



บริษัท เพาเวอร์เทค แอนด์ โอเอ จำกัด
POWER TECH & OA Company Limited

37/2 หมู่ที่ 6 ตำบลรัชฎา อำเภอเมืองภูเก็ต จังหวัดภูเก็ต 83000

โทร. 099-3956324 E-mail : phuketoa@gmail.com

ใบเสนอราคา
Quotation

เลขประจำตัวผู้เสียภาษี 0835560014403

ลูกค้า : นายกเทศมนตรีตำบลเวียงสระ

ที่อยู่ : เทศบาลตำบลเวียงสระ

451 ม.4 ต.บ้านส้อง อ.เวียงสระ จ.สุราษฎร์ธานี 84190

วันที่ :

Quo.No. : POA-Q6311030

Item	Product Description	Qty.	Unit	Price / Unit	Amount (Baht)
1	กล้องโทรทัศน์วงจรปิดชนิดเครือข่าย แบบมุมมองคงที่สำหรับติดตั้งภายนอกอาคาร แบบที่ 1 สำหรับใช้ในงานรักษาความปลอดภัยและวิเคราะห์ภาพ	56	ตัว	58,000.00	3,248,000.00
2	กล้องโทรทัศน์วงจรปิดชนิดเครือข่าย แบบปรับมุมมอง แบบที่ 2 สำหรับใช้ในงานรักษาความปลอดภัยทั่วไป	6	ตัว	92,000.00	552,000.00
3	อุปกรณ์บันทึกภาพผ่านเครือข่าย (Network Video Recorder) แบบ 32 ช่อง	2	ชุด	125,000.00	250,000.00
4	ฮาร์ดดิสก์ ความจุขนาด 12TB	8	ชุด	14,800.00	118,400.00
5	สิทธิ์ไลเซนส์ (IP License) กล้องวงจรปิด สำหรับเครื่องบันทึกภาพ	62	สิทธิ์	12,500.00	775,000.00
6	โปรแกรมบริหารจัดการระบบกล้องวงจรปิด สำหรับเครื่องคอมพิวเตอร์ปฏิบัติการ	1	สิทธิ์	185,000.00	185,000.00
7	เครื่องคอมพิวเตอร์ สำหรับงานประมวลผล แบบที่ 2 (จอภาพขนาดไม่น้อยกว่า 19 นิ้ว)	1	เครื่อง	30,000.00	30,000.00
8	คีย์บอร์ดควบคุมระบบ Keyboard Controller	1	ชุด	85,000.00	85,000.00
9	เครื่องสำรองไฟฟ้า ขนาด 800 VA	30	ชุด	2,500.00	75,000.00
10	เครื่องสำรองไฟฟ้า ขนาด 3 kVA	2	ชุด	32,000.00	64,000.00
11	อุปกรณ์กระจายสัญญาณ (L3 Switch) ขนาด 24 ช่อง	1	ชุด	120,000.00	120,000.00
12	อุปกรณ์ป้องกันไฟกระชาก	30	ชุด	12,800.00	384,000.00
13	แหล่งจ่ายไฟ แบบ PoE สำหรับกล้องวงจรปิด	62	ชุด	2,800.00	173,600.00
14	เครื่องแปลงและสลับสัญญาณเครือข่ายส่งผ่านสายใยแก้วนำแสง แบบ Industrial Grade	30	ชุด	36,500.00	1,095,000.00
15	แหล่งจ่ายไฟ สำหรับเครื่องแปลงสัญญาณเครือข่ายส่งผ่านสายใยแก้วนำแสง	30	ชุด	3,800.00	114,000.00
16	อุปกรณ์เชื่อมต่ออุปกรณ์เครื่องแปลงสัญญาณเครือข่ายส่งผ่านสายใยแก้วนำแสง (SFP Single Mode)	60	ชุด	7,900.00	474,000.00



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ที่อยู่ : เทศบาลตำบลเวียงสระ

451 ม.4 ต.บ้านส้อง อ.เวียงสระ จ.สุราษฎร์ธานี 84190

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Item	Product Description	Qty.	Unit	Price / Unit	Amount (Baht)
17	เครื่องพิมพ์เลเซอร์ หรือ LED สี ชนิด Network แบบที่ 1 (18 หน้า / นาที)	1	ชุด	10,000.00	10,000.00
18	โทรทัศน์ แอล อี ดี (LED TV) แบบ Smart TV ขนาดไม่น้อยกว่า 48 นิ้ว	8	จอ	17,600.00	140,800.00
19	ขายึดจอโทรทัศน์ แอล อี ดี (LED TV) แบบ Smart TV	8	ชุด	2,500.00	20,000.00
20	ตู้สำหรับจัดเก็บเครื่องคอมพิวเตอร์และอุปกรณ์ แบบที่ 1 (ขนาด 36U)	1	ตู้	18,000.00	18,000.00
21	สายนำสัญญาณแบบตีเกลียว ชนิด UTP Cat5	1,500	เมตร	25.00	37,500.00
22	สายนำสัญญาณชนิดเส้นใยแก้วนำแสงแบบโหมดเดี่ยว Single Mode ขนาด 12 Core	15,700	เมตร	85.00	1,334,500.00
23	วัสดุอุปกรณ์สำหรับยึดสายนำสัญญาณชนิดเส้นใยแก้วนำแสง	15,700	เมตร	55.00	863,500.00
24	จุดเชื่อมต่อสายสัญญาณเส้นใยแก้วนำแสง	960	จุด	1,200.00	1,152,000.00
25	ค่าทดสอบสายนำสัญญาณชนิดเส้นใยแก้วนำแสง	1	งาน	50,000.00	50,000.00
26	กล่องสำหรับเชื่อมต่อสายสัญญาณเส้นใยแก้วนำแสง แบบ Closure	8	ชุด	9,500.00	76,000.00
27	กล่องสำหรับเชื่อมต่อสายสัญญาณเส้นใยแก้วนำแสง แบบ Rack Mount	1	ชุด	19,900.00	19,900.00
28	สายนำสัญญาณชนิดใยแก้วนำแสงแบบสำเร็จพร้อมหัวต่อ แบบ Patch Cord	180	เส้น	1,800.00	324,000.00
29	ถาดสำหรับใส่จุดเชื่อมต่อสายสัญญาณเส้นใยแก้วพร้อม อุปกรณ์ท่อหุ้ม	60	ชุด	950.00	57,000.00
30	มาตรวัดไฟฟ้า ขนาด 5/15 A. (มิเตอร์ของ กฟภ.)	30	ชุด	850.00	25,500.00
31	เซอร์กิตเบรกเกอร์ ขนาด 10 A	30	ชุด	220.00	6,600.00
32	ตู้เหล็กสำหรับใส่อุปกรณ์ สำหรับติดตั้งภายนอก	30	ชุด	7,800.00	234,000.00
33	ขาเหล็ก Support สำหรับยึดกล่องกับเสาไฟฟ้า	45	ชุด	5,800.00	261,000.00
34	เสาเหล็ก สูงไม่น้อยกว่า 5.00 ม. สำหรับติดตั้งกล่อง	1	ต้น	30,000.00	30,000.00



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Item	Product Description	Qty.	Unit	Price / Unit	Amount (Baht)
35	งานฐานรากสำหรับเสาเหล็ก	1	งาน	8,500.00	8,500.00
36	งานปรับปรุงห้องศูนย์ควบคุมและย้ายอุปกรณ์ชุดควบคุม	1	งาน	550,000.00	550,000.00
	- งานปรับปรุงแผง Panel Monitor สำหรับติดตั้งจอแสดงผลภาพ				
	- ชุดโต๊ะและเก้าอี้ สำหรับเจ้าหน้าที่ประจำศูนย์ควบคุม				
	- งานปรับปรุงพื้น ผนังและฝ้าเพดาน				
	- งานปรับปรุงประตูห้องควบคุม				
37	งานติดตั้งสายสัญญาณ , สายไฟฟ้า , อุปกรณ์ประกอบต่างๆใน ระบบและอุปกรณ์ภายในห้องศูนย์ควบคุมระบบ และงาน เบ็ดเตล็ด	1	งาน	1,660,000.00	1,660,000.00
	- งานติดตั้งระบบสายดิน Grounding สำหรับอุปกรณ์ภายในตู้เหล็กที่เสไฟฟ้า				
	- งานติดตั้งท่อและสายไฟฟ้าจากมิเตอร์มาบรรจบถึงตู้เหล็กที่เสไฟฟ้า				
	- งานติดตั้งสายสัญญาณกล่องกับอุปกรณ์กระจายสัญญาณภายในตู้เหล็กที่เสไฟฟ้า				
	- งานระบบควบคุมการเข้า-ออก แบบใช้ลายนิ้วมือห้องควบคุม				
	- งานติดตั้งอุปกรณ์ต่างๆ เช่น เครื่องคอมพิวเตอร์ , อุปกรณ์กระจายสัญญาณ , เครื่องสำรองไฟฟ้า ที่อยู่ในห้องควบคุม				
	- งานติดตั้งท่อและสายไฟฟ้าจากแผงวงจรหลักมายังอุปกรณ์ต่างๆที่อยู่ในห้องควบคุม				
	- งานติดตั้งสายสัญญาณจากอุปกรณ์กระจายสัญญาณยังอุปกรณ์ต่างๆที่อยู่ในห้องควบคุม				
38	งาน Commissioning เชื้อต่ออุปกรณ์และทดสอบการทำงาน อุปกรณ์ต่างๆของระบบ	1	งาน	80,000.00	80,000.00
สิบสี่ล้านเจ็ดแสนหนึ่งพันแปดร้อยบาทถ้วน			Grand Total		14,701,800.00

- หมายเหตุ - ระยะเวลารับประกันสินค้า 1 ปี
- ระยะเวลายื่นราคา 60 วัน
- ระยะเวลาส่งมอบอุปกรณ์ภายใน 120 วัน



ศรีษณ์ สุทธิโอสถ

ผู้เสนอราคา



Bosch Video Management System 6.0

www.boschsecurity.com



BOSCH
Invented for life



- ▶ Maximum resilience to ensure continuous operation.
- ▶ Up to 2000 cameras with a single recording server mean high savings.
- ▶ A scalable system growing with your needs.
- ▶ Best integration with Bosch Video hardware.
- ▶ Version 6.0 offers integration with selected 3rd party cameras and storage systems, as well as other hardware and software.

The Bosch Video Management System is a unique enterprise IP video security solution that provides seamless management of digital video, audio, and data across any IP network. It provides the best VMS to go with Bosch CCTV devices, leveraging the unique capabilities of Bosch cameras and recording solutions. It nevertheless offers interfaces and standards to integrate other systems and manufacturers. The system is equipped with a unique embedded resilience.

It keeps operations up and running even when both, Management and Recording Servers fail. On edge intelligent Video Analyses and the unmatched recording technology managing up to 2000 cameras (including up to 500 ONVIF cameras) with a single server dramatically reduces the total cost of ownership.

The Bosch Video Management System allows a very flexible system design:

- Professional: Single Management Server System 1 to 2000 cameras out of the box. Only this system supports Bosch VMS-BIS Connectivity.
- Enterprise System: Supporting multi Management Server requirements for Metro, Airport and other large industrial facilities across different time zones. Supports controlled monitoring across different legal

entities. Monitoring of up to 10,000 cameras across 10 subsystems per user group resulting in 200,000 cameras in total.

Up to 30 subsystems per user group for <100 cameras per subsystem, allowing each operator to access events, alarms, live and playback from up to 30 Management Server computers simultaneously.

- Maximum 500 ONVIF cameras per Management Server
- Access to live including PTZ control and recorded video of up to 9999 sites with Bosch DVR recorders.

The Bosch Video Management System is installed on a Microsoft Windows Operating System.

We recommend using Bosch Workstations and Servers. They are fully tested and optimized for Bosch Video Management System.

In addition to the Bosch ST standard terms and conditions of sale, the Bosch Software Maintenance Agreement is a great option to keep the VMS always up-to date.

It can be found in the online CCTV product catalog.

System overview

Software components

- Management Server software provides management, monitoring, and control of the entire system. One single Management Server manages up to 2000 Cameras/encoders.
- Enterprise Management Server provides access to multiple Management Servers
- Video Recording Manager (VRM) provides recording and playback management of video, audio, and data. One single VRM manages up to 2000 cameras/encoders (including up to 500 ONVIF cameras).
- Configuration Client software provides the straight forward user interface for system configuration and management
- Config Wizard software provides easy and fast setup of a small recording system when using the Bosch VMS Appliance.
- Bosch VMS Appliance: DIVAR IP 3000/7000 is a simple and reliable all-in-one recording, viewing, and management solution for network surveillance systems with 32 channels pre-licensed.
- Operator Client software provides the ergonomic and intuitive user interface for system monitoring and operation.
- Mobile Video Service provides a transcoding service. It transcodes the live and recorded video stream from a configured camera according to the available network bandwidth. This service enables video clients to view high-quality images via low bandwidth.
- Mobile App (iPhone or iPad): Access live and playback video from remote in single or quad-view. Alert and share live video from mobile camera with other security staff with a single click. App available in AppStore.
- Web Client: Access live and playback video from remote in single or quad-view. Search for text data and trigger export of videos on Management Server.
- Bosch Video Streaming Gateway: Bosch cameras, ONVIF cameras, JPEG cameras, RTSP encoders.

Bosch Video Recording Manager (VRM) provides a Distributed Network Video Recorder solution, eliminating the need for dedicated NVRs. The usage of multiple client Workstations offers great scalability.

Functions

Embedded Resilience

- An Offline Client ensures continuous operation for live, playback and export while Management Server is disconnected.

Video Recording Manager (VRM)

VRM provides load balancing and failover for the iSCSI Storage System and makes it easy to add additional iSCSI Storage Systems later on. VRM introduces the concept of a storage virtualization layer. This abstraction layer enables VRM to manage all of the individual disk arrays in the entire system as various “virtual” pools of storage, which are intelligently allocated as needed.

A storage pool is a container for one or more iSCSI storage systems that share the same load balancing properties.

Dual / failover recording:

- A Primary VRM manages the normal recording of the cameras of your system. You use a Secondary VRM to achieve dual recording of your cameras. Dual recording allows you to record video data from the same camera to different locations. A Secondary VRM can manage the secondary recording for multiple Primary VRMs. A Failover VRM is used for continuing the recording of a failed Primary VRM or a failed Secondary VRM computer.

Bosch VMS furthermore supports Live and Playback of the following recording engines:

- DIVAR IP series, Local Storage, Direct iSCSI recording; Bosch Recording Station (BRS), Video Streaming Gateway (VSG).

For legacy purposes the following recording engines are supported: DVR, DiBos, VIDOS (Live only).

Cameras

- Supports Bosch UHD and panoramic cameras, MPEG-4 & H.264 encoders, MPEG-4 & H.264 IP cameras, and IP AutoDome cameras in SD & HD format
- Supported HD resolutions: 720p and 1080p, 5, 8 and 12 Megapixel
- Intelligent Video Analysis (IVA) and Forensic Search
- Automated Network Replenishment (ANR)
- Regions of Interest
- Intelligent tracking
- Quality settings attuned to each camera type. Refer to data sheets of the cameras for further details.
- Support of 3rd party cameras via RTSP, MJPEG or ONVIF Profile S. The list of supported 3rd party cameras is published on the Bosch Integration Partner Program website.

Deployment

- Updates of Operator Client and Configuration Client automatically deployed from Management Server
- One-click hotfix deployment
- New Setup: Internet Information Service is configured automatically for use with Mobile Video Service, enter the desired number of VSG instances, perform an update installation with a very few clicks.

Configuration

- Generic camera connection
Bosch VMS retrieves the values of currently known functions on connection to unknown Bosch IP cameras/encoders. It is thus not required to upgrade to new Bosch VMS version to connect new camera models in the future.
Valid for firmware 5.70 or later
- Automatic scan of IP devices
- Automatic IP address assignment of IP devices
- Configurable Logical Tree
- Device states indicated by icons, including network connection loss, video loss, and camera de-adjustment

- Batch firmware updates of IP devices

Scheduling

- Up to 10 Recording Schedules with Holidays and Exception Days
- Task Schedules with Holidays, Exception Days, and recurring schedule support
- Per camera settings for minimum and maximum recording times
- Per camera, per recording schedule frame rate and quality settings for live, normal recording, motion recording, and alarm recording

Event handling

- Compound events (combining events with Boolean logic)
- Event duplication allowing separate handling
- Event assignment to user groups
- Schedule dependent event logging
- Schedule dependent event-triggered Command Script invocation
- 4 configurable user-events (can be triggered via menu command)
- Mapping of ONVIF events to Bosch VMS events. ONVIF events can then trigger Bosch VMS alarms and recording.

Alarm configuration

- Schedule dependent alarm generation
- Alarms can trigger alarm-mode recording for any cameras.
- 100 alarm priorities can be defined.
- Occurrence of text data can trigger alarm recording.

Sequences

- Pre-configured camera sequences with 25 cameras with each up to 100 steps with individual dwell times.
- “Automatic Sequences” created by multiple selection and drag and drop to Image panes.

User Management

- LDAP compatible for integration with user management systems such as Microsoft Active Directory
- Access to system resources individually controlled per user group
- Logical Tree customized per user group – users only see devices for which they have access
- User group rights for protecting, deleting, exporting, and printing video
- User group rights for Logbook access
- User group priority assignment for PTZ control and Allegiant camera access
- Individual per-camera privileges assignable per user group for live access, playback, audio, text data display, PTZ control
- Dual-authorization logon – special privileges and priorities granted when two users log on together

Efficient operation

Bosch VMS puts a strong emphasis to efficient operation, which consists of several disciplines:

Equipment:

- Workstations are protected by an Inactivity logoff during the absence of the operator.

- Up to 4 PC monitors supported per Workstation. Arbitrary number of Bosch Monitor Walls or a Barco Monitor Wall (Transform N-series) may be used in addition.
- KBD-Universal XF keyboard supported, connected to Workstation via USB interface
- KBD-Universal XF keyboard supports Enterprise System (select the desired Management Server)
- Bosch IntuiKey keyboard supported, connected to either Workstation or IP decoder
- Bosch IntuiKey keyboard supports Enterprise System (select the desired Management Server)

Intuitive operation:

- A unique flexible Image window (patent pending) allows any combination of video window sizes and layouts without the need of pre-configured layouts
- Any live Image pane can be switched to instant playback (not valid for transcoded streams)
- Multiple instant playback Image panes
- Image panes can display live video, instant playback video, text documents, maps, or web pages
- Enhanced map features: Device states indicated on icons; special state events (for example motion alarm) can be highlighted by defined colors or blinking; thumbnail of camera appears on mouse over; alarms of devices can be accepted and presets can be accessed via context menu.
- Camera selection by double-click or drag and drop from site maps, Logical Tree, or Favorites Tree
- Decoders can be organized in Monitor Walls from within Operator Client Monitor Walls can be controlled without connection to Management Server
- Control of analog monitors connected to decoders via drag and drop

Efficient surveillance:

- Favorites tree can be individually configured per user
- Call up Favorites with a click. Include complete views with Image pane layouts and camera assignments
- Intelligent tracking enables the camera to assist the operator by following an automatically or manually selected object (PTZ camera or fixed cameras).
- Zoomable sitemaps with links, devices, sequences, and Command Scripts provide excellent overview
- Automatic map positioning of a camera in a map when this camera is selected
- Two audio listening options – selected channel only, or multiple simultaneous channels
- Audio Intercom functionality
- When operating from a remote access, the operator can retrieve Live and Playback via low bandwidth using transcoded video or TCP for reliable connection (Live Mode). Using Region of Interest further saves network bandwidth when zooming into a section of the camera image.

Efficient response:

- IVA is state-of-the-art intelligent video analysis that reliably detects, tracks, and analyzes moving objects while suppressing unwanted alarms from spurious sources in the image.
- Priority threshold defined for each operator group for escalation management

- Selective auto-popup on alarm
- Alarms displayed in separate alarm window
- Up to 5 Image panes per alarm with live or playback video, sitemaps, documents, or web pages displayed in an “alarm row”, with highest priority alarms on top
- Audio file per alarm
- Workflow with user instructions and user comments, optionally forced before clearing
- Email or SMS notification on alarm
- Alarm display on Monitor Wall
- Alarm auto clear options either time or state dependent

Efficient investigation:

- Forensic Search allows the usage of Intelligent Video Analysis (IVA) algorithms on the recorded video
- Motion search in recordings allows easy locating of changes in selected areas
- Sophisticated multi-camera Timeline allows easy, graphical searching of recorded video
- Bookmarks in Live and Playback Mode for easy investigation and export of recordings
- Selected clips can be exported to DVD, network drives, or USB sticks with a few mouse clicks
- The operator can search for text data to quickly find the corresponding recordings.
- Text data is delivered by systems like foyer card readers, automatic teller machines, point of sales, petrol stations or Automatic Number Plate Recognition.

Text data contains textual transaction data like account numbers and bank routing codes. The text data is stored within the Logbook as well as in the recordings.

System Monitoring

- System-wide health monitoring, including Bosch cameras, computers, and software.
- Network equipment and other third-party devices monitored with SNMP.
- SNMP monitoring on the Management Server computer provides monitoring information to other Management Systems.

Customization and Interfacing

- Server SDK controls and monitors Bosch VMS Management Server by scripts and external applications.
- Client SDK controls and monitors Bosch VMS Operator Client by external applications and scripts (part of the related server configuration).
- Client Enterprise SDK controls and monitors Bosch VMS Operator Client of an Enterprise System by external applications.
- Cameo SDK easily embeds the content of the Bosch VMS Image pane into clients of 3rd party Physical Security Information Management (PSIM) and other management systems.
For each Cameo SDK instance you need a Workstation license.
- Custom Command Scripts can control all system functionality.
- Powerful built in Command Script editor supports C# and Visual Basic .Net.

- External software can trigger events and send text data via virtual inputs.
- Any .Net programming language (for example C#) can be used to interface Bosch VMS functionalities.
- Other systems can control a virtual matrix with Allegiant CCL commands that can be sent via RS232.
- Compatible with Advantech ADAM-6000 series Digital Input / Output modules.
- Compatible with Bosch Building Integration System.
- Compatible with UL intrusion panels from Bosch.

Parts included

- Bosch VMS is delivered electronically via download of the Setup in the Product Catalog.
 - The Setup contains the following items:
 - Installation program that can selectively install all components (Management Server, Video Recording Manager, Configuration Client, Operator Client, Video Streaming Gateway, Mobile Video Service, Bosch VMS SDK, Cameo SDK) in all supported languages
 - Configuration Manual (PDF format) in all supported languages (except Arabic)
 - Operation Manual (PDF format) in all supported languages (except Arabic)
 - Quick Installation Guide (PDF format) in English, French, German, Simplified Chinese and Spanish
- Licenses are provided as eLicenses via email.

Technical specifications

System Specifications

Maximum number of workstations simultaneously viewing the same camera	Multicast: 100 Unicast: 5
Supported GUI languages	English, German, Dutch, Italian, Portuguese, French, Spanish, Simplified Chinese, Traditional Chinese, Russian, Hungarian, Japanese, Czech, Danish, Finnish, Greek, Norwegian, Polish, Swedish, Thai, Turkish, Korean, and Arabic

Anti-Virus software must not perform a full-scan. Performance may decrease depending on configuration.

Event reaction time	<1 second, assuming sufficient network bandwidth
Alarm reaction time (incl. 1 live Image pane, 1 instant playback Image pane and 1 map Image pane):	Maximum 2 seconds, assuming sufficient network bandwidth

Text data	Restrictions for text data written into the Logbook (this applies, if entry is stored only in Logbook, not in recordings): 10*Virtual Input (VI) with length 300 = 3000 characters: 109 items/sec (average) 10 * VI data field with length 800 = 8000 characters: 22 items/sec (average) 10 * VI data field with length 30 = 300 characters: 500 items/sec (average) (item = data input event) Restrictions for text data written into recordings: Bosch VMS can only process up to 3200 Bytes (corresponds to about 3200 English characters in Unicode) per event.
Bandwidth requirements for LAN	Min. 1 Gbps for connections between: Operator Client and Management Server Operator Client and VRM/DiBos Management Server and NVR/VRM/DiBos
Bandwidth requirements for remote access	>= 300kbps
Hardware transcoder	Hardware transcoder VIP-XTCXF-INT or VJT-XTCXF must be configured in VRM, refer to VRM documentation. Hardware transcoding only applicable for VRM connected BVIP cameras. For transcoding live streams it is not required that the respective camera is recording.
Required open ports	See Online Help or Manual for Configuration Client, chapter on used ports.

Management Server Specifications

Maximum number of sustained events	For highest performance server: 500 events/s with Logbook 1000 events/s without Logbook 5000 events/s at peaks (within 60 minutes) with Logbook 500 events/s from ONVIF cameras
Logbook	Supported by SQL Server 2014 Express (64-bit version) 4 GB Logbook size
Management Server Redundancy (VMware)	Available with VMware HA. Please contact Bosch Design Engineer for redundancy

solutions.
The following software versions are used:

- ESXi Server 5.1.0 U1 build 1065491
- vCenter Server 5.1.0 U1 build 1064983

Required hardware

- 2x DL380p Gen8 Management Server with 8 GB RAM and 1x 4-port NIC (one DLxxx for each ESXi server)
- 1x DL380p Gen8 Management Server with 8 GB RAM (for Control computer with monitoring) Not necessary if Control computer is installed on ESXi server as virtual machine. Note: For configuration, only a workstation is required.
- 1x Bosch DSA E-Series

For use with VMware you must install the default NetApp firmware on a DSA E-Series device. The firmware and the manual are available in the Product Catalog of Bosch VMS (**Software & Support**).

Required VMware licenses/
Windows licenses

- 1x VCS-FND-C VMware vCenter Server 5 Foundation for vSphere up to max. 3 hosts. SNS is required.
- 1x VCS-FND-G-SSS-C Basic Support/ Subscription for vCenter Server 5 Foundation for vSphere for 1 year.
- 2x VS4-ADV-C VMware vSphere 5 Advanced for 1 processor (max. 12 cores per processor). SNS is required. Included: vShield Zones, Data Recovery, Fault Tolerance, Hot Add, vMotion, Thin Provisioning, High Availability, Update Manager, VCB / Storage APIs, VC Agent, 4-way vSMP, VMware ESXi or VMware ESX, 12 Physical Cores/CPU, 256GB Physical Memory

	<ul style="list-style-type: none"> • 2x VS4-ADV-G-SSS-C Basic Support/ Subscription for VMware vSphere. Advanced for 1 processor for 1 year. <p>If current hardware is used, the following licenses must be ordered additionally:</p> <ul style="list-style-type: none"> • 1x Windows license for: Windows Server 2008 R2 (64 Bit) for control computer and ESXi server. • 3x licenses for 2nd CPU
Management Server Disaster Recovery (Hyper-V Replica)	Hyper-V from Microsoft; OS requirement: Windows Server 2012 SR2 (64-bit) Minimum hardware requirements: 2 HP ProLiant DL380 PCs with 16 GB RAM and 1x 4-port NIC, 200 GB hard disk
Management Server High Availability (Hyper-V Failover Cluster and Starwind)	Hyper-V from Microsoft; OS requirement: Windows Server 2012 SR2 (64-bit) with Domain Controller for HA Minimum hardware requirements: 2 HP ProLiant DL380 PCs with 16 GB RAM and 1x 4-port NIC Shared storage for HA: Tested with NetApp DSA E-Series 2600 with 2 controllers
Maximum number of Task Schedules	200

VRM Specifications

Version	3.50 Previous versions are not supported.
Maximum count of VRM servers per Management Server	125 (maximum 2000 Cameras in total)
Maximum data rate per iSCSI	Please contact Bosch Design Engineer for iSCSI storage solutions.
Max. number of playback sessions	64

Minimum Client Workstation PC Requirements

Operating System	Windows 7 Professional or Ultimate SP1 (64-bit) Windows 8.1 (64-bit, not Windows 8.0!) We recommend installing Internet Explorer 11.
CPU	Intel Core i7 4770 3.4 GHz (up to 3.9 GHz)
RAM	Minimum 8 GB
Free disk space	Minimum 3 GB for Single Site Systems Minimum 5 GB for Enterprise Systems We recommend having minimum 15% free disk space.
Network card	1000Base-T
Display Resolution	Minimum per monitor 1024x768 1280x1024 or higher recommended
Recommended Graphic Cards	MHW-AWGC-K2200 MHW-AWGC-K620 MHW-AWGC-K4200 MHW-AWGC-K5200 AMD FirePro W5100

Maximum Graphic Cards Specifications

Detailed information on the maximum number of Image panes and the CPU load for various workstations or servers and graphic cards in the Application Guide “Display performance indication”.

Minimum Management Server, Mobile Video Service and Configuration Client PC Requirements

Operating System	Windows 2012 Server R2 (64-bit) or Windows 2008 Server R2 SP1 (64-bit) required for > 500 cameras Windows 8.1 (64-bit) Windows 7 Professional or Ultimate SP1 (64-bit) required for Management Server, Configuration Client and Operator Client on the same computer, and maximum 500 IP cameras/encoders We recommend installing Internet Explorer 11.
CPU	Intel Core i7 4770 3.4 GHz (up to 3.9 GHz)
RAM	Minimum 8 GB
Free disk space	Minimum 15 GB We recommend having minimum 15% free disk space.

Network card	1000Base-T
Display Resolution	1280 x 1024

Minimum VRM Server PC Requirements

Operating System	Windows Server 2008 R2 (Standard Edition, 64-bit), Windows Storage Server 2008 R2 (Standard Edition, 64-bit), Windows 7 Ultimate, Professional (SP1, 32-bit, 64-bit), Windows Server 2012R2, Windows Storage Server 2012R2
CPU	1x or 2x Quad-Core Intel Xeon Processor E5606 (2.13 GHz, 8 MB L3 cache) or faster
RAM	Minimum 4 GB
Free disk space	1000 MB We recommend having minimum 15% free disk space.
Network card	1 Gbps
Display Resolution	1024x768 or higher

Mobile App / Web Client Requirements

Link to App Store	www.boschsecurity.com/MobileVideoService
Maximum number of Mobile Video Service instances per Management Server	5
Number of simultaneous connections per Mobile Video Service (1 mobile device consumes 1 connection, each stream consumes another connection)	up to 20
Supported cameras	IP cameras with H.264 or H.263 support that are controlled by Bosch VMS (not controlled by VIDOS) ONVIF cameras BRS/DiBos/DVR cameras
iOS Version for iPhone/iPad	7.1 / 8.3 / 9.0.2
Hardware version iPad	iPad, iPad 2, iPad 3 rd generation
Hardware version iPhone	iPhone 4, iPhone 4S, iPhone 5C
Browser (Web Client)	Internet Explorer 11.0.9600, Firefox 37.02, Chrome 42.0.2311

Device Compatibility

Intrusion panels from Bosch	GV4 panels: D9412GV4 (requires v2.x firmware upgrade to support Mode 2)
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D7412GV4 (requires v2.x firmware upgrade to support Mode 2)

B-Series US1B:

B5512

B4512

B3512

B-Series US1A:

B9512G

B8512G

Barco Monitor Wall Transform A Series	Barco RCPPlusAgent.exe 2.0.6.12 for Barco Monitor Wall
Barco Monitor Wall Transform N Series	Barco RCPPlus-Agent 0.9.0.3
Analog Matrix Switch	Bosch Allegiant series, firmware 8.75 or later and Master Control Software version 2.94
Bosch POS/ATM Bridge	Version 1.10.00.12(63029)/2010-9-10
CCTV Keyboard	KBD-Universal XF keyboard (USB keyboard) Bosch IntuiKey keyboard, firmware version 1.96
Digital I/O	Digital I/O Advantech ADAM-6050, ADAM-6052, ADAM-6060, ADAM-6066
Digital Video Recorder	DVR 431, 440, 451, 480, 630, 650, 670, 700 series (maximum 15 managed DVRs per Management Server) Bosch Recording Station 8.10, 8.11 DIVAR AN 3000 / 5000 DiBos, firmware version 8.7 Maximum 100 BRS/DiBos recorders per Management Server
USB to Serial adapter	Belkin serial adapter cable F5U103vea
Ethernet to Serial adapter	Comtrol DeviceMaster RTS 4-Port

BVIP Devices	<ul style="list-style-type: none"> FLEXIDOME IP panoramic 5000/7000 FLEXIDOME and DINION 2000/4000/5000/7000/8000/9000 cameras series AUTODOME IP 7000/5000/4000 EXTEGRA IP 9000; MIC 7000 with VIDEOJET 7000 (supporting alarm inputs, and outputs, audio, washer relay, local recording and playback); MIC 612/550 MIC 550, 612, MIC7000 cameras with VIDEOJET connect 7000 (supporting alarm inputs and outputs, audio, washer relay, local recording, and playback) H.264 Series encoders and cameras MPEG-4, H.264 Main Profile, H.264 Baseline Plus are supported (H.264 Baseline and MPEG-2 not supported) VIP-X Series encoders and cameras <p>Decoder:</p> <ul style="list-style-type: none"> VIDEOJET decoder 3000/7000 VIDEOJET decoder 8000 (supports 4K cameras on Monitor Wall) VIP XD HD VIP XD
ONVIF cameras	<ul style="list-style-type: none"> Maximum 500 ONVIF cameras <p>Supported cameras are listed on the Bosch Integration Partner Program website. For non-listed cameras refer to MBV-3RD PRTY.</p>
Unmanaged sites	<ul style="list-style-type: none"> Maximum 9999 unmanaged sites. Supported unmanaged devices: DVR 431, 440, 451, 480, 630, 650, 670, 700 series, DIVAR AN 3000, DIVAR AN 5000 Maximum 5 DVR/DIVAR AN devices per site
Connectivity with Building Integration System	Version 4.0 and 4.1
Foyer Card Readers	Maximum 2 readers per Management Server are supported. MINITER 485 is supported.
DTP 3N Box	Allows for connecting maximum 4 ATM devices to your Management Server.
Audio devices	Supported audio formats: <ul style="list-style-type: none"> G.711 L16

Remote Access

Remote Access	Direct iSCSI and encoder replay is not supported.		
	Live	Playback	Control
VRM	x	x	x

VSG	x	x	x
ONVIF	x (via VSG)	x (via VSG)	x (via VSG)
Local Storage	x	-	x
Live Only	x	-	x
BRS/DiBos	-	-	-
DVR	x	x	x

Ordering information

Demoverision - Non Expandable

Demo license for 3 cameras, 2 workstations (1 with Forensic Search), 2 CCTV keyboards, 2 DVRs.
Order number **MBV-BDEM-60**

Bosch VMS Lite 32 Edition - Non Expandable

Lite license for 32 Cameras, 2 workstations (1 with Forensic Search), 1 CCTV Keyboard, 1 Mobile Video Service.
Order number **MBV-BLIT32-60**

Bosch VMS Upgrade BLITE32 to BPro w. 32 channels

License to upgrade an installed Lite-32 Edition to a Professional Edition with 32 channels. **Always** include the computer hardware ID of installed Lite-32 system with the order.
Order number **BVMS-LITEPRO-32**

Bosch VMS Lite 64 Edition - Non Expandable

Lite license for 64 cameras, 4 workstations (2 with Forensic Search), 2 CCTV Keyboards, 1 Mobile Video Service.
Order number **MBV-BLIT64-60**

Bosch VMS Upgrade BLITE64 to BPro w. 64 channels

License to upgrade an installed Lite-64 Edition to a Professional Edition with 64 channels. **Always** include the computer hardware ID of installed Lite-64 system with the order.
Order number **BVMS-LITEPRO-64**

Bosch VMS Professional Edition

Base license for Professional Edition. 8 cameras; 2 workstations (1 with Forensic Search); 1 CCTV keyboard; 1 DVR. All MBV-X* and MBV-F* options are only available with Base license.
Order number **MBV-BPRO-60**

Bosch VMS Enterprise Edition

Base license for Enterprise System. 2 Management Server subsystems (1 required for Enterprise Management); 8 cameras; 2 workstations (1 with Forensic Search); 1 CCTV keyboard; 1 DVR. All MBV-X* and MBV-F* options are only available with Base license.
Order number **MBV-BENT-60**

1 Channel Expansion

Expansion license for 1 encoder/decoder channel.
Order the exact number required.
Order number **MBV-XCHAN-60**

Integration of 1 ONVIF compliant camera

Service to integrate 1 ONVIF compliant camera with Bosch VMS. Terms and Conditions see Bosch Integration Partner Program website.
Order number **MBV-3RD-PRTY**

1 Workstation Expansion

Expansion license for 1 workstation (each extra workstation requires 1 license). Forensic Search licenses must be ordered separately.
Order number **MBV-XWST-60**

1 DVR Expansion

Expansion license for 1 DVR. Order the exact number required.
Order number **MBV-XDVR-60**

1 CCTV Keyboard Expansion

Expansion license for 1 CCTV keyboard. Order the exact number required.
Order number **MBV-XKBD-60**

1 Forensic Search Expansion

Expansion license for 1 Forensic Search (one license is required per Workstation, not per camera or encoder).
Order number **MBV-XFOREN-60**

1 Enterprise Subsystem Expansion

Expansion license to add 1 Management Server to the Enterprise System as a member of this system.
Order number **MBV-XSUB-60**

1 Mobile Video Service Expansion

Expansion license for 1 Mobile Video Service.
Order number **MBV-XMVS-60**

Bosch VMS Enterprise Upgrade for Pro

Upgrade license to expand a Professional Edition base license to an Enterprise System base license.
Order number **MBV-FEUP-60**

Allegiant Matrix Connection

Expansion license to connect 1 Allegiant Matrix to a Management Server.
Order number **MBV-FALG-60**

ATM/POS Connection

Expansion license to integrate ATM/POS devices.
Order number **MBV-FATM-60**

Bosch VMS OPC Server Connection for BIS

Expansion license to integrate a Building Integration System (BIS).
Order number **MBV-FOPC-60**

Bosch VMS Failover VRM Expansion

Expansion license for 1 encoder channel used with a Failover VRM.
Order number **MBV-XFOV-60**

Bosch VMS Dual Recording VRM Expansion

Expansion license for 1 encoder channel used for dual recording.
Order number **MBV-XDUR-60**

Intrusion Panel

Expansion license to integrate intrusion panels.
Order number **MBV-XINT-60**

Bosch VMS Site Expansion

Expansion license for 1 site. Order the exact number required.
Order number **MBV-XSITE-60**

Accessories**KBD-Universal XF**

USB CCTV-oriented keyboard for use with Bosch Video Management System, BIS - Video Engine, or DIVAR IP systems.
Order number **KBD-UXF**

Services**Maintenance Lite-32-Edition**

One year of maintenance cover for the Lite-32 license.
Order number **MBV-MLIT32**

Maintenance Lite-64-Edition

One year of maintenance cover for the Lite-64 license.
Order number **MBV-MLIT64**

Maintenance Professional Edition

One year of maintenance cover for the Professional Edition base license.
Order number **MBV-MPRO**

Maintenance Enterprise Edition

One year of maintenance cover for the Enterprise Edition base license.
Order number **MBV-MENT**

Maintenance Enterprise Upgrade for Pro

One year of maintenance cover for the upgrade license from Pro to Enterprise.
Order number **MBV-MEUP**

Maintenance Channel Expansion

One year of maintenance cover for the channel expansion license.
Order number **MBV-MCHAN**

Maintenance DVR Expansion

One year of maintenance cover for the DVR expansion license.
Order number **MBV-MDVR**

Maintenance Workstation Expansion

One year of maintenance cover for the Workstation expansion license.
Order number **MBV-MWST**

Maintenance CCTV Keyboard Expansion

One year of maintenance cover for the CCTV keyboard expansion license.
Order number **MBV-MKBD**

Maintenance Forensic Search Expansion

One year of maintenance cover for the Forensic Search expansion license.

Order number **MBV-MFOREN**

Maintenance Enterprise Subsystem

One year of maintenance cover for an Enterprise Subsystem expansion license.

Order number **MBV-MSUB**

Maintenance Mobile Video Service

One year of maintenance cover for the Mobile Video Service expansion license.

Order number **MBV-MMVS**

Maintenance Allegiant Matrix Connection

One year of maintenance cover for an Allegiant Matrix expansion license.

Order number **MBV-MALG**

Maintenance ATM/POS Connection

One year of maintenance cover for an ATM/POS expansion license.

Order number **MBV-MATM**

Maintenance Intrusion Panels

One year of maintenance cover for an intrusion panel expansion license.

Order number **MBV-MINT**

Maintenance OPC Server Connection

One year of maintenance cover for the OPC Server Connection expansion license.

Order number **MBV-MOPC**

Maintenance Failover VRM

One year of maintenance cover for a Failover VRM expansion license.

Order number **MBV-MFOV**

Maintenance Dual Recording VRM

One year of maintenance cover for a Dual Recording VRM expansion license.

Order number **MBV-MDUR**

Maintenance Site Expansion

One year of maintenance cover for the site expansion license.

Order number **MBV-MSITE**

Maintenance Lite-32-Edition

Three years of maintenance cover for the Lite-32 license.

Order number **MBV-MLIT32-3YR**

Maintenance Lite-64-Edition

Three years of maintenance cover for the Lite-64 license.

Order number **MBV-MLIT64-3YR**

Maintenance Professional Edition

Three years of maintenance cover for the Professional Edition base license.

Order number **MBV-MPRO-3YR**

Maintenance Enterprise Edition

Three years of maintenance cover for the Enterprise Edition base license.

Order number **MBV-MENT-3YR**

Maintenance Enterprise Subsystem Expansion

Three years of maintenance cover for the Enterprise Subsystem expansion license.

Order number **MBV-MSUB-3YR**

Maintenance Enterprise Upgrade for Pro

Three years of maintenance cover for the upgrade license from Pro to Enterprise.

Order number **MBV-MEUP-3YR**

Maintenance Channel Expansion

Three years of maintenance cover for the channel expansion license.

Order number **MBV-MCHAN-3YR**

Maintenance DVR Expansion

Three years of maintenance cover for the DVR expansion license.

Order number **MBV-MDVR-3YR**

Maintenance Workstation Expansion

Three years of maintenance cover for the Workstation expansion license.

Order number **MBV-MWST-3YR**

Maintenance CCTV Keyboard Expansion

Three years of maintenance cover for the CCTV keyboard expansion license.

Order number **MBV-MKBD-3YR**

Maintenance Forensic Search Expansion

Three years of maintenance cover for the Forensic Search expansion license.

Order number **MBV-MFOREN-3YR**

Maintenance Mobile Video Service

Three years of maintenance cover for the Mobile Video Service expansion license.

Order number **MBV-MMVS-3YR**

Maintenance Allegiant Matrix Connection

Three years of maintenance cover for an Allegiant Matrix expansion license.

Order number **MBV-MALG-3YR**

Maintenance ATM/POS Connection

Three years of maintenance cover for an ATM/POS expansion license.

Order number **MBV-MATM-3YR**

Maintenance Intrusion Panels

Three years of maintenance cover for an intrusion panel expansion license.

Order number **MBV-MINT-3YR**

Maintenance OPC Server Connection

Three years of maintenance cover for the OPC Server Connection expansion license.

Order number **MBV-MOPC-3YR**

Maintenance Failover VRM

Three years of maintenance cover for a Failover VRM expansion license.

Order number **MBV-MFOV-3YR**

Maintenance Dual Recording VRM

Three years of maintenance cover for a Dual Recording VRM expansion license.

Order number **MBV-MDUR-3YR**

Maintenance Site Expansion

Three years of maintenance cover for the site expansion license.

Order number **MBV-MSITE-3YR**

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DIVAR IP 7000 2U

www.boschsecurity.com



BOSCH
Invented for life



- ▶ RAID-5 protected (standard configuration), all-in-one video management solution for up to 128 channels
- ▶ Out-of-the-box IP video management solution with up to 64 TB storage capacity
- ▶ Instantly find what you are looking for
- ▶ Advanced user and alarm management
- ▶ 3 years warranty, including next business day services

The DIVAR IP 7000 family is an affordable, simple and reliable all-in-one recording, viewing and management solution for network surveillance systems of up to 128 channels (with 32 channels pre-licensed).

Running the full Bosch Video Management System solution and powered by Video Recording Manager software from Bosch, DIVAR IP 7000 is an intelligent IP storage device that eliminates the need for separate NVR (Network Video Recorder) server and storage hardware, reducing the total cost of ownership by as much as 45%.

DIVAR IP 7000 2U is a 2HU rack mount unit that combines advanced management and state-of-the-art recording management into a single cost-effective, plug-and-play IP recording appliance for IT-minded customers.

System overview

The DIVAR IP 7000 family utilizes an energy efficient, embedded design which reduces possible points of failure and boasts Bosch quality through-and-through. Utilizing “enterprise-rated” hard drives in a fault tolerant RAID-5 configuration, dual port Gigabit Ethernet network interface, 8 GB system memory and an Intel Xeon Quad Core Processor, the device delivers high-end performance at a very affordable price.

Easy to install and operate, the system features wizard-based set-up and centralized configuration. All components are pre-installed and pre-licensed. Simply connect to the network and power the unit up - DIVAR IP is ready to begin recording straight out of the box.

Bosch Video Management System manages all IP and digital video and audio, plus all the security data being transmitted across your IP network. It seamlessly combines IP cameras and encoders, provides system-wide event and alarm management, system health monitoring, user and priority management.

Functions

DIVAR IP 7000 2U features highly energy-efficient hot-swap redundant power supplies, as well as front-swappable SATA-3 hard drives providing up to 64 TB of gross storage capacity. All system software is pre-installed and pre-activated - creating an out-of-the-box ready-to-use video management appliance. It utilizes Microsoft Windows Storage Server 2012 R2.

Instant real time access to video

View high quality HD and even UHD video despite low or limited bandwidth connections.

Dynamic Transcoding technology ensures you can view your video immediately - anytime, anywhere.

The built-in transcoder supports up to 4 x UHD resolution video streams in parallel.

Management

Once booted up the system will offer immediate access to the Bosch Video Management System management application via a customized GUI. The ability to use one central GUI for configuration and operation management reduces installation and training requirements, and helps keep ongoing system management costs low.

Remote viewing

For remote viewing of a single DIVAR IP system, Bosch VMS Operator Client is included. For multiple systems, add them to Bosch VMS Enterprise Management Server.

Alternatively, use Video Security Client for viewing video from a separate workstation or mobile device.

IT Management

Microsoft Windows Storage Server 2012 R2 provides a simple, intuitive user interface for system configuration and unified appliance management. Administrators and IT professionals will appreciate the ability to manage DIVAR IP 7000 using the built-in Microsoft System Center Suite. The ability to use one central tool for configuration and operations management reduces installation and training requirements, and helps keep ongoing system management costs low.

In addition, DIVAR IP 7000 offers advanced monitoring and management options using the Intelligent Platform Management Interface (IPMI).

Monitoring

The DIVAR IP 7000 family provides SNMP, Remote Desktop and HTTP monitoring support for the system's hardware and for the video management applications.

Increased reliability of high-availability hardware, embedded design as well as system-wide monitoring and management ensure maximum uptime.

Bosch quality

Bosch subjects all its products to the most comprehensive and rigorous battery of quality endurance tests in the industry. Our recording products are subjected to extreme temperatures, voltages and vibrations to determine reliable operating limits, so you can be assured of long-term reliable operation. And Bosch firmly stands behind every product it sells with an end-to-end 3 year warranty backed by technical support.

Certifications and approvals

Region	Certification	
Europe	CE	DIVAR IP 7000
USA	UL	DIVAR IP 7000

Installation/configuration notes

DIVAR IP 7000 2U comes pre-configured in a RAID-5 standard configuration with iSCSI LUNs (fully populated system only) and provides the following specifications:

RAID-5 configuration

Gross Capacity	Net Capacity	Bandwidth*	IP Cameras
w/o HDD	n/a	475 Mbit/s	32+ pre-licensed / 128+ max.
4 x 3 TB	8375 GB	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 3 TB	19550 GB	475 Mbit/s	32+ pre-licensed / 128+ max.
4 x 4 TB	11170 GB	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 4 TB	26060 GB	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 6 TB	39102 GB	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 8 TB	52136 GB	475 Mbit/s	32+ pre-licensed / 128+ max.

*Performance only warranted with hard drive models tested and qualified by Bosch.

These values refer to the Bosch Video Management System recording engine; Net capacity for a RAID-5 configuration without hot spare; 32+/128+ connected IP cameras indicate the number of concurrent recordable cameras plus 8 sessions for replay. Optional supported RAID configurations are RAID-5 with 1 x hot spare or RAID-6 without hot spare. The optional RAID configurations will not come pre-configured but must be set up manually via the pre-installed RAID configuration utility.

RAID-5 plus hot spare configuration

Gross Capacity	Net Capacity	Bandwidth*	IP Cameras
w/o HDD	n/a	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 3 TB	16758 GB	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 4 TB	22344 GB	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 6 TB	33516 GB	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 8 TB	44688 GB	475 Mbit/s	32+ pre-licensed / 128+ max.

*Performance only warranted with hard drive models tested and qualified by Bosch.

RAID-6 configuration

Gross Capacity	Net Capacity	Bandwidth*	IP Cameras
w/o HDD	n/a	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 3 TB	16758 GB	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 4 TB	22344 GB	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 6 TB	33516 GB	475 Mbit/s	32+ pre-licensed / 128+ max.
8 x 8 TB	44688 GB	475 Mbit/s	32+ pre-licensed / 128+ max.

*Performance only warranted with hard drive models tested and qualified by Bosch.

Storage may be increased by adding up to 4 DIVAR IP 6000 units as expansion. DIVAR IP 7000 may be upgraded with 8-channel licenses (MBV-XCHAN-DIP) to up to 64 channels using the standard base license (pre-installed). It can be upgraded to 128 channels by additionally purchasing the extension base license (MBV-BXPAN-DIP) plus the respective 8-channel licenses (MBV-XCHAN-DIP). For the standard systems please note the number of pre-installed licenses and the upper limit of each:

License type	Pre-installed licenses	Upper limit
Workstation clients	5	10
DVR/BRS systems	1	10
CCTV keyboards	1	10
Forensic Search clients	5*	10*
Mobile video service	1	2
Intrusion Panels	0	10
ATM/POS data	enabled	-

*unlimited in Bosch Video Management System version 7.5 or higher

For further information, under **Ordering information** see **Software Options**.

System status

DIVAR IP 7000 comes fully loaded and fully functional with Microsoft Operating System and Bosch applications: Windows Storage Server 2012 R2, 64-bit; Bosch Video Management System; Video Recording Manager including Video Streaming Gateway; Dynamic Transcoding.

DIVAR IP 7000 without pre-installed hard drives: The RAID configuration of third-party data hard drives must be set up manually via the pre-installed RAID management utility. Only after this manual RAID configuration the system provides full functionality.

**Notice**

Uninterruptable Power Supply (UPS). We strongly recommend using an "Online UPS" with an always active battery. The UPS must support Windows Storage Server 2012 R2 and must be sufficient to allow time to bring an auxiliary power source on line, or to properly shut down the DIVAR IP disk array(s).

**Notice**

Bosch is not liable for system failures of units equipped with third-party hard drives if the third-party hard drives are source of the issues. Such drives are not covered by the 3 years warranty.

**Notice**

The next business day on-site service level can only be provided if the respective system has been registered immediately after receipt and installation. Otherwise, service will be provided based on best effort basis. Information about registration details is available in every shipment (registration form) or from the Bosch online product catalog. Next business day services cannot be provided in every country everywhere. For limitations and exceptions see the registration details in the registration form.

Technical specifications**Electrical**

AC input rating 100 to 240 V / 50 to 60 Hz

Electrical 140 VAC input

Input current	4HD: 2.1 A 8HD: 2.4 A
Actual output wattage from power supply	4HD: 259.9 W 8HD: 305.6 W
Efficiency of power supply	92%
Power consumption*	4HD: 282.5 W 8HD: 332.2 W
Total BTU/h	4HD: 964.2 8HD: 1133.9
Power factor	0.98
System AC input VA requirement	4HD: 288.3 VA 8HD: 339.0 VA

*System power consumption may vary based on workload and environment.

Electrical 240 VAC input

Input current	4HD: 1.2 A 8HD: 1.4 A
Actual output wattage from power supply	4HD: 259.9 W 8HD: 305.6 W
Efficiency of power supply	94%
Power consumption*	4HD: 276.5 W 8HD: 325.1 W
Total BTU/h	4HD: 943.7 8HD: 1109.7
Power factor	0.96
System AC input VA requirement	4HD: 288.0 VA 8HD: 338.7 VA

*System power consumption may vary based on workload and environment.

Mechanical

Form factor	2HU rack mount
Power supply	740 W Platinum Level Redundant
USB ports	Front: 2 USB 2.0 ports Rear: 2 USB 2.0 ports, 2 USB 3.0 ports
Network	Dual Intel i210AT Gigabit LAN (teamed) 1 IPMI BMC port
Dimensions (H x W x D)	89 x 437 x 648 mm (3.5 x 17.2 x 25.5 in)
Weight	23.6 kg (52 lb)

Environmental

Operating temperature	+10 °C to +35 °C (+50 °F to +95 °F)
Non-operating temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Operating relative humidity	8 to 90% (non-condensing)
Non-operating relative humidity	5 to 95% (non-condensing)

Processor

Processor	Intel Xeon Processor E3-1275 V3 (8 MB Cache, 3.5 GHz)
Socket	1
Cache memory	8 MB Intel Smart Cache
Memory protection	ECC unbuffered
Max front side bus	1600 MHz

Memory

Memory installed	8 GB, DDR3-1666 ECC UNB (1 x 8 GB)
------------------	------------------------------------

Storage

Storage Type	8 Trays: 3.5-inch SATA
Hard Drives Installed	
• Data	SATA-3, 7200 RPM, 64 MB, 3.5", RAID-5 configuration (default) DIP-7183-4HD: 4 x 3 TB DIP-7183-8HD: 8 x 3 TB DIP-7184-4HD: 4 x 4 TB DIP-7184-8HD: 8 x 4 TB DIP-7186-8HD: 8 x 6 TB DIP-7188-8HD: 8 x 8 TB DIP-7180-00N: w/o HDD
• OS	2 x 120 GB SSD RAID-1 configuration
SAS RAID Card	8 ports LSI 3108 SAS3 controller
Graphics card	AMD FirePro W4100; 4 x Mini Display Port
Sound card	5.1 Channel 24-bit
DVD writer	Internal

Ordering information**DIVAR IP 7000 2U, 4 x 3 TB HDD**

All-in-one recording, viewing and management solution for network surveillance systems.

For up to 128 channels and with 4 x 3 TB storage capacity, expandable up to 6 x 3 TB max.

Order number **DIP-7183-4HD**

DIVAR IP 7000 2U, 8 x 3 TB HDD

All-in-one recording, viewing and management solution for network surveillance systems.

For up to 128 channels and with 8 x 3 TB storage capacity.

Order number **DIP-7183-8HD**

DIVAR IP 7000 2U, 4 x 4 TB HDD

All-in-one recording, viewing and management solution for network surveillance systems.

For up to 128 channels and with 4 x 4 TB storage capacity, expandable up to 6 x 4 TB max.

Order number **DIP-7184-4HD**

DIVAR IP 7000 2U, 8 x 4 TB HDD

All-in-one recording, viewing and management solution for network surveillance systems.

For up to 128 channels and with 8 x 4 TB storage capacity.

Order number **DIP-7184-8HD**

DIVAR IP 7000 2U, 8 x 6 TB HDD

All-in-one recording, viewing and management solution for network surveillance systems.

For up to 128 channels and with 8 x 6 TB storage capacity.

Order number **DIP-7186-8HD**

DIVAR IP 7000 2U, 8 x 8 TB HDD

All-in-one recording, viewing and management solution for network surveillance systems.

For up to 128 channels and with 8 x 8 TB storage capacity.

Order number **DIP-7188-8HD**

DIVAR IP 7000 2U, w/o HDD

All-in-one recording, viewing and management solution for network surveillance systems.

For up to 128 channels and without HDD.

Order number **DIP-7180-00N**

Accessories**DIVAR IP 6000/7000 Storage Expansion 3 TB**

Hard disk storage expansion with a capacity of 3 TB.

Order number **DIP-6703-HDD**

DIVAR IP 6000/7000 R2 Storage Expansion 4 TB

Hard disk storage expansion with a capacity of 4 TB.

Order number **DIP-6704-HDD**

DIVAR IP 6000/7000 R2 Storage Expansion 6 TB

Hard disk storage expansion with a capacity of 6 TB.

Order number **DIP-6706-HDD**

DIVAR IP 6000/7000 R2 Storage Expansion 8 TB

Hard disk storage expansion with a capacity of 8 TB.

Order number **DIP-6708-HDD**

KBD-Universal XF

USB CCTV-oriented keyboard for use with Bosch Video Management System, BIS - Video Engine, or DIVAR IP systems.

Order number **KBD-UXF**

Software Options**License Upgrade to maximum 128 channels** (6)

Bosch Video Management System license for DIVAR IP. Base license for further expansions, 128 channels max.

Order number **MBV-BXPAN-DIP**

License Camera/decoder expansion

Bosch Video Management System license for DIVAR IP. Expansion license for 8 channels (cameras/decoders).

Order number **MBV-XCHAN-DIP**

License Workstation expansion

Bosch Video Management System license for DIVAR IP. Expansion license for 1 workstation (each extra workstation requires 1 license).

Order number **MBV-XWST-DIP**

License DVR expansion

Bosch Video Management System license for DIVAR IP. Expansion license for 1 DVR. Order the exact number required.

Order number **MBV-XDVR-DIP**

License Keyboard expansion

Bosch Video Management System license for DIVAR IP. Expansion license for 1 CCTV keyboard. Order the exact number required.

Order number **MBV-XKBD-DIP**

License Forensic search expansion

Bosch Video Management System license for DIVAR IP. Expansion license for 1 Forensic Search (one license is required per storage device, not per camera or encoder - not required for Bosch Video Management System version 7.5 or higher).

Order number **MBV-XFOR-DIP**

DIVAR IP MobileVideoService Expansion

Bosch Video Management System license for DIVAR IP. Expansion license for 1 Mobile Video Service.

Order number **MBV-XMVS-DIP**

License Mobile video service expansion

Bosch Video Management System license for DIVAR IP. Expansion license to integrate intrusion panels.

Order number **MBV-XINT-DIP**

License Allegiant feature

Bosch Video Management System license for DIVAR IP. Expansion license to connect 1 Allegiant Matrix.

Order number **MBV-FALG-DIP**

License OPC feature

OPC server license

Bosch Video Management System license for DIVAR IP. Expansion license to integrate a Building Integration System (BIS).

Order number **MBV-FOPC-DIP**

(4)

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emea.boschsecurity.com

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Bosch Sicherheitssysteme GmbH
Robert-Bosch-Ring 5
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130 Perinton Parkway
Fairport, New York, 14450, USA
Phone: +1 800 289 0096
Fax: +1 585 223 9180
onlinehelp@us.bosch.com
www.boschsecurity.us

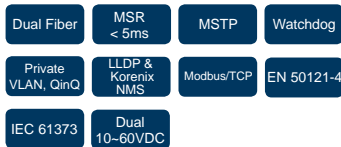
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Singapore 573943
Phone: +65 6571 2808
Fax: +65 6571 2699
apr.securitysystems@bosch.com
www.boschsecurity.asia

JetNet 4508f V2

Industrial 8-port Managed Fast Ethernet Fiber Switch



CE FC ~~X~~ RoHS



- 6-port 10/100TX and 2 100Base-FX fiber ports
- Supports Multi-mode 2KM, Single-mode 30KM
- 32Gbps Non-Blocking, 8K MAC address table
- Multiple Super Ring (recovery time <5ms), Rapid Dual Homing, Multiple Ring, and MSTP / RSTP
- VLAN, Private VLAN, QinQ, GVRP, QoS, IGMP Snooping V1/V2/V3, Rate Control, Port Trunking, LACP, Multi-Port Mirroring
- IEEE 802.1AB LLDP and Korenix NMS for auto-topology and group management
- Supports Modbus TCP/IP for Factory Automation
- Supports SNMP, Web, Telnet In-Band, Serial Out-Band Management
- Embedded Hardware Watchdog for System Auto Rescue
- Dual DC10~60V Power Input with Redundancy
- Advanced configurable Multiple-Event Alarm Output
- EN 50121-4 EMC and IEC 61373 vibration certifications for railway installations
- IP31 rugged aluminum case
- Operating temperature: -10~70°C (JetNet 4508f V2) and -40~75°C (JetNet 4508f-w V2)

- Industrial Intelligent NMS
- Rackmount PoE Plus Switch
- Industrial PoE Plus Switch
- Industrial 12-24V PoE Switch
- Industrial PoE Switch
- Rackmount L3/L2 Switch
- Gigabit Managed Ethernet Switch
- Managed Ethernet Switch
- Entry-level Switch
- Wireless Outdoor AP
- Embedded PoE/Router Computer (LINUX)
- Industrial Communication Computer (WIN/LINUX)
- Ethernet/PoE/Serial Board
- Ethernet I/O Server
- Media Converter
- Serial Device Server
- SFP Module
- Din Rail Power Supply

Overview

The JetNet 4508f V2 is a new 8-port industrial managed Fast Ethernet Switch with advanced network performance and high system reliability, including MSR and MSTP network redundancy technologies, for ensuring real-time and high quality connectivity in various networking applications. The Ethernet switch includes 6 10/100Mbps Fast Ethernet ports with RJ-45 connectors, two 100Mbps fiber ports and 32Gbps switch fabric to provide a real time non-blocking transmission performance for satisfying the needs of long distance and high bandwidth requiring application while ensuring traffic switching without data loss.

Besides, the new system design includes a hardware based watchdog timer for keeping the operating system live. It also provides power redundancy with wide range DC10V~60V inputs for ensuring the power continuity in the system. Combining the outstanding L2 management features along with the LLDP and the Korenix NMS Intelligent NMS into the ruggedized design with IP31 enclosure and -10~70°C (JetNet 4508f V2) and -40~75°C (JetNet 4508f-w V2) wide operating temperature, JetNet 4508f V2 switches provide highly reliable and secure data transmission under severe industrial environments.

Fiber Optic for Long Distance Data Transmission

To offer enhanced reliability, stability and extended connectivity, JetNet 4508f V2 is designed with 2 fiber ports with superior characteristics, including anti-electromagnetic interference, anti-moisture and anti-vibration capabilities. To meet your needs for various distance transmission, the fiber ports support several

connection types - Multi-mode fiber with 2KM link distance or Single-mode fiber with 30KM link distance. Moreover, the fiber connector supports duplex SC /ST or simplex SC for special requests of the Wavelength Division Multiplexing (WDM) applications.

High Performance Micro processor with embedded Hardware Watchdog Time

The JetNet 4508f V2 designed with 32 bits ARM-9E running at 180 MHz and with up to 200MIPS performance, combines an embedded hardware based watchdog timer to avoid system crashed by environmental factors, such as intense electromagnetic interference, extreme temperature variations and/ or any wrong instruction looping. This outstanding design can ensure the system stability and reliability when it installed in hardened environment.



Advanced L2 Network Control Performance and Security features

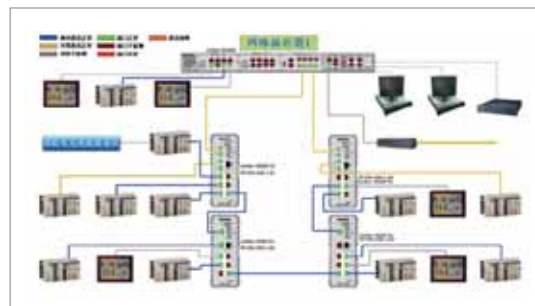
The JetNet 4508f V2 provides various network control and security features to ensure the reliable and secure network connection. To optimize the industrial network environment, the switch supports Tag -based VLAN, IGMP Snooping, IEEE 802.1s Multiple Spanning Tree, IEEE 802.1w Rapid Spanning Tree, Quality of Service (QoS), Link Aggregation Control Protocol (LACP), Rate Control, Port mirror,

etc. allowing users to fully handle network traffic and ensure the real-time data stream delivery. To avoid hacker's attacks and ensure the secure data transmission, JetNet 4508f V2 series features DHCP client, DHCP server with IP and MAC binding, 802.1X Access Control, SSH for Telnet security, IP Access table, port security, Private -VLAN for independent network traffic handling as well as many other security features.

Modbus TCP/IP for Factory Automation Network Enhancement

The Modbus TCP/IP protocol is supported in JetNet 4508f V2 series for factory automation applications. It enables administrator to connect to data acquisition (SCADA) system and read the switch's operating information using its own Modbus TCP/IP master program for monitoring and maintaining switch's status. With the supported Modbus TCP/IP, the JetNet 4508f V2 series become an element of factory automation such as the Programmable Logic Controller (PLC), Distributed Control System (DCS), and allow users to monitor/maintain factory equipment on the HMI (Human Machine Interface) system, including production information and communication status. Therefore, user does not need to integrate multiple management platforms to

monitor factory equipment: with just a single JetNet 4508f V2 platform users can easily achieve enhanced monitoring and maintenance of the entire factory.



Easy-to-Configure Network Management Interface

For easy of configuration and monitoring, the JetNet 4508f V2 offers various of management interface , such as SNMP, Web Browser, In-Band Telnet and Out-Band Local serial console with command like interface.

The switch status as well as all the networking features can be enabled through these management interfaces. The failure notifications are later sent through e-mail, SNMP trap, Local/Remote system log, Fault event alarm relay.

In addition to all these management interfaces, JetNet 4508f V2 also supports Korenix View easy network management utility for achieving cost efficiency in system construction as well as the enhanced Korenix

NMS, which integrates comprehensive network monitoring features for auto topology discovery, device auto discovery, group IP address change and firmware upgrade.

Comprehensive Redundant Solutions – Multiple Super Ring (MSR™)

The JetNet 4508f V2 supports new generation ring technology - MSR™ (Multiple Super Ring), which includes various new technologies for different network redundancy applications and structures. It allows aggregating up to 4 Fast Ethernet Rings. With the MSR™ technology, a node can be configured to multiple rings with the failover time in as little as 5ms and zero-second of restoration time. In addition, users can extend the ring topology by adding hundreds of JetNet series to meet the large-scale network needs without compromising the network speed.

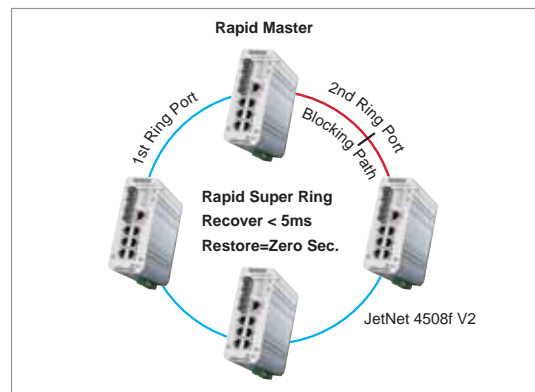
The MSR™ also allows the JetNet series to easily connect with core management switches via standard Rapid Spanning Tree Protocol or through multiple paths or nodes to increase the reliability by RDH™ (Rapid Dual Homing) technology. By integrating MSR™ and Link Aggregation Control Protocol (LACP) the JetNet series can enhance the link availability and increase the overall link capacity. Two or more Fast Ethernet connections are combined in order to increase the bandwidth and to create a resilient and redundant link.



Rapid Super Ring	Rapid Dual Homing	MultiRing	TrunkRing
<ul style="list-style-type: none"> Ring Master auto-select Seamless restoration Ring Failure alarms/LED Failed ring port together with Ring Master Millisecond Recovery Time Backward compatible with legacy Super Ring 	<ul style="list-style-type: none"> Multiple Uplink Paths One to One upper, Many to One upper, One to Many upper switches Seamless Restoration Korenix Patent protected 	<ul style="list-style-type: none"> Couple 2 rings with shared unit Multiple up to 4 100M rings Korenix Patent protected 	<ul style="list-style-type: none"> Integrate Port Trunk/ LACP with MSR, RSR Load balancing of ring Ports Backup with each other Korenix Patent protected

Rapid Super Ring (RSR™) Technology

Rapid Super Ring is the 2nd generation of Korenix Ring Redundancy technology. The recovery time is greatly improved from 20ms to few ms for both copper and fiber rings. The Ring master can be auto-selected by RSR engine. The 1st ring port of the R.M. is the primary path while the 2nd ring port of the R.M. is the block path. Once the primary path fails, the 2nd path will be recovered within few ms. Besides; the restoration time is also shortened to zero in the R.M. auto-selection mode.



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Seamless Ring Port Restoration™

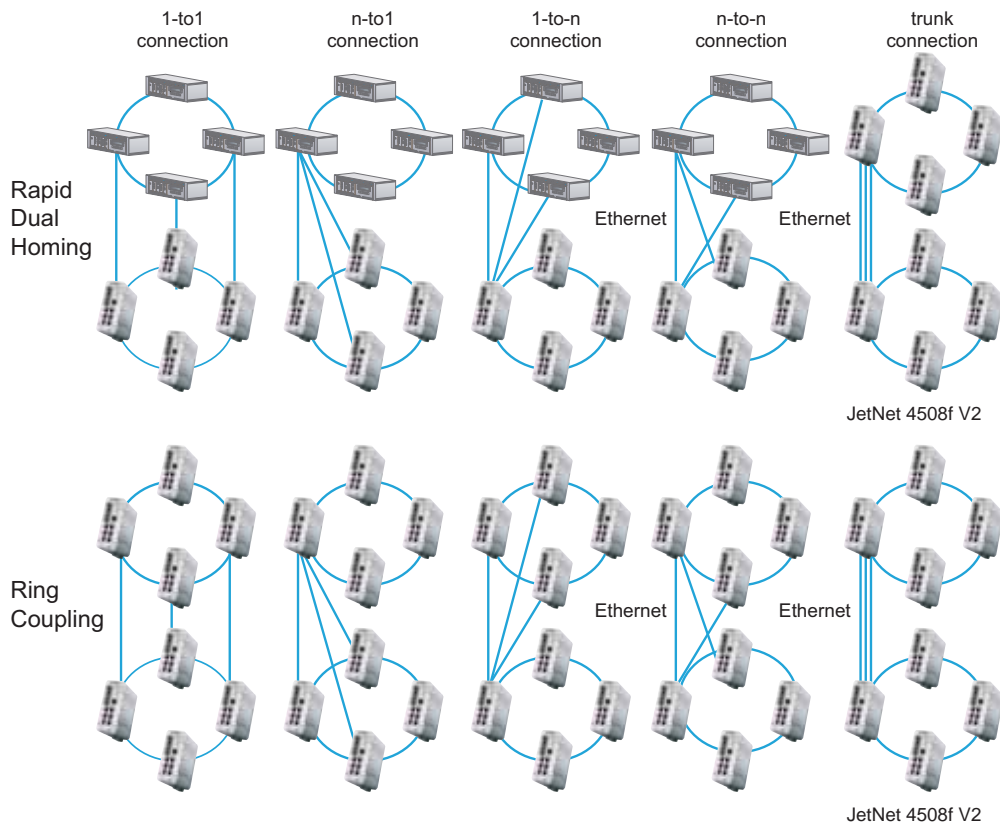
Seamless restoration is a new Korenix patented technology which can restore a failed ring without causing any loop problem, topology change and packet

loss. With zero second restoration time, this mechanism eliminates any unstable status and guarantees the applications running non-stop.

Rapid Dual Homing (RDH™) Technology

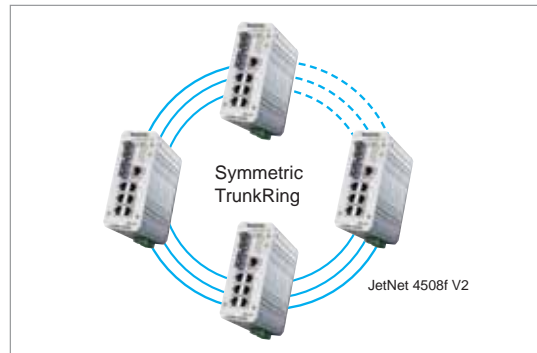
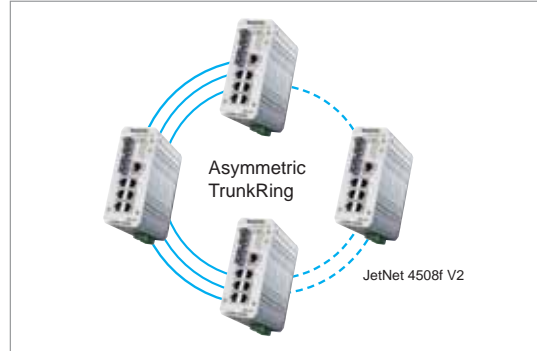
Rapid Dual Homing is also an important feature of Korenix new generation Ring technology. It supports ring coupling with other vendors devices. Moreover, providing easy configuration and multiple redundancies, the failover time is much faster and the restoration time is zero ms. Uplinks can be auto detected and gathered into groups. In each group uplinks are sorted into primary,

secondary and standbys based on their link speed. The uplink with the highest speed is more likely to be active path for data transmission. Link aggregation is also integrated into RDH™. An uplink connection can be a single link or several links aggregated as a trunk, which provides better redundancy and link capacity.



TrunkRing™

TrunkRing is a new feature in MSR which merges the two technologies of RSR and link aggregation. It takes advantages of aggregation to enhance the link redundancy, while increasing the link speed. The ring will open only if all the aggregated links are broken. Link aggregation can be achieved by either static trunk or LACP. Not all the link sections in a TrunkRing need to be the same. Ring links can be either symmetric or asymmetric. Some are a single path, and the others are aggregated by links where the number of links in a trunk group can be different. Users can enhance the link redundancy at different locations in accordance to the need. The link with less speed is more likely to be used as the backup path for restoring the network to full play capacity.

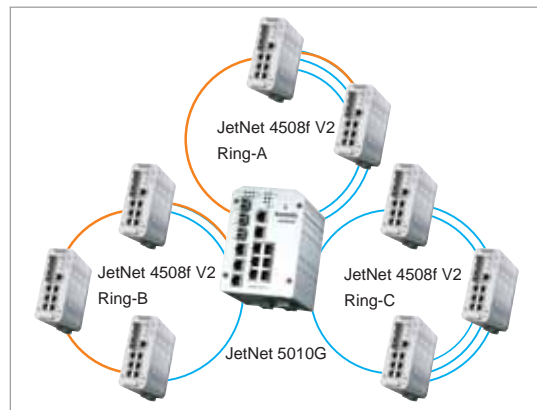
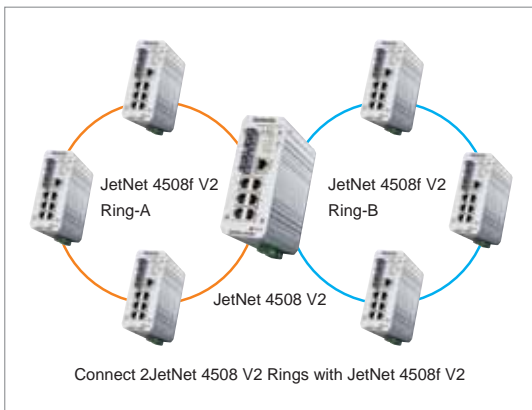


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MultiRing™

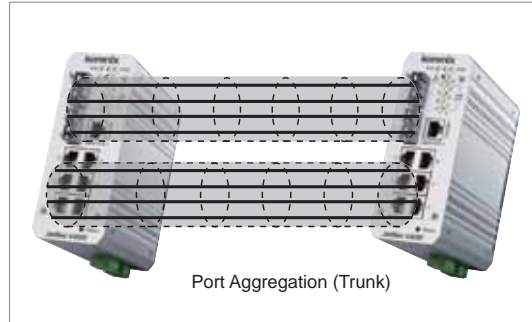
The MultiRing™ provides easier connectivity between two ring networks. The simplest example is to connect two rings by a single device. Depending on the number of ports and the speed, the JetNet 4508f V2 can connect as a 100Mbps ring and uplink with JetNet 5010G or higher level Korenix Industrial Switch. As shown in the below figure, MultiRing™ technology simply extends the network topology by linking multiple

rings into a line or into multiple directions. In addition to extensibility, MultiRing™ has great diversity of various ring technologies. When MultiRing™ enabled, JetNet 4508f V2 can connect RSR rings, TrunkRing™ and a Super Ring together and simultaneously provide more Fast Ethernet Ring connectivities. This provides extensibility to new technologies while keeping the great backward compatibility.



Link Aggregation Control Protocol

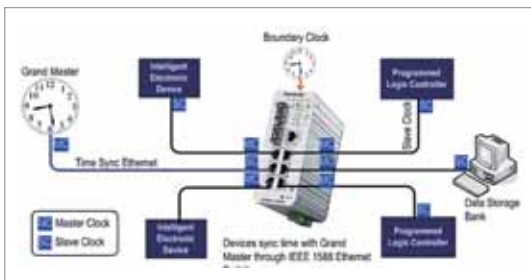
Link Aggregation Control Protocol allows users grouping multiple Ethernet ports in parallel to increase the link bandwidth. The aggregated ports can be viewed as one physical port, so that the bandwidth is higher than just one single Ethernet port. The member ports of the same trunk group can balance the loading and backup with each other. The LACP feature is usually used when higher bandwidth is needed for the backbone network. This is a cost-effective way for transferring much more data. If the trunk port is also assigned as a ring port, it will become a TrunkRing, which means the bandwidth of ring path has increased with port trunk technology. Now, there is no recovery time when failure occurred. The JetNet 4508f V2 provides a simple and easy way to aggregate port bandwidth into Rapid Super Ring.



IEEE 1588 Precision Time Protocol (PTP)

The Precision Time Protocol is designed to synchronize time across Ethernet networks. It allows synchronization of distributed clocks to sub-microsecond accuracy for devices that may have differing precision, resolution and stability. JetNet 4508f V2 supports Auto (or bindery clock), Master and Slave modes for time synchronization to achieve

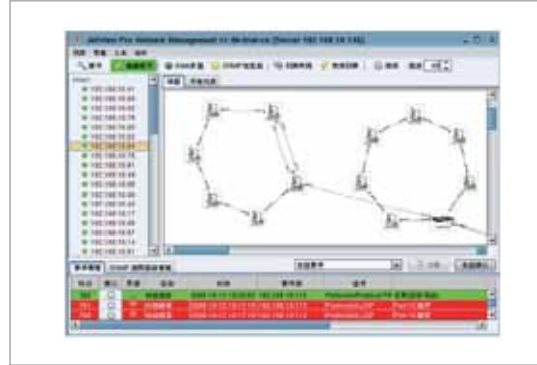
a high level of synchronization within an industrial motion-control environment with a minimum use of network and computing resources. The protocol helps for sequencing event measurements, scheduling outputs, synchronizing actuation, time-stamping, coordinating event records, etc.



IEEE 1588	
PTP State	Enable
Mode	Auto
	Auto
	Master
	Slave

Auto Topology Discovery & Efficient Management through LLDP and Korenix NMS

JetNet 4508f V2 supports topology discovery or LLDP (IEEE 802.1AB Link Layer Discovery Protocol) function that can help users to discover multi-vendor's network devices on the same segment by an NMS system, which support LLDP function. With LLDP function, NMS can easily maintain the topology map, display port ID, port description, system description, VLAN ID, etc.. Once a link failure happens, the topology changed events are updated to the NMS to help users easily maintain the network system. Besides the SNMP and LLDP protocols, JetNet 4508f V2 series efficiently works with the Korenix patented Korenix NMS, which in addition to the auto-topology discovery, also delivers MSR™ group management, group IP assignment, firmware upgrade, configuration file backup/ restore ,SNMP MIB Browser /compile, etc. Furthermore, users can export the topology map to diverse formats,



such as JPG, BMP, PNG and PDF, for easily managing and trouble-shooting the network. The user-friendly software allows administrators to discover devices automatically and efficiently manage the performance of the industrial network.

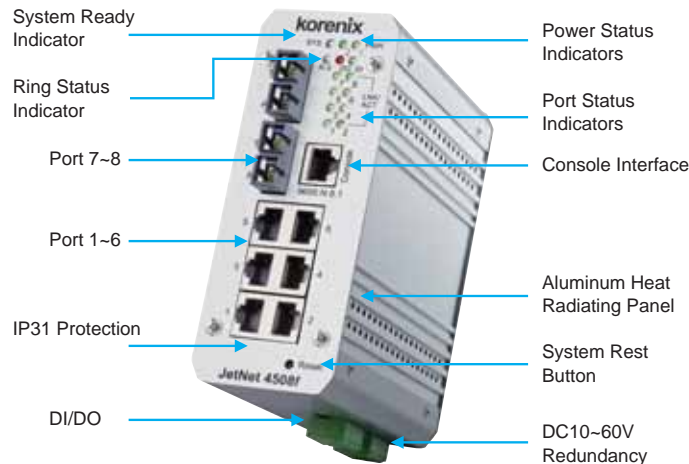
Rugged Design for Harsh Environments

The JetNetf 4508f V2, compliant with the electromagnetic conformance requirements of industry application, provides a high level electromagnetic susceptibility exceeding the requirements of railway EMC standard - EN 50121-4, IEC 61373 as well as Traffic control and Heavy industrial standards with distinguished electrical slow transient (Surge), Radio-Frequency Electromagnetic Field (RS),

Electrical Fast Transient (EFT) protection.

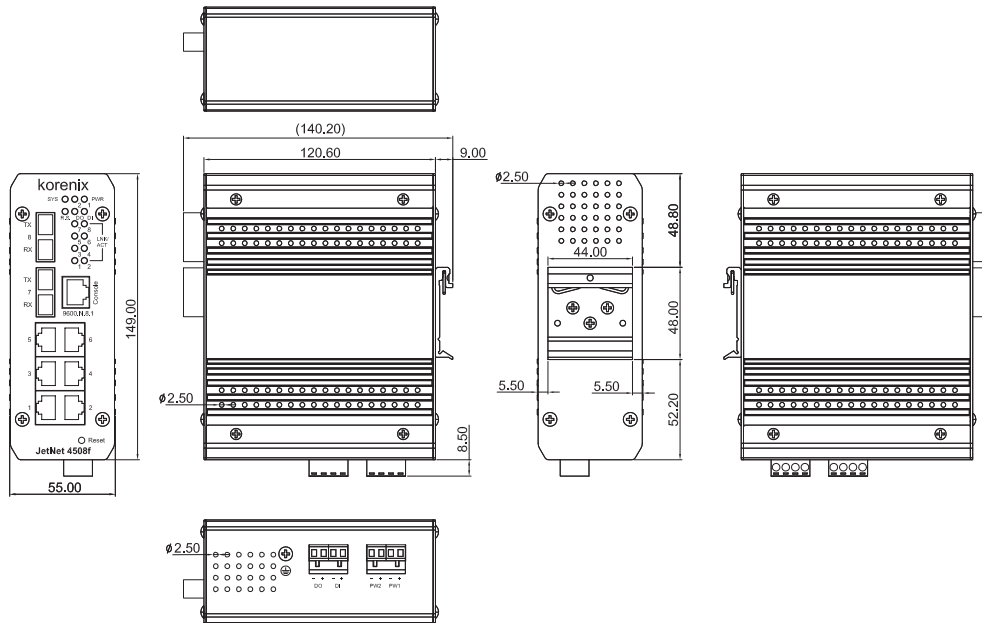
Equipped with a rugged aluminum case with high thermal-conductivity design, it is capable of resisting -10~70°C (JetNet 4508f V2) and -40~75°C (JetNet 4508f-w V2) wide temperature ranges while providing reliable connectivity under harsh industrial environments.

JetNet 4508f V2 Appearance



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- Din Rail Power Supply

Dimension (Unit = mm)



Specification

Technology

Standard:

IEEE 802.3 10Base-T Ethernet
 IEEE 802.3u 100Base-TX Fast Ethernet
 IEEE 802.3x Flow Control and Back-pressure
 IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
 IEEE 802.1p Class of Service (CoS)
 IEEE 802.1Q VLAN and GVRP
 IEEE 802.1QinQ
 IEEE 802.1D-2004 Rapid Spanning Tree Protocol (RSTP)
 IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
 IEEE 802.3ad Link Aggregation Protocol (LACP)
 IEEE 802.1x Port Based Network Access Protocol
 IEEE 1588 Precision Time Protocol (PTP)

Modbus TCP/IP

Performance

Switch Technology:

Store and Forward Technology with 32Gbps Switch Fabric.

System Throughput:

26 Mega packets per second, 64 bytes packet size
 14,880 pps for 10Base-T
 148,800 pps for 100Base-TX (PPS: Packet Per Second)

CPU performance: 32 bits ARM-9E running at 180 MHz and performance up to 200MIPS; Embedded hardware based watchdog timer.

System Memory: 8M bytes flash ROM, 64M bytes SDRAM. Transfer packet size 64 bytes to 1522 bytes (includes 1522 bytes VLAN Tag).

MAC Address: 8K MAC address table.

Packet Buffer: 1M bits shared memory for packet buffer.

Transfer performance: 14,880 pps for Ethernet and 148,800 pps for Fast Ethernet

Relay Alarm: Dry Relay output with 1A /24V DC ability. It supports multiple event reply function to alert either one of event occurred – power, port link, DI/Ring status change, Ping Reset or perform routing relay on/off behavior.

Digital Input (DI):

One Digital Input with Photo Copular isolation

Digital Hi: DC 11V~30V

Digital Low: DC 10V~0V

System Management

Configuration and monitoring interface: Supports 4 configuration and monitoring interfaces: RS-232 serial console, Telnet, SNMP and Web Browser interface. The RS-232 and Telnet interfaces support Cisco like instructions.

System upgrade/Backup: Provides TFTP/Web interface for firmware upgrade and configuration backup, restore.

Telnet & Local Console: Supports command line interface with Cisco like commands and maximum 4 sessions; the telnet interface also supports SSH.

SNMP: Supports v1, v2c, V3 with SNMP trap function, trap station up to 4 and can be manually configured the trap server IP address.

SNMP MIB: MIBII, Bridge MIB, Ethernet-like MIB, VLAN MIB, IGMP MIB, Korenix Private MIB.

Korenix Utility: Supports Korenix View and Korenix NMS with IEEE 802.1AB Link Layer Discovery Protocol for device finding and link topology discovery

Network Time Protocol: Supports NTP protocol with daylight saving function and localize time sync function.

Management IP Security: IP address security to prevent unauthorized access

E-mail Warning: 4 receipt E-mail accounts with mail server authentication

System Log: Supports both Local or remote Server with authentication

Network Performance

IEEE 802.3x: Flow control pause frame supports on 10/100bps with Full Duplex and Back-pressure supports on 100 / 10Mbps Half Duplex only

Port Configuration: Port link Speed, Link mode, current status and enable/disable

Port Trunk: IEEE 802.3ad port aggregation and static port trunk; trunk member up to 4 ports and maximum 4 trunk groups.

VLAN: IEEE 802.1Q Tag VLAN with 256 VLAN Entries and provides 2K GVRP entries

3 VLAN link modes- Trunk, Hybrid and Link access

Private VLAN: Direct client ports in isolated/community VLAN to promiscuous port in primary VLAN

QinQ: Double VLAN Tag in an Ethernet frame

Class of Service: IEEE 802.1p class of service; per port 4 priority queues.

QoS (Quality of Service): Supports 4 physical queues, weighted run robin queuing (WRR 8:4:2:1) and Strict Priority scheme, which follows 802.1p COS tag and IPv4 ToS/ Diffserv information to prioritize the traffic of your industrial network.

IGMP Snooping: IGMP Snooping v1/v2 /v3 for multicast filtering and IGMP Query mode; also support unknown multicasting process forwarding policies- drop, flooding and forward to router port.

Rate Control: Ingress filtering for Broadcast (Broadcast Storm Control), Multicast, Unknown DA or all packets. Egress filtering for all packet types.

Port Mirroring: Online traffic monitoring on multiple selected ports

Port Security: Port security to assign authorized MAC to specific port

DHCP: DHCP Client, DHCP Server with IP & MAC Address binding and DHCP agent (option 82).

IEEE 802.1x: Port based network access control

Radius: Login by Radius account/password, Key for Radius Server Authentication

Modbus TCP/IP: Supports open protocol- Modbus TCP/ IP with function code group -4 for factory automation application.

Network Redundancy

Multiple Super Ring (MSR)TM: New generation Korenix Ring Redundancy Technology, Includes Rapid Super Ring, Rapid Dual Homing, TrunkRingTM, MultiRingTM and backward compatible with legacy Super RingTM

Rapid Dual Homing (RDH)TM: Multiple uplink paths to one or multiple upper switch

TrunkRingTM: Integrate port aggregate function in ring path to get higher throughput ring architecture

MultiRingTM: Couple or multiple up to 16 Rapid Super Rings, JetNet 4508f V2 supports up to 4 Fast Ethernet Ring in one Switch

IEEE802.1d: IEEE802.1D-2004 Rapid Spanning Tree Protocol. Compatible with Legacy

Rapid Spanning Tree: Spanning Tree and IEEE 802.1w

IEEE802.1s^{Note-1}: Supports multiple RSTP deployed in a VLAN or multiple VLANs.

Multiple Spanning Tree: IEEE802.1s MSTP, each MSTP instance can include one or more VLANs

Interface

Enclosure Port:

Fast Ethernet communication port: RJ-45 connector

RS-232 console interface: RJ-45 connector

100Mbps Fiber interface: SC or ST (by request)

DI/DO port: 4-pin removable terminal block

Power port: 4-pin removable terminal block

Cables:

10Base-T: 2-pairs UTP/STP Cat. 3, 4, 5 cable,

EIA/TIA-568B 100-ohm (100m)

100 Base-TX: 2-pairs UTP/STP Cat. 5 cable,

EIA/TIA-568B 100-ohm (100m)

JetNet 4508f-m V2: multi-mode, 50~62.5/125um, 2KM

JetNet 4508f-s V2: single mode, 8~10/125um, 30KM

Fiber port characteristics:

JetNet 4508f-m V2

Wavelength:1310nm

Tx power: -20dBm ~ -14dBm

Rx sensitivity: -31dBm ~ 0dBm

Link Budget: 11dB

JetNet 4508f-s V2

Wavelength: 1310nm

Tx power: -15dBm ~ -8 dBm

Rx sensitivity: -34dBm ~ 0 dBm

Link Budget:19dB

RS-232 serial interface: Supports Cisco like command line interface for out-band management

System Diagnostic LEDs

System:

Power status (Green): On (power is on applying)

Digital Input (Green): On (Digital signal is detected)

Alarm Output (Red): On (Output conductor is formed as a close circuit)

System (Green): On (the system is ready), Blinking (system is on firmware upgrade progress)

Ring Status: Green on (Ring normal) / Blinking (Ring with wrong port), Yellow on (Ring abnormal) / Blinking (device's ring port failed)

Fast Ethernet port: Link (Green On) / Activity (Green Blinking)

Power Requirements

System Power:

Redundant power input with polarity auto reverse protection

Input Range: 10~60V DC

System Type: Positive or Negative power source

Power Consumption: 15Watts / DC 24V

Industrial
Intelligent
NMS

Rackmount
PoE Plus
Switch

Industrial
PoE Plus
Switch

Industrial
12-24V
PoE Switch

Industrial
PoE Switch

Rackmount
L3/L2 Switch

Gigabit
Managed
Switch

Managed
Ethernet
Switch

Entry-level
Switch

Wireless
Outdoor AP

Embedded
PoE/Router
Computer
(LINUX)

Industrial
Communication
Computer
(WIN/LINUX)

Ethernet/PoE/
Serial Board

Ethernet
I/O Server

Media
Converter

Serial Device
Server

SFP Module

Din Rail
Power Supply



Mechanical

Installation: DIN Rail Mounting or Wall Mounting

Case: Aluminum metal case with grade 31 protection

Dimension (mm):

55(W) x 149(H) x 131.2 (D) / with DIN Rail Clip

55(W) x 149(H) x 120.6(D) / without DIN Rail Clip

Weight: 0.885kg without package

Environmental

Operating Temperature:

-10 ~ 70°C (JetNet 4508f V2)

-40 ~ 75°C (JetNet 4508f-w V2)

Operating Humidity: 0% ~ 95%, (non-condensing)

Storage Temperature: -40 ~ 85°C

Hi-Pot: AC 1.5KV for all ports and power

Regulatory Approvals

EMI: FCC Class A, CE/ EN55022 Radiation, Conduction, Heavy Industrial IEC/EN 61000-6-2,

EMS: IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-9, Heavy Industrial IEC/EN 61000-6-4

Railway EMC: EN 50121-4 and EN 50121-1

Railway Vibration/Shock: IEC 61373

Free Fall: IEC60068-2-32 with package ^{Note-3}

MTBF: 661,248 Hours, MIL-HDBK-217F GB standard

Warranty: 5 years

Note-1: available in the further version software

Note-2: pending

Note-3: Korenix's internal testing

Ordering Information

JetNet 4508f V2 Industrial 8-port Managed Fast Ethernet Fiber Switch, -10~70°C

JetNet 4508f-w V2 Industrial 8-port Managed Fast Ethernet Fiber Switch, -40~75°C

Includes:

- JetNet 4508f V2 / 4508f-w V2
- Quick Installation Guide
- Documentation CD-ROM
- RS-232 console Cable



49" Full HD Flat Smart TV J5250 Series 5 (2018)

UA49J5250AKXXT

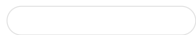
- Wide Color Enhancer
- Slim Design
- Smart TV

เลือกขนาดหน้าจอของคุณ

49"

49" Full HD Flat Smart TV J5250 Series 5 (2018)

49"



สถานที่จำหน่าย



Clean view



Wide Color Enhancer



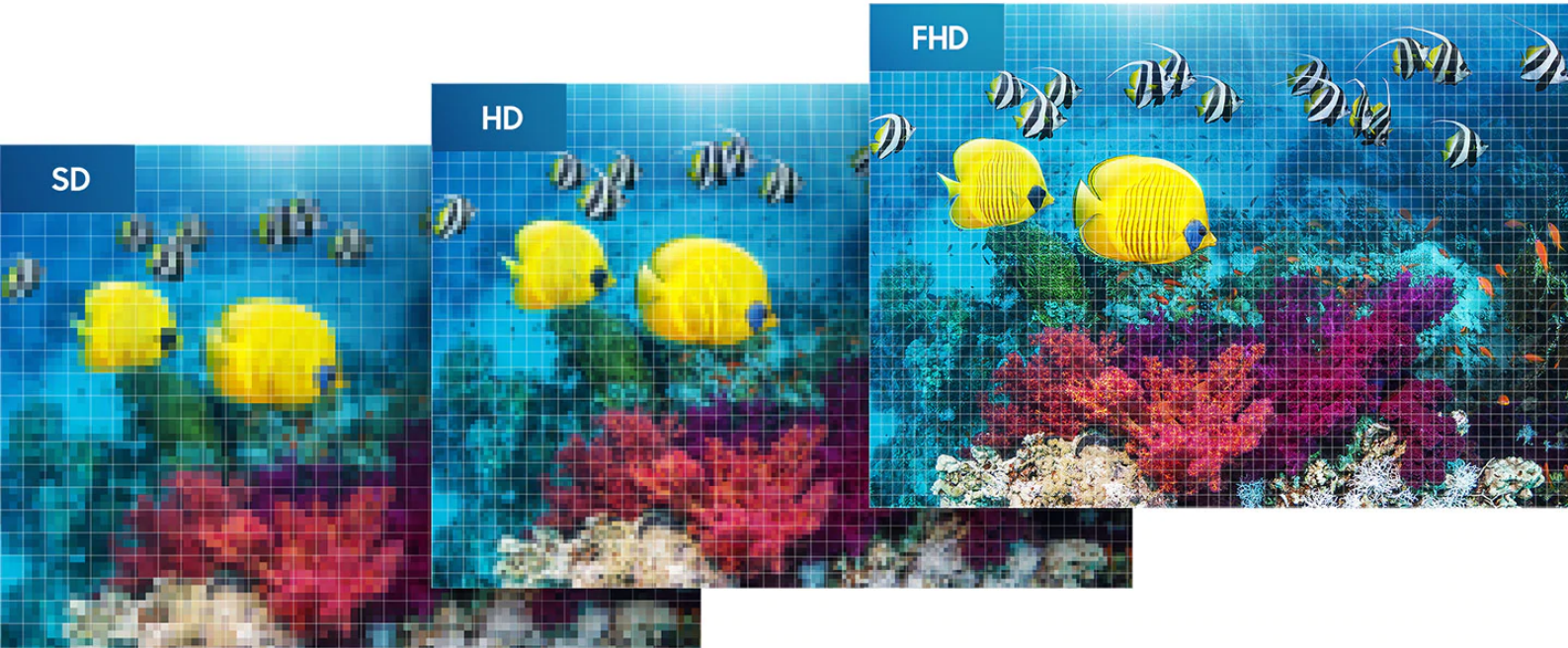
คุณภาพของภาพระดับ Full HD



เชื่อมต่อเพื่อชมภาพยนตร์

ดื่มด่ำไปกับภาพ Full HD อย่างเต็มอิ่ม

รับชมรายการทีวีและภาพยนตร์ที่คุณชื่นชอบอย่างสมจริงด้วยรายละเอียดที่ชัดเจนและคมชัดของภาพระดับ Full HD ที่จะหยุดทุกลมหายใจของคุณ



* ตัวอย่างพิกเซลในหน้าจอทีวีเป็นฉากที่จำลองขึ้นเพื่อช่วยให้ผู้บริโภคเข้าใจได้ดียิ่งขึ้นเท่านั้น

เชื่อมต่อเพื่อชมภาพยนตร์

เสียบช่อง USB เพื่อชมภาพยนตร์ เล่นเพลง หรือดูภาพถ่ายโปรดต่าง ๆ ได้ผ่านทีวี

*รองรับไฟล์ AVI, ASF, MP3, JPEG และไฟล์สกุลอื่น ๆ โปรดอ่านคู่มือเพื่อดูรายการไฟล์สกุลต่าง ๆ ที่หมดที่ทีวีรองรับการใช้งาน

คุณสมบัติ | เกลอรี่ | ข้อมูลจำเพาะ | สนับสนุน | เปรียบเทียบ

* กระจกแบบและข้อมูลจำเพาะของผลิตภัณฑ์นี้อาจแตกต่างกันไปตามรุ่นและขนาดจอทีวี

ข้อมูลจำเพาะ

undefined	Resolution	Wide Color Enhancer (Plus)
5	1,920 x 1,080	Wide Color Enhancer (Plus)
Connectivity	USB	
2	1	

Q Display

5

Display

Screen Size

49"

Resolution

1,920 x 1,080

Screen Curvature

N/A

Video

Picture Engine

HyperReal

Motion Rate

50

Dynamic Contrast Ratio

Mega Contrast

Micro Dimming

N/A

Precision Black (Local Dimming)

N/A

Wide Color Enhancer (Plus)

Yes

คุณสมบัติ เทคโนโลยี ข้อมูลจำเพาะ สนับสนุน เปรียบเทียบ

Contrast Enhancer

N/A

Auto Motion Plus

N/A

Film Mode

Yes

Natural Mode Support

Yes

Peak Illuminator

N/A

Audio**Dolby Digital Plus**

Yes

DTS Codec

Yes

Sound Output (RMS)

20W(L:10W, R:10W)

Speaker Type

2CH(Down Firing + Bass Reflex)

Woofer

N/A

Multiroom Link

N/A

Smart Service**Samsung SMART TV**

Smart

Convergence**TV to Mobile - Mirroring**

N/A

Mobile to TV - Mirroring, DLNA

Yes

Wireless TV On - Samsung WOL

N/A

Notification - BLE

N/A

RVU

N/A

WiFi Direct

Yes

Differentiation**Analog Clean View**

N/A

Cricket Prediction

N/A

Wireless Copy

N/A

Sports Mode

Basic

คุณสมบัติ เทคโนโลยี ข้อมูลจำเพาะ สนับสนุน เปรียบเทียบ

2 Tuner	CI/CI+/2CI+
N/A	N/A
MHP / MHEG / HbbTV / ACAP / GINGA / OHTV	
N/A	

Connectivity

HDMI	USB
2	1
Component In (Y/Pb/Pr)	Composite In (AV)
1	1 (Common Use for Component Y)
Ethernet (LAN)	Audio Out (Mini Jack)
Yes	1
Digital Audio Out (Optical)	RF In (Terrestrial / Cable input)
N/A	1/0/0
Ex-Link (RS-232C)	CI Slot
N/A	N/A
Dongle Ready (3G / LTE)	HDMI A / Return Ch. Support
Yes	N/A
HDMI Quick Switch	Wireless LAN Built-in
N/A	Yes
Anynet+ (HDMI-CEC)	
Yes	

Design

Design	Bezel Type
Slim Edge Mold	NNB
Slim Type	Front Color
Semi Slim FLED	Black
Light Effect (Deco)	Stand Type
N/A	Mini ARC
Swivel (Left/Right)	
N/A	