SONIN®

Laser Targeting Range Finder

Electronic Distance Measuring Tool With Laser Targeting

Pocket Reference Guide

C A U T I O N

Laser Radiation
Do Not Stare Into Beam

1mW MAX. @650 nm
**Class II LASER PRODUCT Complies
with 21CFR 1040.10 & 1040.11
As of date of Manufacture**

Made in China
SONIN Inc., 2345 Route 52, Hopewell Junction, NY 12533, USA

#10075   CE

SONIN INC.
Phone: 800-223-7511 • Website: www.sonin.com

KEYS AND THEIR FUNCTIONS:

ON/OFF Applies power to unit. To use with laser reference, move to [✸] position. To use without laser reference, move to [**ON**] position. Unit will not turn on until a measurement button is pressed.

Measures from bottom of unit – ▪▾ icon will appear in the lower right corner of the display.

Measures from top of unit – ▪▴ icon will appear in the lower right corner of the display.

Using either button: Press and **HOLD** to track measurements - for continuous readings while moving. Fastest way to measure but no reading validation. Useful for locating correct surfaces when there are obstacles in the way.

Press and **RELEASE** to validate measurement only when unit is held absolutely still. **Most accurate mode**. Useful in environments when obtaining a stable reading can be difficult. Validates all measurement before displaying. Filters out noise from machinery and other sources.

M Turns on Memory. Cycles through memory registers.

M_IN Stores data displayed into blinking memory registers.

M_R Recalls memory from blinking memory registers.

X **Multiplies** measurements for area and volume. Stores and recalls ✖ memory.

+ **Adds** linear distances, areas and volumes. Stores and recalls ✚ memory.

− **Subtracts** linear distances, areas and volumes.

C_UNITS **Clear/Convert/Off Button**. Press and immediately release to clear display. Press and hold for two seconds to change display units. Press twice to turn unit off.

Press and Hold **C_UNITS** key for more than 2 seconds to change display units. The display will cycle between m, ft:in, ft:ft and yd. Release **C_UNITS** key to select desired mode.

TAKING A MEASUREMENT / Getting Started:

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

2) Aim cone at a hard, flat, unobstructed surface such as a wall or mirror.

3) Make certain you have a clear path to the surface (wall). (See FIG. 1)
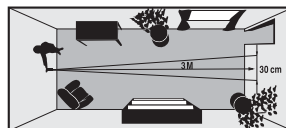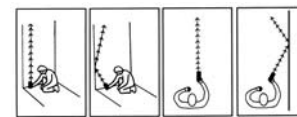

3M   30 cm

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

4) Hold Receiver perpendicular to the surface. (See FIG. 2)

YES   NO   YES   NO
(FIG. 2)

5 Your Laser Targeting Range Finder can be used with or without the integrated laser pointer reference and incorporates a "laser auto off" feature. The laser pointer indicates the approximate center of the target area to which measured.

To use with laser reference:
Move switch to top [✸] position. The laser will not activate until you press the measurement button. When you press either measuring button ⏏ or ⏫ , the laser will activate and point to the approximate center of your target area. When the unit has finished taking the measurement and appears on the LCD, the laser will automatically turn off until the measurement button is depressed again. The laser light will only stay on for approximately 6 seconds (the time it takes to complete a measurement) If you continue to depress the measuring button, (tracking mode) the laser will remain on until you release.

To use without laser reference:
Move switch to [**ON**] position. The laser will NOT be activated when you press the measuring button. Press and release ⏏ or ⏫ to validate measurement.

6) Your unit is factory preset to display metric. To set your display to desired mode (m, ft:in,ft:ft or yds) Press and hold **C_UNITS** button until desired mode displays, then release. NOTE: Unit will now default to your preset mode even after unit is turned off.

HELPFUL MEASURING HINTS:

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

2) The SONIN Model 10075 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.

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

4) To find a specific distance from a wall, walk toward or away from the wall while holding down ⬆ or ⬇ .

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, while holding down ⬆ or ⬇ . You will see the distance increase for recesses and decrease for protrusions.
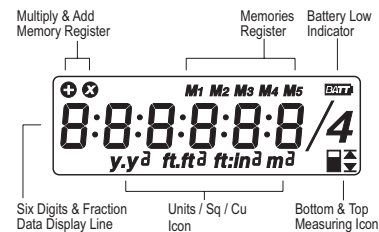
6) Be sure the surface you are measuring to is hard, flat and uniform. Some surfaces such as stucco or clapboard may scatter signals.

7) When tracking, the unit may lock on to a stronger (usually closer) measurement. If this happens, release ⬆ and try again.

8) Remember:
⬆ Measures from bottom of unit.
⬇ Measures from top of unit.

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READING THE DISPLAY:

Multiply & Add Memory Register   Memories Register   Battery Low Indicator

Six Digits & Fraction Data Display Line   Units / Sq / Cu Icon   Bottom & Top Measuring Icon

The SONIN Model 10075 can display measurements in 4 modes.

To change the display units or convert a displayed value from one set of units to another, press and hold ⬚ . The displayed value will change with the units. Release ⬚ when the desired units are displayed. If you release before the reading changes units, the display will clear and the reading will be erased.

| 17.12 meter | 56.16 decimal feet |
| 18.72 yard | 56:02:0/4 foot:inch |
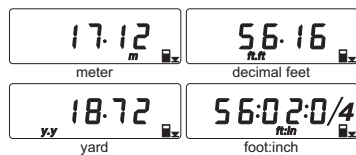
1) If the unit is unable to take a "good" measurement the display will show one of the following:

BLANK SCREEN Make certain the **ON/OFF** switch is in the **ON** position. Check/replace battery. If unit still doesn't work, call your SONIN Dealer.

BATT When the BATT symbol appears on the display, replace the battery.

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Error 1 Out of Range or No Return Signal.

Error 2 No Valid Reading.

Possible causes for Error 1 and Error 2 include:

a) Measurement out of range [0.46m to 18m (1 ft 6 ins to 60 ft)]. See Specification Section on Range.

b) Unit is not perpendicular to the surface.

c) Surface is not hard and flat.

d) Interference from external noise sources (see section on **Environmental Conditions**).

e) Unit was moved during the measurement. When using the validate mode, the unit must be held stationary.

Error 3 Math error - square or cube 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. (See FIG. 1.)

c) The surface you are measuring to 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.

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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. (See HINT #2 for help.)

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

COMPUTATION FUNCTIONS:

To make the computations in the descriptions below, the ⬆ button symbol indicates taking an actual measurement (length, width or height) with either the ⬆ or the ⬇ button.

X **Multiplying:** The unit multiplies linear measurements to compute areas and volumes. The ⊗ symbol will appear in the upper left corner of the display.

+ **Adding:** The unit adds linear measurements, areas or volumes. The ⊕ symbol will appear in the upper left corner of display.

− **Subtracting:** The unit subtracts linear measurements, areas or volumes. The ⊕ symbol will appear in upper left corner of display.

Adding distances:
⬆ + ⬆ +
(Display shows **y.y** , **ft.ft** , **ft:in** or **m**)
(Continue until you are done adding distances.)

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Subtracting distances:
⏶ ⊕ ⏶ ⊖
(Display shows **y.y** , **ft.ft** , **ft:in** or **m**)
(Continue until you are done subtracting distances.)

Multiplying to compute areas:
⏶ ⊗ ⏶ ⊗
(Display shows **y.y²** , **ft.ft²** or **m²**)

Multiplying to compute volumes:
⏶ ⊗ ⏶ ⊗ ⏶ ⊗
(Display shows **y.y³** , **ft.ft³** or **m³**)

To add areas:
⏶ ⊗ ⏶ ⊗ ⊕
⏶ ⊗ ⏶ ⊗ ⊕
(Display shows total area)
(Continue until you are done adding areas.)

To add Volumes:
⏶ ⊗ ⏶ ⊗ ⏶ ⊗ ⊕
⏶ ⊗ ⏶ ⊗ ⏶ ⊗ ⊕
(Display shows total volume)
(Continue until you are done adding volumes.)

Note: The SONIN Model 10075 can only add like units of measure.

MEMORIES:

SONIN Model 10075 has SEVEN Memories total. 5 Memory Registers - M1, M2, M3, M4 and M5 and two mathematical memories in ⊕ and ⊗ .

To Access M1-M5 Memory Registers:
Press Ⓜ key once to Turn On Memory. If any memory is already stored, the icon will appear on the LCD showing where there is stored data, otherwise it remains blank indicating all memory registers are empty.

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Continue to press and release the Ⓜ key to access the memory registers. The icons will blink when accessible. (i.e. **M1** , **M2** , **M3** , **M4** and/or **M5** blinking)

NOTE:

1) When M1 - M5 icons are blinking and the 🄲 key is pressed, it will clear the memory in that register.

2) If you plan to store a new measurement, you must first take the measurement before entering into memory.

3) To exit Memory, continuously press the Ⓜ key until Memory Registers no longer appear on the LCD. NOTE: the unit will automatically exit memory mode when you clear the memory, store to memory or recall the memory.

To Store Memory:
Take a measurement. Press and release the Ⓜ key until you reach the desired memory register. Then, while blinking, press the Ⓜiₙ key once to store the displayed reading. The memory symbol will now turn off to indicate that it has data stored to that register and back to measuring mode.

> **Example:** To store in M3
> Press ⏶ once, and press Ⓜ 4 times - (the **M3** icon will blink)
> Then press Ⓜiₙ , your measurement will be stored in M3.

To Recall Memory:
Press and release the Ⓜ key until you reach the desired memory register. Then, while blinking, press the Ⓜʀ key. This will recall the data stored in that memory register.

> **Example:** To recall from M3
> Press Ⓜ until **M3** is blinking.

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While blinking press Ⓜʀ key.
Memory stored in M3 will display on LCD.

To Clear All Stored Memory - Press Ⓜ key until all 5 Memory icons are blinking. Then press 🄲 key. All memory stored will be erased and your unit will automatically go back to measuring mode.

To store in ⊕ :
Press ⏶ or ☎ , then ⊕ (the " ⊕ " symbol will appear in the upper left corner of the display)

To store in ⊗ :
Press ⏶ or ☎ , then ⊗ (the " ⊗ " symbol will appear in the upper left corner of the display)

NOTES:

1) Turning the unit off will erase both ⊕ and ⊗ memories.

2) If ⊕ memory is empty (no ⊕ symbol in upper left corner of display) a measurement can be stored by pressing ⊕ button.

3) If ⊗ memory is empty (no ⊗ symbol in upper left corner of display) a measurement can be stored by pressing ⊗ button.

4) Subsequent measurements can be added to or subtracted from measurement in ⊕ by pressing ⊕ or ⊖ button, respectively. The resulting value (sum or difference) is displayed.

5) Subsequent measurements can be multiplied by the stored value (measurement or area) in ⊗ by pressing ⊗ button. The resulting value (area or volume) is displayed.

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6) Other operations such as computing the area formed by the sum of two distances multiplied by a third distance are also possible.

For example: ⏶ ⊕ ⏶ ⊕ ⊗ ⏶ ⊗

7) The SONIN Model 10075 can only add like units of measure. If ⊕ contains a distance and the display shows an area, pressing the ⊕ button will cause the area to be stored in ⊕ and the previously stored distance to be lost.

TO RETRIEVE A STORED VALUE IN ⊗ AND ⊕ :

1) Clear the display by pressing and immediately releasing the 🄲 button.

2) Once you have cleared the display, press the ⊗ or ⊕ button to retrieve the reading stored in that memory.

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TEMPERATURE COMPENSATION:

Because temperature affects the speed of sound, the SONIN Model 10075 has automatic temperature compensation for greater accuracy. In order to make the most of this feature, wait 1 minute for each 1°F (2 minutes for each 1°C) of temperature difference between cool and warm locations.

DISPLAYING TEMPERATURE TO IMPROVE ACCURACY: Since temperature affects accuracy, the SONIN Model 10075 is most accurate when its internal temperature matches the air temperature.

To display temperature: press and hold ⊕ key, then press ▲ key, the internal temperature will appear on the display immediately (in °C when m display units are selected or in °F if selected display units are ft:in, ft:ft, yds).

| 77°F | or | 25°C |

To go back to measurement mode, press and release ⚇ key or press the measure key directly.

HINT: To speed equalization of the SONIN Model 10075's internal temperature versus air temperature, wave the unit back and forth in the air to circulate room temperature air through the unit. For additional information, see "Temperature" in the section on **Environmental Conditions**.

LOW BATTERY INDICATOR:

Replace the battery when the BATT symbol appears on the LCD.

SPECIFICATIONS:

Range:
Min: 1.5 ft (0.46 m)
Max: 60 ft (18.2 m)
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 ins (3 cm), And at 60 ft (18.2 m) your reading will be within 3 3/4 ins (10 cm).

Resolution: 1/4 in (1 cm, 0.01 ft or 0.01 yd)

Ultrasonic Frequency: 40 kHz

Laser: 650nm, Semiconductor

Safety Class: Class II, visible, non-hazardous

Safety precautions: Do Not Stare Into Beam

Battery: 9 volt (alkaline recommended)

Current Consumption: 8 - 13 mA
(Approximately 50 hours continuous use with a new 9 volt, alkaline battery)
With Laser: 35-40 mA /15 hours

Operating Temperature:
32 to 100°F (0 to 38°C)

Auto Shutoff:
Approximately 7 minutes after last key press.

Size: 5 7/8 x 2 7/8 x 1 3/4 ins
(147 x 75 x 45mm)

Weight: 6.2 oz (175 gm) without battery

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 SONIN Model 10075 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 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 **DISPLAYING TEMPERATURE** for instructions on how to obtain a temperature measurement from your SONIN Model 10075.)

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/ - 0.6" Hg (0.3 km/-15mm Hg) you are above sea level. Add 0.4% of the measured distance for each 1000 ft/ +0.6" 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 Model 10075 is designed for indoor use.

FIELD CALIBRATION:

This unit was calibrated under the circumstance of 760 mmHg atmosphere and 50% relative humidity, if the unit is not used under such environmental conditions, it may produce an error. The built in user's calibration mode is designed for the user working under other than standard conditions such as high altitudes. After the unit is calibrated all environmental errors are compensated and the accuracy is improved.

To Field Calibrate unit -

1) Turn the On/Off switch to the **ON** position.
2) Place unit 10 feet (or 3 meter) from the bottom of the unit to a flat vertical surface.
3) Press and hold both ⊕ and ⊖ keys then press ⏏ key, the unit will turn on and process calibration immediately.
4) When calibration is completed 10.00 ft.ft (or 3.00 m) will displayed on the LCD.
5) Then turn off the unit and turn on again, the new calibrated data will now used in all measures.

NOTE - BEFORE CALIBRATING UNIT:

1) It is imperative that the unit be exactly 10 feet (imperial) or 3 meter (metric) from the bottom of the unit to a flat vertical surface.
2) Verify the temperature of the unit is within ± 1°C of the ambient temperature.

TO RESET BACK TO FACTORY DEFAULT SETTING:

1) Turn OFF unit and turn in ON again.
2) Press and hold ⒞ key then press ⏏ . The LCD will display r E S E Ł (RESET). the factory default setting now restored to the unit.
3) Then turn OFF unit and turn ON again to resume measuring.

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.

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