

Operating manual

Laser distance meter

Model: COSMO 100



Manufacturer: ADAINSTRUMENTS

Address: WWW.ADAINSTRUMENTS.COM

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Congratulations on the purchase of laser distance meter ADA COSMO 100!



Permitted use

- Measuring distances
- Computing functions, e.g. areas, volumes, subtractions, Pythagorean calculation
- Storing measurements

The safety regulations and instructions along with the operating manual should be read carefully before initial operation. The person responsible for the instrument must ensure that equipment is used in accordance with the instructions. This person is also accountable for the deployment of personnel and for their training and for the safety of the equipment when in use.

SAFETY INSTRUCTION

Prohibited use

Please follow up instructions given in operating manual.

Do not use instrument in explosive environment (filling station, gas equipment, chemical production and so on).

Do not remove warning labels or safety instructions.

Do not open instrument housing, do not change it's construction or modification.

Do not stare at beam. Laser beam can lead to eye injury (even from greater distances).

Do not aim laser beam at persons or animals.

Opening of the equipment by using tools (screwdrivers, etc.), as far as not specifically permitted for certain cases.

Inadequate safety precautions at the surveying site (e.g. when measuring on the roads, construction sites and so on).

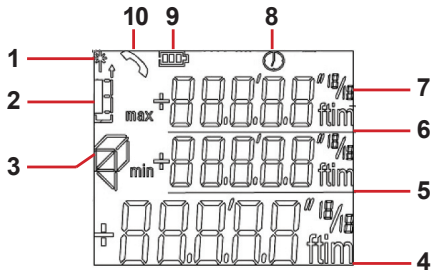
Use the instrument in the places where it could be dangerous: on the air transport, near manufacturers, production facilities, in the places where the work of laser distance meter can lead to the harmful effects on people or animals.

START UP

Keypad

1. ON / Measure
2. Angle / Stake out function button
3. Subtraction (-) / Timer
4. Area / Volume
5. Clear / OFF
6. Pythagorean measurement
7. Addition (+) / Units
8. Reference point





Display

1. Laser ON
2. Reference (front/rear)
3. Area / volume / Pythagorean
4. Main line
5. Line 2
6. Line 1
7. Units
8. Timer On
9. Battery display
10. Error

Inserting / Replacing Batteries

Remove the end piece on 180°. Remove the battery cover, insert the battery correctly. Pay attention to correct polarity.

Close the battery compartment.

Replace the battery when symbol constantly blinks in the display.

Batteries should be removed in case of danger of corrosion, if the device will not be used for a long time.

MENU FUNCTIONS

Switch on and off

Press the button (1) to switch on the instrument and laser.

Press and hold key for about 2 seconds to start continuous measuring.

The device also switches off automatically after 3 minutes of inactivity i.e. no key is pressed within that interval. To switch off the instrument press and hold button (5) for about 2 sec.

Reference Setting

Default reference setting is from the rear of the device.

Press the button (8) to set the reference: the front or the rear.

When the end-piece is folded out fully, the reference rear is set.

You will see the reference symbol on the display.

Selecting Units

Press and hold the button (7) for 2 sec. until the desired unit is displayed.

Clear-Key

Cancel the last action. Press button (5).

MEASUREMENTS

Single distance measurement

Press button (1) to activate the laser. When in continuous laser mode, press this button to trigger the distance measurement directly. The instrument will give acoustical signal.

The result is displayed immediately.

Continuous Measurement

Press and hold the button (1) for about 2 seconds to start continuous measuring.

Minimum/ Maximum measurement

This function allows the user to measure the minimum or maximum distance from a fixed measuring point. It is commonly used to measure room diagonals (maximum values) or horizontal distances (minimum values).

Press and hold down the button (1), until you will hear acoustical signal. Then slowly sweep the laser back and forth

and up and down over the desired target point (e.g. into the corner of a room).

Press (1) to stop continuous measurement. The values for maximum and minimum distances are shown on the display as well as the last measured value in the main line.

FUNCTIONS

Addition/subtraction

Press button (7): next measurement is added to the previous one. Press button (3): next measurement is subtracted from the previous one.

To complete this function press button (1). Repeat this function to measure distances. The result is displayed in the main display area. Previous measured value is displayed in the first line, last measured value is displayed in the second line. To finish working in this mode press button (5).

Area

Press the button (4) once. The symbol “area” is displayed.

Press button (1) to take the first measurement (for example, length). Measured value is displayed in the second line.

Press button (1) to take the second measurement (for example, width). Measured value is displayed in the second line. First measurement (e.g. length) is displayed in the first line. The result of measured area is displayed in the main display area.

Addition / Subtraction of areas

Area measuring – see Area.

Take the first measurement of area. Press button (7) to enter into the Addition mode or button (3) to enter into the Subtraction mode. Area value is displayed in the second line.

Press button (1) to take the first measurement (for example, length). Press button (1) to take the second measurement (for example, width).

After the completion of area, press button (1) , the result of addition/substraction of areas is displayed in the main display area. If the measurements are not finished, press button (7) (addition) or (3) (substraction) to continue calculations.

Volume

For volume measurements, press button (4) twice until the indicator for volume measurement appears on the display.

Press button (1) to take the first measurement (for example, length). Measured value is displayed in the second line.

Press button (1) to take the second measurement (for example, width). Measured value is displayed in the second line. Area value is displayed in the first line.

Press button (1) to take the third measurement (for example, height). Measured value is displayed in the second line.

The volume value will be displayed in the main display area and the previous area value is displayed in the first line.

Indirect measurement

Pythagorean measurement is used in the condition when the object is covered or has no effective reflecting surface and can't be measured directly.

Make sure you adhere to the prescribed sequence of measurement:

All target points must be in a horizontal or vertical plane.

The best results are achieved when the instrument is rotated about a fixed point (e.g. with the positioning bracket fully folded out and the instrument placed on a wall) or the instrument is mounted on a tripod.

Continuous measurements can be used. This function is used for minimum/maximum measurements.

The minimum value must be used for measurements at right angles to the target; the maximum distance for all other measurements.

Be sure that the first measurement and distance are measured at right angles. Use indirect measurement function.

Indirect measurement – determining a distance using 2 auxiliary measurements

This function is used when height and distance can't be measured directly.

Press button (6). The symbol “triangle” is displayed. The distance to be measured is blinking in the symbol triangle.

Press button (1) to take distance measuring (hypotenuse of triangle). The result is displayed in the second line. This measurement can be taken in the indirect measurement function. Press and hold button (1) for 2 sec. After second pressure of the button (1) maximum value is fixed.

The second distance to be measured is blinking in the symbol triangle.

Press button (1) to take distance measuring. There is a right angle between laser beam and the length you need to measure. That's why you should work in continuous mode. Press and hold button (1) for 2 sec. After second pressure of the button (1) maximum distance is fixed. The result of the measurement is displayed in the second line. Previous measurement is displayed in the first line. The result of the function is displayed in the main display area.

Indirect measurement – determining a distance using 3 measurements

This function is used when it's necessary to measure diagonals of rectangular areas, and also for calculation of the length of frameworks, inclined distances and so on.

Press button (6) 2 times. The symbol “triangle” is displayed. The distance to be measured is blinking in the symbol triangle.

Press button (1) to take distance measuring (side of the triangle) . The result of the function is displayed in the second line. This measurement can be taken in the mode of continuous measurement. Press and hold button (1) for 2 sec. After second pression of the button (1) maximum value is fixed. The second distance to be measured is blinking in the symbol triangle. It's very important to have right angle between laser beam and the length you need to measure. That's why you should work in continuous mode. Press and hold button (1) for 2 sec. After second pressure of the button (1) maximum distance is fixed.

Indirect horizontal distance

Press button (2). Symbol of angle measurement will be displayed on the screen. Press button (1) to measure inclination and distance. Horizontal distance will be displayed in the summary line. The display must be upward when measuring. The instrument stops measuring if it deviates from this position more than 10 degrees.

Marking function

Set distance a and then use it as a mark of the definite measurement. Add the distances: press the button (2) two times until the symbol of the fixed distance is showed on the display. Distance volume is blinking on the display.

It is possible to set volumes for required marking of the distance with the help of buttons (3) and (7). press button (1) to confirm the operation. Press button (1) to make measurement based on the mark.

Distance volume is displayed in the summary line between the marking dot and the instrument (see Setting of the reference mark).

The distance is decreased if you slowly move the instrument along the marking line. The instrument starts to give sound alarm at the distance less 0.1m from the following marking point.

Adjusting of the angle meter

1. Turn on the instrument. Place the instrument on the horizontal surface with inclination no more than 5° . The display must be upward. Press and hold simultaneously buttons (2) and (8) to enter the adjusting mode.
2. Current angle is displayed in the line 1. Press button (1) to take first measurement.
3. Turn the instrument through 180° on the same place. Current angle is displayed on the 2 additional filed of the display. Press button (1) to take the second measurement.
4. Press button (1) to confirm the result. Then press button (5). Press button (5) for cancellation and repeated setting of the zero value. Press button (5) once again to quit this function. The result will not be saved if you don't confirm the setting.

NOTE: The surface for adjustment must be smooth and without vibrations.


Timer

Use timer for accurate measurements of large distances. Press and hold button (3) to set stoppage in 5 sec. When you

release button you will see time that remains till the beginning of the measurement (in sec). Time displays on the display. Time reading of last 5 sec. comes with acoustic signal. When you hear last signal, the instrument takes a measurement.

MESSAGE CODES

All message codes are displayed with either “Info” or symbol telephone receiver (Error). Following mistakes can be corrected.

Info	CAUSE	REMEDY
204	Calculation overflow	Repeat procedure
252	Temperature too high	Cool down instrument
253	Temperature too low	Warm up instrument
255	Receiver signal too weak	Use target plate
256	Received signal too strong	Use target plate (grey side)
257	Wrong measurement	Use target plate (brown side)
258	Wrong initialization	Switch on – off the instrument
	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, without target, m	0.05 to 100
Accuracy, mm	$\pm 1.5^*$
Smallest unit displayed	1 mm
Distance measuring by tilt sensor	360°
Tilt sensor accuracy	$\pm 0.3^\circ$
Laser class	2
Laser type	635 nm, <1 mW
IP rating	IP 54

Automatic switch off	3 minutes of inactivity
Battery life, 2 x AAA	> 5000 measurements
Dimensions, mm	114×50×25
Weight	120 g
Temperature range: Storage Operating	-25° to +70° -10° to +50°

* In favourable conditions (good target surface properties, room temperature).

Maximum deviation occurs under unfavorable conditions such as bright sunlight or when measuring to poorly reflecting or very rough surfaces.

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Measuring conditions

Measuring range: the range is limited to 100 m. 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 colorless liquids (e.g. water) or dust free glass, styro-foam 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.

Precautions

Please, handle the instrument with care.

Avoid vibrations, hits, water, effect of heat.

During transportation put the instrument into the soft bag.

Note: the instrument should be dry!

Care and cleaning

Do not immerse the instrument in water. Wipe off dirt with a damp, soft cloth. Do not use aggressive cleaning agents or solutions.

Specific reasons for erroneous measuring results

- Measurements through glass or plastic windows;
- Dirty laser emitting window;

- After instrument has been dropped or hit. Please check the accuracy;
- Large fluctuation of temperature: if instrument will be used in cold areas after it has been stored in warm areas (or the other way round) please wait some minutes before carrying out measurements;
- Against non-reflective and dark surfaces, colorless surfaces and so on.

Electromagnetic acceptability (EMC)

It cannot be completely excluded that this instrument will disturb other instruments (e.g. navigation systems); will be disturbed by other instruments (e.g. intensive electromagnetic radiation nearby industrial facilities or radio transmitters).

Laser classification

The instrument is a laser class 2 laser product with power < 1 mW and wavelength 635 nm. Laser is safety in ordinary conditions of usage. ADA COSMO 100 projects visible laser beam from the front part of the instrument.

The instrument is a laser class 2 laser product according to DIN IEC 60825-1:2007. It is allowed to use unit following further safety precautions (see operating manual).

WARRANTY

This product is warranted by the manufacturer to the original purchaser to be free from defects in material and workmanship under normal use for a period of two (2) years from the date of purchase.

During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with the same or similar model at manufacturer's option), without charge for either parts or labour.

In case of a defect please contact the dealer where you originally purchased this product. The warranty will not apply to this product if it has been misused, abused or altered. Without limiting the foregoing, leakage of the battery, bending or dropping the unit are presumed to be defects resulting from misuse or abuse.

EXCEPTIONS FROM RESPONSIBILITY

The user of this product is expected to follow the instructions given in operators' manual.

Although all instruments left our warehouse in perfect condition and adjustment the user is expected to carry out periodic checks of the product's accuracy and general performance.

The manufacturer, or its representatives, assumes no responsibility of results of a faulty or intentional usage or misuse including any direct, indirect, consequential damage, and loss of profits.

The manufacturer, or its representatives, assumes no responsibility for consequential damage, and loss of profits by any disaster (earthquake, storm, flood ...), fire, accident, or an act of a third party and/or a usage in other than usual conditions.

The manufacturer, or its representatives, assumes no responsibility for any damage, and loss of profits due to a change of data, loss of data and interruption of business etc., caused by using the product or an unusable product.

The manufacturer, or its representatives, assumes no responsibility for any damage, and loss of profits caused by usage other than explained in the users' manual.

The manufacturer, or its representatives, assumes no responsibility for damage caused by wrong movement or action due to connecting with other products.

Certificate of acceptance and sale

_____ **No** _____

name and model of the instrument

Corresponds to _____

designation of standard and technical requirements

Data of issue _____

Stamp of quality control department

Price

Sold _____ Date of sale _____

name of commercial establishment

WARRANTY CARD

Name and model of the product _____

Serial number _____ date of sale _____

Name of commercial organization _____ stamp of commercial organization

Warranty period for the instrument exploitation is 24 months after the date of original retail purchase.

During this warranty period the owner of the product has the right for free repair of his instrument in case of manufacturing defects.

Warranty is valid only with original warranty card, fully and clear filled (stamp or mark of the seller is obligatory).

Technical examination of instruments for fault identification which is under the warranty, is made only in the authorized service center.

In no event shall manufacturer be liable before the client for direct or consequential damages, loss of profit or any other damage which occur in the result of the instrument outage.

The product is received in the state of operability, without any visible damages, in full completeness. It is tested in my presence. I have no complaints to the product quality. I am familiar with the conditions of warranty service and I agree.

Purchaser signature _____

Before operating you should read service instruction!

If you have any questions about the warranty service and technical support contact seller of this product

WARRANTY DOESN'T EXTEND TO FOLLOWING CASES:

1. If the standard or serial product number will be changed, erased, removed or will be unreadable.
2. Periodic maintenance, repair or changing parts as a result of their normal runout.
3. All adaptations and modifications with the purpose of improvement and expansion of normal sphere of product application, mentioned in the service instruction, without tentative written agreement of the expert provider.
4. Service by anyone other than an authorized service center.
5. Damage to products or parts caused by misuse, including, without limitation, misapplication or negligence of the terms of service instruction.
6. Power supply units, chargers, accessories, wearing parts.
7. Products, damaged from mishandling, faulty adjustment, maintenance with low-quality and non-standard materials, presence of any liquids and foreign objects inside the product.
8. Acts of God and/or actions of third persons.
9. In case of unwarranted repair till the end of warranty period because of damages during the operation of the product, its transportation and storing, warranty doesn't resume.