


BOSCH

Invented for life

VideoJet X10/X20/X40 Rugged Video Encoder



- ▶ Ruggedized for extended environmental conditions
- ▶ High-quality MPEG-4 video over IP
- ▶ H.264 Baseline Profile encoding
- ▶ Units with one, two, or four video inputs
- ▶ Built-in Intelligence-at-the-Edge
- ▶ Network-attached RAID storage via iSCSI

The Bosch VideoJet X encoders belong to a family of industrial, high-performance, single-, dual-, or quad-input CCTV video encoders. They are built into a rugged housing and constructed to withstand extreme environmental conditions. The VideoJet X encoders may be used at extreme temperatures, operating from -30 °C to +60 °C (-22 °F to +140 °F). These powerful and flexible devices represent the cutting edge of high-performance Video-over-IP for CCTV today.

Functions

Rugged Environments

VideoJet X encoders are ideal for outdoor applications such as perimeter, border, and fence control, as well as for industrial applications where they are tolerant of harsh environments.

When used at remote locations you benefit from their wide 10 to 30 VDC power input range, so that they can be battery or solar powered. You also benefit from their SFP (small form-factor pluggable) slot that allows a direct connection to a fiber interface module without the need for external fiber hardware.

Their industrial-grade vibration resistance makes these encoders extremely suitable for use in mobile applications such as trains, busses, or other vehicles.

Flexibility

VideoJet X encoders offer unparalleled recording flexibility. Stream video across the network and store it using Network Video Recorders (NVRs). Record locally on CompactFlash, an external USB hard drive, or use an optional automotive-grade internal hard drive. Network-attached RAID iSCSI storage devices can also be used. The built-in iSCSI support enables the VideoJet X encoders to act as conventional DVRs while streaming high-performance live video across the network.

Dual Streaming

The VideoJet X encoders use Dual Streaming to generate two independent IP video streams per channel if sufficient computational power is available. This allows viewing and recording at two different quality levels to save disk space and bandwidth. On alarm, they can send an e-mail with JPEG images attached.

Dual Recording

You can record the streams independently on different media. Thus video can be recorded centrally on iSCSI drives managed by VRM Video Recording Manager and redundantly on the local media. If necessary, for example in case of a network failure VRM can fill up the gap in the central recording (ANR, Automatic Network Replenishment).

Recording Profiles

The encoders feature a highly flexible recording scheduler, providing up to ten programmable recording profiles and allowing individually assigned camera profiles. With these profiles, you can accelerate the frame rate as well as increase the resolution on alarm, saving recording space during non-alarm periods.

H.264 Baseline Profile Encoding

Firmware 4.0 enables the Bosch VideoJet X encoders to use H.264 Baseline Profile to encode the video signal. This allows reducing the required bit rate for a given quality setting, or increasing the quality when keeping the bit rate setting.

Frame Rates and Resolution

When one or two inputs are used, the encoders deliver MPEG-4 video over IP at a full frame rate of 25 (PAL) or 30 (NTSC) images per second with up to 4CIF resolution on every channel. If four inputs are used the maximum frame rate is 12.5/15 images per second at 4CIF resolution and no Dual Streaming is possible.

Because H.264 Baseline Profile does not support field encoding, interlaced video is not possible, thus resolution is limited to a maximum of 2CIF. H.264 encoding requires the double performance in respect to MPEG-4. Frame rate values must therefore be divided by two.

The maximum frame rates listed in the tables below depend on the resolution, picture content and movement, and the number of inputs used.

MPEG-4	4 inputs	2 inputs	1 input
4CIF	12.5/15 ips	25/30 ips	25/30 ips
2/3 D1	25/30 ips	25/30 ips	25/30 ips
2CIF	25/30 ips	25/30 ips	25/30 ips

ips = frame rate in images per second

H.264	4 inputs	2 inputs	1 input
2CIF	12.5/15 ips	25/30 ips	25/30 ips

ips = frame rate in images per second

Reliability

Designed for reliability, the VideoJet X encoders feature a wide temperature range power supply, dual-redundant Ethernet network ports, a third SFP network slot with switching capability between the network ports, dual USB ports, and fault-tolerant mass storage via iSCSI.

Access Security

The VideoJet X encoders offer various security levels for accessing the network, the unit, and the data channels. As well as password protection with three levels, they support 802.1x authentication using a RADIUS server for identification. You can secure Web browser access by HTTPS using a SSL certificate that is stored in the unit. For

total data protection, each communication channel—video, audio, or serial I/O—can be independently AES encrypted with 128-bit keys, once the Encryption Site License has been applied.

Intelligence

With built-in video content analysis, VideoJet X encoders reinforce the Intelligence-at-the-Edge concept where edge devices become increasingly intelligent. The VideoJet X comes with built-in MOTION+ video motion detection. This motion detection algorithm is based on pixel change and includes object size filtering capabilities and sophisticated tamper detection capabilities.

Bosch offers more advanced video content analysis (VCA) applications with its Intelligent Video Analysis (IVA). A licensable option, it bases the IVA algorithm on digital imaging technology that uses multi-level image analysis of pixel, texture, and motion (trajectory) changes.

Viewing

View the VideoJet X encoder video on a PC using a Web browser, in the Bosch Video Management System, or integrate it into another video management system. By routing the IP video to a high-performance VIP XD video decoder or a VIDOS Monitor Wall, you can present the video with ultimate clarity.

Easy Upgrade

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

Certifications and Approvals

Approvals

Region	Certification	
Europe	CE	VideoJet X10/X20/X40
USA	UL	VideoJet X10/X20/X40, X40 SN

Safety

Region	Number
	IEC 60950

Electromagnetic Compatibility

Region	Number
EU	EN55103-1 Video and audio equipment
	EN50130-4 Alarm systems
	EN55022 ITE
	EN55024 ITE
	EN50121-4 Railway applications
	EN61000-3-2
	EN61000-3-3

Region	Number
AUS/NZ	AS/NZS 3548 Class B
US	FCC 47 CFR Chapter 1 Part 15

Environment

Region	Number
EU	EN60068-2-6 Fc Sinusoidal vibration
	EN60068-2-30 Db Damp heat
	EN60068-2-1 Ab Cold storage
	EN60068-2-2 Bb Hot storage
	EN60068-2-14 Na Change of temperature

Installation/Configuration Notes

VideoJet X encoders have an integrated heat pipe which needs a specific mounting direction to be fully functional. Mount VideoJet X encoders in any direction except with the front (BNC side) pointing upwards.

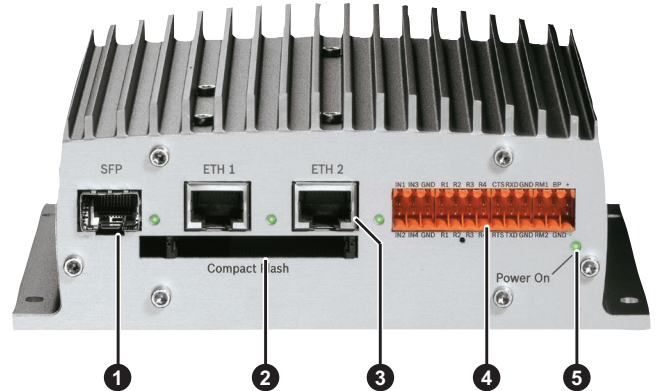
Front Connectors and Indicators



VideoJet X40—front

- 1 USB 1 and 2
- 2 Video input 1 (2, 3, and 4 where applicable)
- 3 2-channel audio input (1-channel for X10)
- 4 1-channel audio output
- 5 LED HDD (only operates on HDD versions)
- 6 LED Connect

Rear Connectors and Indicators



VideoJet X series—rear

- 1 SFP GBIC slot
- 2 Compact Flash slot
- 3 Ethernet 1 and 2
- 4 Alarm input, relay output, serial interface, and power input on separate connector blocks
- 5 LED Power On

Parts Included

Quantity	Component
1	VideoJet X10 encoder with 1 video input, or VideoJet X20 encoder with 2 video inputs, or VideoJet X40 encoder with 4 video inputs
1	Quick Installation Guide
1	CD-ROM with software and documentation
1	Drilling template
1	Set of spring clamp contact connectors

An optional extended temperature range power supply can be ordered separately with power cord versions for the EU/US, UK, and AUS regions.

Technical Specifications

Electrical	
Power supply	Via external unit or external battery
Input voltage	10 to 30 VDC
Power consumption	X10: approx. 16 VA, fully equipped X20/X40: approx. 22 VA, fully equipped

Input/output

Video	X10: 1 x input
	X20: 2 x input
	X40: 4 x input
• connector	BNC
• impedance	75 ohm, switchable
• signal	Analog composite, 0.7 to 1.2 Vpp, NTSC or PAL
Audio	X10: 1 x mono line in, 1 x mono line out
	X20/X40: 2 x mono line in, 1 x mono line out
• connector	2 x 3.5 mm stereo jack
• signal line in	9 kohm typical, 5.5 Vpp max
• signal line out	3.0 Vpp at 10 kohm / 1.7 Vpp at 16 ohm typical
Alarm	4 x input
• connector	Clamp (non-isolated closing contact)
• activation resistance	10 ohm max
Relay	4 x output
• connector	Clamp
• signal	30 Vpp (SELV), 2 A
COM port	Clamp, RS-232/422/485

Video

Standards	H.264 Baseline Profile (ISO/IEC 14496-10) MPEG-4, M-JPEG, JPEG
Data rates	9.6 kbps to 6 Mbps per channel
Resolution	Horizontal x vertical PAL/NTSC
• 4CIF (MPEG-4 only)	X10/X20: 704 x 576/480 (25/30 ips*) X40: 704 x 576/480 (12.5/15 ips*; all inputs used)
• 2CIF	704 x 288/240 (25/30 ips*)
• 2/3 D1	464 x 576/480 (25/30 ips*)
• 1/2 D1	352 x 576/480 (25/30 ips*)
• CIF	352 x 288/240 (25/30 ips*)
• QCIF	176 x 144/120 (25/30 ips*)
	* Depending on encoding algorithm, picture content and movement
GOP structure	I, IP
Overall IP delay	120 ms
Frame rate	1 to 50/60 (PAL/NTSC)

Audio

Standard	G.711; 300 Hz to 3.4 kHz
Data rate	80 kbps at 8 kHz sampling rate

Network

Ethernet	Dual port 10/100 Base-T, auto-sensing, half/full duplex, RJ45
SFP	1 x 1 Gbps SFP (small form-factor pluggable) slot for optional standard SFP GBIC module
Protocols	RTP, Telnet, UDP, TCP, IP, HTTP, HTTPS, FTP, DHCP, IGMP V2/V3, ICMP, ARP, RTSP, SMTP, SNMP, SNMP (V1, MIB-II), 802.1x
Encryption	TLS 1.0, SSL, AES (optional)

Control

Software update	Flash ROM, remote programmable
Configuration	Configuration Manager or Web browser

Connections

CompactFlash	1 x CF slot for optional standard Type I/II CompactFlash memory card
USB ports	2 x USB 2.0 high-speed ports, 2.5 W max feed each

Mechanical

Dimensions (H x W x D)	61 x 160 x 178 mm (2.4 x 6.3 x 7.01 in)
Weight	Approx. 1.5 kg (3.3 lb) with HDD

Environmental

Operating temperature	-30 °C to +60 °C (-22 °F to +140 °F) ambient temperature
Relative humidity	0 to 95% atmospheric humidity, non-condensing
Thermal value	X10: 55 BTU/h max, fully equipped X20/X40: 75 BTU/h max, fully equipped

Ordering Information

VJT-X10S VideoJet X10 with 1 video input	VJT-X10S
VJT-X10S-H008 VideoJet X10 with 1 video input and a 80 GB hard disk	VJT-X10S-H008
VJT-X20S VideoJet X20 with 2 video inputs	VJT-X20S
VJT-X20S-H008 VideoJet X20 with 2 video inputs and a 80 GB hard disk	VJT-X20S-H008
VJT-X40S VideoJet X40 with 4 video inputs	VJT-X40S
VJT-X40S-H008 VideoJet X40 with 4 video inputs and a 80 GB hard disk	VJT-X40S-H008

Ordering Information

Accessories

VJT-XACC-PS VJX10/20/40 wide-range extended-temperature power supply	VJT-XACC-PS
VJT-XACC-PSUK VJX10/20/40 wide-range extended-temperature power supply for UK	VJT-XACC-PSUK
VJT-XACC-PSAU VJX10/20/40 wide-range extended-temperature power supply for AUS	VJT-XACC-PSAU
PSR 1200 Rack-mount Power Supply Rack-mount power supply 1200 W	VIP-PSR-1200
DVA-12T-04075RA iSCSI Diskarray 12-bay 4 HDD, 3 TB	DVA-12T-04075RA
DVA-12T-12075RA iSCSI Diskarray 12-bay 12 HDD, 9 TB	DVA-12T-12075RA
DSA-N2B20-06AT Base unit with 6 x 1 TB SATA hard disk	DSA-N2B20-06AT
DSA-N2B20-12AT Base unit with 12 x 1 TB SATA hard disk	DSA-N2B20-12AT
DSA-N2B50-20AT Base unit with 20 x 1 TB SATA hard disk	DSA-N2B50-20AT
Software Options	
MVC-FIVA4-ENC1 IVA 4.0 VCA software license for single channel encoder	MVC-FIVA4-ENC1
MVC-FIVA4-ENC2 IVA 4.0 VCA software license for dual channel encoder	MVC-FIVA4-ENC2
MVC-FIVA4-ENC4 IVA 4.0 VCA software license for quad channel encoder	MVC-FIVA4-ENC4
MVC-FENC-AES BVIP AES 128 Bit Encryption BVIP AES 128-bit encryption site license. This license is required only once per installation. It enables encrypted communication between BVIP encoders, decoders and management stations.	MVC-FENC-AES

Americas:
Bosch Security Systems, Inc.
130 Perinton Parkway
Fairport, New York, 14450, USA
Phone: +1 800 289 0096
Fax: +1 585 223 9180
security.sales@us.bosch.com
www.boschsecurity.us

Europe, Middle East, Africa:
Bosch Security Systems B.V.
P.O. Box 80002
5600 JB Eindhoven, The Netherlands
Phone: + 31 40 2577 284
Fax: +31 40 2577 330
emea.securitysystems@bosch.com
www.boschsecurity.com

Asia-Pacific:
Robert Bosch (SEA) Pte Ltd, Security Systems
11 Bishan Street 21
Singapore 573943
Phone: +65 6571 2600
Fax: +65 6571 2698
apr.securitysystems@bosch.com
www.boschsecurity.com

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