

# WellConnect™

## Subsea WHO Fibre Optic Penetrator

The Wellhead Outlet (WHO) Penetrator is a Dry Mateable Subsea Fibre Optic Connector designed to provide continuous optical connection through Wellhead equipment. Typically this will be from a Tree mounted Wet mateable Connector to a Diver/ROV Connector situated at the Junction Box. The Connector is mounted to a Flange which is then mounted to a pre-machined face on the Wellhead equipment. The mating half of the Connector is terminated to an Oil Filled Subsea Jumper via an Omnitec Mk 2 interface or Subsea Connector.

### Operational Requirements

Location within Completion:	Subsea, Wellhead
Rated Pressure:	20,000 Psi
Test Pressure:	30,000 Psi
Working Temperature Range:	0°F to 302°F (-18°C to 150°C)
Storage Temperature Range:	-40°F to 158°F (-40°C to 70°C)
Deployment Water Depth:	0-10,000ft (0-3,048m)

### Mechanical Requirements

Connection Cycle Life:	>100
Sealing:	M-M Primary, Elastomeric Secondary
Orientation:	Keyed interfaces

### 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

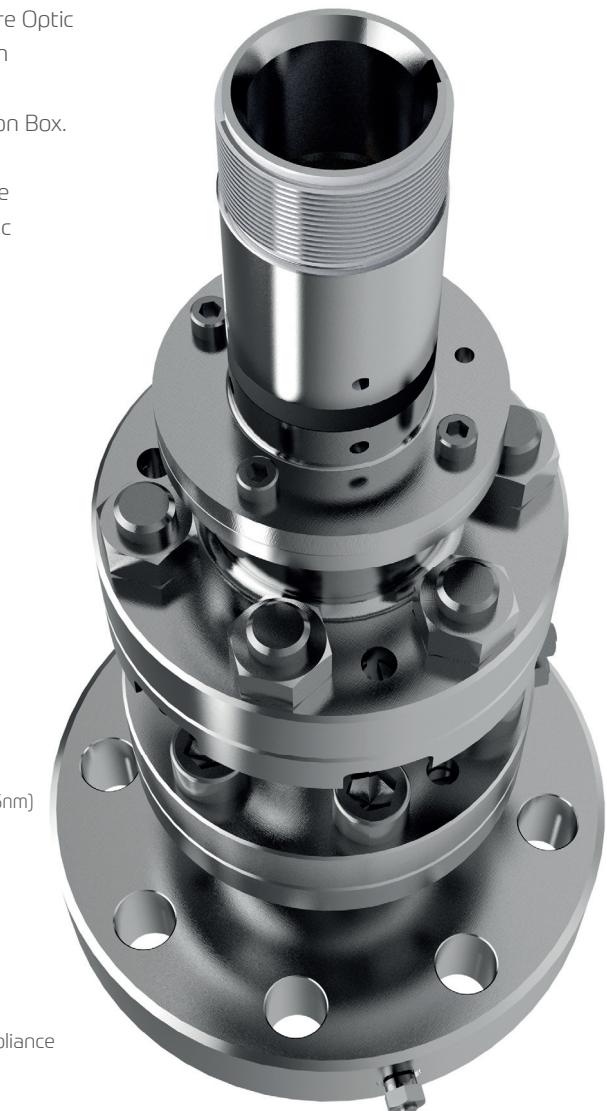
Housing Options:	Stainless Steel 316 SAF 2205, 17-4PH
	Stainless Steel or HS Cupronickel in compliance with ISO15156/NACE MR0175
Seal Options:	Hydrogenated Nitrile Rubber, Flurosilicone, Rubber or Silicone

### Design Philosophy

Ease of Termination
Pressure Testable
Independent Design Review Validation

### Interfaces

WHO Interface API and Grayloc Sealing Flanges, as per customers requirements.
Including as minimum; 1-11/16", 2-1/16" - API BX 150, 152 Ring
Tree Cable Termination 1/8" Encapsulated/Hydraulic Tube or 1/4" Encapsulated/Hydraulic Tube
Oil Filled Jumper/Hose Termination Omnitec Mk 2 Fitting or Subsea Connector



### Qualification Testing

Optical Insertion Loss
Optical Return Loss
Optical Power
Hydrostatic Pressure Test
PR2 Test (Pressure & Thermal Cycle)
Vibration Test
Gas Test
Reverse Pressure Test
Individual Seal Test

### Key Performance Features

Flexible Design Suiting any Wellhead Prep
Ease of termination