

Dual-Contact Vertical Tree Instrumentation Electrical Feedthrough System

Diamould electrical connectors

APPLICATIONS

Electrical feedthrough for subsea vertical trees

ADVANTAGES

- Unique technology for twisted-pair downhole applications (telemetry and electrical flow control devices)
- Dual-pin dry-mate connector for tubing hanger bottom
- Metal-to-metal electrical pressure barriers that eliminate requirement for O-rings
- Protected male pin for corrosion protection when demated
- Crimp termination technology that eliminates soldering
- Design based on proven vertical electrical feedthrough system (EFS) technology used in more than 1,000 installed subsea trees
- Barriers qualified to API Spec 6A Product Specification Level (PSL) 3G

The dual-contact vertical tree instrumentation EFS in the portfolio of Diamould* electrical connectors provide a unique nonoriented solution for vertical tree applications that require enabling more than one electric line downhole. The system offers a robust solution for twisted-pair telemetry and all-electric flow control devices while maintaining all the pressure-containing barriers needed for well integrity.

Based on patented and field-proven wet-mateable technology and cable termination methods, the dual-contact vertical tree instrumentation EFS provides the functionality expected from an industry standard plus differentiating features that improve reliability and long-term performance.

Protected male pins and dielectric-filled wipers

Male pins are protected in dielectric-filled wipers, increasing the electric tracking distance to earth as well as improving integrity and reliability. This feature provides mechanical and corrosion protection to the demated male contact pin.

Crimp termination technology

Unique and reliable crimp and latch boot technology provides a clean, repeatable means of cable termination, eliminating the requirement for soldered terminations and potential quality issues.

Metal-to-metal pressure barrier

When used for long-term sealing, O-rings are subject to compression set and decompression damage. Electric pressure barriers are configured with a metal seal for well integrity, eliminating the need for O-rings and elastomers as a long-term seal solution in critical wellhead applications.

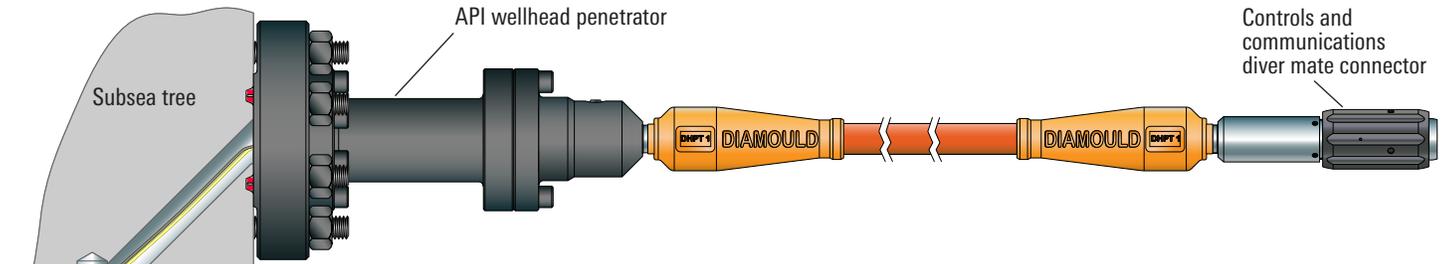
Dual-contact lower tubing hanger solutions

The technology provides multiple options for the reliable termination of twisted-pair offshore cable direct or dual-pin dry-mate electric connectors.



The dual-contact vertical tree instrumentation EFS provide a robust solution for twisted-pair telemetry and all-electric flow control devices without compromising well integrity.

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Specifications

Temperature range, degF [degC]

Operating 0 to 250 [-18 to 121]

Storage -40 to 122 [-40 to 50]

Maximum operating pressure, psi [MPa] 10,000 [68.9]

Rated water depth, ft [m] 10,000 [3,048]

Number of mating cycles 100

Design life, yr 30

Overall connector diameter, in [mm] <1.5 [38]

Mating speed (minimum to maximum), in/s [mm/s] 0.12 to 31.50 [3 to 800]

Axial stackup, in [mm] ± 0.015 [± 0.375]

Radial offset, in [mm] ± 0.004 [± 0.1]

Angular misalignment, ° ± 0.5

Electrical

Voltage rating, V DC 600

Insulation resistance at 68 degF [20 degC], Gohm >500

Materials

Connector housing Super duplex stainless steel and INCONEL 625

Contacts Gold-plated Colsibro copper alloy

Insulation Polyetheretherketone (PEEK-HT)

Sealing systems Bespoke FKM and FFKM compounds

Qualification Compliance

Intelligent Well Interface Standardization Recommended Practice (IWIS RP) A2

ISO 13628-4 (API Spec 17D)

ISO 10423 (API Spec 6A)

Customer-specific specifications

Valve-block-mounted plug (female) wet-mate electric connector

Tubing-hanger-mounted receptacle (male) wet-mate electric connector

Tubing hanger

Vertical tree and tubing hanger connector.

Tubing-hanger-bottom dry-mate electric connector



Tubing hanger dual-contact pin feedthrough.

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