

Image Intensifier specification
18 millimetre micro-channel wafer
XR5™ Technology
XX2540MV



184-6713A0

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Description

The Image Intensifier Assembly, 18 millimetres micro-channel wafer, shall have a minimum useful photocathode and phosphor screen diameter of 17.5 millimetres (mm). The assembly shall employ a micro-channel electron multiplier plate with proximity focus on the input and output. The assembly shall include the high voltage multiplier and oscillator and shall be encapsulated within a hard surface insulating sleeve or boot and assembled in a hard plastic housing. The tube is equipped with **AUTO-GATING**

Phosphor : P43
Input window : Glass
Output window : Inverting fibre-optic

Construction

The assembly shall be fabricated in accordance with the applicable drawing.

Limiting values

	<u>Minimal</u>	<u>Maximal</u>	<u>Unit</u>
Continuous input Supply voltage	2.0	3.5	V
Reversed Polarity (60 sec)	-3.7	+3.7	V
Storage temperature (4 hours max.)	-56	+65	°C
Storage temperature long term	-35	+35	°C
Operating temperature (4 hours max.)	-52	+52	°C
Force on bearing surface		200	N

Operating conditions and characteristics

Operating Supply voltage : 2.7 V
Ambient temperature : 20 ± 1°C

External gain control (EGAC)

The tube gain can be adjusted with an external potentiometer in the goggle using the external connector. This results in a gain range with a maximum gain at the factory set value of the tube, when the external applied resistance is at 180kOhm (or higher) and a minimum gain when the external resistance is 0 Ohm. The minimum gain is about 80 times less than the factory set gain.

When the image intensifier is operated under the conditions mentioned above, unless otherwise specified, the characteristic values that follow are attainable:

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PHOTONIS

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	Minimal	Typical	Maximal	UNIT
Cathode sensitivity at 2850K	700			μA/lm
Radiant sensitivity at 830nm	55			mA/W
Signal to noise ratio (Photocathode illuminance 108 μlx)	23			
Operational life time	7500			hours
Gain at 2.10 ⁻⁵ lx	10000	13000	16000	cd/m ² /lx
Gain at 2.10 ⁻⁶ fc	(31400)	(40800)	(50250)	fl/fc
Maximum Output Brightness	6	8	10	cd/m ²
Maximum Output Brightness	(1.8)	(2.3)	(2.9)	fl
Input current at 2.10 ⁻⁵ lx			35	mA
Limiting resolution at centre	64			lp/mm
Limiting resolution at >200 lux (=autogating mode)	55			lp/mm
M.T.F. at 2.5 lp/mm		94		%
at 7.5 lp/mm		85		%
at 15 lp/mm		70		%
at 25 lp/mm		50		%
at 30 lp/mm		40		%
E.B.I.			0.25	μlx
Burn-in	50			hours
Image inversion	179		181	°
Shear distortion			50	μm
Gross distortion			65	μm
Useful cathode diameter	17.5			mm
Output uniformity over Ø17.0 mm at 2850K			3:1	
Bright source protection 50 millilumens on an area of 1 mm ²	60			sec
Fixed Pattern Noise at 2mlx (mean luminance deviations)	-10		+10	%
Halo (illumination spot 0.35mm)			0.95	mm
Image alignment			0.3	mm
Mass			80	gram

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Shock:

The Image Intensifier tube shall comply with the performance specifications after being exposed to 6 shock impacts parallel to and 6 shock impacts perpendicular to the optical axis. Impacts shall be halve sine waves with a minimum peak amplitude of 500 g's and a duration of 2 ± 0.2 milliseconds.

Vibration:

The Image Intensifier tube shall comply with the performance specifications after being subjected to vibration conditions parallel to and perpendicular to the optical axis over a frequency range of 5 to 55 hertz (Hz), 2.54mm amplitude 10 cycles in each plane.

Spots:

Maximum number of dark spots will be according to the following table:

SPOTS DIAMETER IN MICROMETERS	ZONE 1 dia. 5.6mm	ZONE 2 dia. 5.6mm-14.7mm	ZONE 3 dia 14.7mm-17.5mm
> 380	0	0	0
300 – 380	0	0	0
230 – 300	0	0	0
150 – 230	0	1	1
75 – 150	0	2	2
< 75	Minimal	Minimal	Minimal

In case the assembly has more numerous dark spots of smaller dimension within a zone, the total quantity of dark spots in the zone should be within the total quantity of dark spots in the considered zone as specified in the above table.

For example, if a tube is showing [3 Ø75-150µm] dark spots in zone 2 instead of the [2 Ø75-150µm + 1 Ø150-230µm] specified ones, the tube will be considered to be compliant with the specification.