Photomultiplier Amplifier-Discriminator

Type AD1

Description

The AD1 Amplifier-Discriminator is a compact low noise unit used in photon detection systems to generate output pulses suitable for digital counting. An output pulse of fixed width and amplitude is produced for each photomultiplier input pulse that exceeds the threshold level. In the AD1 the input threshold level is fixed at -1mV.

Output pulses are disabled for a well defined 'dead time' following a previous output pulse. This enables statistical correction of the mean output pulse rate, if required. i.e True Count Rate = Measured Count Rate ÷ (1 - Measured Count Rate x Dead Time).

The dead time is preset at the factory to 100ns and the output pulse width is approximately half the dead time.

The output pulses from Pins 1 & 2 of the 9 way 'D' connector are complementary ECL logic levels (-0.8V to -1.8V). These may be connected, via a twisted pair cable terminated in 100Ω, to ECL receiver circuits. Alternatively, an ECL/TTL Converter type ET1, which links via cable to the AD1, is available to allow connection to TTL pulse counting equipment. All units may be powered from the auxiliary LV output of the ET Enterprises Photomultiplier Power Supply PM20 and PM30 series

The unit is housed in a small metal box and is compatible with all ET Enterprises ambient and cooled photomultiplier housings. The connection between the housing and the AD1 input should be made with a 50Ω BNC screened cable less than 20cm in length to minimise spurious signals and pulse distortion.

Specification

Input Pulse Amplitude	Single electron photomultiplier
Input Impedance	50Ω
Input Threshold	-1mV
Input Protection	Limiting Diodes
Dead Time	100ns
Output Pulse Amplitude	ECL logic level (-0.8V to -1.8V) with 470Ω pull down resistors
Output Pulse Width	50ns approx.
Power Requirements	+5 V @ 25 mA -5 V @ 100 mA

Connections

Signal Input	50Ω BNC Socket
Power In and Signal Output	9 Way 'D' plug

Pin	Function
1	$\overline{Q}$, ECL out
2	Q, ECL out
3	N/C
4	+5V in
5	-5V in
6	OV
7	N/C
8	N/C
9	N/C

Dimensions	76mm x 67mm x 45mm
Weight	85 g

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