

Model 461830 (110V) and 461831 (220V)**Digital Stroboscope Tachometer**

- Inspect and measure the speed of moving parts such as gears, fans, propellers, centrifuges, pumps, etc.
- "Stop-motion" stroboscopic analysis for educational demonstrations
- Strobe flash rate up to 10,000 FPM
- Coarse and Fine adjustment knobs

**1. INTRODUCTION**

Congratulations on your purchase of Extech's Stroboscope Tachometer. This professional meter, with proper care, will provide years of safe reliable service.

2. SAFETY

This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.



This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present

WARNING: Do not look directly at the Strobe's Xenon Lamp or its Reflector. Light pulses at frequencies greater than 5Hz may cause photo-induced epileptic episodes in some individuals.

WARNING: This device causes moving objects to appear still. Precautions should be taken so that accidental contact with moving objects is avoided

CAUTION: Do not touch the flash tube with your fingers or any tool.

3. SPECIFICATIONS

3.1 General Specifications

Circuit	Exclusive one-chip LSI circuit/crystal time base
Display	0.4" 4-digit (9999 count) LED display
Measurement units	rpm (revolutions or rotations per minute) fpm (Flashes per minute)
Operating Temp	32 to 122°F (0 to 50°C)
Operating Humidity	< 80% RH
Power Supply	110VAC (461830) or 220VAC (461831) 50/60Hz ±10%
Weight	2.2 lbs. (1kg)
Dimensions	8.3 x 4.8 x 4.8" (21 x 12 x 12cm)
Housing construction	Impact resistant plastic with plastic lens and mirrored reflectors

3.2 Electrical Specifications

Measurement Range	100 to 10,000 rpm/fpm
Resolution	0.1 (<1000 rpm/fpm) 1 (1000 to 9999 rpm/fpm) 10 (10,000 rpm/fpm)
Accuracy	± (0.05% + 1 digits)
Sampling Time	1 second
Strobe Flash adjust range	Range A: 100 to 1,000 fpm Range B: 1000 to 10,000 fpm
Strobe Flash tube type	Xenon lamp
Strobe Flash duration	60 to 1000 microseconds
Strobe Flash Energy	4 Watt-Seconds (Joules)
Strobe Beam Angle	80°
Strobe Flash Color	White 6500°K

Note 1: Replace Xenon lamp when readings appear irregular at 3600 rpm/fpm or higher

Note 2: To prolong Xenon lamp life and ensure safe operation, please adhere to the following duty cycle recommendations.

30 minute use limit < 2000rpm and 5-minute use limit < 3600rpm
Always permit a 10-minute cool-down between cycles.

4. FRONT PANEL DESCRIPTION

1. Xenon lamp
2. LED Display
3. Grip handle
4. Power cord
5. Control panel
6. COARSE adjust knob
7. FINE adjust knob
8. Power ON/OFF
9. LO/HI Range Select Switch
10. AC power cord jack



5. OPERATION

5.1 Preparation

- 1) Plug unit into proper power source (110V for 461830 or 220V for the 461831)
- 2) Power the unit via the ON/OFF switch.
- 3) Set the range switch to the Low or High position as desired.

5.2 Speed Measurements

- 1) Remove power to the moving object under test and affix a target mark on the area to be measured.
- 2) Apply power to the moving object
- 3) Aim the Stroboscope light beam toward the marked area on the object under test.
- 4) Use the FINE and COARSE adjust knobs to synchronize or "stop" the motion of the object's mark. A single stationary image of the mark provides actual speed measurement data.

NOTE: Care must be taken to ensure that the mark is providing a 1:1 measurement. Checking that there is only one mark and not two, four, or more stationary marks on the object under test does this. Two or more stopped marks indicate "harmonic" measurements (2:1, 3:1, 4:1 etc.) which provide a doubling, tripling, or quadrupling of the actual speed. A useful method of avoiding harmonic measurements is to adjust the FINE/COARSE knobs until two images (marks) appear and then lower the flash rate (via COARSE/FINE knobs) until a single, stationary image appears. This is the actual speed.

NOTE: The LED readout has an AUTO RANGE INDICATOR, which is a flashing decimal (far right). This occurs for readings over 10,000 rpm/fpm, multiply the displayed reading by 10 when the AUTO RANGE INDICATOR is flashing.

5.3 Inspecting a moving object

Measure the speed of a moving object as described above and move the FINE adjust knob alternately higher and lower to visually inspect all areas of the device.

5.4 Duty Cycle

To prolong Xenon lamp life, do not exceed the maximum continuous operating time (duty cycle).

RPM	Max. Operating Time	Cool-Off Time
< 2,000 rpm	30 minutes	10 minutes
> 2,000 rpm	5 minutes	10 minutes

6. CALIBRATION / REPAIR SERVICES

Extech offers complete repair and calibration services for all of the products we sell. For periodic calibration, NIST certification or repair of any Extech product, call customer service for details on services available. Extech recommends that calibration be performed on an annual basis to insure calibration integrity.

7. WARRANTY

EXTECH INSTRUMENTS CORPORATION warrants this instrument to be free of defects in parts and workmanship for one year from date of shipment (a six month limited warranty applies on sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department at (781) 890-7440 (extension. 210) for authorization. A Return Authorization (RA) number must be issued before any product is returned to Extech. The sender is responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.

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