

P-9202-4

<https://www.gigahertz-optik.de/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.

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 330 kHz 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	(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. Input Current	± 5 mA																																																																													
max Input Voltage	DC-Supply Voltage / 2																																																																													
Input Bias Current	± 5 pA (@ 20 °C)																																																																													
BiasVoltage	-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	<p>Output voltage corresponding to the input current Connector: BNC Socket Max. Output Voltage: ± 9 V Max. Output Current: ± 5 mA</p> <p>If an oscilloscope is used to measure the output voltage, set the input impedance of the oscilloscope to 1MΩ.</p>																																																																													
Current / Voltage gain ranges	8 (see "Range Data Specification")																																																																													
Range Front panel control	10 position rotary switch (OFF, REM, 8 Ranges)																																																																													
Remote Control	Optocoupler input for external gain switch (5V / 25mA) Connector: DSUB 9 pins, female																																																																													
Range Specifications	Range Number	Range Gain (A/V)	Slew-Rate (10 - 90%)	Noise (p-p)	Error (20°C)	Offset*) (20°C)																																																																								
	1	1x10 ⁻³	1µs	1mV	0,2%2mV	10V																																																																								
	2	3x10 ⁻⁴	1µs	1mV	0,2%5mV	30V																																																																								
	3	1x10 ⁻⁴	1µs	1mV	0,2%2mV	100V																																																																								
	4	3x10 ⁻⁵	1µs	1mV	0,2%5mV	300V																																																																								
	5	1x10 ⁻⁵	1µs	1mV	0,2%2mV	1mV																																																																								
	6	3x10 ⁻⁶	1µs	3mV	0,2%5mV	3mV																																																																								
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	8	3x10 ⁻⁷	3µs	10mV	0,2%5mV	30mV																																																																								
	*) 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: $U = \text{Offset} / (R / k)$ <i>U: max. Offset Voltage at Output</i> <i>R: internal Resistance of the current source (unit k)</i>																																																																													
Remote Range Control	<p>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.</p> <p>Connector REMOTE (Connector Type: DSUB 9 pin female)</p> <table border="0"> <tr> <td>Pin 1</td> <td>Remote range group selection (Range 1 / 3 / 5 / 7 or Range 2 / 4 / 6 / 8)</td> </tr> <tr> <td>Pin 2</td> <td>Remote range 7/8</td> </tr> <tr> <td>Pin 3</td> <td>Remote range 5/6</td> </tr> <tr> <td>Pin 4</td> <td>Remote range 3/4</td> </tr> <tr> <td>Pin 5</td> <td>Remote range 1/2</td> </tr> <tr> <td>Pin 6</td> <td>GND</td> </tr> <tr> <td>Pin 7</td> <td>Analog output (ROUT = 1k)</td> </tr> <tr> <td>Pin 8</td> <td>Remote range common</td> </tr> <tr> <td>Pin 9</td> <td>free</td> </tr> </table> <p>The desired range is selected by applying a voltage of 5VDC between the corresponding pins and pin 8</p> <table border="0"> <thead> <tr> <th>Range</th> <th>Pin 5</th> <th>Pin 4</th> <th>Pin 3</th> <th>Pin 2</th> <th>Pin 1</th> </tr> </thead> <tbody> <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> </tbody> </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																																																																														

Temperature range	operation: 5 °C bis 40 °C storage: -10 °C bis 50 °C
Size	105 mm x 80 mm x 45 mm
CE conformity	compatible
Rohs	compatible
Warranty	12 month
Weight	500 g
Options	
Accessories	Plug-in power supply <i>Important Note: only use plug-in power supply supplied If another external power supply is used, be sure that the power supply has no electrical connection to input current source (detector) and to the output voltage measurement instrument. This is important, because the P-9202 uses internal virtual ground which adjusts the GND to the middle of the external supply voltage.</i>

Configurable with

Produktname	Product Image	Description	Show product
VL-3701		Detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f1 \leq 3 \%$, $f2 \leq 1.5 \%$, 0.5 nA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/VL-3701
VL-1101		Photometric detector head with DP-11 mount. Features: modular detector for use with integrating spheres, front lenses etc. For use with optometers and signal amplifiers	https://www.gigahertz-optik.de/en-us/product/VL-1101
ISD-5-VL		Integrating sphere detector for luminous flux (lm) of 2π spot sources. Features: 50mm dia, BaSO4 coating, 12.5mm dia port, for the usage with optometers and signal amplifiers, Calibration certificate	https://www.gigahertz-optik.de/en-us/product/ISD-5-VL

Produktname	Product Image	Description	Show product
ISD-10-VL		<p>Integrating sphere detector for luminous flux (lm) of 2π spot sources.</p> <p>Features: 100 mm dia, BaSO4 coating, 25.4 mm dia port, for the usage with optometers and signal amplifiers, Calibration certificate</p>	https://www.gigahertz-optik.de/en-us/product/ISD-10-VL
PD-9310A		<p>PD-9310A measurement head with GB-GD-360 photogoniometer for measurement of the luminous intensity distribution of 2π spot lamps and LEDs. Goniometer bench with adjustable measurement distance of up to 2000 mm. PD-9310A photometric detector corresponding to the DIN 5032 quality class A. Calibration certificate conforming to the ISO 17025 specifications. For use with all optometers and signal amplifiers from Gigahertz-Optik GmbH.</p>	https://www.gigahertz-optik.de/en-us/product/PD-9310A-2
RW-3701		<p>Detector head for the measurement of irradiance in W/m².</p> <p>Features: spectral responsivity from 400-500nm (BLUE), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/RW-3701
RCH-0		<p>Detector head for high intensity irradiation as in UV or blue light curing processes.</p> <p>Features: Separate light integrator and detector with flexible fiber coupling, light, 320-460nm UVABLUe responsivity, wide viewing angle, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/RCH-0
ISD-0.8-SiLP		<p>Integrating sphere detector with short rise time for Laser power in W.</p> <p>Features: 8 mm dia, ODM98 coating, 400 nm - 1100 nm responsivity, optional SMA Adapter, for the usage with fast optometers and signal amplifiers, Calibration certificate</p>	https://www.gigahertz-optik.de/en-us/product/ISD-0.8-SiLP
ISD-1.6 Si		<p>Integrating sphere detector for Laser power in W.</p> <p>Features: 16mm dia, 3mm dia port, BaSO4 coating, 400-1100nm responsivity, for the usage with optometers and signal amplifiers, Calibration certificate</p>	https://www.gigahertz-optik.de/en-us/product/ISD-1.6-Si
ISD-3P-Si		<p>Integrating sphere detector for Laser power in W.</p> <p>Features: 30 mm dia, 5 mm dia port, synthetic ODM98 coating, 400 nm - 1100 nm responsivity, for the usage with optometers and signal amplifiers, Calibration certificate</p>	https://www.gigahertz-optik.de/en-us/product/ISD-3P-Si

Produktname	Product Image	Description	Show product
ISD-5P-Si		Integrating sphere detector for Laser power in W. Features: 50 mm dia, 10 mm dia port, synthetic ODM98 coating, 400 nm - 1100 nm responsivity, for the usage with optometers and signal amplifiers, Calibration certificate	https://www.gigahertz-optik.de/en-us/product/ISD-5P-Si
PD-11 series		Detector head with DP-11 mount. Features: modular detector for use with integrating spheres, front lenses etc, Si, SiLP, InGaAs, SiC, GaP photodiodes, for use with optometers and signal amplifiers	https://www.gigahertz-optik.de/en-us/product/PD-11-Serie
ISD-3P-IGA		Integrating sphere detector with InGaAs photodiode and 30 mm sphere for Laser power in W. Features: 800 nm - 1800 nm spectral responsivity, 5 mm dia measurement port, synthetic ODM98 coating, optional SMA Adapter, for the usage with Optometer and signal amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/ISD-3P-IGA-2
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.de/en-us/product/UV-3701

Purchasing information

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