

# Product Summary

Lights • Cameras • Control Units • Other Products



Oceanographic equipment designed, built and tested to perform in the harshest environments on planet earth.

**DEEPSEA**  
POWER & LIGHT  
Performance Under Pressure

Phone (858) 576-1261 Fax (858) 576-0219

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3855 Ruffin Rd. • San Diego, CA 92123-1813 • USA

January 2000

## Lights



### Deep-SeaLite

1000W max., high and low voltage, rated to 11,000 m, 16.5 cm (D) x 20.0 cm (L), water weight 450 g.



### DropLite

1000W max., high and low voltage, rated to 1000 m, 4.4 cm (D) x 15.2 cm (L), water weight 100 g.



### Micro-SeaLite

Operates in air or water, 12V or 24V, 35W max., rated to 1000 m, 3.7 cm (D) x 6.7 cm (L), water weight 50 g. Includes bracket.



### Mini-SeaLite

325W max., high and low voltage, rated to 1000 m, 3.8 cm (D) x 14.0 cm (L), water weight 100 g.



### Multi-SeaLite

500W max., high and low voltage, rated to 1000 m, 7.9 cm (D) x 15.5 cm (L), water weight 170 g.



### Deep Multi-SeaLite

325W max., high and low voltage, rated to 6000 m, 7.9 cm (D) x 15.5 cm (L), water weight 170 g.



### RiteLite

150W max., 12V or 24V, rated to 1000 m, 7.9 cm (D) x 11.6 cm (L), neutrally buoyant. Mating whip included

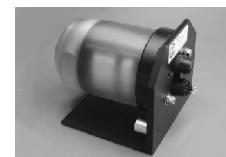


### SeaArc2 [HID]

250W or 400W, TI, NaSc, UV or Daylight lamp, rated to 1000, 4000, and 6000 m, 16.5 cm (D) x 31.2 cm (L), water weight 1.1 kg.

### SeaArc2 [HID] Underwater Ballast

250W or 400W, pressure compensated to full ocean depth, 16.5 cm (D) x 31.5 cm (L), water weight 4.3 kg.



### SeaArc2 [HMI®/MSR]

200W or 400W, rated to 1000, 4000, and 6000 m, 13.5 cm (D) x 27.4 cm (L), water weight 1.8 kg.



### 1200W SeaArc2 [HMI®]

1200W, rated to 6000 m, 27.3-28.3 cm (D) x 47.3-62.2 cm (L) (dimensions depend on reflector), water weight 3.25 kg.



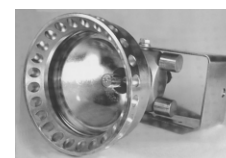
### SeaLite

500W max., high and low voltage, rated to 6000 m, 5.7-11.7 cm (D) x 15.0-17.0 cm (L) (dimensions depend on reflector), air weight 300-600 g.



### Super-SeaLite

1000W max., high voltage, rated to 150 m, 16.3 cm (D) x 20.3 cm (L), water weight 2.4 kg.



### Wet/Dry Multi-SeaLite

Operates in air or water, 100W max., high and low voltage, rated to 1000 m, 10.5 cm (D) x 16.2 cm (L), water weight 227 g.



### Isolated Variable Transformer

0-140V variable output, 120V fixed output, topside use only, 20.3 cm (W) x 17.8 cm (H) x 27.9 cm (D), weight 13.63 kg.



### Topside Isolated Ballast

150/250W, topside use only, 20.3cm (W) x 17.8cm (H) x 27.9cm (D), weight 14.54kg.



For complete product and pricing information, please contact your local DeepSea representative.

# Cameras



## Micro-SeaCam 2000

Color camera, fixed focus, 1/2-inch CCD, rated to 2000 m, 6000 m optional, 2.5 cm (D) x 21.6 cm (L), water weight 170 g.



## Multi-SeaCam 1050

B&W camera, fixed focus, Delrin® (300 m) or titanium (6000 m), 4.7 cm (D) x 12.9 cm (L), water weight 112 g.



## Multi-SeaCam 1060

Low-light B&W camera, fixed focus, Delrin® (300 m) or titanium (6000 m), 4.7 cm (D) x 12.9 cm (L), water weight 112 g.



## Multi-SeaCam 2050

Color camera, fixed focus, Delrin® (300 m) or titanium (6000 m), 4.7 cm (D) x 12.9 cm (L), water weight 112 g.



## SS-100

B&W camera, fixed focus, super wide optics, 1/4-inch CCD, rated to 750 m, 3.4 cm (D) x 4.6 cm (L), water weight 32 g.



## SST-1370

B&W camera, fixed focus, super wide optics, 1/4-inch CCD, rated to 750 m, 3.4 cm (D) x 4.6 cm (L), water weight 70 g.



## SS-126C

Color camera/integrated LED lighting system, fixed focus, 3.2 cm (D) x 5.87 cm (L), rated to 250 m, water weight 42 g



## SS-1750C2

Color camera/integrated LED lighting system, fixed focus, rated to 300 m, 4.45 cm (D) x 5.88 cm (L), water weight 50 g

## Pan/Tilt/Zoom 2001

Color pan/tilt/zoom camera, 1/2-inch CCD, 10x zoom, rated to 1000 m, 19.7 cm (D) x 19.7 cm (L), water weight 300 g.



## SeaCam 2003

Color camera, fixed focus, 1/2-inch CCD, rated to 1000 m, 8.6 cm (D) x 18.4 cm (L), water weight 300 g.



## Super-SeaCam 5000

Low light B&W camera, fixed focus, 1/2-inch CCD, available in 3 housings: Delrin® (300 m), aluminum (4000 m), titanium (6000 m), 11.95 cm (D) x 25.15 cm (L), water weight 1.54 kg (Ti)



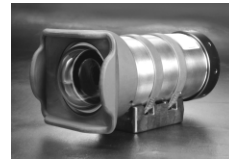
## Super-SeaCam 6000

Color zoom camera, 1/3-inch CCD, 12x zoom, available in 3 housings: Delrin® (300 m), aluminum (4000 m), titanium (6000 m), 11.95 cm (D) x 25.15 cm (L), water weight 1.54 kg (Ti)



## Super-SeaCam 6500

Low light color zoom camera, 1/4-inch CCD, 18x zoom (12x optical), available in 3 housings: Delrin® (300 m), aluminum (4000 m), titanium (6000 m), 11.95 cm (D) x 25.15 cm (L),



## Micro-SeaCam 1010

B&W camera, fixed focus, 1/3-inch CCD, rated to 6000 m, 7.6 cm (D) x 16 cm (L), water weight 340 g.



## Camera Control Unit

13-inch color TV/VCR in splash-proof case, NTSC only, options include 500W light controller, time/date titler, diver comm. unit and audio microphone.



## Suitcase Camera Control Unit

NTSC or PAL, 6.4-inch color LCD, VHS VCR and 500W light controller in a Pelican case.



## Toolbox Camera Control Unit

B & W topside unit, 5.5 in monitor, battery operated, convenient carrying case, for use with integrated camera/lighting systems.



# Other Products



## SeaBattery

6V, 12V, 24V, or 48V, rated to full ocean depth, 31.0 cm (W) x 46.0 cm (L) x 31.5 cm (H), water weight 19.1 kg.



## SeaSource2

12V/6.5 amp battery, rated to 46 m, 7.4 cm (W) x 10.4 cm (L) x 18.3 cm (H), water weight 1.4 kg, 120 VAC charger and mating whip included.



## SeaLaser 100

5 mW/635 NM/Class III-A, semiconductor laser diode, rated to 2000 m. 3.0 cm (D) x 15.24 cm (L) water weight 67 g.



## Dual Laser Mounting Bracket

For use with SeaLaser 100, positions laser at 10 cm separation for scaling operations, dimensions: 14.6 cm (L) x 4.8 cm (H) x 14.8 cm (W).



## Micro-SeaLaser

5 mW/635 NM/Class III-A, semiconductor laser diode, sapphire port, rated to 6000 m, 1.8 cm (D) x 12cm (L), water weight 40 g.



## SeaLogger

Six temperature ranges, up to 1800 measurements, rated to 6000 m, probe option available, 3.8 cm (D) x 15.2 cm (L), water weight 20g.



## Pressure Relief Valve

Universal pressure relief valve, rated to full ocean depth. 1.8 cm (D) x 1.9 cm (L) Air weight 12 g.



## "Under Pressure" Software

Evaluates structural capabilities, deflections and weights of common pressure vessel geometries. Win 95/98/NT. Interactive software tour at [www.deepsea.com](http://www.deepsea.com)



# SeaArc2 (HID)

**HIGH EFFICIENCY METAL  
HALIDE ARC LAMPS**

**COMPACT SIZE  
AND WEIGHT**

**SUITABLE FOR COLOR  
OR B/W VIDEO IMAGING**

**400 WATT MODEL**

**250W SPECIAL ORDER**



The SeaArc2 HID (High Intensity Discharge) underwater arc lights are 3-5 times more efficient (lumens/watt) than comparable tungsten-halogen lights. Since there is no filament to break, SeaArc2 lights are less sensitive to vibration or shock. The SeaArc2 HID lamps utilize several types of lamps: Thallium Iodide (TI), Thallium-Iodide/Electronic Ballast (TI/EB), Daylight (DL), and Ultraviolet (UV).

**TI:** TI lamps produce an intense, monochromatic green light output (535 nm) which is close to the transmission "window" of seawater. The TI lamp offers maximum light penetration for long range monochromatic imaging applications such as submersible navigation and subsea surveying.

**TI/EB:** Same as TI, except it operates with DeepSea's HMI electronic ballast. Using a special ignitor, this lamp gives users the flexibility to use one type of ballast to power an HMI or a TI lamp. You can freely swap lightheads with no modification to the ballast. DeepSea offers a dual ballast housing, so that users can operate a TI/EB and HMI from the same housing.

**DL:** Daylight lamps have a color temperature of 5000-6000K, with a higher blue and green component than quartz halogen, allowing it to penetrate further through seawater.

**UV:** The Ultraviolet SeaArc2 HID underwater arc light is a special UV-enhanced arc lamp designed for hydrocarbon fluorescence. Its most common application will be for detecting fluid leaks in oil tankers, barges, and offshore pipelines. Any ship (commercial or military) suspected of leaking oil would be a candidate for UV inspection. It's also suitable for magnetic particle NDT inspection. Available in 400W only for 1000m depth rating. A retrofit kit is also available for current HID customers who want to convert to UV. The specially doped UV arc lamp and filter (with light baffle holder) are all that are necessary. The UV lamp and filter combination provide a light that is ten times more intense than other UV lamps, and is more UV-enhanced than Mercury vapor lamps. The lighthead can be connected up to 1,000 feet away from the ballast.

SeaArc2 HID lights are best used in applications where: 1) long lamp life is needed (5-10 times greater than HMI lamps), 2) cost is a limiting factor (HID ballasts and lightheads are less expensive than HMI), and 3) instant restrike is not needed.

SeaArc2 HID lamps require a current-limiting, AC magnetic ballast to operate (except for the TI/EB lamp). Ballasts are available as either a pressure-compensated underwater ballasts or topside dry ballasts. The standard SeaArc2 HID has a 400W lamp; 250W lamps are available as special order. There are options available in the types of reflectors, depth rating, types of material, and types of ballasts. Specification for the 1000 meter lighthead are on the reverse side as a sample of what is available.

## SeaArc2 (HID) Specifications

### MECHANICAL

|                         |                      |
|-------------------------|----------------------|
| Length:                 | 31.2 cm (12.30 in.)  |
| Diameter:               | 16.5 cm (6.5 in)     |
| Materials               |                      |
| Lighthouse Body:        | Titanium or Aluminum |
| Dome Retaining Cowl:    | Acetal (Delrin)      |
| Glass Dome:             | Borosilicate         |
| Air Weight:             | 3.54 kg (7.8 lb)     |
| Water Weight (approx.): | 1.09 kg (2.4 lb)     |

### ENVIRONMENTAL

|               |                                                   |
|---------------|---------------------------------------------------|
| Depth Rating: | 1, 000, 4,000, and 6,000 meter versions available |
| Temperature:  | -5 to +40 deg C                                   |

### ELECTRICAL

|                    |                                                                                                     |
|--------------------|-----------------------------------------------------------------------------------------------------|
| Input Connector:   | LPBH-3-MP/ others available                                                                         |
| Input Voltage:     | From Ballast                                                                                        |
| Lamp Wattages:     | 250W, 400W                                                                                          |
| Lamp Types:        | Daylight, Thallium Iodide, Thallium Iodide/Electronic Ballast (400W only), Ultra-Violet (400W only) |
| Reflector Options: | Spot, medium, or wide                                                                               |



*Specifications subject to change without notice*

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Rev. 12/29/99



# Suitcase CCU

**CONTROL AND RECORDING  
UNIT FOR CAMERA AND LIGHT**

**RUGGED 6.4" COLOR  
LCD DISPLAY**

**VHS VCR WITH REMOTE**

**NTSC OR PAL**

**VIDEO AND AUDIO  
IN/OUT JACKS**

**CLEAR PLASTIC HOOD  
FOR WET WEATHER**

**COMPACT – FITS IN A  
TRUCK CAB OR BACK SEAT**



The SCCU can be easily transported by one person, set up at the job site within minutes, and includes everything required to operate and monitor DeepSea video cameras and lights while making video and audio recordings. The SCCU continues DeepSea's trend of producing extremely rugged imaging products for real applications at competitive prices. The color LCD display, for example, can withstand mechanical shock that would damage a CRT monitor. The VCR, which is protected during transport within a pop-up rack-mount, "floats" on a leaf spring suspension system. All components are hard-mounted and secure within the Suitcase CCU during transport. An isolation transformer combined with a ground fault circuit interrupt provides 2 layers of electrical safety.

A complete set of input and output connectors maximize the available configurations. For example, the output connections allow for remote monitor/VCR setups for the customer or agency inspectors while the SCCU is positioned with the tender at the scene of diver deployment. Operators can hook up cameras to the SCCU using banana jacks and BNC terminations and lights via the AC outlets, or specify a cable for all components that takes advantage of the 14-pin universal connector. A video titler can be connected in seconds using the auxiliary video connector. Included with the SCCU is a clear plastic rain hood with drawstring that protects the unit during operation in wet environments.

For more information regarding how the SCCU can simplify your diving and imaging operations, contact DeepSea Power & Light or your local DeepSea representative.

# Suitcase CCU Specifications

## BASE UNIT

Size: 20.75" x 23.25" x 9.00"  
(52.7 x 59.0 x 22.9 cm)  
Weight: 53 lbs. (24 kg.)  
Input Power: (NTSC) 120 VAC, 60 Hz,  
(PAL) 240 VAC, 50 Hz  
Output Power: 15.0 VDC to camera,  
0-140 or 0-240 VAC light  
Monitor: 6.4 inch color LCD, NTSC or PAL  
Recorder: 11-inch, 2-head, VHS recorder/  
player with remote  
Video Format: NTSC or PAL  
Video Signal: Composite, S-VHS pass-through

## INPUT CONNECTORS

Combined camera and light: MS3102A0-27S  
Video: One BNC  
Audio: One BNC  
Optional: SC-4000 and controller

## OUTPUT CONNECTORS

Video: One BNC, one S-VHS  
Audio: One BNC  
Auxiliary Video: One BNC  
Camera voltage: Two bananas, +/- DC  
Receptacles: One fixed (2 plugs) and one variable (2 plugs) in 120 VAC;  
One fixed (1 plug) and one variable (1 plug) in 240 VAC



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Rev. 12/29/99



# ToolBox Camera Control Unit

**BATTERY OR AC  
OPERATION**

**INTEGRATED MONITOR**

**FLIP-DOWN SUN SHADE**

**DETACHABLE**

**NEOPRENE SUNBOOT**

**USES STANDARD NICAD  
OR NIMH BATTERIES**

**BATTERY CHARGER  
AND NICAD INCLUDED**



**DeepSea's ToolBox Camera Control Unit – fast and flexible portable monitoring.**

The ToolBox CCU is the smallest, most portable topside camera control unit available anywhere. With its small footprint, light weight and battery operation, extension cords and slow setup times are a thing of the past and remote imaging applications are a breeze.

The ToolBox CCU will power any of our cameras and will provide power for both camera and lights on systems with integrated LED lighting, such as the SST-1370.

Front panel features include a power switch, a dimmer knob for the lights (SST-1370), video in/out (RCA jack), auxiliary AC power input and camera connector.

The high-resolution monitor includes an integrated sunshade and a detachable neoprene sunboot for use in direct sunlight. To maximize battery life, an interlock switch automatically shuts off system power when the unit is closed. And best of all, the ToolBox CCU is engineered to use the most commonly available portable power source – Makita® 14.4V NiCAD or NiMH batteries (NiCAD battery and charger included).

# ToolBox Camera Control Unit Specifications

## BASE UNIT

|                         |                         |
|-------------------------|-------------------------|
| Length:                 | 39.37 cm (15.50 in.)    |
| Width:                  | 21.72 cm (8.55 in.)     |
| Height:                 | 21.46 cm (8.45 in.)     |
| Weight with battery:    | 5.44 kg (12 lbs.)       |
| Weight without battery: | 4.54 kg (10 lbs.)       |
| Input Power:            | 14.4VDC/120 VAC         |
| Output Power:           | Variable 8.0 to 12.5VDC |

## MONITOR

5.5 inch B&W EIA standard  
700 lines of resolution

## INPUT CONNECTORS

|          |                     |
|----------|---------------------|
| SSBH3FS  | Camera video in     |
| 15VDC in | 120VAC wall adaptor |

## OUTPUT CONNECTORS

|              |                         |
|--------------|-------------------------|
| Video in/out | EIA standard (RCA jack) |
|--------------|-------------------------|

## PIN OUT

- 1 – GROUND
- 2 – POWER
- 3 – VIDEO

## CHARGER

|                                     |        |
|-------------------------------------|--------|
| Will charge NiCAD or NiMH batteries |        |
| Input                               | 120VAC |
| Charge Time                         | 1 hour |

## BATTERY

|         |               |
|---------|---------------|
| Voltage | 14.4VDC       |
| Current | 2.0Ah (NiCAD) |
|         | 2.2Ah (NiMH)  |



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Rev. 12/29/99



# Micro-SeaCam 1001

**HIGH PERFORMANCE  
MINIATURE CAMERA**

**2,000 METERS DEPTH  
RATING; 6,000 METERS  
OPTIONAL**

**VERY HIGH  
RESOLUTION**

**LIGHTWEIGHT**

**ECONOMICAL PRICE**



The Micro-SeaCam 1001 is an ultra small black & white video camera. The camera features fixed focus, wide angle optics that provide a depth of field of 10 cm (4 in.) to infinity. The incredibly small Micro-SeaCam 1001 measures just 3.6 cm (1.4 in.) diameter by 12.2 cm (4.8 in.) long. Unlike some other small cameras, the entire camera is contained in one housing—there is no separate electronics bottle. The Micro-SeaCam 1001 offers 550 lines of horizontal resolution.

Because of its small size and high performance, the Micro-SeaCam 1001 is suitable for applications where other cameras can't fit. Diver's helmets, ROV manipulator wrists, and ROV tether management systems are but a few of the places this camera can be used.

# **Micro-SeaCam 1001 Specifications**

## **CAMERA**

|                         |                                         |
|-------------------------|-----------------------------------------|
| Image Sensor:           | 1/2-inch CCD sensor                     |
| Resolution:             | 550 (H) x 350 (V) lines                 |
| Pixels:                 | 768 (H) x 494 (V)                       |
| Minimum Illumination:   | 0.5 Lux at f1.2                         |
| Lens:                   | f3.5 fixed iris, fixed focus            |
| Angle of View in Water: | 58 deg. (H) x 49 deg. (V) x 69 deg. (D) |
| Video Format:           | EIA, CCIR                               |

## **MECHANICAL**

|                   |                                     |
|-------------------|-------------------------------------|
| Housing Material: | Tiodized titanium                   |
| Port Material:    | Sapphire                            |
| Outer Diameter:   | 3.6 cm (1.4 in.)                    |
| Overall Length:   | 12.2 cm (4.8 in.) without connector |
| Weight in Air:    | 298 g (10.5 oz.)                    |
| Weight in Water:  | 170 g (6.0 oz.)                     |

## **ENVIRONMENTAL**

|        |                                                                                   |
|--------|-----------------------------------------------------------------------------------|
| Depth: | 2,000 meters (6,500 feet) standard<br>6,000 meters (20,000 feet) option available |
|--------|-----------------------------------------------------------------------------------|

## **ELECTRICAL**

|                     |                                                                 |
|---------------------|-----------------------------------------------------------------|
| Power:              | 12 volts DC                                                     |
| Current:            | 140 mA                                                          |
| Pin-Out (standard): | 1 = Ground, 2 = Power, 3 = Video, 4 = No connection             |
| Connector:          | Subconn-type BH4MP or LPBH4MP (right angle),<br>call for others |
| Cable:              | RG59/U triax (ground, 12 VDC, video)                            |



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Rev. 12/29/99



# Micro-SeaCam 1010

**SMALL, LIGHT-WEIGHT  
CAMERA**

**6,000 METER  
DEPTH RATING**

**RUGGED  
CONSTRUCTION**

**WIDE, SHARP  
OPTICS**



The Micro-SeaCam 1010 underwater video camera offers low light sensitivity, extremely wide, sharp optics and a deep-rated housing that make it an ideal choice for deep ROV applications and low light environments. The MSC-1010 contains a 1/3-inch black & white CCD video camera that provides high resolution and sensitivity. Just 76.2 mm (3.0 in.) in diameter and 160 mm (6.3 in.) long, the MSC-1010 is a high-performance camera option for most applications under 6,000 meters (20,000 feet). It can be combined with DeepSea's lighting products to provide a complete underwater video and lighting solution, including strobe synchronization. The MSC-1010 comes with a Delrin crash guard.

# Micro-SeaCam 1010 Specifications

## MECHANICAL

Housing: 6AL4V Titanium (tiodized)  
Port: Optically polished Borosilicate glass  
Outer Diameter: 76.2 mm (3.0 in.)  
Overall Length: 160 mm (6.3 in.) without crash guard  
Weight in Air: 840 g (1.85 lbs.)  
Weight in Freshwater: 340 g (12 oz.)

## OPTICAL

Lens: 6mm, f1.4 nominal, subject to application requirement  
Focus: Fixed focus, wide angle (factory set)  
Depth of Field: 10 cm (4 in.) to infinity  
Field of View in Water: 94 deg. (H) x 73 deg. (V) x 115 deg. (D)

## VIDEO

Image Sensor: 1/3-inch CCD image sensor  
Number of Pixels: 537 (H) x 505 (V) (EIA)  
537 (H) x 595 (V) (CCIR)  
Resolution: 400+ TV lines horizontal  
Scene Illumination: 3.0 Lux at f1.4  
Signal to Noise: More than 45 dB (AGC off)  
Iris: CCD/Electronic or manual  
Video Output: 1.0 volt 75 ohm (peak to peak)  
Video Format: EIA, CCIR

## ELECTRICAL

Power: 11-30 volts DC  
Current: 110 mA  
Pin-Out (standard): 1 = Ground, 2 = Power, 3 = Video, 4 = No connection  
Connector: BH4MP, LPBH4MP

## ENVIRONMENTAL

Depth: 6,000 meters (20,000 feet)  
Operating Temperature: -20 deg. C to +40 deg. C  
Storage Temperature: -30 deg. C to +70 deg. C



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Rev. 12/29/99



# Micro-SeaCam 2000

**HIGH  
PERFORMANCE  
MINIATURE CAMERA**

**2,000 METERS  
DEPTH RATING;  
6,000 METERS  
OPTIONAL**

**Y/C OUTPUT OPTION**

**HIGH RESOLUTION**

**ECONOMICALLY  
PRICED**



The Micro-SeaCam 2000 is an ultra-small, high performance color video camera. The camera features fixed focus, wide angle optics that provide a depth of field of 10 cm (4 in.) to infinity. The incredibly small MSC-2000 measures just 2.5 cm (1.0 in.) diameter by 21.6 cm (8.5 in.) long. Unlike some other small cameras, the entire camera is contained in one housing—there is no separate electronics bottle. What makes this camera truly amazing is its 470 lines of horizontal resolution, minimum illumination of only 4.5 Lux, and optional Y/C output.

Because of its small size and high performance, the Micro-SeaCam 2000 is suitable for applications where other cameras can't fit. Diver's helmets, ROV manipulator wrists, and ROV tether management systems are but a few of the places this camera can be used.

# Micro-SeaCam 2000 Specifications

## MECHANICAL

|                  |                                                                             |
|------------------|-----------------------------------------------------------------------------|
| Housing:         | Titanium                                                                    |
| Window Material: | Sapphire                                                                    |
| Outer Diameter:  | 2.5 cm (1.0 in.) for 2000 m housing;<br>2.8 cm (1.1 in.) for 6000 m housing |
| Overall Length:  | 21.6 cm (8.5 in.) including connector                                       |
| Weight in Air:   | 269 g (9.5 oz.)                                                             |
| Weight in Water: | 170 g (6 oz.)                                                               |

## VIDEO

|                         |                                          |
|-------------------------|------------------------------------------|
| Image Sensor:           | 1/2-inch CCD sensor                      |
| Resolution:             | 470 lines horizontal                     |
| Pixels:                 | 768 (H) x 493 (V)                        |
| Minimum Illumination:   | 4.5 lux at f1.2                          |
| Exposure Control:       | Automatic via adjustable shutter         |
| White Balance:          | Automatic                                |
| Lens:                   | f3.5, fixed iris, fixed focus            |
| Angle of View in Air:   | 91 deg. (H) x 66 deg. (V) x 122 deg. (D) |
| Angle of View in Water: | 64 deg. (H) x 47 deg. (V) x 81 deg. (D)  |
| Output:                 | Composite or Y/C; Master/Slave available |
| Video Format:           | NTSC, PAL                                |

## ELECTRICAL

|                          |                                                                           |
|--------------------------|---------------------------------------------------------------------------|
| Power:                   | 13-30 volts DC; above 18 Volts camera must be in water                    |
| Current:                 | 300 mA                                                                    |
| Composite Video Pin-Out: | 1 = Ground, 2 = Power, 3 = Video, 4 & 5 = No connection                   |
| Y/C Video Pin-Out:       | 1 = Ground, 2 = Power, 3 = Luminance, 4 = Chrominance,<br>5 = Stereo sync |
| Connector:               | MSSJ-5-BCR                                                                |
| Mating Connector:        | MSSJ-5-CCP for 2000 m version;<br>“Deep” MSSJ-5-CCP for 6000 m version    |

## ENVIRONMENTAL

|        |                                                                                    |
|--------|------------------------------------------------------------------------------------|
| Depth: | 2,000 meters (6,500 feet) standard;<br>6,000 meters (20,000 feet) option available |
|--------|------------------------------------------------------------------------------------|



*Specifications subject to change without notice*

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Rev. 12/29/99



# Multi-Sea Cam

**COLOR OR B&W**

**6000 METER (ROV) OR**

**300 METER (DIVER)  
VERSION**

**TITANIUM OR  
DELRIN HOUSING**

**SCRATCH-RESISTANT  
SAPPHIRE PORT**

**INTERCHANGEABLE  
CAMERA MODULES**



The Multi-SeaCam is a versatile camera designed to meet all your needs, whether for deep ROV or shallow diver applications. One housing and mounting system accepts two different video camera cartridges, either black & white or color. This enables you to standardize all your applications with one electrical and mechanical interface. Best of all, you can easily change camera cartridges in the field by removing a snap ring, allowing you to upgrade or repair in minutes.

Both housing types offer superior corrosion resistance. The ROV version is made from titanium, and is rated to 6,000 meters (20,000 feet). The diver version is made from black Delrin, and is rated to 300 meters (1,000 feet). A scratch-resistant sapphire port make the Multi-SeaCam one of the toughest, most durable cameras in the underwater industry.

All camera versions come with DeepSea's acclaimed wide angle, fixed focus optics. Focusing as close as 10 centimeters (4 inches), the Multi-SeaCam is easy to operate.

Identification of camera features in the field is simplified by the use of a label under the sapphire port that indicates such features as model type, depth rating, video format, and pin-out. It's essentially a "manual on a label." Serial numbers are laser-engraved on the housing for inventory tracking.

For diver applications, the Multi-SeaCam can be mounted on a SuperLite 17 or 27 helmet using DeepSea's Universal Helmet Mounting Bracket. It also mounts to DeepSea's Universal Hand Grip for hand-held operation. Working in tandem with any of DeepSea's world-class underwater lights (such as the Multi-SeaLite or Mini-SeaLite), the Multi-SeaCam provides the optimal underwater video solution.

## Multi-SeaCam Specifications

|                            | MULTI-SEACAM 1050                                                                                  | LOW LIGHT MULTI-SEACAM                                                                             | MULTI-SEACAM 2050                                                                                      |
|----------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>MECHANICAL</b>          |                                                                                                    |                                                                                                    |                                                                                                        |
| Housing:                   | Delrin or titanium                                                                                 | Delrin or titanium                                                                                 | Delrin or titanium                                                                                     |
| Port:                      | Sapphire                                                                                           | Sapphire                                                                                           | Sapphire                                                                                               |
| Outer Diameter:            | 4.74 cm (1.87 in.)                                                                                 | 4.74 cm (1.87 in.)                                                                                 | 4.74 cm (1.87 in.)                                                                                     |
| Overall Length:            | 12.95 cm (5.10 in.)                                                                                | 12.95 cm (5.10 in.)                                                                                | 12.95 cm (5.10 in.)                                                                                    |
| Weight in Air--Delrin:     | 296 g (10.5 oz.)                                                                                   | 296 g (10.5 oz.)                                                                                   | 296 g (10.5 oz.)                                                                                       |
| Weight in Air--Titanium:   | 459 g (16 oz.)                                                                                     | 459 g (16 oz.)                                                                                     | 459 g (16 oz.)                                                                                         |
| Weight in Water--Delrin:   | 56 g (2 oz.)                                                                                       | 56 g (2 oz.)                                                                                       | 56 g (2 oz.)                                                                                           |
| Weight in Water--Titanium: | 112 g (4 oz.)                                                                                      | 112 g (4 oz.)                                                                                      | 112 g (4 oz.)                                                                                          |
| <b>OPTICAL</b>             |                                                                                                    |                                                                                                    |                                                                                                        |
| Lens:                      | 2.8 mm, f2.8                                                                                       | 5 mm, f2.8                                                                                         | 2.9 mm, f1.8, wide angle                                                                               |
| Focus:                     | Fixed focus, wide angle                                                                            | Fixed focus                                                                                        | Fixed focus, wide angle                                                                                |
| Depth of Field:            | 10 cm (4 in.) to infinity                                                                          | 30 cm (12 in.) to infinity                                                                         | 10 cm (4 in.) to infinity                                                                              |
| Field of View in Air:      | 106 deg. (H) x 78 deg. (V) x 149 deg. (D)                                                          | 77 deg. (H) x 56 deg. (V) x 98.3 deg. (D)                                                          | 108 deg. (H) x 92 deg. (V) x 120 deg. (D)                                                              |
| Field of View in Water:    | 77 deg. (H) x 59 deg. (V) x 98 deg. (D)                                                            | 57 deg. (H) x 44.6 deg. (V) x 70.5 deg. (D)                                                        | 75 deg. (H) x 65 deg. (V) x 81 deg. (D)                                                                |
| <b>VIDEO</b>               |                                                                                                    |                                                                                                    |                                                                                                        |
| Image Sensor:              | 1/3-inch CCD image sensor                                                                          | 1/2-inch CCD image sensor                                                                          | 1/3-inch CCD image sensor                                                                              |
| Number of Pixels:          | 537 (H) x 505 (V) (EIA);<br>537 (H) x 595 (V) (CCIR)                                               | 811 (H) x 508 (V) (EIA);<br>795(H) x 596 (V) (CCIR)                                                | 768 (H) x 494 (V) (NTSC);<br>752 (H) x 582 (V) (PAL)                                                   |
| Resolution:                | 400+ TV lines horizontal                                                                           | 570 TV lines horizontal                                                                            | 460 (H) x 400 (V) (NTSC);<br>450 (H) x 450 (V) (PAL)                                                   |
| Scene Illumination:        | 0.27 Lux at f2.8                                                                                   | 0.01 Lux at f2.8                                                                                   | 8 Lux at f1.8                                                                                          |
| Signal to Noise:           | More than 45 dB (AGC off)                                                                          | 46 dB (AGC off)                                                                                    | 50 dB (AGC off)                                                                                        |
| Video Output:              | 1.0 volt peak-to-peak at 75 ohm                                                                    | 1.0 volt peak-to-peak at 75 ohm                                                                    | 1.0 volt peak-to-peak at 75 ohm                                                                        |
| Video Format:              | EIA (RS170), CCIR                                                                                  | EIA (RS170), CCIR                                                                                  | NTSC, PAL, composite standard, Y/C optional                                                            |
| <b>ELECTRICAL</b>          |                                                                                                    |                                                                                                    |                                                                                                        |
| Power:                     | 11-30 volts DC                                                                                     | 11-30 volts DC                                                                                     | 11-30 volts DC                                                                                         |
| Current:                   | 110 mA                                                                                             | 160 mA                                                                                             | 300 mA                                                                                                 |
| Connector:                 | Impulse: BH4MP, LPBH4MP, MSSJ-9-BCR, IE55-1508/2008;<br>Burton: 5507-1508/2008;<br>Call for others | Impulse: BH4MP, LPBH4MP, MSSJ-9-BCR, IE55-1508/2008;<br>Burton: 5507-1508/2008;<br>Call for others | Impulse: BH4MP, LPBH4MP, MSSJ-9-BCR, IE55-1508 & 2008;<br>Burton: 5507-1508 & 2008;<br>Call for others |
| Pin-out:                   | 1 = Ground, 2 = Power, 3 = Video (standard)                                                        | 1 = Ground, 2 = Power, 3 = Video (standard)                                                        | 1 = Ground, 2 = Power, 3 = Video (standard)                                                            |
| <b>ENVIRONMENTAL</b>       |                                                                                                    |                                                                                                    |                                                                                                        |
| Depth:                     | Delrin: 300 meters<br>Titanium: 6,000 meters                                                       | Delrin: 300 meters<br>Titanium: 6,000 meters                                                       | Delrin: 300 meters<br>Titanium: 6,000 meters                                                           |
| Operating Temperature:     | -20 deg. C to +40 deg. C                                                                           | -10 deg. C to +40 deg. C                                                                           | -10 deg. C to +50 deg. C                                                                               |
| Storage Temperature:       | -30 deg. C to +70 deg. C                                                                           | -30 deg. C to +70 deg. C                                                                           | -10 deg. C to +50 deg. C                                                                               |



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Rev. 12/29/99



# Pan/Tilt/Zoom 2001

**HIGH RESOLUTION  
VIDEO CAMERA WITH  
PAN/TILT/ZOOM/FOCUS**

**1000 MSW DEPTH  
RATING**

**10:1 ZOOM; Y/C OPTION**

**NO CORROSION — ALL  
PLASTIC HOUSING**

**SCRATCH RESISTANT  
GLASS DOME**



The Pan/Tilt/Zoom-2001 is a multi-purpose color video camera for use in underwater imaging. The camera features a high resolution video camera with built-in pan, tilt, zoom, and focus functions that are all controlled remotely. The camera optics are corrected via a hemispherical optical glass dome port. Focus ranges from close-up to infinity. The camera electronics are reverse/over-voltage protected.

The versatility and good cost/performance ratio of the PTZ-2001 camera create many possibilities for its use. Possible applications include use on ROVs, tourist and research submersibles, tether management systems, dockside and shipboard security/inspection, and scientific marine studies.

Pan, tilt, zoom, and focus functions of the camera are controlled by switching the control lines either to 12VDC or 12Vret. A control box, with joystick control of pan and tilt and with center-off rocker switches for controlling zoom and focus, is available. Custom options, including Y/C video, available to meet your specific needs.

# **PTZ-2001 Specifications**

## **CAMERA**

Image Sensor: 1/2-inch interline transfer CCD  
Resolution: 470 lines horizontal, 375 lines vertical (NTSC) or 440 (PAL)  
Video Output: Composite; Y/C optional  
Video Format: NTSC, PAL  
Minimum Illumination: 1.0 Lux scene illumination  
S/N Ratio: Better than 47dB (AGC off)  
Lens: 8.0 to 80 mm, auto iris f/1.4  
Zoom Ratio: 10:1  
Pan Angle: 160 deg. (including lens FOV)  
Tilt Angle: 160 deg. (including lens FOV)  
Field of View: Diagonal 7 deg. to 53 deg.  
Horizontal 5.7 deg. to 43 deg.  
Vertical 4.3 deg. to 33 deg.  
Focus Range: 24 inches to infinity

## **MECHANICAL**

Housing Material: Delrin plastic  
Port Material: Optically polished borosilicate glass  
Outer Diameter: 19.7 cm (7.75 in.)  
Overall Length: 19.7 cm (7.75 in.)  
Weight in Air: 4.3 kg (9.5 lbs.)  
Weight in Water: 0.3 kg (0.6 lbs.)  
Pan and Tilt Speed: 40 deg. per second

## **ENVIRONMENTAL**

Depth: 1000 MSW

## **ELECTRICAL**

Power: 12-16 VDC  
Current: 400 mA nominal  
Pin-Out (Composite Video, standard): 1 = Ground, 2 = Power, 3 = Video, 4 = Pan, 5 = Focus, 6 = Zoom, 7 = Tilt  
Pin-Out (Y/C Video, standard): 1 = Ground, 2 = Power, 3 = Video-Y, 4 = Video-C, 5 = Pan, 6 = Focus, 7 = Zoom, 8 = Tilt  
Camera Connector: XSL-10-BCR  
Mating Connector: XSL-10-CCP  
Pan/Tilt/Zoom/Focus Control: Individual control lines require connection to 12VDC or 12Vret for operation. Current < 10mA source or sink. Functions operate per Truth Table:

| LINE  | 12VDC<br>INPUT | 12Vret<br>INPUT | OPEN |
|-------|----------------|-----------------|------|
| PAN   | RIGHT          | LEFT            | STOP |
| TILT  | DOWN           | UP              | STOP |
| ZOOM  | TELE           | WIDE            | STOP |
| FOCUS | NEAR           | FAR             | STOP |



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# SeaCam 2003

**HAND-HELD  
CAMERA**

**COMPACT SIZE**

**RUGGED DESIGN**

**FIXED FOCUS,  
WIDE ANGLE LENS**

**ECONOMICALLY  
PRICED**



The SeaCam 2003 underwater video camera produces excellent images at affordable prices, and is designed for either hand-held operation or fixed-mount applications at depths down to 1,000 meters (3,250 feet). The SeaCam 2003 is particularly well suited for bridge or structural inspection, hull inspection, and underwater weld inspection. A high quality color CCD video camera is housed within a Delrin pressure housing with a scratch-resistant acrylic port. The fixed focus 3.5 mm wide angle lens produces crisp, high resolution images from 10 cm (4 in.) to infinity. Threaded holes are tapped into the mounting bracket to accommodate two external SeaLites (or any light of the SeaLite family) for additional lighting. The SeaCam 2003 comes with a handgrip. Options include a light-mounting bracket, 100 meters of cable, and a 120VAC-to-12VDC power supply.

# SeaCam 2003 Specifications

## MECHANICAL

|                       |                                   |
|-----------------------|-----------------------------------|
| Housing:              | Delrin plastic                    |
| Port:                 | Flat, optically clear SAR Acrylic |
| Outer Diameter:       | 8.6 cm (3.4 in.)                  |
| Overall Length:       | 25.4 cm (10.0 in.)                |
| Height with Handgrip: | 18.4 cm (7.25 in.)                |
| Weight in Air:        | 1.6 kg (3.5 lbs.)                 |
| Weight in Water:      | 0.3 kg (0.75 lbs.)                |

## OPTICAL

|                         |                                         |
|-------------------------|-----------------------------------------|
| Lens:                   | 3.7 mm, f1.6 auto-iris                  |
| Focus:                  | Factory set, fixed focus                |
| Depth of Field:         | 10 cm (4 in.) to infinity               |
| Angle of View in Water: | 70 deg. (H) x 56 deg. (V) x 74 deg. (D) |

## VIDEO

|                  |                         |
|------------------|-------------------------|
| Image Sensor:    | 1/2-inch CCD sensor     |
| Pixels:          | 510 (H) x 494 (V)       |
| Resolution:      | 450 lines horizontal    |
| Sensitivity:     | 2 Lux at f1.2           |
| Signal to Noise: | More than 46 dB         |
| Video Out:       | 1.0 volt (peak to peak) |
| Video Format:    | NTSC, PAL               |
| Video Output:    | Composite or Y/C        |

## ELECTRICAL

|                     |                                                     |
|---------------------|-----------------------------------------------------|
| Power:              | 12 volts DC                                         |
| Current:            | 350 mA                                              |
| Pin-Out (standard): | 1 = Ground, 2 = Power, 3 = Video, 4 = No connection |
| Connector:          | BH4MP                                               |

## ENVIRONMENTAL

|        |                           |
|--------|---------------------------|
| Depth: | 1,000 meters (3,250 feet) |
|--------|---------------------------|



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# Super SeaCam

## 5000

### Low-Light CCD Camera

- **0.001 LUX  
SENSITIVITY**
- **1/3 THE COST OF A  
SIT CAMERA**
- **CCD RELIABILITY –  
BURN RESISTANT**
- **117 DEGREE ANGLE  
OF VIEW**
- **AUTOMATIC  
BACKLIGHT  
COMPENSATION**

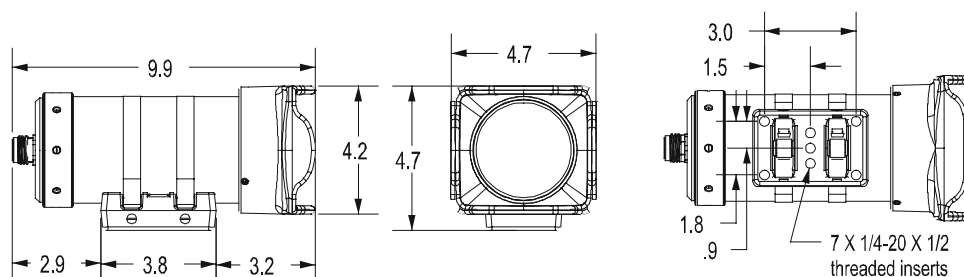


The Super SeaCam 5000 underwater monochrome video camera produces excellent images at affordable prices and is designed for either low-light or long range viewing applications at depths to 6000 meters (20,000 feet). The Super SeaCam 5000 is particularly suited for use as a primary navigation camera for any type of ROV application.

The Super SeaCam 5000 is available with Titanium (6000m), Aluminum (4000m) or Delrin™ (300m) housings to suit your depth application. To ensure razor sharp image quality, the glass dome is polished to optical standards and treated with an anti-reflective coating. A sturdy mounting bracket and Delrin™ crashguard are included.

DeepSea's lights, cameras, batteries, lasers and temperature sensors are used daily in the most demanding environments on planet earth. The Super SeaCam family of cameras continues our commitment to designing best-value products for the user who demands uncompromising quality, reliability and service.

# Super SeaCam 5000



| Standard Pin-out |        |
|------------------|--------|
| 1                | Ground |
| 2                | Power  |
| 3                | Video  |

## MECHANICAL

Material: Titanium, Aluminum, Delrin™  
Overall Length: 25.20 cm (9.90 in.)  
Outer Diameter: 9.45 cm (3.75 in.)  
Port: Optically polished glass dome with anti-reflective coating  
Weight in Air: Ti- 2.95kg (6.50lbs)  
Weight in Water: Ti- 1.54kg (3.41lbs)

## OPTICAL

Lens: 3.8 mm, f 0.80  
Focus: Fixed  
Working Dist: 60 cm to infinity  
Field of View in Water: 117 deg. (D) x 97 deg (H) x 77 deg. (V)

## VIDEO

Image Sensor: ½-inch CCD Sensor  
Pixels: EIA: 768 (H) x 494 (V)  
CCIR: 752 (H) x 582 (V)  
Resolution: 570 lines horizontal  
Sensitivity: 0.001 Lux @ f 0.80  
Signal to Noise: More than 46 dB  
Video Out: Composite, 1.0 volt (peak to peak)  
Video Formats: EIA, CCIR

## ELECTRICAL

Power: 9 – 30 VDC  
Current: 160 mA  
Connector: MHDG-12 (standard), other options available

## ENVIRONMENTAL

|                 |                                 |                                  |                              |
|-----------------|---------------------------------|----------------------------------|------------------------------|
| Depth:          | Titanium<br>6,000 m (20,000 ft) | Aluminum<br>4,000 m (13,000 ft.) | Delrin™<br>300 m (1,000 ft.) |
| Operating Temp: | 0 – 50 deg. C                   |                                  |                              |
| Storage Temp:   | -20 – 60 deg. C                 |                                  |                              |



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# Super SeaCam 6000 Color CCD Camera

- **12X AUTOFOCUS  
ZOOM LENS**
- **OPTICALLY  
CORRECTED DOME**
- **GENLOCK INPUT**
- **RS-232 OR TRINARY  
CONTROL**



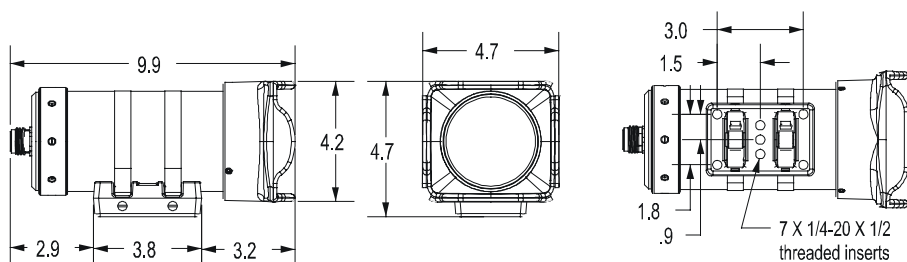
The Super SeaCam 6000 underwater color video camera produces excellent images at affordable prices and is ideal for all types of underwater inspection.

The high quality 1/3-inch IT CCD video camera is housed within your choice of a Titanium (6000m), Aluminum (4000m) or Delrin™ (300m) pressure housing. The 12X zoom lens has auto and macro focus, and produces crisp, high resolution images from 10mm to infinity. And to ensure razor sharp image quality, the glass dome is polished to optical standards and treated with an anti-reflective coating.

The Super SeaCam 6000 also has a genlock input for operation in a multi-camera system. A sturdy mounting bracket and Delrin™ crash guard are included.

DeepSea's lights, cameras, batteries, lasers and temperature sensors are used daily in the most demanding environments on planet earth. The Super SeaCam family of cameras continues our commitment to designing best-value products for the user who demands uncompromising quality, reliability and service.

# Super SeaCam 6000



| Standard Pinouts |               |    |                     |
|------------------|---------------|----|---------------------|
| 1                | Power Gnd     | *7 | Zoom(+/-)           |
| 2                | +VDC          | *8 | Auto focus (On/off) |
| 3                | Y/ Comp video | 9  | Control & video gnd |
| 4                | Video/C       | 10 | A**                 |
| 5                | Sync          | 11 | B**                 |
| *6               | Focus(+/-)    | 12 | Not Used            |

\*Trinary control.

\*\*RS-232/485

## MECHANICAL

Material: Titanium, Aluminum, Delrin™  
 Overall Length: 25.20cm (9.90 in.)  
 Outer Diameter: 9.45cm (3.75 in.)  
 Port: Optically polished glass dome with anti-reflective coating  
 Weight in Air: Ti- 2.95kg (6.50lbs)  
 Weight in Water: Ti- 1.54kg (3.41lbs)

## OPTICAL

Lens: 5.4 – 64.8 mm, 12X optical + 2X digital zoom (24X total)  
 Focus: Auto or manual  
 Working distance: 10mm to infinity  
 Field of View in Water: 104 deg. (D) x 84 deg (H) x 62 deg. (V)

## VIDEO

Image Sensor: 1/3 inch CCD Sensor  
 Pixels: NTSC: 768 (H) x 494 (V)  
 PAL: 752 (H) x 582 (V)  
 Resolution: More than 460 lines horizontal  
 Min. Sensitivity: 1.0 Lux (Scene Illumination)  
 Signal to Noise: 48 dB  
 Video Out: Composite, Y/C  
 Video Formats: NTSC, PAL  
 External Sync: V-Reset

## ELECTRICAL

Input Voltage: 10 – 36 VDC  
 Current: Steady-state – 220mA  
 Drive-state – 580mA  
 Connector: MHDG-12 (standard), other options available

## ENVIRONMENTAL

|                 |                                 |                                  |                              |
|-----------------|---------------------------------|----------------------------------|------------------------------|
| Depth:          | Titanium<br>6,000 m (20,000 ft) | Aluminum<br>4,000 m (13,000 ft.) | Delrin™<br>300 m (1,000 ft.) |
| Operating Temp: | 0 – 50 deg. C                   |                                  |                              |
| Storage Temp:   | -20 – 60 deg. C                 |                                  |                              |



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# Super SeaCam 6500

## Low-Light Color Camera

- **LOW-LIGHT SENSITIVITY**
- **WIDE ANGLE OPTICS**
- **18X ZOOM LENS**
- **RS-232 OR TRINARY CONTROL**



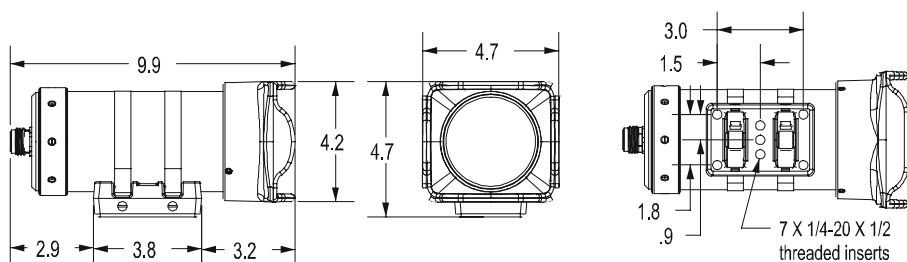
For high quality imaging under difficult lighting conditions, the Super SeaCam 6500 is the camera of choice. Under normal lighting conditions, the camera functions as a high-quality color camera. When scene illumination drops below the level needed for normal color imaging, an infra-red cut filter is removed, extending the camera's operational capability by allowing it to continue imaging as a monochrome device.

A Super HAD CCD imaging device delivers superior image quality for all types of underwater inspection and is available in your choice of Titanium (6000m), Aluminum (4000m) or Delrin™ (300m) pressure housings.

The 18X autofocus zoom lens focuses as close as 10mm. And to ensure razor sharp image quality, the glass dome is polished to optical standards and treated with an anti-reflective coating.

DeepSea's lights, cameras, batteries, lasers and temperature sensors are used daily in the most demanding environments on planet earth. The Super SeaCam family of cameras continues our commitment to designing best-value products for the user who demands uncompromising quality, reliability and service.

# Super SeaCam 6500



## MECHANICAL

Material: Titanium, Aluminum, Delrin™  
 Overall Length: 25.20 cm (9.90 in.)  
 Outer Diameter: 9.45 cm (3.75 in.)  
 Port: Optically polished glass dome with anti-reflective coating.  
 Weight in Air: Ti- 2.95kg (6.50lbs)  
 Weight in Water: Ti- 1.54kg (3.40lbs)

## OPTICAL

Lens: 18X (18X optical and 4X digital- 72X total) zoom  $f=4.1 - 73.8$  mm  
 Focus: Auto or manual  
 Working distance: 10mm to infinity (wide angle setting)  
 Field of View in Water: 104 deg. (D) x 84 deg (H) x 62 deg. (V)

## VIDEO

Image Sensor: 1/4-inch CCD Sensor  
 Pixels: NTSC: 768 (H) x 494 (V)  
 PAL: 752 (H) x 582 (V)  
 Resolution: More than 470 lines horizontal  
 Min. Sensitivity: 3.0 Lux ( $f=1.4$ ), IR cut filter on  
 0.2 Lux ( $f=1.4$ ), IR cut filter off  
 Signal to Noise: 50 dB  
 Video Out: Composite, Y/C  
 Video Formats: NTSC, PAL

## ELECTRICAL

Input Voltage: 10 – 36 VDC  
 Current: Steady-state – 230mA  
 Drive-state – 350mA  
 Connector: MHDG-12 (standard), other options available

## ENVIRONMENTAL

|                 |                                 |                                  |                             |
|-----------------|---------------------------------|----------------------------------|-----------------------------|
| Depth:          | Titanium<br>6,000 m (20,000 ft) | Aluminum<br>4,000 m (13,000 ft.) | Delrin<br>300 m (1,000 ft.) |
| Operating Temp: | 0 – 50 deg. C                   |                                  |                             |
| Storage Temp:   | -20 – 60 deg. C                 |                                  |                             |

## Standard Pinouts

|    |            |    |                     |
|----|------------|----|---------------------|
| 1  | Power Gnd  | *7 | Zoom(+/-)           |
| 2  | Pwr        | *8 | Auto focus (on/off) |
| 3  | Y or Comp  | 9  | Cont& video gnd     |
| 4  | Video/C    | 10 | A**                 |
| 5  | Not Used   | 11 | B**                 |
| *6 | Focus(+/-) | 12 | Not Used            |

\*Trinary

\*\*RS-232/485



*Specifications subject to change without notice*

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Rev. 12/29/99



# SST-1370

## **COMBINED VIDEO & LIGHTING SYSTEM**

## **EXTREMELY DURABLE TITANIUM HOUSING**

## **RATED TO 750 METERS**

## **CRISP, WIDE-ANGLE IMAGE**



The SST-1370 video camera is the newest addition to DeepSea's rugged video inspection series. Packed into a housing less than 1.5 in. (3.48 cm) in diameter is a 1/4" monochrome CCD and powerful lighting system. The SST-1370 is designed to withstand the rigors of day-to-day inspection in areas where environmental and mechanical shock are expected and unavoidable.

Features that contribute to SST-1370 durability and reliability include a titanium housing and a sapphire crystal lens port (where the camera looks through). The housing will not wear in contact with tough materials, such as cast iron, and the lens port can only be scratched by diamond or carbide. Thirty-five bright-red LEDs protected by a smooth, chip and crack resistant window provide powerful, virtually indestructible lighting for the life of the camera. The 1/4" lens is fixed-focus, meaning there are no moving parts to break loose or wear. Each SST-1370 is pressure-tested and guaranteed to 750 meters (2,460 ft.) underwater. The video signal travels up to 2,000 ft. (600 meters) over triax cable.

The SST-1370 has applications in pipe inspection, borehole inspection, water wells, fixed-mount monitoring (such as underwater valves), tank and void inspection, and security and safety monitoring in water-based entertainment and architectural installation. It is suitable wherever a compact camera with built-in lighting is the best solution.

The SST-1370 comes with a mounting bracket and mating connector on an 18-inch (0.5m) whip. The whip can be molded at DeepSea on RG-59 triax or a micro-triax with a tough kevlar braid. Camera and LED repairs can be done within 24-48 hours.

# SST-1370 Combined Video & Lighting System

| Specifications                |                                     |                              |                                                                            |
|-------------------------------|-------------------------------------|------------------------------|----------------------------------------------------------------------------|
| Video                         |                                     | Electrical                   |                                                                            |
| <b>Image Sensor</b>           | ¼" CCD image sensor                 | <b>Power</b>                 | 8.7 to 13.2 volts DC                                                       |
| <b>Number of Pixels</b>       | 512 (H) x 492 (V)                   | <b>Current</b>               | 110 mA (camera), ~290 mA with LEDs                                         |
| <b>Resolution (TV lines)</b>  | 380 (H) x 350 (V)                   | <b>Connector</b>             | 740-055-004                                                                |
| <b>Lens</b>                   | 2 mm, f3.5                          |                              |                                                                            |
| <b>Focus</b>                  | Fixed focus, factory set            | Environmental                |                                                                            |
| <b>Min. Depth of Field</b>    | ½-inch                              | <b>Operating Temperature</b> | -10 C to 50 C (14 F to 122 F)                                              |
| <b>Scene Illumination</b>     | 0.5 lux                             | <b>Depth Rating</b>          | 750 meters (2,460 ft)                                                      |
| <b>Field of View in Air</b>   | 111 (H) x 95 (V) x 122 (D) deg.     | <b>Weight air/water</b>      | 85 g/70 g (3.0 oz/2.5 oz)                                                  |
| <b>Field of View in Water</b> | 76 (H) x 67 (V) x 82 (D) deg.       |                              |                                                                            |
| <b>Lighting</b>               | 35 red LEDs with variable intensity | Mechanical                   |                                                                            |
| <b>Video Output</b>           | 1.0 volt, peak-to-peak, at 75 ohm   | <b>Camera Diameter</b>       | 3.48 cm (1.37 in)                                                          |
| <b>Video Format</b>           | Monochrome; EIA or CCIR             | <b>Camera Length</b>         | 5.00 cm (2.00 in), excluding collar (included)                             |
| <b>Shutter</b>                | Electronic, automatic               | <b>Housing Materials</b>     | Sapphire crystal lens port. Impact-resistant LED window. Titanium housing. |

| Cables                                                       |                                                                                                      |                                                                     |                                                                   |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------|
| Camera Connector                                             | Cable Type                                                                                           | Length                                                              | Dry-End Termination                                               |
| <b>740-055-004:</b><br>Also available as un-terminated whip. | RG-59 Triax ( <b>TRI</b> ): 75 ohm video cable with polyethylene jacket.                             | <b>0-1000 feet:</b> Price is per-foot. Contact DeepSea for pricing. | <b>TOP/SS:</b> Standard. Also available on unterminated 18" whip. |
|                                                              | Kevlar Triax ( <b>KTRI</b> ): 75 ohm video cable with internal kevlar braid and polyurethane jacket. |                                                                     | <b>Other:</b> Please contact DeepSea with requirements.           |

**How to Order:** ( 740-055-004 ) – ( ) – ( ) – ( )

| Power & Viewing                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SST-1370 heads are ideally suited to work as a system with our family of controllers, which include the ability to vary the LED light intensity, view the image with high resolution monitors, output the video signal to other monitors and VCRs, or make video recordings with <i>Hands-Free</i> audio overlay. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Power+</b>                                                                                                                                                                                                                                                                                                     | ( <b>P+</b> ) 120 vac/60 Hz (or 220 vac/50 Hz) to ~12 vdc power supply. Includes direct connection for SS3ILMP terminated cables. RCA video output interfaces with customer-supplied monitors and VCRs. Variable LED intensity controller allows fine adjustment of lighting for different conditions. A Ground Fault Circuit Interrupt (GFCI) is included on the AC cord for added safety.                                                                                                                                                                                                                                                |
| <b>Monitor+</b>                                                                                                                                                                                                                                                                                                   | ( <b>M+</b> ) A P+ with high-resolution surveillance monitor (>850 TV lines) enclosed in a rugged, aluminum case. A metal sunshade folds down to protect the CRT screen and front panel controls during transport. A tilt-stand improves viewing angle when system is on the ground. Includes direct connection for TOP/SS-terminated cables. Variable LED intensity controller allows fine adjustment of lighting for different conditions. Video in/out jacks allow hook up to external devices such as VCRs, camcorders and other remote monitors. A Ground Fault Circuit Interrupt (GFCI) is included on the AC cord for added safety. |
| <b>Monitor+VCR</b>                                                                                                                                                                                                                                                                                                | ( <b>M+VCR</b> ) (Release pending) An M+ with added VHS VCR and <i>Hands-Free</i> audio recording. Video/audio out jacks, CB mike input jacks, front-panel wireless microphone and playback speaker, one-button monitor/record/play.                                                                                                                                                                                                                                                                                                                                                                                                       |



*Specifications subject to change without notice*

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Web: <http://www.deepsea.com> • e-mail: [info@deepsea.com](mailto:info@deepsea.com)

Rev. 12/29/99



# SS-126C

**COLOR MINI VIDEO  
AND LIGHTING SYSTEM  
EXTREMELY DURABLE  
RATED TO 250  
METERS  
CRISP, WIDE-ANGLE  
IMAGE**



The SS-126C video camera with built-in LED lighting is DeepSea's smallest color video camera. The SS-126C is designed to withstand the rigors of day-to-day inspection in confined areas where environmental and mechanical shock are unavoidable.

The SS-126C's housing is constructed from stainless steel for maximum durability and will not wear in contact with tough materials such as cast iron. A sapphire crystal lens port that can only be scratched by diamond or carbide. Built into the camera are 30 ultra bright-white LEDs protected by a smooth, chip and crack resistant window. LED lighting provides powerful and virtually indestructible illumination over thousands of hours of use. The 1/3" lens is fixed-focus, meaning there are no moving parts to break loose or wear. Each SS-126C is factory pressure-tested and guaranteed to 250 meters underwater.

The SS-126C has applications in pipe and borehole inspection, fixed-mount monitoring, tank and void inspection, in fisheries and aquaculture, or just about any confined space with access over 1.26 inches. It is also ideal for inspection of machinery and engineering spaces both on land and aboard ship. It is an economical solution for applications that previously required very expensive and temperamental remote CCD cameras. The SS-126C can be used alone as a drop system, affixed to tools or remote manipulators, and other equipment.

A choice of three cables are available including RG-59 triax, a micro-triax with a tough kevlar braid, and a flexible fiberglass push cable that allows the camera to be pushed through multiple bends up to 61 meters (200 ft.) in pipe as small as 3 cm (1.25 in.). Several camera control options are available, ranging from a basic power supply to an integrated power and video display unit with audio and video recording.

## **SS-126C Combined Video & Lighting System**

| Specifications         |                                       |                       |                                                                             |
|------------------------|---------------------------------------|-----------------------|-----------------------------------------------------------------------------|
| Video                  |                                       | Electrical            |                                                                             |
| Image Sensor           | 1/3" Interline Transfer CCD           | Power                 | 8 to 13 volts DC                                                            |
| Number of Pixels       | 510 (H) x 492 (V)                     | Current               | 160 mA (camera), ~500mA with LEDs                                           |
| Resolution (TV lines)  | 330 (H) x 350 (V)                     | Connector             | 740-055-004                                                                 |
| Lens                   | 2 mm, f3.5 wide-angle                 | Environmental         |                                                                             |
| Focus                  | Fixed focus, factory set              | Operating Temperature | -10 C to 50 C (14 F to 122 F)                                               |
| Min. Depth of Field    | ½-inch                                | Depth Rating          | 250 meters (820 ft)                                                         |
| Scene Illumination     | 0.5 lux                               | Weight (air)          | 3.4 oz                                                                      |
| Field of View in Air   | 111 (H) x 95 (V) x 122 (D) deg.       | Mechanical            |                                                                             |
| Field of View in Water | 76 (H) x 67 (V) x 82 (D) deg.         | Camera Diameter       | 1.26 in.                                                                    |
| Lighting               | 30 White LEDs with variable intensity | Camera Length         | 2.31 in., excluding collar (included with camera)                           |
| Video Output           | 1.0 volt, peak-to-peak, at 75 ohm     | Housing Materials     | Stainless steel housing, Sapphire crystal lens port, High-impact LED window |
| Video Format           | Color; NTSC or PAL standard           |                       |                                                                             |
| Shutter                | Electronic, automatic                 |                       |                                                                             |

| Cables                                                       |                                                                                                      |                                                                     |                                                                   |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------|
| Camera Connector                                             | Cable Type                                                                                           | Length                                                              | Dry-End Termination                                               |
| <b>740-055-004:</b><br>Also available as un-terminated whip. | RG-59 Triax ( <b>TRI</b> ): 75 ohm video cable with polyethylene jacket.                             | <b>0-1000 feet:</b> Price is per-foot. Contact DeepSea for pricing. | <b>TOP/SS:</b> Standard. Also available on unterminated 18" whip. |
|                                                              | Kevlar Triax ( <b>KTRI</b> ): 75 ohm video cable with internal kevlar braid and polyurethane jacket. |                                                                     | <b>Other:</b> Please contact DeepSea with requirements.           |

**How to Order:** ( 740-055-004 ) – ( ) – ( ) – ( )

## Power & Viewing

SS-126C heads are ideally suited to work as a system with our family of controllers, which include the ability to vary the LED light intensity, view the image with high resolution monitors, output the video signal to other monitors and VCRs, or make video recordings with *Hands-Free* audio overlay.

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power+</b>      | <b>(P+)</b> 120 vac/60 Hz (or 220 vac/50 Hz) to ~12 vdc power supply. Includes direct connection for SS3ILMP terminated cables. RCA video output interfaces with customer-supplied monitors and VCRs. Variable LED intensity controller allows fine adjustment of lighting for different conditions. A Ground Fault Circuit Interrupt (GFCI) is included on the AC cord for added safety.                                                                                                                                                                                                                                                |
| <b>Monitor+</b>    | <b>(M+)</b> A P+ with high-resolution surveillance monitor (>850 TV lines) enclosed in a rugged, aluminum case. A metal sunshade folds down to protect the CRT screen and front panel controls during transport. A tilt-stand improves viewing angle when system is on the ground. Includes direct connection for TOP/SS-terminated cables. Variable LED intensity controller allows fine adjustment of lighting for different conditions. Video in/out jacks allow hook up to external devices such as VCRs, camcorders and other remote monitors. A Ground Fault Circuit Interrupt (GFCI) is included on the AC cord for added safety. |
| <b>Monitor+VCR</b> | <b>(M+VCR)</b> An M+ with added VHS VCR and <i>Hands-Free</i> audio recording. Video/audio out jacks, CB mike input jacks, front-panel wireless microphone and playback speaker, one-button monitor/record/play.                                                                                                                                                                                                                                                                                                                                                                                                                         |



*Specifications subject to change without notice*

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Rev. 12/29/99



# SS-1750 C2

**COLOR COMPACT  
VIDEO  
AND LIGHTING  
SYSTEM**

**EXTREMELY DURABLE  
CRISP, WIDE-ANGLE  
IMAGE**

**RATED TO 100\*  
METERS**



The SS-1750 C2 is designed for those tasks that only a compact, self illuminating camera can perform. Designed to reach those areas that are inaccessible to almost every other camera on the market and to withstand the rigors of day-to-day inspection in confined areas where environmental and mechanical shock are unavoidable.

The SS-1750 C2 housing is constructed from stainless steel for maximum durability and will not wear in contact with tough materials such as cast iron, and includes a sapphire crystal lens port that can only be scratched by diamond or carbide. The camera also features built in ultra bright-white LEDs protected by a smooth, chip and crack resistant window. LED lighting provides powerful and virtually indestructible illumination over thousands of hours of use while a fixed focus lens insures that there are no moving parts to break loose or wear. Each SS-1750 C2 is factory pressure-tested and guaranteed to 100\* meters underwater.

The SS-1750 C2 has applications in pipe and borehole inspection, fixed-mount monitoring, tank and void inspection, in fisheries and aquaculture, or just about any confined space with access over 1.75 inches. The SS-1750 C2 can be used alone as a drop system, affixed to tools or remote manipulators, and other equipment.

A choice of three cables are available including RG-59 triax, a micro-triax with a tough kevlar braid, and a flexible fiberglass push cable that allows the camera to be pushed through multiple bends up to 61 meters (200 ft.) in pipe as small as 3 cm (1.25 in.). Several camera control options are available, ranging from a basic power supply to an integrated power and video display unit with audio and video recording.

\*Subject to change.

## **SS-1750 C2 Combined Video & Lighting System**

| Specifications         |                                       |                       |                                                                             |
|------------------------|---------------------------------------|-----------------------|-----------------------------------------------------------------------------|
| Video                  |                                       | Electrical            |                                                                             |
| Image Sensor           | 1/3" Interline Transfer CCD           | Power                 | 8 to 13 volts DC                                                            |
| Number of Pixels       | 510 (H) x 492 (V)                     | Current               | 300 mA (camera), ~500mA with LEDs                                           |
| Resolution (TV lines)  | 330 (H) x 350 (V)                     | Connector             | 740-055-004                                                                 |
| Lens                   | 2 mm, f3.5 wide-angle                 | Environmental         |                                                                             |
| Focus                  | Fixed focus, factory set              | Operating Temperature | -10 C to 50 C (14 F to 122 F)                                               |
| Min. Depth of Field    | ½-inch                                | Depth Rating          | 100 meters (328 ft)                                                         |
| Scene Illumination     | 0.5 lux                               | Weight (air)          | 3.4 oz                                                                      |
| Field of View in Air   | 111 (H) x 95 (V) x 122 (D) deg.       | Mechanical            |                                                                             |
| Field of View in Water | 76 (H) x 67 (V) x 82 (D) deg.         | Camera Diameter       | 1.750 in.                                                                   |
| Lighting               | 51 White LEDs with variable intensity | Camera Length         | 2.314 in.                                                                   |
| Video Output           | 1.0 volt, peak-to-peak, at 75 ohm     | Housing Materials     | Stainless steel housing, Sapphire crystal lens port, High-impact LED window |
| Video Format           | Color; NTSC or PAL standard           |                       |                                                                             |
| Shutter                | Electronic, automatic                 |                       |                                                                             |

| Cables                                                       |                                                                                                      |                                                                     |                                                                   |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------|
| Camera Connector                                             | Cable Type                                                                                           | Length                                                              | Dry-End Termination                                               |
| <b>740-055-004:</b><br>Also available as un-terminated whip. | RG-59 Triax ( <b>TRI</b> ): 75 ohm video cable with polyethylene jacket.                             | <b>0-1000 feet:</b> Price is per-foot. Contact DeepSea for pricing. | <b>TOP/SS:</b> Standard. Also available on unterminated 18" whip. |
|                                                              | Kevlar Triax ( <b>KTRI</b> ): 75 ohm video cable with internal kevlar braid and polyurethane jacket. |                                                                     | <b>Other:</b> Please contact DeepSea with requirements.           |
| <b>How to Order:</b> ( 740-055-004 ) – ( ) – ( ) – ( )       |                                                                                                      |                                                                     |                                                                   |

## Power & Viewing

SS-1750 heads are ideally suited to work as a system with our family of controllers, which include the ability to vary the LED light intensity, view the image with high resolution monitors, output the video signal to other monitors and VCRs, or make video recordings with *Hands-Free* audio overlay.

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power+</b>      | <b>(P+)</b> 120 vac/60 Hz (or 220 vac/50 Hz) to ~12 vdc power supply. Includes direct connection for SS3ILMP terminated cables. RCA video output interfaces with customer-supplied monitors and VCRs. Variable LED intensity controller allows fine adjustment of lighting for different conditions. A Ground Fault Circuit Interrupt (GFCI) is included on the AC cord for added safety.                                                                                                                                                                                                                                                |
| <b>Monitor+</b>    | <b>(M+)</b> A P+ with high-resolution surveillance monitor (>850 TV lines) enclosed in a rugged, aluminum case. A metal sunshade folds down to protect the CRT screen and front panel controls during transport. A tilt-stand improves viewing angle when system is on the ground. Includes direct connection for TOP/SS-terminated cables. Variable LED intensity controller allows fine adjustment of lighting for different conditions. Video in/out jacks allow hook up to external devices such as VCRs, camcorders and other remote monitors. A Ground Fault Circuit Interrupt (GFCI) is included on the AC cord for added safety. |
| <b>Monitor+VCR</b> | <b>(M+VCR)</b> An M+ with added VHS VCR and <i>Hands-Free</i> audio recording. Video/audio out jacks, CB mike input jacks, front-panel wireless microphone and playback speaker, one-button monitor/record/play.                                                                                                                                                                                                                                                                                                                                                                                                                         |



*Specifications subject to change without notice*

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Rev. 12/29/99



# Deep-SeaLite

**11,000 METER RATING**

**ACCOMMODATES  
UP TO  
1000W LAMPS**

**VARIABLE BEAM  
PATTERNS**

**COMPETITIVELY  
PRICED**



The Deep-SeaLite is a deep ocean light fixture rated to 11,000 meters (36,000 feet), and can accommodate up to 1000W lamps. The design features a glass envelope with a specular wet reflector. Three different beam pattern reflectors are available. The reflectors are protected by a metal crash guard with rubber boot. The DS4 series of connector/lamp sockets from our Multi-SeaLites are used, making it easy to re-lamp.

The Deep-SeaLite is the best value in deep underwater lighting available on the market today.

# **Deep-SeaLite Specifications**

## **MECHANICAL**

Housing Material: 6AL-4V titanium (tiodize finish) and 6061 aluminum hard anodized  
Diameter: 16.51 cm (6.5 in.)  
Length: 20.0 cm (7.87 in.)  
Lens: Quartz  
Reflectors: Proprietary design spot, medium flood or wide flood  
Depth Rating: 11,000 meters (36,300 feet) of seawater  
Air Weight: 0.91 kg (2 lbs.)  
Water weight: 0.45 kg (1 lbs.)  
Mounts: Delrin collar included, yoke mounting bracket optional

## **OPTICAL**

Beam patterns (full angle measured to half power point using 120 volt/250 watt lamps):

Wide Flood (WFL): 80 degrees conical (estimated/actual TBD)  
Medium Flood (MFL): 60 degrees conical (estimated/actual TBD)  
Spot (SP): 30 degrees conical (estimated/actual TBD)

## **ENVIRONMENTAL**

Depth: 11,000 meters

## **REPLACEMENT LAMPS (Mini-Can screw base)**

Low voltage lamps (12V and 24V) are re-based, and are available only from DeepSea Power & Light.

| Model Number | Part Number | Volts** | Watts | Hours | Color Temp | Lumens |
|--------------|-------------|---------|-------|-------|------------|--------|
| MC-12/50     | 460-00018   | 12      | 50    | 2000  | 3000K      | 950    |
| MC-12/100    | 460-00026   | 12      | 100   | 1000  | 3100K      | 2,200  |
| MC-24/100    | 460-00099   | 24      | 100   | 2000  | 3000K      | 1,800  |
| MC-24/150    | 460-00034   | 24      | 150   | 70    | 3400K      | 5,000  |
| MC-24/250    | 460-00118   | 24      | 250   |       |            |        |
| MC-24/300    | 460-00097   | 24      | 300   |       |            |        |
| MC-120/100   | 460-00053   | 120     | 100   | 1500  | 2700K      | 1,600  |
| MC-120/150   | 460-00055   | 120     | 150   | 1500  | 2850K      | 2,400  |
| MC-120/250   | 460-00059   | 120     | 250   | 2000  | 2900K      | 4,750  |
| MC-120/325   | 460-00061   | 120     | 325   | 500   | 3100K      |        |
| MC-120/500   | 460-00064   | 120     | 500   | 2000  | 2950K      | 9,930  |
| MC-120/750   | 460-00066   | 120     | 750   | 500   | 3050K      |        |
| MC-120/1000  | 460-00069   | 120     | 1000  |       |            |        |
| MC-220/150   | 460-00078   | 220     | 150   | 1300  | 2800K      | 2,100  |
| MC-220/250   | 460-00079   | 220/230 | 250   | 2000  | 2900K      | 4,500  |
| MC-240/250   | 460-00082   | 240     | 250   | 2000  | 2900K      | 4,200  |
| MC-240/500   | 460-00084   | 240     | 500   | 2000  | 2950K      | 9,500  |

\*\* 220/230V, 230V, and 240V lamps are used to meet a nominal 240V requirement.



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**DEEPSEA**  
POWER & LIGHT

# Deep-SeaProjector

**6000 METER DEPTH  
RATING**

**ILLUMINATES EVENLY  
DEFINED COLUMN OF  
WATER**

**ADJUSTABLE BEAM  
ANGLE**



The Deep-SeaProjector provides a highly structured underwater white light source using slide projector optics. Its primary applications will be for counting sea life or other objects in defined areas for research. Deep-SeaProjectors are often used in pairs to illuminate an evenly defined volume of water. The beam angle can be adjusted using the zoom lens built into the Deep-SeaProjector.

The Deep-SeaProjector is rated to 6000 meters, and measures approximately 22 inches (L) x 4 inches (W). It uses a 360W lamp, and has a glass window. It also comes with a square slide gate, with other shapes available. The body is aluminum with a combination Delrin and titanium head. A lower cost model is available with a 2000 meter rating.

# Deep-Sea Projector Specifications

## MECHANICAL

|                   |                                          |
|-------------------|------------------------------------------|
| Housing Material: | 7075-T6 aluminum, black Delrin, titanium |
| Port:             | BK-7 borosilicate                        |
| Length:           | 56.24 cm (22.14 in.)                     |
| Diameter:         | 10.03 cm (3.95 in.)                      |
| Beam Pattern:     | Adjustable                               |
| Weight in Air:    | 5.2 kg (11 lbs. 10 oz.)                  |
| Weight in Water:  | 1.9 kg (4 lbs. 5 oz.)                    |

## ELECTRICAL

|                |       |
|----------------|-------|
| Input Voltage: | 82V   |
| Lamp:          | 360W  |
| Connector:     | BH3MP |

## ENVIRONMENTAL

|        |                                                                   |
|--------|-------------------------------------------------------------------|
| Depth: | 6,000 meters (20,000 feet);<br>2,000 meters (6,500 feet) optional |
|--------|-------------------------------------------------------------------|



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Rev. 12/29/99



# DropLite

**1,000 METER DEPTH  
RATING**

**UP TO 1000 WATTS**

**QUARTZ HALOGEN  
LAMPS**

**RUGGED,  
LOW WEIGHT  
CONSTRUCTION**



DropLites are underwater lights designed to be dropped off the side of a boat or lowered into a tube or pipe. DropLites use standard screw base quartz halogen lamps which are available up to 1000 watts. An exclusive spring loaded socket prevents vibration-loosening lamp failures. The DropLite's built-in underwater electrical connector allows the light to be removed from the power cable. Relamping is easily done without the use of a tool by unscrewing the connector/socket assembly from the light body.

A lightweight, plastic tube protects the fixture from shock and impact. This protective housing is made from tough, non-corrodible polycarbonate. The tube housing permits unrestricted, omnidirectional lighting.

Applications for the DropLite include attracting fish, pipe inspection, and general underwater illumination.

# DropLite Specifications

## MECHANICAL

Material: Anodized 6061-T6 aluminum  
Length: 15.2 cm (6.0 in.)  
Diameter: 4.4 cm (1.75 in.)  
Tube Housing: 5.1 cm (2.0 in.) outer diameter by 30.5 cm (12.0 in.) overall length  
Weight in Air: 0.3 kg (0.7 lbs.)  
Weight in Water: 0.1 kg (0.1 lbs.)  
Depth Rating: 1,000 meters (3,250 feet)  
Mounting: Multi-position collar bracket

## ELECTRICAL

Operating Voltages: 12, 24, 120, or 240  
Available Wattages: 50, 100, 150, 250, 500, 750, or 1,000  
Connectors: BH3M, XSG3BCL, Penetrator

## ENVIRONMENTAL

Depth: 1,000 meters (3,250 feet)

## REPLACEMENT LAMPS (Mini-Can screw base)

Low voltage lamps (12V and 24V) are re-based, and are available only from DeepSea Power & Light.

| Model Number | Part Number | Volts** | Watts | Hours | Color Temp | Lumens |
|--------------|-------------|---------|-------|-------|------------|--------|
| MC-12/50     | 460-00018   | 12      | 50    | 2000  | 3000K      | 950    |
| MC-12/100    | 460-00026   | 12      | 100   | 1000  | 3100K      | 2,200  |
| MC-24/100    | 460-00099   | 24      | 100   | 2000  | 3000K      | 1,800  |
| MC-24/150    | 460-00034   | 24      | 150   | 70    | 3400K      | 5,000  |
| MC-24/250    | 460-00118   | 24      | 250   |       |            |        |
| MC-24/300    | 460-00097   | 24      | 300   |       |            |        |
| MC-120/100   | 460-00053   | 120     | 100   | 1500  | 2700K      | 1,600  |
| MC-120/150   | 460-00055   | 120     | 150   | 1500  | 2850K      | 2,400  |
| MC-120/250   | 460-00059   | 120     | 250   | 2000  | 2900K      | 4,750  |
| MC-120/325   | 460-00061   | 120     | 325   |       |            |        |
| MC-120/500   | 460-00064   | 120     | 500   | 2000  | 2950K      | 9,930  |
| MC-120/750   | 460-00066   | 120     | 750   |       |            |        |
| MC-120/1000  | 460-00069   | 120     | 1000  |       |            |        |
| MC-220/150   | 460-00078   | 220     | 150   | 1300  | 2800K      | 2,100  |
| MC-220/250   | 460-00079   | 220/230 | 250   | 2000  | 2900K      | 4,500  |
| MC-240/250   | 460-00082   | 240     | 250   | 2000  | 2900K      | 4,200  |
| MC-240/500   | 460-00084   | 240     | 500   | 2000  | 2950K      | 9,500  |

\*\* 220/230V, 230V, and 240V lamps are used to meet a nominal 240V requirement



*Specifications subject to change without notice*

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Rev. 12/29/99



# Micro-SeaLite

**1,000 METER  
RATING**

**ULTRA-SMALL  
DC LIGHT**

**WET/DRY  
OPERATION**

**COMPETITIVELY  
PRICED**



The Micro-SeaLite is a unique ultra-compact light for applications where size or weight are limiting factors. This low voltage (12 or 24 VDC) light offers high efficiency wide-beam optics. It outperforms 120V tubular "mini" lights that have three times the lamp wattage. The Micro-SeaLite is available in 12W, 20W, and 35W versions with a choice of three beam patterns for each wattage. The unique ground and polished quartz window provides broad, even beams.

## Micro-SeaLite Specifications

### MECHANICAL

Housing Material: 6061-T6 hard natural anodize with dichromate seal  
Diameter: 3.77 cm (1.485 in.)  
Length: 6.73 cm (2.65 in.) without connector  
Lens: Quartz  
Reflectors: Wide flood  
Air Weight: 99 g (0.22 lbs.)  
Water weight: 50 g (0.11 lbs.)  
Mounts: Collar and yoke bracket included

### ENVIRONMENTAL

Depth Rating: 1,000 meters (3,250 feet) of seawater

### REPLACEMENT LAMPS

The following bi-pin lamps are available:

| <u>PART NO</u> | <u>VOLTS</u> | <u>WATTS</u> | <u>COLOR TEMP.</u> | <u>LAMP LIFE</u> |
|----------------|--------------|--------------|--------------------|------------------|
| B4-12/12       | 12           | 12           | 3000K              | 2000 Hrs         |
| B4-12/20       | 12           | 20           | 3000K              | 2000 Hrs         |
| B4-12/35       | 12           | 35           | 3000K              | 2000 Hrs         |
| B4-24/20       | 24           | 20           | 3000K              | 2000 Hrs         |



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Rev. 12/29/99



# Mini-SeaLite

**1,000 METER  
DEPTH RATING**

**ULTRA-SMALL**

**LIGHT WEIGHT**



The Mini-SeaLite was designed as a helmet light to accompany our line of ultra-small video cameras. This 1,000-meter depth-rated light utilizes the Mini-can screw base lamp socket/rear connector combination developed for the Multi-SeaLite for ease of relamping. The interior surface of the housing has a special diffuse coating to assure an even beam pattern for video illumination. There is no separate reflector to increase the diameter of the light body, as minimum diameter was the primary design parameter. A special optical window increases beam angle to match the camera field of view. Optional mounting brackets are available.

## Mini-SeaLite Specifications

### MECHANICAL

|                   |                                              |
|-------------------|----------------------------------------------|
| Housing Material: | 6061-T6 aluminum; stainless steel (optional) |
| Port:             | Quartz glass                                 |
| Length:           | 14.0 cm (5.5 in.)                            |
| Diameter:         | 3.8 cm (1.5 in.)                             |
| Weight in Air:    |                                              |
| Aluminum:         | 0.2 kg (0.4 lbs.)                            |
| Stainless steel:  | 0.4 kg (0.8 lbs.)                            |
| Weight in Water:  |                                              |
| Aluminum:         | 0.1 kg (0.3 lbs.)                            |
| Stainless steel:  | 0.3 kg (0.6 lbs.)                            |

### ELECTRICAL

|               |                                                     |
|---------------|-----------------------------------------------------|
| Beam Pattern: | 78 degrees (full angle measure to half power point) |
| Connector:    | LPBH3M, BH3M, XSG-3-BCL, straight molded penetrator |

### ENVIRONMENTAL

|        |                           |
|--------|---------------------------|
| Depth: | 1,000 meters (3,250 feet) |
|--------|---------------------------|

### REPLACEMENT LAMPS (Mini-Can screw base)

Low voltage lamps (12V and 24V) are re-based, and are available only from DeepSea Power & Light.

| Model Number | Part Number | Volts** | Watts | Hours | Color Temp | Lumens |
|--------------|-------------|---------|-------|-------|------------|--------|
| MC-12/50     | 460-00018   | 12      | 50    | 2000  | 3000K      | 950    |
| MC-12/100    | 460-00026   | 12      | 100   | 1000  | 3100K      | 2,200  |
| MC-24/100    | 460-00099   | 24      | 100   | 2000  | 3000K      | 1,800  |
| MC-24/150    | 460-00034   | 24      | 150   | 70    | 3400K      | 5,000  |
| MC-24/250    | 460-00118   | 24      | 250   |       |            |        |
| MC-24/300    | 460-00097   | 24      | 300   |       |            |        |
| MC-120/100   | 460-00053   | 120     | 100   | 1500  | 2700K      | 1,600  |
| MC-120/150   | 460-00055   | 120     | 150   | 1500  | 2850K      | 2,400  |
| MC-120/250   | 460-00059   | 120     | 250   | 2000  | 2900K      | 4,750  |
| MC-120/325   | 460-00061   | 120     | 325   |       |            |        |
| MC-220/150   | 460-00078   | 220     | 150   | 1300  | 2800K      | 2,100  |
| MC-220/250   | 460-00079   | 220/230 | 250   | 2000  | 2900K      | 4,500  |
| MC-240/250   | 460-00082   | 240     | 250   | 2000  | 2900K      | 4,200  |

\*\* 220/230V, 230V, and 240V lamps are used to meet a nominal 240V requirement.



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Rev. 12/29/99



# Multi-SeaLite

**1,000 METER DEPTH  
RATING**

**VARIABLE BEAM  
PATTERNS**

**AVAILABLE IN  
ALUMINUM,  
STAINLESS STEEL,  
OR TITANIUM**

**COMPACT &  
LIGHT WEIGHT**

**COMPETITIVELY  
PRICED**



The Multi-SeaLite fills the void of a high performance light at a reasonable price. The multitude of configurations makes this light truly multi-purpose. Options include three different reflectors, lamps in varying wattage and voltages, and four types of connectors.

Three different DeepSea-designed, user-interchangeable reflectors tailor the light's output from a spot to even, "hot spot"-free medium and wide angle flood beam patterns. An external lens retaining cowl protects the borosilicate glass dome and acts as a baffle to prevent stray light from entering the water column, thus minimizing backscatter. The Multi-SeaLite is 1,000 msw (3,280 fsw) rated and available in aluminum, stainless steel, and titanium housings. The aluminum version has a hard anodized body and an Ultem plastic cowl for increased corrosion resistance.

# Multi-SeaLite Specifications

## MECHANICAL

|                   |                                                       |
|-------------------|-------------------------------------------------------|
| Housing Material: | Anodized aluminum or electro-polished stainless steel |
| Length:           | 15.5 cm (6.1 inches) (with BH3M connector)            |
| Diameter:         | 7.9 cm (3.1 inches)                                   |
| Lens:             | Clear tempered borosilicate                           |
| Reflectors:       | Proprietary design spot, medium flood or wide flood   |
| Air Weight:       | Aluminum 519 g (18 oz.)                               |
|                   | Stainless Steel 952 g (34 oz.)                        |
| Water weight:     | Aluminum 170 g (6 oz.)                                |
|                   | Stainless Steel 624 g (22 oz.)                        |

## OPTICAL

Beam patterns (full angle measured to half power point using 120 volt/250 watt lamps):

|                     |                    |
|---------------------|--------------------|
| Wide Flood (WFL):   | 59 degrees conical |
| Medium Flood (MFL): | 40 degrees conical |
| Spot (SP):          | 16 degrees conical |

## ENVIRONMENTAL

|        |                           |
|--------|---------------------------|
| Depth: | 1,000 meters (3,250 feet) |
|--------|---------------------------|

## MISCELLANEOUS

|             |                                                                                     |
|-------------|-------------------------------------------------------------------------------------|
| Connectors: | BH3M, XSG-3-BCL, LPBH3M, straight molded penetrator                                 |
| Filters:    | Ultra-violet (other colors optional)                                                |
| Mounts:     | Collar bracket included, yoke mounting bracket and helmet mounting bracket optional |

## REPLACEMENT LAMPS (Mini-Can screw base)

Low voltage lamps (12V and 24V) are re-based, and are available only from DeepSea Power & Light.

| Model Number | Part Number | Volts** | Watts | Hours | Color Temp | Lumens |
|--------------|-------------|---------|-------|-------|------------|--------|
| MC-12/50     | 460-00018   | 12      | 50    | 2000  | 3000K      | 950    |
| MC-12/100    | 460-00026   | 12      | 100   | 1000  | 3100K      | 2,200  |
| MC-24/100    | 460-00099   | 24      | 100   | 2000  | 3000K      | 1,800  |
| MC-24/150    | 460-00034   | 24      | 150   | 70    | 3400K      | 5,000  |
| MC-24/250    | 460-00118   | 24      | 250   |       |            |        |
| MC-24/300    | 460-00097   | 24      | 300   |       |            |        |
| MC-120/100   | 460-00053   | 120     | 100   | 1500  | 2700K      | 1,600  |
| MC-120/150   | 460-00055   | 120     | 150   | 1500  | 2850K      | 2,400  |
| MC-120/250   | 460-00059   | 120     | 250   | 2000  | 2900K      | 4,750  |
| MC-120/325   | 460-00061   | 120     | 325   |       |            |        |
| MC-120/500   | 460-00064   | 120     | 500   | 2000  | 2950K      | 9,930  |
| MC-220/150   | 460-00078   | 220     | 150   | 1300  | 2800K      | 2,100  |
| MC-220/250   | 460-00079   | 220/230 | 250   | 2000  | 2900K      | 4,500  |
| MC-240/250   | 460-00082   | 240     | 250   | 2000  | 2900K      | 4,200  |
| MC-240/500   | 460-00084   | 240     | 500   | 2000  | 2950K      | 9,500  |

\*\* 220/230V, 230V, and 240V lamps are used to meet a nominal 240V requirement.



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Rev. 12/29/99



# Deep Multi-SeaLite

**6,000 METER DEPTH  
RATING**

**VARIABLE BEAM  
PATTERNS**

**COMPACT &  
LIGHT WEIGHT**

**ECONOMICALLY  
PRICED**



The Deep Multi-SeaLite provides an improved high performance, deep ocean depth light at an economical price. The multitude of configurations makes this light truly multi-purpose. Options include three different reflectors, lamps in varying wattage and voltages, and four types of connectors.

Three different DeepSea-designed, user-interchangeable reflectors tailor the light's output from a spot to even, "hot spot"-free medium and wide angle flood beam patterns. An external lens retaining cowl protects the borosilicate glass dome and acts as a baffle to prevent stray light from entering the water column, thus minimizing backscatter. The Deep Multi-SeaLite is 6,000 msw (20,000 fsw) rated and available in a hard anodized aluminum body with an Ultem plastic cowl for increased corrosion resistance.

The Deep Multi-SeaLite utilizes the standard Mini-can screw based lamps. DeepSea's unique socket design eliminates vibration related contact failures. This family of lamps is readily available off the shelf around the world, making accessibility to replacement lamps easy and economical. DeepSea also stocks a complete line of these lamps.

# **Deep Multi-SeaLite Specifications**

## **MECHANICAL**

Housing Material: Hard anodized 6061 aluminum  
Length: 15.5 cm (6.1 inches) (with BH3M connector)  
Diameter: 7.9 cm (3.1 inches)  
Lens: Clear tempered borosilicate  
Reflectors: Proprietary design spot, medium flood or wide flood  
Air Weight: 519 g (18 oz.)  
Water Weight: 170 g (6 oz.)

## **OPTICAL**

Beam patterns (full angle measured to half power point using 120 volt/250 watt lamps):

Wide Flood (WFL): 60 degrees conical  
Medium Flood (MFL): 40 degrees conical  
Spot (SP): 15 degrees conical

## **ENVIRONMENTAL**

Depth Rating: 6,000 meters (20,000 feet) of seawater

## **REPLACEMENT LAMPS (Mini-Can screw base)**

Low voltage lamps (12V and 24V) are re-based, and are available only from DeepSea Power & Light.

| Model Number | Part Number | Volts** | Watts | Hours | Color Temp | Lumens |
|--------------|-------------|---------|-------|-------|------------|--------|
| MC-12/50     | 460-00018   | 12      | 50    | 2000  | 3000K      | 950    |
| MC-12/100    | 460-00026   | 12      | 100   | 1000  | 3100K      | 2,200  |
| MC-24/100    | 460-00099   | 24      | 100   | 2000  | 3000K      | 1,800  |
| MC-24/150    | 460-00034   | 24      | 150   | 70    | 3400K      | 5,000  |
| MC-24/250    | 460-00118   | 24      | 250   |       |            |        |
| MC-24/300    | 460-00097   | 24      | 300   |       |            |        |
| MC-120/100   | 460-00053   | 120     | 100   | 1500  | 2700K      | 1,600  |
| MC-120/150   | 460-00055   | 120     | 150   | 1500  | 2850K      | 2,400  |
| MC-120/250   | 460-00059   | 120     | 250   | 2000  | 2900K      | 4,750  |
| MC-120/325   | 460-00061   | 120     | 325   |       |            |        |
| MC-220/150   | 460-00078   | 220     | 150   | 1300  | 2800K      | 2,100  |
| MC-220/250   | 460-00079   | 220/230 | 250   | 2000  | 2900K      | 4,500  |
| MC-240/250   | 460-00082   | 240     | 250   | 2000  | 2900K      | 4,200  |

\*\* 220/230V, 230V, and 240V lamps are used to meet a nominal 240V requirement.



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# **Wet/Dry Multi-SeaLite**

**FUNCTIONS IN AIR  
OR WATER**

**1,000 METER  
DEPTH RATING**

**VARIABLE BEAM  
PATTERNS**



The The Wet/Dry Multi-SeaLite is a light designed for applications requiring lights that can function continuously in either water or air. With its unique cooling fins, it can even withstand immersion in water after several hours of burning in air.

Compatibility with DeepSea's other lights is a key benefit to customers. The Wet/Dry Multi-SeaLite uses the same connectors and lamps as DeepSea's popular Multi-SeaLite, eliminating the need for extra cables or spare lamps. It also uses the same yoke mounting brackets. The Wet/Dry Multi-SeaLite uses lamps in 12V, 24V, 120V, or 240V in 50W or 100W. Like nearly all of DeepSea's lighting products, a choice of three beam patterns is available.

With a 1,000 meter depth rating and competitive pricing, the Wet/Dry Multi-SeaLite can be used in a variety of applications. These include above and below waterline hull inspection, tank and pipe inspection (empty or full), any low voltage operation, and more.

# Wet/Dry Multi-SeaLite Specifications

## MECHANICAL

Housing Material: Anodized aluminum  
Length: 16.2 cm (6.4 inches) (with BH3M connector)  
Diameter: 10.5 cm (4.125 inches)  
Lens: Clear tempered borosilicate  
Reflectors: Proprietary design spot, medium flood or wide flood  
Air Weight: 909 g (2 lbs.)  
Water weight: 227 g (0.5 lbs.)

## OPTICAL

Beam patterns (full angle measured to half power point using 120 volt/100 watt lamps):  
Wide Flood (WFL): 59 degrees conical  
Medium Flood (MFL): 40 degrees conical  
Spot (SP): 16 degrees conical

## ENVIRONMENTAL

Depth: 1,000 meters (3,280 feet) of seawater

## MISCELLANEOUS

Connectors: BH3M type bulkhead connector  
XSG-3-BCL type bulkhead connector  
Straight molded penetrator

## REPLACEMENT LAMPS (Mini-Can screw base)

Low voltage lamps (12V and 24V) are re-based, and are available only from DeepSea Power & Light.

| Model Number | Part Number | Volts | Watts | Hours | Color Temp | Lumens |
|--------------|-------------|-------|-------|-------|------------|--------|
| MC-12/50     | 460-00018   | 12    | 50    | 2000  | 3000K      | 950    |
| MC-12/100    | 460-00026   | 12    | 100   | 1000  | 3100K      | 2,200  |
| MC-24/100    | 460-00099   | 24    | 100   | 2000  | 3000K      | 1,800  |
| MC-120/100   | 460-00053   | 120   | 100   | 1500  | 2700K      | 1,600  |



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Rev. 12/29/99

**ECONOMICAL PRICE**

**INTERCHANGEABLE  
REFLECTORS**

**HELMET  
MOUNTING  
BRACKET**

**1,000 METER  
DEPTH RATING**



The RiteLite is packed with advanced design features and yet is DeepSea's most economically priced light. The same high performance reflectors and glass domes used in the Multi-SeaLite are used in the RiteLite for high efficiency optics. A tough, plastic front cowl protects the glass dome and provides better beam control so backscatter can be minimized.

The RiteLite's plastic housing is impact resistant and immune to corrosion related failures. Bi-pin type low voltage lamps used in the RiteLite provide safe operation when divers are in the water. These efficient lamps are not prone to shock related failures and are available worldwide.

Incorporated into the RiteLite is a novel connector system which greatly reduces connector-related failures. The rear end of the molded light body is an integral bulkhead connector. Recessed electrical contact pins are protected from damage and an additional alignment pin ensures proper connections. The captivated locking sleeve assists in connection and disconnection of the power cable and reduces the strain on the molded connector. The locking sleeve screws directly onto the rear of the light body, preventing the connector from being accidentally unplugged.

The RiteLite is delivered complete with lamp, reflector, and mating cable. With the optional helmet mounting bracket, the RiteLite can be easily mounted on a SuperLite or many other types of diving helmets.

# RiteLite Specifications

## MECHANICAL

Length: 11.6 cm (4.6 in.)  
Diameter: 7.9 cm (3.1 in.)  
Housing Material: Glass reinforced epoxy body and Ultem plastic cowl  
Lens: Clear tempered borosilicate  
Reflectors: Proprietary design spot, medium flood, or wide flood  
Weight in Air: 0.3 kg (0.7 lbs.)  
Weight in Water: Neutrally buoyant  
Depth Rating: 1,000 meters (3,250 feet) of seawater

## ELECTRICAL

Operating Voltages: 12 or 24 VDC  
Bulkhead Connector: RC-2-MP  
Mating Connector: RC-2-FS (in-line)

## MISCELLANEOUS

Mounts: RL-HMB (Helmet Mounting Bracket)

## REPLACEMENT LAMPS

| Model Number | Part Number | Volts | Watts | Hours | Color Temp | Lumens |
|--------------|-------------|-------|-------|-------|------------|--------|
| B6-12/50     | 460-00115   | 12    | 50    | 2000  | 3000K      | 850    |
| B6-BRL       | 460-00019   | 12    | 50    | 50    | 3300K      | 1,400  |
| B6-12/100    | 460-00027   | 12    | 100   | 1000  | 3100K      | 2,200  |
| B6-FCR       | 460-00113   | 12    | 100   | 70    | 3350K      | 2,800  |
| B6-24/100    | 460-00114   | 24    | 100   | 2000  | 3000K      | 1,800  |
| B6-FCS       | 460-00035   | 24    | 150   | 70    | 3400K      | 4,700  |



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Rev. 12/29/99



# Camera Control Unit

**TOPSIDE VIDEO  
CONTROL UNIT**

**RUGGED  
CONSTRUCTION**

**MONITOR & VCR  
IN ONE UNIT**

**MANY OPTIONS  
AVAILABLE**



DeepSea's Camera Control Unit (CCU) is a rugged, plastic case containing a VHS-format VCR, 13-inch color TV (NTSC format) and camera power supply. With all options installed, the CCU is a complete topside control unit that provides power to the diver's video camera, adjustable power to diver's lights, communications between diver and topside, topside viewing and taping of underwater activity, and time/date/titler overlay video for annotation.

Options for the CCU include:

- 500W light controller
- Amron diver's communications (Amcom I)
- Time, date, and two-line title overlay generator

# Camera Control Unit Specifications

## BASE UNIT

|               |                           |
|---------------|---------------------------|
| Width:        | 55.88 cm (22 in.)         |
| Depth:        | 53.34 cm (21 in.)         |
| Height:       | 59.69 cm (23.5 in.)       |
| Weight:       | 32 kg (70 lbs.)           |
| Input Power:  | 120 VAC                   |
| Output Power: | 13 VDC, 1 amp for camera  |
| VCR:          | VHS format (NTSC only)    |
| Monitor:      | 13-inch color (NTSC only) |

## OPTIONS

|                       |                                                                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Communication System: | Amron Amcon I diver two-way communications powered from the base unit power supply.<br>Can be wired as two- or four-wire comm system. |
| Light Controller:     | Isolated AC voltage to run underwater lights.<br>Voltage is adjustable from 0 to 120 VAC, power maximum 500 VA.                       |
| Overlay Generator:    | Time, date, and two-line titler. Time and date are real time, two lines of text are set through front panel switches.                 |



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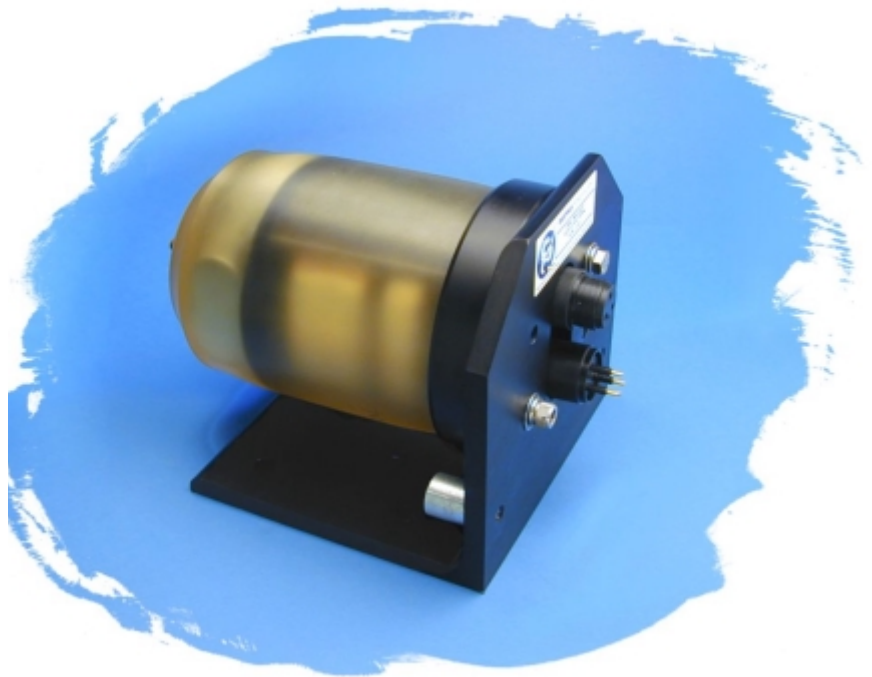
# **SeaArc2 (HID) Underwater Ballast**

**FULL OCEAN DEPTH  
RATED**

**ECONOMICAL**

**DURABLE**

**250 AND 400 WATT  
MODEL**



The ballast provides power to a 250 or 400 watt HID SeaArc lamp ballast output for underwater lighting. The ballast allows the lighthouse to be controlled remotely from the ballast over distances greater than 300 meters (depends on wire gage). The ballast comes in a durable polyurethane bladder mounted on an anodized aluminum mounting platform.

# **SeaArc2 (HID) Underwater Ballast**

## Specifications

### MECHANICAL

|                  |                    |
|------------------|--------------------|
| Width:           | 16.5 cm (6.5 in.)  |
| Length:          | 31.5 cm (12.4 in.) |
| Weight in Air:   | 9.1 kg (20 lbs.)   |
| Weight in Water: | 4.3 kg (9.5 lbs.)  |
| Input Power:     | 120 or 240 VAC     |

### ELECTRICAL

|                          |                                                            |
|--------------------------|------------------------------------------------------------|
| Input Connector:         | BH3MP                                                      |
| Input Pin-out (120 VAC): | 1 = Hot<br>2 = Neutral<br>3 = Ground (Earth)               |
| Output Connector:        | BH3FS                                                      |
| Output Pin-out:          | 1 = Lamp (Hot)<br>2 = Lamp (Neutral)<br>3 = Ground (Earth) |

### ENVIRONMENTAL

|               |                                          |
|---------------|------------------------------------------|
| Depth Rating: | Pressure-compensated to full ocean depth |
|---------------|------------------------------------------|



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# SeaArc2 (HMI®/MSR)

**HIGH EFFICIENCY  
HMI/MSR ARC LAMPS**

**DAYLIGHT COLOR  
TEMPERATURE 5600° K**

**COLOR RENDERING  
INDEX GREATER  
THAN 90**

**SUITABLE FOR COLOR  
OR B/W VIDEO IMAGING**

**200 AND 400  
WATT MODELS**



The SeaArc2 HMI/MSR underwater lights are 3-4 times more efficient (lumens/watt) than comparable tungsten-halogen lights. Since there is no filament to break, SeaArc2 lights are less sensitive to vibration and shock. The SeaArc2 HMI/MSR lights are built using the 200W MSR200/HR and the 400W MSR/400HR lamps.

HMI/MSR lamps are AC-operated discharge lamps in which the luminous arc burns in a dense vapor atmosphere comprising mercury and the halides of rare earths. The MSR in the part number indicates Medium Source Rare earth (MSR) elements, the number indicates the wattage, and the HR designates Hot Restrike.

HMI lamps have a color temperature of 5600°K. Advantages of HMI/MSR lamps over HID lamps is they warm up in 1-2 minutes and have an instant restrike ability. HMI lamps can also be dimmed when operated from a ballast with dimming circuitry.

A properly designed ballast is required to operate a SeaArc2. SeaArc2 HMI/MSR ballasts can be powered from either AC or DC voltage. It accepts a nominal input voltage of 120V or 240V, ranging from 110V to 300V. The ballast provides properly conditioned AC voltage/current required by the ignitor circuit and lamp in the lighthouse.

The HMI ballast can even power DeepSea's proprietary TI/EB (Thallium Iodide/ElectronicBallast) lamp, a specially configured Thallium Iodide (TI) lamp. TI lamps produce an intense, monochromatic green light output (535 nm) which is close to the transmission "window" of seawater. The TI lamp offers maximum light penetration for long range monochromatic imaging applications such as submersible navigation and subsea surveying. TI lamps typically operate from HID magnetic ballasts. However, using a special ignitor, this lamp gives users the flexibility to use one type of ballast to power an HMI or a TI lamp. You can freely swap lighthouses with no modification to the ballast. DeepSea offers a dual ballast housing, so that users can operate a TI/EB and HMI from the same housing.

There are options available in the types of reflectors, depth rating, types of material, and types of ballasts. Specification for the 6000 meter 400 Watt Lighthouse are on the reverse side as a sample of what is available. Please call for assistance in determining the best combination of options to meet your requirements.

# **SeaArc2 HMI<sup>®</sup>/MSR Specifications**

## **For Lighthouse 400 Watt/6000 meter depth rating**

### **MECHANICAL**

#### **Material:**

|                         |                       |
|-------------------------|-----------------------|
| Lighthouse Body:        | Titanium 6AL-4V       |
| Dome Retaining Cowl:    | Black Acetal (Delrin) |
| Glass Dome:             | Borosilicate          |
| Length:                 | 27.43 cm (10.8 in.)   |
| Diameter:               | 13.46 cm (5.3 in.)    |
| Air Weight:             | 3.67 kg (8.1 lbs.)    |
| Water Weight (approx.): | 1.8 kg (4.0 lbs.)     |
| Reflector:              | Spot, medium, or wide |

### **ENVIRONMENTAL**

|               |                           |
|---------------|---------------------------|
| Depth Rating: | 6,000 meters (19,680 ft.) |
| Temperature:  | -5 to +40 deg. C          |

### **ELECTRICAL**

|                                  |                                                   |
|----------------------------------|---------------------------------------------------|
| Input Connector:                 | LPBH-3-MP                                         |
| Input Voltage:                   | From ballast; 400W 300 Hz Sq. Wave                |
| Input Power:                     | 400 watts                                         |
| Ballast Input Voltage Range:     | 110V-190V AC or DC, 190V-275V AC,<br>190V-300V DC |
| Lamp Wattage:                    | 400 watts                                         |
| Lamp Average Life Time:          | 650 hours                                         |
| Recommended Lamp<br>Replacement: | 750 hours                                         |

**Note:** Average Life Time is related to a burning cycle of 3.5 hours on and 0.5 hours off. Because the risk of arc tube rupture increases with the increasing life time of the lamp, it is advised not to use the lamp longer than the recommended replacement time.



HMI is a registered trademark of Osram



*Specifications subject to change without notice*

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**Web:** <http://www.deepsea.com> • **e-mail:** [info@deepsea.com](mailto:info@deepsea.com)

Rev. 12/29/99



# 1200W SeaArc2 [HMI®]

**1200 WATT HIGH  
EFFICIENCY HMI/MSR  
ARC LAMPS**

**DAYLIGHT COLOR  
TEMPERATURE  
5600° K**

**COLOR RENDERING  
INDEX GREATER  
THAN 90**

**SUITABLE FOR  
COLOR OR B/W  
VIDEO IMAGING**



The 1200W SeaArc2 HMI underwater luminaire is the highest performance light source for underwater imaging systems today. The 1200W SeaArc2 HMI utilizes a 1200W Vapor Arc Discharge lamp providing for a near-daylight visible spectral output of light. The pressure housing is constructed of 6AL-4V titanium and quartz glass, which allows the luminaire to operate at a depth of 6,000 meters (20,000 feet).

A 1200W Vapor Arc Discharge lamp produces more than 100,000 lumens of radiant light output, which is 4-1/2 times more efficient than that of conventional tungsten-halogen incandescent light sources. This light source is ideal for commercial lighting applications due to its high efficiency and continuous visible spectral output of light.

The 1200W SeaArc2 HMI luminaire's pressure housing and endcap assembly are constructed from 6AL-4V titanium and the lamp is encapsulated in a quartz glass envelope. The endcap assembly incorporates two pressure relief valves for nitrogen purging and has an LPBH4MP connector.

The 1200W SeaArc2 HMI luminaire is available with three different optical configurations to satisfy different performance demands. The high intensity of light emission is controlled and directed with three types of reflectors: wide, medium, and spot.

## **1200W SeaArc2 (HMI®) Specifications**

### **MECHANICAL**

**Material:**

Lighthouse Body: Titanium 6AL-4V

Glass Envelope: Quartz

Length: 62.2 cm (24.50 in.) with spot reflector  
52.5 cm (20.67 in.) with medium reflector  
47.3 cm (18.64 in.) with wide reflector

Diameter: 27.3 cm (10.75 in.) with spot or medium reflector  
28.3 cm (11.14 in.) with wide reflector

Air Weight: 6.5 kg (14.4 lbs.) with Delrin mounting block

Water Weight (approx.): 3.25 kg (7.2 lbs.)

Reflector: Spot, medium, or wide

### **ENVIRONMENTAL**

Depth Rating: 6,000 meters (20,000 ft.)

Design Safety Factor: 1.5 times depth rating

Temperature: -5 to +40 deg. C

### **ELECTRICAL**

InputConnector: LPBH-4-MP

InputVoltage: From ballast

InputPower: 1200 watts

®

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Rev. 12/29/99



# SeaLite

**LARGE ASSORTMENT  
OF LAMPS**

**RUGGED, COMPACT  
DESIGN**

**MODULAR  
REFLECTOR  
SYSTEM**

**COMPLETE WITH  
BRACKET, LAMP,  
CHOICE OF  
REFLECTOR**



The SeaLite line of underwater lights is fast becoming the number one choice for every underwater lighting requirement. The original patented standard SeaLite offers exceptional versatility through modular design. Lamp voltages range from 12 VDC to 240 VAC, while wattages range from 50 through 500 watts. All lamps are positive locking bayonet mount, which eliminates the vibration related failures associated with screw base type lamps. Relamping is quickly accomplished without tools by simply unscrewing the front bezel assembly from the light body. The glass-to-metal seal of the envelope to the bezel is never disturbed during the relamping process; this ensures maximum reliability. Modular reflectors provide beam patterns ranging from a medium spot to wide angle—optimal lighting for almost any conceivable application. The SeaLite body and bezel are constructed of hard black anodized aluminum for superior corrosion resistance. The black finish minimizes stray reflections which cause flare in video images. Standard depth rating is 6,000 meters (20,000 feet).

# SeaLite Specifications

## MECHANICAL

|                         |                                                                                                                                 |                    |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Maximum Outer Diameter: | with VID-1 reflector:                                                                                                           | 5.7 cm (2.25 in.)  |
|                         | with VID-2 reflector:                                                                                                           | 7.4 cm (2.90 in.)  |
| Length:                 | with NF-1 reflector:                                                                                                            | 11.7 cm (4.61 in.) |
|                         | with VID-1 reflector:                                                                                                           | 15.0 cm (5.90 in.) |
|                         | with VID-2 reflector:                                                                                                           | 17.0 cm (6.70 in.) |
|                         | with NF-1 reflector:                                                                                                            | 16.2 cm (6.39 in.) |
| Weight in Air:          | with VID-1 reflector:                                                                                                           | 0.4 kg (13 oz.)    |
|                         | with VID-2 reflector:                                                                                                           | 0.6 kg (20 oz.)    |
|                         | with NF-1 reflector:                                                                                                            | 0.3 kg (12 oz.)    |
| Material:               | 6061-T6 aluminum                                                                                                                |                    |
| Finish:                 | Hard black anodize                                                                                                              |                    |
| Lens:                   | 19 and 25 mm handblown pyrex envelope (quartz optional)                                                                         |                    |
| Reflector Options:      | Aluminum specular narrow flood (NF-1),<br>Delrin plastic diffuse wide flood (VID-1 low voltage lamps, VID-2 high voltage lamps) |                    |
| Beam Pattern:           | VID-1 100 degree wide flood<br>VID-2 100 degree wide flood<br>NF-1 60 degree narrow flood                                       |                    |
| Depth Rating:           | 6,000 meter (20,000 foot)                                                                                                       |                    |

## MISCELLANEOUS

|            |                                                       |
|------------|-------------------------------------------------------|
| Connector: | LPBH3MP standard, BH3MP, XSG3BCL and others available |
| Mount:     | Multi-position, fully adjustable                      |

## MODEL NUMBERS

Low Voltage: SL-1010 series  
High Voltage: SL-1020 series

## REPLACEMENT LAMPS (Dual Contact bayonet base)

Low voltage lamps (12V and 24V) are re-based, and are available only from DeepSea Power & Light

| Model Number | Part Number | Volts** | Watts | Hours | Color Temp | Socket Positions |      | Lumens |
|--------------|-------------|---------|-------|-------|------------|------------------|------|--------|
|              |             |         |       |       |            | 19mm             | 25mm |        |
| DC-12/50     | 460-00017   | 12      | 50    | 50    | 3300K      | 1                | 1    | 1,400  |
| DC-12/100    | 460-00025   | 12      | 100   | 50    | 3300K      | 1                | 1    | 3,000  |
| DC-24/150    | 460-00033   | 24      | 150   | 50    | 3400K      | 1                | 1    | 5,000  |
| DC-24/250    | 460-00037   | 24      | 250   | 50    | 3400K      | 2                | 1    | 8,500  |
| DC-24/300    | 460-00040   | 24      | 300   | 50    | 3400K      | 2                | 1    | 10,200 |
| DC-28/150    | 460-00046   | 28      | 150   | 700   | 3000K      | 1                | 1    | 2,850  |
| DC-120/100   | 460-00051   | 120     | 100   | 750   | 2850K      | 2                | 2    | 1,800  |
| DC-120/150   | 460-00054   | 120     | 150   | 1000  | 2900K      | 2                | 2    | 2,800  |
| DC-120/200   | 460-00056   | 120     | 200   | 50    | 3200K      | 2                | 2    | 5,500  |
| DC-120/250   | 460-00058   | 120     | 250   | 2000  | 3000K      | N/A              | 2    | 5,000  |
| DC-120/500   | 460-00062   | 120     | 500   | 2000  | 2950K      | N/A              | 3    | 10,450 |
| DC-240/150   | 460-00078   | 240     | 150   | 1300  | 2800K      | N/A              | 2    | 2,300  |
| DC-240/250   | 460-00100   | 240     | 250   | 2000  | 2900K      | N/A              | 2    | 4,200  |
| DC-240/500   | 460-00083   | 240     | 500   | 2000  | 2950K      | N/A              | 3    | 9,500  |

\*\* 220/230V, 230V, and 240V lamps are used to meet a nominal 240V requirement.



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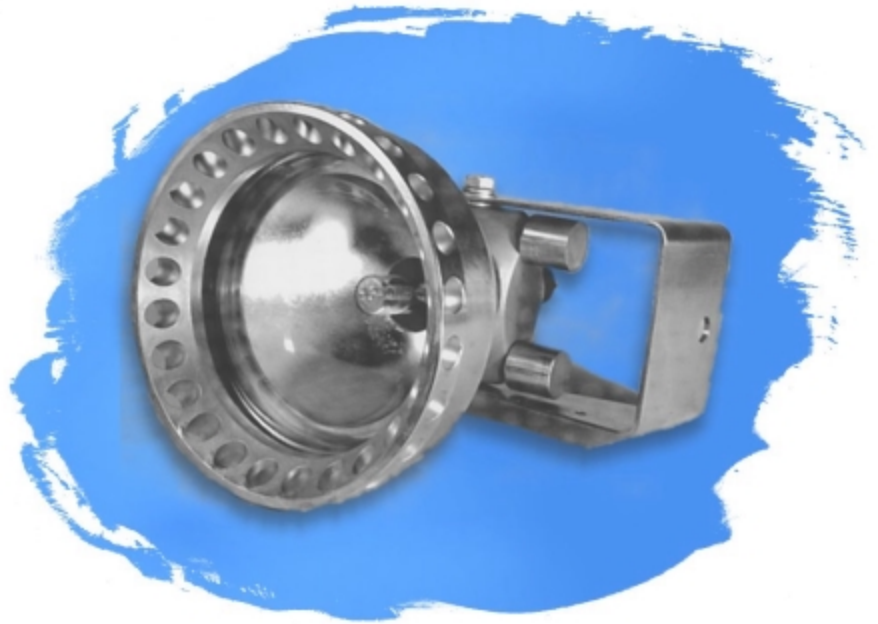
# Super-SeaLite

**EFFICIENT INTERNAL  
REFLECTOR DESIGN**

**FAST, TOOL-FREE  
RELAMPING**

**LOW MAINTENANCE**

**ACCEPTS VARIETY OF  
LAMPS**



Designed for underwater motion picture filming, tourist submarines, and other manned submersibles, the Super-SeaLite is the light of choice for applications requiring wide area illumination. The 150-meter (500 feet) depth-rated Super-SeaLite is constructed of 316L stainless steel, and is designed to provide years of reliable service. The Super-SeaLite accepts PAR 36 sealed beam lamps, single-ended incandescents, and 3200 degree Kelvin stage and studio lamps.

Relamping requires no tools, and in most instances, removal from the mount is not necessary. The relamping procedure preserves the front lens seal, which has a completely elastomerized lens seat for shock and impact resistance. The internal reflector design affords easy removal of marine growth from the outer lens, assuring consistent lighting performance during long term submergences. Optimal positioning of the fixture for each task is accomplished by a fully adjustable mounting bracket.

# Super-SeaLite Specifications

## MECHANICAL

|                             |                                                 |
|-----------------------------|-------------------------------------------------|
| Outer Diameter:             | 16.3 cm (6.5 in.)                               |
| Length (without connector): | 20.3 cm (8.1 in.)                               |
| Weight in Air:              | 4.5 kg (10 lbs.)                                |
| Weight in Water:            | 2.4 kg (5.4 lbs.)                               |
| Material:                   | 316L stainless steel                            |
| Finish:                     | Electropolish                                   |
| Lens:                       | Molded, tempered borosilicate, clear or frosted |
| Reflector:                  | Aluminum, diffuse, specular                     |
| Beam Pattern:               | 90 degrees underwater                           |

## ELECTRICAL

|                        |                                              |
|------------------------|----------------------------------------------|
| Operating Voltages:    | 120 to 240 volts AC or DC                    |
| Available Wattages:    | 500 to 1000                                  |
| Color Temperature:     | 3000 to 3200 degrees Kelvin                  |
| Lamp Life:             | 300 to 2000 manufacturer-rated hours         |
| Connectors:            | Designed to accommodate many connector types |
| Insulation Resistance: | 1000 volts                                   |
| Hi-Pot:                | 500 volts                                    |

## ENVIRONMENTAL

|        |                      |
|--------|----------------------|
| Depth: | 150 meters (500 FSW) |
|--------|----------------------|

## REPLACEMENT LAMPS

| Model Number | Part Number | Volts | Watts | Hours | Color Temp | Lumens |
|--------------|-------------|-------|-------|-------|------------|--------|
| B9-120/500L  |             | 120   | 500   | 2000  | 3000K      | 10,600 |
| B9-120/650   |             | 120   | 650   | 300   | 3150K      | 17,000 |
| B9-120/750L  |             | 120   | 750   | 2000  | 3000K      | 15,400 |
| B9-120/1000  |             | 120   | 1000  | 300   | 3200K      | 27,500 |
| B9-240/500   |             | 240   | 500   | 400   | 3000K      | 10,500 |
| B9-240/650   |             | 240   | 650   | 300   | 3100K      | 15,000 |
| B9-240/1000  |             | 240   | 1000  | 300   | 3200K      | 25,500 |



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Rev. 12/29/99



# Isolated Variable Transformer

**TOPSIDE USE**

**FOCUS ON SAFETY**

**RUGGED AND  
DURABLE**

**600 VA ISOLATION  
TRANSFORMER**



The Isolated Variable Transformer provides isolated power to topside equipment as well as variable power for underwater lighting. A class F-1, 600 VA-rated isolation transformer provides ample power for most on-site applications. The unit is designed to be used with a GFCI in line with the supply to provide additional electrical safety protection.

The variable transformer outputs electrically quiet, continuously and evenly variable power. Unlike SCR-type dimmers, the variable transformer does not generate high frequency switching noise that can interfere with underwater video and communications. This unit also provides the ability to boost the variable output voltage by as much as 15 percent to compensate for long cable voltage losses.

The Isolated Variable Transformer comes in a durable, splash-resistant aluminum case with a convenient carrying handle. There are dual output receptacles for both the fixed and variable outputs, as well as a universal-type detachable AC input cord. Internal components are mounted onto a non-conducting fiberglass plate to provide an additional level of electrical isolation and safety.

# Isolated Variable Transformer Specifications

## MECHANICAL

Housing Material: Aluminum  
Dimensions: 20.3 cm (8.0 in.) W x 17.8 cm (7.0 in.) H x  
27.9 cm (11.0 in.) D  
Weight in Air: 13.63 kg (30.00 lbs.)

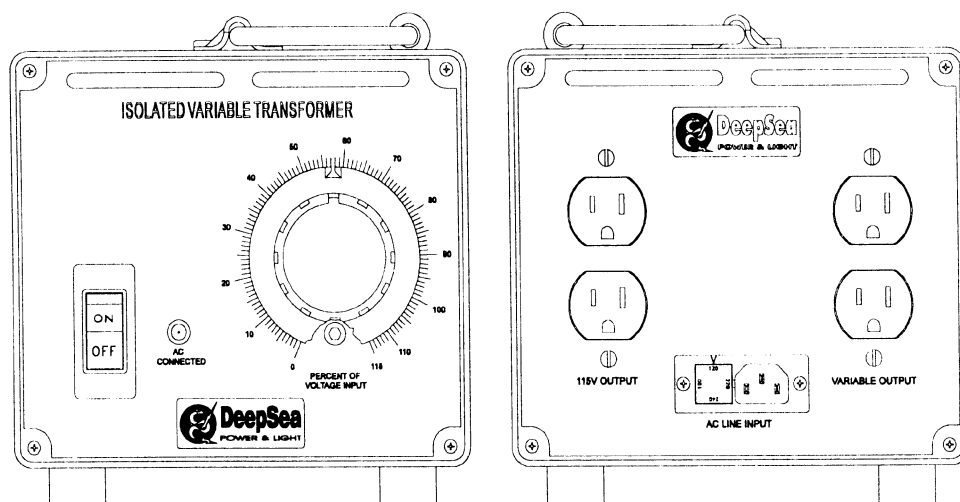
## ELECTRICAL

Type: 600 VA isolation transformer, total load variable and fixed  
Input Power: 120 VAC, 50/60 Hz, 5A (call for other variants)  
Input Connectors: AC input connector  
Output Power: Isolated 0-140V variable, 120V fixed, 5A maximum  
current (all outputs combined), isolated chassis, earth  
ground not connected  
Output Connectors: Dual receptacle for variable output;  
Dual receptacle for fixed output

## ENVIRONMENTAL

Depth: Topside use only

- Note:
1. Includes AC input cord and in-line GFCI.
  2. Chassis is connected to AC input ground.
  3. Outlet grounds are floating.



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Rev. 08/23/99



# Pressure Relief Valve

**FULL OCEAN  
DEPTH RATING**

**ULTRA-SMALL**

**EASILY  
ADJUSTABLE**

**COMPETITIVELY  
PRICED**



DeepSea's universal pressure relief valve can be used on instrument housings, battery packs, and other applications requiring venting. Made from titanium and measuring only 1.85 cm (0.725 in.) diameter by 1.91 cm (0.75 in.) overall length, this valve is rated to full ocean depth. The valve's release pressure can be easily adjusted, and can also serve as a vacuum purge port. A dry spring design is used; all wet parts are titanium.

# Pressure Relief Valve Specifications

## MECHANICAL

Material: 6AL-4V titanium  
Diameter: 1.85 cm (0.725 in.)  
Length: 1.91 cm (0.75 in.)  
Weight in Air: 11.7 g (0.42 oz.)  
Threads: 7/16"-20, with O-ring face seal

## ENVIRONMENTAL

Depth: 20,000 psi (full ocean depth)  
Temperature: -20 deg. C to 200 deg. C (-4 deg. F to 392 deg. F)

## CRACKING PRESSURE CHART

Setable from 2 psi to 15 psi (or closed)

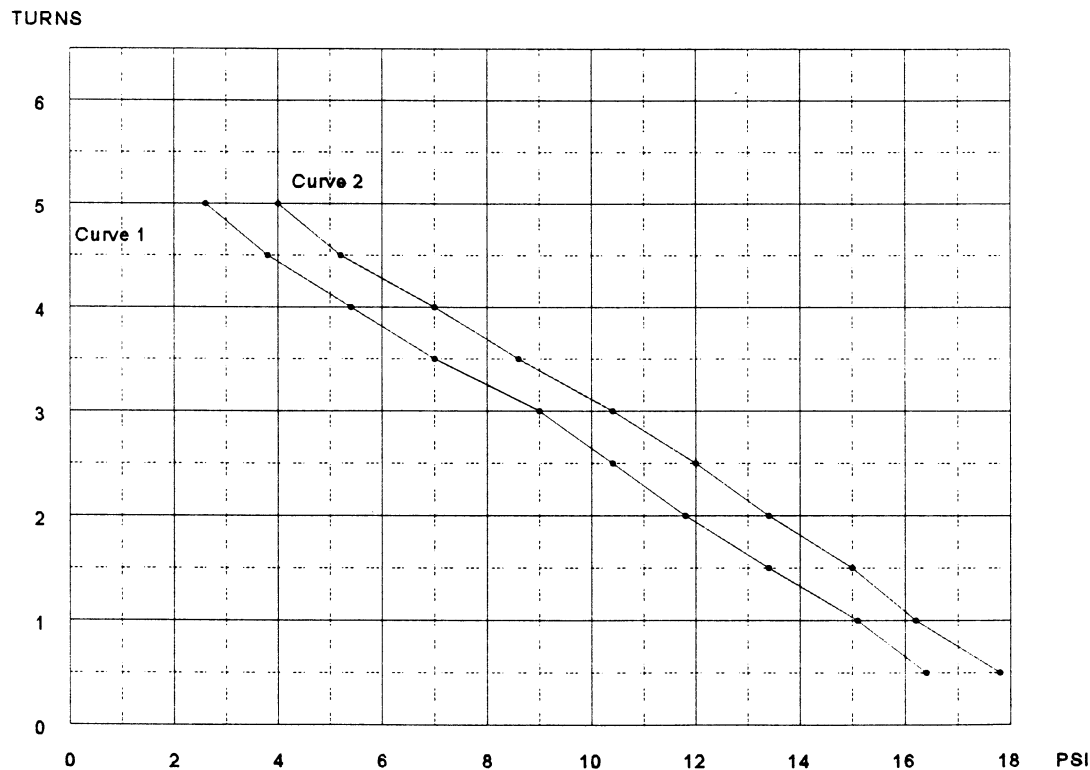


Chart shows pressure for number of turns away from closed position and indicates the increase in setting from testing in air (curve 1) to testing in water (curve 2).



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Rev. 12/29/99



# SeaBattery

**FULL OCEAN DEPTH  
RATED**

**EXCELLENT CAPACITY  
RETENTION**

**FULLY INVERTABLE**

**VARIOUS VOLTAGES  
AVAILABLE**



SeaBatteries are a unique submersible power system designed to perform in the high pressure/low temperature environment of the deep ocean. Deployments to 6,000 meters have proven SeaBatteries to be reliable at great depths. At the heart of each system is a maintenance-free, rechargeable, lead acid battery utilizing a non-liquid electrolyte. Each battery is pressure-modified and mounted in a virtually indestructible polyethylene case filled with inert oil. Built into the top of each case is a resilient urethane diaphragm providing continuous equalization with ambient pressure. The transparent diaphragm incorporates a molded valve assembly for filling and venting the SeaBattery. It also permits visual inspection of the battery status. The dual seal design ensures a leak-free seal. Carrying handles are included on the case.

# SeaBattery Specifications

## MECHANICAL

|                     |                           |
|---------------------|---------------------------|
| Length:             | 46.0 cm (18.1 in.)        |
| Width:              | 31.0 cm (12.2 in.)        |
| Height:             | 31.5 cm (12.4 in.)        |
| Weight in Air:      |                           |
| SB-6/180:           | 48.2 kg (106 lbs.)        |
| SB-12/76:           | 49.0 kg (108 lbs.)        |
| SB-24/38:           | 49.0 kg (108 lbs.)        |
| SB-48/18:           | 49.0 kg (108 lbs.)        |
| Weight in Water:    |                           |
| SB-6/180:           | 18.2 kg (40 lbs.)         |
| SB-12/76:           | 19.1 kg (42 lbs.)         |
| SB-24/38:           | 19.1 kg (42 lbs.)         |
| SB-48/18:           | 19.1 kg (42 lbs.)         |
| Case:               | Molded Polyethylene       |
| Diaphragm:          | Molded Polyether Urethane |
| Compensating Fluid: | Inert oil                 |

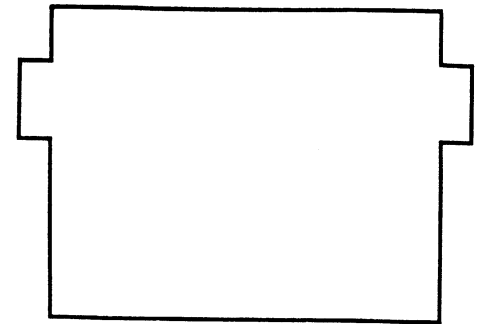
## ELECTRICAL

|                          |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|
| Standard Configurations: |                                                                                   |
| SB-6/180:                | 6 volt, 180 amp hour                                                              |
| SB-12/76:                | 12 volt, 76 amp hour                                                              |
| SB-24/38:                | 24 volt, 38 amp hour                                                              |
| SB-48/18:                | 48 volt, 18 amp hour                                                              |
| Other Configurations:    | Available upon special order                                                      |
| Internal Resistance:     | 35 Milliohms                                                                      |
| Maximum Discharge Rate:  | 30 Amps (limited by gauge of cable)                                               |
| Connector:               | Right angle diaphragm penetrator on 2-meter cable terminated with IL4FS connector |

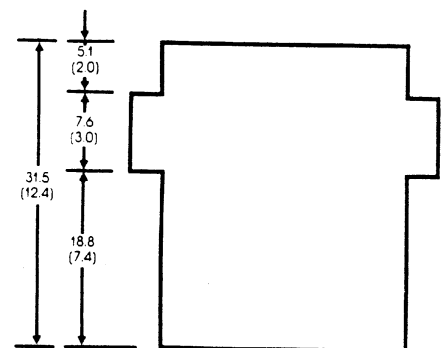
## ENVIRONMENTAL

|                    |                                  |
|--------------------|----------------------------------|
| Depth:             | Full ocean depth                 |
| Temperature Range: |                                  |
| Charge:            | -15 C to 50 C<br>(5 F to 122 F)  |
| Discharge:         | -20 C to 60 C<br>(-4 F to 140 F) |

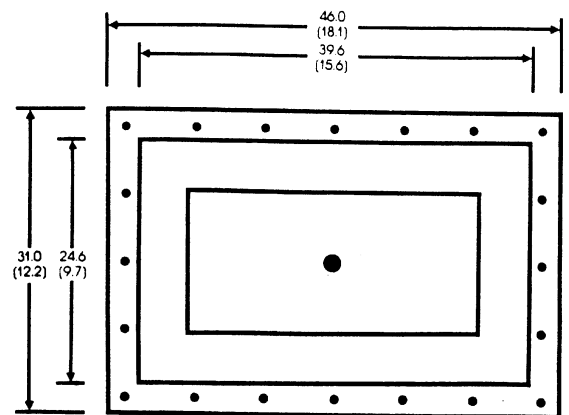
Centimeters (Inches)



SIDE VIEW



END VIEW



TOP VIEW



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Rev. 12/29/99



# SeaLaser 100

**SMALL, LIGHTWEIGHT  
& LOW COST**

**5 mW 670 nm &  
7 mW 635 nm**

**BEAM IS PRECISELY  
ALIGNED TO HOUSING  
BARREL**

**ENSURES CAMERA OR  
LIGHT ALIGNMENT;  
ALLOWS OBJECT  
SCALING USING PAIR**



The SeaLaser 100 is a low cost, lightweight underwater scaling, rangefinding, and aiming device that utilizes a high quality solid state laser diode module. It can be used in pairs or arrays of parallel-aligned beams to determine sizes/scale of viewed objects. Used in an array of three parallel plus one oblique (four total) it can determine zoom lens focal length setting as well.

The 5 mW low cost unit is recommended for close-up applications out to about 1-meter range, whereas the 7 mW high power 635 nm unit is good to 5-8 meters range. The shorter 635 nm wavelength penetrates water much better than does the near IR 670 nm low cost laser. The beam's sharp focus distance is a standard factory-set 1 meter.

An internal power regulation board allows operation to 24 volts DC and protects the laser diode from most voltage transients, and is internally fused. This is important for applications using long cables or those that might have switching transients. It has a scratch resistant SAR optical port.

NOTE: The usable range is a function of ambient light levels, water conditions, and camera sensitivity.

# SeaLaser 100 Specifications

## MECHANICAL

Housing Material: Acetal plastic (Delrin)  
Port: SAR Acrylic  
Length: 15.24 cm (6.0 in.) excluding connector  
Diameter: 3.0 cm (1.2 in.)  
Weight in Air: 227 g laser only, 300 g with bracket  
Weight in Water: 67 g laser only, 140 g with bracket  
Other: Mounting bracket included

## LASER

Type: Semi-conductor laser diode Class III-A (670 nm)  
Semi-conductor laser diode Class III-B (635 nm)  
Beam Diameter: 1.8 mm x 0.5 mm  
Wavelength: 635 nm (7 mW) and 670 nm (5 mW)  
Beam Divergence: 0.09 mRadians x 0.19 mRadians  
Power: 5 mW (670 nm) and 7 mW (635 nm)  
Beam Alignment: Beam runout 5 cm at 10 meters max.

## ELECTRICAL

Voltage: 5-24 VDC  
Connector: BH2M standard, others available

## ENVIRONMENTAL

Depth: 2,000 meters (6,500 feet)

## OTHER

Option: Beam focus distance



*Specifications subject to change without notice*

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Rev. 12/29/99



# Dual Laser Mounting Bracket

**CREATES AND  
MAINTAINS PARALLEL  
BEAMS**

**EXCELLENT FOR  
SCALING AND  
MEASUREMENT**

**DESIGNED FOR USE  
WITH SEALASER 100**



The Dual Laser Bracket is designed to hold two lasers and provide for 10 cm parallel beam alignment. Turning the two eccentrically bored balls at either end of each laser adjusts the beams. The bracket has four mounting holes tapped for 1/4-20 screws. The bolt pattern is 3"x 1.75". The bracket can also be mounted to a camera by placing the camera in one of the two radii at the top and bottom of the unit. A hose clamp can be strapped around the camera, through the slot in the center of the bracket, and over the inner spacer.

## **Dual Laser Mounting Bracket Specifications**

### **MECHANICAL**

|                   |                                                                             |
|-------------------|-----------------------------------------------------------------------------|
| Housing Material: | Acetal plastic (Delrin)                                                     |
| Length:           | 14.6 cm (5.75 in.), without SeaLasers<br>15.8 cm (6.21 in.), with Sealasers |
| Height:           | 4.8 cm (1.90 in.)                                                           |
| Width:            | 14.8 cm (5.84 in.)                                                          |

### **OTHER**

|                         |                  |
|-------------------------|------------------|
| Distance between beams: | 10 cm (3.94 in.) |
|-------------------------|------------------|



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Rev. 12/29/99



# Micro-SeaLaser

**6,000 METER  
DEPTH RATING**

**7 mW BEAM  
OUTPUT**

**SMALL & LIGHT**

**CAN BE USED  
SINGLY OR IN  
PAIRS**



The Micro-SeaLaser is an underwater scaling, rangefinding, and aiming device that utilizes a 635 nm-7 mW semiconductor laser diode. The powerful beam output provides visibility at greater ranges than less powerful lasers. Mounted in parallel, two Micro-SeaLasers add scale to video or photographic images in the form of two brilliant red dots separated by a known distance. Two Micro-SeaLasers mounted to produce intersecting beams can be used to determine an object's distance or to maintain constant positioning

# Micro-SeaLaser Specifications

## MECHANICAL

|                            |                                            |
|----------------------------|--------------------------------------------|
| Housing Material:          | 6AL-4V Titanium; other materials available |
| Port:                      | Sapphire, anti-reflective coated           |
| Length:                    | 12.03 cm (4.73 in.)                        |
| Diameter:                  | 1.84 cm (0.72 in.)                         |
| Weight in Air (approx.):   | 75 g (2 oz.)                               |
| Weight in Water (approx.): | 40 g (1 oz.)                               |

## LASER

|                  |                                       |
|------------------|---------------------------------------|
| Type:            | Semiconductor laser diode Class III-B |
| Beam Diameter:   | 1.8mm x 0.5mm                         |
| Wavelength:      | 635 nm                                |
| Beam Divergence: | 0.09 mRadians x 0.19 mRadians         |
| Beam Power:      | 7 mW                                  |

## ELECTRICAL

|            |                                                        |
|------------|--------------------------------------------------------|
| Voltage:   | 7.5-16 VDC                                             |
| Connector: | Impulse Sub-Miniature Connector IE55 (titanium), 2-pin |
| Current:   | 47 mA                                                  |

## ENVIRONMENTAL

|        |                            |
|--------|----------------------------|
| Depth: | 6,000 meters (20,000 feet) |
|--------|----------------------------|



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# SeaLogger

**HIGH  
PERFORMANCE  
MINIATURE TEMP  
LOGGERS**

**TITANIUM  
CONSTRUCTION**

**1800 DATA POINT**

**NON-VOLATILE  
MEMORY**

**UP TO ONE YEAR  
DEPLOYMENTS**



The SeaLogger is an ultra small, stand-alone temperature logger that utilizes an Onset Computer HOB0. The HOB0 utilizes a low-power CMOS microprocessor, an 8 bit. A-D converter and a 2400 baud RS-232 serial interface. Up to 1800 measurements can be stored in non-volatile EPROM memory. A single lithium battery powers the SeaLogger for up to two years. Deployment durations can be adjusted to 31 settings between 15 minutes and 360 days, giving measurement intervals of 0.5 seconds to 3.8 hours. Launch/retrieval software is used to set the measurement duration and label the data set, as well as to file, graph, or export the returned data. Both Macintosh and PC Windows versions are available.

The SeaLogger is available with an optional 24-inch extended probe. Both models have plastic handles on them designed to be easily grasped by a manipulator. Each model is available in three temperature ranges. Resolution at best is equal to the total range divided by 256 for the 8 bit A-D converter times 0.8.

The SeaLogger housing is constructed of titanium and is depth rated to 6,000 meters of seawater (19,500 FSW).

# SeaLogger Specifications

|                      | <u>Model SLGR-1000</u>                                        | <u>Model SLGR-1000-XP</u>                                         |
|----------------------|---------------------------------------------------------------|-------------------------------------------------------------------|
| <u>TEMPERATURE</u>   |                                                               |                                                                   |
| Probe Type:          | Internal                                                      | External                                                          |
| Probe Sensor Type:   | Thermistor                                                    | Platinum RTP                                                      |
| Range:               | T1: -39 C to +75 C<br>T2: -37 C to +46 C<br>T3: -5 C to +37 C | T4: +152 C to +416 C<br>T5: +15 C to +304 C<br>T6: -2 C to +125 C |
| Best Resolution:     | T1: 0.35 C<br>T2: 0.26 C<br>T3: 0.16 C                        | T4: 0.82 C<br>T5: 0.89 C<br>T6: 0.39 C                            |
| <u>MECHANICAL</u>    |                                                               |                                                                   |
| Material:            | Titanium and polypropylene same                               |                                                                   |
| Outer Diameter       |                                                               |                                                                   |
| (including sleeve):  | 3.8 cm (1.5 in.)                                              | 3.8 cm (1.5 in.)                                                  |
| Overall Length       |                                                               |                                                                   |
| (including sleeve):  | 15.2 cm (6.0 in.)                                             | 91.4 cm (36.0 in.)<br>(including 60.1 cm [24.0 in.] probe)        |
| Weight in Air:       | 0.3 kg (0.8 lb.)                                              | 0.5 kg (1.0 lb.)                                                  |
| Weight in Water:     | 0.2 kg (0.4 lb.)                                              | 0.2 kg (0.4 lb.)                                                  |
| <u>ENVIRONMENTAL</u> |                                                               |                                                                   |
| Depth:               | 6,000 meters (19,500 feet)                                    | same                                                              |
| <u>ELECTRICAL</u>    |                                                               |                                                                   |
| Battery:             | Lithium TL-5186                                               | same                                                              |
| Power Consumption:   | 13 uA nominal                                                 | same                                                              |
| Battery Life:        | 2 years                                                       | same                                                              |



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# SeaSource2

**SMALL SIZE**

**RUGGED, DURABLE  
DESIGN**

**150-FOOT DEPTH  
RATING**

**SAFE, NON-METALLIC  
HOUSING**



The SeaSource2 is a compact underwater battery pack designed for diver operation. The SeaSource2 consists of a 12 volt, 6.5 amp-hour "absorbed electrolyte" lead-acid battery packaged in a rugged neoprene boot and covered with a Cordura holster. The glove-like fit of the rubber boot enables the SeaSource2 to have the smallest possible housing. The rubber pressure relieving housing eliminates the possibility of explosive failures. Incorporated into the clear top of the SeaSource2 are an on/off switch, charging port, charge status indicator lights, and a fuse inspection area. A bulkhead connector provides reliable electrical connections that are pluggable underwater. Strap mounting to a camera or other housing is made easy by using two nylon loops on the holster.

The SeaSource2 coupled with one of DeepSea's underwater lights makes a totally portable underwater/harsh environment lighting system.

## SeaSource2 Specifications

### MECHANICAL

Size: 7.4 cm x 10.4 cm x 18.3 cm (2.9 in.x 4.1in. x 7.2 in.)  
Weight in Air: 3.3 kg (7.2 lbs.)  
Weight in Water: 1.4 kg (3.0 lbs.)

### ELECTRICAL

Voltage: 12 volts  
Capacity: 6.5 amp hours  
Burn Time: 70 min at 50 watts; 30 min at 100 watts  
Charger: 15 hour, two-stage automatic type, 120V input only  
Bulkhead Connector: RC-2-MP  
Mating Connector: RC-2-FS (in-line)

### ENVIRONMENTAL

Depth: 46 meters (150 feet)



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# Topside Isolated Ballast (60 Hz)

**TOPSIDE USE**  
**FOCUS ON SAFETY**  
**RUGGED AND**  
**DURABLE**  
**600 VA ISOLATION**  
**TRANSFORMER**



The Topside Isolated Ballast provides isolated power to topside equipment as well as a 150/250 or 400 watt HID SeaArc lamp ballast output for underwater lighting. A class F-1, 600 VA-rated isolation transformer provides ample power for most on-site applications. The unit is designed to be used with a GFCI in line with the supply to provide additional electrical safety protection. The isolation transformer allows a GFCI to be used without false tripping on long cables.

The isolated ballast allows the lighthouse to be controlled remotely from the ballast over distances greater than 300 meters (depends on wire gage).

The Topside Isolated ballast comes in a durable, splash-resistant aluminum case with a convenient carrying handle. It also includes a dual output receptacle for an auxiliary isolated 120V AC output as well as a universal-type detachable AC input cord. Internal components are mounted onto a non-conducting fiberglass plate to provide an additional level of electrical isolation and safety.

## Topside Isolated Ballast Specifications

## MECHANICAL

|                   |                                                                     |
|-------------------|---------------------------------------------------------------------|
| Housing Material: | Aluminum                                                            |
| Dimensions:       | 20.3 cm (8.0 in.) W x 17.8 cm (7.0 in.) H x<br>27.9 cm (11.0 in.) D |
| Weight in Air:    | 14.54 kg (32.00 lbs.)                                               |

## ELECTRICAL

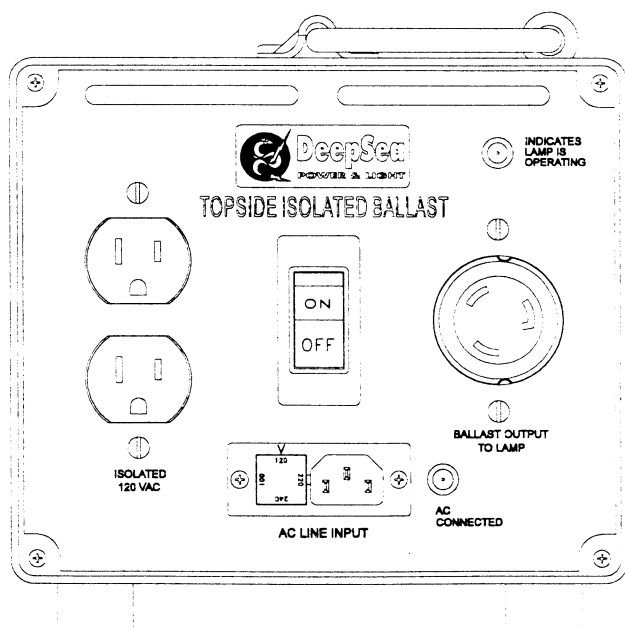
|                    |                                                                                              |
|--------------------|----------------------------------------------------------------------------------------------|
| Type:              | 600 VA isolation transformer, total load variable and fixed                                  |
| Input Power:       | 120 VAC, 50/60 Hz, 5A (400W HID lamp)                                                        |
| Input Connectors:  | AC input connector                                                                           |
| Output Power:      | Isolated chassis, earth ground not connected                                                 |
| Output Connectors: | Twist-lock, 250V receptacle, ballasted lamp output;<br>Dual receptacle for fixed 120V output |

## ENVIRONMENTAL

Depth: \_\_\_\_\_ Topside use only

Note:

1. Includes AC input cord, in-line GFCI, and ballast output mating cable plug.
2. Chassis is connected to AC input ground.
3. Outlet grounds are floating.



Twist-lock pin out:  
Righthand = Not connected internally  
Lower lefthand = AC  
Upper lefthand = AC



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Rev. 12/29/99



# Under Pressure

## NEW WINDOWS VERSION

## DESIGN LOOP ALLOWS VARIATION OF SINGLE PARAMETER

## CALCULATES BOTH THIN WALL AND THICK WALL COLLAPSE PRESSURES

## EQUATIONS FROM ROARK & YOUNG'S FORMULAS FOR STRESS AND STRAIN



Under Pressure is an engineering design tool to aid in the design of pressure housings and pressure vessels. This program is used extensively for DeepSea's R&D and contract engineering. Designed to be used by the working engineer or scientist, this menu-driven software is interactive and user friendly. A large materials database is provided that can be expanded by the user.

The user can choose from a housing shape of tube, sphere, or endcap. Within the endcap category are several subcategories, such as hemispherical and flat annular. The flat annular endcap can be further delineated by choosing among several options, such as fixed, simply supported, guided, and free. The user also selects the material, housing component geometry, and pressure analysis range; the stress analysis is then rapidly calculated. A design loop can be selected and the analysis can be repeated while a single parameter (e.g. wall thickness) is varied. Stresses and deflections are given for internal or external pressures, over a user-selectable pressure range. English or metric units can be specified. The program uses equations from Formulas for Stress and Strain, sixth edition, by Raymond J. Roark and Warren C. Young.

Other features include:

- Graphic representation of the pressure vessel,
- On-line graphic display of radial and tangential stress distribution,
- The manual contains a color comparison of numerical stress results with graphically displayed stress distribution results generated by a computer-aided structural analysis using the finite element method,
- Complete hard-copy manual with step-by-step walk-through of Under Pressure's features,
- Soft copies of the manual are included in the CD in the original Microsoft Word format and in an Adobe Acrobat PDF format so that you can re-print the manual as needed.

You may preview a demonstration of the software at DeepSea's web site at [www.deepsea.com](http://www.deepsea.com). It's listed under Products/Other/Under Pressure, as well as under What's New.

# Under Pressure Specifications

## Hardware Requirements:

- 486-66 or better processor
- Minimum 16MB RAM
- VGA Graphics
- 20MB hard disk space
- CD ROM drive
- Parallel port (for software key "Dongle," or hardware lock)

## Software Requirements:

- Windows 95 or later, or Windows NT 4.0 or later

## Materials Database

Under Pressure contains the following materials. Users can add other materials to the database.

| Category | Subcategory   | Name                                                                                         |
|----------|---------------|----------------------------------------------------------------------------------------------|
| Ceramics | Alumina       | 94%, 96%, 99.5%, Sapphire                                                                    |
|          | Silicon       | Silicon Carbide                                                                              |
| Glass    | Glass         | BK-7, Pyrex, Quartz                                                                          |
| Plastics | Composite     | Glass/Epoxy                                                                                  |
|          | Thermoplastic | Acetal, Acrylic, Nylon-6, Polycarbonate, Polypropylene, PVC                                  |
| Metals   | Aluminum      | 2024-T3, 5456-H111, 6061-T6, 6262-T9, 7075-T6, 2024-T3, 5456-H111, 6061-T6, 6262-T9, 7075-T6 |
|          |               |                                                                                              |
|          | Nickel        | K Monel                                                                                      |
|          |               | Monel                                                                                        |
|          | Stain. Steel  | 17-4PH H900, 17-4PH 1075, 17-4PH 1150, 304, 316                                              |
|          | Steel         | Carbon, Low Alloy                                                                            |
|          | Titanium      | Comm. Pure, Ti-5Al-2.5Sn, Ti-6Al-4V                                                          |
| Other    | Other         | User-defined                                                                                 |

## Housing Configurations

1. Tube
2. Sphere
3. Endcap
  - a. Conical
  - b. Hemispherical
  - c. Flat Circular
    - Simply Supported
    - Fixed
  - d. Flat Annular
    - Fixed/Free
    - Fixed/Guided
    - Fixed/Simply Supported
    - Fixed/Fixed
    - Simply Supported/Free
    - Simply Supported/Guided
    - Simply Supported/Simply Supported
    - Simply Supported/Fixed
    - Guided/Simply Supported
    - Guided Fixed
    - Free/Simply Supported
    - Free/Fixed

## Sample Analysis Screen

The screenshot shows the 'Under Pressure' software window with the 'Sphere Analysis - External Pressure' tab selected. The 'Pressure Range' is set to '1000 - 20000 psi'. The 'Material' is 'ALUMINUM, 6061-T6' with a yield strength 'Ys=35 Ksi'. The 'Weight' is '4.0473' and the 'Water Wt' is '-4.1346'. The 'Units' are 'lbs'. The 'Theoretical Failure' section shows 'Thin Wall Buckling at 17.187 Ksi' as the selected failure mode. The 'Fail value units' are 'Ksi'. The 'Units' section shows 'Pressure' in 'psi', 'Depth' in 'ft (sea)', 'Stress' in 'psi', 'Linear Deflection' in 'inches', and 'Angle Deflection' in 'Radians'. The table below shows the results of the analysis for various pressures and depths.

| Pressure      | Depth  | Max Meridional Stress, psi | Max Hoop Stress, psi | Max Equiv Stress, psi | Max Shear Stress, psi |
|---------------|--------|----------------------------|----------------------|-----------------------|-----------------------|
| 1000.0        | 2248.8 | -7250.0                    | -7250.0              | 7250.0                | N/A                   |
| 2000.0        | 4490.9 | -14500                     | -14500               | 14500                 | N/A                   |
| 3000.0        | 6726.2 | -21750                     | -21750               | 21750                 | N/A                   |
| 4000.0        | 8954.8 | -29000                     | -29000               | 29000                 | N/A                   |
| 4827.6 (fail) | 10794  | -35000                     | -35000               | 35000                 | N/A                   |
| 5000.0 (fail) | 11177  | -36250                     | -36250               | 36250                 | N/A                   |
| 6000.0 (fail) | 13392  | -43500                     | -43500               | 43500                 | N/A                   |
| 7000.0 (fail) | 15601  | -50750                     | -50750               | 50750                 | N/A                   |
| 8000.0 (fail) | 17804  | -58000                     | -58000               | 58000                 | N/A                   |



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