Extended Ethernet Flying Lead

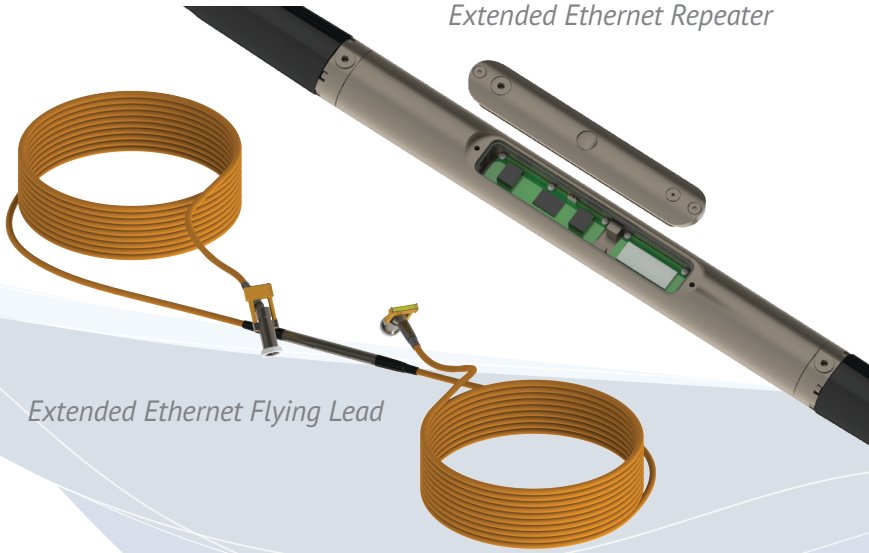
Designed to extend the reach of Ethernet Transmission beyond 100 meters

RELIABLE SUBSEA ETHERNET CONNECTORS

Due to vast geographies and complex field layout configurations, Subsea Ethernet transmission requirements may reach beyond the 100 meter maximum.

Extended Ethernet Flying Leads (E2FL) enables Ethernet transmission beyond the limits of the previous 100 meter Ethernet assemblies.

The E2FL series features two Flying Lead configurations.



- The E2FL-300 enables high integrity Ethernet transmission at distances between 100 meters and 300 meters by utilizing a marinized Ethernet Repeater system in a 1 ATM enclosure. The repeater regenerates the signal via a powered circuit board, allowing it to travel longer distances.

One repeater is used in-line for jumpers up to 200 Meters, and two repeaters are used in-line for jumpers up to 300 Meters in length.

- The E2FL-10k enables high integrity Ethernet transmission to distances up to 120 kilometers in length. This series utilizes patented marinized E/O conversion, integrated within the 12-way Electrical Wet Mate connectors. The PBOF hose assemblies are configured with Ethernet data cable plus up to 4 power lines, allowing power to the E/O converters from either direction.

All E2FL jumpers are suited for connectivity on subsea control modules, data transmission systems, umbilical terminations, electrical junction boxes and other subsea structures. Including E2FL into the layout designs allows the use of existing and qualified electrical subsea control systems and SEMs without the need for designing and qualifying new optical control systems and maintaining dual designs.

PRODUCT FEATURES

- **Wet Mate Electrical Ethernet**
- **Ethernet Jumpers extending beyond 100 meters**
- **30 Year Design Life**
- **Long Step-out (up to 300 meters) and Very-Long Step-Out Flying Leads**

TELEDYNE MARINE
Everywhereyoulook™

Ethernet Flying Lead

Qualified 100m Subsea Ethernet jumpers designed for data transmission and real-time situational awareness and monitoring.

TECHNICAL SPECIFICATIONS

GENERAL SPECIFICATIONS	
Max Operational Depth Pressure Balanced	4000 m (6,000 psi)
Max Operational Differential Pressure	12-way: Receptacle 224bar (3250psi) – Plug 303bar (4400psi)
Operational Temperature	
Seawater	23˚F to +104˚F (-5˚C to +40˚C)
Air	-13˚F to +122˚F (-25˚C to +50˚C)
Storage Temperature	-22˚F to +140˚F (-30˚C to +60˚C)
Subsea Mate/De-mate Cycles	1000 total cycles maximum after factory testing 200 cycles maximum in turbid seawater conditions
Maximum Mate/De-mate Force	< 500N (112 lb-f)
Minimum De-Mate Force	98N (22 lb-f)
Configuration	ROV, Stab & Diver-Mate
Material	
Shell & Latch Fingers	Titanium & High Strength Stainless Steel
Boots & Bladders	ODI Proprietary Plastic & Rubber Components
Slides (ROV Only)	Titanium, Acetal, or Delrin
Repeater Housing	Titanium
Design Life	30 Years (Assuming Operational Temperature of 4˚C)
Maximum Length	1 Repeater: 200 meters 2 Repeaters: 300 meters
OPERATIONAL SPECIFICATIONS	
Number of Circuits	12
Data Rate	10/100 Mbit/sec
Jumper Cable Attenuation: Maximum	36 dB (@100MHz) Per ISO/IEC 11801:2002 (before integrating repeaters)
Jumper Cable Crosstalk: Maximum	30.1 dB (@100MHz) Per ISO/IEC 11801:2002 (before integrating repeaters)
Communications Test	Bit Error Rate <10-8
Power Wires (Pass Through)	
Max Operational Current/Circuit	3 Amps
Max Operational Voltage	620 VAC Phase to Ground
Insulation Resistance	≥ 10 GΩ @ 1 KVDC
Power Wires (Required to run Repeater)	
Operating Power	2 watts
Operating Voltages	24 Volts +12/-4 Volts
Max In Rush Power	6 watts
Contact Resistance	≤ 10 mΩ per contact
Mated Connector Continuity Resistance	≤ 0.2 Ω per contact
Fully Compatible Materials	Fresh Water, Sea Water, DC 200 Silicone Oil
Intermittently Compatible Materials	MEG, Oceanic HW 443, 50% Citric Acid, 50% Acetic Acid

* Longer jumpers with more repeaters can be provided upon request.
** For reference only, see FDS - IFS D/N 393345 for Design Specifications.

TELEDYNE MARINE
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