AXIS A9188 Network I/O Relay Module

Installation Guide - Full Reference

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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

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

Regulatory information
Europe

$C\mathcal{E}$ 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 (LVD) Directive 2014/35/EU. See *Safety on page 2* .
- Restrictions of Hazardous Substances (RoHS) Directive 2011/65/EU. 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 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.

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.

This product fulfills the requirements for immunity according to EN 61000-6-1 residential, commercial and light-industrial environments.

This product fulfills the requirements for immunity according to EN 61000-6-2 industrial environments.

This product fulfills the requirements for immunity according to EN 55024 office and commercial environments.

This product fulfills the requirements for immunity according to EN 50130-4 residential, commercial, light-industrial and industrial environments.

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 情報技術装置です。この装置は、家庭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。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。

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.

The power supply used with this product shall fulfill the requirements for Safety Extra Low Voltage (SELV) according to clause 2.2 of IEC/UL 60950-1 and Limited Power Source (LPS) according to clause 2.5 of IEC/UL 60950-1 or CEC/NEC Class 2 source of supply as defined in the Canadian Electrical Code, CSA C22.1 and National Electrical Code, ANSI/NFPA 70.

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 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

China

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	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有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。						

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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.

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) CAT5 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

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

⚠WARNING

- Risk of explosion if the battery is incorrectly replaced.

- Replace only with an identical battery or a battery which is recommended by Axis.

- Dispose of used batteries according to local regulations or the battery manufacturer's instructions.

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 -35°C to 66°C (31 °F to 150.8 °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.

- – 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

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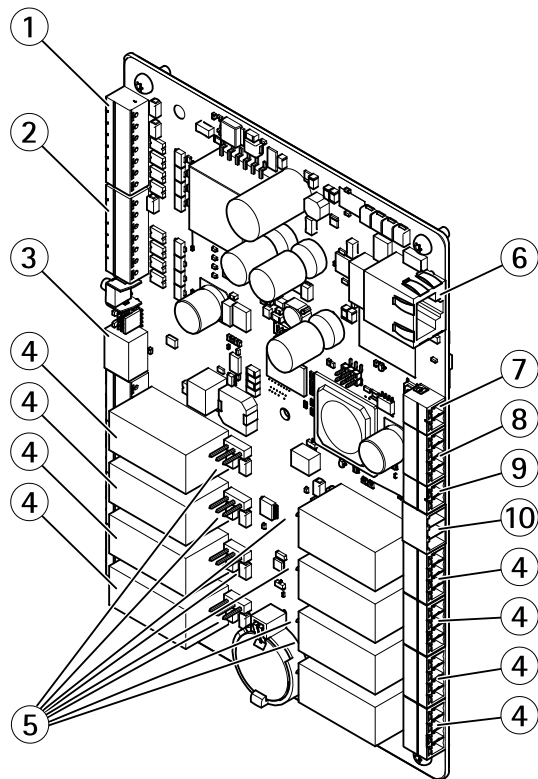
1   Supervised I/O and power connector (DC OUT) port 1–4
2   Supervised I/O and power connector (DC OUT) port 5–8
3   12/24 V power connector (DC OUT)
4   Relay connector (8x)
5   Relay jumper (8x)
6   Network connector (PoE)
7   Power connector (DC IN)
8   RS-485 connector (not used)

9 Tampering alarm input
10 12/24 V power connector (DC OUT)
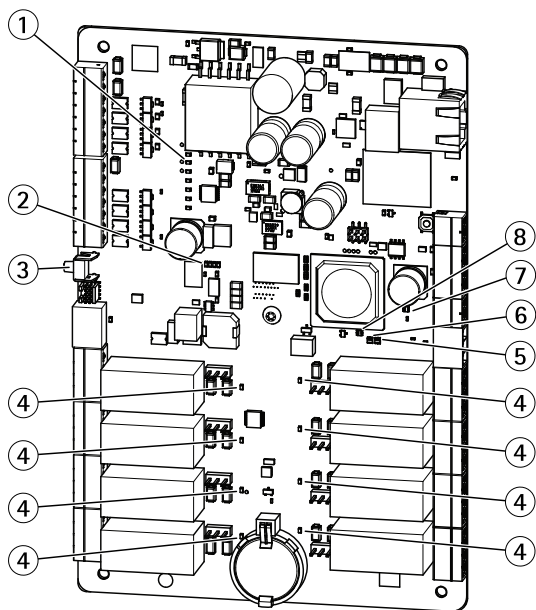
LED indicators, buttons
1 I/O LED indicators (8x)
2 I/O overcurrent LED indicator
3 Control button
4 Relay LED indicators (8x)
5 Status LED indicator
6 Network LED indicator
7 I/O overcurrent LED indicator
8 Power LED indicator

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.

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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 22*.

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.

ENGLISH

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 *on page 13*.

Access the Product

How to access the product from a browser

1. Start a web browser.

2. Enter the IP address or host name of the Axis product in the browser's address field.

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

Note

   To show Bonjour as a browser bookmark, go to **Safari > Preferences**.

3. Enter your username and password. If this is the first time the product is accessed, the root password must first be configured.

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

How to access the product from the Internet

Once connected, the Axis product is accessible on your local network (LAN). To access the product from the Internet you must configure your network router to allow incoming data traffic to the product. To do this, enable the NAT-traversal feature, which will attempt to automatically configure the router to allow access to the product. This is enabled from **Preferences > Additional Device Configuration > System Options > Network > TCP/IP > Advanced**.

For more information about NAT trasversal for IPv4, see the product's User Manual. See also AXIS Internet Dynamic DNS Service at *www.axiscam.net*

For Technical notes on this and other topics, visit the Axis Support web at *www.axis.com/support*

Assign an IP Address

Default IP Address

The Axis product is designed for use on an Ethernet network and requires an IP address for access. Most networks have a DHCP server that automatically assigns IP addresses to connected devices.

If your network does not have a DHCP server the Axis product will use `192.168.0.90` as the default IP address.

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 – Small Installations

AXIS IP Utility automatically discovers and displays Axis products on your network. The application can also be used to manually assign a static IP address.

Note that the computer running AXIS IP Utility must be on the same network segment (physical subnet) as the Axis product.

Automatic Discovery

1. Check that the Axis product is connected to the network and has powered up.
2. Start AXIS IP Utility.
3. When the Axis product appears in the window, double-click to open its web pages.
4. For information about how to set the password, see *page 20*.

Assign the IP Address Manually (optional)

1. Acquire an available IP address on the same network segment as your computer.
2. Select the Axis product in the list.
3. Click **Assign new IP address to selected device** and enter the IP address.
4. Click **Assign** and continue according to the instructions.
5. When the Axis product appears in the window, double-click to open its web pages.
6. For information about how to set the password, see *page 20*.

AXIS Camera Management – Large Installations

AXIS Camera Management is a powerful installation and management tool for Axis network products. The tool can automatically search the network for devices, assign IP addresses, set passwords, show connection status, manage firmware upgrades and configure product parameters. It can perform batch operations on multiple products at once.

Automatic Discovery

1. Check that the Axis product is connected to the network and has powered up.

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2. Start AXIS Camera Management.

3. Connect to a server.

   To connect to a server on the network, select **Remote server** and select a server from the drop-down list or enter the IP or DNS address in the field.

   To connect to a server running locally on your computer, select **This computer**.

4. Click **Log On** to log on as the current computer user, or de-select **Log on as current user** and enter the user name and password to log on with.

5. The first time AXIS Camera Management runs it automatically searches for Axis products on the network. To manually search for products, select **Configuration > Add Devices**. The software displays a list of the products found.

   Select the products to add and click **Next** and then click **Finish**.

6. In the list of devices, click on the address to open the product's web pages.

7. For information about how to set the password, see *page 20*.

Assign IP Addresses in Multiple Devices

AXIS Camera Management speeds up the process of assigning IP addresses to multiple devices by suggesting IP addresses from a specified range.

1. Select the devices you wish to configure (different models can be selected) and click

   Assign IP address to selected devices .

2. Click **Yes** in the **Device Maintenance** dialog.

3. Select **Assign the following IP address range** and enter the IP address range, subnet mask and default router the devices will use. Click **Next**.

4. Suggested IP addresses are listed under **New IP Addresses** and can be edited by selecting a device and clicking **Edit IP**.

5. Click **Finish**.

Other Operating Systems and Methods

The list below shows the other methods available for assigning or discovering the IP address. All methods are enabled by default, and all can be disabled.

- **AVHS Service Connection** (all operating systems). To connect to an AVHS service, refer to the service provider's Installation guide. For information and help in finding a local AVHS Service Provider, go to *www.axis.com/hosting*

- **AXIS Camera Station 5** (Windows®). For information and help, go to *www.axis.com/vms*

- **UPnP™** (Windows®). When enabled on your computer, the Axis network product is automatically detected and added to Network/My Network Places.

- **Bonjour** (Mac OS X® 10.4 or later). Applicable to browsers with support for Bonjour. Navigate to the Bonjour bookmark in your browser (for example Safari) and click on the link to access the web pages.

- **AXIS Dynamic DNS Service** (all operating systems). A free service from Axis that allows you to quickly and simply install your Axis network product. Requires an Internet connection without an HTTP proxy. For more information, see *www.axiscam.net*
- **ARP/Ping** (all operating systems). See *Assign IP Address Using ARP/Ping*. The command must be issued within 2 minutes of connecting power.
- **DHCP server** (all operating systems). To view the admin pages for the network DHCP server, see the server's user documentation.

Assign IP Address Using ARP/Ping

The product'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 product 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 product by disconnecting and reconnecting the network connector (PoE).
5. Close the command prompt when the product responds with `Reply from 192.168.0.125:...` or similar.
6. Open a browser and type `http://<IP address>` in the Location/Address field.

Note

- To open a command prompt in Windows, open the **Start menu** and type `cmd` in the **Run/Search** field.
- 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 via a standard HTTP connection, enter it directly in the dialog.

To set the password via an encrypted HTTPS connection, follow these steps:

1. Click **Use HTTPS**.

   A temporary certificate (valid for one year) is created, enabling encryption of all traffic to and from the product, and the password can now be set securely.
2. Enter a password and then re-enter it to confirm the spelling.
3. Click **OK**. The password has now been configured.

How to 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 (–30 °F to 131 °F)	20–80% 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

AXIS A9188 Network I/O Relay Module

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 22*.

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*.

RJ45 Ethernet connector. Use Category 5e cables or higher.

Function	Specifications
Power and Ethernet	Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 3, 44–57 V DC

Supervised I/O and Power Connector

7-pin configurable I/O terminal block for:

- 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

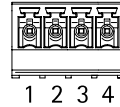The output circuits in this section are Class 2 power limited.

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

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.
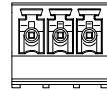
- +12 V
- Relay COM
- +24 V

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

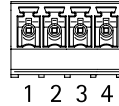The recommended maximum cable length is 30 m (98.4 ft).

RS–485 connector (not used)

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

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

1 2 3 4

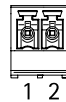| Function	Pin	Notes	Specifications
+12 V DC	1		12 V DC Max load = 350 mA
0 V REF	2		0 V DC
A	3		
B	4		

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.

1 2

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.

1   2
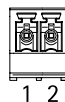
Function	Pin	Notes	Specifications
0 V REF	1		0 V DC
DC input	2	For powering controller when not using Power over Ethernet. Note: This pin can only be used as power in.	8–28 V DC, max 26 W

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Buttons

The control button is used for:

- Resetting the product to factory default settings, *page 20.*
- 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.
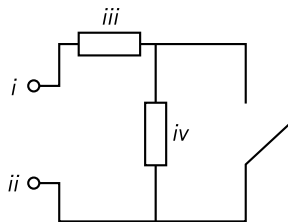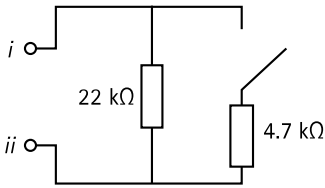
i Input

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 *www.axis.com*
- The user manual is available at *www.axis.com*
- To check if there is updated firmware available for your product, see *www.axis.com/support*
- For useful online trainings and webinars, see *www.axis.com/academy*

Warranty information

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