Green sensitive, low gain, 19 mm (3/4") round tube

Applications :	For low gain photometry and scintillation counting.	
Window :	Material :	lime glass
	Photocathode :	green extended bialkali
	Refr. index at 420 nm :	1.54
Multiplier :	Structure :	linear focused
	Nb of stages :	6
Mass :	20 g	

Photocathode characteristics

Spectral range :				290-690	nm
	Maximum sensitivity at :			420	nm
Sensitivity ① :	Luminous :	min.:	85	typ.: 115	µA/lm
☑	Blue :			typ.: 11.5	µA/lmF
	Radiant, at 420 nm :			typ.: 90	mA/W

Characteristics with voltage divider A

Gain slope (vs supp. volt., log/log) :				4.5	
For an anode blue sensitivity of :				0.05	A/lmF
☑ Supply voltage :		max.:	1000	typ.: 800	V
		min.:		650	
Gain :				3.8×10^3	
☑ Anode dark current ② :		max.:	20	typ.: 2	nA
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
	parallel to axis "n" of :			0.2	mT
	parallel to tube axis of :			0.6	mT

Characteristics with voltage divider ⑤ :

		C	A	
For a supply voltage of :		1200	1100	V
Gain :		4.6×10^3	1.6×10^4	
Linearity (2%) of anode current up to :		80	20	mA
Anode pulse ⑥ :				
	Rise time :	2	2.2	ns
	Duration at half height :	3.2	3.6	ns
	Transit Time :	16	17	ns
Capacitance	anode to final dynode :		2	pF
	anode to all :		4	pF

PHOTONIS imaging sensors

Recommended voltage divider

Type A for maximum gain

K	D1	D2	D3	D4	D5	D6	A	
2	1	1.5	1	1	1	1		(total : 8.5)

Type C for best timing / linearity / gain compromise

K	D1	D2	D3	D4	D5	D6	A	
2	1	1.5	1	1.25	1.25	1.5		(total : 9.5)

K: photocathode Dn: dynode A: anode

Limiting values

Anode sensitivity :				max.:	0.5	A/lmF
Supply voltage :				max.:	1500	V
Continuous anode current :				max.:	0.2	mA
Voltage between :						
	D1 and photocathode :	min.:	100	max.:	350	V
	consecutive dynodes :			max.:	250	V
	anode and D6 :	min.:	30	max.:	400	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 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 µA/lmF, by 7.5 for this type of tube.

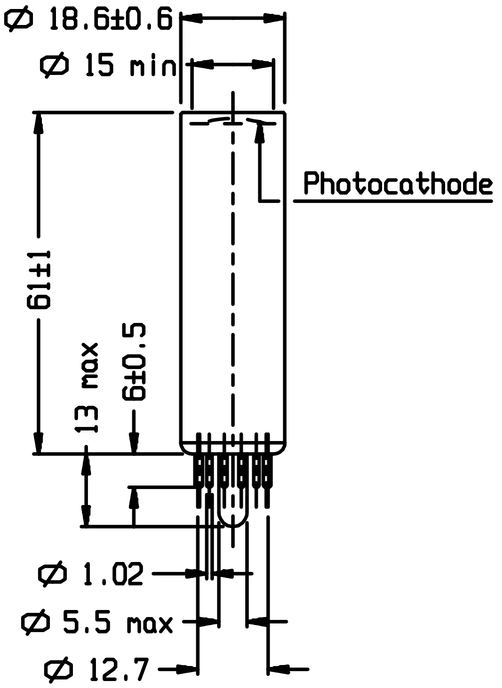
② Dark current is measured at ambient temperature, after the tube has been in darkness for approximately 1 min. Lower value can be obtained after a longer stabilisation period in darkness (approx. 30 min.).

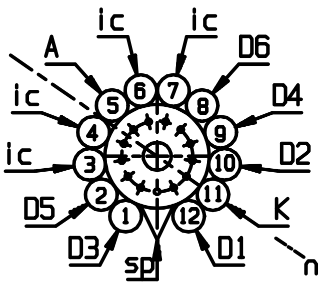
③ Pulse amplitude resolution for ^{137}Cs is measured with NaI(Tl) cylindrical scintillator with a diameter of 12 mm and a height of 25 mm. The count rate used is ~ 10^4 c/s.

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 ~ 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 C is an example of a progressive divider, giving a compromise between gain, 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 Vht as (Vht)-½.

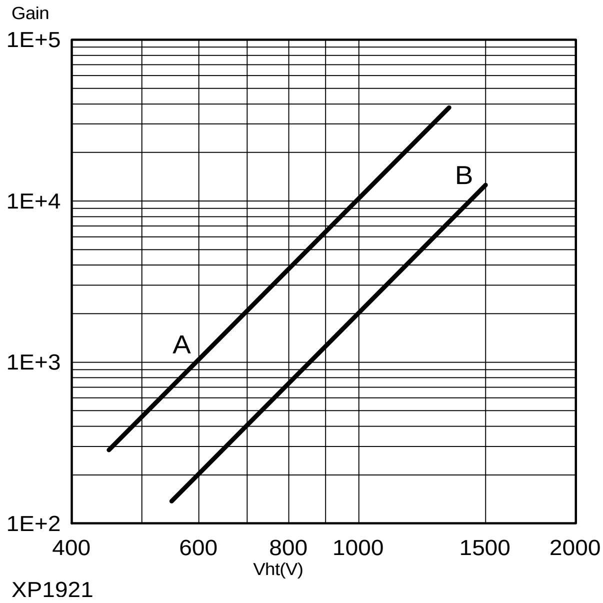




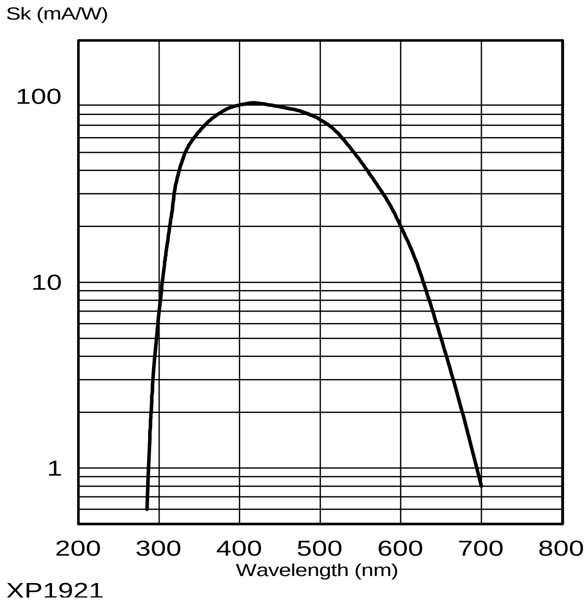
ref.: 61100002
sp: short pin
ic: internal connection
n: plane of symmetry of the multiplier

K: cathode Dn: dynode
A: anode

Typical gain curve



Typical spectral characteristics



Accessories

Socket: FE1004
Socket for PCB: FE3112