

DHI-DSS7016DR-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 1,000 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 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 1,000 video channels per server and the number can be larger with distributed deployment.

High Reliability

- Redundant power option makes the system more stable.
- 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, responsible 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 lockout.

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
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Video Device and Channel

Total Video Device and Channel	500 devices; 1,000 channels
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
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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
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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
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Data Information

Alarm Records	5,000,000 ¹
Face Snapshot Records	5,000,000 ¹
Number Plate Recognition Records	5,000,000 ¹
Violation Records	5,000,000 ¹
Average Speed Records	5,000,000 ¹
People Counting Records	5,000,000 ¹
Heatmap Records	5,000,000 ¹
Attendance Records	5,000,000 ¹
Video Intercom Records	5,000,000 ¹
Log	5,000,000 ¹

Personnel Management

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

Event

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

Distributed System

Server Number

Number of Slave Server	Up to 10
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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

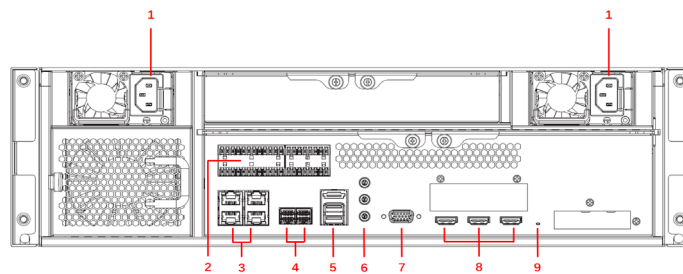
ANPR Device	320 channels
Face Recognition Channel	500 channels
Object Detection Channel	100 channels
Heatmap Channel	320 channels
People Counting Channel	500 channels
Thermal Channel	100 channels
POS Channel	500 Channels (100 POS data per second)
ACS Device	
Access Control	500 IPs; 2,500 doors

Event

Total Event	480 per second ²
Event without Picture	
Alarm without Picture	480 per second ²
Access Control Event	96 per second ²
Event with Picture (for ANPR)	
ANPR Event	120 per second (120 per 3 s for entrance and exit) ²
Event with Picture (for others)	
Alarm with Picture	120 per second ²
Face Capture	280 per second ²
Object Detection	80 per second ²

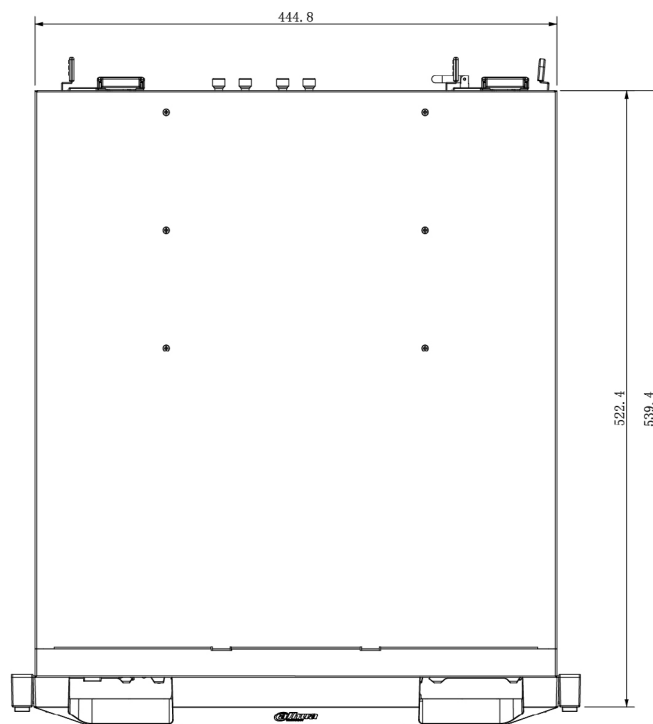
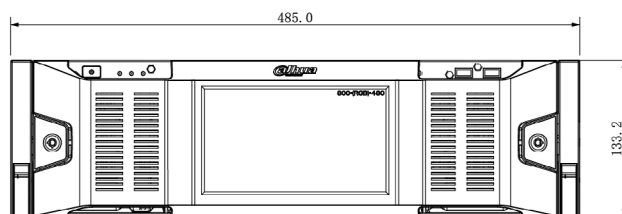
1: The record number depends on the disk capacity, and the maximum record quantity is 5,000,000.

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.

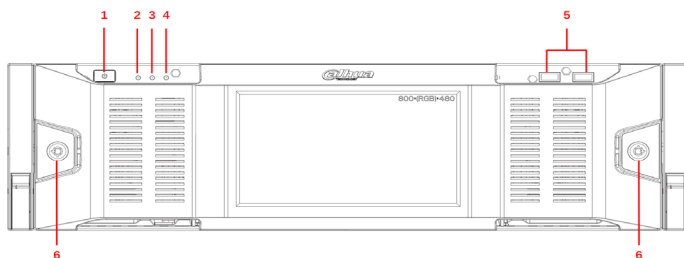


- 1- Power Interface
- 2- RS-485
- 3- Gigabit LAN Port 1-4
- 4- SAS
- 5- USB 3.0
- 6- Audio Input/Output
- 7- VGA
- 8- HDMI Port 1-3
- 9- RESET (Reserved)

Dimensions (mm)



Physical Interface



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