

# Infrared detector module with preamp Thermoelectrically cooled type



## Easy-to-use detector module with built-in preamp

Infrared detector modules operate just by connecting to a DC power supply. The detector element is selectable from among InGaAs, PbS, PbSe, MCT, InAs and InSb, which are all combined with a thermoelectric cooler. 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 element characteristics
- Built-in thermoelectric cooling control circuit (fixed control temperature)

### Applications

- Infrared detection
- CO<sub>2</sub> laser detection

### Accessories (Supplied)

- DC power cable (2 m)
- Instruction manual

### Specifications / Absolute maximum ratings

Type No.	Detector Element	Active area (mm)	Rated input voltage (V)		Absolute maximum ratings				
					Input voltage (V)	Operating temperature T <sub>opr</sub> (°C)	Storage temperature T <sub>stg</sub> (°C)		
G6122	InGaAs	φ1	±15 ± 0.5	V <sub>c</sub> =±18	V <sub>p1</sub> =+5	0 to +40	-20 to +50		
G6122-03		φ1							
G6126		φ5							
P4638	4 × 5	+2.5 <sup>+1</sup> <sub>-0.05</sub>						V <sub>p2</sub> =+7	
P4639	3 × 3								
P4631	MCT	1 × 1						±4.5 ± 0.25	V <sub>p1</sub> =+5
P4631-02	InAs	φ1							
P4631-03	InSb	1 × 1							
P4631-04	MCT	1 × 1						+2.5 <sup>+1</sup> <sub>-0.05</sub>	V <sub>p1</sub> =+5
P4631-10									

### Electrical and optical characteristics (Typ. T<sub>a</sub>=25 °C)

Type No.	Detector element temperature at rated input T (°C)	Peak Sensitivity wavelength λ <sub>p</sub> (μm)	Cut-off wavelength λ <sub>c</sub> (μm)	Photo sensitivity S λ=λ <sub>p</sub> <sup>*1</sup> (V/W)	NEP λ=λ <sub>p</sub> (W/Hz <sup>1/2</sup> )	Frequency response -3 dB (Hz)	Output impedance (Ω)	Maximum output voltage R <sub>L</sub> =1 kΩ (V)	Maximum current consumption <sup>*2</sup> (mA)	
									+V <sub>c</sub> , -V <sub>c</sub>	V <sub>p1</sub> or V <sub>p2</sub>
G6122	-15	1.95	2.05	1.7 × 10 <sup>8</sup>	1 × 10 <sup>-13</sup>	DC to 2.2 k	50	+10	+60, -30	+1100
G6122-03		2.3	2.56	1.5 × 10 <sup>8</sup>	6 × 10 <sup>-13</sup>	DC to 3 k		+10	+60, -30	+1100
G6126		1.55	1.66	5 × 10 <sup>7</sup>	7 × 10 <sup>-14</sup>	DC to 1.2 k		+10	+50, -30	+1100
P4638		2.4	3.1	8 × 10 <sup>7</sup>	1 × 10 <sup>-12</sup>	0.2 to 300		±10	+50, -20	+1100
P4639	-25	4.1	5.0	2 × 10 <sup>5</sup>	1 × 10 <sup>-10</sup>	0.2 to 10 k		±10	+50, -20	+1100
P4631		3.6	4.3	2 × 10 <sup>7</sup>	1 × 10 <sup>-12</sup>	5 to 20 k		±2.5	+60, -10	+1100
P4631-02	-28	3.25	3.45	1 × 10 <sup>7</sup>	4 × 10 <sup>-12</sup>	5 to 120 k		±8	+60, -10	+1100
P4631-03	-58	4.5	6.3	1.5 × 10 <sup>5</sup>	1.5 × 10 <sup>-11</sup>	DC to 100 k		+10	+90, -30	+1100
P4631-04		4.8	5.5	1 × 10 <sup>7</sup>	5 × 10 <sup>-12</sup>	5 to 35 k		±5	+80, -10	+1100
P4631-10		6.5	11.5	2 <sup>*3</sup>	3.5 × 10 <sup>-7</sup> <sup>*3</sup>	DC to 500 k		+10	+150, -30	+1400

\*1: f=100 Hz (G6122, G6122-03, G6126, P4638), f=600 Hz (P4639, P4631-10), f=1.2 kHz (P4631, P4631-02, P4631-03, P4631-04)

\*2: V<sub>c</sub>=15 V, V<sub>p1</sub>=2.5 V or V<sub>p2</sub>=4.5 V

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

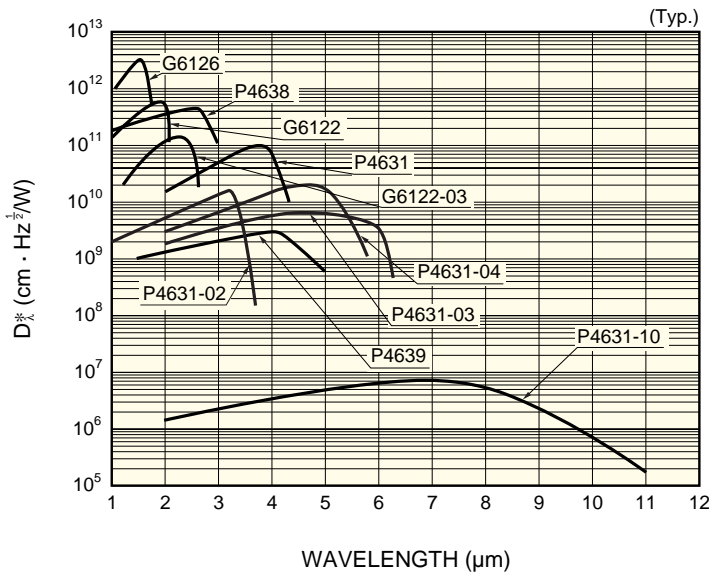
Current capacity: More than 1.5 times the maximum current consumption

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: λ=10.6 μm

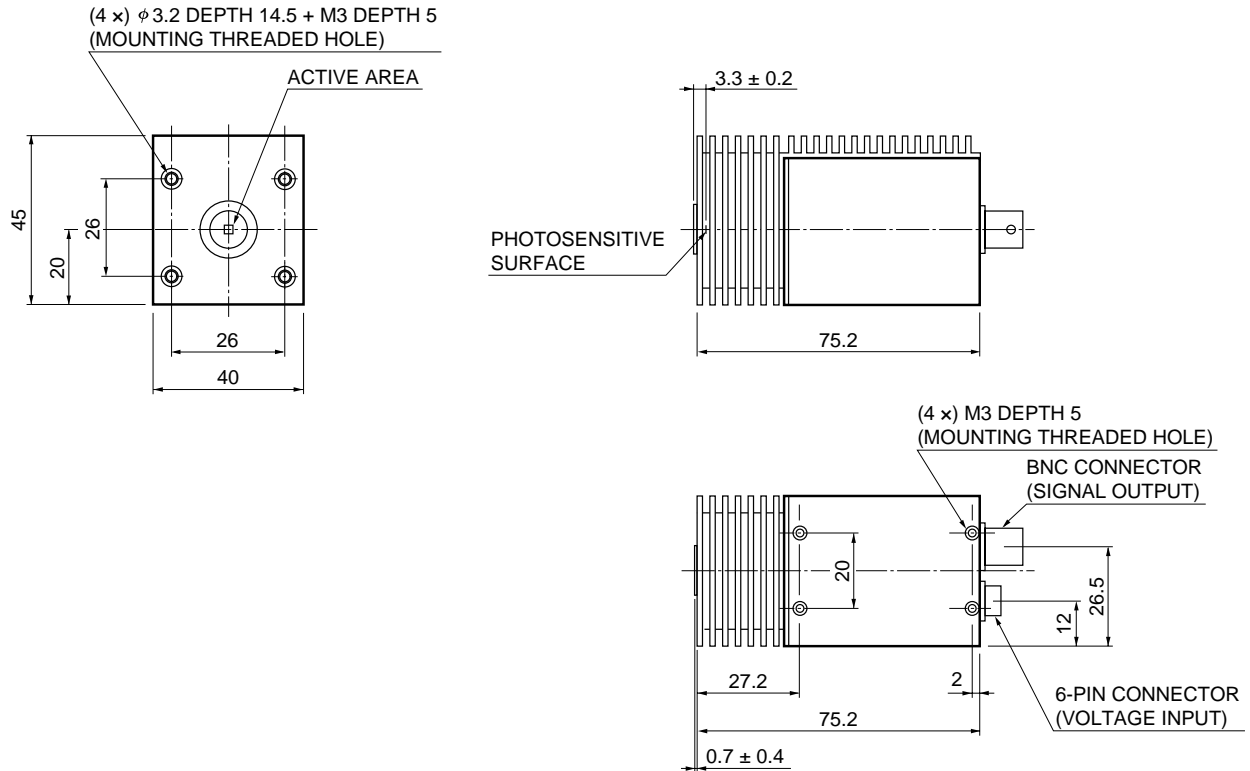
■ Spectral response



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■ Dimensional outlines (unit: mm)

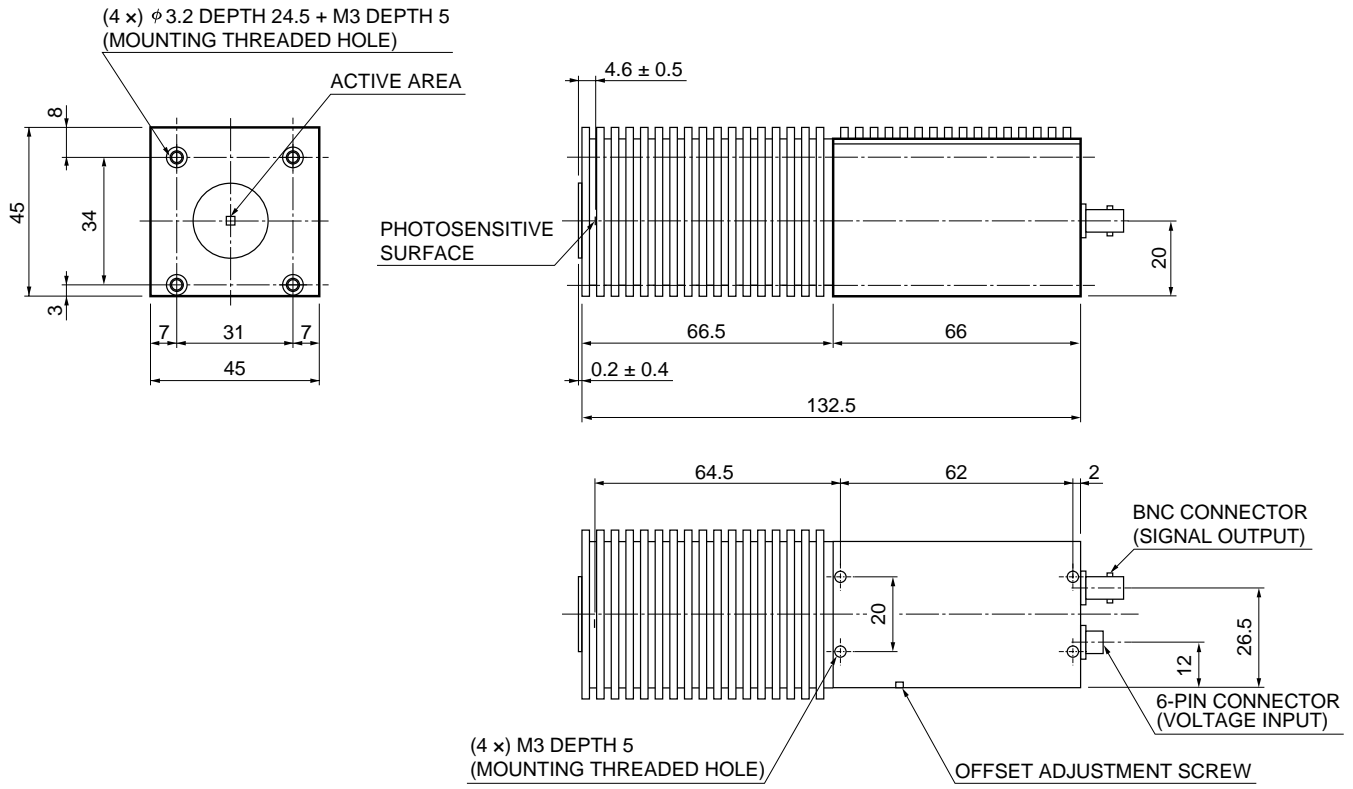
G6122/-03, G6126, P4638, P4639, P4631/-02



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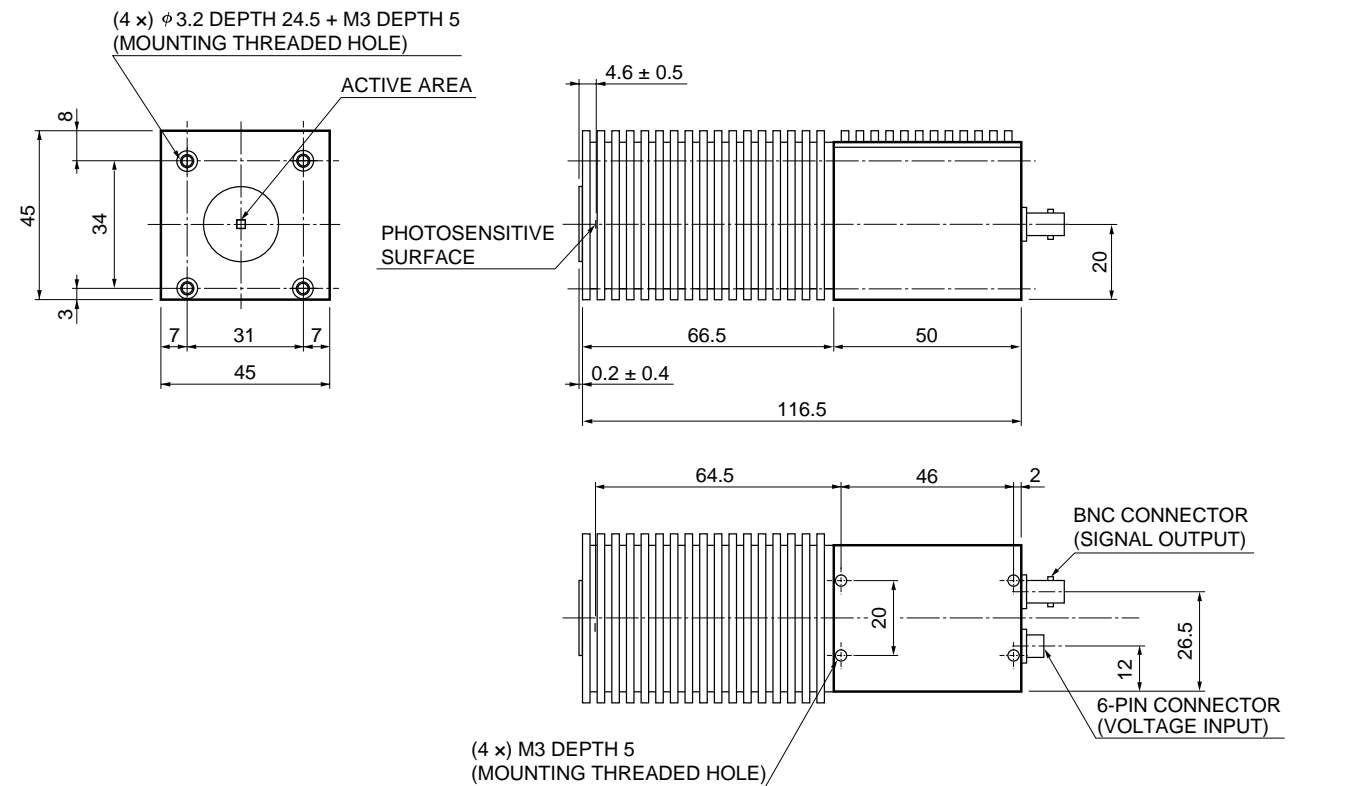
(unit: mm)

P4631-03



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P4631-04

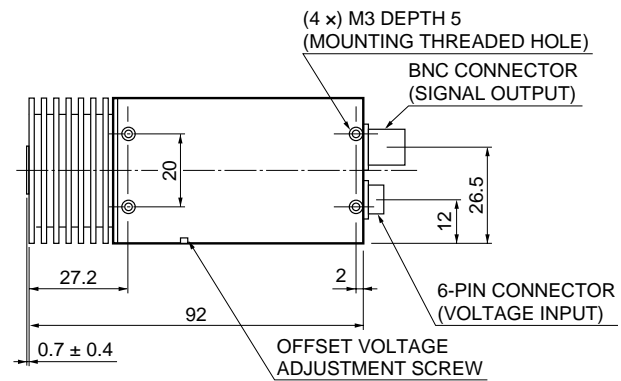
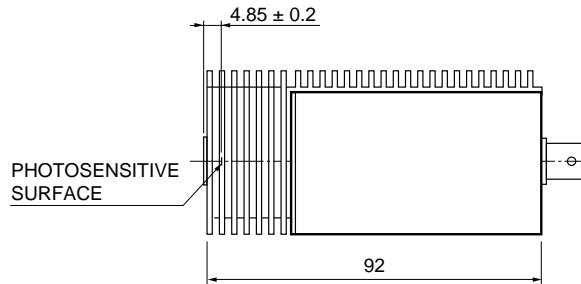
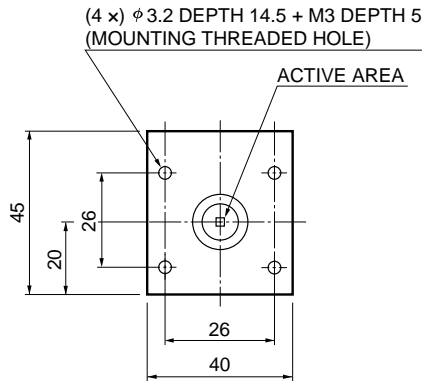


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# Infrared detector module with preamp **Thermoelectrically cooled type**

(unit: mm)

P4631-10



KIRDA0139EC



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

## 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.

Information described in this material is current as of February, 2011. 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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