WMT-Elektronik GmbH

Pulse Preamplifier/Discriminator WMT VCT01

Description:

This preamplifier/discriminator is an alternative to linear amplifiers in the standard PMT- detectorhead. It is designed for processing fast output pulses from electron multipliers up to very high count rates. The dead time is rate-independant, stable, and selectable in four steps in order to suppress multiple pulses and to allow for a precise dead time correction. The threshold is set to 80 fC, allowing single electron counting down to multiplier gains below 1×10^6. In addition to the pulse output a ratemeter output is provided, which may be used for monitoring purposes or triggering protective circuitry. Each unit is delivered with an individual measurement report.

Characteristics:

Input:	signal from PMT:	- 0.8 mV to – 500 mV into 50 Ω, equivalent to 80 fC to 50 pC @ pulsewidth = 5 ns (FWHM).
	pulse width:	5 ns to 30 ns (FWHM)
	rate:	up to > 10^7 s^{-1} (Poisson-distributed)
	threshold:	fixed to - 0.8 mV equivalent to 80 fC @ 5 ns pulsewidth, higher threshold values upon request.
Dead Time:		selectable by jumpers in four steps: 20 – 30 – 40 – 60 ns (nominal), factory setting is 40 ns. initial accuracy: ± 2 ns or ± 5 %, whichever is greater stability: ± 2 % over temperature Note: Dead time cannot be less than 2 × (input pulse width)
Max. Theoretical Count Rate:		1 / (dead time)
Pulse Output:		digital pulse, 50 Ω output resistance, 3.2 V into hi-Z load, max. load current 24 mA, pulse width ≈ 0.5 × (dead time)
Ratemeter Output:		0 to full scale for rates 0 to 10^7 s^{-1}, conversion gain = 1 V / 10^6 s^{-1}, accuracy ± 5 %. Notes: 1. The ratemeter has a fixed dead time of appr. 80 ns, which falsificates the measurement at rates > 5×10^5 s^{-1}. The above specified accuracy is for equally distributed pulses. 2. The ratemeter output uses the connector pin 1 (dark current compensation input for linear amplifiers, not used for pulse counting).
Power Consumption:		I_+ = 34 mA, I_- = 24 mA, (no signal, no load), out of the detectorhead´s ± 15 V supply.

Werksstrasse 15
D-45527 Hattingen Phone: (+49) 2324 506764 Fax: (+49) 2324 506765 e-mail: wmt.elektronik@t-online.de