

Y.XRS152, Y.XRS232, Y.XRS302

Industrial grade image intensifier systems

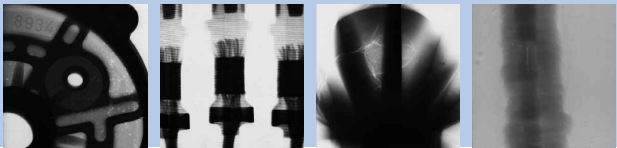


YXLON's XRS152, XRS232 and XRS302 industrial grade image intensifier systems are designed specifically for the demanding non-destructive testing environment. They can be used for a wide variety of applications. Three different display formats (XRS152: two) provide high resolution and excellent contrast latitude that enable the operator to distinguish image information more clearly.

The overall performance of these systems remains constant over a wide range of voltages – up to 450 kV!

Innovations like the use of non-browning output glass (XRS232 and XRS302) and overload protection assure consistent results and prolonged operating life. All of these factors combine to provide low-noise images of the highest quality.

YXLON. The reason why.



- fast testing decision due to highest quality images
- extended life with non-browning output glass
- overload protection prevents damage from misuse

Compact, modular construction

YXLON International models XRS152, XRS232 and XRS302 consist of an image intensifier tube, high-resolution CCD camera and a system control unit. This modular concept enables the expansion and diverse configuration of system functions. Four different camera mounting positions accommodate applications with different space requirements.

Furthermore, front or lateral mounting is provided for the image intensifier itself. Once configured and installed it requires no maintenance under normal operating conditions.

User friendly Operation

- Clear, menu driven operation
- Programmable system settings for easy handling
- Application specific parameter sets
- Operator panel separately mountable
- Illuminated LCD display
- Dose overload 'Phosphor-burn' protection

Safety and Quality Standards

The image intensifier systems of YXLON International are manufactured and tested according to various standards, such as:

- IEC 1262 (quality of image intensifier tube)
- EN 50178 (electrical protection)
- EN 6100-6-2 (electromagnetic compatibility)
- EN 55011 (radio disturbance characteristics)

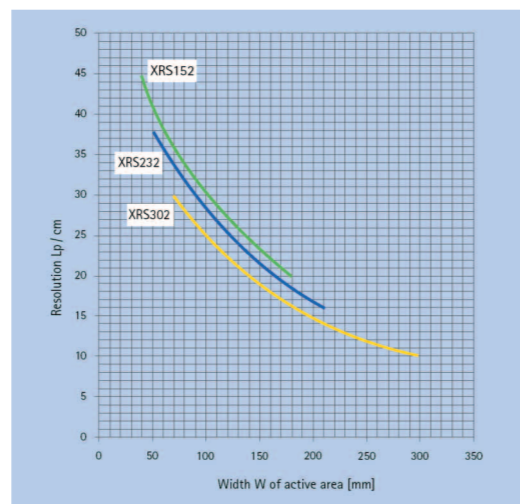
The quality assurance system of YXLON International X-Ray GmbH is certified according DIN ISO EN 9001.

Visual resolution of image intensifier systems

Different applications demand different image details. Therefore, XRS systems are equipped with a manual zoom – or optional motor – to optimize the visible image section to the application. The maximum visual resolution of image intensifier systems is determined by the resolution of the total of all components. It depends among others on the "active" image intensifier input screen, i. e. the area actually displayed on the monitor. The "active" input screen can be adjusted by varying either the image intensifier tube format or the focal length of the camera.

Integrated overload protection

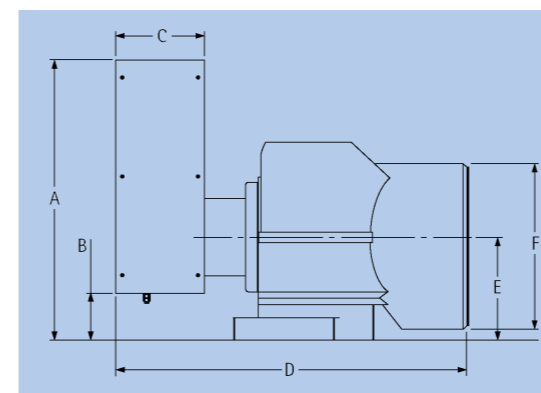
Integrated overload protection is realized by measuring the X-ray output of the intensifier tube. When the X-ray level exceeds a preset threshold, the intensifier is switched off. This method is much more reliable than solutions measuring the electrical level of the camera output.



Resolution of radiosopic chain

Dimensions image intensifier systems in mm

	XRS152	XRS232	XRS302
A	455	530	580
B	50	45	95
C	185	185	185
D	530	620	730
E	165	160	210
F	210	300	400

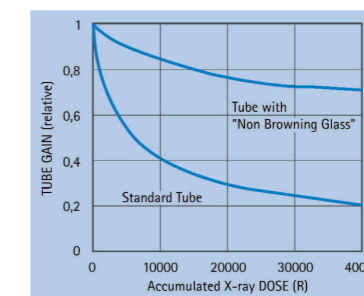


Options

- VS10 Video board package (description see next page)
- Motor zoom (1:1,8; 12,5 – 75 mm; 3 motors for iris, focus and zoom)
- MDC01-3 Integrated control for tube and/or image intensifier diaphragm
- 19"/3 HU table top housing

Aging of image intensifier tubes

Comparison between a standard tube and a tube with "Non Browning Glass"



	XRS152		XRS232			XRS302		
Applicable X-ray tube voltage			20 – 450 kV					
Image intensifier tube	Typ 6" VHR		Typ 9" HX			Typ 12" HX		
Nominal input screen diameter [mm]	152		230			313		
- Format selection	N	M1	N	M1	M2	N	M1	M2
- Input screen diameter acc. IEC 1262 at 1 m focus-detector-distance [mm] ¹	145	105	215	160	120	290	215	160
- Resolution (Lp/cm) ^{1,2}	75	90	54	62	70	48	54	62
- Conversion factor (cd/m ²)/(μGy/s) ^{1,3}	18	9	14,5	9	5	16	7,5	3
- Integral distortion (%) ^{1,3}	3		4	3	2	8	5	3
Camera	1/2" CCD							
Video standards	CCIR (752 x 582 pixel) or EIA (768 x 494 pixel)							
Video output signal	1.0 V _{ss} (75 Ω)							
Camera lens (manual zoom) ⁴	1:1.0 / 8 – 48 mm							
Control and supply unit								
Control unit	Master Flash RAM							
Mains supply	100 – 250 VAC, 50/60 Hz, fuse 2 A							
Dimensions and weights								
Image intensifier unit								
- Overall dimensions (l x w x h) [mm]	530 x 210 x 455		620 x 300 x 530			730 x 400 x 580		
- Weight [kg]	23		34			50		
Control and supply unit (l x w x h) [mm]	520 x 400 x 160 (including housing)							
Weight [kg]	12 kg (including housing)							
Environmental conditions								
- At operation	+5°C up to +40°C							
- At storage	-10°C up to +55°C							
- Relative humidity (at 40°C)	max. 85%							

¹ Typical values
² Acc. IEC 1262

² Limiting visual resolution measured with microscope at the output screen directly
⁴ Settings (diaphragm/distance/focus) secured by fixing screws

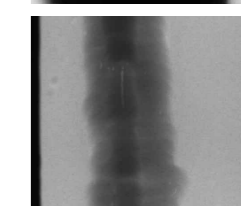
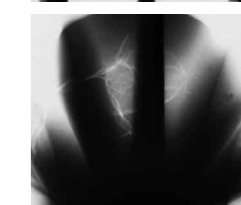
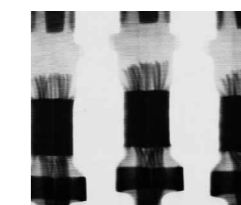
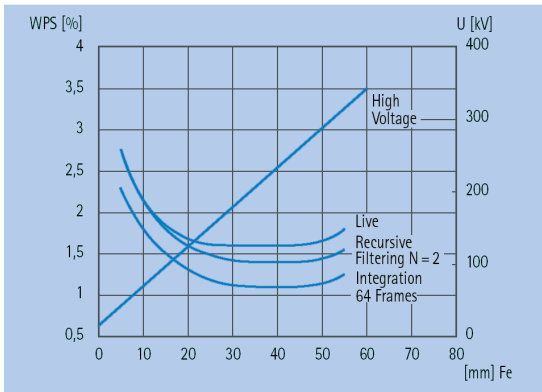


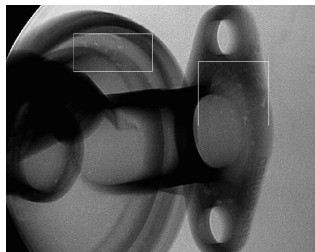
Image Intensifiers and Image Enhancement

With increasing numbers, image intensifiers are replacing traditional film-based radiography. This technology migration is due to multiple benefits that include the direct display of the X-ray subject matter, complete dynamic capability allowing precise object orientation and observation and the reduction of image acquisition time. There are no exposure and development requirements, since the image is instantly displayed on the video monitor. Additional benefits are gained when image intensifiers are combined with image enhancement systems. Especially for applications above 225 kV, these combinations reduce the inevitable noise. Wire penetrameter sensitivity (WPS) is significantly enhanced by the basic enhancement function "Recursive filtering".



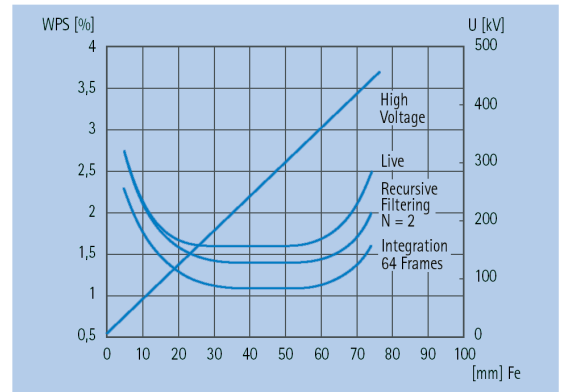
Max radioscopic wire penetrameter sensitivity (WPS) of Fe (%)
 MG325/Y.TU 320-D01, focal spot: 1.9 mm (EN12543)
 Distance focal spot - image intensifier: 800 mm
 Distance focal spot - object: 400 mm
 XRS232 - 7" format

Radioscopic image of Al-casting processed with YXLON image enhancement system
 Integration: 32 frames,
 Filter: Sharp3



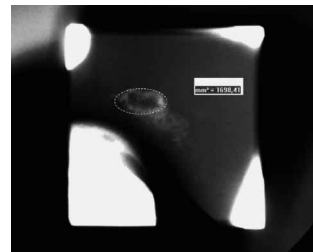
VS10 Video board package

- 100 Hz technology for support of flickerfree images on the monitor
- Recursive filtering for noise reduction (filter factor 4, 8, 16)
- Inverse display, especially suited for operators used to radiographic images
- Mirror functions (left/right and top/bottom)
- Frozen image
- Several output channels:
 - Raw image (BNC connector)
 - Processed 50/60 Hz image (BNC connector)
 - Processed 100/120 Hz image (2 VGA connectors)



Max radioscopic wire penetrameter sensitivity (WPS) of Fe (%)
 MG452/Y.TU 450-D08, focal spot: 2.5 mm (EN12543)
 Distance focal spot - image intensifier: 800 mm
 Distance focal spot - object: 400 mm
 XRS232 - 7" format

Radioscopic image of Fe-casting processed with YXLON image enhancement system
 Integration: 32 frames,
 Filter: Sharp2,
 area measurement.



For further information about image enhancement systems, please see separate data sheet or contact us!