

UNIFIED LOW LIGHT LEVEL PHOTODETECTOR MODULES

Unified low light level photodetector modules FPM-UV, FPM-VIS and FPM-IR are intended for conversion of optical image in UV, visible and near –IR spectral regions into TV signal in wide irradiance range at input.

Devices include two cascade pre-commutating amplifier based on two image intensifiers of 2+ generation, coupled through direct optical-fiber contact with special wide format frame transfer CCD.

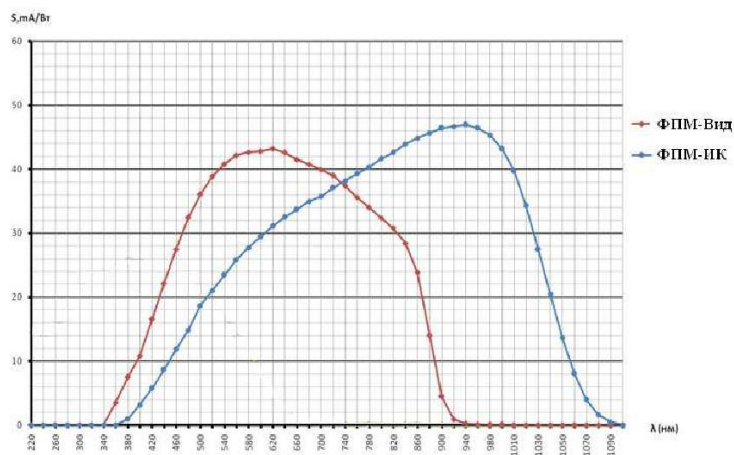
To block the visible range of the radiation spectrum in FPM-UV a combined bandpass filter was used. The unified devices FPM have possibility of gating by e-gate of input image intensifier. Wide adjustable range of irradiance at FPM input of 104 is achieved by varying the gain of two image intensifiers.

The main electrical and photoelectrical parameters of FPM modules are presented in Table 1.

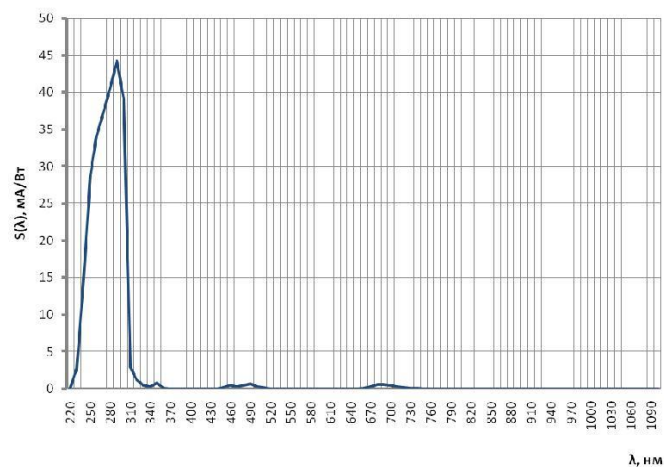
Parameters	FPM-UV	FPM-VIS	FPM-IR
Spectral response, nm	230÷310	340÷920	380÷1080
Operating irradiance	$3 \cdot 10^{-9} \text{ W/cm}^2$	$5 \cdot 10^{-4} \text{ lx}$	$1.4 \cdot 10^{-8} \text{ W/cm}^2$ after bandpass filter ($\lambda=1070\text{nm}$)
Output signal at operating irradiance, mV	>200	>200	>200
Resolution at operating irradiance, TVL	450	500	500
S/N ratio at operating irradiance	>10	>10	>10
Threshold irradiance	$1 \cdot 10^{-10} \text{ W/cm}^2$	$5 \cdot 10^{-6} \text{ lx}$	$6.7 \cdot 10^{-11} \text{ W/cm}^2$ after bandpass filter ($\lambda=1070\text{nm}$)
Dark signal, mV/s	<100	<100	<100
Geometric distortion, %	<1	<1	<1
Signal relative nonuniformity, %	≤20	≤20	≤20
Number of pixels	760×580 (290)	760×580 (290)	760×580 (290)
Photosensitive area size, mm	9.8×13.1	9.8×13.1	9.8×13.1
Pixel size, μm	17×34	17×34	17×34
Gating mode, ns	≥10	≥10	≥10
Frame frequency, Hz	50	50	50

Examples of spectral response characteristics of low light level FPM-UV, FPM-VIS and FPM-IR

FPM-VIS and FPM-IR



FPM-with UV filter



Unified low light level photodetector module FPM is produced in accordance with RAGS.431171.014