

## VJD-7523 High-performance H.265 UHD decoder

### VIDEOJET decoder 7000



- ▶ 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, H.265 or MPEG-4 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 displays 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 the BVMS 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 eleventh generation Core i3 CPU. The system has a 64 GB SSD module to store the operating system and application. The system runs a tailored and Bosch-branded Microsoft Windows 10 IoT Enterprise operating system and Monitor Wall software based on UHD-capable VideoSDK 6. 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 two HDMI and two DisplayPort (via USB-C connector) outputs, all capable of driving monitors of up to 4K UHD simultaneously. The device utilizes a 10/100/1000Base-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, for example, high-performance 19 in. to 55 in. Bosch HD LCD or LED 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. Layout switching can be based on alarm scenarios. 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 match the maximum possible performance without overheating. In case of exceeding the maximum temperature due to environmental conditions, the device will shutdown the system to protect it from hardware faults.

### Decoding performance

The table below shows the typical values which provide a guideline for performance design. There are dependencies that impact 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 displays is limited to 30Hz, and that the decoded output frame rate is reduced to 15 frames per second when using 3 or 4 HD displays or dual 4K UHD displays.

VIDEOJET decoder 7000 allows to optimize for specific use cases:

- Essential for displaying a higher number of streams, for example as thumbnails on a lower decoded output frame rate
- Fluent for smooth video with a reduced number of streams
- Best for full decoding frame rate with a reduced number of streams and less displays

### Display output modes

Mode	A	B	C	D	E
Display resolution	HD <sup>1)</sup>	HD <sup>1)</sup>	HD <sup>1)</sup>	UHD <sup>1)</sup>	UHD <sup>1)</sup>
Number of displays	1	2	3/4	1	2
Screen refresh rate (Hz)	60	30	15	30	15

### Maximum decoded output frame rate

Default	60	30	15	15	15
Essential	15	15	15	15	15
Fluent	15	30	30 <sup>2)</sup>	30 <sup>2)</sup>	- <sup>3)</sup>
Best	60	60 <sup>2)</sup>	- <sup>3)</sup>	- <sup>3)</sup>	- <sup>3)</sup>

1) HD = 1920 x 1080; UHD = 3841 x 2160

2) Supported with reduced number of streams only

3) Not supported

### Stream performance H.264

Stream parameters	Bit rate	Display output mode	
		A/B	C/D/E
Resolution @ frame rate	Mbps		
3840x2160@30	32	5	3
2992x1690@30	16	7	4
1920x1080@60	12	10	6
1920x1080@30	8	20	12
1280x720@60	6	20	12
1280x720@30	4	24	20
768@432@30	2	32	24
512x288@30	1	32	24

### Stream performance H.265

Stream parameters	Bit rate	Display output mode	
		A/B	C/D/E
Resolution @ frame rate	Mbps		
3840x2160@25	32	7	4
1920x1080@60	12	12	7
1920x1080@30	8	22	14
1280x720@60	6	20	12
1280x720@30	4	24	20

### 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 functionality, together with a connected 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 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 displays, 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 display, encoded and streamed to a client or recorder. This allows, for example, an audit trail of the operators 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. 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 or software becomes available. This ensures up-to-date products, thus protecting investment with little effort.

**Regulatory information**

**Safety**

Region	Number
	IEC 62368
EU	EN 62368

Region	Number
US	UL 62368

**Electromagnetic compatibility**

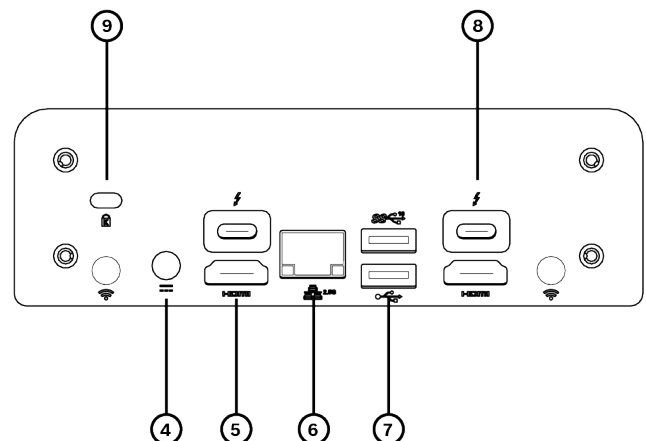
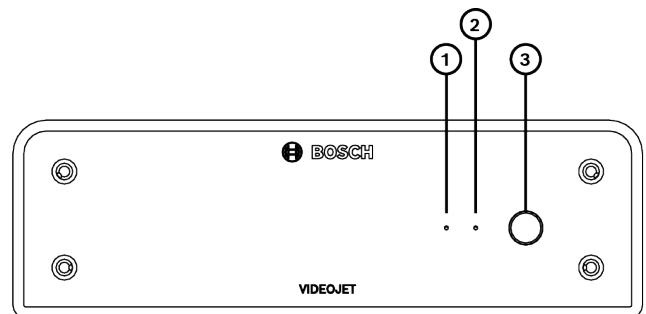
Region	Number
EU	EN 55032: 2015 /AC:2016-07 Emissions CISPR 32: 2012 EN 55024: 2010 - Immunity (CISPR 24:2010) EN 61000-3-2: 2014 - harmonic current emissions EN 61000-3-3: 2013 - Voltage fluctuations EN 62368-1:2014+A11:2017 - Low voltage directive
US	FCC 47 CFR Chapter 1 Part 15

**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**

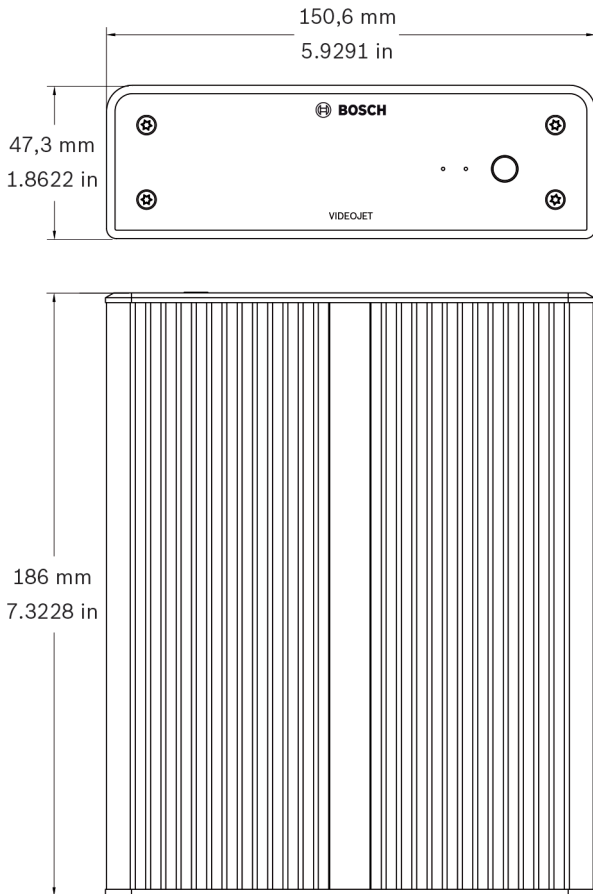


- 1 SSD activity (orange)
- 2 Power indicator (blue)
- 3 Power switch
- 4 DC power connector
- 5 2x HDMI
- 6 Ethernet
- 7 Dual USB 3.0
- 8 2x DisplayPort (via USB-C)
- 9 Kensington lock

**i 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 Hints document
1	EAC document

**Technical specifications**

Electrical / PSU	
Power supply	Wide-range, external, included in the box
Input voltage	100 to 240 VAC 1.2 A 50/60 Hz Class I
Output	19 VDC 3.16 A
Efficiency	Energy Star EPS2.0/ ErP Lot 7 Energy Efficiency DOE Level VI

Electrical / System	
Input	19 VDC 3.16 A

Video	
Video outputs	up to 4 simultaneously
• connector	2x HDMI 2.0a 2x DisplayPort 1.2 (via USB-C)
Standards	H.265 / HEVC (ISO/IEC 23008-2) H.264 (ISO/IEC 14496-10) MPEG-4
Data rates	
• MP	up to 32 Mbps
• 4K UHD	up to 32 Mbps
• HD	up to 20 Mbps
• SD	up to 6 Mbps per stream

Video	
GOP structure	I, IP, IBBP
Monitor resolutions	1920 x 1280 (HD) at 60 Hz 3840 x 2160 (UHD) at 30 Hz
Audio	
G.711	
• Frequency range	300 Hz to 3.4 kHz
• Data rate	80 kbps at 8 kHz sampling rate
L16 (reception only)	
• Frequency range	300 Hz to 6.4 kHz
• Data rate	640 kbps at 16 kHz sampling rate
AAC-LC	
• Data rate	48 kbps at 16 kHz sampling rate 80 kbps at 16 kHz sampling rate
Signal-to-noise ratio	> 50 dB
Network	
Ethernet	10/100/1000/2500 Base-T, auto-sensing, half/full duplex, RJ45
Protocols	IPv4, UDP, TCP, HTTP, HTTPS, RTP, RTSP, IGMP V2/V3, ICMP, ARP, DHCP, 802.1x, EAP-TLS, SNMPv3, digest authentication
Encryption	TLS (v1.0, v1.1, v1.2), AES (128 bit, 256 bit)
Control	
Software update	remotely programmable
Configuration	Configuration Manager
Operation	BVMS, stand-alone
Mechanical	
Dimensions w/o stands (H x W x D)	47.3 x 150.6 x 186 mm (1.862 x 5.929 x 7.323 in)
Weight	Approx. 1.9 kg (4.2 lb)

Mechanical	
VESA mount	100 x 100 mm (3.937 x 3.937 in)
Environmental	
Operating temperature	0 °C to +50 °C (+32 °F to +122 °F) ambient temperature, with airflow 0 °C to +40 °F (+32 °F to +104 °F) ambient temperature, still air
Relative humidity	0 to 90% atmospheric humidity, non-condensing
Thermal value	Decoder: 205 BTU/h max Total (incl. PSU): 307 BTU/h max

### Ordering information

#### VJD-7523 High-performance 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-7523** | **F.01U.407.935**

#### Accessories

##### UML-554-90 LED monitor, 55 inch, 4K

High-performance UHD (4K) 55-inch LED monitor.  
Order number **UML-554-90** | **F.01U.350.601**

##### UML-434-90 LED monitor, 43 inch, Full HD

High-performance full HD (1080p) 43-inch LED monitor.  
Order number **UML-434-90** | **F.01U.350.600**

##### UML-324-90 LED monitor, 32 inch, Full HD

High-performance full HD (1080p) 32-inch LED monitor.  
Order number **UML-324-90** | **F.01U.350.599**

##### UML-275-90 27 inch 4K LED monitor

27 inch 4K (2160 x 3840) monitor  
Order number **UML-275-90** | **F.01U.383.604**

##### UML-274-90 LED monitor, 27 inch, Full HD

High-performance full HD (1080p) 27-inch LED monitor.  
Order number **UML-274-90** | **F.01U.350.598**

##### UML-245-90 23.8 inch FHD LED monitor

23.8 inch FHD (1920 x 1080) LED monitor  
Order number **UML-245-90** | **F.01U.383.603**

##### 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** | **F.01U.279.328**

##### KBD-DIGITAL Security keyboard with joystick

IntuiKey digital keyboard for system control and programming. Multi-lingual; quick-select menu  
Order number **KBD-DIGITAL** | **4.998.138.515**

#### 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** | **F.01U.382.737**

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

Decoder VOCS license for 1 display

Order number **VJD-VOCS-1D | F.01U.382.738****Services****EWE-HPMON-IW 12 mths wrty ext High Perf. Monitor**

12 months warranty extension

Order number **EWE-HPMON-IW | F.01U.346.296****EWE-VJHPD-IW 12 mths wrty ext. Videojet h. perf. dec**

12 months warranty extension

Order number **EWE-VJHPD-IW | F.01U.382.949****Represented by:****Europe, Middle East, Africa:**

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