

# HYBRID PRODUCTS



## Nautilus™ Rolling Seal Hybrid (NRH) Connector 2 Nautilus™ Electrical Circuits, 4 Rolling Seal Optical Circuits

A connector designed to fulfill the needs of customers requiring a hybrid connector (optical and electrical circuits) with higher-capacity electrical contacts.

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.

ROV, Stab or Manual-Mate configurations and various Oil-Filled Hose options are available for this connector.

### FULL LINE OF HYBRID PRODUCTS:

- NRH – Nautilus™ Rolling Seal Hybrid up to 6 Circuits
- MCDU – Modular Connectorized Distribution Unit
- FACT – Field Assembled Cable Termination
- Dry-Mate Submersible Connector

### HYBRID PRODUCT DATA SHEETS:

To access the electronic version and confirm the latest revision level, please visit [www.odi.com](http://www.odi.com) ODI literature on demand.



Teledyne ODI is the world leader in subsea electrical and fiber optic interconnect systems for offshore oil and gas, defense, oceanographic, and telecommunication applications.



## GENERAL SPECIFICATIONS\*

Operational Temperature:	-5°C to +40°C (seawater) -18°C to +50°C (air)
Storage Temperature:	-30°C to +60°C
Max Operational Pressure:	10,000 psi ambient 1,500 psi differential (bulkhead)
Mate/Demate Cycles:	>100 without refurbishment
Mating Force:	<120 lbs
Demating Force:	<100 lbs
Configurations:	ROV, Stab & Diver-Mate
Material:	Titanium is preferred shell material
Design Life:	25 Years

## OPTICAL & ELECTRICAL SPECIFICATIONS

Number of Circuits:	2 Electrical, 4 Optical
Insertion Loss:	<0.5 dB @ 1310/1550 nm
Return Loss:	<-30 dB @ 1310/1550 nm (mated)
Max Operational Current:	30 amps per circuit
Max Operational AC Voltage:	1.0 kV Phase-to-Ground 2.0 kV Phase-to-Phase
Max Operational DC Voltage:	3.3 kV
Insulation Resistance:	≥10 GΩ @ 1 kVDC
Contact Resistance:	<30 mΩ per contact @ > 10 amps

\*For reference only, see FDS - IFS D/N 213932 for Official Values

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This product is covered by one or more of the following U.S. and/or foreign patents; 4,948,377; 5,203,805; 5,171,158; 5,194,012; 1,296,783; 5,645,438; 5,685,727; 5,722,842; 5,645,442; 5,772,457; 5,738,535; 5,873,750; 6,067,395; 6,321,021; 6,315,461; 6,017,227; 6,608,960; 6,439,778; 6,332,787; 6,665,477; 6,402,539; 6,510,270; 6,543,965; 6,796,821; 6,910,910. Other pending U.S. and foreign patents may apply.



**TELEDYNE ODI**

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