Leica DISTO™ X1
The original laser distance meter

User Manual
Version 1.1
English

- when it has to be **right**

Leica Geosystems

PART OF HEXAGON

Introduction

This manual contains important safety directions as well as instructions for setting up the product and operating it. Refer to 1 Safety Directions for further information.

Read carefully through the User Manual before you switch on the product.

☞ The content of this document is subject to change without prior notice. Ensure that the product is used in accordance with the latest version of this document.

Updated versions are available for download at the following Internet address:

https://www.disto.com/manuals

☞ Keep for future reference!

Trademarks

- *Bluetooth*® is a registered trademark of Bluetooth SIG, Inc.
- The N-Mark is a trademark or registered trademark of NFC Forum, Inc. in the United States and in other countries.

All other trademarks are the property of their respective owners.

Validity of this manual

This manual applies to the Leica DISTO™ X1. Where there are differences between the standard setups they are clearly described.

Leica Geosystems address book

On the last page of this manual, you can find the address of Leica Geosystems headquarters. For a list of regional contacts, please visit http://leica-geosystems.com/contact-us/sales_support.

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1 Safety Directions

1.1 General Introduction

Description

The following directions enable the person responsible for the product, and the person who actually uses the equipment, to anticipate and avoid operational hazards.

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

About warning messages

Warning messages are an essential part of the safety concept of the instrument. They appear wherever hazards or hazardous situations can occur.

Warning messages...

- make the user alert about direct and indirect hazards concerning the use of the product.
- contain general rules of behaviour.

For the users' safety, all safety instructions and safety messages shall be strictly observed and followed! Therefore, the manual must always be available to all persons performing any tasks described here.

DANGER, **WARNING**, **CAUTION** and **NOTICE** are standardised signal words for identifying levels of hazards and risks related to personal injury and property damage. For your safety, it is important to read and fully understand the following table with the different signal words and their definitions! Supplementary safety information symbols may be placed within a warning message as well as supplementary text.

Type	Description
⚠ DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a potentially hazardous situation or an unintended use which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result 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.

Additional symbols

	Operator's manual. Instruct the operator to read the user manual and safety instructions.
CE	CE mark Europe (European Conformity) certifying that the product complies with essential requirements of the EU directives and harmonized EU standards.

UK Conformity Assessed.
Manufacturer declaration for the compliance with the relevant UK regulations.

Disposal
In accordance with EU Directive 2012/19/EU on waste of electrical and electronic equipment and its implementation in national legislation, non-usable electrical appliances must be collected separately and disposed of in an environmentally friendly manner.

IP Class acc. IEC 60529.
Dust- and jet water protected.

Packaging is manufactured using corrugated cardboard.
EU Packaging Waste Directive 97/129/EC.

Japan radio equipment certification mark.

Near Field Communication (NFC).

Generic warning.

Laser Warning.
Laser class 2 acc. IEC 60825-1.

Pollution control logo 1 ACPEIP e (China RoHS).
Hazardous substances within maximum concentration values.

RCM mark Australia.

1.2 Definition of Use

Intended Use

- Measuring distances in interior as well as exterior condition
- Tilt measurement
- Data transfer with Bluetooth and/or NFC

Foreseeable misuse

- Use of the product without instructions
- Use outside of the intended use and limits
- Disabling of safety systems
- Removal of hazard notices
- Opening the product using tools, for example a screwdriver, unless this is permitted for certain functions
- Use with accessories from other manufacturers without the prior written explicit approval of Leica Geosystems AG
- Modification or conversion of the product
- Deliberate dazzling of third parties; also in the dark
- Inadequate safeguards at the working site
- Deliberate or irresponsible behaviour on scaffold, 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
- Optics are fogged up or wet. Before measurements, condensation moisture and splash water must be removed from directly accessible parts such as the output optics using a suitable cloth
- Moving the device during measurements. Try to hold it still when measuring
- Dusty atmosphere. Make sure that the lenses of the instrument are free of dust when measuring. If necessary, clean with a brush

- Measurements in rain, snow, fog or other atmospheric conditions between the device and the target point
- Measurements in strong electrical and magnetic fields, which cannot be completely ruled out in the vicinity of transformers, strong magnets, power supply systems, and so on
- Measurements with the laser beam in the immediate vicinity of highly reflective surfaces

1.3 Limits of Use

☞ Refer to section 7 Technical Data.

Environment

Suitable for use in an atmosphere appropriate for permanent human habitation. Not suitable for use in aggressive or explosive environments.

1.4 Responsibilities

Manufacturer of the product

Leica Geosystems AG, CH-9435 Heerbrugg, hereinafter referred to as Leica Geosystems, is responsible for supplying the product, including the User Manual and original accessories, in a safe condition.

The company above is not responsible for third-party accessories.

Person responsible for the product

The person responsible for the product 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
- Always prevent access to the product by unauthorised and/or untrained personnel
- To ensure that the product is used in accordance with the instructions
- Keep the User Manual and pass on if the instrument is passed on
- Do not let children use the laser device unsupervised

☞ The product is permitted to use for skilled persons only.

1.5 Hazards of Use

Radios, digital cellular phones or products with Bluetooth

⚠WARNING

Use of product with radio or digital cellular phone devices

Electromagnetic fields can cause disturbances in other equipment, installations, medical devices, for example pacemakers or hearing aids, and aircrafts. Electromagnetic fields can also affect humans and animals.

Precautions:

- Although the product meets the strict regulations and standards which are in force in this respect, Leica Geosystems AG cannot completely exclude the possibility that other equipment can be disturbed or that humans or animals can be affected.
- Do not operate the product with radio or digital cellular phone devices in the vicinity of filling stations or chemical installations, or in other areas where an explosion hazard exists.
- Do not operate the product with radio or digital cellular phone devices near medical equipment.
- Do not operate the product with radio or digital cellular phone devices in aircrafts.
- Do not operate the product with radio or digital cellular phone devices for long periods with the product immediately next to your body.

☞ This warning also applies when using products with Bluetooth.

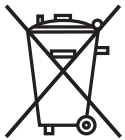
⚠WARNING

Improper disposal

If the product is improperly disposed of, the following can happen:

- If polymer parts are burnt, poisonous gases are produced which may impair health.
- If batteries are damaged or are heated strongly, they can explode and cause poisoning, burning, corrosion or environmental contamination.
- By disposing of the product irresponsibly you may enable unauthorised persons to use it in contravention of the regulations, exposing themselves and third parties to the risk of severe injury and rendering the environment liable to contamination.

Precautions:

▸ 

The product must not be disposed 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 unauthorised personnel.

Product-specific treatment and waste management information can be downloaded from Get Disto Support, section **Recycling Passports**.

⚠ CAUTION

Electromagnetic radiation

Electromagnetic radiation can cause disturbances in other equipment.

Precautions:

- Although the product meets the strict regulations and standards which are in force in this respect, Leica Geosystems cannot completely exclude the possibility that other equipment may be disturbed.
- The product is a class A product when operated with the internal batteries. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

NOTICE

Dropping, misusing, modifying, storing the product for long periods or transporting the product

Watch out for erroneous measurement results.

Precautions:

- Periodically carry out test measurements, particularly after the product has been subjected to abnormal use and before and after important measurements.

NOTICE

Target surfaces

Measuring errors and increase of measuring time can occur.

Precautions:

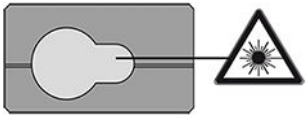
- Keep in mind that measuring errors can occur when measuring to colourless liquids, glass, styrofoam or permeable surfaces or when aiming at high gloss surfaces.
- Against dark surfaces the measuring time increases.

1.6 Laser Classification

General

Laser aperture

The laser diode built into the product produces a visible laser beam which emerges from the front side.



Normative references

The laser product described in this section is classified as laser class 2 in accordance with:

- IEC 60825-1 (2014-05): “Safety of laser products”
- EN 60825-1:2014/A11:2021 “Safety of laser products - Part 1: Equipment classification and requirements"
- EN 50689:2021 “Safety of laser products - Particular Requirements for Consumer Laser Products"

Safety information

These products are safe for momentary exposures but can be hazardous for deliberate staring into the beam. The beam may cause dazzle, flash-blindness and after-images, particularly under low ambient light conditions.

⚠ CAUTION

Class 2 laser product

From a safety perspective, class 2 laser products are not inherently safe for the eyes.

Precautions:

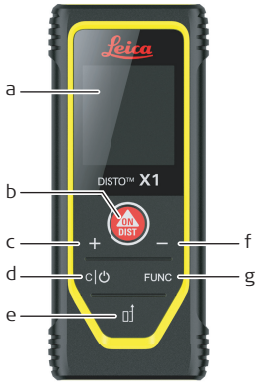
- Avoid staring into the beam or viewing it through optical instruments.
- Avoid pointing the beam at other people or at animals.
- Pay particular attention to the direction of the laser beam when remotely operating the product by an app or software. A measurement could be triggered at any time.
- If laser radiation hits your eye, you must close your eyes and immediately turn your head away from the beam.

Description	Value
Wavelength	620-690 nm
Maximum average radiant power	< 1 mW
Pulse duration	> 400 ps.
Pulse repetition frequency (PRF)	320 MHz
Beam divergence	0.16 mrad × 0.6 mrad

2 Overview

Components

The Leica DISTO™ is a laser distance meter operating with a class 2 laser.
See chapter 7 Technical Data for scope of use.



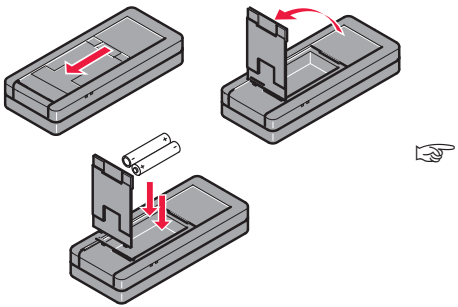
a Display
b **ON/DIST**, ON/Measure
c Add
d Clear/OFF
e Measuring reference
f Subtract
g Functions/Settings

Icons

	Laser ON/OFF, measuring reference		Battery charge
	Loudspeaker ON/OFF		NFC activated
	Bluetooth activated, connection established		Volume
	Area, painter function		

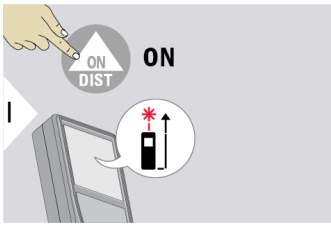
3 Instrument Setup

Insert batteries

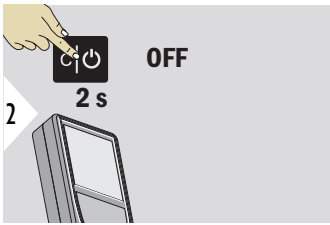


To ensure a reliable use, we recommend using high quality Alkaline batteries. Change batteries when battery symbol is flashing.

Switching ON/OFF

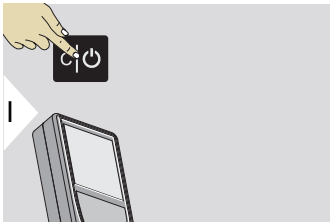


Device is turned ON.

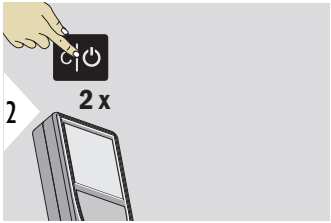


Device is turned OFF.

Clear



Undo last action.



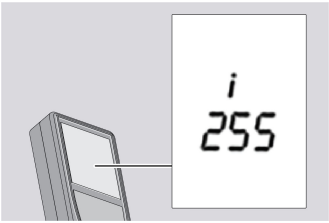
Leave current function, go to default operation mode.

Message codes

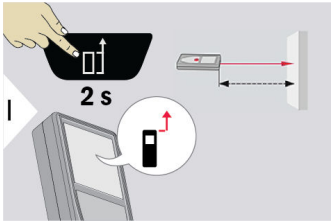
NOTICE

If the message "i" appears with a number, observe the instructions in 5 Message Codes section.

Example:

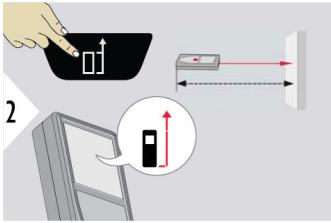


Adjusting measuring reference



Distance is measured from the front of the device.

☞ Press/hold Measuring reference key for 2 seconds and reference from front is set permanently.



Distance is measured from the rear of the device (standard setting).

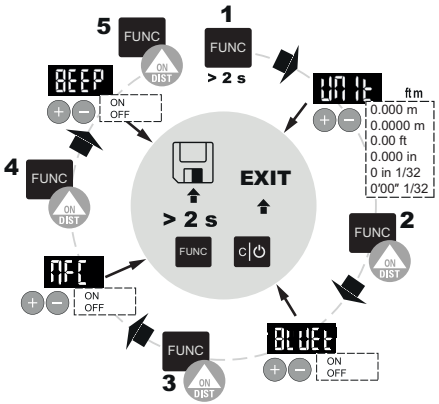
Set default settings

The **FUNC** settings menu allows settings to be changed and stored permanently.

Settings are for:

- **UNIT**
- **BLUETOOTH**
- **NFC**
- **BEEP**

Navigation in the menu



1 Press/hold the **FUNC** key for 2 s to show the **UNIT** setting page.

2 Press the **FUNC** or **ON/DIST** key. Selected **UNIT** is stored. Enter the second setting page - **BLUETOOTH**.

3 Press the **FUNC** or **ON/DIST** key. Selected **BLUETOOTH** setting is stored. Enter the third setting page - **NFC**.

4 Press the **FUNC** or **ON/DIST** key. Selected **NFC** setting is stored. Enter the fourth setting page - **BEEP**.

5 Press the **FUNC** or **ON/DIST** key. Selected BEEP setting is stored. The cycle through the setup menu is repeated.

Change/store settings, exit menu with/without saving

+ −	Toggle between different units/ state.	Select unit/state.
FUNC	Press/hold the **FUNC** key for 2 s to save the current selection.	This exits the settings menu and returns to the measurement screen.
C|⏻	Press the **C/OFF** key to exit the settings menu.	Returns to the measurement screen without saving last changes.

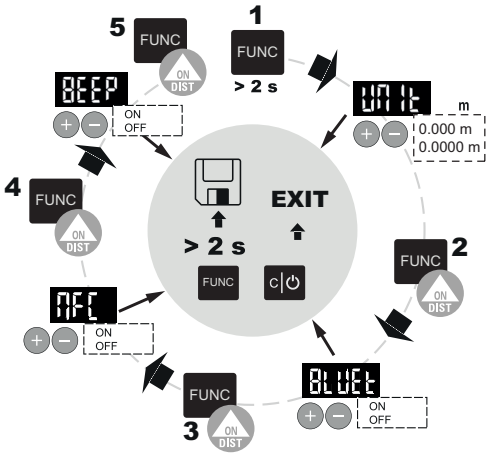
Set default settings

The **FUNC** settings menu allows settings to be changed and stored permanently.

Settings are for:

- **UNIT**
- **BLUETOOTH**
- **NFC**
- **BEEP**

Navigation in the menu



1 Press/hold the **FUNC** key for 2 s to show the **UNIT** setting page.

2 Press the **FUNC** or **ON/DIST** key. Selected **UNIT** is stored. Enter the second setting page - **BLUETOOTH**.

3 Press the **FUNC** or **ON/DIST** key. Selected **BLUETOOTH** setting is stored. Enter the third setting page - **NFC**.

4 Press the **FUNC** or **ON/DIST** key. Selected **NFC** setting is stored. Enter the fourth setting page - **BEEP**.

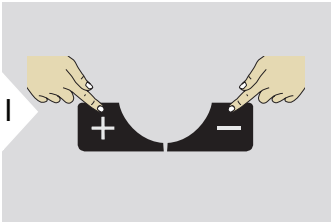
5 Press the **FUNC** or **ON/DIST** key. Selected BEEP setting is stored. The cycle through the setup menu is repeated.

Change/store settings, exit menu with/without saving

+ −	Toggle between different units/ state.	Select unit/state.
FUNC	Press/hold the **FUNC** key for 2 s to save the current selection.	This exits the settings menu and returns to the measurement screen.
C|⏻	Press the **C/OFF** key to exit the settings menu.	Returns to the measurement screen without saving last changes.

UNIT settings

Switch between units by simply pressing + or − key.

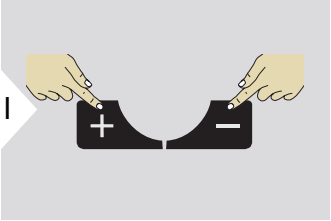


0.000 m	0 in 1/32	0′00″ 1/32
0.0000 m	0 in 1/16 [1]	0′00″ 1/16 [1]
0.00 ft	0 in 1/8 [1]	0′00″ 1/8 [1]
0.000 in	0 in 1/4 [1]	0′00″ 1/4 [1]

[1] Available in devices purchased in USA and Canada

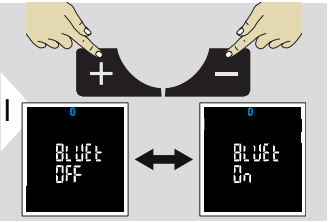
UNIT settings

Switch between units by simply pressing + or – key.



0.000 m
0.0000 m

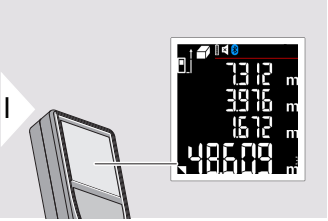
BLUETOOTH settings

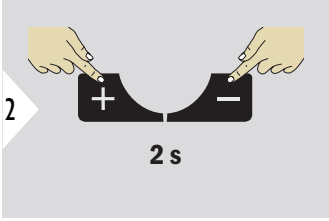


Deactivate/activate Bluetooth.

☞ It is not possible to use Bluetooth and NFC at the same time.

Sending measurements





Hold the + and – key simultaneously for 2 s. The final measured value is sent to a connected device.
This works for all functions.

☞ Bluetooth is active when the device is switched on. Connect the device with your smartphone, tablet, laptop... Measurement values are transferred automatically right after a measurement. To transfer a result from the main line, press the Measuring reference key. Bluetooth switches off as soon as the laser distance meter is switched off.

The Leica DISTO™ is compatible to smartphone, tablet or laptop devices using Bluetooth 4.0 or higher. The number of possible measurements with only one battery charge is hardly affected due to the Low Energy technology.

Following software and app are available from Leica Geosystems. They extend the possibilities arising with the use of Leica DISTO™:

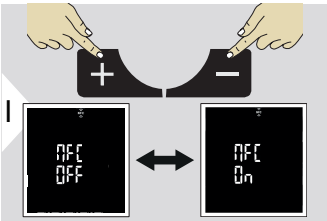
DISTO™ Transfer for use with Windows 10 or higher. It is free of charge and can be downloaded from https://www.disto.com.

The DISTO™ Plan app is available for iOS and Android tablets and smartphones. Download the app from the corresponding app stores. The app is basically free but includes in-App purchases to extend its functionality as well.

☞ We provide no warranty for free Leica DISTO™ software and offer no support for it. We accept no liability whatsoever arising from the use of the free software and we are not obliged to provide corrections nor to develop upgrades. A wide range of commercial software can be found on our homepage. Apps for Android® or iOS can be found in special internet shops. Refer to https://www.disto.com for more details.

NFC settings

Near Field Communication



Deactivate/activate NFC.

☞ It is not possible to use Bluetooth and NFC at the same time.

Placement of the NFC module

The NFC module is located on the back of the device, centrally above the battery compartment, where the NFC symbol is shown on the type label.

Placement of the NFC chip on smartphones

NFC chips in smartphones are usually placed near the top back of the device. On iPhones, the chip is located near the top front, close to the earpiece. In most Android phones, it is typically just below the rear camera.

Operating distance

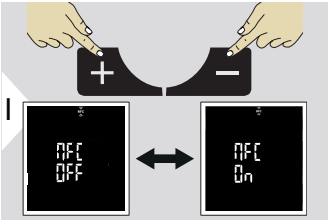
For optimal performance, ensure that the NFC-enabled device is within a distance of up to 2 cm (approximately 0.8 in) from the NFC module on your device. This range allows for efficient and reliable communication and data transfer.

Usage with DISTO™ Plan App

The device utilises NFC technology in combination with the DISTO™ Plan App to enhance user experience. This feature facilitates the initial connection setup and allows for seamless transfer of measurement data.
When the device is delivered, both NFC and Bluetooth are enabled by default. To transfer measurements using NFC, ensure that Bluetooth is turned OFF.

NFC settings

Near Field Communication



Deactivate/activate NFC.

☞ It is not possible to use Bluetooth and NFC at the same time.

Placement of the NFC module

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Placement of the NFC chip on smartphones

NFC chips in smartphones are usually placed near the top back of the device. On iPhones, the chip is located near the top front, close to the earpiece. In most Android phones, it is typically just below the rear camera.

Operating distance

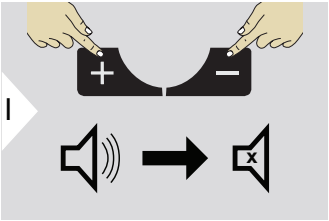
For optimal performance, ensure that the NFC-enabled device is within a distance of up to 2 cm from the NFC module on your device. This range allows for efficient and reliable communication and data transfer.

Usage with DISTO™ Plan App

The device utilises NFC technology in combination with the DISTO™ Plan App to enhance user experience. This feature facilitates the initial connection setup and allows for seamless transfer of measurement data.
When the device is delivered, both NFC and Bluetooth are enabled by default. To transfer measurements using NFC, ensure that Bluetooth is turned OFF.

BEEP settings

Switch between ON/OFF by simply pressing + or − key.



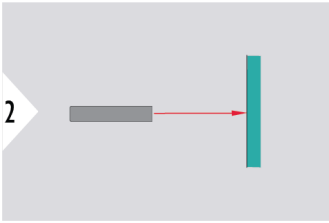
If BEEP OFF, a mute icon appears in the upper part of the display.

4 Operation

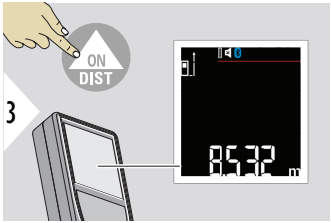
Overview

Key	Press key …	Function
ON DIST	1 × 2 seconds	Single **DISTANCE** **Permanent/minimum-maximum** measuring
FUNC	1 ×	**AREA** **PAINTER** function
	2 ×	**VOLUME**

Single DISTANCE



Aim active laser at target.



NOTICE

Target surfaces

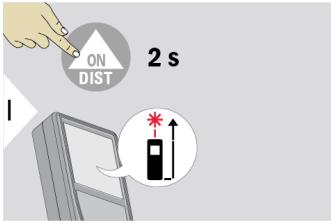
Measuring errors and increase of measuring time can occur.

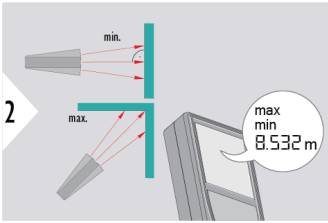
Precautions:

- Keep in mind that measuring errors can occur when measuring to colourless liquids, glass, styrofoam or permeable surfaces or when aiming at high gloss surfaces.
- Against dark surfaces the measuring time increases.

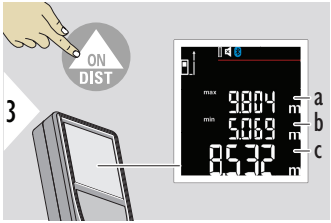
Permanent/minimum-maximum measuring

Used to measure room diagonals (maximum values) or horizontal distance (minimum values).





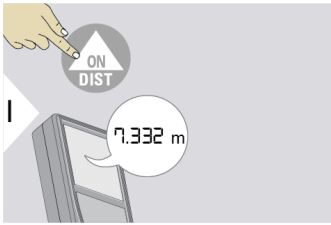
Live view

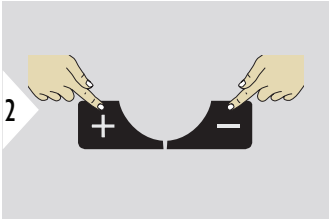


Stops permanent/minimum-maximum measuring.
The measuring results are displayed.

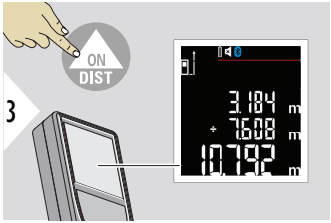
a Maximum distance measured
b Minimum distance measured
c Main line: The current value measured

Add/subtract





+ The next measurement is **added** to the previous one
– The next measurement is **subtracted** from the previous one



The result is shown in the main line and the measured value above.

☞ This process can be repeated as required. The same process can be used for adding or subtracting areas or volumes.