Laser Distance Meter

Operation Instruction

Handheld Laser Distance Meter

Congratulations on the purchase of our product.

Carefully read the Safety Instructions and the User Manual before using this product.

The person responsible for the instrument must ensure that all users understand these directions and adhere to them.

Safety Instructions

Symbols used

The symbols used in the Safety Instructions have the following meanings:

⚠WARNING:

Indicates a potentially hazardous situation or an unintended use which, if not avoided, will result serious injury.

⚠CAUTION:

Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor injury and/or in appreciable material,

financial and environmental damage.

☞Important paragraphs which must be adhered to in practice as they enable the product to be used in a technically correct and efficient manner.

Use of the instrument

Permitted use

- Measuring distances
- Computing functions, e.g. areas and volumes.
- Indirect measurement(Pythagoras proposition).
- Plus or minus measurement.
- Tilt measurement Prohibited use.
- Using the instrument without instrument.
- Using outside the stated limits.
- Deactivation of safety systems and removal of explanatory and hazard labels.
- Opening of the equipment byusing tools (screw-drivers,etc.), as far as not specifically permitted for certaincases.

- Carrying out modificationor conversion of the product.
- Use after misappropriation.
- Use of accessories from other. manufactures without the express approval.
- Deliberate orirresponsible behaviour on scaffolding , when using ladders, when measuring near machines which are running, or near parts of machines or installations which are unprotected, aiming directly into the sun.
- Deliberate dazzling of third parties; also in the dark.
- Inadequate safe guards at the surveying site (e.g. when measuring
Limits of use .

☞ See section "Technical Date"

This product is designed for use in areas permanently habitable by humans, do not use the product in explosion hazardous areas or in aggressive environments.

Areas of responsibility

Responsibilities of the manufacturer of the original equipment:

It is responsible for supplying the product, including the User Manual and original accessories, in a completely safe condition.

Responsibilities of the manufacturer of non-original equipment:

☞ The manufacturers of non-original equipment for the product are responsible for developing, implementing and communicating safety concepts for their products. They are se safetalso responsible for the effectiveness of they concepts in combination with the equipment.

Responsibilities of the person in charge of the instrument:

⚠ WARNING

The person responsible for the instrument must ensure that the equipment is used in accordance with the instructions. This person is also

accountable for the deployment of personnel and for their training and for the safety of the equipment when in use.

The person in charge of the instrument has the following duties:

- To understand the safety instructions on the product and the instructions in the User Manual.
- To be familiar with local safety regulations relating to accident prevention.
- To inform local dealer immediately if the equipment becomes unsafe.

Hazards in use

measurements if the instrument is defective or if it has been dropped or has been misused or modified.

Precautions:

Carry out test measurements periodically. Particularly after the instrument has been subject to abnormal use, and before, during or after important measurements.

Make sure the optics is kept clean and

that there is no mechanical damage to the bumpers.

⚠ CAUTION:

In using the instrument for distance measurements or for positioning moving objects (e.g. cranes, building equipment, platforms, etc.) unforeseen events may cause erroneous measurements.

Precautions:

Only use this product as a measuring sensor, not as a controlling device. Your system must be configured and operated

⚠ CAUTION:

Watch out for erroneous distance in such a way, that in case of an erroneous measurement, malfunction of the device or power failure due to installed safety measures (e.g. safety limit switch), it is assured that no damage will occur.

⚠ WARNING:

Flat batteries must not be disposed of

with household waste.Care for the environment and take them to the collecting points provided in accordance with national or local regulations.

The product must not be disposed of with household waste.

Dispose of the product appropriately in accordance with the national .

regulations in force in your country.

Always prevent access to the product by unauthorized personnel.

Technical Support:

11local dealer.

Electromagnetic Compatibility

(EMC)

The term "electromagnetic compatibility" is taken to mean the capability of the product·

to function smoothly in an environment where electromagnetic radiation and electrostatic discharges are present, and without causing electromagnetic· interference to other equipment.

⚠ WARNING:

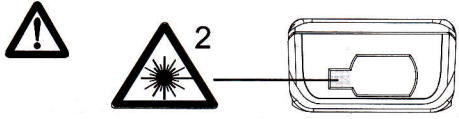
The product conforms to the most stringent requirements of the relevant standards and regulations. Yet, the possibility of it causing interference in other devices cannot be totally excluded.

⚠ CAUTION:

Never attempt to repair the product yourself. In case of damage, contact the local dealership.

Laser classification

Integrated distance meter



The distance meter produces a visible laser beam which emerges from the front of the instrument.

It is a Class 2 laser product in accordance with:
IEC60825-1:2007 "Radiation safety of laser products"
Laser Class 2 products:
Do not stare into the laser beam or direct it towards other people unnecessarily. Eye protection is normally afforded by aversion responses including the blink reflex.

⚠ WARNING:

Looking directly into the beam with optical lens (e.g. binoculars, telescopes) can be hazardous.

Precautions:

Do not look directly into the beam with optical lens.

⚠ CAUTION:

Looking into the laser beam may be

Start-up

Inserting / replacing batteries

1 Remove battery compartment lid and attach hand strap.

2 Insert batteries, observing correct ▭ polarity.

3 Close the battery compartment again.

Replace the batteries when the symbol flashes permanently in the display.

☞ Only use alkaline batteries.

☞ Remove the batteries before any long period of non-use to avoid the. danger of corrosion.

Menu functions

Setting the unit for distance measurements

Press UNITS for long time

The following units are available: m (meter) , ft (feet),in (inch), ft +/ in (feet - inch-1/16)

Beep

Press +▲ for long time to choose BEEP' s on or off.

Laser continuous (—><)

Press and hold down the key when switching on the device until the character * appears permanently in the display with beep sounds.Every further press of the key releases a distance measurement Press the key and hold to switch the device and Laser continuous operation off.

The correction of tilt sensor

Press long this button —you are in the tilt measurement. press five times when the bottom of display shows 0.0; press button until the display shows 0.1. Wait for 5 sends then rotate the instrument by 180 degree. Press the button , and it shows 0.2; wait till it shows 0.0 for finishing the correction. Press the button for exiting.

Illuminating Display (☼)

button(pressed short),the illuminating display can be turned on or off.

Operation

Switching on or off

Switches on the instrument and laser. The display shows the battery symbol until the next button is pressed.

Pressing this button for longer switches the instrument off.

The instrument switches off automatically after 3 minutes of inactivity.

CLEAR button

The last action is canceled. While making area or volume measurements, each single measurement can be deleted and remeasured in series.

Reference setting

The default reference setting is from the rear of the instrument.It will show . on the display. Press long this button to take the next measurement from the front edge. The display will show .

Press this button, the rear reference is set again.

Level Gauge (60m instrument)

Press for long time to choose the level gauge on or off.

Measuring

Single distance measurement

Press to activate the laser. Press again to trigger the distance measurement. The result is displayed immediately.

Tilt measurement

The tilt sensor measures tilts between ± 45° .

During the measurement of tilt, the instrument should be held without transverse tilt, as far as possible, (± 10°). (Not including Type DM1)

Horizontal measurement

Press short button to activate horizontal measurement in the instrument. The following symbol appears in the display If the button is active, the horizontal distance is displayed in the summary line for each distance

measurement (up to max. +/- 45° and up to max. a transverse tilt of +/-10°).

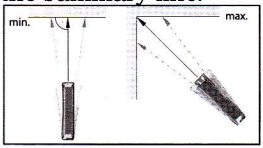
Press the button to collect the measurement data, and the data will be on the display. And hypotenuse distance and angle will be on the auxiliary display.

Minimum / maximum measurement

This function allows the user to measure the minimum or maximum distance from a fixed measuring point.It can also be used as to determine spacings.
It is commonly used to measure room diagonals (maximum values) or horizontal distances (minimum values) or the difference of maximum and minimum.

Press and hold down this button until you hear a beep. Then slowly sweep the laser back and forth, up and down over the desired target point - (e.g. into the corner of a room).

Press to stop continuous measurement. The values for maximum and minimum distances are shown in the display as well as the last measured value in the summary line.



Functions

Addition / subtraction
Distance measuring.

The next measurement is added to the previous one.

The next measurement is subtracted from the previous one.
This process can be repeated as required, the measurement will be displayed in the summary line while the previous one displayed in the secondary line.

The last step will be reverted.
This function is also available for area and volume measurement.
Area

Press once.The symbol appears in the display.

Press this button to take the first length measurement (e.g. length).

Press it again to take the second length measurement (e.g. width).
The result is displayed in the summary line.

Volume

Press this button twice.The symbol appears in the display.

Press this button to take the first length measurement (e.g. length).

Press this button to take the second length measurement (e.g. width).

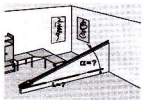
Press this button to take the third length measurement (e.g. height).

The volume then appears in the summary line.

Tilt measurement

Press this button once to activate the tilt sensor.The symbol appears in the display.The tilt is continuously shown as " ° " or " %" depending on the setting.

Press to measure the inclination and the distance. (Not including Tupe 40m instrument)



Indirect measurement
(Pythagoras proposition)

The instrument can calculate distances using Pythagoras proposition.

Make sure you adhere to the prescribed sequence of measurement:

All target points must be in a horizontal or vertical plane.

The best results are achieved when the instrument is rotated about a fixed point (e.g. with the positioning bracket fully folded out and the instrument placed on a wall) .

Make sure that the first measurement and the distance to be measured are at right angle.Use the Minimum / maximum function, as explained in "Measuring -> Minimum / maximum measurement".

Indirect measurement - determining a distance using 2 auxiliary measurements

e.g. for measuring building heights. It is helpful to use a tripod.

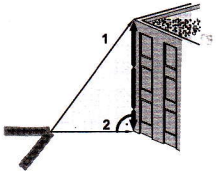
Press this button once, the display shows . The laser is switched on.

Aim at the upper point (1) and trigger the measurement. After the first measurement the value is adopted. The result is displayed in the summary line, the partial results in the secondary line. (e.g. Angle and Hypotenuse distance)

If the angle is above 45° , it need to measure point (2) . Press to switch off the angle sensor, then must measure the distance of point (1). Keep the instrument as horizontal as possible during the measuring.

Press and hold down this button to trigger continuous measurement, sweep the laser back and forth, up and down over the ideal target point.

Press to stop continuous measurement point (2). The result is displayed in the summary line, the partial results in the secondary line. (e.g. Hypotenuse and right angle edge distance)



Indirect measurement - determining a distance using 3 auxiliary measurements

Press this button twice; the display shows the following symbol . The laser is switched on.

If the measurement is the horizontal distance, you can not measure the distance of the picture (2) .When measure the distance of picture (1)you need press button to switch off the angle sensor, then through the three sides to determine the distance.

If the measurement is the horizontal distance, fix the instrument.

Let the light point direct to point (1) and point (3), read angle values on the

secondary line of point (1) and (3). If less than 45° , it is only need to measure the point (1) and point (3), then it will be able to confirm the distance. Otherwise, also need to measure the point (2), to determine the distance.

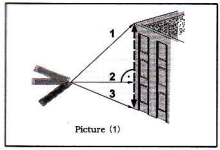
For 60m device, Then press long this button to turn off the angle sensor.

Aim at the upper point (1) and trigger the measurement.After the first measurement the value is adopted. After the measurement, if the angle sensor is turned off, keep the instrument as horizontal as possible.

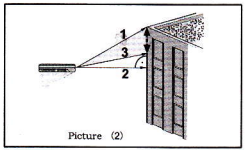
Press and hold down this button to trigger continuous measurement. Sweep the laser up and down over the ideal target point (2).

Press to stop continuous measurement (2). The value is adopted.

press this button to trigger the measurement (3). The result is displayed in the summary line, the partial results in the secondary lines.



Picture (1)



Picture (2)

Storage of constants / historical storage
Historical storage

Press for long time , The icon will show on the display, and the previous 10 results (measurements or calculated results) are shown in reverse order. The and buttons can be used for navigation.

Appendix

Message codes
All message codes are displayed with either icon or"Error".The following errors can be corrected:

Icon	Cause	Remedy
	Calculation error, Receiving the reflected light too weak or too strong, Measurement time too long	Reoperation, change a better surface reflecting or using target plate.
	The goal of the ambient light is too strong	Change the light for measuring.。
	Temperature too high (+40℃) or too low (0℃)	Cool down or Warm up the instrument, External Temperature will be available from 0℃ to +40 ℃.
2800	Hardware error	Switch on / off the instrument several times. If the symbol still appears, then your instrument may be defective. Please call your dealer for assistance.

Technical Data

ITEM	40m instrument	60m instrument
Measuring range	0.05 to 40 M *	0.05 to 60 M *
Measuring accuracy	± 2 mm **	± 2 mm **
Display accuracy	1 mm	1 mm
Laser classification	Class 2M II	Class 2M II
Laser type	620-690nm,< 1mW	620-690nm,< 1mW
Horizontal measurement	○	●
Horizontal measurement range	○	± 45°
Horizontal measurement accuracy	○	± 0.3°
Area, Volume measuring	●	●
Indirect measurement	●	●
Pythagoras proposition	●	●
Plus-minus method	●	●
Continuous measurement	●	●
Minimum / maximum measurement	●	●
Display illumination	●	●
Show beep	●	●
Multifunctional end piece	○	○
Protection against splashes and dust	IP 54	IP 54
Historical storage	10	10
Temperature range for Operation	0℃ to +40℃	0℃ to +40℃
Temperature range for Storage	-20℃ to +70℃	-20℃ to +70℃
Battery life	5000 to 8000 measurements	5000 to 8000 measurements
Battery selection	Lr6 (AAA) 2 × 1.5V	Lr6 (AAA) 2 × 1.5V
Laser switch-off automatically	After 30 seconds	After 30 seconds
Instrument switch-off automatically	After 3 minutes	After 3 minutes
Dimensions	113 ×45 ×25 mm	113 ×45 ×25 mm
Weight	85g	85g

*Use a target plate to increase the measurement range during daylight or if the target has poor reflection properties.

**Measurement could reach 10 m in good conditions (good measurement surface, room temperature).Under adverse measuring conditions, such as the light is too strong, the measured surface reflective weakly or the temperature difference is too large, or the deviation over distance above 10m will increase on ±0.2 mm/m.

Measuring conditions

Measuring range

The range of 40m instrument is limited to 40 m; and 60m instrument is limited to 60m. At night or dusk and if the target is in shadow the measuring range without target plate is increased.

Use a target plate to increase the measurement range during daylight or if the target has poor reflection properties.

Target surfaces

Measuring errors can occur when measuring toward colourless liquids (e.g. water)or dust free glass, styrofoam or similar semi-permeable surfaces.Aiming at high gloss surfaces may deflect the laser beam and lead to measurement errors.Against non-reflective and dark surfaces the measuring time may increase.

Care

Do not immerse the instrument in water.Wipe off dirt with a damp, soft cloth. Do not use aggressive cleaning agents or solutions. Handle the instrument as a camera or telescope.

Warranty

The instrument comes with one year warranty.This effective prerequisite of the warranty is as follows: You should operating instructions, handling, processing, cleaning and maintaining this instrument, according with our company's use of instrument, and maintaining it at good technical condition. This means that the tools can only use the original parts and spare parts from our company. This warranty only provides free repair or replacement of defective parts in the entire expected lifetime of the tool. If the parts need repair or replacement due to normal wear and tear is not in the warranty.

All illustrations, descriptions and technical specifications may be subject to change without prior notice.

Warranty Card

Serial number: _____
Product type: _____
Name of purchaser: _____
Address: _____
Distribution name: _____

Product name: Laser distance meter
Date of purchase: _____
Phone: _____
Zip code: _____
Dealer seal: _____

Free repair services:

- The whole of laser distance meter.

Battery, target board, hand strap, soft package, packaging and other auxiliary equipments are not in the free maintenance range.

Maintenance

Date of maintenance	Maintenance center	Replacement parts

Not registered of purchasing date on the warranty card, the free maintenance service of this machine will be from the date of manufacture.