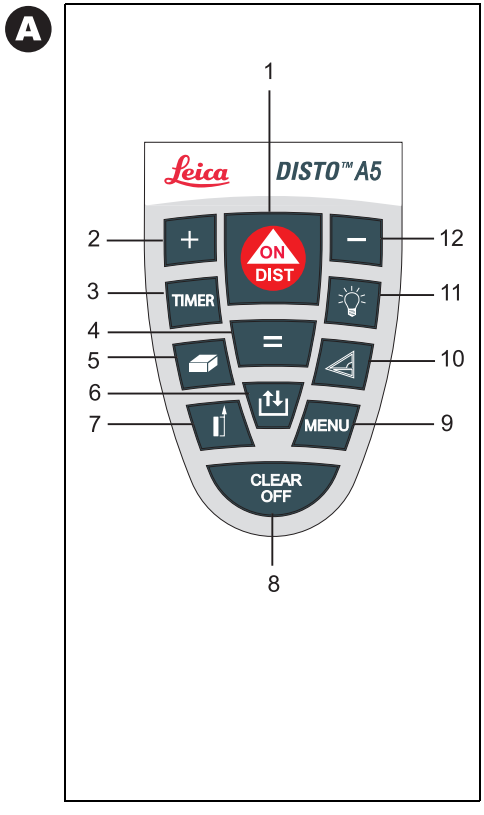
Leica DISTO™ A5

The original laser distance meter

- when it has to be **right**

Leica Geosystems


A
1
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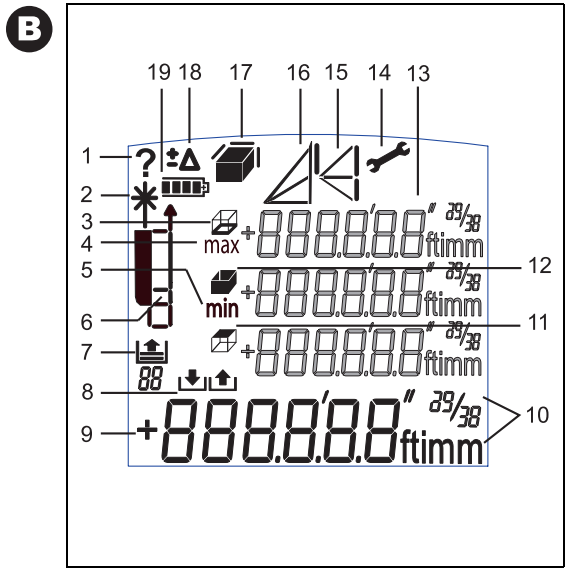
Leica
DISTO™ A5
ON
DIST
TIMER
MENU
CLEAR
OFF


B
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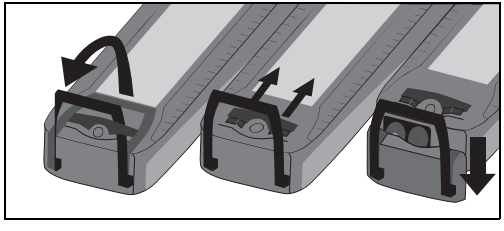
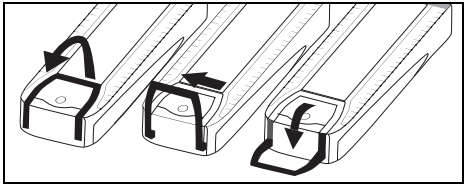
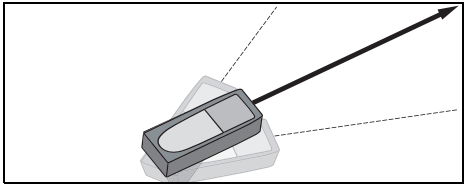

C

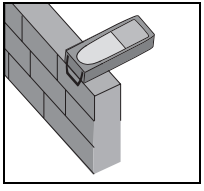
D



I



E



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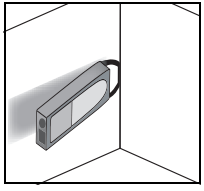
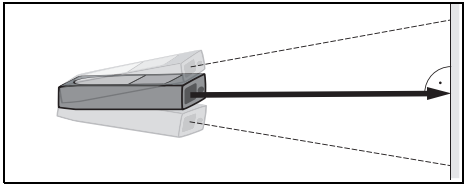
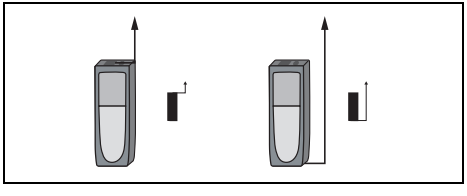


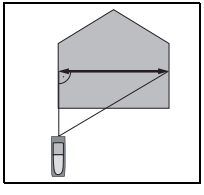
J



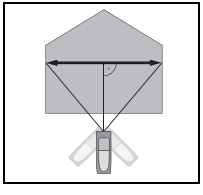
G



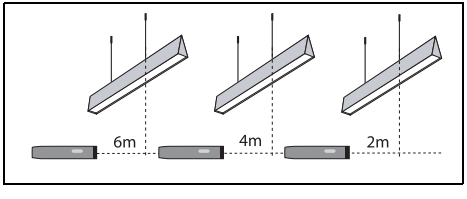
K



L



H



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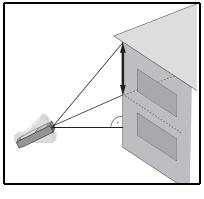

User Manual

Version 1.1

English

Congratulations on your purchase of a Leica DISTO™.


The safety instructions can be found in a separate booklet, which accompanies this user manual. The safety instructions along with the user manual should be read carefully before initial operation.

Helpful Hint: The first and last page including the pictures should be folded out and left open, whilst reading through the manual. Letters and Numbers in braces **{}** refer to the illustrations.

Content

Start-up 1
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Start-up

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Inserting / replacing Batteries

See figure {**C**} - Open the positioning bracket. Remove the locking clip and slide the endpiece down. Slide the red locking mechanism to the side and open the battery compartment. Insert new or replace used batteries. Close battery cover, reinsert the endpiece and fix locking clip.

The battery symbol {**B, 19**} appears permanently blinking in the display when the battery voltage is too low. The batteries should be replaced as soon as possible.

- Pay attention to correct polarity.
- Use alkaline batteries.
- Batteries should be removed if the device will not be used for a long time (danger of corrosion).

When changing the batteries the settings and stack content remain unchanged.

Multifunctional Endpiece

See figure {**D**}

The device can be used for different measurement situations:

- For measurements from an edge open the positioning bracket until it locks in place.
  See figure {**E**}.
- For measurements from a corner, open the positioning bracket until it locks in place, with a slight

push to the right the bracket can be turned further. See figure {**D** and **F**}.

A built-in sensor automatically detects the orientation of the positioning bracket and calculates the corresponding distances accordingly.

Integrated telescopic viewfinder

The device is equipped with a telescopic viewfinder on the right hand side. The viewfinder is especially helpful when aiming at distant targets. When looking through the viewfinder, the target is clearly visible thanks to the 2x magnification. At distances beyond 30 m laser spot is centered on the crosshair, below 30 m the laser spot appears on the edge of the crosshair, which is normal.

Level

The integrated bubble level allows simple horizontal levelling of the instrument.

Keypad

See figure {**A**}:

1 ON/MEASURING
2 **PLUS [+]**
3 **TIMER**
4 **EQUAL [=]**
5 **AREA/VOLUME**
6 STORAGE
7 **MEASUREMENT REFERENCE**
8 **CLEAR/OFF**
9 **MENU**
10 **INDIRECT MEASUREMENT (PYTHAGORAS)**
11 **ILLUMINATION**
12 **MINUS [-]**

Display

See figure {**B**}

1 Information about faulty measurements
2 Laser active
3 Circumference
4 Maximum value of continuous measurement
5 Minimum value of continuous measurement
6 Measurement reference
7 Recall of Historical Storage
8 Storage of constant
9 Main line
10 Units with exponents ($^2/_3$)
11 Ceiling area
12 Wall area
13 Three auxiliary lines (e.g. previous results)
14 Hardware error
15 Indirect measurement - Pythagoras
16 Indirect measurement - Pythagoras - partial height
17 Area / Volume
18 Offset setting
19 Battery indication

Menu functions

Presettings

The menu allows selection of the settings that will remain in memory after the instrument is switched off.

Navigation in the Menu

Press the **MENU** -key {**A, 9**} repeatedly to scroll through the possible menu functions (UNIT, OFFSET, TRIPOD, RESET).

When the desired menu option appears, select it with the **EQUAL** - key {**A, 4**}, scroll through the possible settings with the **PLUS** - key {**A, 2**} or the **MINUS** - key {**A, 12**} and store the selected setting with the **EQUAL** - key {**A, 4**}. Press **CLEAR** - key {**A, 8**} to leave the menu without saving any changes in the settings.

Selecting Units

"UNIT" blinks in the display.

Possible units:

Distance	Area	Volume
0.000 m	0.000 m²	0.000 m³
0.00 m	0.00 m²	0.00 m³
0 mm	0.000 m²	0.000 m³
0.00 ft	0.00 ft²	0.00 ft³
0.00 $^{1}/_{32}$ ft in	0.00 ft²	0.00 ft³
0' 0'' $^{1}/_{32}$	0.00 ft²	0.00 ft³
0.0 in	0.00 ft²	0.00 ft³
0 $^{1}/_{32}$ in	0.00 ft²	0.00 ft³

Measure with offset

An offset automatically adds or subtracts a value to/ from ALL measurements. With this feature tolerances can be taken into consideration e.g. between unfinished and finished dimensions.

Select the menu function **OFFSET** {**B, 18**} (OFFSET blinks in the display), confirm with the **EQUAL** - key {**A, 4**}. Adjust the OFFSET with the **PLUS** - key {**A, 2**} or the **MINUS** - key {**A, 12**}.

By holding the keys down, the setting values will increase/decrease faster. Once you have entered the proper offset confirm your selection with the **EQUAL** - key {**A, 4**}. As long as an **OFFSET** {**B, 18**} is added/ subtracted the symbol is visible on the display.

Measuring with tripod

Using a tripod eliminates shaking when measuring over long distances. On the back of the instrument is an industry standard ¼"-threaded hole for use with a camera tripod mounting screw. For correct measurements the reference needs to be adapted. Select the menu function **TRIPOD** {**B, 6**} ("triPod" blinks in the display) and confirm with the **EQUAL** - key {**A, 4**}.

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Reset

When you select the menu function **RESET** ("**rESET**" will blink in the display) and press the **EQUAL**-key {**A, 4**} twice the device will default to factory settings.

CAUTION: Any customized presettings as well as stored values will be deleted.

Operation

Switching On/Off

ON: Press **ON** - key {**A, 1**} briefly. Battery indication is displayed until the next keystroke.

OFF: Press and hold **OFF** - key {**A, 8**}. To maximize battery life the laser beam will switch off after 3 minutes of inactivity, the device will automatically switch off after 6 minutes of inactivity.

CLEAR key

Pushing the **CLEAR** - key {**A, 8**} clears the last entry or measurement. Within a function (area, volume, etc.) single measurements can be deleted step by step and remeasured.

Illumination

Pressing the **ILLUMINATION** - key {**A, 11**} turns on/off the display backlight.

Measuring reference

If the positioning bracket is folded out, the device recognizes the position, adapts the reference and calculates distances accordingly.

The default reference setting is from the rear of the instrument. By pressing the **REFERENCE** - key {**A, 7**}, the setting can be changed, so that the next measurement taken will be from the "front" of the in-strument. Afterwards the reference setting automatically defaults back to rear. See picture {**G**}.

You can choose the "front" reference permanently by pressing the **REFERENCE** - key {**A, 7**} longer. Press the **REFERENCE** - key {**A, 7**} longer another time to change back to the "rear" reference.

See also "Measuring with tripod".

Measuring

Single distance measuring

Pressing **DIST** - key {**A, 1**} turns the laser on. Aim at the desired target and press **DIST** - key {**A, 1**} again. The measured distance is displayed immediately in the chosen unit.

Minimum/maximum measuring

This function allows the user to measure the minimum or maximum distance from a fixed measuring point as well as to determine spacing - see figure {**H**}.

It is commonly used to measure diagonal distances

(maximum values) or horizontal distances (minimum values).

Press and hold **DIST** - key {**A, 1**} until you hear a beep, indicating the device is in a continuous measuring mode. Then slowly sweep the laser back and forth respectively up and down over the desired target point - see figure {**I, J**} - (e.g. a corner in the room).

Press **DIST** - key {**A, 1**} again and the continuous measurement will be stopped. The values for maximum and minimum distances are shown in the display as well as the last measured value in the main line.

Functions

Addition/Subtraction

To add or subtract two or more measurements simply works as follows:

Measurement +/- Measurement +/- Measurement +/- .... = RESULT

Pressing the **EQUAL** - key {**A, *4***} ends the sequence and displays the result in the main line; the actual measurements are scrolled upwards in the display. Pushing the **CLEAR** - key {**A, 8**} undoes the most recent operation.

Areas and volumes can be added/subtracted in exactly the same manner.

Area

Press the **AREA/VOLUME** - key {**A, 5**} once for the area function. The corresponding symbol appears in the display. When both measurements have been taken the result will be automatically calculated and displayed in the main line.

Press the **AREA/VOLUME** - key {**A, 5**} longer to calculate the circumference {**B, 3**}. Press the **AREA/VOLUME** - key {**A, 5**} longer again to return to the previous area measurement.

If you want to measure another area, press **AREA/VOLUME** - key {**A, 5**} again.

Special Function:
Sides to be measured can be made up of several distances.

If necessary, all sides of your area measurement can be made up of several partial measurements. Choose the area mode. Press the **PLUS** - key {**A, 2**} or **MINUS** - key {**A, 12**} before you start with the first partial measurement. Proceed with the first partial measurement by pressing **DIST** - key {**A, 1**}. In the display an addition or subtraction symbol appears. Make the first partial measurement, press **PLUS** - key {**A, 2**} or **MINUS** - key {**A, 12**} and make the second partial measurement. Unlimited partial measurements can be summed up or subtracted. To finish the distance measurement press the **EQUAL** - key { **A, *4***}. The second distance can be made up of partial distances with the same method. The area result is shown as usual in the main line.

Volume

Press the **AREA/VOLUME** - key {**A, 5**} twice for the volume function. The corresponding symbol appears in the display. When 3 measurements have been taken the result will be automatically calculated and displayed in the main line.

Press the **AREA/VOLUME** - key {**A, 5**} longer to display additional room information such as ceiling/ floor area, surface area of the walls, circumference. Press the **AREA/VOLUME** - key {**A, 5**} long again to return to the previous volume measurement.

If you want to measure another volume press **AREA/ VOLUME** - key {**A, 5**} again.

Special Function:
Sides to be measured can be made up of several distances.

If necessary, all sides of your volume measurement can be made up of several partial measurements. Choose the volume mode. Press the **PLUS** - key {**A, 2**} or **MINUS** - key {**A, 12**} before you start with the first partial measurement. Proceed with the first partial measurement by pressing **DIST** - key {**A, 1**}. In the display an addition or subtraction symbol appears. Make the first partial measurement, press **PLUS** - key {**A, 2**} or **MINUS** - key {**A, 12**} and make the second partial measurement. Unlimited partial measurements can be summed up or subtracted. To finish the distance measurement press the **EQUAL** - key { **A, 4**}. The second and the third distance can be made up of partial distances with the same method. The volume result is shown as usual in the main line.

Indirect Measuring

The device can calculate distances using Pythagoras' theorem. This method is useful when the distance to be measured is difficult or dangerous to access.

- The method is only used to estimate distances, it cannot replace an accurate measurement.
- Make sure you strictly follow the sequence of the measurements
- All target points need to be vertically or horizontally in the same plane
- Best results can be expected if the device is turned around a fixed point (e.g. positioning bracket folded out completely and the device is held towards a wall)
- It is highly recommended to use the "**Minimum/ maximum measuring**" by pressing the **DIST** - key {**A, 1**} longer. The minimum value is used for the measurements perpendicular towards the target respectively the maximum value for the other measurements. This increases the accuracy of the indirect measuring considerably.

Indirect Measuring - Determination with two points

See figure {**K**}

Press the **PYTHAGORAS** - key {**A, 10**} until the correct symbol appears on the display. The distance

to be measured will flash in the display. Take the necessary measurements. The result and the single measurements appear on the display.
CAUTION: Right angle is necessary between the second measurement and the resulting distance. We recommend to press the **DIST** - key {**A, 1**} longer to activate the perpendicular (min.) measuring function.

Indirect Measuring - Determination with three points

See figure {**L**}
Press the **PYTHAGORAS** - key {**A, 10**} until the correct symbol appears on the display. The length to be measured appears flashing on the display. Take the necessary measurements. The result and the single measurements appear on the display.
CAUTION: Right angle is necessary between the second measurement and the resulting distance. We recommend to press the **DIST** - key {**A, 1**} longer to activate the perpendicular (min.) measuring function.

Indirect Measuring - Determination of a partial height with three points

See figure {**M**}
Press the **PYTHAGORAS** - key {**A, 10**} until the correct symbol appears on the display. The length to be measured appears flashing on the display. Take the necessary measurements. The result and the single measurements appear on the display.
CAUTION: Right angle is necessary between the third measurement and the resulting distance. We recommend to press the **DIST** - key {**A, 1**} longer to activate the perpendicular (min.) measuring function.

Storage of Constants/Historical Storage

Storage of a Constant

It is possible to store and recall a frequently used value e.g. height of a room. Measure the desired distance, press and hold **STORAGE** - key {**A, 6**} until the device beeps to confirm the storage.

Recalling the constant

Press **STORAGE** - key {**A, 6**} to recall the constant and make it available with a press on the **EQUAL** - key {**A, *4***} for further calculations.

Special function: Adjusting the constant
A measured value can be adjusted. If you press the **EQUAL** - key {**A, *4***}, the value starts blinking and can be adjusted with the **PLUS** - key {**A, 2**} or **MINUS** - key {**A, 12**}. Through pressing the **EQUAL** - key {**A, *4***} again the adjustment is confirmed. Now the value can be stored as usual as a constant.

Historical Storage

Press **STORAGE** - key {**A, 6**} twice quickly and the previous 20 results (measurements or calculated results) are shown in reverse order. Using the **PLUS** - key {**A, 2**} and the **MINUS** - key {**A, 12**} allows to navigate in the historical storage. Press **EQUAL** - key {**A, *4***} to take a result from the historical storage to use for further calculations.

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Timer

Press and hold **TIMER** - key {**A, 3**} until desired time delay has been reached (5 - 60 seconds).

Press **DIST** - key {**A, 1**}. Once the key is released the remaining seconds until measurement are displayed. The last 5 seconds are counted down with a beep. After the last beep the measurement is taken.

Special function: Switch off of Beep

Pressing **MENU** - key {**A, 9**} and **MINUS** - key {**A, 12**} together for 4 sec. switches the Beep off or on.

Appendix

Message Codes

All message codes will be displayed with either "InFo" or "Error".

The following mistakes can be corrected:

InFo	Cause	Remedy
204	Calculation error	Repeat procedure
206	No endpiece detection	Attach the endpiece properly. If error still occurs, replace the endpiece.
252	Temperature too high	Cool down instrument
253	Temperatur too low	Warm up instrument
255	Receiver signal too weak, measurement time too long, distance > 100 m	Use target plate
256	Received signal too powerful	Use target plate (grey side)
257	Wrong measurement, ambient brightness too high	Use target plate (brown side)
260	Laser beam interrupted	Repeat measurement

Error	Cause	Remedy
	Hardware error	Switch on/off the device several times and check if the symbol still appears. If so please call your dealer for assistance.

Technical Data

Range (use target plate for longer distances)	0.05 m to 200 m 0.2 ft to 650 ft
Measuring accuracy up to 30 m (2 σ, standard deviation)	typ.: ± 2 mm*
Smallest unit displayed	1 mm
Laser class	II
Laser type	635 nm, < 1 mW
Ø laser spot (at distance)	6 / 30 / 60 mm (10 / 50 / 100 m)
Autom. switch off laser	3 min
Autom. switch off instrument	6 min

Integrated telescopic viewer	2x magnification
Display illumination	✓
Integrated level	✓
Multifunctional endpiece	✓
Timer	✓
Single Measurement	✓
Maximum, Minimum, Continuous Measurement	✓
Historical storage of	20 values
Indirect Measuring functions with Pythagoras	✓
Storage of constant	✓
Area/Volume calculation with room calculations	✓
Addition/Subtraction	✓
Tripod thread	✓
Battery life, Type AA, 2 x 1.5V	up to 10 000 measurements
IP rating	IP 54 splash proof, dust proof
Dimension	148 x 64 x 36 mm
Weight (with batteries)	241 g
Temperature range: Storage Operating	 -25°C to +70°C (-13°F to +158°F) -10°C to +50°C (-14°F to +122°F)

* maximum deviation occurs under unfavourable conditions such as bright sunlight or when measuring to poorly reflecting or very rough surfaces. For distances over 30 m the maximum deviation may increase to a maximum of ± 10 mm.

Measuring Conditions

Measuring Range

At night, at dusk and when the target is shadowed the measuring range without target plate is increased.

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

Measuring Surfaces

Measuring errors can occur when measuring toward colourless liquids (e.g. water) or dust free glass, styrofoam or similar semi-permeable surfaces.

Aiming at high gloss surfaces deflects the laser beam and measurement errors can occur.

Against non-reflective and dark surfaces the measuring time can be increased.

Care

Do not immerse the unit in water. Wipe off dirt with a damp, soft cloth. Do not use aggressive cleaning agents or solutions. Treat the optical surfaces with the same care that you would apply to eyeglasses and cameras.

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Warranty

The Leica DISTO™ A5 comes with a two (2) year warranty from Leica Geosystems AG.
More detailed information can be found at:
www.disto.com

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.

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Leica Geosystems AG
CH-9435 Heerbrugg
(Switzerland)
www.disto.com

- when it has to be **right**

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