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ISO9001
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UT391A

Operating Manual

Laser distance meter

P/N:110401104292X

UT391A OPERATING MANUAL

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I UT391A Product Introduction

UT391A, Handheld Laser Distance Meter, is specially designed for users. It is a meter with high-precision and multi-function distance measurement. UT391A can measure distance, area and volume, Pythagorean Calculation can also be used in UT391A to measure indirectly.

UT391A which is light, easy to use and reliable to measure, can make sure your measurement more accuracy, easier and faster.

UT391A can widely apply to construction, Upholster, Property, Traffic, Fire-Fighting, Gardens, Urban Planning, Water Mornitoring, Electric Power Overhaul, etc. As the replacer of traditional measuring instrument(for example,measuring tape), UT391A is your best choice.

II Unpacking Inspection

Unpack and check, if there is any damage or loss, contact with the nearest local sales service agency.

1. Mainframe	one unit
2. User manual	one copy
3. AAA battery(2×1.5V)	two pieces
4. Warranty card	one copy
5. Pouch	one piece

III Safety Instruction

Permitted use

- Measuring distances
- Computing functions, e.g. Areas and Volumes
- Indirect distance measuring with Pythagorean calculation **Prohibited use**

- Using the instrument without instruction
- Using outside the stated limits
- Deactivation of safety systems and removal of explanatory and hazard labels
- Opening of the equipment by using tools(screwdrivers,etc.), as far as not specifically permitted for certain cases
- Carrying out modification or conversion of the product
- Use of accessories from other manufacturers without the express approval of UNI-T
- Deliberate or irresponsible behavior on scaffolding, when using ladders, when measuring near machines which are running, or near parts of machines or installations which are unprotected
- Aiming directly into the sun or glare
- Deliberate dazzling of third parties; also in the dark Inadequate safeguards at the surveying site(e.g. when measuring on roads, construction sites, etc.)**Laser classification**

The UT391A produced a visible laser beam which emerges from the front of the

instrument. Laser Class II products:

Do not stare into the laser beam or direct it towards other people unnecessarily. Eye protection is normally afforded by aversion responses including the blink reflex.

⚠WARNING

Looking directly into the beam with optical aids(e.g. binoculars, telescopes) can be hazardous. Precautions:

Do not look directly into the beam with optical aids.

★CAUTION

Looking into the laser beam may be hazardous to the eyes. Precautions:

Do not look into the laser beam. Make sure the laser is aimed above or below eye level.

IV Meter Structure

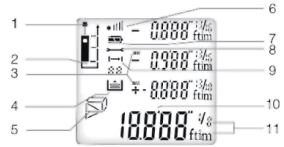
Keypad

1. Power on /Measuring button
2. Area/Area Summation/volume/Pythagorean Calculation/Stake out function button
3. Plus[+]/Historical data records button
4. Display illumination/Unit setting button
5. Reference setting button
6. Minus[-]/Historical data records button
7. Clear/Power off button

Lcd Display

1. LASER “ON”
2. REFERENCE LEVEL

3. MAXIMIN VALUE AND MINIMUM VALUE
4. HISTORICAL DATA RECORDS
5. AREA/AREA SUMMATION/VOLUME/ PYTHAGOREAN CALCULATION
6. SIGNAL POWER INDICATION
7. BATTERY STATUS
8. HARDWARE ERROR
9. CONTINUOUS MEASUREMENT/STAKE OUT FUNCTION
10. CURRENT READING
11. UNIT



V Setting and Operation of Meter

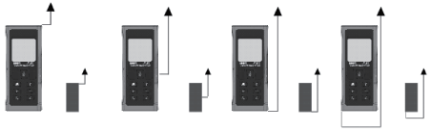
Switching on and off

Press ON to switch on the instrument and laser.
Press C OFF longer to switch off the instrument.
The instrument switches off automatically after three minutes of inactivity.

CLEAR button

C OFF The last actions is cancelled or the data display is cleared.

Reference level setting



The default reference setting is from the rear of the instrument. Short press the key, switch instrument measurement reference among front, Tripod Thread(Type:1/4-20), rear, endpiece. In a word, to select the appropriate reference, repeated press the key, until get the reference you wanted.
After each restart, the reference setting automatically defaults back.(rear reference)

Display illumination

Press Unit , illumination of the display can be switched on or off, User can trigger the function when he/she is in darkness situation. The value is clear viable on the LCD.

Unit setting for instrument

Press Unit longer to change the next type of unit, m, ft, in, ′ ″, then to continue press the button for the next unit selection.

Measuring

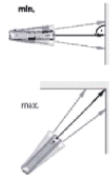
single distance measurement

Press △ to activate the laser. Press again to trigger the distance measurement. The measured value is displayed immediately.

Continuous Measurement / Max and Min Measurement

Long press △ , the instrument begins to trigger continuous measurement. By measuring, maximum and minimum value will be displayed on the screen for the first and second rows.

After measuring 100 times in a row, the continuous measurement stops automatically. This function allows customers to get the maximum value and the minimum value. Press △, can stop continuous measurement.



Area

Press func until ▱ symbol appears in the display.
Press △ to take the first length measurement(e.g.length).
Press △ again to take the second length measurement(e.g.width).

After taking the second measurement, the area/surface is automatically calculated and displayed in the summary line.

Area summation

Press func until ▱ symbol appears in the display.
Press △ to take the first length measurement (e.g.height).
Press △ to take the second length measurement(e.g.length).
The current area will be displayed automatically.
Press △ to take the third length measurement(e.g.length).
The sum of areas will be displayed automatically.

Volume

For volume measurements, press func until the ▱ indicator for volume measurement appears in the display.
Afterwards, Press △ to measure the length.

Press △ for the width.
Press △ to take the height.
After taking the third measurement, the volume is automatically calculated and displayed.

Indirect measurement

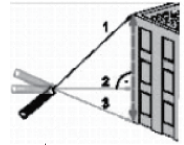
To measure heights that require the measurement of two or three measurements as following step:

Using 2 measurements

Press Func until ◺ appears on display.
Aim at the upper point (1) and then press △ to take the necessary measurement. After the first measurement, the measurement result will be collected and appear on the LCD.
Keep the instrument horizontally and take the next measurement.
Aim at the point (2) and then press △ to take the necessary

measurement. The second measurement will be the minimum value measurement automatically, the instrument will automatically collect the minimum value, press △ to collect the result. At the same time, the height of (1) and (2) appears LCD.

Using 3 measurements



Press Func until ▷ appears on the display.
Aim at the upper point (1) and press △ to take the measurement.
After the first measurement, the result will be collected. Keep the instrument horizontally and take the next measurement.
Aim at the point (2) and then press △ to take the necessary measurement.
The second measurement will be the minimum value measurement automatically, the instrument will automatically collect the minimum value, press △ to collect the result.
Aim at the third point (3) and press △ to trigger the measurement.
Meanwhile, the height of (1) (2) (3) will be shown in summary line.
Press C OFF , the instrument will return to single measurement status.

Plus and Minus Function

Press △ and switch on the instrument, press again to activate laser and aim the target, press again to trigger the measurement, the result is displayed.

Prees + button, and "+" will display on the screen, the previous measured value will be appeared on the second line of the screen.

Press △ and aim the target to make the second measurement, with result display in the third line. Summary of the two measurement results will be displayed on the bottom line of the screen. This function can repeatable.

Press △ or OFF can exit the plus Function.

Minus Function is in a similar way as Plus Function.

Historical Data Records

The instrument will automatically store the last 20 measurement results at reverse sequence.

Under the standby mode, as shown in the figure, the user can press + or - buttons to recall historical measurement results.

Press + will be according to the sequence from the 1st, 2nd, 3rd... to the 20threcord, press - will be according to the sequence from the 20th, 19th, 18th... to the 1strecord. When 20 records are full, the instrument will directly delete the first record and store the current reading.

Stake Out Function

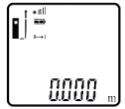
A distance can be entered into the instrument and can then be used to make off defined measured lengths, e.g. if the setting distance is 1.5m, When the measurement result is an integer multiple of 1.5m, the buzzer will be alarm.

Press the Func, until 0.000 display and the cursor flashes.

Press **+** to adjust the cursor position, and press **-** to adjust the value to suit the desired stake out distance, until the desired value has been reached.

Press ON to start measurement.

The display shows required stake out distance in the summary line between the stake out point and the instrument. The instrument is moved slowly along the stake out line, the instrument starts to beep at a distance of 0.1m from the next stake out point. The reading reaches the defined distance, the buzzer beeps quickly. The function can be stopped pressing OFF.



VI Technical specifications

Technical Parameters:

Measuring Range	0.5~70m
Measuring Accuracy (Standard Deviation)	±1.5mm

Measuring Unit	m, ft, in, ′ ″
Laser Type	620~690nm
Laser Class	II, ＜1mW
Laser Spot@Distance	6mm@10m, 30mm@50m, 60mm@100m
Single Measurement Time	0.25~4s
IP Protection	IP54
Operating Temperature	-10~+50℃
Storage Temperature	-20~+65℃
Batteries	AAA(Alkaline), 2×1.5V
Measurements Per Battery Set	＞5000
Weight(Without Batteries)	Approx. 175g
Dimensions(L×W×H)	126×54×28mm
Implementation of Standards	GB/T 14267-2009

Basic Functions

Single Measurement	√	Technology of Intelligent Alterable Frequency Conversion	√
Max./Min. Measurement	√		
Continuous Measurement	√	Multifunction Endpiece	√
Unit Setting	√	Tripod Thread (Type:1/4-20)	√
Reference Setting	√	Buzzer Indicator	√
Display IIlumination	√	Historical Data Records	20 Groups
Operation lcon Indicator	√	Data Cleanup	√
Plus/Minus	√	Error Message Code	√
Multi-line Display	√	Battery Indicator	√
Area/Area Addition/Volume	√	Display IIlumination Auto. Switch off	15s

Pythagorean Calculation	√	Laser Auto. Switch off	30s
Auto. Scale Technology	√	Instrument Auto. Switch off	180s

* Maximum deviation error or Shorter range occurs under unfavourable conditions such as bright sunlight or when measuring too poorly reflecting or very rough surfaces, the environment temperature is too high or too low.
* When measuring within 30m, measurement accuracy is ±1.5mm; more than 30m, measurement accuracy is calculated as follows: ± 1.5mm ± 0.05*(D-30)(D: Measuring Distance, Unit: m)

VII Maintenance

⚠ Warning: during replacing battery, keep the sensitive mirror from seratch or dirt to avoid damaging the mirror or influencing the measuring precision; and do not charge the

replaced battery to avoid explosion and safety accident!

★ When the symbol ▭ flashes permanently in the display, replace the battery immediately.
Use alkaline batteries only.
Remove the batteries before any long period of non-use to avoid the danger of corrorsion.

1. Battery Installation

a. According to figures, remove battery compartment lid with UT391A specified battery key or coin;
b.Insert batteries with correct polarity according to battery lid indications;


c. Close the battery compartment lid and skew tight with the battery compartment key;

General maintenance

● When the surface of meter is dirty, clean with wet cloth and neutral detergent, grinding miller and solvent are forbidden.
● When the meter is damaged and needs to be repaired, please send it to the designated maintenance center of our company for repair by professional service man, do not repair it without authorization.
● Especially in the process of using, keep the sensitive mirror of meter away from scratch or dirt to avoid damaging the mirror or influencing the measuring precision. Remove the battery if it won't be used for a long time. Store the meter in a place free of moist, high temperature and strong magnetic field.

Troubleshooting - Causes and Corrective Measures

All message are displayed with either Message Codes or "Error". The following errors can be corrected:

Message Code	Cause	Remedy
101	Battery too low	Change batteries
104	Calculation error	Repeat procedure
152	Temperature too high	Cool down equipment
153	Temperature too low	Warm up equipment
154	Out of range	Please measure target within distance of 0.05 to 70m
155	Received signal too weak	Use target plant
156	Received signal too strong	Use target plant
157	Measure error or background brightness too high	Darken target or change target
160	Shake too much	Stabilize equipment and repreat measurement

Hardware error. Switch on/off device several times, if the symbol still appears, then please call your dealer for assistance.

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