



A4x Bullet Camera Series

Hardware Manual

A44, A45, A46, A48, A421, A425

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ACTi
Connecting Vision

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Precautions

Read these instructions

You should read all the safety and operating instructions before using this product.

Heed all warnings

You must adhere to all the warnings on the product and in the instruction manual. Failure to follow the safety instruction given may directly endanger people, cause damage to the system or to other equipment.

Servicing

Do not attempt to service this video device yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Trademarks

All names used in this manual are probably registered trademarks of respective companies.

Liability

Every reasonable care has been taken during the writing of this manual. Please inform your local office if you find any inaccuracies or omissions. We cannot be held responsible for any typographical or technical errors and reserve the right to make changes to the product and manuals without prior notice.

Federal Communications Commission Statement

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.

European Community Compliance Statement

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to European Standard EN 55022 and EN 55024. In a domestic environment, this product may cause radio interference in which cause the user may be required to take adequate measures.

Safety Instructions

Cleaning

Disconnect this video product from the power supply before cleaning.

Attachments

Do not use attachments not recommended by the video product manufacturer as they may cause hazards.

Water and Moisture

Do not use this video product near water, for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool and the like.

Don't use accessories not recommended by the manufacturer

Only install this device in a dry place protected from weather

Servicing

Do not attempt to service this video product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Damage Requiring service

Disconnect this video product from the power supply immediately and refer servicing to qualified service personnel under the following conditions.

- 1) When the power-supply cord or plug is damaged
- 2) If liquid has been spilled, or objects have fallen into the video product.
- 3) If the video product has been directly exposed to rain or water.
- 4) If the video product does not operate normally by following the operating Instructions in this manual. Adjust only those controls that are covered by the instruction manual, as an improper adjustment of other controls may result in damage, and will often require extensive work by a qualified technician to restore the video product to its normal operation.







Safety Check

Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks to determine if the video product is in proper operating condition.

Introduction

List of Models

This hardware manual contains the following models:

A44		12MP Video Analytics Zoom Bullet with D/N, Adaptive IR, Extreme WDR, SLLS, 3x Zoom lens
A45		2MP Zoom Bullet with D/N, Adaptive IR, Extreme WDR, ELLS, 4.3x Zoom lens
A46		5MP Zoom Bullet with D/N, Adaptive IR, Extreme WDR, SLLS, 5x Zoom lens
A48		2MP Video Analytics Zoom Bullet with D/N, Adaptive IR, Extreme WDR, ELLS, 10x Zoom lens
A421		8MP Face, People and Car Detection Zoom Bullet with D/N, Adaptive IR, Extreme WDR, SLLS, 4.3x Zoom lens
A425		2MP Zoom Bullet with D/N, Adaptive IR, Extreme WDR, ELLS, 4.3x Zoom lens

Package Contents

Camera	Mounting Screw Kit	Hex Wrench
		
Drill Template	Quick Installation Guide & Warranty Card	Cable Gland (for A45, A46, A421 only)
		
DI/DO Terminal Block (A44, A48)		
	<p>NOTE: For other models, the terminal block comes connected to the DIO port of the camera</p>	

Physical Description

A44, A48



Item		Description
1	Audio Output	This jack connects to an audio output device, such as a speaker. See How to Connect Audio Input / Output Devices (Optional) on page 17.
2	DC 12V Power Input	Connects the camera to an external power adapter (not included). See Connecting a Power Adapter (Optional) on page 17 for more information.
3	Reset Button	Restores the factory default settings of the camera, including the administrator's password. To reset the camera, press and hold the Reset button for at least 10 seconds.
4	BNC Video Output	Connects the camera directly to a monitor with BNC input.
5	Audio Input	This jack connects to a microphone. See How to Connect Audio Input / Output Devices (Optional) on page 17.
6	Ethernet Port	Connects to a network using a standard Ethernet cable.
7	Digital Input / Output	Connects to digital input or output devices, such as an alarm trigger, panic button, etc. Digital Input (DI) and Digital Output (DO) devices are used in applications like motion detection, event triggering, alarm notifications, etc. See Connecting the Digital Input / Output Devices (Optional) on page 18.

A45, A46, A421, A425



Item		Description
1	Audio Output	This jack connects to an audio output device, such as a speaker. See How to Connect Audio Input / Output Devices (Optional) on page 17.
2	DC 12V Power Input	Connects the camera to an external power adapter (not included). See Connecting a Power Adapter (Optional) on page 17 for more information.
3	Reset Button	Restores the factory default settings of the camera, including the administrator’s password. To reset the camera, press and hold the Reset button for at least 10 seconds.
4	Audio Input	This jack connects to a microphone. See How to Connect Audio Input / Output Devices (Optional) on page 17.
5	Ethernet Port	Connects to a network using a standard Ethernet cable.
6	Digital Input / Output	Connects to digital input or output devices, such as an alarm trigger, panic button, etc. Digital Input (DI) and Digital Output (DO) devices are used in applications like motion detection, event triggering, alarm notifications, etc. See Connecting the Digital Input / Output Devices (Optional) on page 18.

Mounting Options

There are several mounting options that you can use to install the camera. Select the most suitable solution for your installation environment.

Mount Types	Accessories
Wall	Suitable when mounting the camera directly on walls using the integrated bracket. See <i>Installation Procedures</i> on page 11.
Ceiling	Suitable when mounting the camera directly on walls using the integrated bracket. See <i>Installation Procedures</i> on page 11.
Vertical Pole	Suitable when mounting the camera on vertical poles.

NOTE:

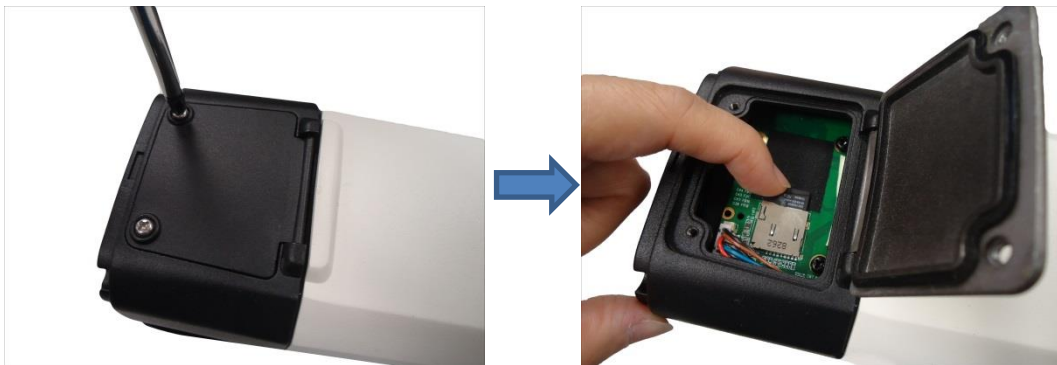
- For more information about the mounting solutions and accessories, please check the *Mounting Accessory Selector* in our website (<http://www.acti.com/mountingselector>).
- The above mounting accessories are not included in the package. Contact your sales agents to purchase.

Installation Procedures

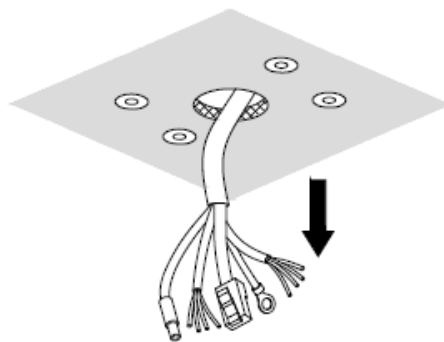
This section describes the procedures in installing the camera on a flat surface such as a hard or dropped ceiling and straight or tilted walls. Before installation, make sure the wall or ceiling can bear more than the weight of the camera.

Step 1: Prepare for Installation

1. If a memory card will be used, install the card first before mounting the camera.



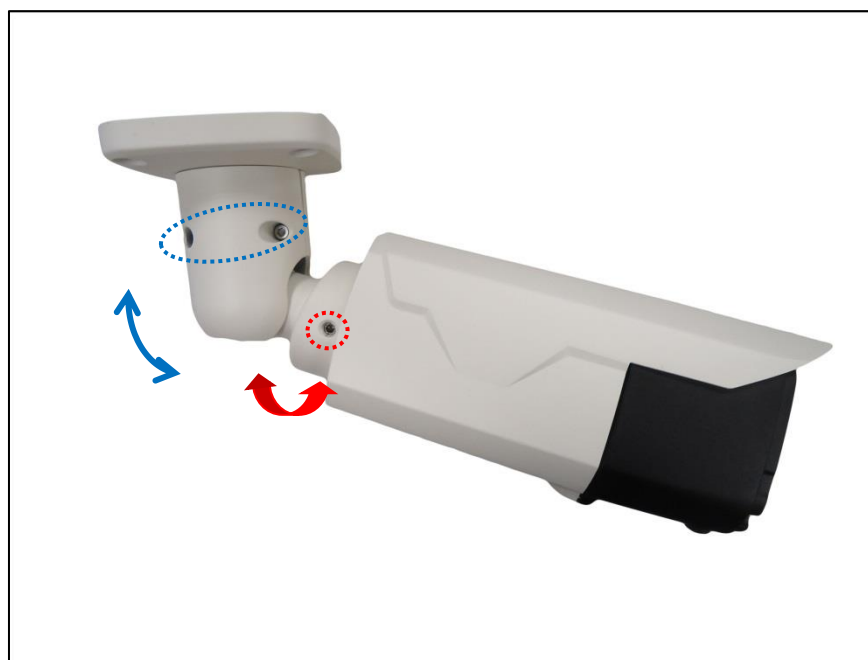
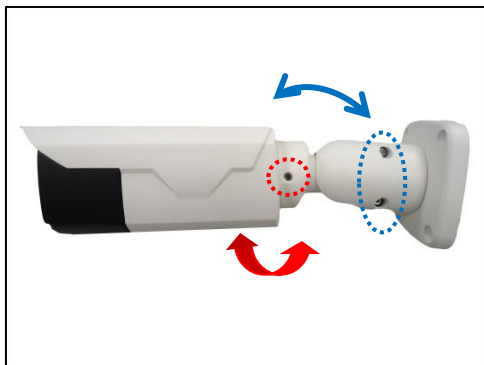
2. Attach the supplied drill template sticker on the surface.
3. Determine how the cable will be routed: **pass through the surface** or **along the surface**.
 - **If the cable will pass through the surface**, drill the cable hole and the four (4) screw holes.
 - Route the network end cables through the hole on the surface.



- Connect the cables (see [Step 3: Waterproof and Connect the Cable\(s\)](#) on page 13)
 - **If the cable will be routed along the surface**, just drill the four (4) screw holes.
4. Detach the drill template sticker from the surface and insert the plastic plugs into the screw holes.

Step 2: Mount the Camera

1. Mount the camera to the surface using the four (4) supplied screws.
2. Adjust the camera installation angle and orientation, and then tighten the lock screws to fix its position.



Step 3: Waterproof and Connect the Cable(s)

The camera and the pre-installed network cable, “pigtail”, are resistant to salt, water, weak acid, alcohol, oil, grease and other common solvents. However, users must ensure that the cable connection and the network side cable itself are also protected from different environmental factors.

The camera also supports DC12V power input, Digital Input and Output (DI/DO) and Audio Input and Output devices using the bundled terminal blocks. The use of these devices, however, is optional.

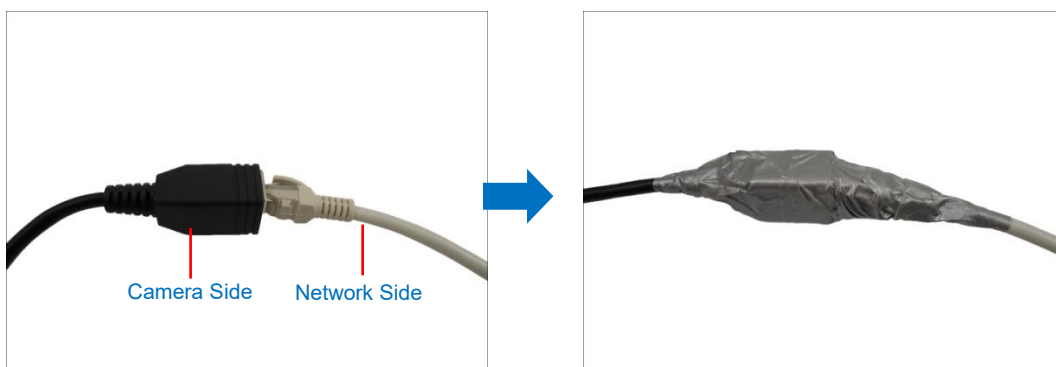
NOTE: After connecting external devices, use a waterproof tape to protect the cable connection or house the cable inside a junction box (purchased separately).

Connect the Ethernet Cable

A44 and A48

For A44 and A48 models, the simplest way to waterproof to connection is by using a waterproof tape.

Connect an Ethernet cable from the network side to the Ethernet port of the camera and wrap the connection with waterproof tape to complete the installation.



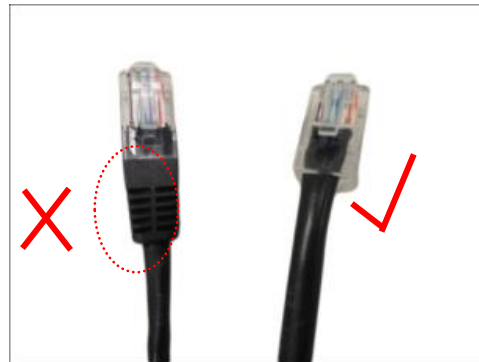
NOTES on using Ethernet cables: For outdoor installations, it is recommended to use *exterior-grade* Ethernet cables (CAT5/CAT5e/CAT6); ordinary Ethernet cables are only designed for indoor use and may deteriorate quickly when exposed to outdoor elements. Exterior-grade Ethernet cables are waterproof and do not require a conduit.

A45, A46, A421, A425

This section describes how to waterproof the Ethernet cable of A45, A46 and A421 models using the bundled cable gland.

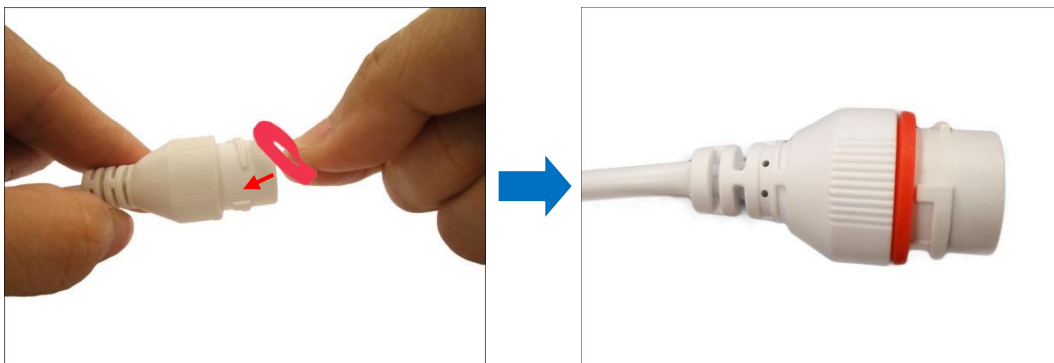
Before connection, prepare an exterior-grade Ethernet cable with RJ-45 connector but without sleeves.

NOTE: The images below are for reference only. The color or actual cable may slightly vary.

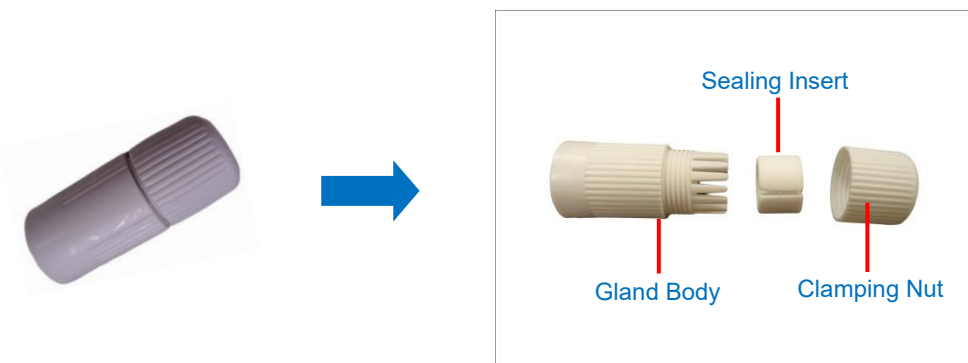


Perform the following to waterproof the “pigtail” using the cable gland:

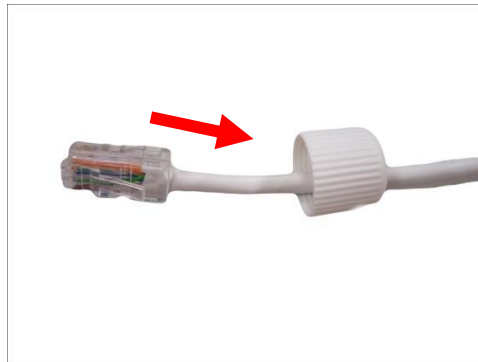
1. Attach the washer to the Ethernet connector of the camera.



2. Detach the clamping nut and sealing insert from the gland body:



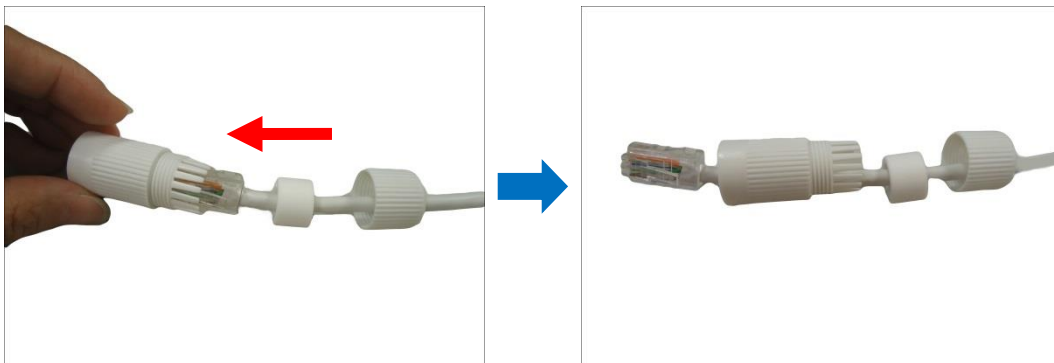
3. Insert the clamping nut into the Ethernet cable.



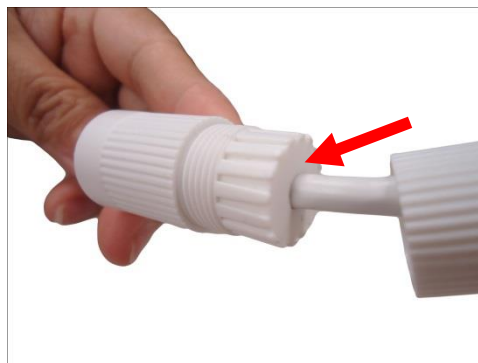
4. Insert the sealing insert through the Ethernet cable.



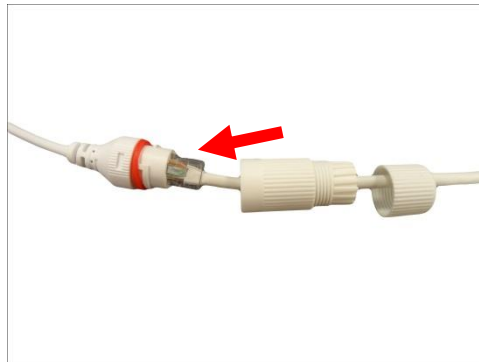
5. Insert the cable through the gland body.



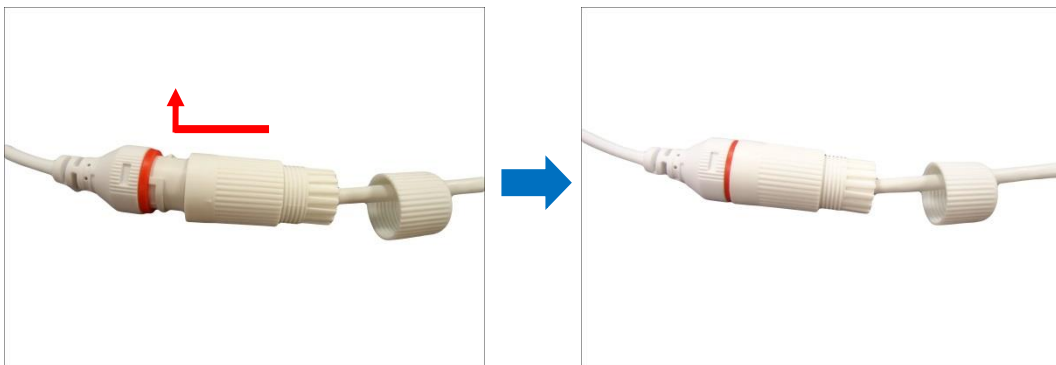
6. Push the sealing insert into the gland body.



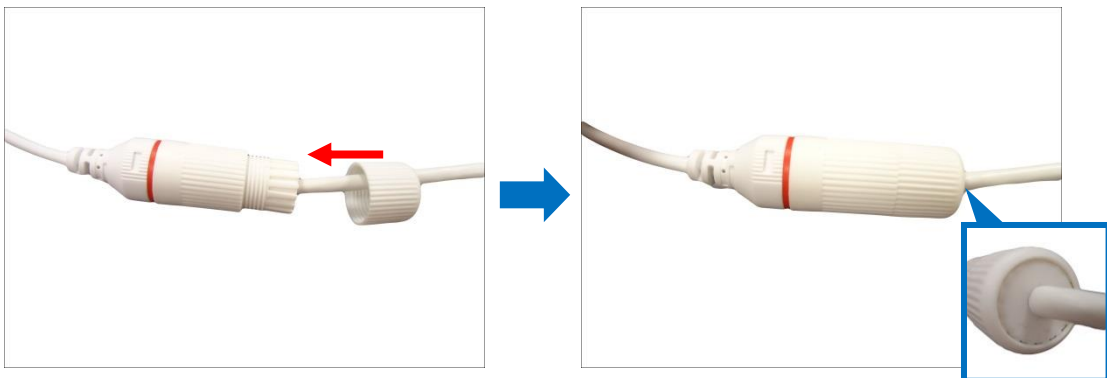
7. Connect the RJ-45 connector to the camera connector.



8. Attach the gland body to the camera connector.



9. Attach the clamping nut to the gland body to complete the cable solution.



NOTE: Make sure the clamping nut is tightly attached to the cable gland body and the sealing insert is squeezed tightly.

DISCLAIMER: ACTi will not be responsible for camera damage caused by water entering the cable connections.

Connecting a Power Adapter (Optional)

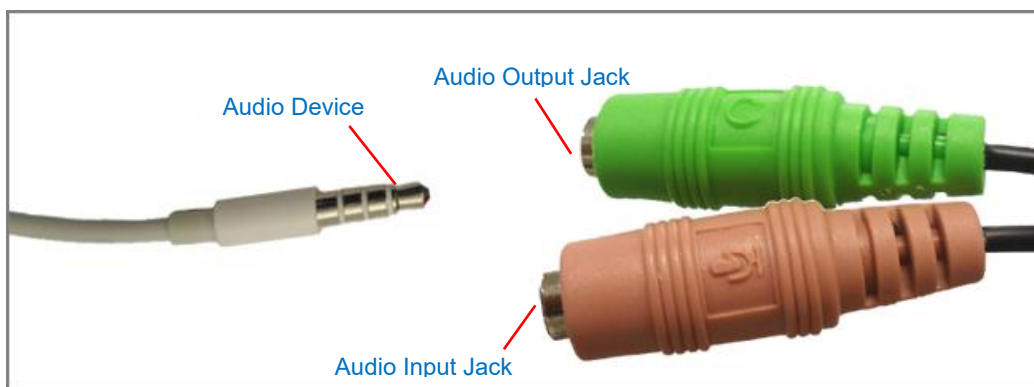
The camera can be powered by a Power over Ethernet (PoE) switch that is IEEE802.3af compliant. In case of using a non-PoE switch or your PoE switch has a limited power supply, you can purchase a power adapter and directly connect the camera to a power outlet.

NOTE:

- The power adapter is not bundled in the package.
- After connecting external devices, use a waterproof tape to protect the cable connection or house the cable inside a junction box (purchased separately).

How to Connect Audio Input / Output Devices (Optional)

If using an audio input device, such as a microphone with a built-in amplifier, connect the device to the **Mic Input** jack (RED) of the camera. If using an audio output device, such as a speaker, connect the device to the **Audio Output** jack (GREEN: A44, A48 or BLACK: A45, A46, A421) of the camera.



NOTE:

- Make sure that the connected audio input device has a built-in amplifier. Connecting an ordinary microphone will dwarf sounds and will result in inaudible recording.
- After connecting external devices, use a waterproof tape to protect the cable connection or house the cable inside a junction box (purchased separately).

Connecting the Digital Input / Output Devices (Optional)

Depending on your surveillance needs, you may connect digital input / output or audio input / output devices to your camera. The camera comes with one (1) terminal block for both digital and audio input/output devices.

Digital Input (DI) devices can be used to notify the camera about an activity in the camera site. DI can be triggers of events. For example, you can connect a “panic button” to the camera; as such when the panic button is pressed, the alarm signal will be sent through the camera. Other common DI device applications are emergency button, smoke detector, passive infrared sensor, etc.

Digital Output (DO) devices are external devices that are activated by the camera upon an event inside the camera. For example, you can connect an “alarm horn” to the camera; as such when an event occurs inside the camera (e.g. detected intruder), the alarm horn will sound. Other common DO device applications are motion-triggered lights, electric fence, magnetic door locks, etc.

To connect digital input / output devices (DI/DO), map the pins to one of the pin combinations below:

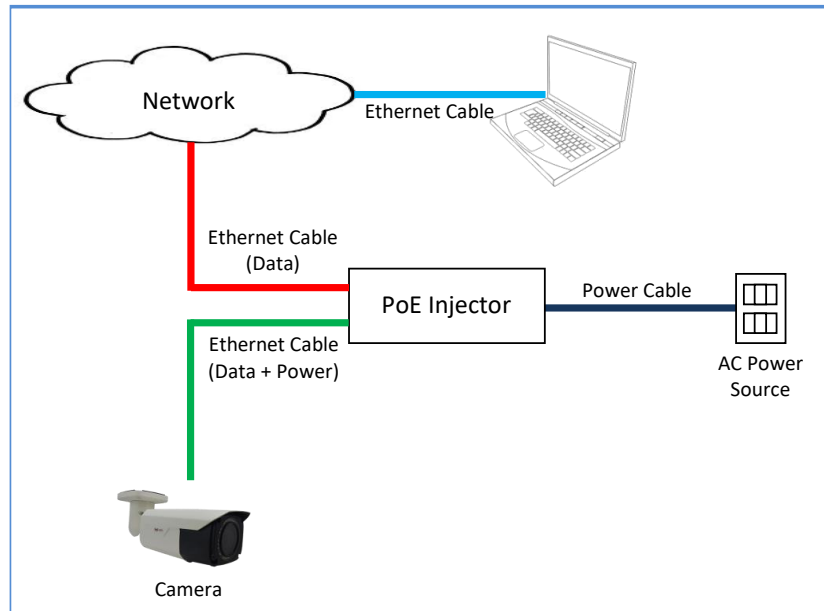
Device	Pin	Mapping Instructions
Digital Output (DO)	DC Out (5V)	Connect the wires of the output device to DC Out (5V) and DO .
	DO	
Digital Input (DI)	GND	Connect the wires of the input device to GND and DI .
	DI	

NOTE:

- For more information on DI/DO connections, please refer to the Knowledge Base article *All about Digital Input and Digital Output* downloadable from the link below (http://www.acti.com/kb/detail.asp?KB_ID=KB20091230001).
- After connecting external devices, use a waterproof tape to protect the cable connection or house the cable inside a junction box (purchased separately).

Step 4: Connect to Network

Connect the other end of the network cable to a switch or injector. Then, connect the switch or injector to a network, PC, and a power source. See Power-over-Ethernet (PoE) connection example below.



Step 5: Access the Camera Live View

See [Accessing the Camera](#) on page 21 for more information on how to access the Live View of the camera.

Other Adjustments and Accessories

How to Install / Remove the Memory Card

NOTE: Supports microSDHC and microSDXC cards.

How to Insert the Memory Card

1. Open the back cover.



2. Insert a memory card into the card slot with the metallic contacts facing the lens of the camera. Push the card until it clicks into place.



3. Close the back cover.

How to Remove the Memory Card

In case there is a need to remove the card, make sure to access the camera Web Configurator to safely “unmount” the card first (see the camera Firmware manual for more information). Once unmounted from the firmware, push the card to eject it from the slot.

Accessing the Camera

Configure the IP Addresses

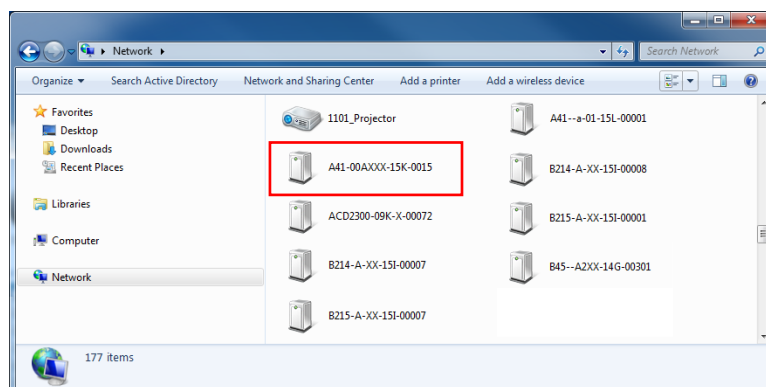
In order to be able to communicate with the camera from your PC, both the camera and the PC have to be within the same network segment. In most cases, it means that they both should have very similar IP addresses, where only the last number of the IP address is different from each other. There are 2 different approaches to IP Address management in Local Area Networks – by DHCP Server or Manually.

Using DHCP server to assign IP addresses:

If you have connected the computer and the camera into the network that has a DHCP server running, then you do not need to configure the IP addresses at all – both the camera and the PC would request a unique IP address from DHCP server automatically. In such case, the camera will immediately be ready for the access from the PC. The user, however, might not know the IP address of the camera yet. It is necessary to know the IP address of the camera in order to be able to access it by using a Web browser.

The quickest way to discover the cameras in the network is to use the simplest network search, built in the Windows system – just by pressing the “Network” icon, all the cameras of the local area network will be discovered by Windows thanks to the UPnP function support of our cameras.

In the example below, we successfully found the camera model that had just connected to the network.

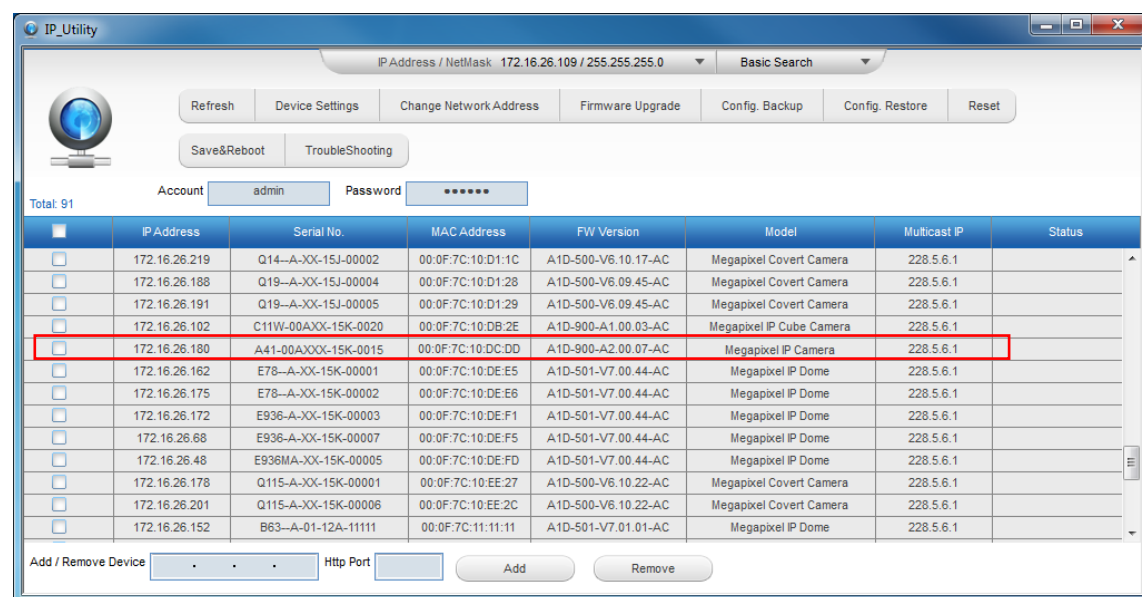


Double-click the mouse button on the camera model name, the default browser of the PC is automatically launched and the IP address of the target camera is already filled in the address bar of the browser.

If you work with our cameras regularly, then **there is even a better way to discover the cameras in the network** – by using **IP Utility**. The IP Utility is a light software tool that can not only discover the cameras, but also list lots of valuable information, such as IP and MAC addresses, serial numbers, firmware versions, etc, and allows quick configuration of multiple devices at the same time.

The latest IP Utility can be downloaded for free from http://www.acti.com/IP_Utility

When you launch IP Utility, the list of connected cameras in the network will be shown. See sample illustration below:



Total: 91

Account: Password:

	IP Address	Serial No.	MAC Address	FW Version	Model	Multicast IP	Status
<input type="checkbox"/>	172.16.26.219	Q14--A-XX-15J-00002	00:0F:7C:10:D1:1C	A1D-500-V6.10.17-AC	Megapixel Covert Camera	228.5.6.1	
<input type="checkbox"/>	172.16.26.188	Q19--A-XX-15J-00004	00:0F:7C:10:D1:28	A1D-500-V6.09.45-AC	Megapixel Covert Camera	228.5.6.1	
<input type="checkbox"/>	172.16.26.191	Q19--A-XX-15J-00005	00:0F:7C:10:D1:29	A1D-500-V6.09.45-AC	Megapixel Covert Camera	228.5.6.1	
<input type="checkbox"/>	172.16.26.102	C11W-00A-XX-15K-0020	00:0F:7C:10:DB:2E	A1D-900-A1.00.03-AC	Megapixel IP Cube Camera	228.5.6.1	
<input type="checkbox"/>	172.16.26.180	A41-00A-XX-15K-0015	00:0F:7C:10:DC:DD	A1D-900-A2.00.07-AC	Megapixel IP Camera	228.5.6.1	
<input type="checkbox"/>	172.16.26.162	E78--A-XX-15K-00001	00:0F:7C:10:DE:E5	A1D-501-V7.00.44-AC	Megapixel IP Dome	228.5.6.1	
<input type="checkbox"/>	172.16.26.175	E78--A-XX-15K-00002	00:0F:7C:10:DE:E6	A1D-501-V7.00.44-AC	Megapixel IP Dome	228.5.6.1	
<input type="checkbox"/>	172.16.26.172	E936-A-XX-15K-00003	00:0F:7C:10:DE:F1	A1D-501-V7.00.44-AC	Megapixel IP Dome	228.5.6.1	
<input type="checkbox"/>	172.16.26.68	E936-A-XX-15K-00007	00:0F:7C:10:DE:F5	A1D-501-V7.00.44-AC	Megapixel IP Dome	228.5.6.1	
<input type="checkbox"/>	172.16.26.48	E936MA-XX-15K-00005	00:0F:7C:10:DE:FD	A1D-501-V7.00.44-AC	Megapixel IP Dome	228.5.6.1	
<input type="checkbox"/>	172.16.26.178	Q115-A-XX-15K-00001	00:0F:7C:10:EE:27	A1D-500-V6.10.22-AC	Megapixel Covert Camera	228.5.6.1	
<input type="checkbox"/>	172.16.26.201	Q115-A-XX-15K-00006	00:0F:7C:10:EE:2C	A1D-500-V6.10.22-AC	Megapixel Covert Camera	228.5.6.1	
<input type="checkbox"/>	172.16.26.152	B63--A-01-12A-11111	00:0F:7C:11:11:11	A1D-501-V7.01.01-AC	Megapixel IP Dome	228.5.6.1	

Add / Remove Device: Http Port:

You can quickly notice the camera model in the list. Double-click on the IP address to automatically launch the default browser of the PC with the IP address of the target camera filled in the address bar of the browser already.

Use the default IP address of a camera:

If there is no DHCP server in the given network, the user may have to assign the IP addresses to both PC and camera manually to make sure they are in the same network segment.

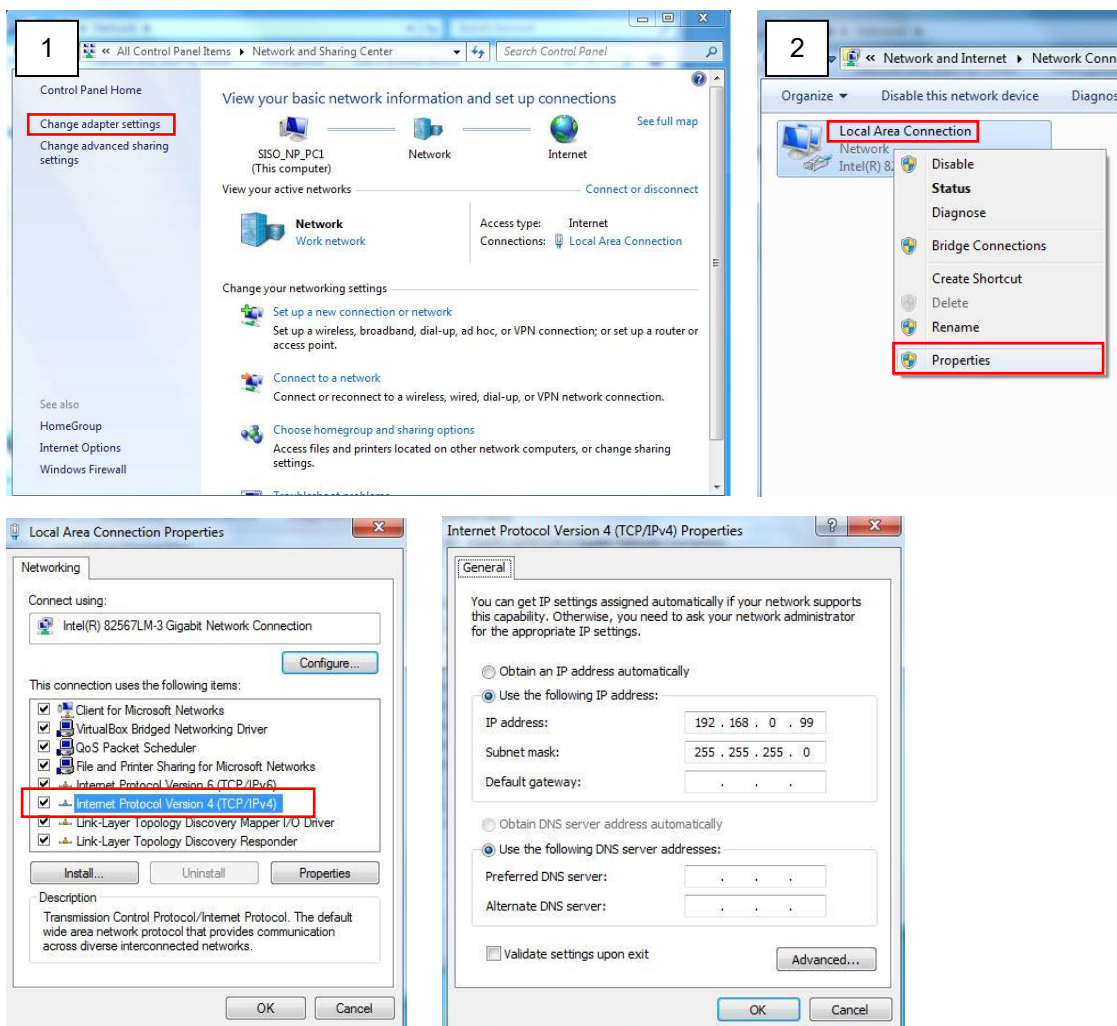
When the camera is plugged into network and it does not detect any DHCP services, it will automatically assign itself a default IP:

192.168.0.100

Whereas the default port number would be **80**. In order to access that camera, the IP address of the PC has to be configured to match the network segment of the camera.

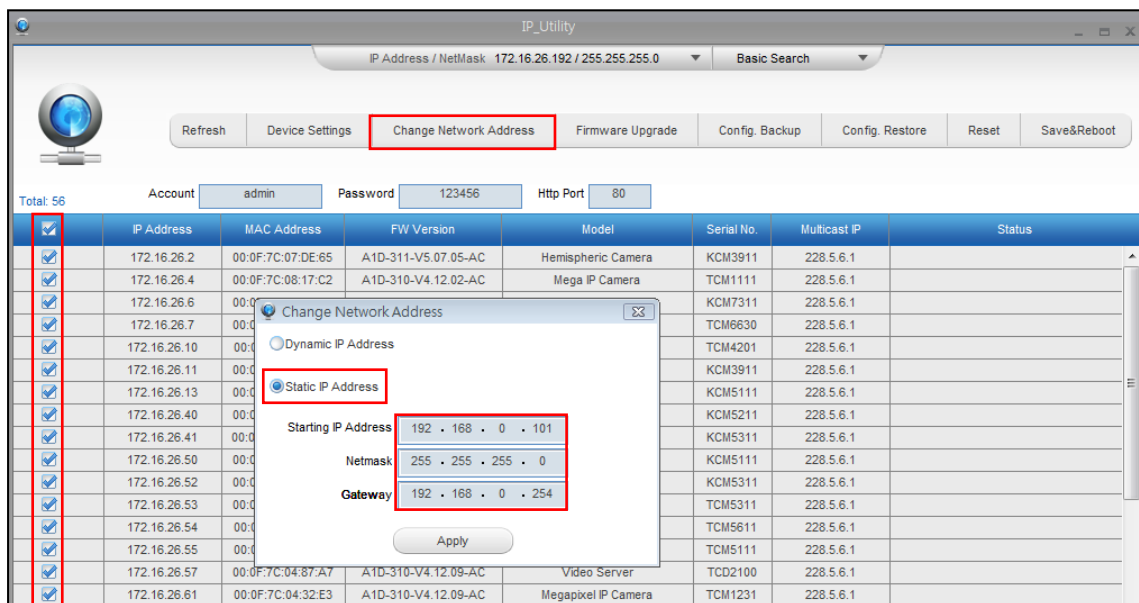
Manually adjust the IP address of the PC:

In the following example, based on Windows 7, we will configure the IP address to **192.168.0.99** and set Subnet Mask to **255.255.255.0** by using the steps below:



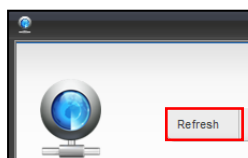
Manually adjust the IP addresses of multiple cameras:

If there are more than 1 camera to be used in the same local area network and there is no DHCP server to assign unique IP addresses to each of them, all of the cameras would then have the initial IP address of **192.168.0.100**, which is not a proper situation for network devices – all the IP addresses have to be different from each other. The easiest way to assign cameras the IP addresses is by using **IP Utility**:



With the procedure shown above, all the cameras will have unique IP addresses, starting from 192.168.0.101. In case there are 20 cameras selected, the last one of the cameras would have the IP 192.168.0.120.

Later, by pressing the “Refresh” button of the IP Utility, you will be able to see the list of cameras with their new IP addresses.



Please note that it is also possible to change the IP addresses manually by using the Web browser. In such case, please plug in only one camera at a time, and change its IP address by using the Web browser before plugging in the next one. This way, the Web browser will not be confused about two devices having the same IP address at the same time.

Access the Camera

Now that the camera and the PC are both having their unique IP addresses and are under the same network segment, it is possible to use the Web browser of the PC to access the camera.

You can use **Microsoft Internet Explorer** to access the camera

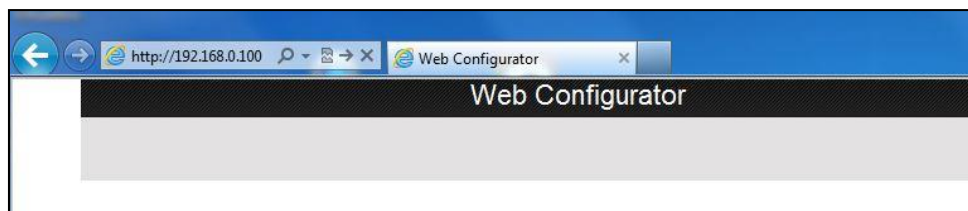
When using Internet Explorer browser, the ActiveX control for video stream management will be downloaded from the camera directly – the user just has to accept the use of such control when prompted so. No other third party utilities are required to be installed in such case.

The following examples in this manual are based on Internet Explorer browser in order to cover all functions of the camera.

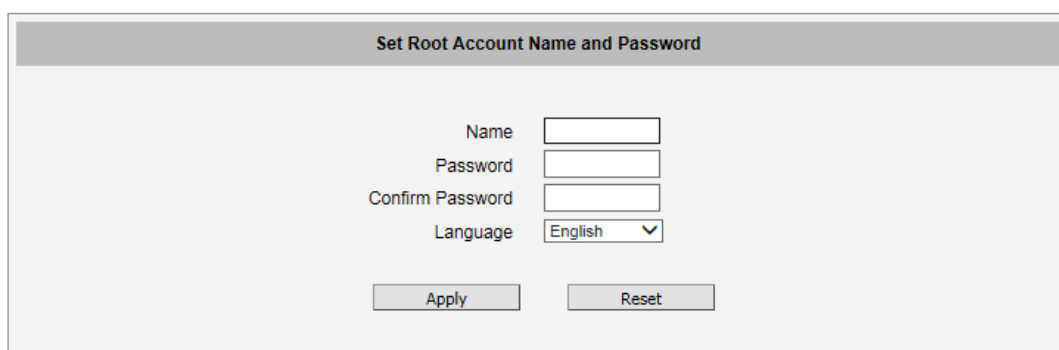
Assuming that the camera's IP address is **192.168.0.100**, you can access it by opening the Web browser and typing the following address into Web browser's address bar:

http://192.168.0.100

Upon successful connection to the camera, the user interface called **Web Configurator** would appear together with the login page. The HTTP port number was not added behind the IP address since the default HTTP port of the camera is 80, which can be omitted from the address for convenience.



Before logging in, you need to setup the root Account and Password of the camera.

A screenshot of a web form titled 'Set Root Account Name and Password'. The form contains four input fields: 'Name', 'Password', 'Confirm Password', and 'Language'. The 'Language' field is a dropdown menu currently set to 'English'. Below the input fields are two buttons: 'Apply' and 'Reset'.

Then use this newly setup **Account** and **Password** to login to the Web Configurator.

For further operations, please refer to the **Firmware User Manual**.



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