

GV-IPCam H.264

Hardware Manual



- Bullet Camera
- Ultra Bullet Camera
- Target Bullet Camera

Before attempting to connect or operate this product, please read these instructions carefully and save this manual for future use.

ICH264TG2V10



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Options

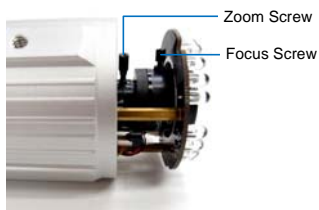
Optional devices can expand your camera's capabilities and versatility. Contact your dealer for more information.

Device	Description
Power Adapter	The power adapter is available for all Bullet Camera, Ultra Bullet Camera (except GV-BL2511-E / 5311-E), and Target Bullet Camera. Contact your sales representative for the countries and areas supported.
GV-PA191 PoE Adapter	The GV-PA191 PoE adapter is designed to provide power and network connection to the cameras over a single Ethernet cable.
GV-Relay V2	The GV-Relay V2 is designed to expand the voltage load of GV IP devices. It provides 4 relay outputs, and each can be set as normally open (NO) or normally closed (NC) independently as per your requirement.
GV-POE Switch	The GV-POE Switch is designed to provide power along with network connection for IP devices. The GV-POE Switch is available in various models with different numbers and types of ports.
GV-Mount Accessories	The GV-Mount Accessories provide a comprehensive lineup of accessories for installation on ceiling, wall corner and pole. For details, see <i>GV-Mount Accessories Installation Guide</i> on the Software DVD.

Note for Adjusting Focus and Zoom

When adjusting the Focus and Zoom Screws on **Bullet Camera**, do not over tighten the Focus and Zoom screws. The screws only need to be as tight as your finger can do it. It is not necessary to use any tools to get them tighter. Doing so can damage the structure of lens.

For example,



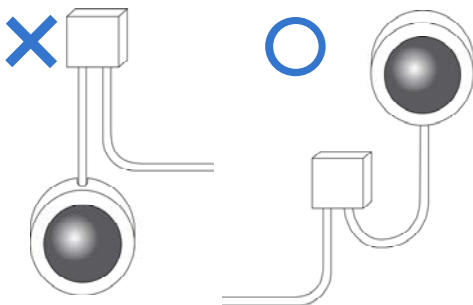
Bullet Camera

The maximum torque value for all the zoom and focus screws is 0.049 N.m

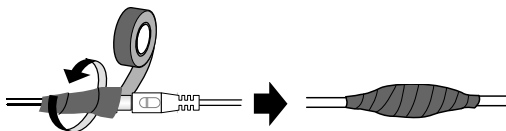
Note for Installing Camera Outdoor

When installing the cameras outdoor, be sure that:

1. The camera is set up above the junction box to prevent water from entering the camera along the cables.



2. Any PoE, power, audio and I/O cables are waterproofed using waterproof silicon rubber or the like.



3. The silica gel bag loses its effectiveness when the dry camera is opened. To prevent the lens from fogging up, replace the silica gel bag every time you open the camera, and conceal the gel bag in camera within 2 minutes of exposing to open air.

Note for Closing the Bullet Camera Cover

To ensure that the camera performs its full capacity against water and dust, tightly close and lock the camera cover as indicated below.



Note for Recording

- 1 By default, the images are recorded to the memory card inserted in the **GV-IP Camera H.264** (except GV-IR Arctic Box Camera and Target Series, which are not equipped with a memory card slot). Make sure the **Write recording data into local storage option** (see *4.1.1 Video Settings, GV-IPCam H.264 Firmware Manual*) is enabled. If this option is disabled, the camera will stop recording to the memory card while the live view is accessed through Web browsers or other applications.
- 2 Mind the following when using a memory card for recording:
 - Recorded data on the memory card can be damaged or lost if the data are accessed while the camera is under physical shock, power interruption, memory card detachment or when the memory card reaches the end of its lifespan. No guarantee is provided for such causes.
 - The stored data can be lost if the memory card is not accessed for a long period of time. Back up your data periodically if you seldom access the memory card.
 - Memory cards are expendable and their durability varies according to the conditions of the installed site and how they are used. Back up your data regularly and replace the memory card annually.
 - Replace the memory card when its read/write speed is lower than 6 MB/s or when the memory card is frequently undetected by the camera.
- 3 It is recommended to use memory cards of the following setting and specifications:
 - Apply a battery backup (UPS) to avoid power outage.
 - Use Micro SD card of MLC NAND flash, Class 10 for better performance.

Note for Waterproofing Failures

To avoid waterproofing failures, do not open the screw on the camera body.

1. The screw on Ultra Bullet Camera



2. The screw on Target Bullet Camera



Chapter 1 Bullet Camera (Part I)

The Bullet Cameras are specifically designed for outdoors and are weatherproof (IP66 or IP67). They are equipped with IR LEDs for infrared illumination in night vision applications. The models described in this chapter use **auto iris**, which allows for automatic control of exposure.

The **WDR Pro** models enhance the image by processing contrasting intensity of light. The **super low lux** models can produce color live view in near darkness. The **motorized varifocal lens** models allow the user to adjust the focus and zoom through the Web interface.

Model No.		Specifications	Description
GV-BL120D	Varifocal lens	Auto Iris, f: 3 ~ 9 mm, F/1.2, 1/2.7" ø 14 mm Lens Mount	1.3 MP, H.264, Low Lux
GV-BL130D			1.3 MP, H.264
GV-BL220D			2 MP, H.264
GV-BL320D			3 MP, H.264
GV-BL1500			1.3 MP, H.264, Super Low Lux
GV-BL2400			2 MP, H.264, WDR Pro
GV-BL2500			2 MP, H.264, Super Low Lux
GV-BL3400			3 MP, H.264, WDR Pro
GV-BL1210	Motorized varifocal lens	Auto Iris, f: 3 ~ 9 mm, F/1.2, 1/2.7" ø 14 mm Lens Mount	1.3 MP, H.264, Low Lux, 3X Optical Zoom
GV-BL2410			2 MP, H.264, WDR Pro, 3X Optical Zoom
GV-BL3410			3 MP, H.264, WDR Pro, 3X Optical Zoom
GV-BL5310		Auto Iris, f: 4.5 ~ 9 mm, F/1.2, 1/2.7" ø 14 mm Lens Mount	5 MP, H.264, 2X Optical Zoom

1.1 Packing List

- Bullet Camera
- Self Tapping Screw x 3
- Plastic Screw Anchor x 3
- Torx Wrench x 2
- Sun-Shield Cover Kit (Sun-Shield Cover, Philips Head Screw x 2, Plastic Screw Spacer x 2 and Hexagon Screw x 2)
- Silica Gel Bag x 2
- 2-Pin Terminal Block
- Power Adapter
- GV-IPCAM H.264 Software DVD
- GV-NVR Software DVD
- Warranty Card

Note: The power adapter can be excluded upon request.

1.2 Features

- Image sensor

Camera Model	Image Sensor
GV-BL120D / 1210	1/3" progressive scan low lux CMOS
GV-BL1500 / 1510	1/3" progressive scan super low lux CMOS
GV-BL130D / 220D / 320D GV-BL5310	1/2.5" progressive scan CMOS
GV-BL2400 / 2410 GV-BL3400 / 3410	1/3.2" progressive scan CMOS
GV-BL2500 / 2510	1/2.8" progressive scan super low lux CMOS

- Dual streams from H.264 or MJPEG
- Frame rate

Camera Model	Frame Rate
GV-BL120D / 130D GV-BL1210 GV-BL1500 / 1510	30 fps at 1280 x 1024
GV-BL220D / 2400 / 2410 GV-BL2500 / 2510	30 fps at 1920 x 1080
GV-BL320D/ 3400 / 3410	20 fps at 2048 x 1536
GV-BL5310	10 fps at 2560 x 1920

- Day and night function (with removable IR-cut filter)
- Megapixel lens
- Motorized varifocal lens for remote focus/zoom adjustment
(GV-BL1210 / 1510 / 2410 / 2510 / 3410 / 5310 only)
- Wide Dynamic Range Pro (GV-BL2400 / 2410 / 3400 / 3410 only)
- Ingress protection
(IP66 for GV-BL120D / 130D / 220D / 320D)

(IP67 for GV-BL1500 / 2400 / 2500 / 3400 and GV-BL1210 / 1510 / 2410 / 2510 / 3410 / 5310)

- Vandal resistance (IK10 for metal casing for all models except GV-BL120D / 130D / 220D / 320D)
- Two-way audio
- One sensor input and alarm output
- Micro SD card slot (SD/SDHC) for local storage
- NAS recording
- Recording assigned by GV-Edge Recording Manager (Windows & Mac)
- Cable-concealed bracket preventing cable from being cut
- DC 12V / AC 24V / PoE (IEEE 802.3af)
- Intelligent IR
- Maximum IR distance

Camera Model	Maximum IR Distance
GV-BL120D / 130D / 220D / 320D	15 m (50 ft)
GV-BL1210 / 5310	40 m (131 ft)
GV-BL2400 / 2410 GV-BL2500 / 2510 GV-BL3400 / 3410	50 m (164 ft)
GV-BL1500 / 1510	70 m (230 ft)

- 3D noise reduction (GV-BL1500 / 1510 / 2500 / 2510 only))
- 2D noise reduction (for all models except super low lux models)
- Defog
- Motion detection
- Tampering alarm
- Visual automation
- Text overlay
- Privacy mask
- IP address filtering

- Smart Phone and 3GPP support
- 31 languages on Web interface
- ONVIF (Profile S) conformant

1.3 Overview

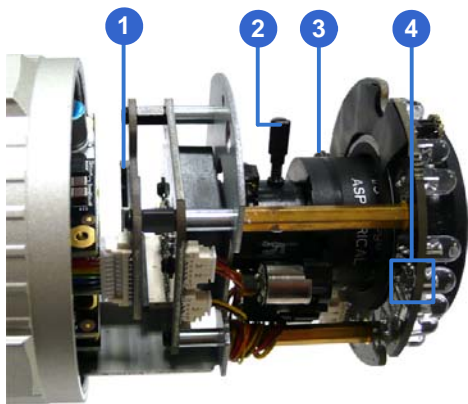


Figure 1-1

No.	Name	Description
1	Memory Card Slot	Receives a micro SD card (SD/SDHC, version 2.0 only, Class 10).
2	Zoom Screw	Holds the zoom lens in place.
3	Focus Screw	Holds the focus lens in place
4	Default Button	Resets all configurations to factory default. For details, see <i>1.5 Loading Factory Default</i> .

1.4 Installation

These instructions describe the basic installation of the Bullet Camera.

- Slide the cable clamp to the camera base.

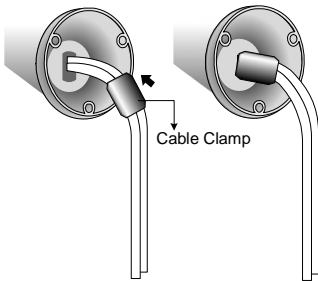


Figure 1-2

- Install the Bullet Camera to the wall.



Figure 1-3

- Remove the protection sticker from the camera's cover
- Connect the power, network and other wires to the Bullet Camera.
See 1.4.1 *Connecting the Camera*.

7. Access the live view. For details, see *2.1. Accessing the Live View, GV-IPCam H.264 Firmware Manual*.
8. Adjust angles of the camera body based on the live view. Three shafts can be adjusted. See *1.4.2 Adjusting the Angles*.
9. Loosen the camera's cover, adjust the focus of the camera and optionally insert a micro SD card (SD/SDHC, version 2.0, Class 10) into the SD card slot. See *1.4.3 Adjusting Lens and Inserting a Memory Card*.
10. Fasten the camera's cover.
11. Install the sun-shield cover to the Bullet Camera. For details, see *1.4.4 Installing the Sun-Shield Cover*.

1.4.1 Connecting the Camera

Wire Definition for Auto Iris Models

The **7-Pin Data Cable** provides connections for power, ground, 1 sensor input, 1 alarm output, audio input and audio output. The wires are illustrated and defined below:

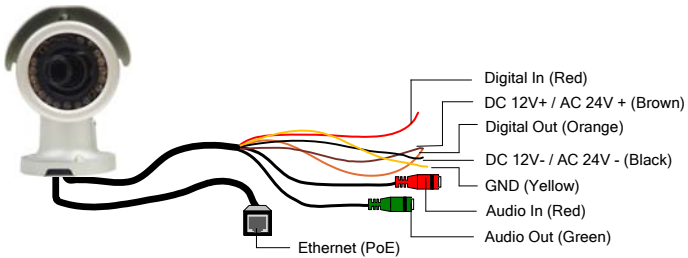


Figure 1-4

No.	Wire Color	Definition
1	Red	Digital In
2	Brown	DC 12V+ / AC 24V+
3	Orange	Digital Out
4	Black	DC 12V- / AC 24V-
5	Yellow	Ground
6	Red RCA	Audio in
7	Green RCA	Audio out

Note that the Audio In and Out connectors may also come as terminal blocks:

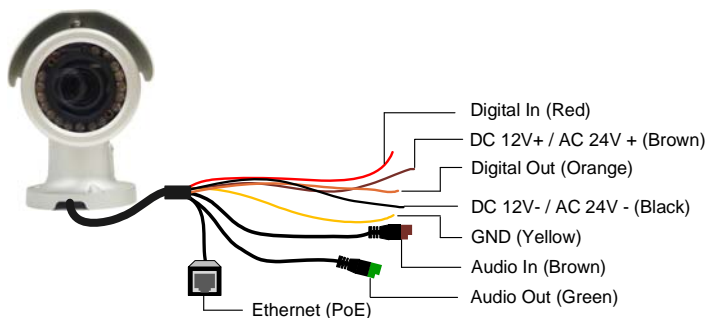


Figure 1-5

No.	Wire Color	Definition
1	Red	Digital In
2	Brown	DC 12V+ / AC 24V+
3	Orange	Digital Out
4	Black	DC 12V- / AC 24V-
5	Yellow	Ground
6	Brown terminal block	Audio in
7	Green terminal block	Audio out

Power Connection

Use one of the following methods to supply power to the camera.

- Use a Power over Ethernet (PoE) adapter to connect the camera to the network, and the power will be provided at the same time.
- Plug the power adaptor to the terminal block as shown below.
 1. Insert the black wire of the Bullet Camera to the left pin (+) and the brown wire to the right pin (-).

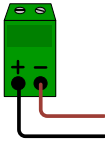


Figure 1-6

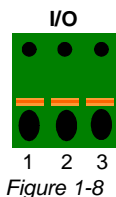
2. Connect the DC 12V Power Adaptor to the Terminal Block.



Figure 1-7

I/O Device Connection

The camera supports one digital input and one digital output of dry contact.



Pin	Function
1	Digital Output
2	GND
3	Digital Input

For details on how to enable an installed I/O device, see 4.2 I/O Settings, *GV-IPCam H.264 Firmware Manual*.

Voltage Load Expansion (Optional)

The camera can only drive a maximum load of **200mA 5V DC**. To expand the maximum voltage load to **10A 250V AC**, **10A 125V AC** or **5A 100V DC**, connect the camera to a GV-Relay V2 module (optional product). Refer to the figure and table below.

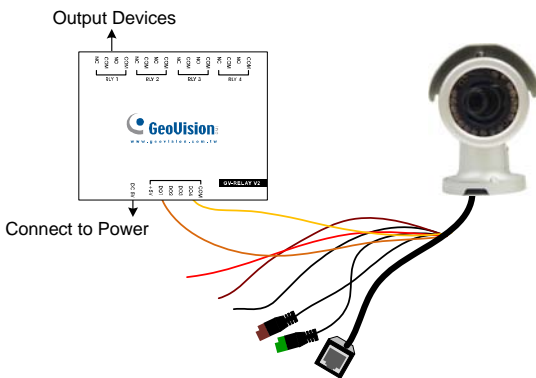


Figure 1-9

GV-Relay V2	Bullet Camera
COM	Ground (Yellow)
DO1	Digital Out (Orange)

1.4.2 Adjusting the Angles

The Bullet Camera is designed to be adjustable in three shafts for easy and flexible installation.

First Shaft

You can adjust the camera body by 360 degrees to the right or the left.

1. Unscrew the panning lock screw with the torx wrench.

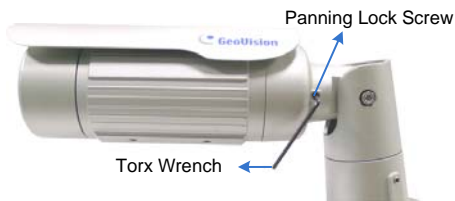


Figure 1-10

2. Adjust the angle of camera body to the right or the left, and fasten the panning lock screw.



Figure 1-11

Second Shaft

You can adjust the camera body up and down by 90, 112.5, 135, 157.5 or 180 degrees by using the gears inside the camera body and the camera base.

1. Unscrew the tilting lock screw with the torx wrench.



Figure 1-12

2. Hold the camera body, and move the camera base to the right to separate the camera gears.

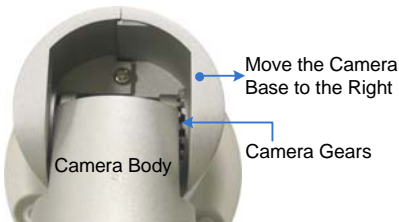


Figure 1-13

- Adjust the angle of camera body to 90°, 112.5°, 135°, 157.5° or 180°. Then move the camera base to the left to combine the gears.



Figure 1-14

- Fasten the tilting lock screw.

Third Shaft

You can adjust the camera base by 360°.

- Unscrew the base fixing screw with the torx wrench.



Figure 1-15

2. Adjust the angle of camera base, and fasten the base fixing screw.



Figure 1-16

1.4.3 Adjusting Lens and Inserting a Memory Card

To adjust the camera's zoom and focus or to insert a micro SD card (SD/SDHC, version 2.0 only, Class 10), follow the steps below.

1. Loosen the camera's cover.



Figure 1-17

For GV-BL2511-E / 5311-E, loosen the camera's cover and the screw as indicated below.



Figure 1-18 (GV-BL2511-E / 5311-E)

2. To adjust for image clarity, follow the steps below.
 - For **models with zoom and focus screws**, pull out the camera and remove the silica gel bag to access its focus and zoom screws. Use GV-IP Device Utility to help you. For details, see 2.2 *Adjusting Image Clarity, GV-IPCam H.264 Firmware Manual.*



Figure 1-19

- For **motorized varifocal lens models**, adjust for image clarity through the Web interface. For details, see *Zoom, Focus Change, and Focus Mode* settings in 3.2.2 *The Control Panel of the Live View Window, GV-IPCam H.264 Firmware Manual.*
3. To insert a micro SD card, follow the steps below.
 - A. Loosen the fixing screw.

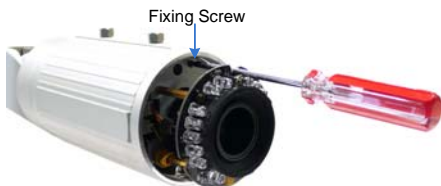


Figure 1-20

- B. Slightly pull out the camera module.

- C. Insert a micro SD card (SD/SDHC, version 2.0 only, Class 10) into the memory card slot.

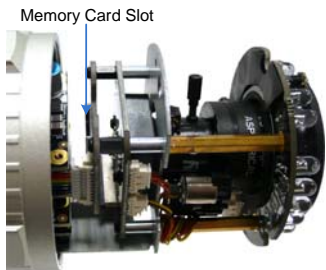


Figure 1-21

- D. Push the camera back and fasten the fixing screw.
4. Insert a new silica gel bag to the camera module and fasten the camera's cover within 2 minutes of opening the silica gel bag package.



Figure 1-22



Figure 1-23 (GV-BL2511-E/5311-E)

IMPORTANT: The silica gel loses its effectiveness when the dry camera is opened. To prevent the lens from fogging up, replace the silica gel bag every time when you open the camera and conceal the gel bag in the camera within two minutes of exposing to the open air.

1.4.4 Installing the Sun-Shield Cover

After setting up the Bullet Camera, now you can install the sun-shield cover to the camera.

1. Fasten the hexagon screws either on top or below the camera.



Figure 1-24

2. Put the sun-shield cover on top of hexagon screws. Make sure to aim the rear hexagon screw at the edge of the sun-shield cover's aperture for optimal sun-shield performance.



Figure 1-25

3. Fasten the Philips head screws with the plastic screw spacers.

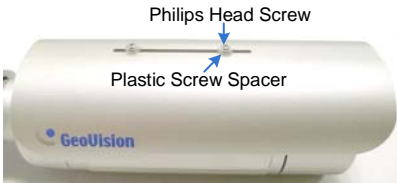


Figure 1-26

1.5 Loading Factory Default

1. Keep the power and network cables connected to the camera.
2. Loosen the camera's cover and remove the **Silica Gel Bag**.
3. Press and hold the **default** button for 8 seconds.

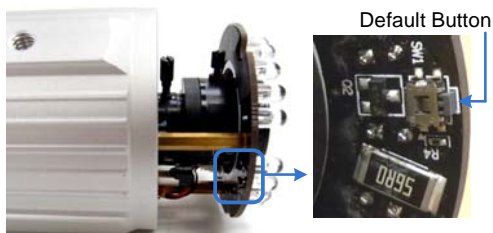


Figure 1-27

4. Release the **default** button. When the process of loading default settings is completed, the camera reboots automatically.
5. Insert a new **Silica Gel Bag** and fasten the camera's cover immediately.

Chapter 2 Bullet Camera (Part II)

The Bullet Cameras are specifically designed for outdoors. They are weatherproof (IP67) and equipped with IR LEDs for infrared illumination in night vision applications. The models described in this chapter use **P-Iris**, which allows for precise control of exposure, producing images with better clarity and contrast.

The **WDR Pro** models enhance the image by processing contrasting intensity of light. The **super low lux** models can produce color live view in near darkness. The **motorized varifocal lens** models allow the user to adjust the focus and zoom through the Web interface. The **arctic** models can withstand extreme temperatures (-40°C ~ 50°C / -40°F ~ 122°F). For related models, see *2.2 Features*.

Model No.		Specifications	Description
GV-BL1501	Varifocal lens	P-Iris, f: 3 ~ 9 mm, F/1.2, 1/2.7" ø 14 mm Lens Mount	1.3 MP, H.264, Super Low Lux
GV-BL2501			2 MP, H.264, Super Low Lux
GV-BL3401			3 MP, H.264, WDR Pro
GV-BL1511	Motorized varifocal lens		1.3 MP, H.264, Super Low Lux, 3X Optical Zoom
GV-BL2511			2 MP, H.264, Super Low Lux, 3X Optical Zoom
GV-BL3411			3 MP, H.264, WDR Pro, 3X Optical Zoom
GV-BL5311		P-Iris, f: 4.5 ~ 9 mm, F/1.2, 1/2.7" ø 14 mm Lens Mount	5 MP, H.264, 2X Optical Zoom
GV-BL2511-E	Motorized varifocal lens, extreme temperature tolerance	P-Iris, f: 3 ~ 9 mm, F/1.2, 1/2.7" ø 14 mm Lens Mount	2 MP, H.264, Super Low Lux, 3X Optical Zoom
GV-BL5311-E		P-Iris, f: 4.5 ~ 9 mm, F/1.2, 1/2.7" ø 14 mm Lens Mount	5 MP, H.264, 2X Optical Zoom

2.1 Packing List

- Bullet Camera
- Self Tapping Screw x 3
- Plastic Screw Anchor x 3
- Torx Wrench x 3
- Sun-Shield Cover Kit (Sun-Shield Cover, Philips Head Screw x 2, Plastic Screw Spacer x 2, and Hexagon Screw x 2)
- Silica Gel Bag x 2
- 2-Pin Terminal Block
- 3-Pin Terminal Block
- Power Adapter
- Installation Sticker
- Ruler
- Stand Kit (Conduit Converter, PG21 Conduit Connector, RJ-45 Connector, M3 Screw x 2, Cable Tie)
- Mounting Kit (M4 Screw x 3, Nut x 3, Plate x 3)
- GV-IPCAM H.264 Software DVD
- GV-NVR Software DVD
- Warranty Card

Note:

1. The power adapter can be excluded upon request.
 2. The Mounting Kit is used for wall corner and pole installations using GV-Mount300 / 310 / 400 / 410 (optional). For details, see *GV-Mount Accessories Installation Guide* on the Software DVD.
-

2.2 Features

- Image sensor

Camera Model	Image Sensor
GV-BL1501 / 1511	1/3" progressive scan super low lux CMOS
GV-BL5311 / 5311-E	1/2.5" progressive scan CMOS
GV-BL3401 / 3411	1/3.2" progressive scan CMOS
GV-BL2501 / 2511 / 2511-E	1/2.8" progressive scan super low lux CMOS

- Dual streams from H.264 or MJPEG
- Frame rate

Camera Model	Frame Rate
GV-BL1501 / 1511	30 fps at 1280 x 1024
GV-BL2501 / 2511 / 2511-E	30 fps at 1920 x 1080
GV-BL3401 / 3411	20 fps at 2048 x 1536
GV-BL5311 / 5311-E	10 fps at 2560 x 1920

- Day and night function (with removable IR-cut filter)
- Megapixel lens
- Motorized varifocal lens for remote focus/zoom adjustment (GV-BL1511 / 2511 / 3411 / 5311 and GV-BL2511-E / 5311-E only)
- P-iris for auto iris adjustment
- Wide Dynamic Range Pro (GV-BL3401 / 3411 only)
- Ingress protection (IP67)
- Vandal resistance (IK10 for metal casing)
- Two-way audio
- Built-in heater and fan (GV-BL2511-E / 5311-E only)
- One sensor input and alarm output
- Micro SD card slot (SD/SDHC) for local storage
- NAS recording

- Recording assigned by GV-Edge Recording Manager (Windows & Mac)
- DC 12V / AC 24V / PoE (IEEE 802.3af, not supported by GV-BL2511-E / 5311-E)
- Intelligent IR
- Maximum IR distance

Camera Model	Maximum IR Distance
GV-BL5311 / 5311-E	40 m (131 ft)
GV-BL2501 / 2511 / 2511-E GV-BL3401 / 3411	50 m (164 ft)
GV-BL1501 / 1511	70 m (230 ft)

- Wide temperature tolerance for GV-BL2511-E / 5311-E (-40°C ~ 50°C / -40°F ~ 122°F)
- 3D noise reduction (GV-BL1501 / 1511 / 2501 / 2511 / 2511-E only)
- 2D noise reduction (GV-BL3401 / 3411 / 5311 / 5311-E only)
- Defog
- Motion detection
- Tampering alarm
- Visual automation
- Text overlay
- Privacy mask
- IP address filtering
- Smart Phone and 3GPP support
- 31 languages on Web interface
- ONVIF (Profile S) conformant

2.3 Overview

Twist off the camera cover to access the following:

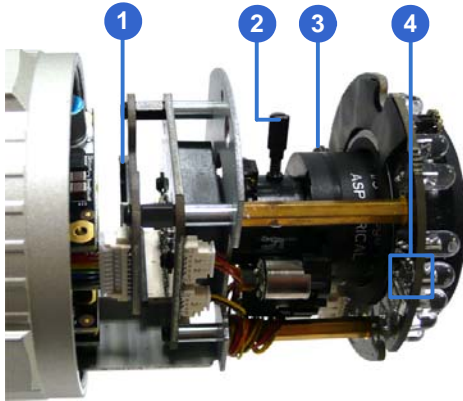


Figure 2-1

No.	Name	Description
1	Memory Card Slot	Receives a micro SD card (SD/SDHC, version 2.0 only, Class 10).
2	Zoom Screw	Holds the zoom lens in place.
3	Focus Screw	Holds the focus lens in place
4	Default Button	Resets all configurations to factory default. For details, see <i>1.5 Loading Factory Default</i> .

To access the following interface, remove the camera base using the supplied torx wrench.



Figure 2-2

No.	Name	Description
1	LAN / PoE	Connects to a 10/100 Ethernet or PoE.
2	Audio In	Connects a microphone for audio input.
3	Audio Out	Connects a speaker for audio output.
4	I/O Terminal Block	Connects to I/O devices. For details, see <i>I/O Terminal, 2.5 Connecting the Camera.</i>
5	DC 12V Port	Connects to power.

2.4 Installation

Follow the steps below to install the Bullet Camera.

1. Paste the supplied sticker to the ceiling/wall. For wall installations, make sure the arrow on the sticker points toward the ceiling.

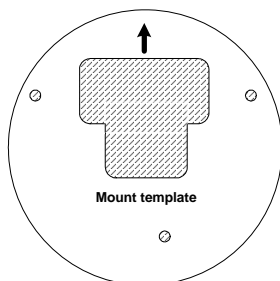


Figure 2-3

2. Drill the shaded area, and insert the screw anchor into the three holes.
3. Loosen the indicated screws with the supplied torx wrench to remove the base.



Figure 2-4

- Loosen the indicated screws and remove the back plate.



Figure 2-5

- Align and secure the black plate to the wall/ceiling with the supplied self-tapping screws.



Figure 2-6

6. To use a pipe (optional), install the conduit converter using the supplied M3 screws.

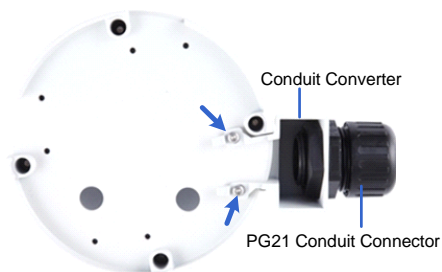


Figure 2-7

IMPORTANT: For GV-BL2511-E / 5311-E connected with a power adapter, only install the conduit converter to the indicated exit.

7. Install the Ethernet cable.
 - A. Twist off and remove the cable seal and the conduit connector.

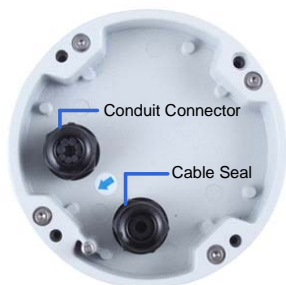


Figure 2-8

- B. Thread an Ethernet cable (with no RJ-45 connector on one end) from the back panel through the conduit converter (optionally installed at step 6) and then through the cable seal.



Figure 2-9

IMPORTANT: Use the supplied ruler and leave about 10 cm of the Ethernet cable between the connector and the cable seal.

- C. Re-install the cable seal. Make sure it is installed tightly to waterproof the camera.
8. Thread wires into the camera.
- A. Disintegrate the removed conduit connector. You should have 4 parts:



Figure 2-10

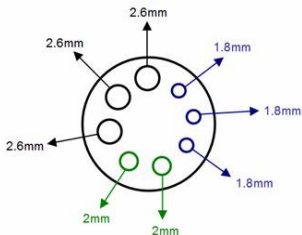
- B. Remove the terminal block from the supplied power adapter.
- C. Optionally thread audio wires, adapter wires, and I/O wires through the conduit converter and then through part 1, 2, 3, and 4 of the conduit connector.

Tip: To make the threading easier, it is advised to thread the wires in the order described here.

For part 2, there are 8 holes each labeled with its diameter. Remove the plugs and push the wires to the corresponding hole listed below:



Figure 2-11



2.6 mm: Audio

2 mm: DC12V / AC24V

1.8 mm: DIDO

Figure 2-12

IMPORTANT:

1. Use the supplied ruler and leave about 10 cm of audio, power, and I/O wires between their connectors and the cable seal.
 2. The plugs are used to prevent water from entering the camera housing. Keep the unused holes plugged and save the removed plugs for future use.
 3. Only thread the wires through their designated holes on the conduit connector to make sure the wires are properly sealed.
-
9. Install the base to the back plate on the wall.
 10. Connect the wires to the camera.
 - A. Install the terminal blocks to the power adapter and I/O devices. See *Power Connection and I/O Device Connections in 2.5 Connecting the Camera.*
 - B. Install the supplied RJ-45 connector to the Ethernet cable.
 - C. Plug all the connectors to the camera panel.
 11. Tie the wires with the supplied cable tie and re-install the base to the camera. You may need to rotate the base for the wires to fit.



Figure 2-13

12. Access the live view. For details, see *2.1 Accessing the Live View, GV-IPCam H.264 Firmware Manual*.
13. Adjust the angles of the camera based on the live view. Three shafts can be adjusted. See *1.4.2 Adjusting the Angles*.
14. To adjust the focus and insert a micro SD card (SD/SDHC, version 2.0, Class 10), see *1.4.3 Adjusting Lens and Inserting a Memory Card*.
15. Install the sun-shield cover. For details, see *1.4.4 Installing the Sun-Shield Cover*.

2.5 Connecting the Camera

Power Connection

Use one of the following methods to supply power to the camera. Note that **GV-BL2511-E / 5311-E** do not support PoE.

- Use a Power over Ethernet (PoE) adapter to connect the camera to the network, and the power will be provided at the same time.
- Plug the power adaptor to the terminal block as shown below. For all models (except GV-BL2511-E / 5311-E), insert the striped wire to the left pin (+); for GV-BL2511-E / 5311-E, insert the striped wire to the right pin (-).

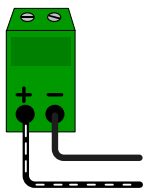


Figure 2-14 (All Models except GV-BL2511-E / 5311-E)

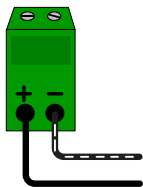
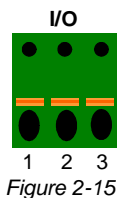


Figure 2-15 (GV-BL2511-E / 5311-E)

I/O Device Connection

The camera supports one digital input and one digital output of dry contact.



Pin	Function
1	Digital Output
2	GND
3	Digital Input

For details on how to enable an installed I/O device, see *4.2 I/O Settings*, *GV-IPCam H.264 Firmware Manual*.

Chapter 3 Ultra Bullet Camera

The Ultra Bullet Camera is a series of light-weighted cameras designed for outdoor environments. The camera adheres to the IP67 standard and has full protection against dust and jets of water. The Ultra Bullet Cameras are available in motorized varifocal lens and fixed lens at 1.3, 2 and 3 megapixels. The **motorized varifocal lens** models allow the user to remotely adjust the focus and zoom through the Web interface. The **WDR Pro** models can enhance the live view by processing contrasting intensity of lights. The **super low lux** models are able to provide color live view in near darkness. For related models, see 3.2 *Features*.

Model No.		Specifications	Description
GV-UBL1211	Varifocal Lens	Auto Iris, f: 3 ~ 9 mm, F/1.2, 1/2.7" ø 14 mm Lens Mount	1.3 MP Low Lux, H.264, D/N, 3X Optical Zoom
GV-UBL1511			1.3 MP Super Low Lux, H.264, D/N, 3X Optical Zoom
GV-UBL2411			2 MP, H.264, D/N, WDR Pro, 3X Optical Zoom
GV-UBL2511			2 MP Super Low Lux, H.264, D/N, 3X Optical Zoom
GV-UBL3411			3 MP, H.264, D/N, WDR Pro, 3X Optical Zoom

Model No.		Specifications	Description
GV-UBL1301-0F	Fixed Lens	Fixed Iris, f: 2.8 mm, F/2.0, 1/3" M12 Lens Mount	1.3 MP, Low Lux, H.264, D/N
GV-UBL1301-1F		Fixed Iris, f: 4 mm, F/1.5, 1/3" M12 Lens Mount	
GV-UBL1301-2F GV-UBL1301-3F		Fixed Iris, f: 4 / 8 mm, F/1.6, 1/3" M12 Lens Mount	1.3 MP, Low Lux, H.264, D/N
GV-UBL2401-0F		Fixed Iris, f: 2.8 mm, F/2.0, 1/3" M12 Lens Mount	2 MP, H.264, D/N, WDR Pro
GV-UBL2401-1F		Fixed Iris, f: 4 mm, F/1.5, 1/3" M12 Lens Mount	
GV-UBL2401-2F GV-UBL2401-3F		Fixed Iris, f: 8 / 12 mm, F/1.6, 1/3" M12 Lens Mount	
GV-UBL3401-0F		Fixed Iris, f: 2.8 mm, F/2.0, 1/3" M12 Lens Mount	3 MP, H.264, D/N, WDR Pro
GV-UBL3401-1F		Fixed Iris, f: 4 mm, F/1.5, 1/3" M12 Lens Mount	
GV-UBL3401-2F GV-UBL3401-3F		Fixed Iris, f: 8 / 12 mm, F/1.6, 1/3" M12 Lens Mount	

3.1 Packing List

- Ultra Bullet Camera (with Waterproof or Non-Waterproof LAN connector)
- Camera Stand
- Black Rubber
- Self Tapping Screw x 3
- Plastic Screw Anchor x 3
- Torx Wrench
- Sun-Shield Cover Kit (Sun-Shield Cover, Philips Head Screw x 2, Plastic Screw Spacer x 2 and Hexagon Screw x 2)
- Cable connector (for waterproof LAN connector only)
- Silica Gel Bag x 2
- 2-Pin Terminal Block
- Data cable
- Power Adapter
- GV-IPCAM H.264 Software DVD
- GV-NVR Software DVD
- Warranty Card

Note: The power adapter can be excluded upon request.

3.2 Features

- Image sensor

Camera Model	Image Sensor
GV-UBL1211	1/3" progressive scan CMOS
GV-UBL1301 Series	1/2.5" progressive scan CMOS
GV-UBL1511	1/3" progressive scan super low lux CMOS
GV-UBL2511	1/2.8" progressive scan super low lux CMOS
GV-UBL2411 / 3411 GV-UBL2401 Series GV-UBL3401 Series	1/3.2" progressive scan CMOS

- Dual streams from H.264 or MJPEG
- Frame rate

Camera Model	Frame Rate
GV-UBL1211 / 1511 GV-UBL1301 Series	30 fps at 1280 x 1024
GV-UBL2411 / 2401 Series GV-UBL2511	30 fps at 1920 x 1080
GV-UBL3411 / 3401 Series	20 fps at 2048 x 1536

- Motorized varifocal lens for remote focus/zoom adjustment (for GV-UBL1211 / 1511 / 2411 / 2511 / 3411 only)
- Day and night function (with removable IR-cut filter)
- Wide Dynamic Range Pro (WDR Pro) (for GV-UBL2411 / 3411 / 2401 Series / 3401 Series only)
- Defog
- Ingress protection (IP67)
- Vandal resistance (IK10 for metal casing)
- One alarm input and sensor output

- Micro SD card slot (SD/SDHC) for local storage
- NAS recording
- Recording assigned by GV-Edge Recording Manager (Windows & Mac)
- Intelligent IR
- 3D noise reduction (for GV-UBL1511 / 2511)
- 2D noise reduction (except for GV-UBL1511 / 2511)
- Motion detection
- Tampering alarm
- Visual automation
- Text overlay
- Privacy mask
- IP address filtering
- DC 5V / PoE (IEEE 802.3af)
- Megapixel lens
- Support for iPhone, iPad, Android and 3GPP
- 31 languages on Web interface
- ONVIF (Profile S) conformant

3.3 Overview

Panel

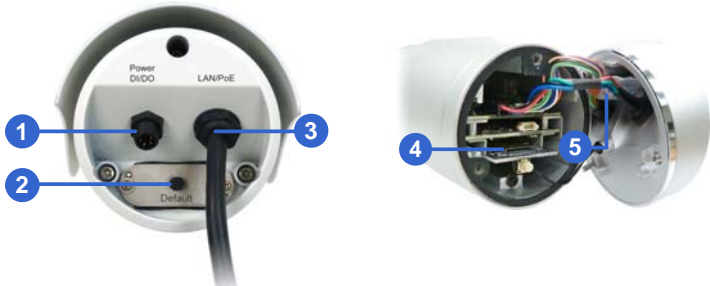


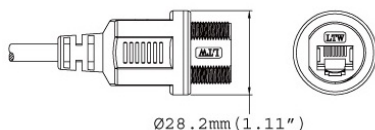
Figure 3-1

No.	Name	Description
1	Power & I/O Connector	Connects to the data cable. For details, see 3.4.2 Connecting the Camera .
2	Default Button	Resets all configurations to factory default. For details, see 3.5 Loading Factory Default .
3	LAN / PoE Cable	Connects to a 10/100 Ethernet or PoE.
4	Memory Card Slot	Receives a micro SD card (SD/SDHC, version 2.0 only, Class 10).
5	Silica gel bag	Desiccant that keeps the camera housing dry.

LAN Connector

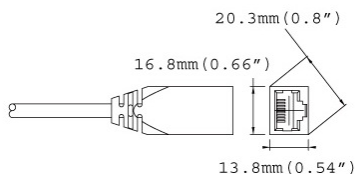
The Ultra Bullet Camera provides two connector types. Select an option based on your installation environment.

- **Option 1 (Waterproof)**



To waterproof the cable, install the supplied cable connector. See 3.4.1 *Waterproofing the Cable*.

- **Option 2 (Smaller and non-waterproof)**



3.4 Installation

You can install the camera to the ceiling or wall. Follow the steps below.

1. Optionally insert a micro SD card to the camera.
 - A. Unscrew and open the back panel with the supplied torx wrench.



Figure 3-2

- B. Insert a micro SD card (SD/SDHC, version 2.0 only, Class 10) into the card slot and replace the silica gel bag (see Figure 3-1).

IMPORTANT:

1. The silica gel loses its effectiveness when the dry camera is opened. To keep the interior dry, replace the silica gel bag every time you open the camera and conceal the gel bag in the camera within two minutes of exposing to the open air.
 2. Make sure the I/O connector is firmly plugged.
-

- C. Secure the back cover with the supplied torx wrench.

2. Install the sun-shield cover to the camera.
 - A. Fasten the hexagon screws on the top of the camera.



Figure 3-3

IMPORTANT: To avoid waterproofing failures, do not open the front cover of the camera and the screw on the camera body. See *Note for Waterproofing Failures*.

- B. Put the sun-shield cover on the top of the camera. For optimal sun-shield performance, make sure the rear hexagon screw is at the end of the opening.



Figure 3-4

IMPORTANT: The GeoVision logo on the sun-shield cover should be closer to the front of the camera.

- C. Fasten the Philips head screws with the plastic screw spacers to mount the sun-shield cover onto the camera.
- Ceiling Mount: Fasten one Philips head screw to the top of the camera.
 - Wall Mount: Fasten two Philips head screws to the top of the camera.

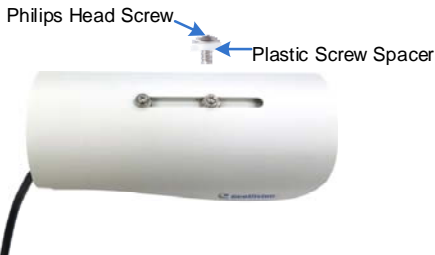


Figure 3-5

3. Install the camera to the wall or ceiling.
 - A. Ceiling Mount: Secure the black rubber and the camera stand to the other screw hole on the top.



Figure 3- 6

- B. Wall Mount: Secure the black rubber and the camera stand to one of the screw holes on the bottom.



Figure 3-7

4. Use the screw anchors and self-tapping screws to secure the camera to the wall.



Figure 3-8

5. Remove the protection sticker from the camera's cover.
6. Connect the wires and cable connector to the camera. See *3.4.1 Waterproofing the Cable* and *3.4.2 Connecting the Camera*.
7. Access the live view. For details, see *2.1 Accessing the Live View, GV-IPCam H.264 Firmware Manual*.
8. Adjust angles of the camera body based on the live view.
9. For varifocal models (GV-UBL1211 / 1511 / 2411 / 2511 / 3411), adjust the focus. For details, see *3.2.2 The Control Panel of the Live View Window, GV-IPCam H.264 Firmware Manual*.

3.4.1 Waterproofing the Cable

Waterproof the option 1 LAN / PoE cable (see 3.3 Overview) using the supplied cable connector. The cable connector can be disassembled into 5 parts:



Figure 3-9

1. Cut off the RJ-45 connector on one end of the Ethernet cable.



Figure 3-10

2. Connect the Ethernet cable to the LAN / PoE connector (No. 3, Figure 3-1) on the camera.
3. Slide the components through the Ethernet cable as shown below.



Figure 3-11

4. Paste the item 1 sticker to item 2.

5. Move all the components toward the LAN / PoE connector, fit item 4 to item 2, secure item 3 to the LAN / PoE connector (Item A) and finally secure item 5 to item 2 tightly.



Figure 3-12

IMPORTANT: Item 5 must be secured tightly to waterproof the LAN / PoE connector.

6. Prepare an RJ-45 connector, reconnect the RJ-45 connector to the cable, and then connect the camera to network.

3.4.2 Connecting the Camera

Wire Definition

The camera's 4-pin data cable provides connections for power, ground, 1 sensor input and 1 alarm output. The wires are defined below:



Figure 3-13

No.	Wire Color	Definition
1	Red	DC 5V
2	Green	Digital In
3	Blue	Digital Out
4	Black	Ground

Power Connection

Connect the camera to power using one of the following methods:

- Use a Power over Ethernet (PoE) adapter to connect the camera to the network, and the power will be provided at the same time.
- Plug the power adaptor to the terminal block as shown below.
 1. Insert the black wire of the data cable to the left pin (-) and the red wire to the right pin (+).

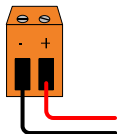


Figure 3-14

2. Connect the DC 5V power adaptor to the terminal block.



Figure 3-15

Voltage Load Expansion (Optional)

The camera can only drive a maximum load of **200mA 5V DC**. To expand the maximum voltage load to **10A 250V AC**, **10A 125V AC** or **5A 100V DC**, connect the camera to a GV-Relay V2 module (optional product). Refer to the figure and table below.

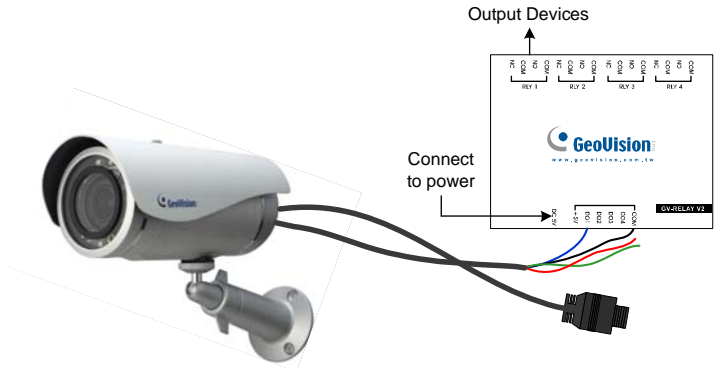


Figure 3-16

GV-Relay V2	Ultra Bullet Camera
DO1	Digital Out (Blue)
COM	Ground (Black)

3.5 Loading Factory Default

1. Keep the power and network cables (or PoE) connected to the camera.
2. Press and hold the **default** button.



Figure 3-17

3. Release the **default** button when the **status LED** blinks. This shall take about 8 seconds.
4. When the **status LED** fades, the process of loading default settings is completed and the camera reboots automatically.

Chapter 4 Target Bullet Camera

The Target Bullet Camera (GV-EBL) is a series of light-weighted cameras designed for outdoor environments. The camera adheres to the IP67 standard and has full protection against dust and jets of water. The camera offers an entry-level surveillance solution with all the essential features and excellent image quality.

Model No.		Specifications	Description
GV-EBL1100-1F	Fixed Lens	Fixed Iris, f: 6 mm, F/1.8, 1/2.7" M12 Mount	1.3 MP / 2 MP, H.264, Low Lux, D/N
GV-EBL2100-1F			
GV-EBL1100-2F	Fixed Iris, f: 3.8 mm, F/1.8, 1/2.7" M12 Mount		
GV-EBL2100-2F			

4.1 Packing List

- Target Bullet Camera
- Sun-Shield Cover
- Silica Gel Tape x 2
- Supporting Rack
- Screw for supporting rack x 3
- Screw Anchor x 3
- Screw for sun-shield cover
- Washer
- Terminal Block
- GV-IPCAM H.264 Software DVD
- GV-NVR Software DVD
- Warranty Card

Note: Power adapter can be purchased upon request.

4.2 Features

- 1/3" progressive scan low lux CMOS for GV-EBL1100 Series
1/2.8" progressive scan low lux CMOS for GV-EBL2100 Series
- Dual streams from H.264 or MJPEG
- Up to 30 fps at 1280 x 1024
Up to 25 fps at 1920 x 1080
- Intelligent IR
- Day and night function (with removable IR-cut filter)
- Wide Dynamic Range (WDR)
- Defog
- Vandal resistance (IK10 for metal casing)
- Ingress protection (IP67)
- Motion detection
- Tampering alarm
- Text overlay
- Privacy mask
- IP address filtering
- DC 12V / PoE (IEEE 802.3af)
- Megapixel lens
- NAS Recording
- Recording assigned by GV-Edge Recording Manager (Windows & Mac)
- Support for iPhone, iPad, Android and 3GPP
- 31 languages on Web interface
- ONVIF (Profile S) conformant

Note: For optimal performance and compatibility, it is highly recommended to use a GV-NAS System.

4.3 Overview

Panel



Figure 4-1

No.	Name	Description
1	Power Connector	Connects to the data cable. For details, see <i>4.5 Connecting the Camera.</i>
2	Default Button	Resets the camera to factory default. For details, see <i>4.6 Loading Factory Default.</i>

IMPORTANT: The silica gel loses its effectiveness when the camera cover is opened. If you open the camera to access the load default button, replace the silica gel tape by taping the new silica gel tape to the inside of the camera cover. Make sure you conceal the silica gel tape in the camera within two minutes of exposing to the open air.



4.4 Installation

You can install the camera to the ceiling or wall. Follow the steps below.

IMPORTANT: To avoid foggy live view, please replace Silica Gel Tape prior to installation and use waterproof tape to seal the RJ45 connector.

1. Slide the sun-shield cover onto the top of the camera.



Figure 4-2

Note: The GeoVision logo on the sun-shield cover should be closer to the front of the camera.

2. Line up the screw hole on the camera with the opening on the sun-shield cover.



Figure 4-3

3. Ceiling Mount:

Secure the supporting rack to the opening on the sun-shield cover



Figure 4-4

4. Wall Mount:

- A. Insert and tighten the supplied screw and washer on the sun-shield cover.
- B. Secure the supporting rack to the bottom.



Figure 4-5

IMPORTANT: To avoid waterproofing failures, do not open the screw on the camera body. See *Note for Waterproofing Failures*.

5. Install the camera to the wall or ceiling using the screw anchors and self-tapping screws. You can also stand the camera on a plain surface.



Figure 4-6

6. Remove the protection sticker from the camera's cover.
7. Connect the wires and cable connector to the camera. See 4.5 *Connecting the Camera*.
8. Access the live view. For details, see 3.1. *Accessing the Live View, GV-IPCam H.264 Firmware Manual*.
9. Adjust angles of the camera body based on the live view.

4.5 Connecting the Camera

4.5.1 Wire Definition

The data cable provides connections for power, ground and network access. The wires are defined below:



Figure 4-7

No.	Wire Color	Definition
1	Red	DC 12V
2	Black	Ground
3	Black (thick)	PoE, Ethernet

4.5.2 Power Connection

There are two ways to supply power to the camera:

- Use a Power over Ethernet (PoE) adapter to connect the camera to the network, and the power will be provided at the same time.
- Plug the power adapter to the 12V terminal block as shown below. The power adapter is an optional device. For detail, see *Options* in the manual.
 1. Insert the black wire of the data cable to the left pin (-) and the red wire to the right pin (+).

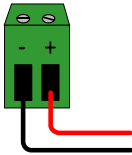


Figure 4-8

2. Connect the DC 12V power adaptor to the terminal block.



Figure 4-9

4.6 Loading Factory Default

1. Keep the power and network cables (or PoE) connected to the camera.
2. Loosen the camera's cover.
3. Press and hold the **default** button for about 8 seconds.



Figure 4-10

4. Release the **default** button. When the process of loading default settings is completed, the camera reboots automatically.
5. Replace the **Silica Gel Tape** inside the camera cover and fasten the camera's cover immediately.