PDAPCB1 adjustable gain photodetector 320-1100nm

1. Overview

PDAPCB1 is a low-noise, adjustable gain silicon photodetector with an integrated amplifier, suitable for free-space optical systems. The device includes a photodiode, transimpedance amplifier, driver stage amplifier, RF connector, etc. The circuit board has four 3.2 mm through-holes with a spacing of 30 mm, making it compatible with cage systems or installation in custom enclosures and equipment.

Features

- Low noise, adjustable gain
- Small size, OEM applications
- Output via circuit board pin header and MMCX female connector

Applications

- Optical instruments and meters
- Scientific research experiments

Specifications

Parameters	Typical value
Material	Si
Wavelength range	320-1100nm
Photosensitive area size	3.6x3.6mm
Responsivity	0.6A/W @940nm
Maximum output amplitude a	10V
Operating voltage	±12V
Operating current	100mA
Output impedance	50Ω
Output coupling method	DC
Output connector	MMXC female connector
Operating temperature	-20~65℃
Storage temperature	-40~85℃

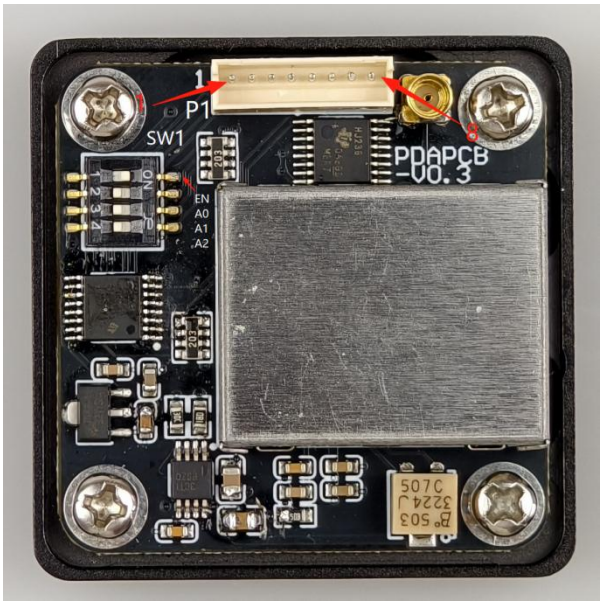
0dbsetting		10dbsetting	
Gain [a]	0.9x10^{3}V/W	Gain [a]	2.90x10^{3}V/W
Bandwidth [b]	DC-12MHz	Bandwidth [b]	DC-1.6MHz
Noise voltage [b]	2mV	Noise voltage [b]	2mV
Equivalent noise power	70.1pW/ √ Hz	Equivalent noise power	28.1pW/ √ Hz
Output bias voltage [a]	5mV	Output bias voltage [a]	5mV
Rise time	25ns	Rise time	200ns
20dbsetting		**30dbsetting**	
Gain [a]	0.9x10^{4}V/W	Gain [a]	2.9x10^{4}V/W
Bandwidth [b]	DC-1MHz	Bandwidth [b]	DC-260kHz
Noise voltage [b]	3mv	Noise voltage [b]	3mv
Equivalent noise power	9.1pW/ √ Hz	Equivalent noise power	6.3pW/ √ Hz
Output bias voltage [a]	5mV	Output bias voltage [a]	5mV
Rise time	350ns	Rise time	1.5us
40dbsetting		**50dbsetting**	
Gain [a]	0.9x10^{5}V/W	Gain [a]	2.9x10^{5}V/W
Bandwidth [b]	DC-90kHz	Bandwidth [b]	DC-28kHz
Noise voltage [b]	4mV	Noise voltage [b]	4mV
Equivalent noise power	4.1pW/ √ Hz	Equivalent noise power	2.8pW/ √ Hz
Output bias voltage [a]	5mV	Output bias voltage [a]	5mV
Rise time	4us	Rise time	10us
60dbsetting		**70dbsetting**	
Gain [a]	0.9x10^{6}V/W	Gain [a]	2.9x10^{6}V/W
Bandwidth [b]	DC-9kHz	Bandwidth [b]	DC-3kHz
Noise voltage [b]	6mV	Noise voltage [b]	8mV
Equivalent noise power	2.2pW/ √ Hz	Equivalent noise power	1.9pW/ √ Hz
Output bias voltage [a]	5mV	Output bias voltage [a]	5mV
Rise time	40us	Rise time	120us

Notes:

1. a For high-impedance loads
2. b For 50Ω loads

Settings

1.The pin assignment for the on-board connector (P1) is as follows:



Front view of the item

P1 Pin Definitions			
1	+V	2	GND
3	-V	4	A0
5	A1	6	A2
7	GND	8	OUTPUT

Note:
±V refers to the positive and negative supply voltages.
A0–A2 are the three digital pins used for gain adjustment. A0–A2 are typically controlled by external signals, where a high level (1) is connected to 3.3V and a low level (0) is connected to GND.

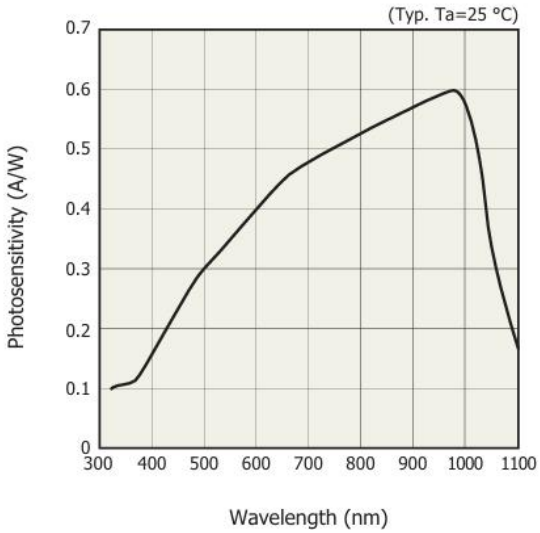
2.The gain can be adjusted via the P1 connector shown in the schematic or using DIP switch SW1. Each switch is set to "Off"/0 in the left position and "On"/1 in the right position. When the DIP switch pin EN is set to 1, gain adjustment is controlled via the remaining three DIP switch pins: A0, A1, and A2. When the DIP switch pin EN is set to 0, gain adjustment is controlled via the three pins (A0, A1, and A2) on the on-board connector (P1).

Gain Control Knob			
A2	**A1**	**A0**	**GAIN**
0	0	0	0db
0	0	1	10db
0	1	0	20db
0	1	1	30db
1	0	0	40db
1	0	1	50db
1	1	0	60db
1	1	1	70db

The table below describes the functions of each number on the switch:

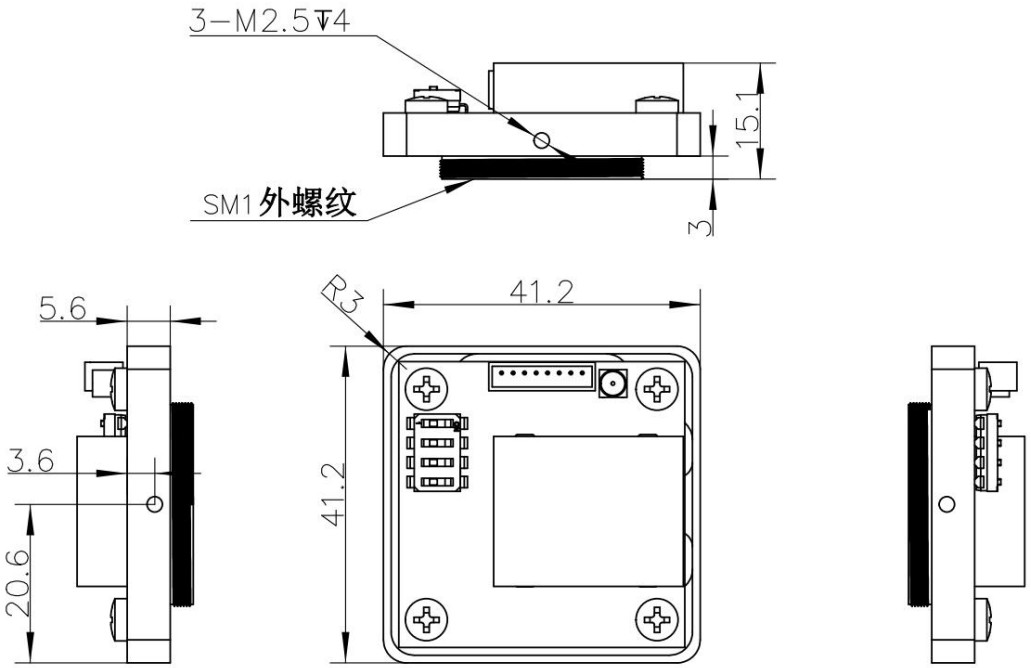
NO	Definition
1	EN
2	A0
3	A1
4	A2

Response Curve

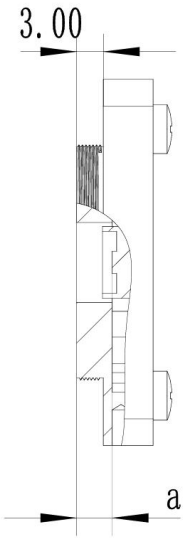


Note: The response curve shows typical values and is for reference only.

Machine Dimensions



Schematic Diagram of Light-Sensitive Distance Measurement



Distance	A Series
a=	4.2mm

1. Packing List

No	Item Name	Quantity	Unit	Notes
1	Photoelectric Detector	1	Piece	
2	Terminal Cable (8-pin)	1	Stick	200 mm long
3	MMXC to BNC RF Cable	1	Stick	
4	Linear Power Supply (Optional)	1	Piece	PN12-M8