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AXIS M7116 Video Encoder User Manual

**AXIS M7116 Video Encoder
User Manual**

Contents

AXIS M7116 Video Encoder

Get started

Find the device on the network
To find Axis devices on the network and assign them IP addresses in Windows®, use AXIS IP Utility or AXIS Device Manager. Both applications are free and can be downloaded from **axis.com/support**.

For more information about how to find and assign IP addresses, go to How to assign an IP address and access your device.

Browser support

You can use the device with the following browsers:

	Chrome™	Firefox®
Windows®	recommended	x
macOS®	recommended	
Other operating systems	x	x

If you need more information about recommended browsers, go to **axis.com/browser-support**.

Access the device

1. Open a browser and enter the IP address or hostname of the Axis device.

   If you do not know the IP address, use AXIS IP Utility or AXIS Device Manager to find the device on the

   network.
2. Enter the username and password. If you access the device for the first time, you must set the root password.

   See Set a new password for the root account on page 3.
3. The live view page opens in your browser.

Verify that no one has tampered with the firmware

To make sure that the device has its original Axis firmware, or to take full control of the device after a security attack:

1. Reset to factory default settings. See Reset to factory default settings on page 16.

   After the reset, secure boot guarantees the state of the device.
2. Configure and install the device.

Set a new password for the root account

Important
The default administrator username is root. If the password for root is lost, reset the device to factory default settings.

Get started

To watch this video, go to the web version of this document. **www.axis.com/products/online-manual/45133#t10098905**

Support tip: Password security confirmation check

1. Type a password. Follow the instructions about secure passwords. See Secure passwords on page 4 .
2. Retype the password to confirm the spelling.
3. Click Create a login. The password has now been configured.

Secure passwords

Important

Axis devices send the initially set password in clear text over the network. To protect your device after the first login, set up a secure and encrypted HTTPS connection and then change the password.

The device password is the primary protection for your data and services. Axis devices do not impose a password policy as they may be used in various types of installations.
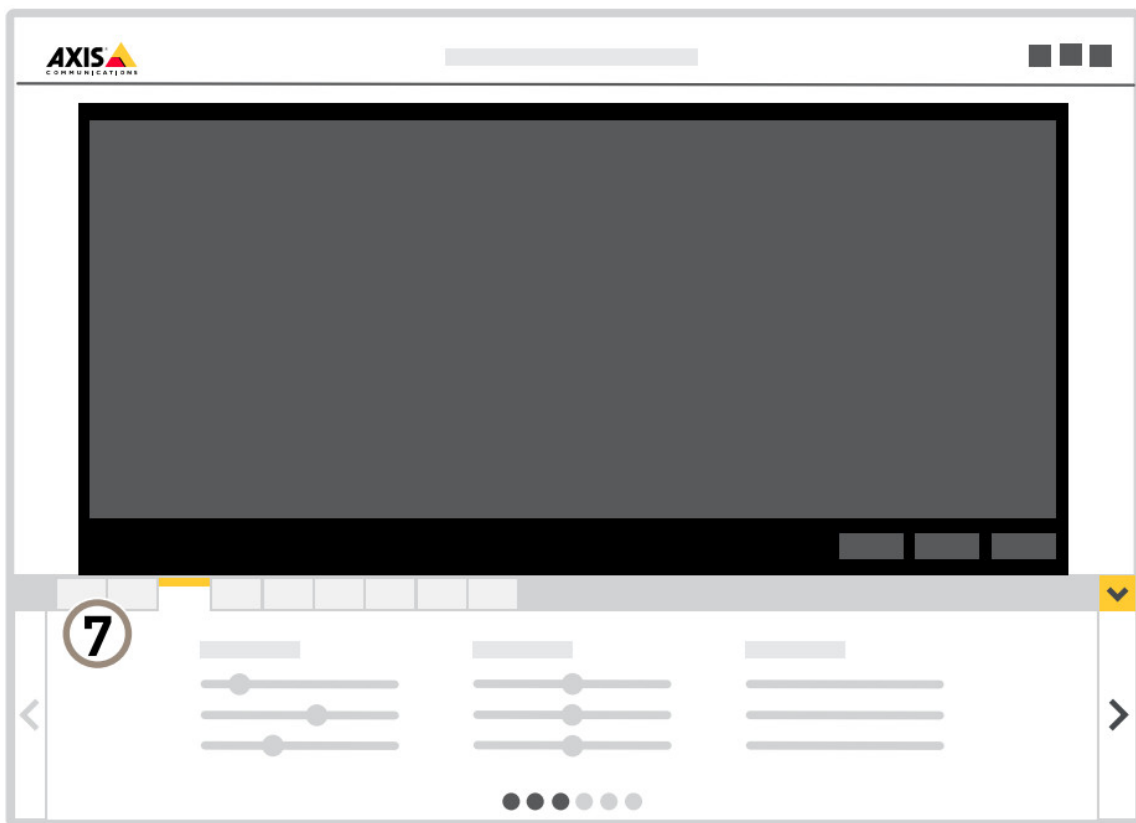
To protect your data we strongly recommend that you:

- Use a password with at least 8 characters, preferably created by a password generator.
- Don't expose the password.
- Change the password at a recurring interval, at least once a year.

Webpage overview

1. Live view control bar
2. Live view
3. Product name
4. User information, color themes, and help
5. Video control bar
6. Settings toggle

7 Settings tabs

Additional settings

Set video input

To use the video encoder, the video inputs for the connected cameras (channels) must be set. When you log in to your device for the first time, the automatically detected video inputs for the cameras are set to Automatic. If you need to change the video inputs, you can do it manually:

1. Select Manual and set the video input settings for each channel you want to change.
2. Click Next to verify your settings and to restart the device.

   Note

   The device will only restart if you have made any changes to the video input settings.

If you need to change the video inputs for the connected cameras after setting up the device:

1. Go to Settings > System > Video input.
2. Select Manual and set the video input settings for each channel you want to change.
3. Click Apply and restart.

Adjust the image

This section includes instructions about how to configure your device. If you want to learn more about how certain features
function, go to Learn more on page 14.

Level the camera

To adjust the view in relation to a reference area or an object, use the leveling guide in combination with a mechanical adjustment of the camera.
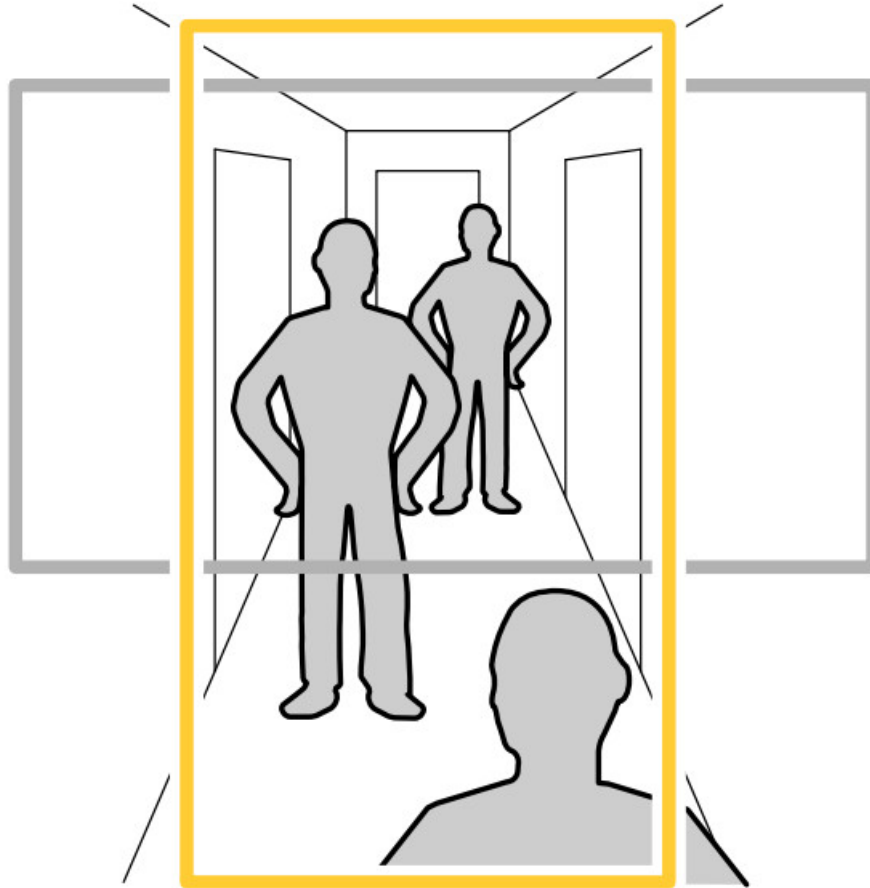
1. Go to Settings > System > Orientation and click

2. Adjust the camera mechanically until the position of the reference area or the object is aligned with the leveling guide.

Monitor long and narrow areas

Use corridor format to better utilize the full field of view in a long and narrow area, for example, a staircase, hallway, road, or tunnel.

1. Depending on your device, turn the camera or the 3-axis lens in the camera 90° or 270°.
2. If the device doesn't have an automatic rotation of the view, login to the webpage and goes to Settings > System > Orientation.
3. Click
4. Rotate the view 90° or 270°.

   Find out more at **axis.com/axis-corridor-format**.

Hide parts of the image with privacy masks

You can create one or several privacy masks to hide parts of the image.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/45133#t10106902

How to create a privacy mask

1. Go to Settings > Privacy mask.
2. Click New.
3. Adjust the size, color, and name of the privacy mask according to your needs.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/45133#t10106902

How to change the appearance of the mask

Show an image overlay
You can add an image as an overlay in the video stream.

1. Go to Settings > Overlay.
2. Click Image list.
3. Upload an image and click Done.
4. lick Create an overlay.
5. Select Image and click Create.
6. Select the image from the drop-down list.
7. To position, the image overlay, choose Custom or one of the presets.
8. Click Create.

Show a text overlay in the video stream when the device detects motion
This example explains how to display the text "Motion detected" when the device detects motion.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/45133#t10103832

How to show text overlay when the camera detects motion

Make sure that AXIS Video Motion Detection is running:

1. Go to Settings > Apps > AXIS Video Motion Detection.
2. Start the application if it is not already running.
3. Make sure you have set up the application according to your needs.

Add the overlay text:

4. Go to Settings > Overlay.

5. Select Create overlay and select Text overlay.

6. Enter #D in the text field.

7. Choose text size and appearance.

8. To position, the text overlay, choose Custom or one of the presets.

   Create a rule:

9. Go to System > Events > Rules and add a rule.

10. Type a name for the rule.

11. In the list of conditions, select AXIS Video Motion Detection.

12. In the list of actions, select Use overlay text.

13. Select a view area.

14. Type "Motion detected".

15. Set the duration.

16. Click Save.

   Note

   If you update the overlay text it will be automatically updated on all video streams dynamically.

   Adjust the camera view (PTZ)

   To learn more about different pan, tilt, and zoom settings, see Pan, tilt, and zoom (PTZ) on page 14.

Install the PTZ driver
This product supports several devices. For a complete list of supported devices, see axis.com

1. Go to the camera's webpage.

2. In the installation wizard, go to Select a PTZ mode and select PTZ driver from the drop-down list.

3. Once you've accessed the live view, go to Settings > System > Accessories.

4. Select one of the following actions:

   4.1 If the PTZ driver is not uploaded, select Upload driver.

   4.2 If the PTZ driver is uploaded, go to Select driver to use and select PTZ driver from the drop-down list.

5. Select a video channel.

6. Enter the Device id and select Device type from the dropdown list. To decide which device type to use, see the documentation supplied with the PTZ driver.

7. Go to the PTZ tab and check that the PTZ settings are available.

Create a guard tour with preset positions
A guard tour displays the video stream from different preset positions either in a predetermined or random order and for configurable periods of time.

1. Go to Settings > PTZ > Guard tours.

2. Click +.

3. To edit the guard tour's properties, click ⚙

4. Type a name for the guard tour and specify the pause length in minutes between each tour.

5. If you want the guard tour to go to the preset positions in a random order, turn on Shuffle.

6. Click Done.

7. Click Add to add the preset positions that you want in your guard tour.

8. Click Done to exit the guard tour settings.

9. To schedule the guard tour, go to System > Events.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/45133#t10111157

View and record video
This section includes instructions about how to configure your device. To learn more about how streaming
Streaming and storage on page 14.
Reduce bandwidth and storage
Important
If you reduce the bandwidth it can result in a loss of details in the picture.

1. Go to live view and select H.264.

2. Go to Settings > Stream.

3. Do one or more of the following:

    Note

    The slipstream settings are used for both H.264 and H.265.

    -Turn on dynamic GOP and set a high GOP length value.

    -Increase the compression.

    -Turn on dynamic FPS.

    Note

    Web browsers do not support H.265 decoding. Use a video management system or application supporting

    H.265 decoding.

Set up network storage
To store recordings on the network, you need to set up your network storage.

1. Go to Settings > System > Storage.

2. Click Setup under Network storage.

3. Enter the IP address of the host server.

4. Enter the name of the shared location on the host server.

5. Move the switch if the share requires a login, and enter the username and password.

6. Click Connect.

    Record and watch video

    To record video you must first set up network storage, see Set up network storage on page 11, or have an SD

    card installed.

Record video

1. Go to the live view.
2. To start a recording, click Record. Click again to stop the recording.

Watch video

1. Click Storage > Go to recordings.
2. Select your recording in the list and it will play automatically.

Set up rules and alerts

You can create rules to make your device perform an action when certain events occur. A rule consists of conditions and actions. The conditions can be used to trigger the actions. For example, the device can start a recording or send an email when it detects motion, or show an overlay text while the device is recording.

Trigger an action

1. Go to Settings > System > Events to set up a rule. The rule defines when the device will perform certain actions. Rules can be set up as scheduled, recurring, or for example, triggered by motion detection.
2. Select the Condition that must be met to trigger the action. If you specify more than one condition for the rule, all of the conditions must be met to trigger the action.
3. Select which Action the device should perform when the conditions are met.

Note

If you make changes to an active rule, you have to restart the rule for the changes to take effect.

Record video when the camera detects motion

This example explains how to set up the camera to start recording to the SD card five seconds before it detects motion and to stop one minute after.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/45133#t10106619

How to record a video stream when the camera detects motion

Make sure that AXIS Video Motion Detection is running:

1. Go to Settings > Apps > AXIS Video Motion Detection.
2. Start the application if it is not already running.
3. Make sure you have set up the application according to your needs. If you need help, see the user manual for AXIS Video Motion Detection 4.

Create a rule:

1. Go to Settings > System > Events and add a rule.

2. Type a name for the rule.

3. In the list of conditions, under Application, select AXIS Video Motion Detection (VMD).

4. In the list of actions, under Recordings, select Record video while the rule is active.

5. Select an existing stream profile or create a new one.

6. Set the prebuffer time to 5 seconds.

7. Set the post buffer time to 60 seconds.

8. In the list of storage options, select SD card.

9. Click Save.

Send an email automatically if someone spray paints the lens

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/45133#t10106687

How to send an email notification if someone spray paint the lens

1. Go to Settings > System > Detectors.

2. Turn on Trigger on dark images. This will trigger an alarm if the lens is sprayed, covered, or rendered severely out of focus.

3. Set a duration for Trigger after. The value indicates the time that must pass before an email is sent.

Create a rule:

1. Go to Settings > System > Events > Rules and add a rule.

2. Type a name for the rule.

3. In the list of conditions, select Tampering.

4. In the list of actions, select Send notification to email.

5. Select a recipient from the list or go to Recipients to create a new recipient.

   To create a new recipient, click ⊞. To copy an existing recipient, click

6. Type a subject and a message for the email.

7. Click Save.

Learn more

Privacy masks
A privacy mask is a user-defined area that covers a part of the monitored area. In the video stream, privacy masks appear either as blocks of solid color or with a mosaic pattern.
You'll see the privacy mask on all snapshots, recorded videos, and live streams. You can use the VAPIX® application programming interface (API) to turn off the privacy masks.
Important
If you use multiple privacy masks it may affect the product's performance.

Overlays

Overlays are superimposed over the video stream. They are used to provide extra information during recordings, such as a timestamp, or during product installation and configuration. You can add either text or an image.

Pan, tilt, and zoom (PTZ)

Guard tours

A guard tour displays the video stream from different preset positions either in a predetermined or random order and for configurable periods of time. Once started, a guard tour continues to run until stopped, even when there are no clients (web browsers) viewing the images.

Note

The pause between successive guard tours is at least 10 minutes, and the fixed minimum viewing time is 10 seconds.

Streaming and storage

Video compression formats

Decide which compression method to use based on your viewing requirements, and on the properties of your network. The available options are:

Motion JPEG

Motion JPEG, or MJPEG, is a digital video sequence that is made up of a series of individual JPEG images. These images are then displayed and updated at a rate sufficient to create a stream that shows constantly updated motion. For the viewer to perceive motion video the rate must be at least 16 image frames per second. Full motion video is perceived at 30 (NTSC) or 25 (PAL) frames per second. The Motion JPEG stream uses considerable amounts of bandwidth but provides excellent image quality and access to every image contained in the stream.

H.264 or MPEG-4 Part 10/AVC

Note

H.264 is licensed technology. The Axis product includes one H.264 viewing client license. To install additional unlicensed copies of the client is prohibited. To purchase additional licenses, contact your Axis reseller. H.264 can, without compromising image quality, reduce the size of a digital video file by more than 80% compared to the Motion

JPEG format and by as much as 50% compared to the MPEG-4 standard. This means that less network bandwidth and storage space are required for a video file. Or seen another way, higher video quality can be achieved for a given bitrate.

H.265 or MPEG-H Part 2/HEVC

Note

H.265 is licensed technology. The Axis product includes one H.265 viewing client license. To install additional unlicensed copies of the client is prohibited. To purchase additional licenses, contact your Axis reseller.

How do Image, Stream, and Stream profile settings relate to each other?

The Image tab contains camera settings that affect all video streams from the product. If you change something in this tab, it immediately affects all video streams and recordings. The Stream tab contains settings for video streams. You get these settings if you request a video stream from the product and don't specify for example resolution, or frame rate. When you change the settings in the Stream tab, it doesn't affect ongoing streams, but it will take effect when you start a new stream. The Stream profiles settings override the settings from the Stream tab. If you request a stream with a specific stream profile, the stream contains the settings of that profile. If you request a stream without specifying a stream profile or request a stream profile that doesn't exist in the product, the stream contains the settings from the Stream tab.

Applications

AXIS Camera Application Platform (ACAP) is an open platform that enables third parties to develop analytics and other applications for Axis products. To find out more about available applications, downloads, trials, and licenses, go to **axis.com/applications**. To find the user manuals for Axis applications, go to **axis.com**.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/45133#t10001688

Troubleshooting

Reset to factory default settings
Important
Reset to factory default should be used with caution. A reset to factory default resets all settings, including the IP address, to the factory default values.
To reset the product to the factory default settings:

1. Disconnect power from the product.

2. Press and hold the control button while reconnecting power. See Product overview on page 20.

3. Keep the control button pressed for 15–30 seconds until the status LED indicator flashes amber.

4. Release the control button. The process is complete when the status LED indicator turns green. The product has been reset

   to the factory default settings. If no DHCP server is available on the network, the default IP address is

   192.168.0.90.

5. Use the installation and management software tools to assign an IP address, set the password, and access the

   video stream. The installation and management software tools are available from the support pages on

   axis.com/support.

   It is also possible to reset parameters to factory default through the web interface. Go to Settings > System > Maintenance and click Default.

Firmware options
Axis offers product firmware management according to either the active track or the long-term support (LTS) tracks. Being on the active track means continuously getting access to all the latest product features, while the LTS tracks provide a fixed platform with periodic releases focused mainly on bug fixes and security updates.
Using firmware from the active track is recommended if you want to access the newest features, or if you use Axis end-to-end system offerings. The LTS tracks are recommended if you use third-party integrations, which are not continuously validated against the latest active track. With LTS, the products can maintain cybersecurity without introducing any significant functional changes or affecting any existing integrations. For more detailed information about Axis product firmware strategy, go to **axis.com/support/firmware**.

Check the current firmware
Firmware is the software that determines the functionality of network devices. One of your first actions when troubleshooting a problem should be to check the current firmware version. The latest version may contain a correction that fixes your particular problem.
To check the current firmware:

1. Go to the product's webpage.

2. Click on the help menu **?**.

3. Click About.

Upgrade the firmware
Important
Preconfigured and customized settings are saved when the firmware is upgraded (provided that the features are available in the new firmware) although this is not guaranteed by Axis Communications AB.
Important
Make sure the product remains connected to the power source throughout the upgrade process.
Note

When you upgrade the product with the latest firmware in the active track, the product receives the latest functionality available. Always read the upgrade instructions and release notes available with each new release before upgrading the firmware. To find the latest firmware and the release notes, go to **axis.com/support/firmware**.
AXIS Device Manager can be used for multiple upgrades. Find out more at **axis.com/products/axis-device-manager**.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/45133#t10095327

How to upgrade the firmware

1. Download the firmware file to your computer, available free of charge at **axis.com/support/firmware**.
2. Log in to the product as an administrator.
3. Go to Settings > System > Maintenance. Follow the instructions on the page. When the upgrade has finished, the product restarts automatically.

Technical issues, clues and solutions
If you can't find what you're looking for here, try the troubleshooting section at **axis.com/support**.
Problems upgrading the firmware

Firmware upgrade failure	If the firmware upgrade fail mon reason is that the wro the firmware file correspon

Problems setting the IP address

The device is located on a different subnet	If the IP address intended access the device are loca act your network administr

The IP address is being used by another device	Disconnect the Axis device from the net[work] type ping and the IP address of the dev[ice] • If you receive: Reply from <IP address[s] this means that the IP address may alre[ady] Obtain a new IP address from the netwo[rk] • If you receive: Request timed out, this for use with the Axis device. Check all c[]
Possible IP address conflict with another device on the same subnet	The static IP address in the Axis device This means that if the same default stat[ic] be problems accessing the device.

The device cannot be accessed from a browser

Cannot log in	When HTTPS is enabled, ensure that the correct protoco[l] ay need to manually type http or https in the browser's ac[] If the password for the user root is lost, the device must b[e] efault settings on page 16.
The IP address has been changed by DHCP	IP addresses obtained from a DHCP server are dynamic changed, use AXIS IP Utility or AXIS Device Manager to the device using its model or serial number, or by the DN[S] If required, a static IP address can be assigned manually

The device is accessible locally but not externally

To access the device externally, we recommend using one of the following applications for Windows®:

- AXIS Companion: free of charge, ideal for small systems with basic surveillance needs.
- AXIS Camera Station: 30-day trial version free of charge, ideal for small to mid-size systems. For instructions and download, go to **axis.com/vms**.

Problems with streaming

Multicast H.264 only accessible by local clients	Check if your router supports multicasting, or if the router settings between the Live) value may need to be increased.
No multicast H.264 displayed in the client	Check with your network administrator that the multicast addresses used by th[e] network administrator to see if there is a firewall preventing viewing.
Poor rendering of H.264 images	Ensure that your graphics card is using the latest driver. The latest drivers can downloaded from the manufacturer's website.
Color saturation is different in H.264 and Motion JPEG	Modify the settings for your graphics adapter. Go to the adapter's documentatio[n] information.
Lower frame rate than expected	• See Performance considerations on page 19. • Reduce the number of applications running on the client computer. • Limit the number of simultaneous viewers. • Check with the network administrator that there is enough bandwidth availabl[e] • Lower the image resolution.
Can't select H.265 encoding in live view	Web browsers do not support H.265 decoding. Use a video management syste[m] supporting H.265 decoding.

Performance considerations

The following factors are the most important to consider:

- High image resolution or lower compression levels result in images containing more data which in turn affects the bandwidth.
- Access by large numbers of Motion JPEG or unicast H.264 clients affects the bandwidth.
- Simultaneous viewing of different streams (resolution, compression) by different clients affects both frame rate and bandwidth. Use identical streams wherever possible to maintain a high frame rate. Stream profiles can be used to ensure that streams are identical.
- Accessing Motion JPEG and H.264 video streams simultaneously affects both frame rate and bandwidth.
- Heavy usage of event settings affects the product's CPU load which in turn affects the frame rate.
- Using HTTPS may reduce frame rate, in particular if streaming Motion JPEG.
- Heavy network utilization due to poor infrastructure affects the bandwidth.
- Viewing on poorly performing client computers lowers perceived performance and affects frame rate.
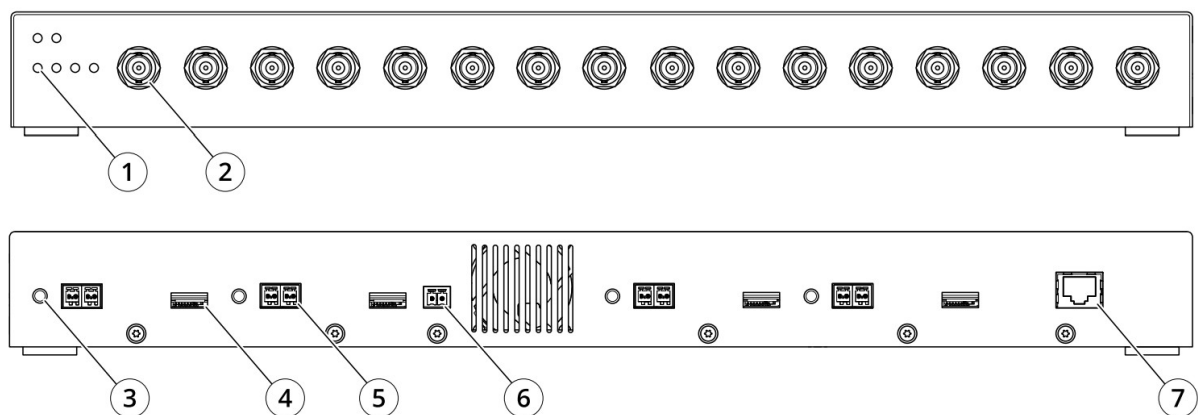
Need more help?

Useful links

• How to assign an IP address and access your device

Contact support

Contact support at **axis.com/support**.

Specifications

Product overview

1. 4x Status LED
2. 16x BNC connectors
3. 4x Control button
4. 4x MicroSD card slot
5. 4x RS485/RS422 connector
6. Power connector
7. Ethernet RJ45

LED indicators

Status LED	Indication
Unlit	Connection and normal operation.
Green	Steady green for normal operation.
Amber	Steady during startup, during reset to factory default or when restoring settings.
Network LED	**Indication**
Green	Steady for connection to a 1 Gbit/s network. Flashes for network activity.
Amber	Steady for connection to a 10/100 Mbit/s network. Flashes for network activity.
Unlit	No network connection.

SD card slot
NONONOTICETICE
TICE

- Risk of damage to SD card. Do not use sharp tools, metal objects, or excessive force when inserting or removing the SD card. Use your fingers to insert and remove the card.
- Risk of data loss and corrupted recordings. Do not remove the SD card while the product is running. Unmount the SD card from the product's webpage before removal.

  This product supports microSD/microSDHC/microSDXC cards.

For SD card recommendations, see **axis.com**.

microSD, microSDHC, and microSDXC Logos are trademarks of SD-3C LLC. microSD, microSDHC, microSDXC are trademarks or registered trademarks of SD-3C, LLC in the United States, other countries or both.

Buttons
Control button
The control button is used for:

- Resetting the product to factory default settings. See Reset to factory default settings on page 16.

  Connectors

  Bus connector

  The bus connectors are the physical interfaces to the video encoder chassis that provide power, network, RS485, and I/O terminal

  connections.

  BNC connector

  Each video input is terminated using a coax/BNC connector. Connect a 75 Ohm coaxial video cable; the recommended maximum length is 250 m (800 ft).
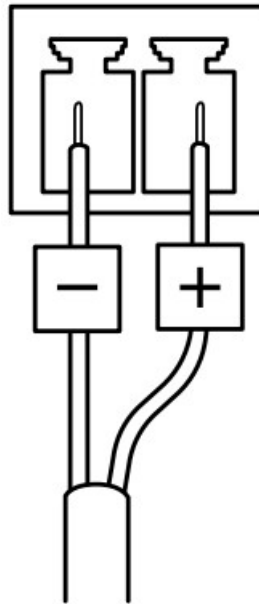
  Note

  75 Ohm video termination can be enabled/disabled for the video input through the product's webpage at .

  Video termination is enabled on factory default. If the product is connected in parallel with other equipment, for optimum video quality, we recommended to enable video termination only for the last device in the video signal chain.

Network connector
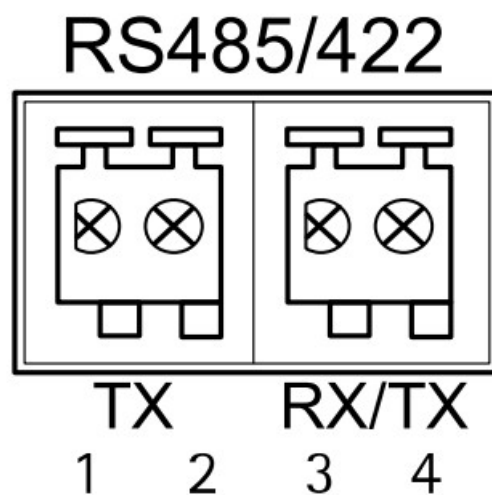
RJ45 Ethernet connector.

Power connector

2-pin terminal block for DC power input. Use a Safety Extra Low Voltage (SELV) compliant limited power source (LPS) with either a rated output power limited to ≤100 W or a rated output current limited to ≤5 A.

RS485/RS422 connector

Two 2-pin terminal blocks for RS485/RS422 serial interface. The serial port can be configured to support:

- Two-wire RS485 half duplex
- Four-wire RS485 full duplex
- Two-wire RS422 simplex
- Four-wire RS422 full duplex point to point communication

Function	Pin	Notes
RS485/RS422 TX A	1	(TX) For full duplex RS485/RS422
RS485/RS422 TX B	2	
RS485/RS422 RX/TX A	3	(RX) For full duplex RS485/RS422
RS485/RS422 RX/TX B	4	(RX/TX) For half duplex RS485

Documents / Resources

AXIS M7116 Video Encoder [pdf] User Manual
M7116, Video Encoder

Manuals+,