User Notes

FPD-UV-3000-JP

FAST PHOTODIODE DETECTOR FOR TEMPORAL MEASUREMENTS

HEADQUARTERS:
POB 45021, HAR HOTZVIM 9145001
JERUSALEM, ISRAEL
PHONE + 972-2-548 4444

WWW.OPHIROPT.COM

General Description

The FPD-UV-3000-JP is a fast UV silicon photodiode detector for the UV-VIS spectrum designed to work with oscilloscopes and spectrum analyzers for measuring the temporal characteristics of pulsed lasers. Its rise and fall times are <3 nanoseconds.

Optional input accessories provide for connecting optical fibers or IS6 integrating spheres to the device's input. Optional filter accessories enable attenuation of the optical input signal.

All FPD detectors come with a stand and base. A nylon standoff is included to allow for electrically insulating the detector from the stand. This can be used in the event that electrical noise is introduced through the base.

1. Getting Started

Connections:

The FPD-UV-3000-JP operates from an external Power supply. Connect the output BNC to your oscilloscope or spectrum analyzer via an input with 50Ω termination resistance. The coax cable used should have an impedance of 50Ω and its length should preferably be 1 m or less. Note: In order to avoid premature battery drainage, the output cable should be disconnected from battery operated detectors when not in use.

2. Power vs. Time Measurement

The peak power of nanosecond pulses is usually very high and above the saturation level of the FPD-UV-3000-JP. However, it is not necessary to have the laser beam incident directly on the detector to measure properly. The beam can be scattered from a diffusive white surface and the FPD-UV-3000-JP can be placed facing the same surface at a distance from it so that the detector receives only a small fraction of the total power. The distance from the scattering surface to the FPD-UV-3000-JP can be varied to get a good, but not saturated signal. If the intensity is still too high, or it is not convenient to measure scattered light, attenuating filters are available to reduce the laser intensity. See ordering information in section 4.

Measuring pulsed lasers with the FPD-UV-3000-JP:

1. Verify that the batteries are in connected and plugged in.
2. Make sure the BNC cable is terminated with a 50Ω impedance.
3. Start with diffusing the laser beam off of a diffusive white surface and placing the FPD-UV-3000-JP at a distance of ~20cm from the surface. If the peak intensity is still too high, move the FPD-UV-3000-JP further away and/or rotate it so that it faces the diffusing surface at an angle. If the intensity is still too high, one or more filters are recommended (see ordering information in section 4). If the intensity is too low, move the sensor closer to the laser spot.
4. If you are measuring a laser pulse through a fiber and are using the optional fiber adapter, first try measuring the beam with several filters in and remove them as necessary.
5. If using the FPD-UV-3000-JP with an IS6 integrating sphere, attenuating filters can be used to lower the signal level.

3. Maintenance

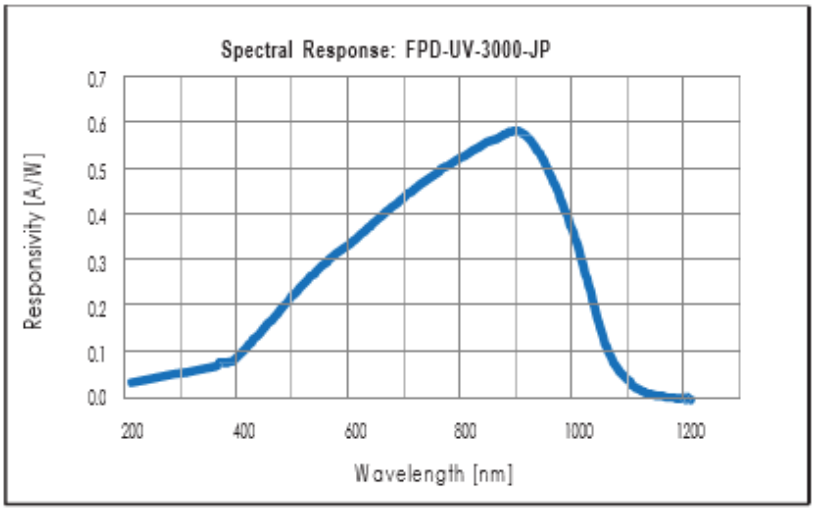
The detector probe should be periodically cleaned with tissue and alcohol. Otherwise no other care is needed for the instrument.

4. Specifications

Model	FPD-UV-3000-JP	
P/N	7Z07153	
Detector	UV Silicon photodiode	
Spectral range	193 nm – 1100 nm	
Detector area	5.11 mm²	
Spectral response	See graph in section 5	
Performance specifications	Into 50Ω load	
Risetime 0 – 90%	<3 ns	
Sensitivity at peak wavelength	1.5 V for 1W/cm² input	
Maximum average output voltage	0.44V	
Output connection	BNC	
Power	24V external power supply	
Input	Direct or scattered laser light or from fiber optics	
Input thread	M20 x 1 thread	
Optional attenuators and fiber adapters (M20 thread)	Description	P/N
	IS6 adapter	7Z08350
	X10 nom. attenuator	7Z08200
	X50 nom. attenuator	7Z08201
	SMA fiber adapter	1G01236A
	FC, FC/APC fiber	7Z08229
	ST fiber adapter	7Z08226

5. Spectral Response

A graph of the approximate relative spectral response of the FPD-UV-3000-JP is given below. This graph represents the sensitivity without the additional filters.



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