

EN

ORIGINAL INSTRUCTIONS
LASER SPIRIT LEVEL



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Notes regarding the instructions

Symbols


 **Warning of electrical voltage**
 This symbol indicates dangers to the life and health of persons due to electrical voltage.


 **Warning of laser radiation**
 This symbol indicates dangers to the health of persons due to laser radiation.

 **Warning**
 This signal word indicates a hazard with an average risk level which, if not avoided, can result in serious injury or death.

 **Caution**
 This signal word indicates a hazard with a low risk level which, if not avoided, can result in minor or moderate injury.

Note
 This signal word indicates important information (e.g. material damage), but does not indicate hazards.

 **Info**
 Information marked with this symbol helps you to carry out your tasks quickly and safely.

 **Follow the manual**
 Information marked with this symbol indicates that the instructions must be observed.

You can download the current version of the instructions and the EU declaration of conformity via the following link:




BD1L



<https://hub.trotec.com/?id=47007>

Safety

Read this manual carefully before starting or using the device. Always store the manual in the immediate vicinity of the device or its site of use.

-  **Warning**
Read all safety warnings and all instructions.
 Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.
Save all warnings and instructions for future reference.
- Do not use the device in potentially explosive rooms or areas and do not install it there.
 - Do not use the device in aggressive atmosphere.
 - Do not immerse the device in water. Do not allow liquids to penetrate into the device.
 - The device may only be used in dry surroundings and must not be used in the rain or at a relative humidity exceeding the operating conditions.
 - Protect the device from permanent direct sunlight.
 - Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in legible condition.
 - Do not open the device.
 - Avoid looking directly into the laser beam.
 - Never point the laser beam at people or animals.
 - Only use the device, if sufficient safety precautions were taken at the surveyed location (e.g. when performing measurements along public roads, on building sites etc.). Otherwise do not use the device.
 - Observe the storage and operating conditions (see Technical data).

Intended use

Only use the device for measuring distances by means of the integrated laser and within the measuring range specified in the technical data. Only use the integrated line laser for the projection on non-reflective surfaces as an aid to determine and check horizontal, vertical and / or parallel lines. Observe and comply with the technical data.

To use the device for its intended use, only use accessories and spare parts which have been approved by Trotec.

Foreseeable misuse

Do not use the device in potentially explosive atmospheres, or for measurements in liquids. Never point it at people or animals. Trotec accepts no liability for damages resulting from improper use. In such a case, any warranty claims will be voided.

Any unauthorised modifications, alterations or structural changes to the device are forbidden.

Personnel qualifications

People who use this device must:

- be aware of the dangers that occur when working with laser measuring devices.
- have read and understood the instructions, especially the Safety chapter.

Safety signs and labels on the device

Note

Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in legible condition.

The following safety signs and labels are attached to the device:

Safety symbol	Meaning
	<p>It is a device with a class 2 laser. The power is less than 1.0 mW. The frequency range of the laser is 630 to 670 nm.</p> <p>Do not look directly into the laser beam or the opening from which the laser beam emerges!</p>
	<p>Do not let the device come into contact with fire. There is a danger of explosion.</p>
	<p>Do not expose the device to excessive temperatures or direct sunlight. There is a danger of explosion.</p>

Safety symbol	Meaning
	<p>Observe the correct disposal of the battery!</p> <p>Ensure that the battery is disposed of correctly and never dispose of it in waste water or public waters.</p> <p>The battery contains irritating, caustic and toxic substances that pose significant risks to people and the environment.</p>
	<p>This sign indicates that the operating manual must be observed.</p>

Residual risks



Warning of electrical voltage

There is a risk of a short-circuit due to liquids penetrating the housing!

Do not immerse the device and the accessories in water. Make sure that no water or other liquids can enter the housing.



Warning of electrical voltage

Work on the electrical components must only be carried out by an authorised specialist company!



Warning of explosive substances

Do not expose the batteries to temperatures above 60 °C! Do not let the batteries come into contact with water or fire! Avoid direct sunlight and moisture. There is a risk of explosion!



Warning of laser radiation

Laser class 2, P max.: < 1 mW, λ: 400-700 nm, EN 60825-1:2014

Do not look directly into the laser beam or the opening from which it emerges.

Never point the laser beam at people, animals or reflective surfaces. Even brief eye contact can lead to eye damage.

Examining the laser output aperture by use of optical instruments (e.g. magnifying glass, magnifiers and the like) entails the risk of eye damage.

When working with a laser of class 2, observe the national regulations on wearing eye protection.



Warning

Risk of suffocation!

Do not leave the packaging lying around. Children may use it as a dangerous toy.



Warning

The device is not a toy and does not belong in the hands of children.

Warning
Dangers can occur at the device when it is used by untrained people in an unprofessional or improper way! Observe the personnel qualifications!

Caution
Lithium-ion batteries might catch fire in case of overheating or damage. Ensure a sufficient distance to heat sources, do not subject lithium-ion batteries to direct sunlight and make sure not to damage the casing. Do not overcharge lithium-ion batteries. If the battery is not permanently installed in the device, only use smart chargers that switch off automatically when the battery is fully charged. Charge lithium-ion batteries in due time before they are discharged completely.

Caution
Keep a sufficient distance from heat sources.

Note
To prevent damages to the device, do not expose it to extreme temperatures, extreme humidity or moisture.

Note
Do not use abrasive cleaners or solvents to clean the device.

Information about the device

Device description

The laser spirit level BD1L comes with a distance measurement function as well as a line laser and two spirit levels for levelling. Individual distances as well as a continuous measurement can be measured in measuring mode.

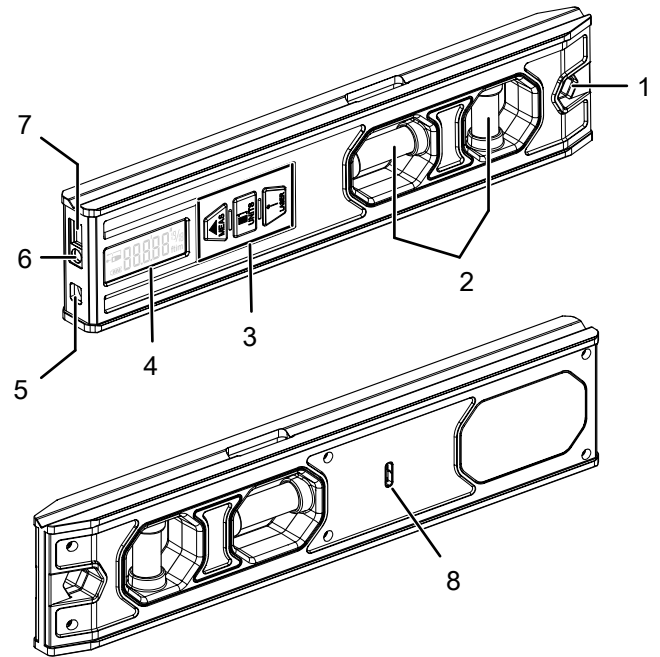
The line laser projects laser lines on surfaces, e.g. to drill holes in a straight line.

The integrated bubbles of the spirit levels serve to provide a horizontal or vertical alignment.

Target surfaces

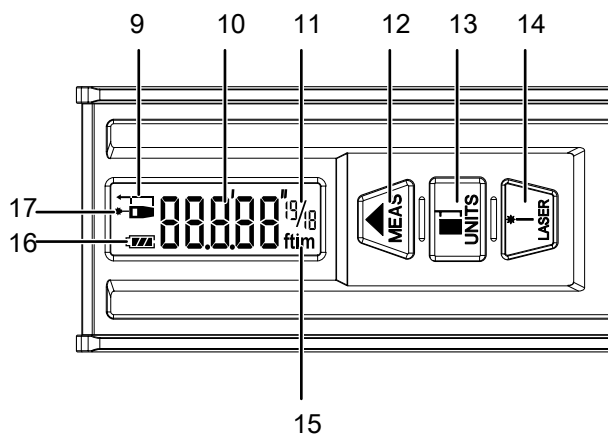
There might be measurement errors when the laser encounters colourless liquids (e.g. water), dust-free glass, styrofoam or other semi-permeable materials. The measurement result may also be falsified if the laser encounters a high-gloss surface and is deflected by it. Non-glossy, non-reflective or dark surfaces can extend the measurement duration.

Device depiction



No.	Designation
1	Eyelet for wrist strap
2	Bubbles of the spirit levels
3	Operating elements
4	Display
5	Line laser
6	Distance laser
7	Receiving lens
8	USB type C interface

Display and operating elements



No.	Display/operating elements		
9	Reference point indication		
10	Measurement value indication		
11	Complementary display when using imperial units		
12	 button	press briefly	Switching the device on Carrying out an individual measurement
		press and hold	Switching on the continuous distance measurement
13	 button	press briefly	Changing the reference value (front, rear)
		press and hold	Changing the units (ft, in, m)
14	 button	press briefly	switches the device on and off Changing the illumination of the spirit level bubbles (vertical, horizontal, both)
		press and hold	Switching the device on
			Switching on the illumination for the spirit level bubbles
			Switching the device off (when spirit levels are illuminated)
15	Display of the selected unit		
16	Battery status indication		
17	Laser active indication		

Technical data

Parameter	Value
Model	BD1L
Weight	217 g
Dimensions (length x width x height)	229 x 48 x 19 mm
Accuracy – laser	±3.0 mm/m
Range	Distance measurement: 0.2 –20 m Line laser: 10 m
Operating temperature	-10 °C to 50 °C
Storage temperature	-20 °C to 60 °C
Laser output	<1 mW (630 –670 nm)
Laser class	2
Power supply	1 integrated Li-Ion battery, 3.7 V

Scope of delivery

- 1 x Laser spirit level BD1L
- 1 x USB type C charging cable
- 1 x Quick guide

Transport and storage

Note

If you store or transport the device improperly, the device may be damaged.

Note the information regarding transport and storage of the device.

Transport

When transporting the device, ensure dry conditions and and protect the device from external influences e.g. by using a suitable bag.

The supplied Li-ion batteries are subjects to the requirements of dangerous goods legislation.

Observe the following when transporting or shipping Li-ion batteries:

- The user may transport the batteries by road without any additional requirements.
- If transport is carried out by third parties (e.g. air transport or forwarding company), special requirements as to packaging and labelling must be observed. This includes consulting a dangerous goods specialist when preparing the package.
 - Only ship batteries if their housing is undamaged.
 - Please also observe any other national regulations.





Storage

When the device is not being used, observe the following storage conditions:

- dry and protected from frost and heat
- protected from dust and direct sunlight
- the storage temperature complies with the values specified in the Technical data

Operation


Switching on/off

1. Press the  button (12) or the  (14) button to switch the device on.
 - ⇒ The device is switched on and is in the respective mode.
2. When in line laser mode, press and hold the  (12) button or press the  (14) button to switch the device off.
 - ⇒ The device switches off in measuring mode after 3 minutes of inactivity.


Basic settings

For setting the operating mode

The device comes with a measuring mode and a line laser mode.


- ✓ The device is now in line laser mode.
1. Press the  button (12) to access the measuring mode.

- ✓ The device is in the measuring mode.

1. Press the  button (14) to access the line laser mode.

Adjusting the reference point

The device always measures the total distance starting at the reference point. This means that if the rear end of the device is set as reference point, the length of the device will be part of the measurement. By default the reference point is set to the rear of the device. You can, however, also relocate the reference point to the front part of the device. Please proceed as follows:


- ✓ The device is in the measuring mode.
1. Press the  button (13) to change the reference point.
 - ⇒ The reference point indication shows the active reference point (9).



Info

When switching the device off and then on again, the reference point will automatically be relocated to the rear end of the device.

Changing the units

- ✓ The device is in the measuring mode.
1. Press and hold the  button (13) to switch between the units for the measured values. Available units are **m**, **ft in**, **in** and **ft**.

Carrying out measurements



Warning of laser radiation

Laser class 2, P max.: <math>< 1 \text{ mW}</math>, λ : 400-700 nm, EN 60825-1:2014

Do not look directly into the laser beam or the opening from which it emerges.

Never point the laser beam at people, animals or reflective surfaces. Even brief eye contact can lead to eye damage.




Examining the laser output aperture by use of optical instruments (e.g. magnifying glass, magnifiers and the like) entails the risk of eye damage.

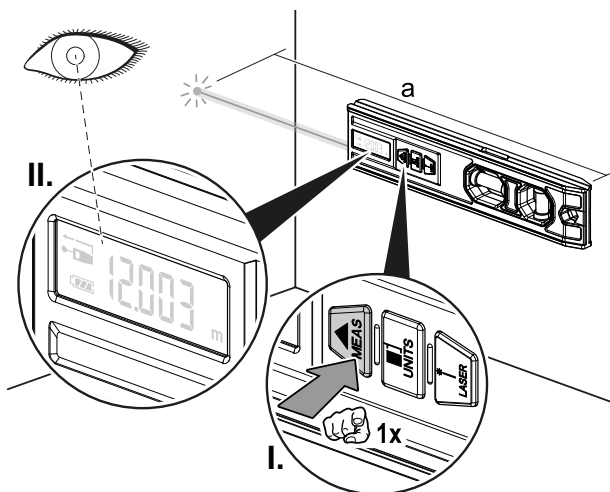
When working with a laser of class 2, observe the national regulations on wearing eye protection.

Carrying out an individual measurement

To carry out an individual measurement, please proceed as follows:



✓ The device is switched on.

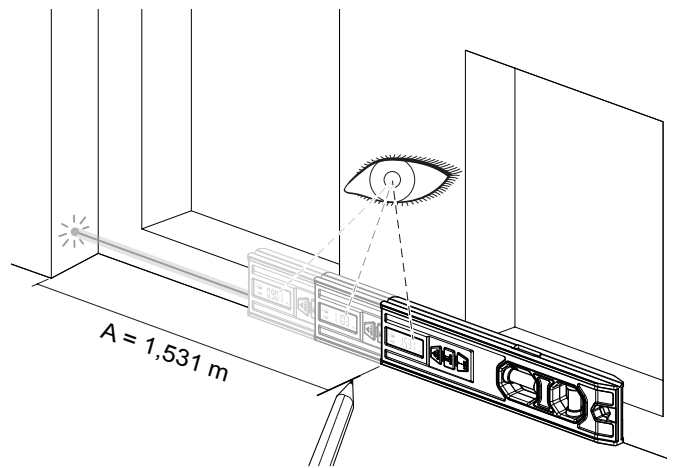
1. Briefly press the  button (12) to activate the laser.
2. Point the laser at the target area.
3. Briefly press the  button (12) again to perform a distance measurement.
 - ⇒ The measured value is immediately indicated on the display.
4. Press the  button (12) again to start the next measurement.




Carry out a continuous measurement

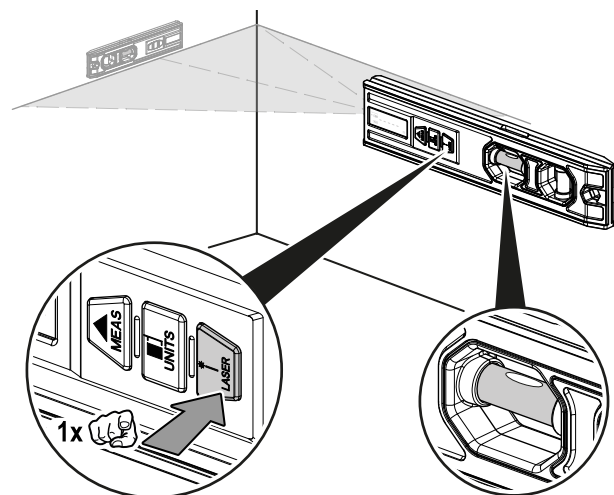
✓ The device is switched on.

1. Press the  button (12) for 2 seconds.
 - ⇒ The continuous measuring mode is switched on.
2. Point the device as desired at the target areas to be measured.
 - ⇒ The currently measured value will be indicated on the display.
3. Briefly press the  button (12).
 - ⇒ The last measured distance will be stored.
 - ⇒ The individual measurement mode is activated again.






Levelling

1. Press the  button (14) briefly to switch on the line laser.
 - ⇒ The line laser is switched on.
 - ⇒ Only the battery symbol (10) is visible on the display.
2. Align the device using the integrated spirit levels to project a horizontal or vertical line onto the target area with the laser.



Illumination of the spirit level

The bubbles of the spirit level can be illuminated as follows:

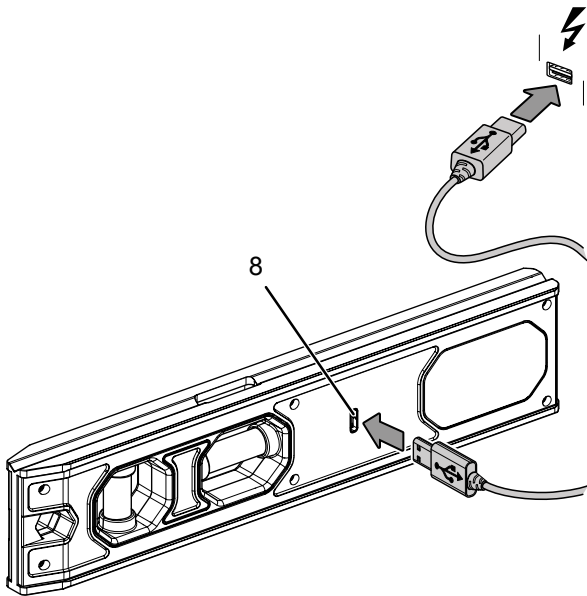
1. Press and hold the  button (14) to switch on the illumination.
⇒ The bubbles of the spirit level light up.
2. Briefly press the  button (14) to switch between the illumination of one or both spirit levels.
3. Press and hold the  button (14) to switch off the illumination and the device.

Maintenance and repair

Charging the battery

The battery must be recharged when the charging indicator on the display indicates a low battery power. To do so, please proceed as follows:

1. Connect the USB cable included in the scope of delivery to a suitable power source (e.g. to the power adapter of a mobile phone or to a computer).
2. Connect the USB cable to the USB type C interface (8).
⇒ The battery symbol (10) indicates the charging level of the battery. Once all bars are permanently illuminated, the device is fully charged.
⇒ The device cannot be used during charging.



Cleaning

Clean the device with a soft, damp and lint-free cloth. Make sure that no moisture enters the housing. Do not use any sprays, solvents, alcohol-based cleaning agents or abrasive cleaners, but only clean water to moisten the cloth.

Repair

Do not modify the device or install any spare parts. For repairs or device testing, contact the manufacturer.

Errors and faults

The device has been checked for proper functioning several times during production. If malfunctions occur nonetheless, check the device according to the following list.

The following fault messages may appear on the display (4):

Display	Cause	Remedy
203	The temperature is too high.	Allow the device to cool down. Observe the permissible operating temperature according to the Technical data chapter.
220	The battery is almost empty.	Charge the device with the USB cable provided in the scope of delivery.
254	Calculation error	Repeat the measurement. Pay attention to the measurement sequence and position of the device.
255	The reception of the reflected signal is too weak.	Repeat the measurement on another surface with better reflective properties.
256	The reception of the reflected signal is too strong.	
259	Measuring distance too great	Observe the range values specified in the Technical data chapter.
301	Hardware fault	Repeatedly switch the device on and off. If the message continues to appear, please contact the Trotec customer service.

Disposal

Always dispose of packing materials in an environmentally friendly manner and in accordance with the applicable local disposal regulations.



The icon with the crossed-out waste bin on waste electrical or electronic equipment is taken from Directive 2012/19/EU. It states that this device must not be disposed of with the household waste at the end of its life. You will find collection points for free return of waste electrical and electronic equipment in your vicinity. The addresses can be obtained from your municipality or local administration. You can also find out about other return options that apply for many EU countries on the website <https://hub.trotec.com/?id=45090>. Otherwise, please contact an official recycling centre for electronic and electrical equipment authorised for your country.

The separate collection of waste electrical and electronic equipment aims to enable the re-use, recycling and other forms of recovery of waste equipment as well as to prevent negative effects for the environment and human health caused by the disposal of hazardous substances potentially contained in the equipment.



In the European Union, batteries and accumulators must not be treated as domestic waste, but must be disposed of professionally in accordance with Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators. Please dispose of batteries and accumulators according to the relevant legal requirements.

Only for United Kingdom

According to Waste Electrical and Electronic Equipment Regulations 2013 (SI 2013/3113) (as amended) and the Waste Batteries and Accumulators Regulations 2009 (SI 2009/890) (as amended), devices that are no longer usable must be collected separately and disposed of in an environmentally friendly manner.

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