HAMAMATSU
PHOTON IS OUR BUSINESS

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, InAs, InSb, and InAsSb 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: P4631-03
  A4372-07: C12485-210, C12486-210, C12483-250, C12492-210, C12494-210M, C12494-210S
- **Instruction manual**

Structure / Absolute maximum ratings

Type no.	Detector element	Window material	Photosensitive area (mm)	Supply voltage		Absolute maximum ratings				
						Incident light level max. (μW)	Supply voltage		Operating temperature*1 Topr (°C)	Storage temperature*1 Tstg (°C)
				Vcc (V)	Vp (V)		Vcc (V)	Vp (V)		
C12483-250	InGaAs (G12180-250A)	AR coated (1.55 μm peak) borosilicate glass	φ5	±15 ± 0.5	$+2.5^{+0.5}_{-0.1}$	0.2	±18	+5	0 to +40	-20 to +50
C12485-210	InGaAs (G12182-210K)	Borosilicate glass	φ1			0.06				
C12486-210	InGaAs (G12183-210K)					0.07				
C12492-210	InAs (P10090-21)	Sapphire glass	φ1		$+2.5^{+0.5}_{-0.1}$	2.6		+5		
P4631-03	InSb (P6606-310)		1 × 1		+4.5 ± 0.25	67		+7		
C12494-210S	InAsSb (P11120-201)		φ1		$+2.5^{+0.5}_{-0.1}$	26		+5		
C12494-210M	InAsSb (P12691-201G)	AR coated Ge	φ1		$+2.5^{+0.5}_{-0.1}$	26		+5		

*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.

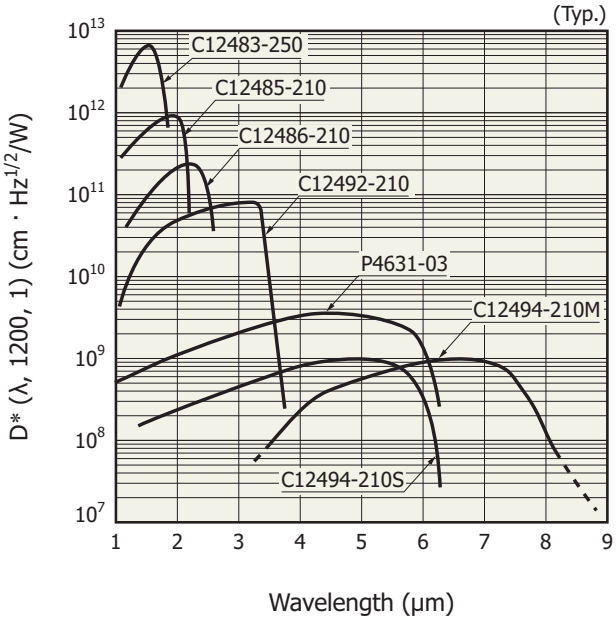
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

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 Min. (V/W)	Photosensitivity S λ=λp *2 Typ. (V/W)	Noise equivalent power NEP λ=λp Typ. ($W/Hz^{1/2}$)	Noise equivalent power NEP λ=λp Max. ($W/Hz^{1/2}$)	Frequency response -3 dB (Hz) FcL Typ.	Frequency response -3 dB (Hz) FcH Min.	Frequency response -3 dB (Hz) FcH Typ.	Output impedance (Ω)	Maximum output voltage RL=1 kΩ (V)	Current consumption*3 Vcc Typ. (mA)	Current consumption*3 Vcc Max. (mA)	Current consumption*3 Vp Typ. (mA)	Current consumption*3 Vp Max. (mA)
C12483-250	-15	1.55	1.66	3.3×10^7	5.0×10^7	7×10^{-14}	7×10^{-13}	DC	900	1.1 k	50	+10	+30, -22	+50, -30	+500	+1100
C12485-210		1.95	2.05	1.1×10^8	1.8×10^8	1×10^{-13}	3×10^{-12}	DC	1.5 k	2.2 k			+30, -13	+60, -30		
C12486-210		2.3	2.56	1.0×10^8	2.0×10^8	4×10^{-13}	6×10^{-12}	DC	2.1 k	3 k			+30, -14	+60, -30		
C12492-210	-28	3.25	3.45	0.8×10^7	1.0×10^7	6×10^{-12}	1×10^{-11}	5	40 k	50 k		±13	+30, -20	+80, -30	+600	
P4631-03	-58	5.5	6.1	1.2×10^5	1.5×10^5	3×10^{-11}	6×10^{-11}	DC	80 k	100 k		+10	+80, -22	+90, -30	+950	
C12494-210S	-28	4.9	5.9	5.0×10^5	7.5×10^5	1×10^{-10}	3×10^{-10}	5	80 k	100 k		±13	+30, -20	+80, -30	+600	
C12494-210M		6.7	8.3													

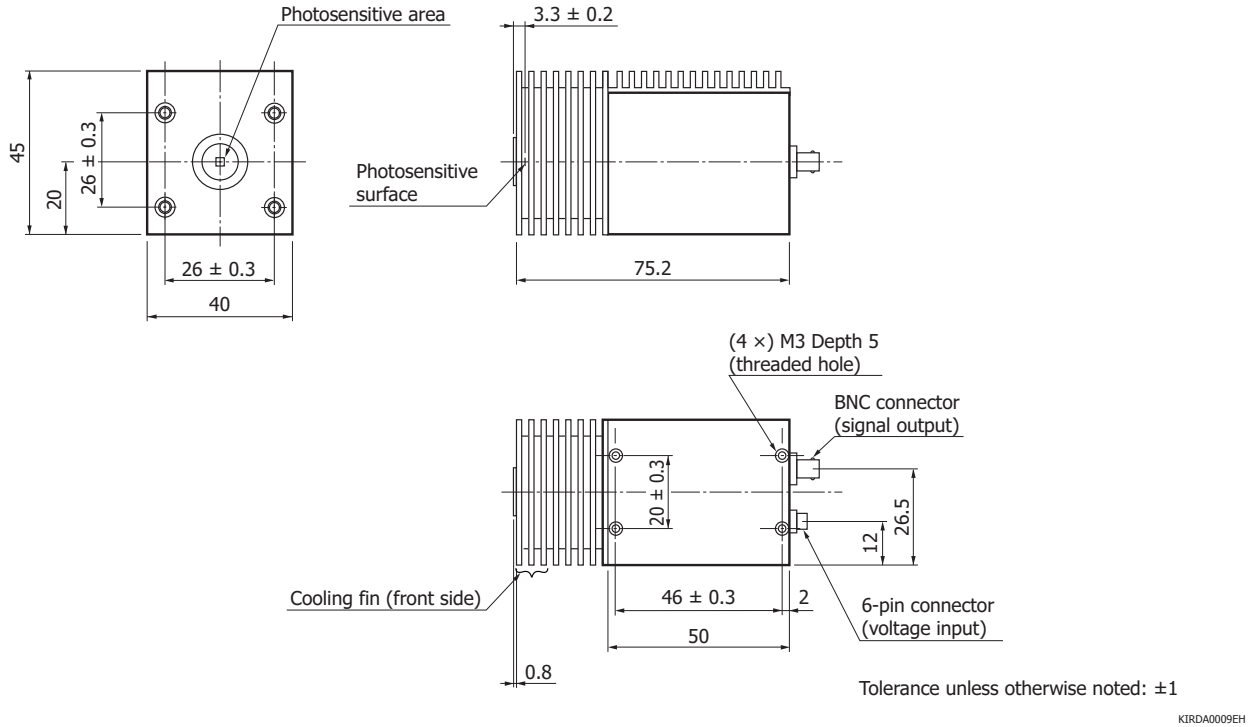
*2: f=100 Hz (C12485-210, C12486-210, C12483-250), f=1.2 kHz (P4631-03, C12492-210, C12494-210S, C12494-210M)
*3: Vcc=±15 V, Vp=2.5 V (C12485-210, C12486-210, C12483-250, C12492-210, C12494-210M, C12494-210S), Vcc=±15 V, Vp=4.5 V (P4631-03)
Recommended DC power supply (analog power supply): PW18-1.3ATS (TEXIO Technology), E3630A (Keysight Technologies)
Current capacity: More than 1.5 times the maximum current consumption
Ripple noise: 5 mVp-p or less (±15 V power supply)
5 mVp-p or less (+2.5 V, +4.5 V power supply)

Spectral response

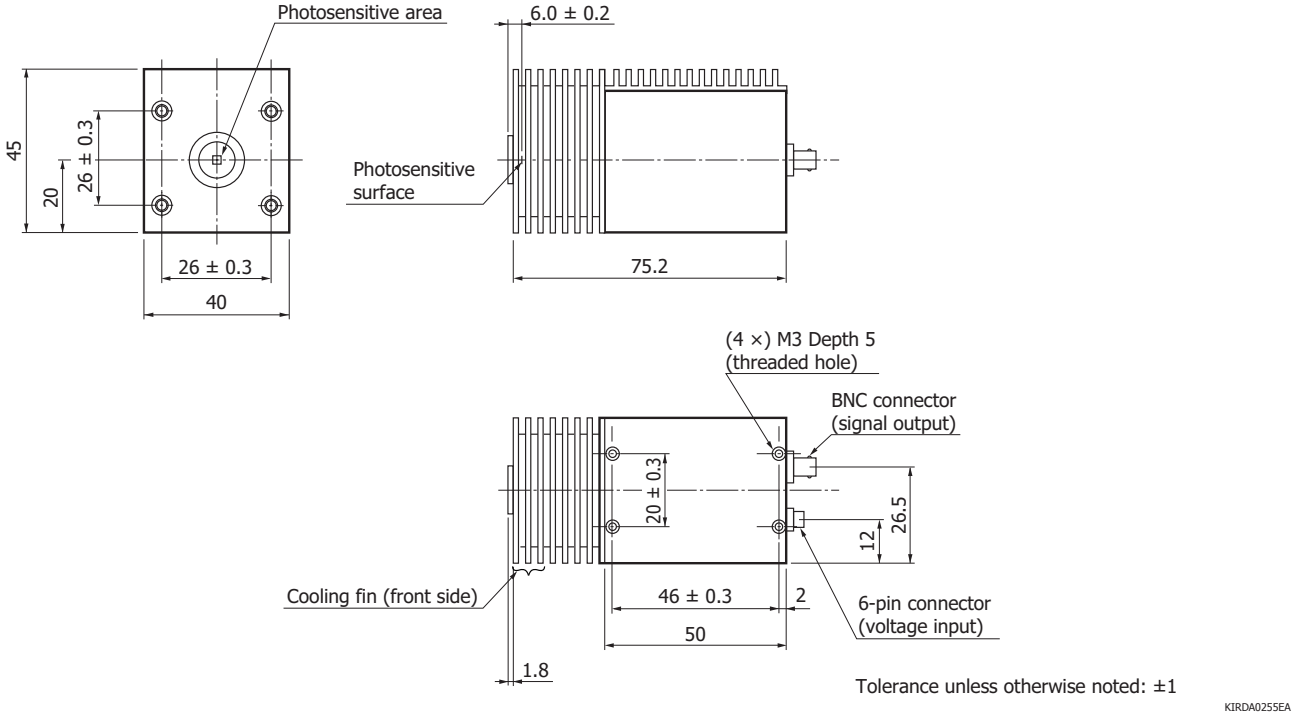


Dimensional outlines (unit: mm)

C12485-210, C12486-210, C12483-250, C12492-210, C12494-210S

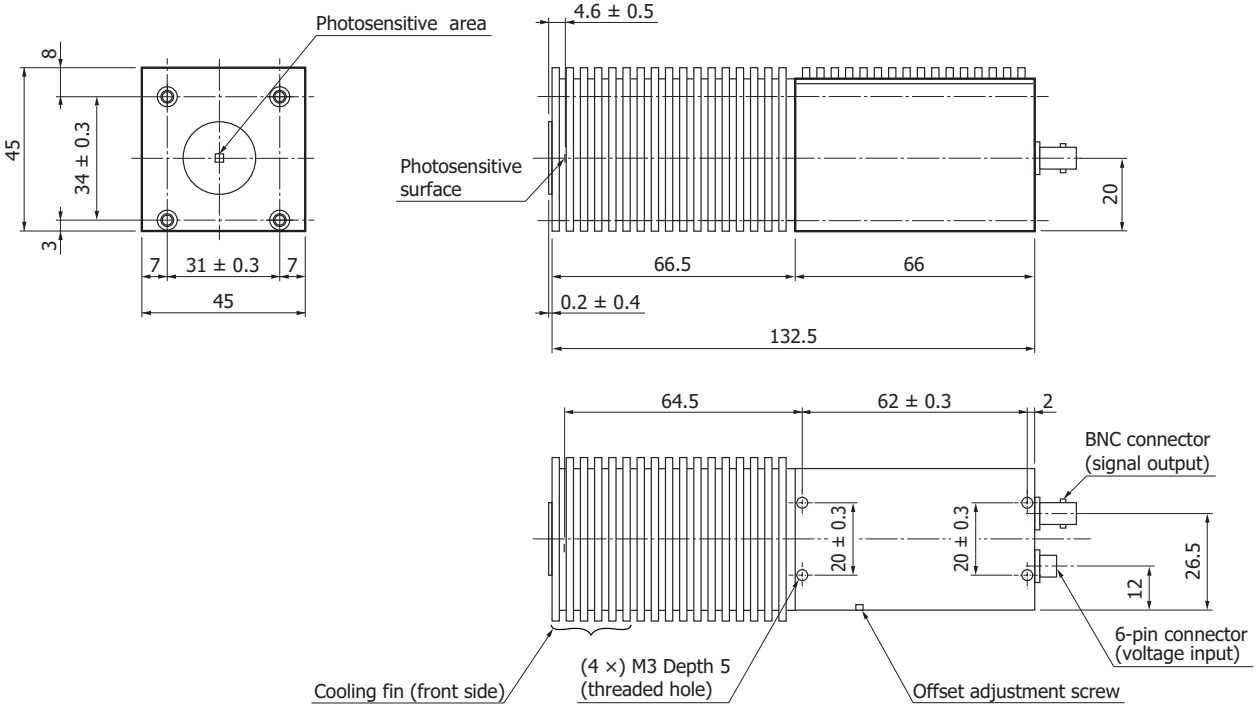


C12494-210M



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

P4631-03



Tolerance unless otherwise noted: ±1

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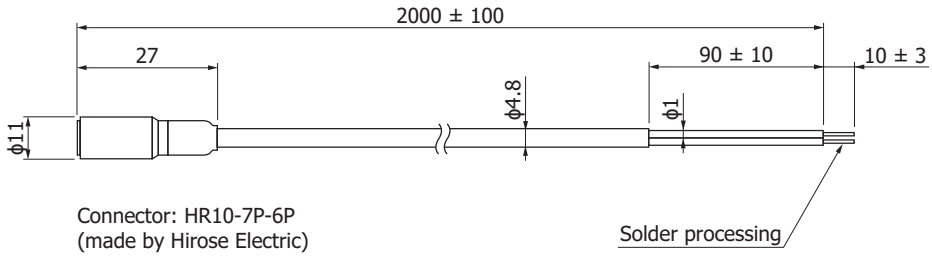
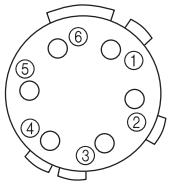
Note: The cooling fin (front side) is removable.

Cable (for DC power supply) A4372-03





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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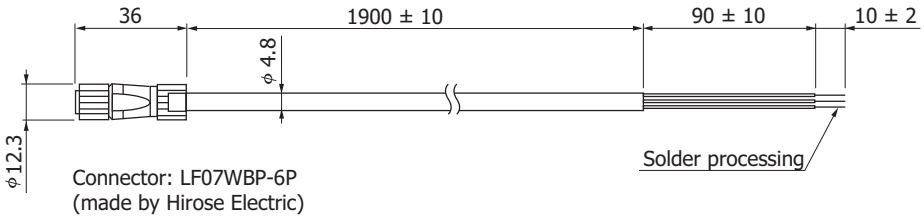
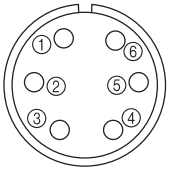
Cable (for DC power supply) A4372-07



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

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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, Bridgewater, N.J. 08807, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218, E-mail: usa@hamamatsu.com
Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 8152-375-0, Fax: (49) 8152-265-8, E-mail: info@hamamatsu.de
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, E-mail: infos@hamamatsu.fr
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, E-mail: info@hamamatsu.co.uk
North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01, E-mail: info@hamamatsu.se
Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41, E-mail: info@hamamatsu.it
China: Hamamatsu Photonics (China) Co., Ltd.: B1201, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86) 10-6586-6006, Fax: (86) 10-6586-2866, E-mail: hpc@hamamatsu.com.cn
Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No. 158, Section2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)03-659-0080, Fax: (886)03-659-0081, E-mail: info@hamamatsu.com.tw

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