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SPAD module

C13001-01

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

The C13001-01 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**
- **Built-in single pixel photon counter**
- **High short-wavelength sensitivity**
- **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	Topr	No dew condensation*1	-10 to +40	°C
Storage temperature	Tstg	No dew condensation*1	-20 to +70	°C

*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 (Ta=25 °C, λ=450 nm, Vs=±5 V, unless otherwise noted)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range		λ			370 to 900		nm
Peak sensitivity wavelength		λp		-	450	-	nm
Fiber connector*2		-			FC type		-
Chip temperature (setting temperature)*3 *4		Tchip		-	-20	-	°C
Photon detection efficiency		PDE		35	45	-	%
Dark count		CD		-	7	25	cps
Afterpulse probability		-	100 ns to 500 ns	-	0.1	-	%
Comparator output		-			TTL compatible		-
Current consumption	Positive power supply	Ic	Vs=+5 V	-	+200	+1000	mA
	Negative power supply		Vs=-5 V	-	-20	-40	

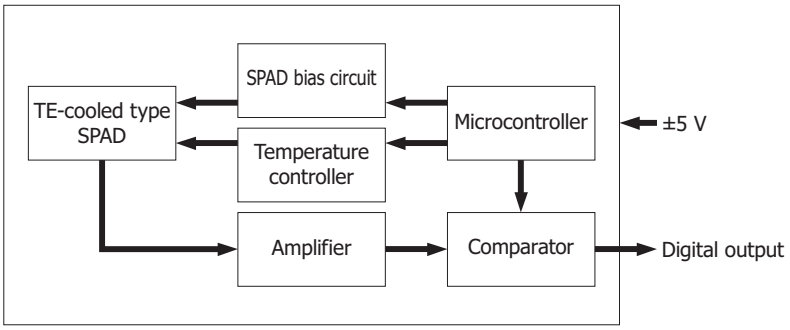
*2: Recommended fiber: GI 50/125 multimode fiber
*3: When the chip temperature strays from the setting temperature by 5 °C, cooling automatically stops, and signals are no longer output.
*4: The setting temperature cannot be changed.

Recommended operating conditions

Parameter		Symbol	Min.	Typ.	Max.	Unit
Supply voltage*5	Positive power supply	Vs	+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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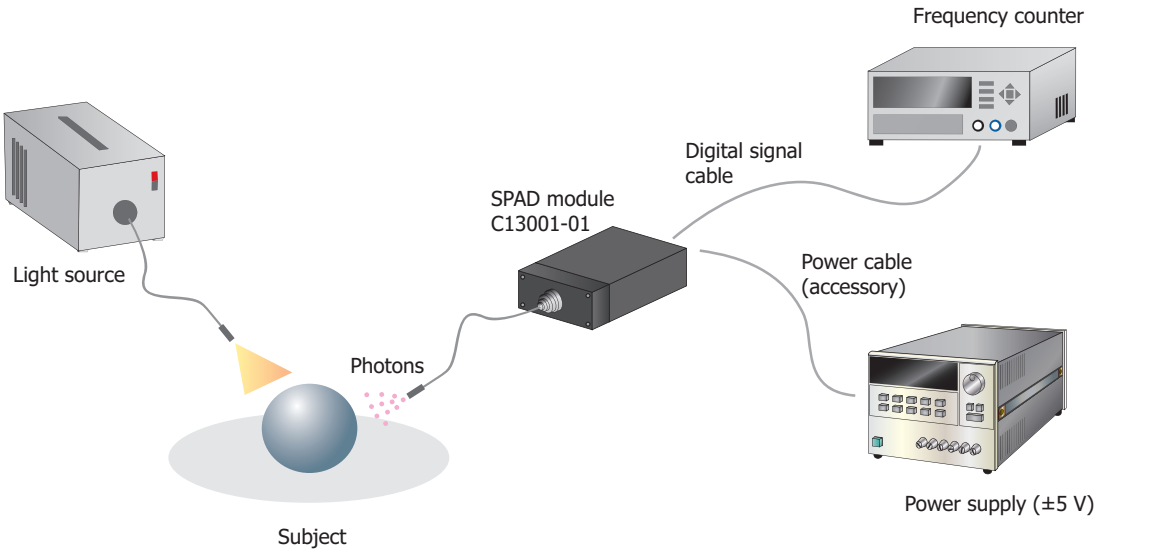
Connection example

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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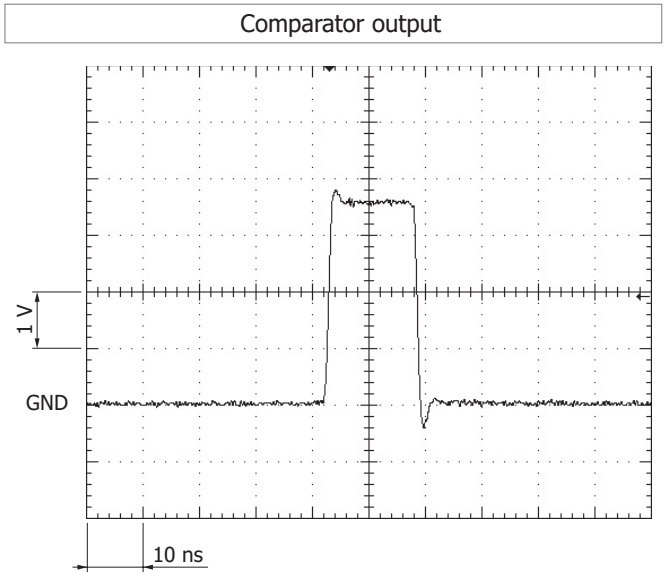
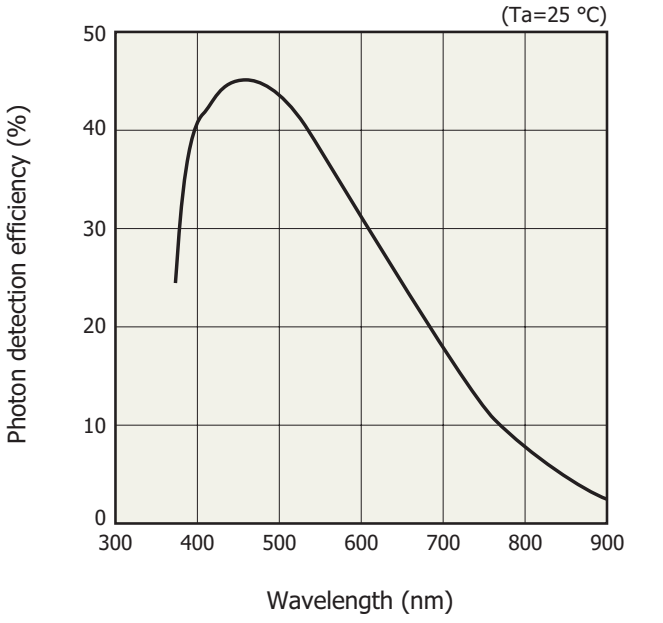
Measurement example



Photon detection efficiency vs. wavelength (typical example)



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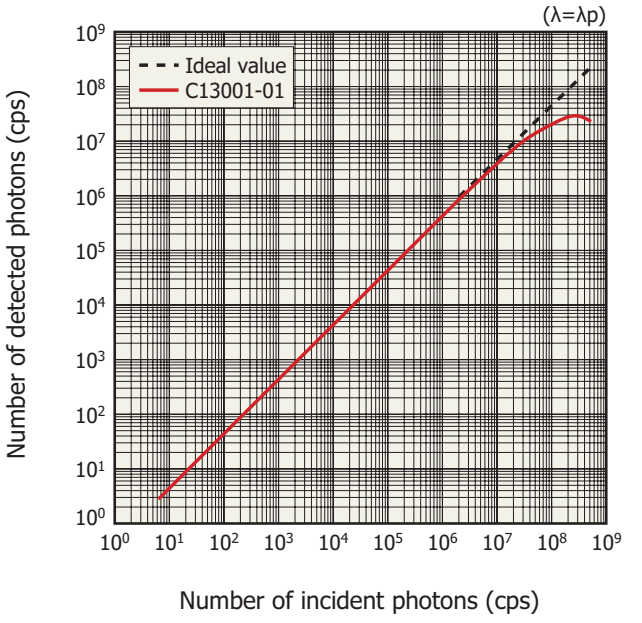
Linearity (typical example)



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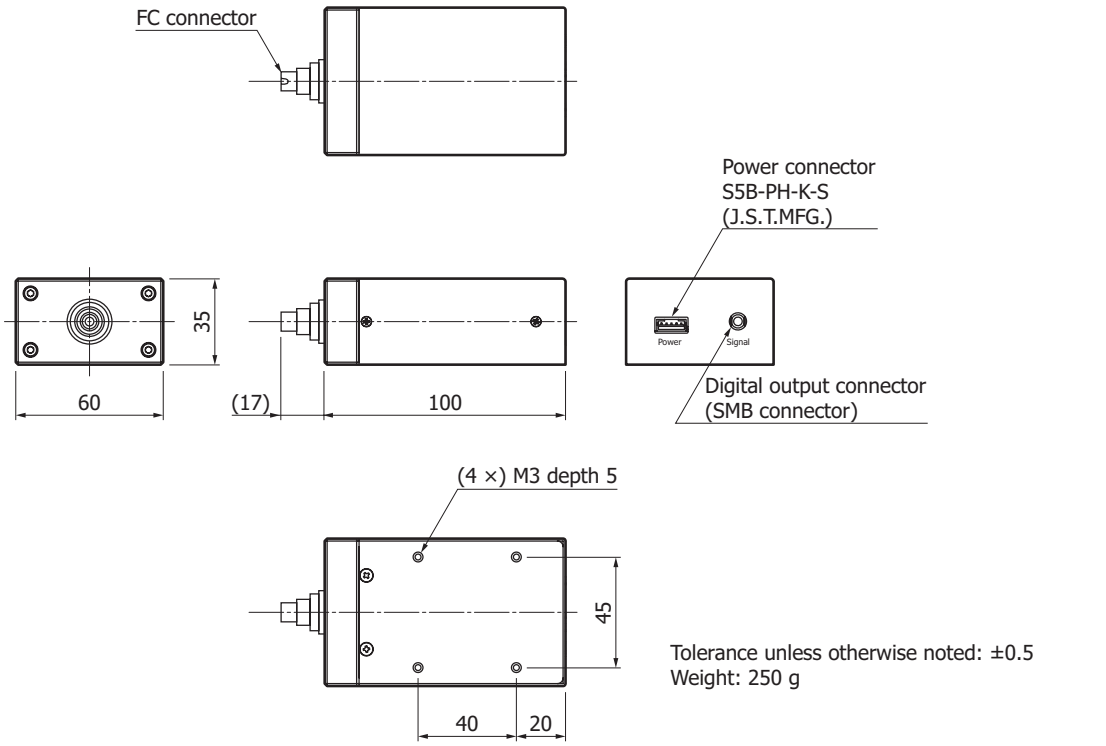
Dimensional outline (unit: mm)



Tolerance unless otherwise noted: ±0.5
Weight: 250 g

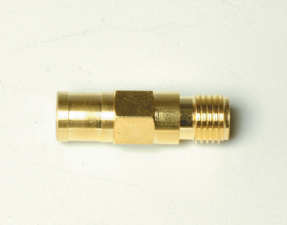
Accessories

· Power cable
· Instruction manual

Options (sold separately)

Coaxial conversion adapter A10613 series

A10613-01 (SMB-BNC)



A10613-02 (SMB-SMA)

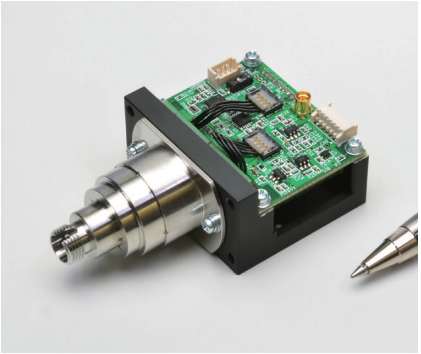
These are coaxial conversion adapters for converting the SMB coaxial connector for extracting MPPC module signals into a BNC coaxial connector or an SMA coaxial connector. These adapters make connection to a BNC cable or SMA cable possible.

Precautions

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

Related products

SPAD module C14076-01



C14076-01 is an optical measurement module that can detect low-level light. It contains a thermoelectric cooled single photon avalanche diode (SPAD). The C14076-01 has nearly the same functions as the C13001-01. Since this product is compact and lightweight, it is suitable for integration into equipment. The C14076-01 requires heat dissipation.

Related information

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

■ Precautions
· Disclaimer

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