PHOTODETECTOR MODULE DM0087C DATA SHEET

SENS - TECH

DESCRIPTION

The DM0087C photodetector module comprises a 25 mm diameter end-window photomultiplier tube with red sensitive S20 photocathode with low dark counts, a positive high voltage power supply and a high speed amplifier discriminator.

All are encapsulated within a rectangular metal case with connectors for power input and TTL signal output. The DM0087C has an internal divide-by-two prescaler.

FEATURES

- Easy to operate
- Compact rectangular assembly
- Electrostatic shielding
- Internal divide-by-two prescaler operates from low voltage supply
- Preset discriminator level and HV
- Fully enclosed high voltages
- Only 175 mW total power dissipation (typical)
- 70 MHz count rate capability
- Wide dynamic range

APPLICATIONS

- Intended for ultra-low light measurement applications requiring single photon detection
- Ideal for battery powered portable instruments

ACCESSORIES

- Adaptor for SMA terminated optical fibre, type DMSMA
- Universal ac power adaptor, type CT2PSU

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CHARACTERISTICS

PHOTOCATHODE TYPE S20	**OUTPUT PULSE** TTL high level
PHOTOCATHODE ACTIVE DIAMETER 22 mm	**OUTPUT PULSE AMPLITUDE (UNTERMINATED)** 5 V
SPECTRAL RESPONSE RANGE 280 to 850 nm, see curve	**OUTPUT PULSE RISE TIME** 2 ns
PEAK QE AT 400 NM 18%	**OUTPUT PULSE FALL TIME** 2 ns
DISCRIMINATOR LEVEL -2 mV	**OUTPUT IMPEDANCE** 50 Ω
DARK COUNTS AT 20 °C (TYP.) 50 s^{-1}	**POWER INPUT AT $10^{-7}S^{-1}$** +5 V, 35 mA
DARK COUNTS AT 20 °C (MAX.) 200 s^{-1}	**WARM UP TIME** < 10s
INPUT VOLTAGE +4.75 V to +5.25 V	**FINISH** Matt black
WEIGHT 200g	**TEMPERATURE** **Operating** +5 °C to +55 °C **Storage** -40 °C to +55 °C
OPERATING POSITION any	

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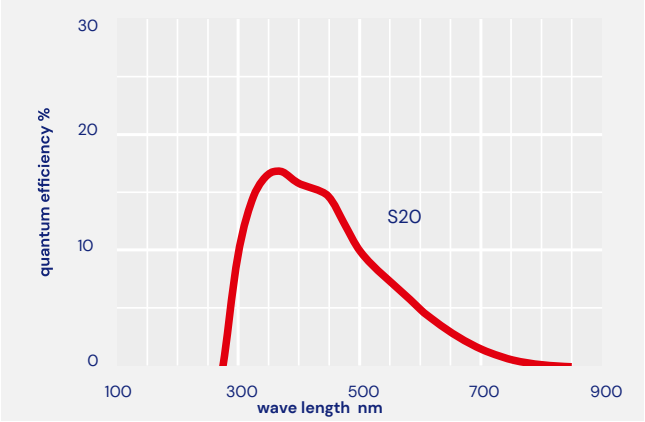
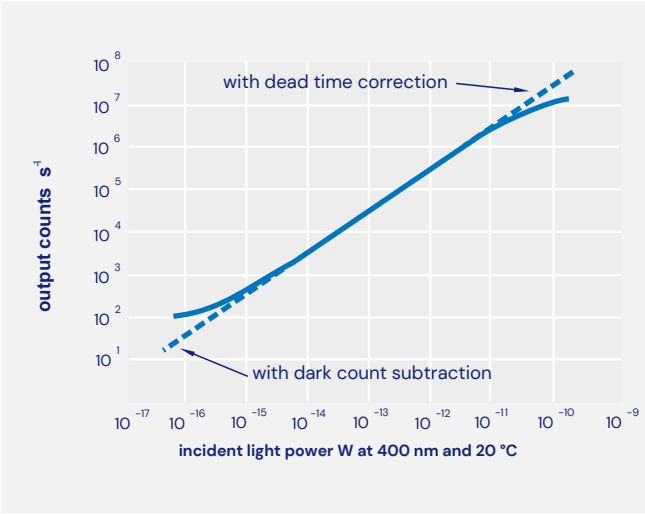
PHOTOCATHODE SPECTRAL RESPONSE



DYNAMIC RANGE

Extended dynamic range can be obtained by dark count subtraction and by dead time correction to compensate for departure from linearity at high count rates due to pulse pile up. The counts s^{-1} in the graph refer to pmt counts (after x2 restoration.



INSTALLATION AND OPERATION

Each module is supplied with test data and with mating connectors for power input and TTL signal output. Wherever possible carry out installation 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.

To ensure the correct operation of the module assemble it into a light-tight enclosure, with only the photomultiplier photocathode exposed.

Remove the protective tape from the module. If necessary, clean photomultiplier window using a lens tissue moistened with alcohol. Do not use any other solvent.

Mount the module and make power input and signal connections. Where the signal lead is longer than 200 mm, it should be terminated into 50W. Do not expose the photomultiplier tube photocathode to strong lights while the module is energised.

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INSTALLATION AND OPERATION CONTINUED...

Dead time may be corrected for, as follows:

N = pn / (1-nTp)

where:

N is the true count rate (s^{-1}),

n is the measured count rate (s^{-1}),

T is the count rate correction factor (typically 2.25 x 10^{-8}s),

p = 2 to allow for the divide-by-two prescaler

WARNING

Do not attempt to repair or dismantle this product. High voltage used within the module presents an electric shock hazard.

Do not operation beyond the maximum ratings, or reverse the input voltage; this may result in loss of performance or permanent damage to the product.

OUTLINE DRAWING MM