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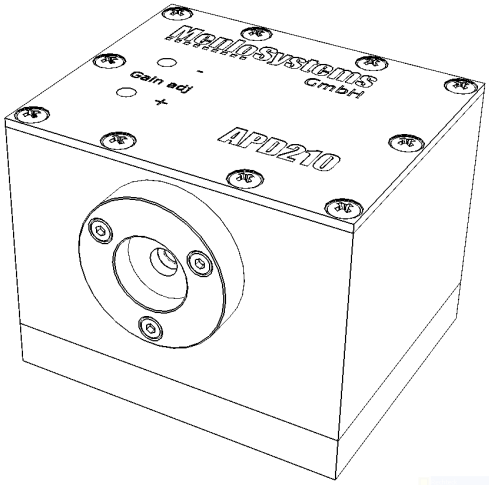
APD210 Operating Manual

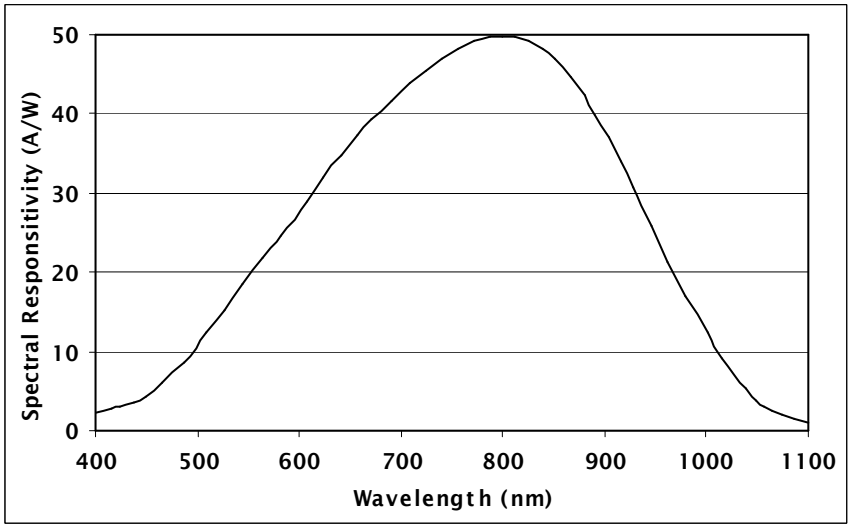
Freespace High Sensitivity Avalanche Photo Detector Unit
(400-1000nm)



Product Specifications

Optical Input	Freespace
Supply Voltage	+12 to +15 V
Current Consumption	200 mA
Max. Incident Power	10 mW
Operating Temperature	10-40 °C
Spectral Range	400-1000 nm
Detector Diameter	0.5 mm
Frequency Range	1-1600 MHz
3dB-Bandwidth	5-1000 MHz

Rise Time	0.5 ns
Maximum Gain	2.5×10^5 V/W
Dark State Noise Level	-80 dBm
NEP (calculated)	0.4 pW/Hz$^{1/2}$
Output Connector	BNC
Output Impedance	50 Ω
Device Dimensions (mm)	50x50x45
Output Coupling	AC



Packing Information

When unpacking your APD210, please check that the case contains the following items:

- 1x APD210 Detector
- 1x Power supply with country specific wall plug adapter
- 1x Envelope with test report and this manual
- 1x Threaded mounting adapter

Setup and Operation

- After unpacking the power supply, attach the included wall plug matching your power line, to it. The power supply is now operable. Connect the power cord from the power supply to the power jack marked **Supply/15V** at the rear of the detector. When using another power supply, connect +15V to the center pin of the input jack and Ground to the outer ring using a 2.1mm DC plug.

- Connect **Signal Out** (BNC jack) to a suitable monitoring device, e.g. oscilloscope or RF-spectrum-analyzer, with 50Ω impedance. Please note that a multimeter is not sufficient to check the detector for functionality.
  Mount the device firmly in your setup by attaching a mounting post to the M4-threaded hole at the bottom of the device. Please note that when the device is not mounted properly involuntary displacements during operation might occur, leading to uncontrolled reflections from the device.
  For countries using non-metric threads an adapter is included.

- Switch on the power supply and the monitoring device, and apply a light source to the photo diode.

- To adjust the gain setting, please use a small pen tip to operate the hidden push-buttons at the top of the device marked "Gain adj ±". Pressing the corresponding button once will increase/decrease the gain. Change the gain continuously by keeping the respective button depressed. Rate of change will increase with time when the button is pressed continously. To control the resulting gain, check the output signal with a suitable monitoring device.

Maintaining the APD210

There are no serviceable parts in the APD210. The housing may be cleaned by wiping with a soft damp cloth. Do not use any alcohol or organic solvent to clean the mechanical parts. The window of the photo diode should only be cleaned using isopropyl alcohol and optical grade wipes.

Troubleshooting

This compilation shall assist you in handling possible unexpected behaviour of the detector unit:

Description of problem	**Probable cause**	**Solution**
The gain changes during the first few minutes after powering on the detector	For a cold device, the gain stabilization may take a few minutes to kick in	After powering on the detector, wait a few minutes until the stabilization works; then adjust the gain to the desired level
Even with no light on the detector the output signal shows periodic spikes; A multimeter directly connected to the detector shows an AC reading of around 0.5V	The gain setting is too high	Reduce the gain setting until the spikes disappear
	The connecting signal cable is flawed or the impedance is not matched	Check if the cable used to connect the output signal to the monitoring device is flawless and fit for 50 Ohm technology; the input impedance of the monitoring device must be 50 Ohm.

If you suspect a problem with your detector please contact Menlo Systems and technical support will be happy to assist you. For service requests, please make sure to provide the serial number of your device. For storage and shipping, please use the case your detector was shipped with.