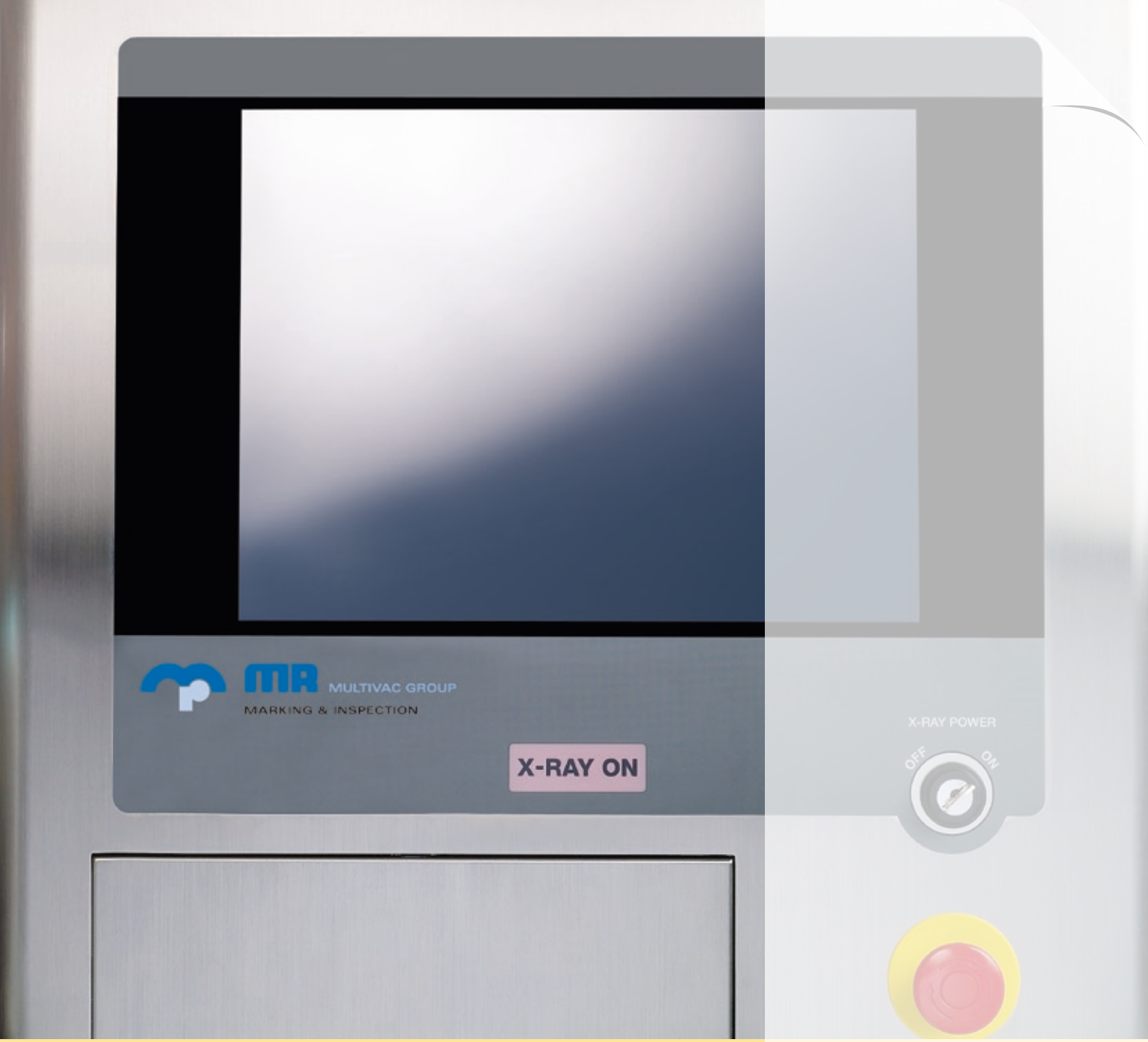


MR 811 X-ray inspection system

Added protection via contaminant detection and product control

MULTIVAC GROUP
MARKING & INSPECTION

MULTIVAC
BETTER PACKAGING

MR X-ray inspection system

Ensures the highest safety for your product

Standard and High Definition

The X-ray systems in the MR 811 series are available in two basic designs optimized for different requirements. Both versions are engineered for the highest possible reliability and operator comfort.

- The models in the **Standard** version are used for the reliable, cost-effective detection of stainless steel and non-metal objects in addition to metal. This can also be done without difficulty even with metal packaging.
- The **High Definition** version offers you maximum detection performance and precision as well as the full spectrum of image processing functions (including grayscale analysis with the GA). In addition to foreign object detection, functions for package control are also available (completeness, weight, intactness). All HD devices are equipped with air conditioning.

XR 200

XR 6xx

Automatic – Better – Integrated

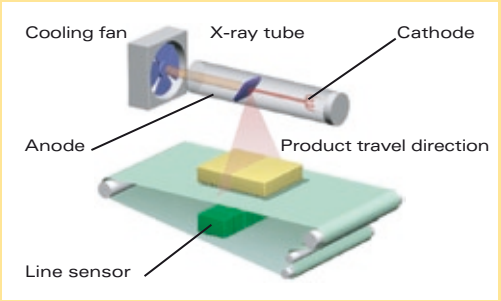
- In the food sector, consumer protection and safety are becoming increasingly significant. HACCP, IFS and BRC are the important standards here. The demand for better inspection methods, including those which can be used to prove that food products contain no defects or foreign objects, has increased. With the MR X-ray inspection system series, MR is offering the latest generation of X-ray inspection systems. These are well suited for industrial and medical applications as well.

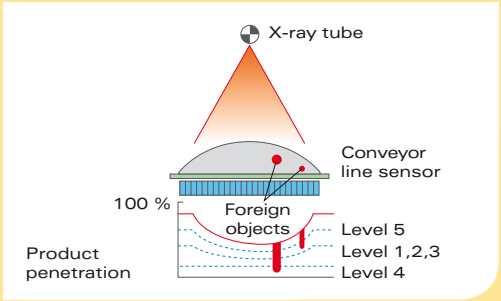
- Convincing protection for product and brand
  - Outstanding detection of stainless steel
  - Reliably recognizes non-metal foreign object (glass, stone, bones, shells, plastics, hard rubber, etc.)
  - Functions perfectly even with packages that include metal (metallic films, aluminum trays, clips, etc.)
  - Localizes and directly identifies foreign objects

- Additional benefits
  - Sound inspection process – detection not dependent on vibrations, product temperature, salt or water content
  - Identifies a wide range of product defects (breakage, deformity, etc.)
  - Monitors not only the number of products in a package, but also their weight (checkweigher function)
  - Can be integrated into all MULTIVAC packaging lines

MR X-ray inspection system function:

An X-ray beam emitted from the X-ray tube passes through the product and hits a high resolution line sensor.
The signal is electronically reinforced and transmitted to the image processing computer. The image processing system recombines the individual image lines into a complete X-ray image and analyzes the image information on five different levels based on different classes of foreign objects. Simultaneously, information regarding the completeness, intactness and weight of the product is evaluated. Non-compliant products can be discharged in a variety of classes. In this way, X-ray technology provides a comprehensive method for testing many aspects of product quality as end customers have come to expect.





MR X-ray inspection system

Technical data

User-friendly, reliable operation

- The clearly organized user interface on the 15“ colour touch screen makes learning to use, operate and monitoring the MR X-ray inspection system easy
- Even non-technical employees can operate an MR X-ray system reliably and confidently with minimal training
- The auto-set function learns all of the parameters (X-ray output, image enhancement and sensitivity) in just 3-4 product runs, quickly ensuring reliable results
- Parameters can be modified/optimized during ongoing operation without stopping production
- Quick product change in just 3 steps
- Programmable TEST function
- 4 password protected operator levels
- Designed for 24 hour continuous operation
- Reliable operation in damp or dusty production areas without any loss in performance – with integrated air conditioning

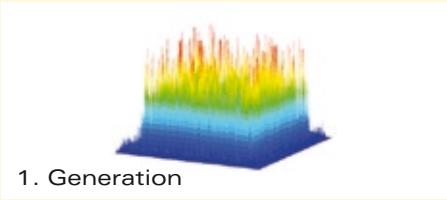
Watertight detection of foreign objects

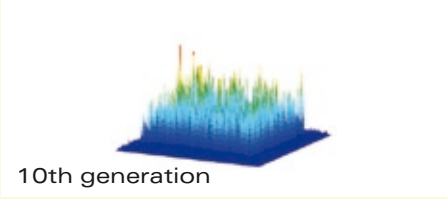
One of the MR X-ray inspection systems most advanced image processing functions is the patented, self-learning grayscale analysis with a genetic algorithm (GA). With the GA, the image processing system can detect foreign objects that are similar to the product with a high degree of sensitivity. The GA closes the detection gap between dense foreign objects (e.g. steel) and less dense foreign objects. With earlier systems this demanded special expertise and considerable lead times for specialized software. Now, on their own, operators can use image processing to generate the correct parameters automatically; see the example here below.

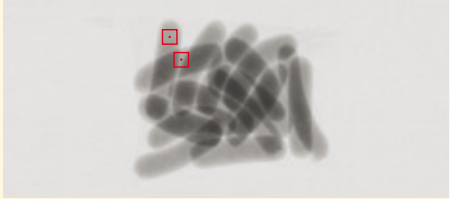
Series	
MR X-ray inspection system	
Product	Length
	Max. width
	Max. height
	Max. throughput
Conveyor belt	
	Length x Width
	Speed
	Weight (on the belt)
	Transport height
X-ray source	Voltage
	Current
	Max. output
	Start up time
	X-ray protection
Detection	Inspection programs
	Spatial resolution
	Image processing
	Grayscale analysis with GA
	Auto-learn
	Inspection for product defects
	Masking functions
Stainless steel design (1.4301/ANSI 304)	Foot print, L x W
	Enclosure class
	Air conditioning
	Ambient temperature
Operation	
Rejector	
Interfaces	

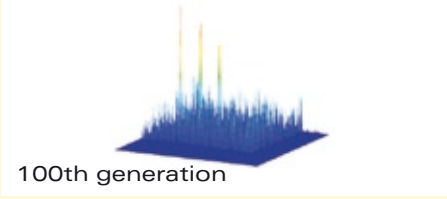
Inspection area

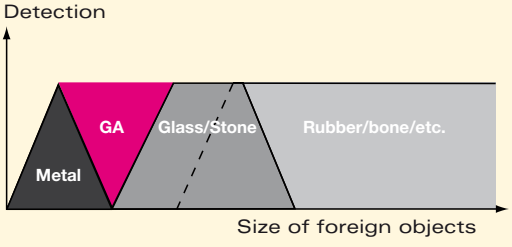
(*) Longer packages and small products optional
(**) Transport unit on a separate, removable belt body
(***) Optional tranport heights, 700 - 1200 mm
(****) MR811-XR401HD model
(*****) MR811-XR651 model


1. Generation


10th generation

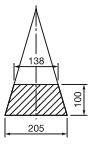



100th generation

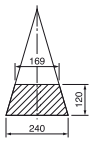


Standard	High Definition			Standard
XR200	**XR240-HD**	**XR400-HD**	**XR620-HD**	**XR650**
20 - 300 mm (*)	20 - 450 mm (*)	20 - 450 mm (*)	70 - 1000 mm (*)	70 - 1000 mm (*)
205 mm	240 mm	400 mm	620 mm	650 mm
100 mm	120 mm	150 mm (optional 220 mm (****))	270 mm	270 mm (optional 390 mm (*****))
>1000 packs/min	>1000 packs/min		>500 packs/min	>500 packs/min
PU belt, FDA/USDA approved				
800 x 220 mm	800 x 270 mm	800 x 430 mm	1200 x 700 mm (**)	1200 x 700 mm (**)
10-60 m/min	10-60 m/min (optional up to 90 m/min)		5-30 m/min (optional up to 60 m/min)	5-30 m/min (optional up to 60 m/min)
1 kg	2 kg (optional up to 4 kg at max. 30 m/min)	5 kg (optional up to 10 kg at max. 30 m/min)	50 kg	50 kg
850 +/- 50 mm (***)	850 +/- 50 mm (***)		850 +/- 50 mm (***)	850 +/- 50 mm (***)
30-50 kV	25-75 kV		40-100 kV	40-100 kV
1 mA	1-8 mA		1-5 mA	1-5 mA
50 W	300 W		350 W	350 W
90 sec				
On all sides < 1µSv/h, including entrance and exit				
100 (optional 200)				
0,6 mm	0,3 mm		0,4 mm	0,6 mm
2 levels	5 levels		5 levels	5 levels
	•		•	•
•	•		•	•
	•		•	•
•	•		•	•
800 x 820 mm	800 x 1015 mm	800 x 1175 mm	1200 x 1330 mm	1200 x 1330 mm
IP65, fan area excluded	IP65, Inspection chamber IP66			
Circulation cooling	•		•	•
0 - 33° C	0 - 40°C	0 - 40°C	0 - 40°C	0 - 40°C
15“ (381 mm) color touch screen				
Various types of rejectors available based on the application (air jet, swivel arm, pusher, etc.)				
Data storage with CF card, optional Ethernet interface				

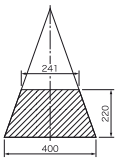
Height	Width
0 mm	205 mm
10 mm	198 mm
20 mm	191 mm
30 mm	185 mm
40 mm	178 mm
50 mm	171 mm
60 mm	165 mm
70 mm	158 mm
80 mm	151 mm
90 mm	145 mm
100 mm	138 mm



Height	Width
0 mm	240 mm
10 mm	234 mm
20 mm	228 mm
30 mm	222 mm
40 mm	216 mm
50 mm	210 mm
60 mm	204 mm
70 mm	198 mm
80 mm	192 mm
90 mm	186 mm
100 mm	180 mm
110 mm	175 mm
120 mm	169 mm

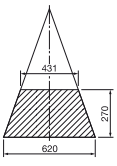


Height	Width
0 mm	400 mm
10 mm	392 mm
20 mm	385 mm
30 mm	378 mm
40 mm	371 mm
50 mm	364 mm
60 mm	356 mm
70 mm	349 mm
80 mm	342 mm
90 mm	335 mm
100 mm	327 mm
110 mm	320 mm
120 mm	313 mm
130 mm	306 mm
140 mm	299 mm
150 mm	291 mm
160 mm	284 mm
170 mm	277 mm
180 mm	270 mm
190 mm	263 mm
200 mm	255 mm
210 mm	248 mm
220 mm	241 mm

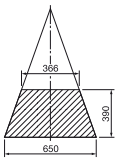


XR400-HD
XR401-HD

Height	Width
0 mm	620 mm
20 mm	606 mm
40 mm	592 mm
60 mm	578 mm
80 mm	564 mm
100 mm	550 mm
120 mm	536 mm
140 mm	522 mm
160 mm	508 mm
180 mm	494 mm
200 mm	480 mm
220 mm	466 mm
240 mm	452 mm
260 mm	438 mm
270 mm	431 mm

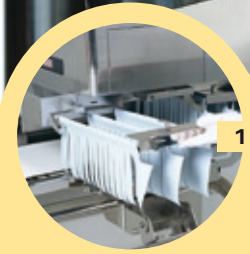


Height	Width
0 mm	650 mm
20 mm	635 mm
40 mm	620 mm
60 mm	606 mm
80 mm	591 mm
100 mm	577 mm
120 mm	562 mm
140 mm	548 mm
160 mm	533 mm
180 mm	518 mm
200 mm	504 mm
220 mm	489 mm
240 mm	475 mm
260 mm	460 mm
270 mm	453 mm
280 mm	446 mm
300 mm	431 mm
320 mm	417 mm
340 mm	402 mm
360 mm	387 mm
380 mm	373 mm
390 mm	366 mm



MR 811

Highest possible hygiene standard – Quick cleaning



Easy cleaning

1 Remove protective curtain
2 Lift conveyor frame
3 Remove belt
4 Open the lock
5 Pull out conveyor frame

Safety

- Cabinet and safety equipment meet the highest requirements of X-ray protection ordinance for full-protection devices
- The X-rays are used exclusively in the enclosed transport chamber.
- Several safety locks switch the X-ray output off if the chamber's integrity is disturbed, e.g. if a door is open, if the protective curtain or conveyor belt is not in position or if the operator is reaching into the device
- Easily visible indicators show when the X-ray device is functioning
- Live tube monitoring

Highest possible hygiene standard – Quick cleaning

- No tools required to disassemble the conveyor belt
- Smooth contours enable quick, easy cleaning
- Entire design in brushed stainless steel
- Inspection chamber in enclosure class IP66
- Design based on sanitary guidelines enables minimal downtime for cleaning and product change

Powerful functionality – Forward Looking Design

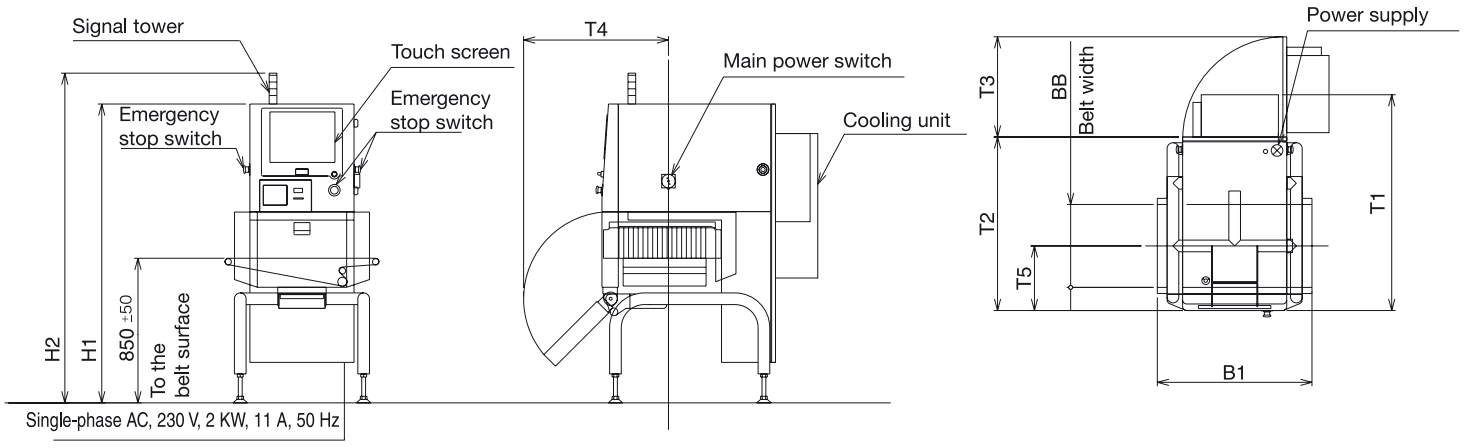
- Rapid availability: start up in just 90 seconds
- No interruption of production for device calibration
- The sensitivity setting can be checked without interrupting operation
- Wear-resistant drive technology for consistent, reliable performance
- Minimal downtime due to quick product change and modular design
- Access to NG images even during operation
- All inspection results are saved in the system and can be accessed there at any time. The data sets are uniquely time-stamped
- Storage for all data (statistics, programs, image sets) on CF card in an unencrypted format
- LAN port for combination with on-site control and information systems (e.g. Ethernet)
- Short, compact design
- Multi-track version available
- Various transport heights available

Outstanding technology – Flexible in application

- High output: e.g. 500 ppm
- Highest detection performance for the best possible image quality
- High resolution line sensor (< 0.3 mm detail recognition) identifies the smallest potential contaminants
- Innovative image processing
- Localizes and directly identifies foreign objects
- Identifies a wide range of product defects
- Completeness check: monitors not only the number of products (damaged products) in a package, but also their weight (checkweigher function)
- Intactness check (size, breakage, shape errors, ...) for a product based on several evaluation criteria
- The MR X-ray inspection system can be programmed such that components that are part of the packaging (e.g. metal clips, trays, closures, ...) are ignored
- Variety of reject options, including collector containers

Service

Our committed team of application specialists and customer service engineers supports you in optimizing your equipment based on your individual requirements.



MR 811 model	BB	B1	H1	H2	T1	T2	T3	T4	T5
XR 200	220 mm	800 mm	1545 ± 50 mm	1820 ± 50 mm	820 mm	740 mm	455 mm	435 mm	270 mm
XR 240-HD	270 mm	800 mm	1620 ± 50 mm	1940 ± 50 mm	1015 mm	740 mm	520 mm	600 mm	255 mm
XR 400-HD	430 mm	800 mm	1650 ± 50 mm	1970 ± 50 mm	1175 mm	900 mm	520 mm	750 mm	325 mm
XR 620-HD XR 650	700 mm	1200 mm	2010 ± 50 mm	2285 ± 50 mm	1330 mm	1110 mm	730 mm	1315 mm	415 mm