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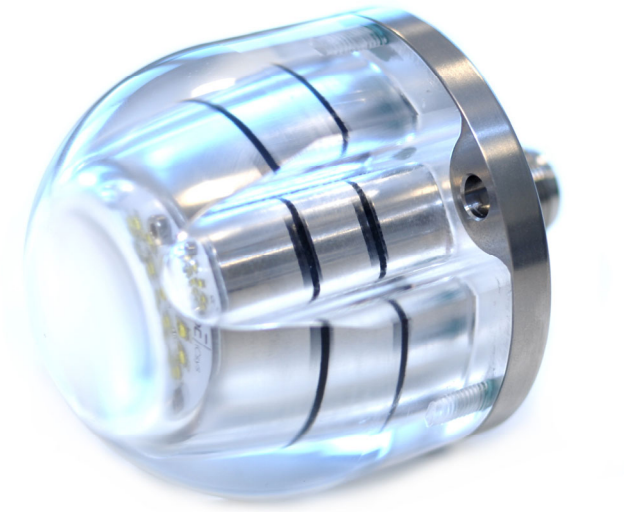
100414-ICS-PD-UMN-0001	**12.12.2022**	**Vidar Haus**

USER MANUAL

SUBSEA LED LIGHT SPOT



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PREPARED	CHECKED	APPROVED
Vidar Haus	Sven Hatteland	Sebastian Hennig

CONTENTS

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
LED	Light Emitting Diode
IP	Internet Protocol

1.3. SUPPLIER CONTACT INFORMATION

iCsys AS
Postvegen 610
N-4351 Kleppe
Norway

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

1.4. DOCUMENT REFERENCES

DOC No.	Description
100414-ICS-PD-DAS-001	Product Datasheet
100414-ICS-MC-DWG-001	GA Drawing

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

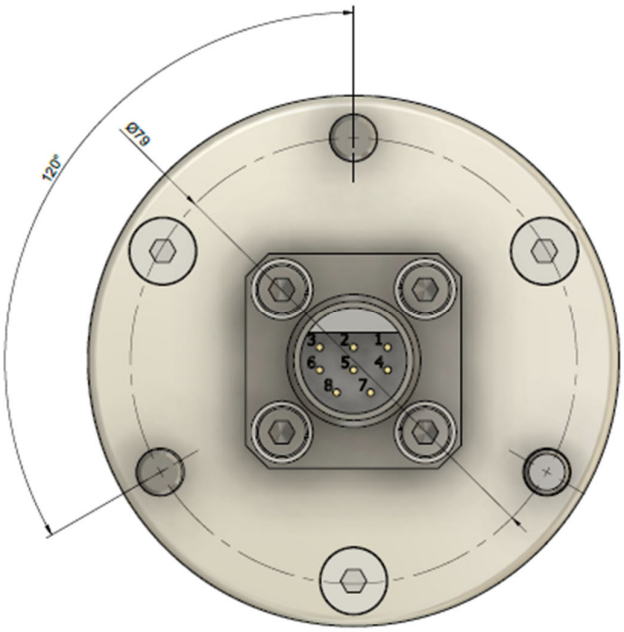
3.1. TECHNICAL DESCRIPTION

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

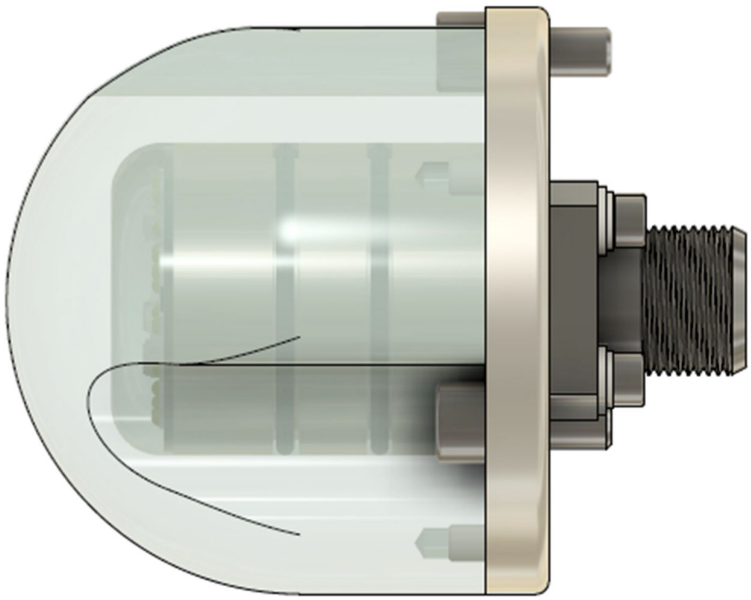
3.2. TECHNICAL DATA

General	
Manufacturer	iCsys AS
iCsys Part Number	100414
Description	Subsea LED Light Spot
Weight in air	~900g
Weight in water	~500g
Dimensions	Ø94 x 120
Supply Voltage	20-28VDC
Power Consumption	~30W (at maximum)
Depth Rating	3000m
Communication	Ethernet 10Mbps
Default IP	10.0.37.248
Connector	5506-1508

4. DRAWING



0V	1
24V	2
0-5V	3
NC	4
ETH TX+	5
ETH TX-	6
ETH RX+	7
ETH RX-	8



5. CONFIGURATION AND OPERATION

5.1. 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.

5.2. TROUBLESHOOTING / FAULTFINDING

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.

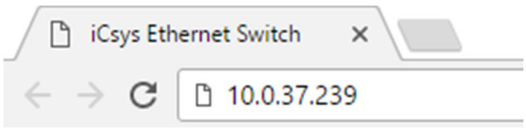
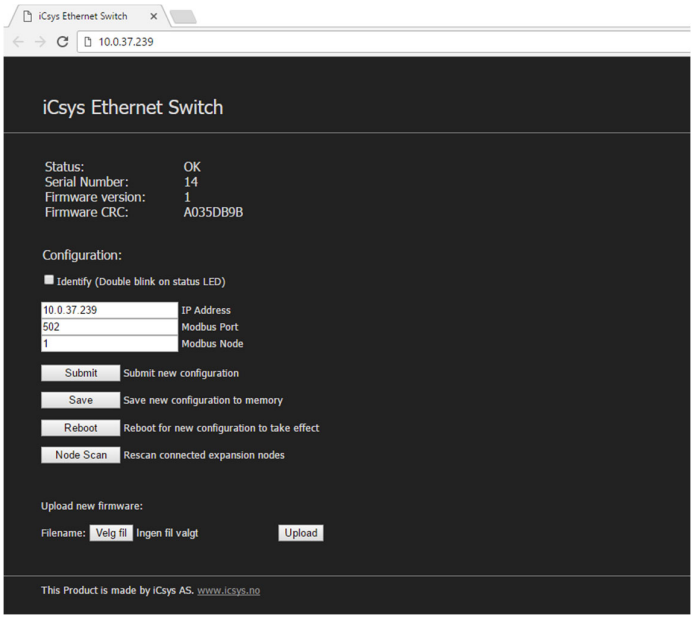
Trouble shooting		
Symptom	**Possible Causes**	**Remedy**
No Connection to the software application	• **Wrong IP settings**	• **Test connecting to the unit by the web interface.**
	• **Computer in wrong subnet**	• **Set IP address of computer to an address within the same subnet as the device**
No Light with 0-5VDC	• **No common 0V between power and signal**	• **Check that there is a common 0V between the two**

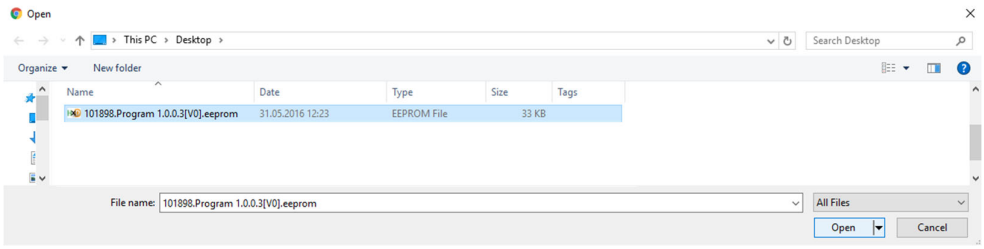
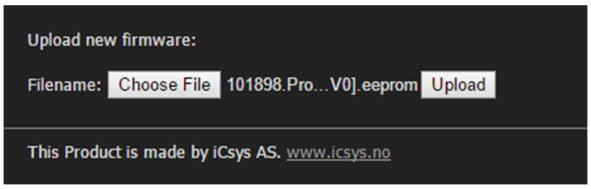
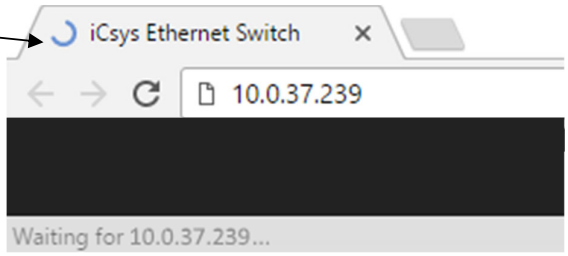
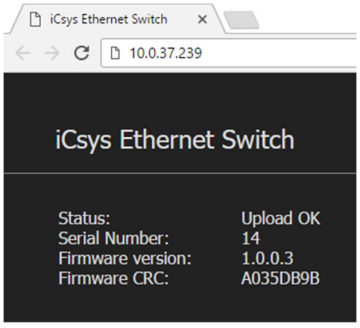
5.3. FIRMWARE UPDATE

Follow this guide to update the firmware in the Subsea LED Light Spot.

CAUTION:

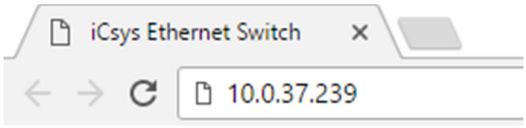
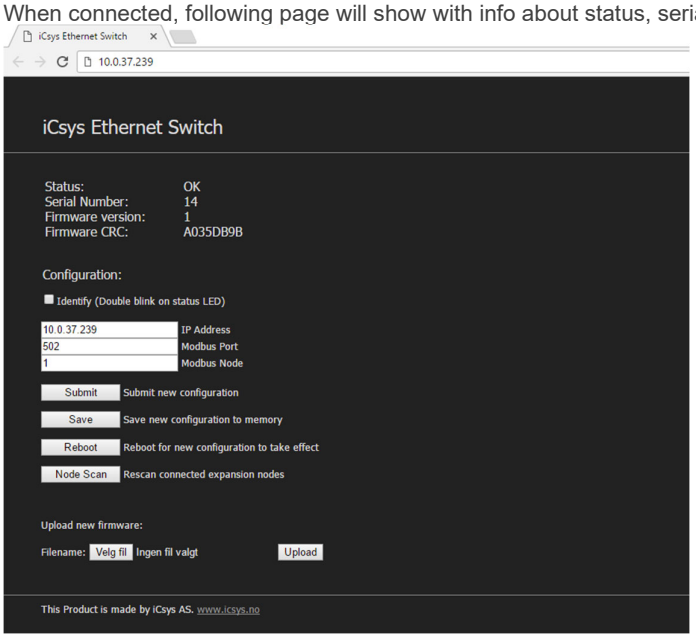
- Do not power down the unit when updating new firmware, this will damage the component that is updating.

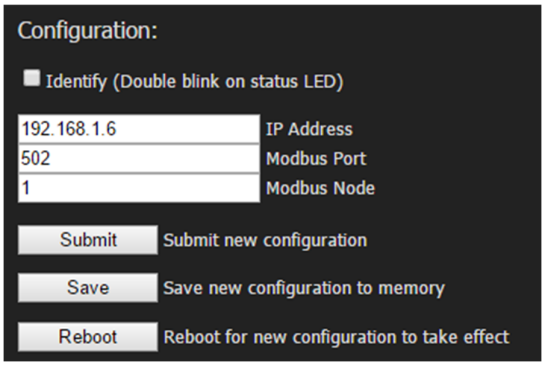
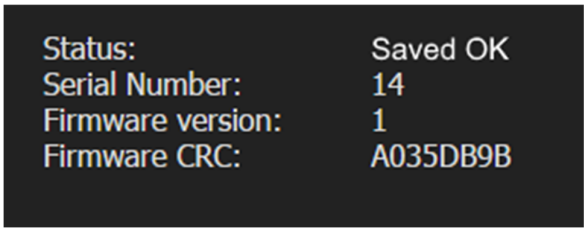
Step	Description	✓
1.	Open web browser, connect to desired Subsea LED Light Spot by typing its IP address. Default IP address is 10.0.37.248 	☐
2.	When connected, following page will show with info about status, serial number, firmware version, etc. 	☐
3.	To update firmware press “Choose File”	☐

4.	A file dialog will open, choose .eeprom file provided by iCsys AS. Press open. 	☐
5.	When correct .eeprom file is chosen, press upload. 	☐
6.	When firmware is uploaded, the browser will indicate that it is waiting for the page to respond. Top of page Bottom of page 	☐
7.	When uploading is finished, Status will indicate “Upload OK” or “Upload Failed”. If “Upload Failed” is shown or the web page times out, try one more time. 	☐
8.	Press reboot for the new firmware to take effect.	☐

5.4. CHANGING IP ADDRESS

Follow this procedure to change the IP address of the Subsea LED Light Spot.

Step	Description	✓
1.	Open web browser, connect to desired Subsea LED Light Spot by typing its IP address. Default IP address of the CPU is 10.0.37.248 	☐
2.	When connected, following page will show with info about status, serial number, firmware version, etc. 	☐

3.	To change IP address, type in the new IP address in the IP address field, also fill in desired Modbus port and node id. 	☐
4.	Press “Submit” and then press “Save” to save the new settings to EEPROM. 	☐
5.	Press “Reboot” for the new settings to take effect.	☐

6. COMMUNICATION PROTOCOL

6.1. MODBUS TCP/UDP

Default IP address	10.0.37.248
Default Modbus Node	1
Modbus port	502

6.2. 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.

6.3. 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

7. REGISTERS

7.1. READ REGISTERS

7.1.1. HEADER

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

7.1.2. INPUTS

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

7.2. WRITE REGISTERS

7.2.1. OUTPUTS

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