

Fast Photometer FPM01-LR



Short description and technical data

Fast Photometer FPM01-LR, successor of FPM01, was developed for quantitative measurement of the muzzle flash of firearms. FPM01-LR contains additional connector for FPM02 Long-Range detector.

FPM01-LR exists in two modifications - one is for measuring in the visible light according to CIE specification (spectral characteristic is the same as the human eye), the other measures in the area of visible and infrared light (up to 1100nm).

For accurate and reproducible measurements, it is important to accurately aim the detector to the muzzle of the barrel and the location of the detector at a defined distance from the muzzle of the barrel. This is done by means of laser rangefinder with a built-in camera (FPM01-LR is supplied with a professional rangefinder from Bosch as standard).

Basic technical specification

Principle of measurement : high-speed Si photodiode with amplifier

Spectral range :

- FPM01-LR (VIS-CIE)*
 - spectral response analogous to CIE spectral luminous efficiency
 - spectral response range 480 to 660 nm
 - peak sensitivity wavelength 550 nm
- FPM01-LR (VIS+IR)*
 - spectral response range 320 to 1100 nm
 - peak sensitivity wavelength 960 nm

Reaction time :

- FPM01-LR (VIS-CIE) <10 us*
- FPM01-LR (VIS+IR) < 3 us*

Field of view :

<i>approx. ±4.5°</i>	<i>distance :</i>	<i>circle diameter :</i>
	<i>1 m</i>	<i>0.15 m</i>
	<i>2 m</i>	<i>0.30 m</i>
	<i>3 m</i>	<i>0.45 m</i>
	<i>4 m</i>	<i>0.60 m</i>
	<i>5 m</i>	<i>0.75 m</i>

Sensitivity :

- FPM01-LR (VIS-CIE) typ. 150 mV/uW @ 550 nm, DC(x1) Output*
- FPM01-LR (VIS+IR) typ. 16 mV/uW @ 960 nm, DC(x1) Output*

Output signals :

- Output voltage approx. 10 V max.*
- DC(x1) Output*
- AC(x1) Output ($f_0 = 1.6$ Hz)*
- AC(x10) Output ($f_0 = 1.6$ Hz)*

Working temperature : -30°C to +40 °C

Protection : IP63

Air humidity : up to 90 %, non-condensing

Altitude : max. 3000 m

Power : 12...24 VDC, max. 2 W

Dimensions (approx.) : 160 x 100 x 100 mm (W x H x D)

Filter diameter : 52 mm

Weight : approx. 1.5 kg

FPM01-LR with a laser rangefinder on the top

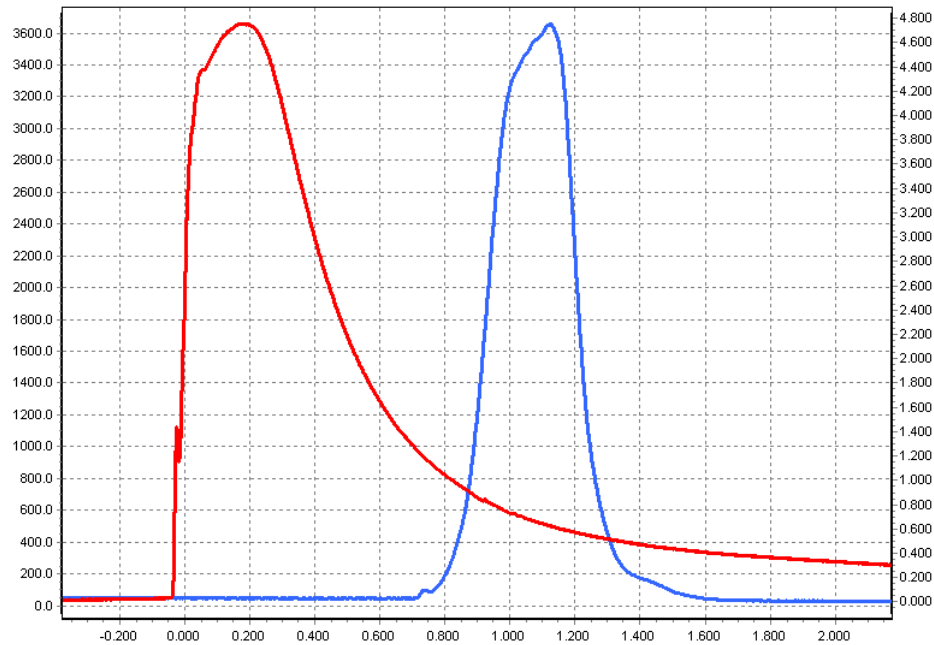


Applications of FPM01-LR

- *measurement of the flash on the muzzle of the weapon*
- *comparing the efficiency of flame suppressors and muzzle shrouds*
- *comparing different kinds of ammunition in terms of flame at the muzzle*
- *comparison of different kinds of smokeless powders*
- *using as Flash Detector to replace the muzzle sensor*
- *testing of pyrotechnics*

Typical signals

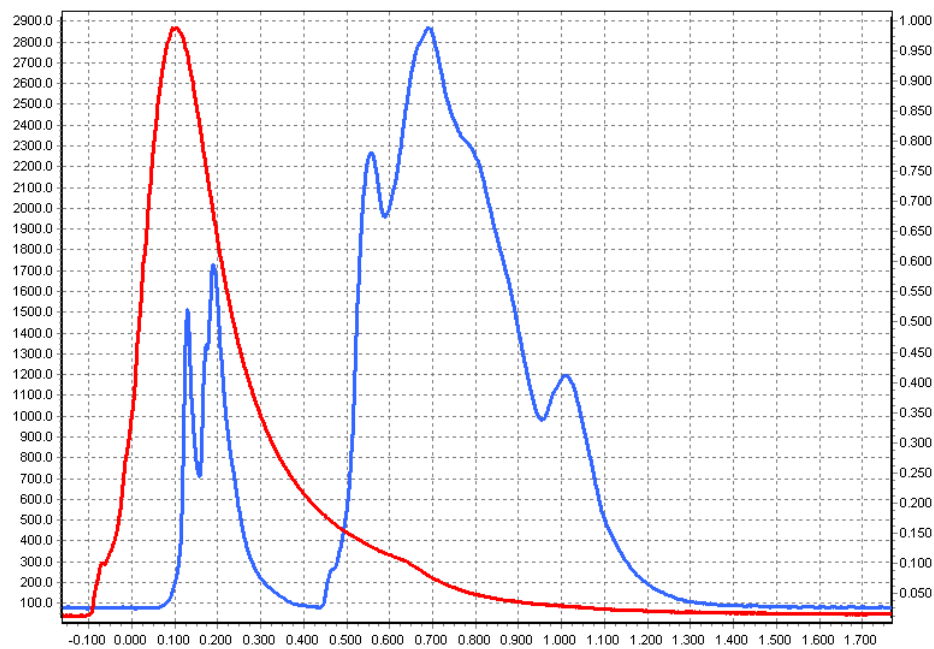
(Ballistic Analyzer BA08M was used for measurement)



Ammunition : 5.56 NATO

Red curve : chamber pressure

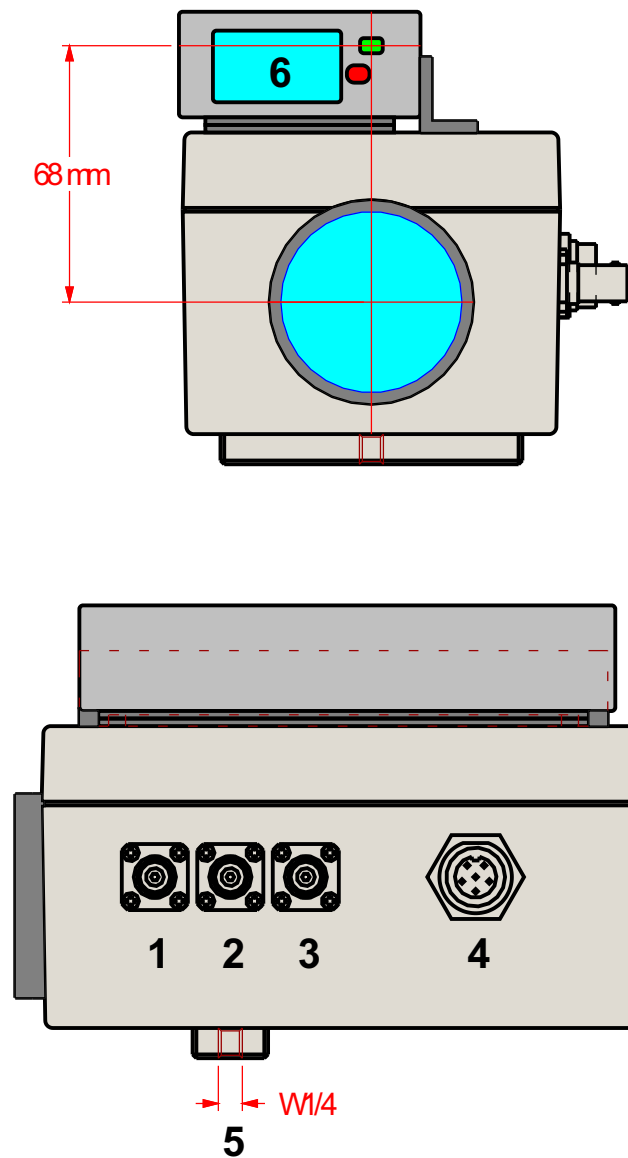
Blue curve : intensity of flame (VIS+IR)



Ammunition : 357Mag

Red curve : chamber pressure

Blue curve : intensity of flame (VIS+IR)



1 : DC Coupled Output x1

2 : AC Coupled Output x1

3 : AC Coupled Output x10

4 : Connector for FPM02-LR Detector

5 : Tripod mounting W1/4 thread

6 : Laser Rangefinder