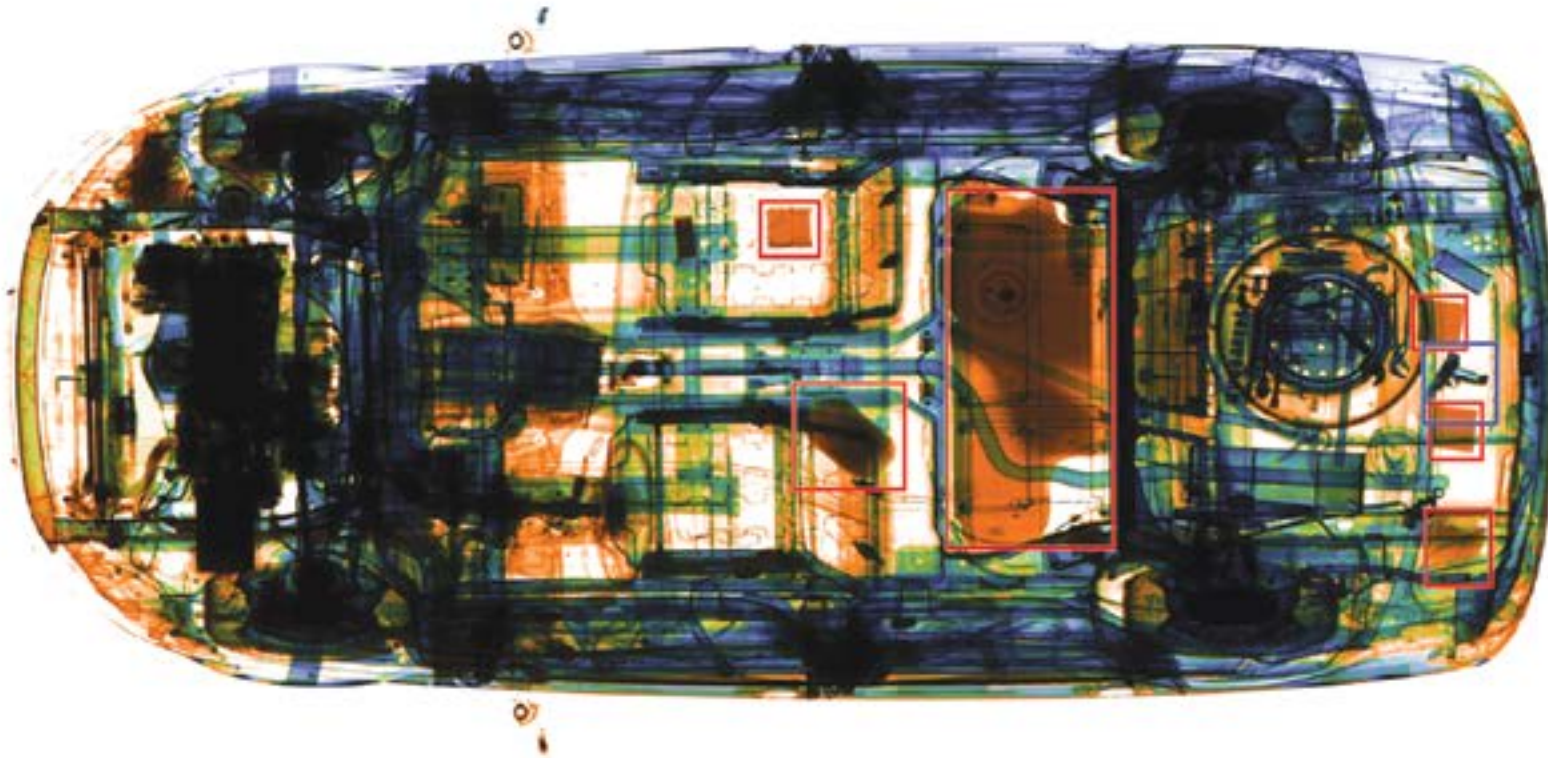


SUSPICIOUS OBJECTS INSPECTION ■ CARGO AND VEHICLE INSPECTION ■  
RADIATION ALARM SYSTEMS ■ MAIL AND PARCELS INSPECTION ■







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# EXPLOSIVE VAPOR AND TRACE DETECTOR M-ION

**M-ION** can detect and identify a wide variety of explosives including pure explosives and composite explosives under different humidity and pressure conditions in vapour and trace (particles) modes.

The list of explosives includes:

**TNT, RDX, C4, Semtex, PETN, ANFO, EGDN, Nitroglycerine (NG), Dynamite, DNT, Black Powder, Ammonia and Urea nitrates, HMTD, Tetryl, HMX, PICRIC ACID and mixtures thereof.**

The cost of ownership of **M-ION** is very low, as no special consumables are required. Regular aluminium foil wipes are used for sampling in the trace mode.

**M-ION** runs on the Field Asymmetric Ion Mobility Spectrometry principle. **M-ION** contains no radiation sources. Corona discharge functions as the source of ionization.

**M-ION** features user authorization function with the internal memory which allows to save more than 500 K results of analysis.

- no special calibration required
- warms up in only **30 sec**
- easy to use, no special training required

Presence of an explosive is visualized on the LCD display of the device or any Wi-Fi device usable as a remote control.

GPS option allows to determine the coordinates of the device when an alarm is detected and save the information to the database.

Optional **built-in searching radiometer** is intended for measuring g-ray dosage. It allows fast and effective detection of radiation sources with extra short exposure time.



## PRODUCT SPECIFICATION

Sensitivity threshold in vapor mode (for TNT at 20 °C and 80 % humidity)	$10^{-14}$ g/cm <sup>3</sup> , 1 ppt (Better than $10^{-13}$ g/cm <sup>3</sup> )
Threshold sensitivity in particle mode (for TNT)	100 pg
Technology	Field Asymmetric Ion Mobility Spectrometry (FAIMS)
Radiation source	No
Calibration	Not required
Type of ionization	Corona discharge
Alarm type	Audio and visual, with substance identification
Warm up time	30 sec
Analysis and results time	1-6 sec
False alarm rate	Less than 1 %
Time of work from standard/extended battery	2 / 4 hours
Display	109 mm (4.3 inches) color TFT display with touch screen
Operating temperature	From -15 °C to +55 °C
Operation humidity at 25 °C	95% non-condensing
Operation altitude	Up to 5 000 m
Dimensions (LxWxH), weight	405x127x160 mm, 2 kg
GPS option	Available
Optional built-in searching radiometer:	Exposure dose measure range: 0.1 uSv/h ... 0.01 Sv/h
	Photon energy counting range: 30...3000 keV
	Operation exposure time: 1 sec

**M-ION is efficient both indoors and outdoors at temperatures above zero**







# METALLIC AND NON-METALLIC OBJECTS DETECTION SYSTEM VIDECT-SM-21

The selective system for detecting prohibited metallic and non-metallic objects is designed specifically to increase the reliability and speed of the visitors screening process at stationary checkpoints of facilities with increased security requirements. The system consists of two antenna modules made of shock-resistant, wearproof material and an electronic unit.

Use of high-performance computing modules and special hardware solutions and a highly efficient built-in classifier allow separate detection of discrete or integral objects made of non-ferrous, ferrous, mixed metals, metal foil of various types, as well as carbon plastics for various purposes.

The effective width of the walk-through for visitors is from 700 to 1020 mm, and can be quickly changed with a step of 40 mm.

The high sensitivity and noise immunity of the measuring unit makes it possible to detect objects whose mass does not exceed a few tenths of a gram.

Flexibly configurable security programs allow for reliable detection of prohibited objects against the background of ignored personal items, which leads to an increase in the throughput of the entire inspection area as a whole.



## GENERAL SPECIFICATIONS

Control zone height	2280 (mm)
Control zone width, adjustable	from 700 to 1020 mm with a step of 40 mm
Control zone depth	704 (mm)
Dimensions (with a passage of 704 mm), W x H x D	867 x 2397 x 805 mm
Information output	graphic display with a diagonal of 110 mm
Principle of operation	pulse excitation of eddy currents
Moving speed of detection objects	0,2 - 5 m/s
Direction of passage	reversible
Detection alarm	light, sound
Detection indication time	Programmable, 1-4 sec
Number of detection zones	33, 48, 55, 63, 80, 105
Indicator location	at the edge of the panels
Counters	passes, alarms, % alarms
Access to settings	code, up to 10 characters, fingerprint scanner
Number of basic security programs	10
Number of custom security programs	50
Sensitivity adjustment by zones	100 levels
Automatic sensitivity adjustment mode	by test objects
Diagnostics of malfunctions	built-in, continuous with module localization
Information transfer, integration	LAN, Wi-Fi, Bluetooth, USB, programmable relays
Ready time after power on	less than 1 minute
Power supply	100-240 VAC, 50/60Hz
Power consumption	no more than 40 Watt





# METALLIC AND NON-METALLIC OBJECTS DETECTION SYSTEM VIDECT-SM-21

Due to the increased number of control zones and multi-colored indicator stripes located in the end faces of the antenna module, the operator receives much more information about the objects distributed on the visitor's body, which makes it possible to simplify and speed up the procedure for subsequent manual inspection. The indication of the fact of carrying a prohibited object and its location on the visitor's body can be carried out both openly (accompanied by a light and sound signal) and hidden (to increase the level of personnel safety). In this case, all relevant information is transmitted via a secure radio channel to the operator's console.

In addition, to increase the safety of personnel, the system provides wired and wireless synchronization with third-party additional equipment: turnstiles, airlock cabins, automatic doors and other devices that impede the free movement of the searched until the verification procedure is completed.

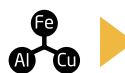
High sensitivity of measuring modules, precise localization of prohibited items, flexible selectivity of security programs, reliable materials and modern design make it possible to recommend the presented system as an effective solution in the field of security.

## GENERAL SPECIFICATIONS

Connecting the power cable	sealed locking connectors on each panel
Protection degree according to MEC- 60529, IPP	IP53/IP64/IP65
Operating temperature	From -10 to +50 °C
Humidity	up to 95% without direct condensation
Operation at height above sea level	up to 3000 m
Working hours	continuous, 24/7
Antenna module packaging dimensions W x H x D	2480 x 150 x 905 mm
Net weight	74 kg
Gross weight	95 kg
Warranty	2 years
Compliance with standards for metal detectors (with a passage of 700 mm)	GOST R 53705-2009, NIJ-0601, ECAC/EU Standard 2

## Distinctive features of the VIDECT-SM-21:

- Ability to work together an unlimited number of devices located in close proximity to each other;
- High throughput;
- A wide range of selective security programs that allow you to adapt the system for specific tasks;
- Flexible system of sensitivity adjustment for each material for all detection zones;
- System of deep self-testing, which allows to reduce the cost of service work and prevent the occurrence of serious malfunctions in advance;
- Convenient and intuitive color user interface with touch-sensitive coordinate input system, providing secure multi-level access to system settings;
- High level of electromagnetic compatibility due to reduced values of the level of electromagnetic radiation;
- Multi-channel secure wireless interface for system communication with operator consoles and auxiliary external devices.









# HANDHELD METAL DETECTOR VIDECT-HH

The metal detector **VIDECT-HH** is the latest development that combines all the best search and performance characteristics. The highly sensitive eddy current microprocessor handheld metal detector **VIDECT-HH** is designed for searching and detecting metal objects during personal inspection, baggage control and correspondence.



## SPECIFICATIONS

Type of technology scheme	digital, microprocessor
Sensor type	«flat»
Settings	automatic and manual
Scanning mode	dynamic
Sensitivity (medium-sized pistol)	230 mm
Operating frequency	about 30kHz
Metal detection alarms	sound, light,vibro
Sensitivity control	manual (16 levels of sensitivity)
Consuming current	3 mA
Power supply	9 V
Time of continues operation (in case of using U9VL-J 9V battery type)	400 h
Automatic power supply disconnection when not in use	after 8 min.
Operation level of discharge battery indication	6,5 V
Operating temperature range	from - 37° to +70° C
Dimensions	420x80x30 mm.
Weight with a battery	0,34 kg
Complete set	on request
Warranty	24 month

## APPLICATION

Positives is not an effective function. So in the **VIDECT-HH** model, the function of protection from a number of operating radio stations and thermal compensation is implemented, which corrects sensitivity in real time depending on the ambient temperature. The effective operating range for this model is from -37 to +70 degrees. In this case, there is the possibility of manual correction of sensitivity depending on the tasks (this function is available through the engineering mode). An example is the search for sim cards from mobile phones or the opposite solution, to concentrate search tasks on dangerous objects, a pistol, a knife.

The performance in this model is the maximum for this class of equipment, so the consumption of the device is only 3 mA, which allows without turning off, use the device for more than 100 hours, using an alkaline battery or about 400 hours from a lithium-ion battery







# MULTISPECTRAL PERIMETER PROTECTION SYSTEM RADAR-IQ

The Radar-IQ multispectral territory protection system, developed by TSNK for facilities protection, can be effectively used to guard the perimeter of sterile areas in prisons, air and sea ports, critical energy and oil&gas infrastructure, for border control, as well as for private property.

Air (drones) and ground (people, vehicles) threats are detected using active radar technology long before they cross the protected perimeter line.

This is a new concept of the security system that often does not require a physical fence – all threats are detected up to the virtual perimeter line.

High protection reliability and integrity are achieved through the use of an Artificial Intelligence controller with neural network algorithms, which is a key component of the multispectral Radar-IQ security system.

Using Artificial Intelligence, the controller combines all the components of the Radar-IQ system into a single system that guarantees the optical confirmation of the detected threat based on analysis of video and IR images by neural network algorithms.

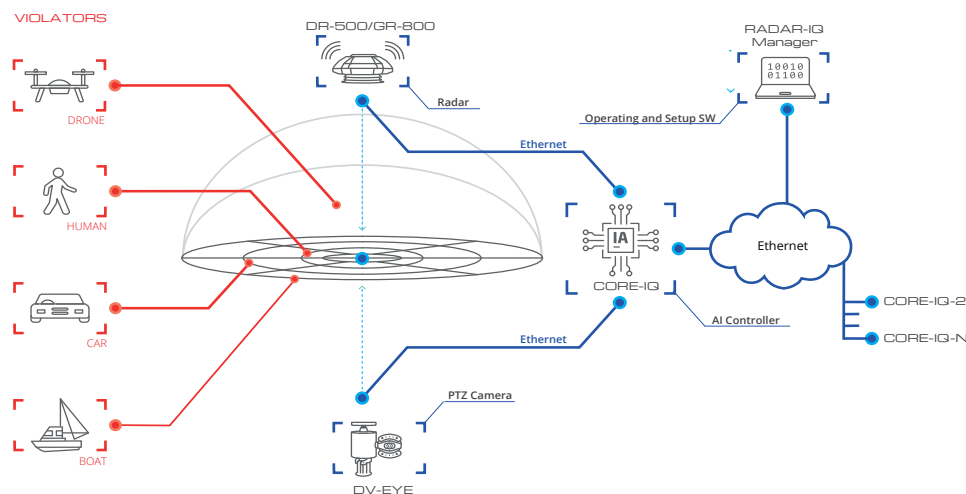
## The Radar-IQ system can effectively protect objects like:



## Radar-IQ» Advantages

- ✓ **Ready to use**  
Radar and Camera are coupled by the construction and factory calibrated, therefore the product is completely ready for use.
- ✓ **High protection efficiency**  
Balanced detection area, low false alarm rate, minimal impact of precipitation.
- ✓ **Open protocol**  
Ability to use the "Radar-IQ" system as part of third-party VMS or C&C SW solution.
- ✓ **No "blind spots"**  
Full 360 ° view of both Radar and Camera (angle of view 360 ° in azimuth and >180° in elevation).
- ✓ **High quality of object detection**  
Solid state radar technology with high scanning frequency (35'000 p/s).
- ✓ **High quality of the tracked object video**  
Specially developed camera control algorithms (based on radar data and neural network image processing) provide smooth picture of tracking object when the camera and zoom are constantly moving.

## Scope of «Radar-IQ» modules:











# MULTISPECTRAL PERIMETER PROTECTION SYSTEM RADAR-IQ

## DR-500 3D radar with full dome coverage

Compact Pulse-Doppler radar for detecting moving targets in the airspace.

Protected area up to 800,000 sq.m

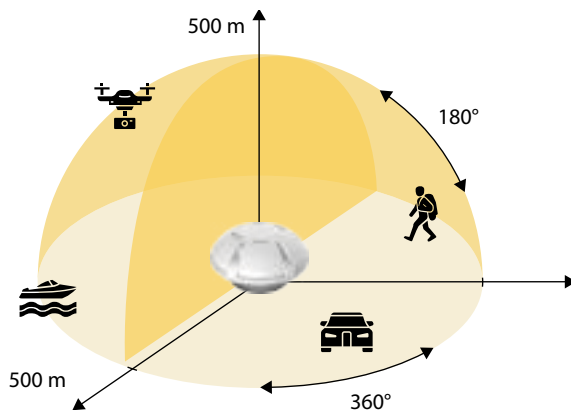


### Designed to detect and track small UAVs:

- Medium (DJI Inspire type)
- Mini (DJI Phantom type)
- Micro (DJI Mavic type)

### Can detect ground-based moving targets in the protected area:

- Humans
- Cars
- Boats



## GR-800 2D Ground Surveillance Radar

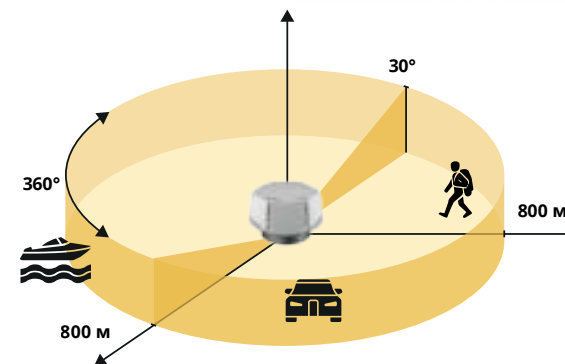
Compact Pulse-Doppler radar for detecting of moving ground targets

Protected area 2 100 000 sq.m.



### Designed to detect:

- Humans
- Cars
- Boats



### Features:

Track update 4 times per second

No moving parts Zero maintenance cost

DPA function (Dynamic Power Allocation) Extends the detection range up to 700 m

Compact size 360 x 180 mm Sealed housing

PoE + One-cable connection Fast installation

Weather resistant performance 24/7

### Features:

Track update 4 times per second Azimuth accuracy  $\pm 0.5^\circ$

No moving parts Zero maintenance cost

DPA function (Dynamic Power Allocation) Extends the detection range up to 1200 m

Compact size 360 x 240 mm Sealed housing

PoE + One-cable connection Fast installation

Weather resistant performance 24/7





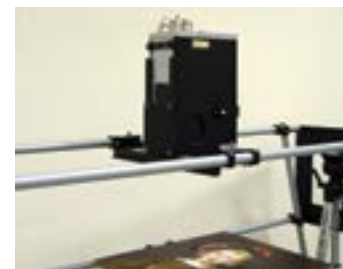
# PORTABLE X-RAY INSPECTION SYSTEM NORKA

**NORKA** is a unique portable X-ray inspection system with a minifocus and microfocus constant potential X-ray sources. The voltage can be adjusted from 20 to 160kV. This allows to inspect objects made from different materials with different density and thickness (20-70kV is the optimal voltage for checking mail and thin objects, while 100-160kV works best for baggage and thick objects). One of the advantages of NORKA is its ability to inspect areas of an object in high detail using geometric magnification (up to 40 times if used with the RE-150MN X-ray unit). Unlike 1 mm spot used in conventional portable X-ray systems, this X-ray unit has a 30-micron focal spot. The resolution power attains an unprecedented value of 25 microns of copper wire equivalent. Besides, the distance between the object and the X-ray source can be minimal, down to a few centimeters or even a few millimeters when using geometric magnification.

## IDENTIFICATION OF ORGANIC AND NON-ORGANIC OBJECTS

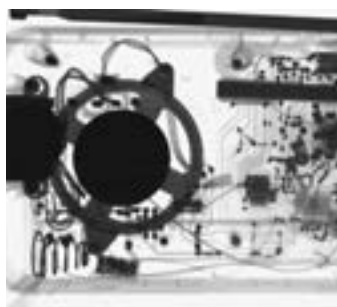
Images are displayed on the screen of the control unit in a positive/negative form, pseudo colours, with enhanced contrast or in dual energy mode. Zooming any of the nine areas of the screen allows better identification. The images acquired can be stored in the control unit memory for further investigation or reference (up to 30,000 images). Stored images can also be copied from the directory additional text, graphics and voice information.

If necessary, these images can be copied from the directory of a "BU-4" control unit to a USB flash drive. Universal power supply (85 - 240 VAC 50/60Hz) ensures easy operation anywhere in the world. This is the only system on the market that works at the temperatures ranging from -20°C to +50°C with humidity level of up to 90%. The NORKA X-ray system is delivered in two handy carrying bags or in a single case.



Dual energy option: Suspicious items (in red)

Verification of artwork authenticity



Geometric magnification with microfocus generator

Explosives detection in suspicious objects





# PORTABLE X-RAY INSPECTION SYSTEM NORKA

**NORKA** has a wide range of application in customs services, law enforcement divisions, airport security and other areas.

**NORKA** X-ray system is easy to use, reliable and completely safe to operate. It provides excellent detecting capability with no harmful effects to its users or service personnel.

- "BU-4" control unit is an HP Stream X360 with a 11.6" LED with touch screen (can be equipped with any notebook computer);
- "SKB-3D" digital camera unit (1280x1024, 16-bit);
- Interchangeable X-ray converter viewing area: 300x400 mm (standard) with converter unit support. Interchangeable converters (190x250 and 410x550 mm) are available upon request.
- Specially designed "RE-160" and "RE-120" minifocus X-ray digital generators, "RE-150MN" microfocus and any X-ray unit from the RAP series (constant potential with the voltage up to 300kV);
- Focusing device (optional for microfocus X-ray units) Set of connecting cables;
- PC mouse & keyboard (optional);
- USB flash drive (optional);
- Rechargeable battery & charging device;
- Set of transport bags or transport case.



Transport case with built-in control unit

## APPLICATIONS:

- Inspection of mail, parcels and small items.
- Searching for concealed eavesdropping devices in furniture, office equipment, walls, door/window frames, etc.
- Detection of Weapons, Bombs, Explosive devices and Narcotics
- Non destructive testing and evaluation of machinery, aircraft, vehicles.

## GENERAL SPECIFICATIONS

X -RAY UNIT	RE-160	RE-120	RE-150MN	RAP 220-5
Operation mode	5-25 second exposures in single energy mode			
Max. X-ray tube voltage, kV	160	120	150	220
Tube current (typical), mA	0.5	0.5	0.1	0.3 - 5
Focal spot size, µm	800	600	80	2000
Resolution (copper wire), µm	80	60	40	80
Total penetration (Al equivalent), mm	120	65	80	200
Total penetration (Fe equivalent), mm	40	24	20	60

## X-RAY IMAGE CONVERTER

Camera unit	Digital - SKB-3D 1280x1024, 16 bit
Interchangeable converter - screening area(H x W), mm	"PR-4" - 190x250
	"PR-5" - 300x400 (standard)
	"PR-6" - 410x550
CONTROL UNIT	"BU-4"
Display	12" colour TFT touch screen display
Memory size (image number)	30 000
Battery life	2 hours, or 60 X-ray image acquisitions
Throughput	60 pictures per hour
Operating temperature	- 20°C to +50°C (-4°F to +122°F)
Relative humidity	90% (35°C / 95°F)
Weight, kg*	less than 29

\* Standard system configuration (NORKA with RE-160, set of transport bags, BU-4, SKB-3D, PR-5 and rechargeable battery & charging device)







# PORTABLE X-RAY INSPECTION SYSTEM NORKA

**PPR-3246** and **FP-3543** are portable X-ray converters designed for X-ray non-destructive inspection of baggage, mail, office environment, furniture, building constructions, etc. both indoors and outdoors. They can be integrated into the **NORKA** inspection system as well as into other X-ray systems. PPR-3246 and FP-3543 converters can successfully detect explosive devices and their components, hidden video/audio recording devices etc.

These converters can be used for inspection of large size objects which can not be scanned by stationary X-ray systems due to their construction profile. All converters have built-in rechargeable batteries and can work while being charged. The control command and data transmission are carried out via Wi-Fi or cable.

The newest and the thinnest (only 15,5mm thick) flat panel detector FP-3543 allows to inspect objects with the highest resolution (2560x3070) and with the bigger (356 x 424mm) detection area. Built-in replaceable battery allows to make up to 80 images on a single charge (two batteries included). Works in both wired and wireless (Wi-Fi) modes. The main feature of the PPR-3246 converters is their scanning linear detectors with various types of scintillators and detector nitch sizes.



FP-3543



PPR-3246



B/w image of a bag

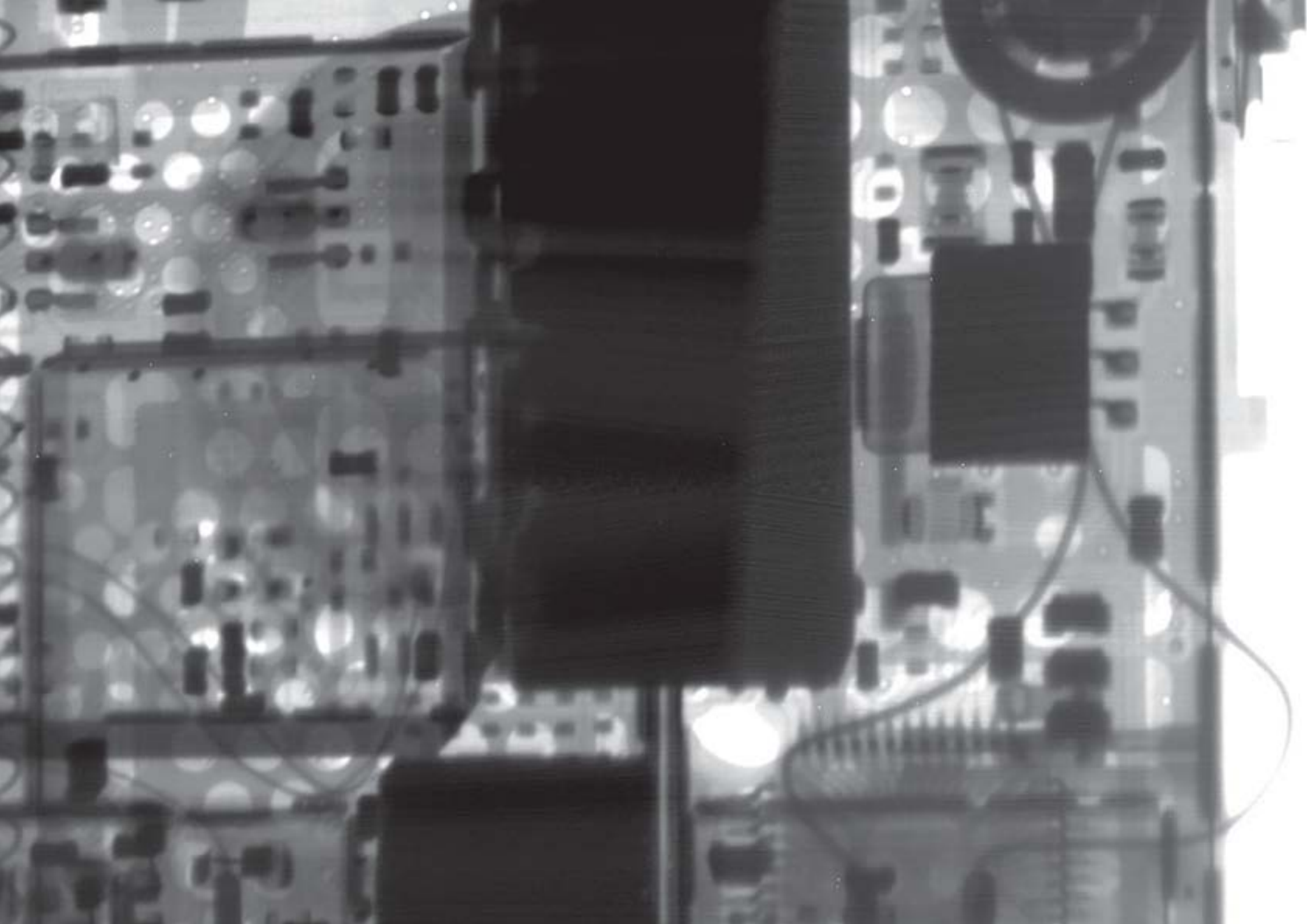


dual energy image of the same bag

## GENERAL SPECIFICATIONS

	PPR-4664	PPR-3246	PR-2432	FP-3543
Operating area (H x W), mm	460 x 640	320 x 460	240 x 320	356 x 424
Converter type	scanning	scanning	phosphor screen + CCD	flat panel
Detector pitch, mm	0,8 or 0,4 or 0,2*	0,8 or 0,4 or 0,2*	-	0,139
Digitizing depth, bit	16	16	12	14
Throughput, pictures per min	4	6	12	8
Wireless communication range, m	up to 50	up to 50	up to 50	up to 50
Wire detection (copper wire), mm	0,1	0,1	0,06	0,05
Spatial resolution, Lp/mm	up to 2,5	up to 2,5	2,7	2,8
Weight, kg	7,0	5,9	4,6	2,9
Dimensions (L x H x W), mm	780x580 x36(59)	454x468 x33(59)	340 x 340 x 160	383 x 460 x 15,5

\* Standard size 0,8mm can be optimized according to the customer's needs (0,4mm and 0,2mm detector pitch)





# OFFICE X-RAY INSPECTION SYSTEM KALAN-2M

**KALAN-2M** designed for the office use for X-ray inspection of mail, baggage, office equipment, etc. to detect explosives, weapons, drugs or electronic bugs. Due to its solid construction and implemented safety features, KALAN-2M is totally safe to operate in any office environment and at any security checkpoint.

**X-ray generator.** A minifocus or microfocus X-ray tube allows to detect extremely fine objects such as wires and detonation devices components. KALAN-2M custom designed X-ray generators contribute to their overall small dimensions. Adjustable voltage allows to inspect objects with different thickness and density. The dual energy option enables differentiation between organic and inorganic objects.

**Processing unit.** The **KALAN-2M** features a versatile image processing unit capable of saving up to 30,000 images accompanied by voice and text comments.

**Design.** As an office X-ray inspection system it has small overall dimensions, modern design and fits perfectly into office interiors. It is supplied with a mobile base and can be moved around by one person. All basic operation functions of the **KALAN-2M** are carried out via a remote control unit. A high contrast, high resolution display shows images with unparalleled accuracy. Object inspection chamber is supplied with an adjustable tray. High resolution magnification up to 12 times can be achieved (only with a microfocus X-ray unit) by precise positioning of the object using the **KALAN-2M** movable tray.



B/w and dual energy image of the same objects



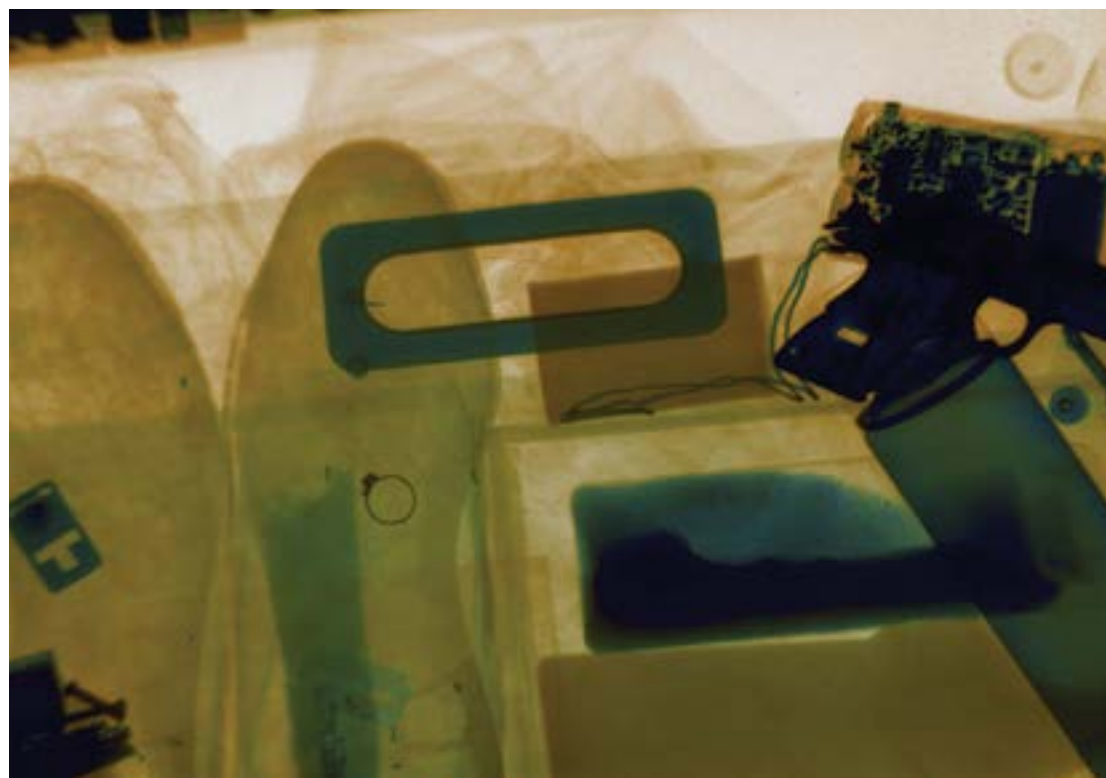
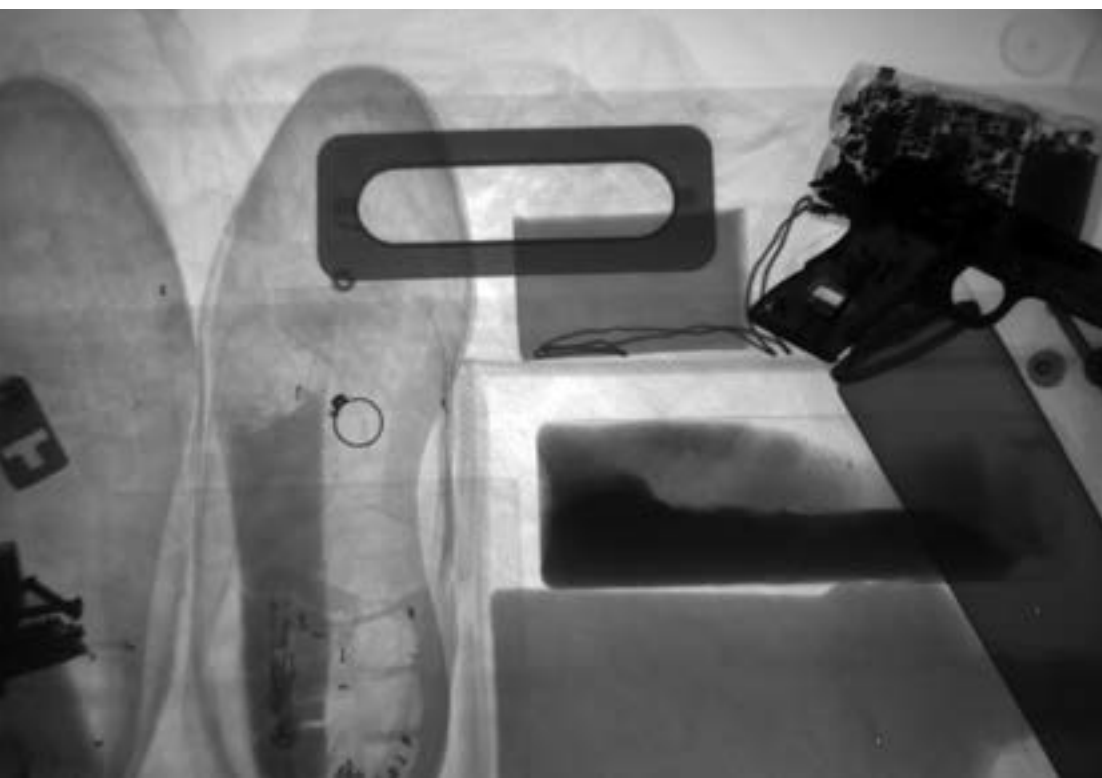
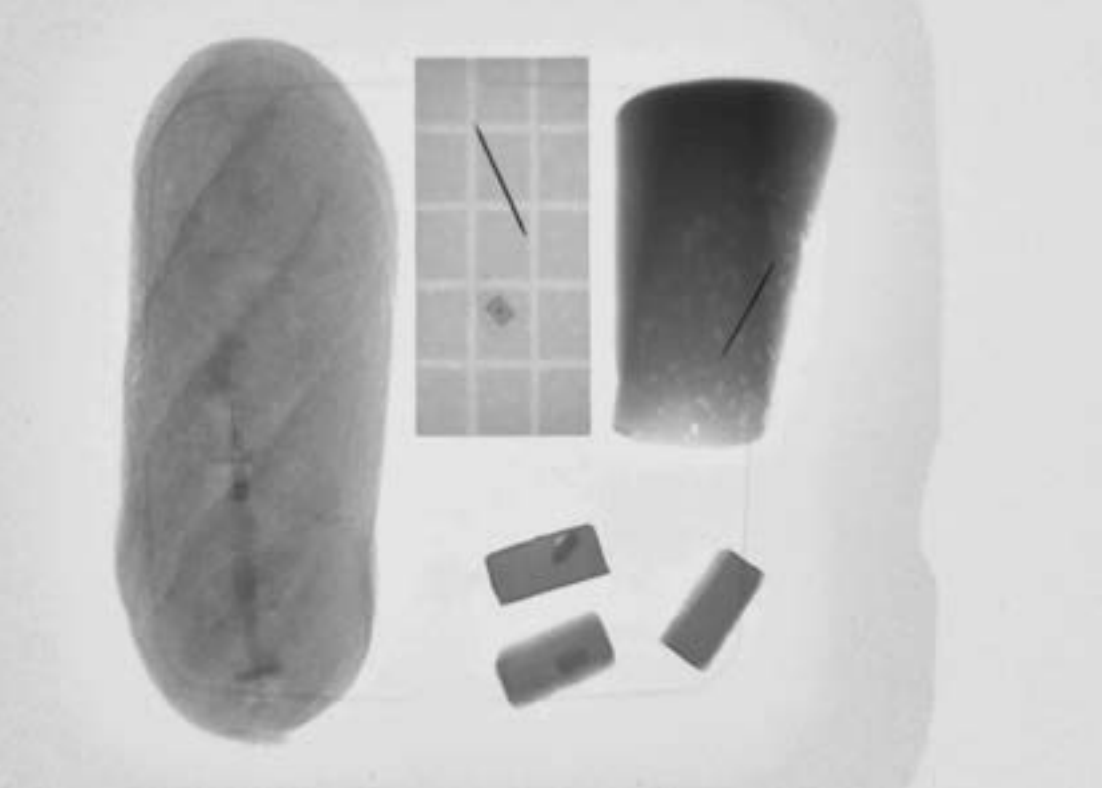
## GENERAL SPECIFICATIONS

Max. object size (W x H x L), mm	440 x 520 x 550
Max. object weight, kg	30
Penetration Fe/Al equivalent, mm	16/70
Wire detection/with 8x geometric magnification (only for microfocus X-ray unit), mm	0,08/0,02
Throughput, images per hour	up to 120
Radiation leakage, $\mu\text{Sv/h}$	less than 1,0

## X-RAY GENERATOR

X-ray tube voltage settings for microfocus/minifocus X-ray units, kV	30-100/45-120
Tube current (typical) for microfocus/minifocus X-ray units, mA	0,1/0,5
Operating temperature (Relative humidity), $^{\circ}\text{C}$	+5 to +40 (80% at 25 $^{\circ}\text{C}$ )
Supply voltage, V	110/220
Power consumption, W	180
Dimensions (W x H), mm	610 x 1380
Total weight (including transport packaging), kg	275









# BAGGAGE INSPECTION SYSTEM TS-SCAN 6040

**TS-SCAN 6040** is a unique multi-view X-ray inspection system. The baggage views provide its complete perspective regardless of its positioning in the X-ray system. Obviates the operator's necessity to reverse and rescan the baggage.

The multi-view system eliminates any possibility of deliberate concealment of prohibited articles in carry-on baggage. A knife is visible at least in one of four views (projections), regardless of its position in the baggage (see second picture on the left).

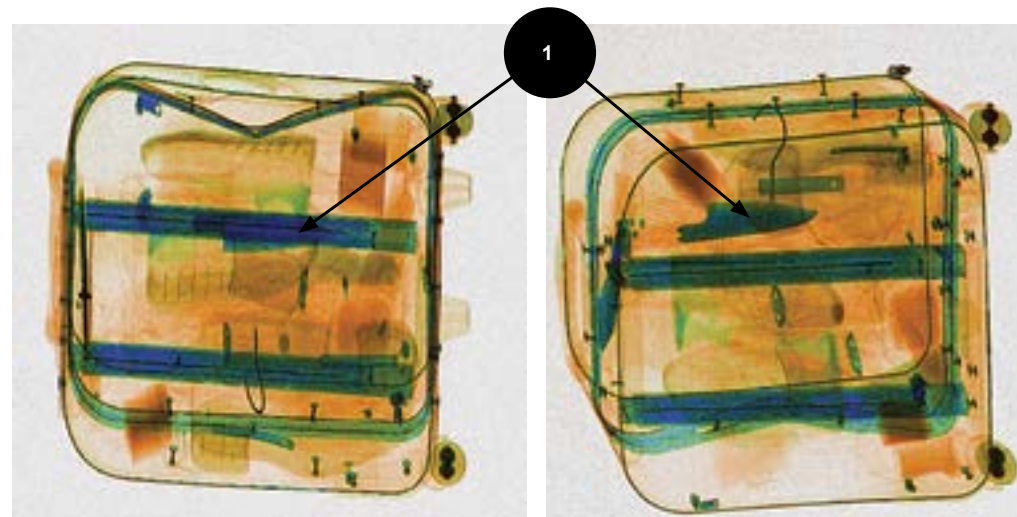
The dual energy technology provides automatic color coding of materials according to their effective atomic numbers. **TS-SCAN 6040** has a large industry standard tunnel opening of 600 mm wide and 400 mm high.

Image processing features: material separation color display, pseudo color, black and white image, positive/negative, contrast manipulation, edge enhancement, organic/inorganic stripping, high/low penetration, high density alert.

Image display features: image review, variable zoom up to 32x, view change.

Additional features: baggage counter, data and time display, all views simultaneous preview.

**TS-SCAN 6040** meets all international health and safety requirements.



## GENERAL SPECIFICATIONS

Tunnel size (W x H), mm	610x410
Max. object size (W x H), mm	600x400
Conveyor height, mm	649 (648*)
Conveyor speed, m/s	0,2
Max. object weight, kg	150
Resolution (wire detection measured by Cu wire)	38 AWG (0,1mm)
Penetration (steel), mm	32 typical 35
Film safety	guaranteed up to ISO 1600 (33 DIN)
Number of X-ray generators*	2 or 1
Anode voltage, kV cp	160/140
Number of views and generators*	2
Detectors	L-shaped
Power consumption, kVA	1,0
Dimensions (L x W x H), mm	2000 x 830 (1080*) x 1230
Weight, kg	Not more than 580

\* Can be optimized according to the customer's needs





# BAGGAGE INSPECTION SYSTEM TS-SCAN 6575

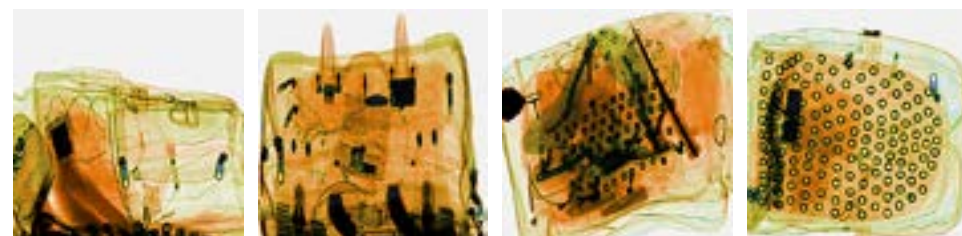
**TS-SCAN 6575** is a unique dual-view and dual-generator X-ray inspection system. The baggage views provide its complete perspective regardless of its positioning in the X-ray system. Dual-view technology obviates the operator's necessity to reverse and rescan the baggage.

The dual energy technology provides automatic color coding of materials according to their effective atomic numbers. **TS-SCAN 6575** has a large industry standard tunnel opening of 670 mm wide and 770 mm high.

Image processing features: material separation color display, pseudo color, black and white image, positive/ negative, contrast manipulation, edge enhancement, organic/ inorganic stripping, high/low penetration, high density alert.

Image display features: image review, variable zoom up to 32x, view change.

Additional features: baggage counter, date and time display, all views simultaneous preview. **TS-SCAN 6575** meets all international health and safety requirements.



GENERAL SPECIFICATIONS	
Tunnel size (W x H), mm	670×760
Max. object size (W x H), mm	650 x 750
Conveyor height, mm	334
Conveyor speed, m/s	0,20
Max. object weight, kg	200
Resolution (wire detection measured by Cu wire)	38 AWG (0,1mm)
Penetration (steel), mm	32 typical 36
Film safety	guaranteed up to ISO 1600 (33 DIN)
Number of X-ray generators*	2
Number of views	2
Detectors	L-shaped
Power consumption, kVA	1,0
Dimensions (L x W x H), mm	2737 x 1300 x 1665
Weight, kg	1100







# LUGGAGE INSPECTION SYSTEM TS-SCAN 100100-2P

**TS-SCAN 100100-2P** is a unique dual-view and dual-generator X-ray inspection system. The luggage views provide its complete perspectives regardless of its positioning in the X-ray system. Dual view technology obviates the operator's necessity to reverse and rescan the baggage. The dual energy technology provides automatic color coding of materials according to their effective atomic numbers. **TS-SCAN 100100-2P** has a large industry standard tunnel opening of 1000 mm wide and 1000 mm high.

Image processing features: material separation color display, pseudo color, black and white image, positive/negative, contrast manipulation, edge enhancement, organic/inorganic stripping, high/low penetration, high density alert.

Image display features: image review, variable zoom up to 32x, view change.

**TS-SCAN 100100-2P** meets all international health and safety requirements.



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## GENERAL SPECIFICATIONS

Dual-view Imaging	Both vertical and horizontal projection images	ROI & Zoom	Stepwise/stepless zoom up to 32 times enlargement without stopping the conveyor. Can immediately enlarge scan images 4 times by special keyboard
Tunnel size (W x H), mm	1010 x 1005		
Max. object size (W x H), mm	1000 x 1000		
Conveyor speed, m/s	0,20 (Adjustable)	Image Recall	Unlimited preceding images are recallable, when the conveyor is stopped anytime during operating
Conveyor bell width, mm	870		
Conveyor height, mm	263-350 (Adjustable)	Image Management	Automatic images storage. General image format conversion, USB storage devices and remote image storage by TCP/IP network.
Max. object weight (Maximum Load Capacity), kg	200		
X-ray Generator, kV	160 (Rated)		
Resolution (wire detection measured by Cu wire)	38 AWG (0,1 mm)	System Functions	Time/date display, baggage counters, user management. built-in diagnostic facilities and dual-direction scanning, etc.
Steel penetration, mm	32		
Spatial Resolution, mm	1,6	X-ray Leakage	Less than 0.5µGy/hour at 5cm away from housing, with no external radiation protection area. Overlapped lead curtains are installed on the entrance and exit or tunnel
Number of X-ray generators	2/1		
Monitor(s)	Two 27 inch color LCD display monitors, with resolution 2560x1440		
Image display	Based on effective atomic number. inspection objects are displayed in different colors: Blue for inorganic as steel; Orange for organic; Green for mixture; Black for objects that X-ray can not penetrate	System Safely	System is designed to be in conformity with all the relevant CE directives
		Operating Temperature I Humidity	0°C - +45°C / 5%- 95% (non-condensing)
Image Enhancement	Color/SW, negative, high/low penetration. Organic/inorganic stripping and general enhancement. etc. All image enhancement functions can be made by one-key or two-key operation	Power consumption, kVA	approx. 1,2
		Dimensions (L x W x H), mm	3920 x 1620 x 1740
		Weight, kg	approx. 1100
		UPS	Ensures safety shutdown







# AIRLINE SERVICE TROLLEY INSPECTION SYSTEM TS-SCAN 40113

X-ray inspection system **TS-SCAN 40113** - is a special designed for inspection of airline service trolley. Specially designed U-shaped line detector allows to achieve 100% inspection of trolley together with food, beverages and drinks.

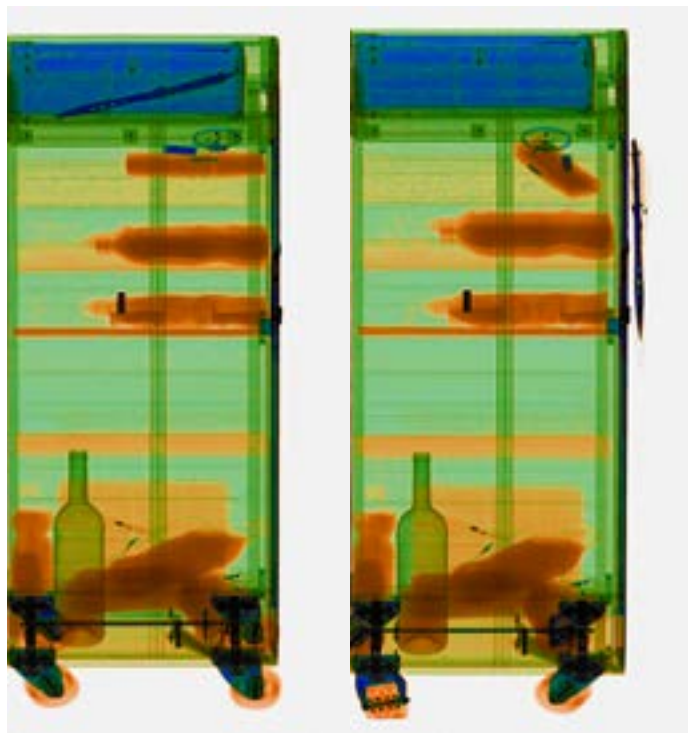
Special automatic doors used instead of usual protective rubber allow to reduce the size of inspection system and to increase the throughput.

The dual energy technology provides automatic color coding of materials according to their effective atomic numbers.

Image processing features: material separation color display, pseudo color, black and white image, positive/negative, contrast manipulation, edge enhancement, organic/inorganic stripping, high/low penetration, high density alert. Image display features: image review, variable zoom up to 32x, view change.



Example of X-ray image



Additional features:  
baggage counter, date  
and time display, all views  
simultaneous preview.

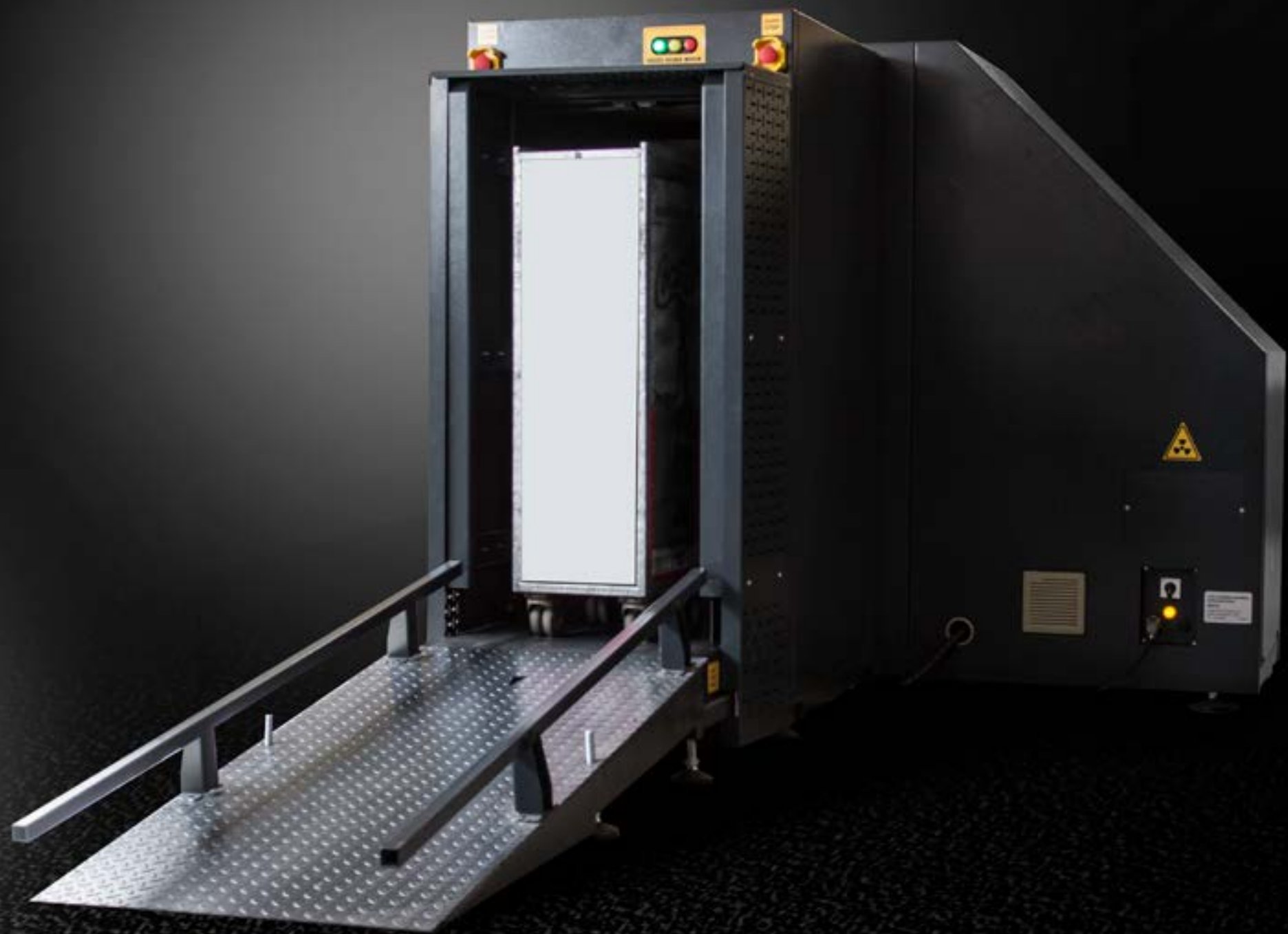
**TS-SCAN 40113** meets  
all international health  
and safety requirements.

## GENERAL SPECIFICATIONS

Tunnel size (W x H), mm	450 x 1130
Max. object size (W x H), mm	420 x 1100
Conveyor height, mm	300
Conveyor speed, m/s	0,20
Max. object weight, kg	200
Resolution (wire detection measured by Cu wire)	38 AWG (0,1mm) typical 40 AWG (0,08mm)
Penetration (steel), mm	32
Radiation dosage, $\mu$ Sv	less than 0,8
Max. voltage, kV	200/180
Max. voltage, mA	1,5/1
Number of views	1,0
Detector	U-shaped
Power consumption, kVA	3,0
Dimensions (L x W x H), mm	3060(6360*) x 1750 x 1560
Weight, kg	1600

\* length including entry/exit pads

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# TRANSMISSION X-RAY BODY SCREENING SYSTEM FB-SCAN

The **Full Body(FB) X-ray screening system** is designed for effective detection of items hidden under clothes, on and inside the human body. This system can be used in anti-terrorism application, to protect state facilities, at border crossings and prisons.

The system can be used to provide access control required for special security zones. It yields high resolution of detected images due to the minimum possible dose of irradiation.

The pre-programmed functions of the system can help an operator to quickly perform the image processing to identify hidden objects.

The main advantages of this design are nondestructivity, low dose load, high penetration and high productivity due to high sensitivity of the detector.

Additional internal protection against scattered X-ray is used, practically, with no exclusion zone.

The system can be installed at any place where a power supply is provided and is intended for 24/7 operation all-year-round. The inspection is carried out automatically with images being transmitted to the PC.



## GENERAL SPECIFICATIONS

Material detectability	Metal, ceramic, plastics, powders, explosives, narcotics etc.
Detection area capability	Objects hidden on and inside the body
Scan time, seconds	not more then 6
Warming time, seconds	80-100
Through-put, persons per hour	120
Penetration (steel), mm	22 (Medium mode) 30 (High dose mode)
Wire detectability	36 AWG (0,15 mm)
Technology	Low dose X-ray radiation
Dose per inspection	< 0,25 $\mu$ Sv (<0,025 mRem) (Medium mode)*
Dimensions (L x W x H), mm	2600 x 2750 x 2000
Width of the tunnel, mm	710
Weight, kg	720

\* Can be optimized according to the customer's needs

- Steel scanning module that includes X-ray unit, full body-sized line detector, local X-ray protection for reducing scattered radiation zone. Integrated color lights indicate the system's status: green - ready, yellow - X-ray On, red - error;
- Movable belt with steps;
- Remote control keyboard with the Power On/Emergency Off buttons;
- Remote control unit based on PC with Windows OS and 21" TFT screen;
- Integrated special software for storing and enhancing images including all known filtering types;
- Meets the ANSI N43.17-2009 standard.









# SUV AND VEHICLE X-RAY INSPECTION SYSTEM PORTAL-AUTO

**PORTAL-AUTO** is a unique stationary or drive-through vehicle screening system designed for the inspection of illegal objects inside vehicles, large size pallets, etc. It can detect smuggled goods, including plastic weapons and explosives, drugs and radioactive materials. The main components of the system are an X-ray generator which emits a high energy X-ray beam and a highly sensitive U-shaped detector.

The dual energy technology (optional) provides automatic colour coding of materials according to their effective atomic numbers.

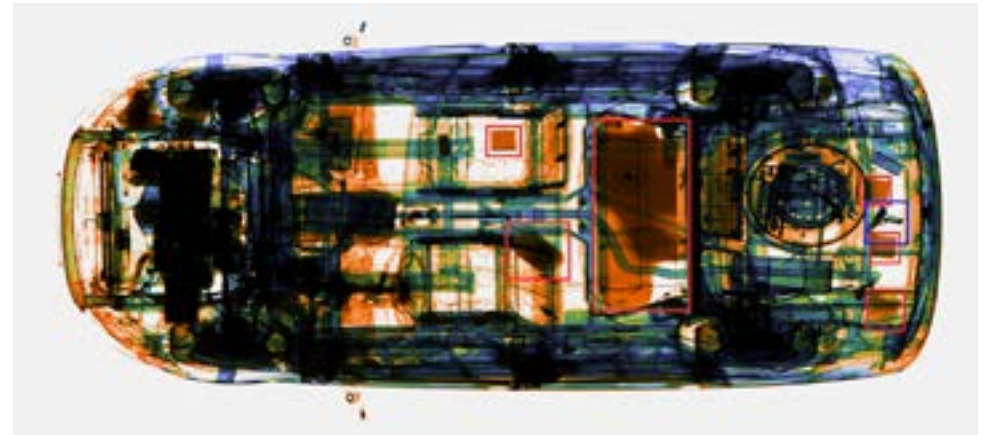
The **PORTAL-AUTO** system combines high penetration and low radiation dosage.

The system can be integrated not only in a temperature controlled permanent or solid built infrastructure but uniquely in a 20ft container or a tent, and is intended to operate 24/7.

The system automatically inspects vehicles without driver placed on a vehicle moving system. Images are transmitted to the remote control room for further examination. Due to its mobility, if set up in a 20ft. container, PORTAL-AUTO is ideally suited to work at border crossings, security checkpoints, as well as at seaports and airports, security sensitive areas such as government/commercial sites, military and law enforcement HQs/structures.

## THE SYSTEM LAYOUT

- Temperature controlled environment\*
  - X-ray generator
  - U-shaped detector unit
- 
- Data collection and processing systems
  - Vehicle moving system\*



## GENERAL SPECIFICATIONS

Inspected object dimensions (W x H), m	2,51 x 2,9**
Throughput, vehicles/objects per hour	up to 10 and up to 250 for Portal- Auto 250
X-ray generator, kV/mA	uniquely designed X-ray generator 300/5**
Detector	U-shaped one dimensional
Image details	black and white (65 000 levels of grey) or pseudo color
Inspection sensitivity	2% up to 35 mm of steel**
Visual means	2 computers with several high resolution LCD displays, special image and data storage system with capacity to store 20 000 images
Digital image processing	Image storage, magnification up to 16 times, sharp and contrast enhancement, filtering, segmentation, X-ray image comparison
Power	built-in generator or 85 - 240VAC 50/60Hz
Power consumption, kW	5 (maximal with additional cooling system)
Operating temperature/ Humidity	- 10°C to + 50°C/up to 95%

\* not applicable to Portal-Auto 250

\*\* Can be optimized according to the customer's needs





# HIGH THROUGHPUT CARGO X-RAY INSPECTION SYSTEM PORTAL-BETA P02-1W

**PORTAL-BETA P02-1W** is a unique one-way multi-energy portal designed for high throughput X-ray inspection of vehicles/trucks with cargo. It can detect smuggled goods, including plastic weapons and explosives, drugs, radioactive materials.

The main system components are the X-ray generators that produce high energy X-ray beams, and highly sensitive L-shaped detectors (each inspection channel has several detectors that allow to increase throughput).

The **PORTAL-BETA P02-1W** combines powerful penetration and low radiation dosage. Due to the use of unique cyclic accelerator with ability of fast change of output energy, the system can penetrate the cabin with the truck's driver using the lowest dosage, and after that switch to high dosage mode within microseconds. After the cabin passes through the portal, the system penetrates all truck with maximum dosage. Also the system can work in Cabin-cut mode, the system starts irradiation after the cabin with the truck's driver. The scanning mode choice can be made due to the local radiation safety regulations that are used in the end-user country.

The system does not require any temperature-controlled permanent or solid built infrastructure and can operate 24/7. The system automatically inspects trucks moving at various speeds. Images are transmitted to the remote control room for further examination. **PORTAL-BETA P02-1W** is ideally suited for using at customs facilities, seaports and airports, border crossings. The system configuration allows fast and thorough inspection of 20/40/45ft sea containers and other freight up to 150 vehicles/trucks per hour in one way (channel) design.

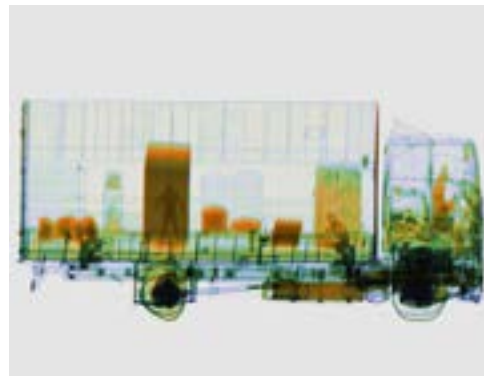


## GENERAL SPECIFICATIONS

Inspected object dimensions (L x W x H), m	30 x 3 x 4,7*
Building dimensions (L x W x H), m	36 x 12 x 6*
Max. weight of inspected object, kg	55 000*
Max. radiation dosage, µSv per scan	less than 100
Throughput, vehicles/trucks per hour	up to 150**
Scan speed, km/h	5-20
X-ray generators energy, MeV	Switched between 6 and 9
Image	black and white (65 000 levels of grey) or pseudo color, dual energy mode
Penetration	270 - 330 mm of steel
Visual and processing means	computers with several high resolution TFT displays and a special image and data storage system
Digital image processing	Image storage, magnification up to 16 times, sharp and contrast enhancement, filtering, segmentation
Power	built-in generator or three-phase AC power circuit 380V/50Hz
Power consumption, kW	less than 20
Operating temperature/Humidity	-35°C to +55°C/up to 90%*

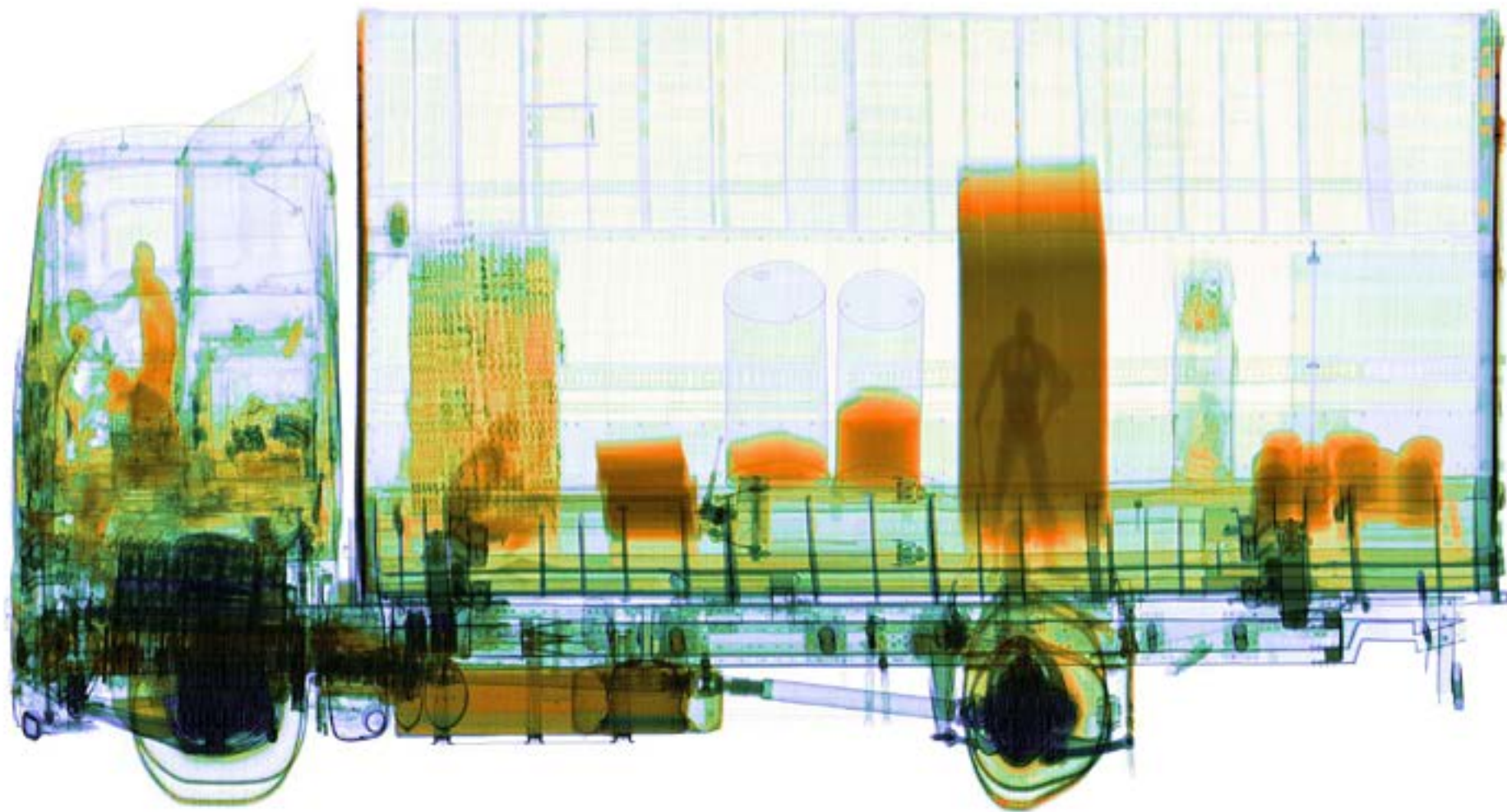
\* Can be optimized according to the customer's needs

\*\* In one way (channel) design. In dual way (channel) design throughput is up to 300 vehicles/trucks per hour.



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# CARGO AND VEHICLES X-RAY INSPECTION SYSTEM PORTAL-BETA

**PORTAL-BETA** is a unique multi-view multi-energy rail-mounted gantry designed for the inspection of sealed sea freight containers such as 20/40/45ft, consignments inside trucks and other vehicles. It can detect smuggled goods, including plastic weapons and explosives, drugs, radioactive materials.

The main system components are the X-ray generator, which produces high energy X-ray beam, and the highly sensitive L-shaped detector. **PORTAL-BETA** is designed in such a way that it is practically impossible to hide illegal items inside the inspected objects owing to the multiple imaging obtained from various perspectives. These perspectives are chosen in such a way that the hidden item will be surely seen from one of the multi-views regardless of its location inside the inspected object.

The **PORTAL-BETA** combines powerful penetration and low radiation dosage. The system is normally located in a temperature controlled permanent or solid build infrastructure and can operate 24/7. The system automatically inspects vehicles without driver, placed between the rails (the gantry moves, images are transmitted to the remote control room over them) for further examination. **PORTAL-BETA** is ideally suited for applications at customs facilities, sea and airports, border crossings.

The system configuration allows fast and thorough inspection of 20/40/45ft sea containers and other freight up to 25-40 vehicles/trucks per hour.

## THE SYSTEM LAYOUT

- Temperature controlled infrastructure
- Single or multy X-ray generator (betatron)
- L-shaped detector unit(s)
- Control unit
- Transportation unit



### GENERAL SPECIFICATIONS

Inspected object dimensions (L x W x H), m	30 x 3 x 4,7*
Building dimensions (L x W x H), m	36 x 14 x 7*
Max. weight of inspected object, kg	55 000*
Throughput, vehicles/trucks per hour	up to 25 - 40
Scan speed, m/min	12, 24, 36
X-ray generators energy, MeV	Switched between 4.5 and 9
Penetration	300 - 330 mm of steel
Visual and processing means	computers with several high resolution TFT displays and a special image and data storage system
Digital image processing	Image storage, magnification up to 16t , sharp and contrast enhancement, filtering, segmentation
Power	built-in generator or three-phase AC power circuit 380V/50Hz
Power consumption, kW	from 16
Operating temperature/Humidity	-35°C to +45°C/up to 90%*

\* Can be optimized according to the customer's needs

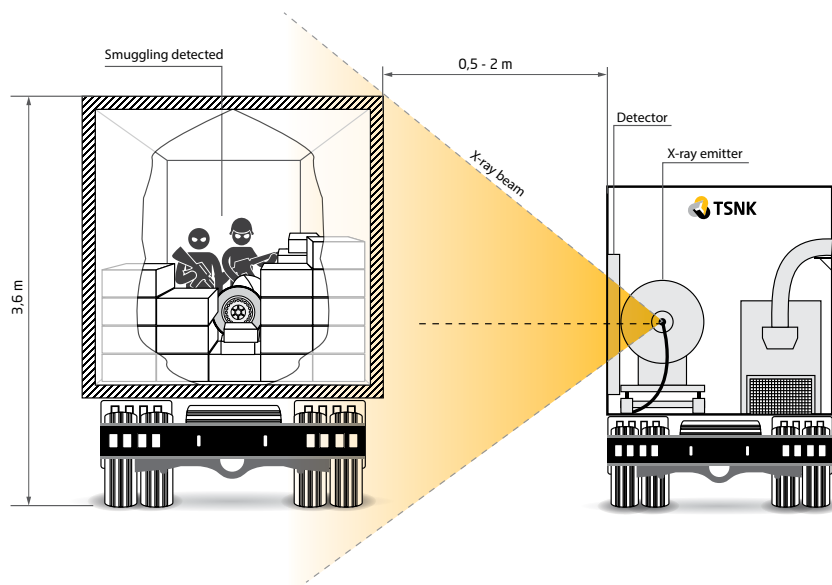






# MBV – MOBILE VAN-BASED X-RAY INSPECTION SYSTEM

Personal remote inspection to detect weapons communication devices etc.



Screening of the moving and parked vehicles for detection of weapons, drugs and explosives, humans;

## PERFORMANCE

Speed mode of backscatter	Speed from 1,5 Kph to 10
Throughput	170 vph
Scanning length	80m max per scan
Distance control scanning cable	50m
Operation independent from the vehicle engine	Yes
Image File storage	100,000 car images and 28,000 trailer images.
<b>Radiation Safety</b>	
Dose to Target Object:	Less than 0.1uSv
Dose to operator:	Less than 1uSv/hour

- Scanning device, detection system and the autonomous power supply are located in the van body
- Complex control and image browsing performed by the remote control and the laptop located in the vehicle body
- Stationary placement is possible with power supply from a single-phase AC 220 V , 32 A

## GENERAL SPECIFICATION

X-Ray technology	Backscatter
Steel penetration	Not less than 7 mm (0.28 inch)
Scanning X-ray height must achieve	Not less than 3.6 m (12 ft)
The optimal scanning distance from target object	1.5 m (5 ft)
System Vehicle	Mercedes Spriter 516 CDI

## DETECTOR/ TRANSMITTER PANEL

Number of detectors	6
PMTs	4 PMT on each transmitter panels
Panel location	Opposite from the driver

## ENVIRONMENT

Operating Temperature:	
- standard	-10°C to 45°C
- with hot weather extension pack	From -10°C to 60°C
- with cold weather extension pack	From -40°C to 45°C
Storage Temperature	-30°C to 60°C
Weather conditions	Operable in rain, sunny, dark, etc
Noise level inside operator space	not more than 70dB
Noise level outside the vehicle	not more than 85dB



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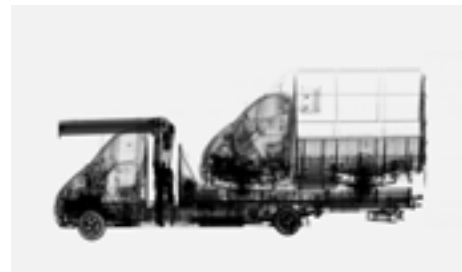
# MOBILE X-RAY VEHICLE SCREENING SYSTEM MXVSS

**MXVSS** (Mobile X-ray Vehicle Screening System) is designed for screen-ing bulky cargo and vehicles and detection of radioactive materials and explosives, as well as other restricted articles using radiometric and dosimetric surveillance equipment.

**MXVSS's** 6/9MV X-ray imaging system is the most powerful and advanced X-ray inspection system available on the mobile vehicle screening systems market. Due to the usage of a cyclic accelerator with variable radiation energy, the system can operate in dual-energy mode that allows to discriminate organic and inorganic material.

Mobility of **MXVSS** improves detection of contraband goods as it can be deployed in non-typical and unexpected locations. System works in two scanning modes: system remains immobile, as the vehicles move through the portal ('dynamic object' mode) or the portal moves parallel to the inspected object ('static object' mode).

In the dynamic object mode it is possible to scan the cabin with the driver due to ability of changing high energy during inspection. As an additional option system can be enhanced with backscattered mode that allows to inspect vehicles and cargo from one side in case if there is no both side access. System with this additional option allows to detect radioactive and/or nuclear materials in active mode.



## GENERAL SPECIFICATIONS

Inspected object dimensions (L x W x H), m	30 x 3 x 4,5*
Deployment time, min	less than 30
Throughput, vehicles/trucks per hour	up to 25
Scan speed, m/min	6, 12, 24
X-ray generators energy, MeV	Switched between 6 and 9
Penetration	320 mm of steel
Visual and processing means	computers with several high resolution TFT displays and a special image and data storage system
Digital image processing	Image storage, magnification up to 16 times, sharp and contrast enhancement, filtering, segmentation
Power	built-in generator or three-phase AC power circuit 380V/50Hz
Power consumption, kW	less than 16 kwt in work mode and 5 kwt in standby mode
Operating temperature/Humidity	From -50°C to +50°C/up to 90%*

\* Can be optimized according to the customer's needs

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# HIGH ENERGY MOBILE X-RAY SERIES M-SCAN

The **M-SCAN** is remotely operated self-propelled scanner designed to optimize security checks at ports, airports and border crossings. It reduces the need for manual inspection of complete trucks (cabin included), containers and vehicles by verifying manifests and checking for threats such as explosives, narcotics, weapons of mass destruction (WMDs) and contraband.

The **M-SCAN** uses betatron type accelerator with high energy level up to 9 MeV, allowing steel penetration 320 mm (standard) up to 340 mm (typical). A high maximum throughput of 25 trucks per hour can be achieved in scan mode; and a maximum of 150 trucks per hour in pass through mode.

High performance imaging equips operators with detailed radioscopic images of the container or vehicle to generate rapid and reliable results.

To military standards - 50 up to 70 degrees cyclic mode. Operators and image database are protected in case of any incident on site.

Operators work outside safety zone. No danger to be radiated. No special permits and regular medical checks etc. Easy to handle. Possible to use multiple scanners close by each other on one site. Easy to extend a scanning capacity on the site of the same dimensions. The same crew can operate multiple scanners.

Based on a trailer chassis, the **M-SCAN** systems can be towed from site to site by a standard tractor as required. Road clearance confirmed with all global road regulations. It offers ease of operations and a small footprint with minimal external infrastructure requirements; and yet meets the most demanding, international security screening standards.



## FEATURE HIGHLIGHTS

- Inspect bulky goods and vehicles in order to detect smuggling, illegal or prohibited goods, objects and explosives at ports, airports and border crossing
- Versatile operational modes:
  - Pass-through (up to 150 trucks/hour)
  - Mobile (up to 25 trucks/hour)
- Steel penetration - up to 340 mm 9MeV
- Lightweight - less than 6 tons/axle
- Fully automated chassis with remote operator cabin
- Advanced technology providing material discrimination and adjustable safety zone parameters









# TECHNICAL INFORMATION M-SCAN

## GENERAL SPECIFICATIONS

Nominal energy (MeV)	Levels available from 9/6MeV
Type of scanning	The M-SCAN moves while the object does not, or it can be the opposite
Steel penetration (mm)	according to requirements
Contrast (%)	320 (standart); 340 (typical)
Steel wire (mm)	1.2 at 100mm of steel
Safety area - ground to 2.5m (8.2') for a 20m (65.5') truck	1.2
0.5μSv/h 20t/h	40m(L) x 40m(l)
Absorbed dose per scan*	Less than 5μSv/scan
Material discrimination	Yes

## COMPUTER SYSTEM

Workstations	Image acquisition station Image analysis station System control station database workstation CCTV server
Image analysis tools	Contrast and edge enhancement, filters, marks and annotations, histogram equalisation, review of stored images and manifest data for comparison, image conversion to standard formats, objects measurement CCTV server
Database workstation type	SQL database
Data storage	200,000 images as standard
Data archiving	DVD burner (standard)
Printer/Scanner	Color laser printe

## RADIATION PROTECTION SAFETY

CCTV	6 Cameras + 3 radio intercom
Markings Regulations	3-color safety light + siren
Radiation protection	Compliant with WHO, ICRP 103-2007, EU & US regulations Security perimeter zone defined by infrared mark

## SYSTEM SPECIFICATIONS

Chassis	Specpricep
Weight	Less than 20 tons
Engine	N/A
Truck dimensions (LxWxH)	10630x2542x3395
Scanning speed	24 or 12m/min - 36m/min available in option • Passage of the trucks in stationary mode up to 7km/ 4mph
Speed	N/A
Footprint (LxWxH)	10630x7500x5150
Scanning height	5150
Maximum height below gantry	4600
Maximum width of gantry	4350
Installation time	Less than 20min (average 15min)
Inspection throughput	Up to 25 trucks per hour (typical 20) in mobile mode and up to 150 (typical 120) in pass through mode*
Minimum crew requirement	1 image operator/driver and 1 traffic marshal
Operating temperature	-40°C to +50°C (-25°C to 50°C in option)
Storage temperature	-40°C to +60°C
Relative humidity	Up to 95%
Electrical consumption	20 kVA in average

## HEALTH & SECURITY

Dose in the environment	Average <0,5μSv/h <1mSv/an at the boundary
Dose rate in operator cabin	Background level

## OPTIONS

Additional image analysis workstation
Connection to Centralized Image analysis Center

\* Typical values - values may differ depending on freight and scanning conditions







# RATE METERS

The 2-channel alarm radiometer **NPS-32** can continually measure X-ray and g-ray radiation. It has a light and sound alarm, which alerts the operator, if the radiation dose exceeds the automatically preset threshold. Once the device is on, it takes about one minute to calculate the threshold, which is equal to the average radiation dosage, plus five standard deviations.

The device consists of the indicator unit and one or two external detector units.

This radiometer can be positioned around doors or gates in order to detect any trace of radioactive material.

**NPS-32** can be supplied with a fast scintillation detector for inside use or by a detector with H-M counters and is perfect for adverse weather conditions (high humidity and extreme temperatures).



**PSD-16** is an 16-channel alarm radiometer with the same features as **NPS-32**. By connecting it to a PC, it can serve as a valuable addition to any integrated safety system.

Searching radiometer **RP-5M** is intended for measuring g-ray radiation dosage. It can be used to find the radiation source and determine the radiation leakage.

The detector (scintillation crystal in combination with PM) provides very short exposure time and, consequently, very fast and effective detection of radioactive sources.

**RP-5M** provides numeric values of radiation dosage, linear and logarithmic scales and produces audio alarm using different frequencies. **RP-5M** is powered by a rechargeable battery. The device can calculate and display not only the radiation dose in a given area but also the dose received by an operator.







# Notes

A large area of the page is filled with horizontal dotted lines, providing a space for taking notes. The lines are evenly spaced and extend across most of the width of the page.







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