photodetector module
PDM TTL series data sheet

ET Enterprises electron tubes

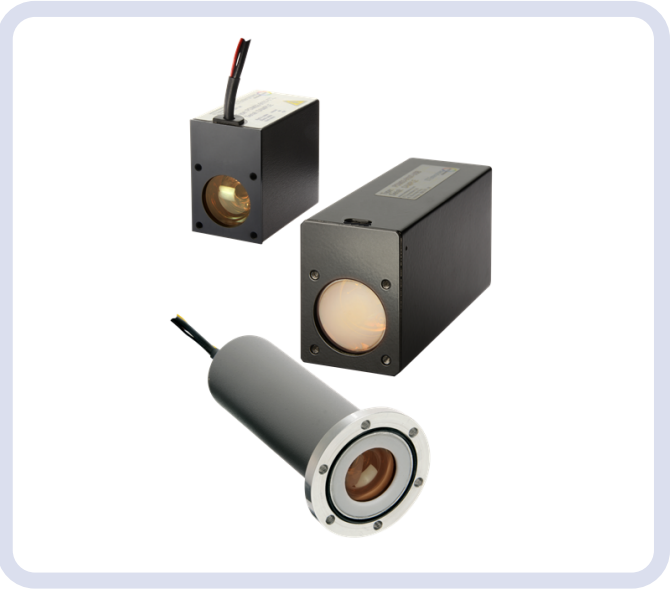
1 description

Our new range of TTL photodetector modules is available either in the cylindrical or rectangular format with a choice of 25mm and 30mm diameter PMT's. The photomultiplier high voltage and discriminator threshold levels are pre-set for optimum performance, enabling photon counting operation simply by connecting to a +5V supply.

These modules have the facility to attach a light fibre guide (not supplied).

2 features

- Pre-configured for optimum performance and ease of use
- Wide dynamic range (up to 100Mcps)
- Magnetic and electrostatic shielding
- Lower cost options (rectangular types)
- Spectral range options



3 photomultiplier options

Part number	spectral range nm	active dia mm	dark counts (cps) typical
PDM03-9107-TTL	280-630	25	100
PDM04-9111-TTL	280-630	22	100
PDM04-9113-TTL	280-850	22	3000
PDM9107-CP-TTL	280-630	25	100
PDM9107-AP-TTL	280-630	25	100
PDM9111-CP-TTL	280-630	22	100
PDM9113-CP-TTL	280-850	22	3000

4 characteristics

	unit	min	typ	max
output pulse:				
TTL high level (terminated)	V	2.6		
rise and fall time	ns		1.2	
pulse-pair resolution	ns		25	
dead-time	ns		25	
signal count rate:				
without dead time correction	cps			30M
with dead time correction	cps			100M
output impedance	Ω		50	
discriminator level	mV		-2	
supply voltage	V	4.5		5.5
supply current (@ 5V, no signal)	mA		40	
supply current (@ 5V, signal = 100Mcps)	mA		120	
for PDM9107-AP-TTL:				
supply current (@ 5V, no signal)	mA		80	
supply current (@ 5V, signal = 100Mcps)	mA		180	
warm-up time	s			1
temperature (operating)	°C	5		55
temperature (storage)	°C	-40		60
humidity (non-condensing)	%			93

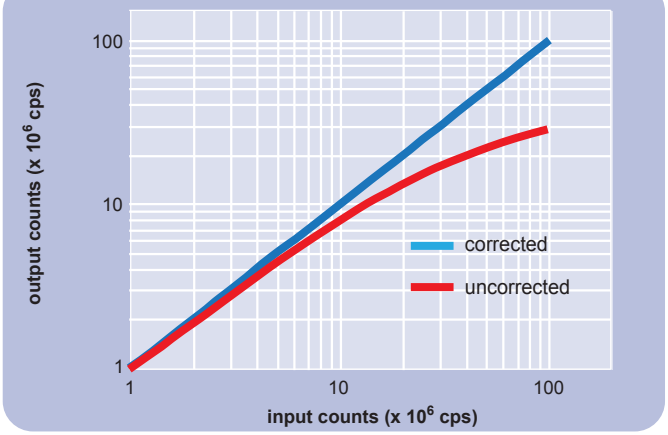
5 dynamic range

Extended dynamic range can be obtained by dead time correction to compensate for departure from linearity at high count rates due to pulse pile-up. Dead time may be corrected for, as follows:

$$N = n/(1-nT)$$

where: N is the true count rate (cps),
n is the measured count rate (cps),
T is the count rate correction factor (25×10^{-9}s),

Using this correction, deviation from linearity is typically within ±5% at 100Mcps.



6 dimensions

Part number	length mm a	dia mm b	height mm c	width mm d	depth mm e	weight g
PDM03-9107-TTL			102.5	36	50	275
PDM04-9111-TTL			56.5	32	48	142
PDM04-9113-TTL			56.5	32	48	142
PDM9107-CP-TTL	150	33				210
PDM9107-AP-TTL	155	33				210
PDM9111-CP-TTL	110	33				210
PDM9113-CP-TTL	110	33				210

7 installation and operation

Each module is supplied with test data. Wherever possible, installation should be carried out in subdued light. Exposure to strong lights, particularly those containing a high UV content, can result in a temporary increase in dark counts during subsequent operation.

Remove the protective cap from the package. If necessary, the photomultiplier window can be cleaned using a lens tissue moistened with alcohol. Do not use any other solvent.

Mount the module and make power input and signal output connections. The signal lead should be terminated into 50Ω. Do not expose the photomultiplier photocathode to strong light while the module is energised.

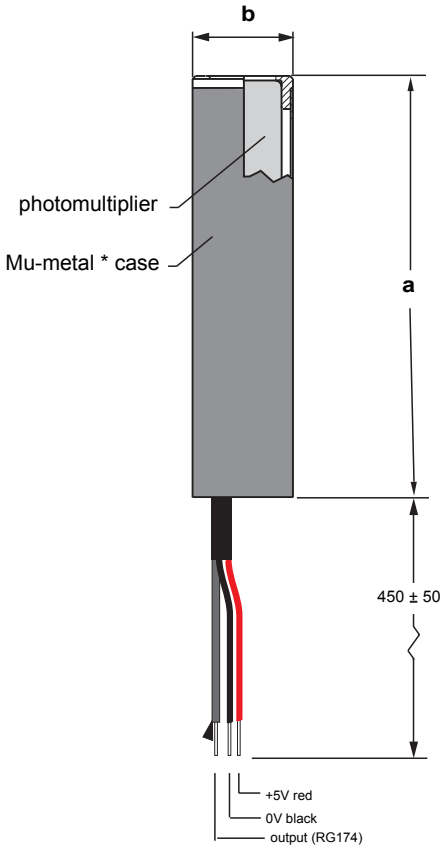
8 warning

No attempt must be made to repair or dismantle this product. High voltage used within the module may present an electric shock hazard.

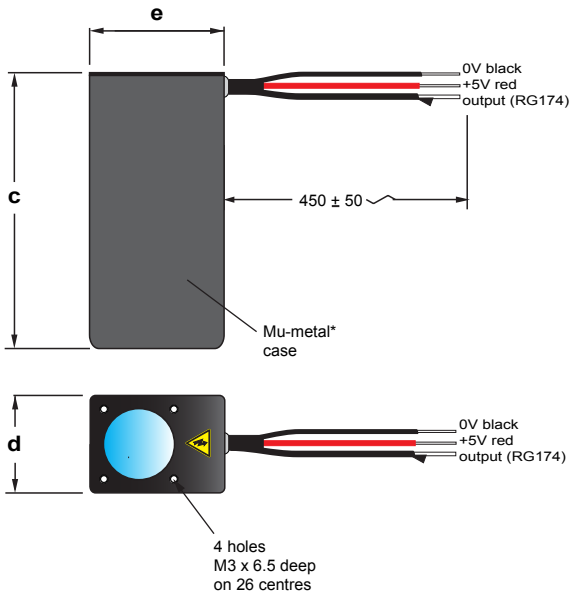
Operation beyond the maximum ratings, or reversal of the input voltage may result in loss of performance or permanent damage to the product.

9 outline drawing (mm)

cylindrical module



rectangular module



*Mu-metal is a registered trademark of Magnetic Shield Corporation

ET Enterprises Limited
45 Riverside Way
Uxbridge UB8 2YF
United Kingdom
tel: +44 (0) 1895 200880
fax: +44 (0) 1895 270873
e-mail: sales@et-enterprises.com
web site: www.et-enterprises.com

ADIT Electron Tubes
300 Crane Street
Sweetwater TX 79556 USA
tel: (325) 235 1418
toll free: (800) 399 4557
fax: (325) 235 2872
e-mail: sales@electrontubes.com
web site: www.electrontubes.com

an ISO 9001 and ISO 14001 registered company