Leica DISTO™ X4

The original laser distance meter

- when it has to be **right**

Leica Geosystems

Overview

Components

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

1 Display

2 ON/ Measure

3 Clear/ OFF

4 Zoom/ Navigate upwards

5 Add/ Navigate left

6 Enter/ Equal

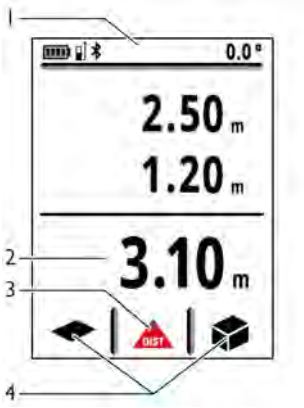
7 Selection keys linked to symbols above

8 Functions

9 Subtract/ Navigate right

10 Measuring reference/ Navigate downwards

Basic result screen



1 Status bar

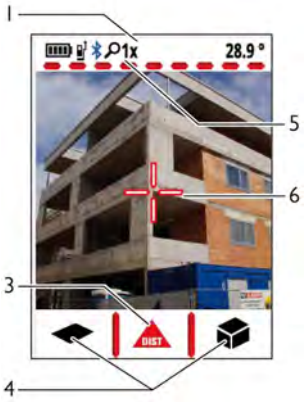
2 Main line

3 Active function

4 Favorites

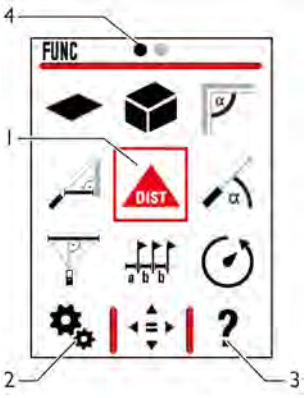
Overview

Basic measuring screen



1	Status bar
3	Active function
4	Favorites
5	Zoom stage
6	Cross hair

Selection screen



1	Function/ Settings
2	Settings
3	Help function
4	Page indicator

Icons on status bar

- Scroll down for further results
- Battery power
- Bluetooth® is switched on
- Bluetooth® connection established
- Measuring reference
- Device is measuring
- Offset is activated and adds/substracts the defined value from measuring distance
- Device is levelled
- Device is not levelled
- Zoom

Technical data

General	
Accuracy with favourable conditions *	1 mm / 0.04" ***
Accuracy with unfavourable conditions **	2 mm / 0.08" ***
Range with favourable conditions *	0.05 - 150m / 0.16 - 500ft ***
Range with unfavourable conditions **	0.05 - 80m / 0.16 - 260ft ***
Smallest unit displayed	0.1 mm / 1/32 in
X-Range Power Technology	yes
Laser class	2
Laser type	635 nm, <1 mW
ø laser point | at distances	6 /30 /60 mm | 10/ 50/ 100 m
Tilt measuring tolerance to laser beam ****	± 0.2°
Tilt measuring tolerance to housing ****	± 0.2°
Tilt measuring range ****	360°
Protection class	IP65 (dust- and splash water protected)
Auto. laser switch off	after 90 s
Auto. power switch off	after 180 s
Bluetooth® Smart	Bluetooth® v4.0
Power of Bluetooth® Smart	0.71 mW
Frequency of Bluetooth® Smart	2400 - 2483.5 MHz
Range of Bluetooth® Smart	<10m
Battery durability (2 x AA)	up to 4000 measurements
Dimension (H x D x W)	132 x 56 x 29 mm | 5.2 x 2.2 x 1.1 in
Weight (with batteries)	184 g/ 6.49 oz
Temperature range Storage | Operation	-25 to 70°C/ -13 to 158°F | -10 to 50°C/ 14 to 122°F

* favourable conditions are: white and diffuse reflecting target (white painted wall), low background illumination and moderate temperatures.
** unfavourable conditions are: targets with lower or higher reflectivity or high background illumination or temperatures at the upper or lower end of the specified temperature range.
*** Tolerances apply from 0.05 m to 10 m with a confidence level of 95%.
With favourable conditions the tolerance may deteriorate by 0.10 mm/m for distances above 10 m.
With unfavourable conditions the tolerance may deteriorate by 0.15 mm/m for distances above 10 m.
**** after user calibration. Additional angle related deviation of +/-0.01° per degree up to +/-45° in each quadrant.
Applies at room temperature. For the whole operating temperature range the maximum deviation increases by +/-0.1°.

Technical data

Functions	
Distance measuring	yes
Min/Max measuring	yes
Permanent measuring	yes
Stake out	yes
Addition/Subtraction	yes
Area	yes
Room angle	yes
Volume	yes
Painter function (area with partial measurem.)	yes
Pythagoras	3-point
Smart Horizontal Mode / Indirect height	yes
Level	yes
Memory	yes
Beep	yes
Illuminated colour display	yes
Bluetooth® Smart	yes
Personalized Favorites	yes
Timer	yes
Point to point function/ distance	yes *****
Smart Area	yes *****
Height tracking	yes

***** In combination with Leica DST 360 adapter

Introduction

The safety instructions (see Safety Instructions) and the user manual should be read through carefully before the product is used for the first time.

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

The symbols used have the following meanings:

⚠ WARNING

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

⚠ CAUTION

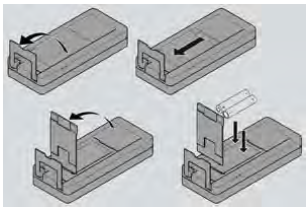
Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor injury and/or appreciable material, financial and environmental damage.

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

Instrument Set-up

Insert batteries

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



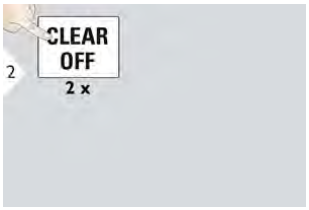
Switching ON/OFF

Device is turned OFF.

Instrument Set-up

Clear

Undo last action.



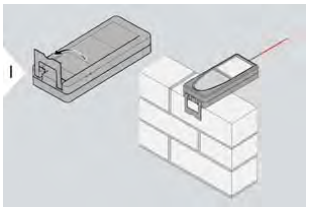
Leave actual function, go to default operation mode.

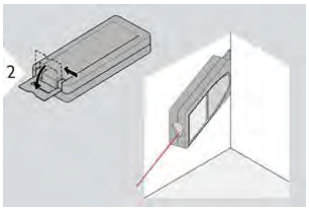
Message Codes

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

Instrument Set-up

Multifunctional endpiece

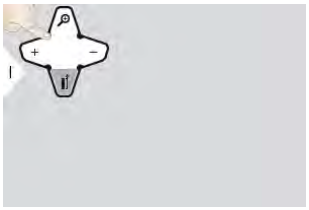


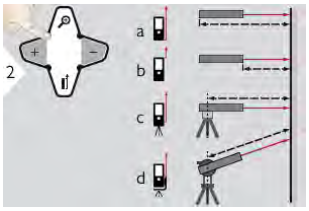


The orientation of the endpiece is automatically detected and the zero point is adjusted accordingly.

When measuring with 90° flipped-out endpiece please meake sure that it lies plane against the edge you measure from.

Adjusting measuring reference





a) Distance is measured from the rear of the device (standard setting).
b) Distance is measured from the front of the device.
c) Distance is measured from the tripod thread.

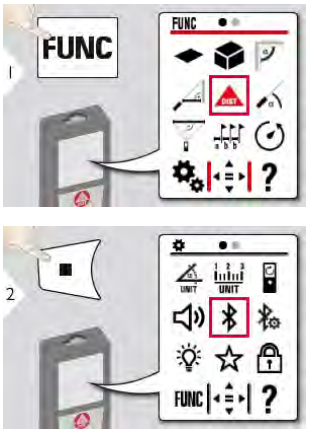
d) Distance is measured from a Leica DISTO Adapter FTA 360.

Confirm setting.

If device is switched off, reference goes back to standard setting (rear of the device).

Settings

Overview



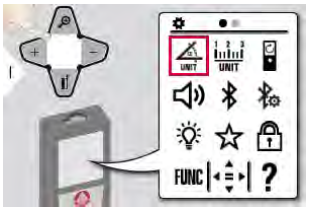
- Tilt units
- Distance units
- Turning screen**
- Beep
- Bluetooth®
- Bluetooth® settings
- Illumination
- Favorites
- Keypad lock
- Tilt calibration
- Information / Serial number
- Offset
- Calibration of DST 360*
- Reset

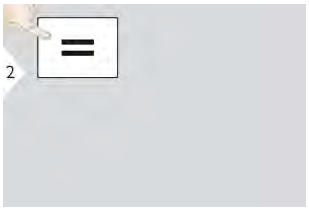
* Activated when connected to Leica DST 360 adapter

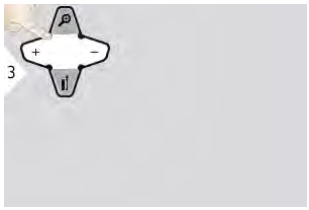
** Firmware update might be required through the Leica DISTO™ Plan App to get this feature

Settings

Tilt units





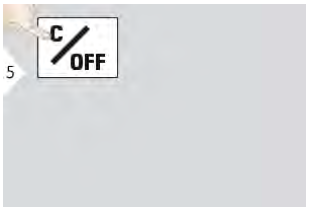


Switch between the following units:

360.0°

0.00 %

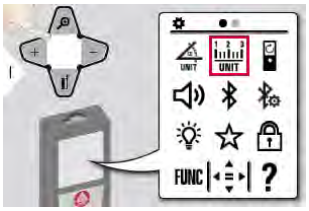
Confirm setting.

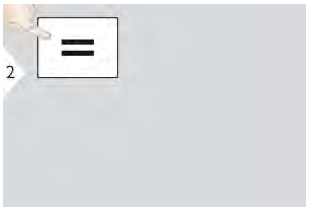


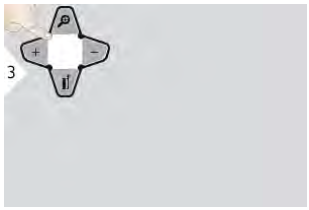
Exit settings.

Settings

Distance units





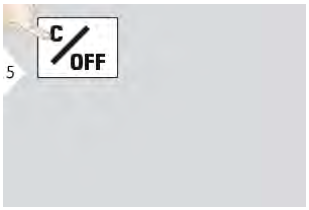


Switch between the following units:

0.00 m	0 in 1/32
0.000 m	0 in 1/16 *
0.0000 m	0 in 1/8 *
0.0 mm	0 in 1/4 *
0'00" 1/32	0.00 ft
0'00" 1/16 *	0.000 in
0'00" 1/8 *	
0'00" 1/4 *	

* Available in devices purchased in USA and Canada

Confirm setting.



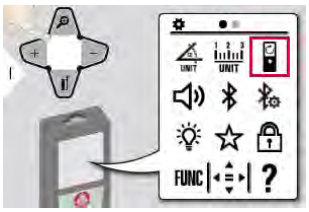
Exit settings.

Settings

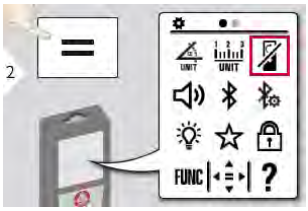
Turning screen ON/OFF*

* Firmware update might be required through the Leica DISTO™ Plan App to get this feature

1

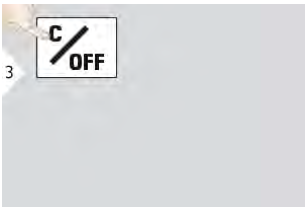


2



To switch ON, repeat procedure.

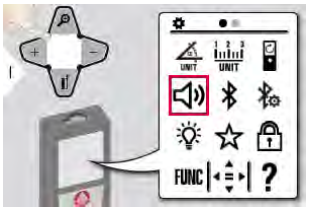
3

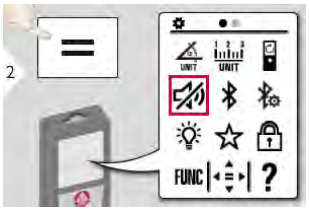


Exit settings.

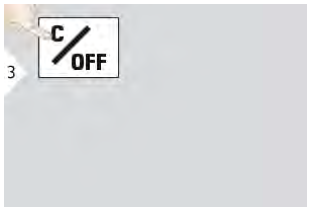
Settings

Beep ON/OFF





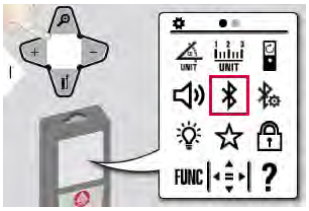
To switch ON, repeat procedure.

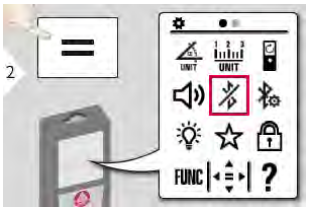


Exit settings.

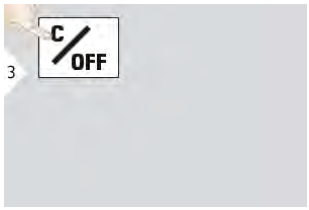
Settings

Bluetooth® ON/OFF





To switch ON, repeat procedure.

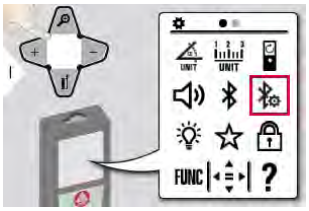


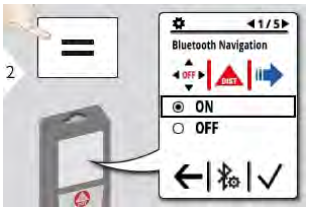
Exit settings.

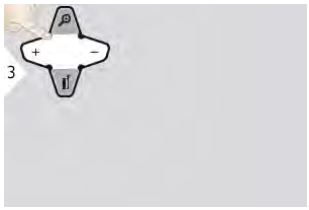
Bluetooth® is switched on and black Bluetooth® icon is displayed in status bar. If connection is established the color of the icon changes to blue.

Settings

Bluetooth® Settings







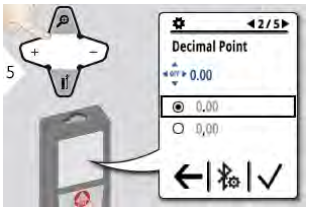
Select ON or OFF.

If device is connected, the favorites disappear and two softkeys appear:

If activated in measuring mode, it allows the arrow keys to move the cursor on your computer.

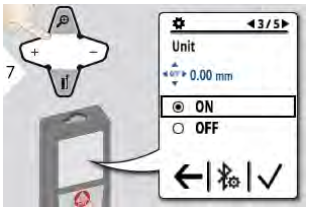
Short press: send the value of the main line to your computer.
Long press: send all measurements and results to your computer.

Confirm setting.



Select kind of decimal point for transmitted value.

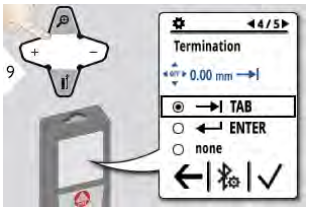
Confirm setting.



Select if unit is transmitted or not.

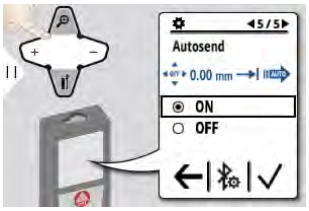
Settings

Confirm setting.



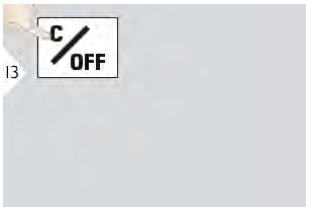
Select termination of transmission.

Confirm setting.



Select if value is transmitted automatically or manually.

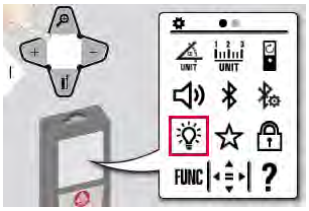
Confirm setting.

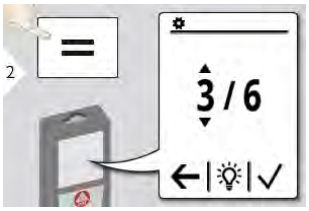


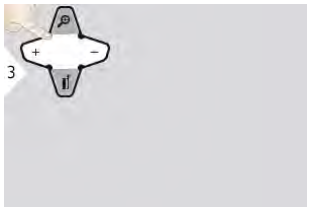
Exit settings.

Settings

Illumination

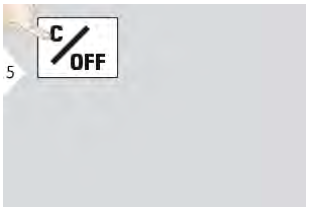






Select brightness.

Confirm setting.

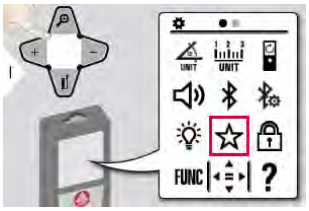


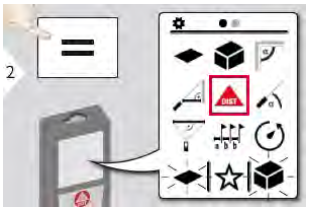
Exit settings.

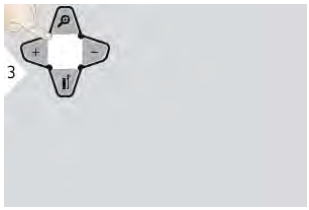
To save power reduce brightness if not necessary.

Settings

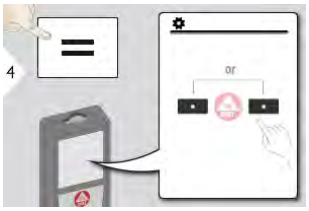
Personalized favorites



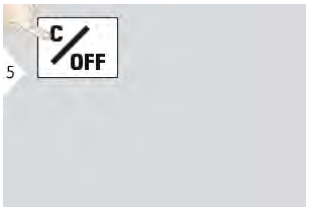




Select favorite function.



Press selection key left or right. Function is set as favorite above the corresponding selection key.

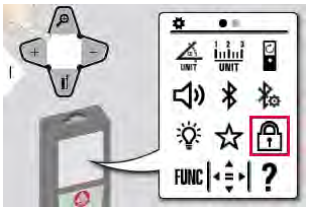


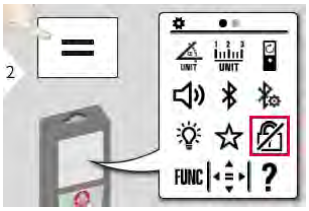
Exit settings.

Select your favorite functions for quick access.
Short cut:
Press 2 sec on a selection-key in the measuring mode. Select your favorite function and press again short on the corresponding selection key.

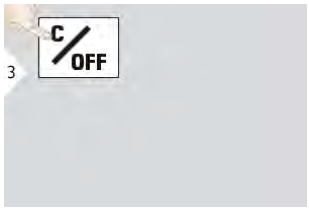
Settings

De-/Activate keylock



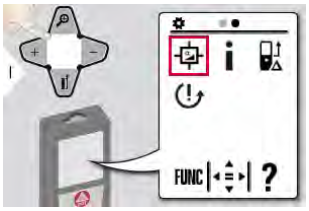


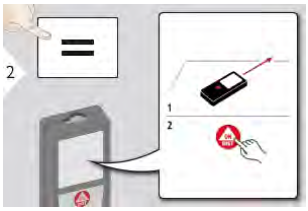
To deactivate, repeat procedure. The keylock is active if device is switched off.

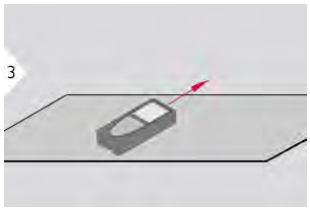


Exit settings.

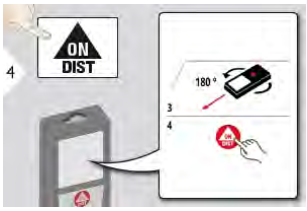
Calibration of tilt sensor (Tilt Calibration)

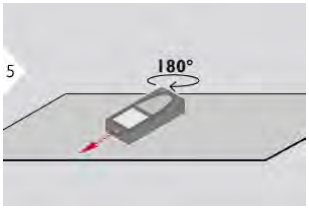




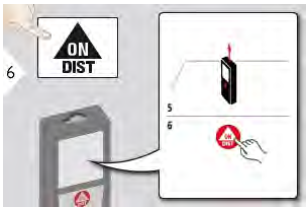


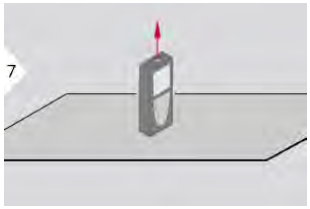
Place device on absolutely flat surface.



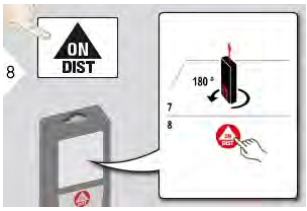


Turn the device horizontally by 180° and place it again on absolutely flat surface.

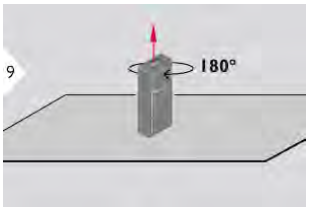




Place device on absolutely flat surface.



Settings

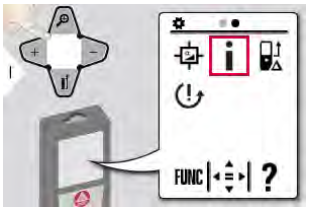


Turn the device horizontally by 180° and place it again on absolutely flat surface.

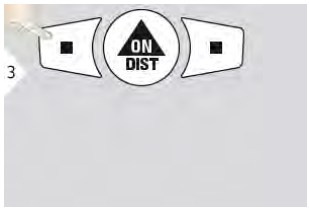
After 2 sec the device goes back to the basic mode.

Settings

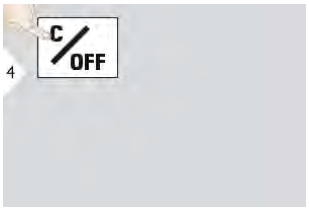
Information

1 

2 

3 

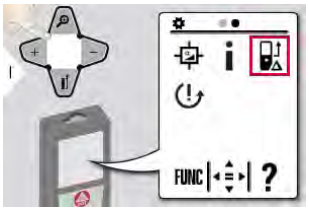
Exit information screen.

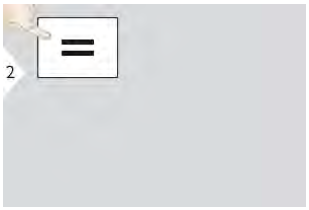
4 

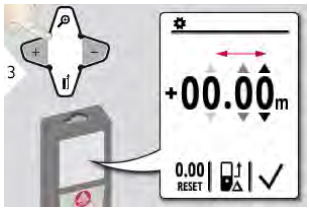
Exit settings.

Settings

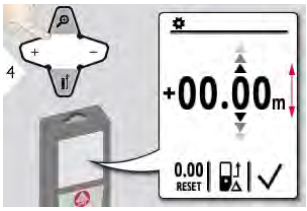
Offset





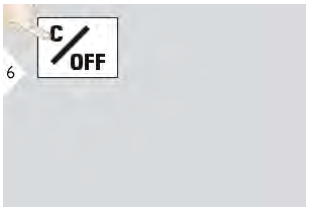


Select digit.



Adjust digit.

Approve value.

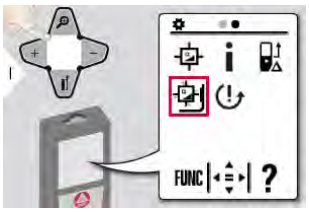


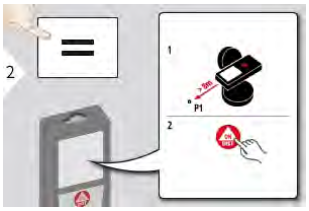
Exit settings.

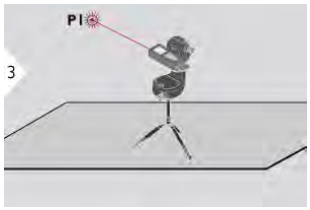
An offset adds or subtracts a specified value automatically to or from all measurements. This function allows tolerances to be taken into account. The offset icon is displayed.

Calibration of Leica DST 360 adapter*

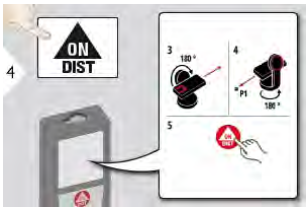
* Function is activated when connected to the Leica DST 360 adapter.

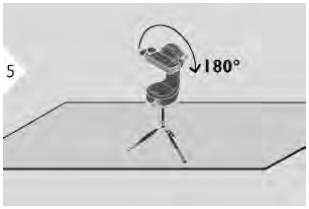




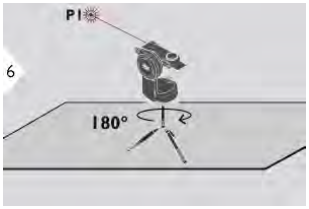


Define a point to be measured in a distance more than 8 m. Aim at defined point and press DIST button to start the 5 seconds countdown to measure.





Turn the device vertically by 180°.

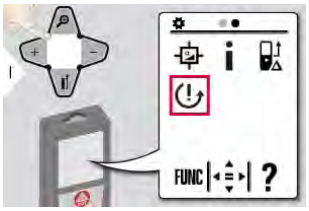


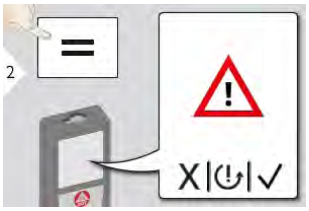
Turn the device by 180°. Aim again at defined point and press DIST button to start the 5 seconds countdown to measure.

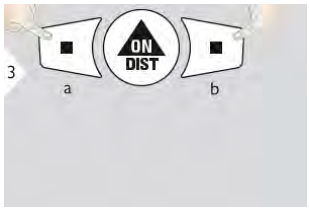
Get more accurate results of the device in combination with the Leica DST 360 adapter.

Settings

Reset





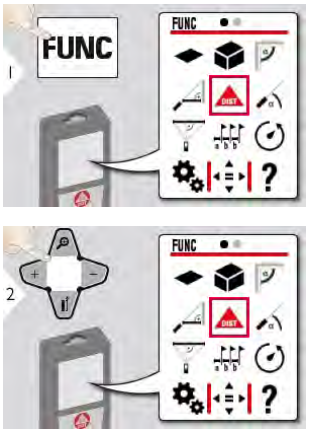


Second confirmation with selection keys:
a) Refuse
b) Confirm

Reset returns the instrument to the factory settings. All customized settings and memories are lost.

Operations

Overview

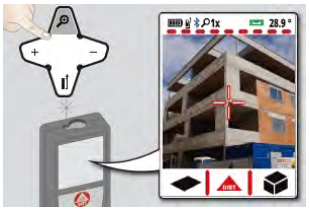


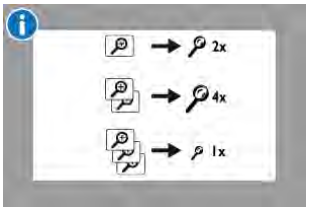
- Single distance measurement
- Area
- Volume
- Room angle
- Smart Horizontal Mode
- Level
- Pythagoras (3-point)
- Stake out
- Timer
- Height tracking**
- Memory
- Point to point measurement*
- Point to point measurement levelled*
- Smart area measurement*/**

* Activated when connected to Leica DST 360 adapter

** Firmware update might be required through the Leica DISTO™ Plan App to get this feature

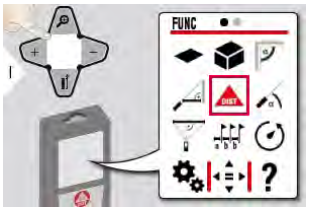
Pointfinder

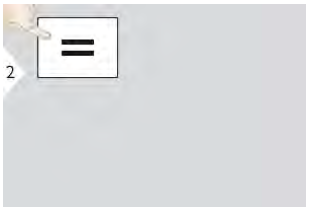


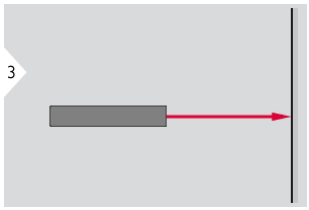


This is a great help for outdoor measuring. The integrated point-finder (viewscreen) shows the target on the display. The device measures in the middle of the cross hair, even if the laser dot is not visible.
Parallax errors occur when the pointfinder camera is used on close targets, with the effect that the laser appears displaced in the crosshair. In this case rely on the real laser dot. When using the point to point functions and smart area measurement the error is automatically corrected with a shift of the crosshair. The pointfinder is always on, when the laser beam is on.

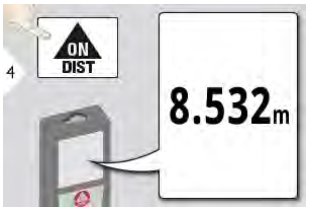
Measuring single distance





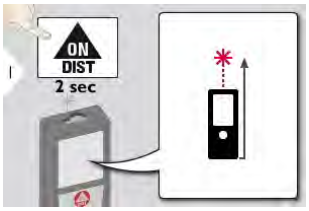


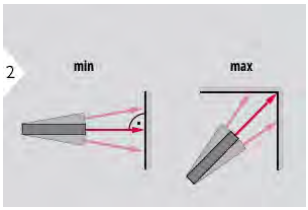
Aim active laser at target.



Target surfaces: 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





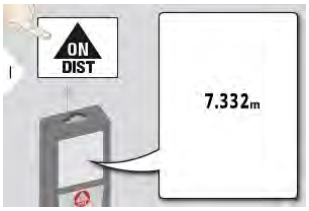
Used to measure room diagonals (maximum values) or horizontal distance (minimum values).

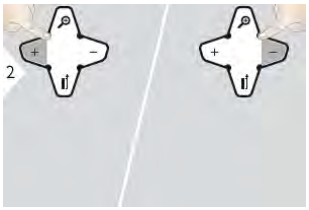
The minimum and maximum distance measured is displayed (min, max.). The last value measured is displayed in the main line.

Use Down navigation key to take over values in the main line for sending via Bluetooth® Smart.

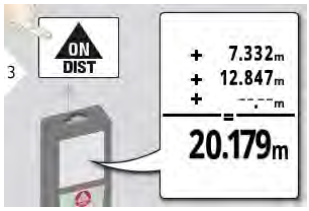
Stops permanent / minimum-maximum measuring.

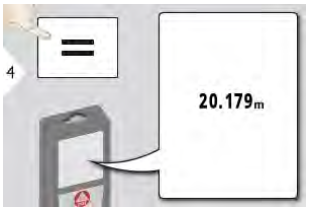
Add / Subtract





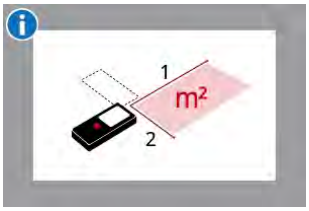
The next measurement is added to the previous one, respectively subtracted from the previous one.



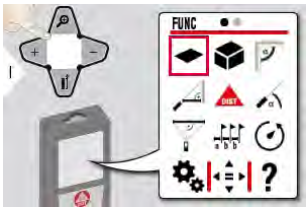


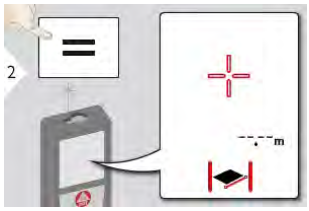
This process can be repeated as required. The same process can be used for adding or subtracting areas or volumes.

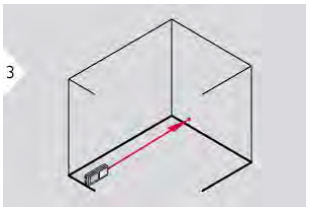
Area



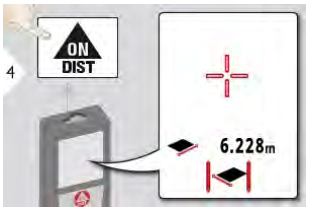
The area is calculated based on the mathematic term multiplying 2 distances.

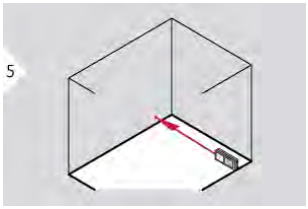




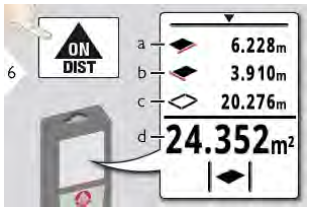


Aim laser at first target point.





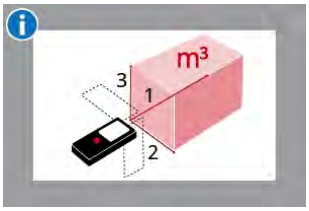
Aim laser at second target point.



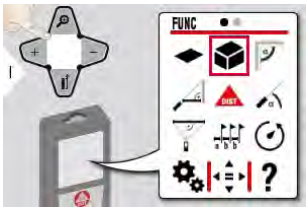
a) First distance
b) Second distance
c) Circumference
d) Area

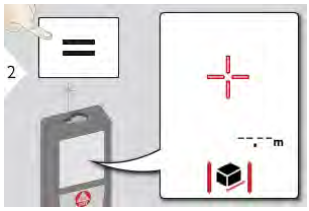
The result is shown in the main line and the measured value above. Painter function: Press + or - after starting the first measurement. Measure and add or subtract wall lengths. Measure finally height for second length to get the wall area.
Use Down navigation key to take over values in the main line for sending via Bluetooth® Smart.

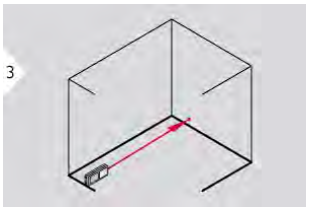
Volume



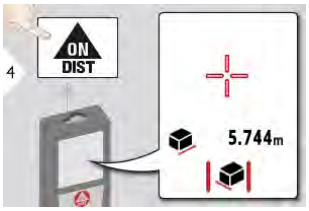
The volume is calculated based on the mathematic term multiplying 3 distances.

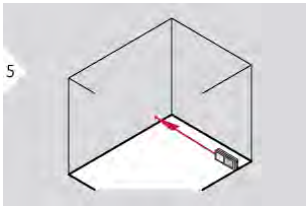




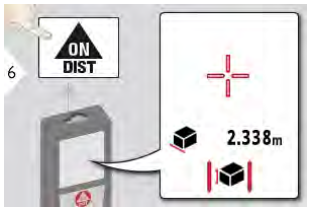


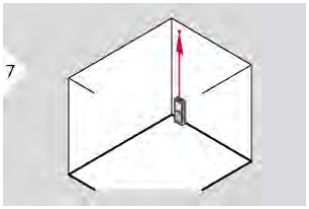
Aim laser at first target point.



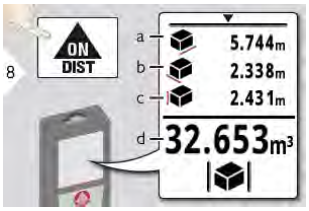


Aim laser at second target point.

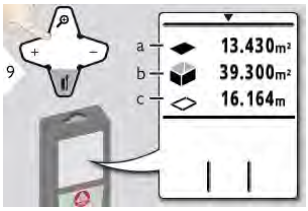




Aim laser at third target point.



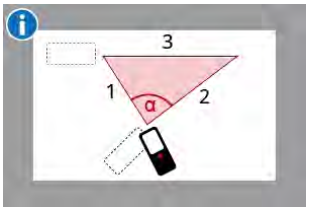
a) First distance
b) Second distance
c) Third distance
d) Volume



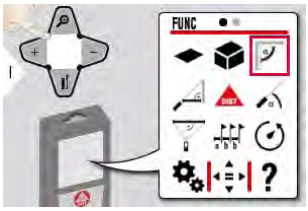
a) Ceiling/floor area
b) Wall areas
c) Circumference

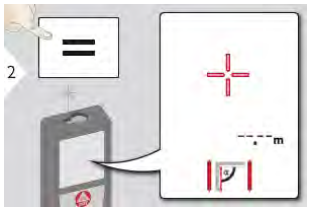
Use Down navigation key to show more results or to take over values in the main line for sending via Bluetooth® Smart.

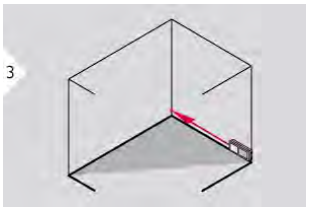
Room angle



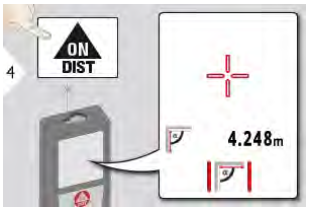
The angle is calculated based on the cosine rule with 3 known side lengths of a triangle.

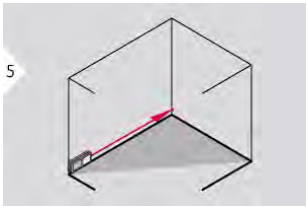




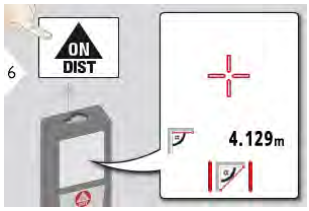


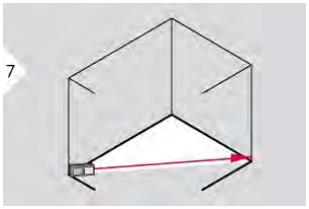
Aim laser at first target point.



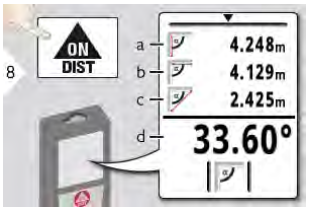


Aim laser at second target point.

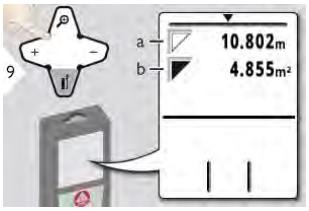




Aim laser at third target point.



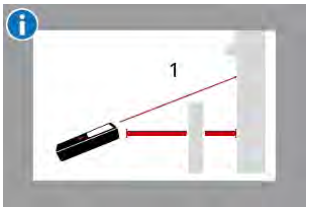
a) First distance
b) Second distance
c) Third distance
d) Angle between first and second measurement



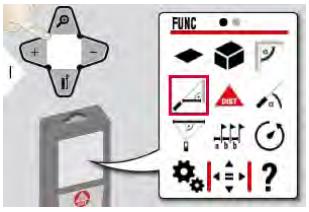
a) Circumference
b) Triangular area

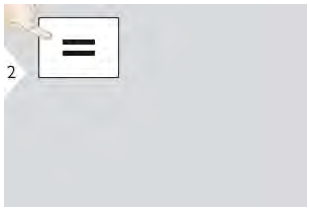
Use Down navigation key to show more results or to take over values in the main line for sending via Bluetooth® Smart.

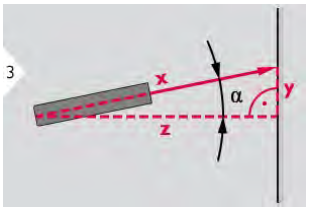
Smart Horizontal Mode



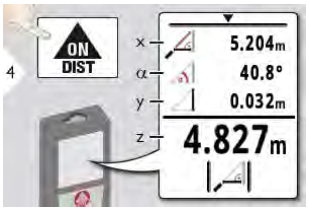
The horizontal distance is calculated based on the trigonimetric function cosine with 1 known length and 1 known angle.





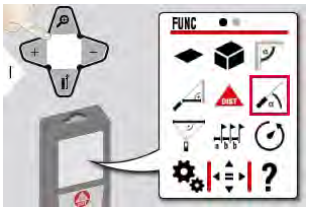


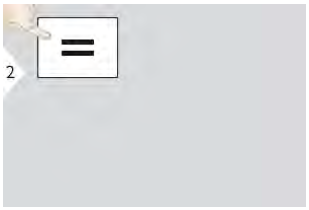
Aim laser at target (up to 360° and a transverse tilt of ±10°).

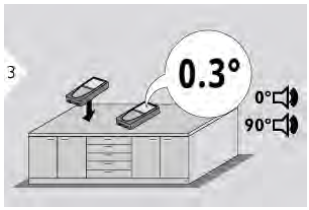


Use Down navigation key to take over values in the main line for sending via Bluetooth® Smart.

Level

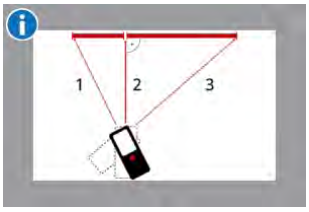




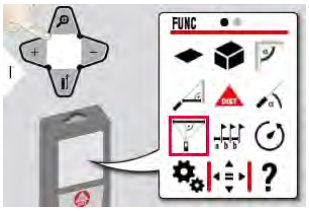


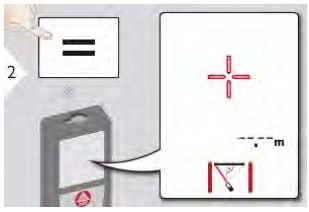
Displays inclinations of 360°. Instrument beeps at 0° and 90°. Ideal for horizontal or vertical adjustments.

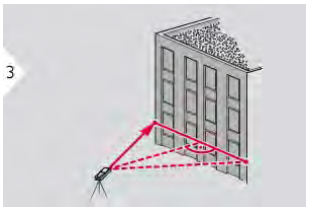
Pythagoras (3-point)



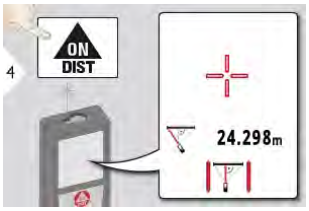
The distance is calculated based on the Pythagorean theorem with 3 known lengths of 2 right-angled triangles.

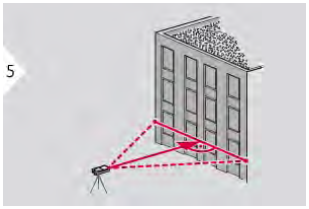




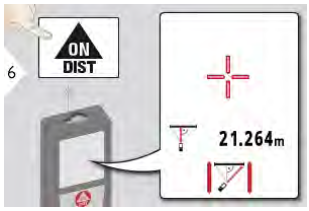


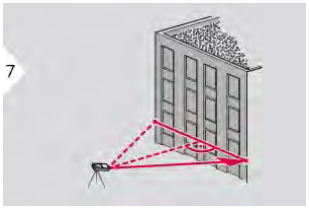
Aim laser at first target.



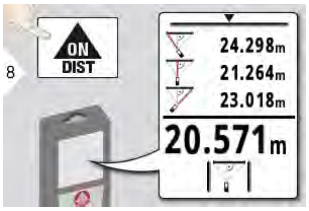


Aim laser at second target.





Aim laser at third target.

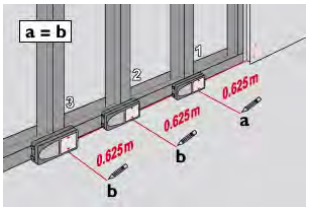


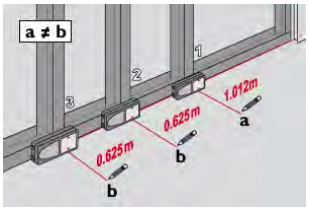
The result is shown in the main line and the measured distance above. Pressing the measuring key for 2 sec in the function activates automatically Minimum or Maximum measurement.
We recommend to use the pythagoras only for indirect horizontal measuring. For height measuring (vertical) it is more precise to use a function with inclination measurement.
Use Down navigation key to take over values in the main line for sending via Bluetooth®

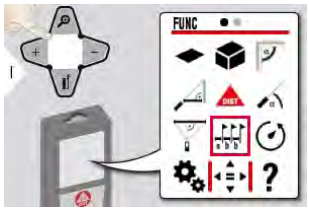
Smart.

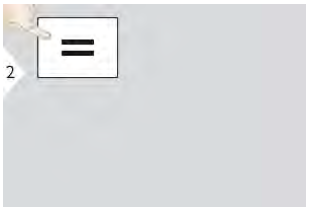
Stake out

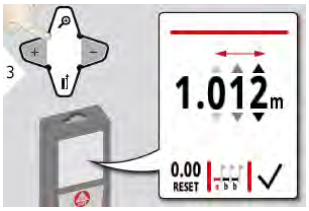
Two different distances (a and b) can be entered to mark off defined measured lengths.



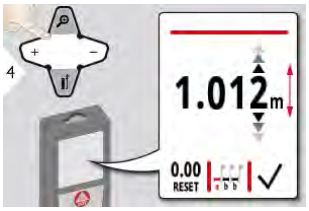






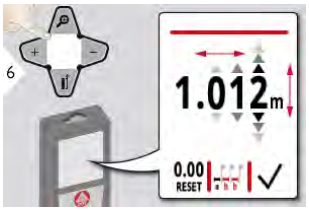


Select digit.



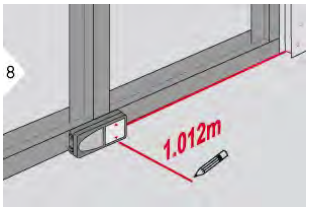
Adjust digit.

Approve value "a".

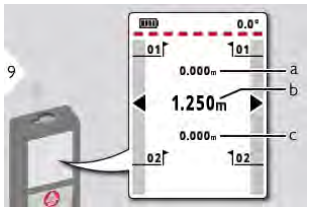


Adjust value "b".

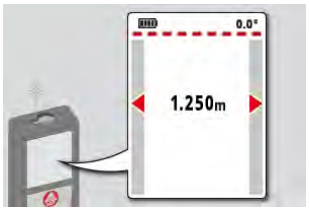
Approve value "b" and start measurement.

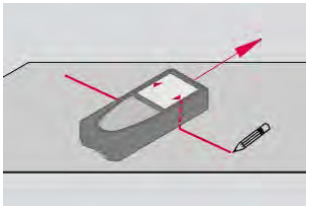


Move device slowly along the stake out line. The distance to the next stake out point is displayed.



a) Distance to first stake out point
b) Actual position to measured target
c) Distance to second stake out point

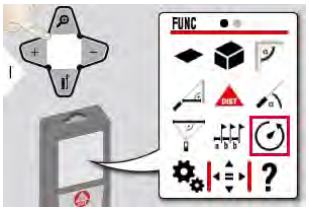


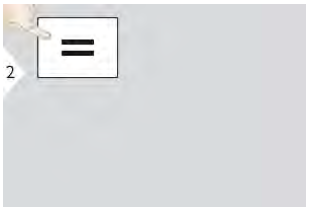


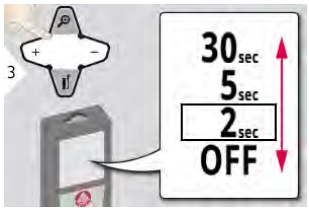
When approaching a stake out point to less than 18 mm the value of the stake out point is frozen and the arrows on the side change their colour to red for marking purposes.

The function can be stopped by pressing the CLEAR/OFF button.

Timer







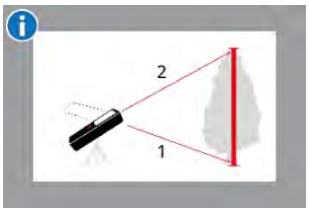
Select release time.

Confirm setting.

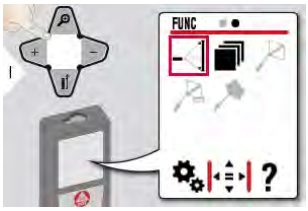
The self release starts if ON/Measure key is pressed.

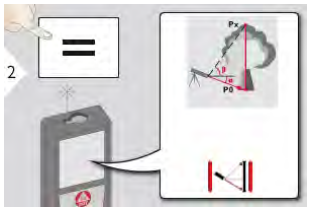
Height tracking*

* Firmware update might be required through the Leica DISTO™ Plan App to get this feature.

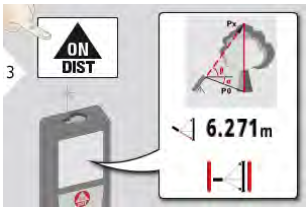


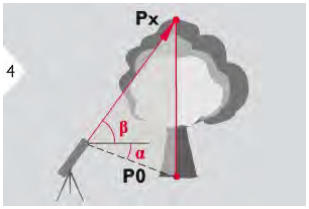
The height is calculated based on trigonimetric functions with 1 known length and 1 measured angle.



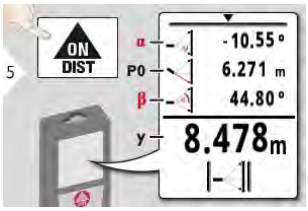


Aim laser at lower point.

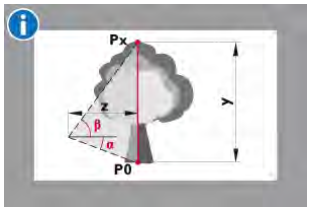


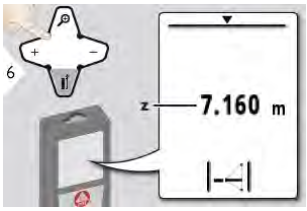


Aim laser at upper points and angle/height tracking starts automatically.



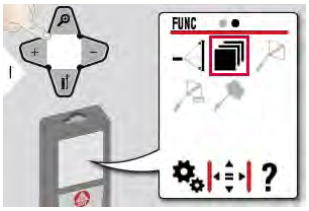
Stops height tracking.

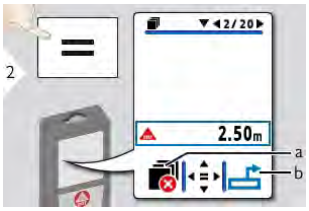




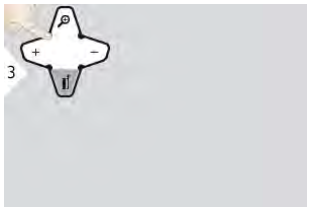
Heights of buildings or trees without suitable reflective points can be determined. At the bottom point, distance and tilt is measured - which needs a reflective laser target. The upper point can be targeted with the pointfinder / crosshair and does not need a reflective laser target as only the inclination is measured.
Use Down navigation key to show more results or to take over values in the main line for sending via Bluetooth® Smart.

Memory (last 20 results)

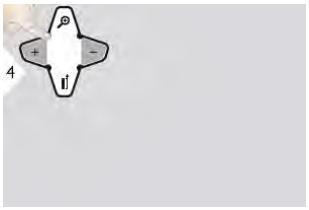




a) Delete memory
b) Take over value for further actions



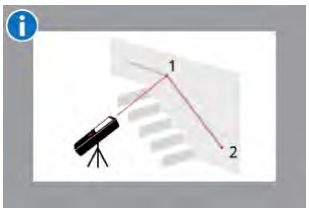
Use Down navigation key to show more detailed results of the specific measurement.



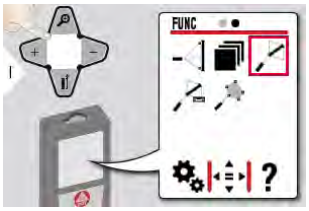
Use Left/Right navigation keys to switch between measurements.

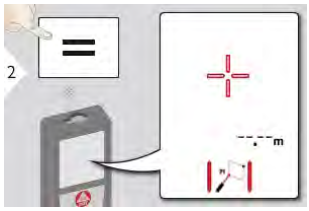
Point to point measurement*

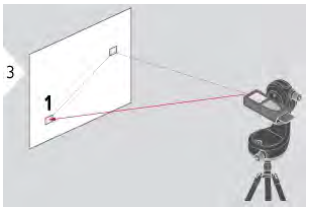
* Function is activated when connected to the Leica DST 360 adapter.



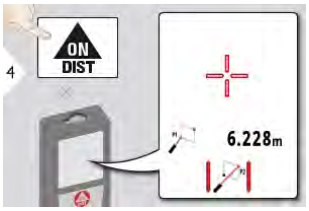
The tie distance is calculated based on 2 known coordinates with x,y and z value.

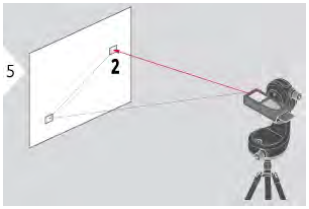




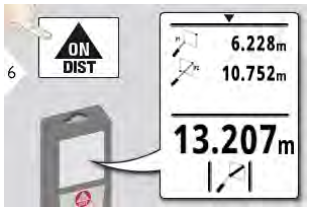


Aim laser at first target point.

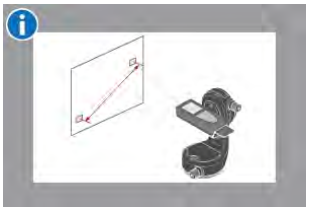


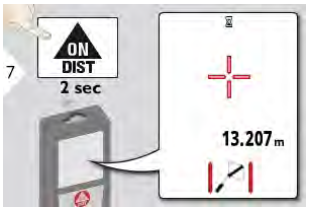


Aim laser at second target point.



Use Down navigation key to take over values in the main line for sending via Bluetooth® Smart.

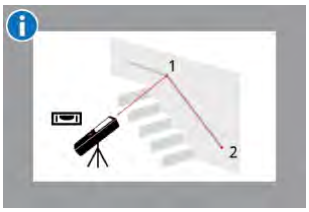




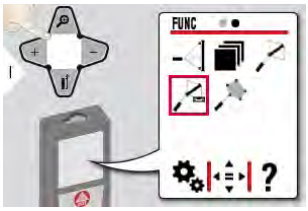
If chosen permanent measurement for second target point, the actual tie distance is displayed.

Point to point measurement levelled*

* Function is activated when connected to the Leica DST 360 adapter.



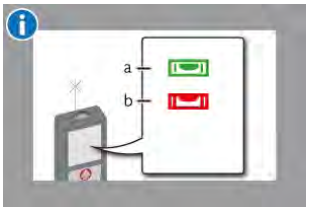
Use this Point to Point measurement function to get more measuring data. Do not move device after levelling. The tie distance is calculated based on 2 known coordinates with x,y and z value.



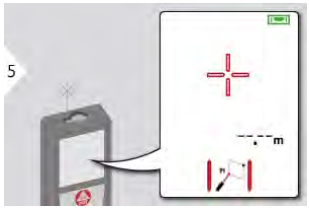
For levelling, device needs to be in an inclination range of +/- 5°.

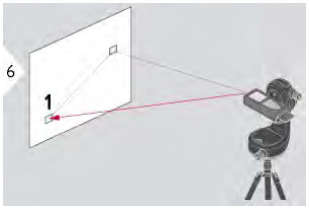
Rotate the device clockwise 90°. Follow the instructions on the display.

Rotate the device clockwise 90°. Follow the instructions on the display. Levelling is finished when OK icon appears on the display.

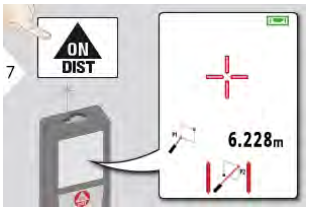


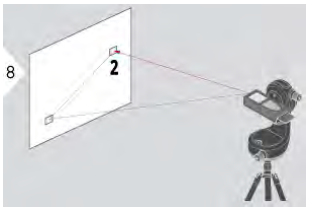
Check status line:
a) Indicates proper levelling
b) Indicates insufficient levelling



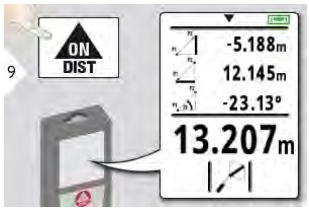


Aim laser at first target point.

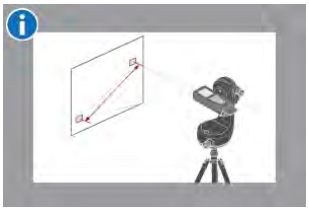


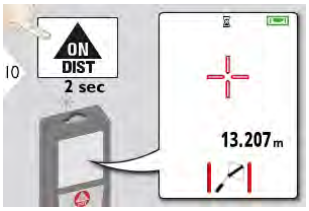


Aim laser at second target point.



Use Down navigation key to take over values in the main line for sending via Bluetooth® Smart.

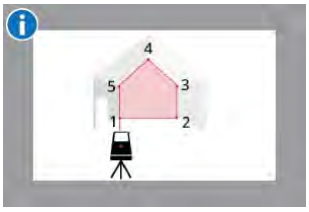




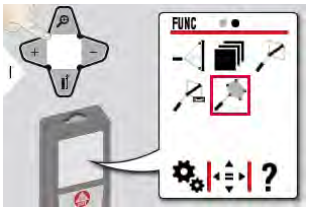
If chosen permanent measurement for second target point, the actual tie distance is displayed.

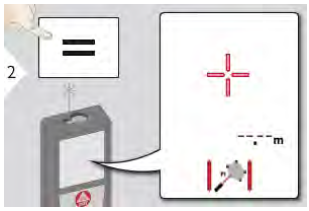
Smart area measurement*

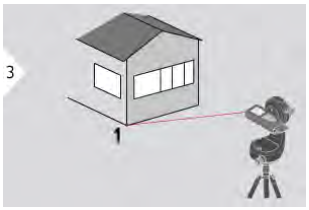
* Function is activated when connected to the Leica DST 360 adapter. Firmware update might be required through the Leica DISTO™ Plan App to get this feature.



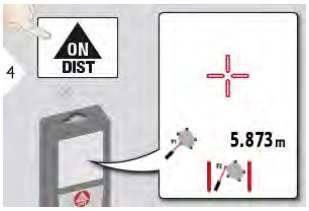
The area is calculated based on several known coordinates with x,y and z value.

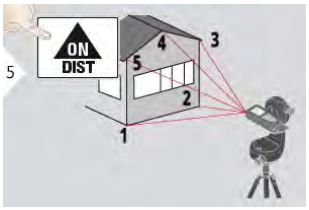




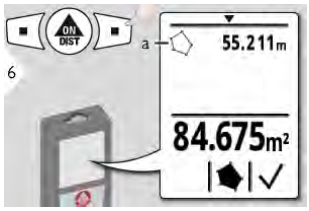


Aim laser at first target point.





Aim at and measure additional points (max. 30).



a) Circumference of measured area

Use Down navigation key to take over values in the main line for sending via Bluetooth® Smart.

Bluetooth® Smart

DISTO™ Plan. Use App for Bluetooth® data transfer. Your device can be also be updated through this App.

Bluetooth® Smart is always active when the device is switched on. Connect the device with your smart-phone, tablet, laptop... Measurement values will be transferred automatically right after a measurement if "Autosend" is activated. To transfer a result press the following softkey:

Bluetooth® switches off as soon as the laser distance meter is switched off.
The efficient and innovative Bluetooth® Smart module (with the new Bluetooth® standard V4.0) works together with all Bluetooth® Smart Ready devices. All other Bluetooth® devices do not support the energy saving Bluetooth® Smart Module, which is integrated in the device.

We provide no warranty for free 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. For more details, see our homepage.

Message Codes

No.	Cause	Correction
156	Transverse tilt greater than 10°	Hold the instrument without any transverse tilt.
162	Calibration error	Make sure the device is placed on an absolutely horizontal and flat surface. Repeat the calibration procedure. If the error still occurs contact your dealer.
204	Calculation error	Perform measurement again.
240	Data transfer error	Connect device and repeat procedure
252	Temperature too high	Let device cool down.
253	Temperature too low	Warm device up.
255	Received signal too weak, measuring time too long	Change target surface (e.g. white paper).
256	Received signal too high	Change target surface (e.g. white paper) .
257	Too much background light	Shadow target area.
260	Laser beam interrupted	Repeat measurement.
301	Device was moved, levelling not valid anymore	Perform levelling again. Measuring with invalid levelling is partially possible, but it affects the accuracy.
303	Error with Leica DST 360 adapter	Repeat measurement.

* If other message codes are displayed frequently even the instrument has been switched off and on, please contact your dealer.

Care

- Clean the device with a damp, soft cloth.
- Never immerse the device in water.
- Never use aggressive cleaning agents or solvents.

Warranty

International Limited Warranty

The Leica DISTO™ comes with a two year warranty from Leica Geosystems AG. To receive an additional year warranty, the product must be registered on our website within eight weeks of the purchase date.

If the product is not registered, our two year warranty applies.

More detailed information about the International Limited Warranty can be found on the internet at:

The person responsible for the instrument must ensure that all users understand these directions and adhere to them. The product is permitted to use for skilled persons only.

Symbols used

The symbols used have the following meanings:

WARNING

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

CAUTION

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

Safety instructions

Permitted use

- Measuring distances
- Tilt measurement
- Data transfer with Bluetooth®

Prohibited use

- Using the product without instruction
- Using outside the stated limits
- Deactivation of safety systems and removal of explanatory and hazard labels
- Opening of the equipment by using tools (screwdrivers, etc.)
- Use of accessories from other manufacturers without express approval
- Carrying out modification or conversion of the product
- Deliberate dazzling of third parties; also in the dark
- Inadequate safeguards at the surveying site (e.g. when measuring on roads, construction sites, etc.)
- Deliberate or irresponsible 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 in the sun

Hazards in use

⚠ WARNING

Watch out for erroneous measurements if the instrument is defective or if it has been dropped or has been misused or modified. Carry out periodic test measurements. Particularly after the instrument has been subject to abnormal use, and before, during and after important measurements.

⚠ CAUTION

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

⚠ WARNING

Changes or modifications not expressly approved could void the user´s authority to operate the equipment.

⚠ CAUTION

Only use chargers recommended by the manufacturer to charge the batteries.

Safety instructions

Limits of use

Refer to section Technical data. The device 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:

Leica Geosystems AG

The company above is responsible for supplying the product, including the User Manual in a completely safe condition.

The company above is not responsible for third party accessories.

Responsibilities of the person in charge of the instrument:

- 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 personnel.

Disposal

CAUTION

Flat batteries must not be disposed of with household waste. Care for the environment and take them to the collection points provided in accordance with national or local regulations.

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. Adhere to the national and country specific regulations.

Product specific treatment and waste management can be downloaded from our homepage.

Electromagnetic Compatibility (EMC)

⚠ WARNING

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

FCC statement (applicable in U.S.)

This equipment has been tested and found to comply with the limits for a Class B digital instrument, 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 the 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

This device complies with part 15 of the FCC rules. Operation is subjected to the following two conditions:

- This device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement

The radiated rf output power of the instrument is below the FCC radio frequency exposure limits for portable devices according to KDB 447498.

ISED Statement (applicable in Canada)

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- this device must accept any interference, including interference that may cause undesired operation of the device.

Radio Frequency (RF) Exposure Compliance Statement

The radiated rf output power of the instrument is below the Health Canada's Safety Code 6 exclusion limit for portable devices (radiated element separation distance between the radiating element and user and/or bystander is below 20 cm).

Japanese Radio Law Compliance

This device is granted pursuant to the Japanese Radio Law 電波法. This device should not be modified otherwise the granted designation number will become invalid.

Use of the product with Bluetooth®

⚠ WARNING

Electromagnetic radiation can cause disturbances in other equipment, in installations (e.g. medical ones such as pacemakers or hearing aids) and in aircraft. It can also affect humans and animals.

Precautions:

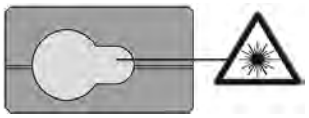
Although this product conforms to the most stringent standards and regulations, the possibility of harm to people and animals cannot be totally excluded.

- Do not use the product near petrol stations, chemical plants, in areas with a potentially explosive atmosphere and where blasting takes place.
- Do not use the product near medical equipment.
- Do not use the product in airplanes.
- Do not use the product near your body for extended periods.

Laser classification

The device produces visible laser beams, which are emitted from the instrument: It is a Class 2 laser product in accordance with:

- IEC60825-1 : 2014 „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 aids (e.g. binoculars, telescopes) can be hazardous.

⚠ CAUTION

Looking into the laser beam may be hazardous to the eyes. Don't dazzle other individuals. Pay particular attention to the direction of the laser beam when remotely operating the product via an app or software. A measurement could be triggered at any time.

Wavelength
620 - 690 nm
Maximum radiant output power for classification
< 1 mW
Pulse duration
> 400 ps
Pulse repetition frequency
320 MHz
Beam divergence
0.16 x 0.6 mrad

Labelling

Subject to change (drawings, descriptions and technical data) without prior notice.