

# photodetector module

## PDM9136-AN data sheet

### 1 description

The PDM9136-AN photodetector module incorporates a 9136B 29mm diameter, fast, red sensitive photomultiplier and a low noise negative HV power supply enclosed in a cylindrical case. The signal output comes out directly from the photomultiplier anode and is at ground potential so that the user has the choice of operating the module in dc, pulse counting or photon counting mode. This feature makes the PDM9136-AN suitable for a very wide range of applications without compromising performance.

The module operates from a low voltage power supply which can be in the range 4.5V to 15V and the HV is set by choosing one of the three HV control options shown in section 9.

The module is available with a BNC connector on the signal output (PDM9136-AN-01).



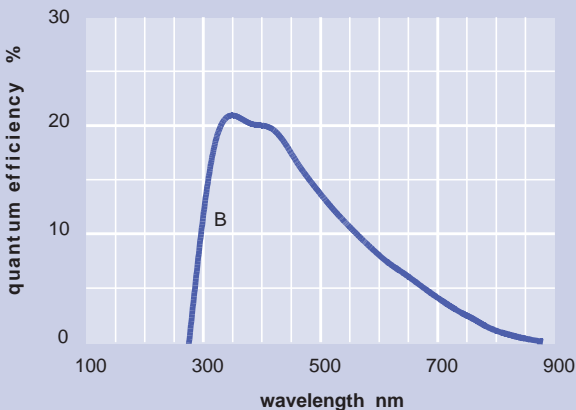
### 2 applications

- industrial instrumentation, especially battery powered
- research projects
- OEM prototypes
- general purpose low-level light detection

### 3 features

- easy to use and operate
- compact cylindrical, light-tight assembly
- integral electrostatic and magnetic shielding
- flanged mounting option available

### 4 photocathode spectral response



### 5 characteristics

	unit	min	typ	max
photocathode: S20				
active diameter	mm		25	
spectral response range	nm	280		850
quantum efficiency (peak)			21	
output pulse (into 50Ω)				
rise time	ns		4.5	
fwhm	ns		7.5	
output impedance (unterminated)	Ω		10M	
dark count rate @ 20°C (typ)	cps		3000	
supply voltage	V	4.5		15
control voltage (1:1000)	V	0.1		2.0
supply current @ 5V:				
for anode current = 0μA	mA		70	
for anode current = 100μA	mA		150	
Supply current @ 12V:				
for anode current = 0μA	mA		40	
for anode current = 100μA	mA		60	
switch-on time (10 - 90%)	s		0.2	
switch-off time (90 - 10%)	s		3	
warm-up time	s		1	
temperature (operating)	°C	5		55
temperature (storage)	°C	-40		60
weight	g		200	

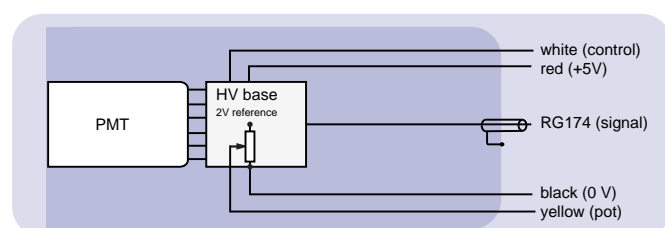
## 7 installation and operation

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.

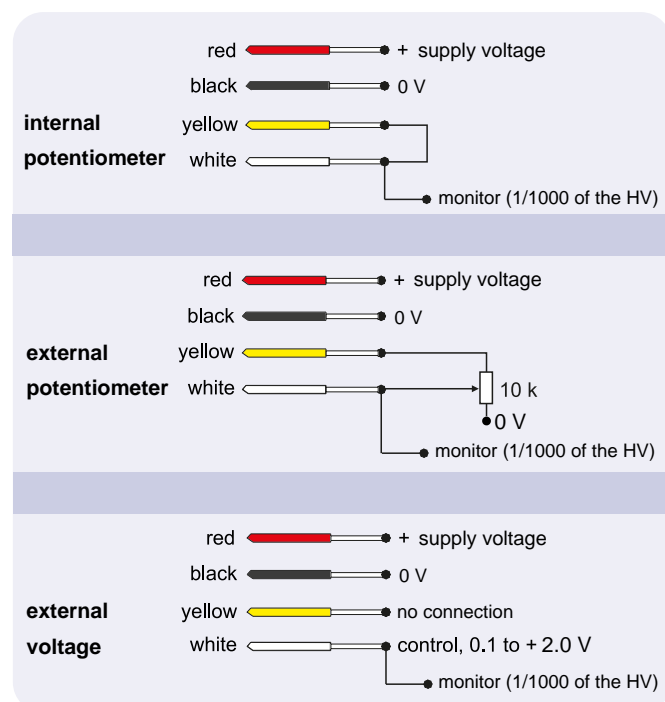
Remove the protective cap from the module before use. If necessary, the photomultiplier window can be cleaned using a lens tissue moistened with alcohol. Do not use any other solvent.

Mount the module and provide power input and signal connections. The signal lead should be terminated in  $50\Omega$  when operating with fast transients ( $<50$  ns). Then choose one of the HV control options in section 9.

## 8 functional diagram

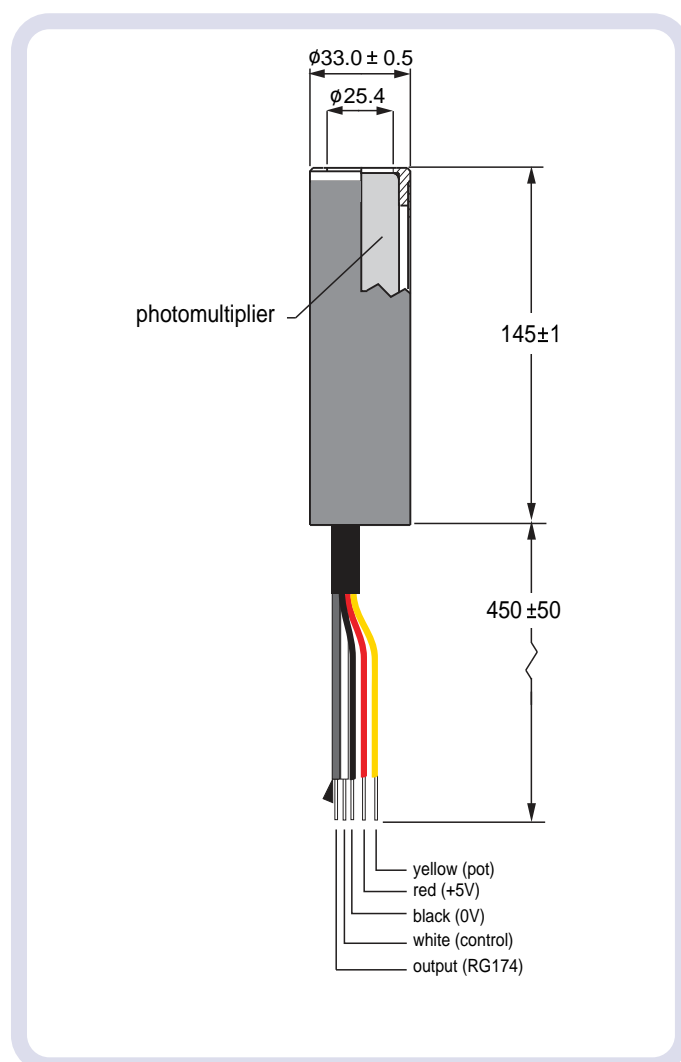


## 9 HV control options



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.

## 10 outline drawing mm



## 11 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 3 mm 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 (2000A/lm) and/or operating voltage of the photomultiplier as specified on the accompanying test ticket and the 9136B data sheet.