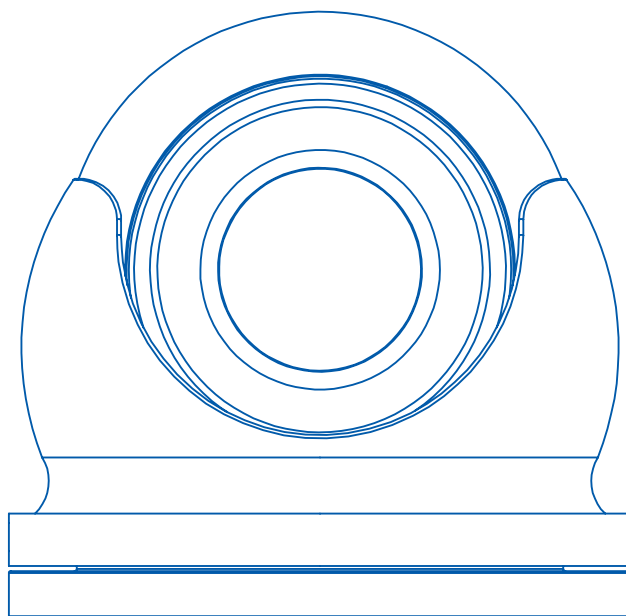


FURUNO

FIP-460 IP Camera

Installation Guide



FURUNO USA, INC.
www.furuno.com

Warnings & Important Product Information

WARNING: Disclaimer

This product is intended to be used only as an aid to navigation and must never be used as an alternative to correct navigational practices and judgements made based on approved navigation methods. It is the user's responsibility to observe correct and proper navigational skill when using this product.

Operating the camera or viewing the video input while the vessel is in motion could cause a distraction and result in accidental collision resulting in property damage, injury, or death. Furuno cannot be held liable for any incidental, special, indirect, or consequential damages whether resulting from the use, misuse or inability to use this product.

WARNING: Do Not Open the Unit

There are no user serviceable parts within the product so there is no need to open the device. The product has been certified to IP66 standards, however, submersion of the product or exposure to high pressure washing will invalidate the warranty. Please refer all maintenance and repair issues to your authorized Furuno dealer. Any unauthorized work to the product may affect the warranty.

CAUTION: Care and Cleaning

The FIP-460 is a sensitive piece of electronic equipment and must be handled and treated accordingly. Do not drop or shake the unit during installation. Avoid exposure of the imager to direct sunlight where possible as this may degrade the cameras performance over time. When cleaning the device, ensure power is switched off. Clean the camera housing with a soft cloth. Moisten the cloth and use a mild detergent if required. The lens window has a protective coating which may suffer damage because of improper cleaning. To clean the lens window, use a soft cotton cloth. Moisten with clean water if necessary.

INFORMATION: Product Disposal and Recycling

Dispose of this product in accordance with the WEEE Directive. The Waste Electrical and Electronic Equipment (WEEE) Directive requires the recycling of waste electronic and electrical equipment.

Please recycle unwanted packaging and documentation. The cardboard carton, all paper manuals and documents and the protective plastic bag in which the camera is shipped are widely recyclable. Please check with your local recycling plant for confirmation.

WARNING: Installation and Operation

This product must be installed and operated in accordance with these instructions. Failure to do so may result in poor product performance, damage to the product or vessel and or personal injury. Installation should only be carried out by qualified personnel.

WARNING: Power Supply and Grounding

Ensure the camera power supply is switched off during installation. Ensure suitably rated circuit breakers / fuses are used in the installation of the product. Never switch on power until the power connections are correctly terminated. Do not connect or disconnect the product with the power supply switched on. Never disconnect the DC ground with the power supply on.

WARNING: Wiring terminations

Ensure that suitable connectors are used when the camera's video, power and data connections are extended, and that the connections for each cable are adequately protected against water ingress. Ensure correct polarity is strictly observed.

Compass safe distance

 CAUTION		
Observe the following compass safe distances to prevent interference to a magnetic compass:		
	standard compass	steering compass
FIP-460	0.05 m	0.05 m

※日本語装備ガイドはこちら。
Here is the equipment guide in Japanese.

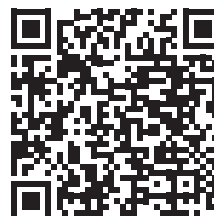


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for Pleasure Boats

(Except North America)

Introduction

Thank you for purchasing the FIP-460 IP Camera from Furuno.

This user manual is designed to be a reference for the installation and setup of your camera.

The FIP-460 IP Camera is ONVIF compliant. In addition to Furuno TZtouchXL MFDs, it may also be viewed on ONVIF compliant hardware.

Key Features

- Up to 3MP Resolution (2304 x 1296)
- High Performance LED - 10 Meter Range
- Mechanical IR Cutout filter for True Day / Night Operation
- Power using direct 12vdc, PoE injector, or PoE HUB
- IEEE802.3af Power over Ethernet (PoE)
- IP66 Water Ingress Protection
- Small, Compact Housing
- Suitable for Multiple Applications, such as on-board security, sport fishing, engine room and vessel monitoring
- Wide Operating Temperature Range
- Various mounting options as the inner camera ball is fully rotatable
- Simple setup with TZtouchXL MFDs
- Compatible with Furuno TZtouchXL MFDs, TIMEZERO software v4.1 and above, and ONVIF compliant devices.

Contents of Package

- 1 x FIP-460 IP Camera
- 1 x Self Adhesive Drill Template
- 1 x Foam Mounting Pad
- 1 x RJ45 Waterproof Backshell
- 1 x DC Connector w/Screw terminals
- 1 x Installation Manual
- 1 x Set of Mounting Screws



Power and Planning

The camera can be powered by a +12 V DC supply, or via PoE (Power over Ethernet)* power supply. Ensure the power supply is included in your installation planning.

If using a direct +12vdc connection, make sure to connect the camera to the power supply with a suitable rated fuse or circuit breaker. An on/off switch is also recommended.

Switch off the power supply or PoE device while installing the camera.

Power over Ethernet (PoE)

Power over Ethernet (PoE) is a system that allows electrical power to be sent via a single ethernet connection. This means that the ethernet cable can provide both power and data to the FIP-460.

Optional PoE injector is part # [MCU-PWR-INJ](#)

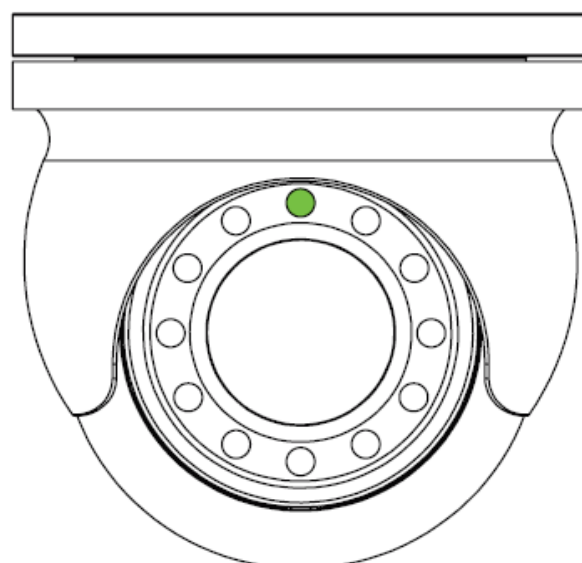
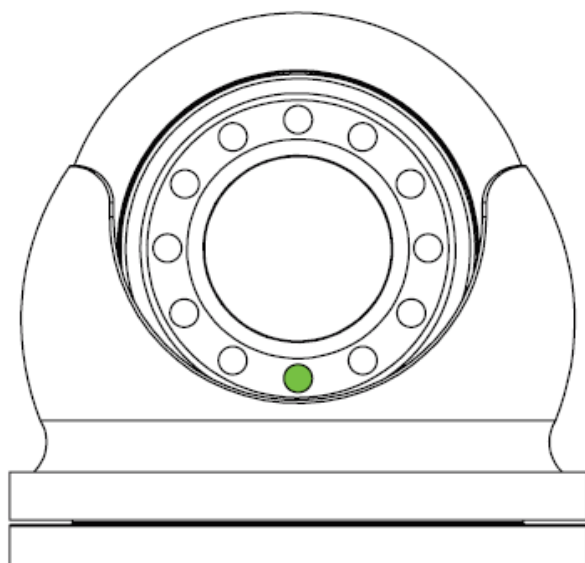
Important: If the camera is using PoE for power, **do not** connect the camera's direct DC power connection. Doing this will cause damage to the camera.

Camera Orientation

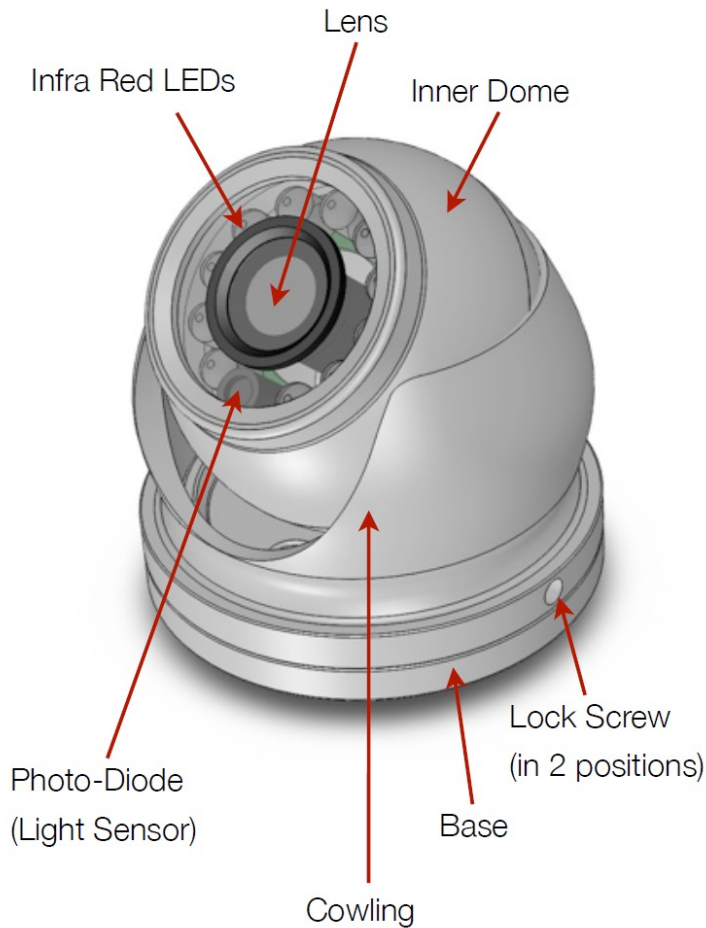
The camera can be mounted in two different orientations, suspended upside down on an overhead or rightside up on a mounting surface. The Camera is defaulted for a suspended overhead installation. If the camera is to be mounted rightside up on a deck, then the internal inner camera dome must be physically rotated 180 degrees.

Use the green infrared sensor as a guide to orientate the camera for your orientation. The green LED should be at the top for an overhead or rightside up mount. Below image displays the green LED in the default position.

Default



Camera Overview



TIP!

It is strongly advised that the camera is powered up and connected to a TZtouchXL MFD to check the desired field of view prior to drilling any holes and mounting the camera in place.

Mounting considerations: When choosing a mounting location, keep in mind the following points:

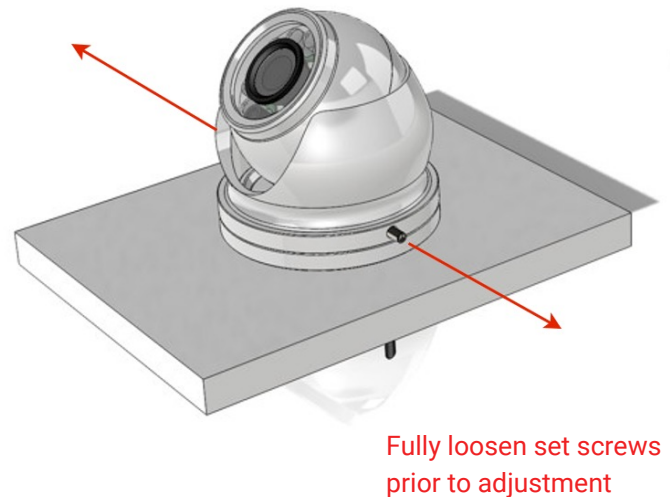
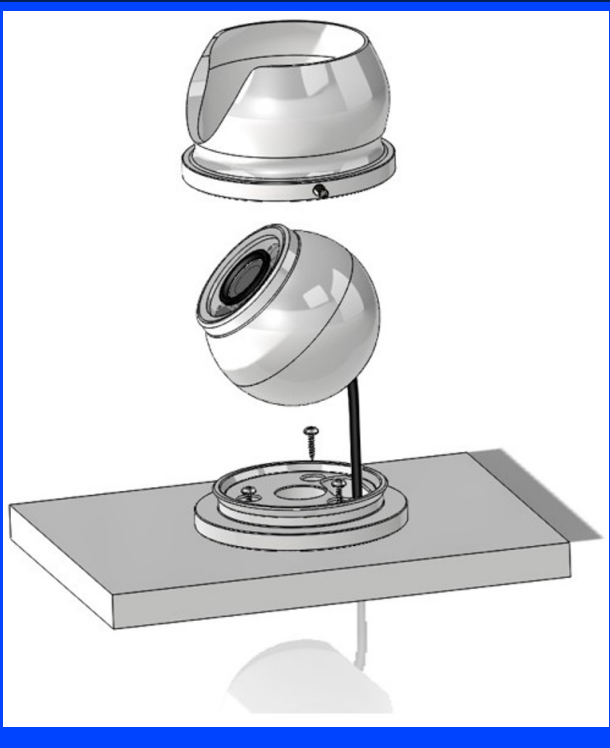
- **Locate the unit where it will not be submerged in water.**
- **Keep the unit out of direct sunlight to prevent build up heat inside the cabinet.**
- **Cables should point down to prevent any possible water wicking.**

Warning

To avoid damage to the camera, ensure that the "Lock Screws" are fully counterclockwise (loosened) before making any adjustments to the inner dome.

Failure to do this could result in paint damage which will cause corrosion.

Overview of Installation Procedure



1. Install Base
2. Slide camera cable through base
3. Set desired camera field of view
4. Slide Cowling over inner dome onto base
5. Tighten Set Screws

Installation

Ensure the camera's power supply is connected via a suitably rated fuse or circuit breaker.

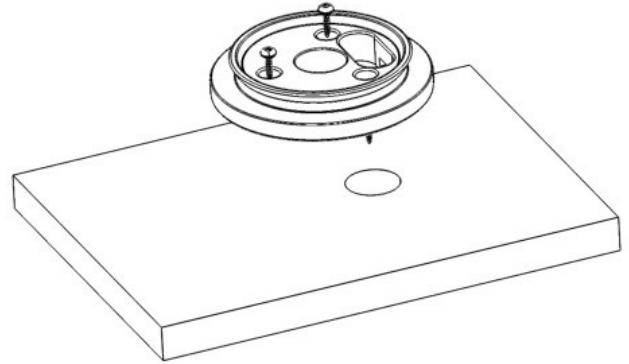
Switch off the power supply while installing the camera.

Step 1

Position base at desired mounting position and mark off screw hole and cable entry positions through the mounting surface.

Step 2

Fit the camera base into position. Drill pilot holes for the screws and the cable entry hole. Then screw the base into position, observing caution not to damage the surface if fitting onto a GRP surface.



Step 3

Feed the cable to the camera through the cable entry hole. If you are using PoE to power the camera, this will just be a single CAT5 cable. If you are not using PoE to power the camera, you will need a CAT5 cable and a power cable (18AWG) for the DC power. Ensure terminations are protected from any moisture. Details on how to fit the waterproof plug are on the next page.

Step 4

Fit the field installable water resistant RJ45 back-shell over the CAT5 cable and connect the RJ45 connector of the CAT5 cable to the camera's RJ45 socket. Make sure the fit is good and you hear the connector 'click' into place. Now ensure the water-resistant back shell is tightened into place. Refer to Page 8 for further details.



Step 5

Slide the slack cable from the camera back through the hole in your panel, ensuring connectors are still intact and sit the inner dome onto the protective foam / rubber ring on the base.

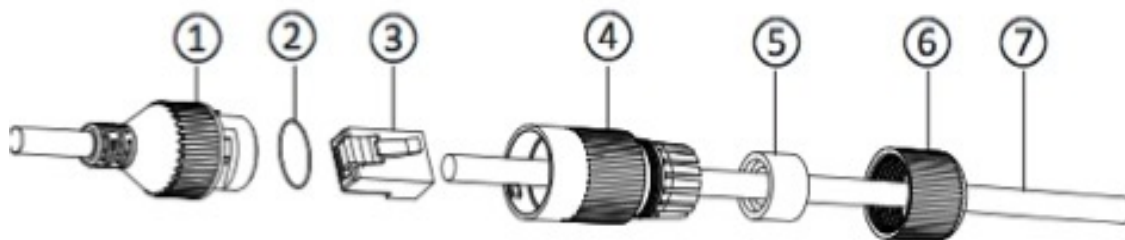
Step 6

Place the cowling over the inner dome and move into position. The cowling will fit over the inner dome and push up to the base. Once in position, carefully tighten the set screws until they lightly hold the inner dome in position. Now power up the camera and check to see if you have the desired field of view. If any adjustments are required, loosen the set screws to make the necessary adjustments, lightly tighten and then check again. Repeat until you have the desired field of view. Once you are satisfied with the camera's position, fully tighten the set screws.



How to Install the Waterproof RJ45 Jacket

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



Part No	Description
1	Camera Network Socket
2	O-ring Seal
3	RJ45 Network Connector
4	Waterproof Endcap
5	Rubber Gasket
6	Lock Nut
7	Ethernet cable to PoE injector, or PoE switch, or HUB 102

Steps to connect Ethernet cable to Camera

Step 1

Feed the Ethernet network cable (7) through the lock nut (6), waterproof rubber gasket (5) (ensuring the rubber gasket inset ridge faces the endcap (4)).

Step 2

Place the O-ring Seal (2) onto the end of the cameras network socket (1).

Step 3

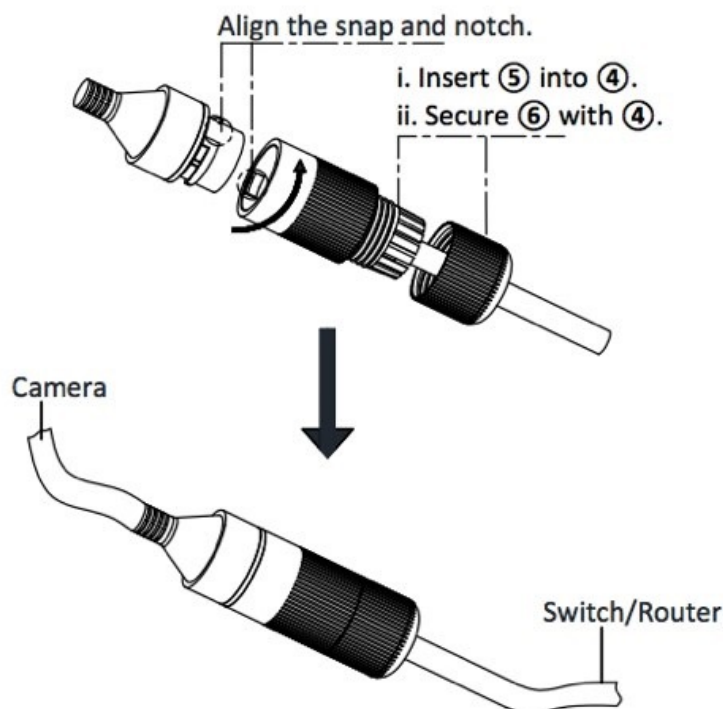
Insert the plug (3) of the Ethernet cable into the cameras network socket (1).

Step 4

Insert the waterproof rubber gasket (5) into the waterproof endcap (4) and tighten the lock nut (6) with the waterproof end cap (4).

Step 5

Align the snap on waterproof endcap (4) with the notch on the cameras network interface socket (1) & then secure the waterproof endcap (4) to the cameras network socket (1).



Connecting the FIP-460 to a TZtouchXL MFD Network

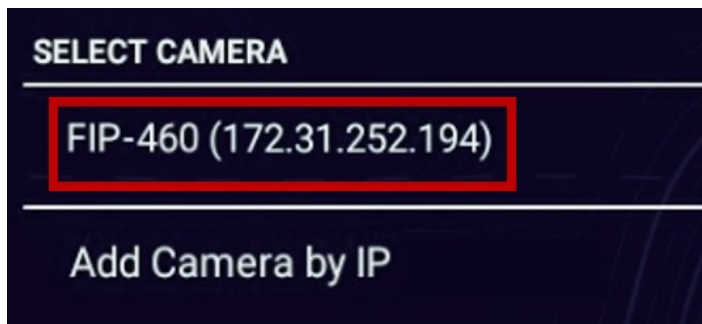
You can connect a max of 8 x FIP-460 IP cameras to a TZtouchXL network.

FIP-460 IP cameras are shipped with their IP address set to DHCP mode. The IP address for each camera will be assigned by the Furuno MFD.

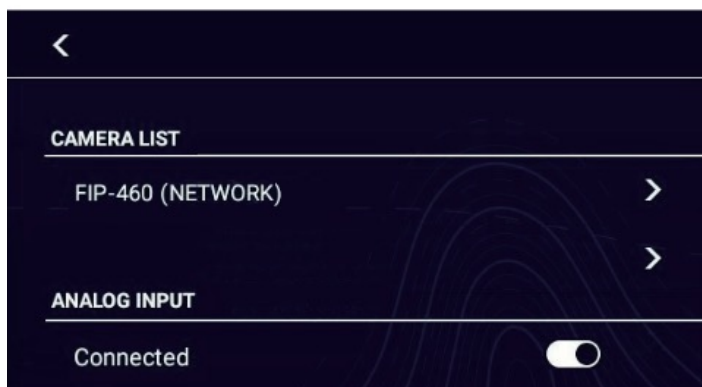
Each FIP-460 IP Camera must be discovered by the MFD and then manually selected & added to the network. This is a quick and easy procedure that takes less than a minute.

Procedure

1. Press the Home Button -> Settings -> Camera and Video -> Add Network Camera.
2. Message "Discovering Camera" will appear.
3. A list of discovered cameras will then be shown
4. Select the camera to add to the network.



5. The MFD will then display, "Getting Camera Information".
6. After the search is completed, the camera selected is added to the camera list as shown below.



7. After a short time, the camera image will show on the MFD.
8. Do this same procedure for each FIP-460 IP camera.
9. Confirm that each MFD on the network populates the FIP-460 cameras in the Camera List.

TIP!

Take this opportunity to change the name of the FIP-460 camera that was just added to the Camera List. Selecting the camera from the list will bring up that camera's settings. Select Nickname & change the name to the location on the vessel (Aft Deck, Engine room), purpose, etc.



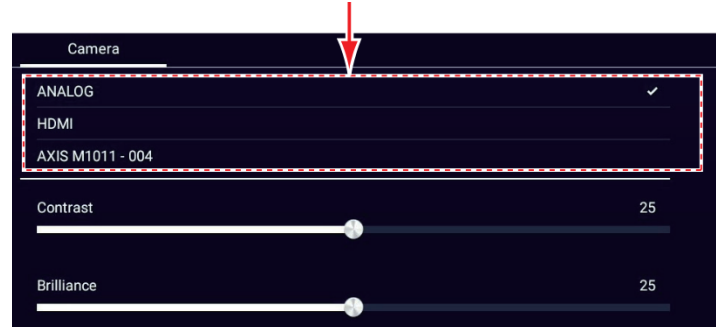
The Nickname will be displayed in the bottom right corner of the video and in the Camera Layers Menu.

Note: The FIP-460 IP camera comes with the necessary settings pre-configured. No additional configuration is required.

How to switch video inputs

If you have more than one camera installed, you can switch the video input from the camera screen.

Open the Layers menu (swipe up from the bottom), select the source to be viewed.



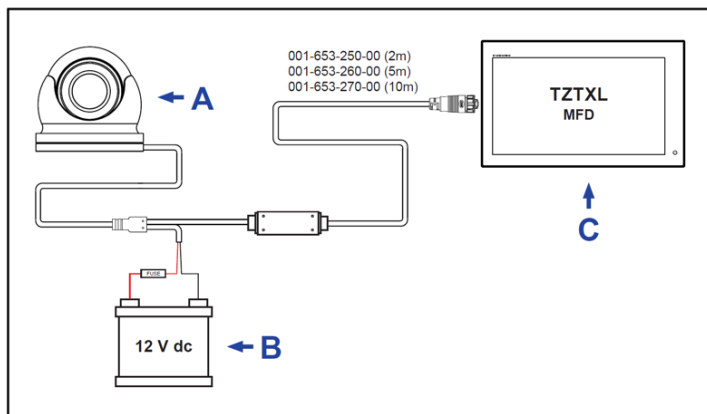
Note: Up to 3 TZtouchXL MFDs can be configured and connected to the FIP-460 IP camera. If configuring more than 3ea TZtouchXL MFDs for the FIP-460 camera/s, only the first three MFDs at startup will display the camera video.

For complete camera and video input operations, see the TZtouchXL operator's manual, section 11.

Sample Connection Diagrams

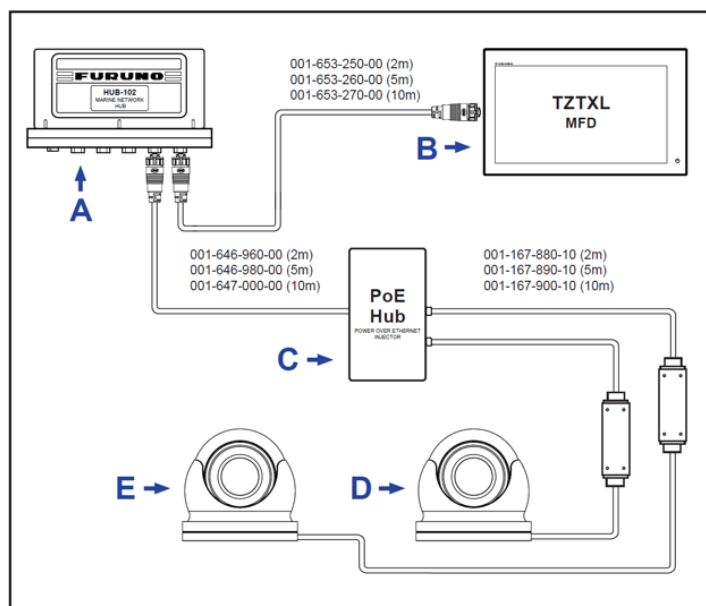
The FIP-460 IP Camera can be powered by PoE from a PoE injector or PoE Switch or via a direct +12vdc connection to the 1.5mm DC jack.

Camera powered via direct +12vdc (non PoE)



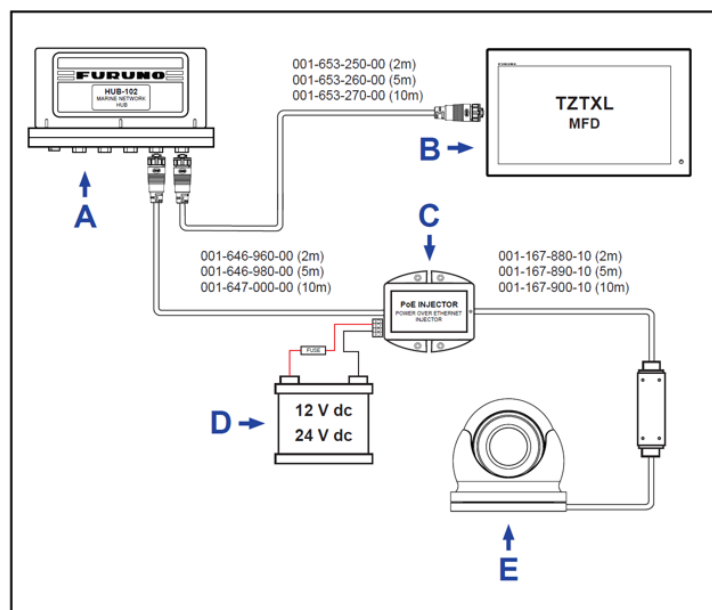
- A. FIP-460 camera
- B. +12vdc
- C. TZTXL MFD

Cameras Powered by PoE Hub



- A. HUB102 1GB Waterproof Ethernet Switch
- B. TZTXL MFD
- C. PoE Hub
- D. FIP-460 Camera
- E. FIP-460 Camera

Camera powered via PoE Injector



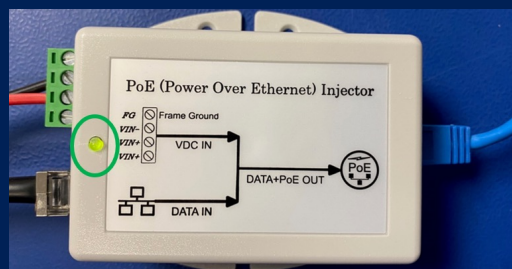
- A. HUB102 1GB Waterproof Ethernet Switch
- B. TZTXL MFD
- C. PoE Injector, Part # MCU-PWR-INJ
- D. External power supply
- E. FIP-460 Camera

Troubleshooting

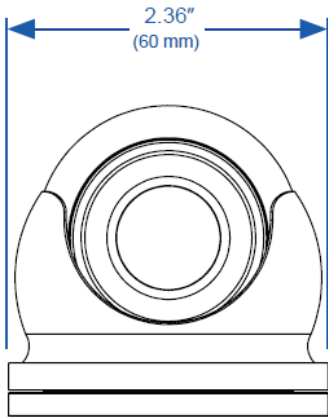
Check the Smart waterproof RJ45 coupler lights. There are two status lights on the RJ45 Ethernet connector. One is a steady blue for camera power. The other is a flashing Green (Link) indicating video traffic.



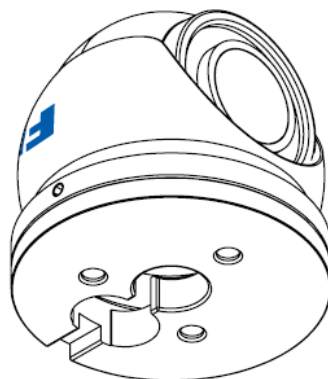
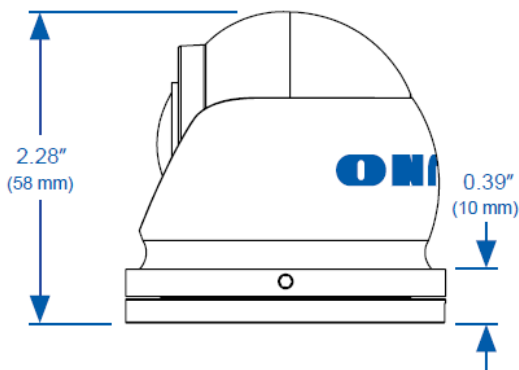
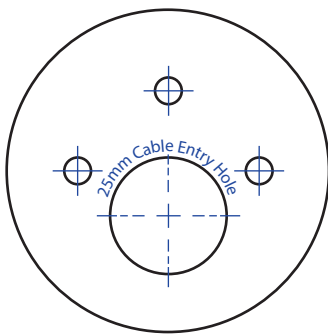
If the blue power light is not lit, check +DC power source or check to see if the PoE injector light is lit (if using a PoE injector). The light will be green if using a Furuno USA supplied PoE injector, part # MCU-PWR-INJ.



Product Dimensions



FIXING TEMPLATE



Specifications

Sensor	1/4" CMOS Sensor
Resolution	Variable - 2304 x 1296 (3MP) Max
Interface	RJ45 10/100 Base T Ethernet
Video Processing	H.264 Codec / Dual Stream
Protocols / Video Format	TCP/UDP/HTTP/Multicast/UPnP/NTP/RTSP/ONVIF
ONVIF	Profile S v2.4
Bitrate	VBR / CBR 32kbps ~ 8Mbps
Illumination	6 x 850nm Infra-Red - 10-meter Range
Lens / Field of View	HFOV / 1.8mm (154° HFOV)
Automatic Gain Control	Supported / Multiple Levels
Operating Temperature	-30 ~ +60°C
Connections	Water Resistant RJ45 Socket / Non PoE with DC Power Socket
Material	316 Stainless Steel
Operating Voltage	12Vdc (10v to 15V)
Power Consumption	1W Nominal @ 12Vdc (1.8W MAX (LEDS ON))
Power over Ethernet (PoE)	IEEE802.3af
Weight & Dimensions	0.420Kg / 59.5mm ø x 52.93mm H
Environmental	IP66
Vibration	EN 60945: 2002 Section 8.7
EMC	EN55032:2015/A11:2020 & EN55035:2017/A11:2020 EN60945:2002 Sections 9 & 10 / PoE with Compliant PoE Injector
RoHS	EN6300:2018 / EU 2015/83

FURUNO Worldwide Warranty for Pleasure Boats (Except North America)

This warranty is valid for products manufactured by Furuno Electric Co. (hereafter FURUNO) and installed on a pleasure boat. Any web-based purchases that are imported into other countries by anyone other than a FURUNO certified dealer may not comply with local standards. FURUNO strongly recommends against importing these products from international websites as the imported product may not work correctly and may interfere with other electronic devices. The imported product may also be in breach of the local laws and mandated technical requirements. Products imported into other countries as described previously shall not be eligible for local warranty service.

For products purchased outside of your country please contact the national distributor of Furuno products in the country where purchased.

This warranty is in addition to the customer's statutory legal rights.

1. Terms and Conditions of Warranty

Furuno guarantees that each new FURUNO product is the result of quality materials and workmanship. The warranty is valid for a period of 2 years (24 months) from the date of the invoice, or the date of commissioning of the product by the installing certified dealer.

2. FURUNO Standard Warranty

The FURUNO standard warranty includes:

- **Repair at a FURUNO national distributor**
- **All spare parts for the repair**
- **Cost for economical shipment to the customer**

3. Furuno Onboard Warranty

If the product was installed/commissioned and registered by a certified FURUNO dealer, the customer has the right to the onboard warranty.

- **Free shipping of the necessary parts**
- **Labor: Normal working hours only**
- **Travel time: Up to a maximum of two (2) hours**
- **Travel distance: Up to a maximum of one hundred & sixty (160)km by car for the complete journey**

4. Warranty Registration

For the standard Warranty – presentation of the product with serial number is sufficient. Otherwise, the invoice with serial number, name and stamp of the dealer and date of purchase is shown.

For the Onboard warranty your FURUNO certified dealer will take care of all registrations.

5. Warranty Claims

For the Standard Warranty – simply send the defective product together with the invoice to a FURUNO national distributor. For Onboard Warranty – contact a FURUNO national distributor or a certified dealer. Give the product's serial number and describe the problem as accurately as possible.

Warranty repairs carried out by companies/persons other than a FURUNO national distributor or a certified dealer is not covered by this warranty.

6. Warranty Limitations

When a claim is made, FURUNO has a right to choose whether to repair or replace the product.

The FURUNO warranty is only valid if the product was correctly installed and used. Therefore, it is necessary for the customer to comply with the instructions in the handbook. Problems which result from not complying with the instruction manual are not covered by the warranty.

FURUNO is not liable for any damage caused to the vessel by using a FURUNO product.

The following are excluded from this warranty:

- Second-hand product**
- Underwater unit such as transducer and hull unit**
- Routine maintenance, alignment, and calibration services.**
- Replacement of consumable parts such as fuses, lamps, recording papers, drive belts, cables, protective covers, and batteries.**
- Magnetron & MIC with more than 1000 transmitting hours or older than 12 months, whichever comes 1st.**
- Costs associated with the replacement of a transducer (e.g. Crane, docking or diver etc.)**
- Sea trial, test and evaluation or other demonstrations.**
- Products repaired or altered by anyone other than the FURUNO national distributor or an authorized dealer.**
- Products on which the serial number is altered, defaced, or removed.**
- Problems resulting from an accident, negligence, misuse, improper installation, vandalism, or water penetration.**
- Damage resulting from force majeure or other natural catastrophe or calamity.**
- Damage from shipping or transit.**
- Software updates, except when deemed necessary & warrantable by FURUNO.**
- Overtime, extra labor outside of normal hours such as weekend/holiday, & travel costs above the 160km allowance.**
- Operator familiarization and orientation.**

FURUNO Warranty for North America

Furuno U.S.A., Limited Warranty provides a twenty-four (24) months Labor and twenty-four (24) months PARTS warranty on products from the date of installation or purchase by the original owner. Products or components that are represented as being waterproof are guaranteed to be waterproof only for, and within the limits of the warranty period stated above. The warranty start date may not exceed eighteen (18) months from the original date of purchase by dealer from Furuno USA and applies to new equipment installed and operated in accordance with Furuno USA's published instructions.

Magnetrons and Microwave devices will be warranted for a period of 12 months from the date of the original equipment installation.

Furuno USA, Inc. warrants each new product to be of sound material and workmanship and through its authorized dealer will exchange any parts proven to be defective in material or workmanship under normal use at no charge for a period of 24 months from the date of installation or purchase.

Furuno U.S.A., Inc. through an authorized Furuno dealer will provide labor at no cost to replace defective parts, exclusive of routine maintenance or normal adjustments for a period of 24 months from installation date provided the work is done by Furuno U.S.A., Inc. or an AUTHORIZED Furuno dealer during normal shop hours and within a radius of 50 miles of the shop location.

A suitable proof of purchase showing date of purchase, or installation certification must be available to Furuno U.S.A., Inc., or its authorized dealer at the time of request for warranty service.

This warranty is valid for installation of products manufactured by Furuno Electric Co. (hereafter FURUNO). Any purchases from brick and mortar or web-based resellers that are imported into other countries by anyone other than a FURUNO certified dealer, agent, or subsidiary may not comply with local standards. FURUNO strongly recommends against importing these products from international websites or other resellers as the imported product may not work correctly and may interfere with other electronic devices. The imported product may also be in breach of the local laws and mandated technical requirements. Products imported into other countries as described previously shall not be eligible for local warranty service.

For products purchased outside of your country please contact the national distributor of Furuno products in the country where purchased.

WARRANTY REGISTRATION AND INFORMATION

To register your product for warranty, as well as see the complete warranty guidelines and limitations, please visit www.furunousa.com and click on "Support". To expedite repairs, warranty service on Furuno equipment is provided through its authorized dealer network. If this is not possible or practical, please contact Furuno U.S.A., Inc. to arrange warranty service.

FURUNO U.S.A., Inc.
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Camas, WA 98607-9300
Telephone: (360) 834-9300
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www.furuno.com