

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 $20 \text{ aW}/\sqrt{\text{Hz}}$
($20 \times 10^{-18} \text{ W}/\sqrt{\text{Hz}}$)
- Instant operability
- Compact design
- Rugged design
- Easy to handle
- Excellent support

Applications

- Near Field Microscopy (SNOM)
- Fluorescence
- Spektroskopie
- Biophotonic
- Chromatography
- Fiber Optic Analysis
- Alternative to PMT or LN₂-Dewar detectors
- Optical input for oscilloscopes, A/D converter or Lock-In Amplifier

General

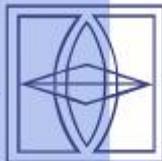
For the photo receivers of the atto series the lowest noise partially TE-cooled and selected photodiodes are used only.

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.



Survey

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

Typical data shown only