

# DHI-NVR4416-EI

16CH 1.5U 4HDDs WizSense Network Video Recorder



WizSense

Launched by Dahua Technology, WizSense is a series of AI products and solutions that adopt independent AI chip and deep learning algorithm. It focuses on human and vehicle with high accuracy, enabling users to fast act on defined targets. Based on Dahua's advanced technologies, WizSense provides intelligent, simple and inclusive products and solutions.

## Series Overview

NVR4000-EI series is a new generation of network recorders that offers powerful decoding capabilities, and strong bandwidth. It features high-precision face recognition, perimeter protection, and SMD (Smart Motion Detection), which can distinguish target vehicles and humans from other types in real time. When connected with select IPC cameras, Quick Pick technology becomes available, allowing human and vehicle targets to be easily searched for and picked out. This network recorder is not only cost-effective, but also compatible with a wide variety of third-party devices, making it a great choice for small and medium-sized businesses.

## Functions

### Face Detection

Face detection is to detect if there is any human face appearing in the video. This technology adopts a deep learning algorithm to support face detection, tracking, optimization and capturing, and then output the best face snapshot.

### Face Recognition

Dahua Face Recognition technology extracts the features of captured faces and compares them with that in face database.

### Perimeter Protection

Automatically filters out false alarms caused by animals, rustling leaves, bright lights, etc. Enables system to act secondary recognition for the targets. Improves alarm accuracy.

- Supports Smart H.265+, H.265, Smart H.264+, H.264 and MJPEG decoding formats.
- Max. 256 Mbps incoming/recording/outgoing bandwidth.
- Max. decoding capability: 16 × 1080p@30 fps or 4 × 8 MP@30 fps.
- Supports IP cameras with a resolution up to 16 MP.
- AI by Recorder supports 1-channel face detection and recognition, 2-channel perimeter protection, up to 10 face databases and 20,000 face images, 4-channel SMD.
- AI by Camera supports face detection and recognition, perimeter protection, SMD, ANPR, people counting, stereo analysis, heat map.
- Supports EPTZ, and one-click arming and disarming.



### SMD Plus

With intelligent algorithm, Dahua Smart Motion Detection technology can categorize the targets that trigger motion detection and filter the motion detection alarm triggered by non-concerned targets to realize effective and accurate alarm.

### AI Search

With AI search, operators can search for videos by the attributes of targets and event types, which helps them to quickly and efficiently investigate where and when targets appeared and events took place.

### Heat Map by Camera

Dahua heat map technology is used to display the crowd density and people appearance probability. Export and display the crowd status by different colors. Generally, the crowd status is the statistics of people quantity in space and time dimensions.

### ANPR by Camera

With deep learning algorithm, Dahua ANPR technology can recognize the number plate information of vehicles in the image with ANPR cameras. Support blacklist/allowlist mode, searching target vehicles from recorded video.

### QuickPick 2.0

By employing the back-end perimeter protection algorithm, QuickPick 2.0 not only retains the capability to identify the color of clothing and vehicles, which was offered by its predecessor QuickPick 1.0, but it also possesses the enhanced ability to detect various types of hats, clothing and vehicles, thus greatly improving the accuracy of the search function.

## Technical Specification

### System

|                     |                            |
|---------------------|----------------------------|
| Main Processor      | Industrial-grade processor |
| Operating System    | Embedded Linux             |
| Operating Interface | Web, Local GUI             |

### AI

|                |                                                                                                               |
|----------------|---------------------------------------------------------------------------------------------------------------|
| AI by Recorder | Face detection; face recognition; perimeter protection; and SMD                                               |
| AI by Camera   | Face detection; face recognition; perimeter protection; SMD; ANPR; people counting; stereo analysis; heat map |

### Perimeter Protection

|                                                            |                                           |
|------------------------------------------------------------|-------------------------------------------|
| Perimeter Performance AI by Recorder (Number of Channels)  | 2 channels, 10 IVS rules for each channel |
| Perimeter Performance of AI by Camera (Number of Channels) | All channels (8 targets/s)                |

### Face Detection

|                                                                   |                                                           |
|-------------------------------------------------------------------|-----------------------------------------------------------|
| Face Attributes                                                   | Gender; age group; glasses; expressions; face mask; beard |
| Face Detection Performance of AI by Recorder (Number of Channels) | 1 channel (up to 12 face images/s each channel)           |
| Face Detection Performance of AI by Camera (Number of Channels)   | All channels (8 targets/s)                                |

### Face Recognition

|                                                                     |                                                                                                                                                                                                              |
|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Face Database Capacity                                              | Up to 10 face databases with 20,000 images, with a total capacity of 2.5 G. Name, gender, birthday, address, credential type, credential No., countries & regions and state can be added to each face image. |
| Face Recognition Performance of AI by Recorder (Number of Channels) | 8-channel FD (by camera) + FR (by recorder), image stream: 12 face images/s<br>1-channel FD (by recorder) + FR (by recorder), video stream: 12 face images/s                                                 |
| Face Recognition Performance of AI by Camera (Number of Channels)   | All channels (8 targets/s)                                                                                                                                                                                   |

### SMD Plus

|                      |                                                                                                                                         |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| SMD Plus by Recorder | 4 channels: Secondary filtering for human and motor vehicle, reducing false alarms caused by leaves, rain and lighting condition change |
| SMD by Camera        | All channels (16 targets/s)                                                                                                             |

### Vehicle License Plate Comparison

|                                     |                                                                     |
|-------------------------------------|---------------------------------------------------------------------|
| ANPR by Camera (Number of Channels) | All channels (4 targets/s)                                          |
| License Plate Database Capacity     | 1. Create up to 20,000 plate numbers.<br>2. Blocklist and allowlist |

## Audio and Video

|                           |                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Access Channel            | 16 channels                                                                                                                                                                                                                                                                                                                                                                                 |
| Network Bandwidth         | AI disabled: 256 Mbps incoming, 256 Mbps recording and 256 Mbps outgoing<br>AI enabled: 180 Mbps incoming, 180 Mbps recording and 180 Mbps outgoing                                                                                                                                                                                                                                         |
| Resolution                | 16 MP; 12 MP; 8 MP; 6 MP; 5 MP; 4 MP; 3 MP; 1080p; 720p; 960p; D1; CIF                                                                                                                                                                                                                                                                                                                      |
| Decoding Capability       | AI disabled: 2-channel 16 MP@30 fps; 2-channel 12 MP@30 fps; 4-channel 8 MP@30 fps; 4-channel 6 MP@30 fps; 6-channel 5 MP@30 fps; 8-channel 4 MP@30 fps; 16-channel 1080p@30 fps<br>AI enabled: 1-channel 16 MP@30 fps; 2-channel 12 MP@30 fps; 3-channel 8 MP@30 fps; 3-channel 6 MP@30 fps; 4-channel 5 MP@30 fps; 6-channel 4 MP@30 fps; 12-channel 1080p@30 fps; 16-channel 720p@30 fps |
| Video Output              | 1 HDMI, 1 VGA<br>HDMI: 3840 × 2160, 1920 × 1080, 1280 × 1024, 1280 × 720<br>VGA: 1920 × 1080, 1280 × 1024, 1280 × 720<br>*Simultaneous/heterogeneous video sources output for VGA and HDMI is configurable.                                                                                                                                                                                 |
| Multi-screen Display      | 1st Screen: 1/4/8/9/16<br>2nd Screen: 1/4/8/9/16                                                                                                                                                                                                                                                                                                                                            |
| Third-party Camera Access | Panasonic, Sony, Hanwha, Axis, Pelco, Arecont, ONVIF, Canon                                                                                                                                                                                                                                                                                                                                 |

## Compression Standard

|                   |                                                 |
|-------------------|-------------------------------------------------|
| Video Compression | Smart H.265+; H.265; Smart H.264+; H.264; MJPEG |
| Audio Compression | G.711a; G.711u; PCM; G726                       |

## Network

|                     |                                                                                                                                                                                                      |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Network Protocol    | HTTP; HTTPS; TCP/IP; IPv4; IPv6; RTSP; UPnP; SNMP; UDP; SMTP; NTP; DHCP; DNS; IP Filter; PPPoE; DDNS; FTP; Alarm Server; IP Search (Support Dahua IP camera, DVR, NVS, etc.); P2P; Auto Registration |
| Mobile Phone Access | iOS; Android                                                                                                                                                                                         |
| Interoperability    | ONVIF 23.12(Profile T; Profile S; Profile G); CGI; SDK                                                                                                                                               |
| Browser             | Chrome; IE9 and later; Firefox                                                                                                                                                                       |

## Recording Playback

|                        |                                                                                  |
|------------------------|----------------------------------------------------------------------------------|
| Multi-channel Playback | Up to 16 channels                                                                |
| Record Mode            | General, motion detection; intelligent; alarm                                    |
| Backup Method          | USB device and network                                                           |
| Playback Mode          | Instant playback, general playback, event playback, tag playback, smart playback |

## Storage

|            |     |
|------------|-----|
| Disk Group | Yes |
|------------|-----|

## Alarm

|               |                                                                                                                                                                                               |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General Alarm | Motion detection; privacy masking; video loss; scene changing; PIR alarm; IPC external alarm                                                                                                  |
| Anomaly Alarm | Error (no disk; disk error; low space; low quota space; abnormal disk health; network disconnection; IP conflict; MAC conflict); video loss; video tampering; camera offline; audio detection |

|                   |                                                                                                              |
|-------------------|--------------------------------------------------------------------------------------------------------------|
| Intelligent Alarm | Face detection; face recognition; perimeter protection; SMD Plus; people counting; stereo analysis; heat map |
| Alarm Linkage     | Record; snapshot; IPC external alarm output; audio; buzzer; log; preset; email                               |

## Port

|                |                                                                                          |
|----------------|------------------------------------------------------------------------------------------|
| Audio Input    | 1-channel RCA                                                                            |
| Audio Output   | 1-channel RCA                                                                            |
| Alarm Input    | 16 channels                                                                              |
| Alarm Output   | 4 channels                                                                               |
| Disk Interface | 4 SATA ports, up to 20 TB. The maximum HDD capacity varies with environment temperature. |
| RS-232         | 1                                                                                        |
| RS-485         | 1                                                                                        |
| USB            | 2 (1 front USB 2.0 port, 1 rear USB 3.0 port)                                            |
| HDMI           | 1                                                                                        |
| VGA            | 1                                                                                        |
| Network Port   | 2 (10/100/1000 Mbps Ethernet port, RJ-45)                                                |

## General

|                       |                                                                                                                                                                                                                                |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Supply          | 100–240 VAC, 50-60Hz                                                                                                                                                                                                           |
| Power Consumption     | <10 W (without HDD)                                                                                                                                                                                                            |
| Net Weight            | 4.25 kg (9.37 lb)                                                                                                                                                                                                              |
| Gross Weight          | 6.35 kg (14.00 lb)                                                                                                                                                                                                             |
| Product Dimensions    | 440.0 mm × 415.6 mm × 76.0 mm (17.32" × 16.36" × 2.99") (W × D × H)                                                                                                                                                            |
| Packaging Dimensions  | 529.0 mm × 499.0 mm × 211.0 mm (20.83" × 19.65" × 8.31") (W × D × H)                                                                                                                                                           |
| Operating Temperature | –10 °C to +55 °C (+14 °F to +131 °F)                                                                                                                                                                                           |
| Storage Temperature   | –20 °C to +60 °C (–4 °F to +140 °F)                                                                                                                                                                                            |
| Operating Humidity    | 10%–93% (RH), non-condensing                                                                                                                                                                                                   |
| Certifications        | FCC: 47 CFR FCC Part15, SubpartB, Class A<br>CE-EMC: EN 55032:2015+A1:2020;<br>EN IEC 61000-3-2:2019+A1:2021;<br>EN 61000-3-3:2013+A1:2019+A2:2021; EN 55035:2017+A11:2020; EN 50130-4:2011+A1:2014<br>CE-LVD: EN 62368-1:2014 |

## Accessories

Optional:

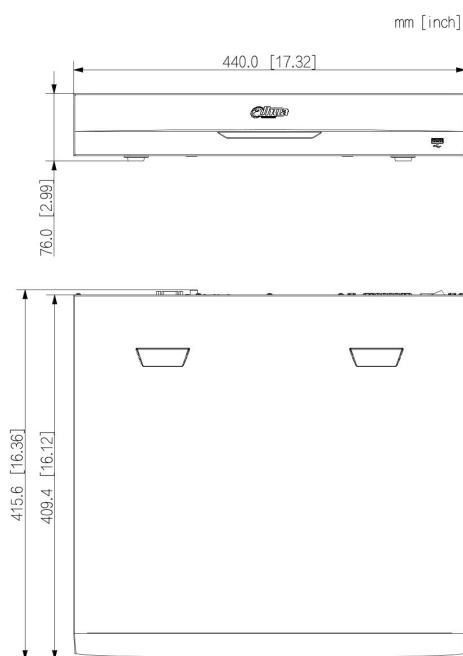


DHI-ARB1606  
Alarm Box



DHI-RailBracket60/L-  
Shaped  
Dahua Server Cabinet Rail  
Bracket

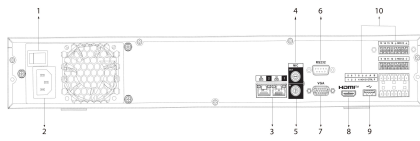
## Dimensions (mm[inch])



## Ordering Information

| Type                   | Model                       | Description                                        |
|------------------------|-----------------------------|----------------------------------------------------|
| NETWORK VIDEO RECORDER | DHI-NVR4416-EI              | 16CH 1.5U 4HDDs<br>WizSense Network Video Recorder |
| Accessories (Optional) | DHI-ARB1606                 | Alarm Box                                          |
|                        | DHI-RailBracket60/L- Shaped | Dahua Server Cabinet Rail Bracket                  |

## Panels



- |                        |                         |
|------------------------|-------------------------|
| 1 Power Switch         | 2 Power Input           |
| 3 Network Ports        | 4 MIC OUT RCA Connector |
| 5 MIC IN RCA Connector | 6 RS-232 Port           |
| 7 VGA Port             | 8 HDMI Port             |
| 9 USB Port             | 10 Alarm In/Out         |