

# photodetector module

## PDM USB series data sheet

### 1 description

Our new range of USB photodetector modules is available either in the cylindrical or rectangular format with a choice of 25mm and 30mm diameter PMT's. There is a choice of three software configurable counting modes: pre-set number of channels, pre-set total measurement period, or continuous. These modules have the facility to attach a light fibre guide (not supplied).

The USB modules have the option of selecting the operating voltage via the supplied software. The user also has the ability to set the threshold level as required via the software. The USB units can be powered through the USB connector.

### 2 features

- easy plug-and-play operation
- wide dynamic range
- no external power supply required
- magnetic and electrostatic shielding
- spectral range options
- low noise
- fibre coupling possible

### 3 photomultiplier options

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

### 4 characteristics

	unit	min	typ	max
<b>output pulse:</b>				
pulse-pair resolution	ns		25	
dead-time	ns		25	
<b>signal count rate:</b>				
without dead time correction	cps			30M
with dead time correction	cps			100M
<b>output impedance</b>	$\Omega$		50	
<b>discriminator level</b>	mV	2		6
<b>supply voltage</b>	V	4.5		5.5
<b>supply current (@ 5V, no signal)</b>	mA		40	
<b>supply current (@ 5V, signal = 100Mcps)</b>	mA		120	
<b>operating voltage</b>	V	100		2000*
<b>warm-up time</b>	s			1
<b>temperature (operating)</b>	$^{\circ}\text{C}$	5		55
<b>temperature (storage)</b>	$^{\circ}\text{C}$	-40		60
<b>humidity (non-condensing)</b>	%			93



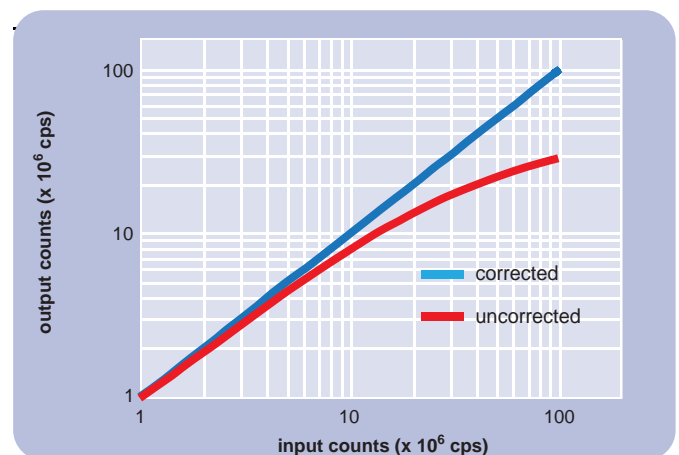
### 5 dynamic range

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 ( $25 \times 10^{-9}\text{s}$ ),

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 g
PDM03-9107-USB			102.5	36	50	275
PDM04-9111-USB			56.5	32	48	142
PDM04-9113-USB			56.5	32	48	142
PDM9107-USB	155	33				220
PDM9111-USB	110	33				220
PDM9113-USB	110	33				220

## 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 or cover 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 in a light-tight enclosure with the light source to be measured and install the application software by downloading from the ET Enterprises Limited website ([www.et-enterprises.com](http://www.et-enterprises.com)). Connect the USB cable to the PC or laptop and run the application. Further details are given in the user manual which can also be downloaded from the ET Enterprises website.

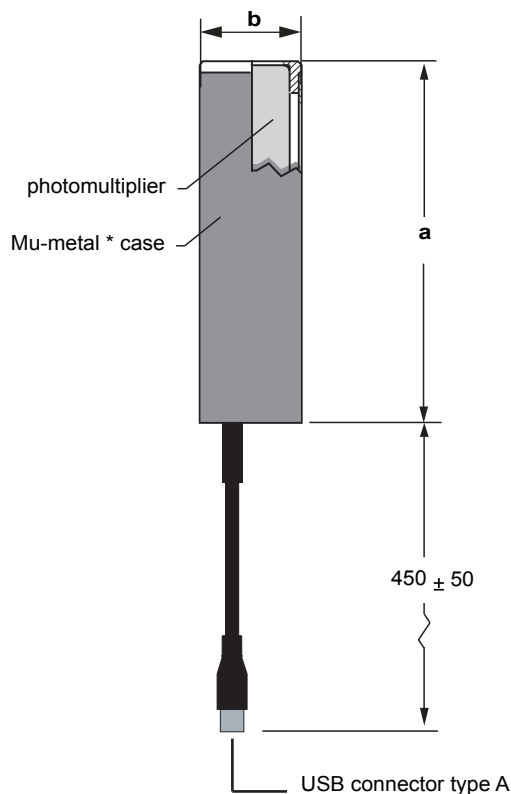
## 8 warning

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

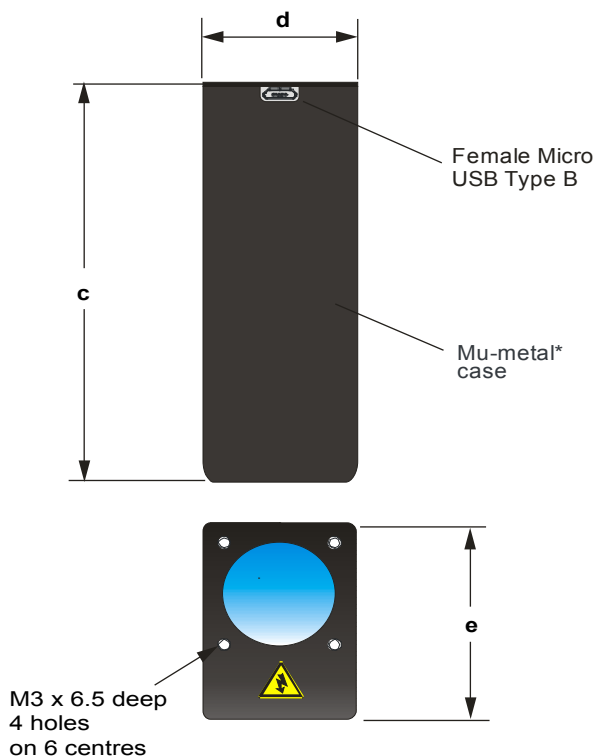
Operation beyond the maximum ratings, or reversal of the input voltage may result in loss of performance or permanent damage to the product.

## 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](mailto:sales@et-enterprises.com)  
web site: [www.et-enterprises.com](http://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@electron tubes.com](mailto:sales@electron tubes.com)  
web site: [www.electrontubes.com](http://www.electrontubes.com)

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