

# Detector Selection Guide

**MenloSystems**



**improved specs  
all models including ready-to-use power supply**

Menlo Systems has developed a series of detectors for lowest light level signals. From avalanche to PIN photodiodes you can find the detector that is best for your specific application. All devices are field tested in our Optical Frequency Comb Systems featuring Nobel Prize winning technology.

## AVALANCHE PHOTODETECTORS

### APD210, APD310, APD410

The Avalanche Photodetectors APD210, APD310 and APD410, for detection in the visible and near infrared range, respectively, offer a number of key features: adjustable gain, high signal-to-noise ratio and a temperature independent gain characteristic through electronic compensation of the bias voltage. The detectors are optimized for free space detection of optical pulses with a very low signal level in the wavelength range from 200 to 1000 nm and from 950 to 1650 nm. They exhibit an extremely flat frequency response over their 3 dB bandwidth.

## PIN PHOTODETECTORS

### FPD310 SERIES

The high sensitivity ultrafast PIN photodetector FPD310 product family is optimized for high gain, high bandwidths, extremely short rise times and high signal-to-noise ratio. These photodetectors are easy-to-use Si- or InGaAs-PIN photodiode packages with an integrated high-gain, low-noise RF amplifier. The gain can be switched between two fixed settings, which allows an optimal performance for the user's application.

### FPD510 SERIES

The high sensitivity ultrafast PIN photodetector FPD510 product family is optimized for highest signal-to-noise-ratio for detection of low level optical beat signals and pulse shape at frequencies up to 250 MHz. These photodetectors are easy-to-use Si- or InGaAs-PIN photodiode packages with an integrated high-gain, low-noise transimpedance amplifier.

### FPD610 SERIES

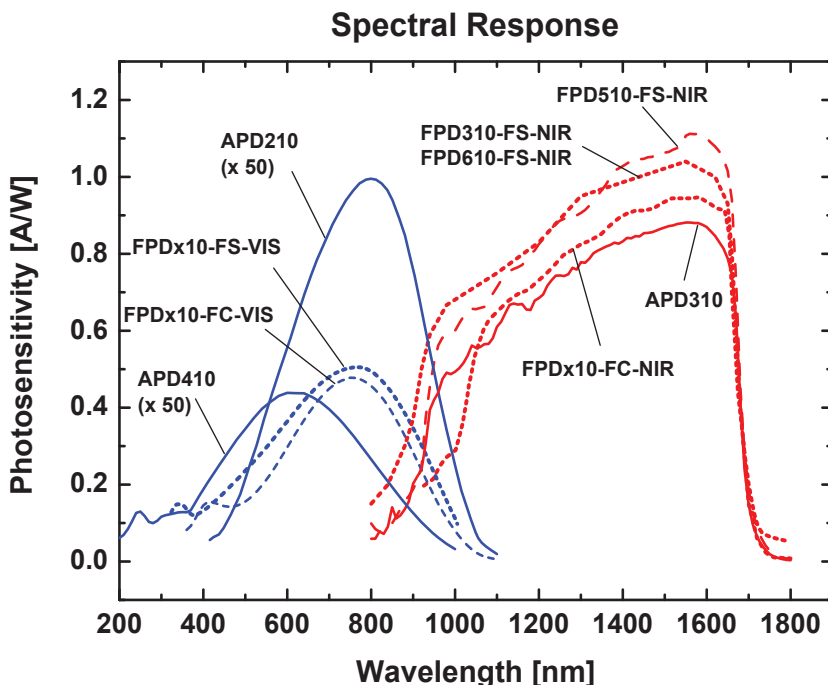
The high sensitivity ultrafast PIN photodetector FPD610 product family combines broad bandwidth and high gain at frequencies up to 600 MHz. These photodetectors are easy-to-use Si- or InGaAs-PIN photodiode packages with an integrated high-gain, low-noise transimpedance amplifier.

### All models:

Available for both visible and near infrared range, both with either free space or fiber coupled optical input. The compact design of these detectors allows for easy OEM integration. Included with each amplified photodetector is a low noise power supply, which features a universal AC input.

## SPECTRAL RESPONSE

Spectral response characteristics of the photodiodes built into the various detector models; please note the different scaling of the APD210 data:



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SPECIFICATIONS	Damage Threshold [mW]	Spectral Range [nm]	Frequency Range [MHz]	3 dB Bandwidth [MHz]	Rise Time [ns]	Max. Gain *** [V <sub>Peak-Peak</sub> /W]	Dark State Noise Level [up to 5 MHz] [dBm/√Hz]	Dark State Noise Level [5 MHz- f <sub>-3dB</sub> ] [dBm/√Hz]	NEP [pW/√Hz] ***	Output Coupling	Output Signal
FS: free space, FC: fiber coupled											
<b>APD210</b>	10	400-1000	1-1600	5-1000	0.5	2.5 x 10 <sup>5</sup>	-	-80	0.24	AC/50 Ω	V <sub>pp</sub> ~1 V
<b>APD310</b>	10	950-1650	1-1800	5-1000	0.5	2.5 x 10 <sup>4</sup>	-	-80	13.3	AC/50 Ω	V <sub>pp</sub> ~1 V
<b>APD410</b>	10	200-1000	1-1600	5-900	0.5	4.5 x 10 <sup>4</sup>	-	-80	87,6	AC/50 Ω	V <sub>pp</sub> ~1 V
<b>FPD310-FC-VIS*</b>	2	400-1000	1-1500	5-1000	0.5	2 x 10 <sup>4</sup>	-100	-130	25.5	AC/50 Ω	V <sub>pp</sub> ~1 V
<b>FPD310-FS-VIS</b>	2	400-1000	1-1500	5-1000	0.5	2 x 10 <sup>4</sup>	-100	-130	24.0	AC/50 Ω	V <sub>pp</sub> ~1 V
<b>FPD310-FC-NIR**</b>	2	950-1650	1-1500	5-1000	0.5	2 x 10 <sup>4</sup>	-100	-130	12.0	AC/50 Ω	V <sub>pp</sub> ~1 V
<b>FPD310-FS-NIR</b>	2	950-1650	1-1500	5-1000	0.5	2 x 10 <sup>4</sup>	-100	-130	14.1	AC/50 Ω	V <sub>pp</sub> ~1 V
<b>FPD510-FC-VIS*</b>	3	400-1000	DC-250	DC-200	2	1.5 x 10 <sup>5</sup>	-110	-135	6.4	DC/50 Ω	0-1 V
<b>FPD510-FS-VIS</b>	3	400-1000	DC-250	DC-200	2	1.5 x 10 <sup>5</sup>	-110	-135	6.0	DC/50 Ω	0-1 V
<b>FPD510-FC-NIR**</b>	3	950-1650	DC-250	DC-200	2	1.5 x 10 <sup>5</sup>	-110	-135	3.0	DC/50 Ω	0-1 V
<b>FPD510-FS-NIR</b>	3	950-1650	DC-250	DC-200	2	1.5 x 10 <sup>5</sup>	-110	-135	3.2	DC/50 Ω	0-1 V
<b>FPD610-FC-VIS*</b>	3	400-1000	DC-600	DC-500	1	2 x 10 <sup>6</sup>	-80	-100	11.9	DC/50 Ω	0-1 V
<b>FPD610-FS-VIS</b>	3	400-1000	DC-600	DC-500	1	2 x 10 <sup>6</sup>	-80	-100	11.2	DC/50 Ω	0-1 V
<b>FPD610-FC-NIR**</b>	3	950-1650	DC-600	DC-500	1	2 x 10 <sup>6</sup>	-80	-100	5.6	DC/50 Ω	0-1 V
<b>FPD610-FS-NIR</b>	3	950-1650	DC-600	DC-500	1	2 x 10 <sup>6</sup>	-80	-100	6.6	DC/50 Ω	0-1 V

\*FC/PC connector \*\*SMF28 pigtail with FC/APC \*\*\* Calculated

For more detailed information and specifications, please refer to the respective product sheets available for download at our website.

## ORDERING INFORMATION

<b>Product Code</b>	APD210	APD310	APD410	
<b>Price</b>	2270 EUR	2760 EUR	2270 EUR	
<b>Product Code</b>	FPD310-FS-VIS	FPD310-FC-VIS	FPD310-FS-NIR	FPD310-FC-NIR
<b>Price for all models</b>	2050 EUR			
<b>Product Code</b>	FPD510-FS-VIS	FPD510-FC-VIS	FPD510-FS-NIR	FPD510-FC-NIR
<b>Price for all models</b>	2050 EUR			
<b>Product Code</b>	FPD610-FS-VIS	FPD610-FC-VIS	FPD610-FS-NIR	FPD610-FC-NIR
<b>Price for all models</b>	2050 EUR			

Prices and specifications are subject to change without notice. Custom modifications are available, please inquire.



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