

# DHI-IVS-IP8000-xE-GU2

## Event Detection Intelligent Server



### System Overview

Designed with Dahua Video Cloud Architecture, Event Detection Intelligent Server (DHI-IVS-IP8000-xE-GU2) is a powerful device that blends AIX3200 analysis cards with traditional and deep learning algorithms into one dynamic server. It provides access to real-time video streams of cameras, triggers alarms, and analyzes event data after intelligent analysis rules have been configured. The server supports detection of different types of events, such as tripwire, intrusion, smoking, fight, crowd gathering, and running.

### Functions

#### Tripwire

Draw lines to establish tripwire zones for detection. Once the line is crossed, tripwire will trigger an alarm, and integral data will be sent to the system of the incident. Following are some details on tripwire.

1. Detection line can be in any form.
2. The illegal crossing direction of each line can be either unidirectional or bidirectional.
3. Up to 10 independent detection lines can be set per scene. 10 intelligence rules can be configured.
4. The trigger position can be set to various points, such as the center (selected by default), upper, lower, left or right side of the line.
5. An alarm is triggered when a defined target crosses the warning line.
6. Police uniforms are recognized by the system. You can also enable or disable intelligence configurations, and select to trigger alarms through the client.
7. Target pixel  $\geq 60 \times 60$ , recall rate  $\geq 90\%$ , and effective rate  $\geq 90\%$ .

- 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.
- Supports tripwire, intrusion, climbing, getting up, stay, sleep, abnormal number of people, abnormal sound, fight, staying alone, crowd gathering, object detection, calling, using mobile phone, falling, fast running, smoking, covering head while sleeping, hitting body, clothes detection, and video quality diagnosis.



#### Intrusion

Set monitoring zones to detect when a person has entered or left the monitored zone. It can detect police uniforms, enable or disable intelligence configuration, and select whether to send alarms through the client. Up to 10 detection zones can be set per scene, and you can use polygons to mark out detection zones (Dahua protocol defines that a polygon has up to 20 edges). The system can detect the quantity of targets, and people entering, and leaving the monitored area. It can also sense unidirectional and bidirectional movement. Target pixel  $\geq 60 \times 60$ , recall rate  $\geq 90\%$ , and effective rate  $> 90\%$ .

#### Climbing Detection

Draw lines to establish detection zones to track when a person attempts to climb or jump a location. The system will detect when the lower body (from neck below) of a person crosses the height warning line. Once the line is crossed, an alarm will be triggered. You can set up to 10 detection lines per scene (Dahua protocol defines that a line has up to 20 points).

#### Getting up Detection

Set monitoring zones to detect when a person gets up from their bed during the arming period. Up to 10 detection zones can be set per scene, and each detection area has four edges. This function is ideal for single-layer sleep quarters that do not have bunk beds. You can set the alarm trigger line and sleep direction line from head to feet.

### Stay Detection

Set monitoring zones to detect when a person stays or loiters in a monitored zone for longer than the defined period. Up to 10 detection zones can be set per scene, and you can use polygons to mark out detection zones (Dahua protocol defines that a polygon has up to 20 edges). You can also configure up to 6 arming periods for each day from Sunday to Saturday, and set the alarm duration and repeated alarm interval. Alarm duration: 1–600 s; alarm interval: 1–600 s.

### Abnormal Number of People Detection

Configure detection modes to: 1. Report when people number is equal to, not equal to, greater than or less than the threshold. 2. Report when people number is within the range (including the boundary value) or falls outside the range (excluding the boundary value). 3. Report on the number of people in an area in real-time. Target pixel  $\geq 60 \times 60$ , Recall rate  $\geq 90\%$ , Effective rate  $\geq 90\%$ .

### Abnormal Sound Detection

Set monitoring zones to detect when the sound intensity exceeds the set value (1 dB–150 dB), and the minimum duration (0–30 s). You can configure 1 audio alarm rule for each channel, the abnormal sound alarm threshold (dB value), and minimum alarm duration. The sound intensity dB value is also displayed in real time. The arming period can be set to 6 different periods for each day, from Monday to Sunday.

### Fight Detection

Set monitoring zones to detect when a fight has broken out. Up to 16 channels can use fight detection (1U server), and each channel can have 1 detection zone and 1 fight rule set for it. The fight rule and other rules can be set together. Detection sensitivity is also customizable from 1 to 10, and you can use polygons to mark out detection zones (Dahua protocol defines that a polygon has up to 20 edges). The fight target must take up  $1/4 \times 1/4$  of the image.

### Staying Alone Detection

Set monitoring zones to detect when a person is alone. Inside this zone, alarms will not be triggered when there are two or more people present, or when no one is present. You can set up to 10 detection zones per scene, and use polygons to mark out detection zones (Dahua protocol defines that a polygon has up to 20 edges).

### Gathering Detection

Set monitoring zones to detect when a gathering of people is detected to exceed the defined duration of time. You can configure the sensitivity level and polygons to mark out detection zones.

### Object Detection

Set monitoring zones to detect when suspicious objects are abandoned, such as bags, luggage and boxes, and to see when objects go missing from the scene. Target pixel  $\geq 60 \times 60$ .

### Calling Detection

"When the call lasts longer than the defined time in the detection area, an alarm is triggered. Target pixel  $\geq 60 \times 60$ , recall rate  $\geq 80\%$ , and effective rate  $\geq 80\%$ .

### Using Mobile Phone

When the target uses the phone for longer than the defined time, an alarm is triggered. Target pixel  $\geq 60 \times 60$ , recall rate  $\geq 80\%$ , and effective rate  $\geq 80\%$ .

### Fall Detection

Detects squatting and falling. Fall detection and squat detection are enabled by default. Squat detection can be disabled. Target pixel  $\geq 60 \times 60$ , recall rate  $\geq 80\%$ , and effective rate  $\geq 80\%$ .

### Fast Moving

Detects when a target moves very fast, and an alarm is triggered. Target pixel  $\geq 60 \times 60$ , recall rate  $\geq 80\%$ , and effective rate  $\geq 80\%$  (less than 5 people).

### Smoking Detection

When the target smokes in the detection area for longer than the defined time, an alarm is triggered. Target pixel  $\geq 60 \times 60$ , recall rate  $\geq 80\%$ , and effective rate  $\geq 80\%$ .

### Sleeping with Quilt Covering Head

When the target is detected sleeping with quilt covering head, an alarm is triggered. Target pixel  $\geq 60 \times 60$ , recall rate  $\geq 80\%$ , and effective rate  $\geq 80\%$ .

### Posture Detection (Banging Head on Wall)

When a target is detected banging their head on a wall or they run into a wall and bang their head on it, an alarm is triggered. Set the minimum duration and report interval.

### Video Quality Diagnosis

Diagnose video loss, image high-brightness, image low-brightness, image color cast, image blurring, B/W image, video jitter, image freeze, video tampering and video scene change.

### Video Channel Management

Provides connection analysis of Dahua, Hikvision, ONVIF network cameras, and network video recorders. Generates a connection analysis of H.264 and H.265 network cameras and network video recorders. Acquires streams from the RTSP platform, and produces connection analysis.

### Device to Platform Connectivity

Devices can be connected to the platform through NetSDK protocol for the quick and easy upload of alarm information to the platform. You can also use the platform to acquire intelligence streams from IP8000 through NetSDK protocol.

### Report Generation and Export

Export alarm information to Excel, such as device, device IP address, channel name, event time, event type, lane number, plate number and speed.

### Independent Algorithm Update

Individually updates algorithms on the system without affecting the normal use of other algorithms.

**Scene**

With its many built-in intelligent algorithms, this server fits a wide range of scenarios, including detention centers, prisons, interrogation rooms, courts, procurators' offices, service windows, classrooms, offices and other scenes related to public security, justice and education.

**Technical Specification**

System	
Main Processor	Two 10 cores/20 thread X86 processors, 2.2 GHz
Chip	Intel C236
Operating System	CentOS Linux release 7.4.1708 (Core)
Intelligent Analysis Card	Six AIX3200 intelligent analysis cards
Memory	Four 16 GB DDR4 memory modules with up to 24 slots
Disk	Two 3.5"4 TB HDD which can be expanded to maximum 32 TB (each HDD is 4T) with up to 8 slots. 7.2K RPM SATA 6 Gbps 512n 3.5"
RAID	RAID 0/1

**Event Detection in Controlled Place**

Tripwire Detection	<ol style="list-style-type: none"> <li>1. Set the detection line as a polyline with an arbitrary shape. (Note: Dahua protocol defines that the line has maximum 20 points).</li> <li>2. Specify the direction of illegal crossing for each detection line (unidirectional or bidirectional).</li> <li>3. Set up to 10 independent detection lines for each scenario (configure 10 intelligent rules).</li> <li>4. Set the target trigger position (the upper, lower, left and right sides and center point of the target box). It is set as the center point by default.</li> <li>5. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> <li>6. An alarm is triggered when a target crosses the detection line.</li> <li>7. The system recognizes the attributes of police uniforms. You can enable intelligent configuration and notifications of alarms on the client. It also supports target attribute filtering, and this function is disabled by default.</li> </ol>
Intrusion Detection	<ol style="list-style-type: none"> <li>1. Set the detection area as a polygon with an arbitrary shape (note: Dahua protocol defines that a polygon has maximum 20 edges).</li> <li>2. Set up to 10 independent detection areas for each scenario.</li> <li>3. For each detection area, behavior detection can be set as crossing the area, inside the area or both.</li> <li>4. For inside the area detection, the number of targets, minimum duration, and report interval can be set. Minimum duration: 1 s–600 s; report interval: 0 s–600 s.</li> <li>5. For targets crossing the area, the crossing direction can be set as entry, exit, or entry and exit.</li> <li>6. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> <li>7. An alarm is triggered when a target enters or exits the detection area.</li> <li>8. The system recognizes the attributes of police uniforms. You can enable intelligent configuration and notifications of alarms on the client. It also supports target attribute filtering, and this function is disabled by default.</li> </ol>
Climbing Detection	<ol style="list-style-type: none"> <li>1. Set the detection line as a polyline with an arbitrary shape (note: Dahua protocol defines that the line has maximum 20 points).</li> <li>2. Set up to 10 independent detection lines for each scenario.</li> <li>3. An alarm is triggered when any part of the body below the head crosses the height detection line.</li> <li>4. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> </ol>

Getting up Detection	<ol style="list-style-type: none"> <li>1. Set a rectangular area for detecting getting up behavior.</li> <li>2. Set the alarm trigger line and sleep direction line (from head to feet) for each detection area.</li> <li>3. Set up to 10 independent detection areas for each scenario.</li> <li>4. Scenario requirement: The bed should be perpendicular to the monitoring direction of the camera.</li> <li>5. Only supports single-layer beds. Bunk beds are not supported at this time.</li> <li>6. An alarm is triggered when the target gets up during arming.</li> <li>7. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> </ol>
Staying (Loitering) Detection	<ol style="list-style-type: none"> <li>1. Set the detection area as a polygon with an arbitrary shape (note: Dahua protocol defines that a polygon has maximum 20 edges).</li> <li>2. Set up to 10 independent detection areas for each scenario.</li> <li>3. Set the minimum duration and report interval. Minimum duration: 1 s–600 s; report interval: 0 s–600 s.</li> <li>4. An alarm is triggered when the stay (loitering) duration exceeds the defined time in the specified area.</li> <li>5. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> </ol>
Sleeping Detection	<ol style="list-style-type: none"> <li>1. Set the detection area as a polygon with an arbitrary shape (note: Dahua protocol defines that a polygon has maximum 20 edges).</li> <li>2. Set up to 10 independent detection areas for each scenario.</li> <li>3. Set the minimum duration and report interval. Minimum alarm duration: 1 s–3,600 s; report interval: 0 s–3,600 s.</li> <li>4. An alarm is triggered when an on-duty personnel stays still or lies down on a table for longer than the defined period.</li> <li>5. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> </ol>
Abnormal Number of People Detection	<ol style="list-style-type: none"> <li>1. Set the detection area as a polygon with an arbitrary shape (note: Dahua protocol defines that a polygon has maximum 20 edges).</li> <li>2. Set up to 10 independent detection areas for each scenario.</li> <li>3. Set the minimum duration and report interval. Minimum duration: 1 s–60 s; report interval: 0 s–300 s.</li> <li>4. Configure detection modes to: 1. Report when people number is equal to, not equal to, greater than or less than the threshold. 2. Report when people number is within the range (including the boundary value) or falls outside the range (excluding the boundary value). 3. Report on the number of people in an area in real-time.</li> <li>5. When the detection mode is reported with the real-time people number in the area, the real-time people number will appear on the left side.</li> <li>6. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> </ol>
Abnormal Sound Detection	<ol style="list-style-type: none"> <li>1. After configuring the rule, the client displays the decibel value of the sound intensity on the video channel in real-time.</li> <li>2. Set the decibel value threshold and the duration for triggering alarms.</li> <li>3. When the decibel value exceeds the defined value (1 dB-150 dB) and lasts longer than the minimum duration (0 s-30 s), an alarm is triggered (one channel only supports one detection rule).</li> <li>4. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> </ol>
Fight Detection	<ol style="list-style-type: none"> <li>1. Set the detection area as a polygon with an arbitrary shape (you can only set one detection area and one fight rule per video channel) (note: Dahua protocol defines that a polygon has maximum 20 edges).</li> <li>2. Supports 16-channel fight detection analysis (overlaid analysis of fight detection and other rules).</li> <li>3. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> <li>4. Set detection sensitivity from 1 to 10.</li> </ol>

Staying Alone Detection	<ol style="list-style-type: none"> <li>1. Set the detection area as a polygon with an arbitrary shape (note: Dahua protocol defines that a polygon has maximum 20 edges).</li> <li>2. Set up to 10 independent detection areas for each scenario.</li> <li>3. When the target stays alone in the detection area, an alarm is triggered.</li> <li>4. Set the minimum duration and report interval. Minimum duration: 1 s–1,200 s; report interval: 0 s–600 s.</li> <li>5. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> </ol>	Running Detection	<ol style="list-style-type: none"> <li>1. Set the detection area as a polygon with an arbitrary shape.</li> <li>2. Set up to 10 independent detection areas for each scenario.</li> <li>3. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> <li>4. Set the sensitivity level from 1 to 10. It is 5 by default.</li> <li>5. Event information includes event time, channel, alarm type, rule name, and scenario picture.</li> <li>6. View the alarms in real-time on the client.</li> </ol>
Crowd Gathering	<ol style="list-style-type: none"> <li>1. An alarm is triggered when the duration of crowd gathering in the detection area exceeds the defined time.</li> <li>2. Set the detection area as a polygon with an arbitrary shape.</li> <li>3. Set the sensitivity level from 1 to 10.</li> </ol>	Smoking Detection	<ol style="list-style-type: none"> <li>1. When the target smokes in the detection area for longer than the defined time, an alarm is triggered.</li> <li>2. Set the detection area as a polygon with an arbitrary shape.</li> <li>3. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> <li>4. Set the sensitivity level from 1 to 10. It is 5 by default.</li> <li>5. Set the minimum duration and report interval. Minimum duration: 1 s-600 s (30 s by default); report interval: 0 s-600 s (0 s by default).</li> <li>6. Event information includes event time, channel, alarm type, rule name, and scenario picture.</li> <li>7. View the alarms in real-time on the client.</li> </ol>
Object Detection	<ol style="list-style-type: none"> <li>1. When there is an abandoned object or a missing object in detection area, an alarm is triggered.</li> <li>2. Set up to 4 independent detection areas for each scenario and set the minimum alarm duration and report interval.</li> <li>3 Event information includes event time, channel, alarm type, rule name, rule line, scenario picture, and object box.</li> <li>4. Set the detection area as a polygon with an arbitrary shape.</li> <li>5. Set the minimum alarm duration from 6 s to 3,600 s.</li> <li>6. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> </ol>	Sleeping with Quilt Covering Head	<ol style="list-style-type: none"> <li>1. Set the detection area as a polygon with an arbitrary shape (note: Dahua protocol defines that a polygon has maximum 20 edges).</li> <li>2. Set up to 10 independent detection areas for each scenario.</li> <li>3. When the target is detected sleeping with quilt covering head, an alarm is triggered.</li> <li>4. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> <li>5. Set the minimum duration and report interval. Minimum duration: 1 s-600 s (10 s by default); report interval: 0 s-600 s (0 s by default).</li> </ol>
Calling Detection	<ol style="list-style-type: none"> <li>1. When the call lasts longer than the defined time in the detection area, an alarm is triggered.</li> <li>2. Set the detection area as a polygon with an arbitrary shape.</li> <li>3. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> <li>4. Set the sensitivity level from 1 to 10. It is 5 by default.</li> <li>5. Set the minimum duration and report interval. Minimum duration: 1 s-600 s (10 s by default); report interval: 0 s-600 s (0 s by default).</li> <li>6. Event information includes event time, channel, alarm type, rule name, and scenario picture.</li> <li>7. View the alarms in real-time on the client.</li> </ol>	Posture Detection (Banging Head on Wall)	<ol style="list-style-type: none"> <li>1. Set the detection area as a polygon with an arbitrary shape (note: Dahua protocol defines that a polygon has maximum 20 edges).</li> <li>2. Set up to 10 independent detection areas for one scenario.</li> <li>3. When a target is detected banging their head on a wall or they run into a wall and bang their head on it, an alarm is triggered. Set the minimum duration and report interval. Minimum duration: 1 s-600 s (5 s by default); report interval: 0 s-600 s (0 s by default).</li> <li>4. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> </ol>
Using Mobile Phone	<ol style="list-style-type: none"> <li>1. When the target uses the phone for longer than the defined time, an alarm is triggered.</li> <li>2. Set the detection area as a polygon with an arbitrary shape.</li> <li>3. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> <li>4. Set the sensitivity level from 1 to 10. It is 5 by default.</li> <li>5. Set the minimum duration and report interval. Minimum duration: 1 s–600 s (10 s by default); report interval: 0 s-600 s (0 s by default).</li> <li>6. Event information includes event time, channel, alarm type, rule name, and scenario picture.</li> <li>7. View the alarms in real-time on the client.</li> </ol>	Video Quality Diagnosis	<ol style="list-style-type: none"> <li>1. Diagnose the quality of videos and set the duration of the analysis for each channel. Analysis durations is from 25 s-60 s. It is 30 s by default. Only global configuration is supported: All channels share the same configuration.</li> <li>2. Enable or disable AI analysis. If it is enabled, the system analyzes one channel at a time.</li> <li>3. Set alarm threshold.</li> <li>4. Diagnose video loss, image high-brightness, image low-brightness, image color cast, image blurring, B/W image, video jitter, image freeze, video tampering and video scene change.</li> <li>5. Event information includes event time, channel, alarm type, rule name, and scenario picture.</li> <li>6. View the alarms in real-time on the client.</li> </ol>
Fall Detection	<ol style="list-style-type: none"> <li>1. Detects squatting and falling. Fall detection and squat detection are enabled by default. Squat detection can be disabled.</li> <li>2. Set the detection area as a polygon with an arbitrary shape.</li> <li>3. Set the arming period from Monday to Sunday with up to 6 arming periods for each day.</li> <li>4. Set the sensitivity level from 1 to 10. It is 5 by default.</li> <li>5. Set the minimum duration and report interval. Minimum duration: 1 s-600 s (3 s by default); report interval: 0 s-600 s (0 s by default).</li> <li>6. Event information includes event time, channel, alarm type, rule name, and scenario picture.</li> <li>7. View the alarms in real-time on the client.</li> </ol>		

Performance of Event Detection in Controlled Place

Camera Access	Provide access to and perform analysis on the camera. A single server supports up to 32*x channels of 1080p cameras at the same time.
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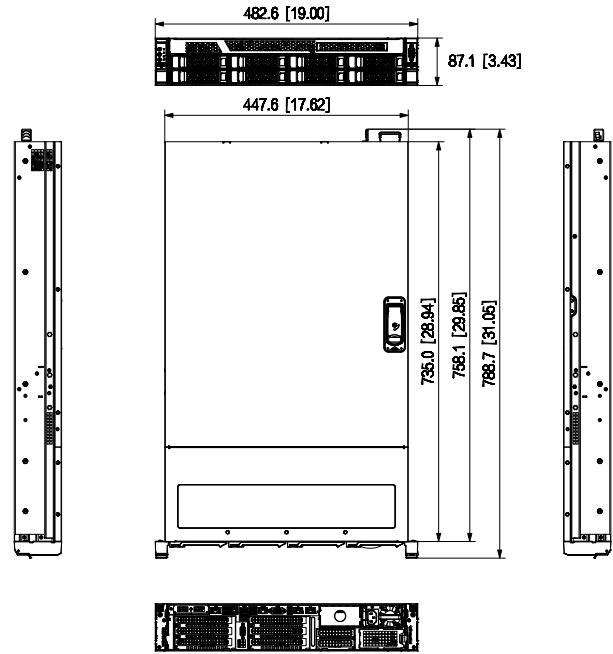
Application of Event Detection in Controlled Place

Scenario Type	It is widely applicable to indoor scenarios such as prisons and detention centers.
Camera Installation Method	Inclined mount
Camera Installation Height	3 m–5 m (9.84 ft–16.40 ft)
Camera Installation Angle	Inclined mount

Resolution	Above 720p
<b>Port</b>	
Network Port	2 × 1,000M/10,000M Ethernet ports
USB	2 × front USB 2.0 ports, 3 × rear USB 3.0 ports
VGA	2
Others	1
DP	2

<b>General</b>	
Power Supply	100–127 V/200-240 V, 50–60 Hz, 10 A/5 A
Power Redundancy	Dual power supply
Power Consumption	≤ 800 W
Operating Temperature	10 °C to +35 °C (50 °F to +95 °F)
Operating Humidity	35 °C–80 °C (RH), max. 90% (RH)(+40 °C/+104 °F)
Storage Temperature	–40 °C to +60 °C (–40 °F to +140 °F)
Storage Humidity	20%–93% (RH)
Gross Weight	35.00 kg (77.16 lb)
Net Weight	27.50 kg (60.63 lb)
Product Dimensions	87 mm × 438 mm × 735 mm (3.43" × 17.24" × 28.94") (H × W × D)
Packaging Dimensions	273 mm × 754 mm × 1069 mm (10.75" × 29.69" × 42.09") (H × W × D)
Installation	Standard 19" rack installation with guide rail

**Dimensions (mm [inch])**



**Ordering Information**

Type	Model	Description
Event Detection Intelligent Server	DHI-IVS-IP8000-2E-GU2	Event Detection Intelligent Server
	DHI-IVS-IP8000-3E-GU2	Event Detection Intelligent Server
	DHI-IVS-IP8000-4E-GU2	Event Detection Intelligent Server
	DHI-IVS-IP8000-5E-GU2	Event Detection Intelligent Server
	DHI-IVS-IP8000-6E-GU2	Event Detection Intelligent Server
	DHI-IVS-IP8000-6E-GU2	Event Detection Intelligent Server