USER MANUAL

SUBSEA CAMERA CALYPSO

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15.01.2024	A	Released		
PREPARED		**CHECKED**		**APPROVED**
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1. INTRODUCTION

1.1. PURPOSE AND SCOPE

This document outlines and defines the configuration and operation of the Subsea Camera Calypso.

The manual is to be used by trained and competent personnel only.

1.2. ABBREVIATIONS

Abbreviation	Description
FOV	Field of View
IP	Internet Protocol

1.3. SUPPLIER CONTACT INFORMATION

Ixys AS
Langmyra 11
N-4344 Bryne
Norway

+47 51 42 22 22
post@ixys.no
www.ixys.no

1.4. DOCUMENT REFERENCES

DOC No.	Description
118597-ICS-PD-DAS-0001	Product Datasheet
118597-ICS-MC-DWG-0001	GA Drawing

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2. HEALTH, SAFETY AND ENVIRONMENT

2.1. GENERAL

Safety Notes and General Precautions shall be presented to all personnel concerned prior to testing, operation, maintenance, and repair. The operations shall be performed by the responsible engineer/supervisor.
The personnel performing this job shall have knowledge of this type of equipment and have familiarized themselves with the applicable procedures and manuals for this product.

2.2. USER HEALTH AND SAFETY

This product is made to operate under many circumstances and specific cases for health and safety will not be described here but must be considered by the equipment manufacturer or owner.

CAUTION:

- By remote operating equipment, there is always a risk of people accessing the equipment without notice to the operator and it is therefore important to establish safety procedures for the specific equipment involved.

2.3. QUALIFICATIONS AND TRAINING

It is essential that operating personnel have been given training and education how to operate and maintain the software and equipment described in this manual. It is also essential that operating personnel have general operational experience.

The personnel responsible for the operation of this system must be appropriately qualified. The operating company must do the following tasks:

- Define the responsibilities and competency of all personnel handling this system.
- Provide instruction and training.
- Ensure that the contents of the operating instructions have been fully understood by the personnel.

2.4. NON-COMPLIANCE RISKS

Failure to comply with all safety precautions can result in the following conditions:

- Death or serious injury due to electrical and mechanical influences
- Product damage
- Property damage
- Loss of all claims for damages

2.5. UNACCEPTABLE MODES OF OPERATIONS

The operational reliability of this product is only guaranteed when it is used as designated. The operating limits given in this manual shall not be exceeded under any circumstances.

3. TECHNICAL INFORMATION AND DATA

3.1. TECHNICAL DESCRIPTION

The Subsea Camera Calypso is designed to be used subsea down to 4000 m. It sends a live video feed via Ethernet.

3.2. TECHNICAL DATA

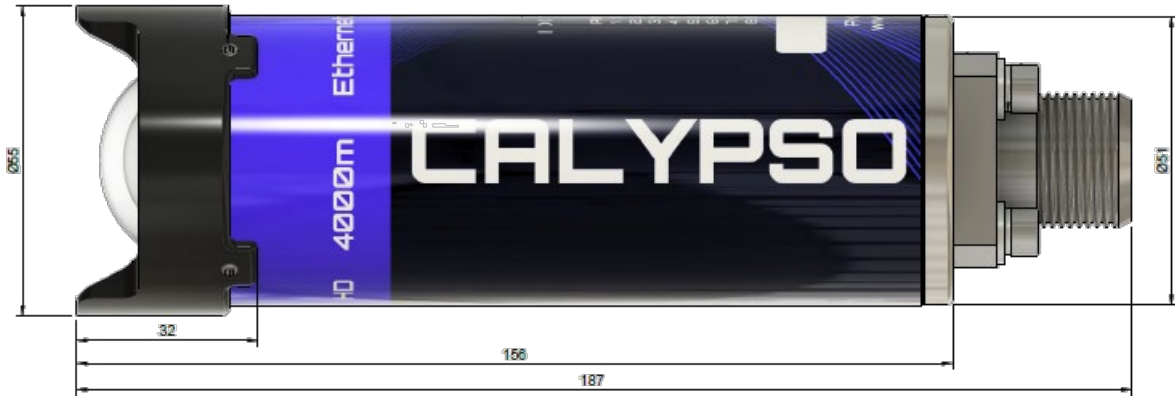| General	
Manufacturer	Ixys AS
Ixys Part Number	118597
Description	Subsea Camera Calypso
Weight in air	500 g
Weight in water	300 g
Dimensions	187 x Ø55 mm
Supply Voltage	24 (10-30) VDC
Power Consumption	~4 W
Benchmark latency	~80 ms (from captured picture to presented on monitor)
Depth Rating	4000 m
Resolution	720P/1080P
Bit rate	0,6-40 Mbps
Video compression	H.264
Stream format	RTP UDP / RTSP
Communication	Ethernet 10/100 Mbps
Camera FOV	Horizontal ~150° in water
Default IP	10.13.37.243

3.3. COMMUNICATION

The communication is based on Ethernet and the video is streamed with the H.264 video codec. Configuration and commands are sent over HTTP. The camera can also be configured by external applications over an HTTP API. See section 5 for details.

3.4. FEATURES

- Live H.264 video streaming
- Supports multicast
- Web interface for configuration and software upgrades

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4. DRAWING
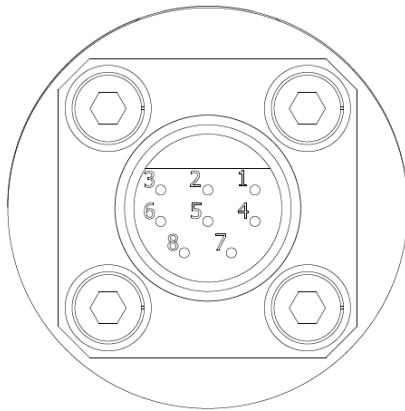
Glenair 5506-1508
Connector Pinout

1:	0V	
2:	24VDC	
3:	NC	
4:	NC	
5:	Eth Tx+	
6:	Eth Tx-	
7:	Eth Rx+	
8:	Eth Rx-	

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5. CONFIGURATION AND OPERATION

5.1. MAIN PAGE

The camera can be configured through a built-in web interface by opening the IP address of the camera in a browser (default http://10.13.37.243), This interface allows changing the camera's video stream, network, and image settings.

Figure 1 – Configuration web interface page

| Video	Bitrate, Destination IP address and the destination port number for video stream. Change between RTP UDP and RTSP type of stream. Save, Stop, and Start for changes to take effect.
Network Configuration	IP address, Subnet mask and Gateway address for the camera. Reboot for changes to take effect.
Image	Adjust these to get optimal video for the situation. Press the "Reset" to revert to factory default settings.
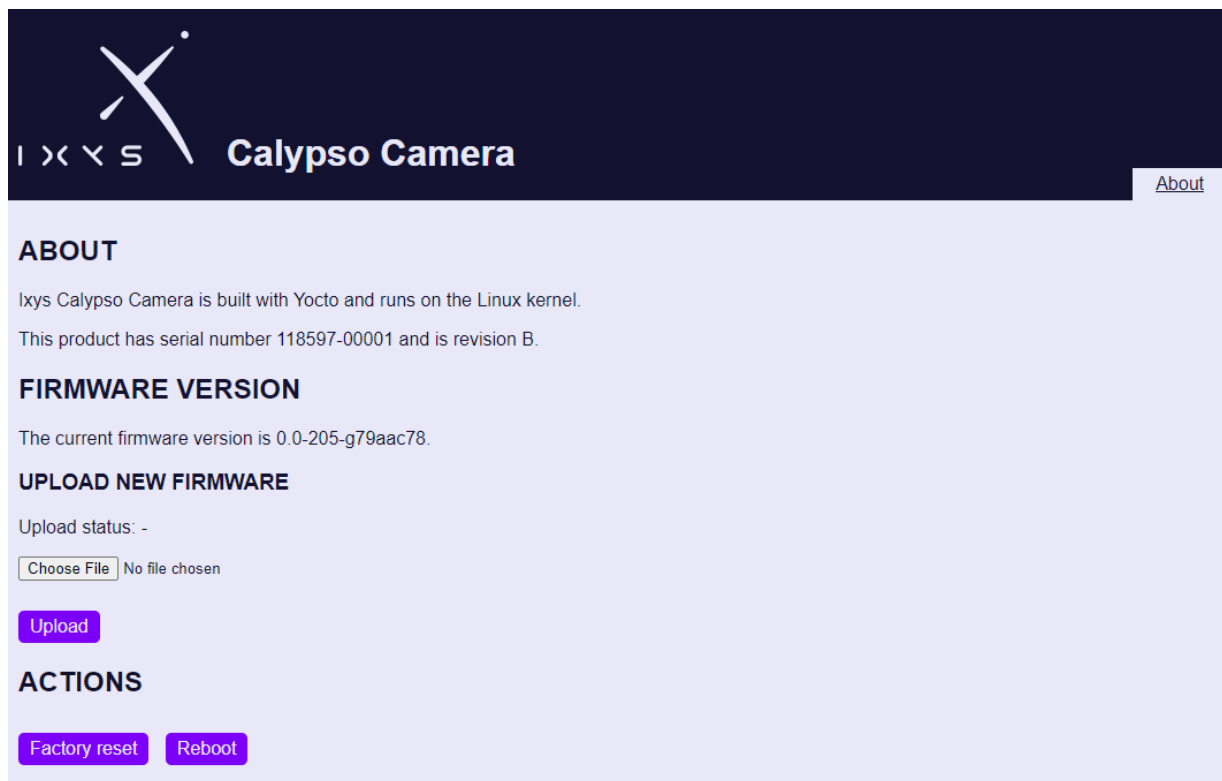
5.2. ABOUT PAGE

Figure 2 – About web interface page

The About page shows the current firmware version, and allows uploading new versions, performing a factory reset and reboot of the camera.
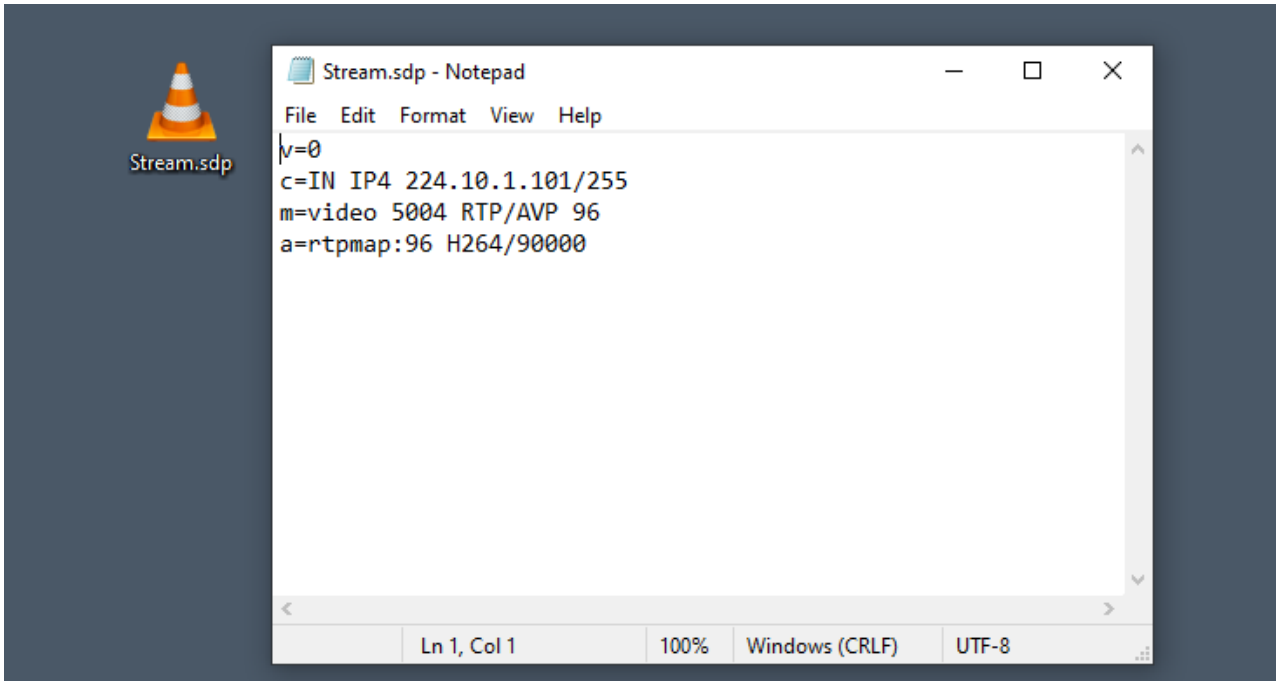
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5.3. API

The screenshot below shows the commands available through the API. The web interface includes a full documentation interface on the /swagger URI (default http://10.13.37.243/swagger/).
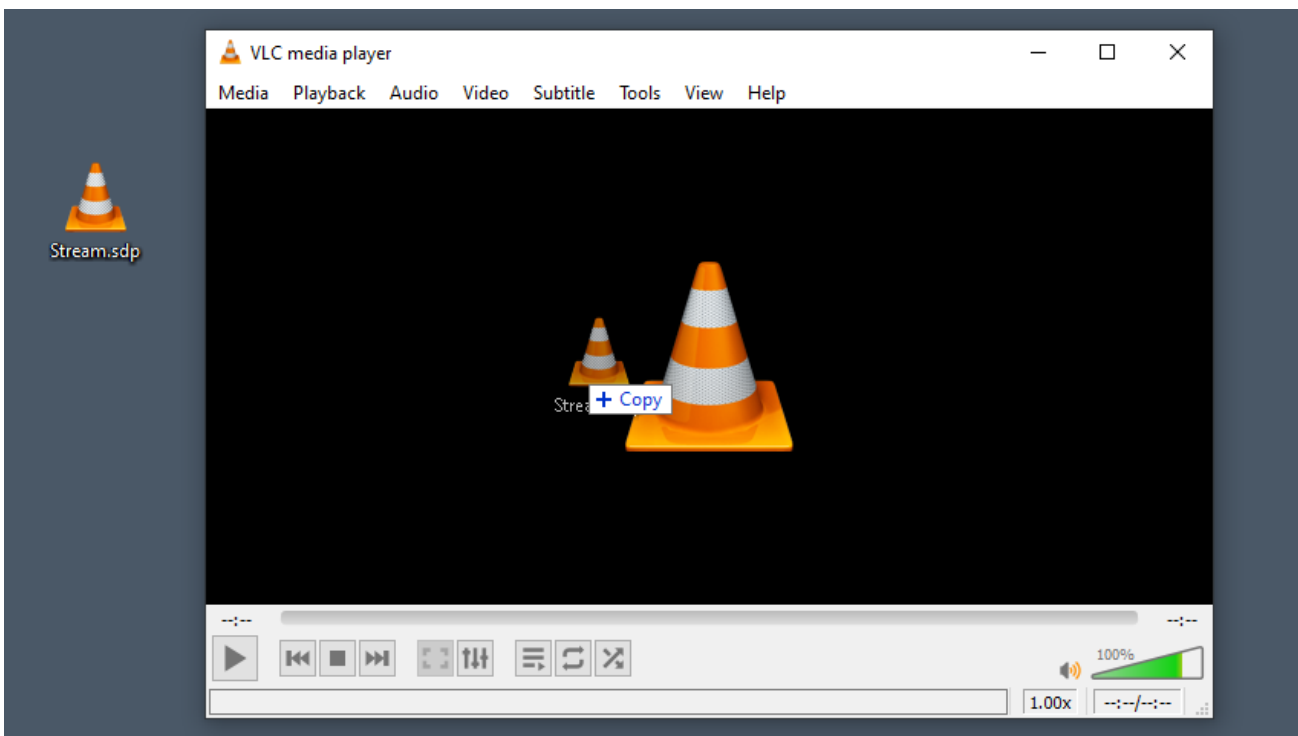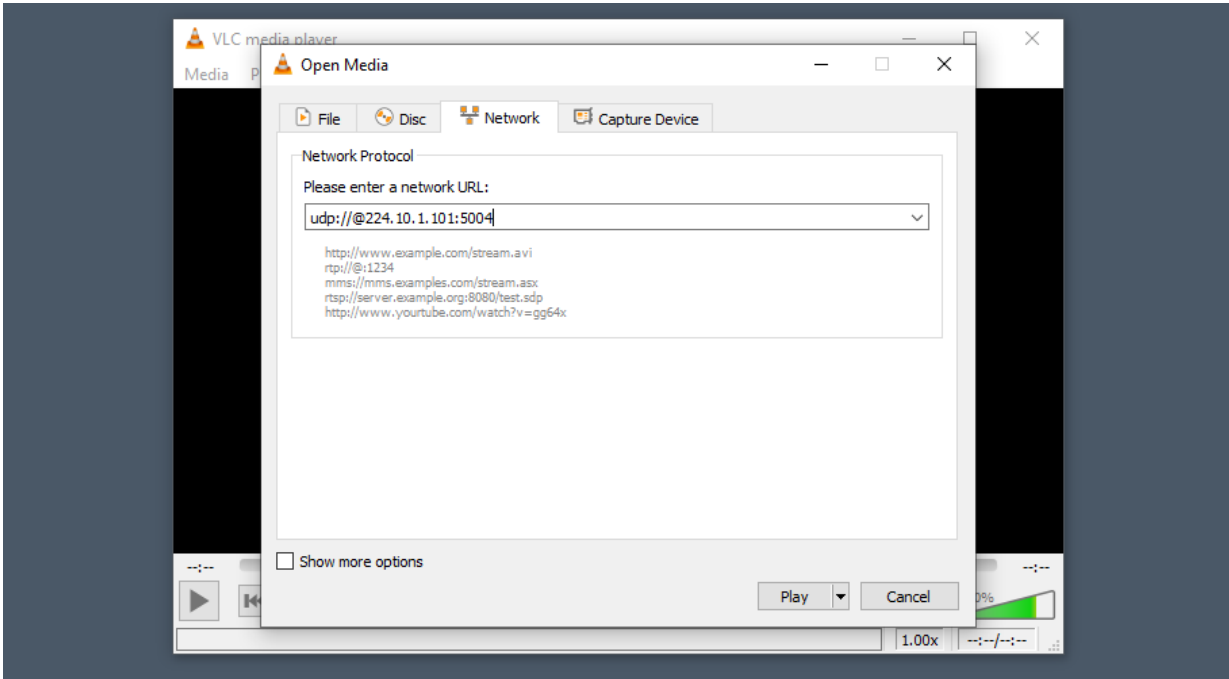
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5.4. VIEW RTP UDP STREAM IN VLC PLAYER

To view RTP UDP stream in VLC Player with default settings, make a .sdp file with the following content:

Open the file with VLC Player.

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5.5. HEARTBEAT

Heartbeat messages are sent once per second as UDP packets to IP 255.255.255.255 port 65000. These messages can be detected to find IP address of the camera if it's not known.

5.6. TROUBLESHOOTING / FAULT-FINDING

The below list is meant to provide some hints for troubleshooting but does not guarantee that the issue is covered by the list. Operational feedback will be used to extend the list in future revisions.

Trouble shooting		
Symptom	**Possible Causes**	**Remedy**
No connection to the software application	• Wrong IP settings	• Test connecting to the web interface of the camera • Look for heartbeat to identify current IP address
	• Computer in wrong subnet	• Set IP address of computer to an address within the same subnet as the device
No video feed	• Wrong stream destination address	• Check the destination address in the web interface. Use Wireshark to check for incoming video feed frames on the designated port numbers
Image is unstable	• Half duplex somewhere along the network	• Check each section of the network lines to verify full duplex link on all segments

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