



Evolution 12 Camera Range



Installation & User Manual

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Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not immerse in water. Protect the connectors from moisture.
6. Do not block any ventilation openings, Install in accordance with the manufacturer's instructions.
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
8. The polarity of any connector attached to the product should be verified before connection.
9. Protect all cables from being crushed or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
10. Only use attachments / accessories specified by the manufacturer.
11. Unplug or appropriately protect this apparatus during lighting storms or when unused for long periods of time.
12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



WARNING

RISK OF EXPLOSION IF REPLACING A BATTERY WITH
AN INCORRECT BATTERY TYPE

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1 Overview

The Oncam Evolution 12 IP Series cameras are innovative and use a fisheye lens to create a 360° view with an extremely large area of coverage. The Oncam 360° IP camera may replace two or more conventional fixed cameras for seamless coverage of an entire scene with no gaps or blind spots. The ability to see in all directions at once makes Oncam 360° IP cameras ideally suited for total situational awareness.

The 12-megapixel sensor produces enough detail to allow digital pan/tilt/zoom (PTZ) operations over the entire field of view (FoV). Unlike conventional PTZ cameras, Oncam 360° IP cameras are silent. Oncam 360° IP cameras have no mechanical motors or gears prone to wear and failure. The camera produces three types of views, each suited to a particular set of requirements.

1.1 Fisheye View

The high quality fisheye lens produces a spherical image from which derive all other views. The raw image appears warped around a central axis. Special dewarping software built into the NVR / VMS converts the spherical image into a flat view that is more familiar to human viewers. When using video management software (VMS) to record a fisheye video stream, the entire image is preserved, allowing you to 'retrospectively' look at all directions, regardless of the area being viewed live or when viewing recorded video after an incident has occurred.

1.2 Virtual Camera Views (VCams)

The camera is capable of creating up to four user defined pre-dewarped views derived from the main fisheye view at the head. Using the camera web interface, you select a key area of interest from the fisheye overview and create a view similar to the look and feel of a traditional narrow field of view (FoV) camera. These camera views become separate ONVIF compatible streams for recording and control on a compatible VMS/NVR system.

Note: VCam mode is disabled (default). When enabling VCam you remove the cameras ability to stream a secondary fisheye view.

1.3 Panoramic View

When using compatible VMS or NVR software integrated with the Oncam dewarping SDK, it is possible to generate a double 180-degree panoramic view from fisheye overview. The fisheye image is dewarped and split into two 180-degree bands for simpler viewing of the overall image.

Note: Due to the dewarping image cropping, the area directly underneath the camera is not visible. Unlike the VCams, the camera does not generate the 180-degree panoramic view. The camera requires a compatible client machine with software to produce this panoramic view.

1.4 Camera Range

Configure the camera module for either an H.264 or MJPEG single stream.

- 12 (maximum) FPS with a frame size of 3200 x 3000 pixels (9.6 MP)
- 14 (maximum) FPS with a frame size of 2528 x 2376 pixels (6 MP)
- 14 (maximum) FPS with a frame size of 2080 x 1960 pixels (4 MP)
- 14 (maximum) FPS with a frame size of 1472 x 1384 pixels (2 MP)
- 14 (maximum) FPS with a frame size of 1056 x 992 pixels (1 MP)
- 14 (maximum) FPS with a frame size of 544 x 512 pixels (1/4 MP)

Enable and configure a second H.264 fisheye stream. If enabling the second stream the maximum frame rates of both the main stream and the second stream are reduced (see Table 2 Maximum Frame Rates, page 44).

If the second H.264 fisheye stream is not required, enable up to four VCam streams.

- Fisheye1 H.264 stream (9.6 MP, 6 MP, 4 MP or 2 MP) + 1x H.264 VCam (0.25 or 1 MP)
- Fisheye1 H.264 stream (9.6 MP, 6 MP, 4 MP or 2 MP) + 2x H.264 VCams (0.25 or 1 MP)
- Fisheye1 H.264 stream (9.6 MP, 6 MP, 4 MP or 2 MP) + 3x H.264 VCams (0.25 or 1 MP)
- Fisheye1 H.264 stream (9.6 MP, 6 MP, 4 MP or 2 MP) + 4x H.264 VCams (0.25 or 1 MP)

Simultaneously access a third MJPEG stream that will mirror the resolution of Fisheye2.

The camera module design allows for easy and fast installation into the corresponding camera module housing options.

1.5 Power Requirements

Supply power in two ways using either Power over Ethernet (PoE) or Direct DC Input.

PoE. Connect power and data using an Ethernet cable plugged into the camera Ethernet port. The PoE supplied equipment must be compliant with IEEE 802.3AF.

Direct DC Input. Use only a UL/CSA-approved LPS or NEC Class 2 power source with a 12 VDC 1A AC adapter (not supplied). The power source must have a wired plug connector with the correct polarity (+ve center). Connect to the camera through the 12 VDC socket. This connector is a 2.1 mm positive center jack.

CAUTION: Do not use an excess of 12 VDC from an external power supply. Doing so may damage the camera and void the warranty.

1.6 Audio Input

The camera mic input follows the computer industry standard for PC mic inputs. The physical connector is a 3.5 mm stereo audio jack. As wired, it works with an ordinary Electret microphone.

Audio Input connects the camera module to an electret microphone in close proximity to the enclosure. The electret microphone and the connecting cable must be electrically floating to prevent noise and hum from ground loops.

Suggested cable length is 1 meter or less. Any length longer than this results in noise interference with the audio.

Contact Oncam for compatible microphones and splitters.

1.7 Alarms

The camera module has 1x input and 1x output hardware alarms connected through a hardwire plug connector.

2 Camera Placement and Orientation

Camera placement is an important factor when planning your deployment. The Evolution 12 camera has an exceptionally wide viewing angle. Consider the camera location for providing comprehensive coverage of a wide area. Mount the camera with an unobstructed view and consider scene optimization when one portion of the scene is bright and another dark.

The camera supports three different mounting orientations, Ceiling, Wall and Table. Each of these options require correct orientation settings selected from the Camera Web Interface. These camera settings ensure using the correct dewarping algorithm when connecting to a compatible VMS or NVR system.

2.1 Ceiling Mount

Ceiling mounting is preferred when most of the action is occurring below the camera in a horizontal plane. When a person is directly below the camera, captured is the top-of head view. When the person moves away from the camera, more of their face and body becomes visible.

Depending on the use case, use a single camera to cover a small to medium sized room. Mounting a camera high gives great situational awareness throughout a large room. When planning coverage ensure there are no obstructions. Some obstructions include pillars, high-sided furniture and any hanging objects near the camera such as signage.



2.2 Wall Mount

Wall mounting the camera can give a complete 180-degree side on view of an area. Use this view where ceiling mounting is not possible or if you need to capture a higher level of detail for objects closer to the camera (such as people's faces as they walk past the camera).



2.3 Table Mount

Mount the Table Mount camera on a flat surface looking up. While this mount is for demonstration or testing purposes, you could use this mount in a system. Use the Table Mount for inspecting systems or viewing under vehicles.



2.4 Coverage Area

The Evolution 12 cameras provide coverage for open areas where situational awareness of people and objects are required.

The higher camera placement provides a larger coverage area. However, with higher camera placement a reduction in the pixel density is expected. Height impacts the image detail available, therefore ensure you consider image quality versus the mounting height.

Perform tests to ensure that the camera meets the system operational requirements and the required detail level is available.

Use a minimum height of 2 m (6.5 ft.) when ceiling mounting a camera for best results.

For multiple camera layouts, ensure the camera areas overlap for full coverage.

2.5 Overhead Viewing Angle

Ceiling-mounted cameras capture a top-of-head shot when the person is directly under the camera. Hats extend that top-of-head zone to some degree. Consider the viewing angle when requiring people identification or recognition.

2.6 Lighting

Avoid bright light sources pointing towards the camera lens. Always face lighting away from the camera or above the camera installation line (if ceiling mounted).

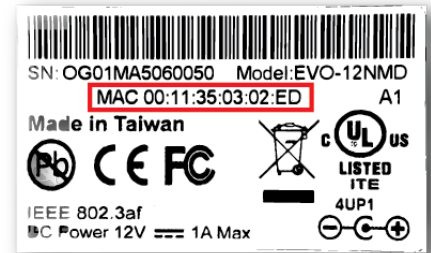
Adjust the auto-sensor in the camera from the Web Interface. Using auto-sensor adjusts the camera continuously to optimize the image by increasing exposure time. Furthermore, the maximum frame rate is reduced as exposure time increases. The image remains in full color until below one Lux, after which it transitions to black and white for better contrast.

3 Camera Installation

For installation of your Oncam Evolution 12 camera, provided are the following instructions. Reference the Camera Web Interface, page 35 for a more detailed features and functionality.

3.1 Preparation

Document the camera's location and MAC address for camera configuration. Find the MAC address on a sticker on the side and rear of the camera module.



3.1.1 Inserting an SD card

Configure an SD card for recording alarm-triggered events. The SD card slot is located on the side of the camera module.

Compatible SD cards

- SD, SDHC, SDXC
- Up to 128 GB max capacity
- Speed of Class 10 or higher

The camera uses the format EXT3, while most SD cards use the format FAT32. Therefore, it is necessary to format the SD card to EXT3 prior to using the first time.

Use the camera to format the SD card for an EXT3 file system using the Camera Web Interface. See Recordings, page 50.

In addition, you may use a computer to format several SD cards for an EXT3 file system. While additional software is required, this method may be faster.

3.1.2 Ethernet and Power Cabling

See Outdoor Camera, page 20 for Ethernet cable preparation instructions.

NOTICE: The cable must be round, otherwise the grommet will not seal around the cable.

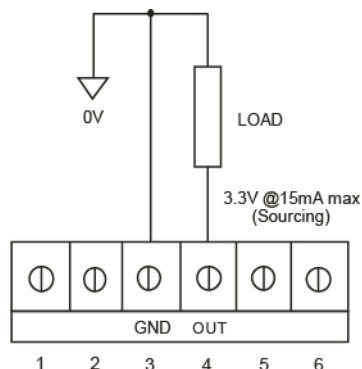
3.1.3 External I/O Cabling

When connecting an external I/O, first remove the multi-way connector block for wiring.



3.1.4 Alarm Out

When an event occurs triggering an external alarm on the camera, the Alarm OUT pin outputs a signal (Low to High). Use this signal to drive the external alarm circuit (known as sourcing). The signal is 3.3VDC at 15 mA (max).

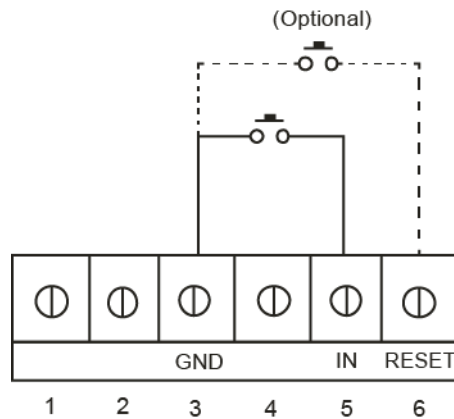


3.1.5 Alarm In

When Alarm IN shorts to GND, the camera's internal alarm triggers. Through the Camera Web Interface, specify the time duration. Options include 10, 30, 60, 300 or 600 seconds.

After the specified amount of time has passed, the internal alarm clears.

The Alarm RESET pin is optional. Use the Alarm RESET pin for overriding the counter in order to clear the internal alarm before the specified amount by shorting to GND.



3.2 Indoor Camera

The Evolution Indoor Camera is for indoor uses in surface or pendant mount applications.

The indoor model consists of the Camera Module, a die cast metal Mounting Plate and a plastic Trim Cover with a spring loaded Torx screw.

Route wires into the enclosure from either the back or the side.

Using the optional Pendant Mount, attach the camera directly to any length of pipe (M32 diameter). This is popular for high ceiling installations.

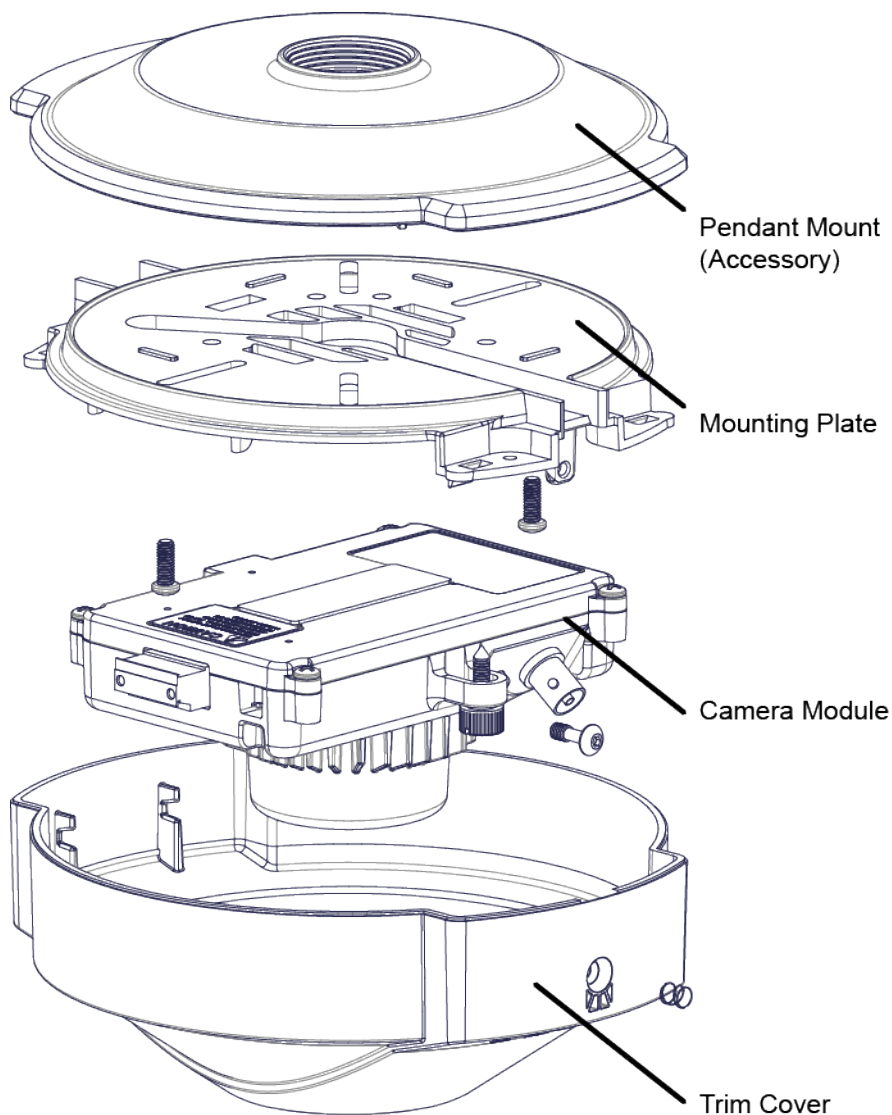


Figure 1 Indoor Camera Exploded View

3.2.1 Parts Supplied

- Mounting Plate
- Camera Module
- Trim Cover
- Quick Start Guide
- Drilling Template

3.2.2 Installation Steps

1. Attach the Mounting Plate to a wall or ceiling surface through the holes and slots located on the plate.
 2. Ensure the fasteners are appropriate for the surface material and support at least four times the weight of the camera and assembled enclosure.
 3. The enclosure covers a mounting surface hole or box through which you pull the wires. The Mounting Plate has holes and slots to allow for mounting directly to most European or American standard electrical boxes.
 4. If the indoor installation is subject to vandalism, use the Evolution Outdoor camera that is IK10 vandal resistant. Only use the indoor enclosure when vandalism is not an issue.
 5. Pull wires through the center hole in the Mounting Plate.
 6. Secure the Mounting Plate to the surface.
 7. Consider the orientation of the Mounting Plate as this determines the fisheye image orientation and affects where the elongated ears of the cover are oriented. For reference, the thumbscrew that fixes the Camera Module to the Mounting Plate corresponds to the top of the fisheye image (unless rotated in the firmware).
 8. Pass the Ethernet cable around the Camera Module; secure the cable by clicking the connector into position.
 9. Route wires under, around or over the Camera Module to the connection points. Remove the alarm connector (if used) from the Camera Module to facilitate connection and service.
 10. Install the Camera Module by rotating the camera into the clip in the Mounting Plate.
 11. Fasten the Camera Module in place with the captive thumbscrew.
 12. Route wires without crossing over the lens area when attaching the Trim Cover.
- Note:** A BNC video connector is present for factory use only and is disabled.
13. Attach the Trim Cover over the Mounting Plate by aligning the two section guides inside the cover (opposite the Torx screw) with the border of the Mount Plate.
 14. Install the spring loaded Torx screw. (Supplied is Torx Driver Bit.)



For installations where the wiring is from the side, there is a thin section of plastic on the cover at one end. Remove the plastic with pliers. Route wiring in this case through the tunnel in the mounting plate.



For mounting options, see Camera Mounts, page 27.

3.3 Indoor Concealed Camera

The Evolution Indoor Concealed camera is for indoor use in ceiling and behind wall applications. The Indoor Concealed camera has a different lens nose compared to the Indoor and Outdoor cameras.

The only portion of the camera visible below the ceiling is the lens and Bezel (black or white). Spray-paint the plastic Bezel with a suitable paint to coordinate with your installation environment.

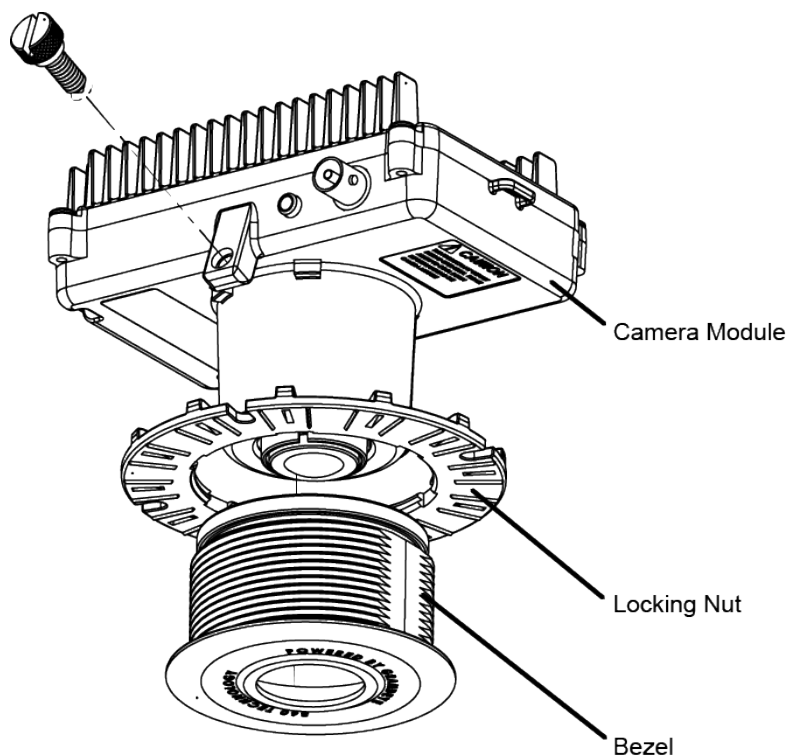


Figure 2 Indoor Concealed Camera Exploded View

3.3.1 Parts Supplied

- Camera Module
- Locking Nut
- Bezel
- Quick Start Guide

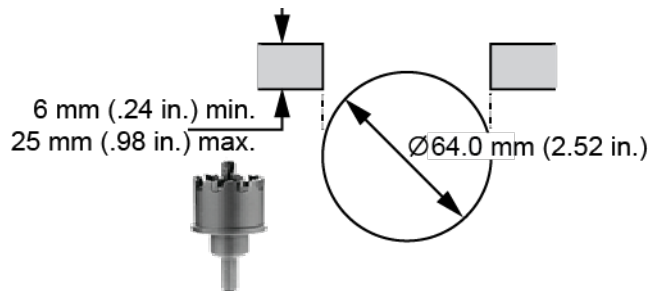
3.3.2 Installation Steps

The Indoor Concealed camera mounts to surface thickness between 6 mm (1/4-inch) and 25 mm (1-inch) using a Bezel and Locking Nut that attaches to the front cover.

The Locking Nut sandwiches the surface material between the Bezel and Locking Nut. This camera requires access from above the ceiling or behind the wall to install and maintain while providing a minimal presence.

Note: Ensure the ceiling material is strong to support four times the weight of the camera and cabling. Otherwise, use a suitable stiffener, such as a metal plate, above the ceiling surface.

1. Using the supplied template for the installation location, mark the hole.
2. Remove the ceiling panel and cut a hole to accept the 64 mm (2.52 in.) Bezel.



3. Insert the Bezel through the hole from the front of the cut out (Lens side). Use one hand and with the other hand fit the blue Locking Nut to the rear securing the Bezel in place. In a solid ceiling, hold both parts and fastened from the top.

4. Ensure the Locking Nut is correctly orientated so the smooth side is against the surface of the ceiling material and the finger grips are exposed.

NOTICE: Do not over tighten the Locking Nut.

5. Insert the Camera Module into the Bezel from above once the Bezel is tight. Slide the Camera Module into the rear of the Bezel.

Note: Ensure the camera is correctly oriented since this affects where the edges of the image are oriented in the resulting full screen picture. Ensure the top of the image corresponds to the orientation of the camera.

6. Tighten the thumb screw to fix the camera in the desired position.
7. Pass the Ethernet cable around the Camera Module; secure the cable by clicking the connector into position.
8. Route wires under and then around or over the camera to the connection points. Remove the alarm connector from the camera (if used) to facilitate connection and service.

Note: A BNC video connector is present for factory use only and is not enabled in production firmware.

9. Fasten all wiring to a nearby ceiling member ensuring there are no torque forces acting on the camera.

NOTICE: The camera is not plenum rated. Installing the camera within air-handling spaces may invalidate the warranty.



3.4 Indoor Recessed Camera

The Evolution Indoor Recessed camera allows for easy and fast installation from below the ceiling line. The camera is an IP40-rated surface mount device and is suitable for internal use only. The Indoor Recessed camera is UL2043 certified for installation in an air handling space.

The enclosure is constructed of an aluminium die cast base, with the electronics PCB encased by a plastic inner shield mounted to the base. The plastic trim cover may be painted to match the interior.

The Evolution 12 Indoor Recessed camera provides recessed mounting from below ceiling line in drop ceilings or walls with a maximum cross section of 1"/25.4mm. The die-cast base contains two spring-loaded flaps for retaining the camera once inserted in the mounting hole.

The Evolution Indoor Recessed camera enclosure is for surface mounts. The camera consists of the camera module, a die-cast aluminium base and an outer trim injection moulded cover.

Remove the camera's trim cover and paint the cover to blend with the installation environment.

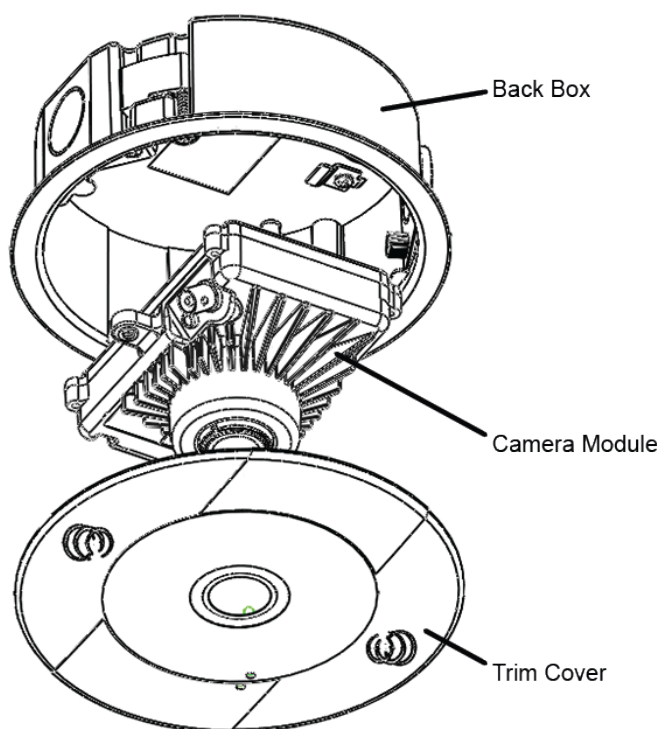


Figure 3 Indoor Recessed Camera Exploded View

3.4.1 Parts Supplied

- Back Box
- Camera Module
- Trim Cover
- Quick Start Guide
- Drilling Template

3.4.2 Installation Steps

The Evolution 12 Indoor Recessed camera is a recessed mounting for drop ceilings or walls with a maximum cross section of 25.4 mm (1-inch).

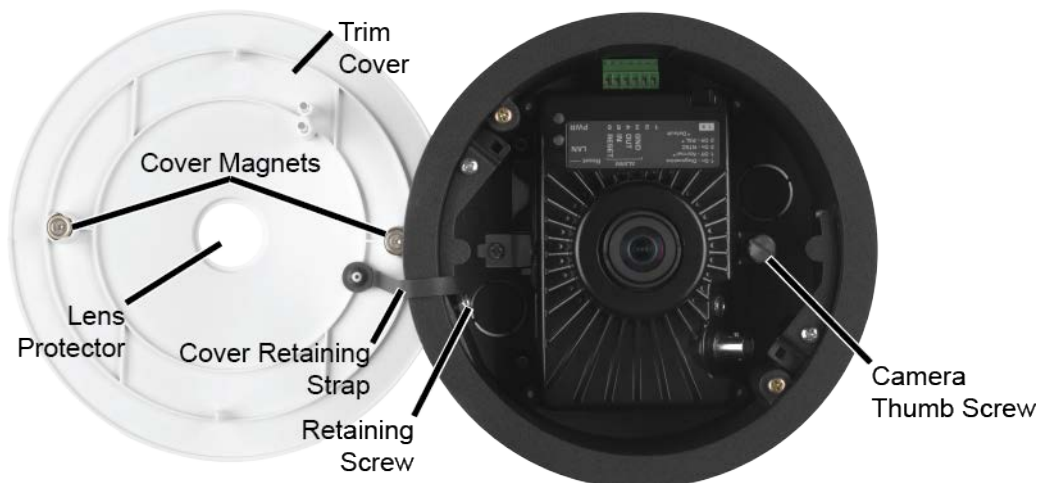
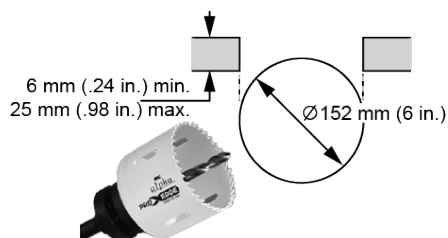


Figure 4 Indoor Recessed Overview

1. Remove the camera cover.
2. Detach the cover retaining strap from the casing by removing the retaining nut.
3. Remove the camera by loosening the thumb screw.
4. Remove the cable entry cover. Cable side and top options are available.
5. Cut a 152 mm (6-inch) hole in the mounting location. A template is supplied.



6. Pass the Ethernet cable through the cable entry hole in the casing.
7. Adjust the casing and insert the casing into the pre-made hole.

8. Secure the casing by tightening the two screws engaging the two retention fins.

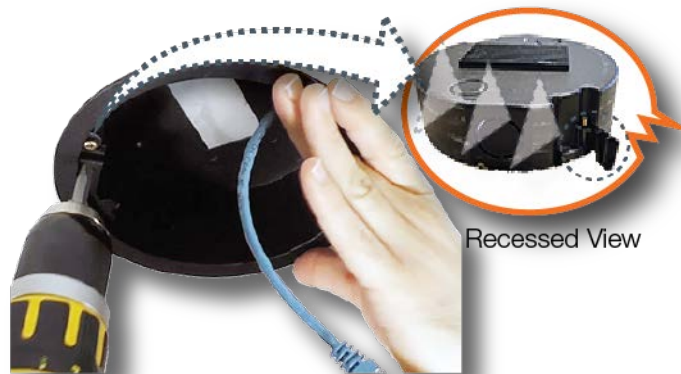


Figure 5 Indoor Recessed Below Ceiling Installation

9. Connect the Ethernet cable to the camera and reinsert the camera into the casing. Fasten the thumb screw firmly.
10. Reattach the cover retaining strap with the retaining nut.
11. Aligning the magnets, place the cover on the casing.
12. Remove the lens protector.
13. Ensure the LED lights illuminate.

3.5 Outdoor Camera

The Evolution Outdoor Dome camera is IP-66 rated and vandal resistant. The Trim Cover and Base Assembly prevents reaching the camera. All mounting perforations are outside the enclosures sealed area.

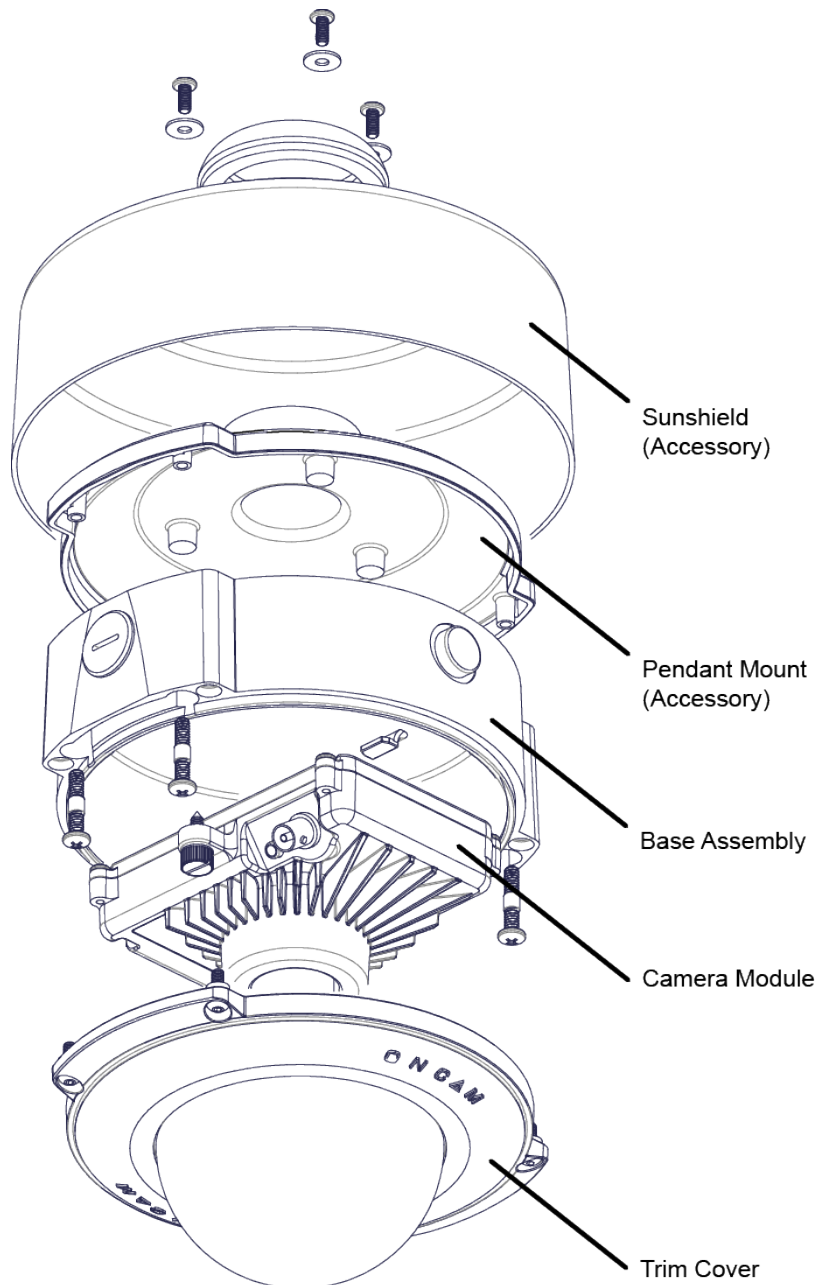


Figure 6 Outdoor Camera Exploded View

3.5.1 Parts Supplied

- Base Assembly
- Camera Module
- Trim Cover
- Security Screw Driver Bit
- Quick Start Guide
- Drilling Template

3.5.2 Installation Steps

3.5.2.1 Preparation

The Outdoor Dome camera comes with a Gore® vent fitted into the side of the die-cast mount base. The Gore vent creates a breathable membrane that is waterproof.

Gore vents provide a simple and technologically advanced solution to maintain container regulatory guidelines that require ventilation for heavy-duty waterproof and breathable products.

The wire grommets on the back are sealed until perforated by the installer. The integrity of these seals are essential in order to keep moisture from entering the enclosure. Carefully pierce the seals to ensure the integrity of the seal around the cable.

The back of the ceiling base has two wire grommets for cable entry.



Featuring a Gore® vent, the enclosure allows it to breathe without letting in moisture. The vent is fitted in the white hexagonal bolt head on the side of the enclosure. The Gore vent is essential for preventing condensation from forming in the camera.

The Gore vent is relatively fragile. Do not probe or touch the vent unnecessarily.

CAUTION: Do not alter the Gore vent. Altering the Gore vent impacts the cameras performance and moisture may build within the bubble dome.

The camera has an M20 conduit entry on the side. Fit a 20 to 13 mm (.79 to .5-inch) adapter if using an imperial sized conduit. When shipped from the factory the enclosure has an O-ring plug installed in the conduit entry.

Note: If using the conduit connection, the installer must ensure that water or moisture cannot enter the enclosure from the conduit.

The two wire grommets provide for a single cable each that is 5 to 7mm (0.197 – 0.276 in.) diameter. This accommodates most industry standard network and alarm signal cables.

NOTICE: Only one wire should pass through a cable entry grommet to avoid seal issues. Passing more than one wire through the grommet invalidates the warranty.

Prepare the wires for an RJ45 connector (not supplied) for crimping. Use appropriate equipment to crimp the RJ45 Ethernet connector. Outdoor Evolution cameras require feeding the cable through the rear second rubber grommet (supplied).

Puncture the diaphragm of the grommet by inserting a wire or by using a sharp tool. Gently pull the cable back to secure and seal.

Pass a round stripped Ethernet cable (CAT5 or better) through a 20mm compression cable gland (side entry) or one of the rear rubber grommets.

NOTICE: Secure the cable to prevent movement during and after the installation. Securing the cable may require additional fasteners, not supplied.



3.5.2.2 Mounting

1. Attach the Base Assembly to a wall or ceiling surface with the four holes located outside the trim ring seal joint. These holes support #10 hardware and have 25 mm (1 in.) of internal boss to pass-through.
2. Use hardware appropriate for the mount surface and which supports a minimum of four times the weight of the camera and assembled enclosure.
3. For vandalism, consider different hardware and mounting strategies. The enclosure covers a hole or box in the mounting surface through which you pull the wires.



NOTICE: Drilling holes through the enclosure affects the IP66 rating, the camera sealing properly and invalidates the warranty.

The enclosure allows for routing wires around or over the camera module to the connection points.

4. Remove the alarm connector (if used) from the Camera Module to facilitate connection and service.
5. Pass the Ethernet cable around the Camera Module; secure the cable by clicking the connector into position.
6. Attach the Camera Module and route the cables.
7. Rotate the Camera Module into the mounting clip in the Base Assembly.
8. Fasten the Camera Module in place with the captive thumb screw.
9. Route wires to avoiding crossing over the lens area when attaching the Trim Cover.

Fitted for factory use only is BNC video connector.

10. Assemble the Trim Cover using the four captive security screws and the provided Security Screw Driver Bit. (See Dome Handling and Cleaning, page 32).
11. For installations using the side conduit entry, remove the sealed plug and a 20mm (.79 in.) conduit connector attaches directly to the enclosure.



NOTICE: When using the conduit connection, you must ensure that water or moisture cannot enter the enclosure through the conduit.

3.5.3 Sun Shield

The Sun Shield is recommended whenever there is significant direct light and sun exposure.

The outer surface around the enclosure provides an air gap. The air gap acts as an insulator reducing heat.

Only use the Sun Shield in pendant mounting configurations (with or without the wall mount).

Attach the Sun Shield to the top of the pendant adapter with the three supplied screws.



3.6 Stainless Steel Camera – Surface Mount

The Evolution Stainless Steel Dome camera is Electropolished marine grade 316 stainless steel. The Stainless Steel camera has the highest rating, at IP-69K, and is the most suitable camera for industrial environments. The Trim Cover and Base Assembly prevents reaching the camera and ensures dust and moisture do not reach inside the enclosure. All mounting perforations are outside the enclosures sealed area.

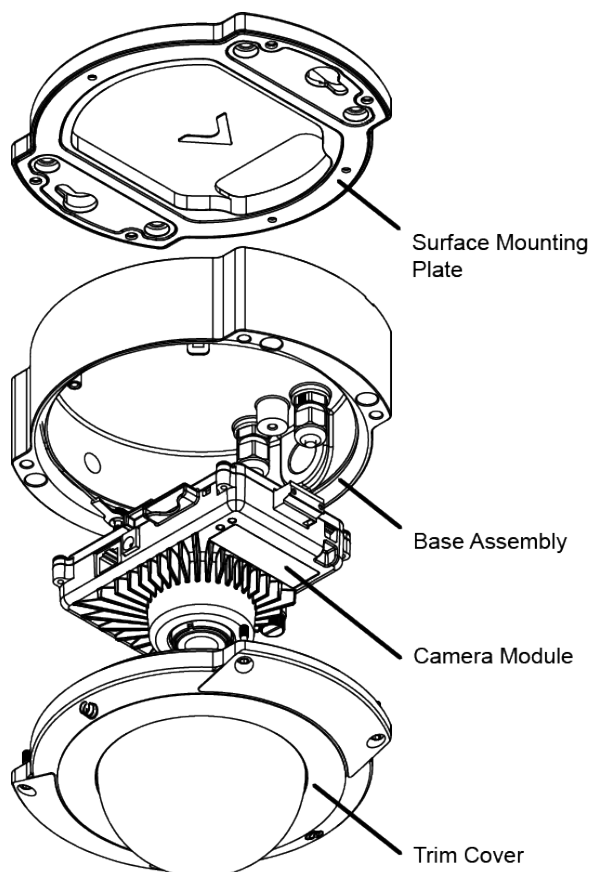


Figure 7 Stainless Steel Camera – Surface Mount Exploded View

3.6.1 Parts Supplied

- Camera Module
- Surface Mounting Plate
- Conduit Gland Adapter
- Quick Start Guide
- Hex Screwdriver
- Spanner
- Drilling Template

3.6.2 Installation Steps

3.6.2.1 Preparation

1. Remove the four cover screws using the Hex screwdriver.
2. Carefully remove the dome cover.
3. Detach the dome cover from the safety wire and remove the camera module.

3.6.2.2 Mounting

1. Using the drilling template, drill-mounting holes for the mounting screws.
2. Attach the Surface Mounting Plate with appropriate mounting screws.
3. Pass the unterminated network cable through the camera base.
4. Align the camera base to the Surface Mounting Plate and twist into place.
5. Secure the camera base to the Surface Mounting Plate.
6. Pull approximately 25 cm (10 in.) of the network cable through the cable gland.
7. Tighten the cable gland using the supplied spanner. Optionally, use the Conduit Gland Adapter to route cable into a conduit (3/4 inch NPT).
- CAUTION:** Ensure all cable entries are sealed to maintain the IP69K rating.
8. Terminate the network cable and secure the camera module into the camera base.
9. Connect the network cable to the camera.
10. Reattach the dome cover safety wire.
11. Secure the dome cover screws using the Hex screwdriver.



3.7 Stainless Steel Camera – Pendant Mount

The Evolution Stainless Steel Dome camera is Electropolished marine grade 316 stainless steel. The Stainless Steel camera has the highest rating (IP-69K) and is the most suitable camera for industrial environments. The Trim Cover and Base Assembly prevents reaching the camera and ensures dust and moisture do not reach inside the enclosure. All mounting perforations are outside the enclosures sealed area.

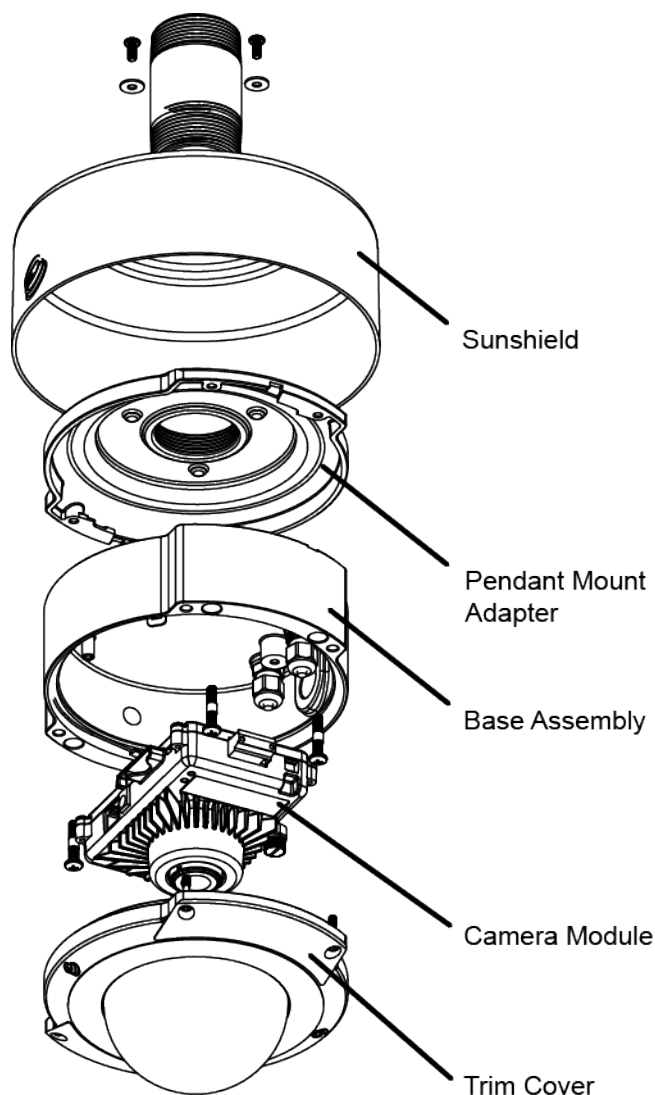


Figure 8 Stainless Steel Camera – Pendant Mount Exploded View

3.7.1 Parts Supplied

- Camera Module
- Pendant Mount Adapter
- Sunshield
- Pipe Thread Adapter
- Quick Start Guide
- Hex Screwdriver
- Spanner
- Drilling Template

3.7.2 Installation Steps

3.7.2.1 Preparation

1. Remove the four cover screws using the Hex screwdriver.



2. Carefully remove the dome cover.
3. Detach the dome cover from the safety wire and remove the camera module.
4. Remove the three pendant mount screws and washers.
5. Aligning the holes, secure the Sunshield to the Pendant Mount Adapter using the three screws and washers.



3.7.2.2 Mounting

1. Use the pipe thread adapter only when connecting to a female 1.5-inch NPT connection. Attach pipe thread adapter to the pendant bracket (not supplied).
2. Attach the Sunshield and Pendant Mount assembly to the pipe thread adapter.
3. Align the camera base to the Pendant Mount assembly and twist into place.
4. Secure the camera base to the Pendant Mount assembly.
5. Pull approximately 25 cm (10 in.) of the network cable through the cable gland.
6. Tighten the cable gland using the supplied spanner. Ensure the second cable gland is blocked off if unused.



CAUTION: Ensure all cable entries are sealed to maintain the IP69K rating.

7. Terminate the network cable and secure the camera module into the camera base.
8. Connect the network cable to the camera.
9. Reattach the dome cover safety wire.
10. Carefully secure the dome cover screws using the Hex screwdriver.



4 Camera Mounts

The following mounting accessories are available for the Indoor and Outdoor Evolution cameras to allow installation in multiple environments.

Indoor installations may require a Pendant Mount in addition to the Wall Mount kit. Connecting to 1.5-inch NPT female pipe threads requires a Gender adapter. Outdoor Pendant Mounts do not require the Gender adapter. Use all Corner, Pole and Wall Mount Brackets with the Evolution Pendant Mount. See Pendant Mount, page 30 for details.

4.1 Wall Mount

The Wall Mount has a 1½-inch NPT female pipe thread, allowing the Pendant Mount to fasten. There is a set screw in the 1½-inch thread area which locks the housing into a fixed rotation.

OBE-04-OWA -White

OBE-04-OBA – Black

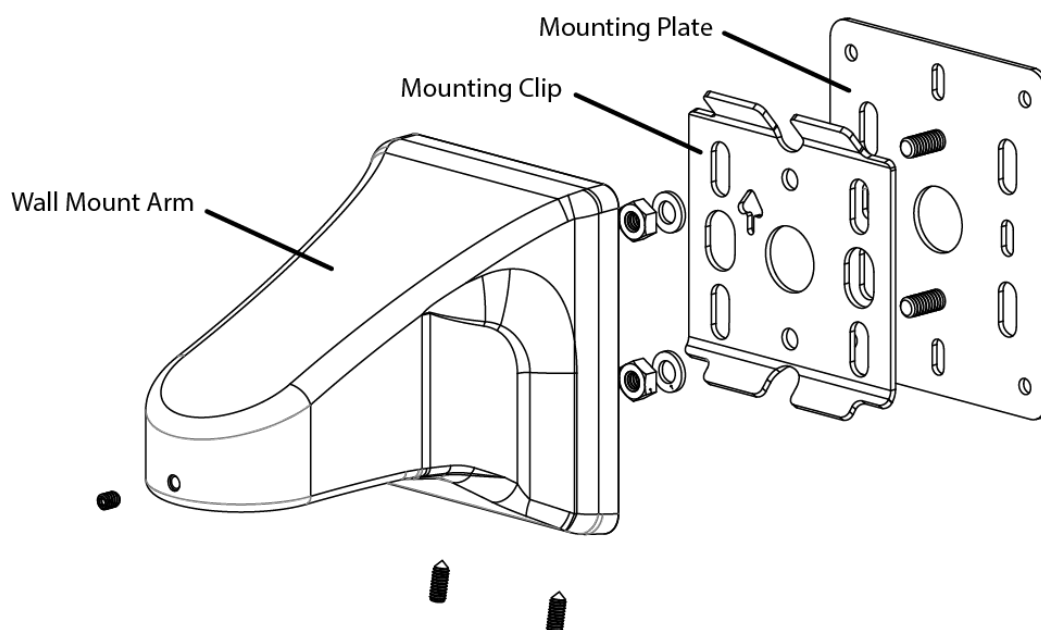


Figure 9 Wall Mount Exploded View

The Mounting Plate is not required when mounting to a studed or solid wall where you are not using an electrical box.

Likewise, do not use the Mounting Plate for Pole or Corner Mount installations.

1. Fasten the Mounting Clip to the wall surface using fasteners (not supplied). Ensure using the appropriate fasteners for the wall material (capable of supporting a minimum four times the weight of the wall mount and camera).
2. Ensure that the arrow mark on the plate is oriented up.
3. Pass the cables through one of the holes in the plate.
4. Hook the wall mount arm over the top tabs on the Mounting Clip.
5. Tighten the two set screws on the bottom, locking the arm to the Mounting Clip.
6. Pass the cables through the mount arm and out the threaded hole on the end of the arm.

4.1.1 Rough Surfaces or over Electrical Boxes

1. Fasten the Wall Mount Plate to the box or the wall surface.
2. Fasten the Mounting Clip using the two nuts and washers provided.

This provides an even surface for the Mounting Clip Plate.

CAUTION: Do not mount the camera to an electrical box where the camera would be easily accessible. Ensure the electrical box is structurally sound to support the camera.

4.2 Corner Mount

The Corner Mount is a bracket that adapts the wall mount to fit diagonally on the corner of a building, giving a 270° FoV at the corner. Attach to the building through four appropriate fixings (not provided). The bracket has an opening that accommodates a conduit connection into the back of the wall mount. The Wall Mount Mounting Clip attaches directly to the Corner Mount bracket in the same manner as the pole mount.

OBE-05-OWA – White

OBE-05-OBA – Black

Use with the Wall Mount kit sold separately.

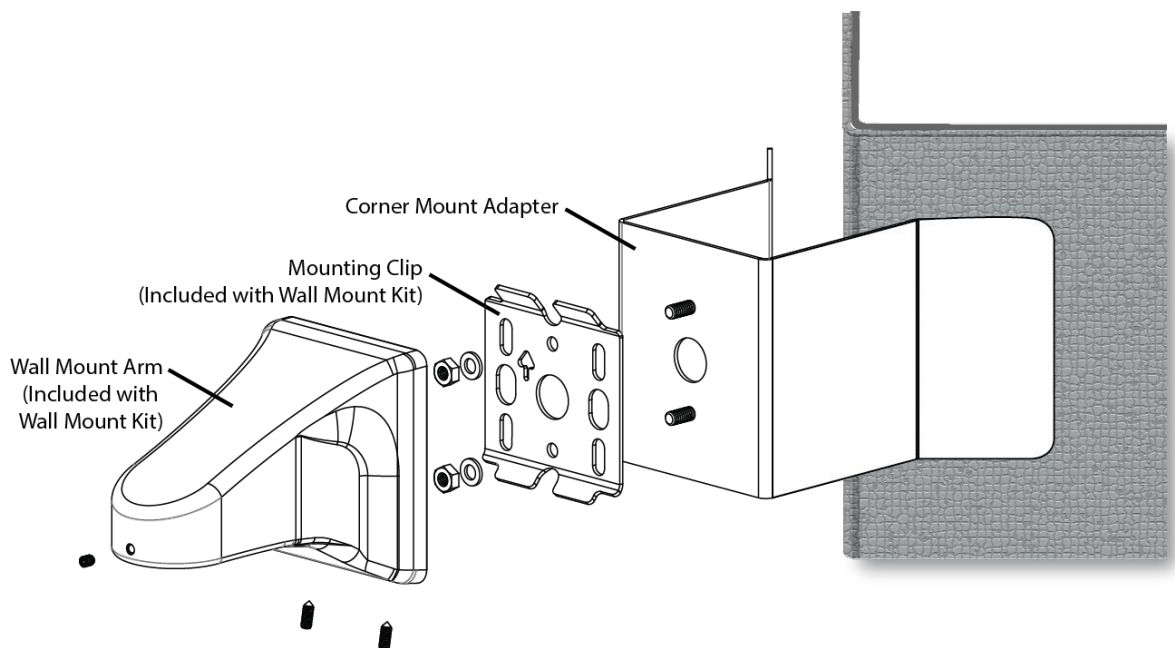


Figure 10 Corner Mount Exploded View

1. Fasten the Corner Mount Adapter to wall surfaces using four fasteners (not supplied). Ensure the fasteners are appropriate for the wall material and capable of supporting at least four times the weight of the wall mount and camera.
2. Fasten the Wall Mounting Clip to the Corner Mount adapter using the two nuts and washers provided with the Wall Mount Kit.

Note: The Wall Mount Plate is not used.

3. If necessary, the hole in the Corner Mount Adapter accepts a flexible conduit adapter.
4. Pass the cables through the hole and into the Wall Mount Arm.
5. Fasten to the Mounting Clip.

4.3 Pole Mount

Use the Wall Mount Kit in conjunction with the Pole Mount when attaching to a light pole. In addition, use the Pole Mount and Corner Mount to connect to the corner of a building. The Pole mount is a bracket that attaches to a pole 100 to 150 mm (4 to 6 in.) in diameter with the provided stainless steel clamping bands.

The Pole Mount Adapter has a hole that accommodates a conduit connection from the Wall Mount Arm if it is necessary to protect the wires from the environment. The Mounting Clip attaches directly to the Pole Mount Adapter in the same manner as the Mounting Plate.

OBE-03-OWA – White

OBE-03-OBA – Black

Use with the Wall Mount kit sold separately.

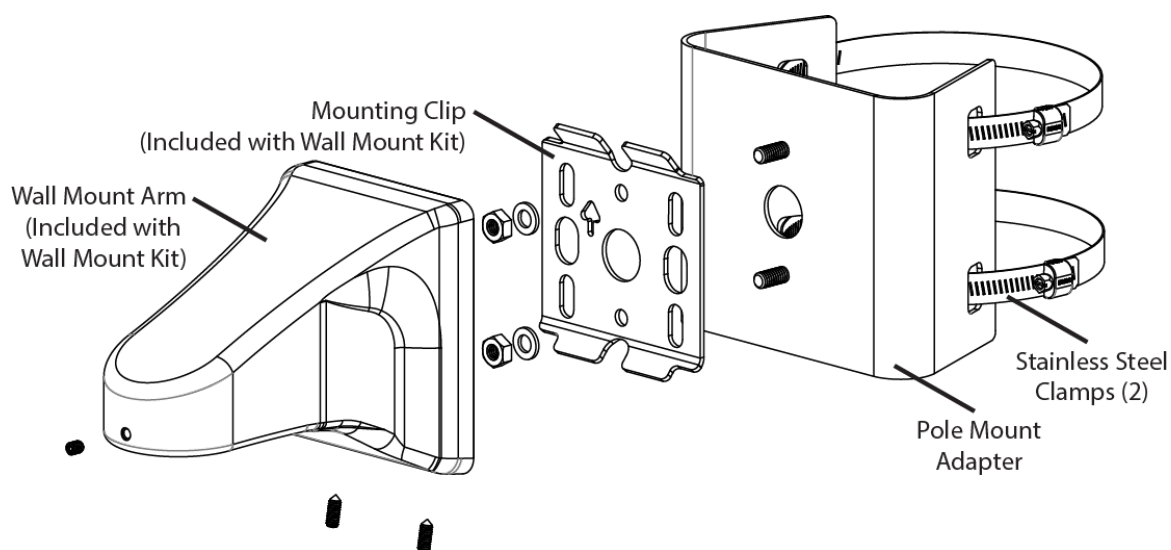


Figure 11 Pole Mount Exploded View

1. Fasten the Pole Mount Adapter to the pole using the two Stainless Steel Clamps.
2. Fasten the Mounting Clip to the Pole Mount Adapter using the two nuts and washers provided with the Wall Mount kit.

Note: The Wall Mount Plate is not used.

The hole in the Pole Mount Adapter is designed to accept a flexible conduit if desired.

3. Pass through the cables into the hole and the Wall Mount Arm
4. Fastened the Wall Mount Arm to the Mounting Clip.

4.4 Pendant Mount

For mounting an enclosure below the ceiling, use the accessory Pendant mount for M32 male pipe threads.

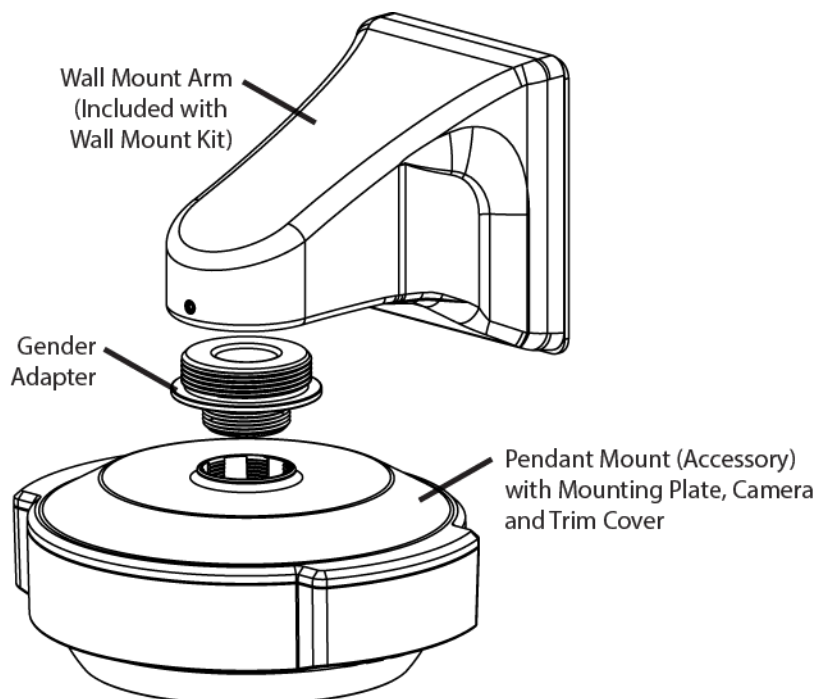


Figure 12 Pendant Mount Exploded View

The Wall Mount kit is sold separately.

Indoor Housing		
Pendant Mount	OBE-01-IWA	White
	OBE-01-IBA	Black
Gender Adapter	OXM-03-UWA	-
Outdoor Housing		
Pendant Mount	OBE-01-OWA	White
	OBE-01-OBA	Black

The **Indoor Evolution** camera housing requires the use of the Pendant Mount and Gender Adapter (sold separately). When using the Wall Mount indoors, directly mount to the M32 threaded pipe.

1. Thread the indoor Pendant Mount to the Gender Adapter.
2. Attach Pendant and Gender adapter assembly onto the Wall Mount Arm.
3. Run the cable through the Wall Mount Arm and Mounting Plate.
4. Attach the Mounting Plate.
5. Rotate and tighten the set screw locking the camera into the desired orientation.
6. Attach the cable to the Mounting Plate using the two snap features in the Pendant Mount.
7. Fasten the Mounting Plate to the Pendant Mount using the two Plastite® thread forming screws into the two bosses with the cables passing through.

The **Outdoor Evolution** camera housing requires the use of a Pendant Mount (sold separately) to fit the housing to the Wall Mount.

The pendant adapts the enclosure to 1.5-inch NPT female pipe threads. The Pendant Mount has a male thread, therefore if the installation is the length of a pipe use a female-to-female coupler.

1. Use Teflon® or PTFE pipe tape on pipe threads to allow compliance, sealing and alignment.
2. Pass cabling through the Pendant Mount.
3. Mount the Pendant Mount to the pipe.
4. Thread cabling onto the Wall Mount Arm.
5. Rotate and tighten the set screw to lock the camera into the desired orientation.
6. Mount the Outdoor Base Assembly to the Pendant Mount with the cables passing through the IP66 grommets in the back of the assembly.
7. Mount the Base Assembly to the Pendant Mount with the supplied four 1" fasteners.

5 Test

1. Confirm the Camera module is installed correctly.
2. Confirm the thumb screw is fastened to prevent movement.
3. Connect the Ethernet cable (RJ45) to the camera module.
4. Connect the alarm input / output / alarm reset cable and the remote microphone (if necessary) to the camera module.
5. Apply power to the camera. The camera module LEDs light starting with the quick green, red and then green LED.

NOTICE: Without PoE power use only a UL/CSA-approved LPS or NEC Class 2 power source with a 12 VDC 1 Amp AC adapter (not supplied). This alternate power source must have a wired plug connector with the correct polarity (+ve center).

The camera's focus is factory set and locked.

5.1 Indoor Camera

1. Align the dome trim ring over the base plate ensuring the retaining clips align correctly and allowing the trim ring to clip into place.
2. Refit the trim ring screw with the supplied Torx driver.
3. Remove the screen protection film from the dome.

5.2 Outdoor Camera

1. Carefully re-seat the dome trim ring.
Note: Ensure the dome surface is not damaged and the dome seal is retained.
2. Refit the dome screws with the supplied Torx driver. Tighten the dome screws ensuring ingress protection is maintained around the dome seal.
3. Remove the screen protection film from the dome.
4. Carefully polish the dome surface with a soft, lint-free, nonabrasive cloth to complete the installation. Contaminants left on the dome or lens degrade optical performance, causing poor focus, incorrect color balance, lens flare and other undesirable effects.

6 Dome Handling and Cleaning

The standard dome is made of a polycarbonate (PC) polymer. Take care when handling or cleaning a dome to avoid scratching the surface.

- Always handle the dome by the outside edge of the flange or trim ring assembly.
- Avoid contacting inside surface of the dome.
- Remove dust or other surface contaminants from the dome's interior with clean, dry air pressure (compressed air cans).
- Remove heavy residue (spots, streaks, stains) or other contaminants from the dome surface with a solution of a mild liquid dish detergent or isopropyl alcohol and water. Only use lint free soft paper towels or a microfiber cloth. After cleaning the dome apply clean, dry air to complete drying and leave no dust.
- Scratches or other surface blemishes within the material of the dome may be removed by applying a non-abrasive wax (Meguiar's #18 or equivalent) with a microfiber cloth. After waxing, apply clean, dry air to complete drying and leave no dust.

NOTICE: The dome may become unusable due to excessive pressure or rubbing causing permanent scratches.

7 First Time Operation

The factory default configuration is DHCP. When a DHCP server is unavailable, the factory default IP address is 192.168.0.200.

Install the Oncam Grandeye IP Configuration Tool. Find the latest version at www.oncamgrandeye.com. Configure all camera IP addresses with the IP Configuration Tool.

7.1 DHCP

DHCP is the default camera configuration. Cameras acquire a unique IP address when connected to a network with a DHCP server. If you are using DHCP permanently for the camera's IP address, be sure to reserve that address with the DHCP server to ensure that the assigned IP address does not change. If a DHCP server is not found or DHCP is disabled, the camera will revert to its current static IP address.

7.2 Static IP Installation

The factory default IP address is 192.168.0.200.

For a multi-camera install, always introduce the cameras one at a time and then re-address them to a non-conflicting static IP address. Using the Network Settings page from the camera Web interface or the IP Configuration Tool.

7.3 Finding Available Cameras

Use the Oncam IP Configuration Tool to find the IP address of installed Oncam 360° IP cameras, whether or not they are addressable on your current sub-LAN.

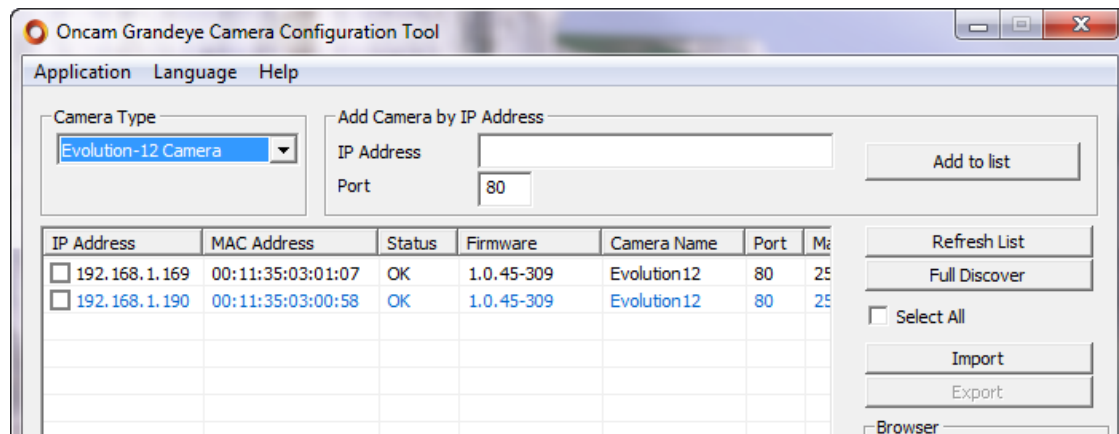


Figure 13 Oncam Grandeye Camera Configuration Tool

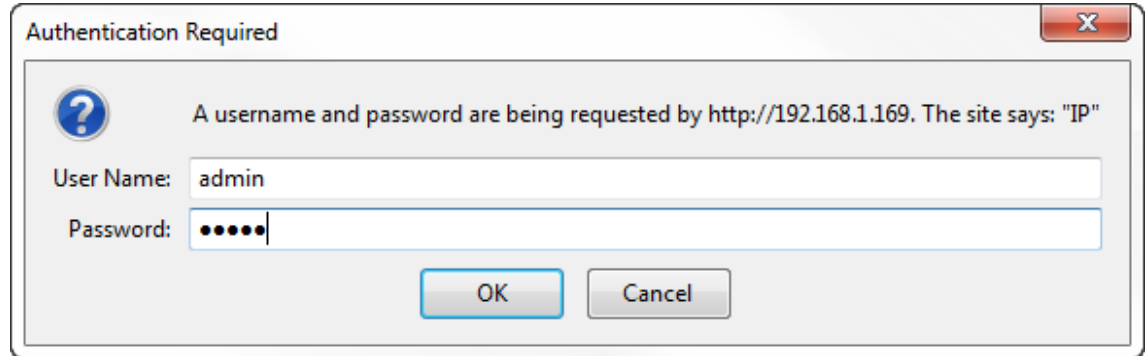
1. Select the Camera Type.
2. Press Refresh List or Full Discover to find new cameras, or update information on cameras already in the list.
3. Check the IP Address box for changing the IP address of a camera.
4. Select the Network Settings tab.
5. Click Get Network Settings to download current settings.
6. Click OK once the download complete.
7. Enter the new IP address, Subnet Mask and Gateway and disable DHCP.
8. Click Save Network Settings to upload new settings to the camera.

You can identify cameras by their MAC addresses. Find the MAC address printed on the camera label and packaging.

7.4 Connecting to the Camera

Connect to any camera on your network by entering the camera IP address into the address bar of a browser running on a PC on the same network. To access the Web interface, open a browser window (Internet Explorer, Firefox or Chrome) and enter the IP address of the camera. (For example, <http://192.168.0.200>).

The first response will be an authentication screen requesting a User name and Password:



The image shows a web browser authentication dialog box titled "Authentication Required". It contains a message: "A username and password are being requested by http://192.168.1.169. The site says: 'IP'". Below the message are two input fields: "User Name:" with the text "admin" and "Password:" with masked characters (dots). At the bottom are "OK" and "Cancel" buttons.

Default User name: admin

Default Password: admin (case sensitive)

Note: The admin user is permanent and cannot be renamed or deleted.

For security purposes, you should change the admin password. If desired, add other users and set the admin password to a complicated random string. Then use another user name for routine maintenance.

7.5 VLC Media Player

Install the VLC media player on your computer to enable live video streaming on the camera webpage. Browsers supported by the VLC media player are Firefox, Internet Explorer, Edge and Safari.

Download the VLC media player from www.videolan.org > VLC > Download.

8 Camera Web Interface

Access camera configuration through the camera Web interface.

- Open a browser window and enter the camera IP address.
- Enter the User name and Password for this camera. The Control Panel screen displays.

Note: Images in the following sections may vary.

8.1 Control Panel

The camera produces a fisheye view that is a full 360-degree image in a circular format.

The camera streams two fisheye images at the same time.

By default only Fisheye1 displays in the Control Panel screen with one of the following options.

9.6 MP	3200 x 3000
6 MP	2528 x 2376
4 MP	2080 x 1960
2 MP	1472 x 1384

Set the resolution from the Admin > Video Setup page. See Video, page 40.



Shown in the right pane is the Control Panel that includes the camera date and time, and current image streaming.

Set the current date and time from the Admin tab.



8.2 Image

The Image tab includes lighting and orientation controls for the image sensor.



Mains Frequency

Select the mains frequency based on the camera location.

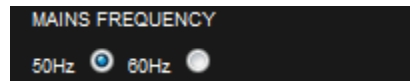


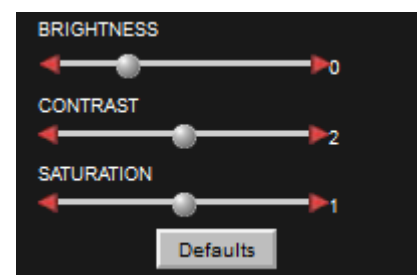
Image Controls

Adjust the view using the image controls (Brightness / Contrast / Saturation).

Select the Defaults button to return the sliders to their default settings.

The camera has automatic imaging controls to guarantee the best image quality at all times.

Rarely use manual tuning.

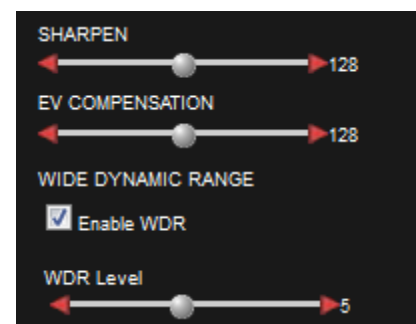


8.2.1 Sharpen

Increase or decrease the clarity and focus of an image. Using the Sharpen setting also emphasizes noise and increases data size.

8.2.2 EV Compensation

Increase or decrease the image exposure. Adjust the EV Compensation for unusual lighting conditions.



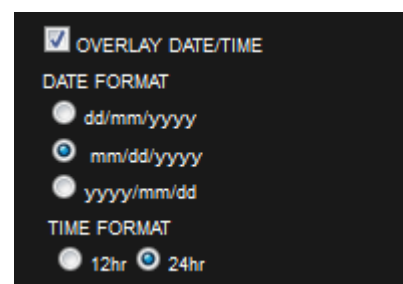
8.2.3 Wide Dynamic Range

Wide Dynamic Range. This increases the dynamic range in difficult lighting conditions. WDR particularly lightens dark areas without over brightening light areas.

WDR Level. After enabling WDR adjust the amount of WDR processing that is applied to the image. Higher settings further bring-out detail in shaded areas, in exchange for slightly lowering the overall contrast.

8.2.4 Image Time and Date Overlay

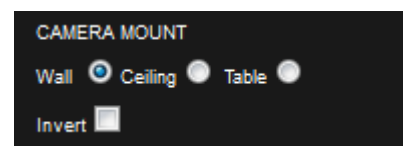
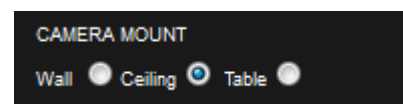
Overlay the current date and time onto the image outside of the fisheye circle so not obscuring the video. The scaled image and overlay appears small when viewed using a web browser. Settings are available to set the format of the date and time text.



8.2.5 Camera Mount

Camera mount position. Mount cameras vertically or horizontally (for instance, wall or ceiling). When recording and viewing the camera using the Oncam SDK this setting ensures that the scene is properly de-warped and the NVR PTZ operations correctly work. Set PTZ to match the installation position of your camera.

When wall mounting a camera, for routing cables the camera may need to be upside down. When configuring the Wall Mount option through the Web interface, use the invert option to invert the video image if the camera is mounted upside down. This only inverts the video image when selecting the Wall mount setting.



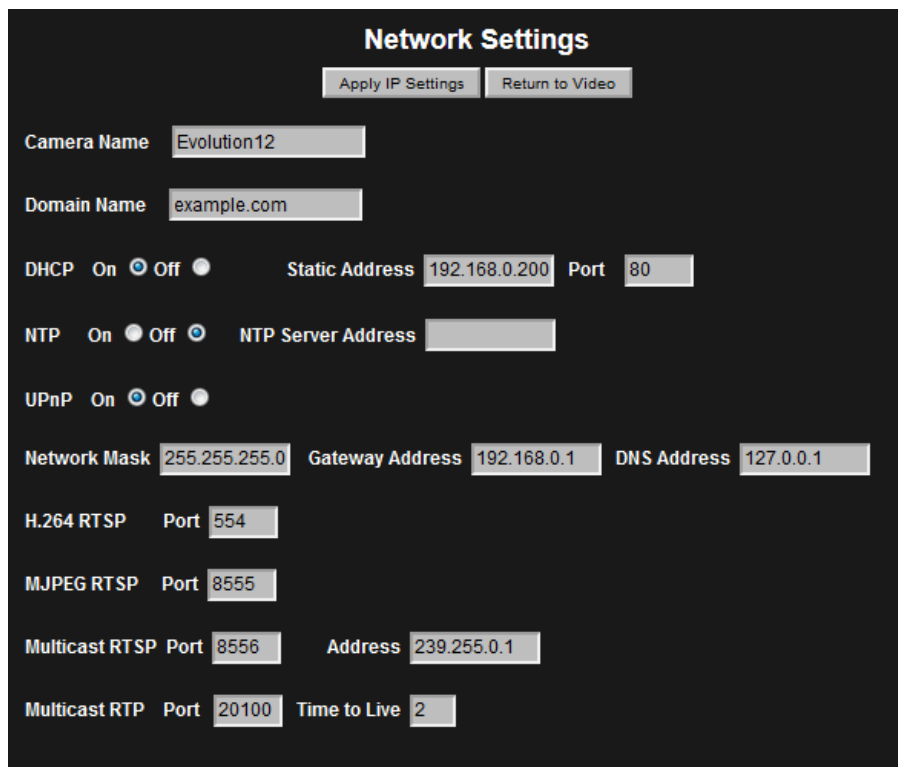
8.3 Administration

The Admin menu provides the camera firmware version and MAC address. Access all administrative camera parameters through the Admin menu.



8.3.1 Network

Using the Camera Configuration Tool you can configure the different Network Settings.



DHCP (Default). The camera is configured for DHCP. Detect the camera using the Camera Configuration Tool.

Static IP Address. Configure the camera using the Static IP address if DHCP is unavailable.

Camera Name. Modify the Camera Name.

Default port. Connecting the web server defaults to port 80.

NTP Server. Provides accurate time services to the camera. For a Network Time Protocol server, enter the DNS name or IP address of the NTP Server.

UPnP (On / Off). Enable the Universal Plug-and-Play feature to show the camera from other UPnP compatible devices on the same network (for example Windows computers).

Multicast RTSP port. Use the RTSP port for receiving a multicast RTSP request from a client.

Multicast RTP port. Use the RTP port for multicasting the video. The clients that receive the video use the Multicast RTP port and Address value to receive the video. Consult your network administrator.

Address. Use the IP address for multicasting the video. The clients that receive the video will use the Address value as well as the Multicast RTP port value to receive the video. Consult your network.

Time to Live. Sets the Time to Live value in your multicast IP packets. Consult your network.

NOTICE: If changes are made, click **Apply IP Settings** to save changes. Your Web Interface connection may be lost if the IP address changes to another subnet.

8.3.2 Video

The Video Setup page allows you to set the RTSP camera stream combinations and parameters for the individual camera streams.

NOTICE: Configure ONVIF streams from your ONVIF-conformant third-party system within ONVIF Profile settings. The Video Setup settings only affect the camera's regular RTSP streams.

The camera supports

- Up to two H.264 fisheye streams (Fisheye1 and Fisheye2) or,
- One fisheye stream and up to four individually-controlled dewarped virtual camera streams (VCam streams).

Note: Fisheye1 is always enabled.

Video Setup

Apply Changes
Return to Video

Sensor
☐ High-speed sensor mode ?

	Resolution	Frame Rate	Rate Control	BitRate (kbps) / Quality (0-100%)		GOP 0 = auto	Enable
Primary Stream (H.264) ?							
Fisheye1	9.6M	12/Max	CVBR	10000 kbps		0	<input checked="" type="checkbox"/>
<input type="checkbox"/> Multicast H.264 Stream ?							
Dual-Stream Mode (H.264) ?							
Fisheye2	0.25M	14/Max	CVBR	800 kbps		0	<input type="checkbox"/>
VCam Mode (H.264) ?							
VCam1	0.25M	14/Max	CVBR	800 kbps		0	<input type="checkbox"/>
VCam2	0.25M	14/Max	CVBR	800 kbps		0	<input type="checkbox"/>
VCam3	0.25M	14/Max	CVBR	800 kbps		0	<input type="checkbox"/>
VCam4	0.25M	14/Max	CVBR	800 kbps		0	<input type="checkbox"/>
Snapshot (MJPEG) ?							
Fisheye2	0.25M	14/Max	Fixed Quality	70 %			<input type="checkbox"/>

The camera supports the following video stream combinations.

1. The camera always has either both fisheye 1 and 2 enabled or the following combinations
2. Fisheye1 H.264 stream (9.6 MP, 6 MP, 4 MP or 2 MP) + Fisheye2 H.264 stream (4 MP, 2 MP, 1 MP or 0.25 MP)
3. Fisheye1 H.264 stream (9.6 MP, 6 MP, 4 MP or 2 MP) + 1x H.264 VCam (0.25 or 1 MP)
4. Fisheye1 H.264 stream (9.6 MP, 6 MP, 4 MP or 2 MP) + 2x H.264 VCam (0.25 or 1 MP)
5. Fisheye1 H.264 stream (9.6 MP, 6 MP, 4 MP or 2 MP) + 3x H.264 VCam (0.25 or 1 MP)
6. Fisheye1 H.264 stream (9.6 MP, 6 MP, 4 MP or 2 MP) + 4x H.264 VCam (0.25 or 1 MP)

The Video Setup page implements these combinations with options for selecting Dual-Stream Mode or VCam mode, and enabled controls for each of their respective streams.

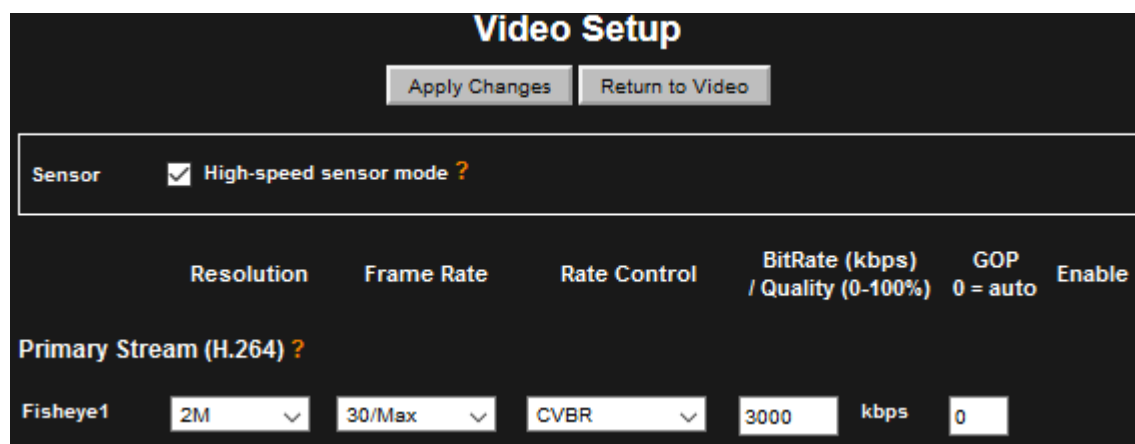
There is a third MJPEG fisheye stream always available in all combinations. This stream shares the resolution set for Fisheye2, but other settings are independent.

High-speed Sensor. Use this feature if requiring frame rates greater than 15 FPS. If enabled, High-speed sensor affects the other settings.

8.3.2.1 Sensor - High-Speed

High-speed sensor mode is an advanced feature of the image sensor that merges square blocks of 2x2 pixels into one pixel. This reduces the image resolution in exchange for increasing the light sensitivity. It also increases the maximum frame rate to 30 FPS. This mode is particularly useful for very low-light conditions, or where faster shutter speeds are needed to capture fast-moving action. Maximum resolution in this mode is 2 MP and the settings on the page adapt to suit when selecting the setting.

When selecting the Sensor checkbox, the Fisheye1 resolution automatically changes to 2 MP and the Frame Rate changes to 30/Max FPS.



The screenshot shows the 'Video Setup' interface. At the top, there are two buttons: 'Apply Changes' and 'Return to Video'. Below them is a section titled 'Sensor' with a checked checkbox for 'High-speed sensor mode ?'. Underneath is a table with columns: Resolution, Frame Rate, Rate Control, BitRate (kbps) / Quality (0-100%), GOP (0 = auto), and Enable. The table has one row for 'Primary Stream (H.264) ?' with a sub-row for 'Fisheye1'. The settings for Fisheye1 are: Resolution: 2M, Frame Rate: 30/Max, Rate Control: CVBR, BitRate: 3000 kbps, GOP: 0, and Enable: (checkbox).









	Resolution	Frame Rate	Rate Control	BitRate (kbps) / Quality (0-100%)	GOP (0 = auto)	Enable
Primary Stream (H.264) ?						
Fisheye1	2M	30/Max	CVBR	3000 kbps	0	

All other parameters remain unchanged.

Enabling high-speed sensor mode is enabled provides the maximum frame shown.

NOTICE: Frames per Second (FPS) may differ depending on network performance and available computer power.

Table 1 High-Speed Sensor Mode – 2 MP

Primary		Secondary	
Resolution (MP)	FPS (max)	Resolution (MP)	FPS (max)
2	29		
2	29	1	29
		0.25	
2	6	 720p	5
	14	 VGA	14
	7	 720p	7
	19	 VGA	19
	11	 720p	11
	23	 VGA	23
	23	 720p	23
	29	 VGA	29

8.3.2.2 Stream

Configure the following parameters for each stream.

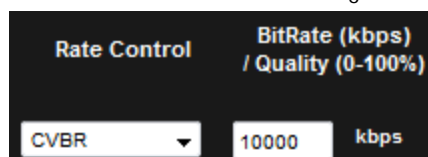
Resolution. Set resolution individually for Fisheye1, Fisheye2 and each VCam.

Frame Rate. The Frame Rate is a number of frames per second (FPS) sent by the camera.

Rate Control. Use Rate Control to control the network bandwidth.

CVBR
(Capped Variable Bit
Rate)

The network bandwidth should not go above the Bit Rate value selected.



Maximum allowed setting is 10000kbps*.

Fixed Quality

Do not use network bandwidth.

When selecting this option a Quality value may be selected instead of a Bit Rate.



Maximum allowed setting is 70%*.

* = Bitrate and quality settings are limited to prevent excessive data usage, network bandwidth and camera workload.

GOP. Configures the Group of Pictures (GOP) number of frames, considered advanced. GOP specifies the number of frames between I-frames in the H.264 compressed video stream. A small value means frequent I-frames for fidelity if recording the output. I-frames are compressed images, using more bits to encode. Therefore more frequent I-frames increase the bit rate and hence storage required to store the video. A value of 0 means this value is set automatically by the camera.

GOP = 0 (automatic) uses the GOP the camera creates which provides an I-frame every two seconds. This is equivalent to setting the GOP to double the frame rate setting.

For Example, if the resolution is 1 MP and FPS is 0 (auto), and GOP is set to 0 (auto), the actual value for FPS = 30, and the value of the GOP will therefore be set to $2 \times 30 = 60$.

8.3.2.3 Primary Stream (H.264)

Fisheye1 RTSP URL

rtsp://<ip address>:port/h264/video.sdp

Fisheye1 RTSP URL <alternate>

rtsp://<ip address>:port/h264/video.sdp?name=FE1

The Primary Stream (Fisheye1) is always enabled. Configure the Primary Stream resolution, frame rate and compression parameters in this section, as described in Stream, page 42.

If the second stream (Fisheye2) is enabled, then the maximum frame rate achievable for each stream is reduced. Only enable Fisheye2 if required. The camera prevents both streams from having the same settings. Each stream allows multiple concurrent connections, and enabling two identical streams would reduce performance without any benefit.

Fisheye1 – Multicast H.264 Stream. When selecting this check box, the camera multicasts the main video stream (Fisheye1) according to the multicast settings found on the Network Settings page (see Network, page 39). Deselecting this check box stops the multicast stream.

8.3.2.4 Dual-Stream - VCam

In addition to the Primary Stream, selecting Dual-Stream Mode allows the configuration of the second fisheye stream, Fisheye2.

Fisheye2 RTSP URL

rtsp://<ip-address>:<h.264 rtsp port>/video.sdp?name=FE2

Selecting VCam mode provides up to four dewarped VCam streams along with the Primary Stream.

VCam1 RTSP URL

rtsp://<ip-address>:<h.264 rtsp port>/video.sdp?name=VC1

VCam2 RTSP URL

rtsp://<ip-address>:<h.264 rtsp port>/video.sdp?name=VC2

VCam3 RTSP URL

rtsp://<ip-address>:<h.264 rtsp port>/video.sdp?name=VC3

VCam4 RTSP URL

rtsp://<ip-address>:<h.264 rtsp port>/video.sdp?name=VC4

It is not possible to use VCam and the Fisheye2 at the same time.

Switching between these modes requires a camera reboot for changing to the ONVIF source mode and defining different facilities in the camera's ONVIF streams.

You must select the Dual-Stream or VCam mode when connecting the camera to other systems using ONVIF profiles before adding the camera to the system.

When changing between modes later, remove the connections already defined in other systems and recreate with the camera in the required mode.

8.3.2.5 Snapshot (MJPEG)

The camera has a third, permanently available stream, compressed using MJPEG compression, whose resolution is the same as that used for Fisheye2. The other compression settings for this stream are independent.

MJPEG RTSP URL. `rtsp://<ip-address>:8555/video.sdp?name=MJPEG`

Note: The default network port for this stream is not the standard 554, but 8555. Configure the actual port in the Network setup page.

When enabling the Fisheye1 stream or a combination of Fisheye1 and any other, listed are the maximum frame rates.

NOTICE: Frames per Second (FPS) may differ depending on network performance and available computer power.

TABLE KEY






























Fisheye












VCam (Number of screens represents camera streams)

Table 2 Maximum Frame Rates

Primary		Secondary	
Resolution (MP)	FPS (max)	Resolution (MP)	FPS (max)
 9.6	12		
 6	14		
 4	14		
 9.6	8	 4	7
	10	 2	10
	10	 1	12
	12	 0.25	13
 6	11	 4	9
	13	 2	14

Primary		Secondary	
Resolution (MP)	FPS (max)	Resolution (MP)	FPS (max)
	14	1	14
	13	0.25	14
4	14	2	14
	14	1	14
	14	0.25	14
9.6	4	 720p	5
	7	 VGA	9
	5	 720p	6
	9	 VGA	10
	8	 720p	9
	10	 VGA	12
	10	 720p	11
	11	 VGA	12
6	5	 720p	5
	10	 VGA	10
	7	 720p	7
	13	 VGA	13
	10	 720p	10
	14	 VGA	14
	13	 720p	14
	14	 VGA	14

Primary		Secondary	
Resolution (MP)	FPS (max)	Resolution (MP)	FPS (max)
	5	 720p	5
	11	 VGA	11
	7	 720p	7
	13	 VGA	14
	11	 720p	11
	14	 VGA	14
	14	 720p	14
	13	 VGA	14

NOTE: When the mains frequency option is set to 50 Hz, the frame rate is limited to 25 FPS. This is to stop the video flickering when in the presence of mains-powered lighting. When the mains frequency option is set to 60 Hz, the frame rate is limited to 30 FPS. The figures in Table 1 High-Speed Sensor Mode – 2 MP are with the mains frequency set to 60 Hz. When set to 50 Hz, the 30 FPS entries may be reduced.

8.3.3 User Management

Enter a User Name and Password for each user. There are three different user profiles.

User

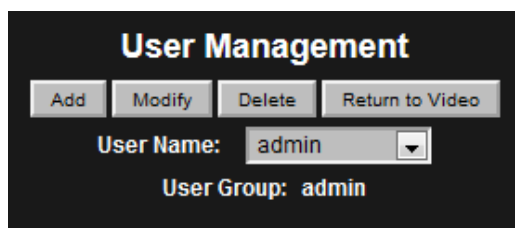
View image streams and camera configuration.

Operator

Change image and IP, motion regions, alarm settings and administer a factory reset.

Administrator

Access all functions, including user configuration.



8.3.4 Alarms

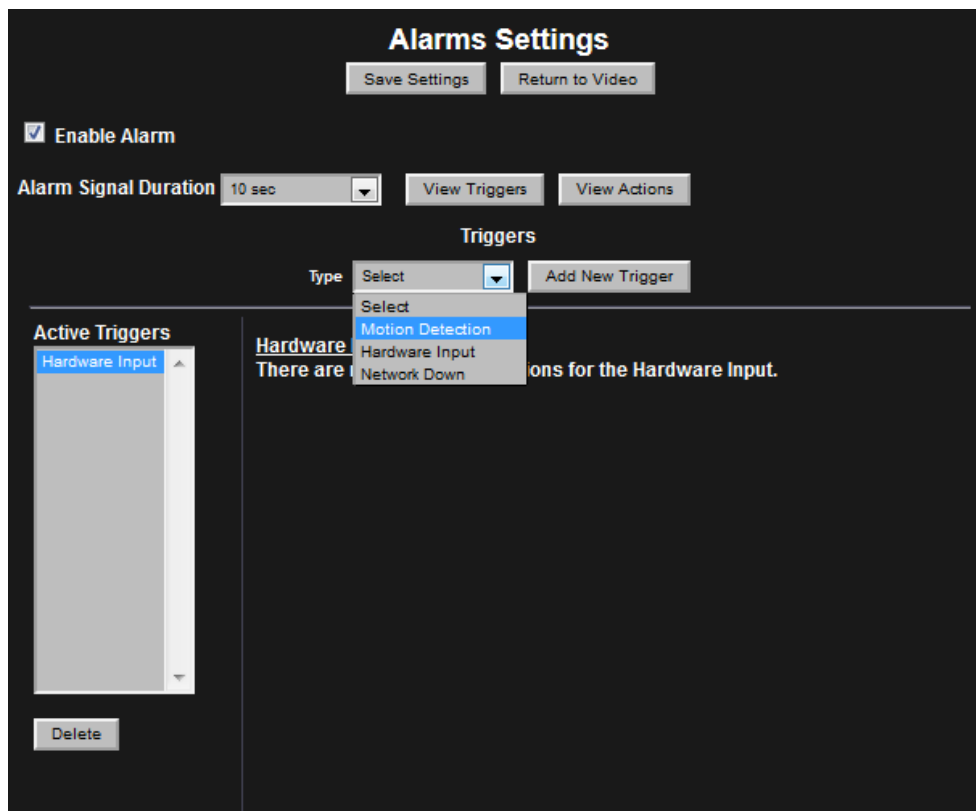


Figure 14 Alarm Settings Triggers

Alarm Signal Duration. The length of time that an alarm persists after the alarm is triggered.

View Triggers. Access a list of triggers that activate an alarm by selecting the View Triggers button. As necessary, configure the active Triggers list.

Add New Trigger. Select a trigger type from the drop down list and then select the Add New Trigger button to add another trigger to the Active Triggers list.

Available triggers include the following.

- Motion Detection – Movement detected in a defined region
- Hardware Input – A sensor or button attached to hardware I/O interface
- Network Down – The camera has lost its network connection

Use the Delete button to delete an unwanted trigger.

View Actions. Select the View Actions button. Configure the active actions list after setting the active triggers. Complete these actions when any trigger has activated. You cannot set Triggers to individual specific Actions.

Available actions include the following.

- Hardware output – A hardware device attached to the hardware I/O is activated.
- Record to SD Card – Video is recorded to the SD Card for a period of time
- Send E-mail – Send a notifying e-mail

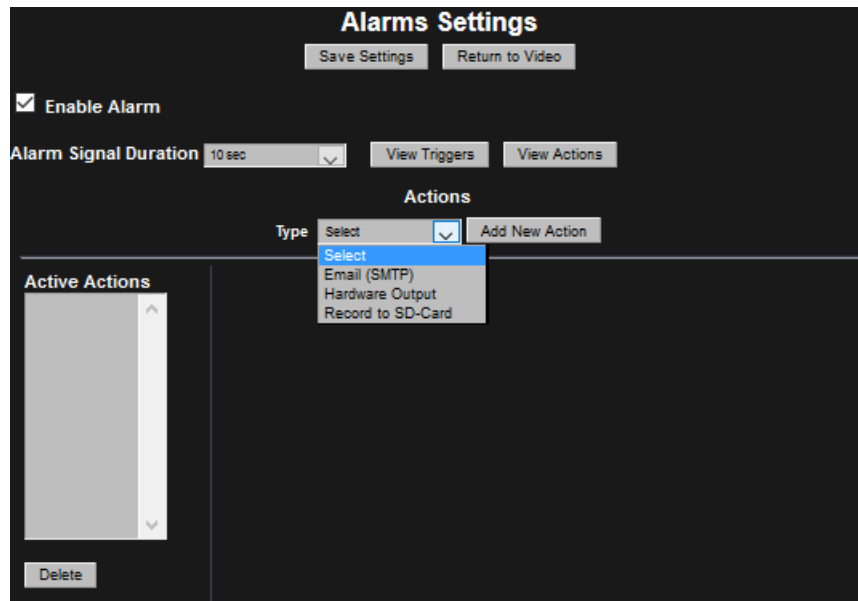


Figure 15 Alarm Settings Active Actions

Some actions have configurable options. From the Active Actions list, select the action to configure.

Email (SMTP). Send an email in response to an alarm by configuring Email (SMTP).

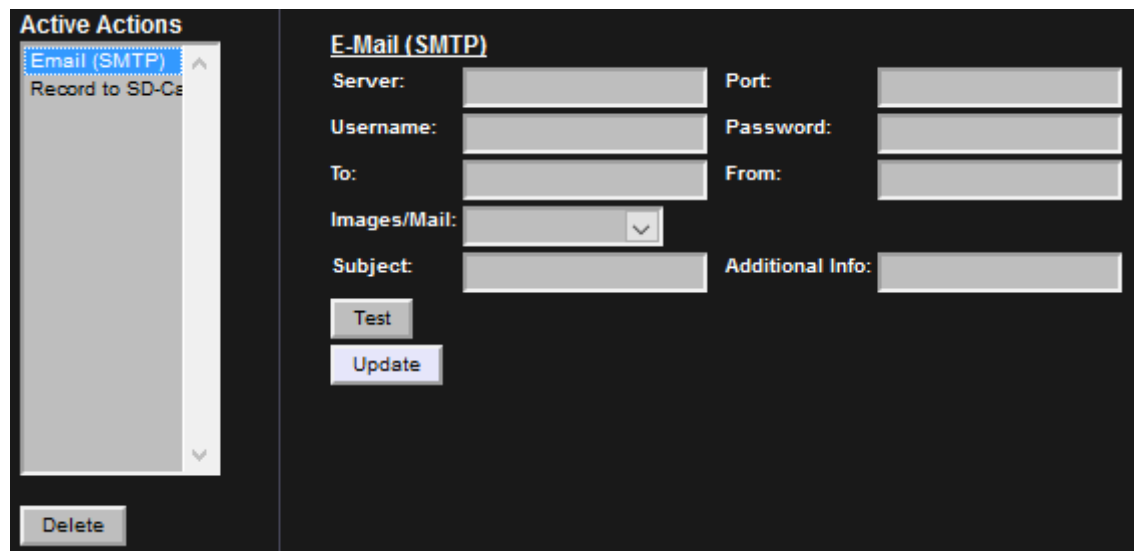
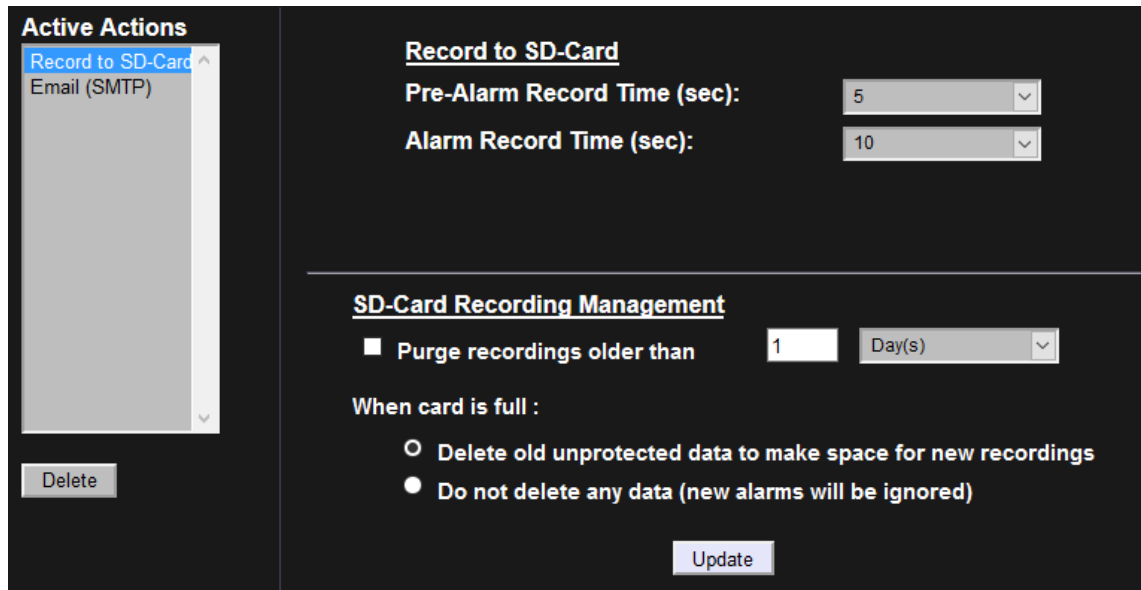


Figure 16 Alarm Settings Active Actions - E-Mail

Record to SD-Card. Setup an alarm for recording to the SD-Card.



The entire recording duration is the sum of the pre-alarm and alarm times.

You can record from either the Main Camera or the Second Camera streams. The video recording has the same resolution as the live stream.

Use the Delete button to delete an action.

8.3.5 Clock

Enter the Region and Zone and set the Camera Time Zone. Then enter the current date and time using 24-hour time format. You can update the camera time directly from the PC or from the Clock Settings.

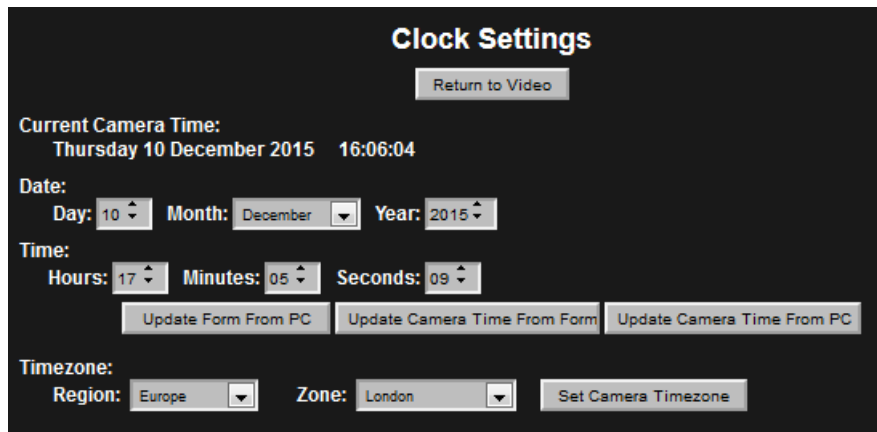
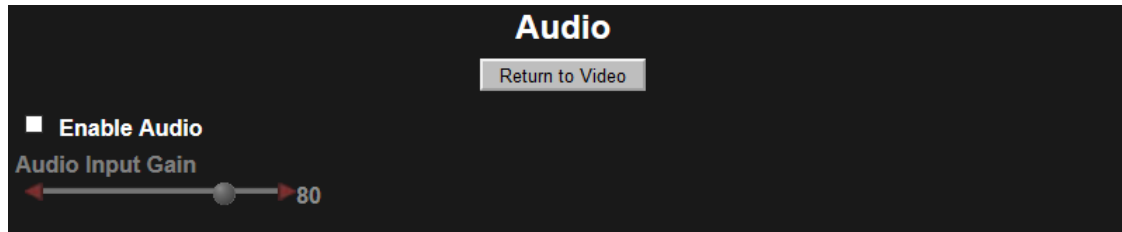


Figure 17 Clock Settings

8.3.6 Audio

The Audio button accesses Audio configuration.

Using an electret microphone, enable Audio and set the Audio Input Gain to the desired level. The audio is included in any H.264 or MJPEG RTSP camera stream.



Note: RTSP streaming occurs when the stream request a URL using the rtsp:// prefix. Video is not available over RTSP for a 4 MP MJPEG video stream. Only stream HTTP with MJPEG video of this size. The HTTP streaming method does not include audio.

With audio enabled, when making an RTSP connection to the camera and viewing video, an additional mono audio channel streams to the player. The audio uses the G.711 mu-law codec. The audio operates with both H.264 and MJPEG video streams.

8.3.7 Recordings

The Recordings dialog provides information and configuration options for the SD card.

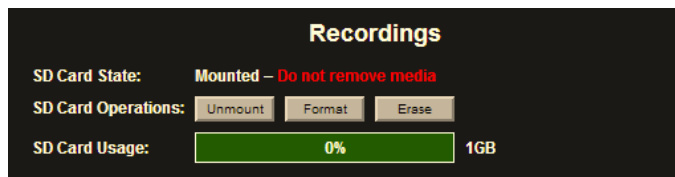


Figure 18 Recordings

SD Card State. Empty slot / Mounted / Unmounted

NOTICE: Avoid corrupting the SD Card by Unmounting the card prior to removal. Do not remove the SD Card when the SD Card State is Mounted.

SD Card Operations

- **Mount / Unmount.** Toggle between Mount and Unmount after inserting the SD Card or prior to removing the SD Card.
- **Format.** Use Format for formatting or reformatting the SD Card. Formatting the SD card erases all data.
- **Erase.** Click Erase to erase all content from the SD Card.

SD Card Usage. Shows the space remaining in the SD card.

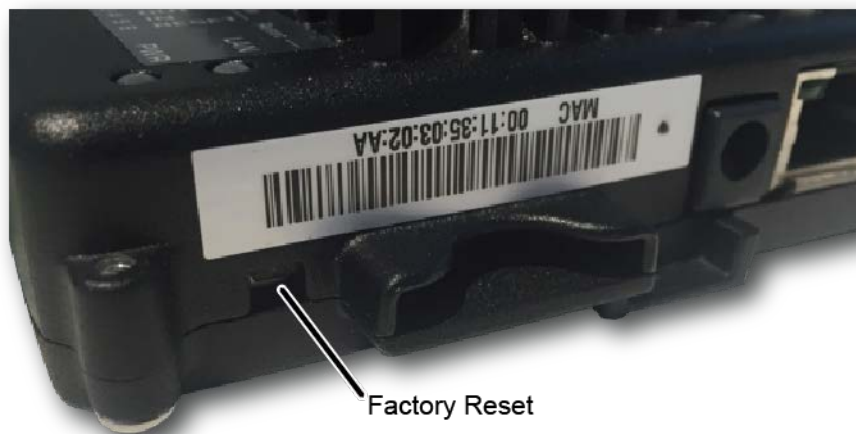
8.3.8 Attributions

The Attributions section references open source libraries and technology used by the camera.

8.3.9 Factory Defaults

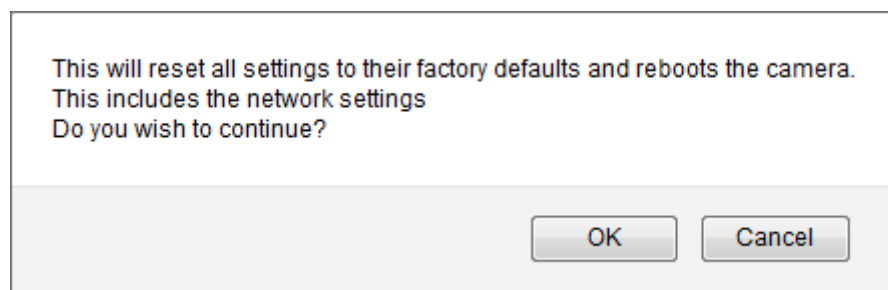
Achieve a factory reset through the camera's recessed reset button, the Web Interface, or from the Configuration Tool.

Recessed Hardware. Using the external recessed reset button on the side of the camera module by using a ballpoint pen.



1. With the camera powered, press and hold the Factory Default reset button for three seconds.
2. When the camera restarts, all camera settings are reset to factory defaults.

Web Interface. Through the camera's Web Interface Admin pane, click the Factory Defaults button. The following warning message displays before the Factory Default reset continues.



Configuration Tool. Reset to factory defaults through the Camera Configuration tool.

Through the camera configuration tool, check the camera(s) that require a factory reset.

1. From Camera Configuration tab
2. Select **factoryreset.cgi** from the Send command to camera field drop-down menu
3. Click Send.
4. Click Reboot. The camera resets back to factory defaults only after the camera has rebooted.

A message appears after the Reboot action.

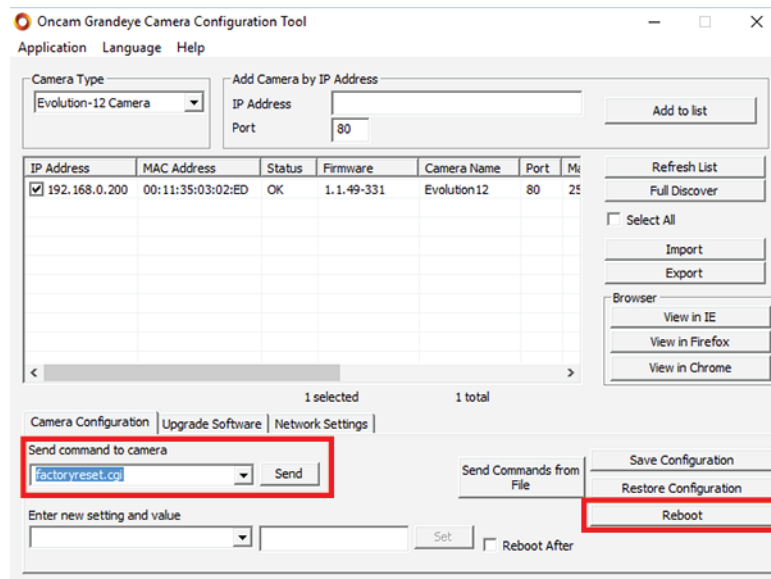


Figure 19 Camera Configuration Tool – Reset to Factory Defaults

Reinstated are the following Factory Defaults.

DHCP	Enabled
Static address	192.168.0.200
Regions (Privacy & Motion)	None
Image Settings	Default values
User Name	Admin
User Password	Admin (case sensitive)

NOTICE: Your Web Interface connection is lost if changing to another subnet.

8.4 Regions

Regions are user-defined zones in the image used to analyze an event, trigger an action, or add security that covers part of the image.

Set-up and configure two types of regions

- Privacy regions (up to 10)
- Motion Detection regions (up to 16)



8.4.1 Privacy

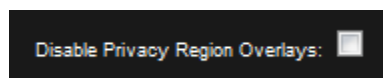
Define a Privacy region using a video-embedded mask restricting the viewing of the video streams masked image portion.

1. Select a Region number (1 to 10).
2. Enter the region Name.
3. Click Draw (the image freezes while you are drawing the zone).
4. Click and hold to set your initial point and move the mouse to define the area. Release the left button once the area is defined. Click Clear to restart drawing the shape or cancel the current action.
5. Click Save to store the new region to the Region dropdown list.
6. Repeat as necessary for up to 10 regions.



Notes:

- When creating Privacy, Regions are automatically enabled when created. Disable them by checking the Disable Privacy Regions Overlay checkbox.

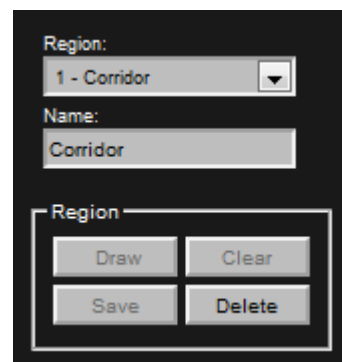


- Delete a region by selecting the region in the list and click Delete. This also deletes any saved name and returns the specific region number to default settings.

8.4.2 Motion Detection

A motion detection region is a user-defined zone of the image where it is required to detect motion in order to analyze it, or trigger an action such as recording, as a result of that event.

1. Select a Region number (1 to 16).
2. Enter a Region Name.
3. Click Draw (the image shrinks slightly while you are drawing the zone).
4. Left-click to set the initial point. Click several times around the area until defining a suitable polygon. Click the starting point again to complete the region.



Region:
1 - Corridor

Name:
Corridor

Region

Draw Clear

Save Delete

Click Clear to restart drawing the polygon or cancel the current action.

5. Click Save to store the region in the dropdown Region list. The motion detection appears in the image as a blue polygon outline.
6. Repeat as necessary for up to 16 regions.

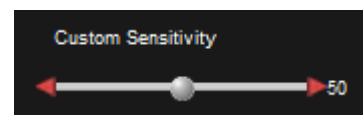
Notes:

- To delete a region, select the region in the Region dropdown list and click Delete. This also deletes any saved name and returns the specific region number to default settings.
- Use the Alarm Settings to configure detected motion as an alarm trigger that activates an alarm action. See Alarm, page 47.



Adjust the motion detection sensitivity by moving the slider left or right to the desired value on the Custom Sensitivity bar.

Fine-adjust the value by clicking the red arrows at each end of the slider. Custom Sensitivity is applied to all motion detection regions.



An Alarm Bell symbol flashes at the bottom of the window giving you a visual indication of the Custom Sensitivity setting. The alarm bell symbol displays when you enable the Alarm Trigger Motion Detection and displays when the Motion Detection event has triggered.

NOTE: Set up and test motion detection by setting the threshold above any natural motion that is occurring in the scene to eliminate false alarms. Set the threshold to a minimum and gradually raise the threshold until natural motion no longer triggers the alarm.

9 Connecting Directly to the Camera Streams

Connect directly to camera streams to acquire video streams.

Media streaming is implemented according to the ONVIF Streaming Specification.

URL Format: `rtsp://<servername>/video.sdp[?name=<source>]`

Send the RTSP request to the proper TCP port as defined for RTSP by the GetNetworkProtocols operation of the Device Management Service.

For devices that support tunnelling, RTSP over HTTP, replace `rtsp` with `http`. Send the HTTP to the proper TCP port as defined for HTTP by the GetNetworkProtocols operation.

The server name is the IP address or hostname of the EVO-12 camera.

Changing the name parameter selects the stream configured in the fixed Media Profile.

Media Profile Name Examples:

FE1	Streams the 360 degree fisheye view using the main fisheye Media Profile settings
FE2	Streams the 360 degree fisheye view using the secondary fisheye Media Profile settings
MJPEG	Streams the 360 degree fisheye view using the snapshot Media Profile settings
VC1	Streams the dewarped view of VCam1 using the VCam1 Media Profile settings
VC2	Streams the dewarped view of VCam2 using the VCam2 Media Profile settings
VC3	Streams the dewarped view of VCam3 using the VCam3 Media Profile settings
VC4	Streams the dewarped view of VCam4 using the VCam4 Media Profile settings

If no name parameter is provided, FE1 is selected.

Streaming with RTSP or HTTP only supports HTTP Digest authentication.

URL Example: `rtsp://192.168.10.30/video.sdp?name=FE2`

10 Connecting through ONVIF Profile S or PSIA

Use an Evolution camera with an ONVIF Conformant Device hardware driver when adding the camera hardware to your NVR System. Set the camera to the desired mode (Dual-Stream Mode or VCam Mode) before adding the camera to your NVR system.

Note: The ONVIF driver uses RTSP for transferring the video from the camera. The Evolution camera sends the MJPEG data using the MJPEG RTP standard RFC 2435. The RFC 2435 standard does not work using JPEG images with a width greater than 2040. This means RTSP does not transfer the larger MJPEG video streams from the camera. Stream any other MJPEG or any H.264 resolution using the ONVIF driver.

11 Troubleshooting and Technical Support

Use the following guide to ensure all components of the system are properly working.

Web Interface unavailable in browser	Use the IP Configuration Tool to confirm that you are looking at the correct address and there are no IP address conflicts. Check your own network settings to ensure the camera is on the same subnet, or is accessible by routing.
Web Interface fails to show a live image	Check your browser security settings.
Motion detection is not working properly	There must be at least one motion detection region defined and in use. On the Motion Detection panel, the VMD mode must be set to Motion Detection. Check the size and sensitivity controls to ensure that movement is detected.
Camera image stops or drops frames	This is commonly due to a network connectivity or bandwidth issues, especially for cameras connected to wireless networks or the public Internet. Try reducing the JPEG quality or resolution settings from the camera Web interface.
One portion of the image is over or under-exposed	Set the Brightness or use an EV setting which will add over or under exposure to the scene light.
There are bright or dark areas in the scene and no detail can be seen	Enable the WDR feature. This increases the contrast in darker and brighter areas of the scene. Adjust the WDR setting depending on the light differences to obtain the best image. See Wide Dynamic Range, page 37. Enhance the image by adjusting the EV settings so the bright areas are not over-exposed and the dark areas are sufficiently exposed. In most lighting conditions, the WDR setting should not be required.

11.1 Contact

Send an email to support@oncamgrandeye.com.

Include in your email the following.

- Problems detailed description
- Camera model numbers
- Relevant configuration information

11.2 Revision History

Date	Revision	Description
2016-11-15	D	Corrected a corrupt cross-reference
2016-11-04	C	Added Stainless Steel Surface and Pendant mount camera information
2016-09-12	B	Added Recessed camera information

12 Copyright and Legal Notices

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13 Additional Online Resources

13.1 Technical Specifications

Oncam is constantly working on new features and functionalities for its Evolution camera range. For the latest Technical Specifications, go to the Oncam website and download the latest product specification.

Indoor

www.oncamgrandeye.com/security-systems/evolution-12-indoor-camera

Outdoor

www.oncamgrandeye.com/security-systems/evolution-12-outdoor-camera

Concealed

www.oncamgrandeye.com/security-systems/evolution-12-indoor-concealed-camera

Recessed

www.oncamgrandeye.com/security-systems/evolution-12-recessed-camera.html

Stainless Steel

www.oncamgrandeye.com/security-systems/evolution-stainless-steel.html

13.2 Oncam 360-degree Viewer

Download the latest Oncam 360-degree Live Viewer and Instruction Manual for the Evolution range of 360-degree IP Cameras. The Instruction Manual describes how to use the Oncam 360-degree Viewer to view and dewarp live images from any Oncam camera connected to the same network. There is no set up required as the Viewer automatically finds any Oncam IP cameras connected to the same network.

<http://www.oncamgrandeye.com/security-systems/360-camera-viewer>

13.3 OnVu360 Mobile Application (iOS and Android)

OnVu360 for mobiles enables users to experience surveillance through 360 degrees in the palm of your hand. The OnVu360 gives you the ability to monitor your 360-degree cameras in real-time enabling anytime access to the information.

Use the pinch to zoom features to Navigate 360-degree video (like iOS or Android device).

The OnVu360 app streams up to 5 MP, streaming over Wi-Fi, 3G and 4G/LTE networks.

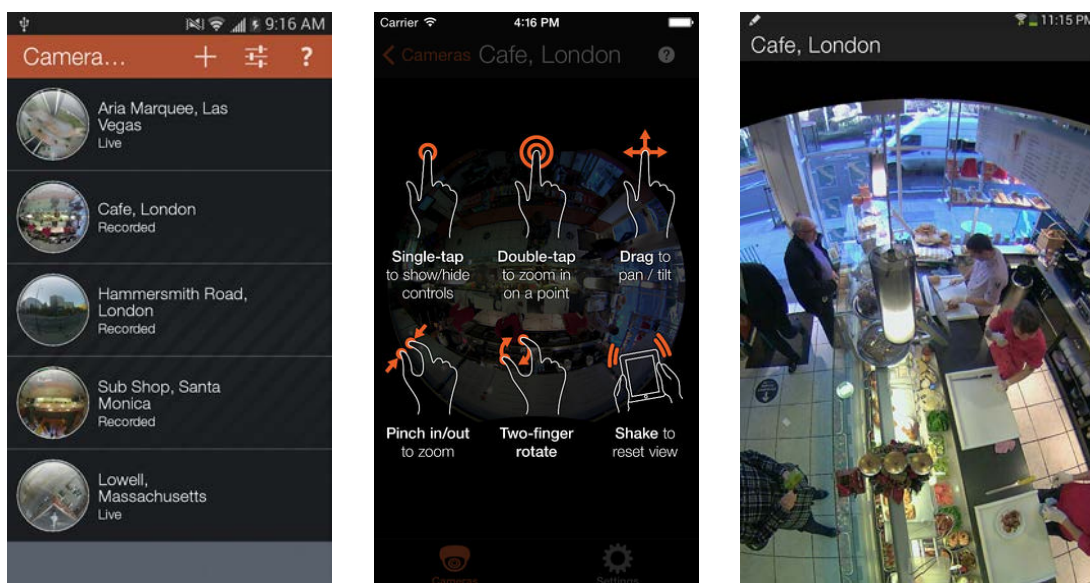
Take a snapshot to save precious data when using over a cellular-data network.

Android

From <https://play.google.com/store> > Search OnVu360

iOS

From within the iTunes Store > Search OnVu360



14 Frame Rate, Resolution & Storage Requirements

H.264 Default Settings					
9.6 MP	(3200x3000)	12 FPS	Constant bit rate settings	10 Mbps	24hrs = 108GB*
4 MP	(2144x1944)	10 FPS	Constant bit rate settings	5 Mbps	24hrs = 54GB*
2 MP	(1488 x1360)	15 FPS	Constant bit rate settings	3 Mbps	24hrs = 40GB*
1 MP	(1056 x 1056)	15 FPS	Constant bit rate settings	1.5 Mbps	24hrs = 16GB*
¼ MP	(528 x 480)	15 FPS	Constant bit rate settings	0.8 Mbps	24hrs = 8GB*

* Based on the same scene, with constant average light conditions

MJPEG Default Settings					
4 MP	(2144x1944)	10 FPS	Average file size 640 KB	Average bit rate 52.4 Mbps	24hrs = 552.96 GB*
2 MP	(1488 x1360)	15 FPS	Average file size 350 KB	Average bit rate 43.0 Mbps	24hrs = 453.60 GB*
1 MP	(1056 x 1056)	15 FPS	Average file size 188 KB	Average bit rate 23.1 Mbps	24hrs = 243.65 GB*
¼ MP	(528 x 480)	15 FPS	Average file size 62 KB	Average bit rate 7.6 Mbps	24hrs = 80.35 GB*

* Based on the same scene, with constant average light conditions

Notes:

Values for frame rate, size, and bandwidth are approximate and influenced by compression, quality settings, number of simultaneous viewers, and the amount of detail and movement in a scene.

Additional CGI commands are available. Software developers requiring the full API interface should contact support@oncamgrandeye.com for additional details.

15 NVR and Storage Partners

For an up-to-date list of NVR / VMS partners supporting the Oncam 360° IP cameras, visit the Oncam web site www.oncamgrandeye.com.