

SPAD module

C16533-050GD



Fiber coupling type 1 ch SPAD module (for VIS to NIR region)

The C16533-050GD is a fiber coupling type photon counting module that can detect low-level light. It consists of a thermoelectric cooled single photon avalanche diode (SPAD), an amplifier, a comparator, a SPAD bias circuit, and a temperature controller. The module operates by simply connecting to an external power supply (± 5 V).

Features

- Fiber coupling type
- Single photon counting is possible.
- High sensitivity in the long wavelength range
- Low dark count

Applications

- Low-light-level measurement
- Particle diameter measurement
- Fluorescence measurement
- Analytical instruments

Absolute maximum ratings

Parameter	Symbol	Condition	Value	Unit
Supply voltage	Vs		± 6	V
Operating temperature	T _{opr}	No dew condensation*1	-10 to +40	°C
Storage temperature	T _{stg}	No dew condensation*1	-20 to +70	°C
Maximum incident light level	-	$\lambda = 630$ nm	50	μ W

*1: When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (T_a=25 °C, $\lambda = 630$ nm, V_s= ± 5 V, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ			400 to 1000		nm
Peak sensitivity wavelength	λ_p		-	630	-	nm
Fiber connector*2	-			FC type		-
Chip temperature (setting temperature)*3 *4	T _{chip}		-	-20	-	°C
Photon detection efficiency	PDE		35	45	-	%
Dark count	CD		-	20	60	cps
Afterpulse probability	-	100 ns to 500 ns	-	0.1	-	%
Comparator output	-			TTL compatible		-
Current consumption	Positive power supply	I _c	V _s =+5 V	-	+200	mA
	Negative power supply		V _s =-5 V	-	-20	

*2: Recommended fiber: GI 50/125 multimode fiber

*3: When the chip temperature strays from the setting temperature by 5 °C, cooling automatically stops, and signals are no longer output.

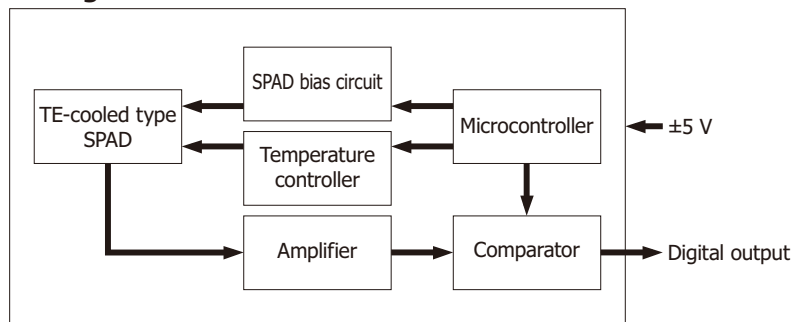
*4: The setting temperature cannot be changed.

Recommended operating conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage*5	Positive power supply	+4.75	+5	+5.25	V
	Negative power supply	-4.75	-5	-5.25	

*5: A power supply with 1.5 A or higher output must be used.

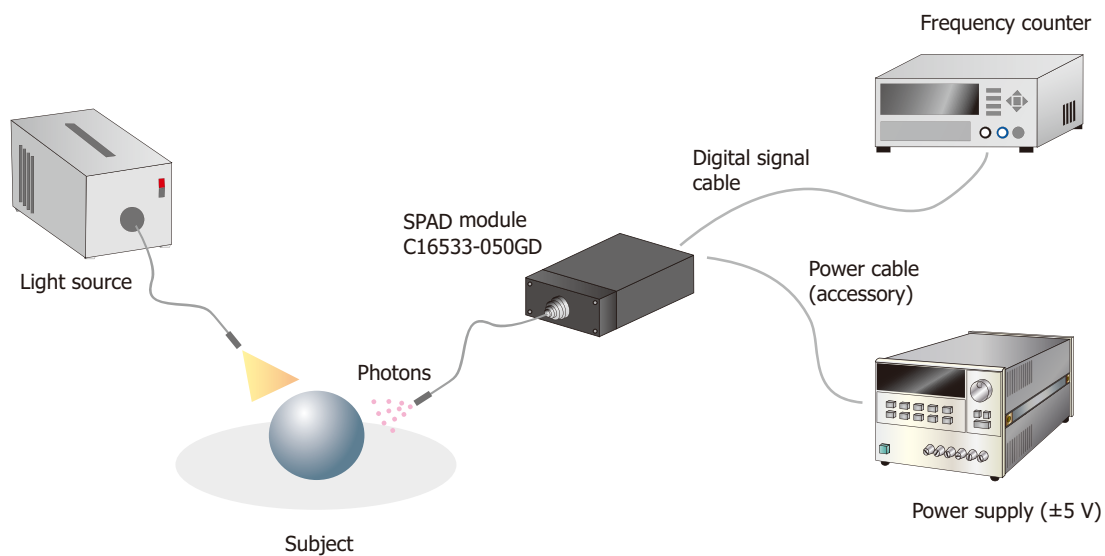
Block diagram



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Connection example

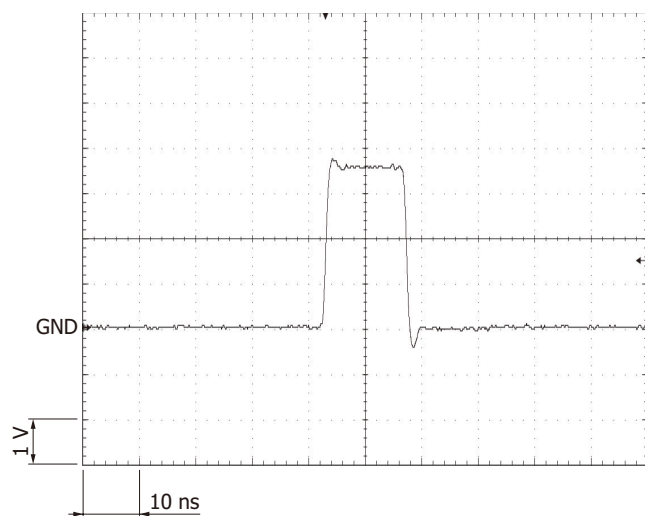
Using the supplied power cable, connect the SPAD module to a power supply. You can count output pulses by connecting the SPAD module to a frequency counter.



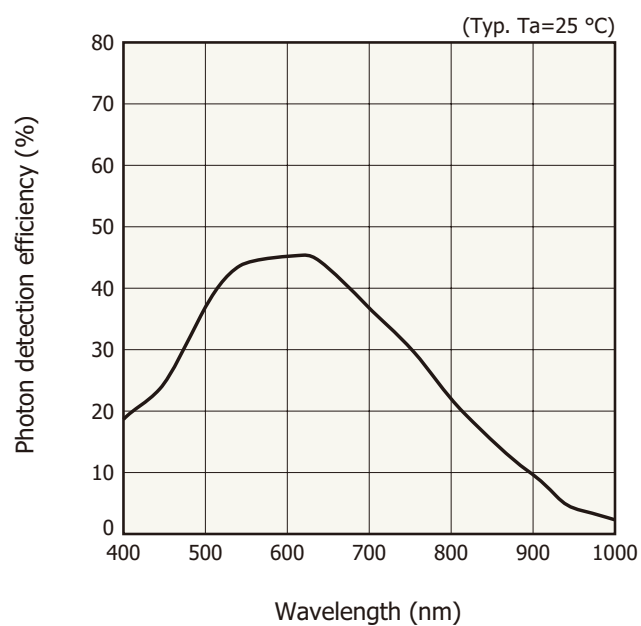
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Measurement example

Comparator output

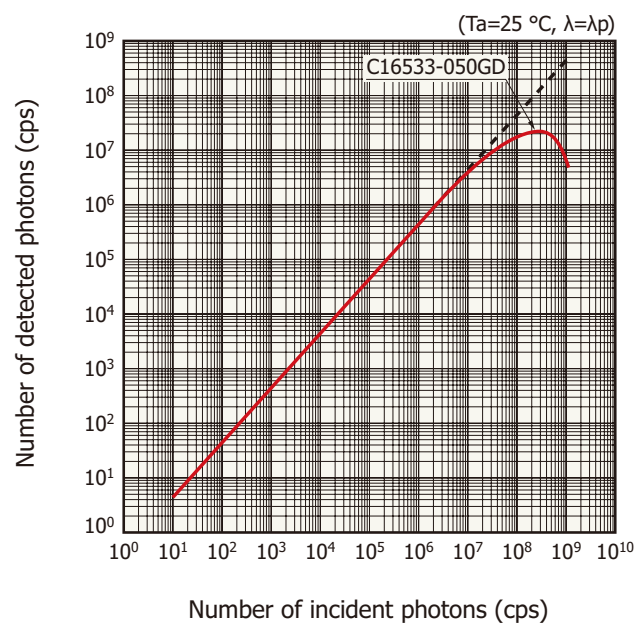


Photon detection efficiency vs. wavelength



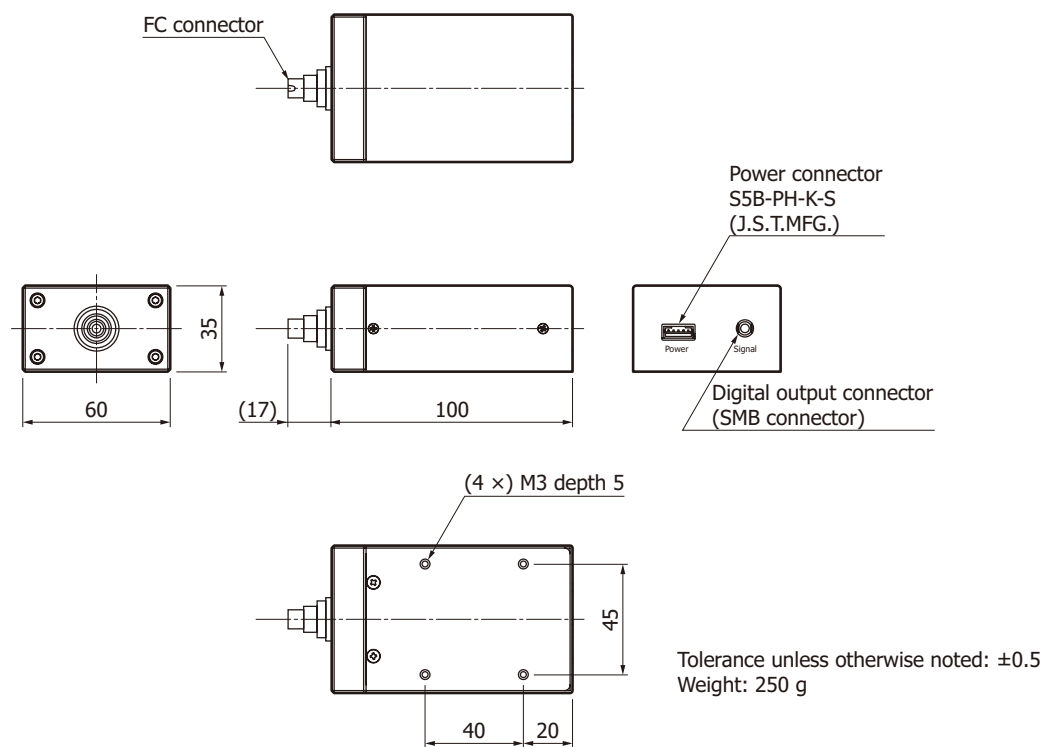
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Linearity (typical example)



KACCB0688EB

Dimensional outline (unit: mm)



KACCA0394EB

Accessories

- Power cable
- Instruction manual

Options (sold separately)

Coaxial conversion adapter A10613 series



A10613-01 (SMB-BNC)



A10613-02 (SMB-SMA)

These are coaxial conversion adapters for converting the SMB coaxial connector for extracting photon counting module signals into a BNC coaxial connector or an SMA coaxial connector. These adapters make connection to a BNC cable or SMA cable possible.

Precautions

- Use the product by referring to the supplied instruction manual.

Related products

SPAD module C16534-050GD



C16534-050GD is an optical measurement module that can detect low-level light. It contains a thermoelectric cooled single photon avalanche diode (SPAD). The C16534-050GD has nearly the same functions as the C16533-050GD. Since this product is compact and lightweight, it is suitable for integration into equipment. The C16534-050GD requires heat dissipation.

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

- Precautions
- Disclaimer

Information described in this material is current as of February 2026.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use. Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.