



Outdoor Hemispheric Dome Hardware Manual

I71

2014/05/08



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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

Don't use the power supply with other voltages

This device is likely to be damaged or damage other equipments / personnel, if you use a power supply with different voltage than the one included with this device. All warranty of this product will be voided in the situations above.

Don't open the housing of the product

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 and the power supply 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

The List of Models

This hardware manual contains the following models:

171		5MP Outdoor Hemispheric Dome with D/N, Advanced WDR, SLLS, Fixed lens

Package Contents

Check if the camera package comes with the following items.

<p>Camera</p> 	<p>Cable Gland</p> 	<p>Conduit Gland</p> 
<p>Hexagon Screwdriver</p> 	<p>Screw Plugs</p> 	<p>Screws for Surface Mount</p> 
<p>Terminal Block (for Power)</p> 	<p>Terminal Block (for DI/DO)</p> 	<p>Terminal Block (for Audio In/Out)</p> 
<p>Warranty Card</p> 	<p>Quick Installation Guide</p> 	<p>Drill Template</p> 

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 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	DC 12V Power Input	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 adaptor. See Error! Reference source not found. on page Error! Bookmark not defined. for information.
2	Ethernet Port	Connects to the bundled network cable which then connects to a network using a standard Ethernet cable.
3	Reset Button	Used to restore the factory default settings, including the administrator's password. Using a pointed object, such as a pen, press and hold the Reset button for 5 seconds or until the Power LED lights up.
4	Audio Input / Output	Connects to the bundled audio cable which provides 3.5mm audio input and output jacks.
5	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 Error! Reference source not found. on page Error! Bookmark not defined. for information on how to connect DI/DO devices to your camera.
6	Memory Card Slot	Insert a memory card (not included) into the slot for local recording purposes. NOTE: Supports only microSDHC and microSDXC cards.

Installation Procedures

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

Mounting Solutions

Mount Types	Accessories
Surface Mount	Suitable when mounting the camera on flat and smooth surface, like ceilings or walls. This solution directly installs the camera to the surface without additional accessories. See Installing the Camera on a Flat Surface on page 12 for more information.
Tilted Wall Mount	Suitable when mounting the camera on high walls. The camera can be tilted 10° to capture a larger viewing angle below the camera and less on the ceiling.
Pendant Mount	Suitable when mounting the camera on hard and high ceilings.
Horizontal Pole Mount	Suitable when mounting the camera on a horizontal pole.
Vertical Pole Mount	Suitable when mounting the camera on a vertical pole.
Corner Mount	Suitable when mounting the camera on a corner area. The camera can also be tilted 10° to capture a larger viewing angle below the camera and less above.

NOTE:

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

Installing the Camera on a Flat Surface

This section covers the step-by-step procedures in directly mounting the camera on a flat and smooth surface, like ceilings or walls.

NOTE: The following camera images are taken using the closest camera model; therefore some images and components may vary from the actual camera.

The installation procedures of other mounting solutions are covered in the Installation Guide downloadable from the website (<http://www.acti.com/mountingselector>).

Step 1: Drill the Holes

1. Mark the screw holes location on the ceiling/wall, then drill the holes and insert the plastic plugs.

IMPORTANT! For wall installations, note that the camera must be installed with the cable hole facing up to install the camera with a correct orientation.

2. Determine how the cables will be routed: pass through the surface or along the surface.

- ***If the cables will pass through the surface:***

- a. Drill the cable hole location on the surface.
- b. Remove the cap covering the bottom hole of the camera, and attach the cap to the side hole to close it. The network cable will pass through the surface and the bottom hole to the camera.



- ***If the cables will be routed along the surface,*** skip to the next step.

Step 2: Open the Camera Cover

1. Loosen the three (3) screws using the supplied hex wrench.



2. Lift to open the cover.



NOTE: Do not abruptly lift the cover; it is attached to the camera body with a spring wire.

Step 3: Prepare for Waterproof Installation

The camera comes with two (2) glands used for waterproof installation: Cable gland and Conduit Gland. Determine the type of waterproof solution that is applicable to your installation requirements and prepare the necessary accessories or purchase extra materials.

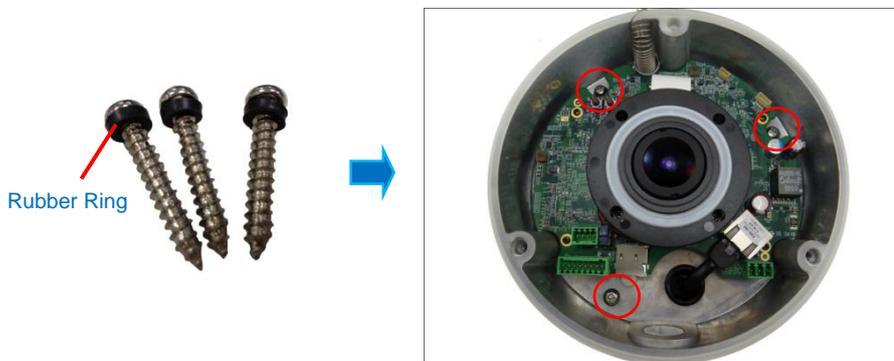
Cable Gland	Conduit Gland
 <p>For use with an EXTERIOR-GRADE Ethernet cable. Exterior-grade Ethernet cables are already waterproof.</p>	 <p>For use with 3/8" flexible conduit. Recommended when an exterior-grade Ethernet cable is not available or when other input/output devices or an external power adaptor will be connected to the camera.</p>

Step 4: Connect the Cable(s)

- To connect the cable using the cable gland solution, see [Waterproof Solution with Naked Cable](#) on page 16.
- To connect the cable(s) using the conduit gland solution, see [Waterproof Solution with Conduit](#) on page 19.

Step 5: Install the Camera to the Surface

1. If necessary, insert a micro SDHC card into the card slot of the camera.
2. Attach the camera to the surface using the three (3) supplied screws. It is recommended to install the camera to the surface with the cable hole facing down to avoid water leak concerns.



NOTE: Make sure the camera screws have rubber rings. If the screws you received do not

have rubber rings, please contact your local sales agents or our [Customer Help Desk \(CHD\)](#) for support.

Step 6: Close the Cover

Tighten the three (3) screws to secure the cover.



Step 7: Access the Camera Live View

See **Error! Reference source not found.** on page **Error! Bookmark not defined.** for more information.

Waterproof Solutions

There are two ways to do the waterproof cabling installation:

- **Waterproof with Naked Cable:** This installation uses the supplied cable gland and an **exterior-grade** Ethernet cable (not supplied). Exterior-grade cables are already waterproof and thus, do not require a conduit.
- **Waterproof with Conduit:** This installation uses the supplied conduit gland and a **3/8"** flexible conduit (not supplied). This is the recommended solution if other input / output devices or an external power adaptor will be connected to the camera.

Waterproof Solution with Naked Cable

This section describes the procedures to waterproof the cabling connections using an exterior-grade Ethernet cable.

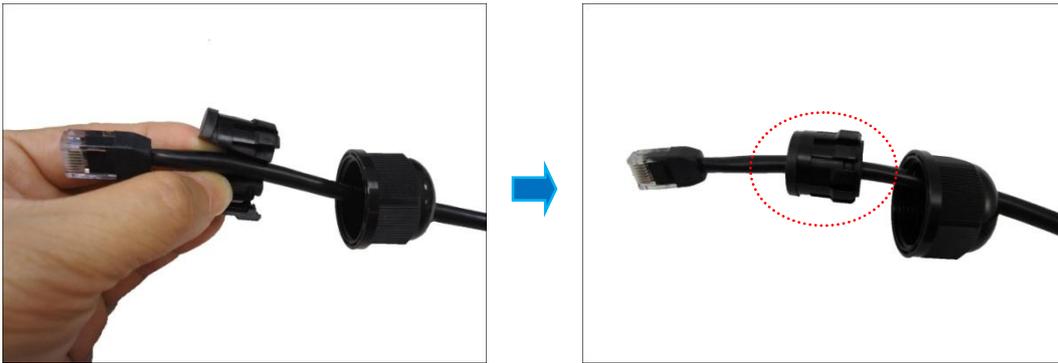
1. Disassemble the cable gland as shown below:



2. Insert the clamping nut into the Ethernet cable.



3. Insert the sealing insert with claw.

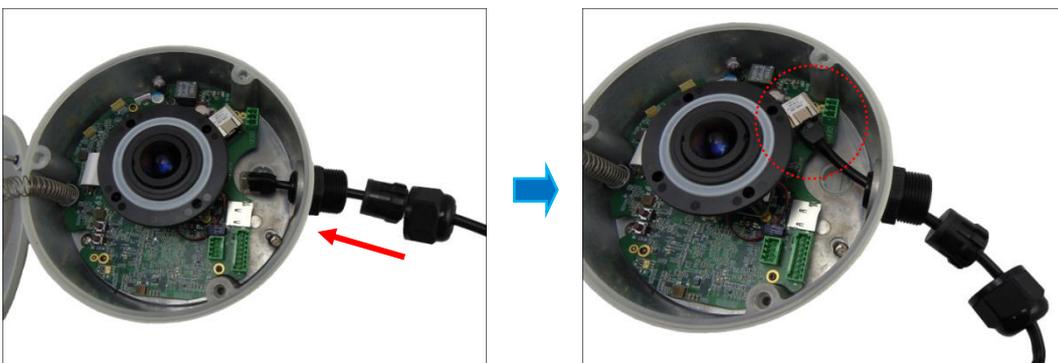


4. Attach the cable gland body to the hole of the camera.



NOTE: The following images are taken using the side hole of the camera; the same procedures apply when using the bottom side hole.

5. Insert the Ethernet cable through the cable gland body and connect it to the Ethernet port of the camera.



6. Insert the claw and rubber insert into the cable gland body and then attach the clamping nut to complete the cable solution.

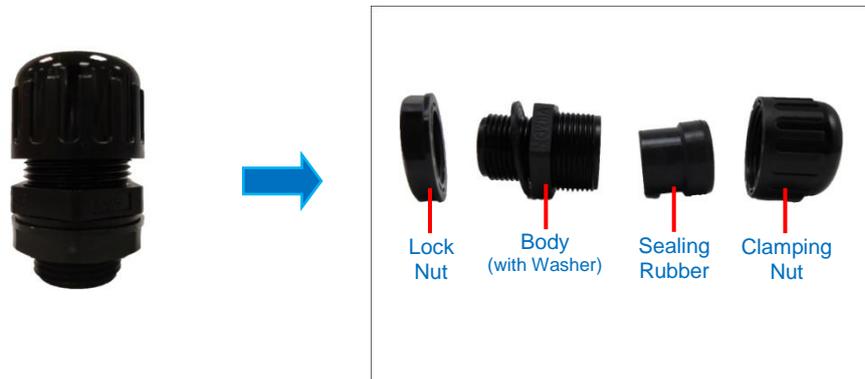


NOTE: Make sure the clamping nut is tightly attached to the cable gland body.

Waterproof Solution with Conduit

This section describes the procedures to waterproof the cabling connections using a flexible conduit with 3/8" trade size (not supplied). This is the recommended solution when connecting an external power adaptor, audio in/out, or digital input/output (DI/DO) devices to the camera.

1. Disassemble the cable gland as shown below:



2. Pull the Ethernet cable and other cables (if any) through the flex conduit.

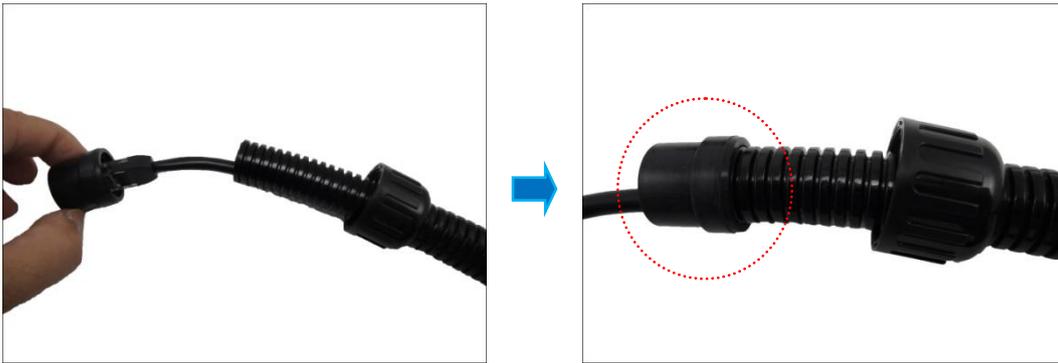


NOTE: To connect an external power adaptor, audio in/out, or digital input/output (DI/DO) devices, insert the cables without connectors through the flex conduit together with the Ethernet cable at this point.

3. Insert the clamping nut through the flex conduit.



4. Insert the sealing rubber and attach it at the end of the flex conduit.



5. Attach the conduit gland body to the hole of the camera.



Attach to Camera Side Hole

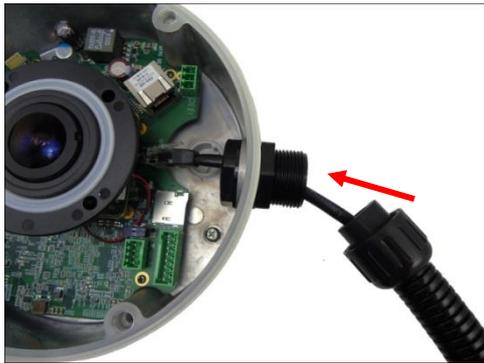
Attach to Camera Bottom Hole

NOTE: The following images are taken using the side hole of the camera; the same procedures apply when using the bottom side hole.

6. Attach the lock nut to secure the conduit gland body to the camera.



7. Insert the Ethernet cable and other cables (if any) through the conduit gland body.



Ethernet Cable Only

or

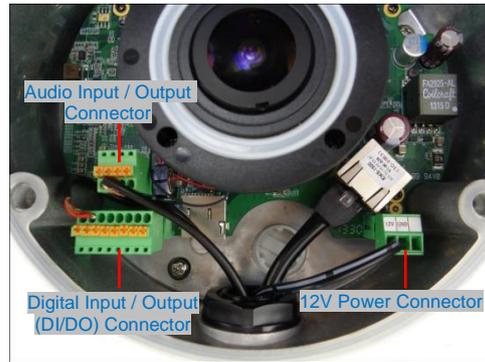


Ethernet and External Power Adaptor Cable

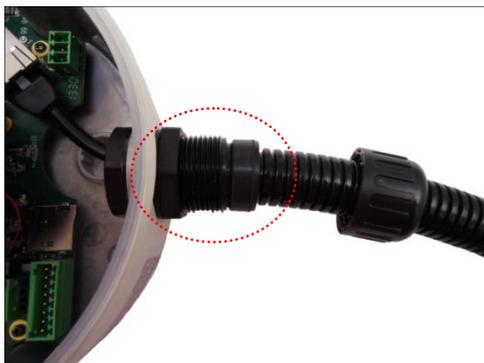
8. Connect the Ethernet cable to the Ethernet port of the camera. If connecting other cables, such as an external power adaptor, audio in/out or DI/DO devices, connect the terminal blocks at this point and connect them to the corresponding connectors of the camera (see [Other Connections](#) on page 22 for more information).



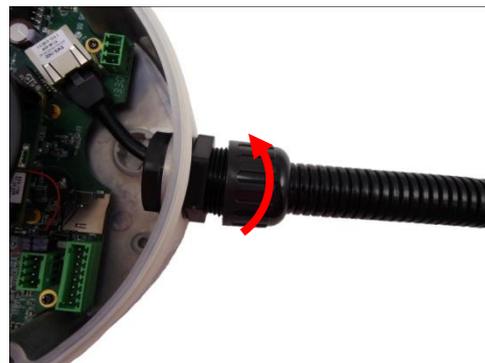
or



9. Insert the sealing rubber into the conduit gland body and attach the clamping nut to complete the cable solution.



→



NOTE: Make sure the clamping nut is tightly attached to the conduit gland body.

Other Connections

This section describes the procedures in preparing the external devices that you can connect to the camera. The camera 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.

Connecting a Power Adaptor (Optional)

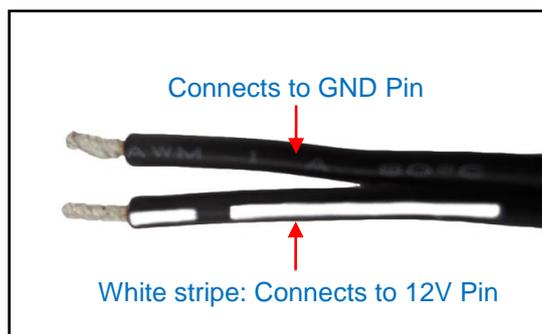
The camera consumes 9.6W power when powered by a Power over Ethernet (PoE) switch that is IEEE802.3af compliant. In case of using a non-PoE switch or your PoE switch has limited power supply, you can purchase a power adaptor and directly connect the camera to a power outlet. The power adaptor must be connected to the supplied terminal block before use.

To do this, follow the procedures below:

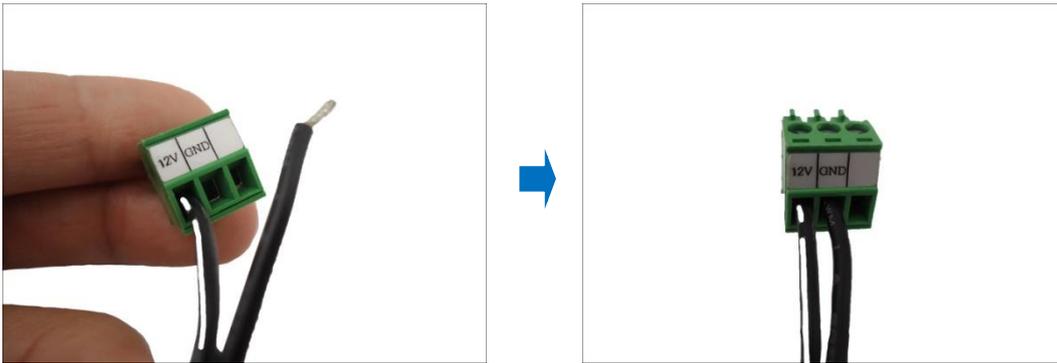
1. Loosen the screws of the **12V** and **GND** pins of the power terminal block.



2. Take note that a standard power adaptor 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 adaptor for connection later. Below is an example of a power adaptor with an attached terminal block.



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

Connecting DI/DO Devices (Optional)

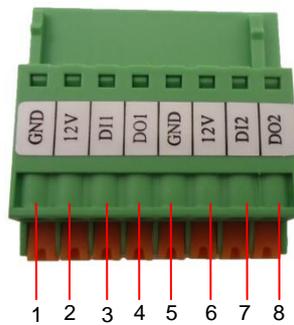
Depending on your surveillance needs, you may connect digital input or output devices to your camera to trigger events or notifications.

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.

You can connect up to two DI and two DO devices to your camera.

Press and hold the orange tab as you insert the wire through the pin slot, then release the orange tab to secure the wire.



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

Device	Pin		Mapping Instructions
Digital Input 1 (DI1)	1	GND	Connect the wires of the first input device to GND (Pin 1) and DI1 (Pin 3).
	3	DI1	
Digital Input 2 (DI2)	5	GND	Connect the wires of the second input device to GND (Pin 5) and DI2 (Pin 7).
	7	DI2	

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

Device	Pin	Mapping Instructions
Digital Output 1 (DO1)	2	Connect the wires of the first output device to 12V (Pin 2) and DO1 (Pin 4).
	4	
Digital Output 2 (DO2)	6	Connect the wires of the second output device to 12V (Pin 6) and DO2 (Pin 8).
	8	

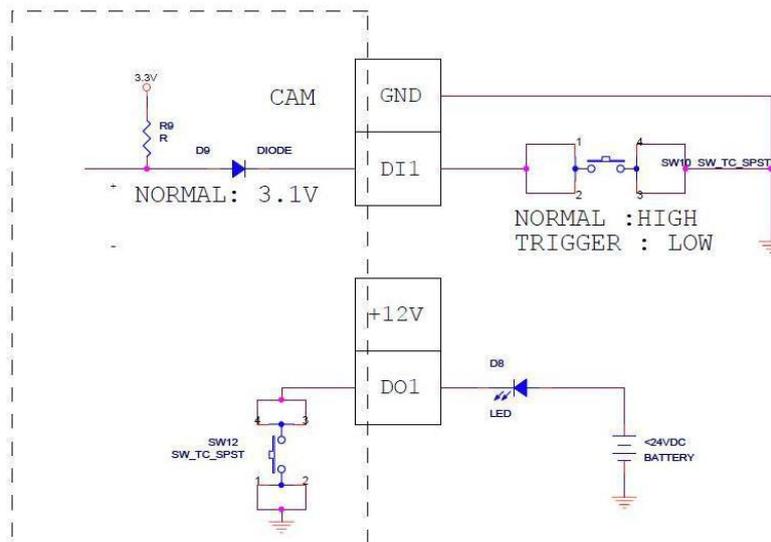
The table below shows the DI/DO connection specifications:

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

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.

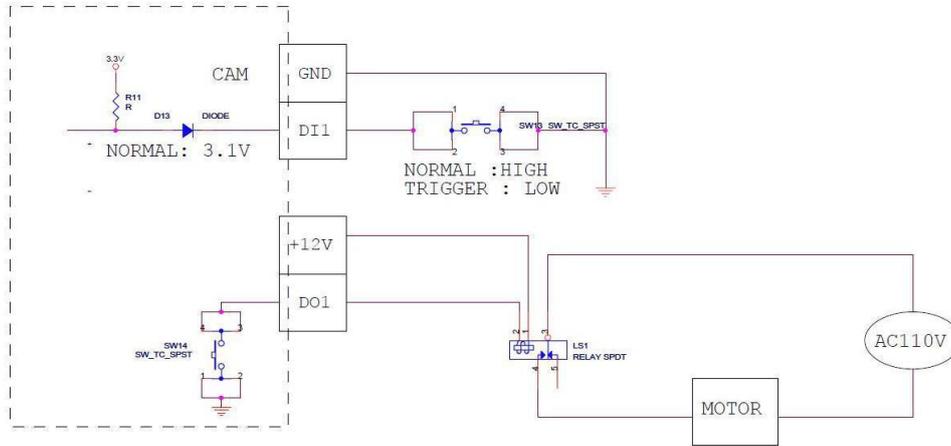
In this case, wire connection to Pins 1 to 4. Use the **GND** and **DI1** pins to connect a DI device and use the **12V** and **DO1** pins to connect a DO device. See wiring scheme below:



Consequently, to connect a second DI or DO device, wire the connection to Pins 5 to 8.

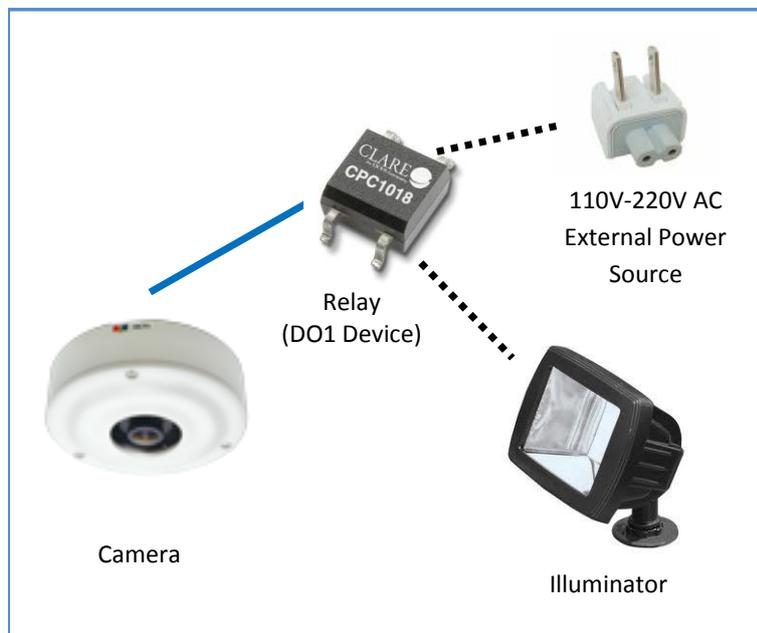
High Voltage DO Device Connection

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).

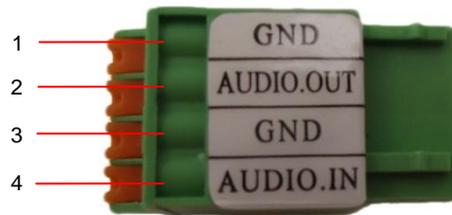
The illustration below is a graphic example of connecting a relay to a high voltage DO device.



NOTE: For more information on DI/DO connections, please refer to the Knowledge Base article [All about Digital Input and Digital Output](http://www.acti.com/kb/detail.asp?KB_ID=KB20091230001) downloadable from the link below (http://www.acti.com/kb/detail.asp?KB_ID=KB20091230001).

Connecting Audio In / Out Devices (Optional)

Depending on your surveillance needs, you may connect audio input or output device, such as an active microphone or speaker, to your camera. In this case, you need to connect the audio input/output device to the supplied audio terminal block.



To connect audio input / output devices, map the pins to one of the pin combinations below:

Device	Pin		Mapping Instructions
Audio Output	1	GND	Connect the wires of the audio output device to GND (Pin 1) and AUDIO.OUT (Pin 2).
	2	DI1	
Audio Input	3	GND	Connect the wires of the audio input device to GND (Pin 3) and AUDIO.IN (Pin 4).
	4	DI2	

Press and hold the orange tab as you insert the wire through the pin slot, then release the orange tab to secure the wire.

NOTE: For more information about AUDIO in connections, please refer to the Knowledge Base article [How to Use Audio-in of ACTi Cameras](http://www.acti.com/support/KnowledgeBase/outside/detail.asp?KB_ID=KB20100114003), downloadable from the link below (http://www.acti.com/support/KnowledgeBase/outside/detail.asp?KB_ID=KB20100114003).

Accessing the Camera

Configure the IP Addresses

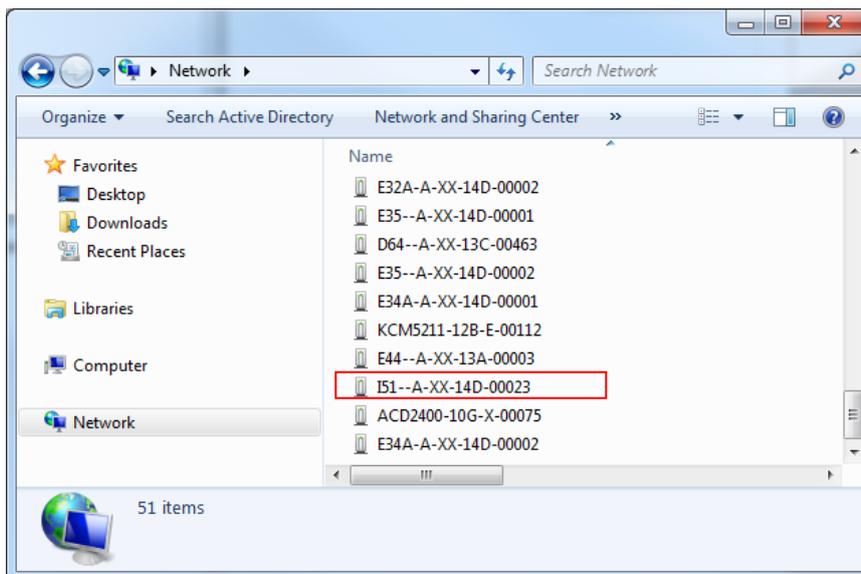
In order to be able to communicate with the camera from your PC, both the camera and the PC have to be within the same network segment. In most cases, it means that they both should have very similar IP addresses, where only the last number of the IP address is different from each other. There are 2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

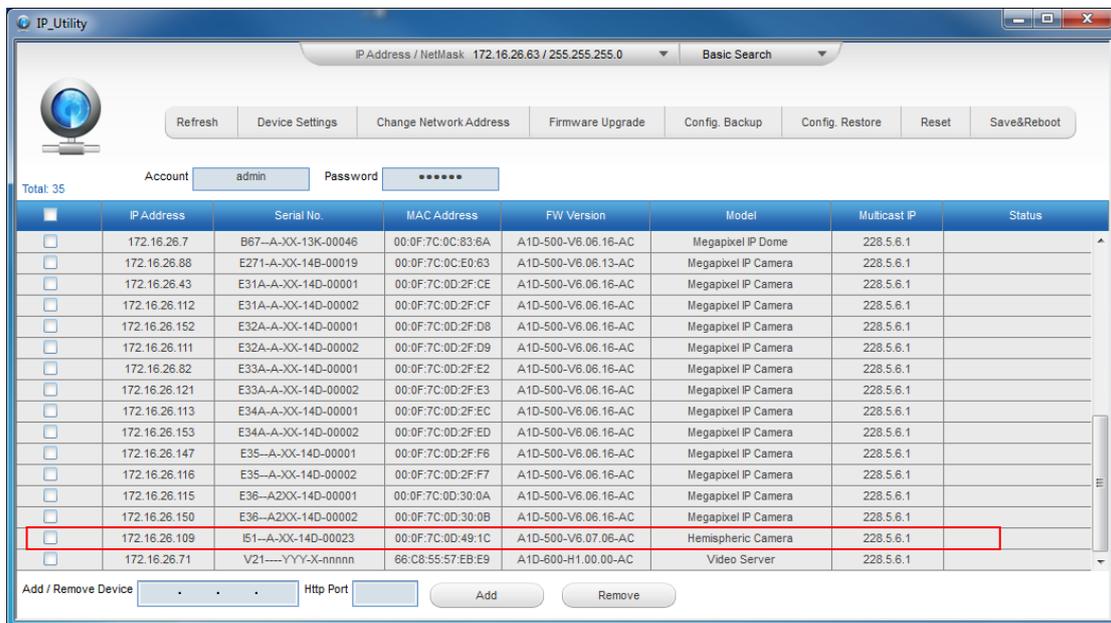


Double-click the mouse on the camera model name, the default browser of the PC is automatically launched and the IP address of the target camera is already filled in the address bar of the browser.

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 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:



You can quickly notice 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 already filled in the address bar of the browser.

Use the default IP address of the camera

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

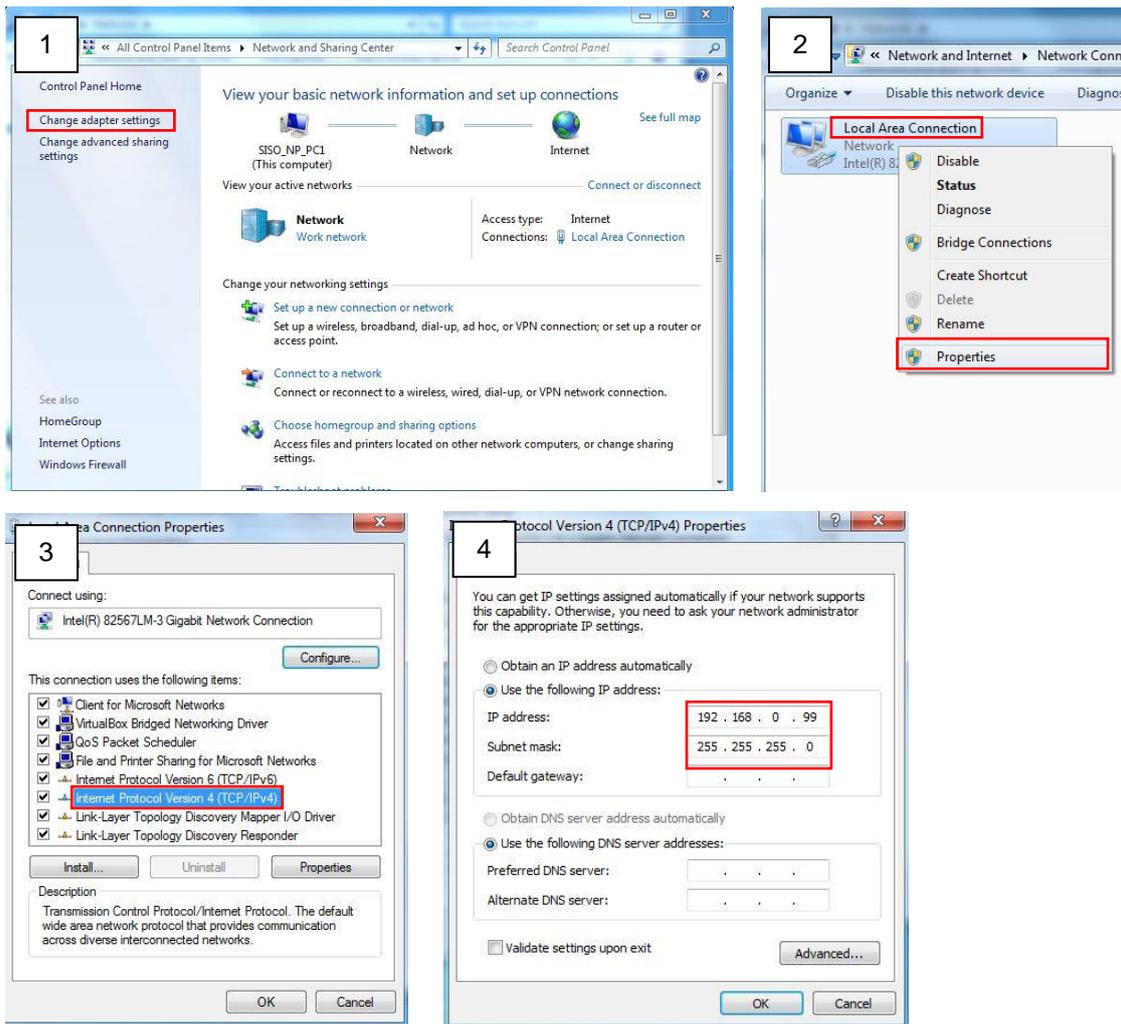
When the camera is plugged into the network and it does not detect any DHCP services, it will automatically assign itself a default IP:

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.

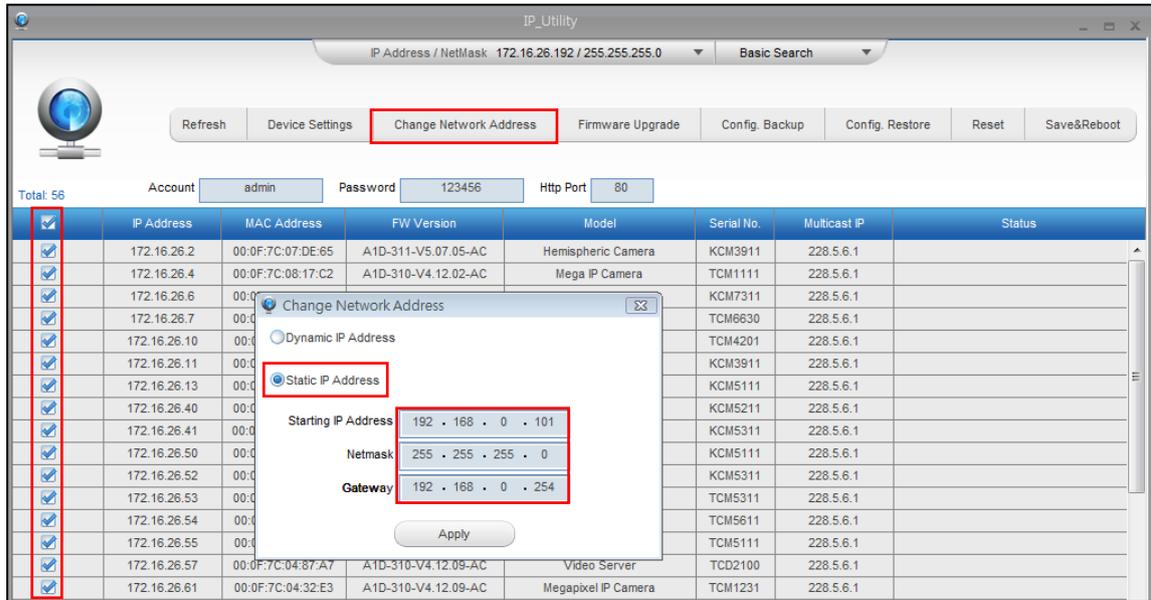
Manually adjust the IP address of the PC

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 one 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.

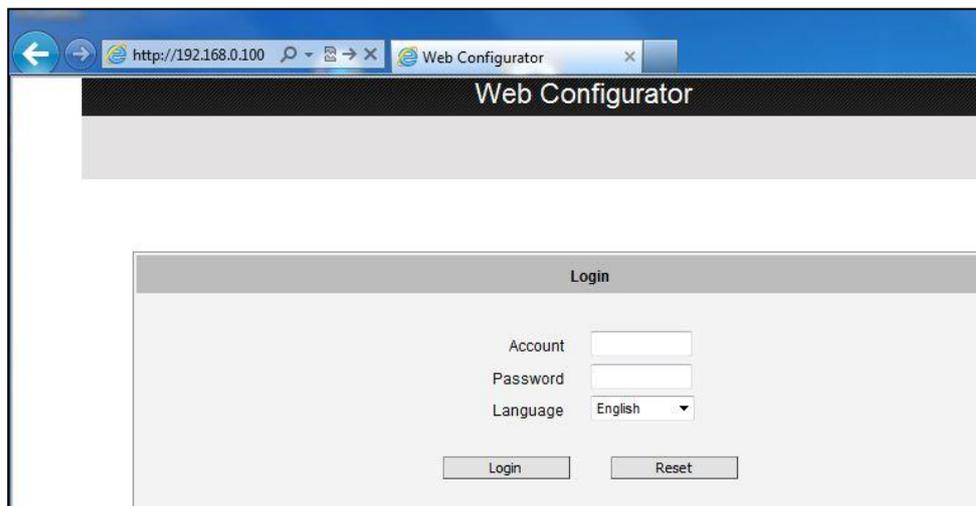
When using Internet Explorer browser, the ActiveX control for video stream management will be downloaded from the camera directly – the user just has to accept the use of such control when prompted so. No other third party utilities are required to be installed in such case.

The 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**

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



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