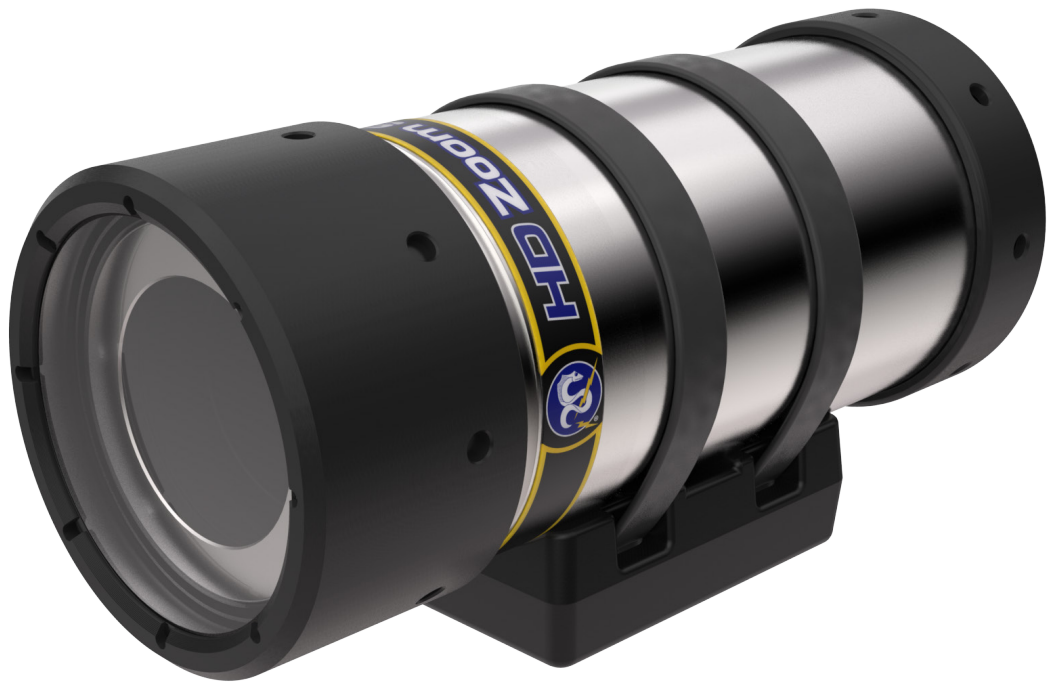


DEEPPSEA
Power & Light®



HD Zoom SeaCam®



Operator's Manual

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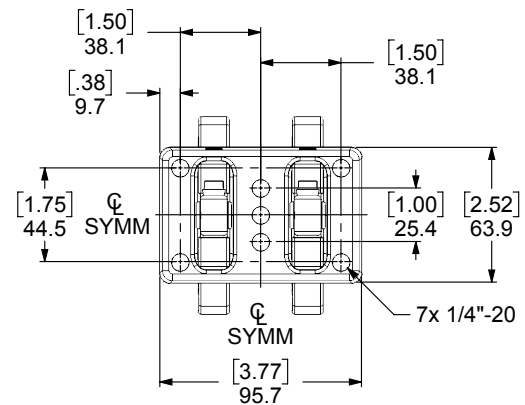
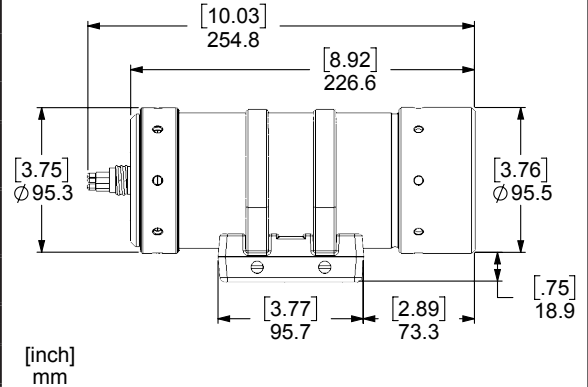
4033 Ruffin Road
San Diego, CA
92123- 1817 USA

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sales@deepsea.com



Specification Overview

HDZSC-3045	
Optical Specifications	
Lens	4.3 mm ~ 129 mm, F/1.6 to F/4.7
Focus	Wide: 10 mm ~ infinity Telephoto: 1200 mm ~ infinity
FOV in Water	Wide: 47° H x 27° V x 53° D Telephoto: 1.7° H x 1° V x 2° D
Video Specifications	
Image Sensor	1/2.8 in. 2.1MP CMOS
Sensor Resolution	1920 H x 1080 V
Measured Resolution	850 TVL
Faceplate Illumination	0.024 Lux (50IRE)
Signal to Noise	>50dB
Video Output	HD-SDI 1.5Gb/s 1080p/60, 1080p/59.94, 1080p/50, 1080p/30, 1080p/29.97, 1080p/25, 1080i/60, 1080i/59.94, 1080i/50, 720p/60, 720p/59.94, 720p/50, 720p/30, 720p/29.97, 720p/25
Serial Protocol	VISCA
Environmental Specifications	
Depth Rating	Ti: 6,000 m Al: 2,000 m
Operating Temp	-5° C to 60° C [23° F to 140° F]
Storage Temp	-20° C to 60° C [-4° F to 140° F]
Electrical Specifications	
Voltage	10~36 VDC
Power	9W max
Mechanical Specifications	
Housing	6061 Aluminum 6Al-4V Titanium
Port	Optically polished glass
Outer Diameter	95.5 mm [3.76 in.]
Overall Length	226.6 mm [8.92 in.]
Weight in Air	Al: 2.18 kg [4.80 lbs] Ti: 2.73 kg [6.02 lbs]
Weight in Water	Al: 0.62 kg [1.37 lbs] Ti: 1.16 kg [2.56 lbs]
Default Connectors	
FlexLink®	SEACON MCBH8-NET
Coax	SubConn HF75CXBH6M-SS



* Specifications subject to change without notice.

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



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



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



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 HD Zoom SeaCam supports a variety of connectors and pin-outs. By looking on the camera, the user can see the model, depth rating, video format as well as the pin-out orientation. 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 Circuit Interrupter (GFCI) 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 HD Zoom SeaCam in fresh water after use in saltwater.

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

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

- Rear bulkhead connector assembly
- Video cable
- Front window
- Retaining Cowl

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 potentially 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.

Integration Procedure

Integrating Instruction

1. Prepare a power supply with 10~36 VDC output.
2. Connect the camera power, HD-SDI video, analog video, and control signals to their respective interfaces per the pin-out specified for the camera.
3. Prepare the camera bulkhead connector as required, verifying proper lubrication of all O-rings and seal surfaces with a silicone lubricant (spray recommended).
4. Mate the female underwater connector to the male bulkhead using a smooth linear motion, making sure the connectors are fully seated and seals are engaged.
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 a max of 9W during operation and will work when supplied with 10~36 VDC.

Video Output

The digital HD video output from the camera is a SMPTE 292M compliant uncompressed HD-SDI data stream at 1.485 Gb/s. This camera is available with field selectable 1080p/30, 1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 1080i/60, and 1080i/30 image formats.

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. Open the housing by removing the rear end cap-retaining ring. Grasp the rear end cap in one hand and the camera housing in the other. With care, separate the two components using a linear motion. If required, gently twist components while separating.
3. Pour out any water trapped in the housing.
4. If the camera is completely flooded, rinse the

internal components with clean fresh water in order to minimize contamination and corrosion.

5. Allow parts to dry in air or a convection oven set at 60° C (190° F).

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. See page 2 of this manual for electrical specs.
 - b. Remove the connector. Inspect the assembly for visual signs of wear. Use a multi-meter check for continuity or shorts in the connector. Try a spare connector, if available.
 - c. Check the wires that go from the power supply to the camera base for wear. If they appear worn, replace them.
 - d. 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 one year 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 LLC within such 90 day or one-year warranty period, the sole obligation of DeepSea Power & Light LLC 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 LLC 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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