

1. GENERAL SAFETY RULES



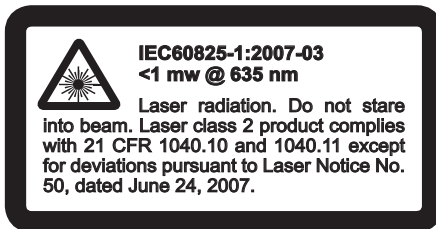
WARNING

Read all instructions. Failure to follow all instructions listed below may result in hazardous radiation exposure, electric shock, fire, and/or serious injury.

- **CAUTION**—use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- **DO NOT** operate this instrument in areas where there is risk of fire or explosion, like in the presence of flammable liquids, gases, dust, etc.
- **DO NOT** disassemble the instrument. There are no user serviceable parts inside. Disassembling the instrument will void all warranties on the product.
- **DO NOT** modify the instrument in any way. Modifying the instrument may result in hazardous laser radiation exposure.
- To ensure that the instrument is used safely, follow all safety and operating instructions in this manual. If the instrument is not used as described in this operation manual, the safety features of this device may be impaired.
- To avoid personal injuries and damage to the instrument, use extreme caution when working around hot machine or engine parts, such as radiators, exhaust manifolds, catalytic converters, etc.
- Repair and servicing must always be performed by qualified repair personnel. Repairs performed by unqualified personnel could result in serious injury.
- This instrument is designed for indoor use at temperatures between 32°F and 122°F (0°C to 50°C), altitudes up to 6500 ft. (2,000 m), and 10% to 90% relative humidity.

2. LASER SAFETY RULES

This label is on your laser instrument for your safety. ALWAYS BE AWARE of its location when using the tool.



DO NOT direct the laser beam at persons or animals and do not stare into the laser beam yourself. This tool produces class 2 laser radiation and complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007. This can lead to persons being blinded.

Working safely with this instrument is possible only when the operating and safety information are read completely and the instructions contained therein are strictly followed.

- Never make the warning labels on the instrument unrecognizable.
- Never aim the beam at a workpiece with a reflective surface.
- Mirrors or similar reflective surfaces are not recommended for laser use, as these could reflect the beam back towards the operator.
- Do not point the laser beam at persons or animals and do not look into the laser beam yourself, not even from a long distance.
- Do not use laser viewing glasses as safety goggles, because they do not protect against laser radiation.
- Do not allow children to use the measuring tool without supervision. They could unintentionally blind other people.
- **ALWAYS:** Make sure that any bystanders in the vicinity of use are made aware of the dangers of looking directly into the instrument.

3. TECHNICAL SPECIFICATIONS

3.1 General Specifications

Display:	5-digit LCD, with measuring unit, low battery and laser on target indicators.
Resolution:	±(0.05%+1 Digit)
Operating temperature:	32°F to 122°F (0°C to 50°C)
Response time:	0.5 seconds (over 120 RPM)
Range selection:	Auto ranging
Memory:	Maximum, minimum, and display hold.
Distance to target:	2" to 20" (50 mm to 500 mm)
Laser class:	2
Laser type:	< 1 mW @ 635 nm
Power source:	4 AA 1.5 V alkaline batteries 1.5 V UM3 or equivalent
Battery life:	Approx. 5 hours (w/alkaline batteries)
Dimensions:	6.3"x 2.8"x 1.5" (160 x 72 x 37 mm)
Weight:	6.96 oz. (200 g) including batteries
Accessories:	User's manual, 3 x 20 cm self-adhesive reflective tape, soft pouch, and 4 AA 1.5 V alkaline batteries

3.2 Measurement Specifications

- Accuracies are ±(% of reading + number of least significant digits) at 23°C ±3°C (73°F ± 6°F) ambient temperature, with less than 75% relative humidity.

Function	Range	Accuracy	Resolution
RPM	2.5 to 999.9 RPM	±(0.05%+1 Digit)	0.1 RPM
	1000 to 99,999 RPM		1 RPM
TOT (total revolutions)	1 to 99,999	±(0.05%+1 Digit)	1 RPM

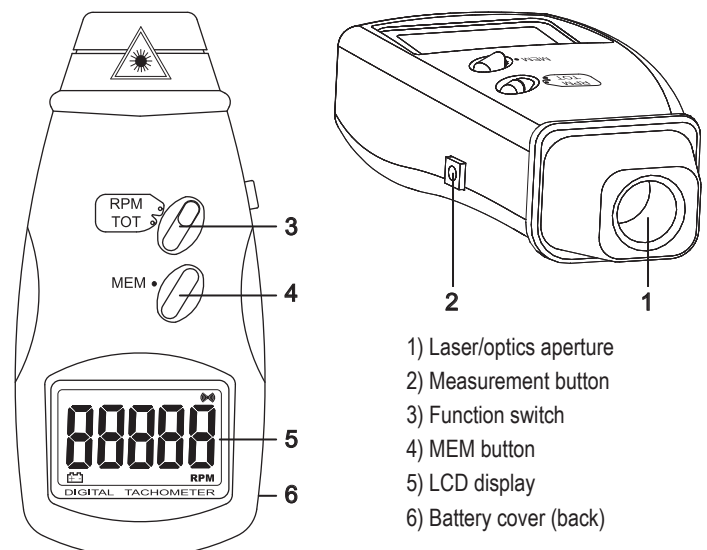
4. OPERATION



CAUTION

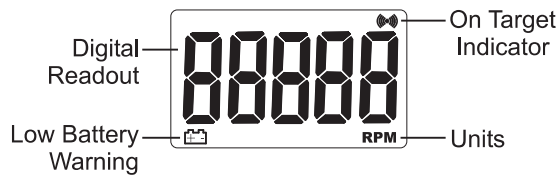
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

4.1 Instrument Description



- 1) Laser/optics aperture
- 2) Measurement button
- 3) Function switch
- 4) MEM button
- 5) LCD display
- 6) Battery cover (back)

4.2 Display Description

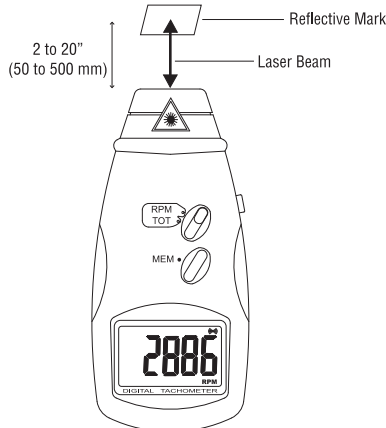


4.3 Measurement Procedures



Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

4.3.1 RPM Measurement



- Apply a piece of reflective tape to the rotating object to be measured.
- Slide the function switch to the "RPM" position
- Press the Measurement button and aim the laser beam at the reflective mark or tape on the rotating object.
- Verify that the on target indicator appears on the display to confirm the instrument is detecting the rotation of the object and the reflective mark on it.
- Proceed to read the RPM on the digital display.

4.3.2 TOT (total revolutions) Measurement

- Apply a piece of reflective tape to the rotating object to be measured.
- Slide the function switch to the "TOT" position
- Press the Measurement button and aim the laser beam at the reflective mark or tape on the rotating object.
- Verify that the on target indicator appears on the display to confirm the instrument is detecting the rotation of the object and the reflective mark on it.
- Proceed to read the total revolutions on the digital display.

4.3.3 Reflective marks

- Cut a 1/2" (1.25 cm) length of the reflective tape provided, peel off the backing to expose the adhesive, and attach it to the rotating part or shaft to be measured, following these recommendations:
 - The non-reflective area must be larger than the reflective piece of tape.
 - If the object or shaft to be measure is reflective, first covered it with a matte tape or paint it black before attaching the reflective tape.
 - Before applying the tape ensure that the surface is clean and smooth.

4.3.4 Very low RPM measurements

To measure slowly rotating parts, it may be advantageous to follow the procedure below to increase the update rate of the measurement:

- Depending on the size of the rotating object or shaft, attach multiple reflective marks, evenly spaced along its circumference.
- Proceed to measure RPM as described in 4.3.1, and divide the reading by the number of reflective marks, in order to obtain the correct RPM.

4.4 Other Functions

4.4.1 Display Hold

- The instrument will automatically hold the last measurement immediately after the on target indicator on the display turns off, while the Measurement button is pressed.

4.4.2 MEM function

In every measuring cycle (pressing the Measurement button, obtaining a reading, and then releasing the button), the instrument will automatically store in its internal memory the maximum, minimum and last value. To retrieve the values in memory follow the procedure described below:

- With the instrument off press and hold down the MEM button to display the maximum value stored in memory. The display will alternate screen between 'UP' (maximum) and the stored maximum reading. Note the value and release the MEM button.
- Pressing and holding again the MEM button will display the minimum value stored in memory. The display will alternate screen between 'dn' (minimum) and the stored minimum reading. Note the value and release the MEM button.
- Pressing and holding once again the MEM button will display the last reading value stored in memory. The display will alternate screen between 'LA' (Last reading) and the stored last reading value. Note the value and release the MEM button.
- This memory retrieve cycle will keep repeating in the order detailed above.

Notes: The values stored in memory will be retained until a new measurement cycle is performed.

Removing the batteries, or low batteries will cause all values stored in memory to be erased.

5. MAINTENANCE



In order to avoid laser radiation exposure when removing or replacing the battery always make sure the laser aperture is pointing away from any person, animal, or reflective surface.

5.1 Battery Replacement

- When the battery is low and needs to be replaced, the 'Low battery warning' symbol will appear on the lower left hand side of the display.
- To replace the battery, remove the screw and open the battery compartment cover (located at the back of the unit), and remove the batteries.
- Replace with 4 x 1.5 V type AA/UM3 or equivalent observing the proper polarity of each battery as indicated at the bottom of the battery compartment.
- Close the battery cover, and replace the screw.

5.2 Cleaning



In order to avoid laser radiation exposure, remove the battery before performing any cleaning of the lens or exterior of the instrument.

5.2.1 Lens Cleaning

Debris or dirt on the lens may cause obstruction and reduce the accuracy of the tachometer. If this occurs, either wipe the lens with a cotton swab (moistened with water only) or blow the loose particles off with clean compressed air. Do not use solvents on the lenses, as they may damage the instrument.

5.2.2 Exterior Cleaning

Periodically wipe the enclosure with a soft damp cloth and mild household cleanser. Do not use abrasives or solvents. Ensure that no water gets inside the instrument to prevent possible short circuits and damage.

6. WARRANTY

One year limited warranty, excluding batteries and fuses. For details see Standard Warranty Information on our web page or request a printed copy.

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