

Infrared detector modules with preamp



Thermoelectrically cooled type

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

Infrared detector modules operate just by connecting to DC power supplies. The detector element is selectable from among InGaAs, PbS, PbSe, and InSb, which are all combined with a thermoelectric cooler. We welcome requests for custom devices that suit your application.

Features

- High S/N
- Compact size
- Easy to use
Operates just by connecting to DC power supply
- Circuit design optimized for detector characteristics
- Built-in thermoelectric cooling control circuit
(fixed control temperature)

Applications

- Infrared detection

Accessories

- Cable (for DC power supply): 2 m (connector installed at one end)
A4372-03: P4638, P4639, P4631-03
A4372-07: C12485-210, C12486-210, C12483-250
- Instruction manual

Structure / Absolute maximum ratings

Type no.	Detector element	Window material	Photosensitive area (mm)	Supply voltage		Absolute maximum ratings					
						Incident light level max. (μ W)	Supply voltage		Operating temperature*1 Topr (°C)	Storage temperature*1 Tstg (°C)	
				V+, V- (V)	Vp (V)		V+, V- (V)	Vp (V)			
C12485-210	InGaAs (G12182-210K)	Borosilicate glass	ϕ 1	$\pm 15 \pm 0.5$	$+2.5^{+0.5}_{-0.1}$	0.06	± 18	+5	0 to +40	-20 to +50	
C12486-210	InGaAs (G12183-210K)		ϕ 1			0.07					
C12483-250	InGaAs (G12180-250A)	AR coated (1.55 μ m peak) Borosilicate glass	ϕ 5			0.2					
P4638	PbS (P2682-01)	Sapphire glass	4 × 5		$+2.5^{+1}_{-0.05}$	0.25					± 7
P4639	PbSe (P9696-203)		3 × 3			100					
P4631-03	InSb (P6606-310)		1 × 1		$+4.5 \pm 0.25$	67					

*1: No dew condensation

When there is a temperature difference between a product and the surrounding area in high humidity environment, 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 (Typ. Ta=25 °C, unless otherwise noted)

Type no.	Element temperature at rated input voltage Td (°C)	Peak sensitivity wavelength λp (μm)	Cutoff wavelength λc (μm)	Photosensitivity S λ=λp *2		Noise equivalent power NEP λ=λp		Frequency response -3 dB (Hz)				Output impedance (Ω)	Maximum output voltage RL=1 kΩ (V)	Current consumption*3			
				Min. (V/W)	Typ. (V/W)	Typ. (W/Hz ^{1/2})	Max. (W/Hz ^{1/2})	FcL		FcH				V+, V-		Vp	
								Typ.	Max.	Typ.	Max.			Typ.	Max.	Typ.	Max.
C12485-210	-15	1.95	2.05	1.1 × 10 ⁸	1.7 × 10 ⁸	1 × 10 ⁻¹²	3 × 10 ⁻¹²	DC	-	1.5 k	2.2 k	50	+10	+30, -10	+60, -30	+500	+1100
C12486-210		2.3	2.56	1.0 × 10 ⁸	1.5 × 10 ⁸	6 × 10 ⁻¹³	6 × 10 ⁻¹²	DC	-	2.1 k	3 k						
C12483-250		1.55	1.66	3.3 × 10 ⁷	5.0 × 10 ⁷	7 × 10 ⁻¹⁴	7 × 10 ⁻¹³	DC	-	900	1.2 k						
P4638		2.4	3.1	4.0 × 10 ⁷	8.0 × 10 ⁷	1 × 10 ⁻¹²	2 × 10 ⁻¹²	0.2	0.4	150	300						
P4639		4.1	5.0	1.3 × 10 ⁵	2.0 × 10 ⁵	1 × 10 ⁻¹⁰	2 × 10 ⁻¹⁰	0.2	0.4	8 k	10 k						
P4631-03	-58	5.5	6.1	1.2 × 10 ⁵	1.5 × 10 ⁵	1.5 × 10 ⁻¹¹	6 × 10 ⁻¹¹	DC	-	80 k	100 k	+10	+75, -20	+90, -30	+950		

*2: f=100 Hz (C12485-210, C12486-210, C12483-250, P4638), f=600 Hz (P4639), f=1.2 kHz (P4631-03)

*3: V+=15 V, V--=-15 V, Vp=2.5 V (C12485-210, C12486-210, C12483-250, P4638, P4639), V+=15 V, V--=-15 V, Vp=4.5 V (P4631-03)

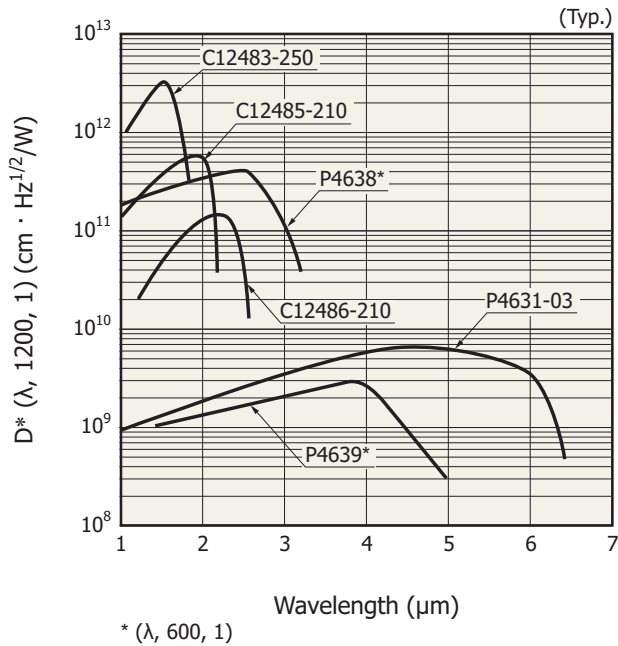
Recommended DC power supply (analog power supply): E3630A (Agilent Technologies)

Current capacity: More than 1.5 times the maximum current consumption

Ripple noise: 5 mVp-p or less (±15 V power supply)

5 mVp-p or less (+2.5 V, +4.5 V power supply)

Spectral response

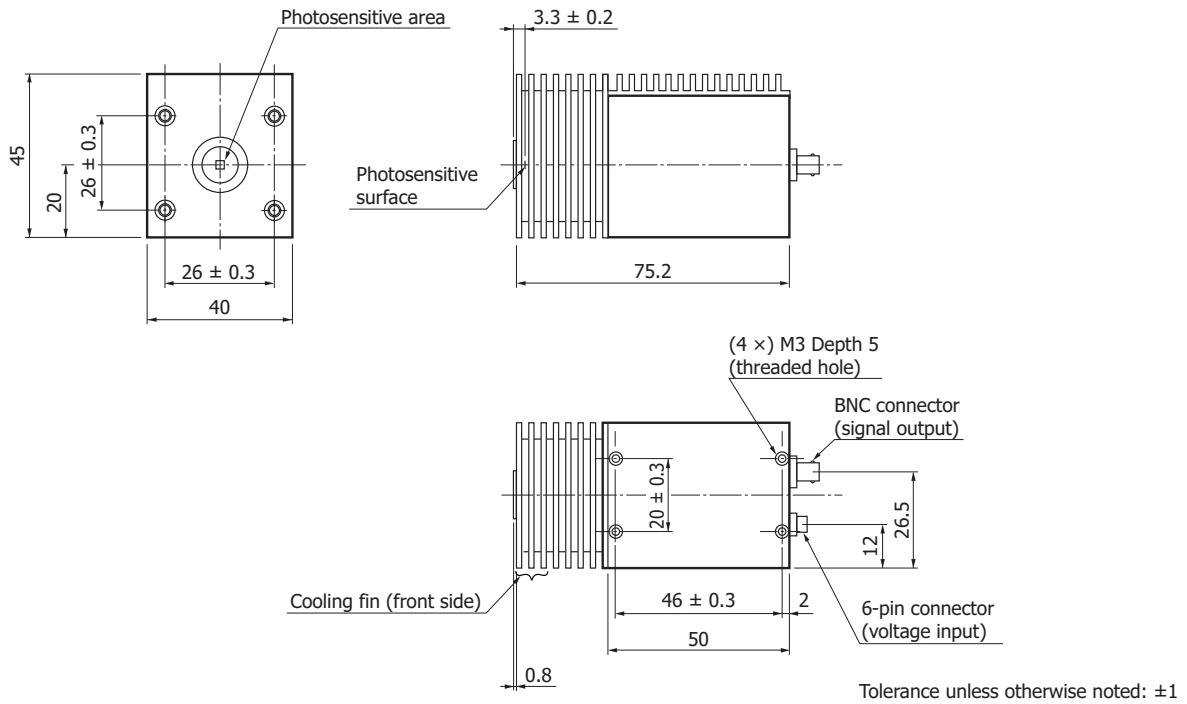


* (λ, 600, 1)

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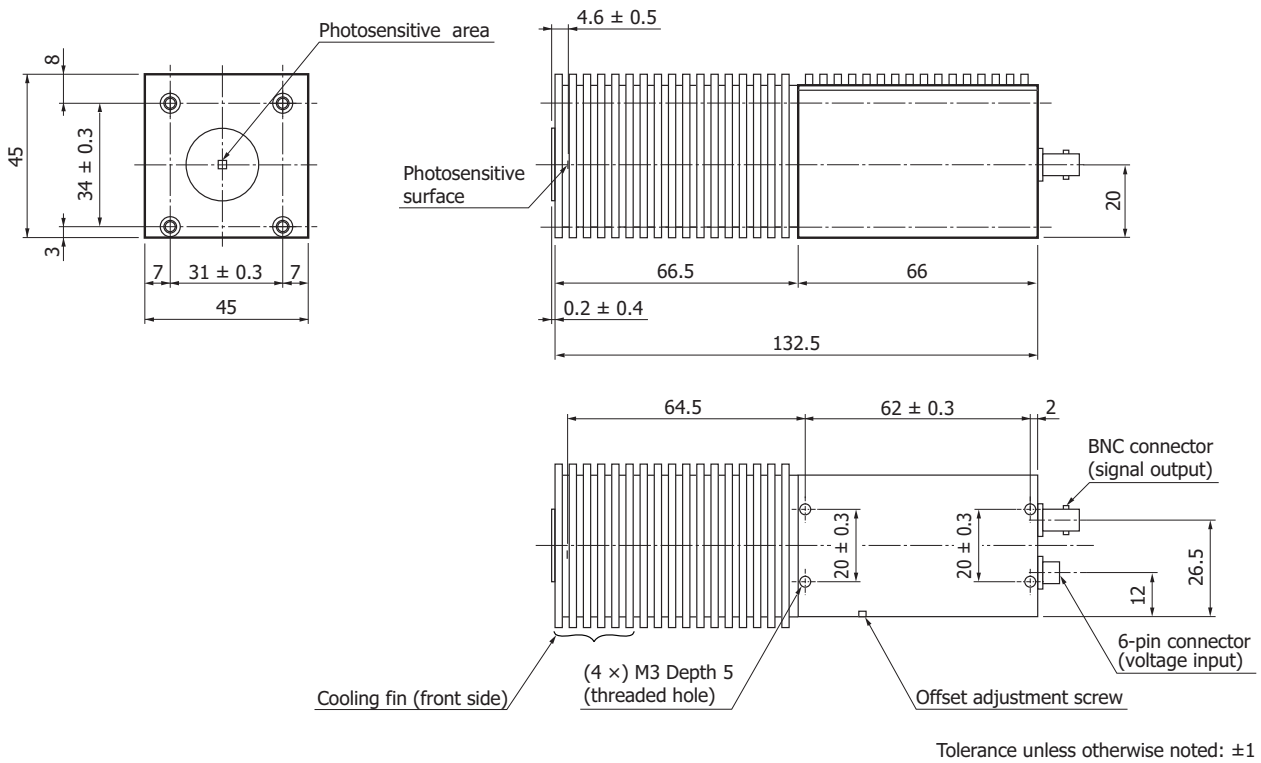
Dimensional outlines (unit: mm)

C12485-210, C12486-210, C12483-250, P4638, P4639



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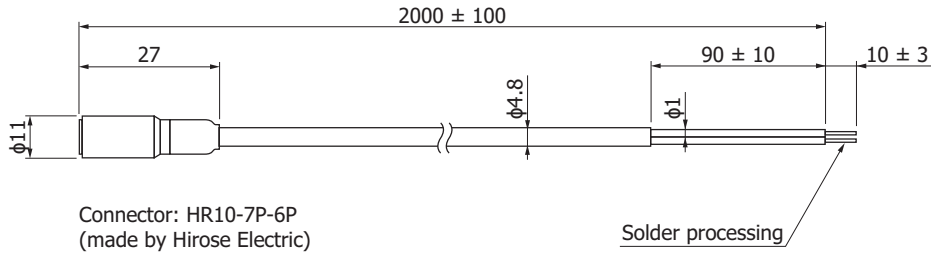
P4631-03



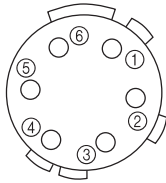
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Note: The cooling fin (front side) is removable.

Cable (for DC power supply) A4372-03



Connector: HR10-7P-6P
(made by Hirose Electric)



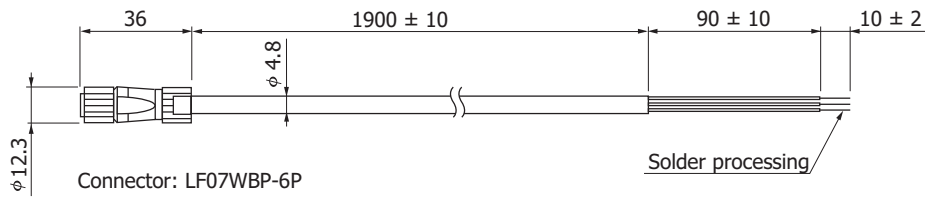
Connector

Pin no.	Pin connection	Lead color
①	+2.5 V (or +4.5 V) Power supply for cooling controller	Red
②	GND Power supply for cooling controller	Blue
③	Output for temperatures monitor	Light green
④	+15 V	Yellow
⑤	-15 V	White
⑥	GND	Black stranded wire

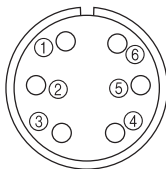
Tolerance unless
otherwise noted: ±1

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Cable (for DC power supply) A4372-07



Connector: LF07WBP-6P
(made by Hirose Electric)



Connector

Pin no.	Pin connection	Lead color
①	+2.5 V or +4.5 V Power supply for cooling controller	Red
②	GND Power supply for cooling controller	Blue
③	Output for temperature monitor	Light green
④	+15 V	Yellow
⑤	-15 V	White
⑥	GND	Black

Tolerance unless
otherwise noted: ±1

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Precautions

- Always use a dual-polarity (± 15 V) power supply to operate this detector. Never use a single-polarity (+15 V or -15 V only) power supply. Using a single-polarity power supply may cause the amplifier in the detector module to break down.
- Always supply +2.5 V or +4.5 V to cool the detector element.
- Be careful not to apply excessive force to the detector surface. Applying excessive force may damage the light input window. Do not directly touch the light input window with bare hands. If dust or dirt gets on the window, wipe it gently using ethyl alcohol.
- Do not drop this product or do not apply excessive shock to it.

Related information

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

Precautions

- Disclaimer

Technical information

- Infrared detectors

Information described in this material is current as of March, 2015.

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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