

USER MANUAL



SUBSEA LED LIGHT SPOT

REVISION B



REVISIONS

Published	Revision	
12.12.2022	A	Issued for release
03.01.2025	B	New layout

Content

1	INTRODUCTION.....	4
1.1	PURPOSE AND SCOPE.....	4
1.2	ABBREVIATIONS.....	4
1.3	SUPPLIER CONTACT INFORMATION.....	4
1.4	DOCUMENT REFERENCES.....	4
2	HEALTH, SAFETY and ENVIROMENT.....	5
2.1	GENERAL.....	5
2.2	USER HEALTH AND SAFETY.....	5
2.3	QUALIFICATIONS AND TRAINING.....	5
2.4	NON-COMPLIANCE RISKS.....	5
2.5	UNACCEPTABLE MODES OF OPERATION.....	5
3	TECHNICAL INFORMATION AND DATA.....	6
3.1	TECHNICAL DESCRIPTION.....	6
3.2	TECHNICAL DATA.....	6
4	DRAWING.....	7
5	CONFIGURATION.....	8
6	OPERATION.....	8
7	COMMUNICATION.....	9
7.1	MODBUS TCP/UDP.....	9
7.2	HEARTBEAT.....	9
7.3	DATA TYPES.....	9
8	REGISTERS.....	10
8.1	HEADER.....	10
8.2	INPUTS.....	10
8.3	OUTPUTS.....	10
9	TROUBLESHOOTING / FAULTFINDING.....	11

1 INTRODUCTION

1.1 PURPOSE AND SCOPE

This document outlines and defines the configuration and operation of the Subsea LED Light Spot. The manual is to be used by trained and competent personnel only.

1.2 ABBREVIATIONS

Abbreviation	Description
PCB	Printed Circuit Board
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
IP	Internet Protocol
EEPROM	Electric Erasable Programmable Read Only Memory

1.3 SUPPLIER CONTACT INFORMATION

Ixys AS
 Langmyra II
 4344 Bryne
 Norway

+47 51 52 22 22
post@ixys.no
<https://ixys.no>

1.4 DOCUMENT REFERENCES

Document number	Description
100414-ICS-PD-DAS-001	Product Datasheet
100414-ICS-MC-DWG-001	GA Drawing

2 HEALTH, SAFETY AND ENVIROMENT

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.

2.3 QUALIFICATIONS AND TRAINING

It is essential that operating personnel have been given training and education in 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 OPERATION

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 LED Light Spot is designed to be used subsea down to 3000m. It is dimmable through both Modbus UDP/TCP and analog 0-5VDC.

Web interface for configuration allows adjustment of parameters like IP address.

3.2 TECHNICAL DATA

General	
Manufacturer	Ixys AS
Ixys part number	100414
Description	Subsea LED Light Spot
Weight in air	~900g
Weight in water	~500g
Dimensions	Ø94 x 120mm
Supply voltage	20 – 28 V DC
Power consumption	~30W (at maximum dimming)
Depth rating	3000m
Communication	Ethernet 10 Mbps
Analog input	0 - 5 V DC
Standard connector	5506-1508

4 DRAWING

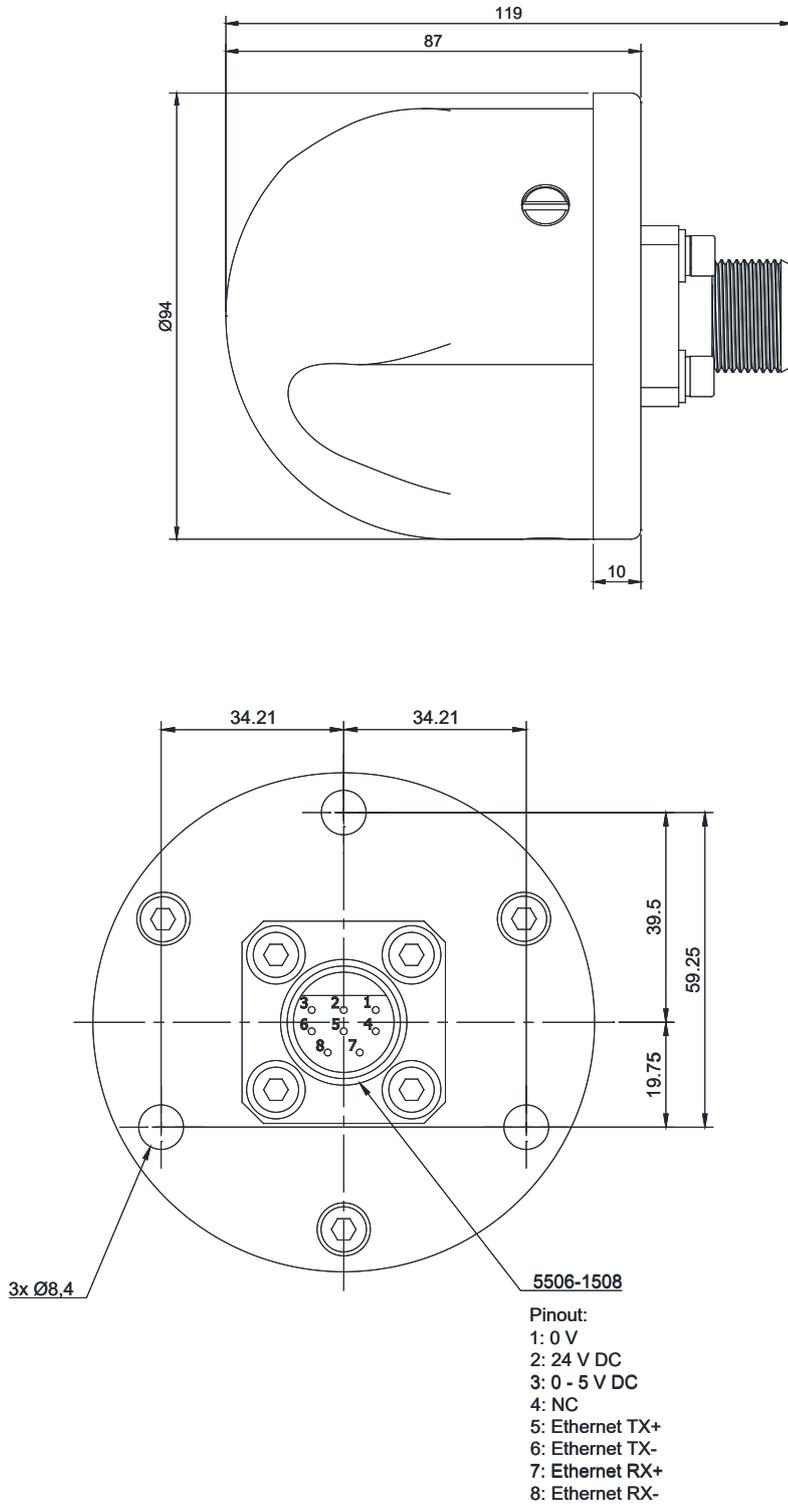


Figure 1 – Dimension and pin configuration.

5 CONFIGURATION

To configure the parameters in the Subsea LED Light Spot, use any available computer and connect to the same network as the PCB.

If the IP of the device is known, then set the computer IP address to one in the same subnet as the PCB (the first three numbers in the IP must be the same as the device).

If the IP of the device is unknown, then use Wireshark network utility and look for heartbeat messages from the device at one hertz interval to IP 255.255.255.255 and port 65000.

Use a web browser and enter the IP address of the device (10.0.37.248) in the address bar to access the built-in web server.

6 OPERATION

The Subsea LED Light Spot will be controlled by the analog 0-5VDC input until a Modbus command with value above zero to register 200 has been sent. If a value has been set by Modbus, then Modbus is in command until next power cycle.

7 COMMUNICATION

7.1 MODBUS TCP/UDP

Default IP address	10.0.37.248
Default Modbus Node	1
Modbus Port	502

7.2 HEARTBEAT

Heartbeat messages are sent once each second to Multicast IP 255.255.255.255 port 65000. These messages can be detected to see IP address if unknown.

7.3 DATA TYPES

The following table describes the data types used on iCsys boards. For 32bit values two Modbus registers is used where the first is the most significant.

Name	Size	Value Range
INT16	2 byte	-32,768 to 32,767
UINT16	2 byte	0 to 65,535
INT32	4 byte	-2,147,483,648 to 2,147,483,647
UINT32	4 byte	0 to 4,294,967,295
REAL32	4 byte	1.2E-38 to 3.4E+38

8 REGISTERS

8.1 HEADER

Address	Description	Default	Note	Data Type
0	PCB Type	24	Subsea LED Light Spot = 24	UINT16
1	Serial Number	N/A		UINT16
2	Firmware Version	N/A		UINT16
3	Reserved	N/A		UINT16
4	Modbus Port	502		UINT16
5	Reserved	N/A		UINT16
6	Timeout	1000	Milliseconds without communication before Com Fail is triggered. Changes to this register will be stored.	UINT16
7	Slave Address	1	Modbus Slave Address	UINT16
8	Heartbeat	0	1Hz counter. Rolls over to zero after 65535	UINT16
9	Reserved	N/A		UINT16

8.2 INPUTS

Address	Description	Default	Note	Data Type
10	ADC Value	0	Raw 15bit ADC value for the 0-5VDC Analog input	UINT16
11	Current Dimmer Level	0	Unit = 1%	UINT16

8.3 OUTPUTS

Address	Description	Default	Note	Data Type
200	Dimmer Output Command	0	0-65535 = 0-100% Light Power	UINT16

9 TROUBLESHOOTING / FAULTFINDING

The list below 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.

Troubleshooting		
Symptom	Possible causes	Remedy
No connection to device from computer	Lack of power	Check that supply power is within limits
	Incorrect ethernet connection	Check wiring of ethernet connection
	IP Address of computer in wrong subnet	Find IP address of device from heartbeat in Wireshark and set computer IP to one in the same subnet as the device
No Light with 0-5VDC	No common 0V between power and signal	Check that there is a common 0V between the two