

USER MANUAL

SUBSEA CAMERA LUMIN



PUBLISHED	REVISION	REVISION NOTE	
15.01.2024	A	Released	
PREPARED		CHECKED	APPROVED
Vidar Haus		Sven Hatteland	Ole Morten Haaland

USER MANUAL

SUBSEA CAMERA LUMIN

CONTENTS

1. INTRODUCTION.....	3
1.1. PURPOSE AND SCOPE.....	3
1.2. ABBREVIATIONS	3
1.3. SUPPLIER CONTACT INFORMATION.....	3
1.4. DOCUMENT REFERENCES	3
2. HEALTH, SAFETY AND ENVIRONMENT	4
2.1. GENERAL	4
2.2. USER HEALTH AND SAFETY.....	4
2.3. QUALIFICATIONS AND TRAINING	4
2.4. NON-COMPLIANCE RISKS	4
2.5. UNACCEPTABLE MODES OF OPERATIONS	4
3. TECHNICAL INFORMATION AND DATA	5
3.1. TECHNICAL DESCRIPTION.....	5
3.2. TECHNICAL DATA.....	5
3.3. COMMUNICATION.....	5
3.4. FEATURES	5
4. DRAWING.....	6
5. CONFIGURATION AND OPERATION	7
5.1. MAIN PAGE.....	7
5.2. ABOUT PAGE	8
5.3. API	9
5.4. VIEW RTP UDP STREAM IN VLC PLAYER.....	10
5.5. HEARTBEAT	12
5.6. TROUBLESHOOTING / FAULT-FINDING.....	12

SUBSEA CAMERA LUMIN

1. INTRODUCTION

1.1. PURPOSE AND SCOPE

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

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

1.2. ABBREVIATIONS

Abbreviation	Description
FOV	Field of View
IP	Internet Protocol
LED	Light Emitting Diode

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
117188-ICS-PD-DAS-0001	Product Datasheet
117188-ICS-MC-DWG-001	GA Drawing

SUBSEA CAMERA LUMIN

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.

SUBSEA CAMERA LUMIN

3. TECHNICAL INFORMATION AND DATA

3.1. TECHNICAL DESCRIPTION

The Subsea Camera Lumin is designed to be used subsea down to 4000 m. It sends a live video feed via Ethernet, and it has inbuilt dimmable LED light.

3.2. TECHNICAL DATA

General	
Manufacturer	Ixys AS
Ixys Part Number	117188
Description	Subsea Camera Lumin
Weight in air	550 g
Weight in water	340 g
Dimensions	187 x Ø51 mm
Supply Voltage	24 (10-30) VDC
Power Consumption (LED off)	~4 W
Power Consumption (LED on)	~15 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 ~90° in water
Default IP	10.13.37.243

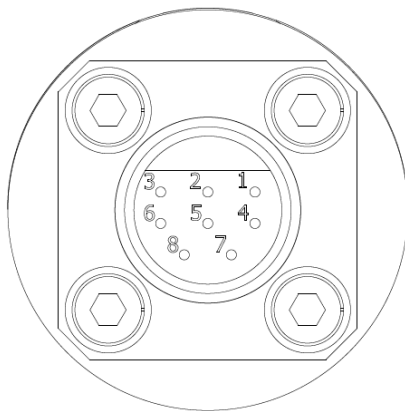
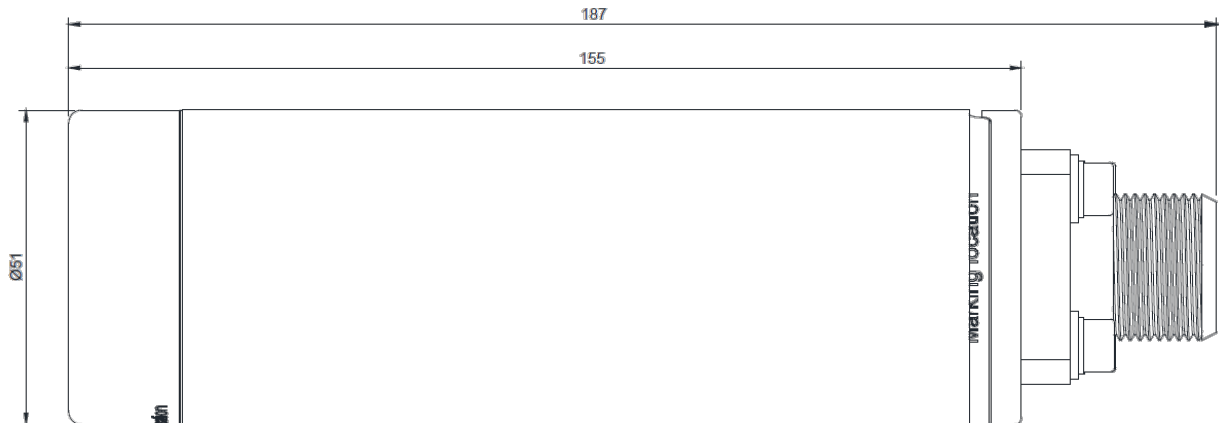
3.3. COMMUNICATION

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
- Dimmable LED light

SUBSEA CAMERA LUMIN

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-	_____

USER MANUAL

SUBSEA CAMERA LUMIN

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.

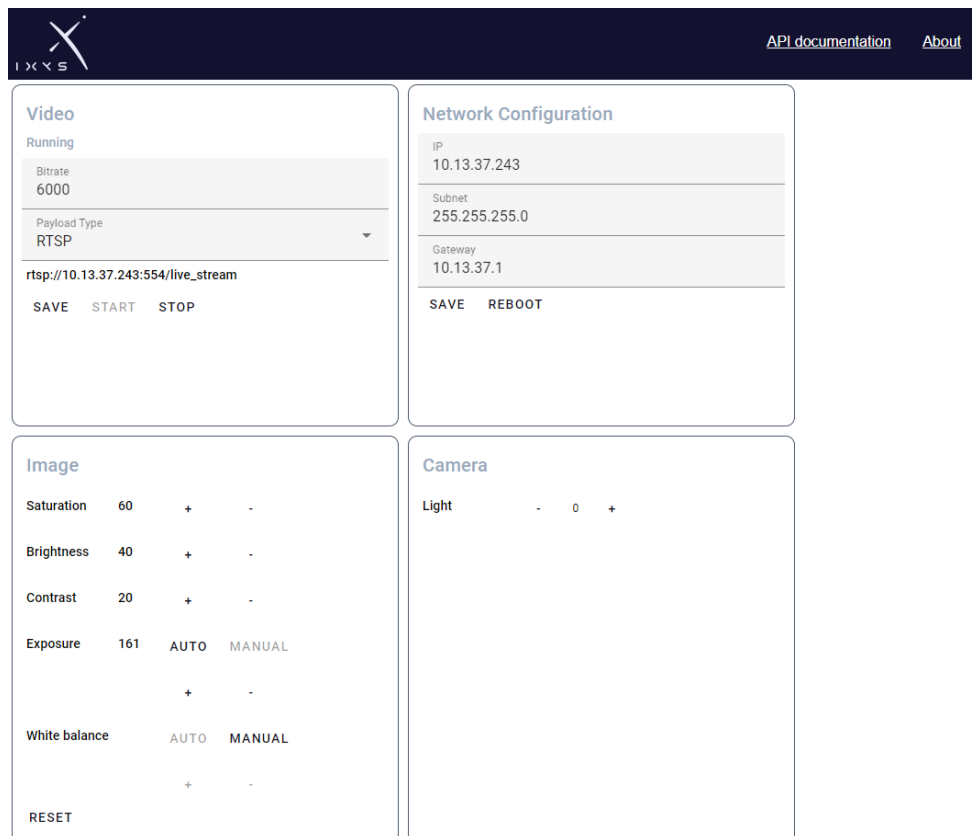


Figure 1 – Configuration web interface page

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.
Camera	Adjust strength of the LED light

USER MANUAL

SUBSEA CAMERA LUMIN

5.2. ABOUT PAGE

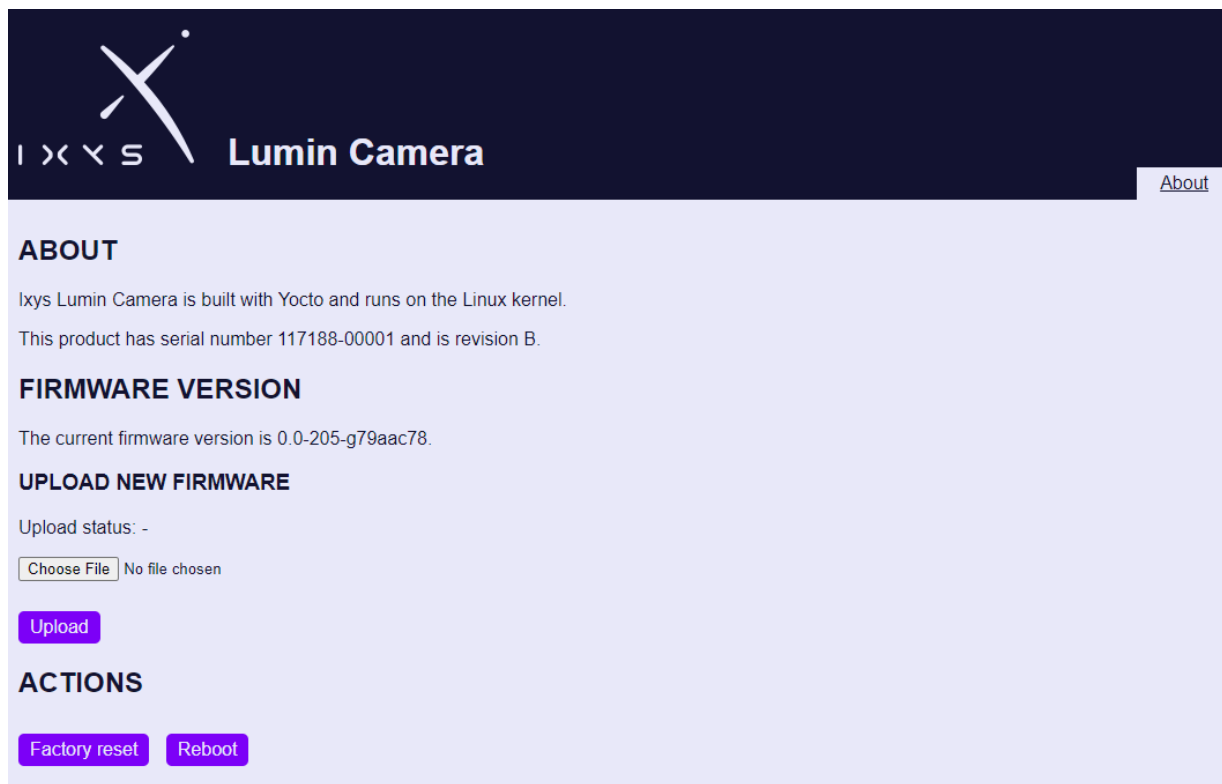


Figure 2 – About web interface page

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

USER MANUAL

SUBSEA CAMERA LUMIN

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/>).

The screenshot displays the Swagger API documentation for the Ixys Camera API (version 1.0.0). The interface includes a 'Schemes' dropdown set to 'HTTP' and a list of API endpoints under the 'Api' section. The endpoints are as follows:

Method	Endpoint
GET	/Api/start
GET	/Api/stop
GET	/Api/bitrate
GET	/Api/bitrate/{bitrate}
GET	/Api/image
GET	/Api/image/brightness/inc
GET	/Api/image/brightness/dec
GET	/Api/image/contrast/inc
GET	/Api/image/contrast/dec
GET	/Api/image/saturation/inc
GET	/Api/image/saturation/dec
GET	/Api/image/exposure/inc
GET	/Api/image/exposure/dec
GET	/Api/image/reset
POST	/Api/whitebalancetemperature/auto
GET	/Api/whitebalancetemperature/auto
POST	/Api/whitebalancetemperature/increase
POST	/Api/whitebalancetemperature/decrease

Below the 'Api' section, there is a 'LightApi' section with the following endpoints:

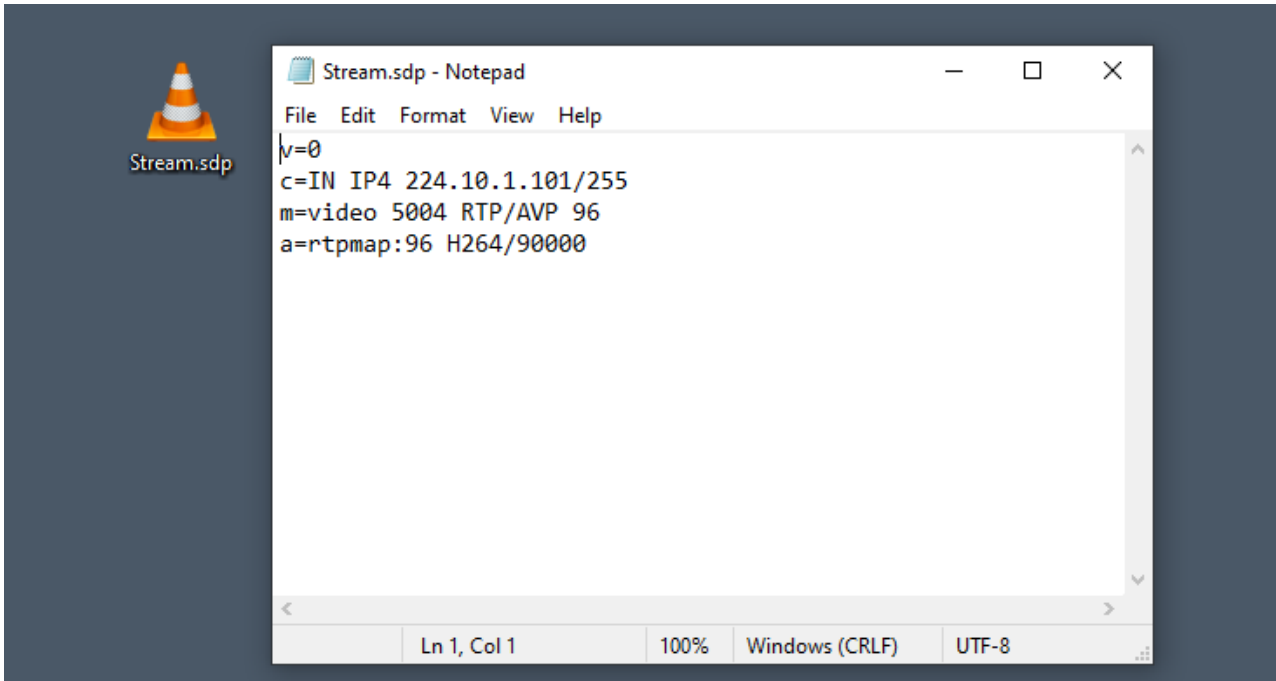
Method	Endpoint
GET	/Api/camera/light/inc
GET	/Api/camera/light/dec

At the bottom of the interface, there is a 'Models' section.

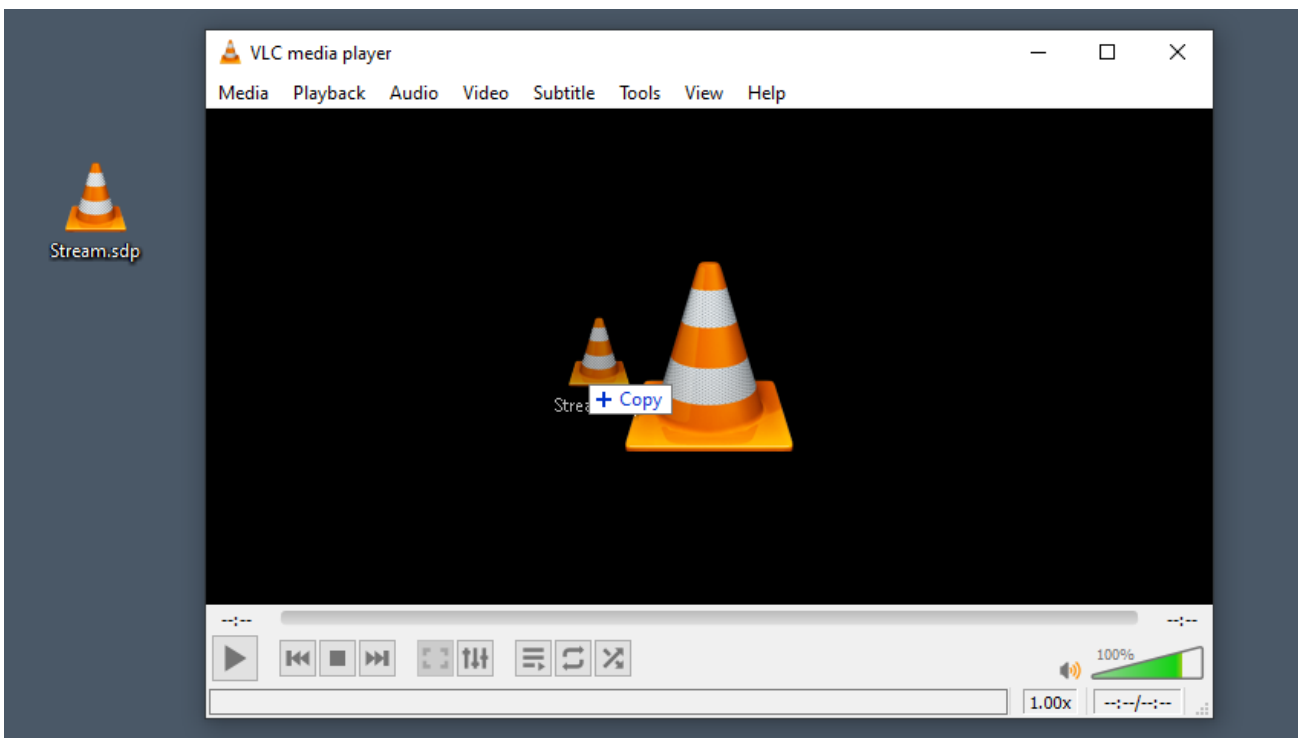
SUBSEA CAMERA LUMIN

5.4. VIEW RTP UDP STREAM IN VLC PLAYER

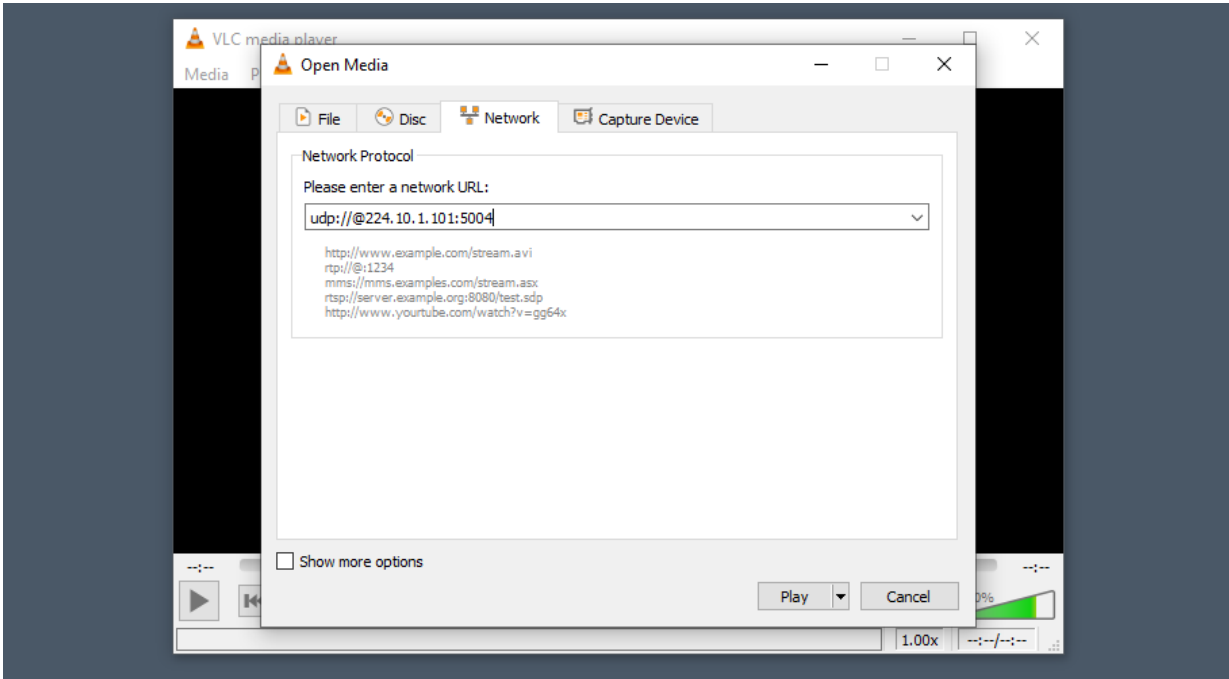
To view RTP UDP stream in VLC Player with default settings, make a .sdp file with the following content:



Open the file with VLC Player.



SUBSEA CAMERA LUMIN



SUBSEA CAMERA LUMIN

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	<ul style="list-style-type: none"> Wrong IP settings 	<ul style="list-style-type: none"> Test connecting to the web interface of the camera Look for heartbeat to identify current IP address
	<ul style="list-style-type: none"> Computer in wrong subnet 	<ul style="list-style-type: none"> Set IP address of computer to an address within the same subnet as the device
No video feed	<ul style="list-style-type: none"> Wrong stream destination address 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Half duplex somewhere along the network 	<ul style="list-style-type: none"> Check each section of the network lines to verify full duplex link on all segments