

LED Multi-SealLite[®] Matrix[®]

- Virtually zero maintenance with 50,000 hour LED lifespan.
- Over five times more efficient than comparable halogen lamps.
- Super rugged, highly vibration and shock resistant.
- Thermal monitoring allows operation in air or water.
- 6000m depth rated.



Patent Pending.



DEEPSEA POWER & LIGHT[®]

LED Multi-SeaLite® Matrix®

MANUAL REV 5/29/13



Patent Pending

GENERAL NOTES AND WARNINGS

Your LED Multi-SeaLite® Matrix® is designed and built for years of maintenance-free operation. Simple pre- and post-cruise maintenance is all that should be done.

- There should be no reason to ever open the body of your LED Matrix light. There are no user serviceable parts inside your new Matrix underwater light. Your Matrix was thoroughly pressure tested prior to leaving the factory to confirm the integrity of the complete assembly. Opening the housing may cause potential problems when resealing.
- You may run your LED Multi-SeaLite® at full power in air. As the light heats up you will notice that the output will diminish. This is normal as your light has thermal sensing circuitry to prevent it from overheating and causing damage. The light will return to full brightness once it is submerged and allowed to cool.

• **IDANGER!** When the LED Multi-SeaLite® Matrix® is operated in air the body may reach temperatures in excess of 65° C (150°F). These temperatures may be enough to cause burns if the light is handled without protective clothing.

• Do not tamper with the split retaining ring that holds the front window. The front window requires a press to install the split retaining ring, and it is very hard to reinstall. Tampering with the lighthouse in any way may damage the light and void your warranty.

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

• **!WARNING!** Do not clean any part of the lighthouse with any type of alcohol. The front window of the lighthouse is made of acrylic plastic and will cloud and craze if exposed to the alcohol.

PRE DIVE INSPECTION

- Check to make sure that the rear bulkhead connector is secure before deployment.
- Check the following areas for previous damage, wear or corrosion: Rear bulkhead connector, power cable, front window, and cowl.

POST DIVE INSPECTION

- Rinse your LED Multi-SeaLite® Matrix® in fresh water after use in saltwater.
- **IDANGER!** After each deployment, carefully check to make sure the light is operational and has not flooded. It is possible for the light to partially flood and then reseal itself while underwater. Upon surfacing, the light can become internally pressurized, which may be potentially dangerous. Additionally, if the power remains on when the light has partially flooded, it is possible for electrolytic generation of an explosive mixture of hydrogen and oxygen gases. If a light appears flooded upon removal from the water, it should be treated as potentially dangerous. Point the light away from persons and valuable equipment and make sure that the power is disconnected. See the Flooded Light Repair procedure for more information.



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TROUBLESHOOTING

1. If the light stops working while underwater assume that it has been flooded. **See Flooded Light Repair procedure below.**
2. Once it has been determined that the light is not flooded, or if it does not turn on during pre-deployment checks, check the input power cable/inline connector to make sure that correct voltage is being supplied, and that the correct sockets are being used. See page 4 and 5 of this manual for electrical specs and connector pin assignments. A five-pin connector indicates low voltage DC, a three pin connector indicates either 120vac or 240vac.
3. With the low voltage DC driver ONLY, disconnect pin 5. The light will deliver full light output. Connecting pin 5 to ground will dim the light to about 20% of full brightness.
4. If the light still does not work, return it to DSPL using the **RMA Procedure for Repair** below.

FLOODED LIGHT REPAIR

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

1. Place the light face down on a table making sure that the connector side is facing up.
2. Slowly unscrew the connector until the face o-ring seal no longer touches the back of the body. This will vent any internal pressure to atmospheric pressure. Listen for venting gases from around the threads. Soapy water will help show any leaking gas.
3. Once it is determined that the light is not or no longer internally pressurized, it is recommended that the light be returned with the connector partly unscrewed as in step 2 above, to DeepSea Power & Light (DSPL) for evaluation and repair using the **RMA Procedure for Repair** below.
4. An emergency field repair kit with instructions is available from DeepSea Power & Light. See below.

FIELD REPAIR KIT

- DeepSea offers a field repair kit (driver board, o-rings, desiccant pack) with detailed instructions should you wish to have the resources to change an LED driver in the field. Contact DSPL Sales for further information.
- It is recommended that the light be pressure tested once reassembled. If pressure testing facilities are not available, soak the light in clean, fresh water for several hours to insure that the light is at least sealed well enough to hold out water.

IMPORTANT! DeepSea Power & Light cannot be responsible for any damage incurred during emergency field repairs. Evidence of opened housings will void the warranty. Such repairs should be undertaken only as a last resort and by qualified personnel.

LIMITED WARRANTY

Seller warrants that the goods (except internal electronic components) sold under this contract will be free from defect in material and workmanship for a period of one year from the date of shipment from the factory, if they have been properly used. Internal electronic components are warranted for 90 days from the date of shipment from the factory, if they have been properly used. This warranty will be limited to the repair or replacement of parts and the necessary labor and services required to repair the goods. **IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.** This warranty is the exclusive and only warranty to pass with the goods under this contract. No agent, employee, or representative of the Seller has any authority to bind Seller to any information, representation, or warranty concerning the goods sold under this contract, and unless an affirmation, representation, or warranty made by an agent, employee, or representative is specifically included within this contract, it will not be enforceable by Buyer. If notice of defect is given to DeepSea Power & Light, Inc. within such 90 day or one year warranty period, the sole obligation of DeepSea Power & Light, Inc. shall be to furnish new or repaired parts free of charge in exchange for parts which have been proved defective and does not include any other costs such as the cost of removal of the defective part, installation, labor, or consequential damages of any kind, the exclusive remedy being to require DeepSea Power & Light, Inc. to furnish such new parts. Under no circumstances shall the Buyer be entitled to recover any incidental damages as that term is defined in Commercial Code §2715.

RMA PROCEDURE FOR REPAIR

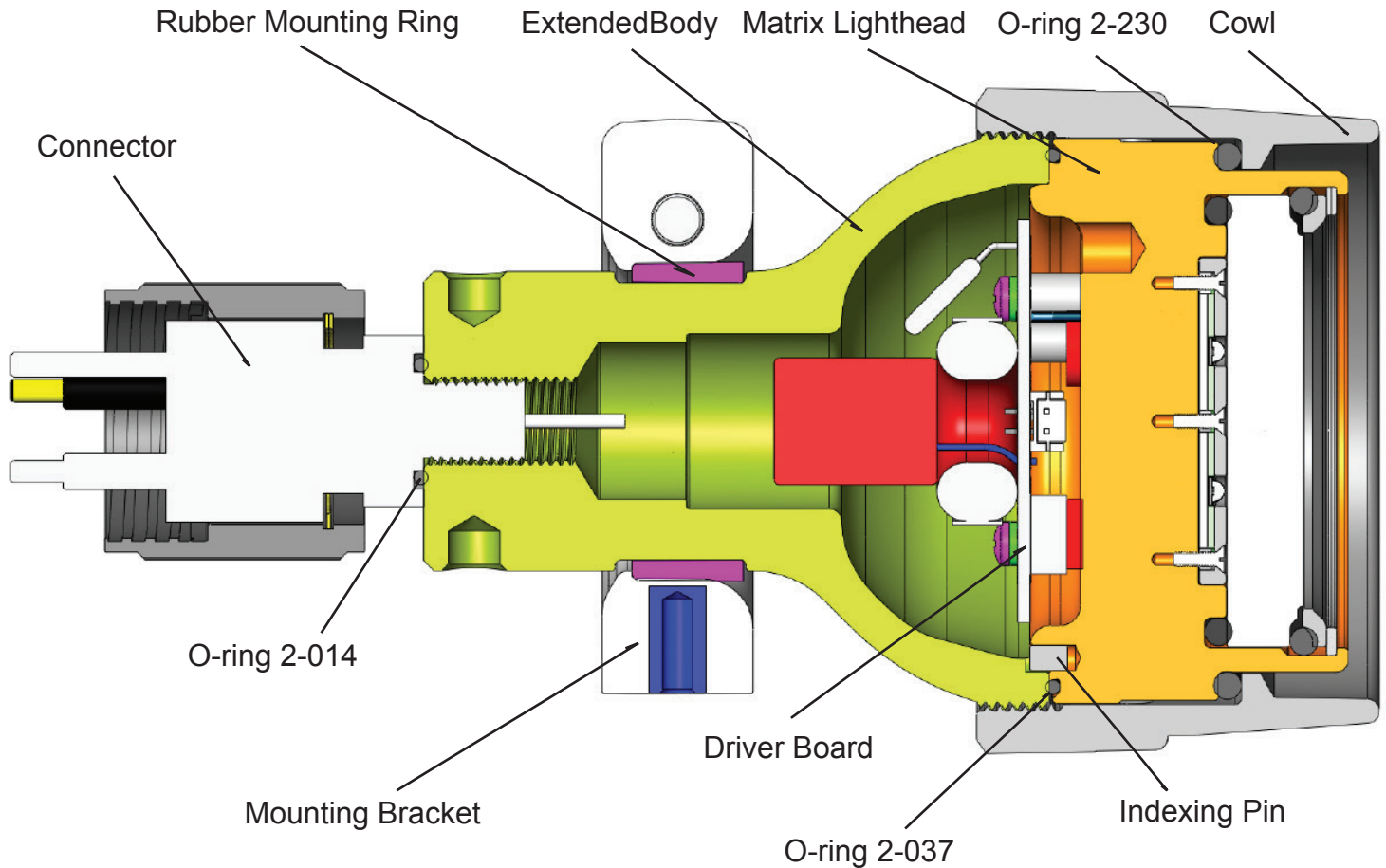
Should it be necessary to return your Matrix to the factory, follow the procedure for the **Flooded Light Repair** above, leaving the connector partially unscrewed.

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

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

RMA contact information:
Phone: 858-576-1261 ext. 324
Fax: 858-576-0219
Email: RMA@deepsea.com

All shipments should be sent to the address below marked:
Attn: RMA #####



PARTS LIST

Part Number	Description
710-040-076-0A	Cowl, Molded, HD
2-230 N0674-70	O-ring, 2-230
712-020-028-0A	Matrix Lighthouse
380-00075	Indexing Pin, 1/8" Dia
712-020-030-0A	Extended body
710-040-019-0C	Multi-SeaLite Mounting Bracket
710-040-104-0A	Rubber mounting collar
(see spec sheet)	Electrical Connector
2-014 N0674-70	O-ring, 2-014
712-017-907-0A-01	Driver Board (10-32 vdc)
712-017-904-0A-01	Driver Board (120VAC)
712-017-904-0A-02	Driver Board (240VAC)
2-037 N0674-70	O-ring, 2-037
610-00468	desiccant, 1 gm (not shown)

DIMMING (22-30vdc MATRIX ONLY)

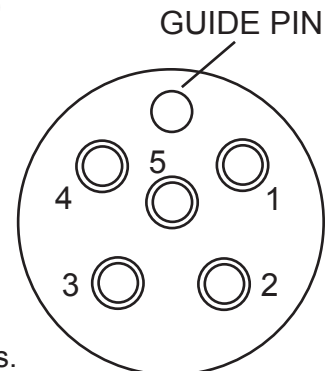
Dimming (10-32vdc Matrix ONLY)

The advanced solid state dimming circuit in DeepSea Power & Light's LED Multi-SeaLite® Matrix® (10-32vdc model) will provide you with smooth, flicker-free dimming ideal for high definition video, close-up underwater inspection, or reduced backscatter in murky water.

The standard Matrix connector pin assignments are:

- Pin-1: Power, Positive (10-32vdc)
- Pin-2: Power, Negative (Ground)
- Pin-3: Ground to shell
- Pin-4: Not used
- Pin-5: Positive, 0-5vdc analog dimming (ground to Pin-2)

If pin 5 is not connected, it will drive at full power. If pin 5 is connected to ground, the light will dim to about 20% of full brightness.



To help customers when installing components, DSPL uses the convention: 2 pin connectors for lasers, 3 pin connectors for lights, 4 pin connectors for cameras, and 5 pin connectors for dimming lights.

LED Multi-SeaLite® Matrix®

The revolutionary LED Multi-SeaLite® Matrix® from DeepSea Power & Light will change the way you look at underwater lighting. Gone are the days of downtime caused by lamp changes. The LED Multi-SeaLite® Matrix® has a 50,000 hour lifespan, and is incredibly shock and vibration resistant. The Matrix's high color temperature white LEDs and state of the art optics give you the ability to put light where you need it and reduce wasted light that is often experienced as backscatter. DeepSea's proprietary driver circuitry, and high efficiency LEDs combine to create a fixture that produces over five times more light per watt than comparable halogen lamps. To top it all off, you can easily convert your current suite of Midwater or Deep Multi-SeaLites® to the LED Multi-SeaLite® Matrix®, using the same cowls, bodies, mounts, and connectors that you keep in your spares kit. The Multi-SeaLite® Matrix® is the plug-n-play halogen replacement that you have been waiting for.

MECHANICAL	
Body Material	Hard Anodized Aluminum (6061)
Window Material	Acrylic
Mounts	High Strength Plastic Mounting Collar (standard) Stainless Steel Yoke Mounting Bracket (optional) Helmet Mounting Bracket (optional)
Air Weight	757g (26.7oz)
Water Weight	367g (12.9 oz)
Implodible Volume	55cc (3.4 ci)
ENVIRONMENTAL	
Depth Rating	6,000m (20,000ft)
Test Pressure	10,000 psi
Crush Depth*	9,700m (31,000ft)
Min/Max Operation Temp.	-10°C to 40°C (14° to 104°F)
OPTICAL	
Color	White
Lumens in the Water**	2600 lumens
Color Temp	6500°K
Beam Pattern***	Flood: 70°
ELECTRICAL	
Input Voltage	85 - 135v AC (100 - 180v DC) 185 - 265v AC (200 - 300vDC) 10 - 32v DC (0-5vdc analog dimming)
Current Draw	550ma @ 120v AC
True Power	44w
Power Factor	0.66
Dimming	0%-100% via 0v-5v control loop on LV option only.
LED Lifespan	50,000 hours

*Crush depth is based on one sample only.

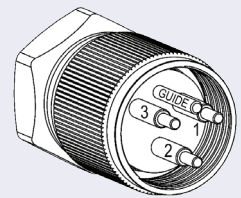
**True amount of light leaving the fixture, as measured with a calibrated integrating sphere. (calibration traceable to NIST)

***Beam angle measured to full width half power.



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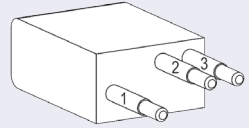


BH3MP

(1=Hot, 2=Neutral, 3=Ground to shell)

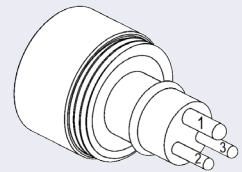
BH5MP

Used in LV dimming option only
(1=Pos, 2=Neg, 3=Ground to shell,
4=Not used, 5=Pos 0-5vdc control)
(Note: 0-5vdc Control ground to Pin 2)



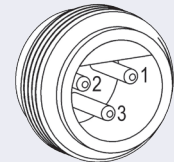
LPBH3MP

(1=Hot, 2=Neutral, 3=Ground to shell)



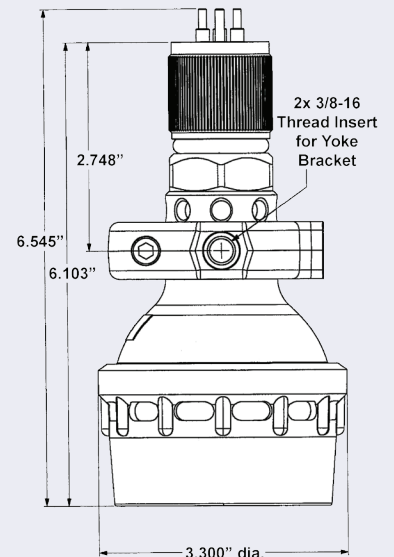
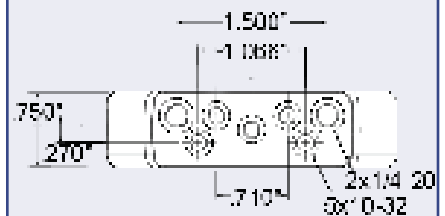
XSG3BCL

(1=Ground to shell, 2=Neutral, 3=Hot)



1503

(1=Hot, 2=Neutral, 3=Ground to shell)



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