SONIN®

Laser Targeting
RANGE FINDER *II*

#10275
Instruction Manual

Electronic Distance Measuring Tool
With Laser Targeting

SONIN INC.

English

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INTRODUCTION
Thank you for choosing a SONIN Laser Targeting Range Finder "LTRF". Your LTRF is recommended for INDOOR use only. To ensure proper use of this product and to obtain optimum performance, be sure to read this manual carefully before use.

CAUTION
This product contains Class II laser radiation, to avoid injury to eyes DO NOT stare into the laser beam or project the laser beam to other persons or animals.

CAUTION
Laser Radiation
Do Not Stare Into Beam
Max Power : < 1mW
Wavelength : 650 nm
Class II Laser Product
Complies with 21CFR 1040.10 & 1040.11
SONIN Inc.
Made in China

AVOID EXPOSURE
Laser Radiation Emitted
From This Aperture

DESCRIPTION OF PRODUCT

Ultrasonic Aperture
Laser Beam Aperture
LCD Display
Clear Display & Change Display Modes
Power ON & Measure Key
Recall & Laser ON/OFF Key
Store Memories & Second Function Key
Multiplication Key
Add & Subtract Key
User's memories M1 M2 & M3

DESCRIPTION OF KEY FUNCTIONS

[STORE 2ND] Second Function Key
Activates the second function or stores a measurement into user memories M1, M2 and M3.

[CLR UNITS] Clear Display / Clear Memories / Unit OFF
Press button once to clear current display and go back to measure mode.

Press and hold 5 seconds to clear all memories, including user's memories M1, M2, M3 and the last 5 measurements.

After recalling M1, M2 or M3, press and hold this button 3 seconds to clear that memory.

Quickly press twice to turn OFF power when the current display is cleared. *Note: unit will automatically turn off in one minute when idle.*

[STORE 2ND] ▶ [CLR UNITS] Change or Convert Display Units
Press [2ND] then press [CLR/UNITS] button to change display units.

[READ] Turns ON Power and Takes Measurements
Press and hold 1 second to turn ON power when the power is OFF.
Press and release to take measurement.

[STORE 2ND] ▶ [READ] Changes the Measuring Position
Your LTRF is factory preset to measure from the bottom of unit, if you want to change the measuring position from top of unit, press [2ND] than press the [READ] button. *Note: The setting will show in the left corner of LCD*

DESCRIPTION OF KEY FUNCTIONS

[RCL] Recalls the Last 5 Measurements
Your LTRF automatically stores up to 5 previous measurements. Press this button to recall those measurements one by one on the LCD screen, the "RCL" icon and upper digits will indicate the measurements sequence.

[STORE 2ND] ▶ [RCL] Sets the Laser Pointer
Your LTRF is preset to measure with the laser pointer on, you can also turn it off or reset the laser pointer by pressing [2ND] then [RCL] button, the " ☀ " icon will appear on the LCD only if the laser is on.

[+] Adds Linear Distance, Areas and Volume Measurements
Press this button to add linear distance or add Areas and/or Volume measurements. The ⊕ icon will appear on the upper corner of LCD screen.

[STORE 2ND] ▶ [+] Subtracts Linear Distance, Areas and Volume Measurements
Press [2ND] button then press [+] button to subtract linear distance or Areas and/or Volume. The ⊕ icon will appear on the upper corner of LCD screen.

[×] Multiplies Measurements for Area and Volume
Press to compute Area or Volume measurements. The ⊗ icon will appear on the upper corner of LCD screen.

DESCRIPTION OF KEY FUNCTIONS

[M1] [M2] [M3] Recalls Measurement from User's Memories
Press [M1], [M2] or [M3] to recall stored data from that memory. The memory icon will blink to indicate the reading was recalled from memory.
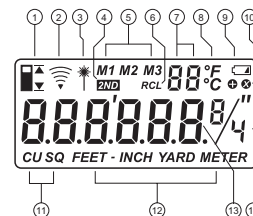
[STORE 2ND] ▶ [M1] [M2] [M3] Stores Displayed Measurement in to User's Memories
Press [2ND] then press [M#] button to store displayed measurement into that memory. The memory icon will appear on LCD indicating the measurement is stored into that memory.

DESCRIPTION OF LCD DISPLAY

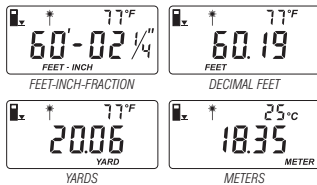## DESCRIPTION OF LCD DISPLAY

1. Icon indicates the measuring position.
2. Icon indicates measurement in process.
3. Icon indicates the Laser settings.
4. Icon indicates the 2ND function key pressed.
5. Icon indicates user's memories in use.
6. Icon indicates measurement recall.
7. Digits indicate temperature reading and number of recall.
8. Temperature display units.
9. Battery low indicator.
10. Icons for calculating functions in process.
11. Cube and Square measurements.
12. Measurement units.
13. Six digits of main display.
14. Indicates Fraction of an inch in feet/inch mode.

DISPLAY MODES

Four display modes are available. To change or convert the displayed value to your desired units, press [2ND] then [CLR/UNITS] button, the displayed value will change to other units. Repeat until you reach the desired mode.
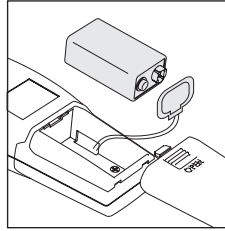
Change Unit [STORE 2ND] ➡ [CLR UNITS]

| 77°F | 77°F |
60'-02 ¼"	60.19
FEET - INCH	FEET
FEET-INCH-FRACTION	DECIMAL FEET
77°F	25°C
20.06	18.35
YARD	METER
YARDS	METERS

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GETTING STARTED / QUICK START

1) Install a fresh 9V alkaline battery in rear of unit. Push contacts firmly in place.

2) Press [READ] button one second to turn ON unit. The LCD screen will show the display units, current temperature, measuring position and the laser setting.

[READ]
1 Second ➡

77°F
FEET - INCH

3) Aim cone at a hard, flat, unobstructed surface such as a wall or floor, and make certain you have a clear path to the surface (wall).

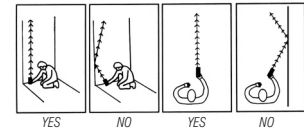
3M
30 cm
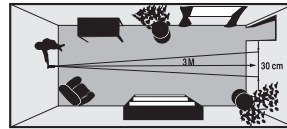
The sound waves emitted from this unit spread 1 ft (30 cm) for every 10 ft (3m) measured. Laser is for reference only.

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GETTING STARTED / QUICK START

4) Hold your LTRF perpendicular to the surface to which you are measuring.

YES   NO   YES   NO

5) Press [READ] button to take a measurement. When taking a measurement, the laser pointer will indicate the approximate center of the target area for your reference.

Note: the laser pointer is a factory set function, however, you can turn it off or reset by pressing [2ND] and [RCL] buttons.

6) Your LTRF may be factory preset to display in Feet-Inch-Fraction mode. To set the display to your desired mode, press [2ND] then press [CLR/UNITS] button to change the display units between Feet-Inch-Fraction, Decimal Feet, Yards or Meters. *NOTE: Unit will now default to your set mode until battery is removed.*

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HELPFUL MEASURING HINTS

1) Remember your LTRF is preset to measure from the BOTTOM of the unit (Measurement displayed is from bottom of unit to the target surface. If you need to measure from the TOP of the unit, press [2ND] then press [READ], the setting will appear on the upper left corner of the LCD.

Measure from top of unit
Measure from BOTTOM of unit
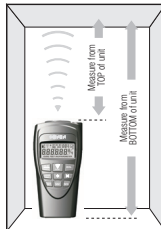
Measure from bottom of unit.   Measure from top of unit.

2) Measurements cannot be taken through glass or off of soft or padded surfaces.

3) The LTRF range and ability to measure in tight spaces can be increased. Stand in the middle of the distance to be measured and add measurements taken in opposite directions.

4) When measuring in confined spaces (hallways), try to measure down the center line and midway between the floor and ceiling.

5) When the surface being measured to has protrusions and recesses, you can determine where the beam is hitting. Move sideways, parallel to the target, then try again, you will see the distance increase for recesses and decrease for protrusions.

6) Be sure the surface you are measuring to is hard, flat and uniform. Some surfaces such as stucco or clapboard may scatter signals.

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COMPUTATION FUNCTIONS

To preform the computations as described below, the [READ] button symbol indicates taking an actual measurement (length, width or height).

Adding Distances:

[READ] ➡ [+] ➡ [READ] ➡ [+]

The display shows the total distance. Continue until you are done adding measurements.

Subtracting Distances:

[READ] ➡ [+] ➡ [READ] ➡ [STORE 2ND] ➡ [+]

The display shows subtracted distance. Continue until you are done subtracting measurements.

Multiplying to compute Areas:

[READ] ➡ [×] ➡ [READ] ➡ [×]
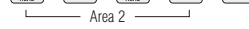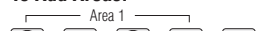
Display shows square (SQ) measurement.

Multiplying to compute Volumes:

[READ] ➡ [×] ➡ [READ] ➡ [×] ➡ [READ] ➡ [×]

Display shows cubic (CU) measurement.

To Add Areas:

Area 1
[READ] ➡ [×] ➡ [READ] ➡ [×] ➡ [+] ➡
[READ] ➡ [×] ➡ [READ] ➡ [×] ➡ [+]
Area 2

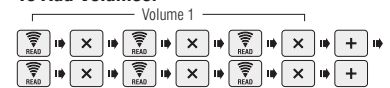Display shows total area. Continue until you are done adding areas.

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COMPUTATION FUNCTIONS

To Add Volumes:

Volume 1
[READ] ➡ [×] ➡ [READ] ➡ [×] ➡ [READ] ➡ [×] ➡ [+] ➡
[READ] ➡ [×] ➡ [READ] ➡ [×] ➡ [READ] ➡ [×] ➡ [+]
Volume 2

Display shows total volume. Continue until you are done adding volumes.

Remarks: You can also compute Distance, Area and Volume between memories M1, M2 and M3

For example: Adding distances between memories M1 and M2. Store 2 distances into M1 and M2 before calculation, then press:

[M1] ➡ [+] ➡ [M2] ➡ [+]

For example: Compute Area or Volume between memories M1, M2 and M3. Store 3 distances (length, width and height) into M1, M2 and M3 before calculation, then press:

[M1] ➡ [×] ➡ [M2] ➡ [×] ➡ [M3] ➡ [×]

For example: Adding 2 Area between M1 and M2. Store 2 Area measurements into M1 and M2, then press:

[M1] ➡ [+] ➡ [M2] ➡ [+]

The display shows total Area.

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MEMORIES

Your LTRF has 3 user memories (M1, M2 and M3) and 5 memory registers to automatically store and recall your last 5 measurements. Three user memories allow users to store Liner, Square or Cube measurements, and the compute functions available for those memories including Addition, Subtraction and Multiplication.

To Store Measurements into Memory M1 thru M3:
Press [2ND] then press [M1] or [M2] or [M3] button to store the displayed measurement in that memory, the memory icon will appear on the LCD screen once stored.

Example: To store distance in M1

[READ] ➡ [STORE 2ND] ➡ [M1]

Example: To store Area in M2

[READ] ➡ [×] ➡ [READ] ➡ [×] ➡ [STORE 2ND] ➡ [M2]

Example: To store Volumes in M3

[READ] ➡ [×] ➡ [READ] ➡ [×] ➡ [READ] ➡ [×] ➡
[STORE 2ND] ➡ [M3]

Note: Storing a new measurement into memories will replace the old one.

To Recall Memory from M1 thru M3:
Press [M1] or [M2] or [M3] button to recall measurement in that memory directly, the memory icon will blink to indicate which memory was recalled.

MEMORIES

To Clear a Measurement in Memory M1 thru M3:
After recalling the memory, press and hold [CLR/UNITS] button for 3 seconds to clear that memory. The memory icon will disappear.

Example: Clear Measurement in M1

[M1] ➡ [CLR UNITS]
        3 Seconds

To Recall the Last Five Measurements:
To recall up to the 5 last measurements one by one, press the [RCL] button, the LCD will display

RCL *01*   RCL *02* … to indicate that memory.

To Clear All Memory
From the on position, press and hold [CLR/UNITS] button 5 seconds to clear all memories, including M1, M2, M3 and 5 last measurements.

TROUBLESHOOTING

1) If the LTRF is unable to take a "good" measurement the display will show one of the following:
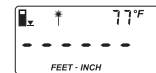
BLANK SCREEN
When the unit cannot turn ON by pressing the [READ] button, check and replace the battery. If unit still doesn't work, call SONIN Technical Support at (800) 223-7511.

BATTERY LOW SYMBOL
When the battery low symbol appears on the upper right corner of the display, replace the battery.

Measuring Distances Too Short
Your measuring distance must be longer than 1 foot 5 inches from top of unit or 1 foot 10 inches from bottom of unit.

Error 1 – Possible causes for Error 1 include:
Measurement out of range or no return signal.
Unit is not perpendicular to the surface.
Surface is not hard and flat.

Error 2 – Possible causes for Error 2 include:
No valid reading (Multiple object detected).

TROUBLESHOOTING

Interference from external noise sources (see section on Environmental Conditions).
Unit was moved during the measurement. The unit must be held stationary.

Error 3
Math error or result overflow.

2) If you get readings which are excessively long or short, the likely causes are:

a) The unit is not being held parallel to the floor. Hold the unit parallel to the floor and at 90° to the surface being measured to.

b) Measuring path is not clear of obstructions or it is not wide enough.

c) The surface you are measuring to is not sufficiently flat and the sound waves are continuing to rebound. Place a flat object, such as a board or mirror against the surface and measure to the object.

d) Environmental factors such as noise from machinery or close proximity to an air conditioner or computer screen.

3) If you get readings that are too short for the distance being measured, make sure there is a clear and sufficiently wide path to the surface. Remove any objects in the way or select a different surface to measure to.

4) If your laser does not display when taking a measurement, it may be turned off. Check LCD to see if (laser icon) is displayed. If it is not. press [2ND] and [RCL] to turn on laser.

TROUBLESHOOTING

5) Range and accuracy can be affected by environmental factors such as wind, temperature, humidity and altitude (see section on Environmental Conditions).

VERIFY TEMPERATURE TO IMPROVE ACCURACY
Because temperature affects the speed of sound, the LTRF has automatic temperature compensation for greater accuracy. In order to make the most of this feature, verify the internal temperature on the upper corner of LCD screen. If it does not match the air temperature, wait 1 minute for each 1°F (or 2 minutes for each 1°C) of temperature difference between cool and warm locations. See "TEMPERATURE" in the section on Environmental Conditions.

Note: The temperature displays in °F when imperial modes are selected, or in °C if metric mode is selected.

The minus sign "-" will alternately display with the reading when the temperature is less than zero.

The reading "1" will separate and alternately display when the temperature is over 100 °F.

SPECIFICATIONS

RANGE:
Min: 1 ft 5 ins or 0.43 meter (from top of unit)
Max: 60 ft (18.2 meter)
Actual: Will vary depending on environmental conditions.

ACCURACY: 99.5% ± 1/4 in (or 99.5% ± 1 cm)
When environmental conditions are as follows:
Temperature: 32 to 86°F (0 to 30°C)
Relative Humidity: 30 to 70%
Altitude: -328 to +328 ft (-0.1 to 0.1 km)
Wind Speed: Still Air

Examples: At 15 ft (4.57 M) your reading will be within 1-1/4 inches (3 cm). And at 60 ft (18.2 m) your reading will be within 3-3/4 ins (10 cm).

RESOLUTION: 1/4 inch (or 1 cm, or 0.01 feet or 0.01 yard)

ULTRASONIC FREQUENCY: 40 kHz

LASER POINTER:
Type of Laser: Semiconductor laser module
Wavelength: 650 nm
Output Power: Less than 1mW (Class II)
Safety Standards: Complies with 21CFR 1040.10 and 1040.11

OPERATING VOLTAGE: 9 volt battery (alkaline recommended)

CURRENT CONSUMPTION:
Standby mode: less than 10 μA
Measure without laser: Approx. 15 mA
Measure with laser: Approx. 30 - 40 mA

OPERATING TEMPERATURE: 32 to 100 °F (0 to 38 °C)

STORAGE TEMPERATURE: -14 to 140 °F (-10 to 60 °C)

AUTO SHUTOFF TIME: Approximately 1 minutes after last key is pressed.

DIMENSION: 4-3/4 x 2-3/8 x 1-1/2 ins (121 x 60 x 37 mm)

WEIGHT: 3 oz (85 gm) without battery

ENVIRONMENT CONDITIONS

ENVIRONMENTAL CONDITIONS THAT COULD AFFECT PERFORMANCE

IMPORTANT
Ultrasonic Distance Measuring Tools work best for quick and easy measuring and estimating. They are not intended for precision work, although they can be very accurate under optimal conditions.

HUMIDITY
Humidity and temperature can affect the range and accuracy of all ultrasonic distance measuring tools. They may give measurements that are longer or shorter than their specifications (depending on atmospheric conditions). The range is longest in high temperature/high humidity and low temperature/low humidity and range is shortest in high temperature/low humidity and low temperature/high humidity.

Humidity effects on accuracy are greatest at high temperatures and negligible at low temperatures. At 100°F (38°C) and 99% R.H., the distance measurement will be short by 0.6%. At 100°F (38°C) and 0% Relative Humidity, the distance measurement will be long by 0.6%. At 32°F (0°C) the distance measurement will essentially not be affected.

TEMPERATURE
Your LTRF has unique automatic temperature compensation to ensure consistency of measurements between 32°F and 100°F (0°C to 38°C). The response rate of this circuitry enables you to move between warm and cold areas and measure with reasonable accuracy. However, we recommend that you do not leave your SONIN unit in very cold or very hot conditions (e.g. sunlight in a car), as the unit will then require more time to

ENVIRONMENT CONDITIONS

adjust to air temperature. As long as the internal temperature is equal to the air temperature, accuracy is unaffected. Wait for the unit's internal temperature to equal the air temperature or, add 1% of the measured distance for each 10°F (5.5°C) that the measured temperature is below the actual temperature; subtract 1% of the measured distance for each 10°F (5.5°C) that the internal temperature is above the air temperature. (See section on **VERIFY TEMPERATURE TO IMPROVE ACCURACY** for instructions on how to obtain a temperature measurement from your SONIN Laser Targeting Range Finder.)

ALTITUDE/BAROMETRIC PRESSURE
Altitude and barometric pressure can affect the range and accuracy of all ultrasonic distance measuring tools.

As the altitude increases (barometric pressure decreases), the range is reduced. As altitude decreases (barometric pressure increases), the range is increased. To correct for altitude (pressure) effects on accuracy, subtract 0.4% of the measured distance for each 1000 ft/ -0.06" Hg (0.3 km /-15mm Hg) you are above sea level. Add 0.4% of the measured distance for each 1000 ft/ +0.06" Hg (0.3km /+15mm Hg) you are below sea level (sea level = 760mm Hg).

NOISE
High frequency noise from machinery, engines, computers, stereos, TV sets, etc. can affect the reading and you may get random readings. Stand away from or shut off this type of equipment when measuring.

OUTDOOR MEASUREMENTS
Your Sonin Laser Targeting Range Finder is designed for indoor use only.

FCC NOTE

This device has been tested and found to comply with the limits for a Class B device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses and can radiate radio frequency energy and, if not used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase separation between the device and receiver

This Class B Digital Apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

DISCLAIMER:
The SONIN Laser Targeting Range Finder employs a sonar method of measurement. The laser pointer in this unit is for reference purposes only, and is not part of the measuring apparatus. The laser pointer indicates the approximate center of the target area to which measured. The laser pointer neither measures, nor increases the accuracy of measurement performed by the unit using sound waves. The accuracy of this measuring device is 99.5% ±1/4" of the distance measured.

CUSTOMER SERVICE

CUSTOMER SERVICE
SONIN takes pride in offering unmatched customer service to owners of SONIN products. If you have any questions or would like additional information,
please call **1- 800 - 223 – 7511 (USA)**
or e-mail to **customerservice@sonin.com**

TECHNICAL ASSISTANCE
If you have any questions or need technical assistance,
e-mail to **technicalsupport@sonin.com**

WARRANTY INFORMATION

Your SONIN Laser Targeting Range Finder is warranted against defects in workmanship and materials for one year from date of original purchase.

Damage while in the possession of the consumer, not resulting from a defect in materials and workmanship, and damage from other than normal use, including misuse, abuse, alternation and repair by unauthorized parties, is not covered by this limited warranty, nor does it cover the battery.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARISING BY LAW OR OTHERWISE, AND IS MADE ON THE EXPRESS UNDERSTANDING THAT THE ITEMS SOLD UNDER THIS CONTRACT ARE PURCHASED BY THE BUYER "AS IS" AND THAT THERE IS NO IMPLIED WARRANTY THAT THIS INSTRUMENT SOLD TO BUYER SHALL BE MERCHANTABLE OR AN IMPLIED WARRANTY THAT IT SHALL BE FIT FOR ANY PARTICULAR PURPOSE OR USE. THE BUYER ACKNOWLEDGES THAT HE (IT) IS NOT RELYING ON THE SELLER'S SKILL OR JUDGEMENT TO SELECT OR FURNISH ITEM OR ITEMS SOLD AND THAT THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE THEREOF. THE BUYER HEREBY WAIVES ALL OTHER REMEDIES' WARRANTIES AND GUARANTEES WITHOUT LIMITATION, INCLUDING CONSEQUENTIAL DAMAGES.

To qualify for replacement of this item, which is the exclusive remedy available from SONIN, within one year from purchase under this limited warranty, the original Buyer shall 1) Mail this warranty coupon within 30 days of date of purchase, properly filled in 2) as his/her cost, return the defective unit with proof of purchase within one year from date of original purchase to your SONIN dealer for repair or replacement. SONIN will repair or replace the instrument at SONIN's option and return it with prepaid freight to the dealer.

WARRANTY REGISTRATION CARD

DETACH AND MAIL TO:

SONIN Inc.
15105-D John J. Delaney Dr. Suite 333,
Charlotte, NC 28277, USA

or eMail the following information to registration@sonin.com

IMPORTANT! Please return this warranty registration card within 30 days to insure that your new SONIN Laser Targeting Range Finder is covered by the limited warranty explained above.

Model: 10275
Laser Targeting Range Finder II
Serial No.: _____

Purchaser's Name _____

Address _____

_____

City _____

State _____ Zip _____

Purchase Date _____

Where Purchased _____

Store Name _____

Address _____

_____

City _____

State _____ Zip _____