AXIS A9188 Network I/O Relay Module

Installation Guide

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Equipment modifications

This equipment must be installed and used in strict accordance with the instructions given in the user documentation. This equipment contains no user-serviceable components. Unauthorized equipment changes or modifications will invalidate all applicable regulatory certifications and approvals.

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Support

Learn more!

Visit Axis learning center *axis.com/academy* for useful trainings, webinars, tutorials and guides.

Regulatory information

Europe

$C\epsilon$

This product complies with the applicable CE marking directives and harmonized standards:

- Electromagnetic Compatibility (EMC) Directive 2014/30/EU. See *Electromagnetic compatibility (EMC) on page 2* .
- Low Voltage Directive (LVD) 2014/35/EU. See *Safety on page 3* .
- Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU and 2015/863, including any amendments, updates or replacements. See *Disposal and recycling on page 3* .

A copy of the original declaration of conformity may be obtained from Axis Communications AB. See *Contact information on page 3* .

Electromagnetic compatibility (EMC)

This equipment has been designed and tested to fulfill applicable standards for:

- Radio frequency emission when installed according to the instructions and used in its intended environment.
- Immunity to electrical and electromagnetic phenomena when installed according to the instructions and used in its intended environment.

USA

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested using a shielded network cable (STP) and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The product shall be connected using a shielded network cable (STP) that is properly grounded.

Contact information

Axis Communications Inc.
300 Apollo Drive
Chelmsford, MA 01824
United States of America
Tel: +1 978 614 2000

Canada

This digital apparatus complies with CAN ICES-3 (Class B). The product shall be connected using a shielded network cable (STP) that is properly grounded. Cet appareil numérique est conforme à la norme CAN NMB-3 (classe B). Le produit doit être connecté à l'aide d'un câble réseau blindé (STP) qui est correctement mis à la terre.

Europe

This digital equipment fulfills the requirements for RF emission according to the Class B limit of EN 55022. The product shall be connected using a shielded network cable (STP) that is properly grounded.

Australia/New Zealand

This digital equipment fulfills the requirements for RF emission according to the Class B limit of AS/NZS CISPR 22. The product shall be connected using a shielded network cable (STP) that is properly grounded.

Japan

この装置は、クラスB機器です。この装置は、住宅環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。 取扱説明書に従って正しい取り扱いをして下さい。 VCCI – B
本製品は、シールドネットワークケーブル(STP)を使用して接続してください。また適切に接地してください。
本製品は電気通信事業者(移動通信会社、固定通信会社、インターネットプロバイダ等)の通信回線(公衆無線 LAN を含む)に直接接続することができません。本製品をインターネットに接続する場合は、必ずルータ等を経由し接続してください。

Safety

This product complies with IEC/EN 60950-1, Safety of Information Technology Equipment.

If its connecting cables are routed outdoors, the product shall be grounded either through a shielded network cable (STP) or other appropriate method.

Disposal and recycling

When this product has reached the end of its useful life, dispose of it according to local laws and regulations. For information about your nearest designated collection point, contact your local authority responsible for waste disposal. In accordance with local legislation, penalties may be applicable for incorrect disposal of this waste.

Europe

⊠

━━━ This symbol means that the product shall not be disposed of together with household or commercial waste. Directive 2012/19/EU on waste electrical and electronic equipment (WEEE) is applicable in the European Union member states. To prevent potential harm to human health and the environment, the product must be disposed of in an approved and environmentally safe recycling process. For information about your nearest designated collection point, contact your local authority responsible for waste disposal. Businesses should contact the product supplier for information about how to dispose of this product correctly.

This product complies with the requirements of Directive 2011/65/EU and 2015/863 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

China

⑩ This product complies with the requirements of SJ/T 11364–2014, Marking for the restriction of hazardous substances in electrical and electronic products.

有毒有害物质或元素						
部件名称	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr-(VI))	多溴联苯 (PB-B)	多溴二苯醚 (PB-DE)
电气实装部分	X	0	0	0	0	0

0: 表示该有毒有害物质在该部件均质材料中的含量均在GB/T 26572标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572标准规定的限量要求。

Contact information

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axis.com

Safety information

Hazard levels

⚠DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates a situation which, if not avoided, could result in damage to property.

Other message levels

Important

Indicates significant information which is essential for the product to function correctly.

Note

Indicates useful information which helps in getting the most out of the product.

ENGLISH

Safety instructions

⚠WARNING

The Axis product shall be installed by a trained professional, and in compliance with local laws and regulations.

NOTICE

- The Axis product shall be used in compliance with local laws and regulations.

- Axis recommends using a shielded network cable (STP).

- Axis recommends using a network cable of category CAT5e or higher.

- To use the Axis product outdoors, or in similar environments, it shall be installed in an approved outdoor housing.

- Store the Axis product in a dry and ventilated environment.

- Avoid exposing the Axis product to shocks or heavy pressure.

- Do not install the product on unstable poles, brackets, surfaces or walls.

- Use only applicable tools when installing the Axis product. Using excessive force with power tools could cause damage to the product.

- Do not use chemicals, caustic agents, or aerosol cleaners.

- Use only accessories that comply with the technical specification of your product. These can be provided by Axis or a third party. Axis recommends using Axis power source equipment compatible with your product.

- Use only spare parts provided by or recommended by Axis.

- Do not attempt to repair the product yourself. Contact Axis support or your Axis reseller for service matters.

- The power supply shall be plugged in to a socket outlet installed near the product and shall be easily accessible.

Transportation

NOTICE

- When transporting the Axis product, use the original packaging or equivalent to prevent damage to the product.

Battery

⚠CAUTION

Do not replace the battery yourself. Contact Axis support if the log message requests a battery change.

Lithium coin cell 3.0 V batteries contain 1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME), CAS no. 110-71-4.

Installation Guide - Full Reference

This full reference installation guide provides instructions for how to install AXIS A9188 Network I/O Relay Module on your network.

- For a quick reference guide, see the printed **AXIS A9188 Installation Guide – Quick Reference** that is included in the package contents. The quick reference guide is also available on *www.axis.com*
- For other aspects of using the product, see the **AXIS A9188 User Manual** available on *www.axis.com*

Requirements for Compliance with UL294 6th Edition

Requirements for Compliance with UL294 6th Edition

This section contains information and instructions required for UL compliance. To make sure the installation is UL compliant, follow the instructions below in addition to the general information and instructions provided throughout this document. In cases where pieces of information contradict each other, the requirements for UL compliance always replace general information and instructions.

Performance Levels for Access Control

This section contains performance level information required for UL 294 compliance.

Feature	Level
Destructive Attack Test	I
Line Security	I
Endurance	IV
Standby Power	I

Safety Instructions

- The Axis product shall be installed and serviced by a factory trained professional.
- The Axis product shall be installed within the protected premises (secured area).
- The Axis product shall be mounted indoors. Outdoor use has not been evaluated or approved by UL.
- All interconnecting devices shall be UL Listed and Class 2 low-voltage power limited.
- All wiring methods shall be performed in accordance with NFPA70, local codes and authorities having jurisdiction.

- When the Axis product has reached the end of its useful life, dispose of it according to local laws and regulations. The product should not be disposed of together with household or commercial waste. See *Disposal and recycling on page 3* .

- Battery

    - The 3.0 V lithium battery used by the Axis product is a UL Recognized component. (Type: BR2032, diameter: 20 mm (0.78 in), manufacturers: Rayovac, Panasonic). The following battery type is also a UL Recognized component: Type CR2032, manufacturers: Fuji, Maxell, Renata, Varta, Panasonic, JHIH

    - Users shall not replace the battery. If the battery needs replacing, a factory trained service professional shall contact Axis support at *www.axis.com/techsup* for assistance.

    - Used batteries shall be disposed of according to local laws and regulations, which may vary from state to state. Waste BR/CR lithium cells are neither listed nor exempted from the USEPA hazardous waste regulations. Waste lithium batteries can be considered reactive hazardous waste if there is a significant amount of unreacted, or unconsumed lithium remaining. For information about how to dispose of used lithium batteries, contact your local authority for waste disposal.

Specifications

- Operating Conditions

    - Classification IEC 60721-4-3 Class 3M3

    - Temperatures -30°C to 55°C (-22 °F to 131 °F).

    - Humidity 20-85% RH (non-condensing)

- Wire area

    - UL Listed or R/C AWM wires that have an conductor gauge range of AWG 22–14 shall be used.

    - The minimum conductor gauge for connection between the power sourcing equipment (PSE) or power injector and the powered device (PD) is 26 AWG.

- Connectors

    - This product is not intended for outside wiring as covered by Article 800 in the National Electrical Code, NFPA 70.

    - Power Connector – For UL security applications, the product shall be powered by a UL 294 Listed or UL 603 Listed Class 2 low-voltage power SELV and limited power supply that is capable of 4 hours of standby power.

    - External power to relays - If the relays are connected to an external power source this must be UL 294 Listed or UL 603 Listed Class 2 low-voltage power SELV and limited power supply that is capable of 4 hours of standby power.

    - Network Connector – Power over Ethernet (PoE) shall be supplied by a UL 294 Listed Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 3 or Power over Ethernet Plus (PoE+) IEEE 802.3at Type 2 Class 4 power limited injector that provides 44–57 V DC, 15.4 W / 30 W and 4 hours of standby power.

The products shall not be installed in the fail-secure mode unless permitted by the local authority having jurisdiction.

- Compliance with IEEE 802.3 (at or af) specifications is not verified as part of UL 294B.

- Tampering Alarm Pin Header – To comply with UL 294/7.2.1 (Enclosure), the tampering alarm shall be connected to a sound alarm.

- System Considerations
  - The Axis product shall not impair the intended operation of the panic hardware used in conjunction with it.
- Wall and Ceiling Mount
  - If using a junction box to mount the Axis product, the junction box shall be UL Listed.
- Assign an IP Address
  - The functionality of AXIS Camera Management has not been evaluated by UL.
- Maintenance Instructions
  - For maintenance instructions and for information about how to configure the Axis product, see the User Manual.
- Further Information
  - Firmware version: Network I/O Relay Module, Model A9188 - 1.0

Installation Steps

1. Make sure the package contents, tools and other materials necessary for the installation are in order. See *page 11*.
2. Study the hardware overview. See *page 12*.
3. Study the specifications. See *page 21*.
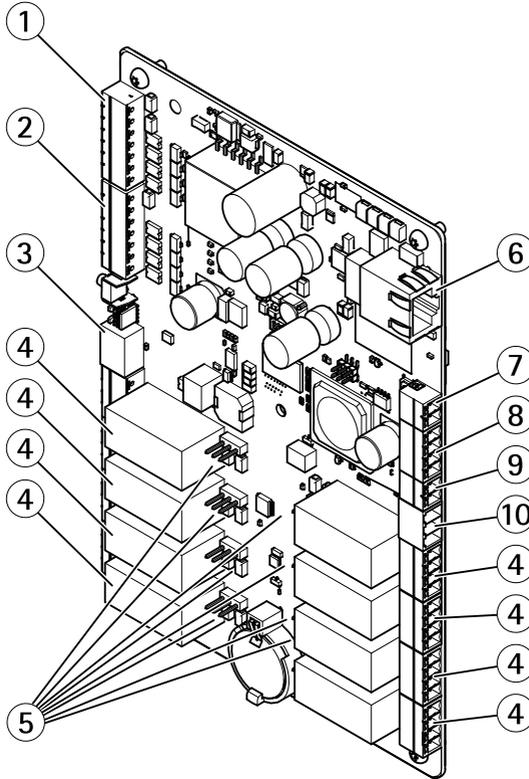4. Install the hardware. See *page 14.*

Package contents

- AXIS A9188 Module
- 2-pin plug connector (2x)
- 3-pin plug connector (2x)
- 4-pin plug connector (9x)
- 7-pin plug connector (2x)
- Relay jumpers (8x)
- Torx Key TR20
- Printed materials
  - AXIS A9188 Installation Guide

- – Overview label
- – Extra serial number label (2x)
- – AVHS Authentication key
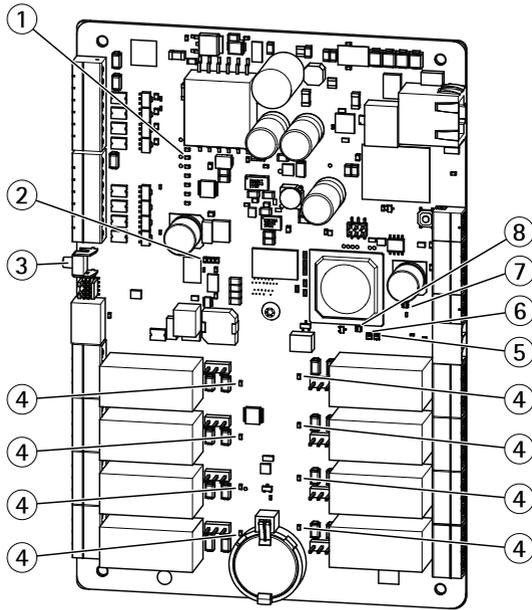- – AXIS Camera Station licence

Hardware overview

1. *Supervised I/O and power connector (DC OUT) port 1–4*
2. *Supervised I/O and power connector (DC OUT) port 5–8*
3. *12/24 V power connector (DC OUT)*
4. *Relay connector (8x)*
5. *Relay jumper (8x)*
6. *Network connector (PoE)*
7. *Power connector (DC IN)*
8. *RS-485 connector (not used)*

9   Tampering alarm input
10   12/24 V power connector (DC OUT)

LED indicators, buttons
1   I/O LED indicators (8x)
2   I/O overcurrent LED indicator
3   Control button
4   Relay LED indicators (8x)
5   Status LED indicator
6   Network LED indicator
7   I/O overcurrent LED indicator
8   Power LED indicator

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LED indicators

LED	Color	Indication
Network	Green	Steady for connection to a 100 MBit/s network. Flashes for network activity.
	Amber	Steady for connection to a 10 MBit/s network. Flashes for network activity.
	Unlit	No network connection.
Status	Green	Steady green for normal operation.
	Amber	Steady during startup and when restoring settings.
	Red	Slow flash for failed upgrade.
Power	Green	Normal operation.
	Amber	Flashes green/amber during firmware upgrade.
Relay	Green	Relay coil is energized
	Unlit	Relay coil is unenergized
I/O	Green	I/O is grounded
	Unlit	I/O is floating
	Blinking	Tamper error (wire cut or open)
RS485 (not used)	Red	Overcurrent
	Unlit	Normal state
I/O voltage	Red	Overcurrent
	Unlit	Normal state

Install the hardware

System Considerations

The Axis product shall be installed within a secured area.

The Axis product, whether it is installed as a single elevator controller or in a system of controllers, shall not limit or weaken the intended use of the devices connected to it.

The Axis product should be installed with a DIN rail on a wall (preferred) or a ceiling, with or without a junction box.

Note

- The Axis product is considered standalone, and does not require constant connection to a computer for proper operation. The use of a connected computer is for local programming, downloading, and supplemental monitoring purposes only.

- Elevator recall for fire has not been evaluated by UL.

Wall and Ceiling Mount

1. If using a junction box, install the junction box before installing the IO Relay Module.
2. Fasten the DIN rail on the wall. Make sure that the screws and plugs are appropriate for the material (e.g. wood, metal, sheet rock, stone)
3. Make sure that the DIN clip position on the metal plate is optimal. See **AXIS A9188 Installation Guide – Quick Reference**
4. Attach the product to the DIN rail
5. Connect the cables. See *page 15*.

Connect the Cables

⚠CAUTION

Disconnect power before connecting any wires to the Axis product. Never make connections while power is applied to the product.

NOTICE

- The product shall be connected using a shielded network cable (STP). All cables connecting the product to the network shall be intended for their specific use. Make sure that the network devices are installed in accordance with the manufacturer's instructions. For information about regulatory requirements, see *Regulatory information on page 2* .

- If using Power over Ethernet, wait with connecting the network cable to the network until all the other wires have been connected.

- To allow for future maintenance, to avoid excessive strain on wires and connectors, and to avoid damage to conductor insulation, leave a service loop and make sure all cables and wires are properly supported and secured.

- To protect the circuits against electrostatic discharge (ESD), use ESD protection when connecting wires to the product.

1. Strip the cables and wires as required using a cable stripping tool.
2. Use relay jumpers to provide internal power to auxiliary equipment connected to the relay connectors. See *Relay Jumper on page 25* .
3. Connect the wires between the IO Relay Module and the external devices. For more information about the connectors and their specifications, see *Connectors on page 23*.

NOTICE

- Make sure all the wires are connected correctly. Incorrect wiring could cause damage to the product.

- Make sure to use wires that meet the requirements. For more information, see *Wire Area on page 22*.

Note

- For information about how to connect other wires, such as power wires to locks and other devices, see the manufacturers' instructions.

4. Collect all the wires neatly and secure them.
5. Label the cables for future reference.
6. If using Power over Ethernet, connect the network cable to the network.
7. Make sure that the LEDs indicate the correct conditions and that none of the overcurrent LEDs are lit. See *LED indicators on page 14*.

Access the Product

Access the device

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

   If you do not know the IP address, use AXIS IP Utility to find the device on the network. For information about how to discover and assign an IP address, see *Assign an IP Address on page 17*. This information is also available from the support pages at *axis.com/support*.

2. Enter the username and password. If you access the device for the first time, you must set the root password. See *How to set the root password on page 20*.

3. AXIS I/O Manager opens in your browser. The start page is called the Dashboard.

How to access the product from the internet

A network router allows products on a private network (LAN) to share a single connection to the internet. This is done by forwarding network traffic from the private network to the internet.

Most routers are pre-configured to stop attempts to access the private network (LAN) from the public network (internet).

If the Axis product is located on an intranet (LAN) and you want to make it available from the other (WAN) side of a NAT (Network Address Translator) router, turn on **NAT traversal**. With NAT traversal properly configured, all HTTP traffic to an external HTTP port in the NAT router is forwarded to the product.

How to turn on the NAT-traversal feature

- Go to **Preferences > Additional Device Configuration > System Options > Network > TCP/IP > Advanced**.
- Click **Enable**.
- Manually configure your NAT router to allow access from the internet.

See also AXIS Internet Dynamic DNS Service at *www.axiscam.net*

Note

- In this context, a "router" refers to any network routing device such as a NAT router, network router, internet gateway, broadband router, broadband sharing device, or a software such as a firewall.
- For NAT traversal to work, NAT traversal must be supported by the router. The router must also support UPnP®.

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Assign an IP Address

About default IP addresses

Axis devices are designed to be used on an Ethernet network. To access the device's webpage you need an IP address. Most networks have a DHCP server that automatically assigns IP addresses to connected devices.

If your network does not have a DHCP server the default IP address is `192.168.0.90`.

Recommended Methods in Windows®

AXIS IP Utility and **AXIS Camera Management** are recommended methods for finding Axis products on the network and assigning them IP addresses in Windows®. Both applications are free and can be downloaded from *www.axis.com/techsup*

AXIS IP Utility

Note

The computer running AXIS IP Utility must be on the same network segment (physical subnet) as the Axis device.

Access your device on the network

1. Connect power and network to the Axis device.
2. Start AXIS IP Utility. All available devices on the network show up in the list automatically.
3. To access the device from a browser, double-click the name in the list.

AXIS A9188 Network I/O Relay Module

Change the IP address of a device

1. Start AXIS IP Utility. All available devices on the network show up in the list automatically.
2. Right-click the device in the list and select **Assign new IP address to selected device**.
3. Enter an available IP address and click **Assign**.
4. To access the device from a browser, double-click the name in the list.

AXIS Device Manager

Access your device on the network

1. Connect power and network to the Axis device.
2. Start AXIS Device Manager.
3. To connect to a server, go to **Main menu > Servers > New connection**:
    - If the server is on the network, select **Remote server** and select a server from the drop-down list or enter the IP address or DNS address in the **Remote server** field.
    - If the server is running locally on the computer, select **This computer**.
4. To log in as the current Windows user, click **Log in**.

   If you clear **Log on as current user** you need to enter a username and password in the next step.
5. Add devices:
    - AXIS Device Manager automatically searches for Axis devices on the network and adds them to the list of devices.
    - To manually add devices, go to **Device management > Add devices**. Select which devices you want to add from the list, click **Next**, and then click **Finish**.
    - To add devices from an IP range, go to **Device management > Add devices from IP range**.
    - To add a device from a specific IP address, go to **Device management > Add device from address**.
6. To access the device from a browser, click the address link in the list.

Change the IP addresses of multiple devices

To speed up the process of assigning IP addresses, AXIS Device Manager suggests IP addresses from a specified range.

1. In AXIS Device Manager, go to **Device management**.
2. Select the devices you want to configure and then click **Assign IP address to selected devices** .

3. In the **Device maintenance** dialog, click **Yes**.

4. Select **Assign the following IP address range**.

5. To change the suggested IP address range, enter the IP address range in the **IP range** text field.

6. Click **Next**.

7. To change any of the IP addresses, select a device and click **Edit IP**.

8. Click **Finish**.

Assign or discover IP addresses

In **Windows®**

- **AXIS Camera Station**

  To learn more, go to *axis.com/vms*

- **UPnP™**

  UPnP automatically detects Axis devices and adds them to **Network** or **My Network Places**.

In **Mac OS X® 10.4 or later**

- **Bonjour** (applicable to browsers with support for Bonjour)

  Navigate to the Bonjour bookmark in your browser, for example Safari, and click the link to access the webpage.

All operating systems

- **DHCP server**

  To view the admin pages for the network DHCP server, see the server's user documentation.

- **Hosted video services**

  To connect to a hosted video service, see the service provider's user documentation. To get more information and help with finding a local service provider, go to *axis.com/hosting*

Assign an IP address using ARP/Ping

The device's IP address can be assigned using ARP/Ping. The command must be issued within 2 minutes of connecting power.

1. Acquire a free static IP address on the same network segment as the computer.

2. Locate the serial number (S/N) on the device label.

3. Open a command prompt and enter the following commands:

   Linux/Unix syntax

   ```
   arp -s <IP address> <serial number> temp
   ping -s 408 <IP address>
   ```

Linux/Unix example

```
arp -s 192.168.0.125 00:40:8c:18:10:00 temp
ping -s 408 192.168.0.125
```

Windows syntax (this may require that you run the command prompt as an administrator)

```
arp -s <IP address> <serial number>
ping -l 408 -t <IP address>
```

Windows example (this may require that you run the command prompt as an administrator)

```
arp -s 192.168.0.125 00-40-8c-18-10-00
ping -l 408 -t 192.168.0.125
```

4. Restart the device by disconnecting and reconnecting the network connector.

5. Close the command prompt when the device responds with `Reply from 192.168.0.125:...` or similar.

6. Open a browser and type `http://<IP address>` in the address field.

Note

- To open a command prompt in Windows, open the **Start** menu and search for `cmd`.

- To use the ARP command in Windows 8/Windows 7/Windows Vista, right-click the command prompt icon and select **Run as administrator**.

- To open a command prompt in Mac OS X, open the **Terminal utility** from **Application > Utilities**.

How to set the root password

To access the Axis product, you must set the password for the default administrator user **root**. This is done in the **Configure Root Password** dialog, which opens when the product is accessed for the first time.

To prevent network eavesdropping, the root password can be set via an encrypted HTTPS connection, which requires an HTTPS certificate. HTTPS (Hypertext Transfer Protocol over SSL) is a protocol used to encrypt traffic between web browsers and servers. The HTTPS certificate ensures encrypted exchange of information.

The default administrator user name **root** is permanent and cannot be deleted. If the password for root is lost, the product must be reset to the factory default settings. For information about how to reset the product to factory default, see the product's User Manual.

To set the password, enter it directly in the dialog.

Reset to factory default settings

Maintenance Instructions

To keep the network I/O module running smoothly, Axis recommends regular maintenance of the network I/O module and connected devices.

Do maintenance at least once a year. The suggested maintenance procedure includes, but is not limited to, the following steps:

- Make sure all the connections between network I/O module and the external devices are secure.
- Verify all the hardware connections. This requires access to the product's webpages.

If the results from any of the steps above indicate faults or unexpected behavior:

- Test the signals of the wires using appropriate equipment and check if the wires or cables are damaged in any way.
- Replace all damaged or faulty cables and wires.
- Once the cables and wires have been replaced, verify all the hardware connections again. This requires access to the product's webpages.

- If the network I/O module is not behaving as expected, see the User manual for information about troubleshooting and the product's built-in maintenance functions.

For information about maintenance of the battery, see *Battery on page 6* .

Specifications

Operating Conditions

The Axis product is intended for indoor use.

Classification	Temperature	Humidity
IEC 60721-4-3 Class 3M3	–30 °C to 55 °C (–22 °F to 131 °F)	20–85% RH (non-condensing)

Power Consumption

NOTICE

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.

Power supply	Maximum load on outputs
Power over Ethernet IEEE 802.3af Type 1 Class 3 / IEEE 802.3at Type 2 Class 4, 44–57 V DC	PoE Class 3: 3.6 W PoE Class 4: 12 W
8–28 V DC, max 26 W	12 W

Power Output Conversion (W to A)

The total maximum output load of the Axis product depends on the power source.

The voltage on the Axis product's power outputs is 12 V DC or 24 V DC. The maximum load is the combined power from 12 V and 24 V. For example if you take 1A from 12V output no power is available from 24 V.

If your connected device has a maximum ampere rating of for example 0.3 A, the following conversion gives the power in watts (W):

Power (W) = Voltage (V) x Current (I)

Power = 12 V x 0.3 A = 3.6 W

The following table shows the available power after connection of the 0.3 A device in the example.

Power source	Available power
Power over Ethernet802.3at Type 2 Class 4	12 – 3.6 = 8.4 W
8–28 V DC	12 – 3.6 = 8.4 W

The DC output on the following connectors are considered as power outputs:

- DC Power Out Connector
- Supervised I/O Connector

For connector specifications, see *page 23*.

Wire Area

NOTICE

> Each wire shall have an conductor cross-sectional area that corresponds to an conductor gauge range of AWG 28–16 (CSA) or AWG 22–14 (cUL/UL). Select cables in compliance with your local regulations.

AWG	Diameter mm (in)	Area mm^2
28–16	0.321–1.29 (0.0126–0.0508)	0.0810–1.31
22–14	0.644–1.63 (0.0253–0.0641)	0.326–2.08

Connectors

For information about the connectors' positions, see *Hardware overview on page 12*.

The following section describes the connectors' technical specifications.
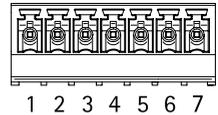
Network Connector

NOTICE

The product shall be connected using a shielded network cable (STP). All cables connecting the product to the network shall be intended for their specific use. Make sure that the network devices are installed in accordance with the manufacturer's instructions. For information about regulatory requirements, see *Electromagnetic compatibility (EMC) on page 2* .

Function	Specifications
Power and Ethernet	Power over Ethernet Plus (PoE+) IEEE 802.3at Type 2 Class 4, 44–57 V DC

Supervised I/O and Power Connector

7-pin configurable I/O terminal block for:

1 2 3 4 5 6 7

- Auxiliary power (DC output)
- Digital Input
- Digital Output
- Supervised input
- 0 V DC (-)

For an example connection diagram, see *Connection Diagrams on page 27.*

Function	Pin	Notes	Specifications
0 V REF	1		0 V REF

12 V DC output	2	For powering auxiliary equipment. Note: This pin can only be used as power out.	See *Power Consumption on page 21*
24 V DC output	3	For powering auxiliary equipment. Note: This pin can only be used as power out.	See *Power Consumption on page 21*
Configurable (Input or Output)	4–7	Digital input — Connect to pin 1 to activate, or leave floating (unconnected) to deactivate.	0 to max 40 V DC
		Digital output – Connect the load between DC out or external source and the output pin. If used with an inductive load, e.g. a relay, a diode must be connected in parallel with the load, for protections against transients.	0 to max 40 V DC, open drain, 100 mA

Important

The recommended maximum cable length is 30 m (98.4 ft).

Important

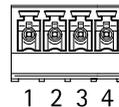The output circuits in this section are Class 2 power limited.

Important

The total power from all DC outputs are 12 W (PoE Type 2 Class 4) or 3.6 W (PoE Type 2 Class 3).

Relay Connector

4-pin relay terminal block for:

- 0 V REF
- NO
- COM
- NC

1 2 3 4

24

Function	Pin	Notes	Specifications
0 V REF	1		0 V REF
NO	2	For connecting auxiliary equipment.	0 to max 30 V AC/DC 1 A When PoE powered, relay output is only rated 12 V AC/DC (1 A) or 24 V AC/DC (500 mA).
COM	3	For connecting auxiliary equipment.	
NC	4	For connecting auxiliary equipment.	

⚠WARNING

Maximum connected load on the relay is 30 V AC/DC, 1 A

Relay Jumper

3-pin relay jumper for enabling power to auxiliary equipment via the Relay connector. Inserting the jumper between 12 V or 24 V to COM causes the internal voltage to be connected to the COM terminal of the relay.
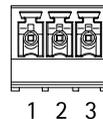
- +12 V
- Relay COM
- +24 V

Function	Pin	Notes	Specifications
+12 V	+12 V	Use jumper to connect power out to Relay COM	+12 V DC
Relay COM	COM	Output power to auxiliary equipment when jumper is used	
+24 V	+24 V	Use jumper to connect power out to Relay COM	+24 V DC

12/24 V DC Out Power Connector

3–pin terminal block for:

- 0 V REF
- 12 V DC OUT
- 24 V DC OUT

1 2 3

Function	Pin	Notes	Specifications
0 V REF	1		0 V DC
12 V DC OUT	2	For powering auxiliary equipment.	See *Power Consumption on page 21*
24 V DC OUT	3	For powering auxiliary equipment.	See *Power Consumption on page 21*

Important

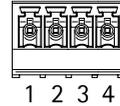The recommended maximum cable length is 30 m (98.4 ft).

Important

The output circuits in this section are NEC Class 2 power limited.

RS−485 connector (not used)

4-pin RS-485/RS-422 half duplex serial port:

- +12 V DC
- 0 V REF
- A
- B

Function	Pin	Notes	Specifications
+12 V DC	1		12 V DC Max load = 350 mA
0 V REF	2		0 V DC
A	3		
B	4		

Important

The recommended maximum cable length is 30 m (98.4 ft).

Important

The output circuits in this section are Class 2 power limited.

Tampering Alarm Input Connector

2-pin terminal block for tampering alarm input.

Function	Pin	Notes	Specifications
0 V REF	1		0 V DC
IN	2	Tampering alarm input. When opened the alarm will trigger.	

DC In Power Connector

2-pin terminal block for DC power input. Use a Class 1 electrical energy source (ES1) or 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 at ≤100 W.
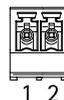
| Function	Pin	Notes	Specifications
0 V REF	1		0 V DC
DC input	2	For powering controller when not using Power over Ethernet. Note: This pin can only be used as power in.	8–28 V DC, max 26 W

Buttons

The control button is used for:

- Resetting the product to factory default settings, *page 21*.
- Connecting to an AXIS Video Hosting System service or AXIS Internet Dynamic DNS Service. For more information about these services, see the User Manual.
- Connecting to AXIS Internet Dynamic DNS Service. See www.axis.com

Connection Diagrams

Supervised inputs

To use supervised inputs, install end of line resistors according to any of the options in the diagrams below.
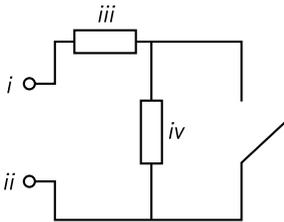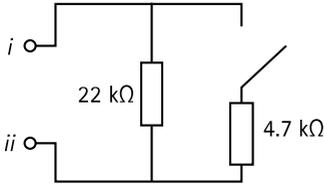
i   Input

ii   0 V DC (-)

iii = iv   1 kΩ, or 2 kΩ, or 4 kΩ, or 10 kΩ

Note

It is recommended to use twisted and shielded cables. Connect shielding to 0 V DC.

Further information

- For the latest version of this document, see *axis.com*
- The user manual is available at *axis.com*
- To check if there is updated firmware available for your device, see *axis.com/support*
- For useful online trainings and webinars, see *axis.com/academy*

Warranty information

For information about Axis' product warranty and thereto related information, go to *axis.com/warranty*.