BOSCH

VJD-7533 H.265 UHD decoder
VIDEOJET decoder 7000

4K UHD | H.264 | H.265

- ▶ HD, 4K UHD and MP decoding of H.264 and H.265 streams
- ▶ Flexible monitor layouts
- ▶ Directly drives up to four 4K UHD monitors
- ▶ Displays VCA metadata overlays
- ▶ Compact size and VESA mount

VIDEOJET decoder 7000 displays video from Standard Definition (SD), High Definition (HD), 4K Ultra High Definition (UHD), and Megapixel (MP) cameras and encoders using H.264 and H.265 encoding at up to 60 frames per second over IP networks.

Its scalable decoding technology and performance management architecture makes it easy for operators to simply connect cameras, regardless of resolution, bitrate, or frame rate. It automatically scales resources, distributing them over the connected streams to produce the best possible performance. VIDEOJET decoder 7000 can drive four HD or 4K UHD monitors directly, each with an independently configurable screen layout, making it ideally suited for applications with flat-screen monitor walls at a moderate cost-per-monitor.

Use for example the Bosch Video Management System Operator Client to establish video connections and control the viewing mode remotely. Compact in relation to its decoding power, VIDEOJET decoder 7000 is perfect for any display application that requires space-saving solutions. Its fanless design is durable without the need for service.

System overview

VIDEOJET decoder 7000 is based on Intel's thirteenth generation Core i3 CPU.
The system runs a tailored Microsoft Windows 10 IoT Enterprise LTSC operating system and Bosch Monitor Wall software. Making use of Intel's hardware decoding accelerators, the software is fine-tuned for HD, 4K UHD and MP video decoding support.

VIDEOJET decoder 7000 provides an HDMI and a DisplayPort (via USB-C connector) output, both capable of driving monitors of up to 4K UHD simultaneously. The device utilizes a 10/100/1000 Base-T port.
The system is enclosed in a specially designed housing. It can be directly mounted to the back of a monitor or wall-mounted, using the 100 mm (3.937 in) VESA mount option.

Functions

High performance
Transmit 4K UHD and MP IP video to a high-performance VIDEOJET decoder 7000 and present it with ultimate clarity on large, flat-screen HD or 4K UHD monitors.
VIDEOJET decoder 7000 is capable of flawlessly decoding a variety of video streams in parallel, displayed in one of the pre-defined and on-the-fly switchable layouts.
Layouts can be switched at any time during operation, initiated by the controlling video management system.
VIDEOJET decoder 7000 supports landscape and portrait video and monitors. Layouts will adapt automatically to optimally utilize the available screen space.

Overheating protection
VIDEOJET decoder 7000 provides optimal performance when operated within its standard temperature range, while providing protection against thermal overload.

When ambient temperatures increase, VIDEOJET decoder 7000 reduces the system load dynamically to achieve the maximum possible performance without overheating.
In case of exceeding the maximum temperature due to environmental conditions, the device will shut down the system to protect it from hardware faults.

Decoding performance

The tables below show the typical values that provide a guideline for performance design. There are dependencies that affect the overall performance, especially when combining various streams and resolutions (for example, upscaling to monitor resolution and frame rate). In an overload situation, VIDEOJET decoder 7000 may drop frames to display overall video as smoothly as possible. Note that the upscaling of video, for example SD or HD video to be displayed on a 4K UHD monitor, draws performance that reduces the decoding capabilities.
Also note that screen refresh rate at 4K UHD monitors is limited to 30Hz in a multi-monitor setup. Additionally, the decoded output frame rate is reduced by default to 30 frames per second when using 3 or 4 HD monitors, and to 15 frames per second when using 4K UHD monitors.
VIDEOJET decoder 7000 allows optimizing for specific use cases:

- Use **Essential** for displaying a higher number of streams, for example as thumbnails on a lower decoded output frame rate
- Use **Fluent** for smooth video also on 4k UHD monitors with a reduced number of streams
- Use **Best** for full decoding frame rate with a reduced number of streams and less monitors when using 4K UHD monitors

Display output modes

Mode	A	B	C	D	E	F
Display resolution	HD [1]	HD [1]	HD [1]	UHD [1]	UHD [1]	UHD [1]
Number of displays	1	2	3 or 4	1	2	3 or 4
Screen refresh rate (Hz)	60	60	60	60	30	30

Maximum decoded output frame rate

Mode	A	B	C	D	E	F
Default	60	60	30	15	15	15
Essential	15	15	15	15	15	15
Fluent	30	30	30	30 [2]	30 [2]	- [3]

Mode	A	B	C	D	E	F
Best	60	60	60 [2]	60 [2]	- [3]	- [3]

1) HD = 1920 x 1080; UHD = 3840 x 2160
2) Supported with reduced number of streams only
3) Not supported

Stream performance H.264[1]

Stream parameters	Bit rate	Display output mode		
Resolution @ frame rate	Mbps	A / B / C	D / E	F
3840x2160@30	32	5	5	3
2992x1690@30	16	8	8	5
1920x1080@60	12	10	10	8
1920x1080@30	8	20	20	8
1280x720@60	6	20	20	12
1280x720@30	4	30	30	12
768@432@30	2	44	44	16
512x288@30	1	44	44	16

Stream performance H.265[1]

Stream parameters	Bit rate	Display output mode		
Resolution @ frame rate	Mbps	A / B / C	D / E	F
3840x2160@25	32	8	6	4
1920x1080@60	12	12	12	8
1920x1080@30	8	22	22	8
1280x720@60	6	20	20	12
1280x720@30	4	30	30	12

1) HD/UHD monitor resolutions with specified maximum screen refresh rates, video window aspect ratio 16x9, no overlays, no display rotation, visual output capture service (VOCS) off. Actual numbers may vary for different monitor resolutions, monitor screen refresh rates, decoder settings and video stream settings.

Memory limitations

The VIDEOJET decoder actively manages the video memory restrictions to ensure that it does not exceed the available video memory budget.

When connecting a new video stream, the video memory load increases in dependence on the video resolution. The following table shows the video memory cost for different video resolutions:

Video resolution Vr	Number of pixels per decoded video image	Video memory cost
Vr ≤ 768x432	[0, 331776]	3
768x432 < Vr ≤ 1280x720	[331777, 921600]	4
1280x720 < Vr ≤ 1920x1080	[921601, 2073600]	6
1920x1080 < Vr ≤ 2992x1680	[2073601, 5026560]	9
2992x1680 < Vr ≤ 3840x2160	[5026561, 8294400]	12

The maximum supported total video memory load for the decoder VJD-7533 is 132 for display output modes A to E, and 48 for display output mode F. The decoder will deny video connection requests that go beyond these limits.

The decoder may still experience computational overload even when the video memory load is within the budget. For detailed computational power restrictions, please refer to the stream performance tables.

Access security

The decoders offer various security levels for accessing the network, the device, and the data channels. System access is password-protected for operator and administrator levels.
VIDEOJET decoder 7000 supports TLS secured and encrypted communication. Also the payload channels - video, audio, metadata - are then AES encrypted. Network and device access can be protected by using 802.1x network authentication with EAP/TLS. Superior protection from malicious attacks is guaranteed by the on-board Trusted Platform Module (TPM) and Public Key Infrastructure (PKI) support. The advanced certificate handling offers:
• Self-signed unique certificates automatically created when required
• Client and server certificates for authentication
• Client certificates for proof of authenticity
• Certificates with encrypted private keys

IP Matrix for PC-free stand-alone applications

The built-in IP Matrix, together with a connected PTZ keyboard, allows VIDEOJET decoder 7000 to run as a stand-alone system. An operator can manage up to 32 cameras via the keyboard without any PC or management system required.

System setup is quickly done with Bosch Configuration Manager. After that, no PC is required to run the IP Matrix.
For larger IP Matrix systems, cluster it with up to 3 other decoders combining their number of cameras up to 128 cameras, keyboards, and monitors, all managed by up to 4 operators. Enhance camera support by licenses to a maximum of 256 cameras in an extended system.
A management system can integrate and control an IP Matrix system to keep operators' full awareness of alarm scenarios.

Video output capture service

VIDEOJET decoder 7000 allows to capture the video content of a monitor, encoded and streamed to a client or recorder. This allows, for example, an audit trail of the operator's view and actions. License this service per display.
Activating this feature may have an impact on the overall decoding and display performance.

Malware resistance

VIDEOJET decoder 7000 has been designed to be highly resistant to viruses and other malware on the network. The embedded Microsoft operating system and Bosch application software limits transactions to operation and maintenance only. No other software can be installed on the decoder.
The embedded firewall operates at the highest security level and only allows for the operation of services required by the installed software. All access is password protected, USB and other external storage devices are disabled, and update files are encrypted and authenticated. This provides a high degree of robustness against malware.

Easy upgrade

Remotely upgrade the decoder whenever new firmware becomes available. This ensures up-to-date products, thus protecting investment with little effort.

Regulatory information

ⓘ **Notice**
Disclaimer
This product is not designed, intended, or authorized for use in any type of system or application in which the failure of the product could lead to a risk to health and safety. The user is responsible to verify that the product and its specified functionalities are suitable for the intended application, in particular with respect to accuracy, safety and security.

Safety

Region	Number
	IEC 62368
EU	EN 62368

Region	Number
US	UL 62368

Electromagnetic compatibility

Region	Number
EU	EN 55032: 2015 /AC:2016-07 Emissions CISPR 32: 2012
	EN 55024: 2010 - Immunity (CISPR 24:2010)
	EN 61000-3-2: 2014 - harmonic current emissions
	EN 61000-3-3: 2013 - Voltage fluctuations
	EN 62368-1:2014+A11:2017 - Low voltage directive
US	FCC 47 CFR Chapter 1 Part 15

Approvals

Region	Regulatory compliance/quality marks
EU	EN 62368 - CE Declaration of Conformity
US	UL 62368 - cTUVus label, certified by TÜV Rheinland

Installation/configuration notes

Connectors and indicators
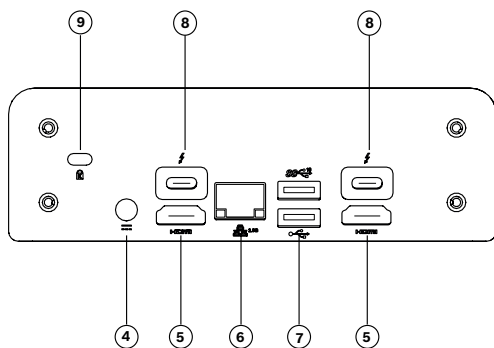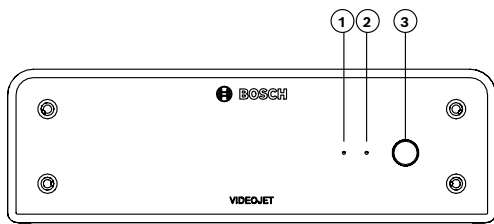

1 SSD activity (orange)
2 Power indicator (blue)
3 Power switch
4 DC power connector
5 2x HDMI
6 Ethernet
7 Dual USB 3.0
8 2x DisplayPort (via USB-C)
9 Kensington lock

ⓘ **Notice**

VGA connections are not supported. For connection to the LED monitors (listed as accessories: UML-274-90, UML-324-90, UML-434-90, UML-554-90), make sure to use native connections without converters. Connect the HDMI output via an HDMI cable to the HDMI port on the monitor. Connect the DP (USB-C) output via a USB-C-to-DP cable to the DP port on the monitor.

Dimensions
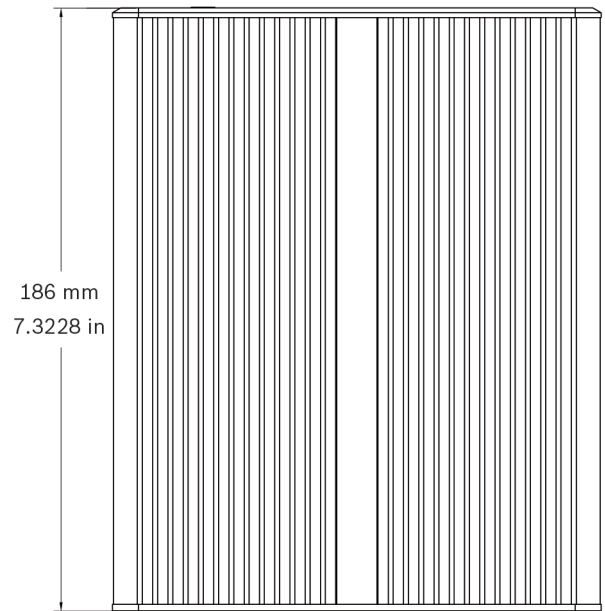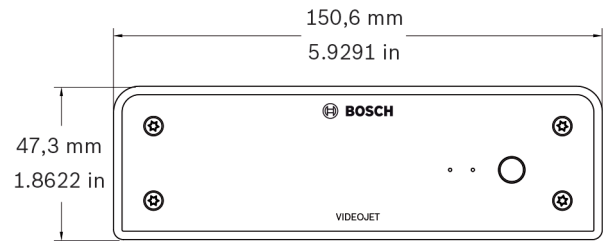
Parts included

Quantity	Component
1	VIDEOJET decoder 7000
3	International power supply unit with EU, US and CN power cords
1	VESA mounting kit
1	Quick installation guide
1	Safety and security information
1	RoHS document

Technical specifications

Video streaming

Video compression	H.264 (ISO/IEC 14496-10); H.265/HEVC
GOP structure	I; IP; IBBP
Resolution	1920 x 1080 (HD) at 60 Hz 3840 x 2160 (UHD) at 30 & 60Hz
Data rates	
MP	up to 32 Mbps
4K UHD	up to 32 Mbps
HD	up to 20 Mbps
SD	up to 6 Mbps

Inputs and outputs

Number of video outputs	Up to 4 simultaneously
Connector type	2 x HDMI (2.0a) 2 x DisplayPort 1.2 (via USB-C)
Ethernet	Shielded RJ45

Audio

Compression and sampling rate	G.711 8 kHz; L16 16 kHz; AAC-LC 80kbps 16 kHz; AAC-LC 48kbps 16 kHz
Minimum signal-to-noise ratio (dB)	50 dB

Network

Ethernet type	10/100/1000BASE-T; Auto-sensing; Full / half duplex

System integration

Protocols / standards	IPv4; UDP; TCP; HTTP; HTTPS; IGMP V2/V3; ICMP; RTSP; ARP; DHCP; SNMP (V3, MIBII); 802.1x, EAP/TLS; Digest authentication; RTP; RTSPS; SRTP

Data security

Encryption	TLS 1.2; TLS 1.1; AES 256; AES 128

Operation

Software compatibility	Bosch Configuration Manager; Bosch Video Management System

Electrical

Type of power supply	VAC
Operating voltage (VAC)	100 VAC – 240 VAC
Power frequency	50 Hz; 60 Hz
Nominal current (A)	1.20 A
Input current (A)	3.16 A
Input voltage (VDC)	19 VDC
Output current (A)	3.16 A
Output voltage (VDC)	19 VDC
Maximum heat loss (BTU/h)	205 BTU/h (decoder), Total (including PSU): 307 BTU/h

Mechanical

Dimensions (H x W x D) (mm)	47.3 mm x 150.6 mm x 186 mm
Dimensions (H x W x D) (in)	1.862 in x 5.929 in x 7.323 in
Dimensions VESA mount (H x W) (mm)	100 x 100 mm
Dimensions VESA mount (H x W) (in)	3.937 x 3.937 in
Weight (kg)	1.90 kg
Weight (lb)	4.20 lb
Mounting type	Directly to the back of a monitor; Wall-mounted (with VESA mount)

Environmental

Operating temperature (°C)	0 °C – 40 °C
Operating temperature (°F)	32 °F – 104 °F
Operating relative humidity, non-condensing (%)	0% – 90%
Thermal value	Decoder: 205 BTU/h max Total (incl. PSU): 307 BTU/h max

Ordering information

VJD-7533 H.265 UHD decoder
High-performance video decoder. H.265/H.264 up to 4K UHD and MP; MPEG-4; audio; up to 60fps per stream; HDMI and DisplayPort monitor outputs.
NDAA compliant
Order number **VJD-7533**

Accessories

UML-554-90 LED monitor, 55 inch, 4K
High-performance UHD (4K) 55-inch LED monitor.
Order number **UML-554-90**

UML-434-90 LED monitor, 43 inch, Full HD
High-performance full HD (1080p) 43-inch LED monitor.
Order number **UML-434-90**

UML-324-90 LED monitor, 32 inch, Full HD
High-performance full HD (1080p) 32-inch LED monitor.
Order number **UML-324-90**

UML-275-90 27 inch 4K LED monitor
27 inch 4K (2160 x 3840) monitor
Order number **UML-275-90**

UML-274-90 LED monitor, 27 inch, Full HD
High-performance full HD (1080p) 27-inch LED monitor.
Order number **UML-274-90**

UML-245-90 23.8 inch FHD LED monitor
23.8 inch FHD (1920 x 1080) LED monitor
Order number **UML-245-90**

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

KBD-DIGITAL Security keyboard with joystick
IntuiKey digital keyboard for system control and programming. Multi-lingual; quick-select menu
Order number **KBD-DIGITAL**

Software Options

VJD-IPM-X8C IP Matrix extension for 8 cameras
IP Matrix extension for 8 cameras, max. 4 licences per decoder
Order number **VJD-IPM-X8C**

VJD-VOCS-1D Decoder VOCS license for 1 display
Decoder VOCS license for 1 display
Order number **VJD-VOCS-1D**

Services

EWE-HPMON-IW 12 mths wrty ext High Perf Monitor
12 months warranty extension
Order number **EWE-HPMON-IW**

EWE-VJHPD-IW 12 mths wrty ext. Videojet h. perf. dec
12 months warranty extension
Order number **EWE-VJHPD-IW**

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