



1. SAFETY RULES

- This instrument is designed for indoor use at temperatures between 32°F and 122°F (0°C to 50°C), and altitudes up to 6500 ft. (2,000 m), and 10% to 90% relative humidity.
- 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 injury and damage to the instrument use extreme caution when working around hot or moving objects or machinery (i.e.: radiators, exhaust manifolds, catalytic converters, drive belts, fly wheels)

2. INTERNATIONAL SYMBOLS

 **Important information**
Refer to the User's Manual

 **CAUTION:** Laser radiation
AVOID DIRECT EYE EXPOSURE
1mW Output at 630-670 nm
Class II Laser Product

3. TECHNICAL SPECIFICATIONS

3.1 General Specifications

Display:	5 digit 0.7" (16mm) LCD, max. of 99999 display, with measuring unit indicator and Laser On Target indicator
Accuracy:	±(0.05%+1 Digit)
Operating temperature:	32°F to 122°F (0°C to 50°C)
Response time:	0.5 sec. (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 pointer:	Laser Diode, < 2mW output wavelength 630-670 nm, Class II
Power source:	9-volt battery type NEDA 1604, IEC6F22 IEC 6LR61
Battery life:	Approx. 5 hours (w/alkaline batteries)
Power saving:	Automatic shut off after 10 seconds
Dimensions:	3.13"x 1.88"x 7.0" (80 x 48 x 178 mm)
Weight:	7.6 oz. (215 g) including battery
Accessories:	User's manual, soft pouch, 3 x 20 cm reflective autoadhesive tape and 9 V alkaline battery

3.2 Measurement Specifications

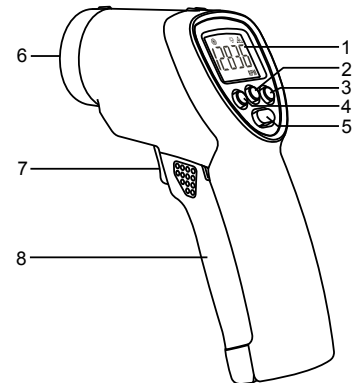
- Accuracies are ±(% of reading + number of least significant digits) at 23°C ±5°C ambient temperature, with less than 75% RH.

Function	Range	Accuracy	Resolution
RPM	1 to 99,999 RPM	±(0.05%+1 Digit)	1 RPM
COUNT (total revolutions)	1 to 99,999	±(0.05%+1 Digit)	1 COUNT

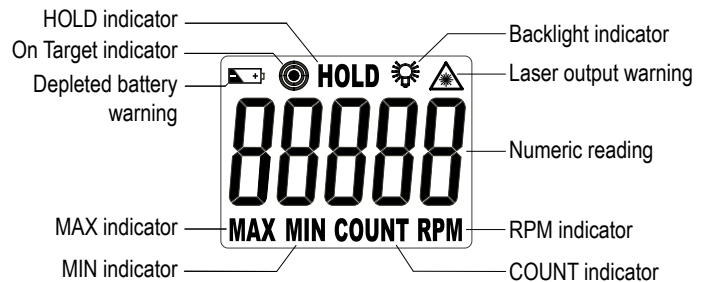
4. OPERATION

4.1 Instrument Description


- 1) Digital display
- 2) Display backlight button
- 3) Minimum button
- 4) Maximum button
- 5) RPM/Count button
- 6) Laser output
- 7) Measurement trigger
- 8) Battery compartment cover




4.2 Display Description

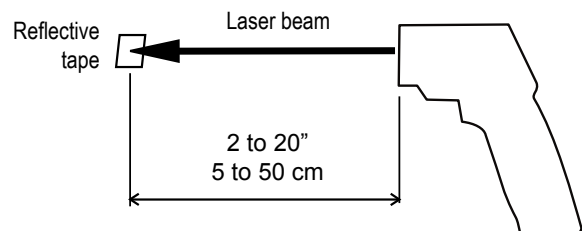


4.3 Measurement Procedures

 **CAUTION:** Avoid contact with moving and/or hot components, to prevent personal injury or damage to the instrument.

 **CAUTION:** Laser radiation is emitted
Avoid direct eye contact

4.3.1 RPM Measurement



- Apply a reflective mark or a piece of reflective tape to the rotating object under measurement.
- Press the "Measurement trigger" and verify that the "RPM Indicator" is shown in the display. If the RPM function is not selected, press the "RPM/COUNT button" once to select the RPM function.
- Press the "Measurement trigger" 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, indicating that 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 COUNT function

- Apply a reflective mark or a piece of reflective tape to the rotating object under measurement.
- Press the “Measurement trigger” and verify that the “COUNT Indicator” is shown in the display. If the “COUNT” function is not selected, press the “RPM/COUNT button” once to select the COUNT function.
- Press the “Measurement trigger” 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, indicating that the instrument is detecting the rotation of the object and the reflective mark on it.
- Proceed to read the revolution count 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 measure, following these recommendations:
 - The non-reflective area must always be larger than the reflective piece of tape.
 - If the object or shaft to be measure is reflective, it must first be covered with a black tape or painted 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

The response time will vary with the rotational speed being measured, therefore when measuring very slow 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 display reading when the “Measurement trigger” is released, and hold it until the “Measurement trigger” is pressed again or the unit turns itself off (automatic shut off).

4.4.2 Display backlight

- Make sure the instrument is turned ON, if it is not, press the Measurement Trigger.
- Pressing the “Display backlight button”, will turn the display backlight ON or OFF. When the backlight is on the “Backlight indicator” will be shown in the display.
- When the backlight is not needed, turn it off to prolong battery life.

4.4.3 MAX and MIN functions

In every measuring cycle (a measuring cycle starts when the “Measuring trigger” is pressed, and finishes when the “Measuring trigger” is released), the instrument will automatically store in its internal memory the maximum and minimum values measured. To retrieve these values from memory, follow the procedure described below:

- With the instrument on, press once the “MAX button”, the ‘MAX’ indicator will appear on the display, and the maximum value stored in memory will be shown. Once the MAX function is selected, if the “Measurement trigger” is pressed again, the maximum value will be cleared and then updated with the new measurements. To turn the MAX function off, press the “MAX button” once.

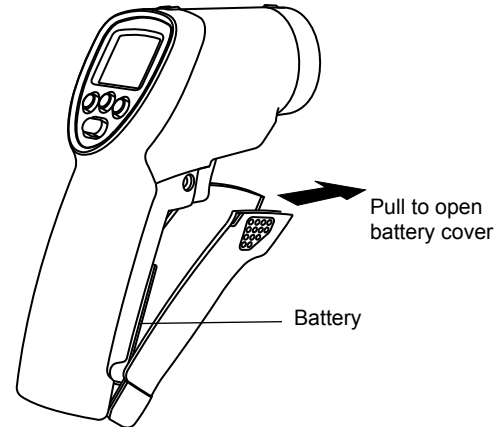
- With the instrument on, press once the “MIN button”, the “MIN indicator” will appear on the display, and the minimum value stored in memory will be shown. Once the MIN function is selected, if the “Measurement trigger” is pressed again, the minimum value will be cleared and then updated with the new measurements. To turn the MIN function off, press the “MIN button” once.

Note: The values stored in memory (maximum and minimum) will be deleted when the unit turns itself off (automatic shut off), or when a new measuring cycle is started.

5. MAINTENANCE

5.1 Battery replacement

- When the battery is depleted 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, open the battery compartment cover (located at the front of the handle) by pulling on the finger indents near the trigger, and remove the battery.
- Replace with a new 9 V alkaline battery type NEDA 1604 or IEC6F22 observing the proper polarity when connecting to the battery terminals.
- Close the battery cover.

5.2 Cleaning

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 Q-tip (moistened with water only) or blow the loose particles off with clean compressed air. Do not use solvent on the lenses, as it may damage the instrument.

5.2.2 Exterior cleaning

Periodically wipe the case 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 the Standard Warranty Information on our web page or you may request a printed copy.

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