C-Kore
Simplify Subsea Testing

SUBSEA OPTICAL TDR

- Precisely locate faults and discontinuities within fibre optic cables
- Reduce vessel and personnel costs with fast automated testing
- Measure directly subsea for repeatable, reliable test results
- Stand alone, self-contained unit with no ROV integration required
- Easy to use, no C-Kore personnel required

Precisely locate faults and discontinuities within fibre optic cables during fault-finding and monitore new cables during construction campaigns.

The C-Kore Subsea OTDR (Optical Time Domain Reflectometer) is a compact automated tool for testing subsea fibre optic cables. It can be configured in advance by C-Kore Systems Ltd or easily set up in the field by the end-user. It is simple to use, automating the previously complex work of operating an OTDR, and thus does not require any specialist personnel offshore. The unique design allows up to 12 fibre inputs to be tested from the same configuration.

The tool allows measurement to be made directly subsea, eliminating the problems of deck-based downline testing, including attenuation, offset errors, faulty downlines and human error. The C-Kore Subsea OTDR is entirely self-contained and does not require any ROV integration.

When fault-finding the OTDR is used to precisely identify where in the cable the fault resides. This knowledge can be used to inform repair versus replacement strategies. It can also be used to evaluate spare fibre optic channels to enable successful field reconfiguration to mitigate faults, without expensive cable repairs or replacement.

For new asset installation the OTDR is used to characterise cables for future reference and find discontinuities that have not yet affected signal transmission integrity. As this testing is automated, vessel time and personnel requirements are reduced to achieve cost savings. The unit can be deployed subsea to take optical TDR readings directly once installation is complete and prove fibre health before hook-up.

The unit is powered by a high-capacity rechargeable battery for stand-alone operation. Simple user configuration is possible with a plug-and-play USB connection to choose what the unit will test and when. Every result is data-logged and the unit has built-in software for result analysis.

KEY FEATURES

Localise Faults
Detect the location of fibre breaks and discontinuities. Identify fault types – short/open circuits, kinks, splices.

Long Range
Measurement 100km+ possible (dependent on cable properties). Automated pulse modes for long and short-range testing.

High Resolution
Locate faults with 15cm resolution, analyse with built-in software. Programmable emitter wavelength, velocity of propagation and gain.

Multiple Fibres
Measure up to 12 fibre inputs in a single test routine. Automatic process with no intervention or reconfiguration.

Automated
Pre-programmed test routine for all measurements. Simple to use with no specialist personnel required.

Temperature & Shock
Monitor environmental conditions during storage and transit. Temperature and shock measurement up to 200G on all axis.

TECHNICAL SPECIFICATION

Measurement

Range:	>100 km (Dependent on cable properties)
Precision:	2nS (~15cm with VoP of 50%)
Gain:	-18dB to 56dB
Wavelength:	1310nm and 1550nm
Pulse Width:	10ns to 10µs
Number of Inputs:	Up to 12
Measurement Safety:	Low energy/short pulse measurement system. This eliminates any hazard to personnel while in use and prevents the test energy from posing a risk to eyesight.

Physical Information

Compatibility:	Standard availability for the following connector families: Siemens DigiTRONf Teledyne ODI Rolling Seal Seacon Hydralight Other connector types on application.
Operating Depth:	Dependent on connector type, see interface drawing for details. Typically 3000msw, unless limited by measurement connector.
Handling:	C-Kore uses entirely standard wet mate connectors and can be handled in the same manner as these items.
Installation:	Can be connected prior to despatch from manufacturer of umbilical, and remain in place, monitoring the system, until immediately prior to connection make-up. Alternatively, C-Kore units can be connected/disconnected at any time and can be used by a diver or ROV as a hand-held test instrument.

Operating Temperature:	Recommended: 0°C to +40°C Maximum dependant on connector type: Siemens DigiTRONf: -5°C to +50°C Teledyne ODI Rolling Seal: -5°C to +40°C Seacon Hydralight: -5°C to +40°C
Storage Temperature:	Recommended: 0°C to +25°C Maximum dependent on connector type: Siemens DigiTRONf: -20°C to +60°C Teledyne ODI Rolling Seal: -20°C to +60°C Seacon Hydralight: -20°C to +50°C
Size:	Dependent on connector type, see interface drawing for details. **Example dimensions common variants:** Siemens DigiTRONf: 515 x 500 x 132 (mm) Teledyne ODI Rolling Seal: 474 x 510 x 132 (mm) Seacon Hydralight: 672 x 548 x 132 (mm)
Weight (in air):	Dependent on connector type, see interface drawing for details. Typically 10 to 12kg.

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