

# Infrared detector modules with preamps



Thermoelectrically cooled type

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

Infrared detector modules operate just by connecting to a DC power supply. The detector element is selectable from among InGaAs, PbS, PbSe, MCT and InSb, which are all combined with a thermoelectric cooler. The P4631-10 using an MCT detector is especially suited for CO<sub>2</sub> laser detection. 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**
- **CO<sub>2</sub> laser 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	Photosensitive area (mm)	Rated supply voltage (V)		Absolute maximum ratings					
					Incident light level max. (μW)	Supply voltage (V)		Operating temperature Topr (°C)	Storage temperature Tstg (°C)	
G6122	InGaAs (G12182-210K)	φ1	Vc=±15 ± 0.5	Vp1=+2.5 <sup>+1</sup> <sub>-0.05</sub>	Vc=±18		Vp1=+5	0 to +40	-20 to +50	
G6122-03	InGaAs (G12183-210K)	φ1								0.06
G6126	InGaAs (G8605-25)	φ5								0.07
P4638	PbS (P2682-01)	4 × 5								0.2
P4639	PbSe (P9696-203)	3 × 3								0.25
P4631-03	InSb (P6606-310)	1 × 1		100						
P4631-10	MCT (P3257-31)	1 × 1		Vp2=+4.5 ± 0.25	67	Vp2=+7				
			Vp1=+2.5 <sup>+1</sup> <sub>-0.05</sub>	5 (W)	Vp1=+5					

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)	Photo-sensitivity S λ=λp *1 (V/W)	Noise equivalent power NEP λ=λp (W/Hz <sup>1/2</sup> )	Frequency response -3 dB (Hz)	Output impedance (Ω)	Maximum output voltage RL=1 kΩ (V)	Current consumption typ. (mA)	Current consumption*2 max. (mA)		
										+Vc, -Vc	Vp1 or Vp2	
G6122	-15	1.95	2.05	1.7 × 10 <sup>8</sup>	1 × 10 <sup>-13</sup>	DC to 2.2 k	50	+10	500	+60, -30	+1100	
G6122-03		2.3	2.56	1.5 × 10 <sup>8</sup>	6 × 10 <sup>-13</sup>	DC to 3 k						
G6126		1.55	1.66	5 × 10 <sup>7</sup>	7 × 10 <sup>-14</sup>	DC to 1.2 k		±10		+50, -30		
P4638		2.4	3.1	8 × 10 <sup>7</sup>	1 × 10 <sup>-12</sup>	0.2 to 300				+50, -20		
P4639		4.1	5.0	2 × 10 <sup>5</sup>	1 × 10 <sup>-10</sup>	0.2 to 10 k						
P4631-03	-58	4.5	6.3	1.5 × 10 <sup>5</sup>	1.5 × 10 <sup>-11</sup>	DC to 100 k	50	+10	950	+90, -30	+1400	
P4631-10	-3	6.5	11.5	2*3	3.5 × 10 <sup>-7*3</sup>	DC to 500 k			800	+150, -30		

\*1: f=100 Hz (G6122, G6122-03, G6126, P4638), f=600 Hz (P4639, P4631-10), f=1.2 kHz (P4631-03)

\*2: Vc=15 V, Vp1=2.5 V or Vp2=4.5 V

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

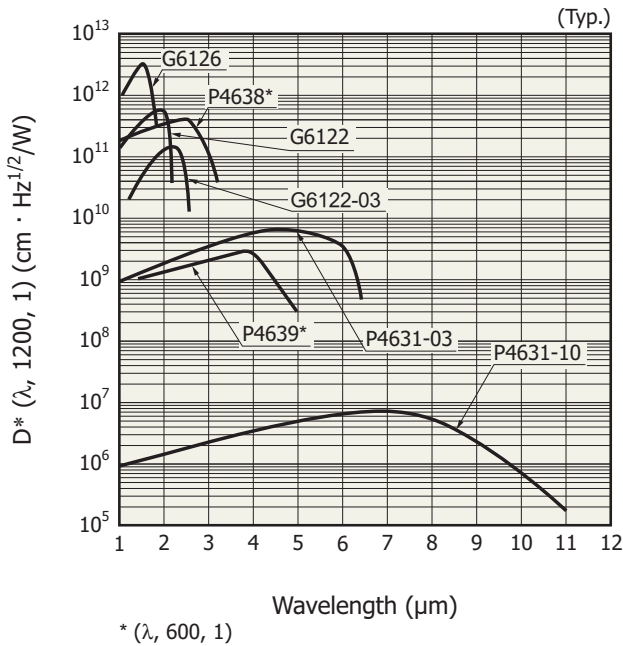
Current capacity: More than 1.5 times the maximum current consumption

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

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

\*3:  $\lambda=10.6 \mu\text{m}$

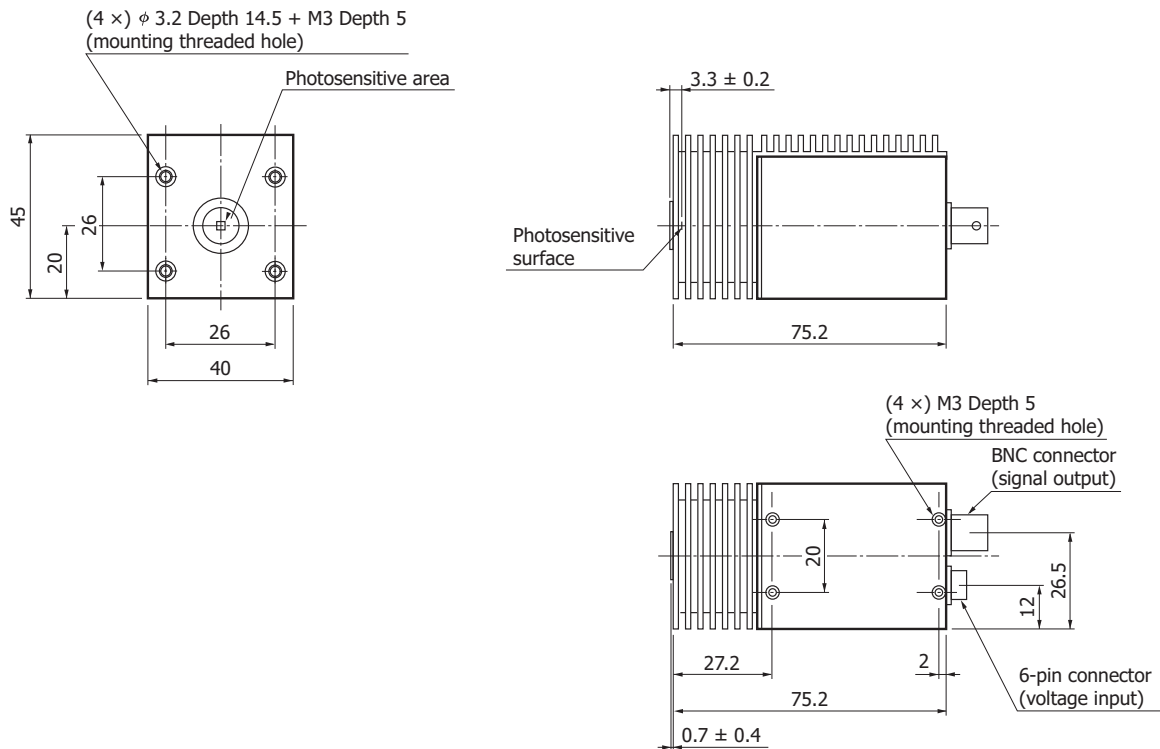
### Spectral response



KIRD80188EG

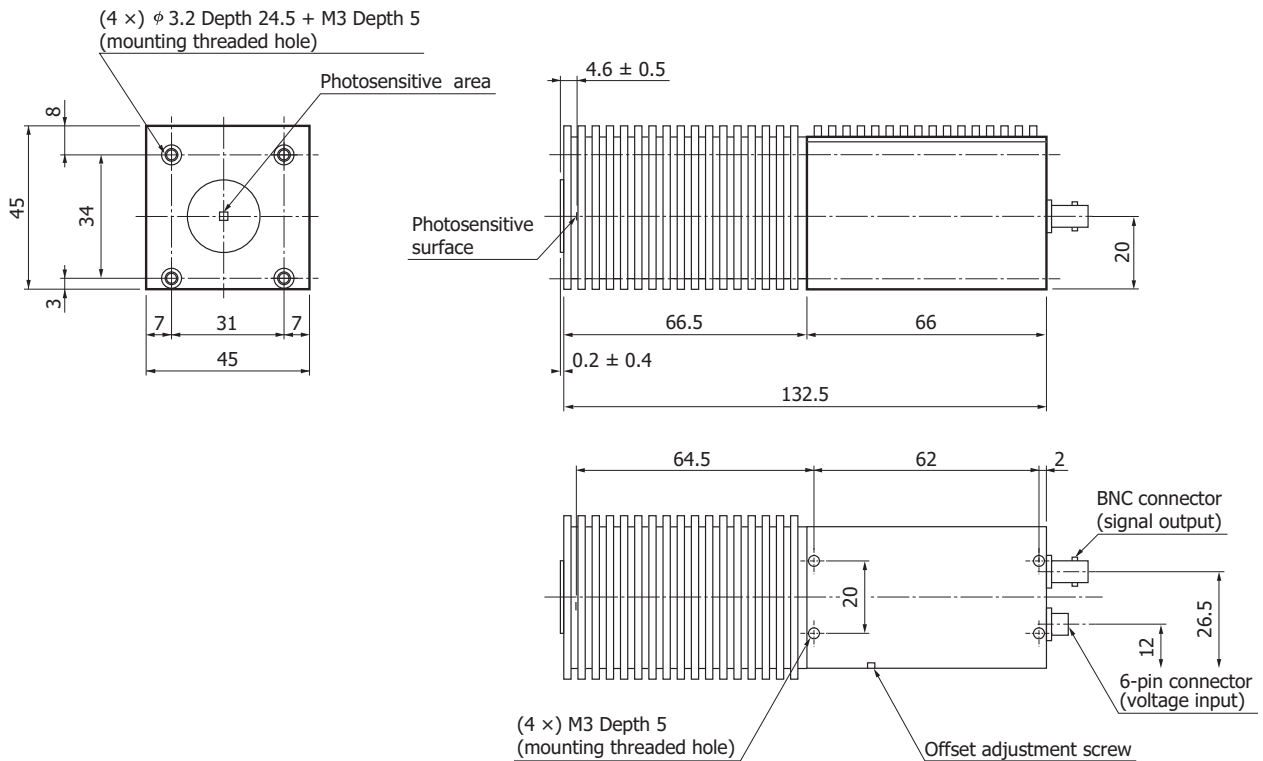
# ■ Dimensional outlines (unit: mm, tolerance unless otherwise noted: $\pm 1$ )

G6122/-03, G6126, P4638, P4639



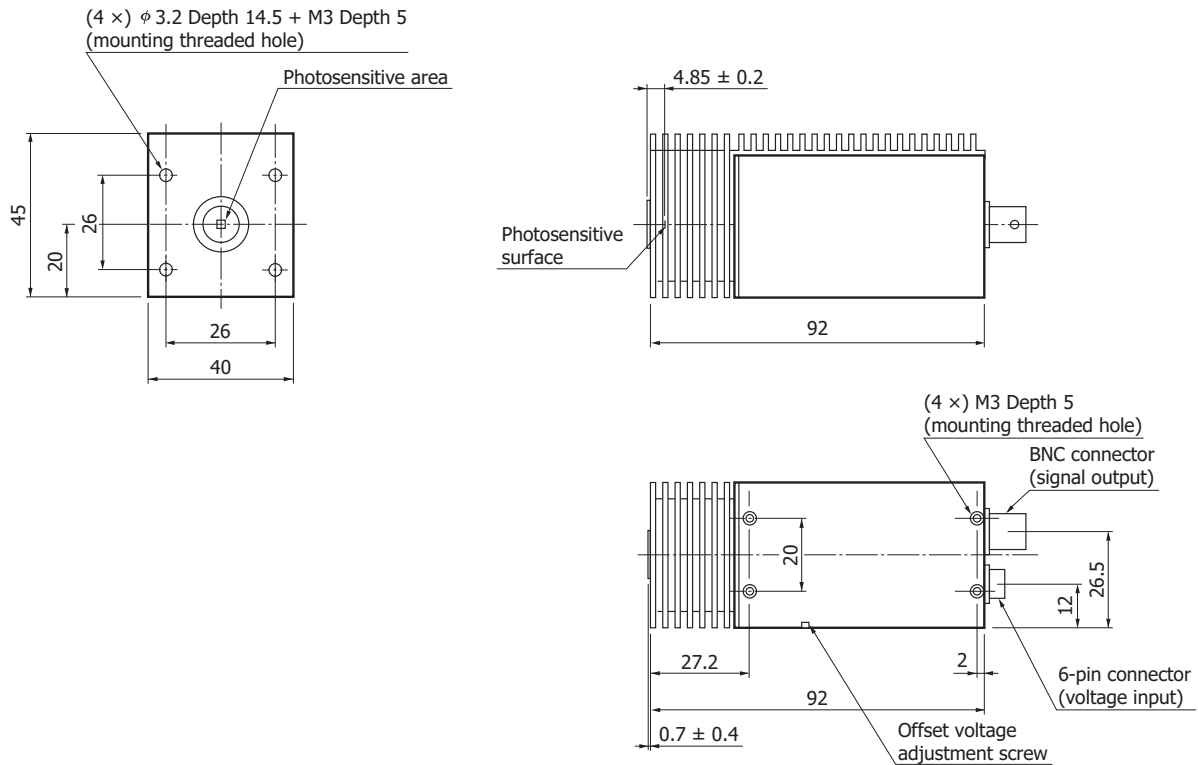
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P4631-03



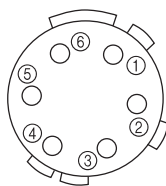
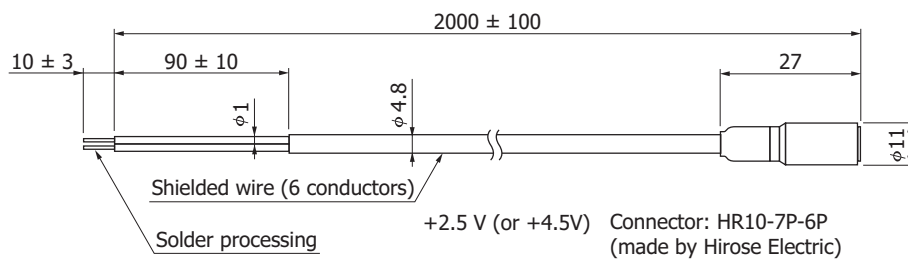
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## P4631-10



KIRDA01393C

## Cable (for DC power supply) A4372-03



Pin no.	Pin connection	Lead color
①	+2.5 V (or +4.5V) 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

KIRDA0197EB

## Handling precaution

The infrared detector modules (TE-cooled type) do not operate if not cooled. Always supply +2.5 V or +4.5 V to cool the detector element.



The G6122, G6122-03, G6126, P4638 and P4631-10 conform to European EMC directives: EN 61326-01 Class B.

Information described in this material is current as of November, 2012.

Product specifications are subject to change without prior notice due to improvements or other reasons. Before assembly into final products, please contact us for the delivery specification sheet to check the latest information.

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.

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