

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 main 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

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 blocklist, 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 Blocklist

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

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, 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 sub servers.
- Enable or disable sub 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.
- 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.

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.

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.

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 | 600 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 | 50 online users and 200 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

| | |
|--------------------------------|---|
| 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 |

ACS Device

| | |
|----------------|---------------------------------------|
| Access Control | 200 IPs; 512 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 | 600 Mbps |
| Video Output per Server | 600 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 |
| Total Persons for Face Library | 5,000 |
| Face Images Imported Each Time | 1,000 |

ANPR

| | |
|-------------------|-----|
| Vehicle Blocklist | 100 |
|-------------------|-----|

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 |
| Video Intercom Records | 5,000,000 ¹ |
| Log | 5,000,000 ¹ |

Personnel Management

| | |
|-------------|-------|
| Person | 5,000 |
| Card | 5,000 |
| Face | 5,000 |
| Fingerprint | 5,000 |

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 Sub Server | Up to 5 |
|----------------------|---------|

Device and Channel

Total Device Number

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

Video Device and Channel

| | |
|--|-------------------------------|
| Total Number of Video Devices and Channels | 2,500 devices; 5,000 channels |
| Auto-register | 2,500 devices; 5,000 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 |

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)

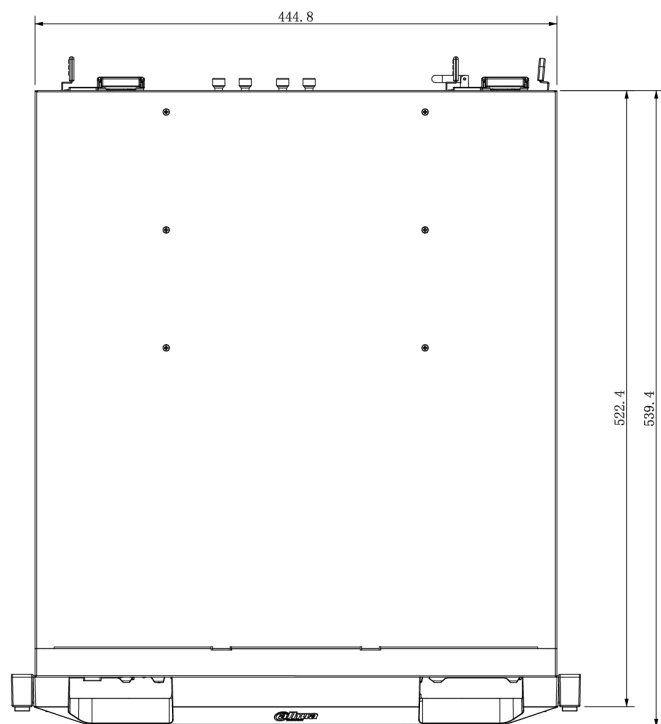
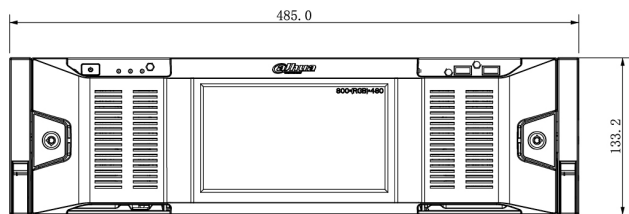
| | |
|------------|---|
| ANPR Event | 120 per second (120 per 3 s for entrance and exit) ² |
|------------|---|

Event with Picture (for others)

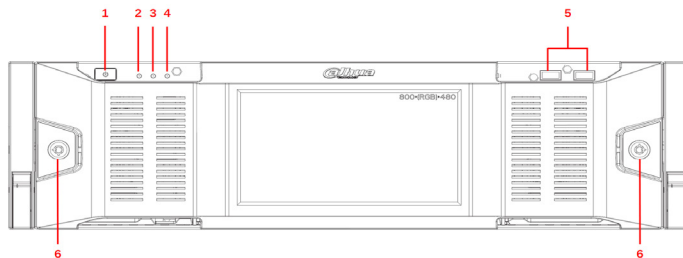
| | |
|--------------------|-----------------------------|
| Alarm with Picture | 120 per second ² |
| Face Capture | 280 per second ² |
| Object Detection | 80 per second ² |

- 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.

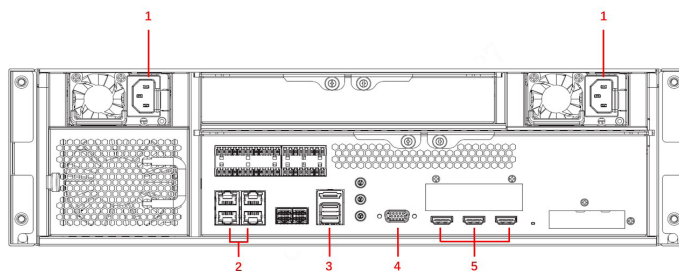
Dimensions (mm)



Panels



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



- 1- Power Interface
- 2- Gigabit LAN Port 1-4
- 3- USB 3.0
- 4- VGA
- 5- HDMI Port 1-3