BOSCH
Invented for life

VideoJet X10/X20/X40 SN Video Encoder

- **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**
- **Local recording on CF card or USB hard drive**
- **ONVIF conformant**

Bosch VideoJet X SN encoders belong to a family of high-performance, single-, dual-, or quad-input CCTV video encoders that feature DVD-like quality MPEG-4 video, at up to 25/30 images per second, over IP networks. The units support PAL and NTSC sources and provide bidirectional audio communication in parallel to video. They are built into a housing that can be easily rack-mounted. These powerful and flexible devices represent the cutting edge of high-performance Video-over-IP for CCTV today.

Functions

Flexibility

VideoJet X SN 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 network-attached RAID iSCSI storage devices. The built-in iSCSI support enables the VideoJet X SN encoders to act as conventional DVRs while streaming high-performance live video across the network.

Dual Streaming

The VideoJet X SN 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

Access Security

The VideoJet X SN 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 SN encoders reinforce the Intelligence-at-the-Edge concept where edge devices become increasingly intelligent. The VideoJet X SN 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 SN 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.

Camera control

Configure and control your camera or dome using one of the various pre-defined control protocols. VideoJet X SN encoders provide a serial interface and alternatively support Bilinx communication over coax cable.

Easy Upgrade

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

ONVIF conformance

Firmware 4.10 introduces conformance to the ONVIF (Open Network Video Interface Forum) specification guaranteeing interoperability between network video products regardless of manufacturer. ONVIF conformant devices are able to exchange live video, audio, metadata and control information and ensure that they are automatically discovered and connected to network applications such as video management systems.

Certifications and Approvals

Approvals

Region	Certification	
Europe	CE	VideoJet X10/X20/X40 SN
		VideoJet X10/X20/X40 SN Power Supply
USA	UL	VideoJet X10/X20/X40, X40 SN
		VCS UL online certifications directory (link)

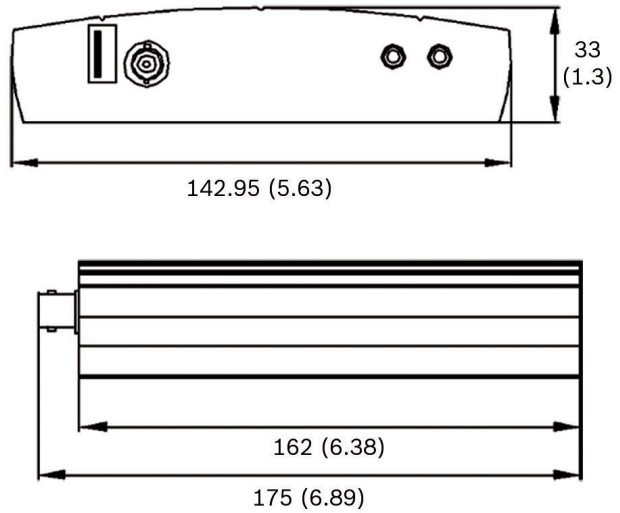
Safety

Region	Number
	IEC 60950

Electromagnetic Compatibility

Region	Number
EU	EN55103-1 Video and audio equipment
	EN50130-4 Alarm systems
	EN55022 ITE
	EN55024 ITE
	EN61000-3-2
	EN61000-3-3
AUS/NZ	AS/NZS 3548 Class B
US	FCC 47 CFR Chapter 1 Part 15

Installation/Configuration Notes



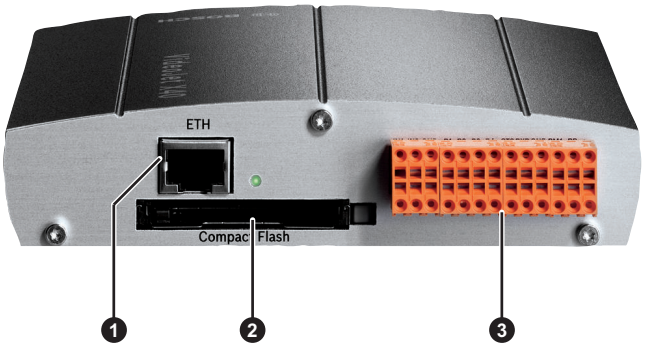
Dimensions in mm (inches)

Front Connectors and Indicators

VideoJet X40 SN–front

1 USB
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 CF (only operates if CF card is mounted)
6 LED Connect

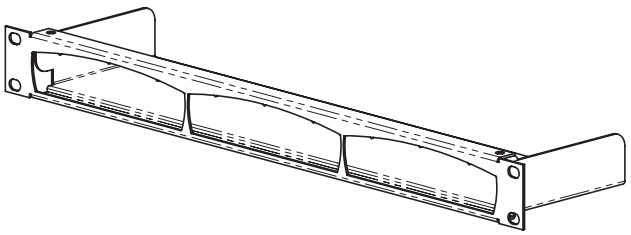
Rear Connectors and Indicators



VideoJet X SN series–rear

1 Ethernet
2 Compact Flash slot
3 Alarm input, relay output, serial interface, and power input on separate connector blocks

Rack Mounting Kit (Optional)



Parts Included

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

An optional power supply with primary adaptors for EU, US, UK, and AUS can be ordered separately.

Technical Specifications

Electrical

Power supply	Via external unit or external battery
Input voltage	10 to 30 VDC
Power consumption	X10: approx. 11 VA, fully equipped
	X20/X40: approx. 19 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	10/100 Base-T, auto-sensing, half/full duplex, RJ45
Protocols	RTP, Telnet, UDP, TCP, IP, HTTP, HTTPS, FTP, DHCP, IGMP V2/V3, ICMP, ARP, RTSP, SMTP, SNTP, 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
Camera control	Via serial interface; supported* protocols and devices:
• Bosch	Autodome, HSPT, MIC1-300 IP, TC8x00
• Canon	VCC1, VC-C4R
• CBC	SMD 12P/12PII/20P
• JVC	TK-C676
• Panasonic	WV-CS850
• Pelco	Spectra D/P
• Sensomatic	SpeedDome Ultra
• Sony	EVI D30/31/D100
• Ultrak	KD6
• VT	VPT4x
•	* Basic functions only, no claim for full functionality valid. Bosch may not be made responsible if functions are not implemented or not working under all circumstances.

Connections

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

Mechanical

Dimensions (H x W x D)	33 x 142 x 178 mm (1.3 x 5.6 x 7 in)
Weight	Approx. 0.6 kg (1.3 lb)

Environmental

Operating temperature	0 °C to +50 °C (+32 °F to +122 °F) ambient temperature
Relative humidity	20 to 80% atmospheric humidity, non-condensing
Thermal value	X10: 37 BTU/h max, fully equipped
	X20/X40: 65 BTU/h max, fully equipped

Ordering Information

VJT-X10SN VideoJet X10 SN for normal temperature with 1 video input	**VJT-X10SN**
VJT-X20SN VideoJet X20 SN for normal temperature with 2 video inputs	**VJT-X20SN**
VJT-X40SN VideoJet X40 SN for normal temperature with 4 video inputs	**VJT-X40SN**
Accessories	
VJT-XACC-PSN VJX10/20/40 wide-range power supply	**VJT-XACC-PSN**
VJT-XACC-RMK VideoJet X SN rack-mount kit for 3 units	**VJT-XACC-RMK**
DVA-12T-04100RA iSCSI Diskarray 12-bay 4 HDD, 4 TB	**DVA-12T-04100RA**
DVA-12T-12100RA iSCSI Diskarray 12-bay 12 HDD, 12 TB	**DVA-12T-12100RA**
DSA-N2B20-06AT iSCSI disk array, base unit with 6 x 1 TB SATA hard disk	**DSA-N2B20-06AT**
DSA-N2B20-12AT iSCSI disk array, 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.x VCA software license for single channel encoder (e-license)	**MVC-FIVA4-ENC1**
MVC-FIVA4-ENC2 IVA 4.x VCA software license for dual channel encoder (e-license)	**MVC-FIVA4-ENC2**
MVC-FIVA4-ENC4 IVA 4.x VCA software license for quad channel encoder (e-license)	**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 devices and management stations.	**MVC-FENC-AES**

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