

## UBD - Subsea Connectivity Solution

The Offshore Renewable energy business brings challenges in getting power and control information from energy conversion devices to shore.

Power is transferred from tidal and wave generation systems by various sized composite cables comprising power cores, system control (fibre optic cores) or cable communication cores.

The J+S solution provides a pressure balanced make and break connectivity facility whereby cables can be deployed. The termination is a Partial Discharge (PD) free, testable stop-end solution allowing full energisation and testing of the terminated cable. Terminated cables are then converted to a splice or in line connection to connect to a generator.

The connection can at any time be returned to a stop-end termination without the need to replace the assembly therefore minimising costs.

The device can be:

- Attached to a composite cable and left as a stop-end allowing cable integrity to be tested.
- Converted to a splice/connector by populating the second half of the frame.
- Recovered from the seabed by defined attachment points capable of lifting the frame and bend stiffeners control the stress induced into the cables,
- Deployed in seas with high current flow due to the free flooding design of the frame.
- Utilised for up to 25 years due to built in cathodic protection dependent upon requirements.



### SYSTEM DESCRIPTION

- Two-part cathodically protected frame assembly
- Facility to terminate power cores up to 36kV
- Facility to terminate control - protection cores
- Facility to terminate any number of fibre optics with loop-back for shore testing
- Designed for safe and secure deployment and recovery

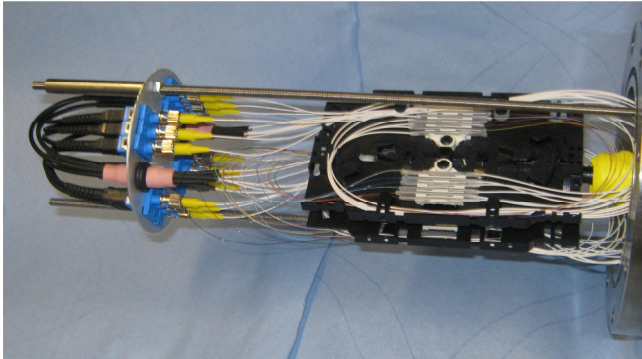
The J+S system is available in various configurations to meet different cable connectivity requirements including branch termination. The design is fully scalable for the ever-changing requirements in Marine Renewable environment.

The assembly can be arranged in multiples to connect to a double circuit cable to form a hub distribution system.

# Specifications

## Composite Cable Connectivity Solution

The photos below show some of the fittings on the device. The image on the left shows the fibre optic termination and the image on the right shows the device being deployed from a vessel.



### Equipment Specifications:

Size :	2700mm x 720mm x 720mm
Weight:	1500kg
System Operating Voltages:	Uo=6.9kV for 12kVAC to Uo=21kV for 36kVAC 50-60Hz and equivalent DC voltage
Fibre Optic:	Splice loose tube fibres to connectable bulkhead
Fibre Optic:	Facility provides low loss fibre loop backs for shore test
Control Cores:	Control-protection cores can be spliced as loop-backs
Test Criterion:	The power termination and splice is PD free <10pC The fibre optic splice arrangement is <2.5dB loop length
Pressure Compensation:	Gel filled HNBR construction
Sealing Glands:	ATEX rated units, double sealing arrangement
Jointing Materials:	Raychem – 3M, dependant on requirements
Frame Material:	Carbon steel
Fittings:	316 Stainless steel
Surface Finish:	Paint finish to meet NORSOK M501 standards
Frame Protection:	Sacrificial Anodes are used for cathodic protection
Design Qualification:	Tested in accordance to IEC specifications Load tested to 8 tonnes

J+S offer a complete installation and connectivity service by qualified and experienced staff. The teams skill set includes fibre optic splicing, high voltage jointing and mechanical assembly. The team are fully offshore certified and supported by a in house engineering team.

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