

# Multi-SeaCam User Manual

## P/N 740-048-601

### DeepSea Power & Light, Inc.

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#### Multi-SeaCam Options:

The Multi-SeaCam supports a variety of connectors, camera modules, depth ratings, and pin-outs. Underneath the front port is a label that identifies internal features, with the options for your specific camera checked off. These features and options are:

|                   | MULTI-SEACAM 1050                                                  | MULTI-SEACAM 1060                                                  | MULTI-SEACAM 2050                                                  |
|-------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|
| Model Description | Black & White Camera                                               | Black & White Camera, Low Light                                    | Color Camera                                                       |
| Video Format      | -EIA U.S.-format<br>-CCIR European- format                         | -EIA U.S.- format<br>-CCIR European- format                        | -NTSC U.S.- format<br>-PAL European- format                        |
| Depth Rating      | -300m (990ft) Delrin housing<br>-6000m (19,800ft) Titanium housing | -300m (990ft) Delrin housing<br>-6000m (19,800ft) Titanium housing | -300m (990ft) Delrin housing<br>-6000m (19,800ft) Titanium housing |
| Custom Pin-Out    | Yes                                                                | Yes                                                                | Yes                                                                |
| Standard Pin-Out  | 1-Ground, 2-Power, 3-Video, 11-30 VDC                              | 1-Ground, 2-Power, 3-Video 11-30 VDC                               | 1-Ground, 2-Power, 3-Video 11-30 VDC                               |

#### Camera Operations:

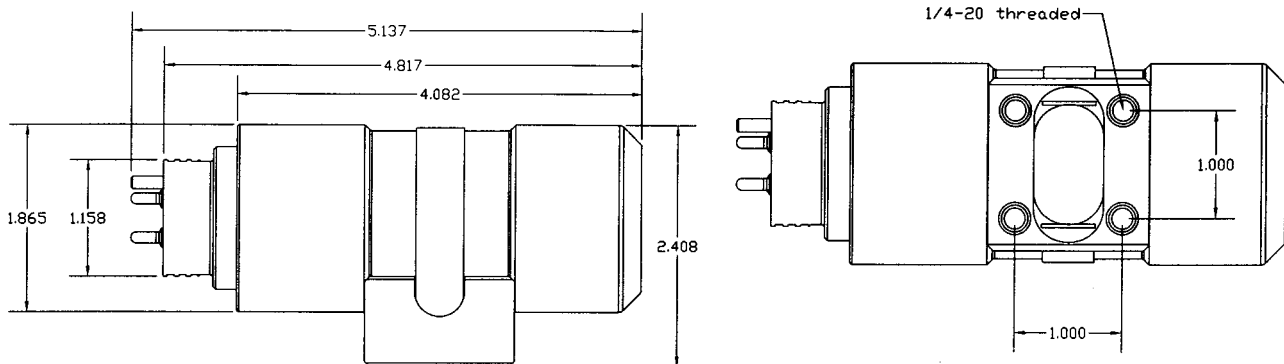
**WARNING:** Whenever AC or DC power is used in the vicinity of water, we **strongly** recommend that a Ground Fault Circuit Interrupt (GFCI) or other safety device be utilized to minimize the chance of electric shock due to a short circuit.

First, plug the 12-volt DC power supply into the GFCI (make sure the switch on the power supply is in the OFF position). Plug the red (positive 12V) and black (12V return (-)) banana plugs of the camera cable into their respective jacks on the power supply. Plug the BNC connector on this end of the cable into the monitor or VCR video-in jack (a BNC-to-RCA adapter may be required by the monitor/VCR in use). Lubricate the camera bulkhead connector with an appropriate silicone lubricant, spray recommended, and using a linear motion plug the female underwater connector on the other end of the cable into the male bulkhead connector on the back of the camera. Screw the locking sleeves together firmly (hand tight--do not use tools). The camera is now ready for operation; switch the power supply ON to power the camera. The camera draws approximately 300 mA of current during operation, and will work when supplied between 11-30 volts DC.

#### Camera Flooding Emergency Procedure:

**WARNING:** In certain rare instances, a pressure case can flood and then reseal itself which may result in internal pressurization. Additionally, if the power is applied while water is present inside the case, hydrogen and oxygen can be generated by electrolysis, forming an explosive mixture.

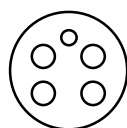
- 1) Immediately turn off the power to the unit.
- 2) Open the housing by removing the rear endcap-retaining ring. Grasp the rear endcap in one hand and the camera housing in the other. With care, separate the two components using a linear motion. If required gently twist components while separating.
- 3) Pour out any water trapped in the housing.
- 4) If the camera is completely flooded, rinse the internal components with clean fresh water in order to minimize contamination and corrosion.
- 5) Allow parts to dry in air or a vacuum chamber.
- 6) Loosely assemble the camera, call DeepSea for an RMA number, and return camera to DeepSea.



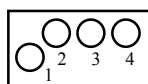
## Multi-SeaCam Specifications

|                            | MULTI-SEACAM 1050                                      | MULTI-SEACAM 1060                                      | 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 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 45 deg. (V) x 71 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                                                                      |
| Pin-out:                   | 1 = Ground, 2 = Power,<br>3 = Video (standard), 4 = NA | 1 = Ground, 2 = Power,<br>3 = Video (standard), 4 = NA | 1 = Ground, 2 = Power,<br>3 = Video (standard), 4 = NA or<br>chroma for Y/C |
| <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                                                    |

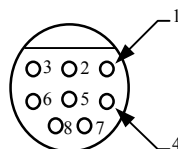
Pin-out:



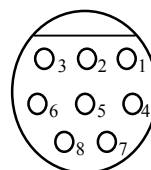
**BH4MP**  
1 = Ground  
2 = Power  
3 = Video  
4 = Not Used



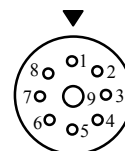
**LPBH4MP**  
1 = Ground  
2 = Power  
3 = Video  
4 = Not Used



**IE55-1508-BCR**  
Or  
**B5507-1508**  
1 = Ground  
2 = Power  
3 = Video  
4 = Not Used  
5 = Not Used  
6 = Not Used  
7 = Not Used  
8 = Not Used



**IE55-2008-BCR**  
Or  
**B5507-2008**  
1 = Ground  
2 = Power  
3 = Video  
4 = Not Used  
5 = Not Used  
6 = Not Used  
7 = Not Used  
8 = Not Used



**MSAJ-9-BCR**  
1 = Ground  
2 = Power  
3 = Video  
4 = Not Used  
5 = Not Used  
6 = Not Used  
7 = Not Used  
8 = Not Used  
9 = Not Used



*Specifications subject to change without notice*

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