

130 mm (5") photomultiplier 9490B series data sheet

1 description

The 9490B is a 130 mm (5") diameter, end window photomultiplier with enhanced green sensitive bialkali photocathode. It has 10 high gain, high stability, SbCs dynodes of linear focused design for good linearity and timing. A version is available with the entire envelope manufactured in ultra-low background glass, which is the 9490UB.

2 applications

- radiation monitoring
- scintillation spectroscopy
- high energy physics studies

3 features

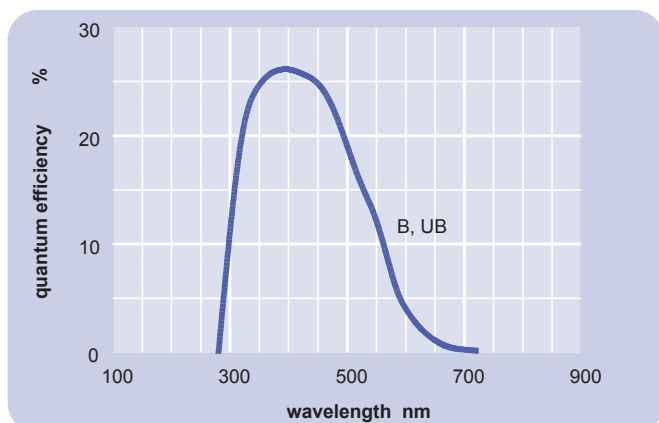
- good SER
- high pulsed linearity
- good pulse height resolution
- large active area

4 window characteristics

	9490B borosilicate	9490UB borosilicate
spectral range (nm)*	300 - 680	290 - 680
refractive index (n_d)	1.49	1.49
K (ppm)	4200	60
Th (ppb)	420	30
U (ppb)	380	30

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

5 typical spectral response curves

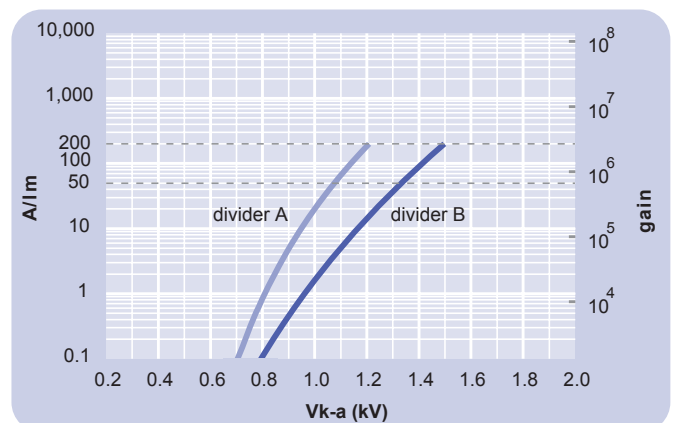


6 characteristics

	unit	min	typ	max
photocathode: bialkali				
active diameter	mm		115	
quantum efficiency at peak	%		26	
luminous sensitivity	$\mu\text{A}/\text{lm}$		90	
with CB filter		8	11.5	
with CR filter			6	
dynodes: 10LFSbCs				
anode sensitivity in divider A:				
nominal anode sensitivity	A/lm		50	
max. rated anode sensitivity	A/lm		200	
overall V for nominal A/lm	V		1100	1600
overall V for max. rated A/lm	V		1200	
gain at nominal A/lm	$\times 10^6$		0.6	
dark current at 20 °C:				
dc at nominal A/lm	nA		2	20
dc at max. rated A/lm	nA		20	
dark count rate	s^{-1}		3000	
pulsed linearity (-5% deviation):				
divider A	mA		30	
divider B	mA		100	
pulse height resolution:				
single electron peak to valley	ratio		2	
^{137}Cs with 5" x 5" NaI(Tl)	%		7.5	
rate effect (I_a for $\Delta g/g=1\%$):				
	μA		20	
magnetic field sensitivity:				
the field for which the output decreases by 50 %				
most sensitive direction	$\text{T} \times 10^{-4}$		1	
temperature coefficient:				
	$\% \text{ } ^\circ\text{C}^{-1}$		± 0.5	
timing:				
multi electron rise time	ns		13	
multi electron fwhm	ns		25	
single electron rise time	ns		5	
single electron fwhm	ns		8	
transit time	ns		60	
weight:				
	g		420	
maximum ratings:				
anode current	μA			100
cathode current	nA			500
gain	$\times 10^6$			2.2
sensitivity	A/lm			200
temperature	$^\circ\text{C}$	-30		60
V (k-a) ⁽¹⁾	V			2000
V (k-d1)	V			600
V (d-d) ⁽²⁾	V			350
ambient pressure (absolute)	kPa			202

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

7 typical voltage gain characteristics



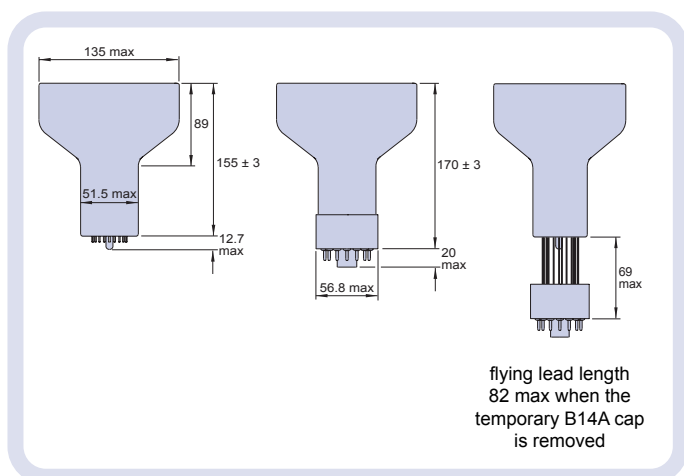
8 voltage divider distribution

	k	d ₁	d ₆	.....	d ₇	d ₈	d ₉	d ₁₀	a	
A	450V R	.....	R	R	R	R	R	R	R	Standard
B	450V R	.....	R	2R	3R	4R	3R			High Pulsed Linearity

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

9 external dimensions mm

The drawings below show the 9490B in hardpin format and the 9490KB with the B14A cap fitted. The 9490KFLB is shown in flying lead format with a temporary cap fitted. This temporary cap is attached as agreed with the customer.



11 ordering information

The 9490B 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 9490A. 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.

9490

- window variant**
 - U** ultra-low background glass
- base options**
 - K** capped
 - KFL** flying lead base with temporary cap
- options**
 - M** supplied with spectral response calibration
- specification options**
 - B** as given in data sheet
 - A** single order to selected specification
 - Bnn** repeat order to selected specification

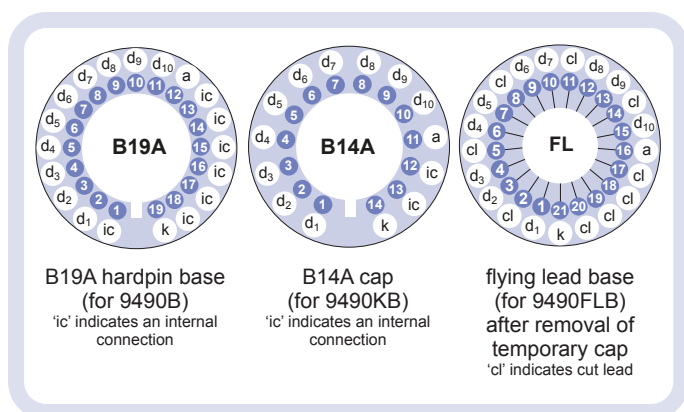
12 voltage dividers

The standard voltage dividers available for these pmts are tabulated below

9490			k	d ₁	d ₂	.....	d ₆	d ₇	d ₈	d ₉	d ₁₀	a
B	KB	FLB										
C647G	C636K	C655G	6R	R	.....	R	R	R	R	R	R	R
C647H	C636L	C655H	6R	R	.....	R	2R	3R	4R	3R		
C647I	C636M	C655I	450 V	R	.....	R	R	R	R	R	R	R
C647J	C636N	C655J	450 V	R	.....	R	2R	3R	4R	3R		

R = 330kΩ

10 base configurations (viewed from below)



Our range of B19A sockets is available to suit the 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 the versions with contacts for mounting directly onto printed circuit boards.

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choose accessories for this pmt on our website

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