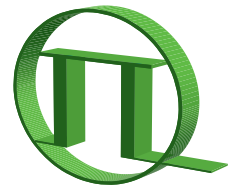


PAM 102



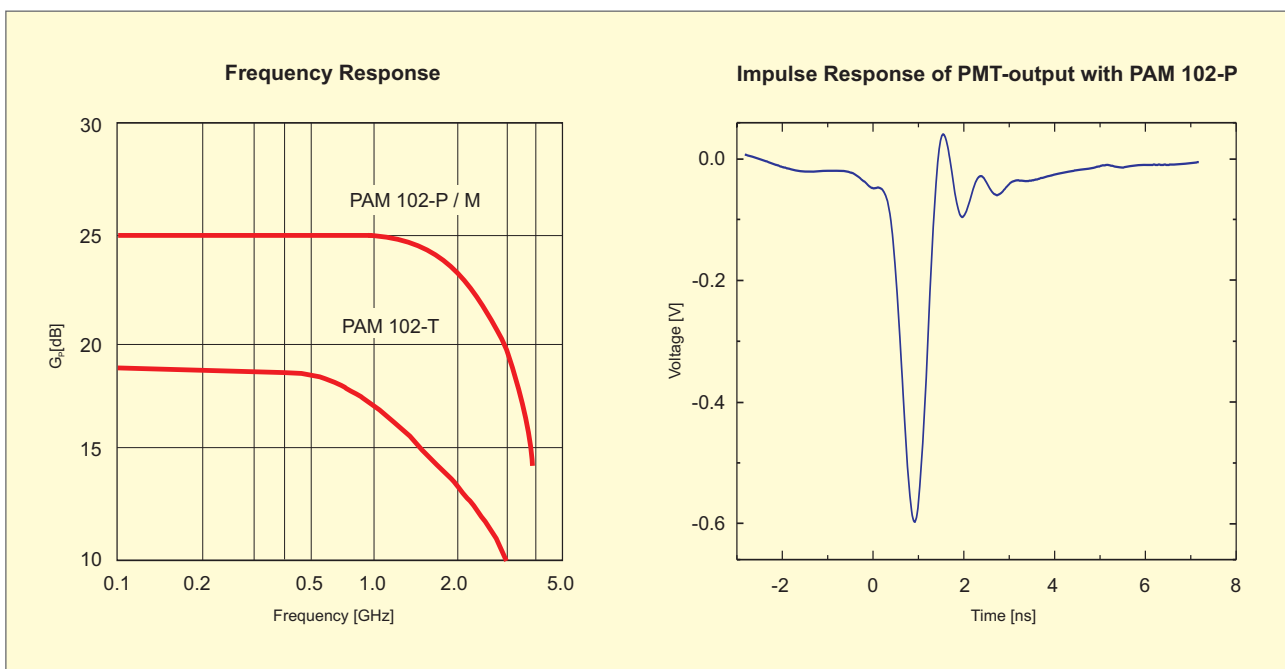
PICOQUANT
Unternehmen für optoelektronische
Forschung und Entwicklung

Pre-amplifier Module

<http://www.picoquant.com>



- Fast rise time / wide bandwidth
- Low jitter
- Ideal for low output fast photon detectors like MCP and PMT
- 3 dB bandwidth: up to 1.8 GHz
- Gain up to 25 dB
- Gain flatness of ± 1.0 dB
- $P_{1\text{dB}}$ up to 10 dBm



Applications

- Amplification of low output pulses with extremely short pulse widths and fast rise / fall times from photon detectors like MCP-PMTs, standard PMTs or Photodiodes in timing sensitive setups
- General purpose broadband signal amplification

Pre-amplifier Module

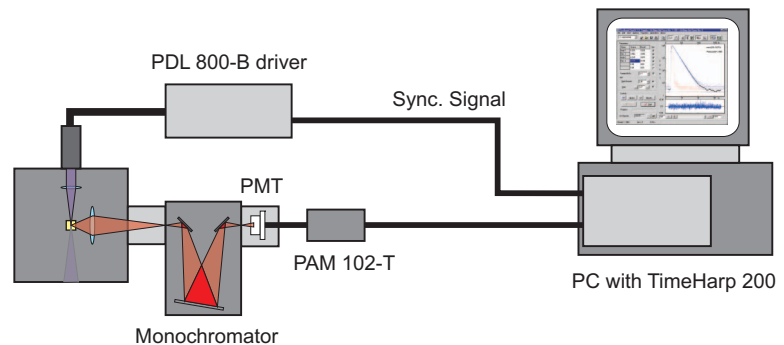
The PAM 102 pre-amplifier is ideal for timing sensitive applications such as Time-Correlated Single Photon Counting (TCSPC) with fast photon detectors like Microchannel plate PMTs. These detectors produce very low output pulses with extremely short pulse widths, usually too small to directly interface with TCSPC electronics or other counters. The pulse rise times (actually fall times) are typically 150 to 500 ps, and the pulse widths (FWHM) are correspondingly small.

If the signal is not infinitely steep, then any fluctuation in amplitude will be translated as a timing uncertainty that is inversely proportional to the steepness dV/dt of the timing edge of the signal. Therefore, an amplifier with an extremely fast rise time is needed between the detector and the timing discriminator of the TCSPC system. The rise time of an amplifier is directly related to its bandwidth, i.e. a fast rise time corresponds to a wide bandwidth. However, a wide bandwidth contributes more electronic noise to the signal. This additional amplitude noise increases the timing jitter of the signal when it is processed by the timing discriminator of the TCSPC electronics. These are, therefore, conflicting requirements for the selection of the appropriate amplifier bandwidth. Best timing resolution is usually obtained when the amplifier rise time is comparable to the detector rise time. For current MCP-PMT detectors the optimum amplifier bandwidth is 1 to 2.5 GHz and the PAM 102 operates at bandwidths up to 2.5 GHz.

Three PAM models are available, to meet pulse polarity, overload threshold and bandwidth requirements for various applications. Please refer to the specifications table. The PAM 102 is powered by a plug-in power supply (included) and the signal inputs and outputs are standard 50 Ohm SMA connectors.

Typical set-up

Typical Measurement system for time-resolved fluorescence spectroscopy utilizing a PDL 800-B and an LDH Series laser diode head for excitation. The signal from the PMT is amplified by a PAM 102-T and then processed directly by a TimeHarp 200 Time-Correlated Single Photon Counting board.



Specifications

	PAM 102-T	PAM 102-P	PAM 102-M
Applications	PMT+TimeHarp 200	PMT's	MCP-PMT's
Electrical Parameters			
Puls polarity	Inverting	Non-inverting	Non-inverting
Gain	18 dB	25 dB	25 dB
Bandwidth	1.1 GHz	1.8 GHz	1.8 GHz
1 dB Compression	+9 dBm	+10 dBm	+10 dBm
Overload threshold	-100 μ A	-100 μ A	-0.1 μ A
Input amplitude	100 mV max.		
Connectors, input & output	50 Ohm SMA female		
Power Supply			
Input	110/240 VAC 50/60 Hz		
Output	12 VDC plug-in power supply		
Power consumption	0.8 Watts max.		
Dimensions	62 mm (with flange) \times 51 \times 27 mm (w \times d \times h)		

Further available are Fluorescence Lifetime Spectrometer; Time-resolved Fluorescence Microscopes; Upgrade kit for Laser Scanning Microscopes; Picosecond / Nanosecond Pulsed and Modulated Diode Lasers; PC Modules for TCSPC. Please call for detailed information and data sheets. **Please check our webpage for latest changes of specs.**

All Information given here is reliable to our best knowledge. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications and external appearances are subject to change without notice. Trademarks or corporate names are used for explanation and identification, to the owner's benefit and without intent to infringe.

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