Bullet Camera

Hardware Manual

E39

2017/4/24

ACTi
Connecting Vision

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Precautions

Read these instructions

Read all the safety and operating instructions before using this product.

Heed all warnings

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

Servicing

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

Trademarks

ACTi and ACTi logo are registered trademarks of ACTi Corporation. All other names and products used in this manual are registered trademarks of their 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. ACTi will not be held responsible for any typographical or technical errors and reserves the right to make changes to the product and manuals without prior notice.

Federal Communications Commission Statement

This equipment has been tested 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.

Warning: Changes or modifications to the equipment that are not expressly approved by the responsible party for compliance could void the user's authority to operate the equipment.

European Community Compliance Statement

This product has been tested and found to comply with the limits for Class B 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 product from the power supply before cleaning.

Accessories and Repair Parts

Use only the accessories and repair parts recommended by the manufacturer. Using other attachments not recommended by the manufacturer may cause hazards.

Water and Moisture

Install other devices (such as PoE injector, alarm, etc.) that will be used with the camera in a dry place protected from weather.

Servicing

Do not attempt to service this product yourself. Refer all servicing to qualified service personnel.

Damage Requiring service

Disconnect this 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 product.
3) If the inner parts of product have been directly exposed to rain or water.
4) If the product does not operate normally even by following the operating instructions in this manual. Adjust only those controls that are covered by the instruction manual, as improper adjustment of other controls may result in damage, and will often require extensive work by a qualified technician to restore the product to its normal operation.

Safety Check

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

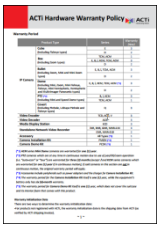
Introduction

List of Models

This hardware manual contains the following models:

E39		2MP Video Analytics Bullet with D/N, Adaptive IR, Extreme WDR, ELLS, Fixed lens

Package Contents

Camera	Mounting Screw Kit	Terminal Block (for Power)
		
Cable Gland	**Washer**	**Terminal Block (for DI/DO)**
		
Extra Desiccant Bag	**Bracket Wrench**	**Drill Template**
		
Quick Installation Guide	**Warranty Card**	
		

Physical Description

Item		Description
1	Audio Input	Connects to an audio input device, such as a microphone with built-in amplifier, etc. See ***How to Connect Audio Input /Output Device (Optional)*** on page 29 for more information. **NOTE:** The microphone must have a built-in amplifier. Connecting an ordinary microphone will dwarf sounds and will result in inaudible recording.
2	Audio Output	Connects to an audio output device, such as a speaker, etc.
3	Ethernet Port	Connects to a network using a standard Ethernet cable.
4	DC 12 V	In case the camera is connected to a non-PoE (Power over Ethernet) switch, use this connector to connect the camera to an external power adapter (not included). See ***Connecting a Power Adapter (Optional)*** on page 22 .
5	Digital Input / Digital Output	This connector 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 ***How to Connect DI/DO Devices (Optional)*** on page 25 for more information.

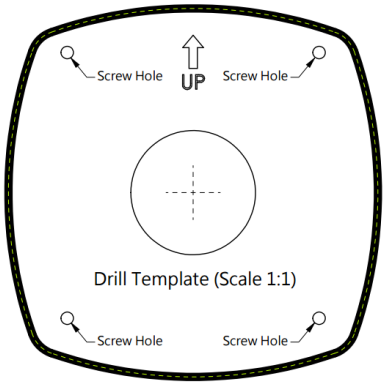
Item		Description
6	Memory Card Slot	Insert a memory card into this slot for local recording purposes. See ***How to Install / Remove the Memory Card (Optional)*** on page 20 for more information. **NOTE:** Supports microSDHC and microSDXC.
7	Reset Button	Restores the factory default settings of the camera. Resetting the camera must be done while the power is on. See ***How to Reset the Camera*** on page 21 for more information.
8	Built-in Microphone	Receives audio input.
9	Built-in Dehumidifier	Allows humidity trapped inside of the camera to be released in the air.

Installation Procedures

If there is a need to install a memory card for local storage recording, insert the memory card to the camera first before mounting the camera. See ***How to Install / Remove the Memory Card (Optional)*** on page 20 for detailed instructions.

Step 1: Install the Camera

1. Mark the screw holes or attach the bundled drill template on the target surface.
   NOTE: Depending on the surface where you will install the camera, it may be necessary to drill four (4) holes and use the supplied screw tox.



2. ***If the cable will pass through the surface***, drill a Ø 30mm cable hole within the radius of the camera bracket.
   If the cable will be routed along the surface, route the cable through the gap on the bracket.

3. Secure the two (2) screws for the top of the bracket on the surface. Note to leave enough room for the camera bracket to hook up to the screws.

4. Hook the camera bracket on the two (2) screws then pull the camera bracket down to lock its position.

5. Attach the remaining two (2) bottom screws to fix the camera position.

6. Using the bundled bracket wrench, loosen the screw to adjust the camera tilt and orientation.

7. Adjust the camera angle and orientation.

8. Tighten the screw to fix the tilt angle position.

Step 2: Connect and Manage the Cable

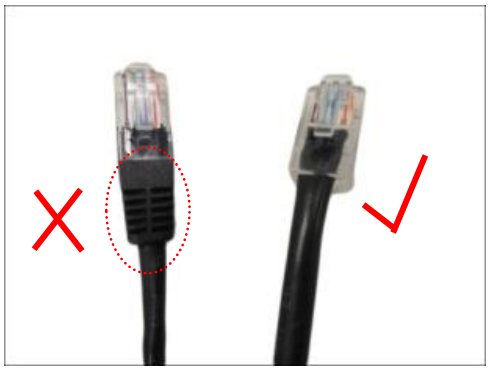
The camera and the pre-installed network cable, “pigtail”, are resistant to salt, water, weak acid, alcohol, oil, grease and other common solvents. If the camera will be installed indoors, simply connect the network side cable to the camera Ethernet port.

However, if the camera will be installed outdoors, ensure that the cable connections are protected from different environmental factors. Use the bundled cable gland to protect the Ethernet connection and use a waterproof tape or house the cables inside a junction box to protect the cable connections. For other cable connections, such as a power adapter and input or output device, see ***Other Cable Connections*** on page 22 for more details.

How to Use the Cable Gland

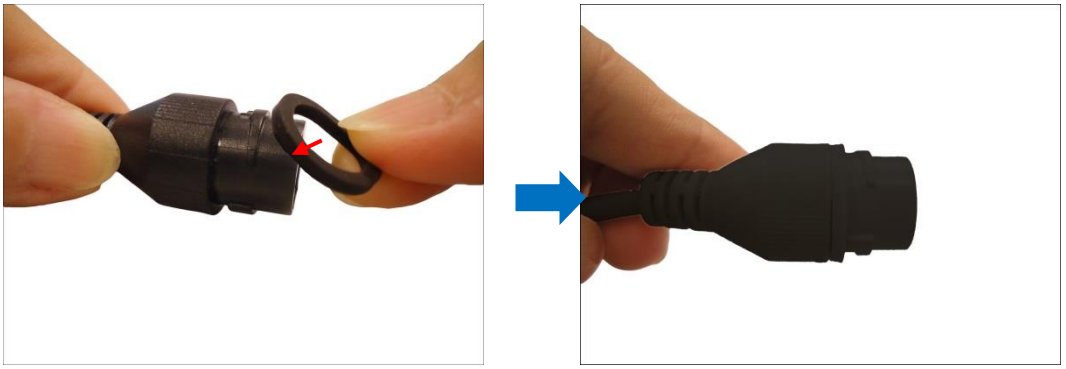
This section describes how to waterproof the Ethernet cable using the bundled cable gland.

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



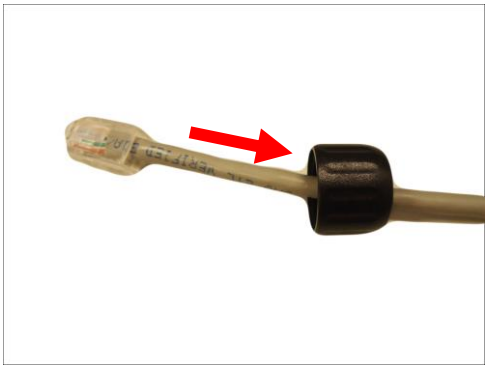
Perform the following to waterproof the cable connector using the cable gland:

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

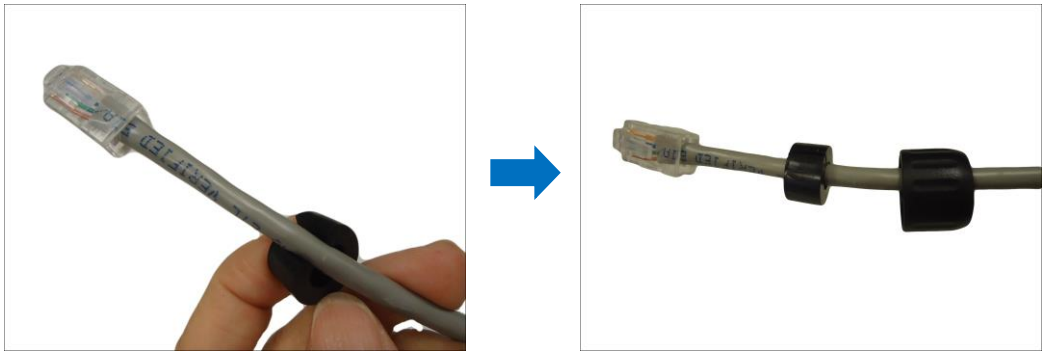


2. Detach the clamping nut from the cable gland:

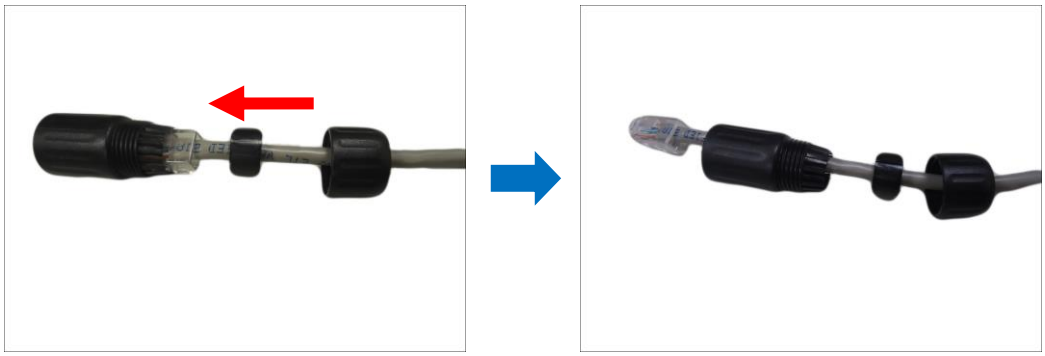
3. Insert the clamping nut into the Ethernet cable (with RJ-45 connector without sleeve).



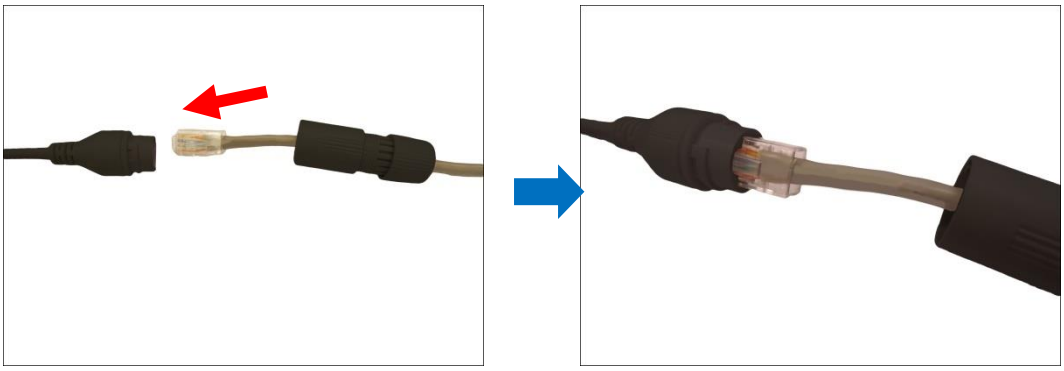
4. Attach the sealing insert through the Ethernet cable.



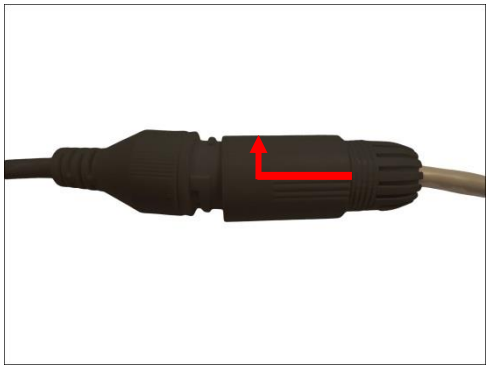
5. Insert the cable through the gland body.



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

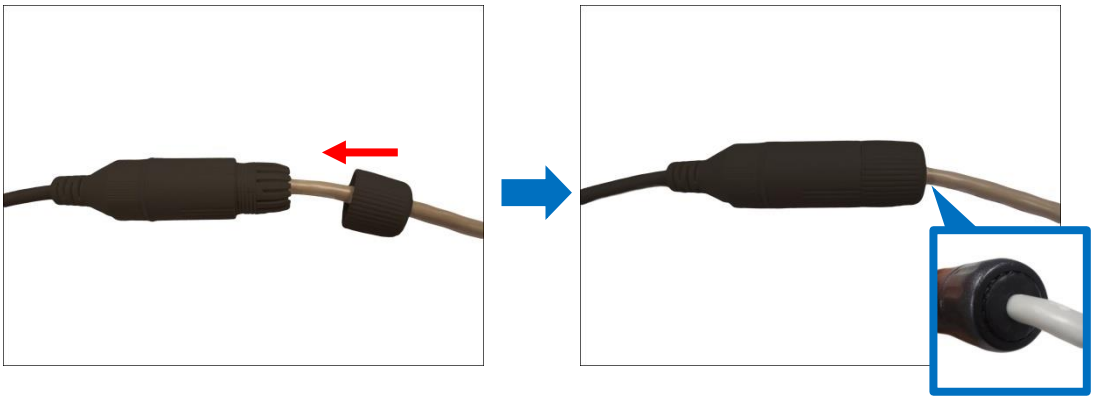


7. Attach the gland body to the camera connector, then squeeze in the sealing insert.



8. Insert the sealing insert into the gland body.

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

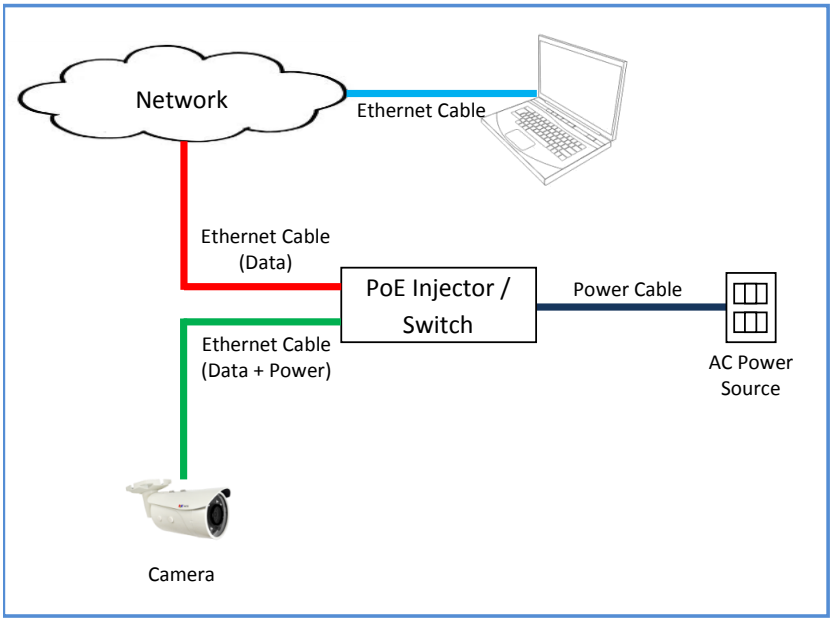


NOTE: Make sure the clamping nut is tightly attached to the cable gland body and the sealing insert is squeezed tightly.

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

Step 3: Connect to Network

Connect the other end of the network cable to a PoE 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 4: Access the Camera Live View

After making the connections, access the camera live view to adjust the viewing angle of the camera and configure the settings according to your preference. See ***Accessing the Camera*** on page 31 for more information.

Other Adjustments and Accessories

This section describes the procedures in preparing the camera for corridor viewing angle, installing a memory card, resetting the camera, and attaching Ethernet cable connectors.

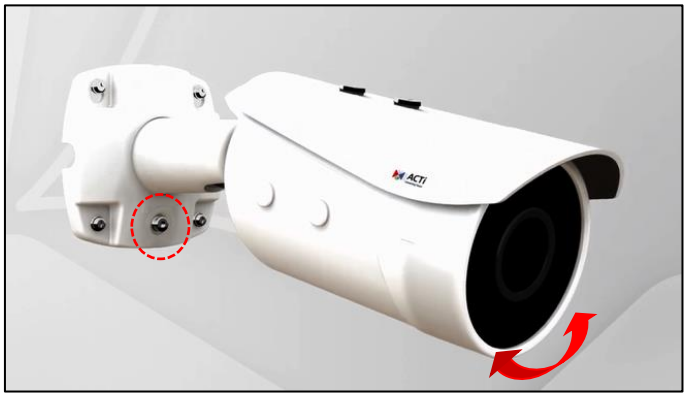
How to Position Camera for Corridor View Format

The camera supports the following viewing format:

- Horizontal: The camera has a wider viewing angle horizontally.
- Corridor: The camera has wider viewing angle vertically.

The camera is set to horizontal viewing angle, by default. To change between Horizontal and Corridor format:

1. Access the **Web Configurator** (see ***Accessing the Camera*** on page 31 on how to access the camera), then rotate the camera view to 90° or 270° to achieve corridor format. See the camera Firmware Manual for more information.
2. Remove the sunshield.
3. Loosen the fix screw to adjust the camera orientation.



4. Attach the sunshield according to the camera orientation. The screw holes are covered by rubber plugs, remove them as needed and use the rubber plugs to cover the other holes.

NOTE: There are three (3) pairs of screw holes in which to attach the sunshield, use any pair depending on the preferred viewing angle. The middle pair is used for horizontal view format and the two (2) others are for corridor format.

How to Install / Remove the Memory Card (Optional)

1. Twist to open the front cover.

   NOTE: Remove the sunshield, as needed, for easy access.

2. Insert the memory card into the memory card slot with the metal contacts facing down.

   NOTE: It is recommended to retain the silicon bag inside the cover to keep the interior parts dry.

3. Tightly close the camera front cover.
4. Attach the sunshield, as needed.

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, simply pull the card from the slot.

How to Reset the Camera

The camera has a **Reset** button that can be used to restore the camera to its factory default settings when the need arises.

The **Reset** button is used for the following purposes:

- The administrator's password is forgotten and therefore the camera cannot be accessed
- In case of IP address, mask, or allow/deny filter related issues, resulting with the inability to modify these settings
- In case of connectivity issues or abnormal video quality

Do the following procedures while the camera is powered on.

1. Twist to open the front cover.

   NOTE: Remove the sunshield, as needed, for easy access.

2. Press and hold the **Reset** button for at least five (5) seconds or until the Power LED lights up.

   NOTE: It is recommended to retain the silicon bag inside the cover.

3. Tightly close the camera front cover.
4. Attach the sunshield, as needed.

Other Cable Connections

This section describes the procedures in attaching the Ethernet cable connector, preparing and connecting an external power adapter, digital input and output (DI/DO) device, such as alarms, sensors, etc., and audio input and output devices. The use of these devices, however, is optional.

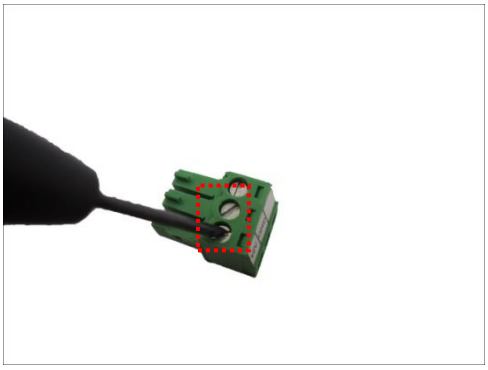
NOTE: If these connectors will not be used, leave the caps on to avoid water or dust from entering the connectors.

Connecting a Power Adapter (Optional)

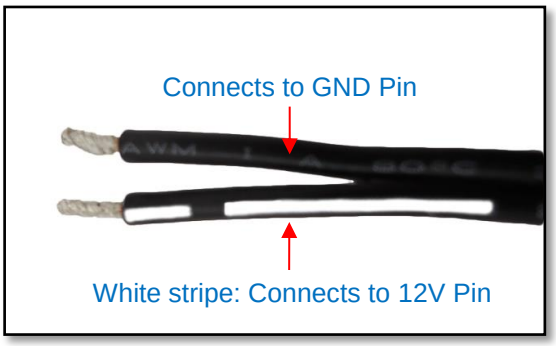
The camera can be powered by a Power over Ethernet (PoE) switch that is IEEE802.3af compliant. In case of using a non-PoE switch or your PoE switch has limited power supply, you can purchase a power adapter and directly connect the camera to a power outlet. The power adapter must be connected to the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

To do this, follow the procedures below:

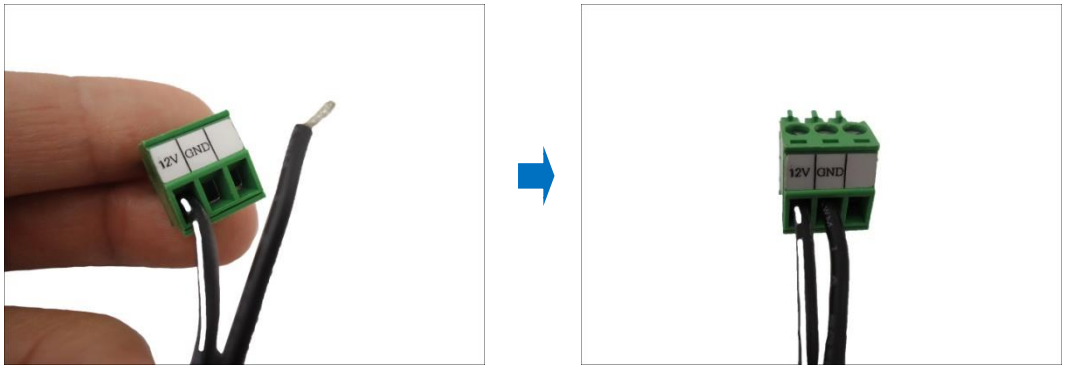
1. Loosen the screws of the **12V** and **GND** pins of the power terminal block.



2. Take note that a standard power adapter cable has two (2) different wires:



3. Connect the wire with the white stripe to the **12V** pin and the other to the **GND** pin.



4. Tighten the screws of the **12V** pin and the **GND** pins to secure the wire connection.

5. Set the prepared power adapter for connection later. Below is an example of a power adapter with an attached terminal block.

NOTE: The power adapter is not bundled in the package.

6. After mapping the wires to the terminal block, connect the terminal block to the DC12V power connector of the camera and make sure to wrap the connection using a waterproof tape (can be purchased in hardware stores).

How to Connect DI/DO Devices (Optional)

Depending on your surveillance needs, you may connect one digital input and one digital output device to your camera.

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.

Loosen the screw and insert the wire through the pin slot, then tighten the screw to secure the wire.

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)	12V	Connect the wires of the output device to **12V** and **DO**.
	DO	
Digital Input (DI)	GND	Connect the wires of the input device to **GND** and **DI**.
	DI	

The table below shows the DI/DO connection specifications:

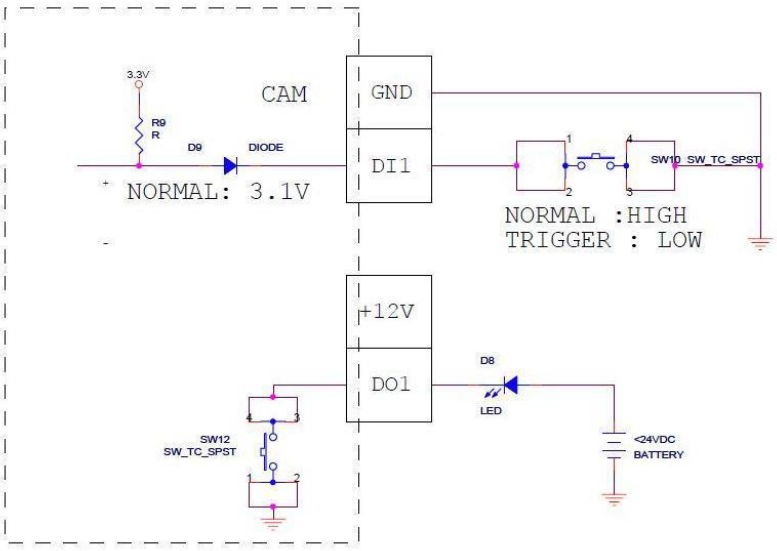
Device			
DI	Connection design		TTL - compatible logic levels
	Voltage	To trigger (low)	Logic level 0: 0V ~ 0.4V
		Normal (high)	Logic level 1: 3.1V ~ 30V
	Current		10mA ~ 100mA
DO	Connection design		Transistor (Open Collector)
	Voltage & Current		< 24V DC, < 50mA

After mapping the wires to the terminal block, connect the terminal block to the DIO connector of the camera and make sure to wrap the connection using a waterproof tape (can be purchased in hardware stores).

Typical Connection

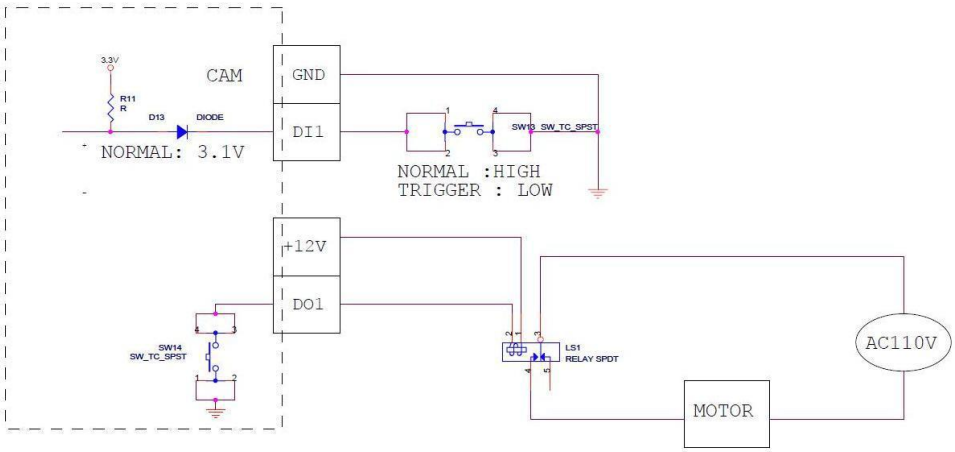
Based on these specifications, if the DI device has a voltage of 0V ~ 30V or the DO device has a voltage of < 24V (< 50mA), then the camera can supply internal power to these devices and there is no need to connect the DI/DO device to an external power source.

In this case, use the **GND** and **DI** pins to connect a DI device and use the **12V** and **DO** pins to connect a DO device. See wiring scheme below:



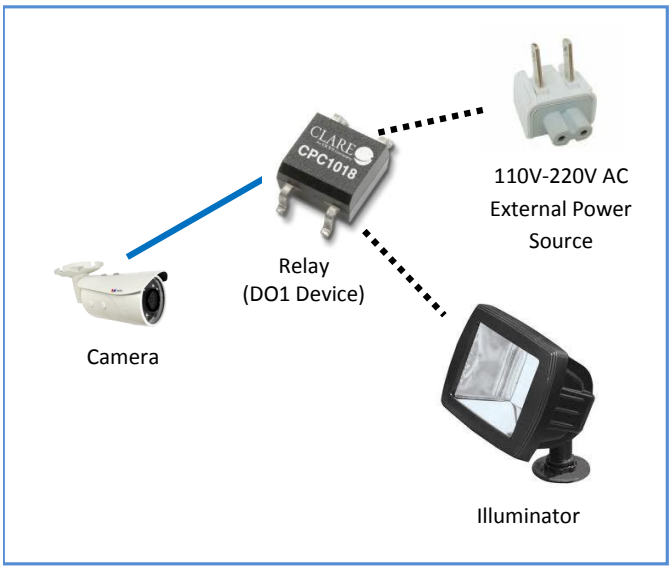
High Voltage DO Device Connection

Even though the camera provides 12V power, this may not be enough for some high voltage DO devices, such as a ceiling light or a motor that opens or closes a gate. In this case, there is a need to connect an external relay. See wiring scheme below:



Note that when choosing an appropriate relay, please refer to its specifications and make sure they match the above design. The triggering circuit voltage has to be around 12V DC and the switch-controlled circuit voltage has to match the external power supply (e.g. 110V AC or 220V AC).

The illustration below is a graphic example of connecting a relay to a high voltage DO device.



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://Download.acti.com?id=516).

How to Connect Audio Input /Output Device (Optional)

The camera comes with a pair of audio input and output jacks where an audio input device, such as a microphone or an audio output device, such as a speaker can be connected. The audio jacks are covered by a rubber protection.

WARNING: Do not remove the rubber protection if the audio jack will not be used to avoid water or dust from entering the jack.

To connect an audio device, do the following:

1. Pull to remove the rubber protection of the jack.
2. Connect the audio input device to the **AUDIO IN** jack and connect the audio output device to the **AUDIO OUT** jack.

NOTE: The microphone must have a built-in amplifier. Connecting an ordinary microphone will dwarf sounds and will result in inaudible recording.

3. If the camera is installed outdoors, be sure to wrap the audio connectors with **Waterproof Tape** (can be purchased in hardware stores).

DISCLAIMER: ACTi will not be responsible for camera damage due to water leakage caused by improper waterproofing of cables.

Accessing the Camera

Configure the IP Addresses

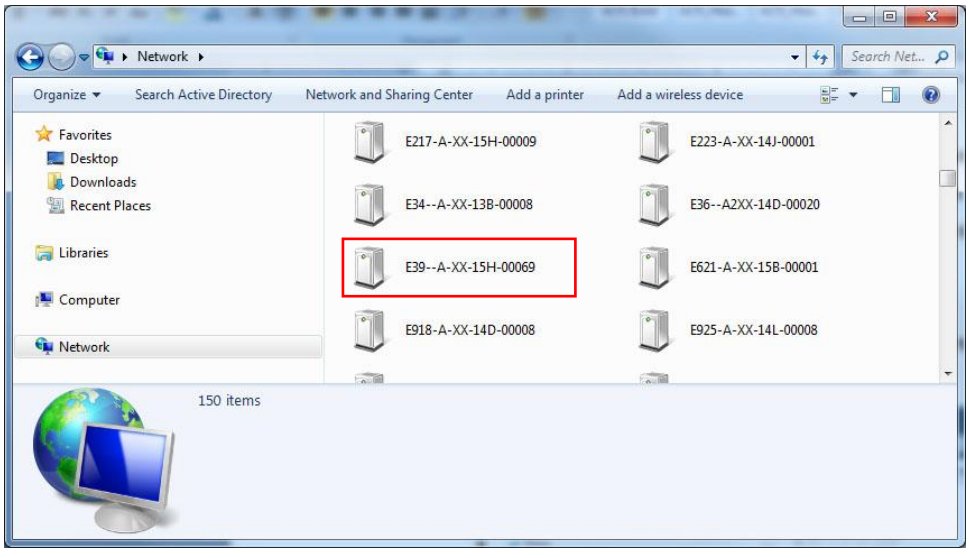
In order to be able to communicate with the camera from your PC, both the camera and the PC have to be within the same network segment. In most cases, it means that they both should have very similar IP addresses, where only the last number of the IP address is different from each other. There are 2 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 other 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.

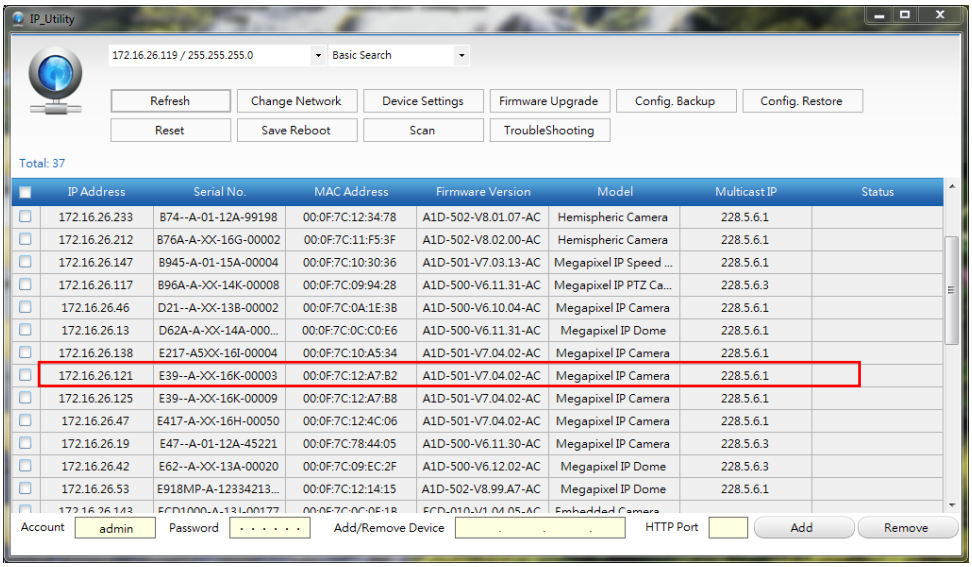
In the example below, we successfully found the camera model that we had just connected to the network.



By double-clicking with the left mouse on the camera model, it is possible 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.

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 IP Utility can be downloaded for free from **http://www.acti.com/IP_Utility**
With just one click, you can launch the IP Utility and there will be an instant report as follows:



You can quickly see the camera model in the list. 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.

Using the Default Camera IP Address

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.

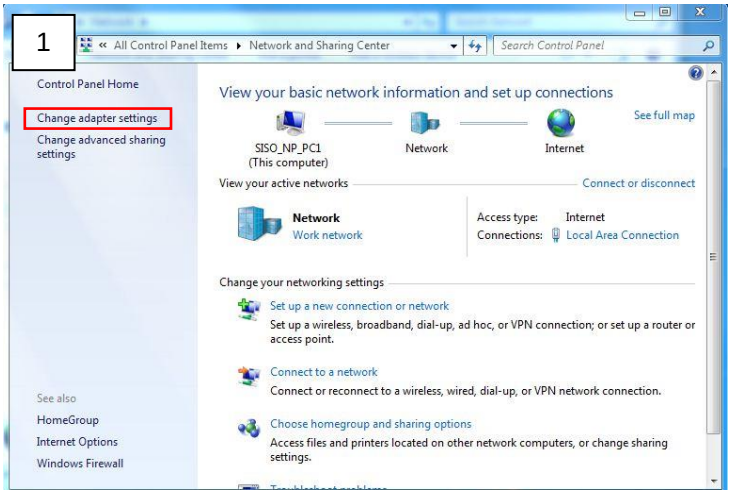
When the camera is plugged into network and it does not detect any DHCP services, it will automatically assign itself a default IP:

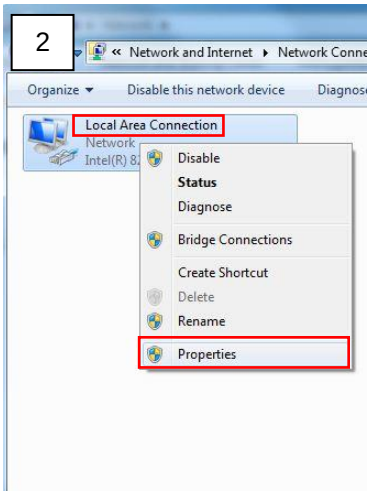
192.168.0.100

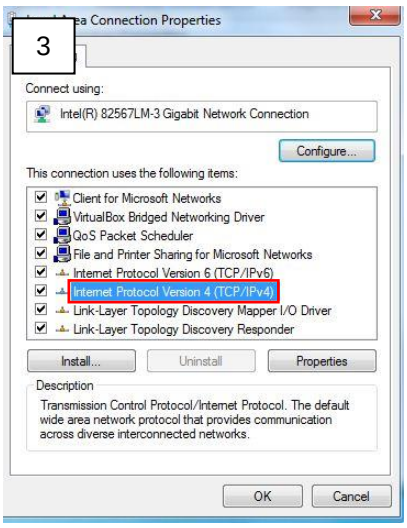
Whereas the default port number would be **80**. In order to access that camera, the IP address of the PC has to be configured to match the network segment of the camera.

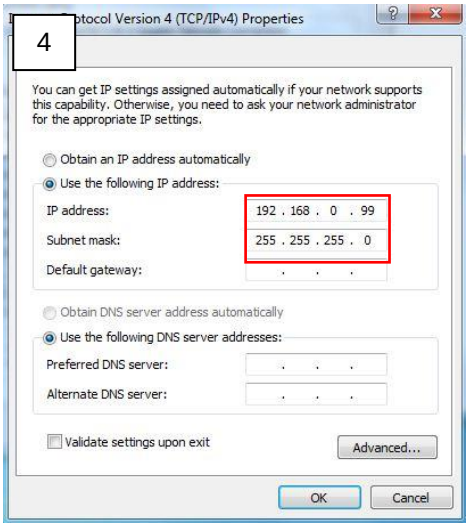
Manually adjust the IP address of the PC:

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:



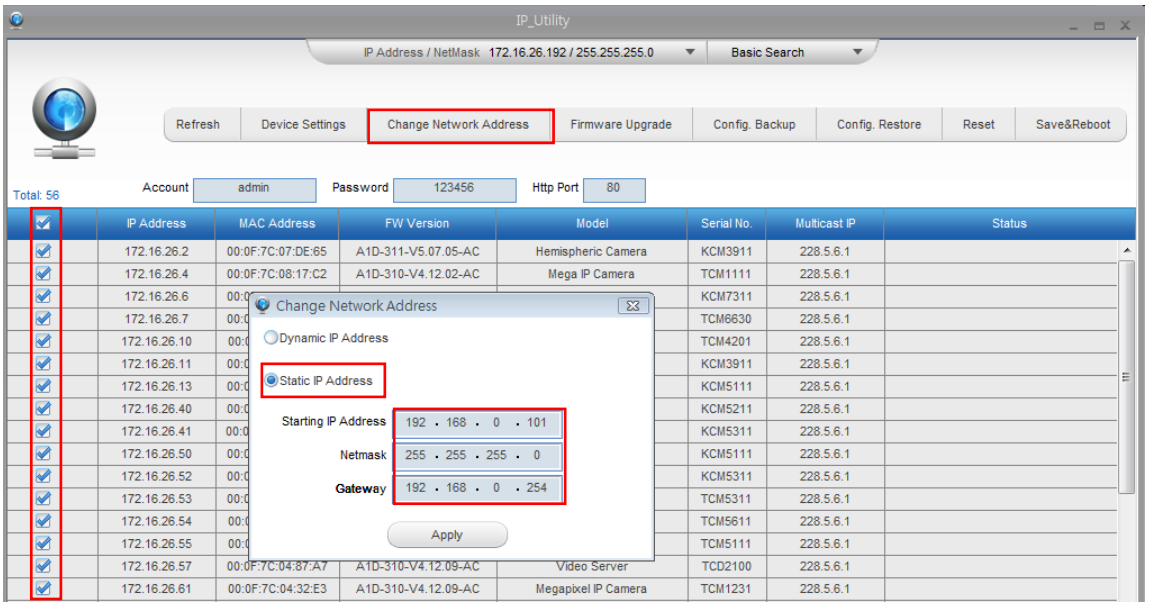






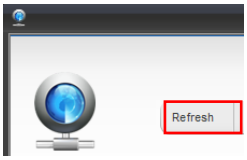
Manually adjust the IP addresses of multiple cameras:

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 **any of the browsers** to access the camera, however, the full functionality is provided only for **Microsoft Internet Explorer**.

The browser functionality comparison:

Functionality	Internet Explorer	Other browsers
Live Video	Yes	Yes*
Live Video Area Resizable	Yes	No
PTZ Control	Yes	Yes
Capture the snapshot	Yes	Yes
Video overlay based configuration (Motion Detection regions, Privacy Mask regions)	Yes	No
All the other configurations	Yes	Yes

* When using non-Internet Explorer browsers, free third-party software plug-ins must be installed to the PC first to be able to get the live video feed from the camera:

Browser	Required Plug-In
Safari	QuickTime (http://www.apple.com/quicktime/download/)
Other non-Internet Explorer browsers	Basic VLC Media Player (http://www.videolan.org)

Disclaimer Notice: The camera manufacturer does not guarantee the compatibility of its cameras with QuickTime or VLC Player – since these are third party softwares. The third parties have the right to modify their utility any time which might affect the compatibility. In such cases, please use Internet Explorer browser instead.

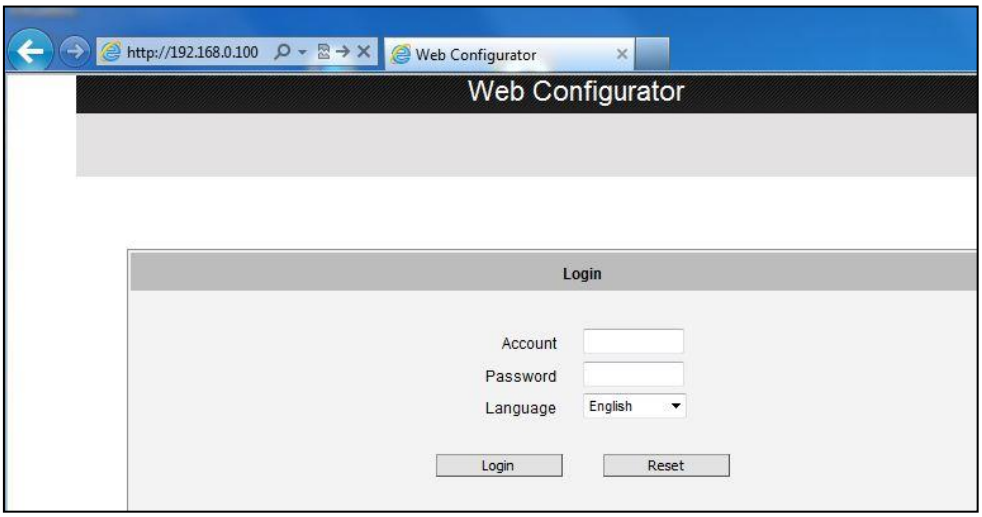
When using Internet Explorer browser, the ActiveX control for video stream management will be downloaded from the camera directly – the user just has to accept the use of such control when prompted so. No other third party utilities are required to be installed in such case.

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 know the factory default Account and Password of the camera.

Account: **Admin**

Password: **123456**

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