



HealthyPhoton

Model : HPPD-M-B

TEC cooled HgCdTe (MCT) Amplified Photodetector



Date	Note
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1. Introduction

HealthyPhoton's TEC cooled MCT Amplified Photodetector is a highly sensitive photovoltaic HgCdTe (mercury cadmium telluride, MCT) detector for sensitive detection of photons in the mid-IR spectral range from 2 to 12 μm .

The detector output can be DC or AC coupled. A multi-stage semiconductor thermoelectric cooler (TEC) is equipped to ensure the active area operating at a temperature $\sim 190\text{K}$, thereby minimizing the effect of thermal noise. The detector package adopts aluminum alloy materials, which shields the working environment from electromagnetic interference and also effectively dissipates heat.

2. Product Description

- Sensitive to mid-IR light from 2 ~ 20 μm
- Customized high-speed signal bandwidth: DC/AC ~ 20MHz
- TEC to hold the temperature at $\sim 190\text{K}$ that greatly reduces thermal noise
- Low-noise, wide-bandwidth pre-amplifier to convert photocurrent into a voltage signal
- Cost-effective

2.1. Parameters

Detector material	HgCdTe (MCT)
Wavelength range	2 ~ 10 μm
Peak wavelength (λ_p)	3 μm , 4 μm , 5 μm , 6 μm , 7 μm , 8 μm , 9 μm , 10 μm , 11 μm , 12 μm (optional)
Peak responsivity	Typ. 10 ~ 100 V/W
Active area	Typ. 1 mm^2
Signal bandwidth	DC/AC ~ 20 MHz
Output voltage	$\pm 5\text{ V}$ (Hi-Z load); $\pm 2.5\text{V}$ (50 Ω load)
Power supply	$\pm 5\text{VDC}$ (photodetector); 220VAC (power module)
Signal output port	SMA female
Working temperature	10 $^{\circ}\text{C}$ - 50 $^{\circ}\text{C}$
Storage temperature	-25 $^{\circ}\text{C}$ - 70 $^{\circ}\text{C}$
Dimension	60mm*60mm*64mm
Weight	0.2 kg (w/o TEC controller & power supply)