

Photodiode module C10439 series



Integrates a Si photodiode for precision photometry with low-noise amp

C10439 series photodiode modules are high-precision photodetectors that integrate a Si photodiode and a current-to-voltage amplifier. The output from these photodiode modules is an analog voltage and can be easily checked with a voltmeter, etc. Since their sensitivity is switchable between two ranges (High/Low), highly accurate output can be obtained by selecting the proper sensitivity range that matches the light level to be detected. C10439 series is available with three different active areas.

Features

- Voltage output for easy handling
- Two-range (High/Low) switching function
- Only half size of a business card
- Can be mounted on optical bench rod (M4)
- Choice of active areas
C10439-01: 2.4 × 2.4 mm
C10439-02: 5.8 × 5.8 mm
C10439-03: 10 × 10 mm

Applications

- Precision photometry
- Light source power monitors
- Fluorescence detection of printed matter
- Illuminometers
- Color difference meters
- Refractometer
- Flowmeters, etc.

■ Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit
Supply voltage	Vcc Max.	±13	V
Operating temperature *1	Topr	0 to +50	°C
Storage temperature *1	Tstg	-10 to +60	°C

*1: No condensation

■ Recommended operating range

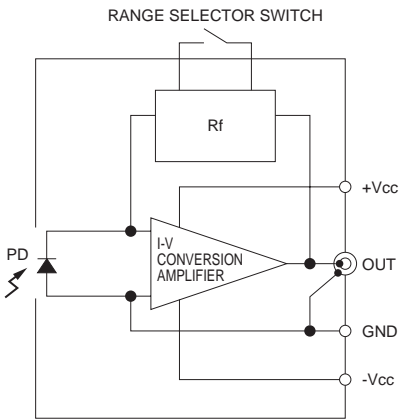
Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply power voltage	Vcc	±5	-	±12	V

■ Electrical and optical characteristics (Ta=25 °C, Vcc=±12 V, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ		-	190 to 1100	-	nm
Peak sensitivity wavelength	λ_p		-	960	-	nm
Saturation input optical power		High range, $\lambda=\lambda_p$	-	23	-	nW
		Low range, $\lambda=\lambda_p$	-	2360	-	
Photo sensitivity	S	High range, $\lambda=\lambda_p$	-	500	-	mV/nW
		Low range, $\lambda=\lambda_p$	-	5	-	
Frequency bandwidth (-3 dB)	fc	High range	DC	10	-	Hz
		Low range	DC	1000	-	
Conversion impedance	Zt	High range	-	1×10^9	-	V/A
		Low range	-	1×10^7	-	
Maximum output amplitude	VFS	Vcc=±5 to ±12 Output current Io=1 mA	+Vcc - 0.5	+Vcc - 0.2	-	V
Dark voltage	Vd	Dark state	-5	-	+5	mV
Time drift (drift over time)	-	Dark state Ta=25 °C *2	-0.5	-	+0.5	mV/day
Output noise voltage width	Vn	Dark state, within frequency band	-	2	5	mVp-p
Capacitive load	CL		500	-	-	pF
Output resistance	Zo		-	100	-	Ω
Current consumption	Icc	Dark state	-	-	±2	mA

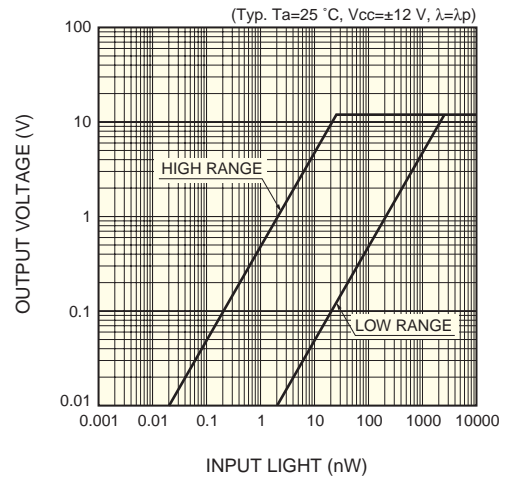
*2: Dark voltage variation per day, measured at 25 °C after a 10-minute warm-up after power-on.

■ Block diagram



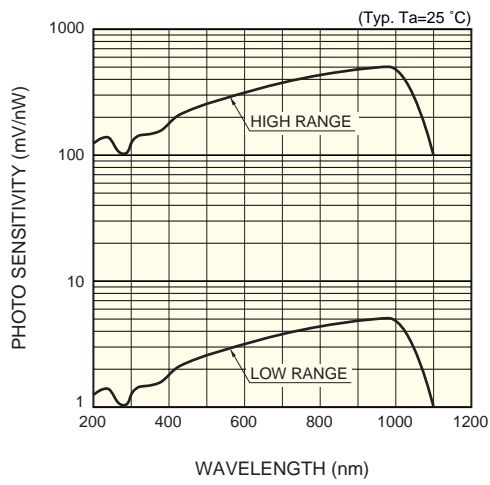
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■ Output voltage vs. input light



KACCB0172EA

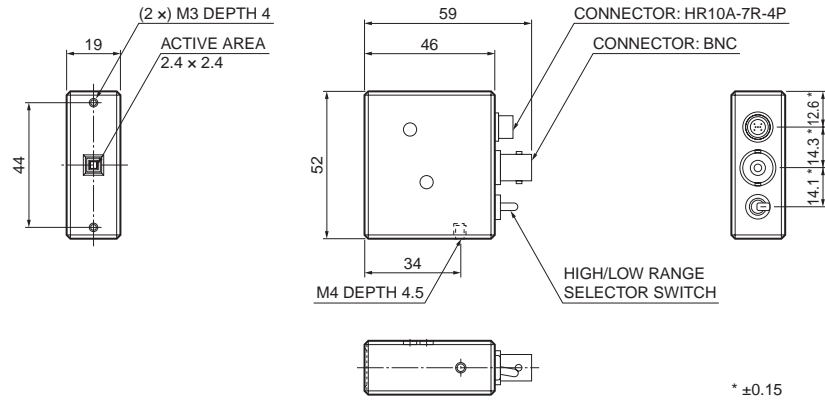
■ Spectral response



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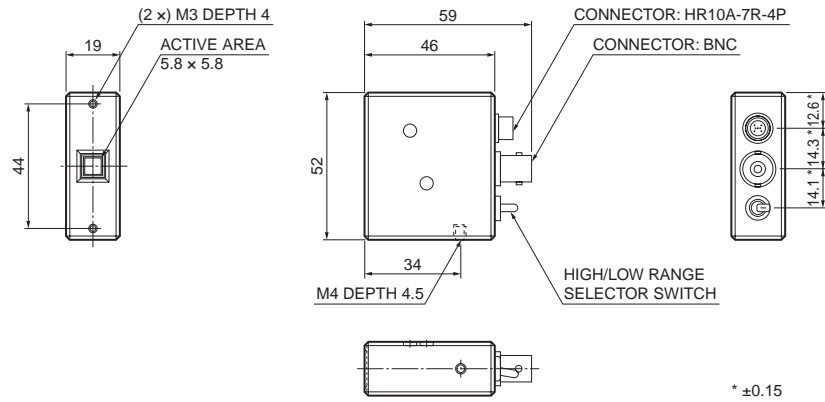
■ Dimensional outlines (unit: mm, tolerance: ± 0.2 mm unless otherwise noted)

C10439-01



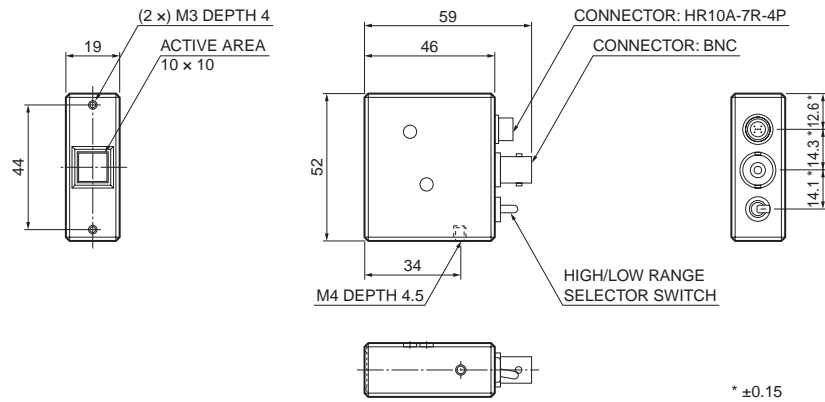
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C10439-02



KACCA0204EA

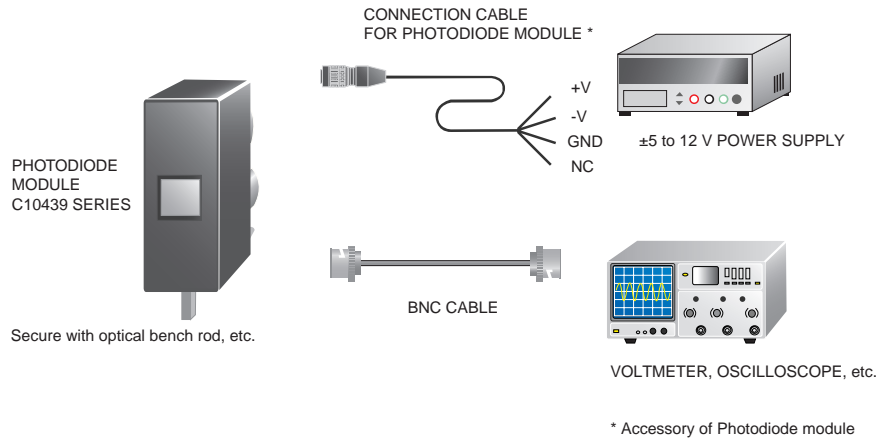
C10439-03



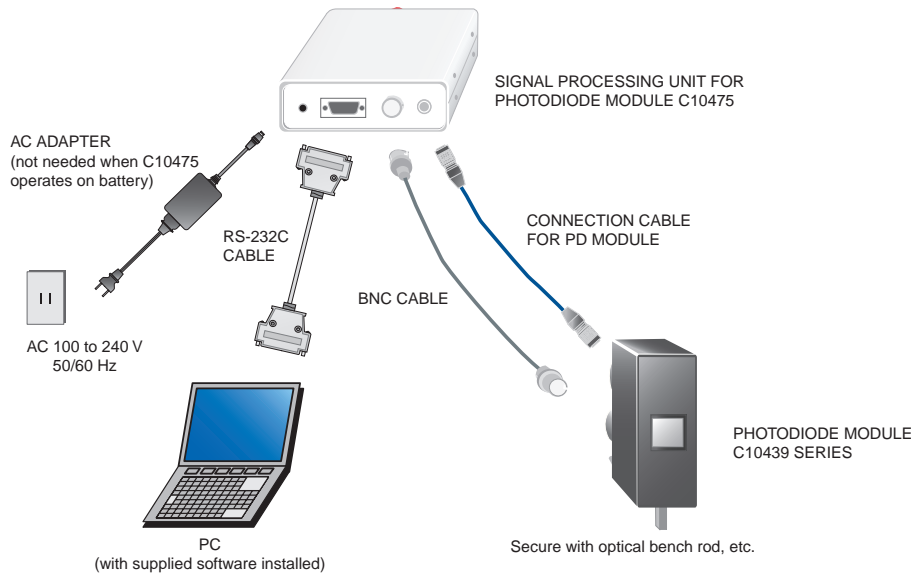
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■ Connection examples

Connection with DC voltmeter, oscilloscope, etc.



Connection with signal processing unit for photodiode module



■ Accessory

- Cable for power supply: length 1 m (no connector on one end)

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