AXIS IP Camera/Video Server (FTI06019)

Hardware Installation Manual

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References

AXIS Video Server Installation Guide
http://www.axis.com/files/manuals/ig_241x_28586_en_0207.pdf

AXIS 241Q Video Server User's Manual
http://www.axis.com/files/manuals/um_241q_241s_32079_en_0901.pdf

Introduction

The Installation manual provides instructions for installing and configuring the AXIS IP Camera/Video server as used within FT NavVision®. The chapters and sections are organized in chronological order in which the specific components must be installed and monitored (where applicable).

About the installation manual

The installation manual contains the following chapters:

- Chapter “Safety instructions” presents warning, caution and note information, which the user should pay attention to.
- Chapter “Receiving, unpacking and checking” contains instructions on how to receive, unpack or check the system.
- Chapter “Overview” contains general information on the basic construction, controls, connections and indicators of the IP camera/video server.
- Chapter “Installation and mounting” contains instructions on how to install and/or mount the video server.
- Chapter “Technical specifications” contains an overview of the main technical data.

Abbreviations list

AC	Alternating Current
API	Application Programming Interface
ARP	Address Resolution Protocol
ASF	Advanced Systems Format
AWG	American Wire Gauge
BNC	Bayonet Neill-Concelman
CAN	Controller Area Network
CBR	Constant Bit Rate
CIF/QCIF	Common Intermediate Format/Quarter CIF
CTS	Clear To Send
cUL	UL mark for Canada
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
DIN	Deutsches Institut für Normung
DIP	Dual In-line Package
DNS	Domain Name System
DTR	Data Terminal Ready
DynDNS	Dynamic Network Services
EEPROM	Electrically Erasable Programmable Read-only Memory
EMC	Electromagnetic Compatibility
EN	European Union/European standard (Europese norm)
ESD	Electrostatic Discharge
FCC	Federal Communications Commission
FT	Free Technics
FTP	File Transfer Protocol
GND	Ground
HTTP(S)	Hypertext Transfer Protocol (Secure)
ICES	Interference-Causing Equipment Standard
ICMP	Internet Control Message Protocol
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IGMP	Internet Group Management Protocol
IM	Installation Manual
I/O	Input/Output
IP	Ingress Protection / Internet Protocol
ISO	International Organization for Standardization
JPEG	Joint Photographic Experts Group
LAN	Local Area Network
LED	Light Emitting Diode
MIB	Management Information Base
MPEG	Motion Picture Editors Guild
NTP	Network Time Protocol
NTSC	National Television System Committee
OS	Operating System

PAL	Phase Alternate Line
PLC	Programmable Logic Controller
PTZ	Pan, Tilt and Zoom
QoS	Quality of Service
RCA	Radio Corporation of America
RH	Relative Humidity
RISC	Reduced Instruction Set Computer
RJ	Registered Jack
RTC	Real Time Clock
RTP	Real Time Transport
RTCP	RTP Control Protocol
RTSP	Real Time Streaming Protocol
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Management Protocol
SOCKETS	Internet protocol
SSL/TLS	Secure Sockets Layer/Transport Layer Security
TCP	Transmission Control Protocol
TX	Transmission
TxD	Transmitted Data
UDP	User Datagram Protocol
UL	Underwriters Laboratories Inc. (product safety certification)
UPnP	Universal Plug and Play
VCCI	Voluntary Control Council for Interference by Information Technology Equipment
VBR	Variable Bit Rate

Revision history

Revisions issued since publication.

Issue	Date	Revision	Reason
1.0	August 24, 2010		First release

Safety instructions

NOTE:

- *This section provides only a summary of the most important safety requirements and notes, which will be mentioned in the individual sections. To protect your health and prevent damage to the devices, it is essential to read and carefully follow the safety instructions.*
- *The installation manual is addressing the installation and maintenance personnel responsible for taking the AXIS IP Camera into normal service and out of service.*
- *The installation personnel must have a basic knowledge in handling electronic equipment. The maintenance personnel must be well experienced in using protection equipment and test equipment.*

The indications NOTE, CAUTION and WARNING have the following significance:

NOTE:
An operating procedure, practice or condition etc., which it is essential to emphasize.

CAUTION

An operating procedure, practise or condition etc., which, if not strictly observed, may damage or destroy equipment.

WARNING

An operating procedure, practise or condition etc., which, if not carefully observed may result in personal injury or loss of life.

CAUTION

- **When the device is installed on the wall or ceiling, make sure that it is firmly attached**
- **Make sure that the power supply is correct before using the camera**
- **Do not drop the device or expose it to physical shock**
- **Do not expose to temperatures outside the range of 5 – 50℃ when the device is in operation**
- **Do not expose the device to wet/damp conditions or high electromagnetism radiation**
- **Avoid heat accumulation, make sure that the operating environment has proper ventilation**
- **Do not attempt to open, disassemble, or modify the system.**

1. Receiving, unpacking and checking

1.1 Procedure

NOTE:
Notify your sales representative if any of the items mentioned below are missing or damaged.

1. Remove the transport casing

2. Visually inspect the respective parts

3. Check that all items are included in accordance with the delivery documents.

4. Check for transport damages.
   In case of transport damage appropriate action must be taken against the latest carrier and the nearest certified dealer or representative should be informed.

5. Store the part in the original transport package in a dry and dust free place, if the unit is not to be installed immediately. Observe the environmental requirements stated in the specifications

2. Overview

2.1 General

The AXIS video server is fully featured for security surveillance and remote monitoring needs. It is based on the AXIS ARTPEC-2 compression chip, and can digitize up to four analogue video sources and make these available on the network as real-time, full frame rate Motion JPEG and/or MPEG-4 video streams.
The AXIS video server is equipped with RS-232 and RS-485 ports for connecting third party PTZ systems. The four alarm inputs and four alarm outputs can be used to connect various third party devices, such as, door sensors and alarm bells.

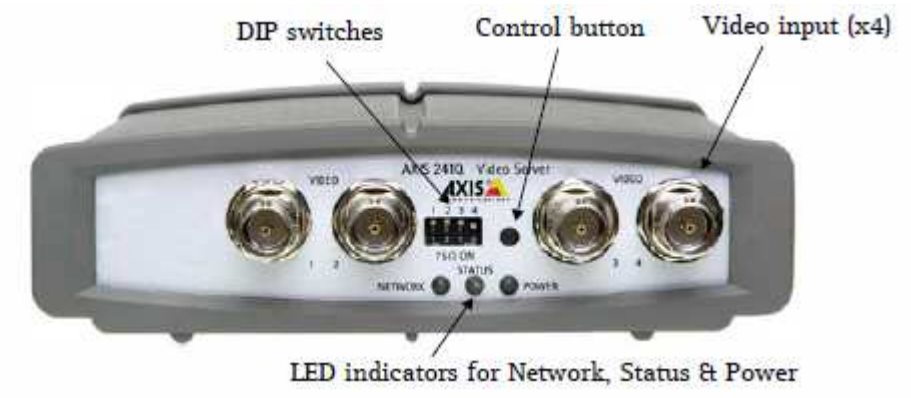

Figure 2-1: AXIS video server 241Q (front panel)

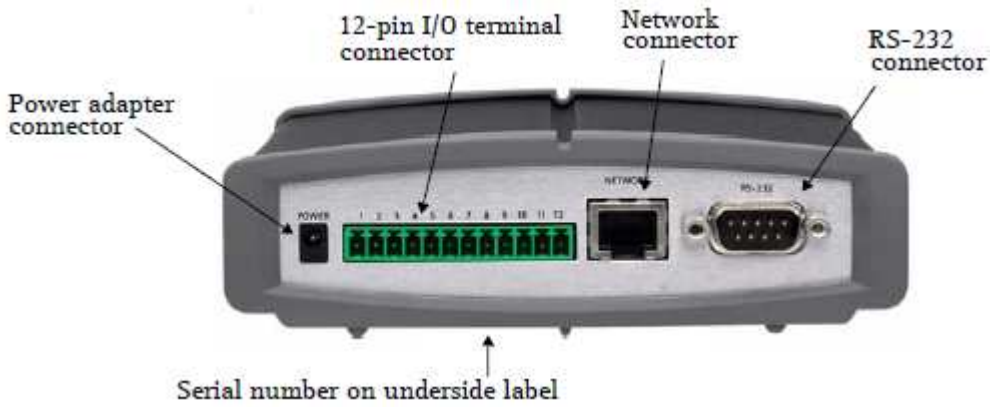

Figure 2-2: AXIS video server 241Q (rear panel)

2.2 LED indicators

After completion of the start-up and self-test routines, the multi-coloured LED indicators (see Figure 2-1) signal the following conditions:

LED	Colour	Description
Power	Green	Normal operation
	Green/Amber	Flashes green/amber during firmware upgrade
Network	Amber	Steady for a connection to a 10 MBit/s network. Flashes for network activity.
	Green	Steady for connection to a 100 MBit/s network. Flashes for network activity.
	Unlit	No connection
Status	Green	Steady for normal operation
	Amber	Steady during start-up, reset to factory default or when restoring settings.
	Red	Slow flash for failed firmware upgrade.

2.3 Switches and connectors

2.3.1 DIP switch

A corresponding line termination switch is supplied for each video input. All units are shipped with line termination enabled for each video input, that is, with the DIP switches (see Figure 2-2) set in the down position.

Switch	1	2	3	4
Description	75 Ω video in termination	75 Ω video out termination	Connects video in and video out	Not used
Composite video input	ON	OFF	ON	n/a
Y/C video input	ON	ON	OFF	n/a

NOTE:
If the video source is to be connected in parallel with other equipment, disable the input termination by turning the corresponding DIP switch to the up position (OFF). Failure to do so may cause reduced image quality.

2.3.2 Control button

Press this button to restore the factory default settings, as described in *Resetting to the factory default settings*, or to install the video server using AXIS Internet Dynamic DNS Service (See the AXIS Video Server Installation Guide).

2.3.3 Video input

The video input is connected using a coax/BNC connector. Physical connections made using 75 Ω coaxial video cables have a recommended maximum length of 250 m.

2.3.4 Video output (AXIS 241S only)

Loop through connection to the video signal from the Video-In connector. Terminated with a coaxial/BNC connector allows direct connection of an e.g. external monitor. Set DIP switches to ON when in use.

3. Installation and mounting

This chapter provides instructions for installing an AXIS video server on your network.

3.1 Installation steps

Follow these steps to install the AXIS video server on your Local Area Network (LAN):

- Check the package contents against Table 3-1
- Connect the AXIS video server (see 3.1.1)
- Set an IP address
- Set the password

Item	Description
AXIS video server model	AXIS 241Q
Power adapter	Not used
Mounting kit	For wall or rack mounting
Terminal block connector	12-pin connector block for connecting external devices to the I/O terminal connector
CD	AXIS network video product CD, including installation tools and other software, product documentation
Documentation	AXIS video server installation guide AXIS warranty document

Table 3-1: Package contents

3.1.1 Connections[1]

1. Connect the AXIS video server to your network using a standard network cable
2. Connect the video output of your camera(s) to the AXIS video server, using a standard 75 Ω coaxial video cable with BNC connectors
3. Connect power, using the supplied power adapter, or via the terminal connector on the rear panel.

[1] Use an RCA-to-BNC adapter if your camera has a standard phono-type (RCA) connector.

3.2 Mounting steps

The AXIS video server is supplied with a mounting kit for wall or rack mounting. The mounting brackets can be positioned for mounting the video server on a vertical surface or in a rack (4U). Follow the instructions below to attach the brackets to the video server:

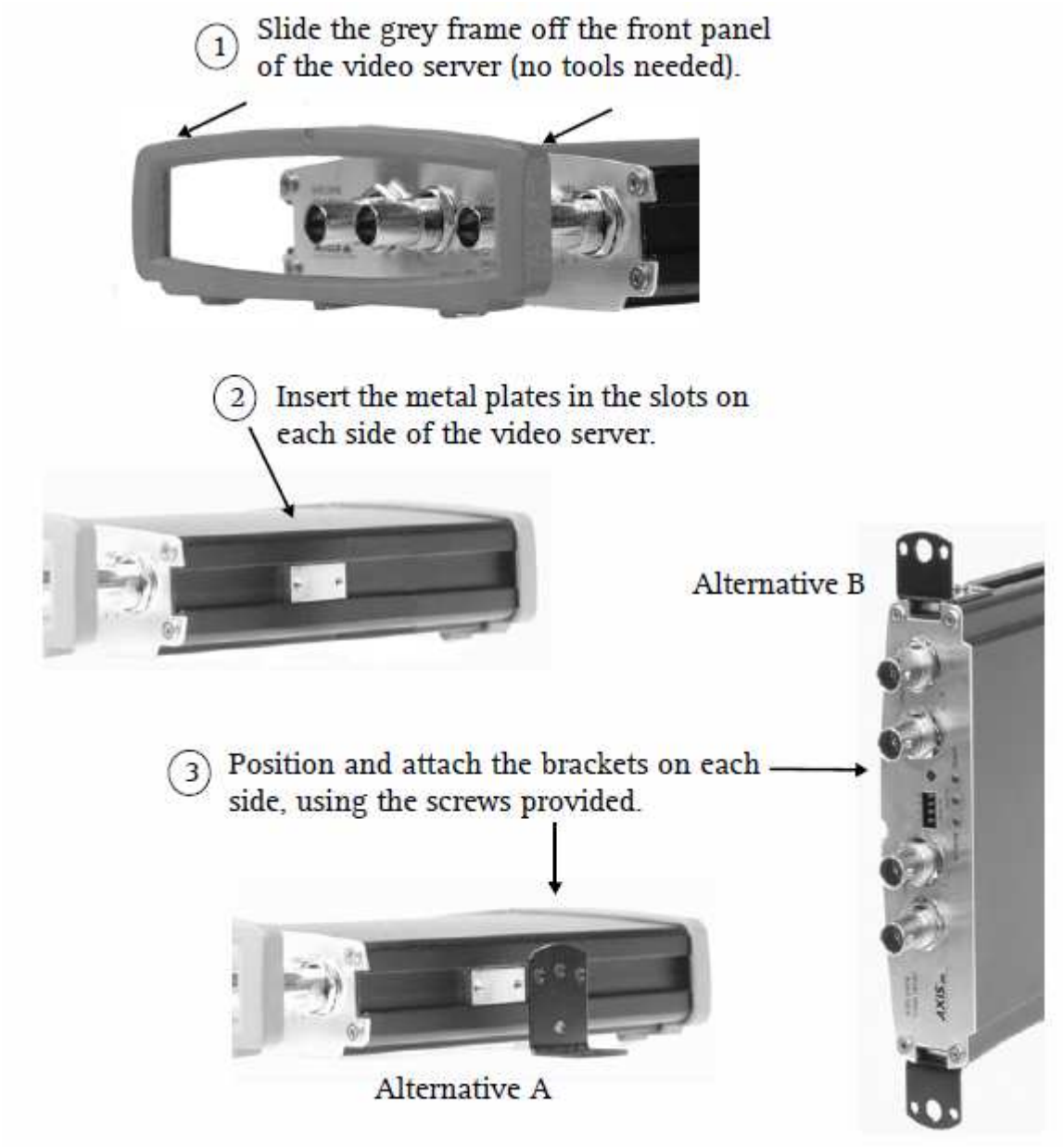

Figure 3-1: Mounting procedure

3.3 Wiring

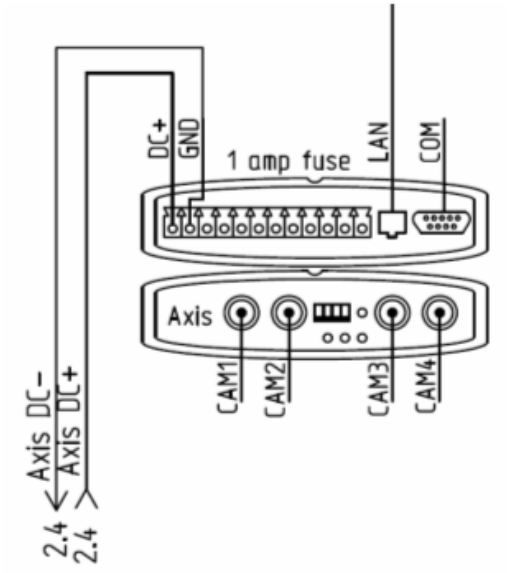

Figure 3-2: Wiring

3.3.1 D-Sub connector

The Axis video server provides one 9-pin D-Sub connector, providing the physical interface for an RS-232 port, used for connecting accessory equipment; such as standalone PTZ devices for the remote control of connected video cameras.
Pin assignment table and pin-out of the RS-232 connector:

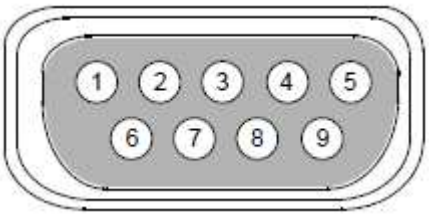

Figure 3-3: D-Sub connector

Pin	Function
1	CD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Table 3-2: Pin assignment

3.3.2 I/O terminal connector

This section describes the pin-out and interface support provided by the 12-pin I/O terminal connector, which includes:

- 4 digital transistor outputs
- 4 digital inputs
- RS-485 interface
- Auxiliary power and GND.

The terminal connector is used in applications for motion detection, event triggering, time lapse recording, alarm notification via email, and image storage to FTP locations,

The Axis video server includes one (green) 12-pin connector block. Connect input/output devices to this block:

1. Loosen the corresponding screw on top of the pin on the connector block (see the table above to determine which pin to use)
2. Push the cable into the connector block and secure it by fastening the screw
3. Once all devices are connected, connect the connector block to the video server's terminal connector.

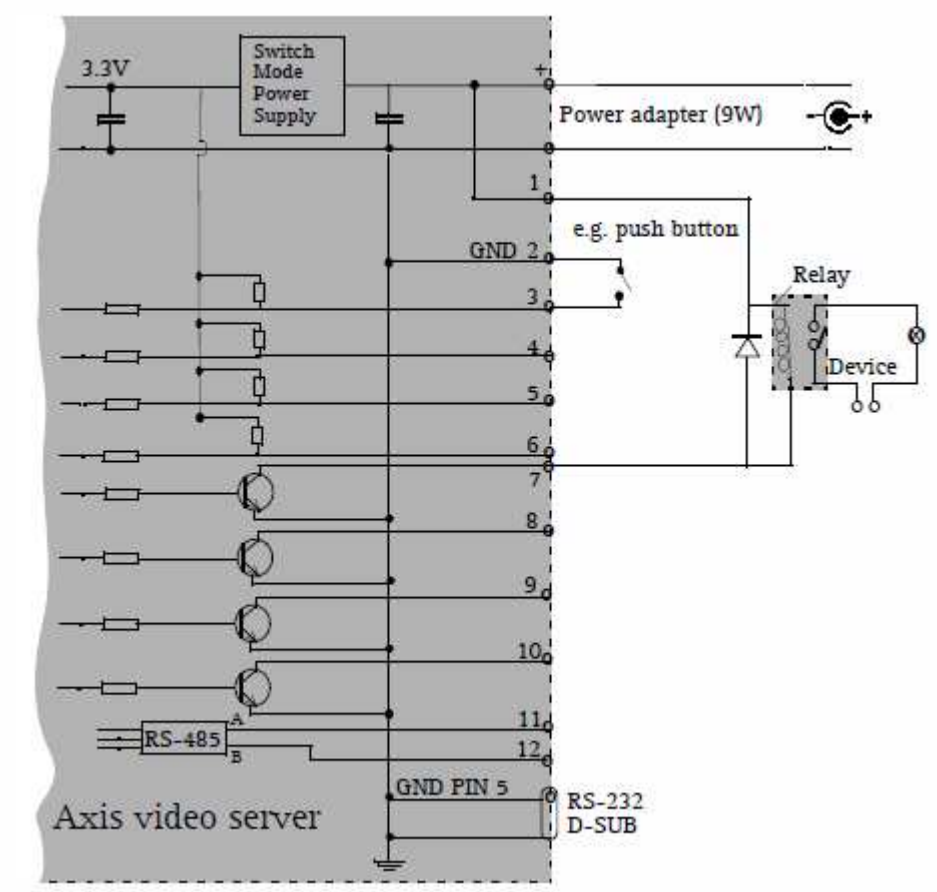

Figure 3-4: I/O terminal connector schematic

3.3.3 COM ports RS-232 and RS-485

The COM Ports RS-232 and RS-485 support several operational modes:

- Generic TCP/IP - enables the video server to receive status/data and send commands via TCP/IP
- Generic HTTP - enables the video server to receive status/data and send commands via HTTP
- Pan Tilt Zoom (PTZ) - for controlling a PTZ device. A PTZ device requires a driver for its function. Drivers can be obtained from www.axis.com.

3.3.4 Y/C to BNC cable

AXIS 241Q/241S supports conversion from Y/C (S-video) to composite video using an Y/C to BNC cable. The cable is available as an accessory - see the Axis Web site at: www.axis.com. Follow these instructions to connect the Y/C to BNC cable:

1. Connect the BNC connector marked IN to the Video In connector on the video server.
2. Connect the BNC connector marked OUT to the Video OUT connector on the video server
3. Connect the Y/C connector to the Y/C video unit (S-video)
4. Set the DIP switches on the front panel of the unit to 1=ON, 2=ON, 3=OFF, 4=OFF
5. Go to AXIS 241Q/241S web pages under Setup > Video & Image > Video Source and select Y/C (S-video) from the physical connector drop-down list.

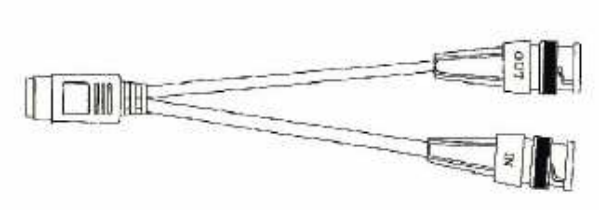

Figure 3-5: One female MiniDin 4-pol connector (split into two BNC connectors)

The following description describes how the cable can be assembled using standard components:

1. Use two male BNC connectors and one female 4-pole MiniDin connector
2. Connect pin 1, 2 and shield on the MiniDin connector to the shield on the two BNC connectors.
3. Connect pin 3 (Y) on the MiniDin connector to centre pin on one of the male BNC connectors, mark this BNC connector with IN
4. Connect pin 4 (C) on the MiniDin connector to centre pin on the other male BNC connector, mark this BNC connector with OUT.

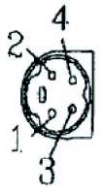

Figure 3-6: Pins on MiniDin connector

4. Technical specifications

Detail	Description
Model	AXIS 241Q: 4 video channels
Video compression	• MPEG-4 Part 2 (ISO/IEC 14496-2) • Motion JPEG
Resolutions	• 4CIF, 2CIF Expanded, 2CIF, CIF, QCIF • Max. 704 x 480 (NTSC) 704 x 576 (PAL) • Min. 176 x 120 (NTSC) 176 x 144 (PAL)
Frame rate MPEG-4	Up to 30/25 (NTSC/PAL) at CIF
Frame rate motion JPEG	Up to 20/17 (NTSC/PAL) at CIF
Video streaming	• Multi-stream MPEG-4 and motion JPEG • Controllable frame rate and bandwidth • VBR/CBR MPEG-4
Image settings	• Compression • Colour • Rotation: 90°, 180°, 270° • Aspect ratio correction • Mirroring of images • Text and image overlay • Privacy mask • De-interlace filter
Pan/Tilt/Zoom	• Wide range of analogue PTZ cameras supported[2] • 20 presets/camera • Guard tour • PTZ control queue • Supports Windows compatible joysticks
Security	• Password protection • IP address filtering • HTTPS encryption • IEEE 802.1X network access control • Digest authentication • User access log
Supported protocols	• IPv4/v6, HTTP, HTTPS, QoS layer 3 DiffServ, FTP, SMTP, Bonjour, UPnP, SNMPv1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS, etc • SSL/TLS[3]

[2] Drivers available for download at www.axis.com

Application Programming Interface	• Open API for software integration, including VAPIX® from AXIS Communications, AXIS Media Control SDK, event trigger data in video stream • Quality of Service (QoS) layer 3, DiffServ Model • Watchdog ensures continuous operation, event notifications can be monitored by other systems • Embedded Linux operating system
Intelligent video	• Video motion detection • Active tampering alarm
Alarm triggers	• Intelligent video • External inputs • Video loss
Alarm events	• File upload via FTP, HTTP and email • Notification via email, HTTP and TCP • External output activation
Video buffer	9 MB pre- and post-alarm per channel
Video access from web browser	• Camera live view • Video recording to file (ASF) • Sequence tour for up to 20 AXIS video sources • Customizable HTML pages • Windows XP, 2000, 2003 server • DirectX 9c or higher For other operating systems and browsers see www.axis.com/techsup
Casing	• Metal casing. Standalone, stackable or with brackets for wall or cage mount
Processors and memory	• ARTPEC-2, 8 MB Flash • 64 MB RAM • Battery backed-up real-time clock
Power	7 – 20 VDC, max. 8 W
Connectors	• Analog composite video NTSC/PAL auto-sensing • 4 BNC inputs • RJ-45 10BaseT/100BaseTX • I/O terminal block for four configurable inputs/outputs • RS-485/RS-422 • D-sub for RS-232 port
Operating conditions	• 5 – 50℃ • Humidity 20 – 80% RH (non-condensing)
Approvals	• EN55022 Class B • EN61000-3-2 • EN61000-3-3

[3] This product includes software developed by the Open SSL Project for use in the Open SSL Tool kit (www.openssl.org)

	• EN55024 • FCC Part 15 subpart B Class B • ICES-003 Class B • VCCI Class B • C-tick AS/NZS CISPR 22 • EN69050 • Power supply: EN60950, UL, cUL
Dimensions (H x W x D)	42 x 140 x 155 mm
Weight	540 g
Accessories (included)	• Power supply (not used) • Mounting and connector kit • Installation guide • CD with installation and management tools, software and user's manual • Windows decoder user license
Accessories (not included)	• AXIS 295 video surveillance joystick • MPEG-4 decoder multi-user license pack

5. Outline drawing

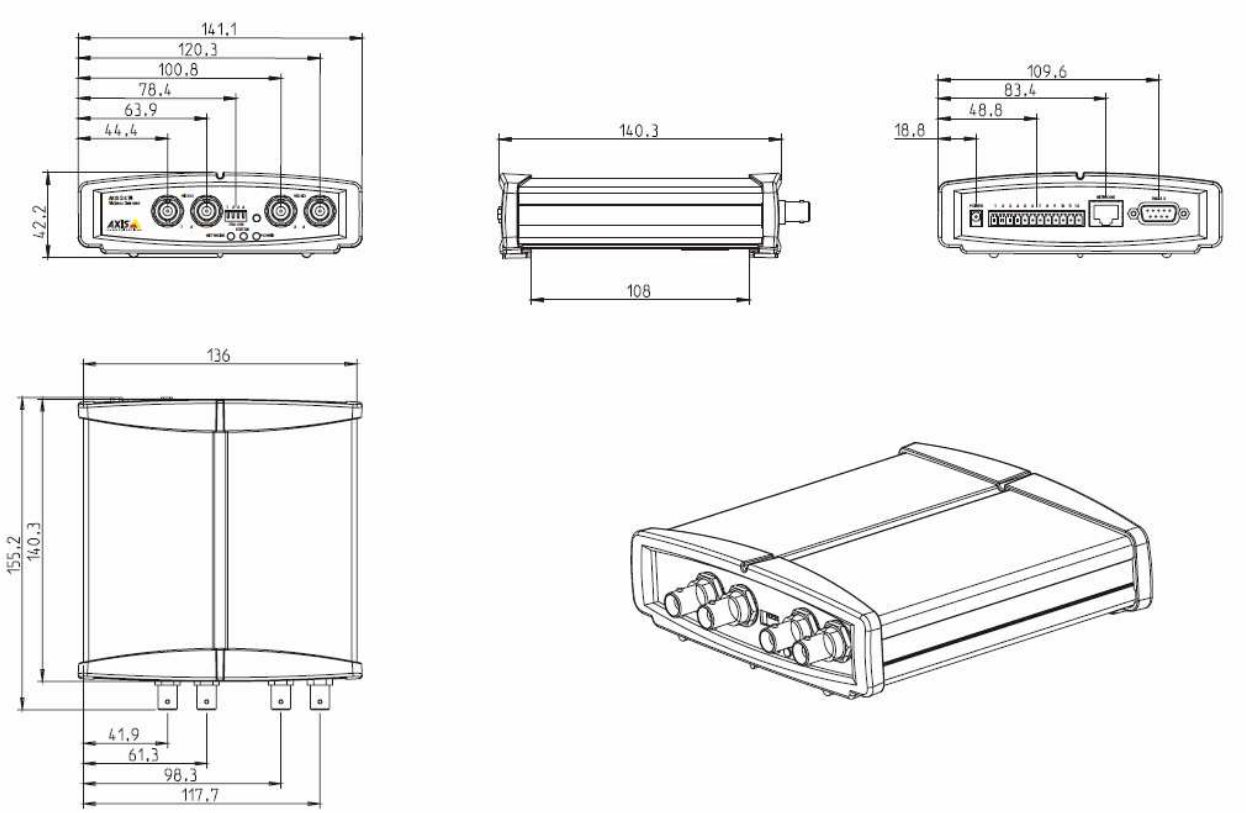

Figure 5-1: Outline drawing[4]

[4] Dimensions in mm

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