

photodetector module

PDM03-9107-PD data sheet (provisional)

1 description

The PDM03-9107-PD is a detector module designed for monitoring PM2.5 and PM10 particles. The module incorporates a plastic scintillator coupled to the photomultiplier window, a fast amplifier-discriminator, and a low power high-voltage supply. The unit produces TTL pulses in the presence of beta decay.

The combination of high-speed electronics and fast photomultiplier with low dark counts enables a wide dynamic range to be achieved. A positive polarity high-voltage supply is used for maximum count rate stability at very low light levels. The module is operated with a single +5V supply and the fixed pulse width TTL output is fully compatible with the ET Enterprises MCS-CT3 multi-channel scaler/counter-timer.

2 applications

- PM2.5 and PM10 particle detection

3 features

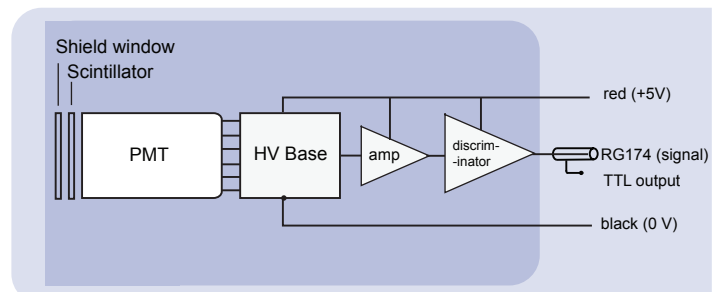
- pre-configured for optimum performance and ease of use
- wide dynamic range
- operation from a single +5V supply
- low background counts
- low power consumption

4 characteristics

	unit	min	typ	max
photocathode: biakali				
active diameter	mm		25	
output pulse:				
TTL high level (terminated)	V	2.6		
rise and fall time	ns		1.2	
pulse-pair resolution	ns		500	
output impedance	Ω		50	
background counts (@ 20°C)	cps		1	
signal counts with 10μCi ¹⁴C source	kHz		40	
supply voltage	V	4.5		5.5
warm-up time	s		1	
temperature (operating)	°C	5		55
temperature (storage)	°C	-40		60
humidity (non-condensing)	%			93
weight	g		240	



5 functional diagram



The figure above illustrates a block diagram of the internal structure of PDM03-9107-PD. It is integrated with a shield window, plastic scintillator, high performance photomultiplier, high voltage power supply incorporating voltage divider and signal processing electronics.

As the β -ray enters the plastic scintillator through the shielding window it interacts with the scintillator to produce fluorescent photons which is detected by the photomultiplier and the output pulse from the photomultiplier is then processed into a TTL pulse using the signal processing electronics.

6 installation and operation

Each module is supplied with test data. Remove the protective cap from the package before use.

Please take care when handling the shielding window as it is very delicate and can be easily pierced by sharp objects.

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.

7 ordering information

PDM03-9107-PD

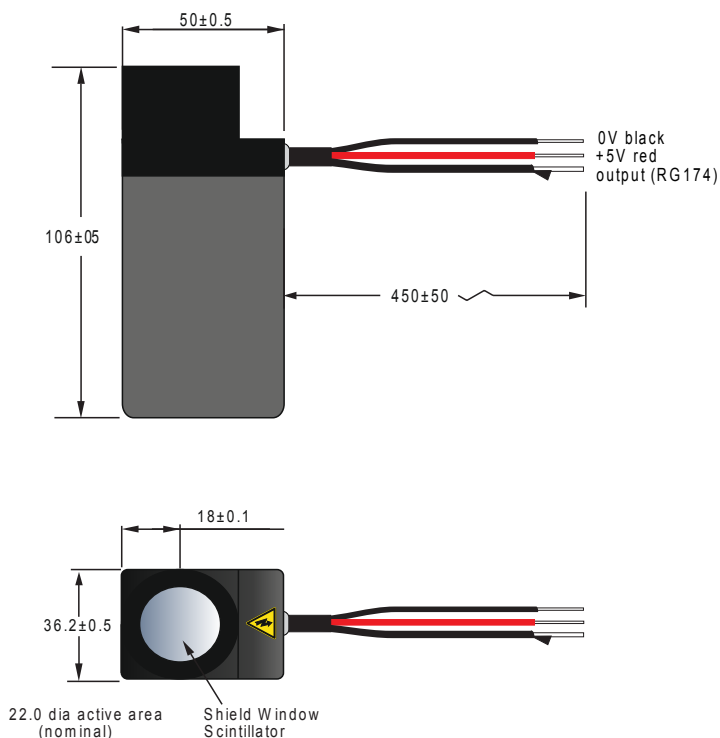
visible range (280-630nm)

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



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