

Infrared detector modules with preamp

C17212-011, C17213-011, C17214-011

Easy-to-use detector modules with built-in preamps

These are room-temperature modules with an integrated amplifier that can detect infrared light simply by connecting to a DC power supply. Using back-illuminated type InAsSb photodetectors, modules with wavelengths in the 5 μm , 8 μm , and 10 μm bands are available. We welcome requests for custom devices that suit your application.

Features

- **High-speed response: 10 MHz typ.**
- **Compact size**
- **Easy to use**
Operates just by connecting to DC power supply
- **Circuit design optimized for detector characteristics**

Applications

- **High-speed gas analysis (combined with QCL)**
- **CO₂ laser monitor (C17214-011)**

Accessories

- **4-conductor cable (for DC power supply):
2 m (with one side connector) A4372-02**
- **Instruction manual**

Structure

Type no.	Detector element	Window material	Photosensitive area (mm)	Supply voltage V _{CC} * ¹ (V)
C17212-011	InAsSb (P16112-011MA)	AR coated Si	0.7 × 0.7	±15 ± 0.5
C17213-011	InAsSb (P16113-011MN)	None		
C17214-011	InAsSb (P16114-011MN)			

*1: V_{CC}=power supply for circuit

Absolute maximum ratings

Type no.	Incident light level* ² (W)	Supply voltage V _{CC} (V)	Operating temperature T _{opr} * ³ (°C)	Storage temperature T _{stg} * ³ (°C)
C17212-011	0.2	±18	0 to +40	-20 to +50
C17213-011	0.17			
C17214-011	0.2			

*2: The value at which the output voltage of each module is maximized when light with the maximum sensitivity wavelength λ_p enters the device. This value does not cause immediate failure.

However, if light that destroys the device (1 W/mm² for all elements) enters the device, it may cause a drop in product quality.

*3: No dew condensation

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 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.

Optical characteristics (Typ. Ta=25 °C, unless otherwise noted)

Type no.	Peak sensitivity wavelength λ_p (μm)	Cutoff wavelength λ_c (μm)	Photosensitivity*4 $\lambda=\lambda_p$		Noise equivalent power NEP $\lambda=\lambda_p$	
			Min. (V/W)	Typ. (V/W)	Typ. (W/Hz ^{1/2})	Max. (W/Hz ^{1/2})
C17212-011	4.1	5.3	35	50	1.5×10^{-9}	4.0×10^{-9}
C17213-011	6.5	8.3	45	60	2.0×10^{-9}	6.0×10^{-9}
C17214-011	7.4	11	35	50	2.0×10^{-9}	6.0×10^{-9}

*4: f=600 Hz

Electrical characteristics (Typ. Ta=25 °C, unless otherwise noted)

Type no.	Frequency response -3 dB		Output impedance (Ω)	Maximum output voltage $R_L=1\text{ M}\Omega$ (V)	Current consumption*5 V_{CC}	
	FcL Typ. (Hz)	FcH Typ. (MHz)			Typ. (mA)	Max. (mA)
C17212-011	DC	10	50	10	± 12	± 18
C17213-011						
C17214-011						

*5: $V_{CC}=\pm 15\text{ V}$

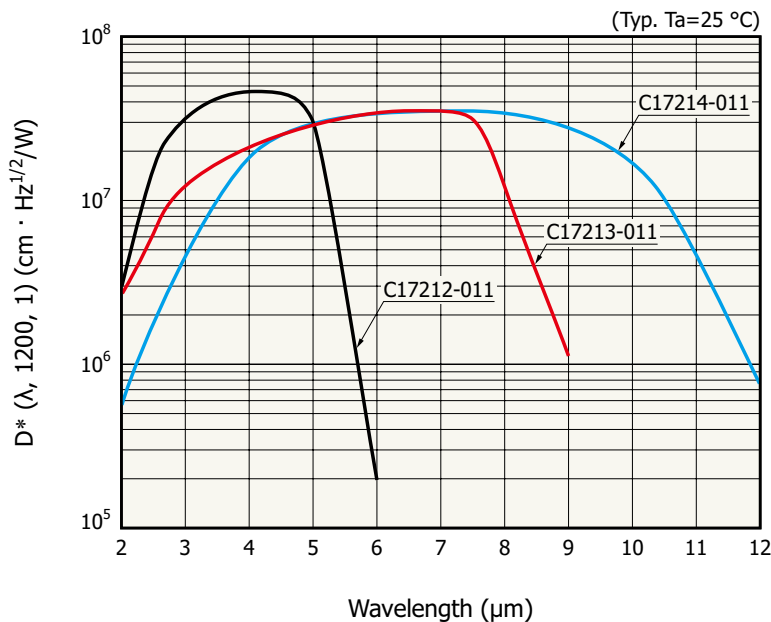
Recommended DC power supply (analog power supply): PW18-1.3ATS (TEXIO Technology), E3630A (Keysight Technologies)

Current capacity: More than 1.5 times the maximum current consumption

Ripple noise: 5 mVp-p or less ($\pm 15\text{ V}$ power supply)

Current consumption (min.)	Voltage
+30 mA	+15 V
-30 mA	-15 V

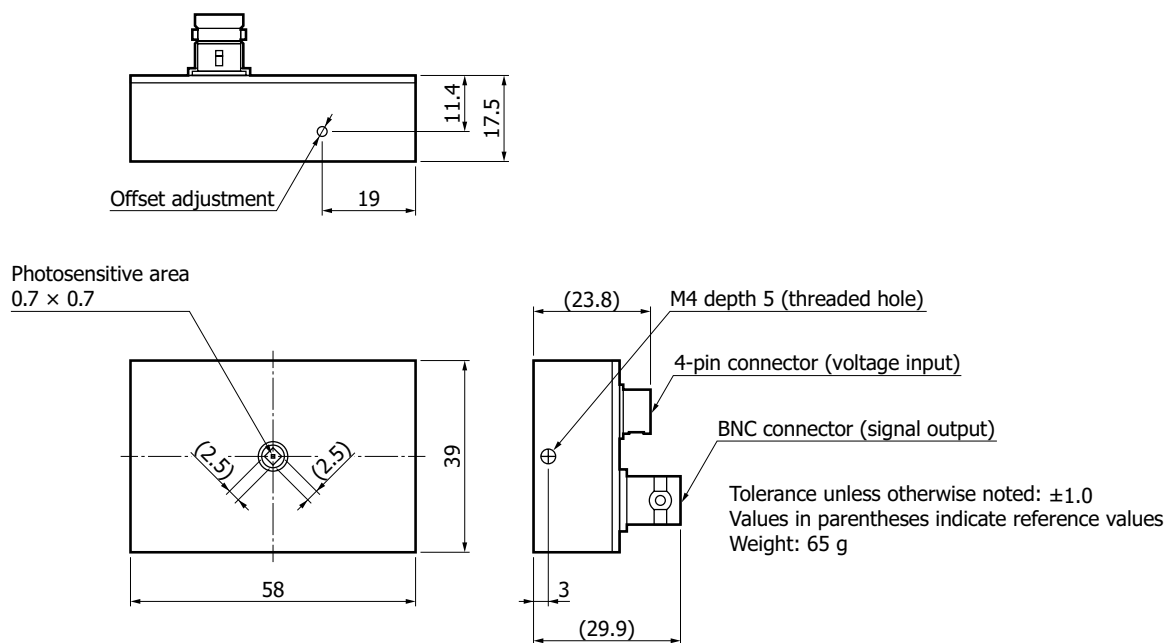
Spectral response



KIRD80736EA

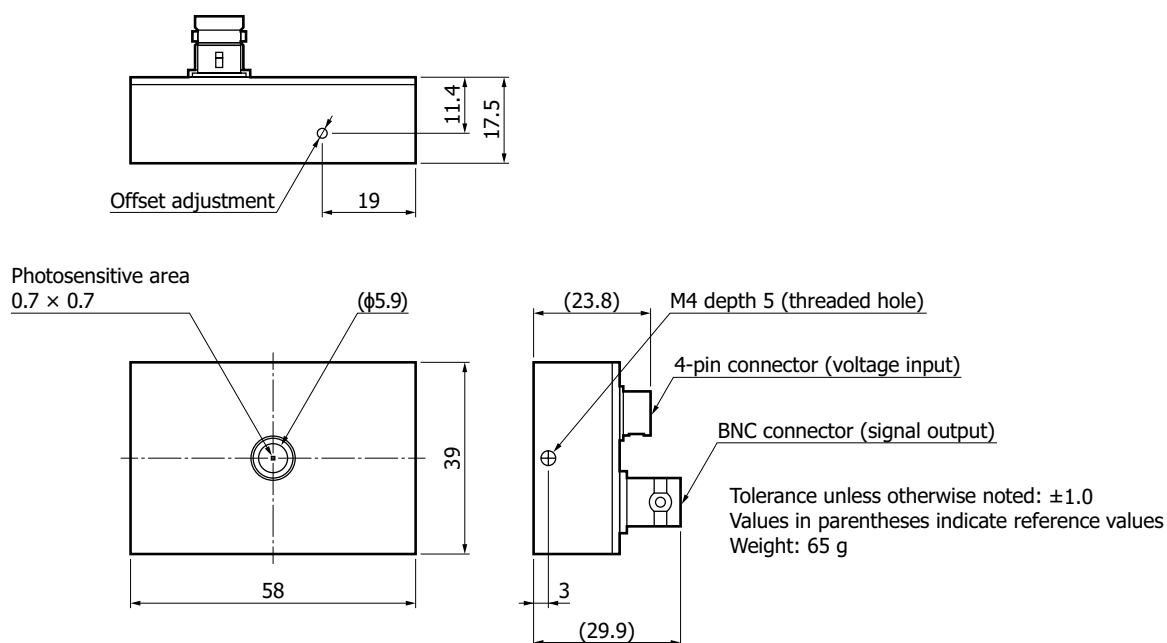
Dimensional outlines (unit: mm)

C17212-011



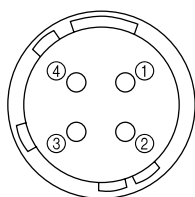
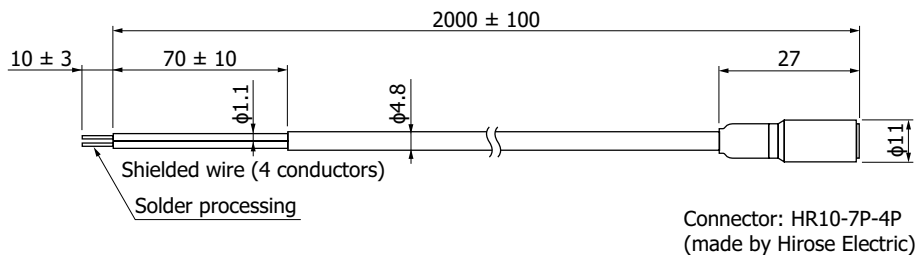
KIRDA0291EA

C17213-011, C17214-011



KIRDA0292EA

4-conductor cable (for DC power supply) A4372-02



Pin no.	Pin connection	Lead color
①	-Vs	Blue
②	GND	Black/white/blue stranded wire
③	GND	Black/white/blue stranded wire
④	+Vs	White

Tolerance unless otherwise noted: ± 1

As viewed from connector side

KIRDA0196EB

Precautions

- Always use a dual-polarity ± 15 V power supply to operate this detector. Never use a single-polarity power supply. Using a single-polarity power supply may cause the amplifier in the detector module to break down.
- The detection elements of C17213-011 and C17214-011 do not have the chip part protected by a window material, etc. Please refer to "Precautions / Unsealed Products" and handle with care.
- Do not drop this product or do not apply excessive shock to it.

Related information

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

■ Precautions

- Disclaimer
- Safety consideration
- Precautions / Unsealed products
- Precautions / Compound opto-semiconductors (photosensors, light emitters)

■ Catalogs

- Selection guide / Infrared detectors
- Technical note / Compound semiconductor photosensors

Information described in this material is current as of March 2025.

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.

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