



PA100 Pulse Amplifier

Description

The PA100 is a pulse amplifier used to counteract the effects of attenuating signal cables on small signals generated from photodiodes. The PA100 accomplishes this function by isolating the detected photodiode signal from the line inductance and capacitance typical of coaxial signal cables. This isolation function allows very small photodiode signals (on the order of 10 fC) to be transmitted over several feet of common 50 ohm coaxial cables without being corrupted by noise pick-up.

Integral to the PA100 amplifier is a high quality 2-pole filter used to reduce power supply coupled noise on the amplifier output and an internal detector bias network used to supply a bias of 0-50V to the detector

Features

- AC coupled detector bias network for photodiodes with up to 1 μ A of dark current at 50V and up to 500 nF capacitance. Bias network is bipolar.
- Internal power supply filter network.
- Selectable gains of 1,5,10,50,100,500, 1000 and 5000 X. If requested, the gain can be remotely selected.
- Integral test capacitor to facilitate charge injection input for calibration.

Specifications

Parameter	Conditions	Minimum	Typical	Maximum	Units
Detector Capacitance	As attached to PA100	-	-	500	nF
Detector dark current leakage	As attached to PA100	-	-	1	μ A
Detector Bias Voltage	As attached to PA100	0	-	50	V
Minimum Charge Detection Limit	As attached to PA100	7	10	20	fC
Risetime	Gain = 5000		25		μ s
Maximum Pulse Width	As attached to PA100	-	-	62	ms
Noise Figure	All bands		16	64	nV/(Hz) ^{1/2}
Test Capacitor	Integral to PA100	9	10	11	pF
Peak output	Saturation distortion		4		V
Power Supply	Dual	+/- 6	+/- 12	+/- 17	V

Mechanical Drawing

