

WellConnect™

1" Subsea Vertical Fibre Optic Connector

The Vertical Instrument Wet Mateable Fibre Optic Connectors are designed to provide a continuous optical connection between the Tubing Hanger (TH) and the X-Tree. The purpose of the Vertical Optical Connectors is to provide a long-term reliable optical connection for DFOS (Downhole Fibre Optic Sensing) Applications.

Operational Requirements

Design Life:	25 years
Location within Completion:	Subsea Vertical X-Tree & TH
Rated Pressure:	15,000 Psi
Test Pressure:	22,500 Psi
Working Temperature Range:	-18°C to 150°C (0°F to 302°F)
Storage Temperature Range:	-40°C to 70°C (-40°F to 158°F)
Number of Mating Cycles:	25 turbid & 100

Mechanical Requirements

Envelope Diameter:	As per Customer Specifications
Stack up Tolerance:	± 3.5mm
Vibration:	Double Sweep 10 Hz to 60 Hz - 6g
Mechanical Shock:	Half sine, 11ms @ 10g, 30g
Angular Misalignment:	± 0.5°
Radial Misalignment:	± 1mm
Max. Mate/De-Mate Speed:	Mate 0.5 m/s, De-Mate 1.0 m/s

Optical Specification

Number of Contacts:	6 - with any combination of single mode or multi-mode
Contact Method:	APC Ferrule
Insertion Loss:	≤ 0.5 dB Single Mode (1310nm, 1550nm & 1625nm) ≤ 1.0 dB Multi-mode (850nm & 1300nm)
Return Loss:	≤ -45 dB Single Mode ≤ -30 dB Multi-mode
Max. Optical Crosstalk:	≤ -60 dB Single Mode ≤ -60 dB Multi-mode

Material Specification

Housing:	Receptacle - HS Cupronickel Alloy Plug - Stainless Steel 316 (max. 22 HRC)
Contact:	HT APC Ferrules

Design Philosophy

Main Pressure Balanced Body:	Pressure balanced, dual thixotropic gel filled chambers.
Seal Philosophy:	HTHP Glass-to-Metal optical penetrators, tapered seal, O-ring with PEEK backup ring
Optical Contacts:	Angled Physical Contact ferrules
Optical Fibre:	Mid-temperature, harsh environment

Qualification Testing

Note: All testing to SEAFOM TSD-01

- Insertion Loss Test
- Return Loss Test
- Hydrostatic Pressure Test
- Functional Mate / Demate in Turbid Conditions
- Functional Mate / Demate in Cold Conditions
- Misalignment Test
- Thermal Shock Test
- Flooded Termination Test
- Individual Seal Pressure Test
- Mechanical Shock Test
- Vibration Test
- Cyclical Pressure and Temperature Test
- Helium Leak Test
- Partial Mating Test

Key Performance Features

- Both Connector halves are controlled environment pressure balanced.
- HPHT Application Materials
- Energised Seals
- Metal to Metal Sealing
- APC Optical Ferrules

