Outdoor-Ready Box

Hardware Manual

KCM-5211E, KCM-5311E

KCM-5511, KCM-5611

Ver. 2014/10/15

ACTi
Connecting Vision

Table of Contents

www.acti.com

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.

FCC/CE Regulation

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

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.
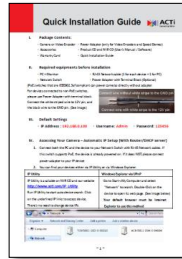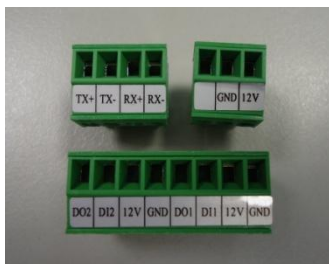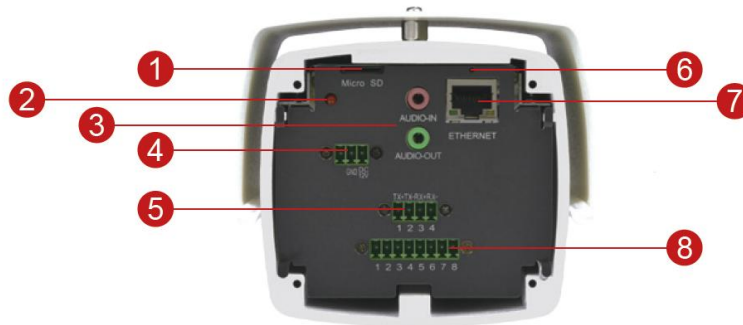
Introduction

Package Contents

Camera   QIG

Terminal Blocks for Power, DI/O and
Serial Port   Warranty Card

Physical Description

① MicroSDHC Card Slot   ⑤ Serial Port
② Power LED   ⑥ Reset Button
③ Audio Input / Output   ⑦ Ethernet Port
④ DC 12V Power Input   ⑧ Digital Input / Output

1) MicroSDHC Card Slot

Insert a MicroSDHC card here for local recording on the camera.

2) Power LED

The Power LED lights red when the camera is powered on.

3) Audio Input / Output

These connectors connect to audio input and output devices, such as microphones and speakers.

4) DC 12V Power Input

In case the camera is connected to a non-PoE (Power over Ethernet) switch, use this connector to connect an external adaptor (not included) to the camera. See *Connecting a Power Adaptor (Optional)* on page 15 for more information.

5) Serial Port

This port connects to serial devices via RS-485 or RS-422 protocols. Use the supplied serial port terminal block to connect the wires from the camera to the serial device.
See *Connecting a Serial Device (Optional)* on page 20 for connection details.

6) Reset Button

The Reset button is used to restore the factory default settings of the camera, including the administrator's password.

The reset button can be used for following purposes:

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

How to do the reset properly?

Step 1: Disconnect the power supply (e.g. disconnect the power adaptor or a PoE switch / injector).

Step 2: Press and hold the reset button.

Step 3: Connect the power supply while keeping the reset button pressed. During this time the Power LED may turn on and turn off several times.

Step 4: Wait for 45 seconds and then release the reset button.

7) Ethernet Port

The Ethernet port connects to a network using a standard Ethernet cable.

8) Digital Input / Output

This connector connects to digital input or output devices, such as alarm triggers, panic buttons, etc. Digital Input (DI) and Digital Output (DO) devices are used in applications like motion detection, event triggering, alarm notifications, etc. See *Connecting DI/DO Devices (Optional)* on page 17 for more information.

Installation Procedures

Before installation, prepare the following tools and accessories which are not included in the camera package thus must be purchased separately:

- Camera Bracket (PMAX-1101 is recommended)
- Flexible Conduit (Trade size = 1/2")
- Ethernet Cable
- Network Switch (PoE or non-PoE)
- Screwdriver

Step 1: Remove the Back Cover

Loosen the four (4) screws to detach the back cover of the camera.
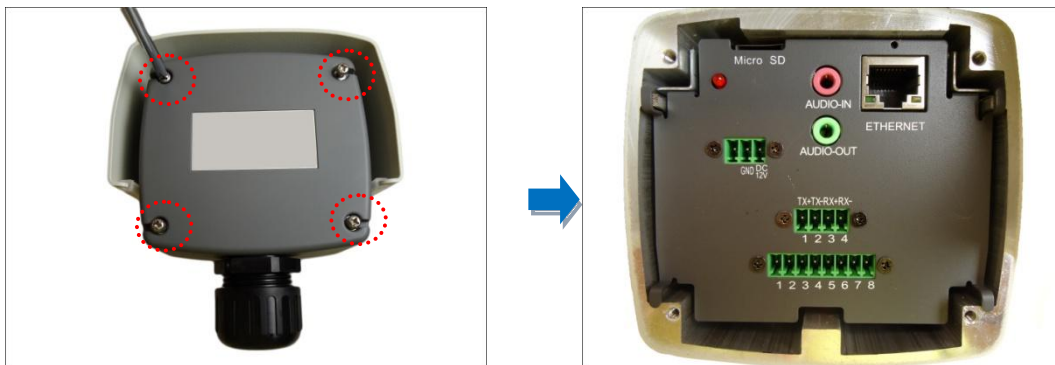
Step 2: Prepare the Flex Conduit

1. From the network side, insert the Ethernet cable and other cables (if any) through the flex conduit.


   NOTE: To connect an external power adaptor, digital input/output (DI/DO) or serial devices, insert the cables without connectors through the flex conduit and as well as audio input/output device cables at this point.
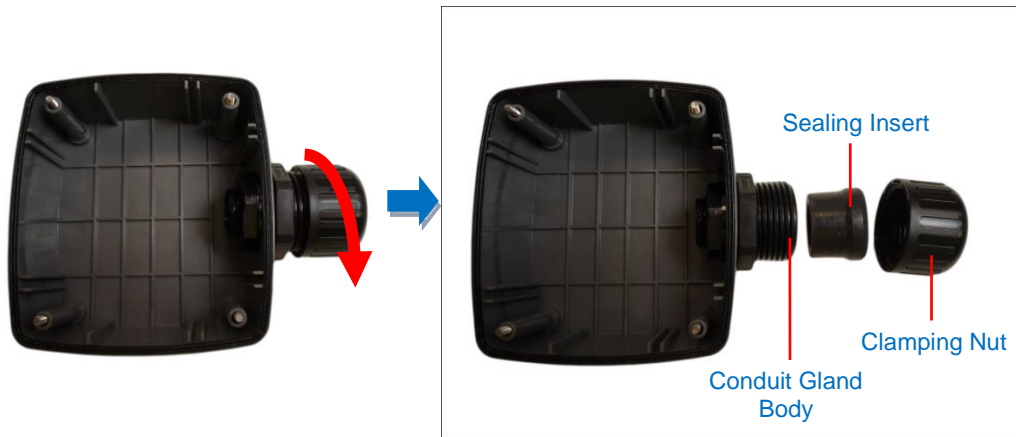
2. Insert the clamping nut through the flex conduit.

3. Insert the sealing insert and attach it at the end of the flex conduit.

Step 2: Prepare the Flex Conduit
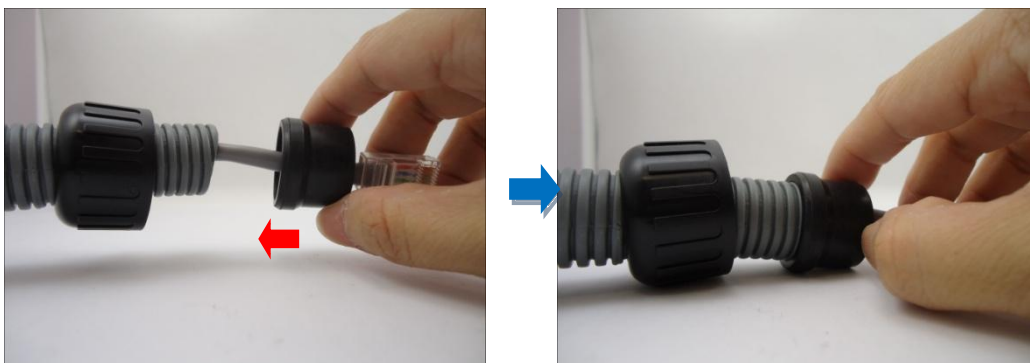
4. Detach the conduit gland from the back cover of the camera as shown below:
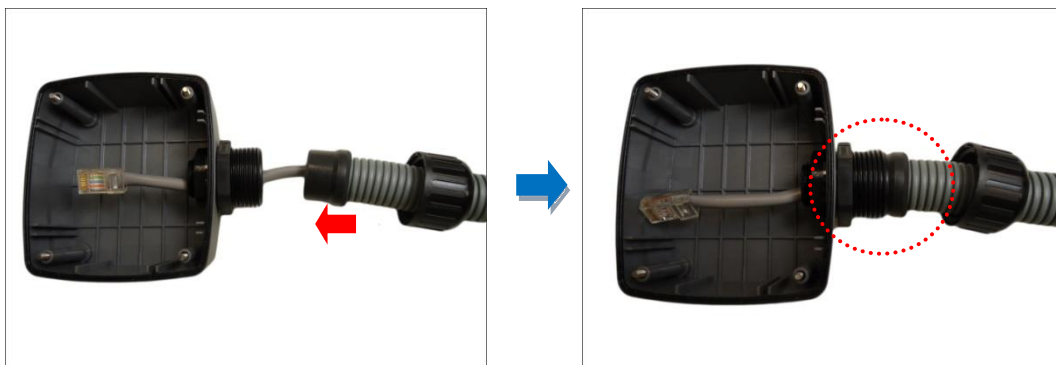
Sealing Insert

Clamping Nut

Conduit Gland Body

5. Insert the Ethernet cable and other cables (if any) without terminal blocks through the conduit gland body of the back cover.
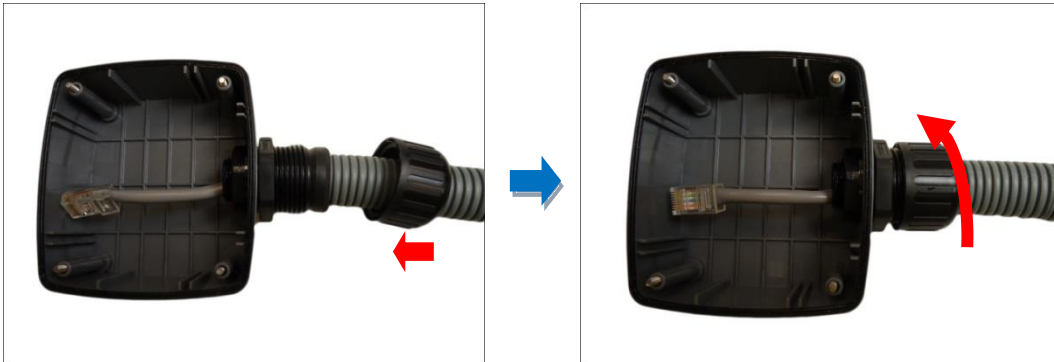
or

Ethernet Cable Only

Ethernet and Power Adaptor Cable

6. Insert the sealing insert into the conduit gland body.

7. Attach the clamping nut to complete the cable solution.

NOTE: Make sure the clamping nut is tightly attached to the conduit gland body to avoid water leak.
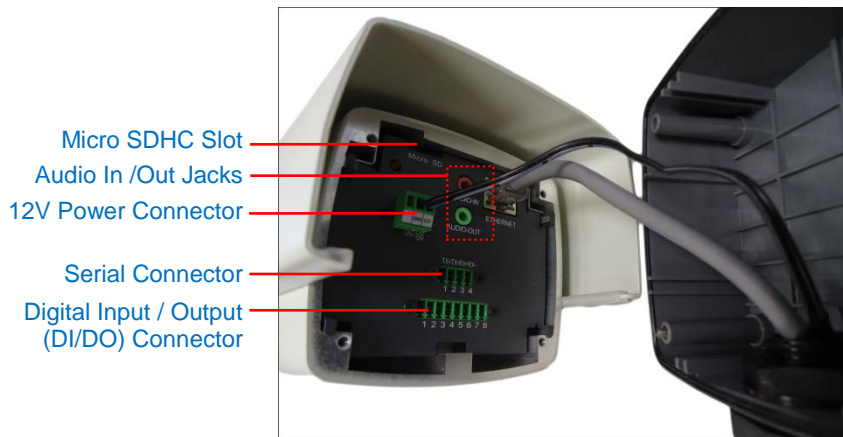
Step 3: Connect the Ethernet Cable

1. Connect the Ethernet cable to the Ethernet port of the camera.

If connecting other cables, such as an external power adaptor, DI/DO or serial devices, connect the supplied terminal blocks and connect them to the corresponding connectors of the camera (see *Other Connections* on page 15 for more information). Sample image below.

Micro SDHC Slot
Audio In /Out Jacks
12V Power Connector

Serial Connector
Digital Input / Output
(DI/DO) Connector

2. When done, close the back cover by tightening the three (3) screws.

3. Connect the other end of the Ethernet cable to a network switch.

   NOTE: In case of using a non-PoE switch, you must use an external power adaptor (not included) to connect the camera to a power source. See *Connecting a Power Adaptor (Optional)* on page 15.

Step 4: Install the Camera

Install the camera to the bracket (not included in the package).

NOTE: The bracket is not included in the camera package. The camera can be mounted directly on a wall using PMAX-1101 or use accessory sets for pole or corner installations (see http://www.acti.com/mountingselector for more information).

Step 5: Access the Camera

Access the camera Live View. See *Accessing the Camera* on page 22 for more information.

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), Audio Input and Output devices, as well as Serial Devices like a Pan-Tilt (PT) Scanner using the bundled terminal blocks. The use of these devices, however, is optional.

## Connecting a Power Adaptor (Optional)

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.

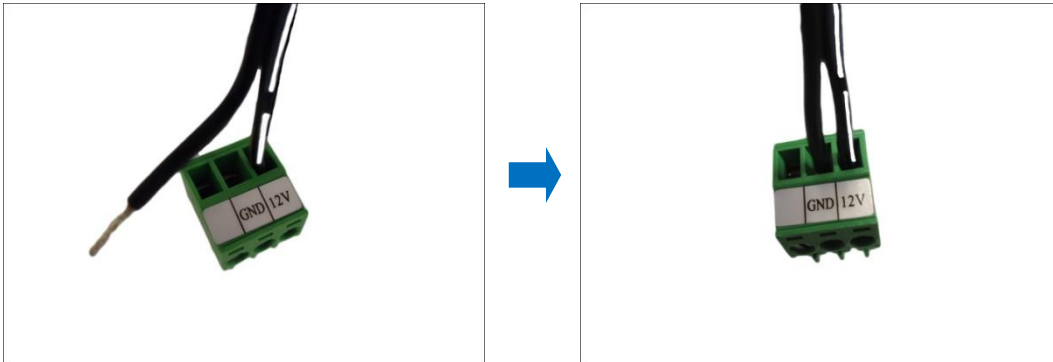To do this, follow the procedures below:

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:

Connects to GND Pin

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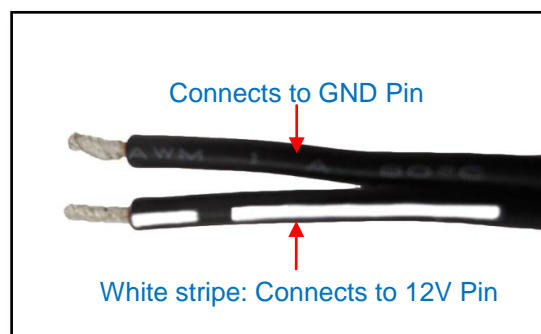
3. Connect the wire with the white stripe to the **12V** pin and the other to the **GND** pin.

4. Tighten the screws of the **12V** pin and the **GND** pins to secure the wire connection.
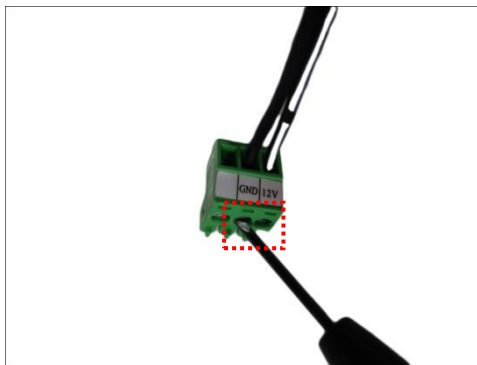
5. Set the prepared power adaptor for connection later. Below is an example of a power adaptor with an attached terminal block.

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.

Loosen the pin screw, insert the wire, and tighten the screw to secure the wire. See the following tables on how to map the pins.
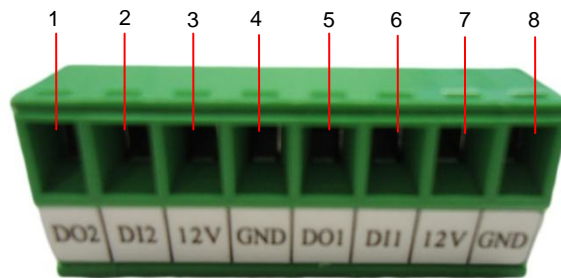
To connect output devices (DO), map the pins to one of the pin combinations below:

Device	Pin		Mapping Instructions
Digital Output 2 (DO2)	1	DO2	Connect the wires of one output device to **DO2** (Pin 1) and **12V** (Pin 3).
	3	12V	
Digital Output 1 (DO1)	5	DO1	Connect the wires of another output device to **DO1** (Pin 5) and **12V** (Pin 5).
	7	12V	

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

Device	Pin		Mapping Instructions
Digital Input 2 (DI2)	2	DI2	Connect the wires of the one input device to **DI2** (Pin 2) and **GND** (Pin 4).
	4	GND	
Digital Input 1 (DI1)	6	DI1	Connect the wires of another input device to **DI1** (Pin 6) and **GND** (Pin 8).
	8	GND	

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, < 100mA

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 (<100mA), 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 **DI2** pins to connect a DI device and use the **12V** and **DO2** pins to connect a DO device. See wiring scheme below:
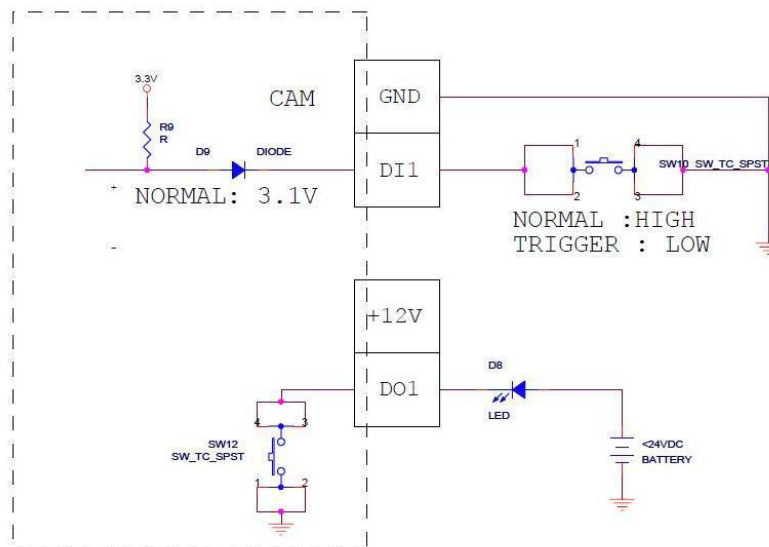
Consequently, to connect a second DI or DO device, wire the connection to Pins 5 to 8.

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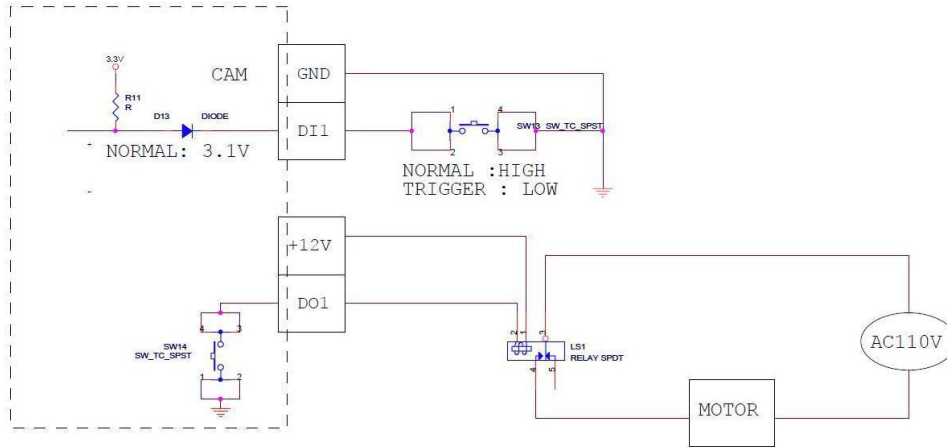
Note that when choosing an appropriate relay, please refer to its specifications and make sure they match the above design. The triggering circuit voltage has to be around 12V DC and the switch-controlled circuit voltage has to match the external power supply (e.g. 110V AC or 220V AC).

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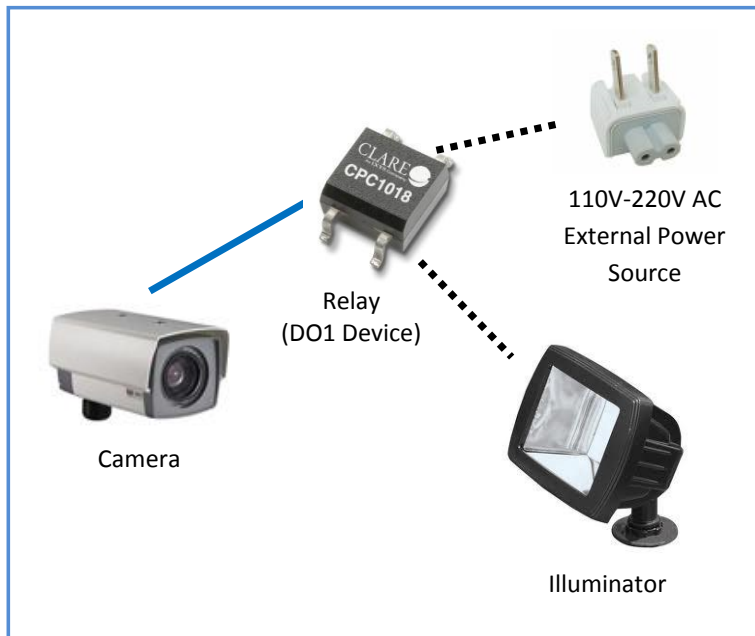

NOTE: For more information on DI/DO connections, please refer to the Knowledge Base article *All about Digital Input and Digital Output* downloadable from the link below *(http://www.acti.com/kb/detail.asp?KB_ID=KB20091230001*).

Connecting a Serial Device (Optional)

The camera can be connected to a **Pan-Tilt (PT) Scanner** (Pan-Tilt Head) using the serial port connector. This allows the zoom camera to do pan and tilt using the Pelco-D protocol. Most PT scanners accept Pelco-D and Pelco-P protocol commands via RS-485 or RS-422 connection, which are both supported by your camera.

Check the connection available on the PT scanner and connect it to your camera following the procedures below.

1. Map the wires from the PT scanner to your camera using the supplied terminal block according to one of the tables below.
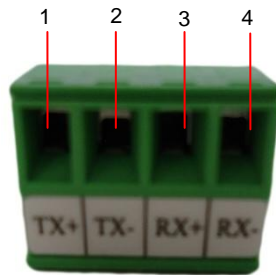
Via RS-485 Connection

Terminal Block		Wire Mapping	
Pin Number / Label		Camera Pin	PT Scanner Pin
1	TX +	TX +	DATA +
2	TX -	TX -	DATA -
3	RX+	-	
4	Rx-	-	

Via RS-422 Connection

Terminal Block		Wire Mapping	
Pin Number / Label		Camera Pin	PT Scanner Pin
1	TX +	TX +	RX +
2	TX -	TX -	RX -
3	RX+	RX +	TX +
4	Rx-	RX -	TX -

NOTE: The pins of the PT Scanner may be labeled differently depending on the location or country where the scanner is purchased. For example, some devices may have RS-485 **DATA+** pins labeled as "TX+", "RX+", "A" or "485+", etc. Refer to the scanner

documentation or contact the manufacturer to verify the corresponding pin labels and ensure proper wiring connection.

⚠️ **CAUTION:** Incorrect wiring may cause damage to the connected devices.

DISCLAIMER: ACTi will not be responsible for any damage caused by improper wiring.

2. Connect a ground wire to one of the GND terminal pins of your camera (via Power or DI/O terminals) to complete the connection.

For more information on connecting PT scanners, please refer to the Knowledge Base article: [Pan and Tilt Scanner for ACTi Zoom Cameras (http://www.acti.com/support/KnowledgeBase/outside/detail.asp?KB_ID=KB20110120001)](http://www.acti.com/support/KnowledgeBase/outside/detail.asp?KB_ID=KB20110120001) available on the website.

Accessing the Camera

Configure the IP Address

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 address

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.
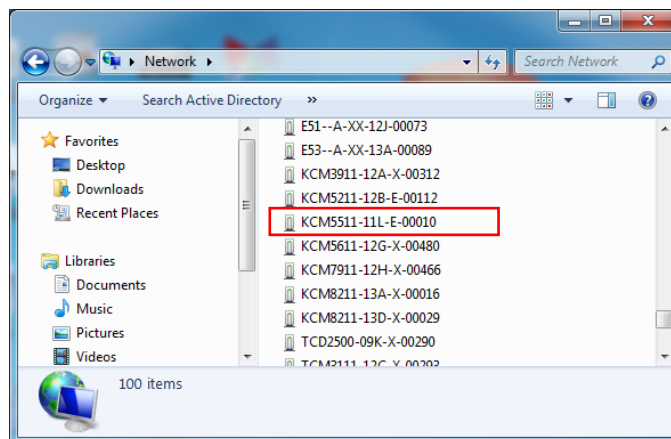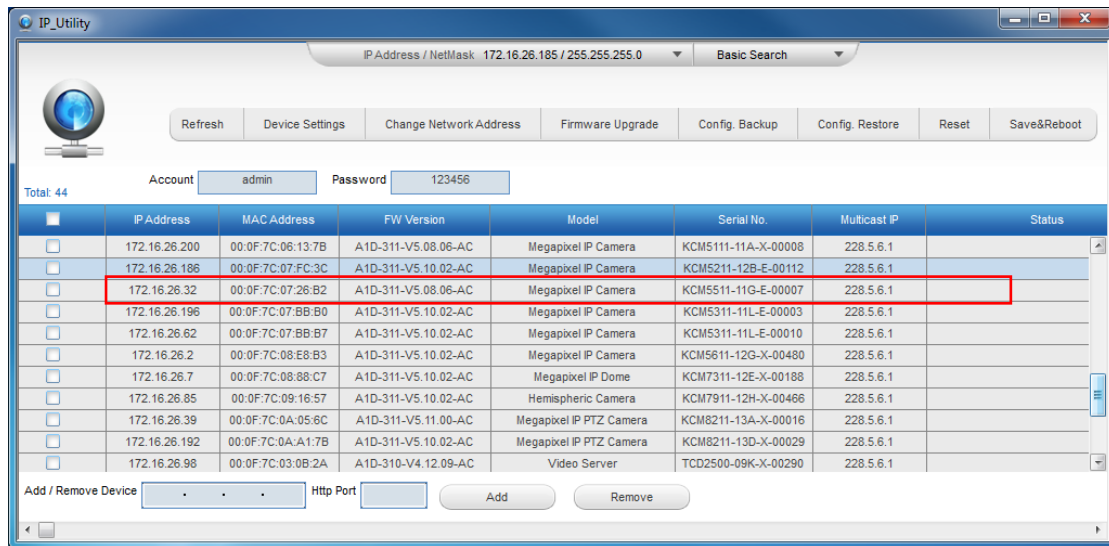

When the left mouse is clicked on the camera model name, the default browser of the PC is automatically launched and the IP address of the target camera is already filled in the address bar of the browser.

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:
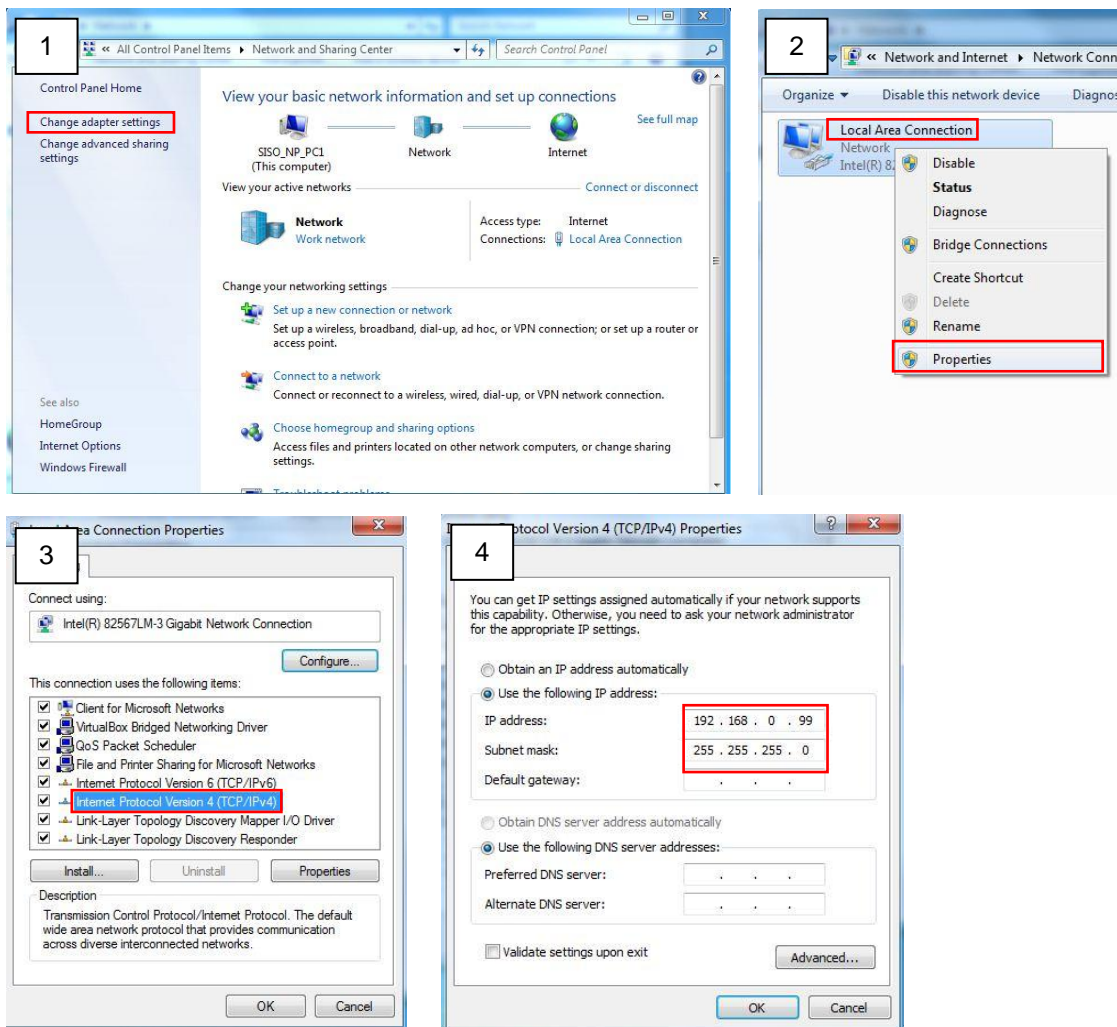
Manually adjust the IP addresses of multiple cameras

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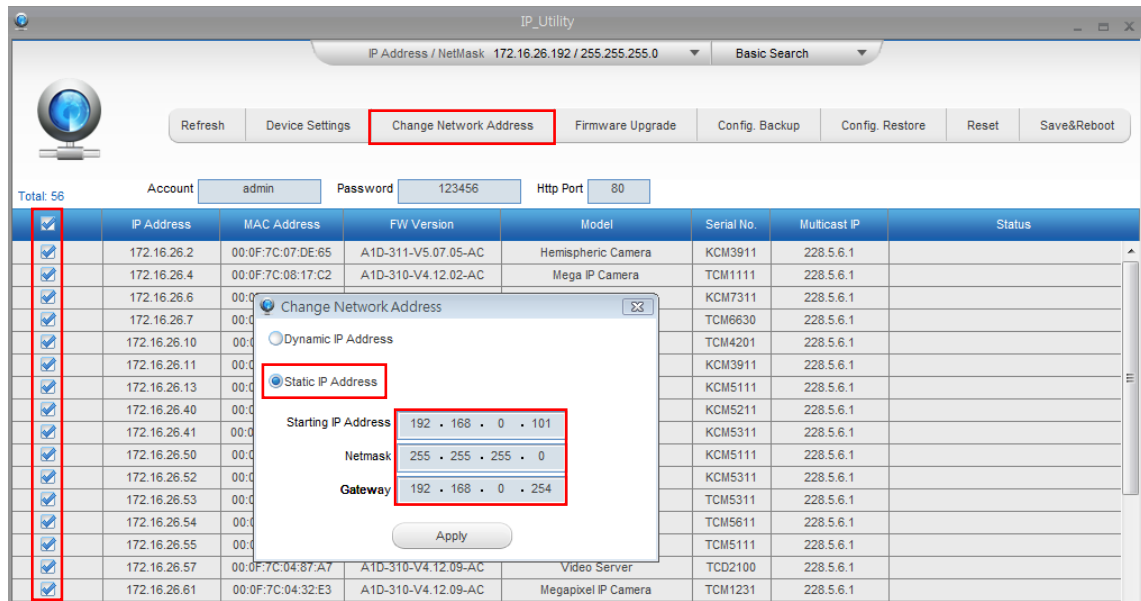
With the procedure shown above, all the cameras will have unique IP addresses, starting from 192.168.0.101. In case there are 20 cameras selected, the last one of the cameras would have the IP 192.168.0.120.

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 both have their unique IP addresses and are under the same network segment, you can use **Microsoft Internet Explorer** on the PC to access the camera.

Note: Only Microsoft Internet Explorer is supported by the camera at the time of writing this documentation. Please refer to our website (www.acti.com) for future upgrades.

Internet Explorer supports the following functionalities:

Functionality	Internet Explorer
Live Video	Yes
Live Video Area Resizable	Yes
PTZ Control	Yes
Capture the snapshot	Yes
Video overlay based configuration (Motion Detection regions, Privacy Mask regions)	Yes
All the other configurations	Yes

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

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 the 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.
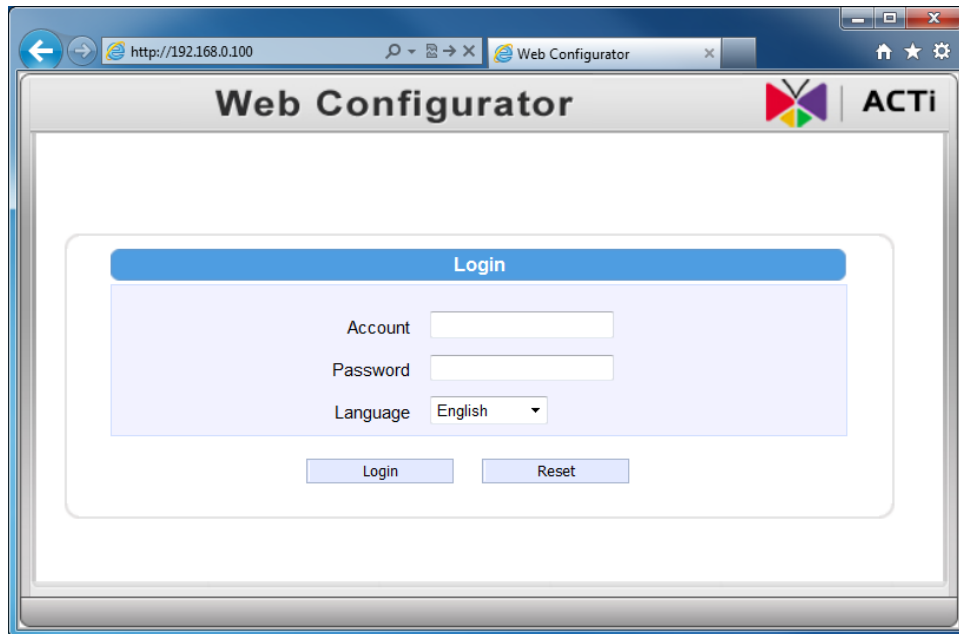
Before logging in, you need to know the factory default Account and Password of the camera.

<p style="text-align:center; font-size:1.5em;">Account: Admin</p>

<p style="text-align:center; font-size:1.5em;">Password: 123456</p>

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