

LED Micro SeaCam[®]



Operator's Manual

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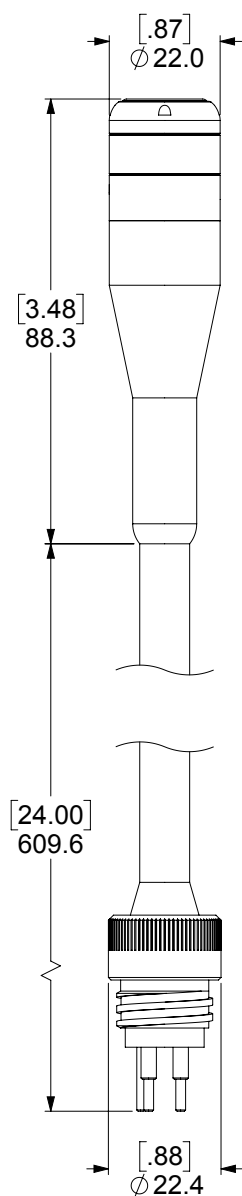
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Specification Overview

	LMSC
Optical Specifications	
Lens	2.54 mm FL, f/2.6
Focus	Fixed Focus
FOV in Water	55° H x 40° V x 74° D
Video Specifications	
Image Sensor	NTSC: 1/3.6 in. CMOS PAL: 1/3 in. CMOS
Sensor Resolution	NTSC: 656 H x 492 V PAL: 768 H x 576 V
Measured Resolution	540 TVL
Faceplate Illumination	0.8 lux
Signal to Noise	38 dB
Video Output	NTSC/PAL Composite Video (CVBS), 1.0 V p-p into 75 ohm, unbalanced
Environmental Specifications	
Depth Rating	Standard: 4,000 m Optional: 6,000 m
Thermal Protection	Yes
Operational Temp	-10° C to 50° C [14° F to 122° F]
Storage Temp	-40° C to 80° C [-40° F to 176° F]
Electrical Specifications	
Voltage	8~13 VDC
Power	2.2 W
Mechanical Specifications	
Housing	6AL-4V Titanium
Port	Sapphire
Outer Diameter	22 mm [0.87 in]
Length	60 mm [2.36 in] to strain relief 600 mm [23.60 in] overall
Weight in Air	101 g [3.56 oz]
Weight in Water	50 g [1.76 oz]
Connector	
Default	SEACON MCIL4-MP



[inch]
mm

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Safety Symbols

In this operator's manual and on the product, safety symbols are used to communicate important safety information. This section is provided to improve understanding of these symbols.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, could result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in damage to the product or bodily harm.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE indicates information that relates to the protection of property.



This symbol means read the operator's manual carefully before using the equipment. The operator's manual contains important information on the safe and proper operation of the equipment.



This symbol means always wear safety glasses with side shields or goggles when handling or using this equipment to reduce the risk of eye injury.



This symbol indicates the risk of electrical shock.

General Notes & Warnings

The LED Micro SeaCam supports a variety of connectors. Be sure to verify the pin-out before use.

It is important when preparing the system for deployment that the cable at both the camera and topside ends be carefully dressed to provide complete strain relief to the connectors. Failure of the strain relief provisions will almost certainly damage the connectors and possibly other elements of the system.

DANGER

Do not operate any high voltage electrical equipment in or around water without using a Ground Fault Interrupt circuit (GFI) and an isolation transformer, especially when divers are in the water.

WARNING

Never place the camera in a vice or other hard clamping tool. Should it become necessary to hold the camera more tightly than can be managed by hand, use a clean, good quality strap wrench.

Pre & Post Dive Inspection

Rinse your LED Micro SeaCam in fresh water after use in saltwater.

Always check to make sure that the connector assembly is secured before deployment.

Before and after each deployment, check the following areas for damage, wear or corrosion:

- Connector assembly
- Video cable
- Front window

WARNING

After each deployment, carefully check to make sure the camera has not flooded. It is possible for the camera to partially flood and then reseal itself while underwater. Upon surfacing, the camera can become internally pressurized, which may be dangerous. Additionally, if the power remains on when the camera has partially flooded, it is possible for electrolytic generation of an explosive mixture of hydrogen and oxygen gases. If a camera appears flooded upon removal from the water, it should be treated as potentially dangerous. Point the camera away from persons and valuable equipment and make sure that the power is disconnected. See the Flooding Repair Procedure for more information.

Operation Instructions

1. Prepare a power supply with 8~13 VDC output.
2. Plug the red [positive(+)] and black [negative(-)] banana plugs of the camera cable into their respective jacks on the power supply.
3. Plug the BNC connector on the top side of the cable into the monitor.
4. Lubricate the camera connector with an appropriate silicone lubricant (spray type recommended), and using a linear motion plug the female inline connector into the male connector on the back of the camera.
5. Screw the locking sleeves together firmly (hand tight, do not use tools). The camera is now ready for operation. Switch the power supply ON to power the camera. The camera draws approximately 2W of power during operation, and will work when supplied between 8~13 VDC.

Flooding Repair Procedure

If the camera stops working while underwater, you should assume that it has been flooded. When working on a potentially flooded camera, it is important to use appropriate personal protective equipment to include, at a minimum, eye and hand protection.

1. Immediately turn off the power to the unit.
2. Allow parts to dry in air or a convection oven set at 60° C (190° F).
3. If the camera still does not work, return it to DSPL using the RMA Procedure.

IMPORTANT! DeepSea Power & Light cannot be responsible for any damage incurred during emergency field repairs. Such repairs should be undertaken only as a last resort and by qualified personnel.

Troubleshooting

1. If the camera stops working while underwater, assume that it has been flooded. See **Flooding Repair Procedure**.
2. Once it has been determined that the camera is not flooded, or if it does not turn on during pre-deployment checks, troubleshoot in the following sequence:
 - a. Check the cable/inline connector to make sure that correct voltage and current are being supplied, and that the correct

sockets are being used.

- b. Remove the inline connectors. Inspect the assembly for visual signs of wear. Use a multi-meter check for continuity or shorts in the connector.
- c. If the camera still does not work, return it to DSPL using the RMA Procedure.

RMA Procedure for Repair

For warranty and non-warranty repairs, please contact DeepSea Power & Light for an RMA number prior to returning the item. Please have the model number, serial number, and any other pertinent information along with a description of the problem on hand when calling, or include them in a fax or e-mail.

When shipping the item, be sure that the freight is pre-paid (CODs will not be accepted) and that the RMA number is clearly printed on the outside of the box.

All shipments should be sent to the address below:

DeepSea Power & Light
Attn: RMA ####
4033 Ruffin Road
San Diego, CA 92123-1817
U.S.A
Tel: 858-576-1261
Fax: 858-576-0219
Email: RMA@deepsea.com

Limited Warranty

Seller warrants that the goods (except internal electronic components) sold under this contract will be free from defect in material and workmanship for a period of two years from the date of shipment from the factory, if they have been properly used. Internal electronic components are warranted for 90 days from the date of shipment from the factory, if they have been properly used. This warranty will be limited to the repair or replacement of parts and the necessary labor and services required to repair the goods. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY. This warranty is the exclusive and only warranty to pass with the goods under this contract. No agent, employee, or representative of the Seller has any authority to bind Seller to any information, representation, or warranty concerning the goods sold under this contract, and unless an affirmation, representation, or warranty made by an agent, employee, or representative is specifically included within this contract, it will not be enforceable by Buyer. If notice of defect is given to

DeepSea Power & Light, Inc. within such 90 day or two-year warranty period, the sole obligation of DeepSea Power & Light, Inc. shall be to furnish new or repaired parts free of charge in exchange for parts which have been proved defective and does not include any other costs such as the cost of removal of the defective part, installation, labor, or consequential damages of any kind, the exclusive remedy being to require DeepSea Power & Light, Inc. to furnish such new parts. Under no circumstances shall the Buyer be entitled to recover any incidental damages as that term is defined in Commercial Code §2715.



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