

# 51 mm (2") photomultiplier

## 9956B series data sheet

### 1 description

The 9956B is a 51mm (2") diameter end window photomultiplier, with enhanced green sensitive bialkali photocathode, and 10 high gain, high stability, SbCs dynodes of the long established venetian blind design providing a low afterpulse rate.

### 2 applications

- wide range of applications

### 3 features

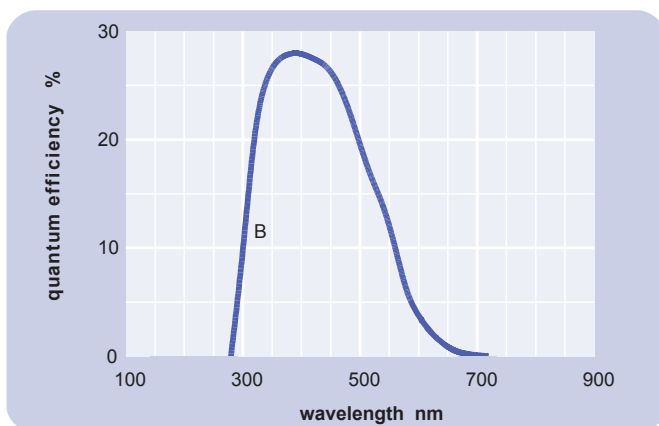
- high gain
- low afterpulse rate

### 4 window characteristics

	9956B borosilicate
spectral range *(nm)	290 - 680
refractive index ( $n_d$ )	1.49
K (ppm)	300
Th (ppb)	250
U (ppb)	100

\* wavelength range over which quantum efficiency exceeds 1 % of peak

### 5 typical spectral response curves

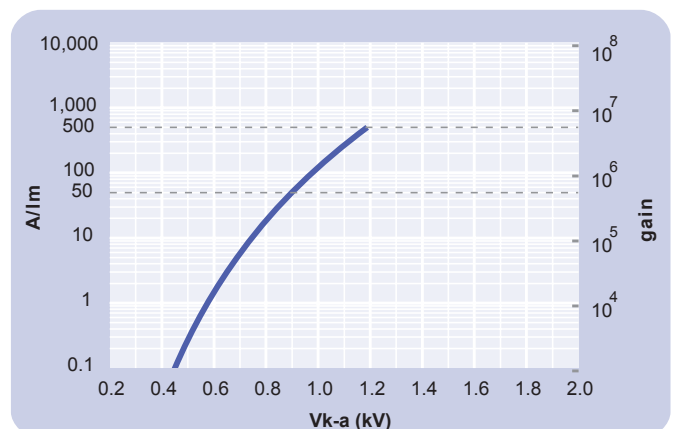


### 6 characteristics

	unit	min	typ	max
<b>photocathode: bialkali</b>				
active diameter	mm		46	
quantum efficiency at peak	%		28	
luminous sensitivity	$\mu\text{A}/\text{lm}$		90	
with CB filter		8	12	
with CR filter			6	
<b>dynodes: 10VBSbCs</b>				
<b>anode sensitivity in divider A:</b>				
nominal anode sensitivity	$\text{A}/\text{lm}$		50	
max. rated anode sensitivity	$\text{A}/\text{lm}$		500	
overall V for nominal $\text{A}/\text{lm}$	V		900	1150
overall V for max. rated $\text{A}/\text{lm}$	V		1250	
gain at nominal $\text{A}/\text{lm}$	$\times 10^6$		0.6	
<b>dark current at 20 °C:</b>				
dc at nominal $\text{A}/\text{lm}$	nA		0.3	3
dc at max. rated $\text{A}/\text{lm}$	nA		3	
dark count rate	$\text{s}^{-1}$		800	
<b>pulsed linearity (-5% deviation):</b>				
divider A	mA		2	
<b>rate effect (<math>I_a</math> for <math>\Delta g/g=1\%</math>):</b>				
	$\mu\text{A}$		20	
<b>magnetic field sensitivity:</b>				
the field for which the output decreases by 50 %				
most sensitive direction	$\text{T} \times 10^{-4}$			
temperature coefficient:	$\% \text{ } ^\circ\text{C}^{-1}$		$\pm 0.5$	
<b>timing:</b>				
single electron rise time	ns		10	
single electron fwhm	ns		22	
transit time	ns		65	
weight:	g		140	
<b>maximum ratings:</b>				
anode current	$\mu\text{A}$			100
cathode current	nA			200
gain	$\times 10^6$			6
sensitivity	$\text{A}/\text{lm}$			500
temperature	$^\circ\text{C}$	-30		60
V (k-a) <sup>(1)</sup>	V			2000
V (k-d1)	V			450
V (d-d) <sup>(2)</sup>	V			300
ambient pressure (absolute)	kPa			202

<sup>(1)</sup> subject to not exceeding max. rated sensitivity <sup>(2)</sup> subject to not exceeding max rated V(k-a)

### 7 typical voltage gain characteristics



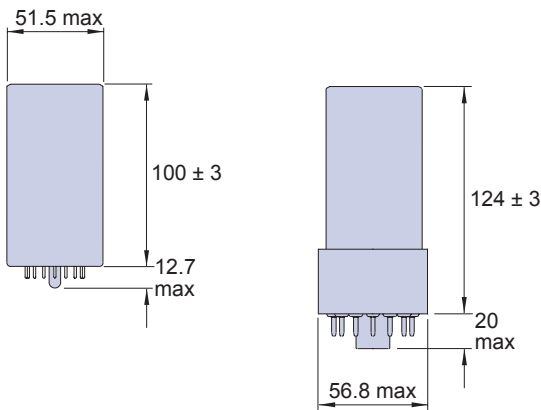
## 8 voltage divider distribution

k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>7</sub>	d <sub>8</sub>	d <sub>9</sub>	d <sub>10</sub>	a	
A	150V	R	.....	R	R	R	2R	R	Standard

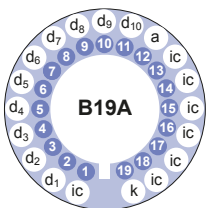
Characteristics contained in this data sheet refer to divider A unless stated otherwise.

## 9 external dimensions mm

The drawings below show the 9956B in hardpin format and the 9956KB with the B14A cap fitted.

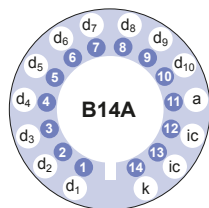


## 10 base configuration (viewed from below)



B19A hardpin base  
(for 9956B)

'ic' indicates an internal connection



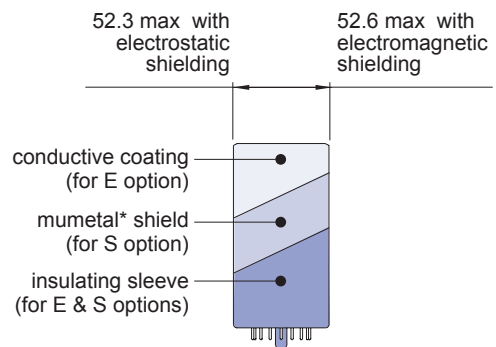
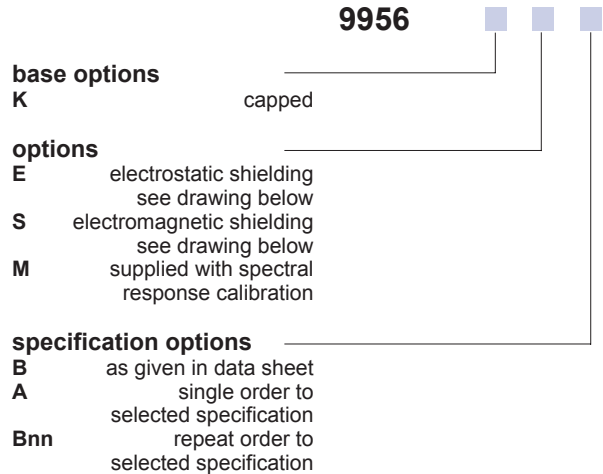
B14A cap  
(for 9956KB)

'ic' indicates an internal connection

Our range of B19A sockets is available to suit the B19A hardpin base. Our range of B14A sockets is available to suit the B14A cap. Both socket ranges include versions with or without a mounting flange, and versions with contacts for mounting directly onto printed circuit boards.

## 11 ordering information

The 9956B meets the specification given in this data sheet. You may order **variants** by adding a suffix to the type number. You may also order **options** by adding a suffix to the type number. You may order product with **specification options** by discussing your requirements with us. If your selection option is for one-off order, then the product will be referred to as 9956A. For a repeat order, ET Enterprises will give the product a two digit suffix after the letter B, for example B21. This identifies your specific requirement.



## 12 voltage dividers

The standard voltage dividers available for hardpin variants of these pmts are tabulated below:

9956B	9956KB	k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>9</sub>	d <sub>10</sub>	a
C647E	C636E	2R	R	.....	R	R	R	R	R	R	
C647F	C636F	150 V	R	.....	R	R	R	2R	R		

R = 330 kΩ

\*mumetal 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  
web site: 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  
web site: www.electrontubes.com

choose accessories for this pmt on our website

an ISO 9001 registered company

The company reserves the right to modify these designs and specifications without notice. Developmental devices are intended for evaluation and no obligation is assumed for future manufacture. While every effort is made to ensure accuracy of published information the company cannot be held responsible for errors or consequences arising therefrom.



© ET Enterprises Ltd, 2012  
DS\_9956B Issue 6 (23/01/12)