

Product Data

Portable Stroboscope — Type 4912

USES:

- Inspection of rotating or reciprocating machinery
- Mode study vibration testing
- Loudspeaker analysis
- Dynamic field balancing of rotating parts
- Speed/frequency measurement of rotary, linear or vibratory motions
- Investigation of high-speed repetitive industrial processes on the shop floor
- Internal frequency generator range 5 to 125 Hz (300 to 7500 r/min)
- Flash rate obtainable 0 to 130 Hz (0 to 7800 r/min)
- Tachometer operation 0 to 1500 Hz
- External trigger range 0 to 20000 Hz
- Constant white light output independent of frequency above 25 flashes per second
- 4-digit liquid crystal display of frequency or r/min
- Compact self-contained unit for use in the hand
- Typically 2 hours' operation from built-in accelerated-charge rechargeable NiCd batteries
- External DC operation when required

FEATURES:

- Combined motion analyzer and tachometer

Overview

The Type 4912 Portable Stroboscope is a compact hand-held instrument which combines the function of tachometer with that of motion analyzer. It permits both qualitative investigation and accurate measurement of various kinds of rapid, repetitive motion in trouble-shooting and design and development situations.

The Stroboscope utilizes the phenomenon of persistence of vision to "freeze" or slow down motion of vibrating, rotating or reciprocating parts of machinery too rapid for the unaided eye to perceive. When the machinery is illuminated by the flashing light from the xenon lamp in the Stroboscope and the flash rate is suitably adjusted, the illusion obtained is of stationary or slowly moving machinery. This illusion makes it very easy to assess qualitatively how the machinery is behaving, and it also permits comparative measurements to be made on the amount of motion taking place. Since the 4912

features a 4-digit liquid crystal display which can be set to either Hz or r/min, it can also be used to measure accurately the frequency of the motion.

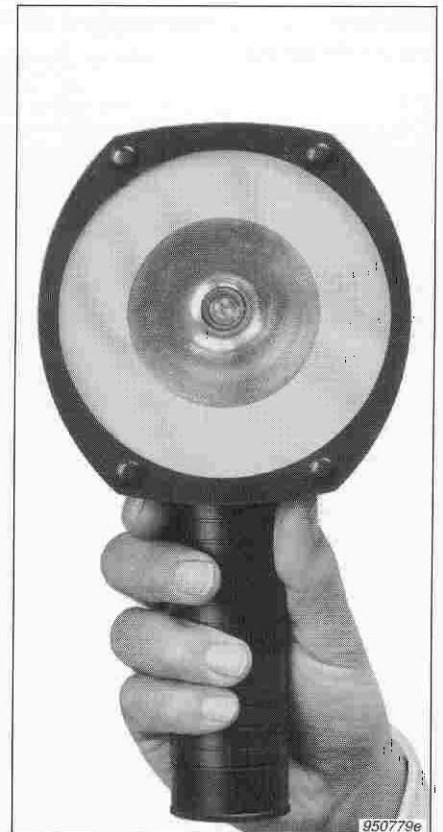
The 4912 can be used as a free-run stroboscope, a tachometer or a combined tachometer/stroboscope.

Free-run Mode

In the free-run mode the lamp is triggered from an internal frequency-generator which may be adjusted between 5 and 125 Hz. The actual frequency is indicated on the display.

Externally Triggered

The 4912 can be triggered externally, via a coaxial cable, from a photoelectric tachometer probe MM 0012 (Fig.1) or MM 0024 (Fig.2) or a magnetic probe MM 0002 (Fig.3).



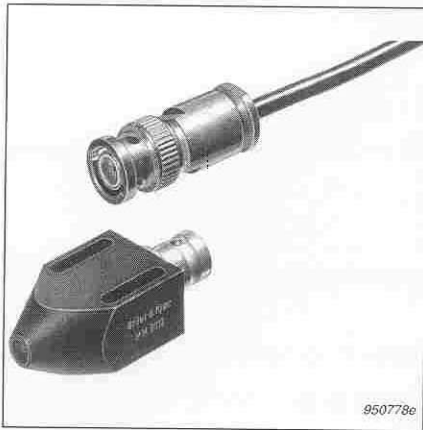


Fig.1 Photoelectric Probe MM0012

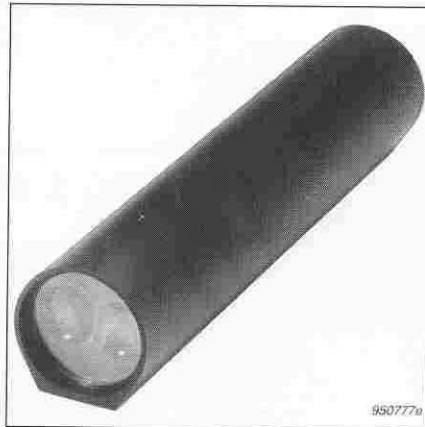


Fig.2 Photoelectric Probe MM0024



Fig.3 Magnetic Transducer MM0002

When used solely as a tachometer, the display will indicate frequency from 0 to 1500 Hz. If the upper limit is exceeded, the display flashes to indicate out-of-range.

When it is used as a stroboscope synchronized with the machinery or system being studied, the flash rate range is 0 to 130 Hz. In this operating mode the external trigger will lock to trigger frequencies up to 20 kHz, and if they are greater than 130 Hz the flash rate will be a submultiple of the trigger frequency.

Power Supply

The 4912 is a completely self-contained unit, powered from rechargeable batteries built into its carrying-handle. The integration of the light source, power supply and generator into a hand-held instrument weighing only 1.3 kg makes the 4912 ideal for studies of moving machinery in cramped, confined spaces and remote locations where transportability is essential. It may be recharged from the mains using Battery Charger ZG0283 (supplied).



Fig.4 Control panel of Type 4912, showing Rubber Sheath DS0594 fitted for protection

Specifications 4912

FREQUENCY RANGES:

Flash Rate: 0 to 130 Hz (with external triggering)

Internal Generator: 5 to 125 Hz

Display: 0 Hz to 1500 Hz and 0 r/min to 90000 r/min. Display flashes if upper limit is exceeded

External Trigger: 0 to 20000 Hz

TACHOMETER DISPLAY:

Type: 4-digit liquid crystal display, 7-segment numerals 12mm (0.5in) high

Configuration: Display reads Hz to nearest 0.1 or 1 Hz, and r/min to nearest 1 or 10 r/min

Accuracy (Typical): ± 1 part per thousand, ± 0.1 Hz or ± 1 r/min in lower ranges
 ± 1 Hz or ± 10 r/min in higher ranges

LIGHT SOURCE:

Type: Xenon white-light discharge tube

Average Light Output: Greater than 2500 lux up to 250mm (10in) range and greater than 1000 lux up to 500mm (20in) range, for flash rates above 25Hz (1500 r/min)

Flash Duration: 5 μ s approx.

Lamp Life: 200 hours at flash frequencies above 25 Hz; longer for lower frequencies

Beam Diameter: Typically 60mm (2.4in) at 500mm range

EXTERNAL TRIGGER:

Connector Type: 3-pole coaxial BNC, accepting plug JP 0315

Trigger Sensitivity: 200mV Pk-Pk

Trigger Level: Adjustable from +400mV to -400mV

Supply for Trigger Source: +5V DC to +7V DC (internal batteries), or +6V DC to +10V DC (ext. power source), on pole no.2 (ring) of socket, referred to shield (can be used to power photoelectric Probe MM0012 or MM0024)

POWER INPUT:

Connector Type: standard 7-pin DIN socket accepting plug JP 0703

Charging: +6 to +15V DC, 0 to 600mA, 7 hours at max. rate; or from battery charger ZG 0283, 10 hours

External Power: +6 to +15V DC, max. 7W to 15W respectively with stroboscope operation, 1W to 5.5W respectively with tacho. only

Battery Condition: moving-coil indicator

WEIGHT:

1.3kg (2.8lb approx.)


DIMENSIONS:

Height: 265mm (10.4in)

Width: 135mm (5.3in)

Depth: 93mm (3.7in)

COMPLIANCE WITH STANDARDS:

	CE-mark indicates compliance with: EMC Directive and Low Voltage Directive.
Safety	EN 61010-1 (1993) and IEC-1010-1 (1990): Safety requirements for electrical equipment for measurement, control and laboratory use.
EMC Emission	EN 50081-1 (1992): Generic emission standard. Part 1: Residential, commercial and light industry. CISPR 22 (1993): Radio disturbance characteristics of information technology equipment. Class B Limits. FCC Class B limits.
EMC Immunity	EN 50082-2 (1995): Generic immunity standard. Part 2: Industrial environment. (1995) Note: The above is guaranteed using accessories listed in this Product Data sheet only.
Temperature	Operating Temperature: -10° to +50°C (14° to 122°F); display only, 0° to 50°C (32° to 122°F) Storage Temperature: -25° to +70°C (-13° to 158°F) IEC 68-2-14: Change of Temperature: -10° to +50°C (14° to 122°F)
Humidity	Operating: 90% RH (non-condensing at 30°C) Storage: 90% RH (non-condensing at 40°C)
Mechanical	Non-operating: IEC 68-2-6: Vibration: 0.3 mm, 20 m/s ² , 10-500 Hz IEC 68-2-27: Shock: 1000 m/s ² IEC 68-2-29: Bump: 3000 bumps at 250 m/s ²

Ordering Information

Type 4912 Portable Stroboscope
Includes the following accessories:
ZG 0283 Battery Charger
JP 0315 3-pole BNT plug
JP 0703 7-pin DIN plug
VF 0010 2 spare fuses
DB 2164 Tripod Bush Adaptor
DS 0594 Rubber Sheath

Accessories Available:

MM 0024 Photoelectric Probe
MM 0012 Photoelectric Probe
MM 0002 Magnetic Transducer
UA 0588 Tripod Bush Adaptor
VS 1004 Lamp

Bruel&Kjaer reserves the right to change specifications and accessories without notice