

A UV-sensitive, 10-stage, 19 mm (3/4") round tube

Applications : For high energy physics and scintillation counting under limited dimensional conditions.			
Description :	Window :	Material :	UV glass
		Photocathode :	bi-alkali
		Refractive index at 400 nm :	1.48
	Multiplier :	Structure :	linear focused
		Number of stages :	10
	Mass :	21 g	

Photocathode characteristics

Spectral range :	200-650	nm
Maximum sensitivity at :	420	nm
Sensitivity ① :	Luminous :	typ.: 90 $\mu\text{A/lm}$
<input checked="" type="checkbox"/> Blue :	min.: 9.0	typ.: 10.5 $\mu\text{A/lmF}$
Radiant, at 420 nm :	typ.: 80	mA/W

Characteristics with voltage divider A

Gain slope (vs supp. volt., log/log) :	7.5	
For an anode blue sensitivity of :	10	A/lmF
<input checked="" type="checkbox"/> Supply voltage :	max.:1350 min.: 1000	typ.: 1200 V
Gain :	9×10^5	
<input checked="" type="checkbox"/> Background noise ② :	max.:5000	typ.: 2000 c/s
Pulse amplitude resolution for ^{137}Cs ③ :	7.5	%
Mean anode sensitivity deviation ④ :		
long term (16 h):	1.5	%
after change of count rate:	1.5	%
Gain halved for a magnetic field perpendicular to axis "n" of :	0.3	mT

Characteristics with voltage divider :

	B	A	
For a supply voltage of :	1700	1500	V
Gain :	4.5×10^6	5.1×10^6	
Linearity (2%) of anode current up to ⑤ :	80	20	mA
Anode pulse ⑥ :			
Rise time :	2.4	2.3	ns
Duration at half height :	3.8	3.5	ns
Transit Time :	23	22	ns
Transit Time Difference centre of photocathode up to 7 mm from it:	1.5	1.5	ns
Capacitance	4	4	pF

Recommended voltage dividers

Type A for maximum gain

K	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	A	
2	1	1.5	1	1	1	1	1	1	1	1	1	(total :12.5)

Type B for best timing / linearity

K	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	A	
2	1	1.5	1	1.25	1.25	1.5	2.25	2.25	2.5	3		(total :19.5)

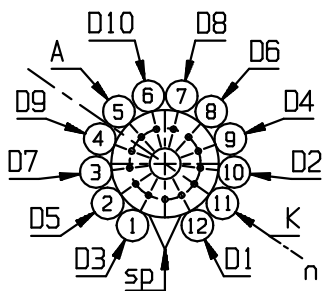
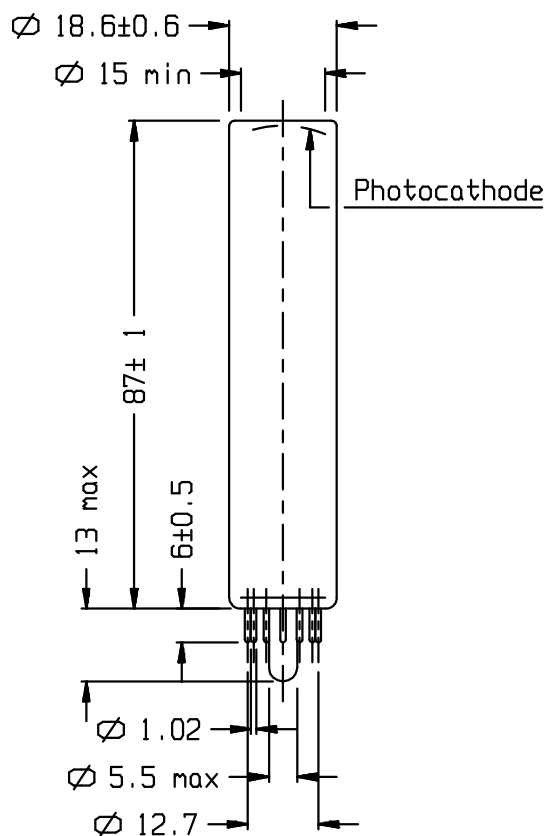
K: photocathode Dn: dynode A: anode

Limiting values

Anode luminous sensitivity :		max.:	100	A/lmF
Supply voltage :		max.:	1900	V
Continuous anode current :		max.:	0.2	mA
Voltage between :				
	D1 and photocathode :	min.:	100	V
	consecutive dynodes :	max.:	250	V
	anode and D10 :	min.:	30	V
		max.:	300	V
Ambient temperature :				
	short operation (< 30 mn) :	min.:	-30	°C
	continuous operation & storage :	min.:	-30	°C
		max.:	+80	°C
		max.:	+50	°C

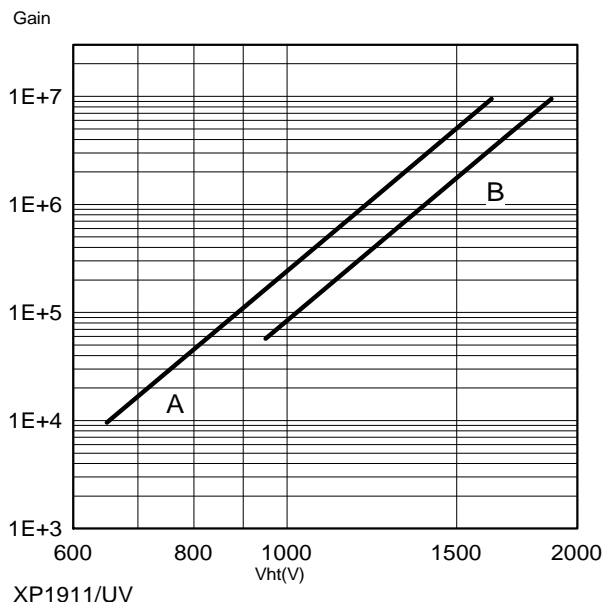
Notes : ☒ Characteristic measured and mentioned on the test ticket of each tube.

- ① Luminous sensitivity is measured with a tungsten filament lamp with a colour temperature of 2856 ± 5 K. The blue sensitivity, expressed in A/lmF ("F" as in Filtered) is measured with a tungsten filament lamp with a colour temperature of 2856 ± 5 K. Light is transmitted through a blue filter Corning CS no.5-58, polished to half stock thickness. The radiant sensitivity is measured with a tungsten filament lamp with a colour temperature of 2856 ± 5 K. Light is transmitted through an interference filter. Radiant sensitivity at 420 nm, expressed in mA/W, can be estimated by multiplying the blue sensitivity, expressed in $\mu\text{A/lmF}$, by 8 for this type of tube.
- ② The background noise is measured with an output circuit and electronics with a bandwidth of the order of 3 MHz above a threshold of 0.2 photoelectron.
- ③ Pulse amplitude resolution for ^{137}Cs is measured with NaI(Tl) cylindrical scintillator with a diameter of 12 mm and a height of 25 mm. The count rate used is $\sim 10^4$ c/s.
- ④ The mean pulse amplitude deviation is measured by coupling a NaI(Tl) scintillator to the window of the tube. Long term (16h) deviation is measured by placing a ^{137}Cs source at a distance from the scintillator such that the count rate is $\sim 10^4$ c/s, corresponding to an anode current of ~ 300 nA. The mean pulse amplitude deviation after change of count rate is measured with a ^{137}Cs source at a distance from the scintillator such that the count rate can be changed from 10^4 to 10^3 c/s, corresponding to an anode current of ~ 1 μA and 0.1 μA respectively. Both tests are carried out according to ANSI-N42-9-1972 of IEEE recommendations.
- 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 optimised 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 1 ns., 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 V_{ht} as $(V_{ht})^{-1/2}$.

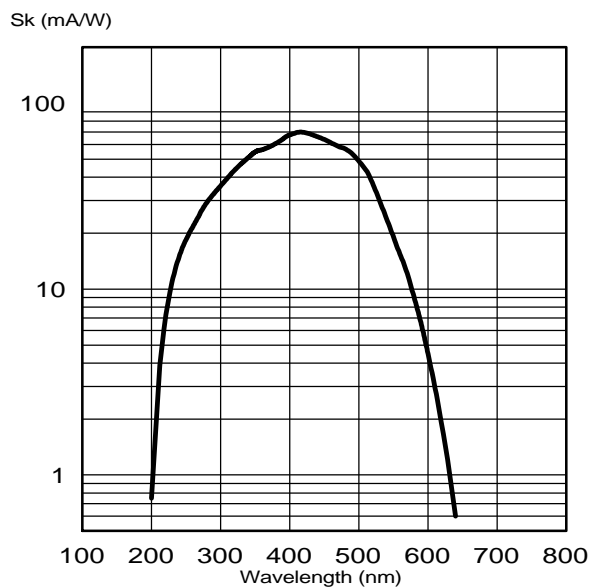


ref.: 99901157
sp: short pin
n: plane of symmetry of the multiplier
K: cathode
Dn: dynode
A: anode

Typical gain curve



Typical spectral characteristics



XP1911/UV

Accessories

Socket: FE1004
Socket for PCB: FE3112
Mu-metal shield: MS178
Voltage divider assemblies:
+HV: VD308
- HV: VD108