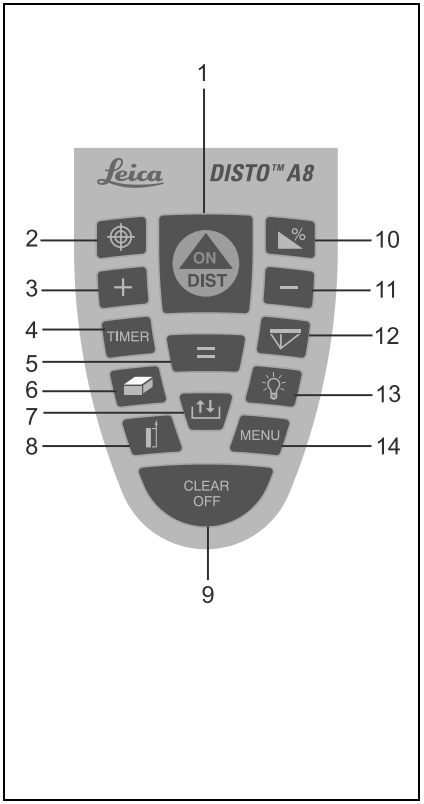
Leica DISTO™ A8

The original laser distance meter

- when it has to be **right**

Leica Geosystems

A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Leica
DISTO™ A8
ON
DIST
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MENU
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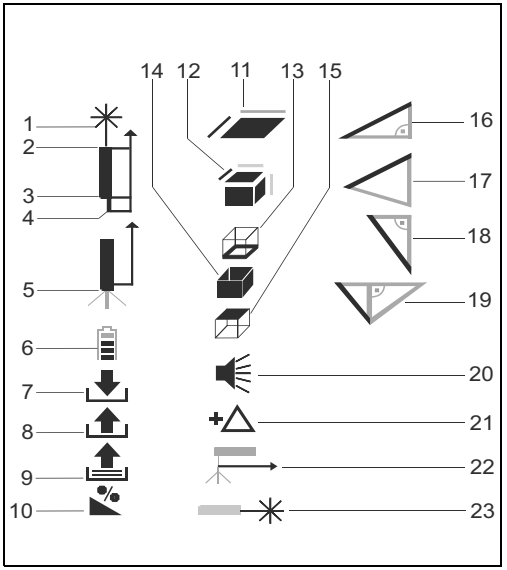
CLEAR
OFF
9

B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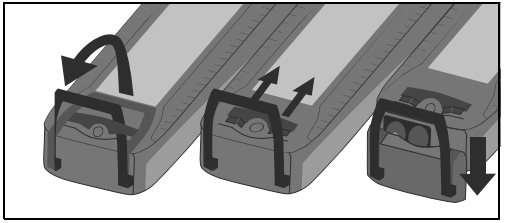
C



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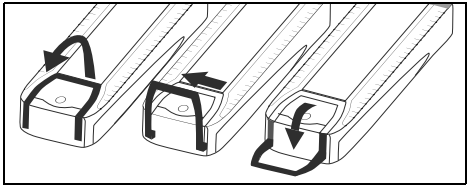

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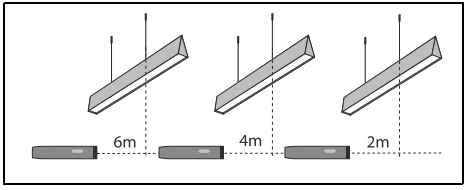

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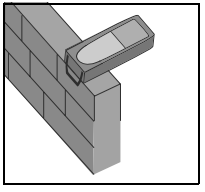

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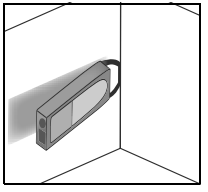

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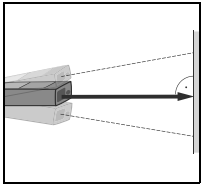

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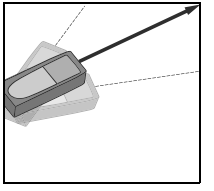

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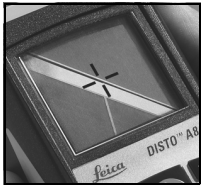

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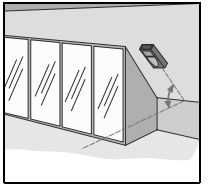

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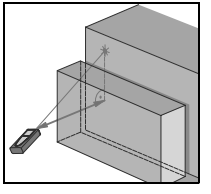

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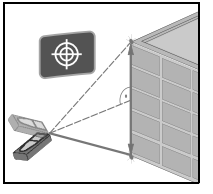

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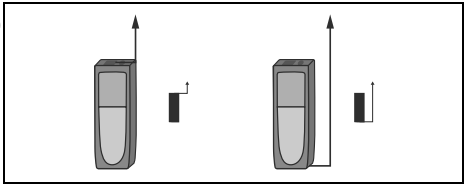

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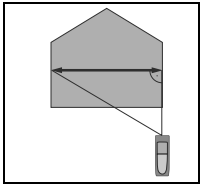

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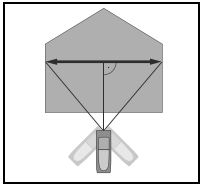


User Manual

Version 1.0

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

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, 6**} 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.

Level

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

Keypad

See figure {**A**}:

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

Display

See figure {**B**}

The graphics display shows clear, large symbols which enable an easy to use interface.

1 Laser active
2 Reference (front)
3 Reference (rear)
4 Reference(corner stop)
5 Measuring with the tripod
6 Battery status
7 Save constant value
8 Call up constant value
9 Historical mermory, call up values
10 Tilt
11 Area
12 Volume
13 Circumference
14 Wall area
15 Ceiling area
16 Single tilt measurement
17 Double tilt measurement
18 Single Pythagorean measurement
19 Double Pythagorean measurement
20 Beep
21 Offset settings
22 Reference (tripod)
23 Continuous laser

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, 14**} repeatedly to scroll through the possible menu functions.

When the desired menu option appears, select it with the **EQUAL** - key {**A, 5**}, scroll through the possible settings with the **PLUS** - key {**A, 3**} or the **MINUS** - key {**A, 11**} and store the selected setting with the **EQUAL** - key {**A, 5**}. Press **CLEAR** - key {**A, 9**} to leave the menu without saving any changes in the settings.

Set unit of distance

"UNIT ?" and the DISTO symbol with the laser beam {**B, 1**}.are displayed on the screen

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

Set unit of tilt

"UNIT ?" and the tilt symbol {**B, 10**} are displayed on the screen.

Possible units:

±90.00°
±180.00°
360.00°
0.00%
0.0 mm/m
0.00 in/ft

Beep

The Beep symbol is displayed. It can be switched on or off.

Measure with offset (add/subtract tolerance)

An offset automatically adds or subtracts a value to/ from all measurements. With this feature toler-ances can be taken into consideration e.g. between unfi-nished and finished dimensions.

Select the menu function **OFFSET** {**B, 21**} (OFFSET blinks in the display), confirm with the **EQUAL** - key

{**A, 5**}. Adjust the OFFSET with the **PLUS** - key {**A, 3**} or the **MINUS** - key {**A, 11**}.
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, 5**}. As long as an **OFFSET** {**B, 21**} 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, 22**}. Confirm with the **EQUAL** - key {**A, 5**}. The corresponding symbol {**B, 5**} is displayed permanently.

Continuous laser

Select the Menu function Continuous laser and confirm with the **EQUAL** - key {**A, 5**}. The laser is now on permanently and whenever the **DIST** - key {**A, 1**} is pressed, a measurement is taken.
The laser is automatically switched off after 60 minutes.

Reset

When you select the menu function **RESET** and press the **EQUAL**-key {**A, 5**} 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, 9**}. 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

Pressing the **CLEAR** - key {**A, 9**} cancels the last action.
While making area/volume or indirect measurements, each single measurement can be deleted and remeasured.

Digital Viewfinder (3x zoom)

The instrument has a built in camera that displays the target in 16 grayscales on the camera. With the crosshairs blended in, targets can be aimed at and accurately measured, even if the laser is not visible. Refer to piture {**G**}.
The integrated camera is a great help outdoors and can be used for every function. Long distance measurements and accurate measurements to small areas,

can be made even in bright sunlight without any problems. The 3- fold zoom supports the individual magnification.

Press the **DIGITAL VIEWFINDER** - key {**A, 2**} and the camera is activated. Press the **DIGITAL VIEWFINDER** - key {**A, 2**} repeatedly to switch from 1-fold to 2-fold to 3-fold zoom.

The **PLUS** - key {**A, 3**} and the **MINUS** - key {**A, 11**} adjust in steps 9-1 the brightness of the camera.

Whenever a distance measurement is triggered, an hour glass symbol appears in the lower left corner of the display screen until the measurement is completed.

For measurements of less than 5 meters, using the digital viewfinder is not recommended as the laser is not centered because of the parallax.

Tilt

The instrument has a built in tilt sensor with an accuracy of ± 0.15° in reference to the laser beam. Activate the tilt sensor with the **TILT**- key {**A, 10**}. While measuring, the tilt is now displayed in the upper right of the screen. The housing can also be held at a tilt. By pressing the **DIST** - key {**A, 1**} the tilt is stabilised and displayed in an intermediate row. The tilt measurement works independently of the distance measurement.

Please make sure that the instrument is not traverse tilted when making a tilt measurement. If the transverse tilt is too large, an error message is displayed to prevent measuring errors. The units can be set under **MENU**. Refer to picture {**H**}. You need to consider the height difference, between the housing and the laserpoint, by marking off the tilt with help of the laser beam.

Illumination

Pressing the **ILLUMINATION** - key {**A, 13**} 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, 8**}, 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 {**I**}.

You can choose the "front" reference permanently by pressing the **REFERENCE** - key {**A, 8**} longer. Press the **REFERENCE** - key {**A, 8**} longer another time to change back to the "rear" reference.

Measurements from the front edge are signalled by a different sounding "Beep".

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 {**J**}.

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 {**K, L**} - (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.

With tilt activated, the tilt value of the maximum measurement is displayed in the frame.

Functions

Addition/Subtraction

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

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

Pressing the **EQUAL** - key {**A, 5**} 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, 9**} undoes the most recent operation.

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

Area/Volume

Press the **AREA/VOLUME** - key {**A, 6**}. In the symbol {**B, 11, 12**} the distance to be measured is highlighted. Make the required two or three measurements and the result will be displayed in the summary row. Press the **AREA/VOLUME** - key {**A, 6**} for a longer period to display additional information {**B, 13-15**}. Press the **AREA/VOLUME** - key {**A, 6**} again for a longer period to return to the current area-/volume measurement or a short press to make the next area/volume measurement.

Special functions

If desired, the sides of an Area/Volume can be composed of several partial lengths. Select the **AREA/VOLUME** function.

Press the **PLUS** - key {**A, 3**} or **MINUS** - key {**A, 11**} 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, 3**} or **MINUS** - key {**A, 11**} 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, 5**}. The second distance can be made up of partial distances with the same method. The result of the Area/Volume calculation is displayed as usual in the summary row.

Indirect Measuring

The instrument can measure vertical distances with the tilt sensor. This procedure is especially helpful if the upper target point does not reflect the laser. The upper target point can be aimed at, with the digital viewfinder. For a double tilt measurement, the first measurement only requires a tilt measurement and not a distance measurement.

Then the vertical and horizontal distances can be calculated with the Pythagorean theorem. This method is ideal when the distance to be measured is hard to reach.

- Both methods only serve to estimate distances and cannot replace an exact measurement.
- Make sure you adhere to the prescribed sequence of measuring.
- All target points must be in a straight line to the wall area. See figure {N, P}
- 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 single tilt measurement - determine all 3 sides and an angle with 1 distance measurement

See figure {**M**}

Press the **INDIRECT MEASUREMENT** - key {**A, 12**}. In the symbol, the distance to be measured is highlighted. Make the required distance measurement. The result is displayed in the summary row, the measured distance and the angle in the secondary row.

Press the **INDIRECT MEASUREMENT** - key {**A, 12**} for a longer period to obtain more details.

Indirect double tilt measurement - obtain all detail information with 1 tilt measurement and 1 distance measurement

See figure {**N**}

Press the **INDIRECT MEASUREMENT** - key {**A, 12**} twice. In the symbol, the tilt to be measured is highlighted. Make the required tilt measurement with the Digital Viewfinder. Here will we measure with the **DIST**-key {**A, 1**}, a tilt and not the distance. In the symbol, the distance to be measured is highlighted. Make the distance measurement. The result is displayed in the summary row, the measured distance and angles in the secondary row. Press the **INDIRECT MEASUREMENT** - key {**A, 12**} for a longer period to obtain more details.
If the tilt of the distance measurement is above 0°, the result is automatically displayed as a partial height.

Indirect single Pythagorean measurement - determine a stretch with 2 auxilliary measurements

See figure {**O**}
Press the **INDIRECT MEASUREMENT** - key {**A, 12**} three times. In the symbol, the distance to be measured is highlighted. Make the required distance measurements. The result is displayed int the summary row. Press the **INDIRECT MEASUREMENT** - key {**A, 12**} for a longer period to obtain more details.

Indirect double Pythagorean measurement - determine a stretch with 3 auxilliary measurements

See figure {**N, P**}
Press the **INDIRECT MEASUREMENT** - key {**A, 12**} until the corresponding symbol is displayed. In the symbol the distance to be measured is dark. Make the required distance measurements. The result is displayed int the summary row. Press the **INDIRECT MEASUREMENT** - key {**A, 12**} for a longer period to obtain more details.
You will find application examples with detailed measuring sequences on our homepage www.disto.com.

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, 7**} until the device beeps to confirm the storage.

Recalling the constant

Press **STORAGE** - key {**A, 7**} to recall the constant and make it available with a press on the **EQUAL** - key {**A, 5**} for further calculations.

Special function: Adjusting the constant
A measured value can be adjusted. If you press the **EQUAL** - key {**A, 5**}, the value starts blinking and can be adjusted with the **PLUS** - key {**A, 3**} or **MINUS** - key {**A, 11**}. Through pressing the **EQUAL** - key {**A, 5**} again the adjustment is confirmed. Now the value can be stored as usual as a constant.

Historical Storage

Press **STORAGE** - key {**A, 7**} twice quickly and the previous 30 results (measurements or calculated results) are shown in reverse order. Using the **PLUS** - key {**A, 3**} and the **MINUS** - key {**A, 11**} allows to navigate in the historical storage. Press **EQUAL** - key {**A, 5**} to take a result from the historical storage to use for further calculations.

Timer

Press and hold **TIMER** - key {**A, 4**} 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.

Appendix

Message Codes

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

The following mistakes can be corrected:

InFo	Cause	Remedy
154	Transverse tilt < 20°	Hold the instrument without any transverse tilt
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

Power Range Technology™: Range (without target plate) Range (with target plate)	 100 m (330 ft) 200 m (650 ft)
Measuring accuracy up to 30 m (2 σ, standard deviation)	typ.: ± 1.5 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
Digital Viewfinder (3x zoom)	✓
Display illumination	✓
Integrated level	✓
Multifunctional endpiece	✓
Timer	✓
Single Measurement	✓
Tilt sensor: Accuracy - to laser beam - to the housing	 ± 0.15° ± 0.3°
Maximum, Minimum, Continuous Measurement	✓
Historical storage of	30 values
Storage of constant	✓
Indirect measurement with the tilt sensor	✓
Indirect Measuring functions with Pythagoras	✓
Area/Volume calculation with room calculations	✓
Addition/Subtraction	✓
Tripod thread	✓
Battery life, Type AA, 2 x 1.5V	up to 5000 measurements
IP rating	IP 54 splash proof, dust proof
Dimension	148 x 64 x 36 mm
Weight (with batteries)	280 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.

Warranty

The Leica DISTO™ A8 comes with a two (2) year warranty from Leica Geosystems AG.

More detailed information can be found at:
www.disto.com

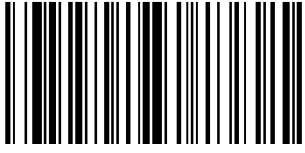
All illustrations, descriptions and technical specifications are subject to change without prior notice.

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.

Translation of original text (743367)

Pat. No.: WO 9427164, WO 9818019, WO 0244754, WO 0216964, US 5949531, EP 1195617, US 7030969, WO 03104748



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- when it has to be **right**

Leica Geosystems