

# DHI-DSS7016D-S2

A Powerful Surveillance System



## Introduction

DSS7016-S2 is a powerful surveillance system preloaded with Linux-optimized VMS software, which has high performance and scalability. It supports up to 2,000 cameras, and this number can be larger with distributed deployment. It has a 3.5" chassis with up to 15 hot-swapping hard drives for center storage, providing a very powerful all-in-one solution for projects.

## Key Components

### Service

- Central Management Service (CMS)
- Device Management Service(DMS)
- Storage Service (SS)
- Media Transmission Service (MTS)
- Auto Register Service (ARS)
- Alarm Dispatch Service(ADS)
- Picture Transfer Service (PTS)
- Object Storage Service (OSS)

### Client

- Windows PC Client
- DSS Mobile 2
- DSS Mobile for VDP

## Running Environments

### Operating System

- OS for Windows Control Client:  
Win7 - 32 bit / Win7 - 64 bit/ Win10 - 64 bit
- OS for DSS Mobile Client:  
IOS: IOS 9.0 and above  
Android: Android 4.4 and above

### Hardware

- Hardware for Control Client

## Recommended

|                     |                                         |
|---------------------|-----------------------------------------|
| CPU                 | Intel Core i5, 64 bits 4 Core Processor |
| Memory              | 8 GB                                    |
| Graphics Card       | NVIDIA® GeForce®GT 730                  |
| Hard Drive Capacity | 200 GB free for DSS Control Client      |
| Ethernet Port       | 1000 Mbps                               |

## Minimum

|                     |                                         |
|---------------------|-----------------------------------------|
| CPU                 | Intel Core i3, 64 bits 4 Core Processor |
| Memory              | 4 GB                                    |
| Graphics Card       | Intel® HD Graphics 4400                 |
| Hard Drive Capacity | 100 GB free for DSS Control Client      |
| Ethernet Port       | 1000 Mbps                               |

## Hardware for Mobile Client

|         |                                                         |
|---------|---------------------------------------------------------|
| iPhone  | iPhone 5S and above                                     |
| Android | Resolution: 1280 × 720 and above<br>RAM: 3 GB and above |

## Browser Version

- Internet Explorer: 9 and above
- Chrome: 52 and above
- Firefox: 51 and above

## Features

### Easy Expansion

- 3.5" chassis with up to 15 hot-swapping hard drives and extends storage through iSCSI.
- Up to 2,000 video channels per server and the number can be larger with distributed deployment.

### High Reliability

- Hot standby application of two servers ensures 7 × 24h stable operation.
- N+M distributed deployment ensures 7 × 24h stable operation.

### High Compatibility

- Dahua devices: Network camera, network speed dome, decoder, NVR, DVR, ANPR, access control device, VDP, and alarm controller.
- Connect third-party devices through standard ONVIF protocol.

## Main Functions

### System

- Support hot standby for master server.
- Support distributed deployment.
- Support LAN and WAN deployment.

### 1. Web Manager

#### • Business Configuration

#### Organization Management

- Device group management through organization.

#### Device Management

- Initialize Dahua devices.
- Add devices through auto search, IP, Domain, IP segment, auto register (for 3G, 4G, DHCP device).
- Manage Dahua devices such as network camera, network speed dome, NVR, DVR, access control, video intercom, alarm controller, and decoder.
- Add third-party devices through ONVIF protocol.
- Modify Dahua device IP address.
- Modify the password of added Dahua device.
- Import intercom devices.
- Bind the associated camera: Link cameras for alarm video display; bind
- POS channels and cameras for POS transaction monitoring.

#### Role and User Management

- Manage user permissions by role (device permission, control permissions).
- User can be assigned with roles to obtain the corresponding permissions.
- User can be restricted by MAC and expiry information.

#### Set PTZ permission for user.

- User can be locked.
- Support importing domain user and assigning roles to the user.

### Event Management

- Alarm type: Device, video channel, audio detection, alarm input, IVS alarm, thermal, vehicle blacklist, access control, face arming, emergency, entrance alarm.
- Alarm scheme: All day template, weekday template, weekend template and custom template.
- Alarm priority: Low, medium, high.
- Linkage: Recording, snapshot, live video, alarm output, PTZ, video wall, e-mail, door control, and user notification.

### Storage

- Support edge storage and central storage.
- Central storage: Extend storage through iSCSI.
- Server disk configuration for picture storage involving face detection and recognition, alarms, and object detection.
- Create recording plan by time template: All day template, weekday template, weekend template and custom template.
- Back up video as scheduled from the edge storage devices such as EVS, NVR, and DVR.
- Back up video from edge storage devices through Wi-Fi.
- Disk quota: Group the disks, and cameras can be allocated to different disk groups.

### Map

- Google online map, Google offline map, raster map
- Up to 8 levels of submap.
- Configure hot spots (camera, alarm input, access control channel) and

sub maps on the map.

### Video Wall

- Display or hide the screen ID.
- Support screen combination.
- Bind the decoding channel with the corresponding screen.

### Face Database

- Face library management.
- Add face one by one.
- Import faces in batches.
- Set person type.
- Send face database to face recognition devices, and configure the similarity.

### Vehicle Blacklist

- Vehicle blacklist management.
- Set start time and end time for vehicle blacklist.
- Vehicle blacklist arming and disarming.
- Import and export vehicle blacklist.

### Video Intercom

- Residence configuration: Set whether to enable Building No. and Unit No.
- Issue VTH contact list to VTO.
- Set VTH private password for unlocking VTO.
- View, delete and freeze users of DSS Mobile for VDP.

#### • System Maintenance

### Backup and Restore

- Automatically back up system database (daily, weekly, monthly).
- Manually back up system database.
- Restore system database from server or local file.

### System Dashboard

- Overview and detailed system information.
- Status of CPU, storage, bandwidth.
- Service, device and user online information, device health report.
- Event information statistics: Total and processed events.
- Source information: Video channel, alarm channel.

### Log

- System, admin, client log.
- Log search and export.

### System Configuration

- Configure data retention duration of logs, alarms, POS, heatmap, face recognition, vehicle records, and people counting data.
- Time synchronization: Timed synchronization and device connection synchronization.
- Email server configuration.
- Active directory configuration.
- Support importing HTTPS certificate.

### Service Management

- Delete slave servers.
- Enable or disable slave servers.
- Manually or automatically assign devices to different servers to balance server load.

### 2. Control Client

#### • Basic Video Management Features

### Live View

- Display device tree with offline devices shown or hidden.
- Display device IP address or name on the device tree.

- View live video.
- Common layout (1/4/6/8/9/13/16/20/25/36/64) and custom layout.
- PTZ control.
- Electric focus.
- Manual recording (store on PC or central storage).
- Snapshot.
- Instant playback.
- Digital zoom.
- Fisheye dewarp.
- Fisheye-PTZ smart track.
- Panoramic camera smart track.
- Bullet-PTZ smart track.
- Audio talk.
- Set alarm window.
- Turn on/off audio in live view.
- Turn on/off the IVS display in live view.
- Region of interest: Divide one window into 4 or 6 parts, one for whole image, the others for the details.
- Display map in live view.
- Save the current live view as a view.
- Up to 4 live view tabs for multi-display operation.
- Support adding channels to favorites.
- Video tour by device, organization, favorites, or view.
- Quickly switch to playback.
- Support NKB1000.
- POS transaction overlay.
- Set POS overlay style.
- Adjust the video image.
- Adjust the display mode (full screen and original).
- Live video on map.
- Basic device setting: Camera properties, video, and audio.

### Playback

- Play videos from the front-end devices or central storage.
- Video filter: Normal, motion, alarm.
- Synchronous play.
- Reverse playback of central record.
- Digital zoom.
- Slow and fast forward (up to 64X and 1/64X).
- Frame-by-frame playback.
- Lock or mark the important records for central storage.
- Download video in the formats of .avi, .dav, .mp4, and .asf.
- Turn on/off the IVS display in playback.
- Video decoding on video wall.
- Fisheye dewarp.
- Adjust video image.
- Snapshot.
- Quickly switch to live view.
- Adjust the display mode (full screen and original).
- Common layout (1/4/6/8/9/13/16/20/25/36) and custom layout.
- Support search by thumbnail.
- Support smart search.
- Support POS record search.

### Download Center

- Download records from central storage or devices in the formats of .avi, .dav, .mp4, and .asf.
- Download records by timeline, file or tag.
- Support multi-task download.

### Event

- Real-time and history alarm information.
- Alarm details: Live video, records and pictures from related camera, and alarm source location on the map.
- Acknowledge alarms.
- Arming control for alarm source.
- Forward the alarm to relevant user.
- Manually send alarm email to relevant person.
- Handle alarms and fill out the handling comments.
- Search for alarms by alarm source, alarm time, status, handle user, and priority.
- Search for alarms and export alarm list.

### Video Wall

- Create different video wall tasks.
- View real-time video.
- Real-time video on video wall.
- Manually or automatic video wall display.
- Manage video wall split.
- Change stream type of video channel.
- Turn on/off audio.
- Add box, turn on/off screen and get video stream to control client.
- Video tour in one screen.
- Scheduled plan: Set the running task on timeline.
- Tour plan: Loop display of tasks at specific intervals.
- Support NKB1000 for video wall control.

### Map

- View live and recorded videos on the map.
- Support area or length measurement on GIS map.
- Support visible range and initial angle (only available on select PTZ models).
- Alarm source turns red and flickers on the map when alarm occurs.
- Remote access control.

### Access Control Features

#### Personnel Management

- Add, edit and delete people and department.
- Upload face pictures by selecting files or taking pictures.
- Import personnel information in batches.
- Issue cards and fingerprints through USB reader or devices.
- Authorize by door group.
- Authorize video intercom devices.
- Card, password, fingerprint and face authentications.
- Guest, VIP, normal and blacklist personnel management.
- Extract person information (ID, card, fingerprint, IR face feature code) from device.
- Support setting super passwords for access control devices.
- Support holiday management.

#### Access Control

- Door status and door events monitoring.
- View related videos.
- Lock or unlock doors by one key.
- Global operation of opening or closing doors.
- Support access control channel configuration.
- Advanced door rules, such as anti-passback, first card unlock, inter-door lock, multi-card unlock, and remote verification.
- View logs and records from device.
- Support device log search.

### Video Intercom

- Video intercom between VDP devices based on SIP protocol.
- Video intercom between VDP devices and the command center.
- Release text information to VTH.
- View video intercom logs.
- Call management: Support configuring device groups, management groups, and relationship groups to enable call between specific groups.

### Attendance

- Set access control devices as attendance stations.
- Attendance period and holiday management.
- Attendance shift management and arrangement.
- Attendance report management, including attendance records report, abnormality report, and card-swiping report.
- Support exporting attendance reports.

### Visitor Management

- Support visit registration and appointment.
- Support issuing access permissions by card or face recognition.
- Support card-swiping record query.
- Support visitor record query.

### Vehicle Entrance

- Overview of entrance and exit information: Number of parking spaces and remaining parking spaces, traffic statistics, parking turnover, and parking utilization rates.
- View real-time number plate recognition.
- Edit parking-lot information such as total and available spaces and parking lot name.
- Support configuration of barrier control rules for normal and zero-space-left cases.
- Support searching for vehicle records, on-site vehicles, and ANPR details.
- Manage owners, vehicles and cards.
- Bind LED screen with ITC or spot detector device.
- Open barrier gate remotely or by swiping card on VTO.
- Forced leave for existing vehicles.
- Vehicle records search and export.
- Support daily, weekly, monthly, and annual statistics of vehicle access records.

### • Advanced Features

### Face Recognition

- Automatic face capture.
- Extract face attribute information from face snapshot.
- Real-time face comparison.
- Quickly register face to face library.
- Search for face by face attribute.
- Search for face by uploading a face image.
- Search for face comparison records.
- Generate travel routes for specific faces.
- Generate daily, weekly, monthly attribute report based on gender and age.

### Object Detection

- Real-time face capture by camera, and display information about human, motor vehicles, and non-motor vehicles.
- Extract attribute information from snapshots.
- Search for objects in the snapshot database quickly by setting up criteria.
- Generate daily, weekly, monthly attribute report based on human, motor vehicles, and non-motor vehicles.

### Flow Analysis

- People counting: Provides daily, weekly, monthly, yearly reports.
- Heatmap.
- Export people counting and heatmap data.
- Dwell time reports.

### Thermal

- Support monocular thermal imaging devices and binocular thermal imaging devices.
- Support taking temperature values from video frame points.
- Support acquiring timed heatmap.
- Support viewing analysis results of specific areas on the heatmap by box selection, circle selection, and drawing lines.
- Support temperature curve analysis on heatmap.
- Support saving, importing, and re-analyzing heatmap.

### ANPR

- Real-time number plate recognition.
- View vehicle records.
- Generate vehicle track based on number plate and time.
- Search for arming records.

### Alarm Controller

- Support custom alarm types.
- Update the status of alarm controller.
- Global arming, disarming; arming or disarming specific zones or subsystems.
- Zone status control: Bypass, Isolate and Normal.
- Cancel alarms.

### • Control Client Information and Configuration

#### Control Client Information

- Show status of network, CPU, and memory usage.
- User information.
- Support auto-discovery of online DSS services.
- Support modifying passwords.
- Support client logout.

#### Control Client Configuration

- Basic settings: Language, theme, resolution, time synchronization, automatic login, auto-start on power-on, whether to restore the last live view, adaptive intercom parameters, and device nodes display.
- Video settings: Default window split, split number threshold for switching to sub stream, playback modes, custom video buffer time, instant playback duration, GPU decoding, closing video after a specified time of silence, and switching to main stream on full screen.
- Video playback: Default window split, recording stream type, and extract-frame playback.
- Snapshot settings: Snapshot format, saving path, naming rules, continuous snapshot interval, and number of continuous snapshots.
- Recording: Saving path, naming rules, and recording file size
- Alarm: Alarm sound, loop play, map flash warning, and associated video play.
- Video wall: Stream type, tour interval, split number threshold for switching to sub stream, and switching to main stream on full screen.
- View shortcuts for PC keyboard and NKB.

### 3. Mobile Client

#### History Record

- Show recently viewed channels; open live video or playback through history records.
- Display up to 20 latest history records.

**Live View**

- Open more than one channel at the same time, up to 16 channels.
- Three stream types: HD (high definition), SD (standard definition), FL (Fluency).
- Support PTZ control.
- Support horizontal screen play.
- One-key switch to playback.
- Snapshot, local record, audio talk.
- Supports fisheye dewarp.

**Playback**

- Play back records from device or central storage (Up to 8X and 1/8X).
- The calendar shows whether there is video on that day.
- Support snapshot.
- Manually start recording for local storage.
- Support 1X, 2X, 3X, 4X, 1/2X, 1/4X, 1/8X playback.

**Face Recognition**

- Support searching the face database or snapshot records for target faces by uploading a face picture.
- Support face database management.

**Object Detection**

- Search for objects classified by people, vehicle and non-motor vehicle.

**Alarm Center**

- Alarm subscription.
- Query for alarm messages by category.
- Claim and handle alarm messages.
- History alarm message query.

**Map**

- Support Google map and raster map.
- Display video channels on the map.
- View live and recorded videos.

**Access Control**

- Open or close doors remotely.
- View and delete personnel.

**Video Intercom**

- Support video intercom.
- Support calling VDP devices.
- View call records.

**Favorite**

- Quickly view videos of channels in the favorites.

**Files Management**

View local pictures and videos.

**Hardware Specification****System**

|                         |                                         |
|-------------------------|-----------------------------------------|
| Main Processor          | Intel i5-6600, 64 bits 4 Core Processor |
| Operating System        | Embedded Linux                          |
| Memory                  | 8 GB                                    |
| Motherboard             | Embedded board (7 × 24 operation)       |
| Hard Disk Hot swap      | Support hot swap and online replacement |
| Hard Disk Compatibility | SAS/SATA disk                           |

**Interface**

|                         |                                                       |
|-------------------------|-------------------------------------------------------|
| Number of Network Ports | 4 Ethernet ports (100/1000 Mbps)                      |
| RS-485                  | Reserved                                              |
| RS-232                  | Reserved                                              |
| USB                     | 2 × USB 2.0 on front panel; 2 × USB 3.0 on rear panel |
| HDMI                    | 3 HDMI ports                                          |
| VGA                     | 1 VGA port                                            |

**Storage**

|                                       |                                                                    |
|---------------------------------------|--------------------------------------------------------------------|
| HDD Installation                      | Support 15 HDDs (3.5") for video or picture storage (8 TB per HDD) |
| Storage                               | Up to 200 TB per server                                            |
| HDD Mode                              | Single; raid 0/1/5/6/10                                            |
| Bandwidth of Video Storage per Server | 700 Mbps                                                           |

**Other**

|                                 |                                                        |
|---------------------------------|--------------------------------------------------------|
| Power                           | Maximum power 315W; stable power 210W                  |
| Working Environment Temperature | 0°C to 40°C (32°F to 104°F)                            |
| Working Environment Humidity    | 10%–80% (RH) (non-condensation)                        |
| Storage Environment Temperature | -20°C to +70°C (-4°F to +158°F)                        |
| Storage Environment Humidity    | 5%–90% (RH) (non-condensation)                         |
| Working Altitude                | 0 m–5000 m (0 ft–16,404.2 ft)                          |
| Weight (Without Package)        | 19.1 kg (42.1 lb)                                      |
| Dimension                       | 444.8 mm × 133.2 mm × 522.2 mm (17.5" × 5.24" × 20.6") |
| Installation Method             | Standard 19-inch rack mount                            |
| Secondary Development           | Platform SDK provided                                  |

**Performance Specification****Organization, User and Role**

|                         |                                                 |
|-------------------------|-------------------------------------------------|
| Organization            | 10 hierarchies, 999 organizations per hierarchy |
| Role (User Permission)  | 100                                             |
| User                    | 200 online users and 2,500 total users          |
| User for VDP Mobile APP | 500 online users and 5,000 total users          |

**Total Device**

|              |               |
|--------------|---------------|
| Total Device | 2,000 devices |
|--------------|---------------|

**Video Device and Channel**

|                                        |                                             |
|----------------------------------------|---------------------------------------------|
| Number of Connected Cameras Per Server | 512 IP and 2,000 channels <sup>3</sup>      |
| Auto-Register                          | 500 devices; 1,000 channels                 |
| ONVIF                                  | 200 devices; 400 channels                   |
| ANPR Device                            | 64 channels (6 pairs for entrance and exit) |
| Face Recognition Channel               | 100 channels                                |
| Object Detection Channel               | 20 channels                                 |
| Heatmap Channel                        | 64 channels                                 |
| People Counting Channel                | 100 channels                                |
| Thermal Channel                        | 20 channels                                 |
| POS Channel                            | 100 POS channels (16 POS data per second)   |

**ACS Device**

|                |                                       |
|----------------|---------------------------------------|
| Access Control | 200 IPs; 1,024 doors                  |
| VDP            | 2,000 IPs (Unit VTO no more than 200) |

**Alarm Device**

|                  |                      |
|------------------|----------------------|
| Alarm Controller | 10 IPs; 100 channels |
|------------------|----------------------|

**Media Transmission Server**

|                         |          |
|-------------------------|----------|
| Video Input per Server  | 700 Mbps |
| Video Output per Server | 700 Mbps |

**Playback and Download**

|                               |          |
|-------------------------------|----------|
| Playback Bandwidth per Server | 100 Mbps |
| Download Task                 | 5        |
| Maximum Record Plan           | 100      |

**Alarm**

|             |     |
|-------------|-----|
| Alarm Rules | 200 |
|-------------|-----|

**Map**

|                                         |                            |
|-----------------------------------------|----------------------------|
| Hierarchy                               | 8 hierarchies              |
| Submap                                  | 32 per hierarchy           |
| Map Size of Raster Map                  | 14.7 MB                    |
| Spots per Map (e.g. Camera Alarm Input) | Up to 300 (GIS and Raster) |

**Face Recognition**

|                                |       |
|--------------------------------|-------|
| Face Library                   | 50    |
| People per Face Library        | 5,000 |
| Face Images Imported Each Time | 1,000 |

**ANPR**

|                   |     |
|-------------------|-----|
| Vehicle Blacklist | 100 |
|-------------------|-----|

**Data Information**

|                                  |                        |
|----------------------------------|------------------------|
| Alarm Records                    | 5,000,000 <sup>1</sup> |
| Face Snapshot Records            | 5,000,000 <sup>1</sup> |
| Number Plate Recognition Records | 5,000,000 <sup>1</sup> |
| Violation Records                | 5,000,000 <sup>1</sup> |
| Average Speed Records            | 5,000,000 <sup>1</sup> |
| People Counting Records          | 5,000,000 <sup>1</sup> |
| Heatmap Records                  | 5,000,000 <sup>1</sup> |
| Attendance Records               | 5,000,000 <sup>1</sup> |
| Video Intercom Records           | 5,000,000 <sup>1</sup> |
| Log                              | 5,000,000 <sup>1</sup> |

**Personnel Management**

|             |        |
|-------------|--------|
| Person      | 50,000 |
| Card        | 50,000 |
| Face        | 50,000 |
| Fingerprint | 80,000 |

**Event**

|                                        |                                                                |
|----------------------------------------|----------------------------------------------------------------|
| Total Event                            | 240 per second <sup>2</sup>                                    |
| <b>Event without Picture</b>           |                                                                |
| Alarm without Picture                  | 240 per second <sup>2</sup>                                    |
| Alarm Controller Event                 | 40 per second <sup>2</sup>                                     |
| Access Control Event                   | 16 per second <sup>2</sup>                                     |
| <b>Event with Picture (for ANPR)</b>   |                                                                |
| ANPR                                   | 12 per second (12 per 3 s for entrance and exit ) <sup>2</sup> |
| <b>Event with Picture (for others)</b> |                                                                |
| Alarm with Picture                     | 40 per second <sup>2</sup>                                     |
| Face Capture                           | 120 per second <sup>2</sup>                                    |
| Object Detection                       | 40 per second <sup>2</sup>                                     |

**Distributed System****Server Number**

|                        |          |
|------------------------|----------|
| Number of Slave Server | Up to 10 |
|------------------------|----------|

**Device and Channel****Total Device Number**

|                     |               |
|---------------------|---------------|
| Total Device Number | 5,000 devices |
|---------------------|---------------|

**Video Device and Channel**

|                                            |                                |
|--------------------------------------------|--------------------------------|
| Total Number of Video Devices and Channels | 5,000 devices; 10,000 channels |
| Auto-register                              | 1,000 devices; 4,000 channels  |
| ONVIF                                      | 400 devices; 800 channels      |

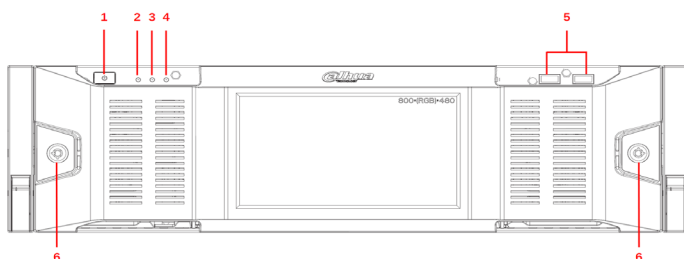
|                                        |                                                                 |
|----------------------------------------|-----------------------------------------------------------------|
| ANPR Device                            | 320 channels                                                    |
| Face Recognition Channel               | 500 channels                                                    |
| Object Detection Channel               | 100 channels                                                    |
| Heatmap Channel                        | 320 channels                                                    |
| People Counting Channel                | 500 channels                                                    |
| Thermal Channel                        | 100 channels                                                    |
| POS Channel                            | 500 Channels (100 POS data per second)                          |
| <b>ACS Device</b>                      |                                                                 |
| Access Control                         | 500 IPs; 2,500 doors                                            |
| <b>Event</b>                           |                                                                 |
| Total Event                            | 480 per second <sup>2</sup>                                     |
| <b>Event without Picture</b>           |                                                                 |
| Alarm without Picture                  | 480 per second <sup>2</sup>                                     |
| Access Control Event                   | 96 per second <sup>2</sup>                                      |
| <b>Event with Picture (for ANPR)</b>   |                                                                 |
| ANPR Event                             | 120 per second (120 per 3 s for entrance and exit) <sup>2</sup> |
| <b>Event with Picture (for others)</b> |                                                                 |
| Alarm with Picture                     | 120 per second <sup>2</sup>                                     |
| Face Capture                           | 280 per second <sup>2</sup>                                     |
| Object Detection                       | 80 per second <sup>2</sup>                                      |

1: The record number depends on the disk capacity, and the maximum record quantity is 5,000,000.

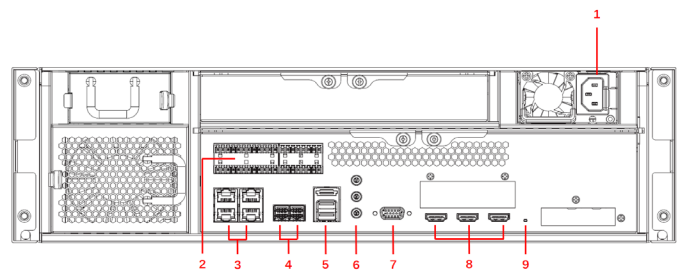
2: The sum of event of each type cannot exceed the total number of events. One piece of access controller event is equivalent to three general alarms without pictures; one piece of alarm controller event is equivalent to a general alarm without picture; one piece of alarm with picture or one object detection is equivalent to three face detection events.

3: The maximum number when add only video devices

## Physical Interface



- 1- Power Button
- 2- Hard Device Indicator
- 3- Alarm Indicator
- 4- Network Indicator
- 5- USB 2.0
- 6- Lock



- 1- Power Interface
- 2- RS-485
- 3- Gigabit LAN Port 1-4
- 4- SAS
- 5- USB 3.0
- 6- Audio Input/Output
- 7- VGA
- 8- HDMI Port 1-3
- 9- RESET (Reserved)

## Dimensions (mm)

