DHI-ISC-M6040E

Intelligent Security Screening Machine

Introduction

The intelligent security screening machine 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 that has service functions. The device has a large HDD capacity that can store massive high-definition images. It supports many functions. It recognizes prohibited objects , alarms when prohibited objects are detected and features person-package linkage, image enhancement, network expansion and interconnection, automatic detection and maintenance and more. In addition, the operation design is simple and user-friendly.

Features

X-ray Package Image Generating
Adopts the Dahua algorithm to render images of packages and their content, displaying their shape and the materials that they are made of. The rendered images reflect X-ray absorption degrees and material composition. To better identify dangerous items, scanned objects will be categorized into organic matter, mixture and inorganic matter, and marked in orange, green and blue respectively according to their composition.

X-ray Package Image Enhancement
Adopts Dahua 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, organic stripping, metal stripping, mixture stripping, Inverse, high-energy enhancement, low-energy enhancement, light, dark, density threat alert Z7/Z8/Z9, high density alert, AI overlay, vertical flip, pseudo color and more.

Dual-screen Display Video Output
Displays images in security mode (package images) or video surveillance mode.

- Uses X-ray to generator 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 high energy enhancement, super enhancement, high density alert and image scanning.
- Supports security screening mode and video surveillance mode.
- Recognizes dangerous items such as knives, bottled liquid, spray cans, guns and lighters from scanned images.
- Set danger levels for suspect items and link alarms such as voice prompt, sound and light alarm and conveyor belt stopping.
- 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.
- 2 built-in cameras that respectively monitor the entry and exit of baggage and the package inspection process.
- Add IP camera and PoE 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.
- Supports HDD storage space management and advanced management such as RAID configuration (RAID0/1/5); ensures data security.
- Supports user group management and multiple authorities setting; supports custom function, permission and password configuration.
- Supports system operation and maintenance management, such as self diagnosis, log and online user search, and device updating.

Dangerous Items Recognition
Adopts the Dahua algorithm to analyze X-ray images of packages and identify dangerous items such as knives, bottled liquid, spray cans, 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.

Person-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-rate is less than 0.9 μGy/h.

Power Saving Mode
Supports power saving mode.
The conveyor belt can automatically stop without package passing within 15 seconds, which achieves energy saving and reduces the operating power consumption by 35%.

Scene

The machine is applicable for use in airport, railway station, bus station, metro station, government buildings, exhibition centers, large event venues and more.

Technical Specification

System

CPU	Intel dual-core processor
RAM	8 G
Operating System	Embedded Linux OS
User Interface	Local GUI (full functions); Web interface

Basic

Tunnel size	620 mm × 420 mm
X-ray Tube Anode Voltage	160 KV
X-ray Tube Cooling	Sealed oil bath with forced air
Wire Resolution	Typical: 40AWG, Standard: 38AWG *
Penetration(steel)	Typical: 41mm; Standard: 34 mm *
Leakage Dose-rate	≤ 0.9 μSv/h (μGy/h)
Noise Level	≤ 65 dB
Conveyor Speed	Default: 0.2 m/s; 0.3 m/s and 0.4 m/s adjustable
Conveyor Hight	660 mm to 720 mm adjustable
Maximum Belt Load	170 kg (374.78lb) **
Power Saving mode	Support
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 22 types of objects: Guns, fireworks, spray cans, knives, axes, scissors, lighter fluid, nail polish, bottled liquids, glass bottles, thermos bottles, plastic bottles, handcuffs, nightsticks, brass knuckles, lighters, tools, electronic products, mobile phones, powerbanks, 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 and screen notification 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

Performance

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, organic stripping, metal stripping , mixture stripping, inverse, high-energy enhancement, low-energy enhancement, light, dark, density threat alert Z7/Z8/Z9, 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 and special keyboard
Detection Configuration	Key function configuration; image display configuration (vertical flip and max zoom times), scan mode configuration (double direction, forward scan, reverse scan, compulsory scan and power saving mode, baggage counter configuration and personpackage linkage configuration
TIP	Optional
Explosive detection	Optional
Nacotics detection	Optional

Basic

Graphics Output	2-channel DVI outputs; resolution: Up to 1920 (H) × 1080 (V) @60 Hz
Monitor	1 × 21.5" monitor
Video Input (Network)	12-channel input (max 4K); 8-channel IPC + 4 PoE (2 PoE by default); supports H.265, H.264, PCM and MPEG4
Recording Mode	Offers manual recording and recording plan. Recording plan features continuous recording, alarm event linked recording and no recording
Built-in Disks	Supports up to 4 × 10 T SATA disks and configures 1 × 4T disk by default
Storage Management	Single; RAID 0/1/5 (Enterprise-level disks are recommended); global hot standby
Ethernet Ports	1 RJ-45 10M/100M/1000M self-adaptive Ethernet ports; 4 RJ-45 PoE 10M/100M Ethernet ports
Internet Protocols	HTTP, HTTPS, TCP/IP, UDP, RTSP, IPv4, NTP, DHCP, DNS, IP Filter, IP Search (Support Dahua IP camera, DVR and more)

*Conveyor Speed 0.2m/s, Measured by Dahua Imaging Test Kit.
**Conveyor Speed 0.2m/s

Interoperability	ONVIF, SDK and more

Certifications

Certifications	IEC 60068-2-1 IEC 60068-2-2 CE-LVD: Low Voltage Directive 2014/35/EU CE-EMC: Electromagnetic Compatibility Directive 2014/30/EU CE-MD: Machinery Directive 2006/42/EC FCC: 47 CFR FCC Part 18, Subpart B Conform with RoHS Directive 2011/65/EU, 2015/863/EU and REACH regulations as defined in EC No 1907/2006 and subsequent amendments.

Ports

rs 232 Port	1-channel RS 232 port for controlling the operating keyboard
Power port	1-channel port for monitor power supply
USB Port	2-channel USB3.0, 2-channel USB2.0
Display Port	2-channel DVI outputs
Emergency Stop Button	3 (2 buttons on the machine body and 1 button on the operating keyboard)
Power Button	1 (on the operating keyboard)
Key Switch	1 (on the operating keyboard)
Indicator light	On the machine: Power indicator: Turns solid green when the machine is working and flashes during updates and when an error occurs X-ray indicators: Turn solid red when X-ray is triggered and turns off when X-ray is turned off On the operating keyboard: Key switch indicator: Turns solid green when the switch is turned on and turns off when the switch is turned off Power button indicator: Turns solid green when the power button on the operating keyboard is pressed on. Light turns off when the machine is powered off Press button indicators: Flashes green when one button is pressed on

Regular

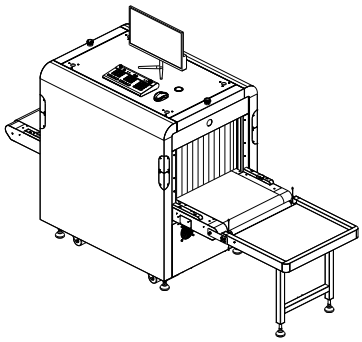
Power Supply	AC 220 V–240 V, 50/60 Hz; AC 100 V–130 V, 50/60 Hz (optional)
Typical Power Consumption	450W
Maximum Power Consumption	1 KW
Intelligent Temperature Control	Detects the temperature of main board and HDD and automatically adjusts fan speed to make it work stably and quietly
Operating Temperature	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	1993 mm × 870 mm × 1297 mm (78.46" × 34.25" × 51.06")
Package Size	2142 mm × 1132 mm × 1542 mm (84.33" × 44.57" × 60.71")

Net Weight	430 kg (947.98lb)
Gross Weight	600 kg (1322.77 lb)
Installation Mode	Ground mount

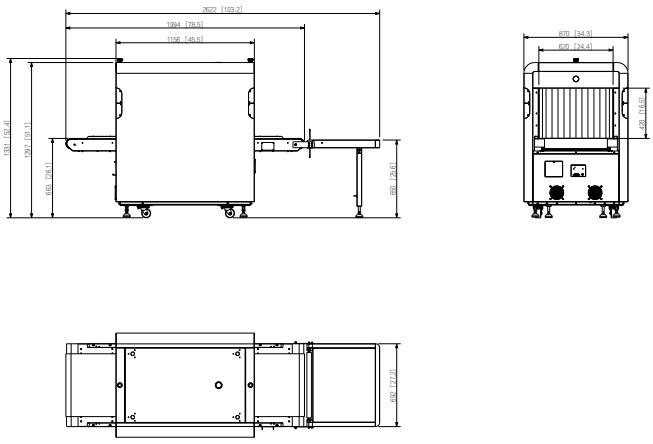
Ordering Information

Type	Model	Description
Intelligent Security Screening Machine	DHI-ISC-M6040E	Intelligent Security Screening Machine
		21.5 inch LCD Monitor
		Out sliding table
		Special Keyboard, Mouse
Roller Table (Optional)	ISC-M60-EC05	0.5m Roller table
	ISC-M60-EC10	1.0m Roller table
Monitor (Optional)	DHI-LM24-B200	24" LCD Monitor

Installation



Dimensions (mm[inch])



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