

Image Intensifier

40mm , 3-stage

PF403KC



Features

- Phosphor : P-20 aluminised (yellow-green).
- Internal Power Supply.
- Automatic Brightness Control
- Ruggedised construction.
- Fibreoptic input and output faceplates.
- Input faceplate at ground potential.
- Photocathode : S20 (extended - red response).

Description

The PF403KC is an image intensifier assembly comprising three modules optically coupled in series. Fibre optics are used for the input and output windows on which are formed a photocathode and phosphor screen respectively.

When an image is projected on to the cathode a corresponding inverted and intensified image is produced on the output screen.

Included in the assembly is an oscillator-generator and high voltage multiplier which produced e.h.t. potentials to energise the modules. The assembly is encapsulated in silicone rubber compound

and enclosed in a protective plastic housing.

The oscillator has an automatic brightness control (ABC) feature which eliminates phosphor saturation and image burn-in and enables the intensifier to regain useful performance within a few seconds after illumination overload. The dynamic range of the intensifier is also greatly increased as is clearly shown in the transfer characteristic curves on page 3.

The fibre-optic input and output windows have flat surfaces with a numerical aperture of 1.

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Maximum Ratings (Absolute)

Input voltage, d.c., max.	(V)	7,0
Ambient temperature		
operating maximum continuous	(°C)	35
operating range	(°C)	-54 to +52
non-operating range	(°C)	-54 to +68
Photocathode illuminance, max. average (intermittent flashes of much higher intensity are permissible)	(lux)	$5,0 \times 10^{-3}$

Performance Characteristics at 6,75V d.c. input

Input current, d.c., typical	(mA)	30 (50 max.)
Useful cathode diameter, min.	(mm)	38
Photocathode luminous sensitivity (2 854°K source), min.	(μ A/lumen)	175
Photocathode radiant sensitivity		
min. at 800nm	(mA/W)	12
min. at 850nm	(mA/W)	6
Centre resolution, min.	(lp/mm)	28
Edge resolution at 11mm radius, min.	(lp/mm)	25
Paraxial magnification, typical	-	0,82
Distortion at 16mm radius, typical	(%)	18
Luminance gain, min. (Notes 1 and 2)	-	35 000
Equivalent background illumination, max.	(lux)	2×10^{-7}
Screen luminance, max.	(cd/m ²)	500
Screen luminance ratio, max., within area 32mm diameter and concentric with tube axis -		4:1

Note 1. Luminance gain is defined as $\pi L/E$

where L = luminance (in cd/m²) in a direction normal to the screen and measured with an eye-corrected photometer having an acceptance angle of 2° or less.

E = cathode illuminance (in lux) produced by a tungsten lamp at a colour temperature of 2 854°K.

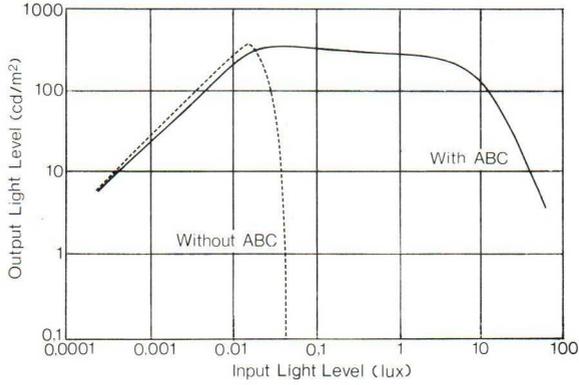
Note 2. This is the luminance gain when the intensifier is operated in the linear part of the characteristic, i.e. at cathode illuminances less than 0,01 lux.

Shock and Vibration Conditions

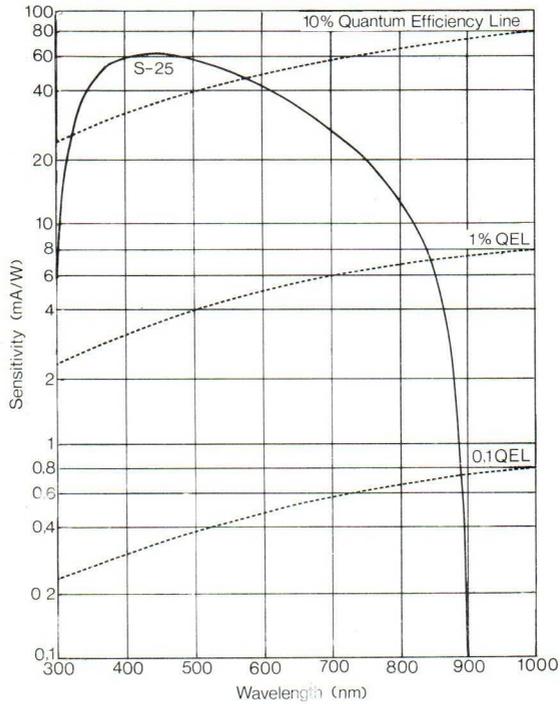
This intensifier will operate in any position and will withstand shock pulses of 75g peak amplitude.

The intensifier is also designed to withstand vibrations at a double amplitude of 2,5mm over the frequency range of 10Hz to 55Hz.

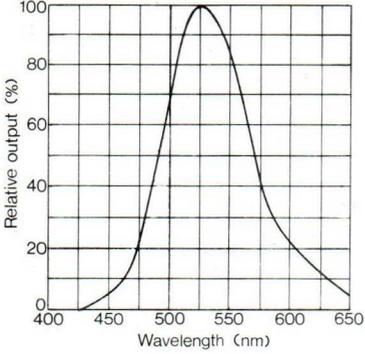
Typical Output versus Input Light Intensity



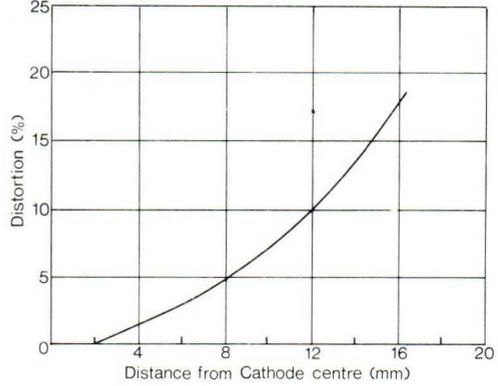
Photocathode Typical Absolute Spectral Response



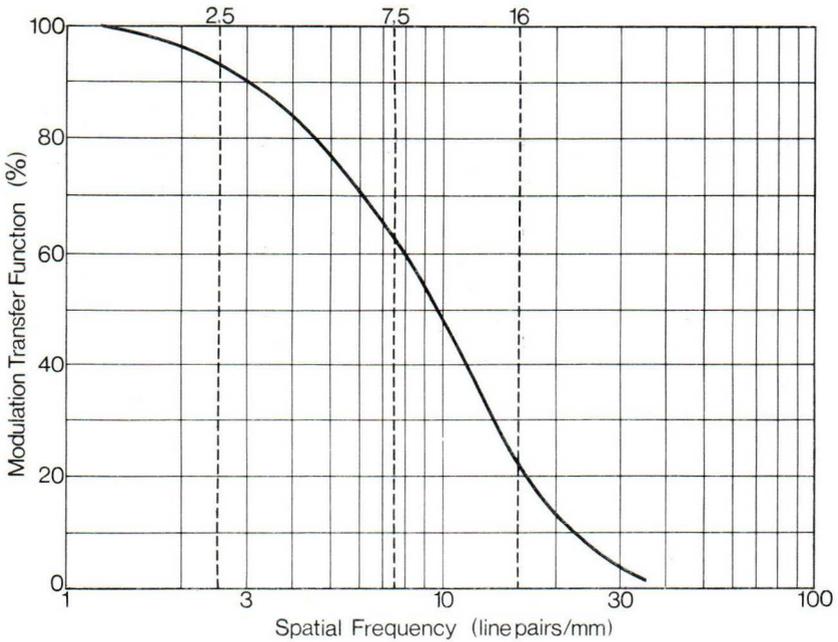
P-20 Phosphor Spectral Output



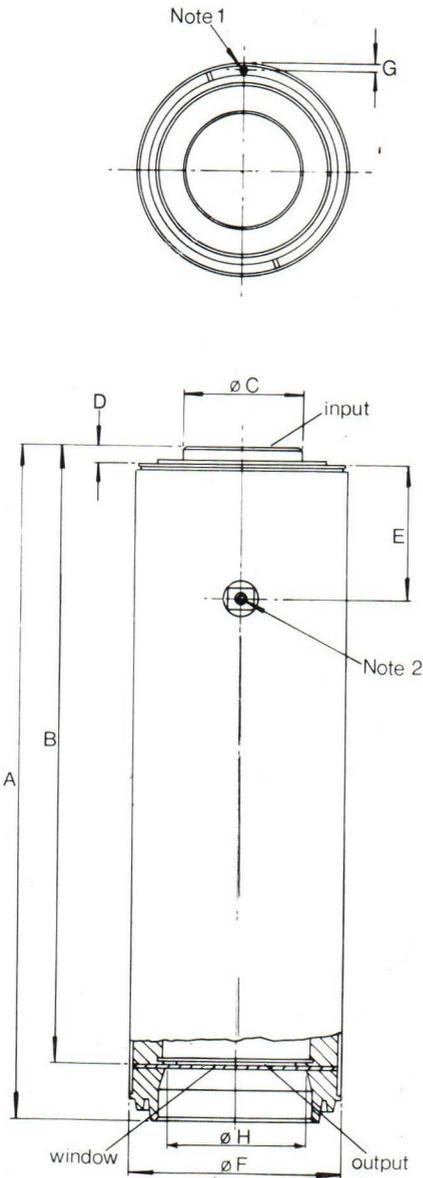
Typical Distortion



Typical Modulation Transfer Function (MTF)



Physical Data



Dimensions

	mm	in.
A	302,3 min.	11,902 min.
	305,6 max.	12,032 max.
B*	278,9 min.	10,980 min.
	282,7 max.	11,130 max.
C	53,2 min.	2,095 min.
	53,5 max.	2,105 max.
D	6,0 min.	0,237 min.
	6,2 max.	0,243 max.
E	60,2 min.	2,370 min.
	61,0 max.	2,400 max.
F	94,9 min.	3,735 min.
	95,3 max.	3,750 max.
G	2,1 min.	0,082 min.
	2,3 max.	0,092 max.
H	63,7 min.	2,508 min.
	64,8 max.	2,551 max.

*B = optical length.

Notes

1. Locating pin, diameter 3,0mm (0,120in.) min.: 3,1mm (0,123in.) max.
Height of pin above bearing surface 5,3mm to 5,5mm.
2. Connecting socket hole, diameter 2,65 to 2,68mm
Minimum depth of socket 6,22mm.

These Components are available from:

ITT Components Group Europe

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