

# Image Intensifier

25mm, 3-stage

PF253KC



## Features

- Fibreoptic input and output faceplates.
- Input faceplate at ground potential.
- Photocathode : S25 (extended - red response).
- Phosphor : P-20 aluminised (yellow-green).
- Internal Power Supply.
- Automatic Brightness Control.
- Ruggedised construction.

## Description

The PF253KC 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.

October 1973

PF253KC-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)	23
Photocathode luminous sensitivity (2 854°K source), min.	( $\mu$ 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 7mm radius, min.	(lp/mm)	25
Paraxial magnification, typical	-	0,84
Distortion at 10mm radius, typical	(%)	18
Luminance gain, min. (Notes 1 and 2)	-	35 000
Equivalent background illumination, max.	(lux)	$2 \times 10^{-7}$
Screen luminance, max.	(cd/m <sup>2</sup> )	500
Screen luminance ratio, max., within area 20mm diameter and concentric with tube axis -		4:1

Note 1. Luminance gain is defined as  $\pi L/E$   
 where  $L$  = luminance (in cd/m<sup>2</sup>) 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.

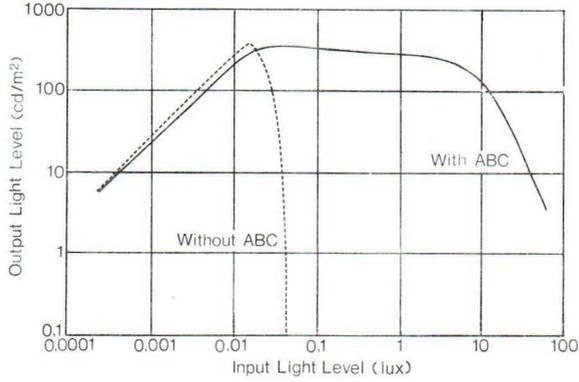
Note 2. This is the luminance gain when the intensifier is operated in  
 the linear part of the characteristic, i.e. at cathode illum-  
 inances less than 0,01 lux.

**Shock and Vibration Conditions**

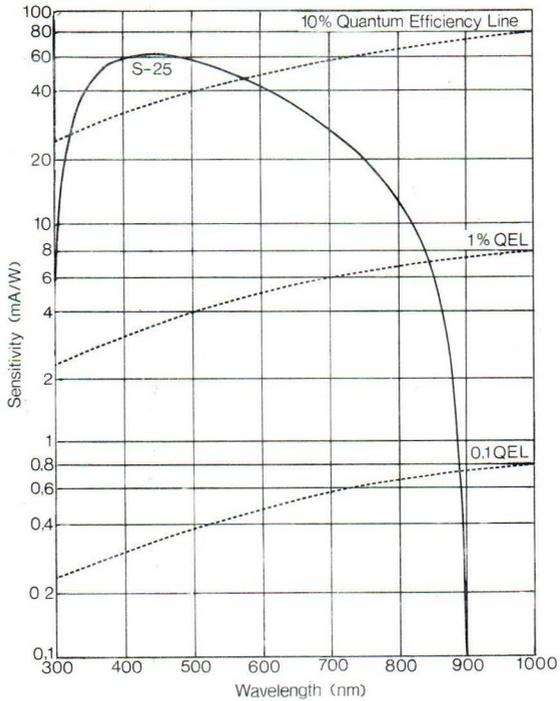
This intensifier will operate in any position and will withstand shock  
 pulses of 75g peak amplitude.

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

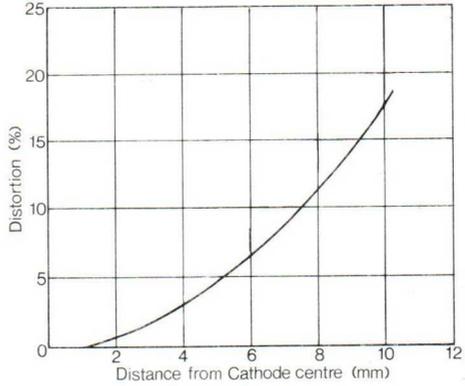
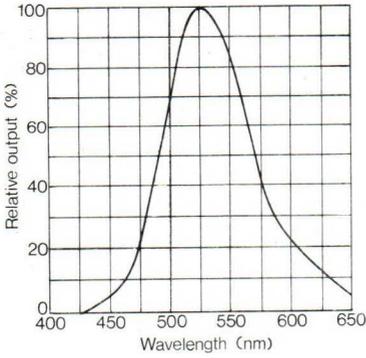


Photocathode Typical Absolute Spectral Response

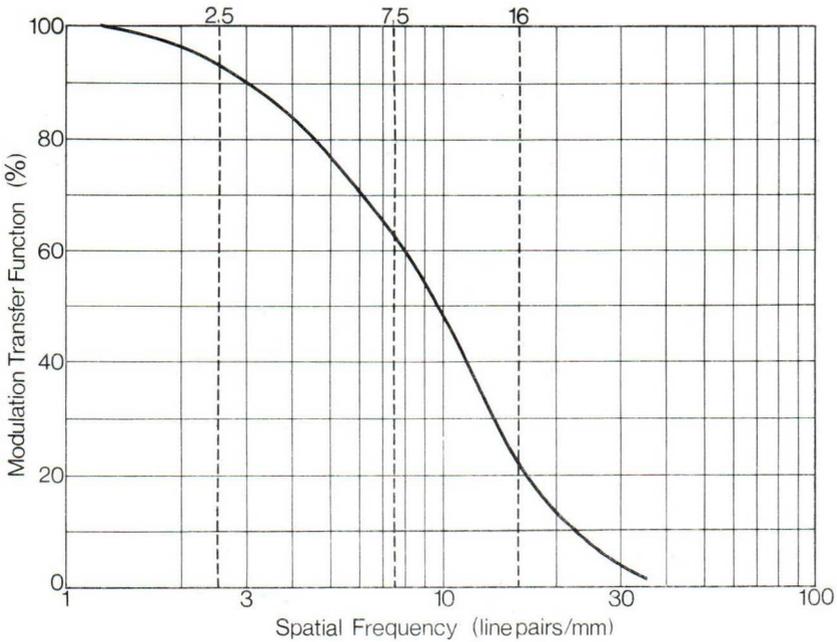


**P-20 Phosphor Spectral Output**

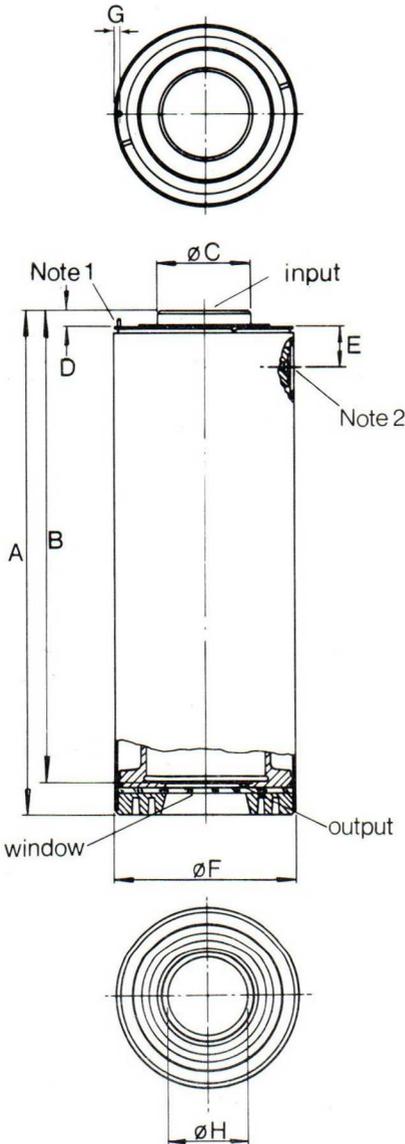
**Typical Distortion**



**Typical Modulation Transfer Function (MTF)**



Physical Data



Dimensions

	mm	in.
A	192,2 min. 195,2 max.	7,568 min. 7,684 max.
B*	180,67 min. 182,96 max.	7,113 min. 7,203 max.
C	35,4 min. 35,7 max.	1,395 min. 1,405 max.
D	6,0 min. 6,2 max.	0,237 min. 0,243 max.
E	15,7 min. 16,1 max.	0,617 min. 0,638 max.
F	69,6 min. 69,9 max.	2,740 min. 2,750 max.
G	1,6 min. 1,8 max.	0,062 min. 0,072 max.
H	33,0 max.	1,300 max.

\*Optical length.

Notes

1. Locating pin 2,2 to 2,4mm diameter. Height of pin above bearing surface is 2,4 to 2,6mm.
2. Connecting socket hole 2,65 to 2,68mm diameter, minimum depth 6,2mm.

These Components are available from:

**ITT Components Group Europe**

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Valve Product Division

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Paignton, Devon

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