# Ethernet Flying Lead

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

### RELIABLE SUBSEA ETHERNET CONNECTORS

*Ethernet Flying Lead 7-Way*

Increases in bandwidth requirements and longer offsets have driven demand for subsea Ethernet transmission. For real-time asset monitoring in flow assurance and sensing and subsea processing, optical sensing and communications, Teledyne Oil and Gas has developed an optimized custom cable qualified for subsea use. Jumpers are offered with power lines for transmission of up to 620 VAC/3A.

Nautilus Ethernet connector harnesses have been engineered to provide a fully wet-mateable connection system for 10/100 Base-TX communication. The typical Ethernet harness system consists of wet-mateable, Nautilus-style connectors, Nautilus penetrators, pressure balanced, oil-filled (PBOF) hose conduits. Internally, the Ethernet signals are transmitted over custom Ethernet cabling sealed to seawater ingress by two independent barriers.

Seven and 12-way configurations are available. Up to eight pins are soldered to the custom Ethernet cable for low power signal communication. The four remaining pins have twisted 16 AWG 1000 V spec 44 wire connections capable of DC or AC power.

Subsea connection of the harnesses may be accomplished by ROV, Diver-Mate or Stab-Plate applications

#### 7-WAY NAUTILUS CONNECTORS

- Single Ethernet channel (100 Mb/s)
- 100 m maximum length (ISO/IEC 11801 compliant)

#### 12-WAY NAUTILUS CONNECTORS

- Single or dual redundant Ethernet channels – not simultaneous (100 Mb/s)
- 100 m maximum length (ISO/IEC 11801 compliant)

All Ethernet jumpers are suited for connectivity on subsea control modules, data transmission systems, umbilical terminations, electrical junction boxes and other subsea structures.

### PRODUCT FEATURES

- **Fully Qualified**
- **Ethernet Jumpers up to 100 m**
- **30 Year Design Life**
- **Single or Dual Channel Redundant Ethernet**
- **7-Way or 12-Way**

TELEDYNE MARINE
Everywhereyoulook™

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## TECHNICAL SPECIFICATIONS

| GENERAL SPECIFICATIONS | |
|---|---|
| Max Operational Depth Pressure Balanced | 6400 m (10,000 psi) |
| Max Operational Differential Pressure, bar (psi) | |
| **7-way** | Receptacle 259 (3750) – Plug 338 (4900) |
| **12-way** | Receptacle 224 (3250) – Plug 303 (4400) |
| 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 | -40˚F to +140˚F (-40˚C to +60˚C) |
| Subsea Mate/De-mate Cycles | 1000 total cycles maximum after factory testing<br>200 cycles maximum in turbid seawater conditions |
| Maximum Mate/De-mate Force | < 500N (112 lb-f) |
| Minimum De-Mate Force | 98N (22 lb-f) |
| Data Transfer Rates Supported | 10/100 Mb/sec @ 100MHz Max (Single Channel) |
| Configuration | ROV |
| Material | |
| **Shell & Latch Fingers** | Titanium |
| **Boots & Bladders** | ODI Proprietary Plastic & Rubber Components |
| **Slide Shell** | Titanium & Delrin |
| Design Life | 30 Years |
| Max Length | 100 Meters |
| **OPERATIONAL SPECIFICATIONS** | |
| Number of Circuits | 7 (single channel), or 12 (single channel or dual redundant)<br>12 (Dual Channel Simultaneous or Gigabit) |
| Ethernet Attenuation | Maximum: 24 dB (@100MHz) Per ISO/IEC 11801:2002 |
| Ethernet Crosstalk | Maximum: 27.1 dB (@100MHz) Per ISO/IEC 11801:2002<br>For Information Only when IL < 4 dB Per ISO/IEC 11801:2002 |
| Ethernet Return Loss | Minimum: 8 dB (@100MHz) Per ISO/IEC 11801:2002<br>For Information only when IL < 3 dB (Dual Channel) |
| Power Wires | |
| **Max Operational Current/Circuit** | 3 Amps |
| **Max Operational Voltage** | 620 VAC Phase to Ground |
| **Insulation Resistance** | ≥ 10 GΩ @ 1 KVDC |
| 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 |

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