A standard fast, UV sensitive, 12-stage, 51mm (2") tube

Applications :	Visible range and liquid scintillation counting.		
Description :	Window :	Material:	quartz
		Photocathode :	bi-alkali
		Refr. index at 420 nm :	1.48
	Multiplier :	Structure:	linear focused
		Nb of stages:	12
	Mass :	170 g	

Photocathode characteristics

	Spectral range :					150-650	nm
		Maximum sensitivity at :				420	nm
	Sensitivity ① :						
		Luminous :			typ.:	70	µA/lm
☑		Blue :	min.:	9	typ.:	11.2	µA/lmF
		Radiant, at 400 nm :			typ.:	90	mA/W

Characteristics with voltage divider A

	Gain slope (vs supp. volt., log/log) :					9	
	For a gain of :					$3x10^7$	
☑	Supply voltage :		max.:	2300	typ.:	1700	V
			min.:	1400			
☑	Anode dark current ② :				typ.:	5	nA
☑	Background noise ③ :		max.:	1000	typ.:	300	cps
	Single electron spectrum ④ resolution :				typ.:	70	%
	Peak to valley ratio ⑤ :				typ.:	4	
	Mean anode sensitivity deviation :						
		long term (16 h) :			typ.:	1	%
		after change of count rate :			typ.:	1	%
		vs temperature between 0 and +40°C at 400 nm :			typ.:	- 0.2	%/K
	Gain halved for a magnetic field of :						
		perpendicular to axis "n" :				0.2	mT
		parallel to axis "n" :				0.1	mT

	Characteristics with voltage divider ⑤ :	**A**	
	For a supply voltage of :	1900	V
	Gain :	$5x10^7$	
	Linearity (2%) of anode current up to :	100	mA
	Anode pulse ⑥ :		
	Rise time :	3.1	ns
	Duration at half height :	5.0	ns
	Transit Time :	36	ns
	Transit Time Difference between center of PK and 18mm from it :	2	ns
	Capacitances anode to all dynodes :	5	pF

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Recommended voltage divider

Type A for maximum gain

K	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	A	
4	2	1	1	1	1	1	1	1	1	1	1	1		(total : 17)

K: photocathode Dn: dynode A: anode

Limiting values

Gain :				max.:	$2x10^8$	
Supply voltage :				max.:	2500	V
Continuous anode current :				max.:	0.2	mA
Voltage between :						
	D1 and photocathode :	min.:	300	max.:	800	V
	consecutive dynodes :			max.:	400	V
	anode and D12 :	min.:	80	max.:	600	V
Ambient temperature :						
	short operation (< 30 mn) :	min.:	-30	max.:	+80	°C
	continuous operation & storage :	min.:	-30	max.:	+50	°C

Notes

☑ Characteristic measured and mentioned on the test ticket of each tube.

① Luminous sensitivity is measured with a tungsten filament lamp with a colour temperature of 2856 ± 5 K. The blue radiant blue sensitivity expressed in A/lmF ("F" as filtered) is measured with a tungsten filament lamp with a colour of 2856 ± 5 K transmitted through a blue filter Corning Cs N°5-58, polished to half stock thiskness.

② Dark current is measured at ambient temperature, after the tube has been in darkness for approximately 1 min. Lower value can be obtained after a longer stabilisation period in darkness (approx. 30 min.).

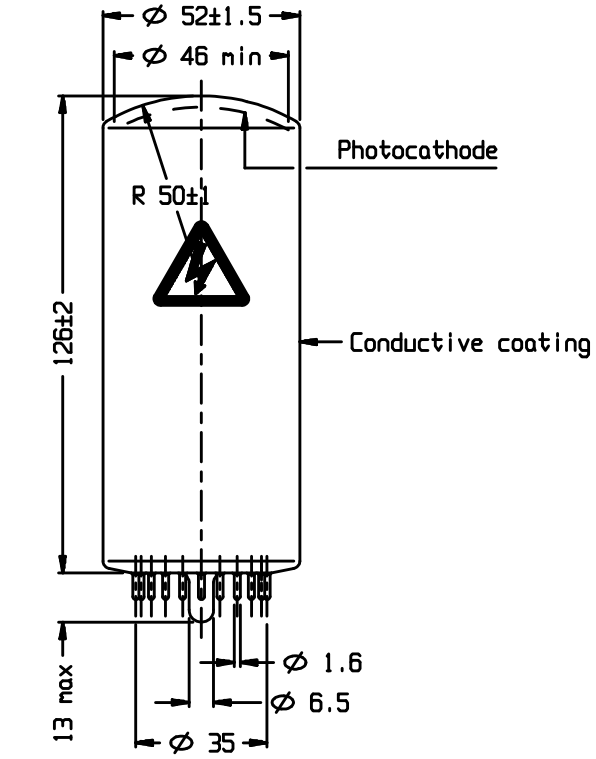
③ Noise is measured at ambient temperature. After having been stored with its protection hood, the tube is placed in darkness with Vd set at a value to give a gain of $3x10^7$. After a 30 mn stabilisation period, noise pulses above a threshold of 1 pC (corresponding to 0.2 photoelectron) are recorded.

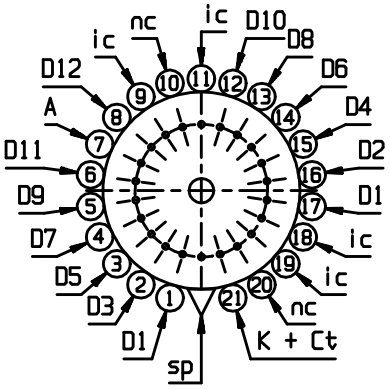
④ The peak to valley ratio is defined as the single electron peak value divided by the minimum value to the left of the peak.

⑤ To obtain a peak pulse current greater than that obtainable with divider A, it is necessary to increase the inter-dynode voltage progressively. Divider circuit B is an example of a progressive divider, giving an optimisation of speed and linearity. Other dividers can be conceived to achieve other compromises. It is generally recommended that the voltage ratio between two successive stages is less than 2.

⑥ Measured with a pulse light source, with a pulse duration (FWHM) of approximately 1ns., the cathode being completely illuminated. The rise time is determined between 10 % and 90 % of the anode pulse amplitude. The signal transit time is measured between the instant at which the illuminating pulse of the cathode becomes maximum, and the instant at which the anode pulse reaches its maximum. Rise time, pulse duration and transit time vary with respect to high tension supply voltage Vht as (Vht)-½. Transit Time Difference between centre and edge (18 mm from PK cenre) is 0.25 ns at 2500 V with C divider.

Note : The envelope of the tube is covered with a conductive coating connected to the pin nr 21 on top of which a black coating is applied. This coating is not guaranteed to be electrically insulating. Care should be taken to avoid electrical shock.

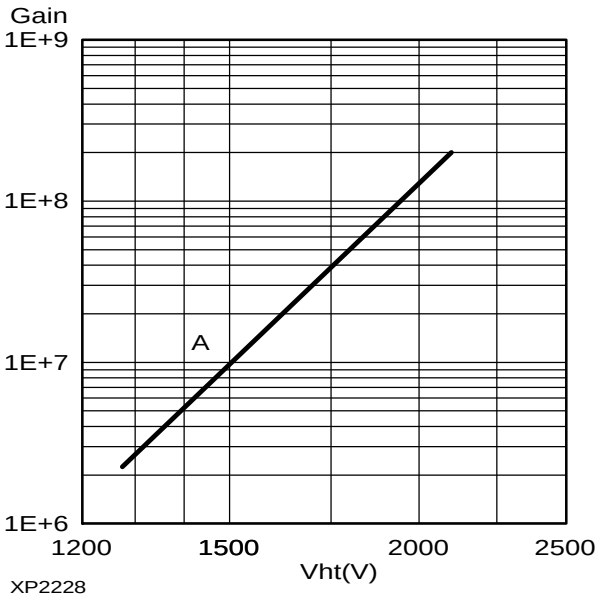




ref.: 99902345
nc: not connected
ic: internal connection
sp: short pin

K: cathode Dn: dynode
A: anode Ct: coating

Typical gain curve



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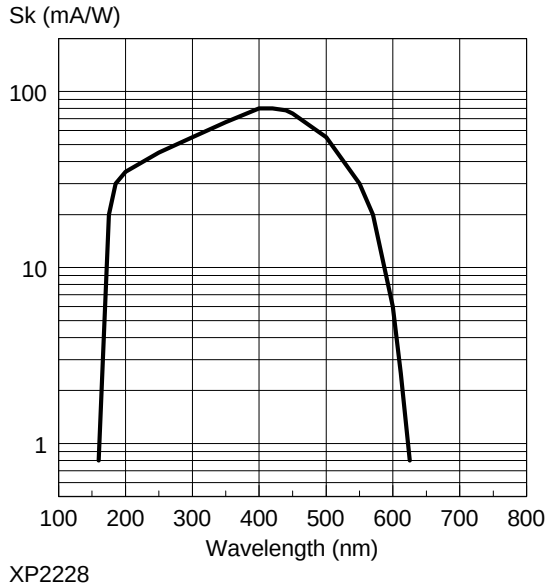
Typical spectral characteristics



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Accessories

Socket: FE 2021

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