51 mm (2.0”) photomultiplier
L51B16 series data sheet

1 description

The L51B16 is a 51mm (2”)diameter, end window photomultiplier with a blue-green sensitive photocathode and 10 high gain, high stability, SbCs linear focused dynodes. It is electrically and mechanically interchangeable with the ADIT B51B03 but without the need for a separate focus connection.

The short base version (L51B16S) is a plug-in alternative to many other 10 stage photomultiplier having a 14 pin capped base. A flexible wire version is available (L51B16W) and this can also be supplied fitted with a voltage divider to a configuration agreed upon with the customer.

2 applications

- scintillation counting
- general purpose low light level detection

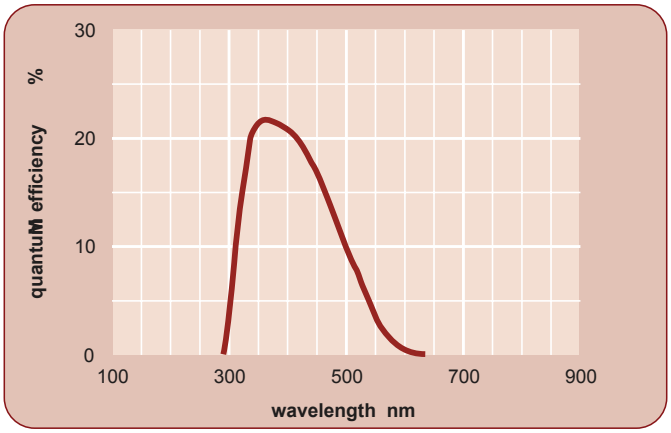
3 features

- low dark current
- good energy resolution
- high pulse linearity
- low rate effect
- helium resistant envelope

4 window characteristics

	L51B16 soda lime
spectral range*(nm)	290 - 620
refractive index (n_d)	1.52
K (ppm)	50,000
Th (ppb)	250
U (ppb)	200

5 typical spectral response curves

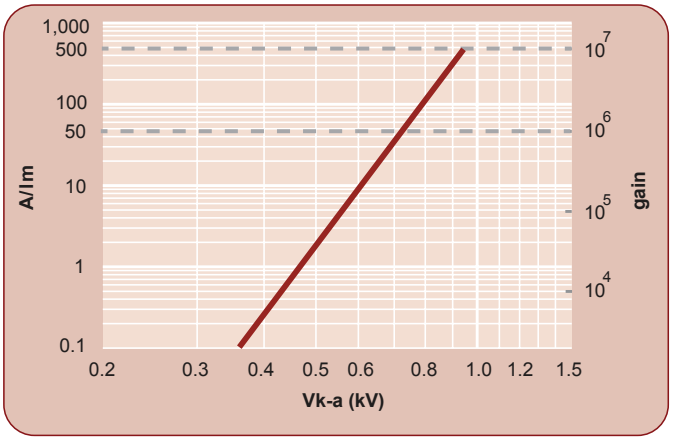


6 characteristics

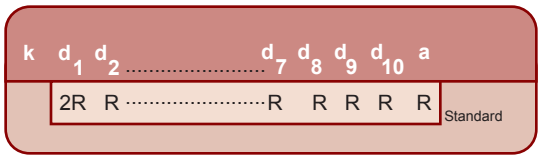
	unit	min	typ	max
photocathode: bialkali				
active diameter	mm		48	
quantum efficiency at peak	%	22		
luminous sensitivity	μA/lm		50	
with CB filter		5	9	
with CR filter			0.5	
dynodes: 10LFSbCs				
anode sensitivity:				
nominal anode sensitivity	A/lm		50	
max. rated anode sensitivity	A/lm		500	
overall V for nominal A/ml	V		700	850
overall V for max. rated A/ml	V		920	
gain at nominal A/ml	x10^6		1	
dark current at 20℃:				
dc at nominal A/lm	nA		0.3	1.5
dc at max. rated A/lm	nA		3	
dark count rate	s^{-1}		-	
pulsed linearity(-5% deviation)	mA		20	
rate effect(I for Δ g/g+1%):	μA		20	
magnetic field sensitivity:				
the field for which the output decreases by 50%				
most sensitive direction	Tx10^{-4}		1.3	
temperature coefficient:	% C		±0.5	
timing:				
multi electron rise time	ns		4	
multi electron (fwhm)	ns		6.5	
transit time	ns		47	
weight:	g		94	
maximum ratings:				
anode current	μA			100
cathode current	nA			100
gain	x 10^6			10
anode sensitivity	A/lm			500
temperature	°C	-30		60
V (k-a)(1)	V			2000
V (k-d1)	V			300
V (d-d)(2)	V			300
ambient pressure (absolute)	kPa			101

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

7 typical voltage gain characteristics



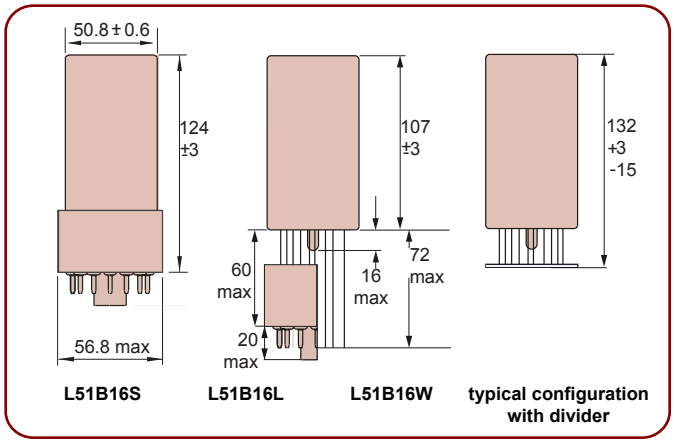
8 voltage divider distribution



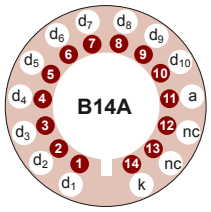
Characteristics contained in this data sheet refer to standard divider.

9 external dimensions mm

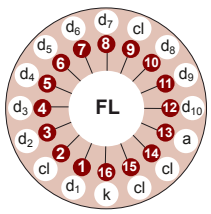
The drawing below show the L51B16S and L51B16L with the B14A cap fitted, the L51B16W in flying lead format and the L51B16W with a factory fitted voltage divider.



10 base configuration (viewed from below)



B14A cap for L51B16S and L51B16L
'nc' indicates no internal connection



flying lead base for L51B16W
'cl' indicates cut lead

A range of B14A sockets are available to suit the B14A cap of the L51B16S and L51B16L. The socket range includes versions with or without a mounting flange, and with contacts for mounting directly onto printed circuit boards.
The L51B16 can be supplied with a custom designed voltage divider installed.

11 ordering information

The L51B16 meets the specifications given in this data sheet. The desired basing option must be specified when ordering by appending the W,S or L suffix to the part number. Custom specifications are available.

Product with special test requirements, integral voltage divider network or with one or more of the shielding options below will be assigned a suffix with the letter A followed by a unique 3 digit number to designate the requirement.

L51B16

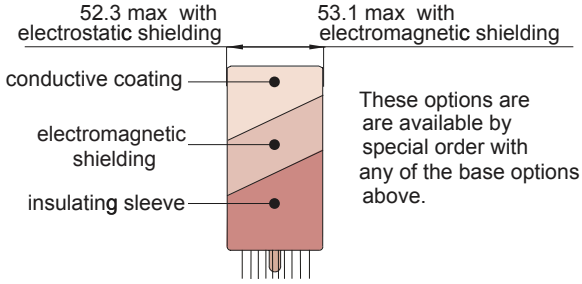
base options

W	flying leads, no cap
S	capped
L	temporary B14 cap

L51B16

specification options

A nnn	special requirements unique designator



12 voltage dividers

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

L51B16S L51B16L	k	d1	d2	...	d6	d7	d8	d9	d10	a
C636A	2R	R		....	R	R	R	R	R	

R=330 kΩ

Custom dividers available for all base options.

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