Speed Dome Camera

Hardware Manual

Z954

2023/12/14

ACTi
Connecting Vision

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www.acti.com

Precautions

Read these instructions

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

Heed all warnings

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

Servicing

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

Trademarks

ACTi and ACTi logo are registered trademarks of ACTi Corporation. All other names and products used in this manual are registered trademarks of their respective companies.

Liability

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

Regulatory Compliance

FCC Part 15

This equipment has been tested and found to comply with the limits for 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 user will be required to correct the interference at his own expense.

This product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.

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

LVD/EMC Directive

This product complies with the European Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU.

WEEE Directive–2012/19/EU

The product this manual refers to is covered by the Waste Electrical & Electronic Equipment (WEEE) Directive and must be disposed of in a responsible manner.

Battery Directive-2013/56/EC

Battery in the product complies with the European Battery Directive 2013/56/EC. For proper recycling, return the battery to your supplier or to a designated collection point.

Safety and Compliance Information

Installation and removal of the unit and its accessories must be carried out by qualified personnel. You must read all of the Safety Instructions supplied with your equipment before installation and operation.

Installation

- This device is a class A product and may cause radio interference. Take measures if necessary.

- Make sure the camera operates in an environment where the temperature and humidity meet requirements. Keep the camera from excessive pressure, vibration, moisture, dust, and intensive electromagnetic radiation.

- Use a power adapter or a PoE device that meets requirements. Otherwise, the device may be damaged.

- Make sure the length of the power cable between the power adapter and the camera is not too long, otherwise the voltage of the camera is lowered, causing the camera to work abnormally. If it is required to lengthen the power cable, lengthen the cable between the power adapter and the mains.

- Do not hold the tail cable by hand for weight bearing. Otherwise, the cable connector of the camera could be loosened.

- Do not cut the tail cable. Exposed tail cables may cause short circuit and damage the camera.

- When connecting to an external interface, use an existing connection terminal, and ensure that the cable terminal (latch or clamp) is in good condition and properly fastened. Ensure that the cable is not tense during mounting, with a proper margin reserved to avoid poor port contact or loosening caused by shock or shake.

- The end of the tail cable must be kept under good protection. Take waterproof measures to protect the tail cable.

- During the process of transportation, special attention is required for the protection of the transparent dome cover to prevent friction, scratch and contamination, etc. In order to keep the cover clean, do not remove the protective film on the cover during mounting. After mounting is finished, remove the film before the device is powered on.

- Contact professionals for maintenance information. Do not attempt to dismantle the device by yourself. We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.

Network Security

Please take all necessary measures to enhance network security for your device.

The following are necessary measures for the network security of your device:

- Change default password and set strong password: You are strongly recommended to change the default password after your first login and set a strong password of at least nine characters including all three elements: digits, letters and special characters.

- Keep firmware up to date: It is recommended that your device is always upgraded to the latest version for the latest functions and better security. Visit our official website or contact your local dealer for the latest firmware.

The following are recommendations for enhancing network security of your device:

- Change password regularly: Change your device password on a regular basis and keep the password safe. Make sure only the authorized user can log in to the device.

- Enable HTTPS/SSL: Use SSL certificate to encrypt HTTP communications and ensure data security.

- Enable IP address filtering: Allow access only from the specified IP addresses.

- Minimum port mapping: Configure your router or firewall to open a minimum set of ports to the WAN and keep only the necessary port mappings.   Never set the device as the DMZ host or configure a full cone NAT.

- Disable the automatic login and save password features: If multiple users have access to your computer, it is recommended that you disable these features to prevent unauthorized access.

- Choose username and password discretely: Avoid using the username and password of your social media, bank, email account, etc, as the username and password of your device, in case your social media, bank and email account information is leaked.

- Restrict user permissions: If more than one user needs access to your system, make sure each user is granted only the necessary permissions.

- Disable UPnP: When UPnP is enabled, the router will automatically map internal ports, and the system will automatically forward port data, which results in the risks of data leakage. Therefore, it is recommended to disable UPnP if HTTP and TCP port mapping have been enabled manually on your router.

- SNMP: Disable SNMP if you do not use it. If you do use it, then SNMPv3 is recommended.

- Multicast: Multicast is intended to transmit video to multiple devices. If you do not use this function, it is recommended you disable multicast on your network.

- Check logs: Check your device logs regularly to detect unauthorized access or abnormal operations.

- Physical protection: Keep the device in a locked room or cabinet to prevent unauthorized physical access.

- Isolate video surveillance network: Isolating your video surveillance network with other service networks helps prevent unauthorized access to devices in your security system from other service networks.

Safety Warnings

The device must be installed, serviced and maintained by a trained professional with necessary safety knowledge and skills. Before you start using the device, please read through this guide carefully and make sure all applicable requirements are met to avoid danger and loss of property.

Storage, transportation, and use

- Store or use the device in a proper environment that meets environmental requirements, including and not limited to, temperature, humidity, dust, corrosive gases, electromagnetic radiation, etc.
- Make sure the device is securely installed or placed on a flat surface to prevent falling.
- Unless otherwise specified, do not stack devices.
- Ensure good ventilation in the operating environment. Do not cover the vents on the device. Allow adequate space for ventilation.
- Protect the device from liquid of any kind.
- Make sure the power supply provides a stable voltage that meets the power requirements of the device. Make sure the power supply's output power exceeds the total maximum power of all the connected devices.
- Verify that the device is properly installed before connecting it to power.
- Do not remove the seal from the device body without consulting our company first. Do not attempt to service the product yourself. Contact a trained professional for maintenance.
- Always disconnect the device from power before attempting to move the device.
- Take proper waterproof measures in accordance with requirements before using the device outdoors.

Power Requirements

- Installation and use of the device must be in strict accordance with your local electrical safety regulations.
- Use a UL certified power supply that meets LPS requirements if an adapter is used.
- Use the recommended cord set (power cord) in accordance with the specified ratings.
- Only use the power adapter supplied with your device.
- Use a mains socket outlet with a protective earthing (grounding) connection.
- Ground your device properly if the device is intended to be grounded.

Battery Use Caution

- When battery is used, avoid:
  - o High or low extreme temperatures during use, storage and transportation;
  - o Extremely low air pressure, or low air pressure at high altitude.
- Use the battery properly. Improper use of the battery such as the following may cause risks of fire, explosion or leakage of flammable liquid or gas.
  - o Replace battery with an incorrect type;
  - o Dispose of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery;
- Dispose the used battery according to your local regulations or the battery manufacturer's instructions.

Maintenance

- If there is dust on the front glass surface, remove the dust gently using an oil-free brush or a rubber dust blowing ball.
- If there is grease or a dust stain on the front glass surface, clean the glass surface gently from the center outward using anti-static gloves or an oil-free cloth. If the grease or the stain still cannot be removed, use anti-static gloves or an oil-free cloth dipped with detergent and clean the glass surface gently until it is removed.
- Do not use organic solvents, such as benzene or ethanol when cleaning the transparent dome cover.

Class 1
LASER PRODUCT

- Never look at the transmit laser while the power is on. Never look directly at the fiber ports and the fiber cable ends when they are powered on.
- Use of controls or adjustments to the performance or procedures other than those specified herein may result in hazardous laser emissions.

Introduction

List of Models

This hardware manual contains the following models:

Z954		8MP Outdoor Speed Dome with D/N, Adaptive IR, Superior WDR, SLLS, 25x Zoom Lens

Package Contents

Contact your local dealer if the package is damaged or incomplete. The attachments may vary with models, please see the actual model for details.

- Camera
- Power Adapter and Cord
- Bracket Adapter Ring
- Cable Gland
- Hex Screwdriver
- Quick Installation Guide
- Warranty Card

Physical Description

Item		Description
1	**Serial Port**	Connects to a serial device, such as a PT controller, etc. See *How to Connect a Serial Device* on page 20.
2	**AC24V/DC24V Power Input**	In case the camera is connected to a non-PoE (Power over Ethernet) switch, use this connector to connect the camera to the bundled power adapter. See *How to Connect the Power Adapater (optional)* on page 20.
3	**Digital Input / Output**	Connects to input and output devices, such as a panic button, or an alarm trigger, etc. See *How to Connect Digital Input / Output Device (optional)* on page 20.
4	**Ethernet Port**	Connects to a network using an Ethernet cable with RJ-45 connector.
5	**Analog Video Output**	Connects to an analog video output device using BNC connection to monitor what is seen from the camera lens.
6	**Audio Input / Output**	Connects to audio input / output devices, such as a microphone with built-in amplifier or speaker, etc. See *How to Connect Audio Input / Output Device (optional)* on page 22.

| Item		Description
7	**Memory Card Slot**	Insert a memory card (not included) into the slot for local recording purposes. See *Install Memory Card (Optional)* on page 15.
8	**Reset Button**	Press the reset button for 15 seconds to restore the camera to its default settings. See *Reset the Camera* on page 23. **NOTE:** The reset button only works within 10 minutes after the camera is powered on.

NOTE:

- The above photo is for reference only; depending on the location or time the product is purchased, some components may not be available on the actual product.

- Please disconnect the power before mounting the camera.

- The camera does not provide power for external devices. Make sure to use external power source to power up external devices such as alarm input/output, audio, etc.

Installation Procedures

Prepare for Installation

The following figures are for reference only. See the actual product for details.

Before mounting the camera, check the device model, accessory types and quantities against the packing list to ensure the components are complete.
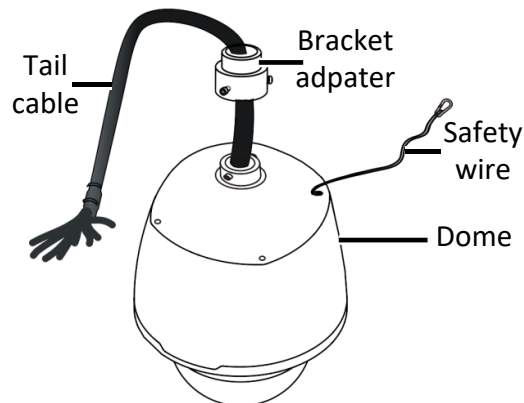
Verify the bearing capacity of the mounted position

Verify that the mounted position meets the bearing requirements. Otherwise, you are advised to reinforce the mounted position for the device weight. For more information, see the product datasheet.

Verify the lightning protection and grounding requirements

Select proper lightning protection devices for the power supply, audio and video signals interfaces, and RS485 interfaces.

Cable Requirements

10M/100M Ethernet CAT 5/5E UTP cables are applicable to the ANSI/EIA/TIA-568A/B and ISO/D.

Eight wires in the network cable need to be inserted in parallel into the top of the cable connector. The cable connector needs to be crimped in position. When the cable connector is in position, ensure that the metal pieces of the cable connector are parallel to each other and the clamp of the cable connector is intact.

Install Memory Card (Optional)

Make sure the camera is disconnected from the power before installation, otherwise the camera or the memory card may be damaged.

Install the memory card first, then format the card in the software interface before use. See firmware manual for details.

1. Unscrew the four screws to remove the back cover.
2. Insert the memory card into the slot with the metal contacts facing the camera main board.
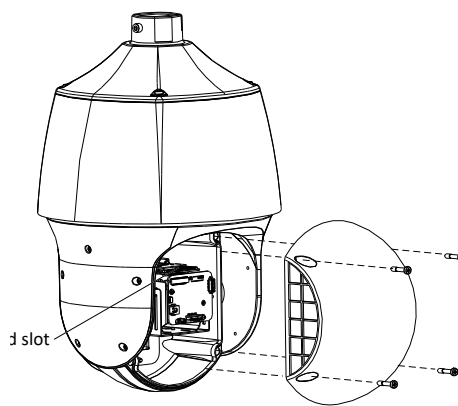
3. Attach the back cover.
4. Properly mount the waterproof ring in position.

Mount on the Wall

1. Mark the positions of the holes by referring to the mount points of the bracket and lead the cable through the hole on the wall. Then drill holes and knock the expansion bolts.
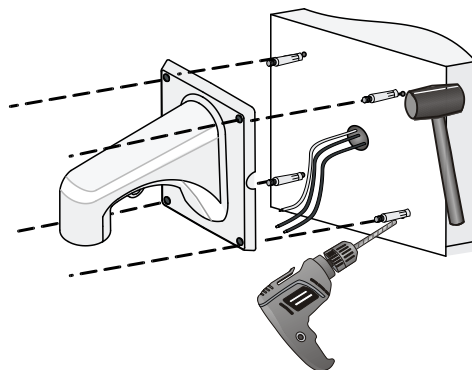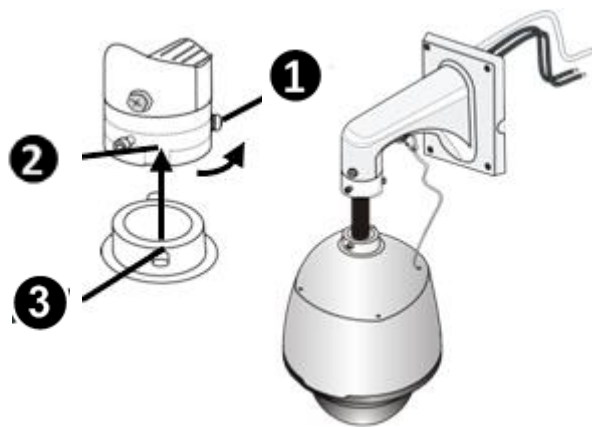
2. Turn the bracket adapter (G1 ½ male thread) in and secure the bracket adapter with a screw.
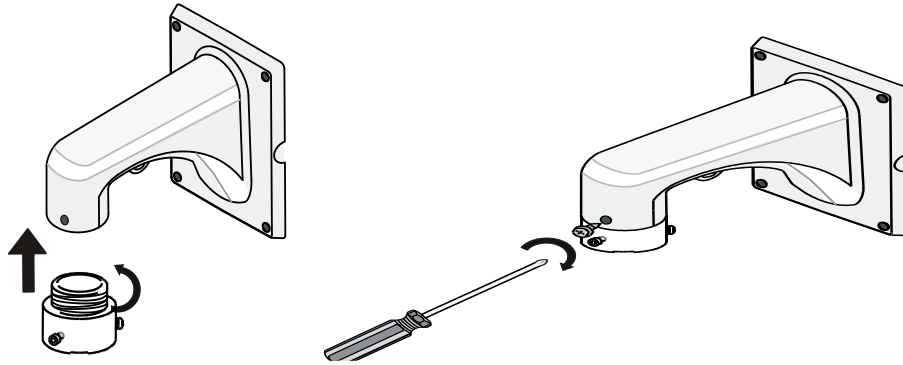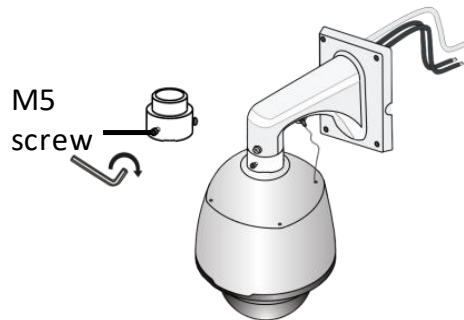

3. Attach the safety wire to the bracket and the dome. And lead the tail cable through the bracket.
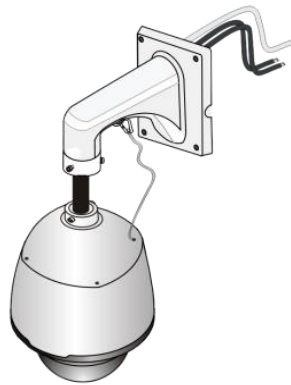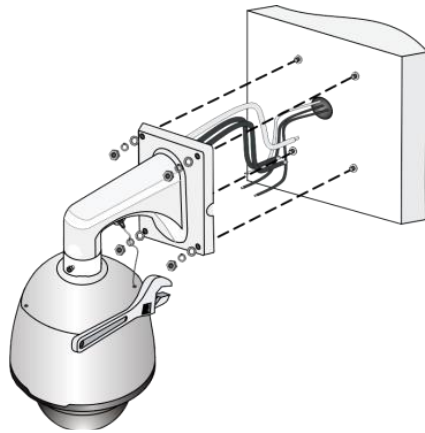

4. Attach the camera to the bracket adapter.
    Slide camera holders into inner track and turn camera till it is blocked by bracket adapter screw.

5. Secure the dome with two M5 screws.

6. Connect the cables and attach the bracket to the wall with flat pads, washers and nuts.
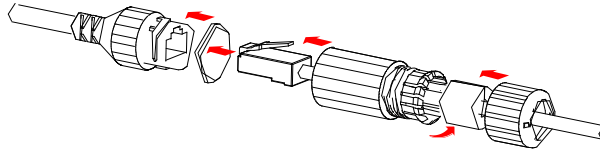

NOTE:

- When mounting the camera, install the bracket adapter to the bracket first and then mount the camera to the bracket.
- Tighten all the screws to hold the camera securely.
- For waterproofing, apply sealant between the camera and the bracket, wall veneer slits, and leading-out holes of the wall.
- The above installation describes concealed installation. To implement open installation, directly lead the cable out from the cable slot on the bracket.

Waterproof Ethernet Cable

1. Attach the rubber ring to the network cable. Then attach the cable gland according to the sequence shown below.


2. Insert the cable from the network into the Ethernet port of the camera. Then, tighten the cable gland.

NOTE: Please waterproof the cables in accordance with the following instructions. Users shall assume responsibility for device damage caused by water due to improper waterproof measures.
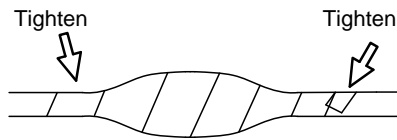
Waterproof Other Cables

Connect the other cables to their corresponding devices. Then take the following steps to protect the cables from water using waterproof tapes. The figures are for your reference only.
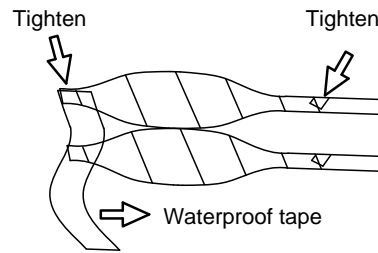
1. Connect the cables to their corresponding devices, and protect the cables and cable connections using insulating tapes. Then wrap each cable connection using insulating tapes.

Connection part

Insulation tape
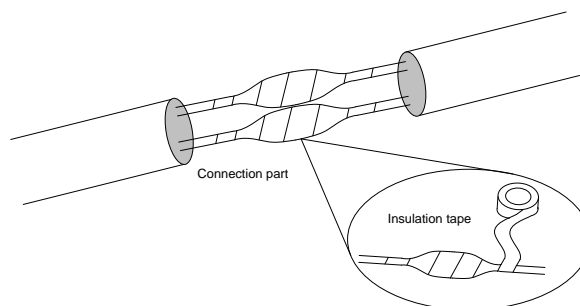
2. Waterproof the cables with self-adhesive waterproof tape. Wrap the waterproof tape tightly and make sure the tape is fully stretched during the process. Tighten the tape at both ends to prevent water leakage.

Tighten   Tighten   Tighten   Tighten

Waterproof tape

Wrap the used cables separately   Wrap the unused cables together into a bundle

NOTE:

- Avoid short circuit when insulating the cables.

- Use self-adhesive waterproof tapes that will stick together with the twisted cables.

- Tighten waterproof tapes when wrapping the cables and make sure the cable connections are fully covered.

- You are recommended to put the waterproof cables in a waterproof junction box (purchased separately).

Other Connections (Optional)

How to Connect the Power Adapater (optional)

The camera comes with a bundled AC24V power adapter. Map the wires according to the table below to use the power adapter.

Camera Terminal Block Wire	Pin	Bundled Power Adapter Wire
Red	AC24V+ / DC24V+	White
Black	AC24V- / DC24V-	Black
Yellow & Green stripe	Ground	-

How to Connect a Serial Device

You can connect serial devices, such as a PT controller or joystick, to the camera through its RS-485 connector.

| Wire	Pin
Yellow	RS-485 D+
Yellow and Black stripe	RS-485 D-

How to Connect Digital Input / Output Device (optional)

Digital linput (DI) or alarm IN (ALM IN) devices can be used to notify the camera about an activity in the camera site. DI can be triggers of events, like a panic button, emergency button, smoke detector, etc.

Digital Output (DO) or alarm OUT (ALM OUT) 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 sound when an event occur. Other common DO devices applications are motion-triggered lights, electric fence, magnetic door locks, etc.

To connect digital input/output devices, map the pins to the wires on the camera accordingly.

Wire	Pin
Gray	Alarm IN 1 (ALM IN1)
Purple	Alarm IN 2 (ALM IN2)
Black	GROUND (GND)
Orange & White stripe	Alarm OUT+ (ALM OUT+)
Orange	Alarm OUT- (ALM OUT-)
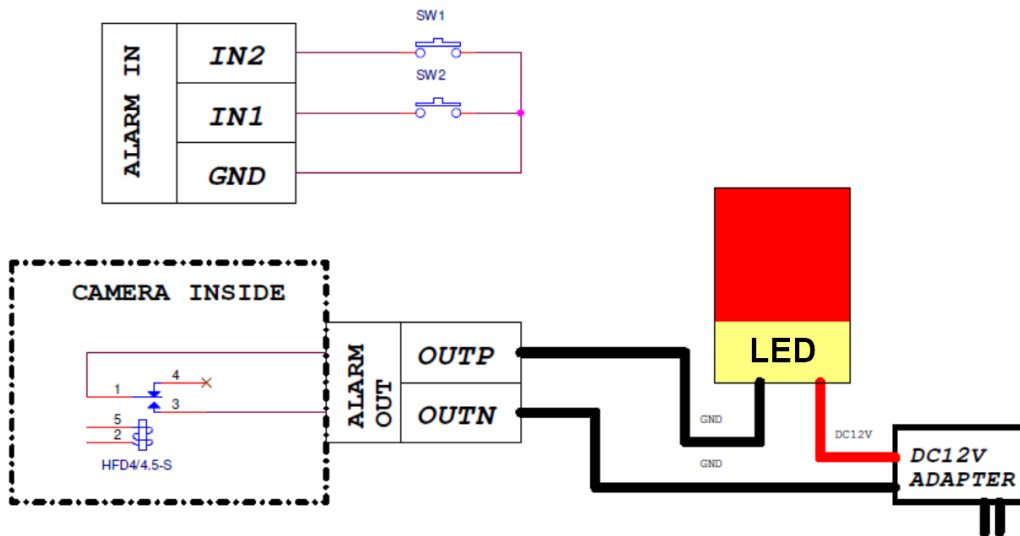
The table below shows the DI/DO connection specifications:

Device		
DI (Alarm IN)	Connection design	TTL - compatible logic levels
	Voltage — To trigger (low)	Logic level 0: 0V ~ 0.4V
	Voltage — To trigger (high)	Logic level 1: >3.1V or NC (Internal pull-high)
	Current	10mA ~ 100mA
DO (Alarm OUT)	Connection design	Relay HFD4/4.5-S
	Voltages accepted	125V AC / 0.5A 30V DC / 1A

The camera does not provide power for DO devices, make sure to use external power source to power them up. Note the maximum voltage and current allowed on the table above.

After mapping the wires to the terminal block, connect the terminal block to the DIO connector of the camera and make sure to protect the cable connection against water or other environmental factors, such as by using a waterproof tape.

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)

Audio input / output devices, such as an active microphone or speaker can be connected to the camera. To connect an audio output, connect the wires of the audio output device to **AUDIO OUT** and **GND** (Ground). Connect the wires of the audio input device to **AUDIO IN** and **GND** (Ground).

Camera Terminal Block Wire	Pin
Brown	Audio IN
Brown & White stripe	GROUDN (GND)
Green	Audio OUT

The camera does not provide power for external devices. Use an external power source to supply power when using LINE-IN microphones with the camera.

NOTE: For more information about AUDIO in connections, please refer to the Knowledge Base article How to Use Audio-In of ACTi Cameras, downloadable from the link below (https://Download.acti.com?id=534).

Ensure to protect the cable connection against water or other environmental factors, by using a waterproof tape.

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

Reset the Camera

Remove the back cover first. Press and hold the **Reset** button for about 15 seconds to restore the factory default settings. The **Reset** button only works within ten minutes after the camera is powered on.

Access 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.

If you work with our cameras regularly, **there is 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:
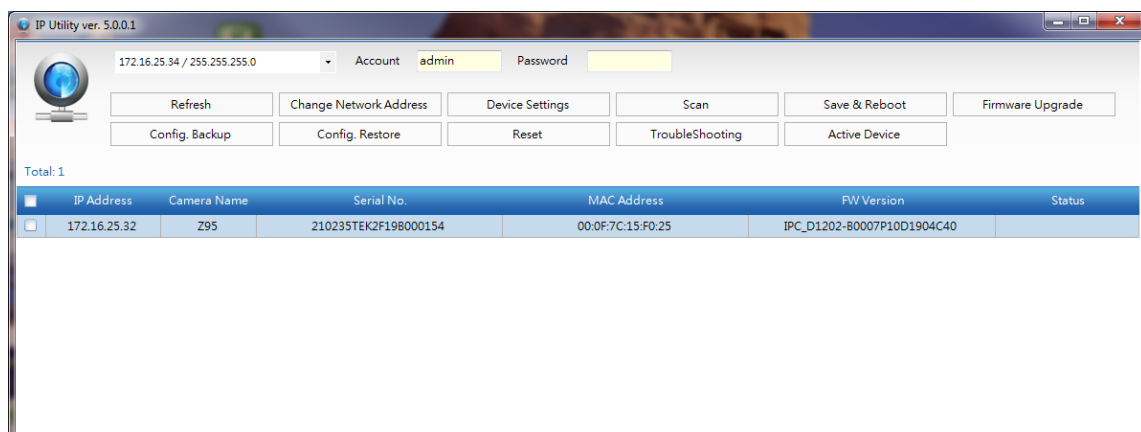
You can quickly see the camera model in the list. Double-click on the IP address to automatically launch the default browser of the PC with the IP address of the target camera filled in the address bar of the browser already.

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:
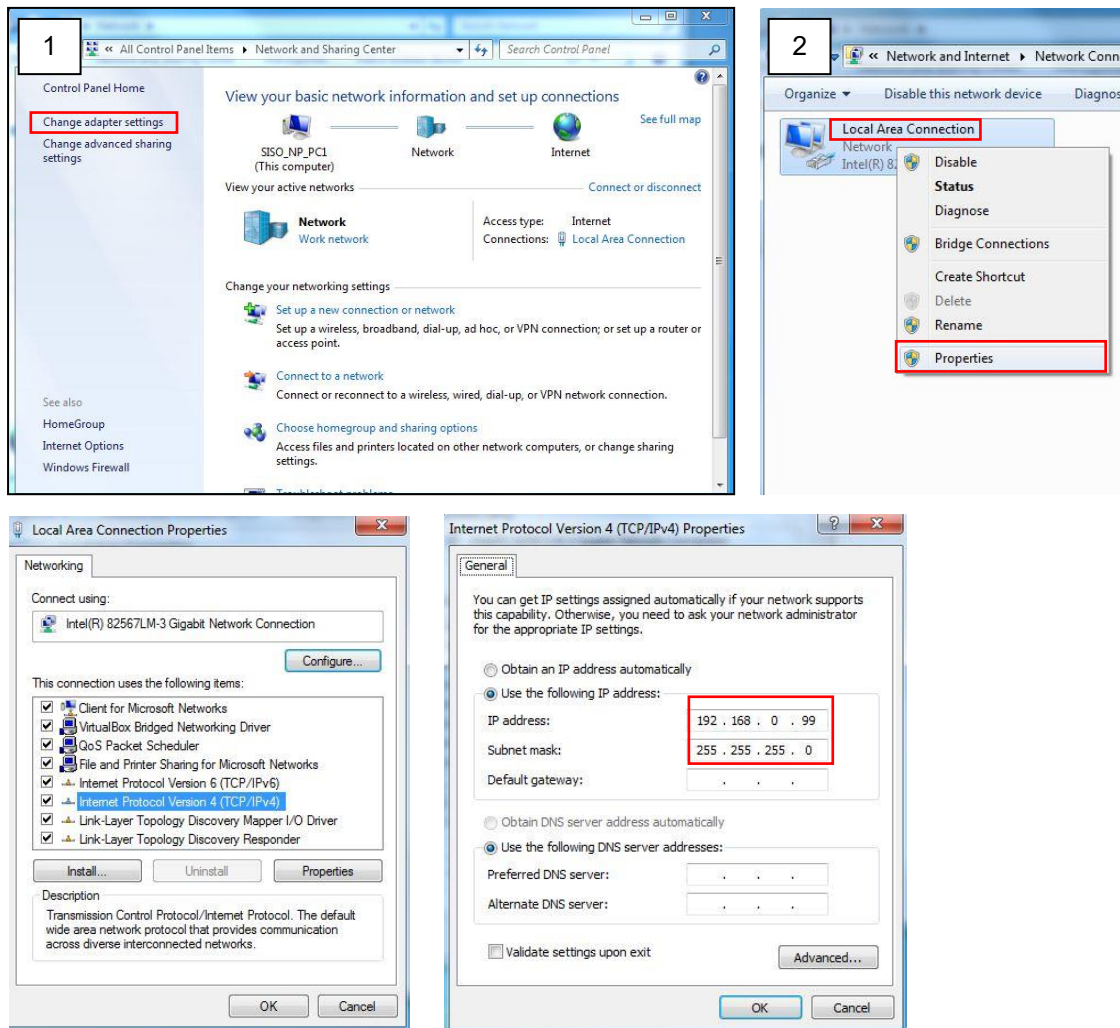
Manually adjust the IP addresses of multiple cameras:

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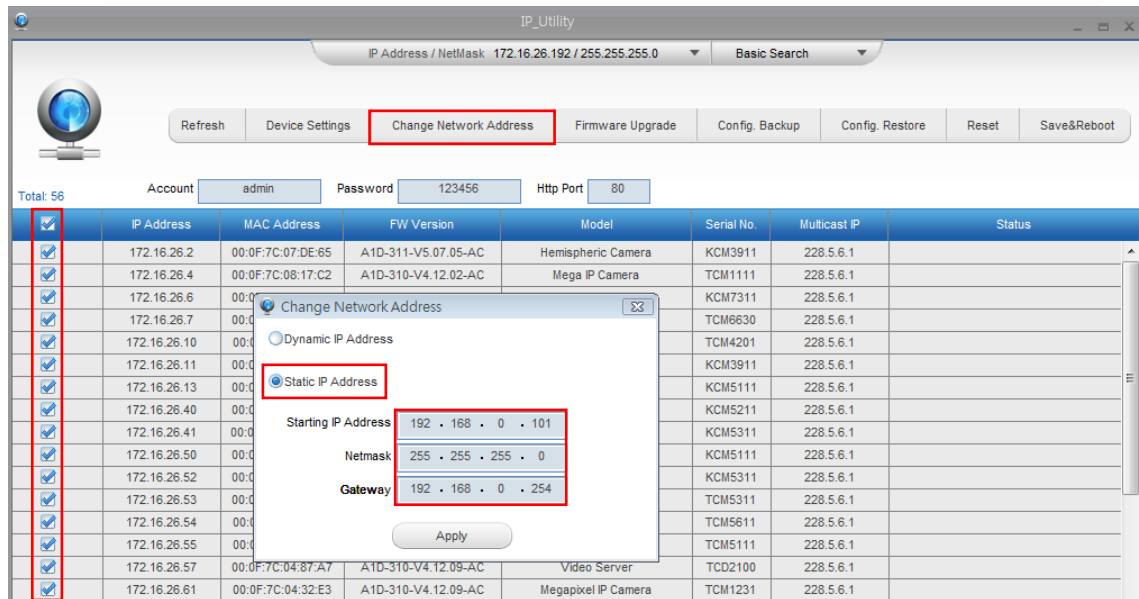
With the procedure shown above, all the cameras will have unique IP addresses, starting from 192.168.0.101. In case there are 20 cameras selected, the last one of the cameras would have the IP 192.168.0.120.

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.

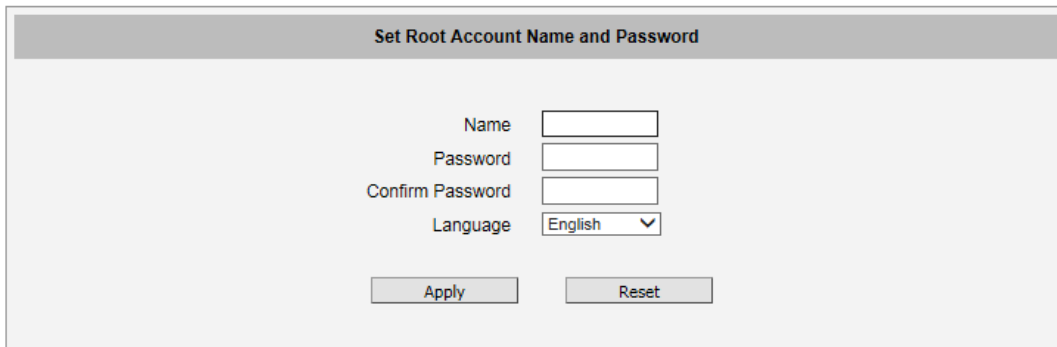You can use Edge, Chrome or Firefox to access the camera.

An 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 Web browser's address bar:

http://192.168.0.100

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

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

Set Root Account Name and Password

Name	
Password	
Confirm Password	
Language	English

Apply   Reset

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