

ELECTRONIC TUBE REFERENCE

TH9415

Specialized - X-Ray Tube electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

XRAY

Compact electronic-zoom X-ray image-intensifier tube for medical radiology, providing selectable 16 and 10 cm input fields with high brightness 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 TH9415 is a compact electronic-zoom X-ray image-intensifier tube with selectable input fields and high brightness gain for medical radiology.

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
BRIGHTNESS GAIN	6000	BRIGHTNESS GAIN : 6000 X
INPUT FIELDS [1]	16	INPUT FIELDS : 16 cm (6') and 10 cm (4'')
INPUT FIELDS [2]	6	INPUT FIELDS : 16 cm (6') and 10 cm (4'')
INPUT FIELDS [3]	10	INPUT FIELDS : 16 cm (6') and 10 cm (4'')
INPUT FIELDS [4]	4	INPUT FIELDS : 16 cm (6') and 10 cm (4'')
resolution than that of older types TH [1]	9411	resolution than that of older types TH 9411 and TH 9412.
resolution than that of older types TH [2]	9412	resolution than that of older types TH 9411 and TH 9412.
tion so to display to the user input fields of	16	tion so to display to the user input fields of 16 φcm and
Published value	10	10 cm. The output image is delivered on the output screen
from [1]	1 V	from 1/8 to 1/11 by a proper choice of voltages applied to
from [2]	8 V	from 1/8 to 1/11 by a proper choice of voltages applied to
from [3]	1 V	from 1/8 to 1/11 by a proper choice of voltages applied to
from [4]	11 V	from 1/8 to 1/11 by a proper choice of voltages applied to
Fields of applications in industrial radiology are considerably extended by the use of the tube TH	9415	Fields of applications in industrial radiology are considerably extended by the use of the tube TH 9415
shield against X-radiations. 2 A lead shield of		shield against X-radiations. A lead shield of 2 mm thick is provided at the output plane of the shell,

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Operating and stocking temperature . . . max. +	50	Operating and stocking temperature . . . max. +50° C
Input screen diameter [1]	16	Input screen diameter 16+ 0.5cm
Input screen diameter [2]	0.5	Input screen diameter 16+ 0.5cm
Output image diameter (0 [1]	1	Output image diameter (O.1.) 14.22 0.5 mm
Output image diameter (0 [2]	14.22	Output image diameter (O.1.) 14.22 0.5 mm
Output image diameter (0 [3]	0.5	Output image diameter (O.1.) 14.22 0.5 mm
Input spectral response X-rays ([1]	30	Input spectral response X-rays (30 to 250 kVp generator)
Input spectral response X-rays ([2]	250	Input spectral response X-rays (30 to 250 kVp generator)
Input field diameter [1]	16	Input field diameter 16 10 om
Input field diameter [2]	10	Input field diameter 16 10 om
Minimum resolution (note	2	Minimum resolution (note 2)
Minimum luminance gain (note [1]	5	Minimum luminance gain (note 5) 6000 3000 X
Minimum luminance gain (note [2]	6000	Minimum luminance gain (note 5) 6000 3000 X
Minimum luminance gain (note [3]	3000	Minimum luminance gain (note 5) 6000 3000 X
Maximum background luminance (note6) [1]	0.06	Maximum background luminance (note6) 0.06 0.06 Cd/m2
Maximum background luminance (note6) [2]	0.06	Maximum background luminance (note6) 0.06 0.06 Cd/m2
Photocathode Cvoltage	0 V	Photocathode Cvoltage 0 \Y
Electrodegvtvoltage	0.3 V	Electrodegvtvoltage 0.3 kV
Electrodeg2voltage c	2 V	Electrodeg2voltage c. 2 kV
Electrode g3 voltage	7.5 V	Electrode g3 voltage 7.5 kV
Anode A voltage c [1]	0 V	Anode A voltage c..0.0..n 32 kV
Anode A voltage c [2]	32 V	Anode A voltage c..0.0..n 32 kV

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
(anodegd	3.5	. (anodegd 3.5 kV
Active getter voltage (cathode E	0 V	Active getter voltage (cathode E 0 Vv
" Photocathode C maximumcurrent	500 mA	" Photocathode C maximumcurrent 0.5 MA
Electrode g1 maximumcurrent	7 A	Electrode g1 maximumcurrent 7 uA
Electrode g2 maximumcurrent	1 A	Electrode g2 maximumcurrent 1 MA
Electrode g3 maximumcurrent . %	1 A	Electrode g3 maximumcurrent . % 1 nA
Anode A maximumcurrent	2 A	Anode A maximumcurrent 2 HA
Input diameter for [1]	142	Input diameter for 14,2 mmO. 1. 16 10 cm
Input diameter for [2]	1	Input diameter for 14,2 mmO. 1. 16 10 cm
Input diameter for [3]	16	Input diameter for 14,2 mmO. 1. 16 10 cm
Input diameter for [4]	10	Input diameter for 14,2 mmO. 1. 16 10 cm
Photocathode Cvoltage [1]	0 V	Photocathode Cvoltage 0 0 vV
Photocathode Cvoltage [2]	0 V	Photocathode Cvoltage 0 0 vV
Electrode g1 voltage" [1]	100 V	Electrode g1 voltage" 100to 250 10010250 V
Electrode g1 voltage" [2]	250 V	Electrode g1 voltage" 100to 250 10010250 V
Electrode g1 voltage" [3]	10010250 V	Electrode g1 voltage" 100to 250 10010250 V
Electrode g2 voltage™ [1]	400 V	Electrode g2 voltage™ 400 to 1000 0to500 V
Electrode g2 voltage™ [2]	1000 V	Electrode g2 voltage™ 400 to 1000 0to500 V
Electrode g2 voltage™ [3]	0 V	Electrode g2 voltage™ 400 to 1000 0to500 V
Electrode g2 voltage™ [4]	0 V	Electrode g2 voltage™ 400 to 1000 0to500 V
Electrode g3 voltage™ [1]	3 V	Electrode g3 voltage™ 3.0to 3.5 6.0to6.5 kV
Electrode g3 voltage™ [2]	3.5 V	Electrode g3 voltage™ 3.0to 3.5 6.0to6.5 kV

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Electrode g3 voltage™ [3]	6 V	Electrode g3 voltage™ 3.0to 3.5 6.0to6.5 kV
Electrode g3 voltage™ [4]	6.5 V	Electrode g3 voltage™ 3.0to 3.5 6.0to6.5 kV
Anode A voltage ovnennvnnnn [1]	28 V	Anode A voltage ovnennvnnnn 28to 30 28to 30 kV
Anode A voltage ovnennvnnnn [2]	30 V	Anode A voltage ovnennvnnnn 28to 30 28to 30 kV
Anode A voltage ovnennvnnnn [3]	28 V	Anode A voltage ovnennvnnnn 28to 30 28to 30 kV
Anode A voltage ovnennvnnnn [4]	30 V	Anode A voltage ovnennvnnnn 28to 30 28to 30 kV
; (anodegd [1])	2.56	; (anodegd 2.56to0 3 2.5to 3 kV
; (anodegd [2])	3	; (anodegd 2.56to0 3 2.5to 3 kV
; (anodegd [3])	2.5	; (anodegd 2.56to0 3 2.5to 3 kV
; (anodegd [4])	3	; (anodegd 2.56to0 3 2.5to 3 kV
Active getter voltage o\ ode E . ..o onnn [1]	0 V	Active getter voltage o\ ode E . ..o onnn. . 0 0 Vv
Active getter voltage o\ ode E . ..o onnn [2]	0 V	Active getter voltage o\ ode E . ..o onnn. . 0 0 Vv
* g1 g2 g3 voltages are defined for an anode voltage of	30 V	* g1 g2 g3 voltages are defined for an anode voltage of 30 kV.
A	10	A 10 Megohms resistance protecting the tube against discharge is provided inside the shell in the anode
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).
(	2	(2) - The resolution (as referred to input screen) is measured by using square lead pattern consisting in
a circle having a diameter equal to [1]	70	a circle having a diameter equal to 70 Z of the input diameter. Peripheral zone is within circles 70 and

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
a circle having a diameter equal to [2]	70	a circle having a diameter equal to 70 Z of the input diameter. Peripheral zone is within circles 70 and
Published value [1]	90	90 7 of the input diameter.
Published value [2]	7	90 7 of the input diameter.
minimum contrast. X-ray conditions [1]	80	minimum contrast. X-ray conditions : 80 kVp - HVL 7 £ 0.2 mm Al-input dose rate 20 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 20 mR/mn.
minimum contrast. X-ray conditions [3]	0.2	minimum contrast. X-ray conditions : 80 kVp - HVL 7 £ 0.2 mm Al-input dose rate 20 mR/mn.
minimum contrast. X-ray conditions [4]	20	minimum contrast. X-ray conditions : 80 kVp - HVL 7 £ 0.2 mm Al-input dose rate 20 mR/mn.
(	4	(4) The conversion factor is the value of the viewing screen luminance corresponding to a determined X-ray
(	6	(6) - The luminance gain is the ratio of luminance of the image intensifier to the luminance of a Massiot -
Fluor - Sirius fluoroscopic screen having a luminance of	0.012	Fluor - Sirius fluoroscopic screen having a luminance of 0.012 cd/m2 per mR/s. Both are irradiated in
the same conditions [1]	80	the same conditions : 80 kVp - 20 mm Al filter - HVL 7 £ 0.2 mm Al. The luminance is measured by a
the same conditions [2]	20	the same conditions : 80 kVp - 20 mm Al filter - HVL 7 £ 0.2 mm Al. The luminance is measured by a
the same conditions [3]	7	the same conditions : 80 kVp - 20 mm Al filter - HVL 7 £ 0.2 mm Al. The luminance is measured by a
the same conditions [4]	0.2	the same conditions : 80 kVp - 20 mm Al filter - HVL 7 £ 0.2 mm Al. The luminance is measured by a
(	6 V	(6) The background luminance is the luminance of output screen when normal operating voltages are
the field. The dimensions of the images measured on the viewing screen are respectively [1]	11	the field. The dimensions of the images measured on the viewing screen are respectively 11 and 2. The

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
the field. The dimensions of the images measured on the viewing screen are respectively [2]	2	the field. The dimensions of the images measured on the viewing screen are respectively 11 and 12. The
{	8	.{8) - The image persistence is the residual luminance measured at a determined time after removal of X-ray
Cathode C Black [1]	320	Cathode C Black 320 - 2g°
Cathode C Black [2]	2	Cathode C Black 320 - 2g°
INPUT DIAMETER \ B	220	INPUT DIAMETER \ B 220 max —————»=
IINPUT SCREEN! @	212	IINPUT SCREEN! @ 212 max —————ee—

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