



C11209-110

Optical measurement modules for low-level light detection

The C11209-110 is an optical measurement module capable of detecting low level light. It consists of an MPPC, a high-speed amplifier circuit, a high-voltage circuit, and a temperature compensation circuit. Utilizing a small pixel pitch (10 μm) MPPC allows high-speed measurement over a wide dynamic range, making the C11209-110 suitable for high-speed signal measurement such as distance measurement. The C11209-110 operate just by connecting it to an external single power supply (+5 V).

Features

- High sensitivity in the short wavelength range
- High-speed response
- Built-in temperature compensation circuit
- Compact and lightweight

Applications

- Rangefinders
- Fluorescence measurement
- Analytical instruments

Structure

Parameter	Symbol	Value	Unit
Internal MPPC	-	S12571-010C	-
Effective photosensitive area	-	1 × 1	mm
Pixel pitch	-	10	μm
Number of pixels	-	10000	-

Absolute maximum ratings

Parameter	Symbol	Condition	Value	Unit
Supply voltage	Vs		+6	V
Operating temperature	Topr	No condensation	-10 to +40	°C
Storage temperature	Tstg	No condensation	-20 to +50	°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. Ta=25 °C, λ=470 nm, unless otherwise noted)

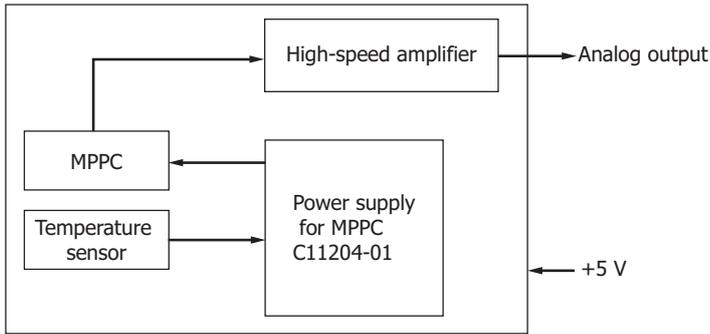
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ			320 to 900		nm
Peak sensitivity wavelength	λp		-	520	-	nm
Temperature stability of output voltage	-	Ta=25 ± 10 °C	-	-	±5	%
Photoelectric sensitivity	-		2.1 × 10 ⁶	2.6 × 10 ⁶	3.2 × 10 ⁶	V/W
Rise time	-		-	500	-	ps
Cutoff frequency	High band	fc	-	40	-	MHz
	Low band		-	10	-	kHz
Noise equivalent power	NEP	Dark state	-	3	-	fW/Hz ^{1/2}
Minimum detection limit	-	Dark state	-	20	-	pW rms
Saturation incident light level	-		-	100	-	nW

Electrical characteristics

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	Vs		4.75	5	5.25	V
Current consumption*1	Ic	Dark state	-	35	70	mA

*1: If strong light exceeding the saturation light level enters the MPPC module, a power supply current of about 200 mA flows in the module, so use an external power supply with a capacity of at least 300 mA.

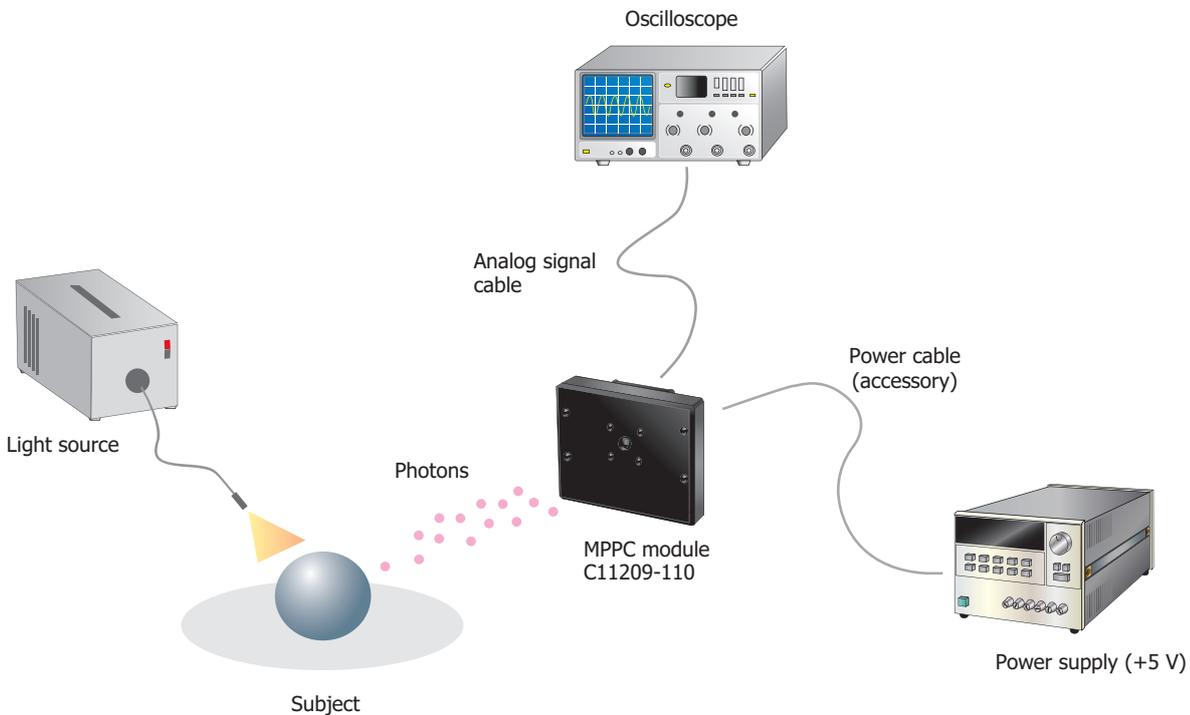
Block diagram



KACCC0710EA

Connection example

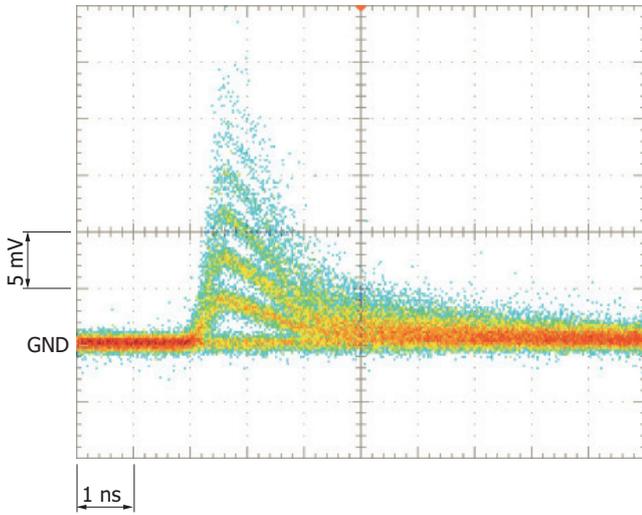
Using the supplied power cable, connect the MPPC module to a power supply. You can monitor the output waveform by connecting the MPPC module to an oscilloscope.



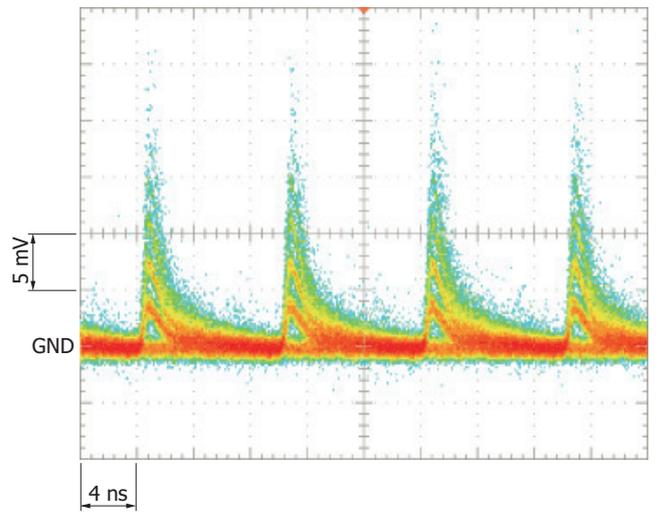
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Measurement examples

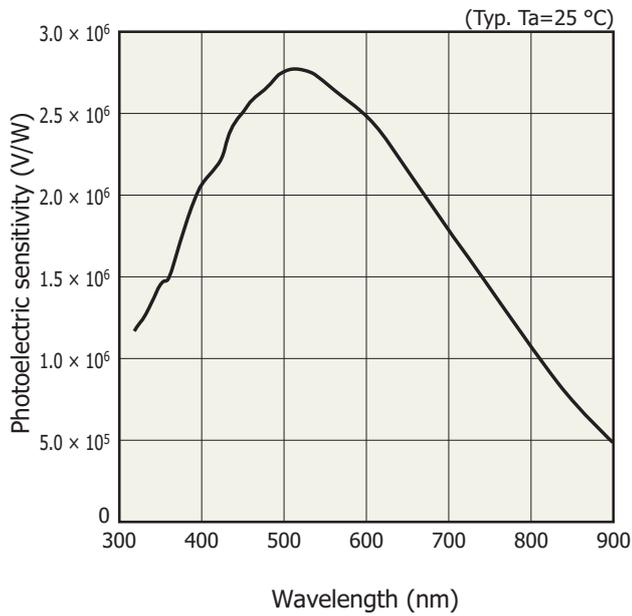
Analog output



Toggle output

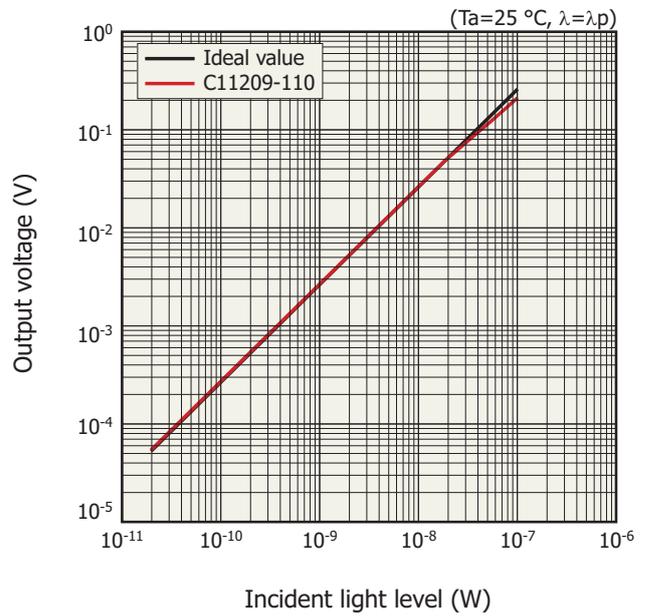


Photoelectric sensitivity vs. wavelength



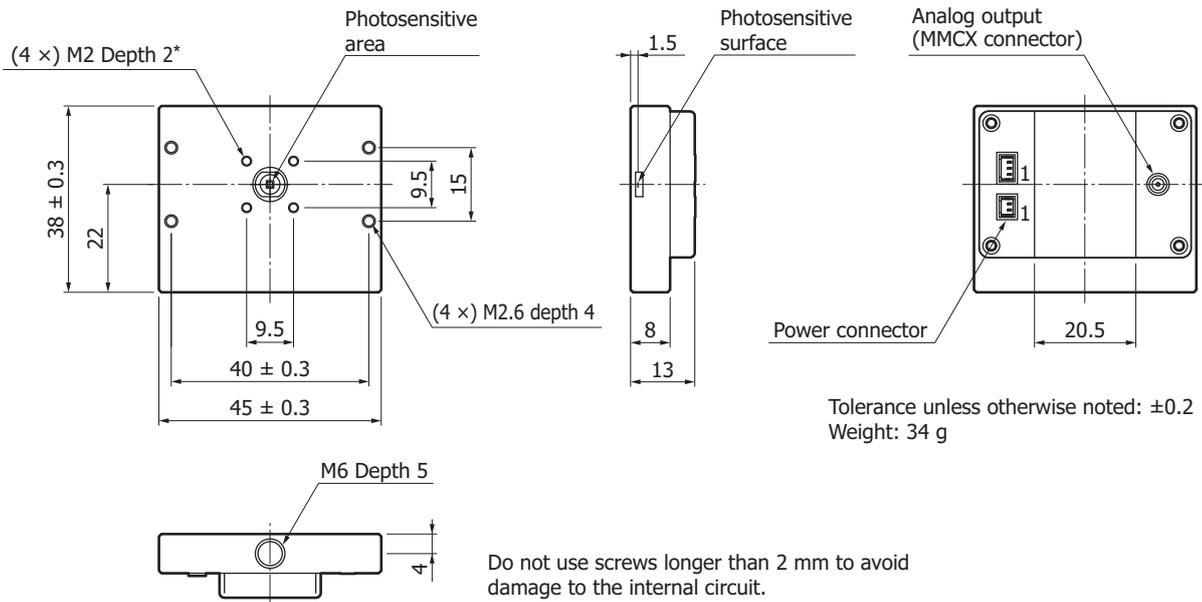
KACC80307EA

Linearity (typical example)



KACC80310EA

Dimensional outline (unit: mm)



KACCA0312EB

Accessories

- Power cable
- Instruction manual

Related information

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

Precautions

- Notice

Information described in this material is current as of July 2014.

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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