APD2008 Avalanche Detector

Module Introduction and Product Features

Fiberwdm APD Avalanche Photodetector is fully domestically produced. Adopting an exclusive temperature compensation technical solution, it achieves high sensitivity.The detector maintains high stability, high gain, and low noise throughout the entire temperature range (-40°C~80°C).

In addition to detectors with conventional specifications, customized services are also available. We can adjust various indicators of the detector (such as supply voltage, gain, bandwidth, etc.) according to customer needs to meet specific requirements.

Application Fields: LiDAR, free-space optical communication, optical fiber sensing systems, optical detection systems, etc.

User Manual

2.1 Appearance and Interface Description

The module appearance is shown in the figures below:

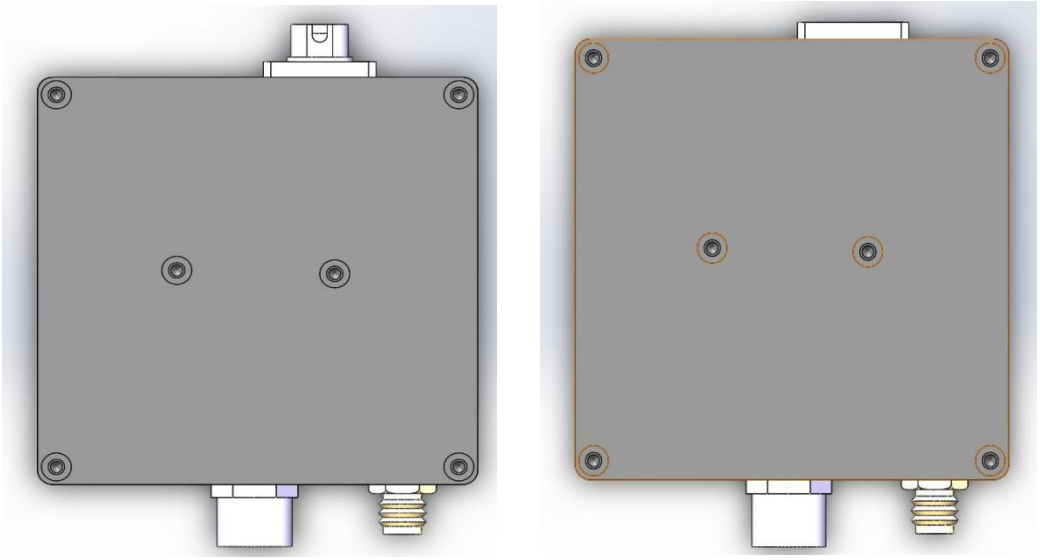

Figure 2-1 Detector Module Appearance (Left: FC Interface, Right: Free Space)

Among them, the upper interface is the optical input interface (FC/free space), the lower right is the power input interface (M8 or lead wire output), and the lower right is the signal output interface (SMA).

The output of the version with temperature compensation is a GH1.25 terminal block, and its definition is as follows:

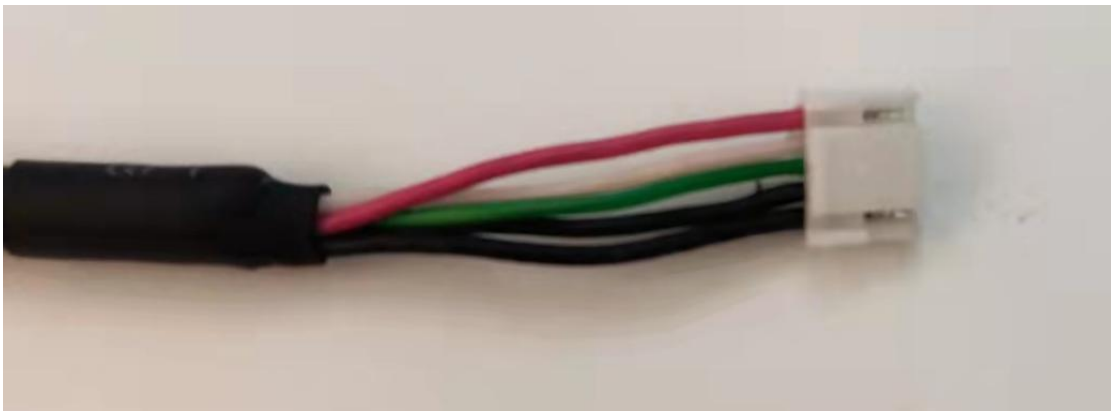

Figure 2-2 Matching Power Cord

Color	Interface Definition
Red	+12V Input
Black	+12V_GND Input
Green	GND
Blue	Serial Port TTL_TX
Yellow	Serial Port TTL_RX

Electrical Description

The APD module is a single-power-supply product: connect the red wire to 12V, the black wire to ground, with a current of 300mA. The current of the detector module during normal operation is less than 100mA.

1. Output Interface: SMA (female connector);
2. Output Impedance: 50ohm;
3. Maximum Output Voltage:
   Products below 500MHz: ±3.6V (@High Z), ±1.8V (@50ohm);
   Products of 1GHz (inclusive) and above: ±1V (@50ohm).
4. Spectral Response Range: 400nm-1100nm;
5. Detector Responsivity: 50A/W@905nm;
6. Do not exceed the saturation optical power for the optical input amplitude.

Performance Parameters

Performance Test Description

1. Due to the different FC connector conditions of the test light source, the insertion loss of each detector is inconsistent, and the test results of detector response will vary slightly;
2. The transimpedance gain of the detector is calculated under the condition of high output load impedance. If the output load is 50Ω, the gain will be reduced to half of the nominal value;
3. The measurement results of detector noise and rise time are obtained under the following conditions:
   a: Oscilloscope input impedance is 50Ω;
   b: Oscilloscope bandwidth is full bandwidth (≥1GHz);
   c: Oscilloscope time scale is set to 100ns/div (Note: noise will vary greatly with different time scales);
4. Test room temperature: 23℃±5℃;
5. Test relative humidity: 35%±15%;
6. Test working voltage: ±12V;

Typical Test Parameters of APD Detector (APD2008)

Item	Parameter
Model	400-1100nm
Wavelength Range	DC/AC-50MHz
3dB Bandwidth	3000x103V/A
Overall Output Voltage Noise	3mVRMS (typ)
Saturation Power	0.1uW
Maximum Output Responsivity	50A/W @800nm
Input Impedance	50Ω
Maximum Output (Max Value)	1.5V@50Ω
Maximum Incident Power	1uW@800nm
Detector Material Type	Si/APD
Detector Diameter	500μm
Optical Input	Free Space
Electrical Output	SMA
Package Size	58mm×58mm×25mm
Power Supply Requirement	12 V/200 mA

Figure 3-1 Summary of Electrical Performance

Mechanical Dimensions

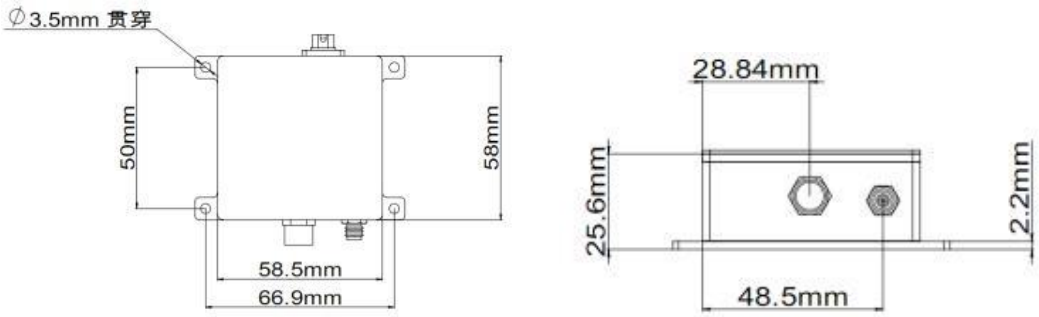

Figure 4-1 Mechanical Dimension Drawing of APD Detector Module