CONNECTOR FORMS

Summary


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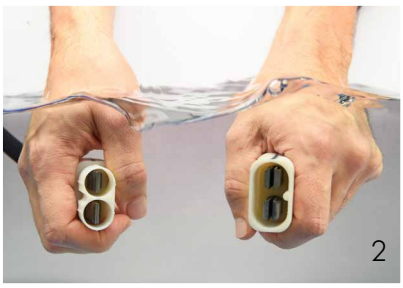
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1	**Connector Form:** **Coaxial High Power**			
	Design Characteristics: Power and high definition video streaming simultaneously via superimposed RF over power. Lab demo transfers 2.75kW plus data.			
	Potential Applications: UUV charging and data transfer, general underwater power and data			
	Dimensions of Mated Connector	**Data Rate**	**Voltage Limitations**	**Current Limitations**
	Diameter: 1.75″ Length: 10″	60-80 Mbps using power line ethernet adapter	60-75V DC	55A* Current limited by cable*
2	**Connector Form:** **Portable Marketing Case (Bladed Connectors)**			
	Design Characteristics: Demonstrated around 6A using hair dryer as a load. Likely capable of more, but further testing required. Similar to connector that has been mated more than 1500 times with no physical degradation or change in performance.			
	Potential Applications: General purpose			
	Dimensions of Mated Connector	**Data Rate**	**Voltage Limitations**	**Current Limitations**
	Width: 1.75″ Length: 8″ Depth: 1″	60-80 Mbps using power line ethernet adapter	60-75V DC	30A* Current limited by cable*
3	**Connector Form:** **Single Contact with Seawater Return (Conceptual Demo)**			
	Design Characteristics: Niobium anode with graphite cathode utilizing sea water return. Only one contact needed to transfer power.			
	Potential Applications: UUV charging, underwater electronic sensors, clip on underwater power source			
	Dimensions of Mated Connector	**Data Rate**	**Voltage Limitations**	**Current Limitations**
	Diameter: 3.5″ Length: 8″	N/A *Has not been tested	60-75V DC *Demo is limited to 12 V due to LED lights used	Demo is limited by LED lights (150mA). In practice, no foreseen limits
4	**Connector Form:** **8-Pin Commercial Style**			
	Design Characteristics: Streaming video along with command and control of an ROV. Has an M12 format.			
	Potential Applications: Underwater data			
	Dimensions of Mated Connector	**Data Rate**	**Voltage Limitations**	**Current Limitations**
	Diameter: .708″ Length: 3.607″	Blue ROV command and control + video	60-75V DC	1A contacts* 22AWG

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Summary


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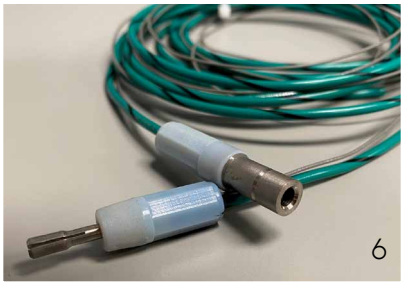
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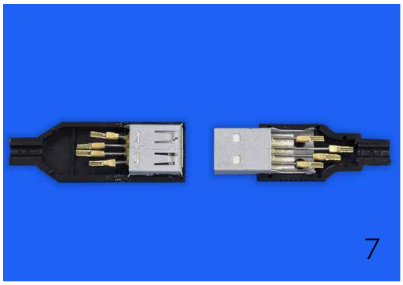
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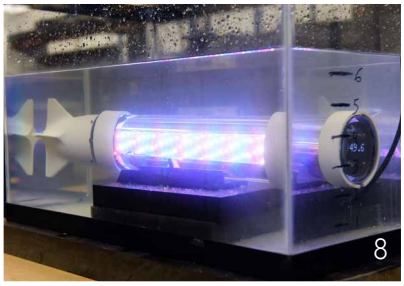
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5	**Connector Form: 8-Pin, Bladed**			
	Design Characteristics: Has M12 format with a keying feature to ensure proper mating. Bladed design allows for better contact.			
	Potential Applications: Underwater data, ethernet, power over ethernet			
	Dimensions of Mated Connector	**Data Rate**	**Voltage Limitations**	**Current Limitations**
	Diameter: .726″ Length: 4.365″	750 Mbps upload950 Mbps download while flooded *Computer limited speeds	60-75V DC	1A contacts
6	**Connector Form: Banana Plug**			
	Design Characteristics: Single contact used for special applications such as diving equipment.			
	Potential Applications: Charging			
	Dimensions of Mated Connector	**Data Rate**	**Voltage Limitations**	**Current Limitations**
	Diameter: ~.5″ Length: ~3″	N/A *Has not been tested	5V *Using Ti in lieu of Nb	2A
7	**Connector Form: USB Connectors**			
	Design Characteristics: Proof of concept, handmade prototype allowing for USB 2.0 underwater data transfer while flooded.			
	Potential Applications: Underwater data transfer/collection (for divers)			
	Dimensions of Mated Connector	**Data Rate**	**Voltage Limitations**	**Current Limitations**
	Diameter: 3″ Length: 0.63″	Able to stream high-def video	5V *Standard USB	1A *Standard USB
8	**Connector Form: Underwater Charging - Open Rails (Conceptual Demo)**			
	Design Characteristics: Exposed niobium contact shoes for landing on niobium rails, fastened charging base for power transfer.			
	Potential Applications: UUV charging, battery connections and housings, general underwater power transfer			
	Dimensions of Mated Connector	**Data Rate**	**Voltage Limitations**	**Current Limitations**
	Length of rails: 7″ Width of rails: 0.187″ Length of shoes: 3″ Width of shoes: 0.375″	N/A *Has not been tested	60-75V DC *Demo limit is 48V due to power supply	None