Leica DISTO™ plus
THE ORIGINAL LASER DISTANCEMETER
User Manual

Version 1.0

English

The Safety Instructions (738266) in a separate brochure form a part of this User Manual.

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

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Leica DISTO™ plus hand-held laser meter

Congratulations on your purchase of a Leica DISTO™ plus.

Product identification

The identification label for your product is fitted on the front. The serial number is under the endpiece. Enter model and serial number in your User Manual, and always refer to this information when you need to contact your agency or service center.

Model: Leica DISTO™ plus ..........................
Serial no.: ...............................................
Date of purchase: ....................................

International Manufacturer’s Warranty

Leica Geosystems offers its customers a two (2) year warranty on Leica DISTO™ plus instruments. For more information, refer to www.disto.com.

In case of a defect, please contact the dealership near you.

Symbols used

The symbols used in the User Manual 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 in appreciable material, financial and environmental damage.

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

Keypad

The Leica DISTO™ plus has two function levels. The first level contains direct functions like ON/OFF, +/- etc. The second level is for data transfer functions and software control.

Press to switch between the function levels.

Is displayed on the screen.
1st function level
1 Distance measuring, Tracking
2 2nd function level 1 or 2
3 Meas. reference
4 Areas, Volumes
5 Measuring
6 min. / max. Tracking
7 BLUETOOTH® ON/OFF
8 Pythagoras functions
9 Plus [+]
10 Menu
11 Illumination
12 Multiply [x]/ Timer Release
13 ON/OFF key
14 Clear
15 Memory, Stack
16 Equals, Enter
17 Minus [-]
18 2nd function level
19 delete
20 direction left upward
21 direction left
22 direction left downward
23 direction upward
24 direction downward
25 direction right downward
26 direction right
27 direction right upward
2 Information
3 Measuring reference (front / tripod / rear)
4 BLUETOOTH® ON/OFF
5 Main display (e.g. measured distance)
6 Distance measurement
7 Tracking
8 Area / Volume
9 10 min. Tracking
10 max. Tracking
11 Pythagoras function
12 Pythagoras function with partial height
13 Units with exponents (² / ³)
14 Time symbol for time delay release
15 Save constant
16 Contact customer service
17 3 auxiliary displays (e.g. previous values)
18 19 SET
19 RESET
20 Battery display
21 delete
22 direction upward
23 direction downward
24 direction left upward
25 direction right downward
26 direction left
27 Offset setting
How to Use the Instrument

Inserting / replacing the batteries
1. Depress the locking clip and slide end piece to the right.
2. Remove battery cover. Replace batteries. Appears on the display if battery voltage is too low.
   For type of battery, refer to Technical Data.
   Fit batteries the right way round.
   Use only Alkaline batteries.
3. Push in end piece and listen for locking click sound.

1st Function level

Leica DISTO™ plus switching ON/OFF
Briefly press.
The illumination, Battery and Beep symbols are displayed until the first key press.
The instrument can be switched off from any menu point.
The instrument switches off automatically after 90 seconds if no key is pressed.
An unwanted switching off of the BLUETOOTH®-dataconnection is blocked by special precautions. Please refer to page 11.

Clear key
The clear key may be pressed before or after a measurement/ calculation.
In Menu Mode it resets to Normal Mode.
During a function (area, volume or Pythagoras) the single measurements can be deleted step by step and remeasured.

In the menu settings, the program is terminated if the Equal (=) and Enter keys are not pressed.

Illumination
Press briefly.
Illumination is switched ON/OFF with a key press.
Illumination switches off after 30 seconds if no key is pressed.

Reference setting
Press until desired reference setting appears.
Possible settings

At the back of the instrument is a 1/4" camera thread for the tripod.

Settings remain valid until the reference level is changed or the instrument is automatically or manually switched off.

Basic setting: rear reference

Measuring

Distance measurement

Press and the laser is switched on, the instrument is in "Pointing Mode".

A second press starts the distance measurement. The result is displayed immediately in the selected unit.

With the instrument on and the laser off, it is in "Normal Mode".

With the laser on, it is in "Pointing Mode".

Measuring from flat planes

For stable measuring turn endpiece 90°.

Measuring from corners

Continuous measurement (Tracking)

Press until 

appears on the display.

Continuous measurement is started and the result is displayed.

Press to end Tracking Mode. Last result is shown in the display.

Example: Stake off distance

Laser in continuous operation

Press until a long "beep" is heard. Now the laser is activated permanently.

A distance measurement is triggered each time the key is pressed.

Press to end continuous laser operation.
Time delay release
Instrument must be in Pointing Mode.
Press and hold until desired time delay has been reached (max. 60 seconds).
Once the key is released, the remaining seconds (e.g. 59, 58, 57...) are displayed, until measuring.
The last 5 seconds are counted down with a "beep". After the last "beep", the measurement is made and the value displayed.
Example: Measuring without any key activation.

Calculations

Area
Press until appears on the display.
The side to be measured blinks.
Make 2 measurements (l x w).
The result and the two partial results appear on the display.

Volume
Press until appears on the display.
The side to be measured blinks.
Make 3 measurements (l x w x h).
The result and the three partial results appear on the display.

Menu/ Settings
The menus allow a free selection of the settings that are to remain valid after switching off the instrument. The functions follow each other endlessly (rollmode).

Press to toggle between the functions.

GB
Confirm selection, reset to Normal Mode.

*Clear Entry* may also be used (e.g. to cancel a selection).

**Selecting units (menu)**
Selectable units:
- m (mm) = 0.000 m
- m (cm) = 0.00 m
- ft = 0.00 ft
- ft in 1/16 = 0.00 1/16 ft

**Measure with offset (menu)**

Call up menu point.

 blinking on the display.

With key [+ / -] set desired offset (=shifting reference) (e.g. 0.015m); quick set by keeping key pressed.

For larger steps hold additionally.

Offset can be positive (add) or negative (reduce)?

Confirm setting.

Is displayed continuously if offset ≠ 0.

Subject to set offset, the measured results are displayed.

Using this function you can measure with rough size, as an example!

Please make this a rule: After rough size measurement always set the Leica DISTO™ plus to offset 0.000:

Press.

Confirm function.

After making/changing settings, it is imperative that a test measurement is performed.

**Resetting (menu)**

Call up menu point.

starts blinking on the display.

With key [+ / -] select components to be reset. To choose from:

- Stack/ Memory
- Stack and Constant

If additional symbols e.g. units are shown in the display, the following values are reset:

- Offset (=0), Beep (On) and Units (meter)

Selected components are reset; back to Measuring Mode.

**Save values (constants)**

Measure/ calculate desired value (e.g. height of room, area, volume).

Press longer.
1st Function level

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starts to blink on the display.
With key [+ / -] adjust value as desired (e.g. from 2.297m to 2.300m).
For larger steps press and hold additionally.
Press to adjust unit (²/³).
The adjustment is for m, m² and m³ rsp. ft, ft² and ft³ only.
Confirm.
and a number (=memory location) starts to blink.
With key [+ / -] select memory location (1-10).
Save value.

Recalling the constant
Briefly press.
and the contents of the first constant memory location are displayed (e.g. 2.300m).
With key [+ / -] select desired memory (1 to 10).
Confirm; value is ready to be used for (e.g. calculating an area) or
Recall last measured value (Stack)
Briefly press twice
and the last value in the display is shown.
With key [+ / -] select desired value (max. 15!).
Confirm; value is ready to be used for (e.g. calculating an area).

Tracking - Minimum
Determine the minimum dimension, e.g. ceiling height, without having to precisely align to the normal.
Press until

Tracking - Maximum
appears on the display.
Aim Leica DISTO™ plus approximately at the target point.
Activate continuous measurement with a brief press.
Move the Leica DISTO™ plus a large amount around the target point.
Stop continuous measurement.
The smallest measurement is displayed (e.g. 3.215m = height of room).
Both planes (e.g. floor/ ceiling, walls) must be nearly parallel to each other.
Determine maximum dimension, e.g. to determine the (room) diagonal.
- Press until \( \text{max} \) appears on the display.
- Move the Leica DISTO™ plus a large amount around the target point.
- Activate continuous measurement with a brief press.
- Slowly rotate the Leica DISTO™ plus to the right/ left past the corner.
- Stop continuous measurement.
- The largest measurement is displayed (e.g. 12.314m = diagonal of room).

**Calculations**

*Partial heights, partial distances*
- Make measurement.
- Add by [+] key/ Subtract by [-] key.
- Make additional measurements.
- \( = \) Result.

\( \text{chain values} \) (= any amount of distance measurements) and sums of areas/ volumes can be added up.

**Multiplication**
- Make measurement (e.g. 8.375m).
- Multiplication by pressing [x] key.
- Additional measurements (e.g. 8.375m).
- \( = \) Area (e.g. 29.313m\(^2\))

- The volume can be calculated by an additional multiplication following an area calculation.
- This function can be used for calculating areas or volumes with individual partial heights/ partial distances.

**Doubling a measured value**
- It is easy to double the measured values, e.g. to determine the length of walls in a room:
- Make measurement.
- Add by [+] key.
- Make additional measurements.
- \( = \) Sum (=half circumference)
- With key [+] repeat, double measured value.
- \( = \) Sum (=circumference)

**Pythagoras, height/ width measurement**
- The measuring sequence must be adhered to in any case!
- All three (two) points must be on a vertical or horizontal line in the plane of the wall!
With each of the distance measurements you can use:
- a simple distance measurement,
- a value from stack/memory or
- a measurement with time delay release.

For short distances, a good base behind the instrument is sufficient for mechanical alignment.

You will obtain the best results if the Leica DISTO™ plus is rotated around a fixed point (rear edge, thread position) and the axis of the laser beam passes through this axis. The Leica DISTO™ plus should not be placed on a camera tripod without an adapter, as the axis of the laser beam would be 70 to 100 mm above the instrument’s axis of rotation. Without the adapter this would lead to significant height deviations in the measurements.

**Determination with two points**

For estimating the height/width of buildings. Very useful for making measurements from standing position (no bending) if the height is determined with two or three distances.

Press until 

appears on the display; laser is activated and "1 ---" starts blinking.

Aim at the upper point (1).

Trigger measurement; do not move the instrument!

Value is accepted.

appears on the display and "2 ---" starts blinking.

Point the Leica DISTO™ plus approximately horizontal (2).

Press, a continuous measurement is triggered.

Move the Leica DISTO™ plus a large amount around the ideal measurement point.

Stop of continuous measurement. The height and width are displayed from measurements (Pythagoras).

**Determination with 3 points**

Press until 

appears on the display; laser is activated and "1 ---" starts blinking.

Aim at the upper point (1).

Trigger measurement; do not move the instrument!

Value is accepted.

appears on the display and "2 ---" starts blinking.

Point the Leica DISTO™ plus approximately horizontal (2).

Press, a continuous measurement is triggered.
Move the Leica DISTO™ plus a large amount around the ideal measurement point.

Stop of continuous measurement.

Value is accepted and on the display "3 ---" starts blinking.

Aim at the lower point (3).

Trigger measurement; do not move the instrument!

The height and width are displayed from three measurements (Pythagoras).

**Determination of a partial height with 3 points**

Height determination between point 1 and point 2 with three measured points.

Press until "appears on the display; laser is activated and "1 ---" starts blinking.

Aim at the upper point (1).

Trigger measurement; do not move the instrument!

Value is accepted and on the display "2 ---" starts blinking.

Trigger measurement; do not move the instrument!

Value is accepted.

appears on the display and "3 ---" starts blinking.

Press, a continuous measurement is triggered.

Move the Leica DISTO™ plus a large amount around the ideal measurement point.

Stop of continuous measurement. The height and width are displayed between point 1 and 2 (Pythagoras).

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**2nd Function level**

Only in the second level can measured values be transferred or corrected with the Leica DISTO™ plus. The type and number of functions that can be activated in the second function level depend on the software used.

**Switching on the BLUETOOTH®**

Press briefly.

If BLUETOOTH® is switched on, this icon appears in the display.

The data connection must be built up by the application software on a Pocket PC or PC. As long as the connection is being built up, this icon will be blinking.

If during 120 seconds after switching on the BLUETOOTH® no connection is established with the Pocket PC or PC, then the BLUETOOTH® is switched off automatically.

If five minutes after the connection has been established, no data transfer has occurred, then the BLUETOOTH® is switched off automatically. After a further 90 seconds, the Leica DISTO™ plus is also switched off.
Switching off the BLUETOOTH®

Before switching off the BLUETOOTH®, always change to the first function level.
Press briefly.
BLUETOOTH® is switched off, when this icon is no longer visible.
If still in the second function level, the BLUETOOTH® cannot be switched off. This is a safety precaution to prevent an accidental interruption of the BLUETOOTH® connection.
Before the Leica DISTO™ plus can be switched off, the BLUETOOTH® function has to be switched off.

The direction arrows

The eight arrow keys in the lower part of the Leica DISTO™ plus keyboard are used to input directions (orthogonal and diagonal) when generating a spatial drawing.
Trigger a measurement in the usual way (even if the second level is active, these keys remain functional), the value appears in the display. Select the arrow key that corresponds to the direction needed for your spatial drawing. When this arrow key is pressed, the distance is transferred according to value and direction to the data receiver (Pocket PC or PC).
Depending on the software used, the arrow keys can also control the cursor (e.g. Excel).

Transfer of the measured values

Press the arrow key briefly. A a thin line will be drawn to scale.

Confirmation (or deletion) of a transferred measuring value

Leica DISTO™ plus 1.0.0 GB
2nd Function level
User Information

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During data transfer
As long as there is no confirmation of a successful data transfer from the Pocket PC or PC, no new measurement can be triggered.

Appears and "240" blinks, if after 2 seconds no data transfer occurs.
Press briefly to acknowledge the display. Repeat measurement and data transfer.

Remark to the software
The two free software programs "PlusDraw" and "PlusXL" are included to demonstrate the basic applications of the Leica DISTO™ plus and are designed to perform simple tasks (spatial drawings with measurements, data transfer into an Excel table etc.)
Leica Geosystems gives no warranty on the free software nor on their functionality and does not offer any support. Leica Geosystems is not liable for any damage resulting from the use of the free software and is not obligated to make corrections on them or to develop additional functions for them (updates, upgrades etc.).
There are a number of commercially available software programs that provide the required functions. Please visit our homepage www.disto.com for details.

User Information

Range
In daylight (outdoors) always work with a laser viewfinder (see page 13). If necessary, shade the target. If required, use a target plate.
Increased range:
At night, at dusk and when target area is in the shade.

Reduced range / increased measuring time:
Against mat and dark surfaces (also plants and trees) a reduction of the range may occur as well as an increase in measuring time.

Rough surfaces
On a rough surface (e.g. coarse plaster) measure against the centre of the illuminated area.
To avoid measuring to the bottom of plaster joints:
Use target plate, 3M "Post-it" or board.

Transparent surfaces
To avoid measuring errors, do not measure towards colorless liquids (e.g. water) or (dust free) glass, styropor, or similar semi-permeable surfaces. For materials and liquids unfamiliar to you always take a trial measurement.
When aiming through panes of glass, or if there are several objects in the line-of-sight erroneous measurements can occur.

User Information

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**Wet, smooth or high-gloss surfaces**

1. Aiming at a "obtuse" angle deflects the laser beam. The Leica DISTO™ plus may receive a signal that is too weak (error message 255).
2. If aiming at a right angle, the Leica DISTO™ plus may receive a signal that is too strong (error message 256).

**Inclined, round surfaces**

Can be measured with the laser.

Requirement: There is enough area on the target surface for the laser spot.

**Using a target plate**

Use target plates 563875 (DIN C6) or 723385 (DIN A4’), if the signal is too weak (e 255), if the targeted surface is too rough, if the surface has poor reflection or during daylight when measuring from more than 30 meters away.

- White surfaces: to up approx. 30 m
- Brown surfaces: from approx. 30 m to 200 m

**In the field**

Leica DISTO™ plus is equipped with an integrated telescopic viewfinder (2x magnification).

With measurements from a distance of 25 m the laser spot is in the centre of the crosshairs. Below a distance of 25 m the laser spot moves to the edge of the crosshairs.

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**Technical Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring accuracy (2x standard deviation) typ.:</td>
<td>± 1.5mm / max.: ± 3mm**</td>
</tr>
<tr>
<td>Smallest unit displayed</td>
<td>1mm**</td>
</tr>
<tr>
<td>Range (from about 30m, use target plate)</td>
<td>0.2m up to 200 m</td>
</tr>
<tr>
<td>Time for a measurement dist / trc</td>
<td>0.5...ca.4s / 0.16...ca.1s</td>
</tr>
<tr>
<td>Laser spot (at distance)</td>
<td>6 / 30 / 60 mm (10 / 50 / 100 m)</td>
</tr>
<tr>
<td>Integrated telescopic viewfinder</td>
<td></td>
</tr>
<tr>
<td>Illumination</td>
<td></td>
</tr>
<tr>
<td>Multiline display</td>
<td></td>
</tr>
<tr>
<td>Multifunctional endpiece</td>
<td></td>
</tr>
<tr>
<td>Time delay release</td>
<td></td>
</tr>
<tr>
<td>Pocket calculator</td>
<td></td>
</tr>
<tr>
<td>BLUETOOTH®</td>
<td></td>
</tr>
<tr>
<td>Tracking</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>10 values</td>
</tr>
<tr>
<td>Min./ max. Tracking</td>
<td></td>
</tr>
<tr>
<td>Pythagoras</td>
<td></td>
</tr>
<tr>
<td>Memory (SD)</td>
<td>15 values</td>
</tr>
<tr>
<td>Battery, Type AA, 2x 1.5V</td>
<td>up to 10'000 measurements *** (only with Alkaline batteries!)</td>
</tr>
<tr>
<td>Splash and dustproof</td>
<td></td>
</tr>
<tr>
<td>Line of sight accuracy</td>
<td></td>
</tr>
<tr>
<td>Temperature range</td>
<td>-25°C to +70°C (-13°F to +158°F)</td>
</tr>
<tr>
<td>Storage</td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>-10°C to +30°C (-14°F to +122°F)</td>
</tr>
<tr>
<td>Weight</td>
<td>335g</td>
</tr>
</tbody>
</table>

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Leica DISTO™ plus 1.0.0 GB
Maximum deviation occurs under unfavorable conditions, such as in bright sunlight or when measuring to inadequately reflecting surfaces. For distances over 30m without using a target plate, the maximum deviation may increase by ±0.1mm/m to maximum ±10mm. For more information, refer to www.disto.com.

As of 100m, the measuring units are displayed in cm.

*** Reduced when using the BLUETOOTH® function

**Message Codes**

**Error message**

Appears beside the message number on the display.

<table>
<thead>
<tr>
<th>Message Code</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>203</td>
<td>Wrong sequence with Pythagoras meas.</td>
<td>Carry out measurement in correct sequence</td>
</tr>
<tr>
<td>204</td>
<td>Calculation error</td>
<td>Repeat procedure</td>
</tr>
<tr>
<td>240</td>
<td>Transmission error</td>
<td>Repeat procedure</td>
</tr>
<tr>
<td>252</td>
<td>Temperature too high, above 50°C (measuring)</td>
<td>Cool down instrument</td>
</tr>
<tr>
<td>253</td>
<td>Temperature too low, below -10°C (measuring)</td>
<td>Warm up instrument</td>
</tr>
</tbody>
</table>

**Care**

Look after the optical surfaces with the same care that you would apply to spectacles, cameras and field glasses.

The most current information can be found on our homepage: www.disto.com

We publish the addresses of specialized software manufacturers. However, we are not responsible for the correctness of their specifications or for the performance of their software.

For software developers, the Leica DISTO™ plus Online-Interface description is available.

All illustrations, descriptions and technical specifications are subject to change without prior notice.
Leica Geosystems AG, Heerbrugg, Switzerland has been certified as being equipped with a quality system which meets the International Standards of Quality Management and Quality Systems (ISO standard 9001) and Environmental Management Systems (ISO standard 14001).

Total Quality Management - Our commitment to total customer satisfaction
Ask your local Leica Geosystems agent for more information about our TQM program.

Pat. No.

- US 5,815,251
- US 5,949,531
- US 6,336,277
- US 6,463,393
- EP 0738 899
- EP 0932 835