

Photomultiplier

XP3960A

9-stage 39mm (1.5"), Round tube

Application

- ✓ PET medical imaging
- ✓ High energy physics
- ✓ Fast Crystals scintillation detectic

Features

- ✓ Very Fast
- ✓ Good PHR

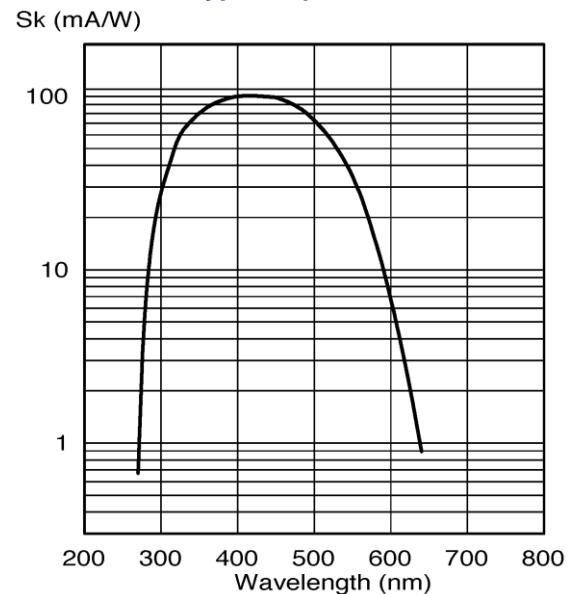


Description

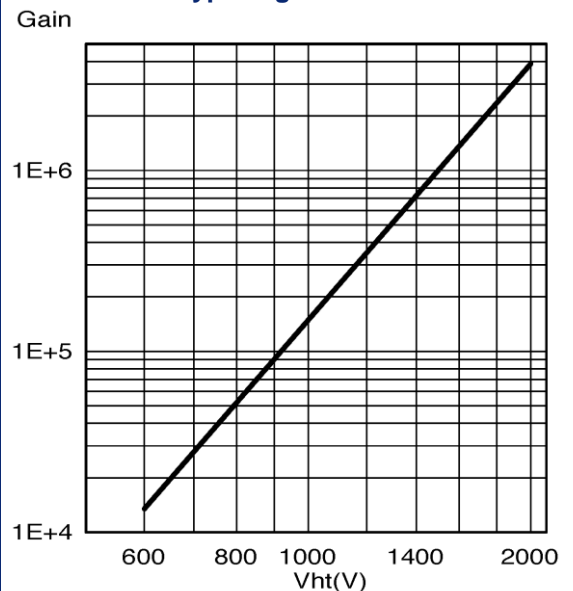
| | |
|----------------------|--------------------|
| Window material | Borosilicate glass |
| Photocathode | Bi-alkali |
| Refr. Index at 420nm | 1.48 |
| Multiplier structure | Linear focused |

| Photocathode characteristics | Min | Typ | Max | Unit |
|---|-----|-------------------|------|--------|
| Spectral range: | | 300-650 | | nm |
| Maximum sensitivity at | | 420 | | nm |
| Sensitivity: | | | | |
| Luminous | | 120 | | μA/lm |
| Blue * | 10 | 12 | | μA/lmF |
| QE, at 420nm | | 22 | | % |
| Gain characteristics | Min | Typ | Max | Unit |
| Gain slope (vs supp. Volt., log/log) | | 6.2 | | |
| For an anode blue sensitivity of | | 5 | | A/lmF |
| Supply voltage * | 900 | 1100 | 1300 | V |
| Gain | | 4x10 ⁵ | | |
| Anode dark current | | 5 | 30 | nA |
| Mean anode sensitivity deviation | Min | Typ | Max | Unit |
| Temperature coefficient (-30°C, 50°C) | | 0.05 | 0.15 | %/K |
| At HV= 1300V | | | | |
| Linearity (5%) of anode current up to | | 30 | | mA |
| Pulse height resolution: | | | | |
| ¹³⁷ Cs + LaBr ₃ 1.5"x1.5" | | 3.6 | | % |
| ²² Na + LYSO 4x4x22 mm ³ | | 11.0 | | % |
| Count rate shift- ²² Na + LYSO 14x14x14mm ³ | | | | |
| Low rate: 1000 cps- high rate: 20.000 cps | | | | |
| Gain deviation from low to high rate: | | | ±4 | % |
| Anode pulse- ²² Na- LYSO 4x4x22mm ³ : | | | | |
| Raise time | | 3.1 | | ns |
| Time Resolution (FWHM) | | 235 | | ps |
| At HV= 2000V | | | | |
| Transit Time Spread (FWHM) | | 620 | | ps |

Typical spectral



Typical gain curve



Recommended Voltage Divider

Type A for maximum gain

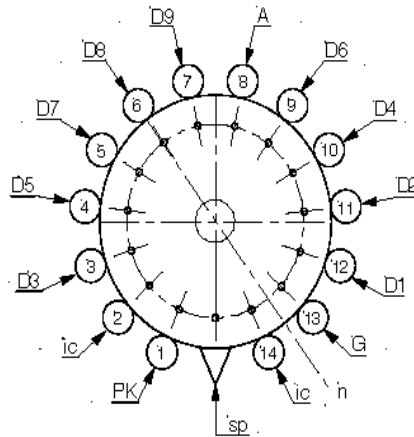
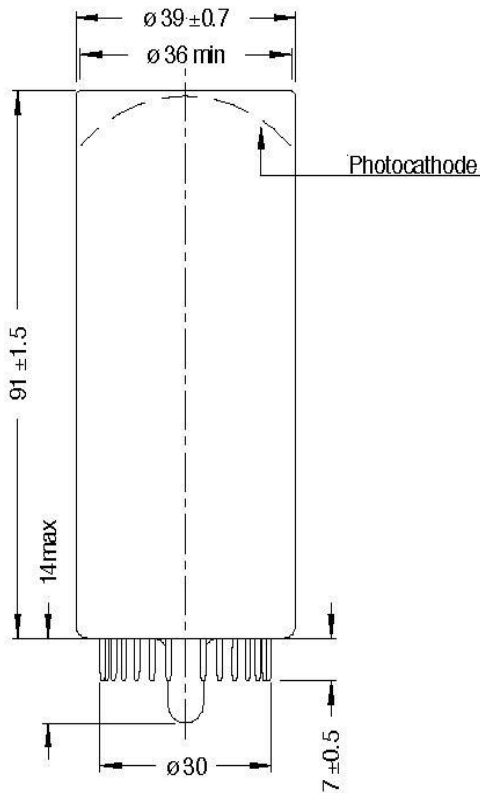
| | | | | | | | | | | | |
|---|-----|----|----|----|----|----|----|----|----|----|---------------|
| K | G | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | A |
| 1 | 3.5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | (Total: 13.5) |

* characteristic mentioned on the test ticket of the tube



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Outline (dimensions in mm)



Mass: 65g

Accessories:

Socket: FE 1115

Mu-metal shield: MS 170

K: cathode
Dn: dynode

A: anode
ic: internal connection

sp: short pin
G: focusing electrode

n: plane of symmetry of the multipli
nc: not connected

| Limiting values | Min | Max | Unit |
|--------------------------------|-----|------|-------|
| Anode blue sensitivity | | 50 | A/1mF |
| Supply voltage | | 2000 | V |
| Continuous anode current | | 0.2 | mA |
| Voltage between: | | | |
| G and photocathode | | 250 | V |
| D1 and photocathode | 250 | 700 | V |
| Consecutive dynode | | 150 | V |
| Anode and D7 | 70 | 150 | V |
| Ambient temperature: | | | |
| Short operation (<30 mn) | -30 | +80 | ° C |
| Continuous operation & storage | -30 | +50 | ° C |

Variants

Finishing

B with plastic base

F with flying leads Φ 0.5

FB with flying leads and plastic base

Option

C with electrostatic coating

(conductive paint connected to the cathode

+ insulating coating)



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Also, other variants can be made. Please, contact us to discuss any specific product requirements.