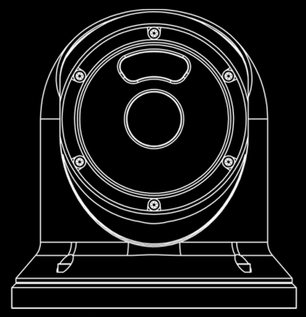


photon

4K UHD Super Low Light Camera

Quick Start Guide

WARNINGS

Distraction Warning:
When used properly, this device is intended to enhance situational awareness and safety, especially in low light conditions. When used improperly, there is a danger of distraction from the display which could lead to an accident causing serious presonal injury or death and damage to your vessel or third party vessels and property. Always maintain awareness of your surroundings and do not stare or become distracted by the display. The camera is a visual aid only and will not enhance your ability to control your vessel / vehicle. It is your responsibiity to operate your vessel / vehicle in a safe and responsible manner. In extreme low light conditions, the cameras processing methods along with the integrity of your network may cause visible distortion to the image and therefore it is essential you should adjust your vessel / vehicle speed accordingly and operate responsibility. Overly focusing on the display could distract you and prevent your from noticing and avoiding obstacles or hazards.

Camera Legal Notice:
Some jurastictions may prohibit or regulate recording video from this type of device unless all parties have knowledge and consent to the recording. It is your responsibility to know and comply with the laws and regulations in your territory and any other territory in which the camera is to be operated.

Environmental Policy:
Information about the Iris product recycling program, WEEE, RoHS, REACH and packaging recycling requirements can be found at our website:
www.boat-cameras.com/iris-innovations-environmental-policy

Declaration of Conformity:
Iris Innovations hereby declares that this product is in compliance with the Directive 2014/30/EU and FCC Part 15 for Class B digital devices,

Limited Warranty:
For details of Iris Innovations standard limited warranty to which this product applies, please visit our website:
www.boat-cameras.com/warranty

Photon Mounting Considerations.

Take care to select a suitable mounting location. The camera should be offered up in the proposed mounting position and tested prior to permanent installation to ensure the desired view is achieved and to ensure the camera is not mounted in a position that presents a hazard in walkways and doorways and cannot be damaged by docks, pilings or any other piece of equipment or obstacles.

Consider any potential obstacles or dangers behind the mounting surface. If there are likely to be cables then ensure care is taken when drilling pilot holes and cable entry holes. Ensure there is a suitable cable route and if necessary, space to accommodate the camera's connector (including field installable connector back-shell).

The camera must not be submerged and must be installed in a location which can support its weight and where you can access the camera for maintenance and cleaning operations.

Ensure the camera's LED illuminator is not obstructed as this may result in sub-optimal performance in extreme low light conditions.

The camera is supplied with a mounting gasket. Ensure this is used to protect the mounting surface and help prevent moisture incursion through drilled fitting holes and cable entry holes. It is the responsibility of the installer to ensure measures are taken to maintain the waterproofing integrity of the vessel using suitable sealants, and any mounting hardware which may be required for the installation such as glands, grommets etc.

Mounting the Camera

1) Once the desired mounting position has been determined (see Photon Mounting Considerations), fix the mounting template to the mounting location.

2) Using a 2mm (1/16in) self tapping drill bit, drill pilot holes for the three fixing positions and the cable entry hole.

3) Open up the pilot hole for the cable entry hole using a drill bit suitable for the material onto which the camera is being installed.

4) Use a 26mm hole saw to open out the cable entry hole.

5) Position the mounting gasket so the pilot holes and cable entry holes line up as required.

6) Feed the camera cables through the entry hole and mounting gasket. If not using pre-made UTP Cable with RJ45 connector, terminate in accordance with wiring convention T568B as detailed below - ensuring the field installable waterproof back shell is fitted over the cable prior to connector termination.*

7) With the RJ45 connector fitted and checked to ensure correct polarity, connect the camera and test once again to prove the connector prior to fitting the camera into place.

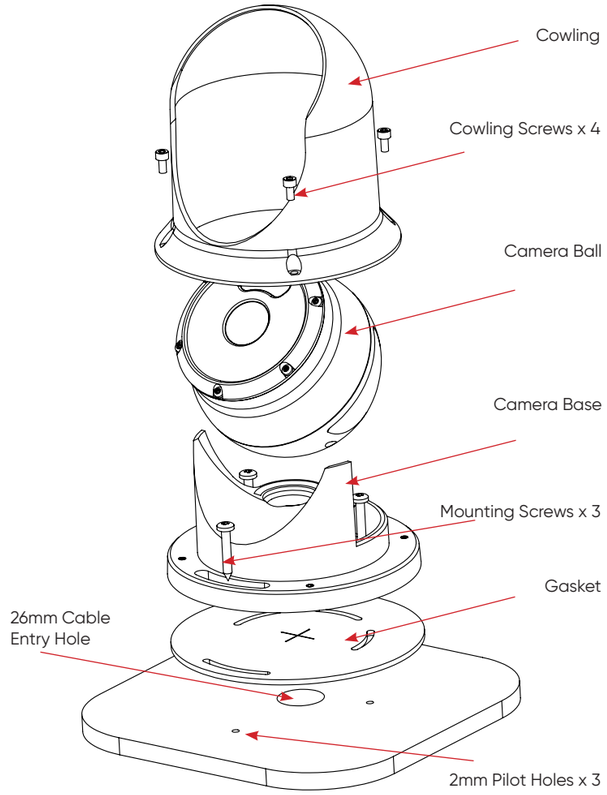
8) The connector can either be tucked into the cavity in the base of the camera or fed back through the mounting gasket into the superstructure of the boat.

9) Position the camera into place and carefully fit screw (X), however, do not tighten fully yet. Power up the camera again and check the view. Make any slight adjustments as required and then tighten the three screws.

10) With the camera base secured, place the camera ball onto its pedestal so that it is looking perpendicular to the mounting surface (either directly upwards for a 'desktop' mounting scenario, or directly downwards for a 'hanging' mounting scenario (if hanging you will need to manually support the camera during this stage and the next).

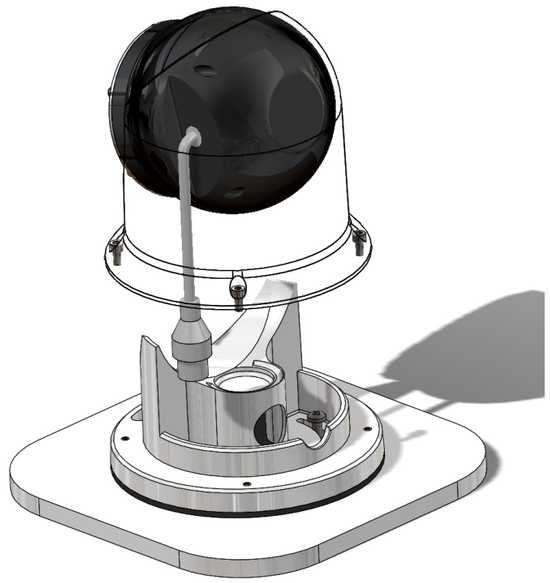
11) Slide the cowling over the camera ball and then lightly screw the four cowling screws into the base, tightening slightly, but not overly so the final position of the ball can be ascertained so as to achieve the desired view.
12) Tighten the four cowling screws fixing the camera ball into place - taking care not to 'over-tighten' which may damage the cowling and/or base.

* Please Note - It is the installers responsibility to ensure the environmental protection of the RJ45 camera connector. If pre-made cables are being used and the field installable waterproof back shell is not used, the manufacturer will not warranty damage caused by water intrusion to the connector.



Cable Routing

The cable routes from the side of the camera and through the exit hole in the base as indicated below. There is sufficient space within the cowling to loose spare cable, and there is also space underneath the base to stow the connector if necessary.
When installing in the hanging orientation, it will be necessary to turn the ball upside down, but as the cable exit is in the back of the camera base this will not cause any routing issues.



Powering your Photon Camera & Network Considerations

For ease of installation, Photon has been designed to be powered via IEEE802.3af / 3at Power over Ethernet (PoE). This means only a single UTP cable (CAT5/CAT6) is required to connect and deliver power to the camera, via a suitable PoE injector or switch.

Suitable PoE Injector / Switches.

You may power your Photon with any IEEE802.3af or higher capacity injector/switch but please note, Iris do not extend their manufacturers warranty to cover third party devices and we recommend the following devices:

IRIS-PoE01 - Single Channel PoE Injector (9~30VDC power input range).
IRIS-PoE01W - Waterproof Single Channel PoE Injector (12~40VDC power input range).
IRIS-PoE04v2 - 4ch (+Uplink) PoE Switch (9~30VDC power input range).

These devices have been specially designed to work with automotive and/or battery powered systems and feature a wide DC input voltage range.

WARNING!

There are many low cost devices available, especially online, that purport to be IEEE802.3af compliant but are nothing more than baluns that carry a voltage over a twisted pair cable. These devices are not PoE compliant and will not only damage or destroy the camera and/or your possessions, but could result in injury and even death.

Power over Ethernet is a very specific technology that features built in electronic components to establish a connected device's power requirements via a handshaking method and then delivers power in accordance with a specific industry standard protocol. Simply pumping a voltage over one or more of the cables twisted pairs presents a serious danger. Photon features built in components to provide over voltage protection but these have a tolerance which will break down over a short period of time. In the event of suspected improper power damage, we can inspect these components to establish a cause.

Connect your camera in accordance with the instructions provided for your PoE device. Observe the correct polarity when powering your PoE switch or injector and also ensure the device has enough power budget to drive the camera, especially when using multi-channel devices with multiple cameras.

Photon is a network camera (also referred to as an IP camera) which is designed to connect to an ethernet network and transmit video and data to compatible devices on the network. The camera can be integrated into a standard ethernet network like any other ONVIF compliant IP camera, and/or can be added to any compatible on board camera networks. A list of directly compatible chart plotter's (MFD's) is included in the document and is updated on the product page of our website for the latest devices.

Please note, Photon supports ultra high definition video resolutions which may not be supported by your chartplotter. Please determine the maximum supported video resolution your chart plotter can handle and configure the camera accordingly to prevent video loss, latency issues and/or other network latency issues which may arise by congested bandwidth caused by the UHD video data traffic. Your chart plotter manufacturer or vendor should be able to provide this information.

Cable Termination

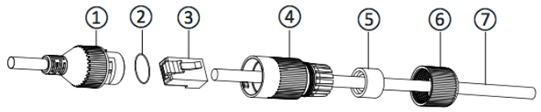
Use a suitable UTP (CAT5/CAT6) cable to connect your camera to the network and power via a PoE injector.

Cable termination must adhere to the standard T568B standard.

At the camera end, if the camera is giong to be installed in a location exposed to moisture be sure to install the waterproof field installable backshell plug that is supplied with the camera. Details on how to fit the backshell and wiring information is shown overleaf...

How to fit Field Installable Waterproof RJ45 Jacket

When installing in an external location, or any position that will be prone to moisture ingress or harsh weather, it is important the the waterproof RJ45 connector (supplied) is used to protect the cameras connections.



Part Ref	Description
1	Camera Network Interface Socket (RJ45 Receptacle)
2	O Ring
3	RJ45 Crimp Connector
4	Waterproof Backshell
5	Rubber Sealing Grommet
6	Lock Nut
7	UTP Ethernet Cable from PoE Injector / Hub

How to fit Field Installable Waterproof RJ45 Jacket

When installing in an external location, or any position that will be prone to moisture ingress or harsh weather, it is important the the waterproof RJ45 connector (supplied) is used to protect the cameras connections.

Method

Step.1:
Feed the plug-less network cable (7) through the lock nut (6), waterproof rubber gasket (5) (ensuring the rubber gasket inset ridge faces the end-cap (4).

Step.2:
Crimp an RJ45 Network plug (3) onto the end of the cable in accordance with the table below (T568B Wiring Standard), taking care to ensure the wires are terminated in the correct order and are not crossed.

Pin No	Wire Colour
1	White / Orange
2	Orange
3	White Green
4	Blue
5	White / Blue
6	Green
7	White / Brown
8	Brown

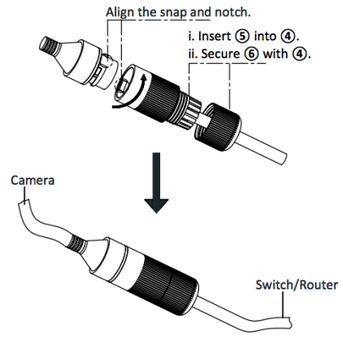
Step.3:
Place the O Seal (2) onto the end of the cameras network interface socket (1)..

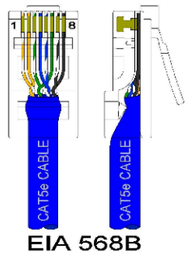
Step.3:
Place the O Seal (2) onto the end of the cameras network interface socket (1)..

Step.4:
Insert the network plug (3) into the cameras network interface socket (1).

Step.5:
Insert the waterproof rubber gasket (5) into the waterproof end-cap (4) and secure lock nut (6) with the waterproof end cap (4).

Step.6:
Align the snap on waterproof end-cap (4) with the notch on the cameras network interface socket (1) and then secure the waterproof end-cap (4) to the cameras network interface socket (1).





Configuring the Camera on your Network

WARNING! STAY SECURE!

When connecting any device to a network with access over the internet brings risks to the security of your network and your data. Your PHOTON camera features User Name and Password authentication but it is also your responsibility to strengthen your network security where ever possible. Although the camera ships with a default username and password, we strongly recommend you change this following your intial log on to secure credentials and keep this information safe.

Default login credentials:

Username: admin
Password: Password1234!

(Login credentials are case sensative).

Once you have successfully logged into your camera, you can access the camera's live video stream and also enter the configuration pages in order to change IP address settings, preferences, viideo streaming and other network settings. Details can be found in the full product manual available to download from our website:

www.boat-cameras.com/product/photon-4k-uhd-ultra-low-light-camera-white-black (under the Downloads tab).

IP Addressing & DHCP (Dynamic Host Control Protocol):

Devices on your network require their own, unique IP address. Where some networks use static IP addressing, where all devices on the network are manually assigned a unique address by the network administrator, other networks use an automated process known as DHCP (Dynamic Host Control Protocol). Your camera is factory set as DHCP when it leaves the factory. Depending on your network you may need to change the camera's address settings accordingly.

DHCP Addressing:

DHCP allows devices on the network to receive their IP address automatically from a server (or a device on the network that acts as a server - such as cetain Chartplotters (MFD's).

Nowadays, pretty much all routers have a DHCP server feature, which usually just needs enabling and configuring. Care should be taken on larger networks to ensure there are no conflicts if multiple routers or devices are configured as DHCP servers. Please refer to your IT specialist for further details if you are unsure..

Static (or Fixed) IP Addressing:

If you are not using a DHCP server, you will need to log onto the camera and assign an address to fit in with your network address range. This sounds obvious, and like it should be a basic step, but can actually be a major challenge, as you can only log into the camera if its address is in the same range as your network. If you do not have experience in this field we recommend you consult your IT specialist, as making undesirable changes to your settings could result in major network problems. For further details, please contact your Iris dealer.

Discovering Your Camera:

To discover your camera on your network you can check your router for attached devices (if using DHCP) or use a software discovery tool, or an ONVIF device manager.
A great Onvif Device Manager can be downloaded from here:

https://sourceforge.net/projects/onvifdm/

Remember, you'll only be able to find a device on your network if it's in the same IP address range. If you are unsure how to do this, consult your IT specialist.
Once you have found, or set your cameras address, you can log on to set up and view your camera.

Chart Plotter Integration:

Depending on the make and model of your Chartplotter, and the limitations of the plotters camera integration features, you will either be able to view the camera connected directly to your MFD, or you will require an appropriate convertor interface.

As chart plotter manufacturers change their software and hardware frequently, and all brands work differently from each other, it is not possible to provide an integration table in printed format, so we therefore recommend you check the Photon page on the Iris website for the latest integration information. Please also consult the documenation for your chart plotter, or consult your chartplotter manufacturer for integration confirmation and details. See Diagram 1 in the next column for details.

Your camera IP address should be set to DHCP or Static in accordance with the operation of your chart plotter. If set to static, ensure to use the correct IP address range required by your MFD.

Warning - IP Address Conflicts:

If there is an IP address conflict, ie, the address statically assigned to the camera is in a different range to the rest of your network, or two devices have been manually assigned the same address, the camera may not display. Ensure your IP address settings are correct. Use the discovery tool detailed earlier or contact Iris technical support for assistance if necessary.

Using CMAC or IP2HDMI-01 Interfaces to Integrate with Chartplotter:

If the chartplotter does not support Photon directly, Iris provide a range of Camera Management and Control interface products and a simple plug and play IP camera to HDMI convertor called IP2HDMI-01.

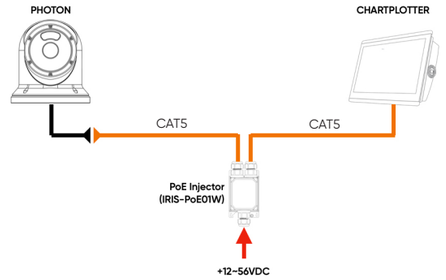
CMAC is a fully featured multi camera interface with a very powerful and feature rich interface. For full details, visit our website. This is the best option for larger systems with multiple cameras and/or camera recording is required.

The IP2HDMI-01 interface is a basic in-line device which takes the IP stream from the camera and converts it to an HDMI output which can be plugged directly into one of the many chart plotters which support HDMI inputs. This is an especially good solution to acheive 4K resolution on supported chartplotters with 4K resolution displays, but which do not support 4K streaming directly from the camera.

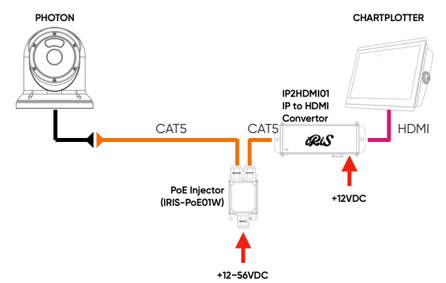
With the IP2HDMI-01 interface, the camera connects to ethernet port of the device and the HDMI output port connects to the HDMI input of your chartplotter. The only configuration required is to discover the Photon on the IP-2HDMI interface either automatically or manually. Consult the user guide for the IP2HDMI-01 for further details. Once configured on the interface, video from the camera can be viewed using the HDMI input on your MFD. See Diagram 2 in the next column for details.

Direct Connection to Compatible Chart Plotter:

Diagram 1: Photon connects to the chatplotter network input via the IRIS-PoE01W power injector using a network cable. Power to the camera is supplied via the +12~56VDC input to the PoE01W.



Direct Connection to Chart Plotter via HDMI
Diagram 2: Photon connects to the IP2HMI-01 convertor via the PoE01W Power over Ethernet injector which also powers the camera. The HDMI output of the IP2HDMI-01 convertor connects to the HDMI input of the chartplotter. If there are mulitple chartplotters, Iris's range of HDMI distribution and transmission products can be used.



Multi-Camera / Extended Systems:

This Quick Start Guide provides a simplified set of instructions to connect a Photon camera to your chart plotter, but for larger systems with multiple cameras, multiple chart plotters, recorders, remote viewing requirements etc please contact Iris Innovations where we will be able to provide full system suggestions and solutions. Iris provide an extensive range of networking and video distribution and transmission products designed specifically for marine and vehicular projects. From a simple one camera, one display set up to a fully distributed 36 camera to unlimited MFD solution, with remote viewing via satellite / cellular transmission, we can provide a solution.

Contact Information:

For latest product information and support, including the full Photon user-manual, visit: www.boat-cameras.com.

To request technical assistance, contact your vendor or request a support ticket at www.boat-cameras.com/support

Iris Innovations Limited
Units 240~250 Ordnance Business Park, Aerodrome Road
Hampshire PO13 0FG. United Kingdom.
Tel: +44(0)2392 556509 / email: info@boat-cameras.com

Iris Innovations LLC
969W Commercial Blvd, Fort Lauderdale. 33309. Florida. USA.
Tel: +1(754) 755 5754 / email: info@boat-cameras.com

www.boat-cameras.com