# DHI-NVR4416-16P-4KS2/I

## 16 Channel 1.5U 16PoE 4HDDs WizSense Network Video Recorder

- Smart H.265+/H.265/Smart H.264+/H.264/MJPEG decoding format
- Access, storage or forwarding at 256 Mbps (160 Mbps when AI function enabled)
- Max. decoding capability: 10 × 1080p@30 fps. Supports adaptive decoding
- AI by NVR: 1-channel  face detection and recognition; 2-channel perimeter protection;  up to 10 face databases and 20,000 face images; 4-channel SMD Plus
- AI by Camera: Face detection and recognition, perimeter protection; SMD Plus; ANPR; people counting; stereo analysis; heat map
- Support IPC UPnP, 16PoE ports
- Security baseline 2.1

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.

| Face Detection | Face Recognition | Perimeter Protection | SMD Plus | Search by Image | IVS |
| Heat Map | ANPR | People Counting | | | |

## Series Overview

This AI network video recorder is a highly cost-effective product, providing functions such as local live view, multi-screen display, real-time storage on local HDD, fast operation by mouse, and remote management and control. This product is suitable for face detection and recognition at entrances and exits, and perimeter protection of people and vehicles.

### 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

Support AI seach by metadata of different targets or uploading face pictures to device and comparing them with recorded faces by similarity. Enable operators to quickly and easily search through multi channels and long duration, efficiently find out when and where a person of interest appeard.

## 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 those in face database to recognize the person identity.

### Perimeter Protection

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

### Smart Fan

The NVR is equipped with a smart fan to achieve high cooling efficiency. It automatically turns on or turns off according to CPU and ambient temperature. The fan is long-lasting and low noise, reducing maintenance costs and improving the user experience.

## Technical Specification

### System

| | |
|---|---|
| Main Processor | Industrial-grade embedded processor |
| Operating System | Embedded Linux |
| Operation Interface | Web; local GUI |

### AI

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

### Perimeter Protection

| | |
|---|---|
| Perimeter Performance AI by Device(Number of Channels) | 2 |
| Perimeter Performance of AI by Camera (Number of Channels) | 8 |

### Face Detection

| | |
|---|---|
| Face Attributes | 6 attibutes: Gender; age group (6); glasses; expressions (8); mouth mask; beard |
| Face Detection Performance of AI by Device (1080P) (Number of Channels) | 1 (up to 12 face images/second) |
| Face Detection Performance of AI by Camera (Number of Channels) | 8 |

### Face Recognition

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|---|---|
| Face Database Capacity | Up to 10 face databases with 20,000 images |
| Face Recognition Performance of AI by Device (1080P) (Number of Channels) | 1 (up to 4 face images/second) |
| Face Recognition Performance of AI by Camera (Number of Channels) | 8 |

### SMD Plus

| | |
|---|---|
| SMD Plus by Device | 4 |
| SMD Plus by Camera | 16-channel SMD Plus (AI by camera): Detects tripwire and intrustion of human or vehicle; filters false alarms caused by leaves, raindrops and change of brightness away |

### ANPR

| | |
|---|---|
| ANPR by Camera | 4 |

### Video

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|---|---|
| Access Channel | 16 channels |
| Network Bandwidth | AI off: Access: 256 Mbps; Storage: 256 Mbps; Forward: 256 Mbps<br>AI on: Access: 160 Mbps; Storage: 160 Mbps; Forward: 160 Mbps |
| Resolution | 16MP; 12MP; 8MP; 5MP; 4MP; 3MP; 2MP; 720p; D1 |

| | |
|---|---|
| Decoding Capability | AI off: 1 channel × 16MP@20 fps; 1 channel × 12MP@20 fps; 2 channels × 8MP@30 fps; 4 channels × 5MP@30 fps; 5 channels × 4MP@30 fps; 10 channels × 1080p@30 fps<br>AI on: 1 channel × 16MP@20 fps; 1 channel × 12MP@20 fps; 2 channels × 8MP@30 fps; 3 channel × 5MP@30 fps; 4 channels × 4MP@30 fps ; 8 channels × 1080p@30 fps |
| Video Output | 1-ch VGA output and 1-ch HDMI output; 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 |
| Third Party Camera Access | Panasonic; Sony; Samsung; Axis, Pelco; Areacont; ONVIF; Canon; RTSP; |

### Compression

| | |
|---|---|
| Video | Smart H.265+; Smart H.264+; H.265; H.264; MJPEG |
| Audio | PCM; G.711A; G.711U; G.726 |

### Network

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

### Record Playback

| | |
|---|---|
| Multi-channel Playback | Up to 16 channels |
| Record Mode | Manual; schedule (general; MD; alarm; MD & alarm; intelligent) |
| Storage Method | Local HDD; network |
| Backup | USB device |
| Playback Function | 1. Play; pause; stop; fast forward; fast backward; rewind; play by frame<br>2. Full screen; backup (cut/file) ; partially enlarge; audio on/off |

### Alarm

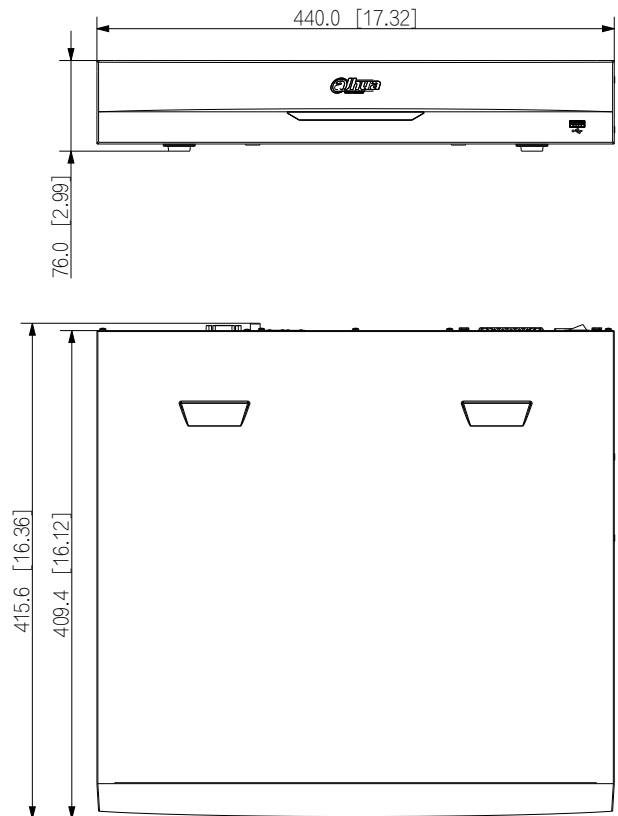| | |
|---|---|
| General Alarm | Motion detection; privacy masking; video loss; scene changing; PIR alarm; IPC external alarm |
| Anomaly Alarm | Camera disconnection; storage error; disk full; IP conflict; MAC conflict; login locked; and cybersecurity exception |
| Intelligent Alarm | Face detection; 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 |

### External Port

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|---|---|
| HDD | 4 SATA ports, up to 10 TB. The maximum HDD capacity varies with environment temperature |
| USB | 1 front USB 2.0 port, 1 rear USB 3.0 ports |
| HDMI | 1 (max. resolution: 4K) |
| VGA | 1 |
| Network | 1 RJ-45 10/100/1000 Mbps self-adaptive Ethernet port |
| PoE | 16 × PoE ports |
| RCA Input | 1 |

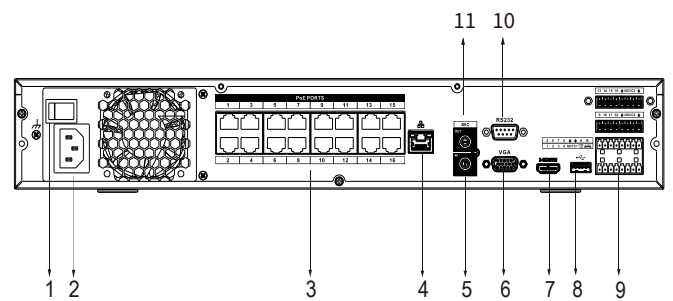| | |
|---|---|
| RCA Output | 1 |
| Alarm Input | 16 |
| Alarm Output | 6 |
| RS-232 | 1 channel, used to debug and pass through serial data |
| RS-485 | 1 channel, used to control PTZ, and it supports multiple protocols |

## General Parameter

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|---|---|
| Power Supply | Single, 100 V–240 V AC, 50 Hz–60 Hz |
| Power Consumption | Total output of NVR is ≤ 10 W (without HDD)<br>Total output power of PoE is 130 W, the maximum output power of a single port is 25.5W |
| Net Weight | 4.82 kg (13.77 lb) |
| Gross Weight | 7.09 kg (20.26 lb) |
| Product Dimensions | 440.0 mm × 415.6 mm x 76.0 mm (17.32" × 16.36" × 2.99") (W × L × H) |
| Package Dimensions | 529.0 mm × 499.0 mm × 211.0 mm (20.83" × 19.65" × 9.31")  (W × L × H) |
| Operating Conditions | −10 °C to +55 °C (+10 °F to +131 °F) |
| Storage Conditions | 0 °C to +40 °C (32 °F to 104 °F) |
| Operating Humidity | 10%–93% |
| Storage Humidity | 30%–85% |
| Operating Altitude | 3,000 m (9,843 ft) |
| Installation | Desktop/Rack mount |
| Certifications | FCC:47 CFR FCC Part15,SubpartB,Class A<br>CE-EMC:EN 55032:2015,Class A;EN IEC 61000-3-2:2019;EN 61000-3-3:2013+A1:2019;EN 55024:2010+A1:2015;EN 55035:2017;EN 50130-4:2011+A1:2014<br>CE-LVD:EN 62368-1:2014+A11:2017 |

## Ordering Information

| Type | Model | Description |
|---|---|---|
| 16 Channel WizSense NVR | DHI-NVR4416-16P-4KS2/I | 16 Channel 1.5U 16PoE 4HDDs WizSense Network Video Recorder |

## Dimensions (mm[inch])

440.0 [17.32]

76.0 [2.99]

415.6 [16.36]
409.4 [16.12]

## Panels

11  10

1 2          3    4 5 6    7 8   9

| | | | |
|---|---|---|---|
| 1 | Power Switch | 2 | Power Input |
| 3 | PoE Ports | 4 | Network Port |
| 5 | AUDIO IN, RCA Connector | 6 | VGA Port |
| 7 | HDMI Port | 8 | USB Port |
| 9 | Alarm In/Out | 10 | RS-232 Port |
| 11 | AUDIO OUT, RCA Connector | | |