

Stroboscopes

MODEL K4020

Ideal for quality control, motion analysis, maintenance procedures, and speed measurements of motors.

- Simply aim and synchronize the strobe's flash rate (fpm) with the speed (rpm) of the object
- Direct reading of RPMs
- Exclusive one-chip micro-computer LSI circuit and quartz crystal control time-base assures accuracy of $\pm 1\%$
- 4-digit, 0.3" high LED display
- Duty cycles from 5 to 30 minutes (depending on RPM range)
- Tripod mountable AC operated with 6-foot power cord



Flash Range: 100 to 100,000 fpm (flashes per minute)
 Resolution: 1 rpm/fpm
 Accuracy: $\pm 1\%$: 100 to 5000 fpm; $\pm 0.05\%$: ≥ 5000 fpm
 Sampling Rate: 1/second
 Power Supply: 110 VAC, 50/60 Hz
 Dimensions: 8.3 x 4.8 x 4.8" (210 x 120 x 120mm)
 Weight: 2.2 (1kg)

K4020

Stroboscope

\$395

MODEL K4040

A wide measurement range is ideal for motion analysis and speed measurement.

- Non-contact rpm measurement
- Highly visible, 0.4" high, 5-digit LCD readout gives accurate rpm readings over a wide measuring range
- Last value, max and min values can be stored in memory automatically and recalled at the touch of a button
- For motion analysis, simply locate the actual speed and then turn the dial slowly up or down; this will give a slow motion effect, allowing complete inspection
- Battery-operated
- Includes hard carrying case



Flash Range: 100 to 100,000 fpm
 Resolution: 0.1 fpm < 1000 fpm;
 1 fpm ≥ 1000 fpm
 Accuracy: $\pm 0.1\% \pm 2$ digits
 Speed Range: 5 to 99,999 rpm
 Power Supply: 4 x 1.5V "AA" batteries
 Dimensions: 8.5 x 2.6 x 1.5" (215 x 65 x 38mm)
 Weight: 0.66 lb (300g)

K4040

Stroboscope

\$495

MODEL K4030

Freeze the motion and measure the speed of a rotating object, without contact!

- Push button that doubles and one that divides in half the flashing and display rate with just one activation
- Coarse and Fine adjustment buttons to synchronize flash to exactly the right rate
- Duty cycles from 10 minutes to 2 hours depending on rpm range
- Xenon white flash tube has a flash duration of 60 to 1000 μ s
- External trigger input
- RS232 serial interface



Flash Range: 10 to 10,500 rpm
 Resolution: 0.1 rpm: 5 to 999.9 rpm; 1 rpm: 1,000 to 9,999 rpm;
 10 rpm: $\geq 10,000$ rpm
 Accuracy: $\pm(0.15\% \text{ rdg.} + 0.2 \text{ rpm}) < 1,000 \text{ rpm}$; $\pm(0.5\% \text{ rdg.} + 1 \text{ rpm})$:
 1,000 to 3,300 rpm; $\pm 1\% \text{ f.s.}$: 3,301 to 10,500 rpm
 Stability: 1 digit within 10 min.
 External Trigger Input: 5 to 30 Vrms, 0.083 to 175 Hz
 Power Supply: 110 VAC 15%, 50/60 Hz
 Dimensions: 8.3 x 4.8 x 4.8" (210 x 120 x 120mm)
 Weight: 2.2 lb. (1 kg)

K4030

Stroboscope

\$595

MODEL PS-700STD

Compact, battery-operated stroboscope provides fast and accurate rpm measurements without contact.

- User adjustable flash rates
- Push buttons rapidly increase ($\times 2$) or decrease ($\div 2$) flash rate
- Phase Shift feature allows user to advance or retard flash timing by degrees of angle, without changing actual fpm
- 8 character x 2-line alphanumeric LCD display
- Continuous display update
- Crystal oscillator timebase
- External trigger (0 to 5V TTL) and clock output
- One-hand operation for right- or left-handed operators
- Removable battery with built-in charge
- Includes AC adapter and extra flash bulb



Flash Range: 40.0 to 12,500 fpm (flashes per minute)
 Speed Range: 40 to 59,000 rpm
 Resolution: 0.1 fpm: 100 to 9,999 fpm; 1 fpm: 10,000 to 12,500 fpm
 Accuracy: ± 0.5 fpm/rpm or $\pm 0.01\%$ of reading, whichever is greater
 Power Supply: NiMH rechargeable battery
 Weight: 1 lb 7 oz (650g)

PS-700STD

Stroboscope

\$895

Tachometers

Measuring Speed of Rotation

One of the most basic methods of sensing the speed of rotation of some rotating component is the contact tachometer. With such a tachometer, the shaft of the rotating component is coupled to the shaft of a small DC generator. The output voltage of this generator is fed to a voltmeter. The scale of the voltmeter is calibrated in units of rpm (revolutions per minute). The amplitude of the generator output voltage is directly proportional to the rotational speed of the rotating component. Thus, an increase in rotational speed produces a high voltage which, in turn, appears as a higher rpm indication.

A photo tachometer is another method for measuring the speed of rotation, without physical contact. A piece of reflective material is affixed to the rotating component. The photo tachometer emits a beam of infrared light which is directed towards the reflective target. When the light beam strikes the target, it is reflected back to a light sensor housed inside the tachometer. When the light is applied to the sensor, an output voltage is produced. If the component is rotating

steadily, the sensor produces "pulses" of voltage (one pulse for each time the reflective target passes by the light beam). The pulses are then converted to an rpm indication by a frequency measuring device or counter.

The magnetic pickup is a more common method of measuring the speed of rotation. The basic elements of this system are a metallic toothed wheel, such as a gear wheel, connected by a shaft to the rotating component, and a magnetic pickup or coil. Typically, the pickup consists of a housing containing a small permanent magnet with coil wound around it. A fixed magnetic field surrounds the field, since both the field and coil are stationary, no voltage is induced in the coil. When the wheel is rotated and the teeth pass through the field, a voltage pulse is induced in the coil. The frequency of the pulses depends on the number of teeth and the speed of rotation. Since the number of teeth is known, the pulse frequency can be related directly to rpm.

MODEL K4010

New patented design incorporates both a photo and a contact tachometer into one precision instrument.

- Automatically holds last reading for 5 minutes and recalls minimum and maximum readings
- Characters on the 5-digit display reverse direction depending on which measurement mode you are in
- Microcomputer LSI circuitry provides accuracy to 0.05% and permits readings to a resolution of 0.1 RPM in either photo or contact mode
- ABS plastic housing assures years of maintenance free performance
- Designed to fit comfortably in either hand
- Includes 3 contact adapters (2 cones, 1 funnel), surface speed wheel, reflective tape and hard carrying case



Photo Range: 5 to 99,999 rpm
Contact Range: 0.5 to 20,000 rpm
Surface Speed Range:
 0.05 to 1,999.9 mpm/0.2 to 6,560 fpm
Resolution: 0.1 rpm < 999.9 rpm, 1 rpm > 1000 rpm; 0.1 mpm < 99.99 mpm; 0.1 fpm < 99.99 fpm, 1 fpm > 1000 fpm
Accuracy: ±(0.5% + 1 digit)
Sampling Time: Photo: 1 sec. > 6 rpm; Contact: 1 sec. > 60 rpm
Detecting Distance: 50 to 150 mm (2 to 6") typically; 300 mm (12") max.
Display: 5 digit LCD 10 mm high
Power Supply: (4) 1.5V "AA" batteries
Dimensions: 8.5 x 2.6 x 1.5" (215 x 65 x 38 mm)
Weight: 0.66 lb (300g)

K4010

Photo-Contact Tachometer

\$295

MODEL DT-1236L

Versatile contact and non-contact operation, as well as laser sighting, in one compact unit

- Photo tachometer and contact tachometer in one precision instrument
- Surface speed measurements in fpm or mpm
- Retains Min/Max and last reading for later recall
- Automatic reverse display direction depending on which measurement mode you are in
- Laser light for improved accuracy at a greater distance in photo mode
- Highly visible LCD readout
- Includes 3 contact adapters (2 cones, 1 funnel), surface speed wheel, reflective tape and hard carrying case



Photo Range: 10 to 99,999 rpm
Resolution: 0.1 rpm ≤ 999.9 rpm; 1 rpm > 1000 rpm
Contact Range: 0.5 to 19,999 rpm
Resolution: 0.1 rpm ≤ 999.9 rpm; 1 rpm > 1000 rpm
Surface Speed Range: 0.05 to 1,999.9 mpm/0.2 to 6560 fpm
Resolution: 0.01 mpm ≤ 99.99 mpm; 0.1 mpm > 100 mpm/0.1 fpm ≤ 999.9 fpm; 1 fpm > 1000 fpm
Accuracy: ±(0.5% + 1 digit)
Sampling Rate: Photo: 1 sec. over 60 rpm; Contact: 1 sec. over 6 rpm
Detection Distance: 50 to 2,000mm
Laser: Class 2 red laser diode, 645nm wavelength
Power Supply: 4 x 1.5V "AA" batteries
Dimensions: 8.5 x 2.6 x 1.5" (215 x 65 x 38mm)
Weight: 0.66 lb (300g)

DT-1236L

Photo-Contact Tachometer

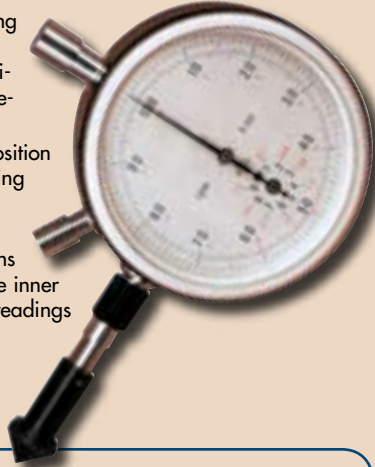
\$295

Tachometers

MODEL H

For accurate measurement of revolutions per minute or linear speeds in feet per minute.

- A built-in timing element operating over a fixed period of 3 seconds makes this speed indicator especially suitable for accurate measurements of constant speeds
- The pointer remains in a fixed position until returned to zero by depressing the reset button
- Large, easy-to-read dial, with black figures indicating revolutions per minute and red figures on the inner circle indicating feet per minute readings
- Accuracy is $\pm 0.5\%$



Contact Range: 5 to 10,000 rpm
 Surface Speed Range: 0 to 3,000 fpm
 Accuracy: $\pm 0.5\%$
 Sampling Rate: 1/3 seconds
 Dimensions: 3 x 2.5 x 1"
 Weight: 12.8 oz

H Contact Tachometer **\$495**

MODEL AT-6

Provides fast and accurate rpm measurements of rotating objects without contact.

- Laser targeting
- Provides Total measurements
- Built-in memory recalls maximum, minimum values as well as last value stored
- Highly visible 5-digit LCD with backlight
- Includes reflective tape, soft carrying case and batteries



Measuring Range: 2 to 99,999 rpm
 Accuracy: $\pm(0.05\% \text{ rdg.} + 1 \text{ dgt.})$
 Resolution: 0.1 rpm: 2 to 999.9 rpm;
 1 rpm: >1000 rpm
 Sampling Time: 0.5 sec over 120 rpm
 Detection Distance: 50 to 500mm
 Power Supply: Single 9V battery
 Dimensions: 160 x 58 x 39mm
 Weight: 151g

AT-6 Photo Tachometer **\$99**

MODEL ST-6234B

A laser light source provides for improved accuracy of rpm measurements!

- Non-contact measurement of rpm of rotating objects facilitated by integral light beam
- Recalls Max/Min and last values
- Large, easy to read display
- Autoranging with 0.05% accuracy
- Includes battery and carrying case



Photo Range: 2.5 to 99,999 rpm
 Accuracy: $\pm(0.5\% + 1 \text{ digit})$
 Sampling Rate: 1/second
 Dimensions: 6.3 x 2.8 x 1.5"
 Weight: 7.9 oz

ST-6234B Photo Tachometer **\$159**

MODEL ST-6236B

Fast and accurate rpm and surface speed measurements of rotating objects.

- Dual function unit with both contact and non-contact capabilities
- Supplied with adapters for mpm, rpm and surface speed measurements
- Non-contact function utilizes laser light beam for improved accuracy
- Recalls Max/Min and last values
- Large, easy to read display
- Autoranging with 0.05% accuracy
- Includes battery and carrying case



Photo Range: 5 to 99,999 rpm
 Contact Range: 5 to 19,999 rpm
 Surface Speed Range: 0.05 to 1,999 mpm
 Accuracy: $\pm(0.5\% + 1 \text{ digit})$
 Sampling Rate: 1/second
 Dimensions: 6.3 x 2.8 x 1.5"
 Weight: 7.9 oz

ST-6236B Photo-Contact Tachometer **\$179**