

# X-RAY IMAGING

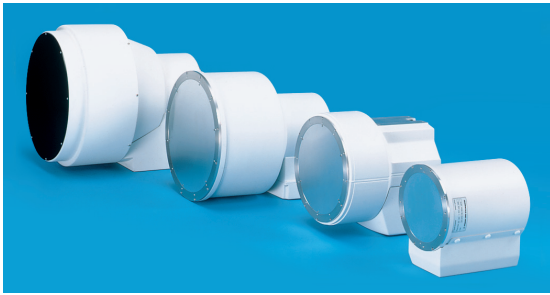
## PRODUCT DIRECTORY

**At the source  
of excellence**

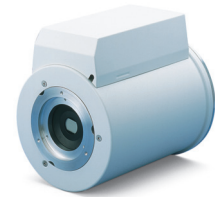


**THALES**

# A FOCUS OF TOTAL QUALITY BY DESIGN



X-ray image intensifiers - 6", 9", 12", 16" family



TH 9466 HP  
6" X-ray image intensifier

Thales Electron Devices, is the world's leading manufacturer of X-Ray Imaging Tubes and associated devices, with the widest range of products:

- high-performance X-Ray Image Intensifiers (XRII) available in more than 400 custom-tailored versions from 6 to 16 inches;
- innovative Radiological Imaging Units (RIU) featuring standard and high-resolution CCD cameras for seamless integration in all radiological systems.

## X-ray image intensifiers: 6", 7" and 9" family (1)

Nominal entrance field size Reference	Useful entrance field size	Output image diameter	Output window thickness	Central resolution	Contrast ratio	Conversion factor	DQE at 59.5 keV	Power supplies		
								TH 7193	TH 7195-x	TH 7197
inches	mm	mm	mm	lp/cm	10 mm	10%	cd.m <sup>-2</sup> /mR.s <sup>-1</sup>	cd.m <sup>-2</sup> /μGy.s <sup>-1</sup>	%	(2)
6 TH 9466 HP	145	15	3.6	48	17:1	23:1	250	30	65	●
	145	20	3.6	55	16:1	21:1	150	17	65	●
6 TH 9464 HP	105	20	3.6	65	16:1	21:1	75	9	65	●
	145	20	7	70	20:1	33:1	155	18	65	●
6 TH 9464 QX	105	20	7	90	20:1	33:1	80	9	65	●
	7 TH 9416 HP2	160	20	3.6	50	16:1	22:1	150	17	65
105		20	3.6	54	20:1	>30:1	65	8	65	●
9 TH 9428 HP2	215			48	16:1	23:1	240	28		
	160	20	3.6	56	18:1	25:1	120	14	65	● ●
9 TH 9429 HP2	120			64	20:1	30:1	60	7		
	215	20	3.6	48	16:1	23:1	240	28	65	●
9 TH 9438 QX	215			56	23:1	36:1	260	30		
	160	25	14	62	25:1	>36:1	130	15	65	● ●
9 TH 9438 QX	120			70	30:1	>36:1	65	8		

(1) IEC standards 1262-1 to 1262-7

(2) Four PSU models according to the number (x) of fields

TH 9435 QX - 14" X-ray image intensifier



TH 9447 QX - ultra compact 16" X-ray image intensifier



**X-ray image intensifiers: 12", 14" and 16" family (1)**

Nominal entrance field size Reference	Useful entrance field size	Output image diameter	Output window thickness	Central resolution	Contrast ratio	Conversion factor	DOF at 59.5 keV	Power supplies		
								TH 7195-x	TH 7197	TH 7198
inches	mm	mm	mm	lp/cm	10 mm	10%	cd.m <sup>-2</sup> / mR.s <sup>-1</sup>	cd.m <sup>-2</sup> / μGy.s <sup>-1</sup>	%	(2)
<b>12</b> <b>TH 9432 HP</b>	290			44	13:1	22:1	240	28		●    ●
	215	25	3,6	50	15:1	25:1	120	14	65	
	160			56	17:1	30:1	65	7		
<b>12</b> <b>TH 9432 QX</b>	290			48	22:1	36:1	320	36		●    ●
	215	25	14	54	24:1	>36:1	160	18	65	
	160			62	30:1	>36:1	80	9		
<b>12</b> <b>TH 9436 HP</b>	290			44	13:1	22:1	240	28		●    ●
	215	25	3,6	50	15:1	25:1	120	14	65	
	160			56	17:1	30:1	65	7		
	120			66	19:1	>30:1	30	3		
<b>12</b> <b>TH 9436 QX</b>	290			48	22:1	36:1	320	36		●    ●
	215	25	14	54	24:1	>36:1	160	18	65	
	160			62	30:1	>36:1	80	9		
	120			70	36:1	>36:1	45	6		
<b>14</b> <b>TH 9435 QX</b>	325			48	20:1	30:1	290	33		●
	290	35	19	54	23:1	32:1	230	26	65	
	215			58	25:1	>34:1	125	14		
<b>16</b> <b>TH 9447 QX</b>	360			46	20:1	30:1	350	40		●
	290	35	19	50	23:1	32:1	205	24	65	
	215			56	25:1	>34:1	110	13		
	160			64	>30:1	>34:1	65	8		

(1) IEC standards 1262-1 to 1262-7

(2) Four PSU models according to the number (x) of fields



**TH 8740**  
high resolution CCD camera



**TH 8730**  
high-resolution CCD camera

### High resolution CCD cameras

Reference	Number of pixels	Progressive frames per sec.	Digital output	Dynamic range (2)	CCD technology
(1)			bit	dB	
<b>TH 8730 (3)</b>	1024 x 1024 1024 x 512	30 60	12	66	interline
<b>TH 8740 (3)</b>	1000 x 1000	30	12	62	interline

(1) Various options available depending on cable length, optics, mechanical and electrical interface

(2) Maximum signal divided by noise level in darkness

(3) 2 versions available: 12-bit digital output/stand-alone with analog outputs and control unit and image processing

### ADCS: Active S-Distortion Correction System

The ADCS corrects in real time the S distortion in the image intensifier and is remotely controllable (RS 232C).

### DC-DC high voltage power supplies

Reference	X-ray image intensifier		Input		G1 - G2 - G3 adjustment			Tube mode selection				
	Entrance field	Number of fields	DC voltage	Max. current	● Potentiometers ○ Encoders	Analog 0-10 V	RS 232 C	Switch	Analog 0-10 V	RS 232 C		
	inches		V	A								(1)
<b>TH 7193</b>	6	1	24	0.25	●							
<b>TH 7195-1</b>	9	1										
<b>TH 7195-2</b>	6 or 7	2										
<b>TH 7195-3</b>	9 or 12	3	24	0.35	○	●	●	●	●	●	●	
<b>TH 7195-4</b>	12	4										
<b>TH 7197</b>	9 or 12	3	24	0.5	○	●	●	●	●	●	●	●
<b>TH 7198</b>	14 or 16	4	24/40	0.65/0.5	○	●	●	●	●	●	●	●

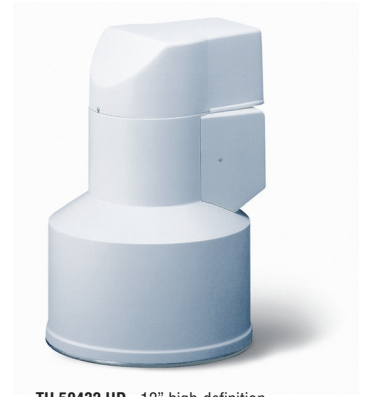
(1) Switching time: 400 μs



TH 59464 HD - 6" high definition radiological imaging unit



TH 59429 - 9" standard radiological imaging unit



TH 59432 HD - 12" high-definition radiological imaging unit

## Radiological imaging units

### High definition ( $\geq 1$ million pixels)

Nominal entrance field size	Reference	
inches	(1)	<b>Several versions available depending on:</b>
6	TH 59464 HD	<ul style="list-style-type: none"> <li>- QX XR11 format</li> <li>- TH 8730 and 8740 high-definition CCD camera (<math>\geq 1\,000\,000</math> pixels). The TH 8740 is available in two versions: the camera alone (12-bit digital video output), compatible with frame grabbers and a stand-alone version (digital and analog video outputs), including a processing and control unit which allows high-definition image processing for real-time fluoroscopy.</li> <li>- Compact optical system comprising a motorized iris and a neutral density filter, capable of operating under conditions from the low dose in fluoroscopy (1 <math>\mu</math>R/image) to the high doses in radiography (1 mR/image).</li> </ul>
9	TH 59438 HD	
12	TH 59432 HD (2)	
16	TH 59447 HD	

(1) Features: digital or analog video output with image processing adapted to fluoroscopy, motorized iris, neutral density filter, light measurement, various housings/fastenings

(2) TH 59432 HD replaces TH 59430 HD

### Standard (400.000 pixels)

Nominal entrance field size	Reference	Useful entrance field size (mm) and central resolution (lp.cm <sup>-1</sup> )			Dynamic range
		Normal mode	Zoom 1	Zoom 2	
inches	(1)	mm / lp.cm <sup>-1</sup>	mm / lp.cm <sup>-1</sup>	mm / lp.cm <sup>-1</sup>	(2)
6	TH 59464	145 / 24	105 / 31		5
	TH 59466				
9	TH 59428	215 / 16	160 / 20	120 / 25	5 or 40 (3)
	TH 59429				
12	TH 59432	290 / 12	215 / 16	160 / 20	5 or 40 (3)

(1) Various options are available:

- Operating mode: continuous X-rays, pulsed X-rays at frame rate and low frequency pulsed X-rays
- Adaptation to video standard, CCIR or EIA-RS170
- Optics: manually adjustable or motorized iris
- Motorized image rotation on  $\pm 180^\circ$
- Housings/Mountings

(2) The dynamic range is noted as the maximum operating dose divided by the minimum operating dose available during normal operation

(3) With motorized iris

For further information, please contact:

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