

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) A4372-02:
2 m (connector installed at one end)
- Instruction manual

Structure / Absolute maximum ratings

Type no.	Detector element	Window material	Photosensitive area (mm)	Supply voltage		Absolute maximum ratings						
				Vcc (V)	Vp (V)	Incident light level max. (μ W)	Supply voltage		Operating temperature Topr (°C)	Storage temperature Tstg (°C)		
							Vcc (V)	Vp (V)				
G6122	InGaAs (G12182-210K)	Borosilicate glass	ϕ 1	$\pm 15 \pm 0.5$	$+2.5^{+1}_{-0.05}$	0.06	± 18	+5	0 to +40	-20 to +50		
G6122-03	InGaAs (G12183-210K)		ϕ 1			0.07						
G6126	InGaAs (G8605-25)	AR coated (1.55 μ m peak) Borosilicate glass	ϕ 5			0.2						
P4638	PbS (P2682-01)	Sapphire glass	4 × 5			$+4.5 \pm 0.25$					0.25	± 7
P4639	PbSe (P9696-203)		3 × 3								100	
P4631-03	InSb (P6606-310)		1 × 1								67	

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 *1		Noise equivalent power NEP λ=λp		Frequency response -3 dB (Hz)				Output impedance (Ω)	Maximum output voltage RL=1 kΩ (V)	Current consumption*2			
				Min. (V/W)	Typ. (V/W)	Typ. (W/Hz ^{1/2})	Max. (W/Hz ^{1/2})	FCL		FCH				Vp		Vcc	
								Typ.	Max.	Typ.	Max.			Typ. (mA)	Max. (mA)	Typ. (mA)	Max. (mA)
G6122	-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	+500	+1100	+30, -10	+60, -30
G6122-03		2.3	2.56	1.0 × 10 ⁸	1.5 × 10 ⁸	6 × 10 ⁻¹³	6 × 10 ⁻¹²	DC	-	2.1 k	3 k					+30, -10	+60, -30
G6126		1.55	1.66	3.3 × 10 ⁷	5.0 × 10 ⁷	7 × 10 ⁻¹⁴	7 × 10 ⁻¹³	DC	-	900	1.2 k					+35, -15	+50, -30
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					+25, -15	+50, -20
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					+25, -15	+50, -20
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	+950		+75, -20	+90, -30	

*1: f=100 Hz (G6122, G6122-03, G6126, P4638), f=600 Hz (P4639), f=1.2 kHz (P4631-03)

*2: Vcc=15 V, Vp=2.5 V (except for P4631-03), 4.5 V (P4631-03)

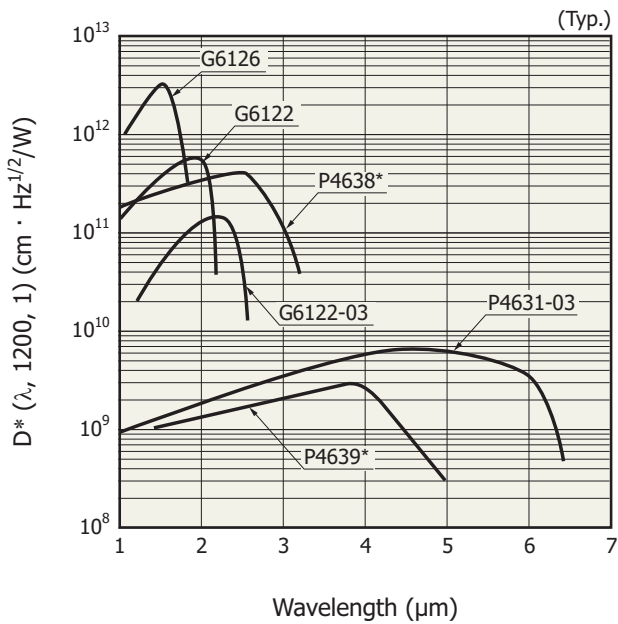
Recommended DC power supply (analog power supply): E3630A (Agilent Technologies)

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)

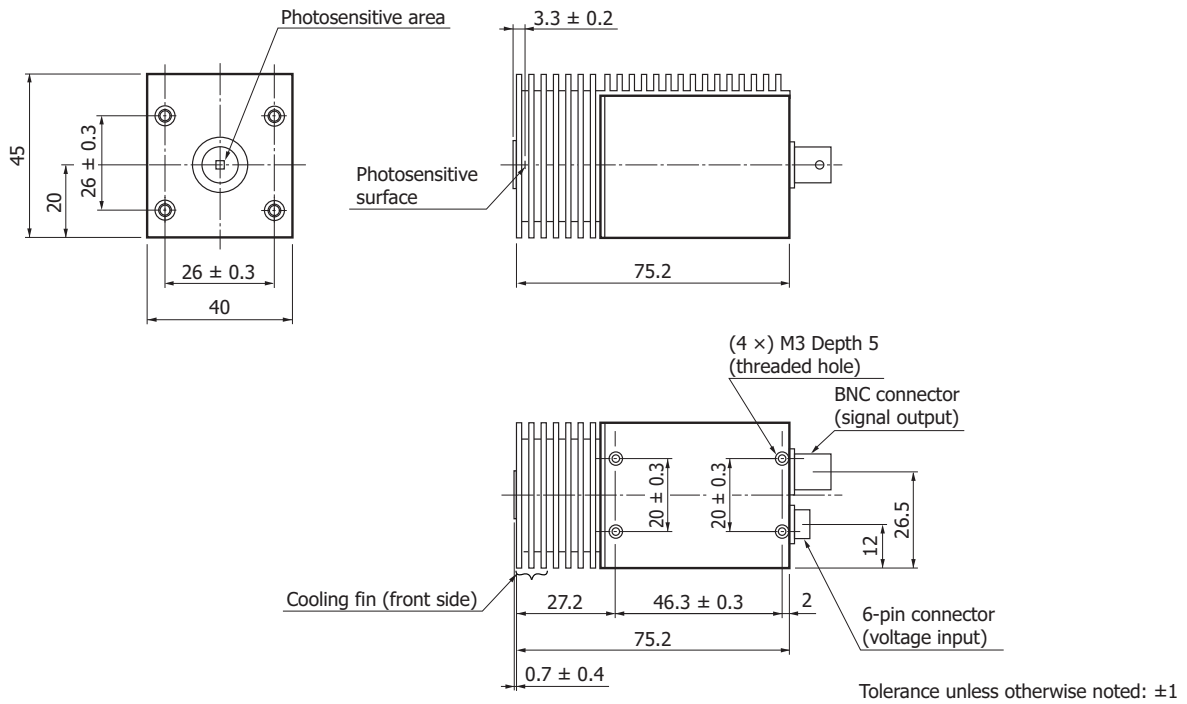
Spectral response



KIRD00188EH

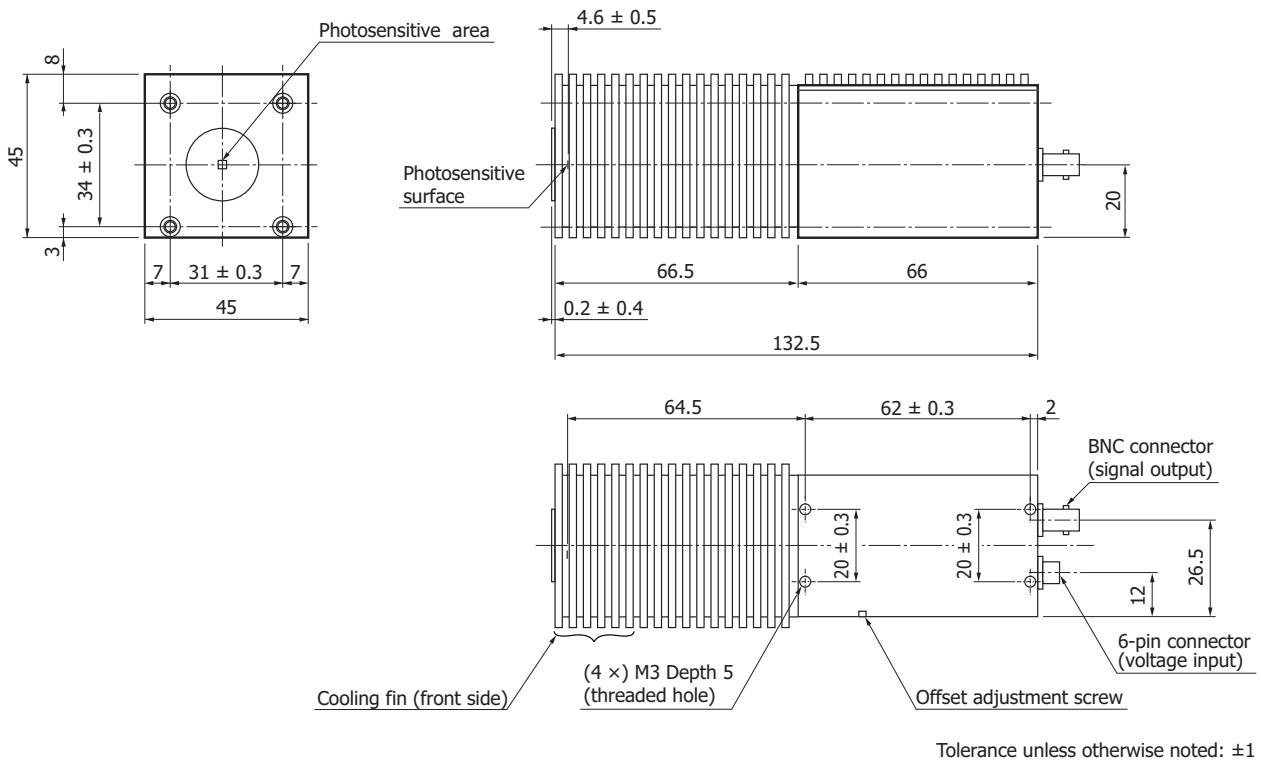
Dimensional outlines (unit: mm)

G6122/-03, G6126, P4638, P4639



KIRDA0009EG

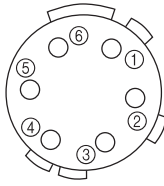
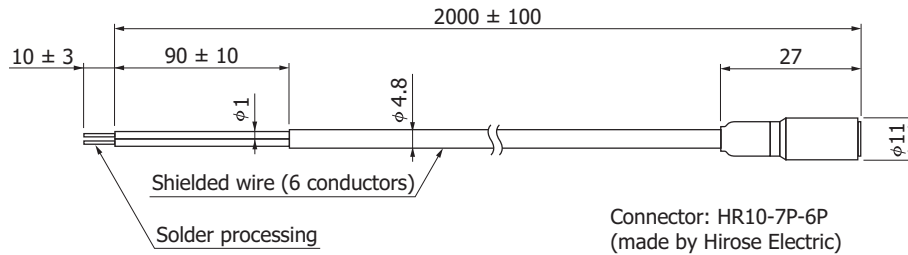
P4631-03



KIRDA0137EE

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

Cable (for DC power supply) A4372-03



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

KIRDA0197EC

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

- Notice

Technical information

- infrared detectors/technical information



The G6122, G6122-03, G6126 and P4638 conform to European EMC directives: EN 61326-01 Class B.

Information described in this material is current as of September, 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.

Type numbers of products listed in the delivery specification sheets or supplied as samples may have a suffix "(X)" which means preliminary specifications or a suffix "(Z)" which means developmental 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.

Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.

HAMAMATSU

www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81) 53-434-3311, Fax: (81) 53-434-5184

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P.O.Box 6910, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 8152-375-0, Fax: (49) 8152-265-8

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 10

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777

North Europe: Hamamatsu Photonics Norden AB: Thorshamnsgatan 35 16440 Kista, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01

Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1 int. 6, 20020 Arese, (Milano), Italy, Telephone: (39) 02-935-81-733, Fax: (39) 02-935-81-741

China: Hamamatsu Photonics (China) Co., Ltd.: 1201 Tower B, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86) 10-6586-6006, Fax: (86) 10-6586-2866