



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	$^{\circ}\text{C}$
Storage temperature	Tstg	No condensation	-20 to +50	$^{\circ}\text{C}$

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. Ta=25 $^{\circ}\text{C}$, $\lambda=470\text{ nm}$, unless otherwise noted)

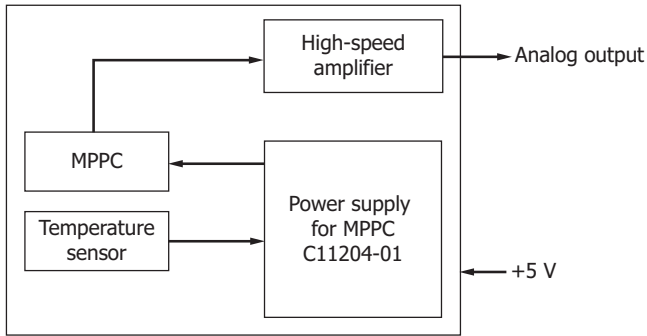
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ			320 to 900		nm
Peak sensitivity wavelength	λ_p		-	520	-	nm
Temperature stability of output voltage	-	Ta=25 \pm 10 $^{\circ}\text{C}$	-	-	\pm 5	%
Photoelectric sensitivity	-		2.1×10^6	2.6×10^6	3.2×10^6	V/W
Rise time	-		-	500	-	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.

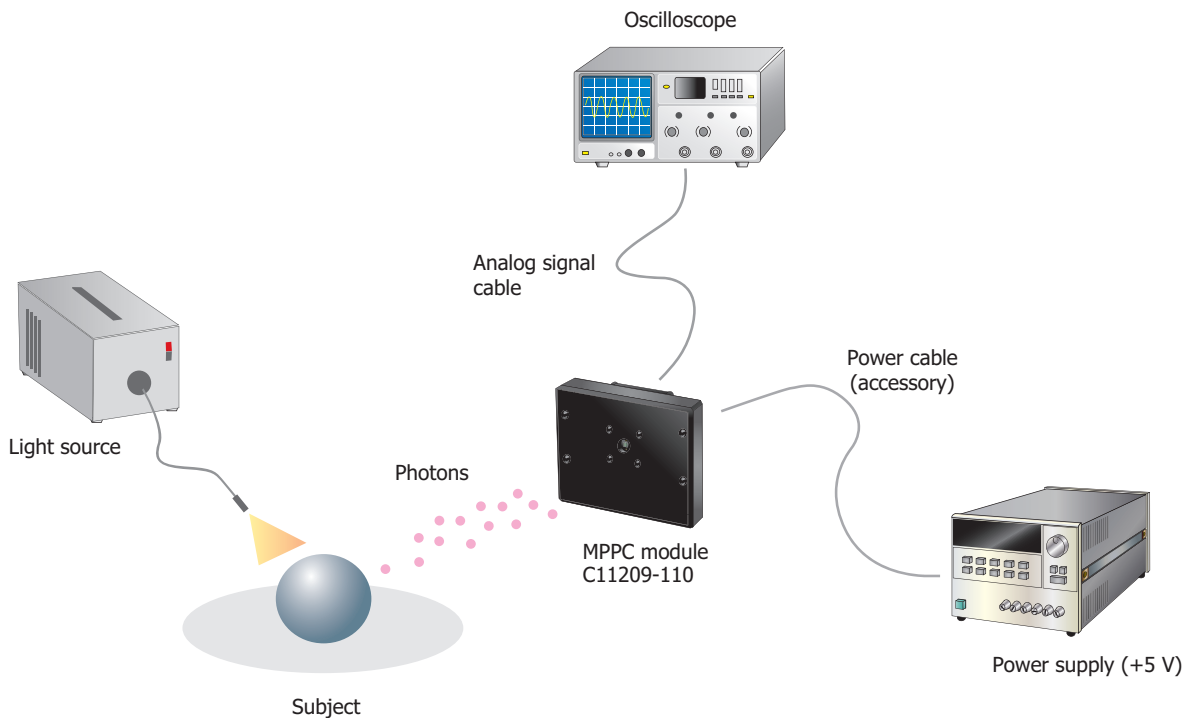
Block diagram



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Connection example

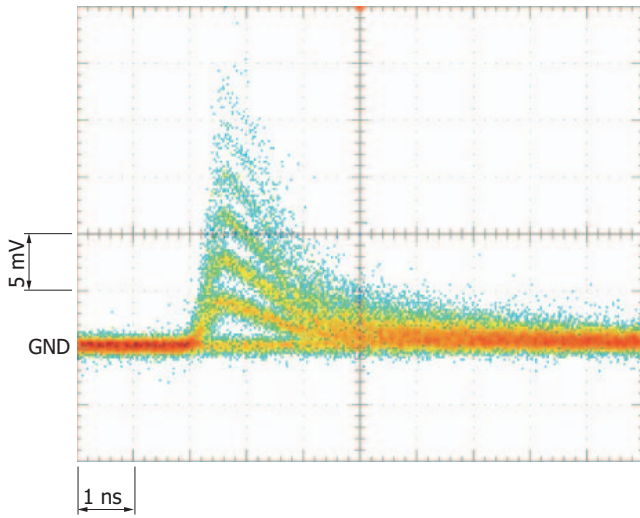
Using the supplied power cable, connect the MPPC module to a power supply. You can monitor the output waveform by connecting the MPPC module to an oscilloscope.



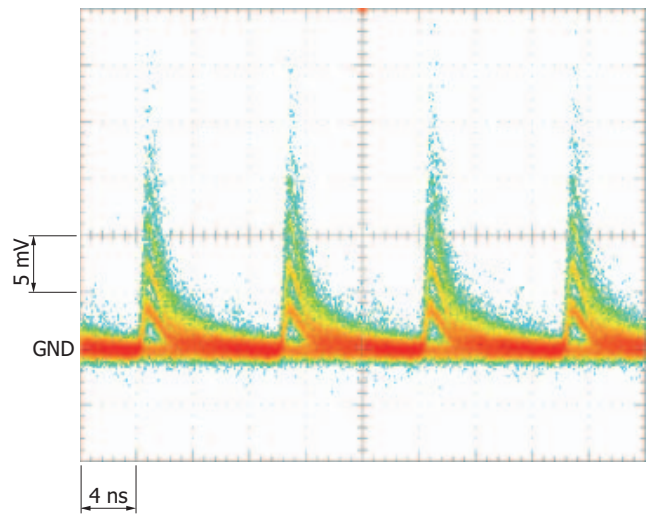
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Measurement examples

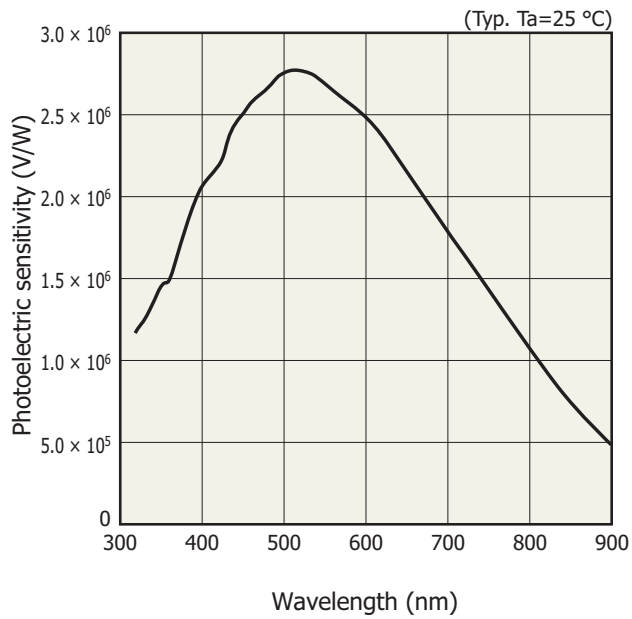
Analog output



Toggle output

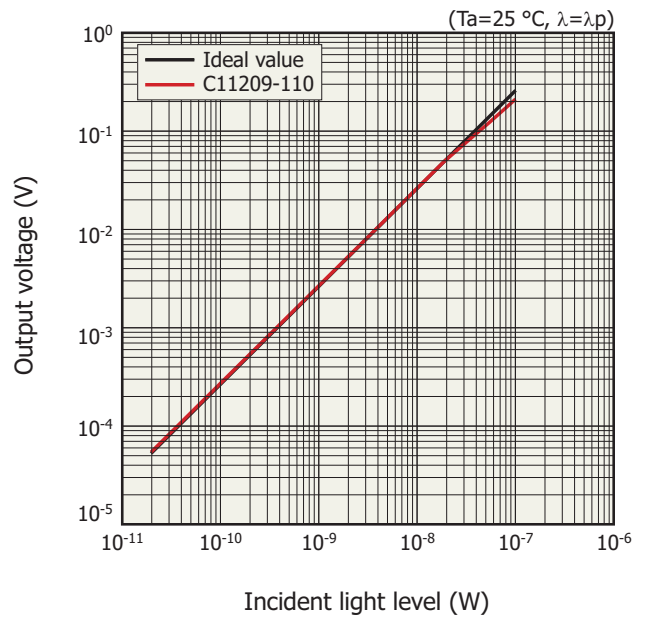


Photoelectric sensitivity vs. wavelength



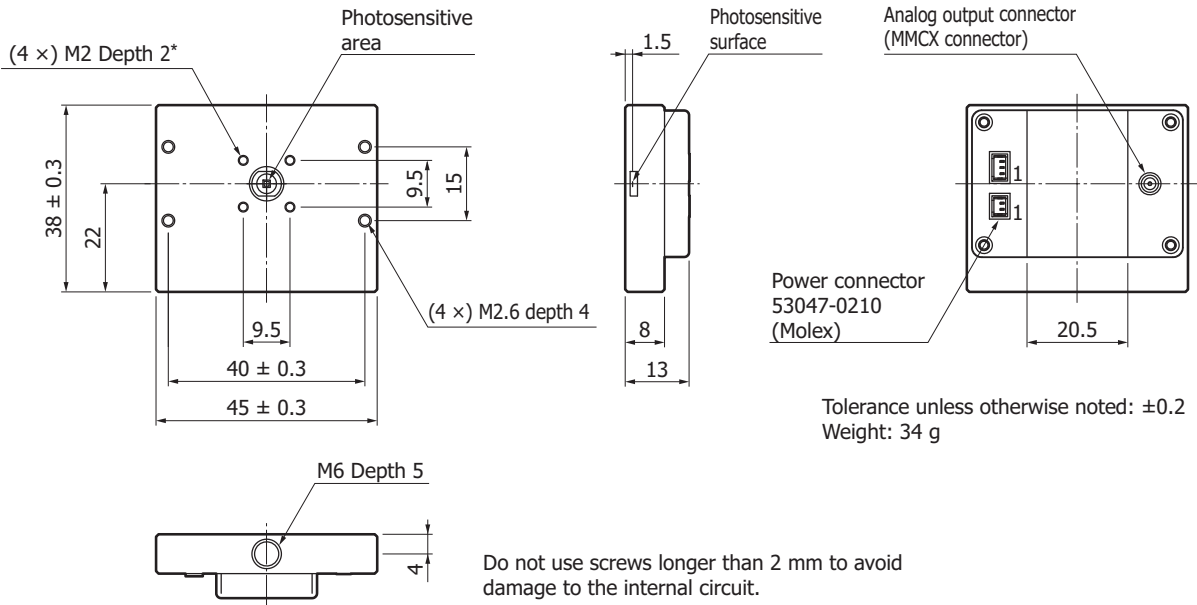
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Linearity (typical example)



KACC80310EA

Dimensional outline (unit: mm)



KACCA0312EC

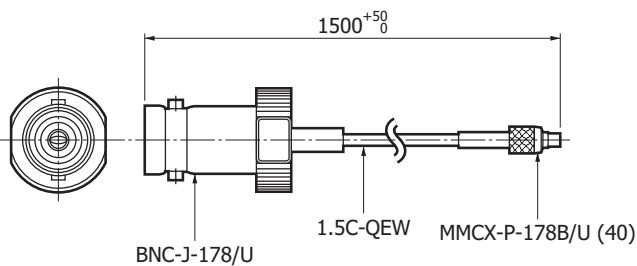
Accessories

- Power cable
- Instruction manual

Options (sold separately)

MMCX-BNC cable A12763

Dimensional outline (unit: mm)



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Related information

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

- Precautions
- Notice

Information described in this material is current as of March 2020.

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