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.

⃠ Do not use the level sensor near a cardiac pacemaker user.
A magnetic field is generated from the magnet and may affect the function of the pacemaker.

⃠ Do not heat or throw dry batteries into fire. An explosion could occur, resulting in injury.

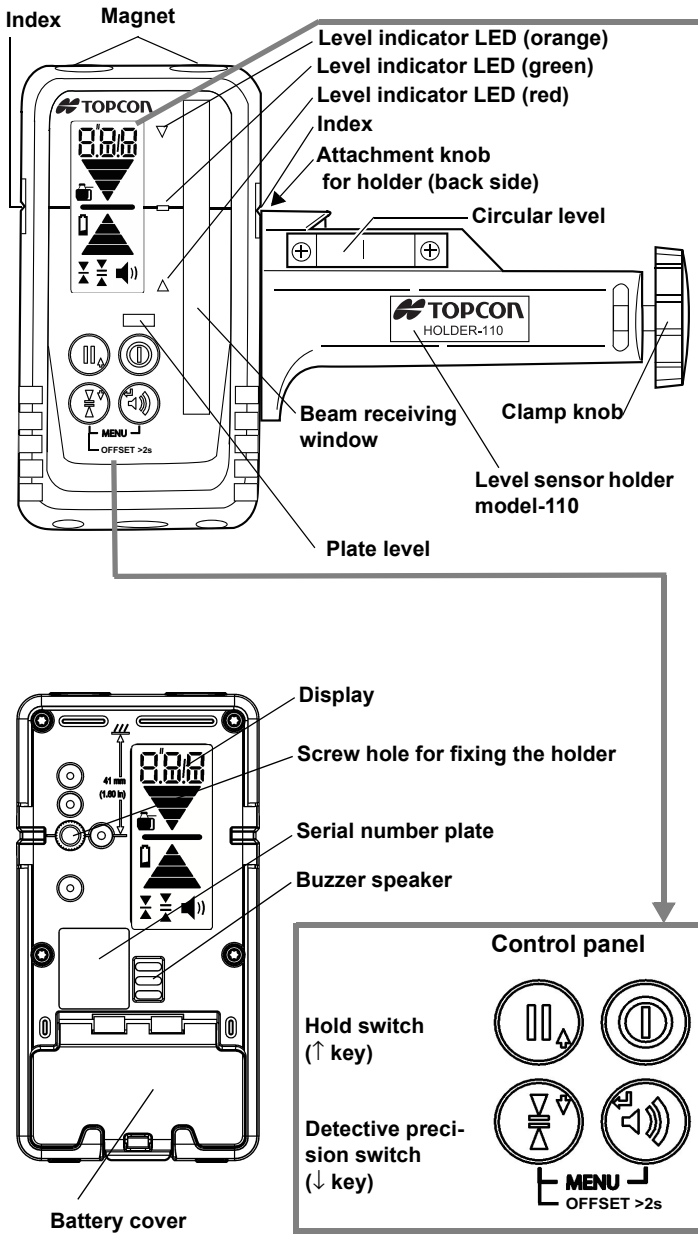
● To prevent shorting of the dry battery in storage, apply insulating tape or equivalent to the terminals. Otherwise shorting could occur, resulting in fire or burns.

⃠ Do not use 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.

2. NOMENCLATURE AND FUNCTION



Control panel

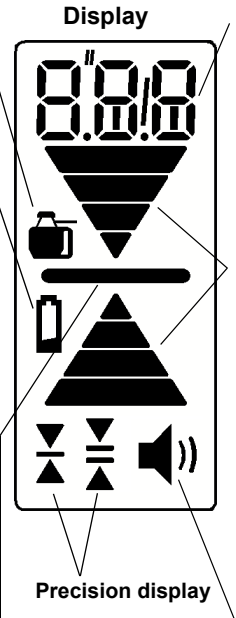
Rotating laser display
In some of our rotating laser models, a warning signal is given by changing the laser rotational speed (rpm). On the rotating laser having this function, the mark of the rotating laser flashes when a warning signal is output.

Low battery warning
If only the battery mark flashes, replace the dry battery of the level sensor (LS-110D).

Height alert function
This is the function for notifying the worker of an impact detected by rotating laser (height alert is also called safety lock).
When the auto leveling function operates and the laser is irradiated, if the rotating laser installation status (height) is suddenly changed by contact with a worker etc., the rotating head rotates at 150 rpm to keep the work accuracy.

Height alert HiA	Rotating laser: low battery	Only sensor: low battery	Rotating laser & sensor: simultaneously low batteries
Flashing H I A With buzzer sound	Flashing simultaneously	Lighting → Decreases; Flashing → Replace	Flashing; Still lighting → Decreases
			Flashing alternately → Replace

Display



Precision display

Numeric value/character display
This is 3-digit display part for displaying a value representing height from reference position or simple text message. The numeric value indicating a level is displayed in [mm], [cm], [inch] or [F.in.]. For a value out of the measuring range, "---" is displayed. If a value is flashing, it is out of accuracy guarantee range.

Level display arrows
The high/low level is displayed in 4 steps. The arrow size increases as the level is farther away than the datum position. The bars of the arrow show the steps of the selected dead band.

Lost beam display:
If the laser light comes free from light detecting range in vertical direction, an arrow will be displayed flowingly.
Move the level sensor according to the direction of arrow.

Buzzer sound volume display

Center bar
Indicates the reference position.

Procedure for switching the detective precision
By pressing the detective precision switch once, the current set precision is numerically displayed. By pressing once more while the precision is displayed (for one second), the current precision setting can be changed. By keeping pressing, the 5-step precision* (mode 1 to 5) is displayed in turn.

Precision mode	Resolution (mm)	Precision display	Flashing/ Lighting
Mode 1	0.5	▼ ▲	Flashing
Mode 2	1.0	▼ ▲	Lighting
Mode 3	2.0	▼ ▲ ▼ ▲	Lighting
Mode 4	5.0	▼ ▲	Lighting
Mode 5	10.0	▼ ▲	Flashing

* If "Fin" is set as the Display unit, the Precision display changes to the 3-step precision.

Procedure for adjusting the buzzer sound volume

When the buzzer sound switch is pressed, Loud/Quiet/ OFF is repeatedly displayed in turn.

Loud:
The mark of the buzzer sound is displayed and the characters "Hi" are displayed for one second.

Quiet:
The mark of the buzzer sound is displayed and the characters "LOW" are displayed for one second.

OFF:
The mark of the buzzer sound is not displayed and the characters "OFF" are displayed for one second.

Remark (Precision mode)
- When the power supply is turned ON, the mode is set to mode 3.
- In the mode 3, the pitch of selected resolution is set to 2 mm, so the display of height from reference position is switched as 0, 2, 4, 6, 8...

TOPCON CORPORATION (Manufacturer)
75-1 Hasunuma-cho, Itabashi-ku, Tokyo 174-8580, Japan **https://www.topcon.co.jp**
Please see the following website for contact addresses.
GLOBAL GATEWAY https://global.topcon.com

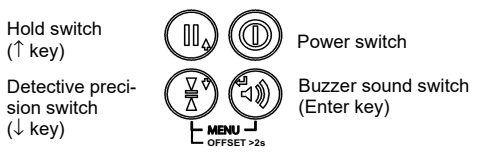
©2026 TOPCON CORPORATION
ALL RIGHTS RESERVED

3. MENU FUNCTION

By using the menu function, the settings below can be changed. Generally, the factory settings are used. It is recommended that the settings should not be changed except in any special application.

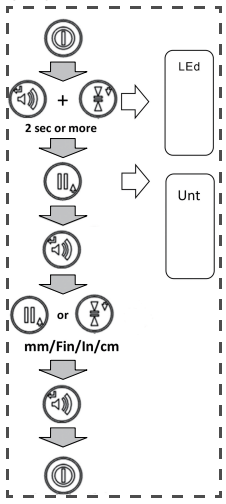
Setting items(*: Factory setting)

The following settings can be set/displayed.
Display unit: mm*/Fin/In/cm
Level display LED: ON/OFF*
Information you want: Software version "Fw"
Zero point offset function mode: PEr/tmP*/OFF
Sensitivity function: Low/Hi(gh)*
Averaging function: Low/Hi(gh)*



Start-up Procedure

1. Turn the power switch ON.
2. Press buzzer sound switch and the detective precision switch at the same time for 2 or more seconds. "Led" is displayed.



Finalization Procedure

1. Press the buzzer sound switch (Enter key) again to confirm the setting.
2. Press the power switch to reset the mode to usual mode.

Procedure for setting the unit

1. Use the same procedure as **[Start-up Procedure]**.
2. Press the hold switch (↑ key). "Unt" is displayed.
3. Press the buzzer sound (Enter key).
4. Press the detective precision switch (↓ key) or the hold switch (↑ key) and select the unit.
5. Use the same procedure as **[Finalization Procedure]**.

Procedure for setting the level display LED

1. Use the same procedure as **[Start-up Procedure]**.
2. Press the buzzer sound switch (Enter key).
3. Press the detective precision switch (↓ key) or the hold switch (↑ key) and select On/OFF.
4. Use the same procedure as **[Finalization Procedure]**.

Procedure for setting the information you want

1. Use the same procedure as **[Start-up Procedure]**.
2. Press the detective precision switch (↓ key) twice. "InF" is displayed.
3. Press the buzzer sound switch (Enter key). "Fw" is displayed.
4. Use the same procedure as **[Finalization Procedure]**.

4. ZERO POINT OFFSET FUNCTION

Using the zero point offset function

When the level sensor is within -10 mm to +40 mm from the reference position, the current beam receiving position can be changed to 0 mm by performing the zero point offset.

1. Set the level sensor under the beam receiving condition at the position of the level display "-10 mm to +40 mm".
2. Press the detective precision switch (↓ key) for 2 or more seconds. After 2 seconds, the buzzer sounds. At the same time, the large and small upward/downward arrows and the center bar are displayed and besides, the level display from the reference position is changed to 0 mm.
   (If the instrument is beyond the zero point offset usable range, "E30" is displayed.)

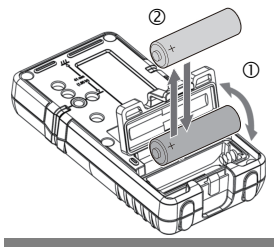
Checking the zero point offset condition

Under the zero point offset condition, when the level sensor does not receive the beam, the large and small upward/downward arrows and the center bar are displayed. When the power is ON under the zero point offset condition with the "PEr" mode, the same display appears.

Canceling the zero point offset function

In the case of the "tmP" mode and the "PEr" mode:To cancel the zero point offset function, press the detective precision switch for 2 or more seconds under the condition that the level sensor does not receive the beam. The buzzer sounds and the zero point offset function is canceled.
In the case of the "tmP" mode: Turn OFF the power, and the zero point offset function is canceled.

6. REPLACING BATTERY



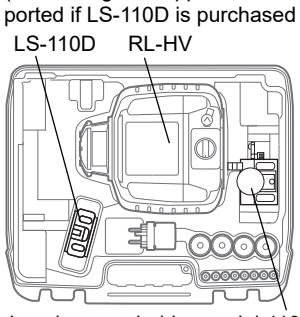
If the low battery warning is displayed, replace the dry battery (1 x AA).
The dry battery is sold separately. Use an alkaline dry battery.

1. Open the battery cover. If it is fixed firmly and cannot be opened, use a coin.
2. Remove the dry battery.
3. Insert a new dry battery. (Ensure correct polarity.)
4. Close the battery cover till you hear two click sounds.

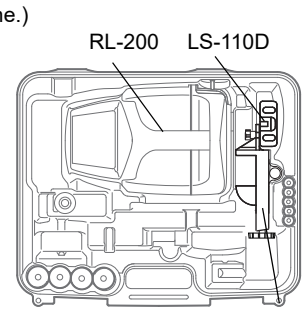
Note:
Immediately after the dry battery is replaced, the power may not be turned on unless the power switch is pressed twice. It is not a failure.

7. STORAGE

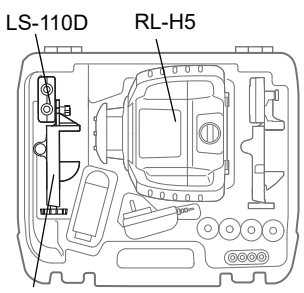
LS-110D and the level sensor holder model-110 can be stored in the carrying case.
(The storage is supported if RL-HV series, RL-200 or RL-H5 series is bundled, however, it is not supported if LS-110D is purchased alone.)



Level sensor holder model-110
RL-HV



Level sensor holder model-110
RL-200



Level sensor holder model-110
RL-H5

9. SPECIFICATIONS

Detective range	:	90 mm
Value reading range	:	70 mm
Value display accuracy guarantee range	:	1m to 50 m
Detective angle	:	± 45°
Detective spectrum	:	620 nm to 800 nm
Detective radius***1**	:	400 m or more (When using RL-HV series, RL-200 series or RL-H5A) 200 m or more (When using RL-H5B) (however, the warning is displayed as 3 m or more)
Detective resolution***2**	:	0.5 mm, 1.0 mm, 2.0 mm, 5.0 mm, 10.0 mm
Buzzer sound volume	:	Loud/Quiet/OFF
The time for auto-cut off	:	Approx. 30 min. (after no key operation/after no laser beam receiving)
Index position	:	41 mm above the top surface of this instrument
Dimensions	:	135 (L) × 69 (W) × 25 (H) mm
Weight	:	190 g (level sensor holder model-110 not included)
Dust and water resistance	:	IP67 (IEC 60529: 2001)***3**
Power source	:	1×AA size dry battery (alkaline)
Operating time	:	Approx. 45 hours or more (With the conditions; LED: OFF, buzzer sound: Loud, center bar: displayed, temperature: 25 °C, and use of alkaline dry battery)
Operating temperature range	:	– 20 to 50 °C
Storage temperature range	:	– 30 to 60 °C

***1, *2**: These values may vary depending on the rotating laser used or status of the atmosphere.
***3**: Excluding the battery compartment.

Procedure for setting the zero point offset function mode

The function and setting procedure of each mode are described below. This setting is stored even after the dry battery has been removed. (For the zero point offset function, refer to "4. ZERO POINT OFFSET FUNCTION".)
"tmP" mode :When the power is OFF, the zero point offset position is deleted.
"PEr" mode :When the power is OFF, the zero point offset position is stored.
"OFF" mode :The zero point offset function is locked and cannot be used.

1. Use the same procedure as **[Start-up Procedure]**.
2. Press the detective precision switch (↓ key). "OFS" is displayed.
3. Press the buzzer sound switch (Enter key). The "tmP"/"OFF"/"PEr" modes are alternately displayed.
4. Use the same procedure as **[Finalization Procedure]**.

Procedure for setting the sensitivity function

1. Use the same procedure as **[Start-up Procedure]**.
2. Press the detective precision switch (↓ key) third times.
3. Press the buzzer sound switch (Enter key).
4. Press the detective precision switch (↓ key) or the hold switch (↑ key) and select "Low/Hi(gh)"*.
5. Use the same procedure as **[Finalization Procedure].**

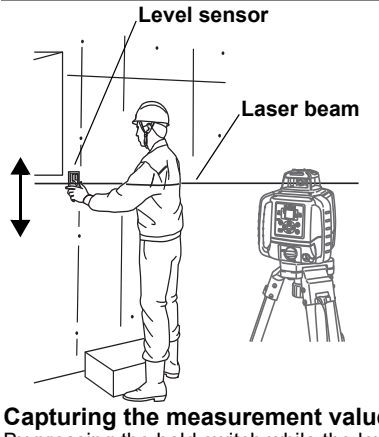
*If you have problems with disturbing sources like fluorescent or strobe lights, set it to "Low". When set to "Low", the detection radius maybe shorter than when set to "Hi(gh)", depending on the measurement conditions.

Procedure for setting the averaging function

1. Use the same procedure as **[Start-up Procedure]**.
2. Press the detective precision switch (↓ key) four times.
3. Press the buzzer sound switch (Enter key).
4. Press the detective precision switch (↓ key) or the hold switch (↑ key) and select "Low/Hi(gh)"*.
5. Use the same procedure as **[Finalization Procedure]**.

*If you need to have more stable readings under difficult atmospheric conditions, set it to"Hi(gh)".

5. OPERATION



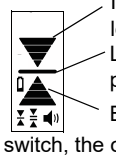
Operating procedure

1. Press the power switch.The power is turned on.
2. Move up and down the level sensor so that the center bar is displayed.
3. Mark the position of the index.
   Press the power switch. The power is turned off.

Note:
When using the level sensor, point it at the front of the rotating laser to the extent possible. If the laser beam is received from the slant direction, a correct measurement value may not be obtained.

Each buzzer sound and position of the level sensor

By the buzzer sound, the position of the level sensor can be checked.



Intermittent short beeps: Move down the level sensor.
Long beep: The level sensor is in the datum position.
Beep Beep: Move up the level sensor.

Capturing the measurement value

By pressing the hold switch while the level sensor is receiving the laser beam, the buzzer sounds and the currently measuring value is fixed. At this time, the level display arrow and the numeric value display flash. By pressing any switch, the operation is returned to normal.
By pressing the hold switch while the level sensor is not receiving the laser beam, "CAP" is displayed on the level sensor. If the laser beam is received for 5 seconds or more continuously in this status, the buzzer sounds and the currently measured value is fixed. At this time, the level display arrow and the value display flash. By pressing any switch, the operation is returned to normal.

Note:

- Make sure that any part of the beam receiving window is not covered during measurement to obtain a correct measurement result.
- When using LS-110D in conjunction with the holder model-110, use the circular level on the holder model-110 to check tilting of the staff.

8. MAINTENANCE

- Always keep this instrument clean, especially the beam receiving window.
- Do not use a strong cleaning agent or solvent.
- If the instrument gets extremely dirty, it may be washed with running water.
- Do not use a high pressure washing machine.
- Be sure to wipe off any moisture from the battery and battery contacts and let them dry completely before storing them in the carrying case. If moisture remains on the device, the contacts may corrode. In this case, the warranty is not applied.
- Should the instrument have any problem or defect, contact to your nearest sales office for inspection and repair.

10. REGULATIONS

[U.S.A.] FCC Compliance (FCC-Class B)
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Responsible party:
Topcon Positioning Systems, Inc.
7400 National Drive Livermore, CA 94550 USA
https://www.topconpositioning.com
FCC CAUTION
Changes or modifications 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 the 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 Nickel, which is known to the State of California to cause cancer.
For more information go to www.P65Warnings.ca.gov.

[Canada] ICES (ICES-Class B)
This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numerique de la Class B est conforme a la norme NMB-003 du Canada.

[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.

[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:Werner von Siemensstraat 35, 2712 PN Zoetermeer, The Netherlands
UK Importer
Name: Topcon Positioning (Great Britain) Ltd.
Address: Unit 2 Sandy Hill Park, Sandy Way, Tamworth, Staffordshire B77 4DU U.K.

CONTRACTORS-TOOLS.COM

SURVEY EQUIPMENT AND SUPPLIES

AUTHORIZED TOPCON DISTRIBUTOR

Need one, or need a hand with yours?

We sell, ship and support these every week.

CALL **1-877-866-5721**

WEB **Contractors-Tools.com**

PRODUCT **LS-110D laser receiver**

- Family owned and operated | Free shipping | Same-day shipping
- Real people who set these up - not a call centre

Experience the value of Great Customer Service!

Contractors-Tools.com | 1-877-866-5721