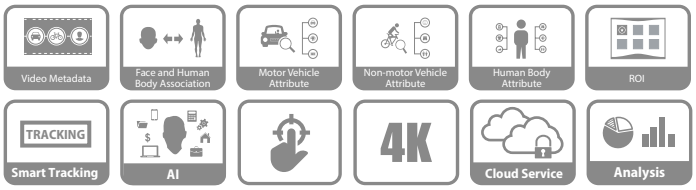
DHI-IVS-VS8000-xA-GU2

Dahua 2U Structuring Intelligent Server

- ASIC intelligent computing card is researched and developed by Dahua, with low power consumption and high performance.
- Adopt advanced structured deep learning algorithm, and reach the world-class target detection rate and attribute recognition rate.
- Support dynamic loading and chip-level separation of algorithm to enhance system robustness.
- Adopt high-density multi-slot design to support maximum 6 intelligent cards, provide powerful computing and analysis capability, and reduce single-channel analysis cost.
- Based on video cloud architecture, support upgrading and maintenance at module level, and thus reduce maintenance cost.
- Deploy on the cloud.



System Overview

IVS-VS8000 Structuring Intelligent Server integrates server resource and intelligent analysis algorithm, and abstracts vehicle and human feature information from video surveillance of standard ANPR, e-police, entrance and exit, and public security surveillance. This device applies to locations where intelligent application is required, such as telecommunication, government, school, airport, public security, judicial field and safe city.

Functions

Target Classification

Classify targets, including humans, motor vehicles and non-motor vehicles. Make intelligent structured analysis on the live video, historical video (supported by platform) and the offline uploaded video files, and then abstract structured information about the moving targets.

Analysis Performance

Analysis performance: Each intelligent card can analyze moving targets in 20-channel 1080p live video or 40 pictures/second. One device supports maximum 6 intelligent cards.

Search by picture: Compare 10 million pictures in the passenger database quickly. During hot search, operator time is 4 million pictures/second, and total search time is no more than 5 s.

Motor Vehicle Detection

Detect vehicles by vehicle type, color, brand, model, year, plate number, and plate type. Detect sunshield, safety belt, phone call and inside decorations (pendant and tissue box).

Non-motor Vehicle Detection

Detect non-motor vehicles by driver's gender, age, hair style, wearing (hat), belongings (umbrella, backpack and handbag), top clothes, top color, and non-motor vehicle type.

Pedestrian Detection

Detect pedestrians by gender, age, hair style, wearing (hat), belongings (umbrella, backpack and handbag), top clothes, top color, bottom clothes, and bottom color.

Search by Image

Select one image manually, filter by time and channel, compare with historical data, thus find the qualified humans, motor vehicles and non-motor vehicles, and arrange them according to the similarity.

Search by Attribute

Support intelligent search of humans, motor vehicles and non-motor vehicles according to their attributes.

Video Recording Task

Make intelligent structured analysis on the historical video (supported by platform), and then abstract structured information about the moving targets. And then, search the analysis results by pictures and attributes.

Local Task

Make intelligent structuring analysis on the offline uploaded local video files, and abstract structuring information about the moving targets. And then, search the analysis results by pictures and attributes.

Technical Specification

System

Main processor	2 Intel Xeon Silver 4114T
Operating system	CentOS Linux release 7.4.1708 (Core)
Intelligent card	1 Dahua DH-AIX3000 self-researched standard half-height intelligent card
Memory	8 16GB DDR4 memory, maximum 24 slots.
Disk	4 3.5" 4T disks which can be extended to maximum 32T (each disk is 4T), and maximum 8 slots. 7.2K RPM SATA 6Gbps 512n 3.5"

Structuring Intelligent Analysis

Target classification	Classify targets, including humans, motor vehicles and non-motor vehicles. Make intelligent structured analysis on the live video, historical video (supported by platform) and the offline uploaded video files, and then abstract structured information about the moving targets
Motor vehicle detection	Detect vehicles by vehicle type, color, brand, model, year, plate number, and plate type. Detect sunshield, safety belt, phone call and inside decorations (pendant and tissue box).
Non-motor vehicle detection	Detect non-motor vehicles by driver's gender, age, hair style, wearing (hat), belongings (umbrella, backpack and handbag), top clothes, top color, and non-motor vehicle type.
Pedestrian detection	Detect pedestrians by gender, age, hair style, wearing (hat), belongings (umbrella, backpack and handbag), top clothes, top color, bottom clothes, and bottom color.
Region detection	Support detection area and exclusion area settings.
Real-time display	Display the analysis results in real time, and display humans, motor vehicles and non-motor vehicles in real time with tracking boxes.
Search by attribute	Support intelligent search of humans, motor vehicles and non-motor vehicles according to their attributes.
Search by picture	Select one picture manually, filter by time and channel, compare with historical data, thus find the qualified humans, motor vehicles and non-motor vehicles, and arrange them according to the similarity.
Target comparison	Compare 1V1 target quickly, and return target similarity in two pictures.
Video recording task	Make intelligent structured analysis on the historical video (supported by platform), and then abstract structured information about the moving targets. And then, search the analysis results by pictures and attributes.
Local task	Make intelligent structured analysis on the offline uploaded local video files, and abstract structured information about the moving targets. And then, search the analysis results by pictures and attributes.
Deploy attributes	Platforms
Structuring picture storage	Local storage or external cloud storage.
Display tracks on the map	Platforms
Computing node cluster	Support cluster and management of 2-XX structured analysis servers.

Structuring Intelligent Analysis Attribute Dictionary

Pedestrians	Age: Child, adult, senior citizen Backpack: Yes, no Umbrella: Yes, no Handbag: Yes, no Top color: Black, white, gray, red, green, blue, yellow, orange, purple, pink and brown. 11 colors in total. Bottom color: Black, white, gray, red, green, blue, yellow, orange, purple, pink and brown. 11 colors in total. Top style: Short sleeves, long sleeves Bottom style: Shorts, pants Gender: Male, female Hat: No hat, hat, helmet Hair style: Short hair, long hair, ponytail, updo, head covered.
Non-motorized vehicles	Age: Child, adult, senior citizen Backpack: Yes, no Umbrella: Yes, no Handbag: Yes, no Top color: Black, white, gray, red, green, blue, yellow, orange, purple, pink and brown. 11 colors in total. Top style: Short sleeves, long sleeves Gender: Male, female Hat: No hat, hat, helmet Hair style: Short hair, long hair, ponytail, updo, head covered. Non-motor vehicle type: Two-wheeled vehicle, tricycle
Motor vehicles	Vehicle color: Gray, black, white, silver gray, blue, green, purple, red, orange, pink, brown and yellow. 12 colors in total. At least 86 logos and brands in the front can be recognized. At least 55 logos and brands in the rear can be recognized. Vehicle type: Passenger vehicle, heavy truck, medium truck, car, van, light truck, medium bus, SUV, MPV, bus, pickup and minicar Attributes inside the window: Pendant, tissue box, sunshield, telephone call, and safety belt. Number plate color: Blue, yellow, white, green and black. Recognize the number plates of 47 countries in the world.

Structuring Analysis Performance

Structuring analysis performance	Each intelligent card can analyze moving targets in 20-channel 1080p live video or 40 pictures/second. One device supports maximum 6 intelligent cards.
Search by picture performance	Compare 10 million pictures in the passenger database quickly. During hot search, operator time is 4 million pictures/second, and total search time is no more than 5 s.
Region detection quantity	Support 1 detection region in one image, and at least 10 exclusion regions in one detection region.
Moving target detection rate	With normal light in the day and normal fill light at night, resolution ≥40 × 80, clear, distinguishable and no blocking: Detection rate of pedestrians: ≥95%; Detection rate of non-motor vehicles: ≥95%; With normal light in the day and normal fill light at night, resolution ≥120 × 120, clear, distinguishable and no blocking: Detection rate of motor vehicles: ≥95%.

Recognition accuracy of pedestrians	With normal light in the day and normal fill light at night, resolution ≥80×160, clear and distinguishable pedestrians: Gender accuracy: ≥90%; Hair style accuracy: ≥85%; Clothes style and color accuracy: ≥85%; Wearing accuracy: ≥80%; Belongings accuracy: ≥80%.
Recognition accuracy of non-motor vehicles	With normal light in the day and normal fill light at night, resolution ≥80×160, clear and distinguishable non-motor vehicles: Gender accuracy: ≥90%; Hair style accuracy: ≥90%; Clothes style and color accuracy: ≥90%; Wearing accuracy: ≥80%; Belongings accuracy: ≥70%; Non-motor vehicle type accuracy: ≥90%.
Recognition accuracy of motor vehicles	With normal light in the day and normal fill light at night, resolution ≥240×240, clear, distinguishable, no blocking motor vehicles whose inclined angle is no more than 25°: Motor vehicle type accuracy: ≥92%; Motor vehicle color accuracy: ≥90%; Motor vehicle brand accuracy: ≥85%; Driver and passengers' safety belt accuracy: ≥95%; Driver and passengers' phone call accuracy: ≥90%; With normal light in the day and normal fill light at night, resolution width ≥120, clear, distinguishable number plate: Number plate accuracy: ≥96%; Number plate color accuracy: ≥90%.

Port

Network port	Two 10000/1000Mb self-adaptive network ports
USB port	2 front USB3.0 ports and 3 rear USB3.0 ports
VGA port	2 VGA ports
Other ports	1 RJ-45 management network port

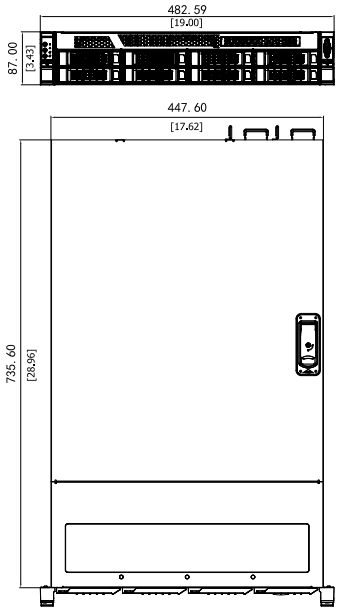
General parameter

Power supply mode	100–127V/200–240V, 50/60Hz, 10A/5A
Power redundancy	Dual power redundancy
Power consumption	≤ 800W
Operating temperature	10°C to 35°C (50°F to 95°F)
Operating humidity	35%–80% RH, 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 kg (77.2 lb)
Net weight	27.5 kg (60.6 lb)
Dimensions	87.00 mm × 447.60 mm × 735.60 mm (3.43'' × 17.62'' × 28.96'')
Package dimensions	273.00 mm × 754.00 mm × 1069.00 mm (10.75'' × 29.68'' × 42.09'')
Mounting	Standard 19'' rack installation with guide rail.

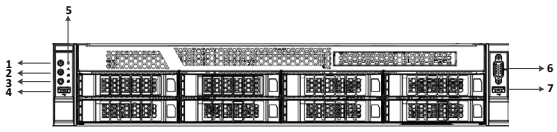
Ordering Information

Type	Part Number	Description
Structured Analysis Server	DHI-IVS-VS8000-A-GU2	Dahua 2U Structured Analysis Server
	DHI-IVS-VS8000-2A-GU2	Dahua 2U Structured Analysis Server
	DHI-IVS-VS8000-3A-GU2	Dahua 2U Structured Analysis Server
	DHI-IVS-VS8000-4A-GU2	Dahua 2U Structured Analysis Server
	DHI-IVS-VS8000-5A-GU2	Dahua 2U Structured Analysis Server
	DHI-IVS-VS8000-6A-GU2	Dahua 2U Structured Analysis Server

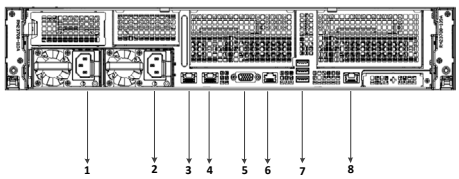
Dimensions (mm[inch])



Panels



1 Power Button
2 ID Button
3 Reset Button
4 USB3.0 Port
5 HDD/System Status/LAN1/LAN2 LED
6 VGA Port
7 USB3.0 Port



1 Power Input1
2 Power Input2
3 LAN Port1
4 LAN Port2
5 VGA Port
6 Serial Port
7 3*USB3.0 Port
8 Management Port