

## AI Based X-Ray Baggage Scanner

### TW5030 (AI)

The intelligent security screening machine adopts single energy detector, is a new security inspection device that uses X-ray to quickly inspect baggage and goods without opening packages.

### System Overview

The machine adopts an advanced X-ray image detection system, which integrates semiconductor detectors, digital image processing technology and computer image display technology, to provide users with an efficient, reliable and high-quality image processing system. It can store a number of high-definition images, and deliver reliable recognition and warning of dangerous articles, person-baggage association, image enhancement, network expansion, automatic maintenance and more functions. It also has a simple and user-friendly operation design for convenient and fast user operation.

## Function

### X-ray Package Image Generation

Adopts the TimeWatch algorithm to generate images of packages and their content, displaying their shape and material size. The generated images reflect X-ray absorption degrees.

### X-ray Package Image Enhancement

Adopts TimeWatch algorithm and enhances package images with different effects so that operators can better analyze the items. Enhancement functions include color/black and white, local enhancement, super enhancement, edge enhancement, image scanning, Inverse, high-energy enhancement, light, dark, high density alert, AI overlay, vertical flip, pseudo color and more.

### Display Video Output

Displays images in security mode (package images) or video surveillance mode.

### Dangerous Items Recognition

Adopts the TimeWatch algorithm to analyze X-ray images of packages & identify dangerous items such as knives, bottled liquid, pressure tanks, guns and lighters. It also tracks dangerous items by using AI overlay which can be marked in different colors to indicate danger levels. Alarm linkage are supported such as voice prompt, sound and light alarm and conveyor belt stopping.

- Uses X-ray to generate images of packaged items passing on the conveyor belt, and checks the shape and size of packaged items.
- Displays images of the packages with enhanced effects, such as penetration enhancement, super enhancement, high density alert and image.
- Supports security screening mode and video surveillance mode.
- Recognizes dangerous items such as knives, bottled liquid, spray cans, guns and lighters from scanned images.
- Displays AI overlay on suspected objects. The AI overlay box moves with the package.
- All detection results can be stored and generated as reports, which can be searched and exported according to danger level and time.



- Built-in 2 cameras that respectively monitor the entry and exit of baggage and the package inspection process.
- Add ordinary network camera camera for live video, storage and playback. The cameras monitors the entire security inspection.
- Alarms are triggered by system errors such as no HDD, storage error, IP conflict and MAC conflict.
- Hard disk storage space management.
- User group management, multiple authorities setting, custom function, permission and password configuration.
- System operation and maintenance management, such as self diagnosis, log and online user search, and device updating.

## Package Linkage

Included are the entrance camera and exit camera. The system supports real-time recording, and offers person-package linkage storage and search.

## Package Statistics

All detection results can be stored and generated as reports, which can be searched and exported according to danger level and time.

## Continuous Scanning

Continuously scans packages and displays their images even when the system restarts after being stopped.

## Safety Protection

X-ray protection is higher than the international standard. The leakage dose is less than 0.9  $\mu\text{Sv/h}$  ( $\mu\text{Gy/h}$ ).

## Scene

The machine is used for security screening of handbag, briefcase, postal parcels, express parcels and other small packages. It is applicable for use in government buildings, courts, procuratorates, public security and more.



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## Technical Specification

System	
CPU	Intel quad-core processor
RAM	8 GB
Operating System	Embedded Linux OS
User Interface	Local GUI (full functions); Web interface
Basic	
Tunnel size	500 mm × 300 mm (19.69" × 11.81")
X-ray Tube Anode Voltage	80kv
X-ray Tube Cooling	Sealed oil bath with forced air
Wire Resolution	40 AWG (0.0787 mm)
Penetration(steel)	8 mm
Leakage Dose-rate	≤ 0.9 μSv/h(μGy/h)
Noise Level	≤ 65 dB
Conveyor Speed	0.2 m/s
Maximum Belt Load	80 kg (176.37 lb)
Conveyor Hight	Approx. 665 mm
Current Leakage	≤ 0.25 mA
Film Safety	ISO 1600 (33 DIN)
Intelligent Analysis	
Preview	Real-time display of X-ray package image and camera image; real-time item intelligent analysis
Item Recognition	Recognizes items and displays AI overlay; the AI overlay box moves with packages
Recognition Types	Recognizes 21 types of objects: Guns, fireworks, spray cans, knives, axes, scissors, nail polish, bottled liquids, glass bottles, thermos bottles, plastic bottles, handcuffs, nightsticks, brass knuckles, lighters, tools, electronic products, mobile phones, power banks, laptops and umbrellas
Danger Levels	High risk, warning, and safe (supports custom configuration according to types of objects)



Event Linkage	I/O alarm, voice prompt, platform alarm can be triggered according to danger levels
Image Storage	Stores as much as 1 million images with information on their danger levels and the types of objects detected. Original and analyzed images can both be viewed.
Baggage Search	Search, play back, and export baggage images and linked videos according to time, objects type and more
Report Search	Generate and export reports according to time and object types
Backup	USB/Network
<b>Performance</b>	
Self-inspection	Automatically detects system failures and prompts error codes
Image Processing	Enhancement functions include color/black and white, local enhancement, super enhancement, edge enhancement, image scanning, inverse, Penetration enhancement, light, dark, high density alert, AI overlay, vertical flip, pseudo color and more
Image playback	Supports playback of 30 images
Image Zooming	Zoom in X-ray images up to 64x. Drag the focus position using a mouse or direction- keys
Device Diagnosis	Supports diagnosis of key components such as the detector, motor, IR sensor
Detection Configuration	Key function configuration; image display configuration (vertical flip and max zoom times), scan mode configuration (double direction, forward scan), baggage counter configuration and person-package linkage configuration
<b>Basic</b>	
Graphics Output	1-channel HDMI video output: Up to 1920 (H) × 1080 (V) @60 Hz
Monitor	1 × 21.5" monitor
Video Input (Network)	4-channel input (max 4K); 4-channel IPC
Recording Mode	4-channel input (max 4K); 4-channel IPC; supports H.265, H.264, PCM and MPEG4



Audio output	1-channel MIC Out (3.5 mm)
Built-in Disks	Supports up to 6 T SATA disks and configures 1T disk by default
Ethernet Ports	1 RJ-45 10 M/100 M/1000 M self-adaptive Ethernet ports; 2 RJ-45 10 M/100 M Ethernet ports
Internet Protocols	HTTP, HTTPS, TCP/IP, UDP, RTSP, IPv4, NTP, DHCP, DNS, IP Filter, IP Search (Supports IP camera, DVR and more)
Interoperability	ONVIF, SDK and more

## Ports

RS 232 Port	1-channel RS-232 port
Power Port	1-channel port for monitor power supply 12V1A power output
USB Port	2-channel USB3.0 for controlling the operation keyboard and mouse
Display Port	2-channel HDMI outputs (same source)
Alarm Port	2-channel alarm output; 2-channel alarm input
Emergency Stop Button	2 (on the machine body)
Power Button	1 (on the machine top)
Key Switch	1 (on the machine top)
Indicator light	<p>On the machine:</p> <p>Power indicator: Turns solid green when the machine is working and flashes during updates and when an error occurs</p> <p>X-ray indicators: the red light is always on when X-ray is turned on, but not when X-ray is turned off</p> <p>Key switch indicator: The green light is always on when the key is turned to on, but not on when the key is turned to off</p>

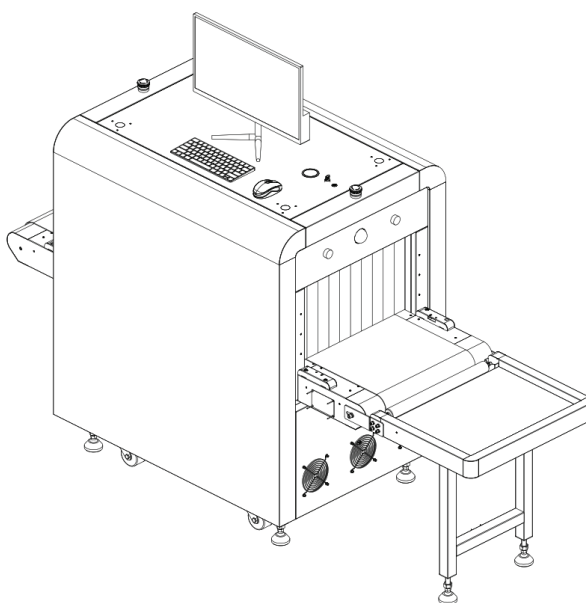
## Regular

Power Supply	220–240 VAC, 50/60 Hz; 100–130 VAC, 50/60 Hz (optional)
Typical Power Consumption	220 W
Maximum Power Consumption	650 W
Intelligent Temperature Control	Detects the temperature of main board and HDD and automatically adjusts fan speed to make it work stably and quietly
Operating Temperature	0 °C to +45 °C (32 °F to +113 °F)
Operating Humidity	0%–95% (RH), non-condensing
Storage Temperature	–20 °C to +70 °C (–4 °F to +158 °F)

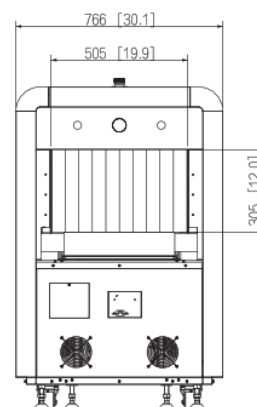
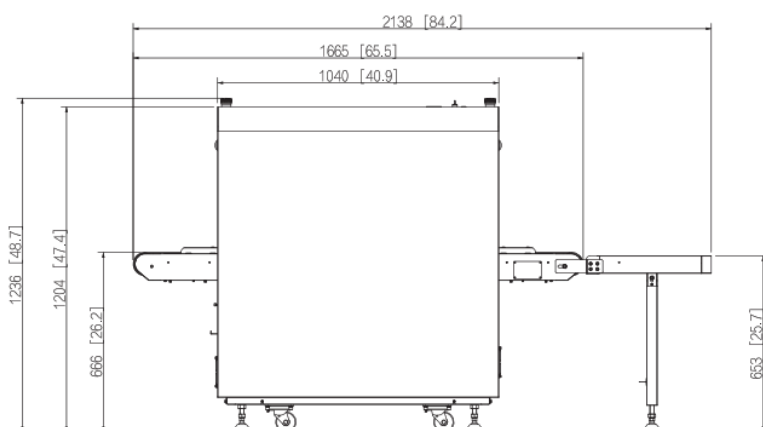


Storage Humidity	0%–95% (RH), non-condensing
Dimensions	1665 mm × 766 mm × 1202 mm
Package Size	1805 mm × 1026 mm × 1425 mm
Net Weight	300 kg (661.39 lb)
Gross Weight	350 kg (771.62 lb)
Installation Mode	Floor installation

## Installation



## Dimension Drawing



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**Disclaimer :** All pictures shown are for illustration purposes only. The actual product and color may vary due to product enhancement. The brief specification is mentioned and may change without prior notice. Please consult us before placing any order.

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