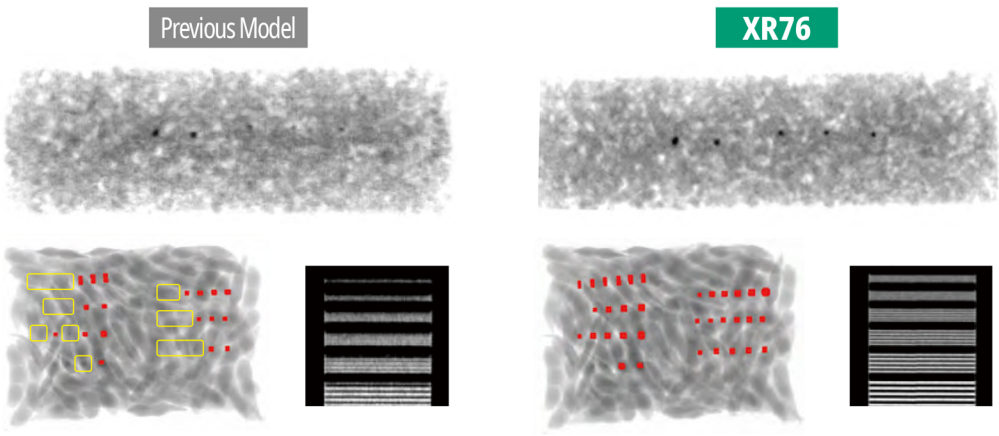
Anritsu
Advancing beyond

XR76 Series

X-ray Inspection System

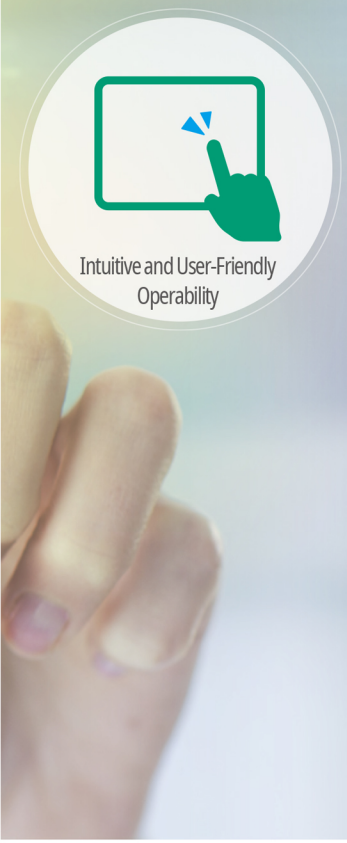
Enhanced Detection Capability

A newly developed high-performance X-ray sensor has been adopted, significantly improving the resolution of X-ray images. It is now possible to capture fine structures and shapes clearly, enabling high-precision detection of minute metal contaminants and low-density foreign objects that were previously difficult to detect. This achieves up to 40% sensitivity improvement, contributing to enhanced product quality.



Bringing Ease and Peace of Mind to Your Production Sites

Anritsu delivers innovative solutions to address the challenges facing the food industry such as labor shortages, rising costs, and food waste. The XR76 series X-ray inspection systems not only improves detection performance but also contributes to labor savings through features such the revamped intuitive user interface, significant reduction in false detections, and long-life technology. This reduces re-inspection effort, simplifies equipment operation, reduces downtime, and food waste, bringing unprecedented efficiency and peace of mind to your production facilities.

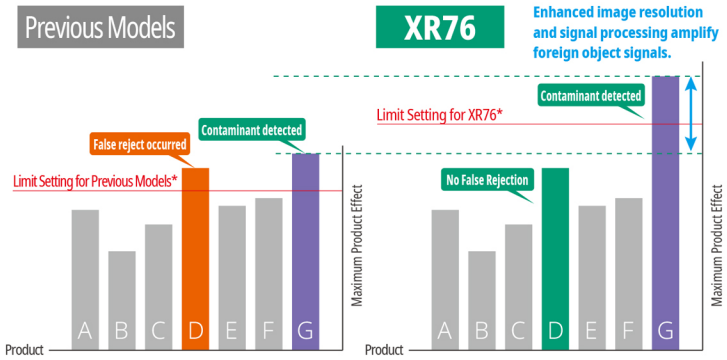


Increased Yield through Reduced False Rejects

Improved detection performance enables setting detection limits with ample margin relative to required sensitivity levels. This significantly minimizes false reject rates and improves yield. Additionally, it reduces the effort required for re-inspection and contributes to reducing food loss.

Mechanism for Reducing False Rejects

Assuming products A to F are PASS products and product G contains foreign objects.



Due to the proximity of the limit setting and product effect values, percentage of false rejects are increased.

Due to sufficient margin, false rejects are not occurring.

*Sensitivity setting that meets required sensitivity

Test Example

Over 5,000 inspections were conducted on products with physical irregularities that are susceptible to false rejects, and the false reject rates of the two models were compared.

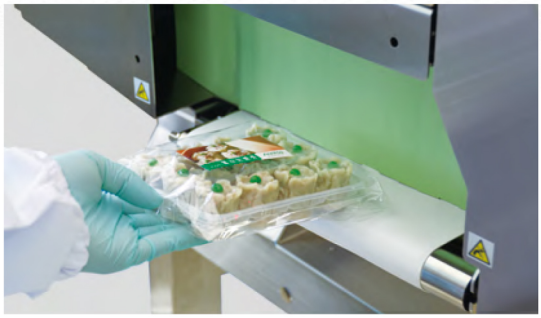
Results

XR76 reduced the number of false rejects to one-seventh, while also exhibiting higher detection levels.

Series	XR76	Previous Model
Total Inspections	5318	
PASS count	5317	5311
Number of False Rejects	1	7
False Reject Rate	**0.02%**	**0.13%**

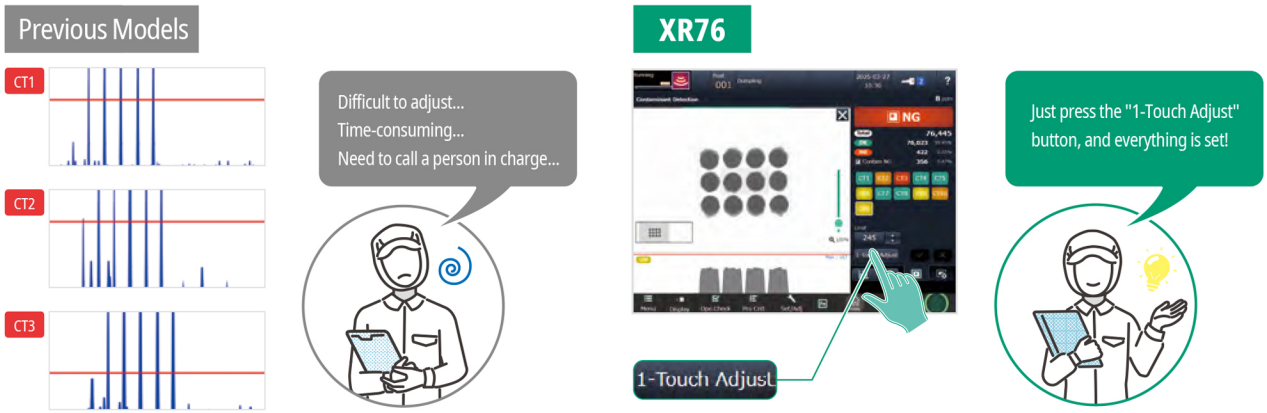
1-Pass Product Setup

Using the **1-Pass Product Setup** mode, product set-up time is dramatically reduced, by entering basic information and passing a single product sample through the machine. A safety margin is automatically set for the limit values to reduce the false rejection rate. As a result, while maintaining high levels of detection performance, manual adjustment after automatic setup is no longer required*.



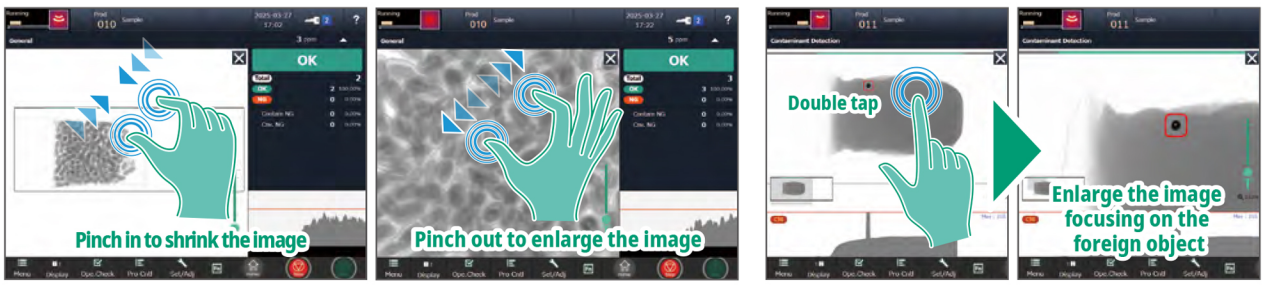
*Verification that the sensitivity meets your quality standard is still necessary.

For applications requiring higher detection sensitivity than that achieved with One-Pass Product Setup, the traditional product setup is still available. After using it, if false detections occur and manual adjustment is needed, simply tapping the **1-Touch Adjust** button will automatically and instantly adjust the limit settings to an appropriate level without complex adjustment procedures that previously required switching between multiple screens.



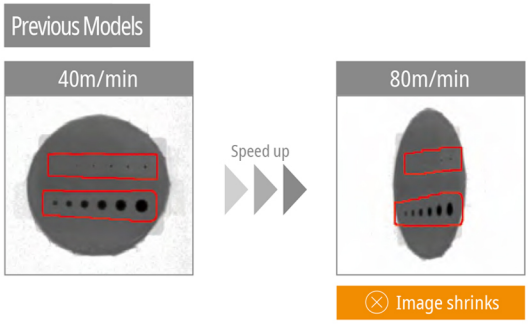
Intuitive and User-Friendly Operability

The newly developed screen design and user interface enable operation as intuitive as using a smartphone. Intuitive operation includes pinch-in/out for zooming X-ray images, double-tapping to enlarge foreign object areas, and swiping to scroll through lists.

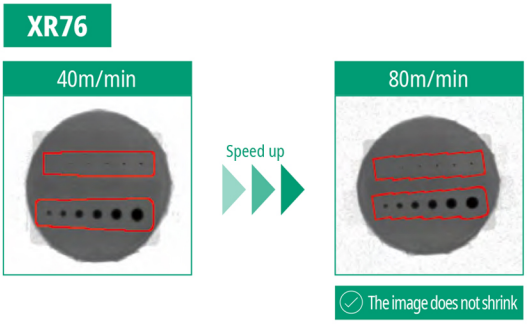


Stabilized Detection on High-Speed Production

On high-speed production lines, conventional machines struggle with distorted X-ray images due to rapidly transported products, reducing foreign object detection levels. However, improvement in the sensor design on the XR76 allows for faster scan speeds producing clearer images with no distortion even at extremely higher belt speeds, significantly increasing detection performance.



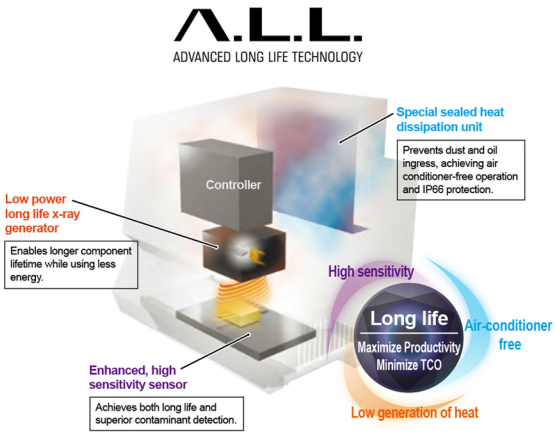
Images shrink in the flow direction, reducing sensitivity.



No image shrinkage allows for maintaining performance.

A.L.L. Technology: Minimizing TCO and Downtime

Building upon the highly regarded A.L.L. (Advanced Long Life Technology) from the XR75 series, the lifespan of the X-ray source and sensor has been dramatically improved, achieving over 2.5 times the longevity of previous models. This figure, based on preventive replacements, suggests that actual lifespan is even longer, ensuring stable performance over extended periods. Furthermore, the adoption of a specialized sealed structure has reduced the failure rate of key electrical components to approximately one-third. By decreasing the frequency of component replacements and failures, both lifetime costs and downtime are effectively minimized.



Achievements of A.L.L.
(Comparison with the KD74 Series)

X-ray generator, X-ray sensor	Major electrical components
Average Lifetime Over 2.5 times longer	Failure Rate approx 1/3 reduction

Variety of Quality Inspection Functions Available

In addition to contaminant inspection, various inspections such as shape inspection and missing product inspection can be performed simultaneously. In the XR76 series, shape recognition performance has been particularly enhanced for high-speed production lines.

Safety in design

XR76 Series

Anritsu believes customer safety is of utmost importance.

Anritsu safety mechanism

Emergency stop switch
Cuts power to x-ray and drive circuits, stops the conveyor and x-ray radiation.

X-ray ON/OFF key
Turning the key to OFF stops x-ray radiation completely.

X-ray shield cover open/close sensor
Opening the cover stops x-ray radiation.

X-ray shield cover
Opened/Closed using x-ray Irradiation ON/OFF Key.
Opening the cover stops x-ray radiation due to the x-ray Shield Cover Open/Close Sensor.

X-ray irradiation display
The lamp is lit during x-ray radiation.

Leakage prevention curtain
Prevents x-ray leakage. For unpackaged or bulk products, the standard lead impregnated curtains are replaced with SUS covers - preventing direct food contact with the curtains.

Hand insertion sensor
Interrupting the sensor for a certain period of time stops x-ray radiation.

Safety management

X-ray inspection system has been designed to fully satisfy the safe operation. However, to ensure even higher safety, use the safety procedures outlined below.

❶ Periodic measurement and recording of x-ray leakage data

❷ Management of operator working hours

❸ Additional safety measures
Covers may need to be mounted on upstream and downstream conveyors instead of the shield curtains, depending on the shape, weight, and package of products.

❹ No disassembly or modification
NEVER modify or disassemble the main unit, covers, x-ray leakage prevention curtains, safety covers, safety interlocks, etc., otherwise the x-ray leak-proof design may no longer be functional.

X-ray radiation safety

Safety of inspected products
According to the World Health Organization (WHO), “irradiation of any food commodity up to an overall average dose of 10 kGy presents no toxicological hazard and introduces no special nutritional or microbiological problems.” *
The maximum dose of x-ray radiation to the products moving through Anritsu x-ray inspection systems is 2.0 mGy, which is 5 million times lower than the WHO threshold.

*Wholesomeness of Irradiated Food: Report of a Joint FAO/IAEA/WHO Expert Committee, 1980

Safety of humans
The average U.S. resident receives a total radiation dose of 6.2 mSv/year (620 mRem). About one third (2.4 mSv/240 mRem) of that annual radiation derives from natural sources like the sun and soil. The rest comes from manmade sources like medical procedures (a typical chest x-ray generates about 0.1 mSv/10 mRem) or air travel (a round trip flight from New York to Tokyo is about 0.2 mSv/20 mRem).
Throughout the world, most governments consider 20–50 mSv/year (2,000–5,000 mRem) to be safe for occupational workers. Anritsu cabinet x-rays are engineered to meet some of the strictest emission standards in the world. A typical Anritsu x-ray solution is designed for maximum dosage of 2.0 mSv/year (200 mRem) This is based on the improbable scenario of a worker continually being 2 inches (5.08 cm) from the x-ray machine 2,000 hours/year (40 hours/week × 50 weeks). For typical work environments, the actual radiation dose from the cabinet x-ray to the worker is negligible.

Note: Please follow the local laws and regulations regarding the installation and use of the x-ray inspection systems.

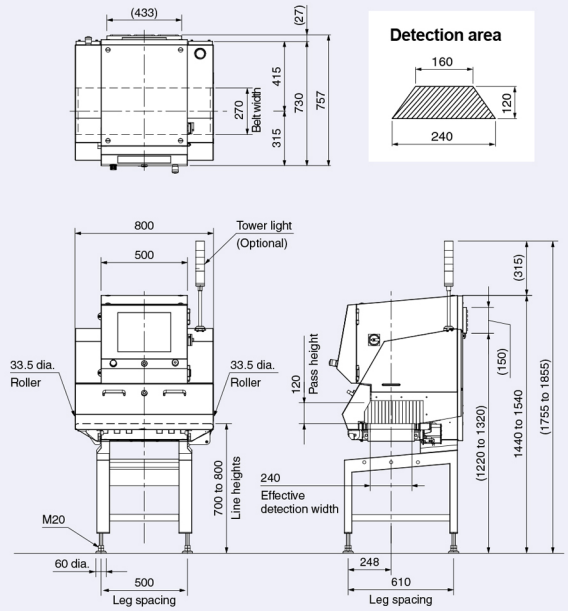
Safety in design

XR76 Series

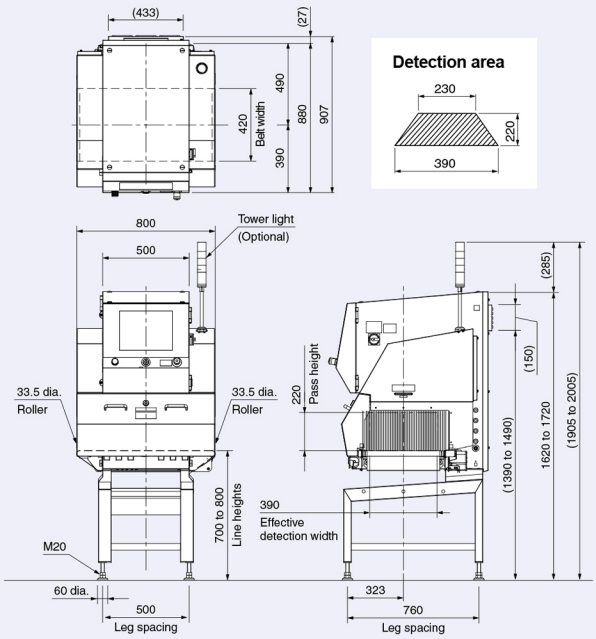
For Packaged Products

External Dimensions

KXS7622AVCTV



KXS7634AVCTV



Units: mm

Specifications

Model	KXS7622AVCTV	KXS7634AVCTV
Detection area [1, 2]	Maximum width 240 mm, maximum height 120 mm	Maximum width 390 mm, maximum height 220 mm
Belt width	270 mm	420 mm
Conveyor speed/ Maximum product weight [3]	10 to 60 m/min, maximum 5 kg	10 to 60 m/min, maximum 5 kg
	61 to 90 m/min, maximum 2 kg	—
Mass [4]	230 kg	290 kg
Display	15-inch LCD with capacitive touch panel	
Exterior	Stainless steel (SUS304)	
Preset memory	1000 (initial setting: 200)	
X-ray output	Tube voltage 30 to 80 kV (accuracy: within ±3 %), tube current 0.4 to 3.3 mA (accuracy: within ±5 %), maximum 100 W	
Safety	X-ray leakage maximum 1.0 µSv/h or less, prevention of x-ray leakage by safety devices	
Environmental conditions	Temperature: 0°C to 35°C, Humidity: 30 % to 85 %, non-condensing	
Power requirements	100 Vac to 240 Vac, single phase, 50/60 Hz, 700 VA or less, Allowable power fluctuation range ±10 %	
Protection class	IP66 [5]	

1: The product size should fall below the detection area.
2: The entrance and exit may require covers depending on the length of a product.
3: Sum total of product weight on the conveyor.
4: Mass without option.
5: Waterproof protection class is equivalent to IPX6, excluding the duct. Dustproof protection class is equivalent to IP6X excluding negative pressure condition.
Note: The noise level of the KXS7622AVCTV is 72 dB(A) in terms of A-weighted sound pressure level. The noise level of the KXS7634AVCTV is 70 dB(A) in terms of A-weighted sound pressure level.