

# PA200-10

## Description

This is a +12V D.C. powered pre-amplifier designed to work with electronic output photonic imaging detectors.

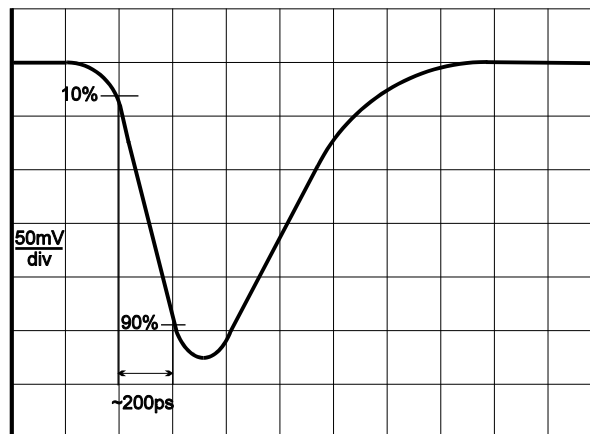
The output from this unit is a voltage-amplified version of the input pulse. Pulses below 1.25ns will be temporally stretched to approximately twice their length i.e. a 1ns pulse input will be a 2ns pulse output. The amplification ratio is a minimum of 20db, i.e. gain of 10. This module requires an external +12V power supply and both input and outputs must be 50Ω matched systems.

## Operating Characteristics

This pre-amplifier has 50Ω input and output impedance's, 2 GHz Bandwidth and 180ps rise time. The gain of this unit is 20dB non-inverting.

Assuming minimum 20dB gain the maximum amplitude input pulse that this unit can amplify without clipping is 400mV, this would give approximately 4V output.

Assuming a negative going input pulse, the output pulse from this pre-amplifier is of the form illustrated below: -



The rise time of the output pulse is related to the rise time of the input pulse and the rise time of the pre-amplifier approximately by the formula :-

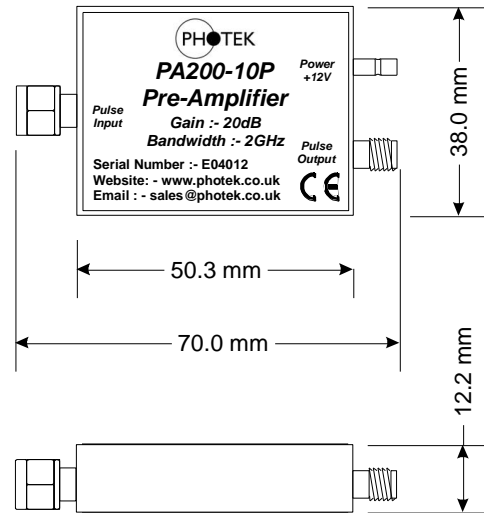
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$$\text{Output Pulse Rise Time} = \sqrt{t_i^2 + t_a^2}$$

Where  $t_i$  = Input pulse rise time  
and  $t_a$  = Pre-Amplifier rise time

PA200-10 Connectors		
<b>Input Power</b>		
<b>SMB Socket</b>	Center	+12V
	Screen	0V
<b>Input Signal</b>		
<b>SMA Socket</b>	Center	Pulse Input
	Screen	0V
<b>Output Signal</b>		
<b>SMA Socket</b>	Center	Pulse Output
	Screen	0V



**Pre-Amplifier Part Number Selection : -**



This module is designed to mount directly onto the MCP device being used that should be fitted with a mating half of the SMA connector.

### Items Supplied

- 1 off PA200-10P Pre-Amplifier - fitted with SMA plug input connector
- or 1 off PA200-10S Pre-Amplifier - fitted with SMA socket input connector
- 1 off Power Cable – 1m SMB to Bare Ends.

Electrical Specifications		Mechanical Specifications	
Supply Voltage	+12V D.C.	Length	50.3mm
Supply Current (max)	20mA	Length (Incl. Connectors)	70.0mm
Input Pulse Limits	200mV max	Width	38.0mm
Input Impedance	50Ω	Height	12.2mm
Output Impedance	50Ω	Weight	≈25g
Gain (Non-Inverting)	20dB	<b>Operating Temperature Range</b>	
3dB Bandwidth (typical)	2GHz	Temperature Minimum	0°C
Rise Time	180ps	Temperature Maximum	70°C

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Any unauthorised adjustment or modification to this unit will void all warranties and will only be supported at Photeks discretion.

Photek reserves the right to amend general information contained in this manual without prior notice.

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