Outdoor Dome

Hardware Manual

E78

Ver. 2016/02/02

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 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 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

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

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

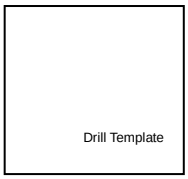
List of Models

This hardware manual contains the following models:

E78		2MP Video Analytics Outdoor Dome with D/N, Adaptive IR, Extreme WDR, SLLS, Fixed lens

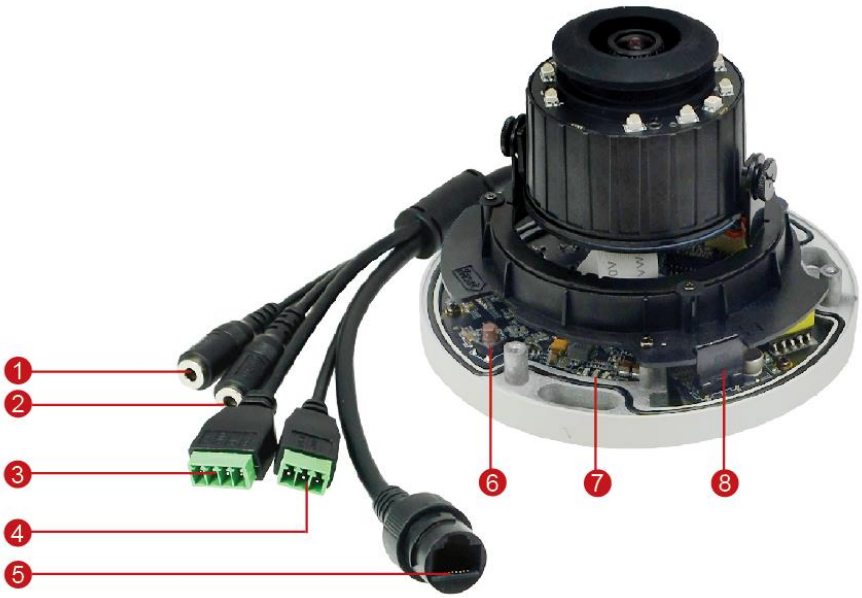
Package Contents

Check if the camera package comes with the following items:

Camera	Cable Gland with Rubber	Washer
Terminal Block (for DI/DO)	**Terminal Block (for Power)**	**Screw Kit**
Hexagon Screwdriver	**Extra Desiccant Bag**	**Drill Template**
		
Quick Installation Guide	**Warranty Card**	

IMPORTANT: When the camera is taken out from the box, the lens cover is covered by a thin film. DO NOT remove this film. It is used to protect the lens cover from scratches or fingerprint marks which may happen during installation. Remove this film only after the camera is securely installed and all connections are complete.

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 32 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. See ***How to Connect Audio Input /Output Device (Optional)*** on page 32 for more information.
3	**Digital Input / 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 28 for more information.
4	**DC 12V**	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 26 for more information.
5	**Ethernet Port**	Connects to a network using an Ethernet cable with RJ-45 connector.

Item		Description
6	**Reset Button**	Restores the factory default settings of the camera. To reset the camera, while the power is on, press and hold the **Reset Button** for at least 5 seconds or until the **Red LED** lights up.
7	**System LEDs**	Indicates the camera status: • **Amber LED**: Blinks when network activity is in progress. • **Red LED**: Lights up when the camera is powered up and goes off again after the boot up process is complete. • **Green LED**: Lights up when the camera is connected to a network.
8	**Memory Card Slot**	Insert a memory card (not included) into the slot for local recording purposes. See ***How to Install / Remove the Memory Card*** on page 21 for more information. **NOTE:** Supports microSDHC cards only.

Mounting Options

Select the most suitable solution for your installation environment. The camera can be mounted by either of the following methods:

Mount Types	Accessories
Surface Mount	Suitable when mounting the camera directly on walls or ceilings without additional mounting accessories. See ***Installation Procedures*** on page 12 for more information.
Flush Mount	Suitable for discreet camera installation, where the camera is installed above the ceiling and only the dome cover can be seen beneath the ceiling. A Flush Mount accessory (purchased separately) is required for this type of installation.
Gangbox	Suitable when mounting the camera on a 4” Round or 4” Octagon Gangbox. The use of gangbox is lawfully required in some areas in the United States. A Gangbox Converter (purchased separately) is required for this type of installation.
Wall Mount	Suitable when mounting the camera on the wall with the camera facing down as if installed on the ceiling. The Wall Mount (optional mounting accessory) is required for this type of installation.
Pendant Mount	Suitable when installing the camera on high ceilings where a straight tube is used to lower the camera. The Pendant Mount with Mount Kit (optional accessory set) is required for this type of installation.
Pole mount	Suitable when installing the camera on a vertical pole. The Pole mount (optional accessory set) is required for this type of installation.

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

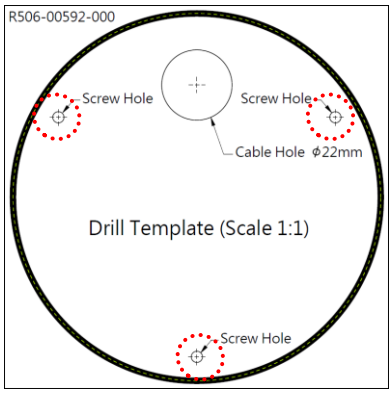
This section describes procedures in mounting the camera on a flat surface.

NOTE: The camera images on this documentation are for reference only and may be different from the actual camera.

Step 1: Prepare for Installation

1. Before installing the camera, prepare the additional accessories required for installation.

2. Determine whether the cable will go through a hole on the surface or be routed along the surface. Note also the direction to which the cable will be routed to attach the bundled drill template on the surface according to the direction of the cable.



3. Drill the screw holes. Depending on the material of the surface where the camera will be installed, it may be necessary to drill the three (3) screw holes and use the supplied screw tox.

Step 2: Open the Dome Cover

1. Loosen the three (3) screws using the bundled hex screwdriver.

2. Lift to remove the dome cover.

NOTE:

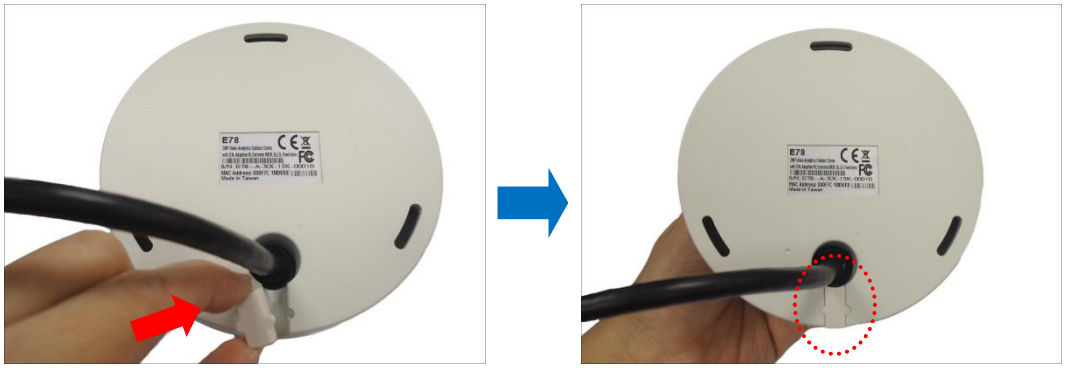
- The dome cover is attached to the camera body by a string; do not abruptly lift the dome cover!
- A desiccant bag is attached underneath the dome cover. DO NOT remove the desiccant bag to keep the camera interior parts dry. An extra bag is bundled with the camera that can be used for replacement, as needed, over time.

Step 3: Route the Cables

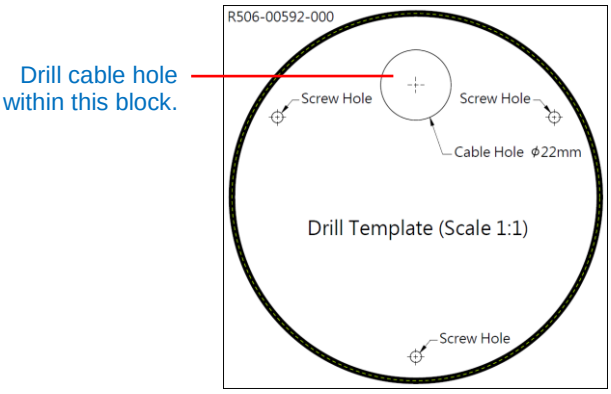
Determine whether the cable will pass through a hole on the surface or be routed along the surface:

If the cable will pass through a hole on the surface:

1. Attach the rubber tab into the gap on the base of the camera.



2. Drill the hole for the cable on the surface.



3. Route the cable from the network side through the hole and connect it to the Ethernet port of the camera.

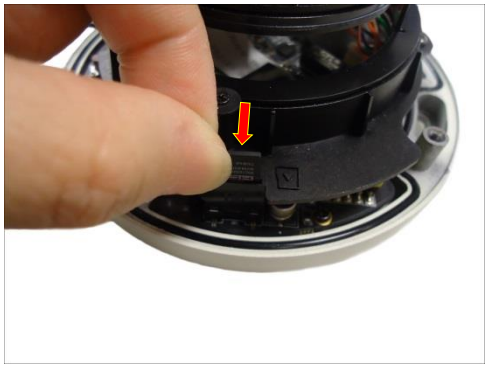
   NOTE: If the camera will be installed outdoors or in places wherein environmental factors change drastically, make sure to waterproof the cable connection; see ***Step 5: Connect and Manage the*** Cable on page 16 for instructions.

4. Push the cable through the hole on the surface.
5. Skip to ***Step 4: Install the Camera*** on page 15.

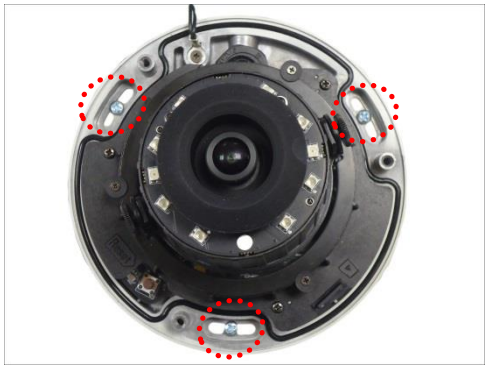
If the cable will be routed along the surface, route the cable through the gap on the base of the camera.

Step 4: Install the Camera

1. If necessary, insert a memory card into the memory card slot of the camera. See ***How to Insert the Memory Card*** on page 21 for more information.



2. Install the camera to the surface using the three (3) bundled screws.



Step 5: Connect and Manage the Cables

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 to protect other cable connections. For other cable connections, such as a power adapter and input or output device, see ** for more details.

How to Use the Cable Gland

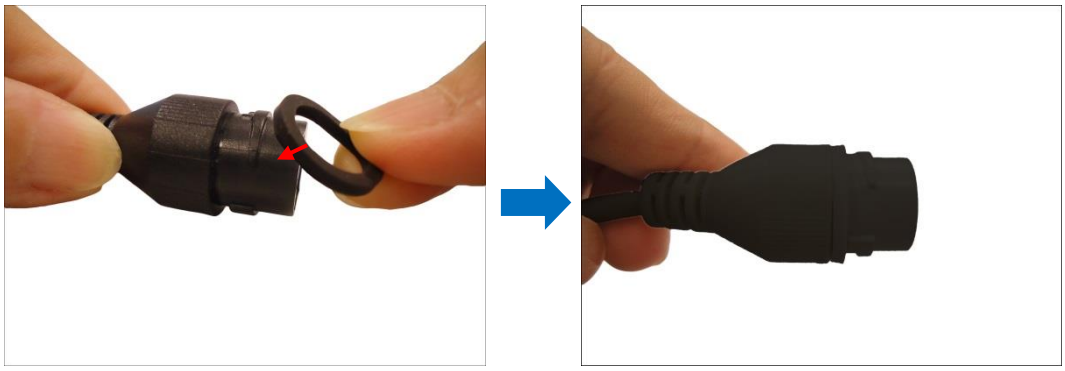
This section describes how to waterproof the Ethernet cable using the bundled cable gland.

Before connection, prepare the following materials:

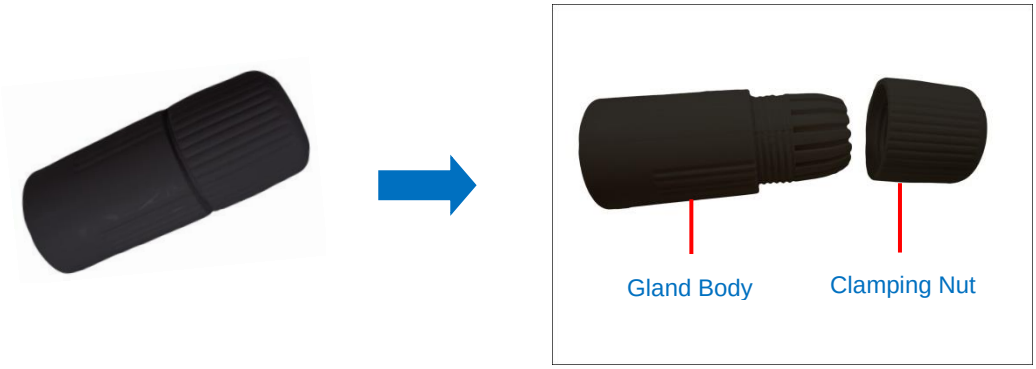
- An exterior-grade Ethernet cable without the RJ-45 connector
- RJ-45 connector
- Crimping Tool
- Scissors

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

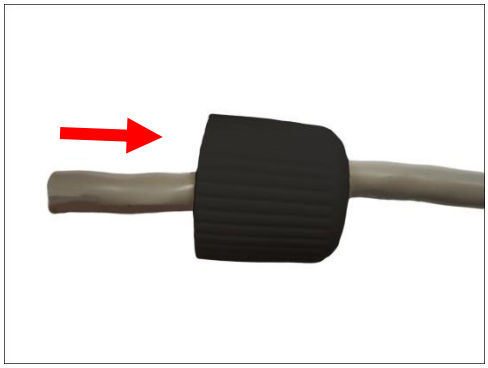
1. Attach the washer to the Ethernet connector of the camera.



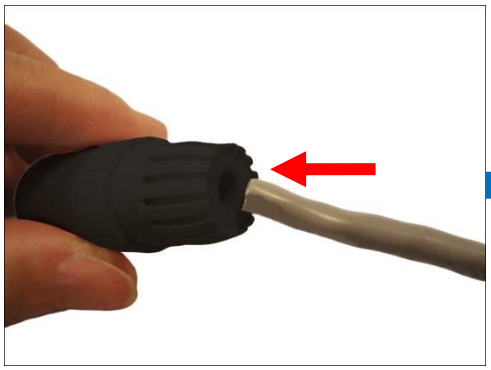
2. Detach the clamping nut from the cable gland:



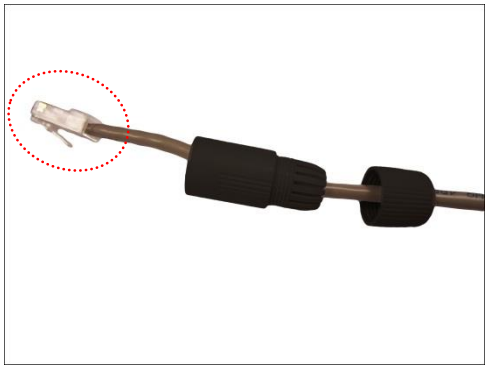
3. Insert the clamping nut into the Ethernet cable (without connector).



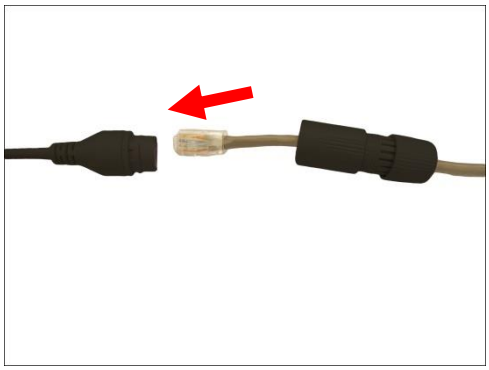
4. Insert the cable through the gland body.

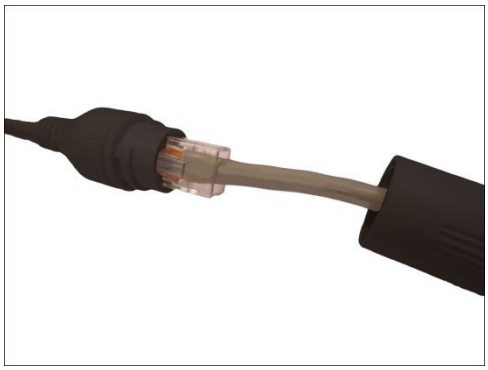


5. Attach the RJ-45 connector to the cable. For pin mapping and detailed instructions, see ***How to Attach the RJ-45 Connector*** on page 24 for detailed information.

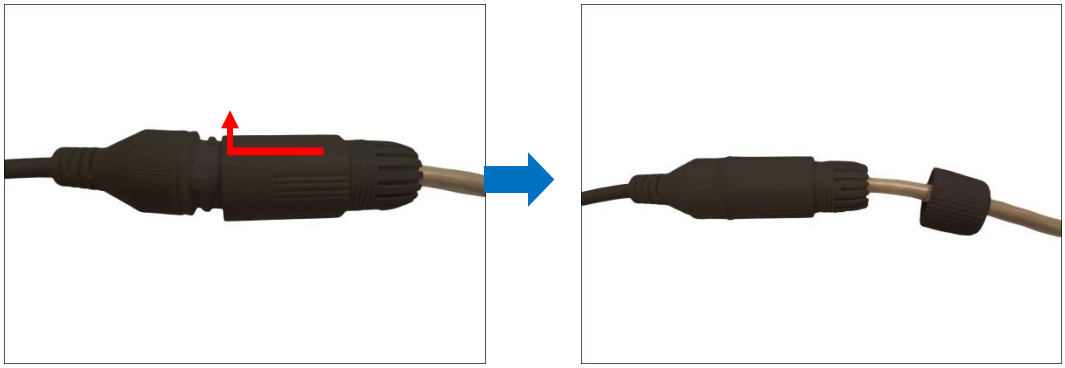


6. Connect the RJ-45 connector to the camera connector.

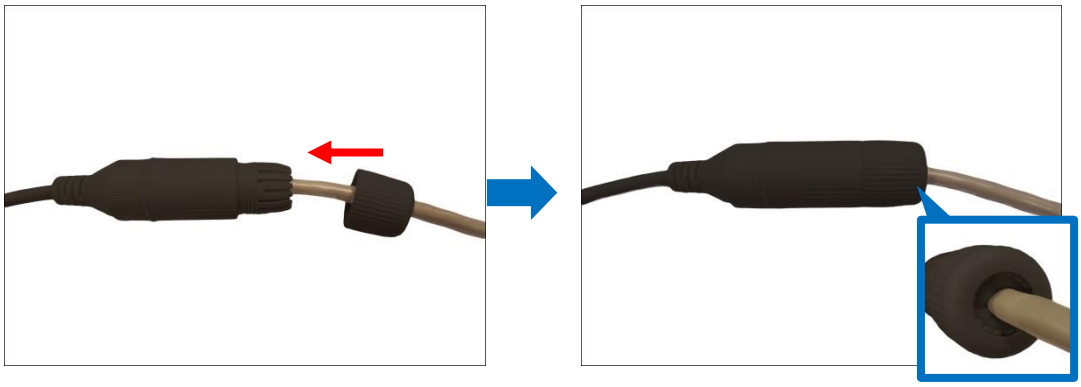




7. Attach the gland body to the camera connector.



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

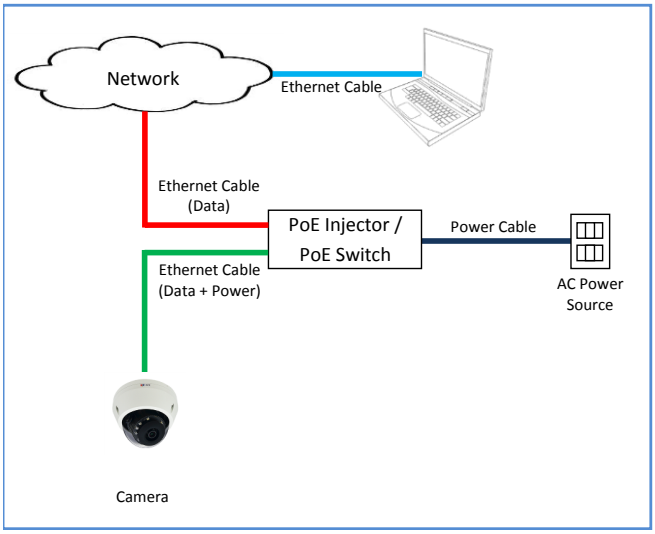


NOTE: Make sure the clamping nut is tightly attached to the cable gland body and the sealing insert is squeezed tightly.

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

Step 6: 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 or PC and a power source. See Power-over-Ethernet (PoE) example connection diagram below.



Step 7: Access the Camera Live View

See ***Accessing the Camera*** on page 34 for more information on how to access the Live View of the camera.

Step 8: Adjust the Viewing Angle and Orientation

See ***How to Adjust the Viewing Angle and Orientation*** on page 22 for detailed information.

Step 9: Close the Dome Cover

1. Align the cable holes on the dome cover and the camera to close the dome cover.
2. Tighten the three (3) screws using the supplied hex screwdriver to attach the dome cover.

Final installation should look similar to the illustration below.

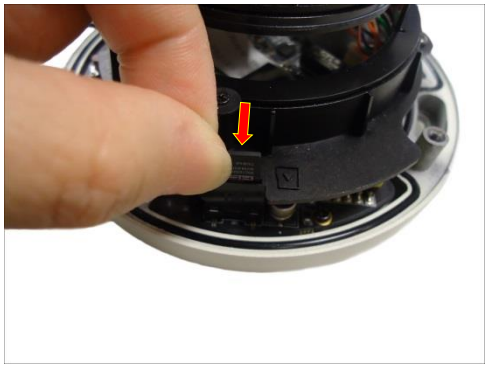
Other Adjustments and Accessories

How to Install / Remove the Memory Card

How to Insert the Memory Card

1. Loosen the three (3) screws to remove the dome cover.

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



3. Push the card completely into the slot.

4. Attach the dome cover to the camera and tighten the three (3) screws.

Once inserted, make sure to access the camera Web Configurator and “mount” the card to prepare the card for local recording. Refer to the camera Firmware User’s Manual for more information.

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 User’s Manual for more information). Once unmounted from the firmware, pull the card from the slot.

How to Adjust the Viewing Angle and Orientation

This section describes the procedures in rotating, adjusting the viewing angle and pan direction of the camera.

Camera Parts Overview

1. Open the dome cover.

2. To pan the camera, move the lens module bracket to the left or right.

3. To tilt the lens, loosen the two (2) tilt adjustment screws. Then, adjust the tilt and tighten back the screws to fix the tilt position.

4. To rotate the video orientation, turn the lens module left or right.

5. Close the dome cover.

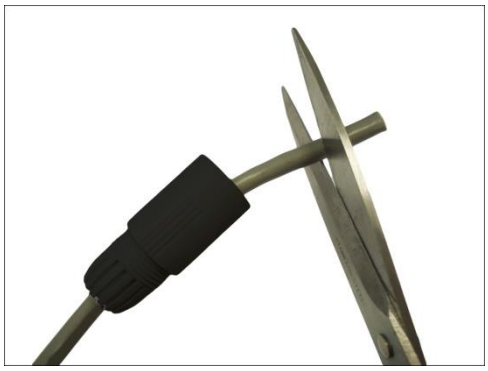
Other Cable Connections

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.

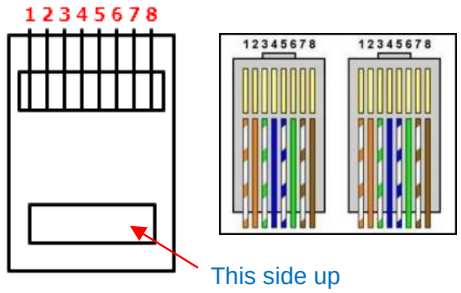
NOTE: If these connectors will not be used, leave the caps on to avoid water or dust from entering the connectors.

How to Attach the RJ-45 Connector

1. Prepare the following tools:
   a. RJ-45 connector
   b. Crimping tool
   c. Scissors
2. Cut about one (1) inch into the plastic sheath from the end of the cable.

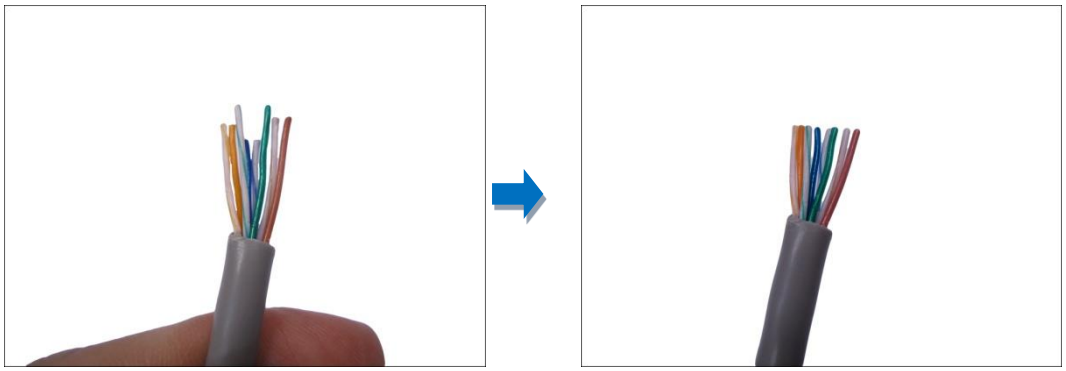


3. Unwind the wires and arrange them according to the color sequence below.

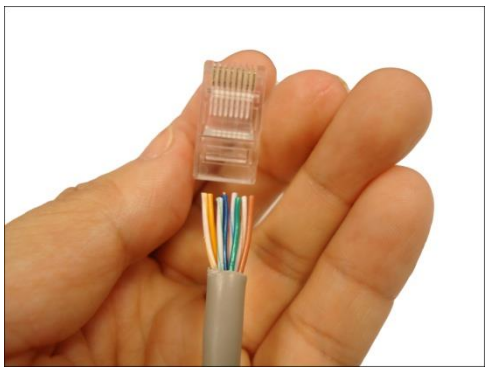


1	Stripe Orange
2	Orange
3	Stripe Green
4	Blue
5	Stripe Blue
6	Green
7	Stripe Brown
8	Brown

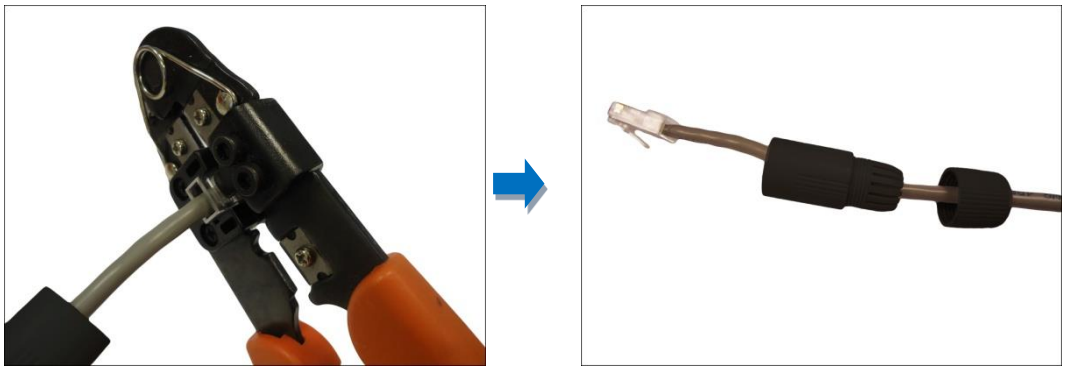
4. Straighten out the wires and use the scissors to make a straight cut ½ inch from the cut end.



5. With the RJ-45 connector tab facing down, push down the wires into the connector all the way to the end.



6. Place the connector into the crimping tool, and cinch down to secure the RJ-45 connector to the Ethernet cable.

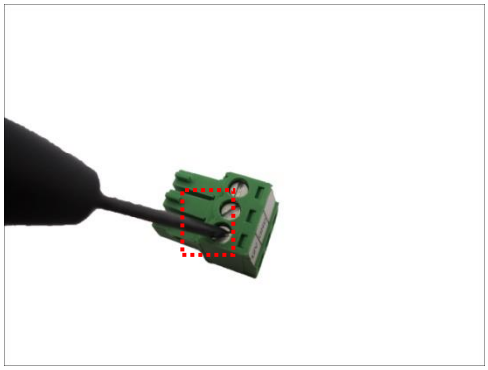


Connecting a Power Adapter (Optional)

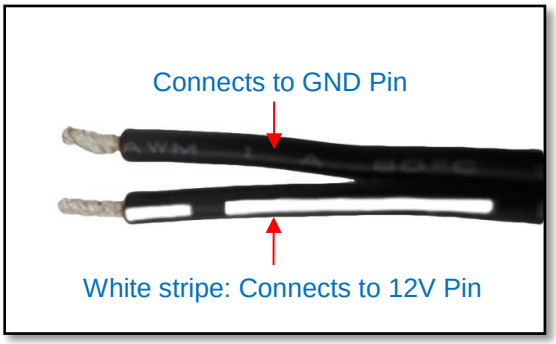
The camera can be powered by a Power over Ethernet (PoE) switch that is IEEE802.3af compliant. In case of using a non-PoE switch or your PoE switch has limited power supply, you can purchase a power adapter and directly connect the camera to a power outlet. The power adapter must be connected to the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

To do this, follow the procedures below:

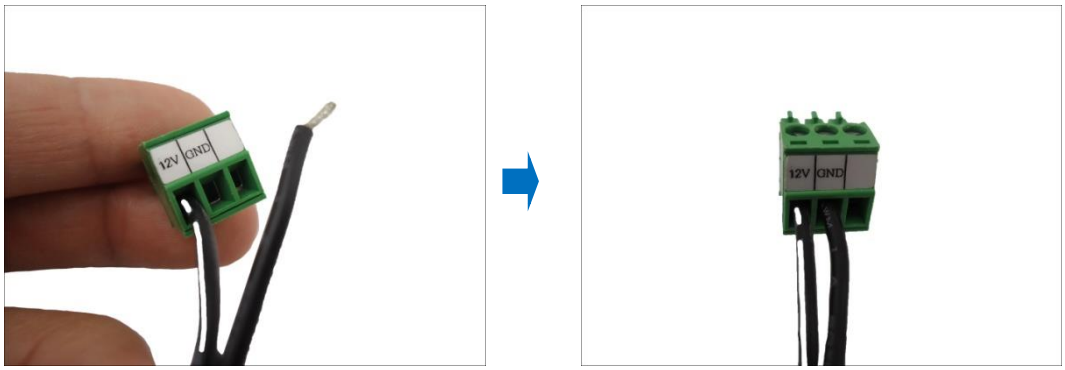
1. Loosen the screws of the **12V** and **GND** pins of the power terminal block.



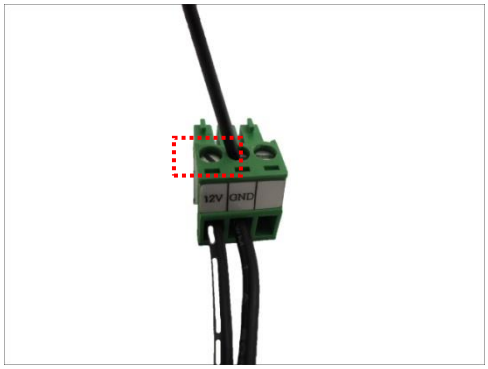
2. Take note that a standard power adapter cable has two (2) different wires:



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:

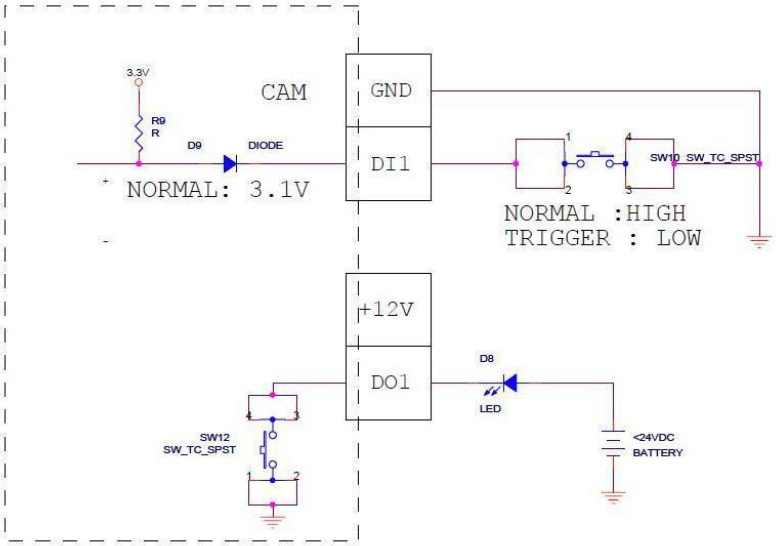
Device			
DI	Connection design		TTL - compatible logic levels
	Voltage	To trigger (low)	Logic level 0: 0V ~ 0.4V
		Normal (high)	Logic level 1: 3.1V ~ 30V
	Current		10mA ~ 100mA
DO	Connection design		Transistor (Open Collector)
	Voltage & Current		< 24V DC, < 50mA

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

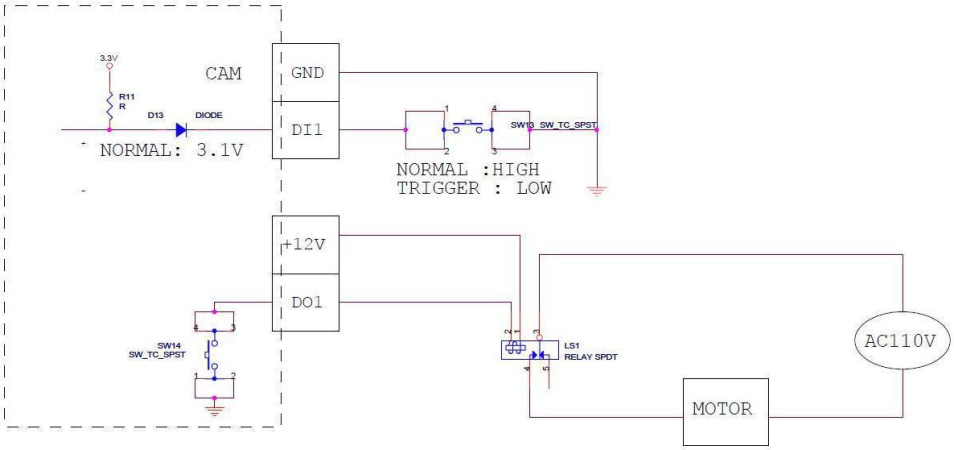
Based on these specifications, if the DI device has a voltage of 0V ~ 30V or the DO device has a voltage of < 24V (< 50mA), then the camera can supply internal power to these devices and there is no need to connect the DI/DO device to an external power source.

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:



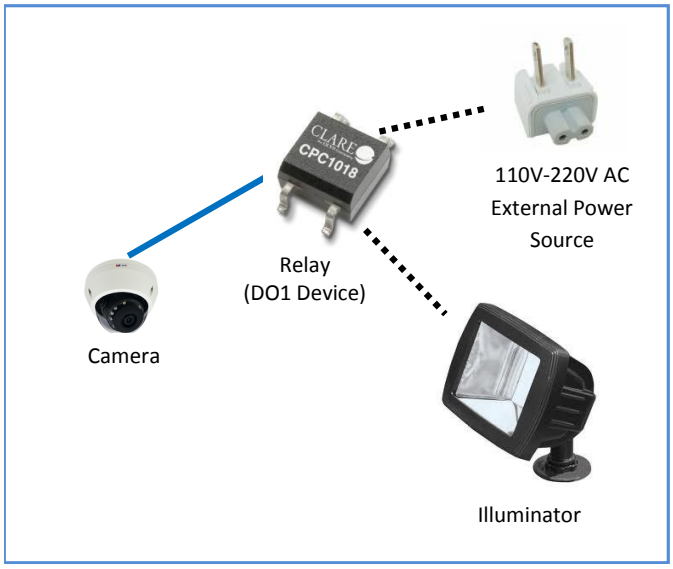
High Voltage DO Device Connection

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).

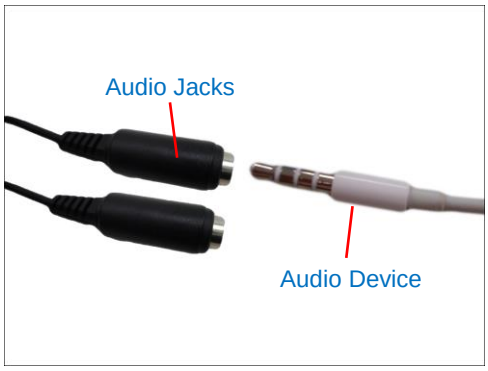
How to Connect Audio Input /Output Device (Optional)

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.

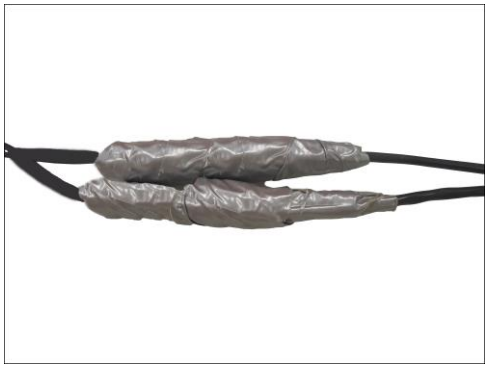
To connect an audio device, do the following:

1. Pull to remove the rubber protection of the jack.
2. Connect the audio input device to the **MIC 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

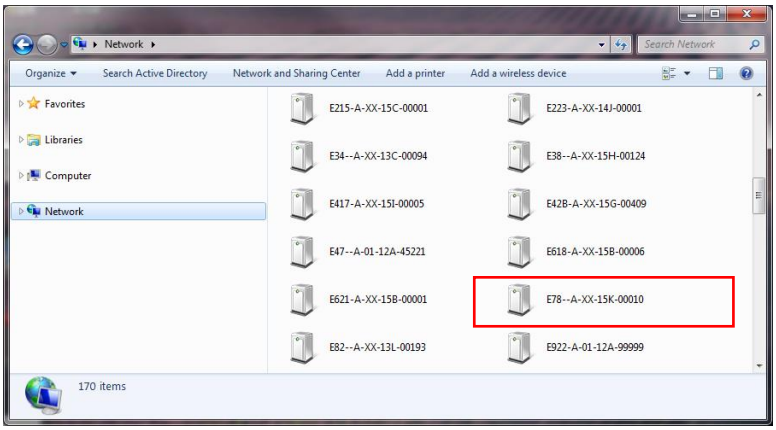
In order to be able to communicate with the camera from your PC, both the camera and the PC have to be within the same network segment. In most cases, it means that they both should have very similar IP addresses, where only the last number of the IP address is different from each other. There are 2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

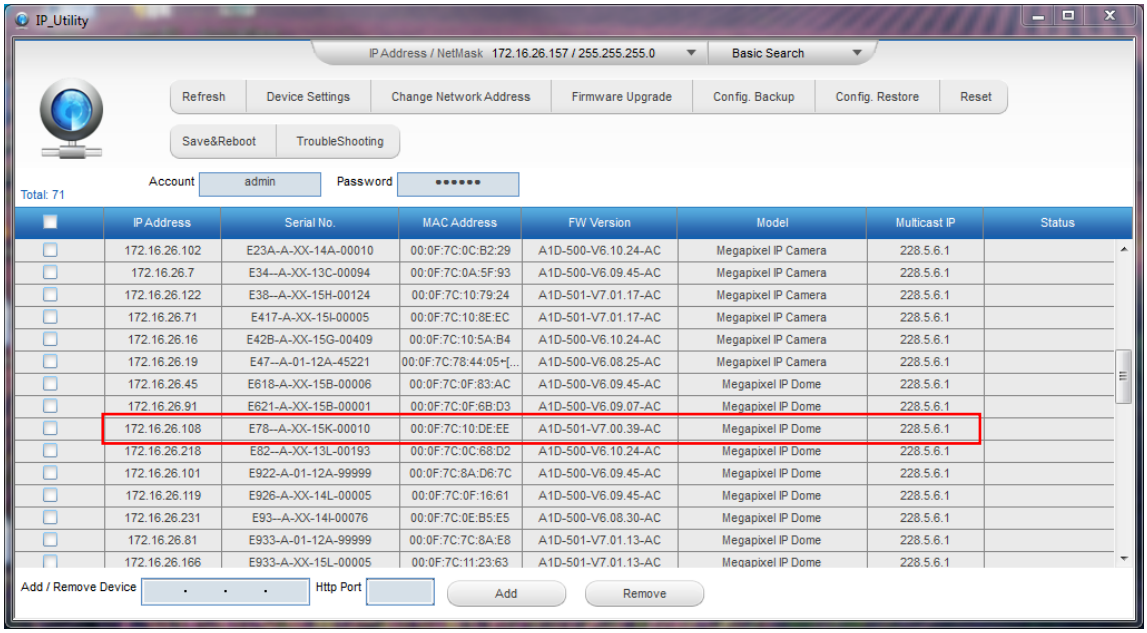
In the example below, we successfully found the camera that we had just connected to the network.



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.

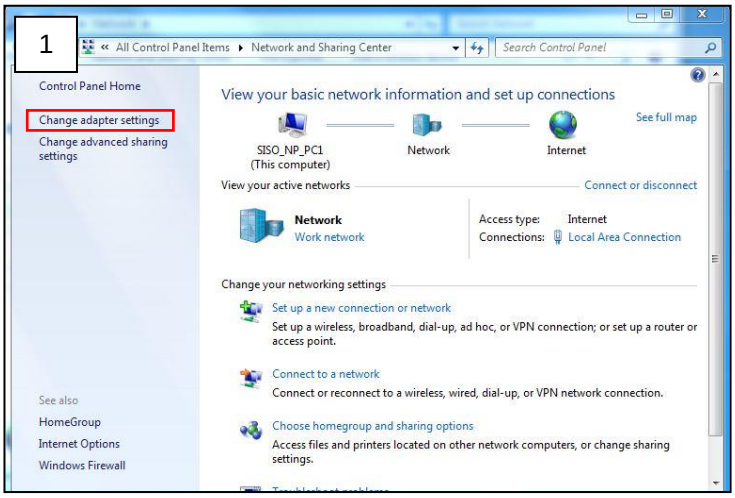
When the camera is plugged into network and it does not detect any DHCP services, it will automatically assign itself a default IP:

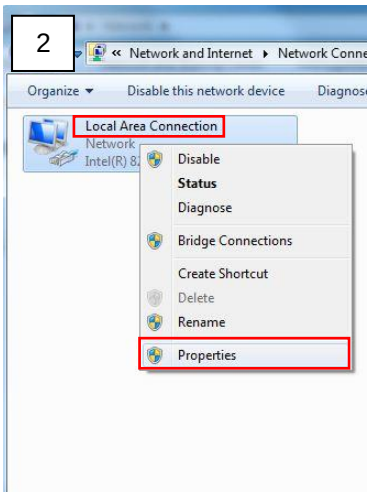
192.168.0.100

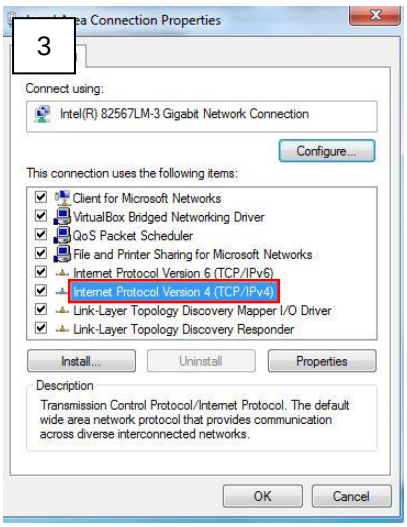
Whereas the default port number would be **80**. In order to access that camera, the IP address of the PC has to be configured to match the network segment of the camera.

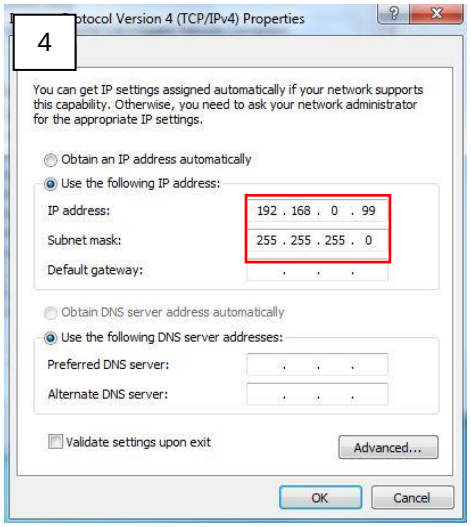
Manually adjust the IP address of the PC:

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:



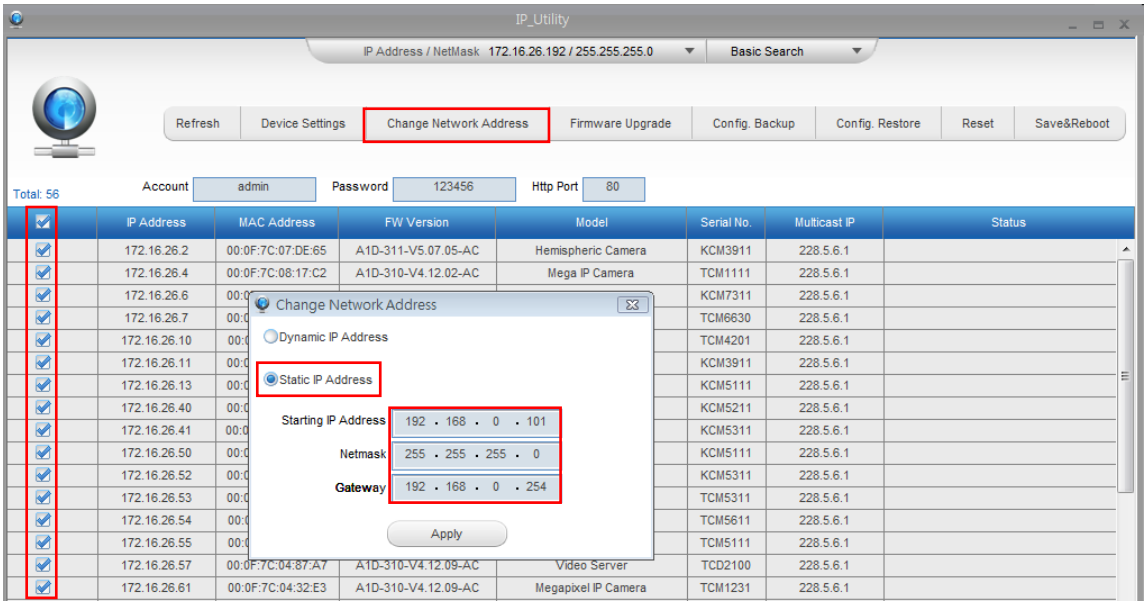






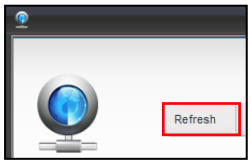
Manually adjust the IP addresses of multiple cameras:

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 VLC player or QuickTime – since these are third party softwares. The third party has the right to modify their utility any time which might affect the compatibility. In such cases, please use Internet Explorer browser instead.

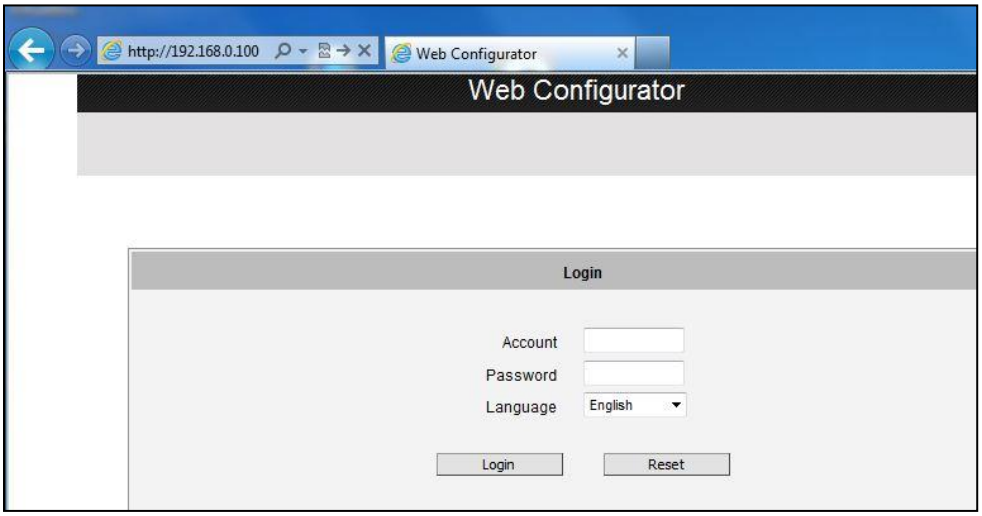
When using Internet Explorer browser, the ActiveX control for video stream management will be downloaded from the camera directly – the user just has to accept the use of such control when prompted so. No other third party utilities are required to be installed in such case.

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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