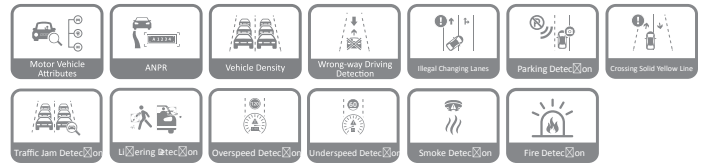


DHI-IVS-TB8000-xE-GU2(x=2-6)

Intelligent Video Analysis Server for Traffic Event Detection



- Separation of rules and algorithms, based on metadata of traditional and deep learning algorithms, for the high performance of various upper-level applications.
- Adopts Dahua video cloud architecture and supports dynamic adjustment of computing resources for greater precision and control.
- Automatic detection of lane lines and key points of vehicles.
- Supports the global detection application of PTZ Camera scenes.
- Supports one-click deployment of all-in-one machines for small-scale scenarios and simple demonstrations, and supports distributed cluster deployment for large-scale scenarios.



System Overview

"Built on Dahua video cloud architecture, TB8000-E series intelligent video analysis server for traffic event detection is a powerful traffic detection device built to the specific standards of Dahua. It adopts AIX3200 intelligent analysis card, which combines traditional and deep learning algorithms. The server not only supports real-time video stream access, and outputs abnormal event alarms but with its smart design, it also gives you the control to analyze data according to your preferences based on the defined intelligent rules. The server integrates a variety of intelligent algorithms and supports large-scale clusters, serving the many demands that come with traffic management.

With its dynamic and rich design, the server supports making statistics of traffic flow, and detecting abnormal events such as parking, pedestrian on vehicle lane, non-motor vehicle, traffic jam, littering, area intrusion, illegal lane change, wrong-way driving, reversing, road under construction, roadblock, traffic accident, agglomerate fog, smoke, fire, crossing solid line, overspeed and underspeed. It is ideal for traffic management, and applies to scenarios such as expressways, tunnels, bridges, city roads and railways.

Functions

Parking Detection

1. Detects an event when a vehicle moves and then stops, and the stop time exceeds the defined value.
 - 1) Configure parking duration (range: 1-600 seconds, default value: 10).
 - 2) Configure parking threshold (3 by default).
2. Alarm details: Two alarm images (with alarm frame), device, channel, event time, event name, event type, and plate number.

Pedestrian Detection

1. Detects an event when a pedestrian walks onto the vehicle lane or into an area where pedestrians are prohibited from entering and the duration exceeds the defined value.
 - 1) Configure the shortest duration (range: 1-300 seconds, default value: 3).
 2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name, and event type.

Non-motor Vehicle Detection

1. Detects battery-powered two-wheelers and tricycles.
 - 1) Configure the shortest duration (range: 1-300 seconds, default value: 3).
 2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name, and event type.

Traffic Jam Detection

1. Detects an event when a lane is congested and the duration exceeds the defined value.
 - 1) Configure lane, lane occupancy rate (range: 1-100, default value: 50), alarm interval (range: 1-300 seconds, default value: 60), delay time (range: 1-300 seconds, default value: 10), sensitivity (range 1-10, default value is 2).
 2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name and event type.

Littering Detection

1. Detects an event when an object is littered by a person in a vehicle or a pedestrian disturbs traffic and the duration exceeds the defined value.
 - 1) Configure duration (range: 1-300 seconds, default value: 6), and repeated alarm time (range: 1-300 seconds, default value: 0).
 2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name, and event type.

Plate Number Recognition

Supports ANPR for parking, illegal lane change, crossing the solid yellow line, wrong-way driving, and area intrusion. It is recommended that the license plate width is more than 80 pixels.

Report Generation and Export

Supports alarm information in Excel form, including device, device IP, channel name, event time, event name, event type, lane, license plate number, speed and other information.

Alarm Search

Supports searching for alarm information according to multiple options, such as device, channel, event type, capture time and more.

Scene

Suitable for locations where intelligent applications are required, such as expressways, tunnels, bridges, city roads and railways.

Technical Specification

System	
Main Processor	Two Intel Xeon extensible processors, 10 C/20 T for each one
Intelligent Card	2-6 AIX3200 intelligent analysis cards
Operating System	CentOS Linux release 7.4.1708 (Core)
RAM	Four 8 GB DDR4 memory, maximum 24 slots
Hard Drive	Two 3.5" 4 TB disk which can be extended to 32TB (each disk is 4TB), with up to 8 slots 7.2K RPM SATA 6Gbps 512n 3.5"

Traffic Event Detection

Multi-rules Application	Multiple rules can take effect simultaneously
Detection Area and Exclusion Area Setting	Supports detection zone and exclusion zone for the server. The server only triggers alarms for events that occur in the detection zone or outside the exclusion zone. Supports up to 1 detection zone and 10 exclusion zones
Real-time Display	Displays detection zone rules and the target tracking box in live view. The rule and target tracking boxes flash on screen when an alarm is triggered
Parking Detection	1. Detects an event when a vehicle moves and then stops, and the stop time exceeds the defined value 1) Configure parking duration (range: 1-600 seconds, default value: 10) 2) Configure parking threshold (3 by default) 2. Alarm details: Two alarm images (with alarm frame), device, channel, event time, event name, event type, and plate number
Pedestrian Detection	1. Detects an event when a pedestrian walks onto the vehicle lane or into an area where pedestrians are prohibited from entering and the duration exceeds the defined value 1) Configure the shortest duration (range: 1-300 seconds, default value: 3) 2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name, and event type
Non-motor Vehicle Detection	1. Detects battery-powered two-wheelers and tricycles 1) Configure the shortest duration (range: 1-300 seconds, default value: 3) 2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name, and event type

Traffic Jam Detection	1. Detects an event when a lane is congested and the duration exceeds the defined value 1) Configure lane, lane occupancy rate (range: 1-100, default value: 50), alarm interval (range: 1-300 seconds, default value: 60), delay time (range: 1-300 seconds, default value: 10), sensitivity (range 1-10, default value is 2) 2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name and event type
Traffic Flow Statistics	1. Displays traffic flow statistics in the following order: Lane > traffic flow > small vehicles > medium-sized vehicles > large vehicles > average speed > time occupancy rate > space occupancy rate > spacing > time interval > queuing length Displays traffic flow statistics by configuration items. The default page is as follows: 1) Lane 1: traffic flow: XX small vehicles XX medium-sized vehicles XX large vehicles XX. Selected by default ● Large vehicles (bus, truck and other large-sized vehicle) ● Medium-sized vehicles (medium/small truck) ● Small vehicles (minibus) 2) Average speed, time occupancy rate, space occupancy rate, spacing, time interval and queuing length are not selected by default 3) If there are more than two lanes, the last line shows the total of all lanes: XX 2. If the operator is abnormal or restarted, traffic flows continue to accumulate with the previous value, rather than starting from 0
Visibility Detection	1. Supports detecting road agglomerate fog 1) Configure the shortest duration (range: 1-300 seconds, default value: 5), repeated alarm time (range: 1-300 seconds), and alarm threshold (range: 1-100) 2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name, event type and defog intensity
Littering Detection	1. Detects an event when an object is littered by a person in a vehicle or a pedestrian disturbs traffic and the duration exceeds the defined value 1) Configure duration (range: 1-300 seconds, default value: 6) and repeated alarm time (range: 1-300 seconds, default value: 0) 2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name, and event type
Area Intrusion Detection	1. Detects an event when a motor vehicle enter the detection area 1) Configure detection area 2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name, event type, and plate number
Illegal Lane Change Detection	1. Detects an event when a vehicle crosses the lane line (yellow or white solid line) and the duration exceeds the defined value 1) Configure lane number, sensitivity (range: 1-10, default value: 10) 2. Alarm details: Two alarm images (with alarm frame), device, channel, event time, event name, event type, lane number, and plate number
Wrong-way Driving Detection	1. Detects an event when a vehicle is moving opposite to the specified direction of the traffic and the duration exceeds the defined value. This is to prevent drivers from crossing lanes while driving. 1) Configure lane number, duration (range: 1-300 seconds, default value: 2) 2. Alarm details: Two alarm images (with alarm frame), device, channel, event time, event name, event type, lane number, and plate number
Reversing Detection	1. Detects events that a vehicle moves wrong way and reverse at a highway intersection 1) Configure detection region, duration (range: 1-300 seconds, default value:3) 2. Alarm details: Two alarm images (with alarm frame), device, channel, event time, event name, event type, and plate number

Construction Detection	<p>1. Detects construction signs that are in an area for longer than the defined value</p> <p>1) Configure the shortest duration (range: 1-300 seconds, default value: 5), repeated alarm time (range: 1-300 seconds, default value: 60), sensitivity (range: 1-10, default value: 5)</p> <p>2. Alarm details: An alarm image(with alarm frame), device, channel, event time, event name, and event type</p>
Roadblock Detection	<p>1. Detects roadblocks that are in an area for longer than the defined value</p> <p>1) Configure the shortest duration (range: 1-300 seconds, default value: 5), repeated alarm time (range: 1-300 seconds, default value: 60), and sensitivity (range: 1-10, default value: 1)</p> <p>2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name, and event type</p>
Accident Detection	<p>Detects traffic accidents in an area</p> <p>1. Configure alarm interval (range 1-600 seconds, default value is 600)</p> <p>2. Alarm details: An alarm image(with alarm frame), device, channel, event time, event name, and event type</p>
Fire Detection	<p>1. Detects when a fire breaks out in an area and the duration exceeds the defined value</p> <p>1) Configure the shortest duration (range: 1-300 seconds, default value: 5), sensitivity (range: 1-10, default value: 5)</p> <p>2. Alarm details: An alarm image(with alarm frame), device, channel, event time, event name, and event type</p>
Smoke Detection	<p>1. Detects when smog appears in an area and the duration exceeds the defined value</p> <p>1) Configure the shortest duration (range 1-300 seconds, default value is 5), sensitivity (range 1-10, default value is 5)</p> <p>2. Alarm details: An alarm image(with alarm frame), device, channel, event time, event name and event type</p>
Crossing Solid Line Detection	<p>1. Detects when a vehicle crosses the lane line</p> <p>1) Configure lane, duration (range: 0-300, default value: 1), and sensitivity (range: 1-10, default value: 1). Yellow solid line is selected by default, and white solid line can also be selected</p> <p>2. Alarm details: An alarm image (with alarm frame), device, channel, event time, event name, event type, lane number and plate number</p>
Overspeed Detection	<p>1. Detects when the vehicle speed is higher than the defined value and the vehicle time exceeds the defined value</p> <p>1) Configure lane, the maximum speed (range: 60-180 km/h, default value: 120), the shortest duration (range: 1-10 seconds, default value: 1)</p> <p>2. Alarm details: Two alarm images (with alarm frame), device, channel, event time, event name, event type, lane number, plate number, speed limit and speed)</p>
Underspeed Detection	<p>1. Detects when the driving speed is lower than the defined value and the vehicle time exceeds the defined value</p> <p>1) Configure lane number, the minimum speed (range: 30-120 km/h, default value: 60), the shortest duration (range: 1-10 seconds, default value: 1)</p> <p>2. Alarm details: Two alarm images (with alarm frame), device, channel, event time, event name, event type, lane number, plate number, min speed and speed)</p>
Plate Number Recognition	<p>Supports ANPR for parking, illegal lane change, crossing the solid yellow line, wrong-way driving, and area intrusion. It is recommended that the license plate width is more than 80 pixels</p>

Report Generation and Export	Exports alarm information in Excel form, including device, device IP, channel name, event time, event name, event type, lane, license plate number, speed and more
Alarm Search	Supports searching for alarm information according to multiple options, such as device, channel, event type, capture time and more

Traffic Event Detection Application Scenes

Scene Attribute	Widely used in traffic management, road operations and maintenance scenarios such as expressways, urban expressways, viaducts, tunnels, and cross-sea bridges
Camera Installation	Front installation (recommended) and side installation
Camera Installation Height	6-12 meters recommended, two or three lanes can be captured
Camera installation Angle	Recommended pitch angle is between 10°-15°, covering about 50 m-100 m (164.04 ft-328.08 ft) and lane inclination angle < 30° when side-mounted

Traffic Event Detection Performance

Video Resolution	1080p or higher
Analysis Capability	<p>xE: E refers to intelligent analysis card, and x refers to the number of the card.</p> <p>A single intelligent analysis card supports simultaneous access analysis of 32 1080P cameras, except for special algorithms. Please see the product overview calculation formula for details</p>
Traffic Event Detection Type	Includes parking, pedestrian on vehicle lane, non-motor vehicle, traffic jam, traffic flow statistics, littering, area intrusion, illegal lane change, wrong-way driving, reversing, construction, roadblock, traffic accident, agglomerate fog, smoke, fire, crossing solid line, overspeed and underspeed detection
Traffic Parameters	Traffic flow, average speed, time occupancy rate, space occupation rate, space headway, time headway and queue length
Parking Detection	According to test data (1080P access), the detection rate is 90%, and the effective rate is 90%.
Pedestrian Detection	According to test data (1080P access), the detection rate is 90%, and the effective rate is 90%.
Non-motor Vehicle Detection	According to test data (1080P access), the detection rate is 90%, and the effective rate is 90%.
Traffic Jam Detection	According to test data (1080P access), the detection rate is 90%, and the effective rate is 90%.
Traffic Flow Statistics	According to test data (1080P access), the traffic accuracy rate is over 90%.
Visibility Detection	Subject to actual test
Littering Detection	According to test data (1080P access), the detection rate is 80%, and the effective rate is 80%.
Area Intrusion Detection	According to test data (1080P access), the detection rate is 90%, and the effective rate is 90%.
Illegal Lane Change Detection	According to test data (1080P access), the detection rate is 90%, and the effective rate is 90%.
Wrong-way Detection	According to test data (1080P access), the detection rate is 90%, and the effective rate is 90%.
Reversing Detection	According to test data (1080P access), the detection rate is 90%, and the effective rate is 90%.
Construction Detection	According to test data (1080P access), the detection rate is 90%, and the effective rate is 80%.

Roadblock Detection	According to test data (1080P access), the detection rate is 90%, and the effective rate is 90%.
Traffic Accident Detection	Subject to actual test
Fire Detection	Subject to actual test
Smoke Detection	Subject to actual test
Line Crossing Detection	According to test data (1080P access), the detection rate is 90%, and the effective rate is 90%.
Overspeed Detection	Subject to actual test
Underspeed Detection	Subject to actual test

Port

Network	2 × 10,000/1,000 Mbps gigabit Ethernet ports
USB	2 front USB3.0 ports and 3 rear USB3.0 ports
VGA	2
DVI	1
PCIe	8 × standard PCIe
Other Port	1 RJ-45 management network port

General

Power Supply Mode	100 V-127 V/200 V-240 V~, 50 Hz/60 Hz, 10 A/5 A
Power Redundancy	Dual power redundancy
Power Consumption	≤ 800 W
Operating Temperature	+10 °C to +35 °C (+50 °F to +95 °F)
Operating Humidity	35%–80% (RH), the maximum relative humidity during operation is 90% RH (+40 °C).
Storage Temperature	–40 °C to +60 °C (–40 °F to +140 °F)
Storage Humidity	20%–93% (RH)
Gross Weight	35.0 kg (77.16 lb)
Net Weight	27.5 kg (60.62 lb)
Dimensions	87.0 mm × 438.0 mm × 735.0 mm (3.43" × 17.24" × 28.94") (H × W × D)
Packaging Dimensions	273.0 mm × 754.0 mm × 1069.0 mm (10.75" × 29.68" × 42.08") (H × W × D)
Installation	Standard 19" rack installation with guide rail
Mean Time Between Failures	69.6 years
Certification	CCC: 2019010911224727 CE: SHEM190901702201ATC/SHEM1909017022AT FCC: SHEM190901702301ATC/SHEM1909017023AT

Filter

Product Type	All-in-one server integrating software and hardware
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Ordering Information

Type	Model	Description
Dahua 2U Intelligent Video Analysis Server for Traffic Event Detection	DHI-IVS-TB8000-2E-GU2	Dahua 2U Intelligent Video Analysis Server for Traffic Event Detection
	DHI-IVS-TB8000-3E-GU2	Dahua 2U Intelligent Video Analysis Server for Traffic Event Detection
	DHI-IVS-TB8000-4E-GU2	Dahua 2U Intelligent Video Analysis Server for Traffic Event Detection
	DHI-IVS-TB8000-5E-GU2	Dahua 2U Intelligent Video Analysis Server for Traffic Event Detection
	DHI-IVS-TB8000-6E-GU2	Dahua 2U Intelligent Video Analysis Server for Traffic Event Detection

Dimensions (mm[inch])

