

UNI-T

UT395A/B/C



Operating Manual



Laser distance meter



P/N:110401105899X

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1. Overview

UT395 series includes three models UT395A, UT395B and UT395C with ranges of 50m, 70m, and 100m respectively. The accuracy is 2.0mm for all models. It is a highly accurate laser distance meter suitable for professionals.

The UT395 series comes with its own operating system. The colorful and user friendly interface, abundant functionalities, personalized settings, and a fusion of ergonomic and fashionable design all make measuring distance a fun and exciting experience!

2. Unpack for Inspection

Unpack and take out the device. Please carefully check whether the following accessories are missing or damaged. If any item is missing or damaged, please contact with your suppliers.

- User manual -----1
- Rechargeable Battery ----- 3

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- USB Cable -----1
- Cloth Bag -----1
- Hang Rope -----1
- Target Baffle-Board (only UT395C) ----- 1
- Gift Box -----1

3. Safety Considerations**3.1 Specified Scope**

To measure distance
To measure angle
Other functions mentioned in the manual

3.2 Forbidden Scope

When users have not read the manual carefully before using the device.
The device is used beyond the specified scope.

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Breaking the device security system and taking off the instruction or danger sign.
Use tools to open, update or transform the device without authorization.
Use accessories from other manufacturer without authorization.
Directly aim at the sunlight or strong light.
Deliberately use the laser to irradiate a third party.
Measure in places where it is unsafe, illegal, or against regulatory violations.

3.3 Laser Class

UT395 series has the visible laser shooting from front end
The device is a Class 2 laser product.

For Class 2 laser products :

Do not look straight at the laser beam. Do not aim at the eyes of others.

3.4 Warning

Warning is any possible situation or behavior which can cause danger to users. Please follow the guide below to avoid personal injury. Do not use the device in occasions specified outside the scope.

Looking straight at the laser light speed through optics lens can damage the eyes.
Precaution: Do not look straight at the laser beam through the optics lens.
Inspect the device before use. Inspect whether the plastic shell parts are broken or missing. Do not use the device if the surface is damaged.
Charge the battery as soon as possible when the low battery voltage icon appears.
If the device does not work normally, please discontinue usage. The protective equipment is probably damaged. The device should be repaired at specified repair stations.

Do not use the device in explosive environments.

3.5 Caution

The following conditions or behaviors may cause damage to the device or equipment under test. Please be careful during usage.

Please use the battery type supplied by the manufacturer.

It is forbidden to charge any non-rechargeable battery when it is used.

Pay attention to the battery polarity when installing the battery.


Please take out the battery if the device is not used for long time.

4. Power on and Power off

1) Install and Replace Battery

Press the battery cover top and pull up the battery cover. Install the included battery attached to the device and tighten the battery cover.

2) Power On


Press  to turn the power on.

First image will be start, then the system will automatically enter the single measurement interface.

When the device is not used for a long time, please take out the battery to avoid battery corrosion.

It is highly recommended that users should use the battery type supplied by the manufacturer, otherwise the instrument may be damaged.

3) Power Off

Manual power off: Perform a long press on the key  at any time until the screen image disappears.

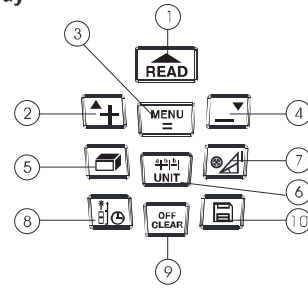
Auto power off: The device will automatically power off if there is no operation within 150s. (150s is the default setting. Users can set the time by themselves as required. Please refer to the MENU Settings Part for detailed instructions).

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5. Buttons and Display

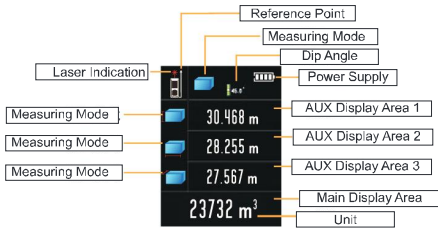
1). Buttons

1. Power on and Measure
2. "+"
3. Menu/Equal
4. "-"
5. Volume/Area
6. Staking-out/Unit
7. Angle/Pythagorean
8. Standard/Timing
9. Power off/Clear
10. Store Record



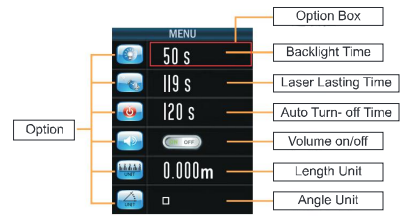
6

2) Display Interface



Picture 1 Main Interface

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Picture 2 Menu Interface

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6. Basic Settings


1).Unit Settings




Press the  button to Change the current unit .

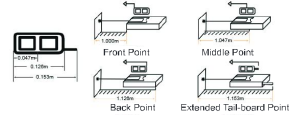
The default unit is: 0.000m. There are eight different selections, shown below:

	Distance	Area	Volume
1	0.000m	0.000m ²	0.000m ³
2	0.00m	0.00m ²	0.00m ³
3	0.00ft	0.00ft ²	0.00ft ³
4	0.0in	0.00in ²	0.00in ³
5	0 in 1/32	0.00in ²	0.00in ³
6	0'00"1/32	0.00ft ²	0.00ft ³
7	0.000m	0.000m ²	0.000m ³
8	0.00m	0.00m ²	0.00m ³

2). Reference Point Setting

The device has four reference points. The system reference point is at back point (refer to diagram below). The measurement origin is the end of device. Please note to select the reference point as required. Short press the  button to select it.




1. Short press  once under the default state. The device is changed from back point to extended tail-board point. Now the measurement origin is the extended tail-board.
2. Short press  twice under the default state. The device is changed from back point to front point. Now the measurement origin is the top of device.
3. Short press  three times under the default state. The device is changed from back point to middle point. Now the measurement origin is at the device middle screw hole.



7. Single, Continuous, Area, Volume and Pythagorean Measurement.

7.1 Single Measurement




The operating steps are as follows:

- 1) Short press the button  under the measuring mode and laser will start.
- 2) Focus the target. Short press the button . The distance is measured and shown in the main display area. The latest 3 records are shown in the AUX area. Short press the button  to delete the data history.


7.2 Continuous Measurement



Users can use this mode to find the target distance without frequent operation.

The operating steps are as follows:





- 1) Long press the button  under the measuring mode to enter continuous measuring mode. The MAX and the MIN value will be shown on the screen. The present result will be displayed in main display area.
- 2) Short press  or  to exit.



7.3 Area Measurement

Applicable scenarios :  $S=L*W$


Short press the button  once, and the screen displays .



Follow the below instructions for area measurement.







-  Press the button  for length.
-  Press the button  for width.

The device will automatically calculate the area after measuring. If users think this measure may be wrong, users can short press  to return the last measurement and measure again. Users can long press  to save results in storage medium, which is convenient to check anytime.

7.4 Volume Measurement

Applicable scenarios :  $V=L*W*H$

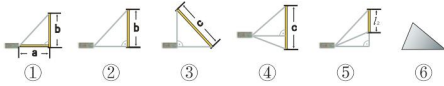
Short press the button  twice, and the screen displays . Follow the below instruction for volume measurement.

-  Short press the button  for the height
-  Short press the button  for the length.
-  Short press the button  for the width.

It is unnecessary for users to measure according to this order. device can automatically calculate the volume after measuring the third edge. If users think this measurement may be wrong, users can short press \square to return to the last measurement and measure again. Users can long press \square to save results in storage medium. It is convenient to check any time.

7.5 Pythagorean Measurement.

There are six triangle measurement methods



They are:

- ① Measure the hypotenuse and dip angle. Input the height and horizontal distance.
- ② Measure the hypotenuse and base. Input the height.
- ③ Measure the two right-angle sides. Input the hypotenuse.
- ④ Measure the two right-angle sides and height. Input the base.

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- ⑤ Measure the hypotenuse, auxiliary line and base, and indirectly calculate the auxiliary line height.
- ⑥ Measure the three sides of any triangle. Input the area.

It is convenient for users to use the six measurement modes to measure indirectly under the specific complex environment. Short press the button \square to select the proper mode.

Pythagorean measurement instructions must be correctly followed.

- 1). Input the right triangle height and horizontal distance








Applicable scenarios : $a=c \cdot \cos \alpha$ $b=c \cdot \sin \alpha$

Short press the button \square once, and the screen displays .







Short press the button \square to measure the hypotenuse and dip angle.

The device will calculate the height b and the horizontal distance a according to the hypotenuse length after measuring the hypotenuse.







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2). Input the height of right triangle Applicable scenarios :  $b = \sqrt{c^2 - a^2}$ Short press the button  twice, and the screen displays . Press the button  to measure one hypotenuse c; Press the button  to measure one right-angle side a;






The device will automatically calculate the triangle height b after ending the second measurement.

3). Input the hypotenuse of right triangle Applicable scenarios :  $c = \sqrt{a^2 + b^2}$ Short press the button  three times, and the screen displays . Short press the button  to measure one right-angle side a; Short press the button  to measure the other right-angle side b;

The device will automatically calculate the triangle hypotenuse c after ending measurement.

4) Input the third side of non-right triangle Applicable scenarios :  $c = \sqrt{a^2 + b^2}$ Short press four times , and the screen displays . Press the button  to measure one side a. Press the button  to measure the height h. Press the button  to measure the other triangle side b.


The device will automatically calculate the third side c after ending the measurement.




5) Measure the height of auxiliary line Applicable scenarios :  $h = \sqrt{c^2 - a^2} - \sqrt{h^2 - a^2}$ Short press five times , and the screen displays . Press the button  to measure one side c. Press the button  to measure the length of auxiliary line l1 Press the button  to measure the base a.

The device will automatically calculate the height of auxiliary line l2 after ending the third measurement.

6) Measure the triangle area ▲



Applicable scenarios :  $S = \frac{1}{2} \cdot (a+b+c) \cdot h$
 $L = (a+b+c) / 2$

Short press six times , and the screen displays ▲.

- ▲ Press the button  to measure the first side a
- ▲ Press the button  to measure the second side b
- ▲ Press the button  to measure the third side c

The device will automatically calculate the triangle area S after ending the measurement.



ATTN: If the device displays "ERR 5" during measuring, that means the previous measured results cannot meet the triangle rules. For example, if the hypotenuse is less than a side, the device will display the error information "ERR5". In that case, users need to measure again.


If this measured data is wrong, short press the button  to return to the last measurement and measure again. Long press  to save results in storage medium after ending the measurement. It is convenient to check any time.

8. Distance Addition; Distance Subtraction; Area Addition and Subtraction; Volume Addition and Subtraction.

8.1 Distance Addition.

The function can accumulate the measured data and sum them.

Step 1: Press the button  to open laser. Press the button  again, and the main display area will display the measured data.



Step 2: Press the button  to enter the addition measurement. The left bottom of the screen displays [+].


Step3: Repeat the step1. The device will automatically sum after measuring the second data. The auxiliary display area will display the first time and second time measured data. The main display area displays the summation of the two data sets.

Step 4: Repeat the step 1. The device will continue to sum after every measurement. The auxiliary display area displays the last time summation data and the final measured data. The main display area displays the summation of the two data sets.

8.2 Distance Subtraction.


The function can request the difference of the measured data.



Step 1: Press the button  to open laser. Press the button  again, and the main display area will display the measured data.

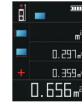
Step2: Press the button  to enter the subtraction measurement. The left bottom of the screen displays [-].

Repeat the step1. The device will automatically sum after measuring the second data. The auxiliary display area will display the first time and second time data. The main display area displays the difference between the two data sets.

Step 3: Repeat step 1. The device will continue to request the difference. The auxiliary display area displays the last difference data and the final measured data. The main display area displays the difference between the two data sets.


When the consecutive subtract value is negative, if users continue to press the button  to subtract, the device will auto exit the subtraction state because the negative value is meaningless.

ATTN: Short press the button  to cancel the final addition and subtraction. Short press the button  twice to exit the addition and consecutive subtraction state.


8.3 Area Addition and Subtraction

Picture3 First time measured area Picture4 Second time measured area Picture5 summation of areas.

Step 1 Measure the first time area (refer to Area Measurement), as the picture3 shows.

Step 2 Short presses  to clear the data. The main display area displays +.

Repeat the step 1. Measure the second time area, as the picture 4 shows. Do not perform step 3 after step 2. Repeat step 2 until the device have measured all the data needed for the sum.

Step 3 Short press , and the device will automatically sum up all the area data. The auxiliary display area displays the first time and second time area value. The main display area displays the summation of the two times area, as picture 5 shows.

The steps of subtraction are the same with that of the addition.

8.4 Volume Addition and Subtraction

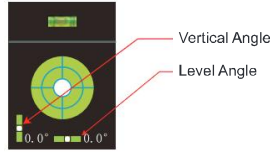


Picture6 First time measured volume Picture7 Second time measured volume Picture8 summation of volumes.
 Step 1 Measure the first time volume (refer to Area Measurement), as the picture 6 shows.
 Step 2 Short press the button to clear the data. The main display area displays +. Repeat the step 1. Measure the second time volume, as the picture 7 shows. Do not perform step 3 after step 2. Repeat step 2 until the device have measured all the data needed for the sum.
 Step 3 Short press the button and the device will automatically sum up the volume data. The auxiliary display area displays the first time and second volume values. The main area displays the summation of the volume data, as picture 8 shows.
 The steps of subtraction are the same with that of the addition.

9. Multi-directional Electronic Leveler, Delay Measurement, Staking-out and Angle Measurement.





9.1 Multi-directional Electronic Leveler

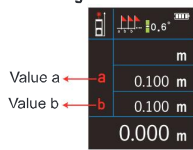
Multi-directional electronic leveler simulates the actual level bubble. It measures the slant angle which is relative to the horizontal position and vertical position. Long press the button once, and the screen displays:



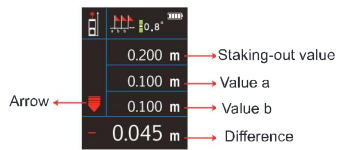
Short press the button to exit the mode.

9.2 Delay Measurement

The function is applied to the scenarios where users need delay measurement. Long press the button , and the top screen displays the current delay time (the unit is S). At this time short press the button  to adjust the delay time. The max is 60s, and the min is 5s. Under the state short press the button  any time to start this delay measurement. If the laser is open, long press the button  to immediately start delay measurement.


9.3 Staking-out Function

Picture 9









Picture 10

Users can use staking-out function to find the position which match the setting distance.

1) Enter the staking-out function: Long press the button  as the picture 9 shows.

2) Set the value.

① The value a is flickering after entering the staking-out function. Long press the button  to adjust the value a (long press  to increase the adjustment range). Short press the button  to confirm value a after ending adjustment.


② The value b is flickering in the picture 9 after setting a. Long press the button  to adjust the value a (long press  to increase the adjustment range). Short press the button  to confirm value b, to confirm value b, and the device start staking-out after ending adjustment.

3) Arrow :

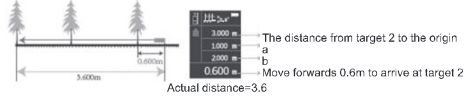
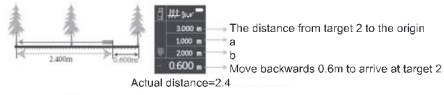
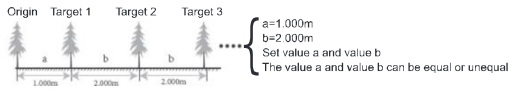
▼ : The device is not at the position. Please move backwards

▲ : The device is beyond the position. Please move forwards.

⌂ : The device matches the position.

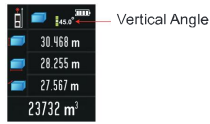
4) Exit staking-out function: Short press the button  to exit staking-out function.

5) staking-out function instruction:



9.4 Angle Measurement

The top screen displays the angle information constantly. The angle range is -90.0°~90.0°. There are two angle units for selection: ° and % (slope)



10. Connect to Computer

User can transfer the records from the device to the computer with USB connector. User need to install the WINDOWS software "LDM Studio" from the corresponding product information of official website. The software helps the upper computer conveniently control the device measurement function. The device is offered with opened USB HID for users to do further development. Please check the disc for the whole agreement.

10.1 Software Installation

- 1) Open the folder LDM_Studio_setup in the folder. Double click "setup.exe" to install the software. Operate according to the following instructions in chapter 2 "One-key Installation" in the "readme.docx" or "readme.pdf".
- 2) Connect the device to the computer with USB after installation. Open the software. If it is successfully connected, it will show "Connected" at the left bottom of the interface.
- 3) Click or to control or clear the records.
- 4) If the device saves the record, users can click to export the record. Click to get the records in EXCEL. Also, click to print the records.

11. MENU Setting**11.1 Enter and Exit the MENU**

Short press the button to enter the menu setting interface after booting. There are two ways to exit. Users can selected the way as required.

Short press the button , and the device will exit menu settings interface. The alternation will be effective. But the parameters will not be stored.

Short press the button , and the device will exit menu settings interface. The alternation will be effective. The parameters will be stored.

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11.2 Basic Operation

There is a red option box to show your selection (refer to picture 2) on the screen after entering the menu settings interface. Move the red option box to select the option that requires to be modified. The followings describe the menu setting button operations.

: Move up the red option box :

: Move down the red option box:

Short press the button , and the red option box turns green. At the moment short press or to adjust the option contents.






11.3 Items and Options

There are totally 7 items in 2 pages in the menu. Please modify according to the following table.

Item	Description	Options
	Backlight	5s~60s
	Laser Lasting	0s~120s
	Auto Power off	100s~300s
	Tone	Open-Close
	Distance Unit	1: 0.000m, 2: 0.00m, 3: 0.0in, 4: in1/32 5: 0'00"1/32, 6: 0.00ft, 7: 0.000m, 8: 0.00m
	Angle Unit	1: 0 Degree; 2: % Slope
	Calibration	-0.009m~+0.009m



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ATTN: Calibration function may affect precision of the device, so this item cannot be adjust under default state. User need to follow the below steps for the calibration

- Step 1 Turn off the device.
- Step 2 Press the button , and then press  to power on. Press the button , then release it. Release the button  until the device enter the main interface.
- Step 3 Short press the button  to enter the menu settings. At the moment calibration parameter is allowed to be adjusted.

12. Battery

The device is equipped with large-capacity rechargeable batteries and complete charging circuits. Users must confirm whether the batteries in the battery compartment are rechargeable before charging. It is strictly forbidden to charge the non-rechargeable batteries. The device will detect it automatically.

The icon  will roll on the right top of the screen during charging. It is normal phenomenon that the batteries are heating during charging. When charging is finished, the icon  will turn green.

Current Maintenance for Device

- 1) The device should not be stored in the high temperature and strong humidity environment for long time.
- 2) If it is not used very often, please take out the battery and place the device in the portable bag and store in the cool and dry place.
- 3) Keep the device surface clean. Use the wet soft cloth to wipe the dust. Do not use any corrosive liquid.
- 4) Laser output window and its focus lens can be maintained according to maintenance procedures for optical device.

13. Error Information

When the ERR X occurs, the device may not measure correctly. The followings are the possible error prompts and solutions.

Error Information	Definition and Solution
ERR 1	The received signal is too weak. Use the reflector.
ERR 2	The received signal is too strong. Measure the different reflecting surface.
ERR 3	Low power. Replace or charge the battery
ERR 4	Memory failure. Return to the factory to be repaired
ERR 5	Pythagorean measurement error. Measure again.
ERR 6	Beyond the measurement range
ERR 8	Angle sensor is wrong. Return to the factory to be repaired.

14. Technical Parameters

Function	Remark
Range	0.05-50/70/100m
Min Unit	1mm
Accuracy**	$\pm (2.0\text{mm}+d*5/100000)$
Max Laser Power	<1mW
Laser Wave Length	635nm
Max/Min/Continuous	√
Area/ Volume	√
Triangle Pythagorean	√
Triangle Height/ Angle	√
Triangle Area	√

Dip Angle Range	-90.0°~90.0°
Delay Measurement	✓
Staking-out	✓
Record	100 pcs
Universal Electron Level Ruler	✓
Auto Power off	100s-300s (adjustable)
Auto Laser off	20s-120s (adjustable)
USB Connector	✓
Storage Temperature	-20℃~60℃
Operating Temperature	0℃~40℃
Storage Humidity	RH85%
Dimension	126*56*28mm
Battery	1.2V 800mAh AAA NI-MH battery *3

* "d" means the actual distance.

** The severe environments are as follows: strong sunshine, big environment temperature fluctuation, weak reflecting surface, low battery voltage and so on. These conditions may cause large error. Using the target reflector has a better effect under these conditions.

Manufacturer:
 Uni-Trend Technology (China) Limited
 No. 6, Gong Ye Bei 1st Road
 Songshan Lake National High-Tech Industrial
 Development Zone, Dongguan City
 Guangdong Province
 China
 Postal Code: 523 808

Headquarters:
 Uni-Trend Group Limited
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 Kwun Tong
 Kowloon, Hong Kong
 Tel: (852) 2950 9168
 Fax: (852) 2950 9303
 Email: info@uni-trend.com
 http://www.uni-trend.com