



C11202 series

Single pixel photon counting module for low-light-level detection

The C11202 series is a single-photon counting module capable of detecting low light levels. The C11202 series is made up of a single-pixel thermoelectrically cooled MPPC, a signal amplifier circuit, a comparator circuit, a high-voltage power supply circuit, and a temperature control circuit. The photosensitive area is available in two sizes of $\phi 50 \mu\text{m}$ and $\phi 100 \mu\text{m}$, and such small photosensitive areas offer a low dark count. Modules operate just by connecting them to an external power supply ($\pm 5 \text{ V}$).

Features

- High sensitivity in the short wavelength range
- Low dark count
- Low afterpulse

Applications

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

Structure

Parameter	Symbol	C11202-050	C11202-100	Unit
Internal MPPC	-	Single pixel type		-
Photoinsensitive area size	-	$\phi 50$	$\phi 100$	μm

Absolute maximum ratings

Parameter	Symbol	Condition	C11202-050	C11202-100	Unit
Supply voltage	V_s		± 6		V
Operating temperature	T_{opr}	No condensation	-10 to +40		$^{\circ}\text{C}$
Storage temperature	T_{stg}	No condensation	-20 to +70		$^{\circ}\text{C}$

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.

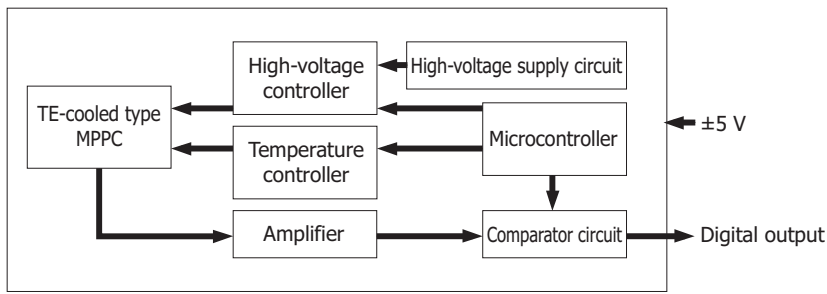
Electrical and optical characteristics (Typ. $T_a=25 \text{ }^{\circ}\text{C}$, $\lambda=\lambda_p$, $V_s=\pm 5 \text{ V}$, unless otherwise noted)

Parameter	Symbol	Condition	C11202-050			C11202-100			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	λ		320 to 900			320 to 900			nm
Peak sensitivity wavelength	λ_p		-	450	-	-	450	-	nm
Element temperature (set temperature)	T_d		-	-20	-	-	-20	-	$^{\circ}\text{C}$
Photon detection efficiency	PDE		60	70	-	60	70	-	%
Dark count	-		-	7	25	-	30	100	cps
Afterpulse probability	-	100 ns to 500 ns	-	0.1	-	-	0.1	-	%
Comparator output	-		TTL compatible			TTL compatible			-
Maximum count rate	-		-	30	-	-	20	-	Mcps

Electrical characteristics

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	+Vs		+4.75	+5	+5.25	V
	-Vs		-4.75	-5	-5.25	
Current consumption	Ic	+Vs	-	+200	+1000	mA
		-Vs	-	-20	-40	

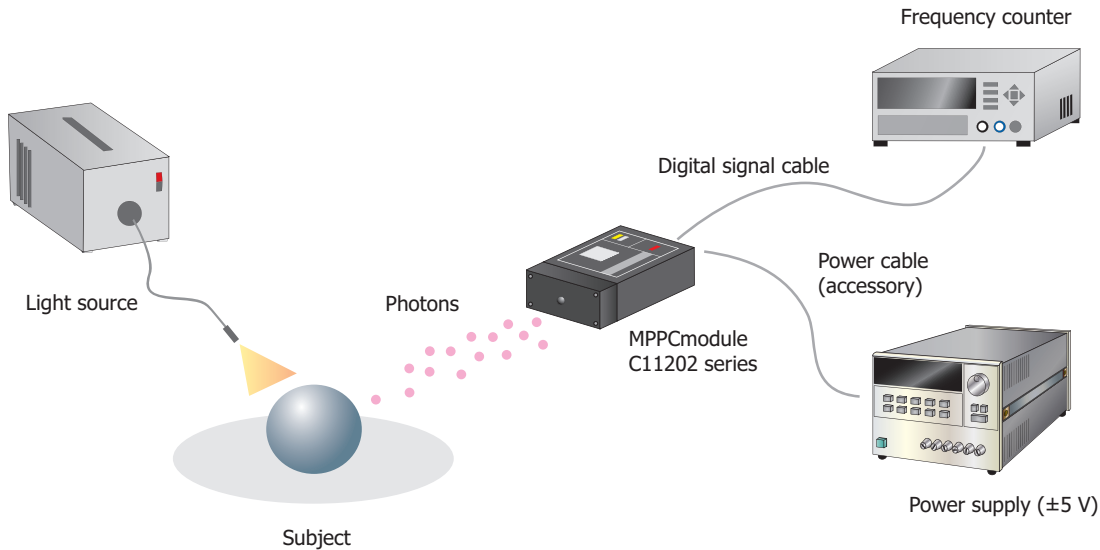
Block diagram



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Connection example

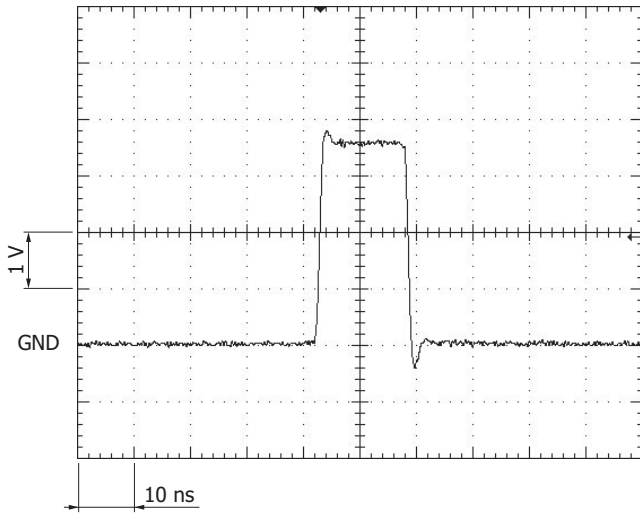
Using the supplied power cable, connect the MPPC module to a power supply. You can count output pulses by connecting the MPPC module to a frequency counter.



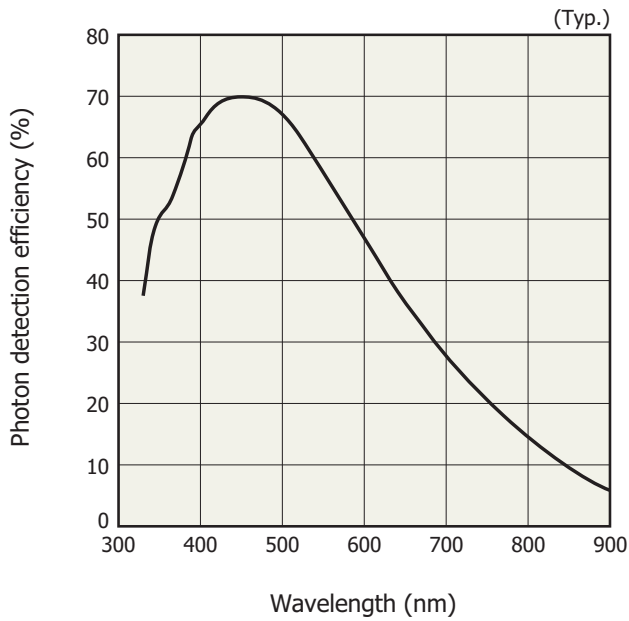
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Measurement example

Comparator output

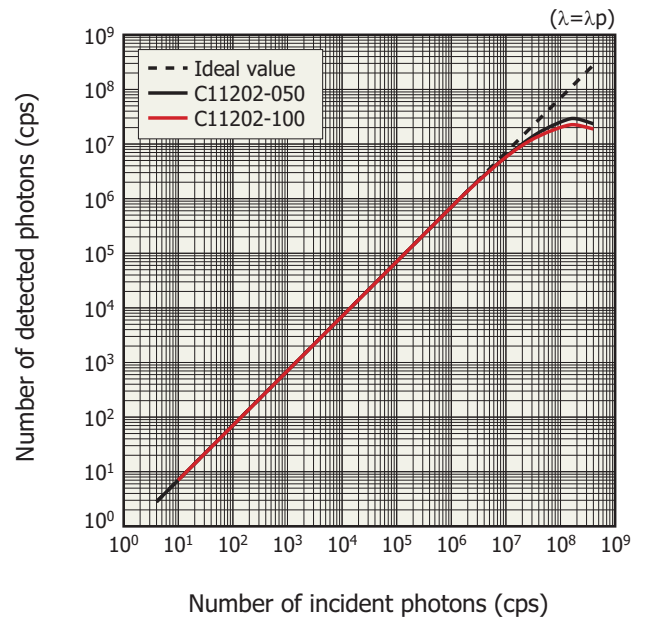


Photon detection efficiency vs. wavelength



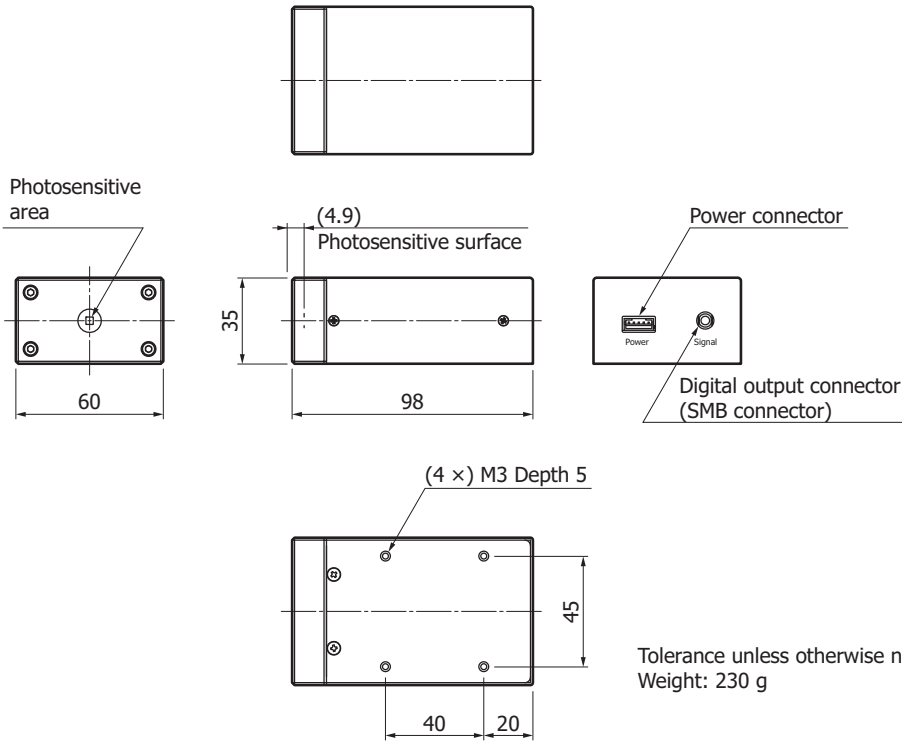
KACCB0296EA

Linearity (typical example)



KACCB0297EA

Dimensional outline (unit: mm)



KACCA0317EA

Accessories

- Power cable
- Instruction manual

Options (sold separately)

Coaxial converter adapter A10613 series

The A10613 series is a coaxial adapter that converts the SMB coaxial connector for signal-output on the MPPC module to a BNC or SMA coaxial connector. This adapter allows connecting a BNC or SMA cable to the MPPC module.



A10613-01 (SMB-BNC)



A10613-02 (SMB-SMA)

Precautions

- For cleaning the product, wipe using a clean, soft, dry cloth. Do not use organic solvents such as thinner and acetone.
- Do not cover the unit with a dark cloth or something similar while the product is running. Covering the product can cause the internal temperature to rise and prevent it from operating normally.

Related information

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

■ Precautions

- Notice

Information described in this material is current as of December, 2013.

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.

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