

## SUBSEA TDR

- ✓ Precisely locate faults and discontinuities within electrical cables
- ✓ Save vessel and personnel costs with fast automated testing
- ✓ Measure directly subsea for repeatable, reliable test results
- ✓ Safe for divers and SCMs, high-voltage permits not required




## Precisely locate faults and discontinuities within electrical cables during fault-finding and characterise new components during construction campaigns.


The Subsea TDR is normally used in tandem with the Cable Monitor for fault-finding. Once the Cable Monitor has narrowed the location of a fault to a single component (for example an in-field umbilical) the TDR is used to precisely identify where in the cable the fault resides. This knowledge can be used to inform repair versus replacement strategies. By measuring directly subsea, the problems of deck-based downline testing are eliminated, including impedance mismatches, attenuation, faulty downlines and the difficulty of driving the TDR correctly.


For new asset installation the Subsea TDR can be used to characterise cables for future reference and find discontinuities in impedance that have not affected the insulation resistance. As this testing is automated, vessel time and personnel requirements can be reduced to achieve cost savings. The unit can be deployed subsea to take TDR readings directly once installation is complete.


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 intelligent built-in software for result analysis.


### KEY FEATURES


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**Localise Faults**  
Detect the location of cable shorts, breaks and discontinuities. Identify fault types – short/open circuits, water ingress, splices.
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**Long Range**  
Measurement 20km+ possible (dependent on cable properties). Automated pulse and step-modes for long and short-range testing.
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**High Resolution**  
Locate faults with 10cm resolution, analyse with built-in software. Programmable impedance, velocity of propagation and gain.
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**Physical Shock**  
Measures impacts, acceleration and orientation changes. Logs shocks up to 200G in all 3 axis.
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**Temperature**  
Monitor environmental conditions during storage and transit. Accurate measurement over complete temperature range.
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**Voltage**  
Detect galvanic voltages and residual charge. Automatic flagging of voltage readings.

# TECHNICAL SPECIFICATION

## Measurement

<b>Range:</b>	>20 km (Dependant on cable properties)
<b>Precision:</b>	2nS (~15cm with VoP of 50%)
<b>Gain:</b>	-18dB to 56dB
<b>Impedance:</b>	20Ω to 600Ω
<b>Pulse Width:</b>	10ns to 10μs
<b>Test Voltage:</b>	20V 10μs pulse max (into open circuit)
<b>Number of Inputs:</b>	From 2 to 13 (factory-programmable) including measurement to seawater

<b>Input protection:</b>	Voltage measurement and safe-discharge for inputs charged up to 150V. Fuse protection for inputs charged from 150V to 1kV.
<b>Measurement Safety:</b>	Low energy/low voltage measurement system. This eliminates any hazard to personnel while in use and prevents the test energy from further damaging faulty connectors or sensitive subsea electronics.

## Physical Information

<b>Compatibility:</b>	Standard availability for ODI Nautilus and Siemens DigiTRON connectors. ROV and Diver varieties. Available in 4, 7 and 12 pin versions. Other connector types on application, including Siemens Mini-CE
<b>Operating Depth:</b>	<b>Dependent on connector type, see interface drawing for details.</b> Typically 3000msw, unless limited by measurement connector.
<b>Handling:</b>	C-Kore uses entirely standard wet mate connectors and can be handled in the same manner as these items.
<b>Installation:</b>	C-Kore can be connected prior to despatch from manufacture of umbilical, jumper or module and remain in place, monitoring the system, until immediately prior to connection make-up. Alternatively, C-Kore be connected/disconnected at any time and can be used by a diver or ROV as a hand-held test instrument.

<b>Operating Temperature:</b>	Recommended: 0°C to +40°C Maximum dependant on connector type: Teledyne ODI Nautilus ROV: -10°C to +50°C Siemens DigiTRON ROV: -5°C to +60°C
<b>Storage Temperature:</b>	Recommended: 0°C to +25°C Maximum dependant on connector type: Teledyne ODI Nautilus ROV: -20°C to +50°C Siemens DigiTRON ROV: -20°C to +50°C
<b>Size:</b>	Dependent on connector type, see interface drawing for details.  <b>Example dimensions for 7-Way ROV Plug variants:</b> Teledyne ODI Nautilus: 331 x 258 x 118 (mm) Siemens DigiTRON: 355 x 258 x 124 (mm)
<b>Weight (in air):</b>	Dependent on connector type, see interface drawing for details.  <b>Example weights for 7-Way ROV Plug variants:</b> Teledyne ODI Nautilus (Titanium): 5 kg Siemens DigiTRON (Stainless Steel): 7 kg

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**C-Kore**  
Simplify Subsea Testing

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