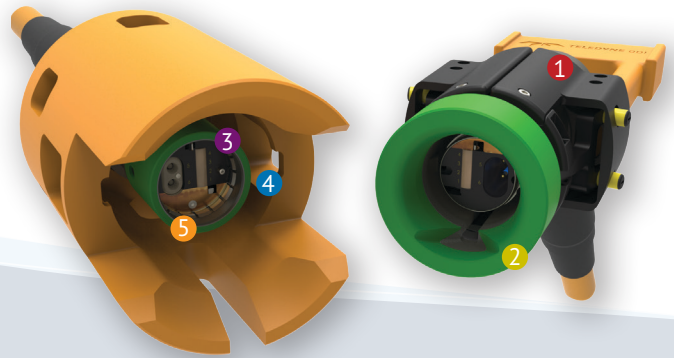


# Nautilus Rolling Seal Hybrid - MK IV

Hybrid connector available in ROV and Manual-Mate configurations –  
Up to 4 optical circuits and 2 electrical circuits

The NRH MK IV generation builds upon the strong performance of the NRH MK III, including product enhancements for increased robustness, and full qualification to API 17F v4, SEAFOM TSD-02, and many other industry standards. The MK IV maintains backwards compatibility to the MK II and MK III generations.

Subsea control modules and umbilical terminations often have need for both power and high-speed data transmission via optical fiber. Addressing this challenge, the Teledyne ODI Nautilus Rolling Seal Hybrid (NRH) Connector combines the reliability and electrical current capacity of the industry-standard Nautilus Connector with the flexibility and multi-channel optical capabilities of the Rolling Seal Connector. Containing two proven technologies, this product is particularly well-suited for applications requiring up to four optical circuits and two higher power electrical circuits rated at 30 amps and 3.3 kVDC in a robust fully wet-mateable connector. On one side of the connector, the patented Rolling Seal design excludes water and silt from the region where the optical ferrules are brought into contact, providing a clear oil-filled conduit for the ferrules to contact and create a low-loss optical path. Featuring the Teledyne ODI “Dual Seal” design philosophy, the Nautilus side of the connector boasts two independent oil reservoirs, providing two completely separate barriers to the ingress of sea water. The patented design of the electrical contacts allows the pin to enter these reservoirs and to transfer sealing via a shuttle pin and dual wiper seal assembly. Configurations include ROV and manual mate, with either pins or sockets on the flying lead connector half.



## Five Performance Enhancements

- ① GAF/ELI ensures mating efficiency and eliminates potential for shell damage while offering positive latch indication.
- ② Bulkhead Center actuator material change offers increased margin against deformation, for overall field reliability.
- ③ Bulkhead main spring force increase assures manifold return even when mated at excessive angles.
- ④ Bulkhead bushing now reinforced and more robust for ROV handling.
- ⑤ Longer, contoured Cable End lead-in bushing enhances fine alignment of connector halves during the mating sequence.

## PRODUCT FEATURES

- Enhanced Mating Features
- Fully Qualified
- 2-Way Electrical, 4-Way Optical
- <0.5 dB IL/3.3 kVDC/30A
- 10 kpsi Pressure Balanced
- Flying Lead with Pins or Sockets (HSE Compatible)
- 30 year Design Life



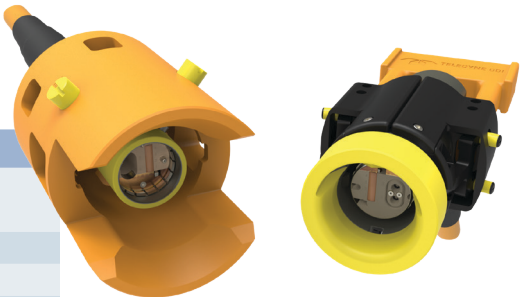
**TELEDYNE MARINE**  
Everywhere you look™

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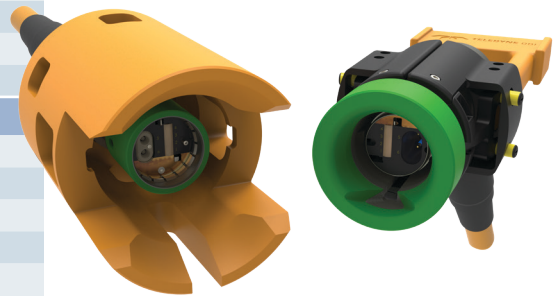
Hybrid connector available in ROV and Manual-Mate configurations –  
Up to 4 optical circuits and 2 electrical circuits

## TECHNICAL SPECIFICATIONS

GENERAL SPECIFICATIONS	
Operational Temperature	23°F to +104°F (-5°C to +40°C) (seawater) 4°F to +122°F (-20°C to +50°C) (air)
Storage Temperature	-22°F to +140°F (-30°C to +60°C)
Maximum Operational Pressure	10,000 psi pressure balanced
Mate/Demate Cycles	100 without refurbishment
Mating Force	<120 lbs
Demating Force	<100 lbs
Configurations	ROV & Manual Mate
Flying Lead Configuration	Pins or Sockets
Material	Titanium is the preferred shell material
Design Life	30 Years
OPTICAL & ELECTRICAL SPECIFICATIONS	
Number of Circuits	2 Electrical, up to 4 Optical
Insertion Loss	≤0.5 dB @ 1310/1550/1625 nm
Return Loss	≥30 dB @ 1310/1550/1625 nm
Maximum Operational Current	30 amps per circuit
Maximum Operational AC Voltage	1.0 kV Phase-to-Ground 1.73 kV Phase-to-Phase
Maximum Operational DC Voltage	3.3 kV
Insulation Resistance	>20 GΩ @ 1,000 VDC
Contact Resistance	<30 mΩ per Contact



*Alternate Configuration:  
Reversed Electrical Genders\*\**



*ROV NRH MK IV  
Hybrid Connectors*

\*For reference only, see FDS - IFS D/N 213932 for Official Values  
Compliant to API 17Fv4, SEAFOM TSD-02  
\*\*Reverse Gender NRH API 17F v4 Qualification Not Completed



*NRH Pressure-Balance Oil-Filled Jumper*