Opto-Electronic Components

Stand 02.07.2018

Ultra Low noise Photoreceiver — Series atto

Spectral Ranges — **190nm – 1100nm**, **800nm – 1700nm**

Key Features

- Spectral Range: 190nm – 1700nm
- Gain: 10^7 up to 10^{13} V/W
- Output Signal: 0 up to +5V … 10V
- Noise: ultra low noise, NEP down to 20 aW/√Hz (20×10^{-18} W/√Hz)
- Instant operability
- Compact design
- Rugged design
- Easy to handle
- Excellent support

Applications

- Near Field Microscopy (SNOM)
- Fluorescence
- Spektroscopy
- Biophotonic
- Chromatography
- Fiber Optic Analysis
- Alternative to PMT or LN_2-Dewar detectors
- Optical input for oscilloscopes, A/D converter or Lock-In Amplifier

General

For the photo receivers of the atto series the lowest noise partially TE-cooled and selected photodiodes are used only.
The amplification of the detector signals is performed by an amplifier of our atto series, the noise of which is much lower than the noise of the detector.
Therefore signal levels in the atto watt range can be detected and can be processed via oscilloscope, or AD converter or lock-in amplifier.
The plug type power supply is provided together with the atto sensor.

All relevant technical data is measured individually and documented.

OEC GmbH
Vogelbergstraße 20
D-86441 Zusmarshausen

Tel. +49-(0)8291-18 86-0
Fax. +49-(0)8291-18 86-79
info@oec-gmbh.de
www.oec-gmbh.de

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Survey

Model	Sensor	Spectral Range nm	Signal-Input via	Bandwidth -3dB	Rise Time 10 - 90 %	Gain V / W	NEP fW / √Hz	Saturation Power Level nW	Case Type (***)
atto-sc-1	SiC	200 - 400	0,23mm □, 5mm Linse	DC - 10 Hz	35 ms	10^{10}	7	1	2
atto-gp-1	GaP	190 - 570	1mm □, 5mm Linse	DC - 10 Hz	35 ms	10^{10}	3,5	1	2
atto-su-1	Si UV	200 - 1000	1,1mm Ø, 5mm Linse	DC - 10 Hz	35 ms	$4*10^{10}$	1,8	0,25	2
atto-su-2	Si UV	200 - 1100	2,4mm G	(**), DC - 1...10 Hz	35 ... 350 ms	10^{12}	0,4	0,005	1
atto-se-1	Si Eye	400 - 700	1,3mm Ø, 5mm Linse	DC - 10 Hz	35 ms	$3*10^{10}$	1,6	0,3	2
atto-s-1	Si	400 - 1050	50µm Ø Faser	(**), DC - 1...350 Hz	1 ... 350 ms	10^{13}	0,02	0,0005	1
atto-s-2	Si	300 - 1000	0,4mm Ø, 5mm Linse	Charge amplifier		10^{13} V / Cb	80 (*)	1pCb	2
atto-sa-1	Si APD	400 - 1000	0,5mm Ø, 5mm Linse	(**) DC - 0,1 ...10 KHz	0,035 ... 3,5 ms	$5*10^{11}$	0,05	0,02	1
atto-i-1	InGaAs	800 - 1700	50µm Ø Faser	DC - 1,5 KHz	230µs	10^{9}	5	10	1
atto-i-2	InGaAs	800 - 1700	50µm Ø Faser	DC - 100 KHz	3,5µs	10^{7}	90	500	1
atto-i-3	InGaAs	800 - 1700	50µm Ø Faser	DC - 300 KHz	1,2µs	10^{7}	120	500	1
atto-i-4	InGaAs	800 - 1700	1mm Ø, 5mm Linse	(**), DC - 1...10 Hz	35 ... 350 ms	10^{12}	0,4	0,01	1
atto-i-5	InGaAs	800 - 1700	1mm Ø, 5mm Linse	DC - 5 KHz	70µs	10^{8}	25	100	2
atto-i-6	InGaAs	800 - 1700	3mm Ø	DC - 2 KHz	175µs	10^{8}	50	100	2
atto-i-7	InGaAs	800 - 1700	50µm Ø Faser	(**), DC - 2...50 Hz	7 ... 175 ms	10^{12}	0,3	0,01	1
atto-i-8	InGaAs	800 - 1700	0,3mm Ø, 5mm Linse	(**), DC - 1...10 Hz	35 ... 350 ms	10^{12}	0,3	0,01	1
atto-i-9	InGaAs	800 - 1700	1mm Ø, 5mm Linse	DC - 600 Hz	580µs	10^{9}	5	10	2
atto-i-10	InGaAs	800 - 1700	1mm Ø, 5mm Linse	DC - 80 Hz	5ms	10^{10}	2	1	2
atto-i-11	InGaAs	800 - 1700	1mm Ø, 5mm Linse	DC - 10 Hz	35ms	10^{12}	0,4	0,01	1
atto-i-12	InGaAs	800 - 1700	3mm Ø	DC - 400 Hz	900µs	10^{9}	9	10	2
atto-ia-1	InGaAs APD	800 - 1700	0,2mm Ø, 5mm Linse	DC - 100...<200 KHz	1,75 ... 3,5 µs	10^{6} .... 10^{8}	30	50000...50	1

(*) Photoelectrons RMS
(**) Switch selectable
(***) 1= Aluminium 150mm x 64mm x 36mm (Farnell-No 3535964) or
Aluminium with flange 119mm x 98mm x 30mm (Farnell-No 3062016)
2= Aluminium tube 20mm Ø, length 70mm
Typical data shown only

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