



Installation Guide

Avigilon H4 License Plate Capture Camera

Important Safety Information

This manual provides installation and operation information and precautions for the use of this device. Incorrect installation could cause an unexpected fault. Before installing this equipment read this manual carefully. Please provide this manual to the owner of the equipment for future reference.



This Warning symbol indicates the presence of dangerous voltage within and outside the product enclosure that may result in a risk of electric shock, serious injury or death to persons if proper precautions are not followed.



This Caution symbol alerts the user to the presence of hazards that may cause minor or moderate injury to persons, damage to property or damage to the product itself if proper precautions are not followed.



WARNING — Failure to observe the following instructions may result in severe injury or death.

- Installation must be performed by qualified personnel only.
- Installation of the device must conform to all local codes.
- Power supply to the product must be exclusively provided by Power over Ethernet (PoE).
- Do not connect directly to a mains power system for any reason.



CAUTION — Failure to observe the following instructions may result in injury to persons or damage to the device.

- Do not expose the camera directly to high levels of x-ray, laser, or UV radiation. Direct exposure to high levels of x-ray, laser, or UV radiation may cause permanent damage to the image sensor.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other sources of heat.
- Do not subject the device cables to excessive stress, heavy loads or pinching.
- Do not open or disassemble the device. There are no user serviceable parts.
- Refer all device servicing to qualified personnel. Servicing may be required when the device has been damaged (such as from a liquid spill or fallen objects), has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Do not use strong or abrasive detergents when cleaning the device body.
- Use only accessories recommended by Avigilon.
- This product should be installed in restricted access locations.



WARNING — The electrical system to which the unit is connected must be equipped with an automatic bipolar circuit breaker. The circuit breaker for main supply voltage phase units must have a level of intervention of 20A max. The circuit breaker for low voltage units must have a level of intervention of 6A max. This circuit breaker must be of the Listed type. The minimum distance between the circuit breaker contacts must be 3 mm (0.1"). The circuit breaker must be provided with protection against the fault current towards the ground (differential) and the overcurrent (magnetothermal).

- The manufacturer declines all responsibility for any damage caused by an improper use of the appliances mentioned in this manual. Furthermore, the manufacturer reserves the right to modify its contents without any prior notice. The documentation contained in this manual has been collected with great care. The manufacturer, however, cannot take any liability for its use. The same thing can be said for any person or company involved in the creation and production of this manual.
- Before starting any operation, make sure the power supply is disconnected.
- Be careful not to use cables that seem worn or old.
- Never, under any circumstances, make any changes or connections that are not shown in this handbook. Improper use of the appliance can cause serious hazards, risking the safety of personnel and of the installation.
- Use only original spare parts. Non-original spare parts could cause fire, electrical discharge or other hazards.
- Before proceeding with installation, check the supplied material to make sure it corresponds to the order specification by examining the identification labels (Product marking).
- This device was designed to be permanently secured and connected on a building or on a suitable structure. The device must be permanently secured and connected before any operation.
- Installation category (also called Overvoltage Category) specifies the level of mains voltage surges that the equipment will be subjected to. The category depends upon the location of the equipment, and on any external surge protection provided. Equipment in an industrial environment, directly connected to major feeders/short branch circuits, is subjected to Installation Category III. If this is the case, a reduction to Installation Category II is required. This can be achieved by use of an insulating transformer with an earthed screen between primary and secondary, or by fitting UL listed Surge Protective Devices (SPDs) from live to neutral and from neutral to earth. Listed SPDs shall be designed for repeated limiting of transient voltage surges, suitable rated for operating voltage and designated as follows: Type 2 (Permanently connected SPDs intended for installation on the load side of the service equipment overcurrent device); Nominal Discharge Current (In) 20kA min. For example: FERRAZ SHAWMUT, STT2240SPGCN, STT2BL240SPG-CN rated 120Vac/240Vac, (In=20kA). Maximum distance between installation and reduction is 5m.
- Any device which could be installed inside the product must comply with the current safety standards.
- If the installation is NEMA TYPE 4X, the installer must replace the cable glands of the product with NEMA TYPE 4X cable glands.
- For all connections, use cables that are able to withstand temperatures of at least 75°C (167°F).
- The product is designed to house only cameras that are properly certified (7W max).
- A power disconnect device must be included in the electrical system, and it must be very quickly recognizable and operated if needed.
- To connect the power supply line, use an appropriate junction box. For further information, refer to the product use and installation manual.
- Use Listed copper tube crimping lugs for the connection of the network conductors to the terminals. The copper tube crimping lugs must be suitable for the type of installation (from -20°C [-4°F] to +80°C [+176°F] min., V-0). Copper tube crimping lugs examples: RP, BP o YP (Cembre).

Regulatory Notices

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class B digital apparatus complies with Canadian ICES-003.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications made to this equipment not expressly approved by Avigilon Corporation or parties authorized by Avigilon Corporation could void the user's authority to operate this equipment.

Disposal and Recycling Information

When this product has reached the end of its useful life, please dispose of it according to your local environmental laws and guidelines.

Risk of fire, explosion, and burns. Do not disassemble, crush, heat above 100 °C (212 °F), or incinerate.

European Union:



This symbol means that according to local laws and regulations your product should be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. Some collection points accept products for free. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

Legal Notices

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Overview

Read through the documentation supplied with the IR illuminator box and see the *H4A-B - H4 HD Camera Installation Guide* before proceeding with this manual.

This guide provides instructions on how to install an H4 License Plate Capture (LPC) camera using the Avigilon H4 LPC Camera Kit.

For information on how to select an appropriate mounting location and to set up the IR illuminator, see the *H4 LPC Site Design Guide*.

For information on how to use the License Plate Recognition feature in the Avigilon Control Center (ACC), see the *Avigilon Control Center™ Client User Guide*.

Product Description and Type Designation

The ES-HD-LP-PS housing is powered by POE+ technology. The Ethernet cable supplies power to the heater in the housing and the camera, thus ensuring maximum efficiency and flexibility of the network system as well as user-friendly installation and low costs.

The IPM (Intelligent Power Management) system automatically operates the heater and this guarantees the optimal operation of the IP camera between -30°C (-22°F) and +50°C (122°F), with heat regulation and cold start (activation at low temperature).

NOTE: The IR illuminator is powered separately from the housing and requires a PoE+ power supply.

Unpacking

When the product is delivered, make sure that the package is intact and that there are no signs that it has been dropped or scratched. If there are obvious signs of damage, contact the supplier immediately. When returning a faulty product, we recommend using the original packaging for shipping. Keep the packaging in case you need to send the product for repairs.

Safely Disposing of Packaging Material

The packaging material can all be recycled. The installer technician will be responsible for separating the material for disposal, and in any case for compliance with the legislation in force where the device is to be used.

Preparing the Product for Use



CAUTION — Any change that is not expressly approved by the manufacturer will invalidate the guarantee.

Attaching the Bracket



CAUTION — The product must be fastened with suitable equipment. The fastening means must guarantee the mechanical seal when a force equal to at least 4 times the weight of the device is applied.

Installation



CAUTION — The assembly and installation must only be performed by a qualified technician.

CAUTION — Eye Safety – IR emitted from the illuminator EN62471 Risk Group 2.



Do not stare at the lamp. Avoid exposure or use appropriate shielding or eye protection. Risk Group 2 for cornea or lens infrared hazard. Hazard distance is 1500 mm.

Max IR EHV (Exposure Hazard Value): 69% of Risk Group 2 Limit at 200 mm from the lamp.

For information on how to select an appropriate mounting location and to set up the IR illuminator, see the *H4 LPC Site Design Guide*.

For information on how to use the License Plate Recognition feature in the Avigilon Control Center (ACC), see the *Avigilon Control Center Client User Guide*.

Use this manual to install the H4 LPC Camera Kit after you have selected a mounting location as per the site design guidelines (see the *H4 LPC Site Design Guide*).

Housing Package Contents

Ensure the package contains the following:

- Camera housing
- Mounting arm
- RJ-45 wiring
- Housing equipment:
 - Allen wrench
 - Spacers
 - Sealing ring × 3
 - Bolts and screws
 - Screws for the camera
- Desiccant bag

Mounting the LPC Enclosure

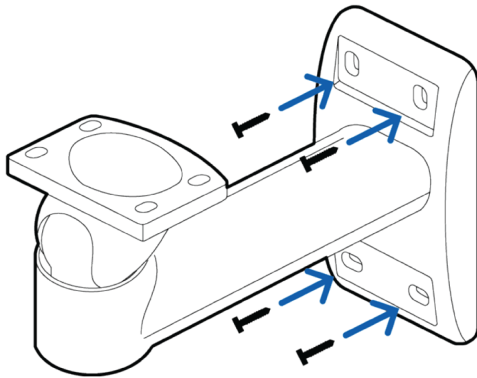
The enclosure can be mounted by either using one of the following mounts:

- The feed through mounting arm. See *Mounting the Feed Through Mounting Arm* on the next page.
- The optional ES-HD-MNT-PAR mounting adapter. See *Mounting the Optional ES-HD-MNT-PAR Parapet Mounting Adapter* on page 14.

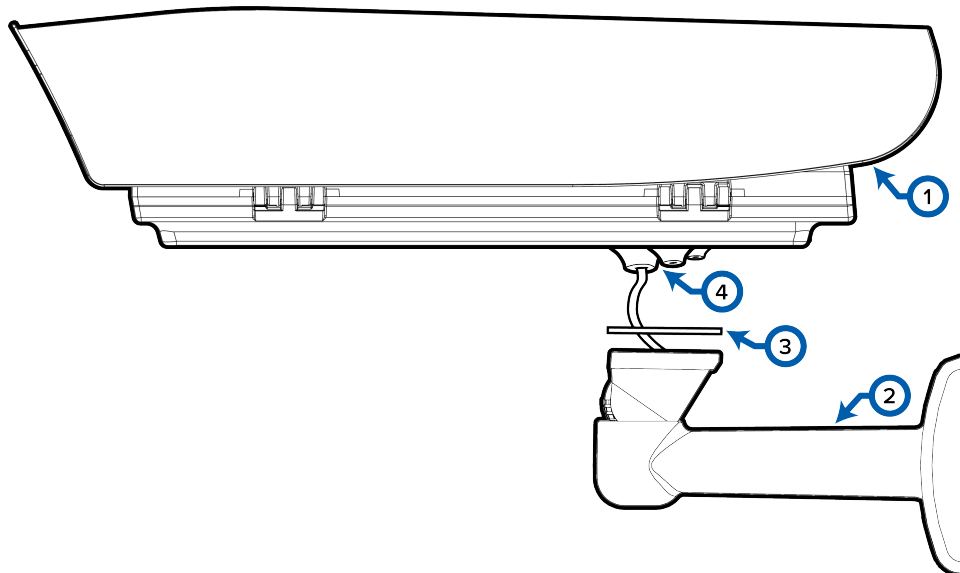
Mounting the Feed Through Mounting Arm

Complete the following steps to mount the enclosure using the included feed through mounting arm:

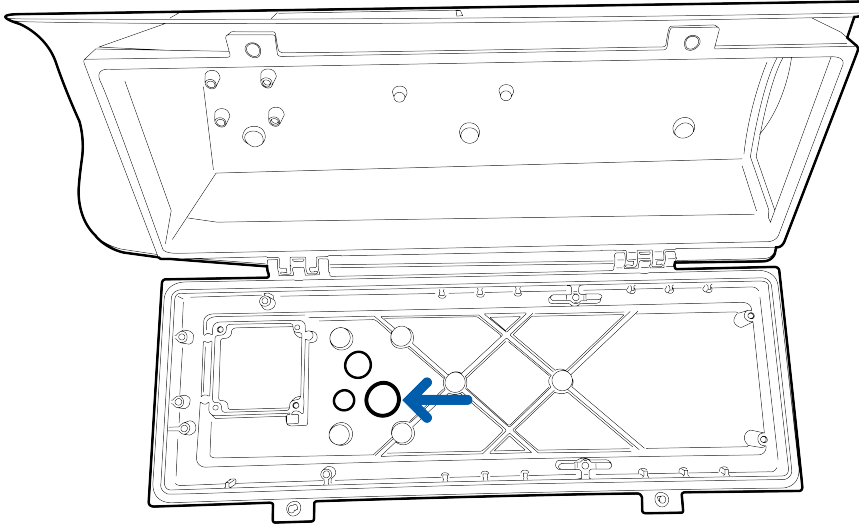
1. Drill four mounting holes and a cable entry hole into the mounting surface.
2. Attach the mounting bracket to the mounting surface.
 - Use screws that are appropriate for the mounting surface.
 - It is recommended that you apply silicone sealant into the mounting holes underneath the screw heads.



3. Pull the required PoE cable from the Power Injector through the mounting arm and through the included gasket.
 - a. Cut a hole in the gasket (3). The hole needs to be big enough to accommodate the PoE cable and the part of the sealing rings (4) that will extend through the enclosure (1). Place the gasket (3) in between the mounting arm (2) and the enclosure (1).

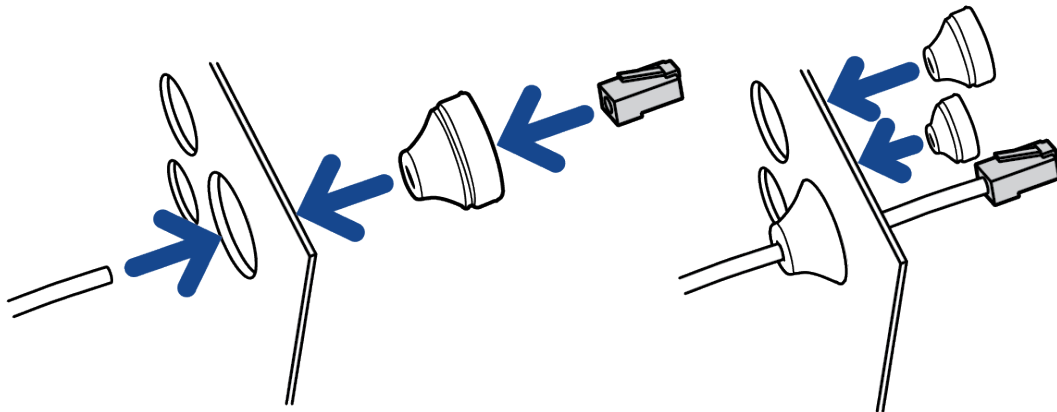


- b. The PoE cable will be routed through the largest cable opening on the bottom of the enclosure.

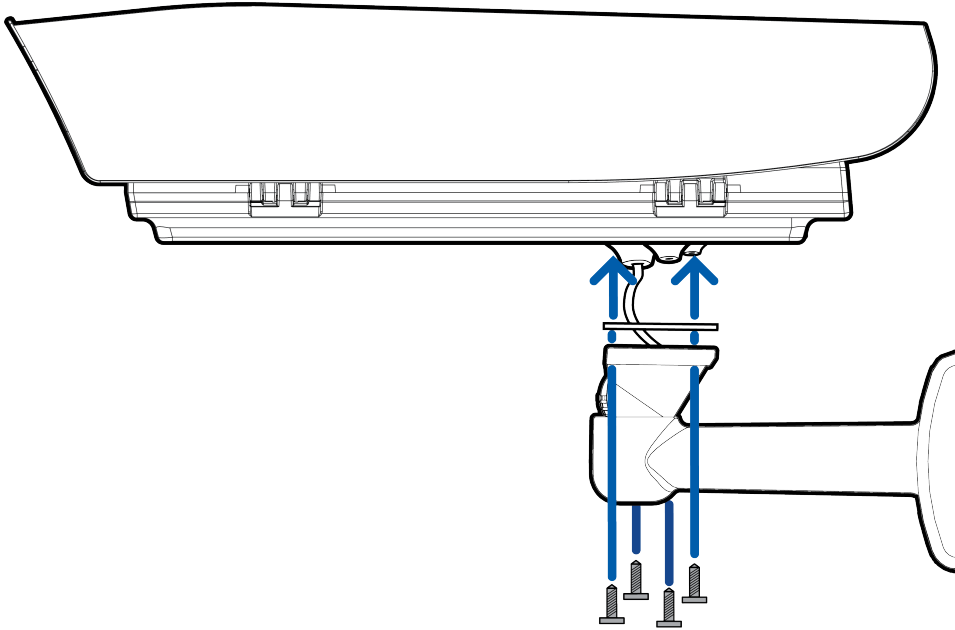


- c. Use the sealing ring to seal the cable connection through the enclosure. Ensure that the unused holes on the bottom of the housing are sealed with the remaining sealing rings to prevent water from entering the housing.

NOTE: You will need to crimp the PoE cable to pull the wire through the sealing ring.

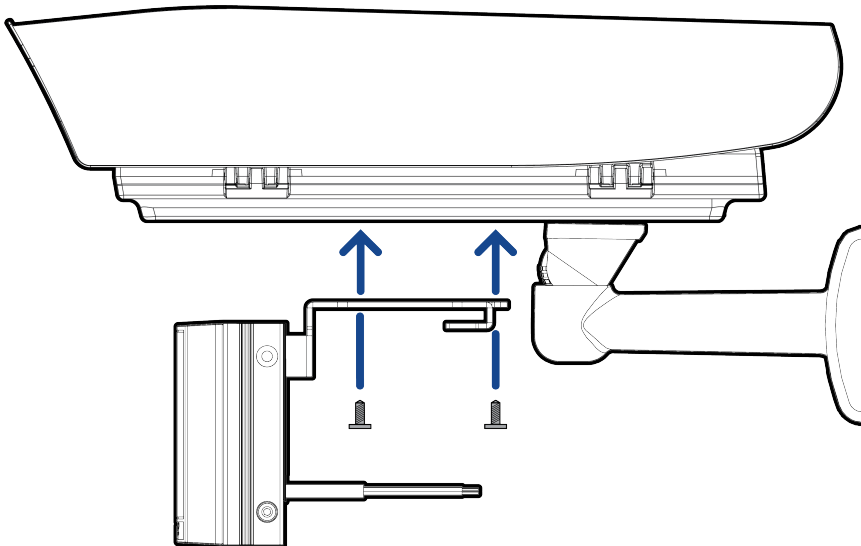


4. Use the provided screws to secure the enclosure to the mounting arm.

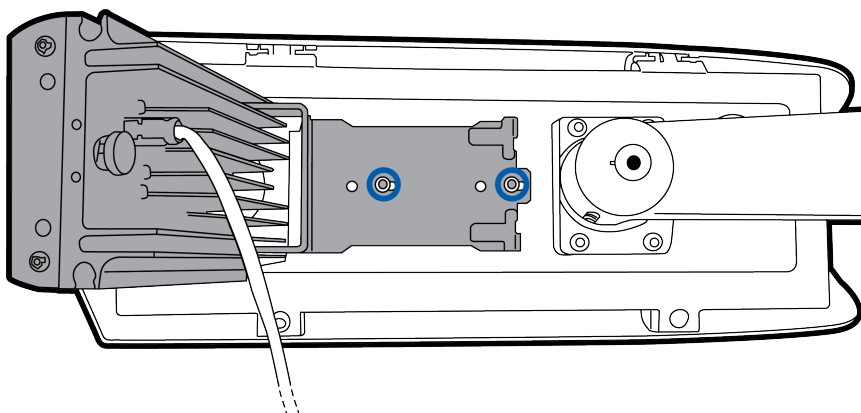


Installing the IR Illuminator

1. Refer to the *H4 LPC Site Design Guide* to determine if the IR illuminator's lens needs to be changed or removed. Please consult the printed installation guide shipped with the IR illuminator for instructions on replacing the lens, if required.
2. Align the IR illuminator's bracket holes with the housing, as shown in the diagram below.



3. Use the included screws to secure the IR illuminator to the housing. Be sure to use the IR bracket screw holes indicated in the image below.



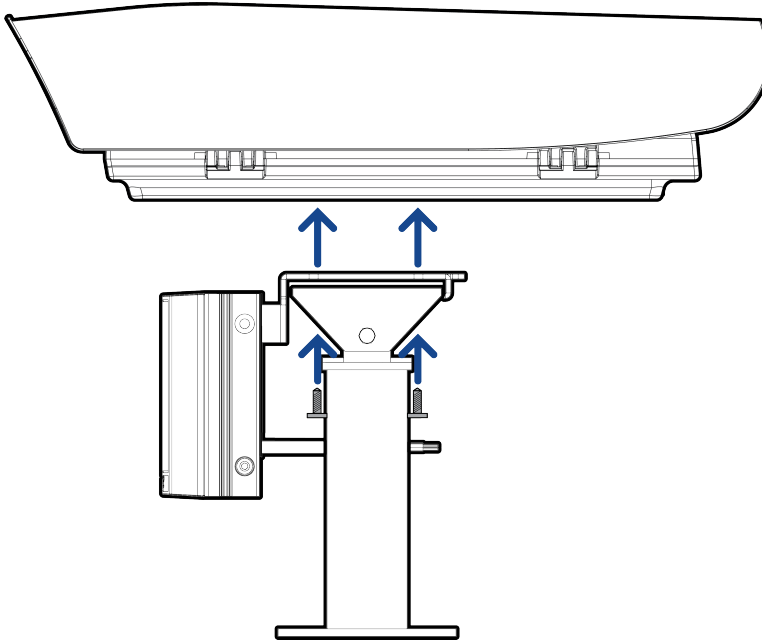
4. Tighten the screws using the provided allen wrench.
5. Connect the IR illuminator directly to a Power Injector and not via the camera enclosure.

Mounting the Optional ES-HD-MNT-PAR Parapet Mounting Adapter

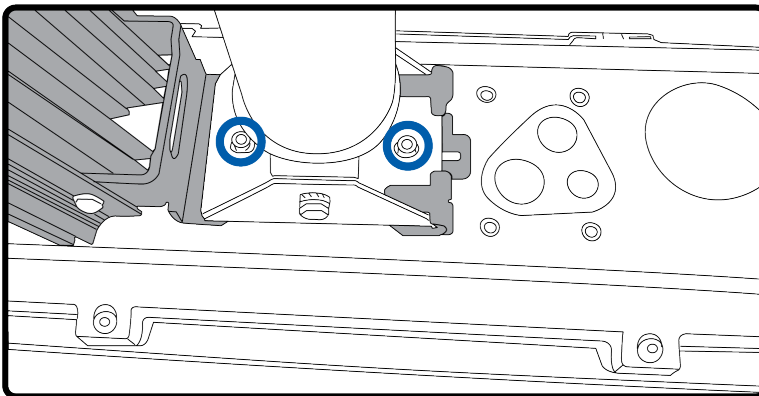
Complete the following steps to mount the enclosure using the optional ES-HD-MNT-PAR mounting adapter.

Installing the IR Illuminator

1. Refer to the *H4 LPC Site Design Guide* to determine if the IR illuminator's lens needs to be changed or removed. Please consult the printed installation guide shipped with the IR illuminator for instructions on replacing the lens, if required.
2. Align the IR illuminator's bracket holes and mounting adapter holes with the mounting holes in the housing, as shown in the diagram below.



3. Use the included screws to secure the IR illuminator and mounting adapter to the housing. Tighten the screws using the provided allen wrench.

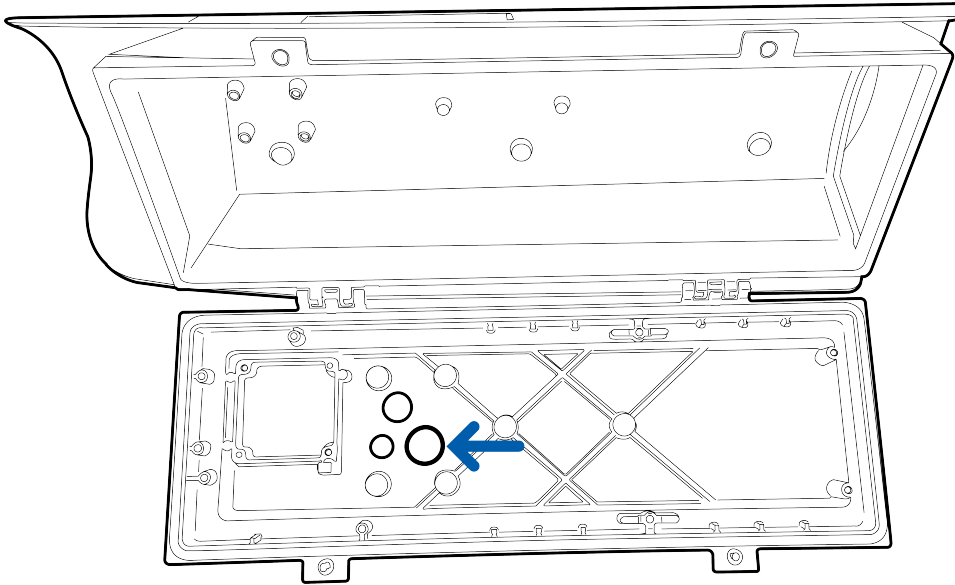


4. Connect the IR illuminator directly to a Power Injector and not via the camera enclosure.

Connecting the Housing Cable

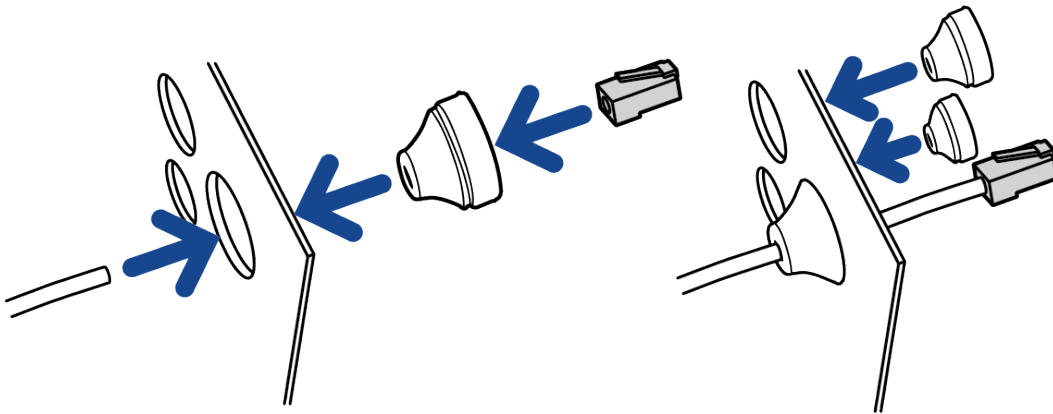
Once the housing and mounting adapter have been mounted to the desired location, follow the steps below to connect the PoE cable:

1. Pull the required PoE cable from the Power Injector. The PoE cable will be routed through the largest cable opening on the bottom of the enclosure.



2. Use the sealing ring to seal the cable connection through the enclosure. Ensure that the unused holes on the bottom of the housing are sealed with the remaining sealing rings to prevent water from entering the housing.

NOTE: You will need to crimp the PoE cable to pull the wire through the sealing ring.

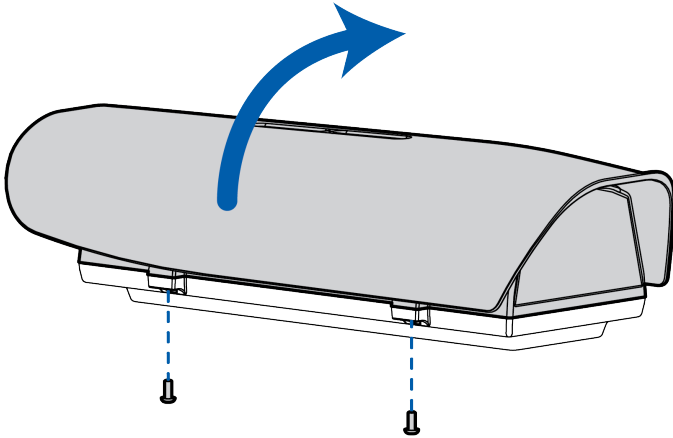


Installing the Camera

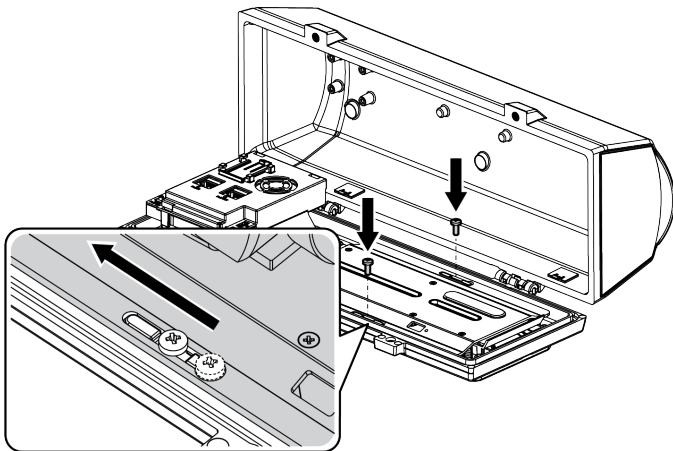
Complete the following steps to install the camera into the enclosure:

1. Loosen the 2 screws on the side of the enclosure using the provided allen key. Open the housing as shown in the diagram below.

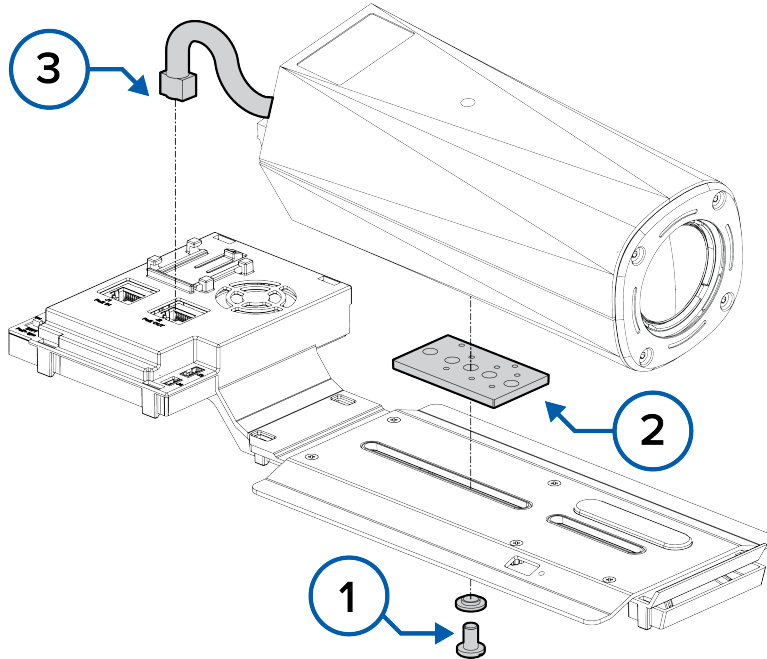
NOTE: After installation and wiring is complete, make sure to close the housing securely.



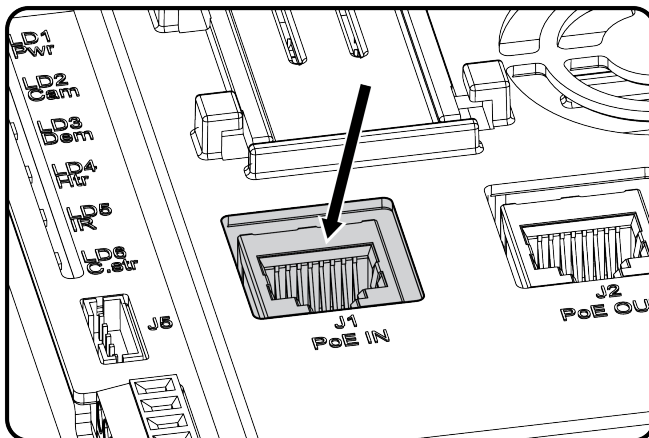
2. To remove the PoE module you must first partially unscrew the fixing screws as shown in the figure below. Remove the module by sliding it until the holes align with the slide locking screws and then lift the module.



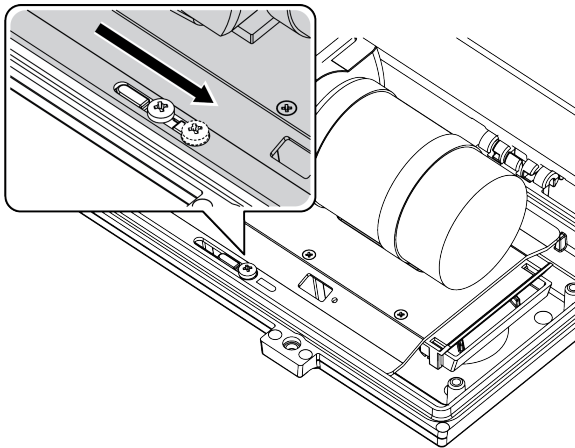
3. Mount the camera to the PoE module using the supplied screw (1), washer, and spacer (2). Apply at least one spacer to guarantee electrical isolation between the PoE module and the camera.
 - a. The spacer should be positioned in the second slot, as shown in the image below. Slide the camera and spacer as close to the front as possible to avoid visual interference or optical reflections from the glass.



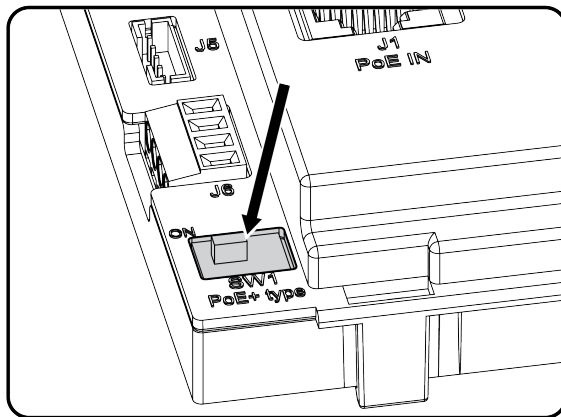
- b. Ensure that the camera is aligned parallel to the module and then tighten the screw.
 - c. Connect the camera to the J2 connector (PoE OUT) with the supplied cable (3).
4. Connect the PoE cable from the Power Injector to the J1 connector (PoE IN). The PoE cable was routed into the enclosure during the mounting step (see *Mounting the LPC Enclosure* on page 9).



5. Re-attach the PoE module with the camera back to the housing and tighten the previously loosened screws.



6. Make sure to set the dip switch SW1 to the ON position. Remove the protective lens film from the camera before closing the housing.



Absorbed Power Configuration

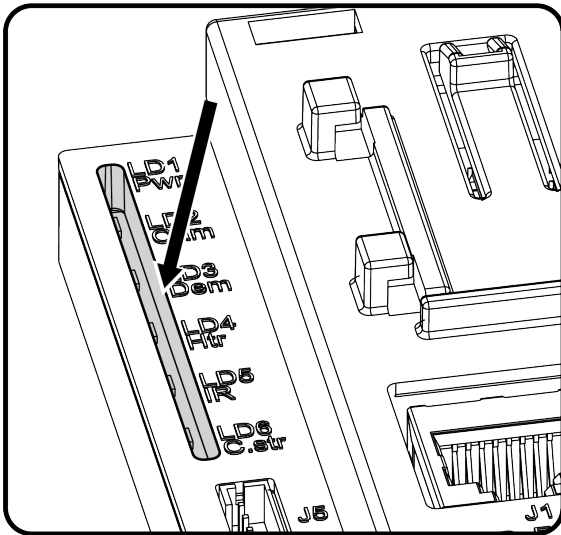
SW1	Maximum Power
OFF	PoE Class 3 (13W max)
ON	Hi-PoE Class 4 (25W max)

Powering Up

The H4 LPC camera kit requires 2 × IEEE 802.3at Class 4 PoE+ (25.5 W) power source. The enclosure heater and the camera require a total of 16 W power. The IR illuminator requires 25 W power.

NOTE: The automatic pre-heating (de-icing) process could be started whenever the device is switched on and the air temperature is below 0°C (32°F). This process ensures that the device works properly even at low temperatures. The pre-heating duration ranges depending on environmental conditions (from 60 minutes up to 120 minutes).

The LEDs shown in the figure below allow users to check the operating status of the camera and enclosure. Refer to the table below for the operating status indicators.

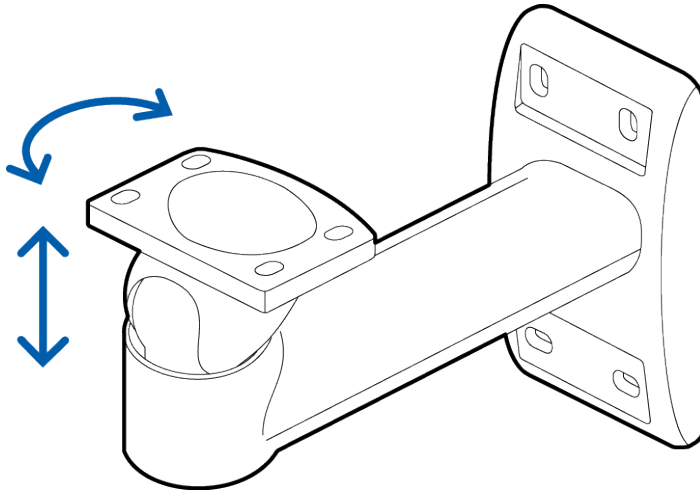


Operating Status

LED	LED Status	Apparatus Status
LD1 (Power Supply)	Off	The device is not powered.
	On	The device is correctly powered.
LD2 (Camera)	Off	The camera is not connected or Cold Start is active.
	On	The camera is correctly powered.
	1 Flash	The camera has a low identification resistance.
	2 Flashes	The camera has a high identification resistance.
	5 Flashes	The camera has excessive energy consumption.
LD3 (De-Misting)	9 Flashes	The camera requires more energy than the energy that is available.
	Off	De-misting was not correctly detected.
	1 Flash	Standard de-misting is inactive.
	2 Flashes	The anti-ice system (optional) is inactive.
LD4 (Heater)	On	The de-misting or anti-ice system is active.
	Off	Heating is not available or power available is not sufficient.
	1 Flash	Heating is inactive.
LD5 (Delayed Activation)	On	Heating is active.
	Off	Heating is not available.
	1 Flash	The pre-heating procedure is inactive.
	On	The pre-heating procedure is underway.

Adjusting the Mounting Bracket

1. Use the 4mm Hex key provided to loosen the screw at the head of the mounting bracket.
2. Adjust the head as required.



3. Tighten the screw to secure the head.

Cleaning and Maintenance



CAUTION — Do not clean glass window with ethyl alcohol, solvents, hydrogenated hydrocarbide, strong acid, or alkali. Such cleaning products may irreparably damage the surface.

Glass Window

If the video image becomes blurry or smudged in areas, it may be because the housing's glass window requires cleaning.

To clean the glass window:

- Use hand soap or a non-abrasive detergent to wash off dirt or fingerprints.
- Use a microfiber cloth or non-abrasive fabric to dry the dome bubble.

Important: Failure to use the recommended cleaning materials may result in a damaged or scratched glass window. A damaged glass window may negatively impact image quality and cause unwanted IR light reflecting into the lens.

Body

- Use a dry or lightly dampened cloth to clean the camera and housing body.
- Do not use strong or abrasive detergents.

For More Information

Additional information about setting up and using the device is available in the following guides:

- *Avigilon H4 License Plate Capture (LPC) Camera Site Design Guide*
- *Avigilon Control Center Client User Guide*
- *Web Interface User Guide — Avigilon High Definition H.264 IP Cameras*
- *Avigilon USB Wi-Fi Adapter System User Guide*
- *Avigilon Camera Configuration Tool User Guide*

These guides are available on the Avigilon website: [avigilon.com/support-and-downloads](https://www.avigilon.com/support-and-downloads).

Specifications

General Specifications

Maximum Capture Speed	100 km/h (62 mph)
Minimum Illumination	0 lux
IR Illumination	850 nm, continuous, field adjustable angle
Maximum IR Illumination Distance	Single Lane: 30 m (100 ft) Dual Lane: 12 m (40 ft)
Operating Temperature Range	-30 °C to 50 °C (-22 °F to 122 °F)
Cold Start Delay	Up to 1.5 hours
Humidity	0 - 95%, non-condensing

Camera Specifications

The following are the specifications for the camera, 3.0C-HD-LP-B1.

Image Performance

Image Sensor	1/2.8" progressive scan CMOS
Aspect Ratio	4:3
Active Pixels	3MP: 2048 × 1536
Imaging Area	5.12 mm × 3.84 mm (0.20" × 0.15")
Maximum Image Rate	30 fps
3D Noise Reduction Filter	Yes

Lens

Lens	4.7 – 84.6 mm, F1.6, P-Iris, remote focus and zoom
Angle of View	3.5° – 59°

Image Control

Video Compression	H.264 (MPEG-4 Part 10/AVC), Motion JPEG, HDSM SmartCodec™ Technology
Streaming	Multi-stream H.264 and Motion JPEG
Bandwidth Management	HDSM™
Motion Detection	Selectable sensitivity and threshold
Iris Control	Automatic, Manual
Day/Night Control	Automatic, Manual
Flicker Control	50 Hz, 60 Hz
White Balance	Automatic, Manual
Backlight Compensation	Adjustable

Privacy Zones	Up to 64 zones
Audio Compression Method	G.711 PCM 8 kHz
Audio Input/Output	Line level input/output, A/V mini-jack (3.5 mm)
External I/O Terminals	Alarm In, Alarm Out
USB Port	USB 2.0 Micro
Network	
Network	100BASE-TX
Cabling Type	CAT5
Connector	RJ-45
ONVIF	ONVIF Profile S
Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication
Protocol	IPv6, IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP,UDP, IGMP, ICMP, DHCP, Zeroconf, ARP
Streaming Protocols	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP
Device Management Protocols	SNMP v2c, SNMP v3
Mechanical	
Dimensions (L×W×H)	168 mm × 76 mm × 67 mm (6.6" × 3.0" × 2.6")
Weight	0.62 kg (1.4 lbs)
Camera Mount	1/4"-20 UNC (top and bottom)
Onboard Storage	SD/SDHC/SDXC slot – minimum class 4; class 6 or better recommended
Electrical	
Power Consumption	8 W
Power Source	VDC: 12 V +/- 10%, 8 W min; PoE: IEEE802.3af Class 3 compliant; VAC: 24 V +/- 10%, 12 VA min
Power Connector	2-pin terminal block
RTC Backup Battery	3V manganese lithium
Environmental	
Storage Temperature	-10 °C to +70 °C (14 °F to 158 °F)
Certifications	
Certifications	UL, cUL, CE, ROHS, WEEE, RCM
Safety	UL 60950-1, CSA 60950-1, IEC/EN 60950-1
Electromagnetic Emissions	FCC Part 15 Subpart B Class B, IC ICES-003 Class B, EN 55032 Class B, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3
Electromagnetic Immunity	EN 55024, EN 61000-6-1

Enclosure Specifications

The following specifications are for the enclosure, ES-HD-LP-HS.

Mechanical

Dimensions (W×H×L)	176 mm × 160 mm × 514 mm (6.9" × 6.3" × 20.2")
Internal Usable Area (W×H×L)	100 mm × 70 mm × 250 mm (4.6" × 2.7" × 9.8")
Weight	3.1 kg (6.6 lbs)
Window Material	Glass
Finish	RAL 9002

Electrical

Power Consumption	25 W
Power Source	IEEE 802.3at Class 4 PoE+
Heater	Electronically controlled, Ton 20°C ± 2°C (68°F ± 4°F), Toff 23°C ± 2°C (73.4°F ± 4°F)

Certifications

Certifications	CE, ROHS
Electromagnetic Emissions	EN 55032, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3
Electromagnetic Immunity	EN 50130-4
Environmental	IP 66, Resistant to 1,000 hours of salt fog testing (ISO 9227)

IR Illuminator Specifications

The following specifications are for the IR illuminator, ES-HD-IR-IP6.

Mechanical

Dimensions (W×H×L)	100 mm × 135 mm × 66 mm (4.0" × 5.0" × 2.5")
Weight	0.95 kg (2.1 lbs)
Finish	Black
CAT5 Cable Length	2.5 m included. Female to female CAT5 adapter included
Bracket	Included, for mounting to ES-HD-LP-HS

Illuminator

Wavelength	850 nm
Beam Angle	User adjustable lenses included: 35° × 10° (default), 60° × 25° or 10° circular

Electrical

Power Consumption	25 W
Power Source	IEEE 802.3at Class 4 PoE+

Certifications

Certifications	UL, cUL, CE, ROHS, VCCI
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Safety	UL 1598, UL 2108, UL 8750, CSA C22.2 No. 250.0, EN 60598-1, EN 60598-2-1, EN 62471 (Risk Group 2)
Electromagnetic Emissions	FCC Part 15 Subpart B Class B, EN 55015
Electromagnetic Immunity	FCC Part 15 Subpart B Class B, EN 61547
Environmental	IP 66

Limited Warranty and Technical Support

Avigilon warranty terms for this product is provided at [avigilon.com/warranty](https://www.avigilon.com/warranty).

Warranty service and technical support can be obtained by contacting Avigilon Technical Support: [avigilon.com/contact-us/](https://www.avigilon.com/contact-us/).