

P-9202-4

<https://www.gigahertz-optik.com/en-us/product/p-9202-4/>

Product tags:



Description

Transimpedance amplifier for Light Detectors

Silicon, Germanium and Indium Gallium Arsenide Photodiodes offer best linearity correlation of light input to their electrical signal when are operated in photovoltaic mode. Simulation of a real short circuit at a signal amplifier input requires a current to voltage conversion amplifier with very low offset voltage independent of the selected gain range.



P-9202

Low noise output signal

The P-9202 amplifiers assembled in a metal shielding housing equipped with low noise feedback resistors and gold contact read-relays for gain selection offer very low noise voltage signals.

Short rise time model P-9202-4

The P-9202-4 model is a fast amplifier with a 8-step switchable sensitivity range from 300 nA/V to 1 mA/V and a nearly constant slew-rate of 1 μ s in all gain ranges. Photodiodes can be operated in photovoltaic or photodiode mode (-5 V bias voltage). Useful in applications requiring high bandwidth up to 1 MHz or short 1 μ s rise time.

General purpose model P-9202-5

The P-9202-5 model is a general purpose amplifier featuring an 8-step switchable sensitivity range from 100 pA/V to 1 mA/V and gain dependent slew-rate. Photodiodes can be operated in photovoltaic or photodiode mode (-5 V bias voltage).

Very high gain model P-9202-6

The P-9202-6 model is a very high sensitivity amplifier with an 8-step switchable sensitivity range from 10 pA/V to 100 μ A/V and variable, gain dependent slew rates. This model is suited to applications involving very low photodiode signals starting in the 10 femto A (0.01 pA) range.

Specifications

Product	
Power Supply	(16 - 24) VDC / 80mA Connector: Friwo Nb. 105316 <i>Important Note: only use plug-in power supply supplied</i>
Current Input	Connector: BNC Socket (Shield: -5V BIAS voltage or GND)
Max. signal current	$\pm$ 5 mA

max. Input Voltage	DC-Supply Voltage / 2																																																																																																																
Bias	± 5 pA (@ 20 °C)																																																																																																																
Bias	-5 V bias voltage at shield of Input BNC Socket (switchable to 0 VDC or -5 VDC). If -5 V BIAS voltage is used, the anode of the detector has to be connected to the shield and the cathode to the inner contact of the BNC Input connector.																																																																																																																
Output Voltage	Output voltage corresponding to the input current Connector: BNC Socket Max. Output Voltage: ± 9 V Max. Output Current: ± 5 mA If an oscilloscope is used to measure the output voltage, set the input impedance of the oscilloscope to 1MΩ.																																																																																																																
Current / Voltage gain ranges	8 (see "Range Data Specification")																																																																																																																
Measurement range	10 position rotary switch (OFF, REM, 8 Ranges)																																																																																																																
Interface	Optocoupler input for external gain switch (5V / 25mA) Connector: DSUB 9 pins, female																																																																																																																
Range Specifications	Range Number	Range Gain	Slew-Rate	Noise	Error																																																																																																												
		(A/V)	(10 - 90%)	(p-p)	(20°C)																																																																																																												
	1	$1 \cdot 10^{-3}$	1 μs	1 mV	0.2% 2 mV																																																																																																												
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	4	$3 \cdot 10^{-5}$	1 μs	1 mV	0.2% 5mV																																																																																																												
	5	$1 \cdot 10^{-5}$	1 μs	1 mV	0.2% 2 mV																																																																																																												
	6	$3 \cdot 10^{-6}$	1 μs	3 mV	0.2% 5 mV																																																																																																												
	7	$1 \cdot 10^{-6}$	3 μs	3 mV	0.2% 2 mV																																																																																																												
	8	$3 \cdot 10^{-7}$	3 μs	10 mV	0.2% 5 mV																																																																																																												
<i>*) The offset error is produced by the finite internal resistance of the current source. To calculate the offset error use the value in the column 'Offset' with the following formula:</i> $U = \text{Offset} / (R / k)$ <i>U: max. Offset Voltage at Output</i> <i>R: internal Resistance of the current source (unit k)</i>																																																																																																																	
Remote Range Control	The range can be selected via the remote interface. The rotary switch therefore has to be set to "REM". By applying +5VDC voltage (current max. 25mA) at the corresponding control pin of the remote connector the measurement range can be set. Connector REMOTE (Connector Type: DSUB 9 pin female) <table> <tr> <td>Pin 1</td><td colspan="5">Remote range group selection (Range 1 / 3 / 5 / 7 or Range 2 / 4 / 6 / 8)</td></tr> <tr> <td>Pin 2</td><td colspan="5">Remote range 7/8</td></tr> <tr> <td>Pin 3</td><td colspan="5">Remote range 5/6</td></tr> <tr> <td>Pin 4</td><td colspan="5">Remote range 3/4</td></tr> <tr> <td>Pin 5</td><td colspan="5">Remote range 1/2</td></tr> <tr> <td>Pin 6</td><td colspan="5">GND</td></tr> <tr> <td>Pin 7</td><td colspan="5">Analog output (ROUT = 1k)</td></tr> <tr> <td>Pin 8</td><td colspan="5">Remote range common</td></tr> <tr> <td>Pin 9</td><td colspan="5">free</td></tr> </table> The desired range is selected by applying a voltage of 5VDC between the corresponding pins and pin 8 <table> <tr> <td>Range</td><td>Pin 5</td><td>Pin 4</td><td>Pin 3</td><td>Pin 2</td><td>Pin 1</td></tr> <tr> <td>1</td><td>5V</td><td>0*</td><td>0*</td><td>0*</td><td>0*</td></tr> <tr> <td>2</td><td>5V</td><td>0*</td><td>0*</td><td>0*</td><td>5V</td></tr> <tr> <td>3</td><td>0*</td><td>5V</td><td>0*</td><td>0*</td><td>0V</td></tr> <tr> <td>4</td><td>0*</td><td>5V</td><td>0*</td><td>0*</td><td>5V</td></tr> <tr> <td>5</td><td>0*</td><td>0*</td><td>5V</td><td>0*</td><td>0*</td></tr> <tr> <td>6</td><td>0*</td><td>0*</td><td>5V</td><td>0*</td><td>5V</td></tr> <tr> <td>7</td><td>0*</td><td>0*</td><td>0*</td><td>5V</td><td>0*</td></tr> <tr> <td>8</td><td>0*</td><td>0*</td><td>0*</td><td>5V</td><td>5V</td></tr> </table>					Pin 1	Remote range group selection (Range 1 / 3 / 5 / 7 or Range 2 / 4 / 6 / 8)					Pin 2	Remote range 7/8					Pin 3	Remote range 5/6					Pin 4	Remote range 3/4					Pin 5	Remote range 1/2					Pin 6	GND					Pin 7	Analog output (ROUT = 1k)					Pin 8	Remote range common					Pin 9	free					Range	Pin 5	Pin 4	Pin 3	Pin 2	Pin 1	1	5V	0*	0*	0*	0*	2	5V	0*	0*	0*	5V	3	0*	5V	0*	0*	0V	4	0*	5V	0*	0*	5V	5	0*	0*	5V	0*	0*	6	0*	0*	5V	0*	5V	7	0*	0*	0*	5V	0*	8	0*	0*	0*	5V	5V
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Miscellaneous

Dimensions	105 mm x 80 mm x 45 mm
Weight	500 g
Temperature range	operation: (5 bis 40) °C storage: (-10 bis 50) °C
Humidity	<80%, non-condensing
Info	In the case of very high humidity, fault currents of the radiometer are possible at low measuring currents and should be taken into account.

Configurable with

Product Name	Product Image	Description	Go to product
VL-3701		Detector head for the measurement of photopic illuminance in Lux [lx]	https://www.gigahertz-optik.com/en-us/product/vl-3701/
VL-3702		Detector head for the measurement of photopic illuminance in Lux [lx]. Class B, $f_1 \leq 6 \%$	https://www.gigahertz-optik.com/en-us/product/vl-3702/
VL-3704		Detector head for the measurement of photopic illuminance in Lux [lx]	https://www.gigahertz-optik.com/en-us/product/vl-3704/
VL-3705		Detector head for the measurement of scotopic illuminance in Lux [lx]	https://www.gigahertz-optik.com/en-us/product/vl-3705/
PD-9310A		High sensitive detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f_1 \leq 3 \%$, 2.8nA/lx, 20mm diffuser, for the usage with optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.com/en-us/product/pd-9310a/
PD-9310B		High sensitive detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f_1 \leq 6 \%$, 2.8nA/lx, 20mm diffuser, for the usage with optometers and amplifiers, calibration	https://www.gigahertz-optik.com/en-us/product/pd-9310b/
PD-9310B-N		Very high sensitive detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f_1 \leq 3 \%$, 28nA/lx, no diffuser, for the usage with optometers and amplifiers, calibration	https://www.gigahertz-optik.com/en-us/product/pd-9310b-n/

Product Name	Product Image	Description	Go to product
LP-9901		Detector head to measure Laser radiant power in W and Laser irradiance in W/m ²	https://www.gigahertz-optik.com/en-us/product/lp-9901/
VL-3701 with SRT-M37-L		Detector head to measure the photopic illuminance in lx and the luminance in cd/m ²	https://www.gigahertz-optik.com/en-us/product/vl-3701-with-srt-m37-l/
PD-9310 with SRT-M37-L		High sensitive detector head to measure the photopic luminance in cd/m ² . Features: front lense for 1°, 2°, 5° or 10° viewing angle, for the usage with Optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.com/en-us/product/pd-9310-with-srt-m37-l/
LDM-9810		Detector head to measure the photopic spot luminance in cd/m ² . Features: selectable 20', 1° and 6° viewing angles, view finder, focus able achromatic lens, for the usage with Optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/lm-9810/
VL-1101		Photometric detector head with VL-11 mount. Features: modular detector for use with integrating spheres, front lenses etc. For use with optometers and signal amplifiers	https://www.gigahertz-optik.com/en-us/product/vl-1101/
LDM-9901		Detector head to measure the photopic spot luminance in cd/m ²	https://www.gigahertz-optik.com/en-us/product/lm-9901/
ISD-0.8-SiLP		Integrating sphere detector with short rise time for Laser power in W	https://www.gigahertz-optik.com/en-us/product/isd-0.8-silp/
VL-1101 + UMPA-0.5-11-RD Detector head		Module detector head for the measurement of photopic illuminance in Lux [lx]. Features: UMPA adapter for usage with integrating spheres, for the usage with optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.com/en-us/product/vl-1101uempa-05-11-rd/

Product Name	Product Image	Description	Go to product
ISD-5-VL		Integrating sphere detector for luminous flux (lm) of 2π spot sources	https://www.gigahertz-optik.com/en-us/product/isd-5-vl/
ISD-10-VL		Integrating sphere detector for luminous flux (lm) of 2π spot sources	https://www.gigahertz-optik.com/en-us/product/isd-10-vl/
ISD-15P-VL		Integrating sphere detector for luminous flux (lm) of 2π sources	https://www.gigahertz-optik.com/en-us/product/isd-15p-vl/
TD-11VL01		Photometric, temperature stabilized detector with DP-11 mount	https://www.gigahertz-optik.com/en-us/product/td-11vl01/
RW-3701		Detector head for the measurement of irradiance in W/m^2	https://www.gigahertz-optik.com/en-us/product/rw-3701/
RW-3702		Detector head for the measurement of irradiance in W/m^2	https://www.gigahertz-optik.com/en-us/product/rw-3702/
RW-3703		Detector head for the measurement of irradiance in W/m^2	https://www.gigahertz-optik.com/en-us/product/rw-3703/
RW-3704		Detector head for the measurement of irradiance in W/m^2	https://www.gigahertz-optik.com/en-us/product/rw-3704/
RW-3705		Detector head for the measurement of irradiance in W/m^2	https://www.gigahertz-optik.com/en-us/product/rw-3705/
RW-3708		Detector head for the measurement of irradiance in W/m^2	https://www.gigahertz-optik.com/en-us/product/rw-3708/

Product Name	Product Image	Description	Go to product
UV-3701		Detector head for the measurement of irradiance of UV radiation in W/m ² . Features: spectral responsivity from 315-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/uv-3701/
UV-3702		Detector head for the measurement of irradiance of UV radiation in W/m ² . Features: spectral responsivity from 280-315nm (UV-B), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/uv-3702/
UV-3703		Detector head for the measurement of irradiance of UV radiation in W/m ² . Features: spectral responsivity from 200/250-280nm (UV-C), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/uv-3703/
UV-3710		Detector head for the measurement of irradiance of UV radiation in W/m ² . Features: spectral responsivity from 320-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/uv-3710/
UV-3711		Detector head for the measurement of irradiance of UV radiation in W/m ² . Features: spectral responsivity from 280-320nm (UV-B), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/uv-3711/
UV-3716		Detector head for the measurement of irradiance of UV radiation in W/m ² . Features: spectral responsivity from 305-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/uv-3716/
UV-3717		Detector head for the measurement of irradiance of UV radiation in W/m ² . Features: spectral responsivity from 315-400nm (UV-A), low cross talk from radiation > 400 nm, cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/uv-3717/
UV-3719		Detector head for the measurement of irradiance of UV radiation in W/m ² . Features: spectral responsivity from 250-400nm (UV), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/uv-3719/
UV-3720		Detector head for the measurement of irradiance of UV radiation in W/m ² . Features: spectral responsivity from 240-320nm (UV), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/uv-3720/
UV-3721		Detector head for the measurement of irradiance of UV radiation in W/m ² . Features: spectral responsivity from 350-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/uv-3721/
UV-3718		Detector head for the measurement of high irradiance of UV-C 254nm radiation in W/m ²	https://www.gigahertz-optik.com/en-us/product/uv-3718/

Product Name	Product Image	Description	Go to product
ISD-5-VISNIR		Integrating sphere detector for radiant power in W of 2π sources	https://www.gigahertz-optik.com/en-us/product/isd-5-visnir/
ISD-3P-Si		Integrating sphere detector for Laser power in W	https://www.gigahertz-optik.com/en-us/product/isd-3p-si/
UV-3706		Detector head to measure irradiance W/m^2 in Bilirubin phototherapy. Features: Bilirubin actinic responsivity, cosine field-of-view, for use with optometers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/uv-3706/
UV-3711-308		Detector head for the measurement of irradiance of 308nm Eximer Lasers in W/m^2 . Features: flat spectral responsivity beside 308nm, cosine field-of-view, dose measurement in conjunction with P-9710 optometer, calibration certificate	https://www.gigahertz-optik.com/en-us/product/uv-3711-2/
UV-3709		Detector for Blue-light hazard measurements. Features: Single-cell detector, BLH actinic irradiance, for the use with optometer, calibration certificate	https://www.gigahertz-optik.com/en-us/product/uv-3709/
ISD-3P-IGA		Integrating sphere detector with InGaAs photodiode and 30 mm sphere for Laser power in W.	https://www.gigahertz-optik.com/en-us/product/isd-3p-iga-2/
ISD-5-Si		Integrating sphere detector for Laser power in W	https://www.gigahertz-optik.com/en-us/product/isd-5-si/
MD-37-SU100-VL		Photometric detector head with M30x1 mount	https://www.gigahertz-optik.com/en-us/product/md-37-su100-vl/
MD-37-SU100-VLS		Scotopic detector head with M30x1 mount	https://www.gigahertz-optik.com/en-us/product/md-37-su100-vls/

Product Name	Product Image	Description	Go to product
PD-9304		Universal detector head for LASER power, illuminance and 400-1100 nm irradiance. Features: Si-photodiode with 1 cm², exchangeable filters and cosine diffuser, for the usage with optometers and signal amplifiers	https://www.gigahertz-optik.com/en-us/product/pd-9304/
ISD-15-Si		Integrating sphere detector for Laser power in W	https://www.gigahertz-optik.com/en-us/product/isd-15-si/
PD-11 Series		Detector head with DP-11 mount	https://www.gigahertz-optik.com/en-us/product/pd-11-serie/
MD-37 series		Detector head with M30x1 mount. Features: modular detector for use MD-37, SRT and other accessories, Si, SiLP, InGaAs, SiC, GaP photodiodes, for use with optometers and signal amplifiers	https://www.gigahertz-optik.com/en-us/product/md-37-serie/
UV-37 with SRT-M37-L-UV		Detector heads to measure the UV irradiance in W/m² and the UV-radiance in W/(m²sr)	https://www.gigahertz-optik.com/en-us/product/uv-37usrt-m37-l-uv/
UV-3725		Detector for the measurement of UV-C 254 nm irradiance in air disinfection applications	https://www.gigahertz-optik.com/en-us/product/uv-3725/
RCH-006		Detector head for high intensity irradiation in UV wide range curing processes	https://www.gigahertz-optik.com/en-us/product/rch-006/
RCH-008		Detector Head for High-Intensity Irradiation in UV-A Curing Processes	https://www.gigahertz-optik.com/en-us/product/rch-008/
RCH-009		Detector Head for High-Intensity Irradiation in Blue Light Curing Processes	https://www.gigahertz-optik.com/en-us/product/rch-3/
RCH-010		Detector head for high intensity irradiation in UV H-type light curing processes.	https://www.gigahertz-optik.com/en-us/product/rch-4/
RCH-011		Detector head for high intensity irradiation in UVA peak light curing processes.	https://www.gigahertz-optik.com/en-us/product/rch-5/

Product Name	Product Image	Description	Go to product
RCH-012		Detector head for high intensity irradiation in blue light curing processes.	https://www.gigahertz-optik.com/en-us/product/rch-6/
RCH-013		Irradiance Detector for UV or Blue light curing processes	https://www.gigahertz-optik.com/en-us/product/rch-7/
RCH-014		Detector head for high intensity irradiation in UV or blue light curing processes. Features: Separate light integrator and detector with flexible fiber coupling, 400nm+436nm BLUE responsivity, wide viewing angle, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/rch-8/
RCH-015		Detector head for high intensity irradiation in UV or blue light curing processes. Features: Separate light integrator and detector with flexible fiber coupling, light, 436nm BLUE-Peak responsivity, wide viewing angle, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/rch-9/
RCH-002		Detector Head for High-Intensity Irradiation in UVA or Blue Light Curing Processes	https://www.gigahertz-optik.com/en-us/product/rch-002/
RCH-005		Detector head for high intensity irradiation in UV or blue light curing processes. Features: Separate light integrator and detector with rigid fiber coupling, (320-460)nm UVABLU responsivity, wide viewing angle, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/rch-005/
RCH-116		Detector head with rigid fiber for high intensity UV and BLUE LED sources.	https://www.gigahertz-optik.com/en-us/product/rch-2/
RCH-106		Detector head for high intensity irradiation in UV wide range curing processes	https://www.gigahertz-optik.com/en-us/product/rch-10/
RCH-108		Detector head for high intensity irradiation in UVA Peak light curing processes	https://www.gigahertz-optik.com/en-us/product/rch-11/
RCH-109		Detector head for high intensity irradiation in blue-peak light curing processes	https://www.gigahertz-optik.com/en-us/product/rch-12/
RCH-110		Detector head for high intensity irradiation in H-Type light curing processes	https://www.gigahertz-optik.com/en-us/product/rch-13/
RCH-111		Detector head for high intensity irradiation in UVA light curing processes	https://www.gigahertz-optik.com/en-us/product/rch-14/

Product Name	Product Image	Description	Go to product
RCH-112		Detector head for high intensity irradiation blue light curing processes.	https://www.gigahertz-optik.com/en-us/product/rch-15/
RCH-113		Detector head for high intensity irradiation in UV or blue light curing processes	https://www.gigahertz-optik.com/en-us/product/rch-16/
RCH-114		Detector head for high intensity irradiation in UV or blue light curing processes. Features: Separate light integrator and detector with rigid fiber coupling, 400nm+436nm BLUE responsivity, wide viewing angle, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/rch-17/
RCH-115		Detector head for high intensity irradiation in UV or blue light curing processes. Features: Separate light integrator and detector with rigid fiber coupling, light, 436nm BLUE-Peak responsivity, wide viewing angle, for the usage with optometers and amplifiers, calibration certificate.	https://www.gigahertz-optik.com/en-us/product/rch-18/

Purchasing information

Article-Nr	Modell	Description
Product		
15295281	P-9202-4	Amplifier, with power supply and manual

Contact, Calibration, Service & Support

We are known worldwide for excellent technical consulting and after sales support. Contact us to find together the best solution for you. Our services:

- Technical Consulting & Sales
- After-Sales Support
- Calibrations & Re-Calibrations ([ISO/IEC 17025 Calibration Services](#), [factory calibration](#), [Calibration of Third-Party Products](#))
- Repairs & Updates
- OEM & Feasibility Consulting of Customized Solutions

[Send us your inquiry](#) or contact us by phone or e-mail. We would welcome your feedback too or review us on [Google](#).

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