photodetector module
PDM CNA ANA series data sheet

ET Enterprises electron tubes

1 description

Our new range of photodetector modules for analogue applications are designed for measurements over a bandwidth of 0 to 100MHz. These modules are available with either a 25mm or 30mm diameter photomultiplier tube in both cylindrical and rectangular formats. The PMT high voltage is set by applying any one of the three control options shown in section 5.

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

2 features

- simplicity of operation
- compact cylindrical assembly
- electrostatic and magnetic shielding
- bandwidth of 100 MHz
- works into a 50Ω matched coaxial cable
- conversion gain of 1 V per 10 μA of anode current
- flanged mounting option available

3 photomultiplier options

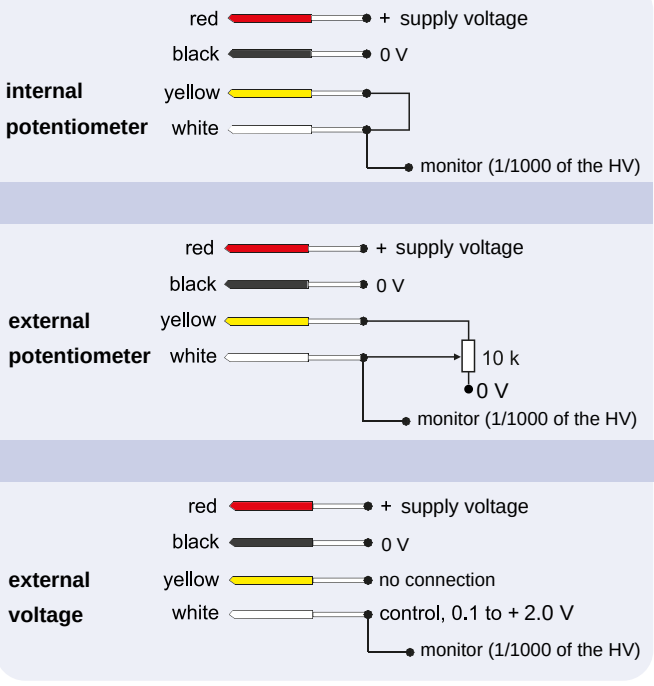
Part number	spectral range nm	active dia mm	peak cath sensitivity mA/W	sensitivity @ 400nm pmt g=10^5 mV/nW
PDM04-9111-CN-A	280-630	22	85	850
PDM04-9112-CN-A	280-680	22	85	850
PDM04-9113-CN-A	280-850	22	64	640
PDM9107-AN-A	280-630	25	85	850
PDM9107-CN-A	280-630	25	85	850

4 characteristics

	unit	min	typ	max
amp conversion gain (unterminated)			1V/10μA	
bandwidth (3db)	MHz		0 - 100	
amplifier noise	mVrms		3	
amplifier offset	mV		8	
output rise and fall time	ns		12	
output impedance	Ω		50	
output signal (unterminated)			0 to +5V	
output signal (terminated into 50Ω)			0 to 2.5V	
power input: CN type				
+5V (+4.5 to +5.5)	mA		50	
-5V (-4.5 to -5.5)	mA		50	
power input: AN type				
+5V (+4.5 to +5.5)	mA		110	
-5V (-4.5 to -5.5)	mA		40	
hv control			1:1000	
hv control volts (max)*	V			+2.0
warm-up time	s			<60
temperature (operating)	°C	5		55
temperature (storage)	°C	-40		60
humidity (non-condensing)	%			93

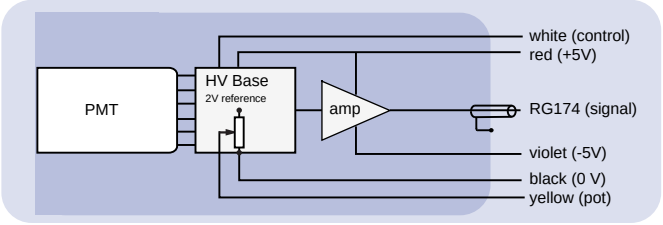
*subject to not exceeding the rated gain of the PMT

5 HV control options



As supplied, the internal potentiometer is set to zero and should be rotated clockwise to increase the voltage when using this control option. When using an external potentiometer to control the HV, the internal potentiometer should be set to maximum (fully clockwise) to provide the correct 2V reference output on the yellow wire. The HV can be monitored by connecting a voltmeter between the white (control) and black (0 V) wires. The HV will be 1000 X the voltage on the white wire.

6 functional diagram



7 dimensions

Part number	length mm a	dia mm b	height mm c	width mm d	depth mm e	weight g
PDM04-9111-CN-A			56.5	32	48	142
PDM04-9112-CN-A			56.5	32	48	142
PDM04-9113-CN-A			56.5	32	48	142
PDM9107-AN-A	155	33				285
PDM9107-CN-A	150	33				285

8 installation and operation

Each module is supplied with the photomultiplier test data. Wherever possible, installation should be carried out in subdued light to avoid a temporary increase in dark current during subsequent operation.

Remove the protective cap from the module before use. 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 provide power input and signal connections. The signal lead should be terminated in 50Ω when operating with fast transients (<50 ns). Then choose one of the HV control options in section 5.

9 warning

The pmt cathode is operated at -HV. To guarantee stable performance and for safety reasons, the entire window should be isolated by a distance of at least 3mm from any ground plane or components. The use of PTFE for insulation is recommended.

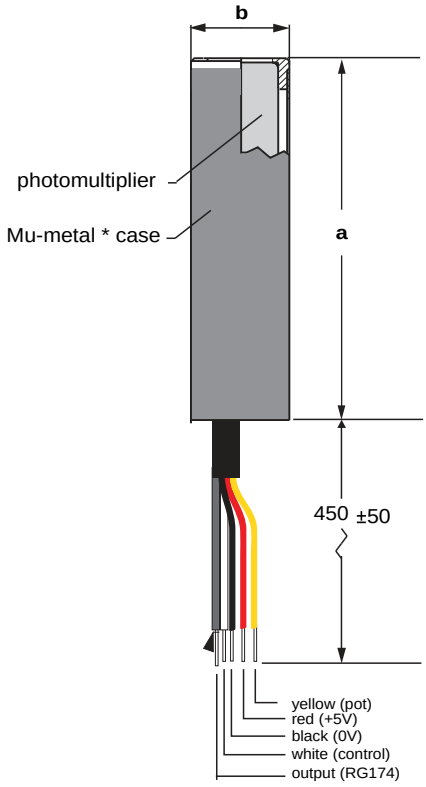
Do not expose the photocathode to strong light while the module is energised.

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

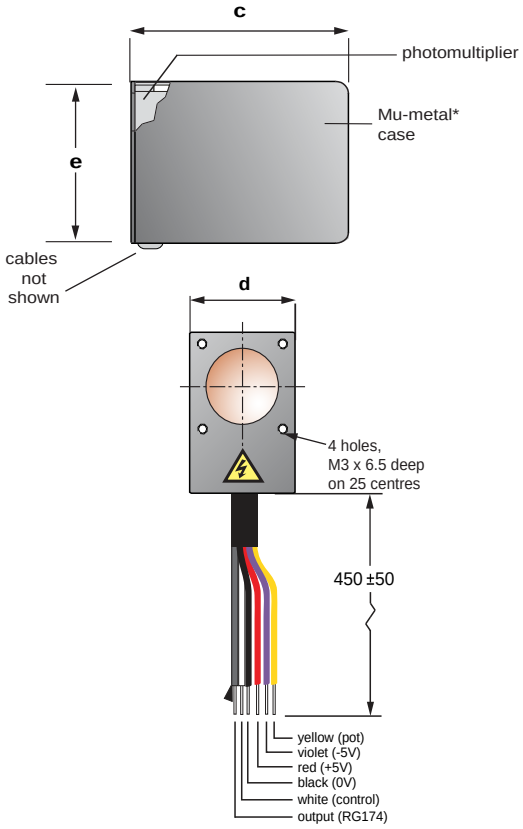
Care should be taken not to exceed the maximum rated gain and/or operating voltage of the photomultiplier as specified on the accompanying test ticket and the PMT data sheet.

10 outline drawing (mm)

cylindrical module



rectangular module



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