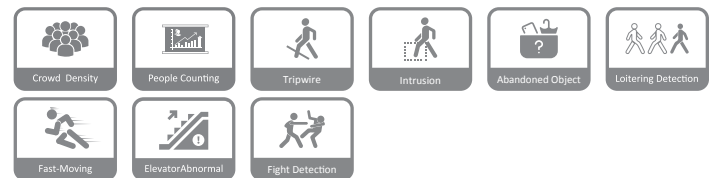# DHI-IVS-PB8000-E-GU1

Intelligent Server for Public Event Detection

· Advanced structured + behavior analysis deep-learning algorithm with world-class target detection rate and behavior analysis accuracy.

· Dynamic loading of algorithm and chip separation to enhance system robustness.

· Universal server with PCIE slot design that enables recycling old servers to reduce costs.

· Based on video cloud architecture, it supports standalone and clustered deployment that satisfies various requirements for capacity expansion.

· The server can be sold with a client or separately, and it can work with third-party devices.

| Crowd Density | People Counting | Tripwire | Intrusion | Abandoned Object | Loitering Detection |
| Fast-Moving | ElevatorAbnormal | Fight Detection | | | |

System Overview

Based on Dahua video cloud architecture, this intelligent server for public event detection adopts self-developed AI analysis cards, which integrates traditional and deep-learning algorithms.

This server is connected to real-time video streams of cameras. By configuring intelligent analysis rules, it can report alarms and analysis data about abnormal events, including crowd density, escalator anomaly, fighting, abandoned objects, wrong-way walking, loitering, tripwire, intrusion, fast moving, number of people in a region, customer flow, and more.

By integrating multiple intelligent algorithms, the server supports large-scale clustering dedicated to protect public security.

Functions

Crowd Density Detection

Support to set max 8 monitoring areas in one video channel; give an alarm when number of people in the area exceeds the threshold for certain period; give an alarm when area density exceeds the threshold for certain period; support real-time statistics of total number of people in the video of output channel; support real-time statistics and output of number of people in each monitoring area.

Crowd density: Low density scene: People counting accuracy ≥80% (not required if there are less than 10 people);

High density scene: People counting accuracy ≥75% (20–50 people), people counting accuracy ≥80% (50+ people) (not required if there are less than 10 people).

Customer Flow Statistics

Support real-time analysis on number of people entering and leaving one area in video channel;

Target pixel ≥60×60, and accuracy >93% (in the day, no obvious obstacles).

Tripwire

Automatically detect tripwire crossing;

Target pixel ≥60×60, recall rate ≥90%, and effective rate ≥90%.

Intrusion

Monitor the forbidden area and give an alarm;

Target pixel ≥60×60, recall rate ≥90%, and effective rate ≥90%.

Object Detection

Monitor suspected abandoned object in key protection areas, and give an alarm (bags, luggage and boxes);

Target pixel ≥60×60.

Loitering Detection

Monitor people staying in key protection areas and give an alarm;

Target pixel ≥60×60, recall rate ≥90%, and effective rate ≥90% (less than 5 people).

Fast Moving

Detect fast moving and give an alarm;

Target pixel ≥60×60, recall rate ≥80%, and effective rate ≥80% (less than 5 people).

Fighting Detection

Detect fighting and give an alarm;

The fighting target takes up 1/4 × 1/4 of the image.

Wrong-way Detection

Monitor pedestrians who walk in the wrong way in unidirectional areas, and give an alarm;

Target pixel ≥60×60, recall rate ≥90%, and effective rate ≥90% (less than 5 people, no obvious obstacles).

Escalator Abnormity Detection

Support real-time monitoring of sudden stop and reverse operation of escalators;

Target pixel ≥60×60.

Video Channel Management

1. Connection analysis of Dahua, Hikvision, GB28181 and ONVIF network cameras and network video recorders.
2. Connection analysis of H.264 and H.265 network cameras and network video recorders.
3. Acquire streams from RTSP platform, and make connection analysis.

Platform Supporting Functions

1. Connect to DSS platform through NetSDK protocol, and upload the alarm information to the platform.
2. The platform can acquire smart streams from PB8000 through NetSDK protocol.

Report Generation and Export

Export alarm information in Excel, including channel name, event time, event name, event type, rule name, rule line, scene and target box.

Scene

Applicable to public areas, sucha as airports, subway and railway stations, squares, office perimeters, places of business, and supermarkets.

Technical Specification

System

Processor	One Intel Xeon E3-1275 V5, 3.6 GHz, 4C/8T
Intelligent Analysis Card	One high-performance analysis card
Operating System	CentOS Linux release 7.4.1708 (Core)
Memory	Two 8 GB DDR4 memory, maximum 4 slots.
Disk	One 3.5"4T disk, maximum 4 disks. 7.2K RPM SATA 6 Gbps 512n 3.5 inch

Public Event Detection

Multi-rules Application	Multiple rules can be configured and run at the same time.
Real-time Display	Supports displaying rule detection zone and target detection box in real-time video. Rule detection zone and target detection box will flash when an alarm is triggered.

Crowd Density Detection	Supports to set max 8 monitoring areas in one video channel; give an alarm when number of people in the area exceeds the threshold for certain period; give an alarm when area density exceeds the threshold for certain period; support real-time statistics of total number of people in the video of output channel; support real-time statistics and output of number of people in each monitoring area. Crowd density: Low density scene: People counting accuracy ≥80% (not required if there are less than 10 people); High density scene: People counting accuracy ≥75% (20–50 people), people counting accuracy ≥80% (50+ people) (not required if there are less than 10 people).
People Counting	Supports real-time analysis on number of people entering and leaving one area in video channel; Target pixel ≥60×60, and accuracy >93% (in the day, no obvious obstacles).
Tripwire	Automatically detects tripwire crossing; Target pixel ≥60×60, recall rate ≥90%, and effective rate ≥90%.
Intrusion	Monitors the forbidden area and give an alarm; Target pixel ≥60×60, recall rate ≥90%, and effective rate ≥90%.
Object Detection	Monitors suspected abandoned object in key protection areas, and give an alarm (bags, luggage and boxes); Target pixel ≥60×60.
Loitering	Monitors people staying in key protection areas and give an alarm; Target pixel ≥60×60, recall rate ≥90%, and effective rate ≥90% (less than 5 people).
Fast Moving	Detects fast moving and give an alarm; Target pixel ≥60×60, recall rate ≥80%, and effective rate ≥80% (less than 5 people).
Fighting	Detects fighting and give an alarm; The fighting target takes up 1/4 × 1/4 of the image.
Wrong-way Walking	Monitors pedestrians who walk in the wrong way in unidirectional areas, and give an alarm; Target pixel ≥60×60, recall rate ≥90%, and effective rate ≥90% (less than 5 people, no obvious obstacles).
Escalator Anamoly	Supports real-time monitoring of sudden stop and reverse operation of escalators; Target pixel ≥60×60.
Report Generation and Export	Exports alarm information in Excel, including channel name, event time, event name, event type, rule name, rule line, scene and target box.
Alarm Search	Search for alarm information by device, channel, type, time, and more.

Public Event Detection Performance

Resolution	720p and above.
Analysis Capability	People counting: One server can access and analyze video data of up to 32 channels of 1080p cameras at the same time. Crowd density: One server can access and analyze video data of up to 32 channels of 1080p cameras at the same time (For cameras installed 9 m or more above the ground, up to 16 channels are supported). IVS: One server can access and analyze video data of up to 32 channels of 1080p cameras at the same time (up to 8 cameras for fighting/escalator anomaly).

Public Event Detection Application

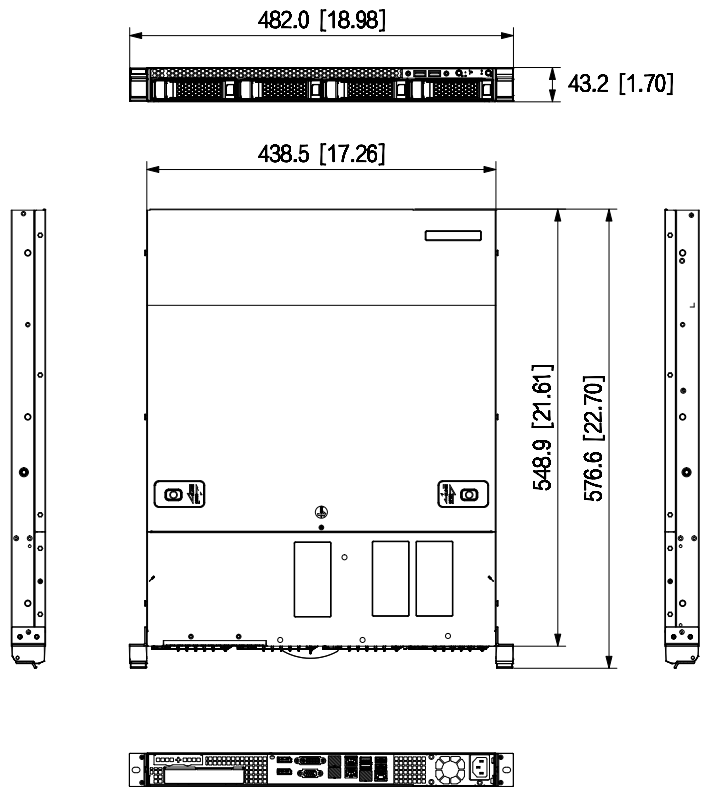|	
Scenario Type	Extensively applicable to airports, subway and railway stations, squares, office perimeters, places of business, supermarkets, and more.
Camera Installation Method	Front installation (recommended) and side installation.
Camera Installation Height	3–6 m is recommended; for crowd density analysis, 9–20 m is recommended.
Camera Installation Angle	10–75° for pitch angle is recommended, and target pixel should be ≥60×60.
Resolution	720p and above.

Port

Network Port	Two 1000 Mbps Ethernet ports
USB	2 front USB2.0 ports, 2 rear USB3.0 ports and 2 rear USB2.0 ports
VGA	2
Others	1 DVI port and 2 DP ports

General

Power Supply	100–240 V, 50–60 Hz, 6 A–3 A
Power redundancy	Single power supply
Power Consumption	≤ 400W
Operating Temperature	+10 °C to +35 °C (+50 °F to +95 °F)
Operating Humidity	10%–80% (RH)
Storage Temperature	+10 °C to +65 °C (+50 °C to +149 °C)
Storage Humidity	5%–95% (RH)
Gross Weight	16.00 kg (35.27 lb)
Net Weight	8.50 kg (18.74 lb)
Product Dimensions	43.50 mm x 438.50 mm x 550.00 mm (17.13" x 172.64" x 216.54") (H × W × D)
Packaging Dimensions	271.00 mm x 625.00 mm x 895.00 mm (106.69" x 246.06" x 352.36") (H × W × D)
Installation	Standard 19" rack installation with guide rail

Dimensions (mm [inch])

Ordering Information

Type	Model	Description
1U Intelligent Server for Public Event Detection	DHI-IVS-PB8000-E-GU1	1U Intelligent Server for Public Event Detection