

High-resolution 16 cm X-ray image intensifier converting fluoroscopic X-ray patterns into bright visible images with approximately 10,000-fold luminance gain.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	— / —	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 XRay
No fixed ratings recorded.
Published ratings/characteristics audited; detailed numeric data retained in parameter table.

The TH9412B is a high-resolution X-ray image-intensifier tube that converts an X-ray pattern into a bright visible image for radiographic and fluoroscopic imaging.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1972 Thomson CSF

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1972 THOMSON CSF

Section 1 · XRay

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
® INPUT FIELD	16	® INPUT FIELD : 16 cm
® LUMINANCE GAIN [1]	10	® LUMINANCE GAIN : 10 000
® LUMINANCE GAIN [2]	0	® LUMINANCE GAIN : 10 000
considerable expertise in the field of X-ray image intensifier tubes. The TH	9412	considerable expertise in the field of X-ray image intensifier tubes. The TH 9412B has the same dimensions and
electrode voltages as the previous model TH	9412 V	electrode voltages as the previous model TH 9412A ; it can directly replace the latter with improved image
Since the TH	9412 W	Since the TH 9412B performs very high resolution, the power supply must be carefully designed and especially ripple voltages
The TH [1]	7127 W	The TH 7127 THOMSON-CSF power supply designed especially for use with the TH 9412B is highly recommended. It delivers
The TH [2]	9412 W	The TH 7127 THOMSON-CSF power supply designed especially for use with the TH 9412B is highly recommended. It delivers
Published value [1]	0 V	0. 1 % regulated voltages for all electrodes and is directly energized from 110/220 V - 50/60 Hz line supply.
Published value [2]	1 V	0. 1 % regulated voltages for all electrodes and is directly energized from 110/220 V - 50/60 Hz line supply.
Published value [3]	110 V	0. 1 % regulated voltages for all electrodes and is directly energized from 110/220 V - 50/60 Hz line supply.
Published value [4]	220 V	0. 1 % regulated voltages for all electrodes and is directly energized from 110/220 V - 50/60 Hz line supply.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Published value [5]	50 V	0.1 % regulated voltages for all electrodes and is directly energized from 110/220 V - 50/60 Hz line supply.
Published value [6]	60 V	0.1 % regulated voltages for all electrodes and is directly energized from 110/220 V - 50/60 Hz line supply.
plate of	2	plate of 2 mm thickness is provided at the output plane of the housing.
Input screen diameter L e e e [1]	16	Input screen diameter L e e e 16+0.5 cm
Input screen diameter L e e e [2]	0.5	Input screen diameter L e e e 16+0.5 cm
Output image diameter e [1]	14.212	Output image diameter e 14.2120.5 mm
Output image diameter e [2]	5	Output image diameter e 14.2120.5 mm
Input field diameter ee e	16	Input field diameter ee e 16 cm
Typical resolution (Note	2	Typical resolution (Note 2) :
Minimum luminance gain (Note B) e [1]	10	Minimum luminance gain (Note B) e 10 000
Minimum luminance gain (Note B) e [2]	0	Minimum luminance gain (Note B) e 10 000
Maximum background luminance (Note [1])	7	Maximum background luminance (Note 7) e 0.06 cd/m?
Maximum background luminance (Note [2])	0.06	Maximum background luminance (Note 7) e 0.06 cd/m?
Photocathode pc voltage ee	0 V	Photocathode pc voltage ee . 0 VvV
Electrode gl voltage e	0.3 V	Electrode gl voltage e 0.3 kV
Anode avoltage e e	32 V	Anode avoltage e e 32.0 kV
cathode K . . L L	0	cathode K . . L L 0 Vv
Photocathode pc maximum current Le	500 mA	Photocathode pc maximum current Le 0.5 wuA
Electrode g2 maximum Current L e e	1 A	Electrode g2 maximum Current L e e 1 WA

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Electrode g4 maximum current (after post-gettering operation) ,	10 A	Electrode g4 maximum current (after post-gettering operation) , 10 uA
Anode a maximum current (without X-radiation) e	2 A	Anode a maximum current (without X-radiation) e 2 uA
Input diameter for [1]	14	Input diameter for 14. 2 mm OULPUL IMAGE o o ittt e e e e 16 cm
Input diameter for [2]	2	Input diameter for 14. 2 mm OULPUL IMAGE o o ittt e e e e 16 cm
Input diameter for [3]	16	Input diameter for 14. 2 mm OULPUL IMAGE o o ittt e e e e 16 cm
Photocathode pcvoltage e e e	0 V	Photocathode pcvoltage e e e 0 Vv
Electrode g1 voltage® e [1]	160 V	Electrode g1 voltage® e 160t0 300 V
Electrode g1 voltage® e [2]	300 V	Electrode g1 voltage® e 160t0 300 V
Electrode g2 voltage™ e [1]	2700 V	Electrode g2 voltage™ e 2700t0 3700 V
Electrode g2 voltage™ e [2]	3700 V	Electrode g2 voltage™ e 2700t0 3700 V
S aAn0de G4 . L L e e e e e e [1]	2.5	S aAnOde G4 . L L e e e e e e 2.5t03.0 kV
S aAn0de G4 . L L e e e e e e [2]	3	S aAnOde G4 . L L e e e e e e 2.5t03.0 kV
cathode K e e e e	0	cathode K e e e e 0 Vv
Ripple voltages must not exceed [1]	0 V	Ripple voltages must not exceed 0. 3 %.
Ripple voltages must not exceed [2]	3 V	Ripple voltages must not exceed 0. 3 %.
* g1, g2 voltages are given for an anode voltage of	30 V	* g1, g2 voltages are given for an anode voltage of 30. 0 kV.
A	10	A 10 Megohms resistance protecting the tube against discharge must be inserted in series in the anode circuit inside the
As the tube features very high resolution performance, a variation of electrode voltages of	1 V	As the tube features very high resolution performance, a variation of electrode voltages of 1 % can alter the image quality.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Voltages supplies can be applied to the electrodes in a short time but with a slope not exceeding	5 V	Voltages supplies can be applied to the electrodes in a short time but with a slope not exceeding 5 kV/ms.
Let tube at rest with voltages applied for potential stabilization before adjusting it. {	10 V	Let tube at rest with voltages applied for potential stabilization before adjusting it. {10 s minimum).
Electrode voltages in the Test Report are given for an anode voltage of	30 V	Electrode voltages in the Test Report are given for an anode voltage of 30 kV. If the tube is operated at a lower anode voltage,
aluminum filter. The central resolution is given for	70	aluminum filter. The central resolution is given for 70 % of the input field diameter and the peripheral resolution is given for the area between
circles of [1]	70	circles of 70 % and 90 % of the input field diameter.
circles of [2]	90	circles of 70 % and 90 % of the input field diameter.
minimum contrast, X-ray conditions [1]	80	minimum contrast, X-ray conditions : 80 kVp - HVL 7 £ 0. 2 mm Al.input dose rate 100 mR/mn.
minimum contrast, X-ray conditions [2]	7	minimum contrast, X-ray conditions : 80 kVp - HVL 7 £ 0. 2 mm Al.input dose rate 100 mR/mn.
minimum contrast, X-ray conditions [3]	0	minimum contrast, X-ray conditions : 80 kVp - HVL 7 £ 0. 2 mm Al.input dose rate 100 mR/mn.
minimum contrast, X-ray conditions [4]	2	minimum contrast, X-ray conditions : 80 kVp - HVL 7 £ 0. 2 mm Al.input dose rate 100 mR/mn.
minimum contrast, X-ray conditions [5]	100	minimum contrast, X-ray conditions : 80 kVp - HVL 7 £ 0. 2 mm Al.input dose rate 100 mR/mn.
The contrast ratio is measured by inserting a lead disc of [1]	6	The contrast ratio is measured by inserting a lead disc of 6 mm thickness in the center of the tube's input field and covering 10 % of the input
The contrast ratio is measured by inserting a lead disc of [2]	10	The contrast ratio is measured by inserting a lead disc of 6 mm thickness in the center of the tube's input field and covering 10 % of the input
are irradiated in the same conditions [1]	80	are irradiated in the same conditions : 80 kVp - 20 mm A filter - HVL 7 * 0.2 mm Al. The luminance is measured by a photometer which
are irradiated in the same conditions [2]	20	are irradiated in the same conditions : 80 kVp - 20 mm A filter - HVL 7 * 0.2 mm Al. The luminance is measured by a photometer which

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
are irradiated in the same conditions [3]	7	are irradiated in the same conditions : 80 kVp - 20 mm A filter - HVL 7 * 0.2 mm Al. The luminance is measured by a photometer which
are irradiated in the same conditions [4]	0.2	are irradiated in the same conditions : 80 kVp - 20 mm A filter - HVL 7 * 0.2 mm Al. The luminance is measured by a photometer which
where : Mp = magnification measured on a circle covering	90	where : Mp = magnification measured on a circle covering 90 % of the input field.
Mc = magnification measured on a	2	Mc = magnification measured on a 2 cm diameter circle centered on the input field.
Published value	3	3-\ Anode A White
USEFUL INPUT	210	USEFUL INPUT 210