

100 MHz balanced photodetector

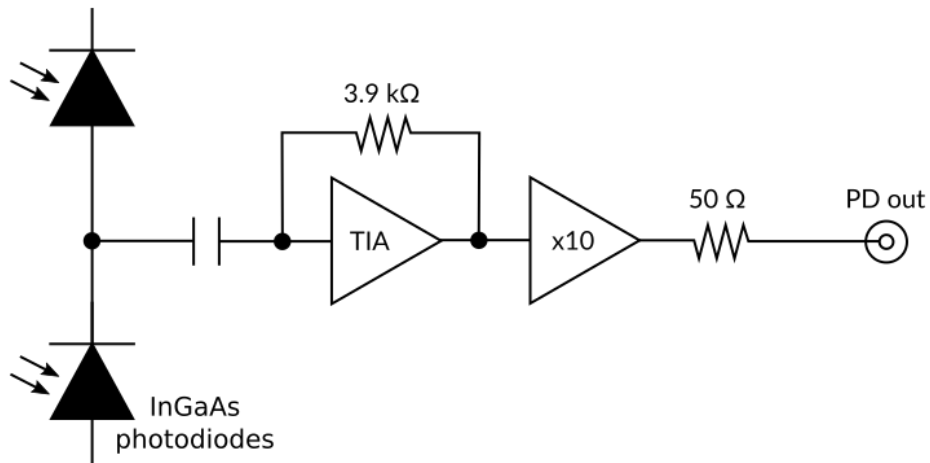


Koheron PD100B is an amplified balanced detector with 39 kV/A gain, 100 MHz bandwidth and a common mode rejection ratio of 35 dB. Available in AC and DC coupled versions, with mounted InGaAs photodiodes or without photodiodes, the PD100B is ideal for applications such as Optical Coherence Tomography and Lidar sensing.

Specifications

	PD100B-AC	PD100B-DC
Detector		
Detector type	InGaAs photodiodes	InGaAs photodiodes
Wavelength range	900 nm to 1700 nm	900 nm to 1700 nm
Optical input power	0 mW to 1.5 mW	0 mW to 1.5 mW
Photodiode connector	FC	FC
Photodiode active diameter	300 μm	300 μm
Photodiode peak responsivity	0.9 A/W	0.9 A/W
Transimpedance amplifier		
Coupling	AC	DC
DC cutoff frequency	160 Hz	
Small signal bandwidth (3 dB, $C_{in} = 8 \text{ pF}$)	160 Hz to 100 MHz	0 Hz to 100 MHz
Transimpedance gain	39 kV/A	39 kV/A
Output voltage range	-3 V to 3 V	-3 V to 3 V
CMRR at 1 MHz	35 dB	35 dB
Input current noise density (10 MHz, $C_{in} = 8 \text{ pF}$)	8 pA/ $\sqrt{\text{Hz}}$	8 pA/ $\sqrt{\text{Hz}}$
Output impedance	50 Ω	50 Ω
Output	SMA female connector	SMA female connector
Power supplies		
Positive supply voltage	5.5 V to 12 V, nom. 6 V	5.5 V to 12 V, nom. 6 V
Negative supply voltage	-12 V to -5.5 V, nom. -6 V	-12 V to -5.5 V, nom. -6 V
Quiescent current per rail	25 mA	25 mA
Maximum current per rail	120 mA	120 mA
Other		
Outside dimensions	63 mm x 38 mm x 14 mm	63 mm x 38 mm x 14 mm
Operating temperature	0 °C to 50 °C	0 °C to 50 °C
Weight	21 g	21 g
Mechanical details	Compatible with M6 metric breadboards (25 mm spacing)	Compatible with M6 metric breadboards (25 mm spacing)

Functional diagram

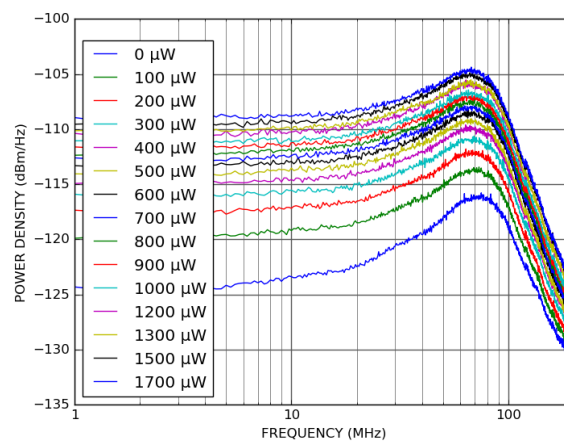


PD100B functional diagram

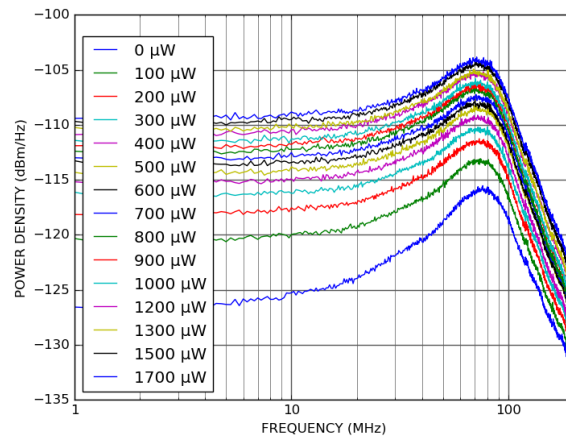
Characterization

Output power spectral density

The power spectral density of the PD100B output was measured for different incident optical powers. The indicated power is the incident power per photodiode. Optical source is a [Koheron LD100 laser](#) at 1550 nm.



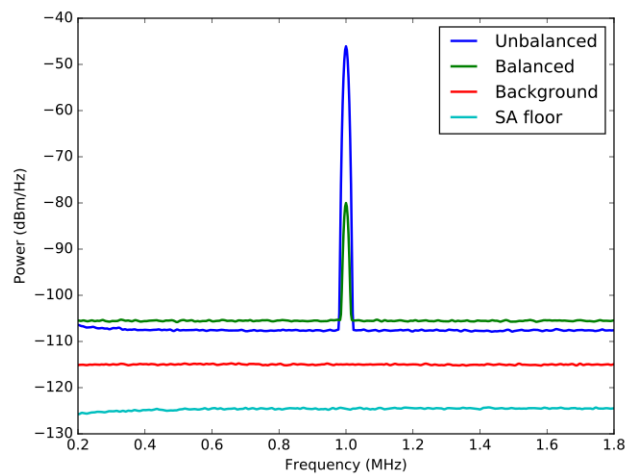
PD100B-AC output power spectral density



PD100B-DC output power spectral density

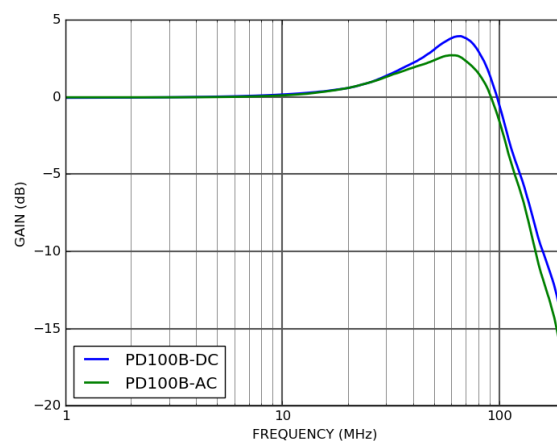
Common mode rejection ratio

When properly balanced, the common mode rejection ratio (CMRR) at 1 MHz of the PD100B is 35 dB. To maximize the CMRR care should be taken not only to balance the optical powers, but also the path length between the two channels.



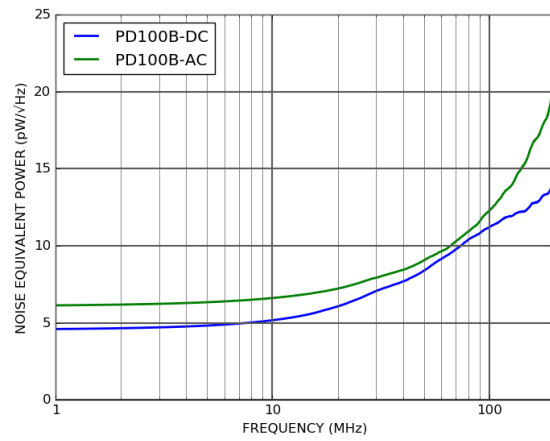
PD100B common mode rejection ratio

Frequency response



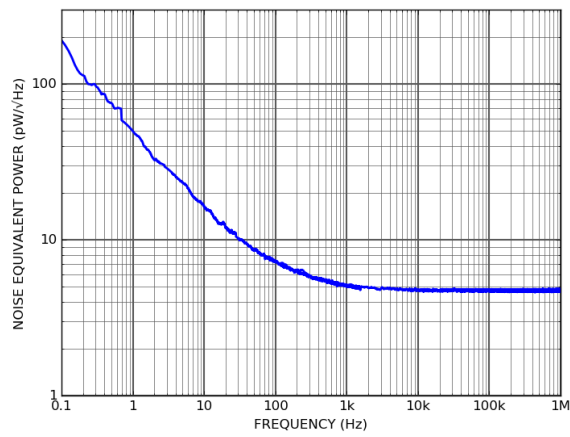
PD100B frequency response

Noise equivalent power



PD100B noise equivalent power

Low frequency noise equivalent power



PD100B-DC low frequency noise equivalent power

Ordering codes

PRODUCT NUMBER	ATTRIBUTE
PD100B-AC	InGaAs photodiodes mounted / Coupling AC
PD100B-DC	InGaAs photodiodes mounted / Coupling DC
PD100B-AC-NOP	No photodiodes / Coupling AC
PD100B-DC-NOP	No photodiodes / Coupling DC