UWEC – Underwater Eddy Current Tester

Sensima Inspection's UWEC TESTER (UW0100-ECT-2CJM3GI) is the perfect tool for reliable eddy current inspection, both underwater and on surface. The equipment complies with eddy current inspection standards, in particular weld inspections as required by the BS 1711:2000 and the ISO 15548_1.

The differentiating features of the UWEC tester are
1. **Reliable signals**: the eddy current signals are digitalized and processed next to the probe, i.e. robust, digital signals can be transmitted to the surface using well-proven cables such as those used for digital serial ROV communication. This setup ensures that the eddy current signals are reproducible and are not disturbed by spurious effects caused by cable configuration, interferences, or cable deterioration.

2. **No compromise on wear**: our proprietary design for weld probe includes a full metal protection of the probe contact points.

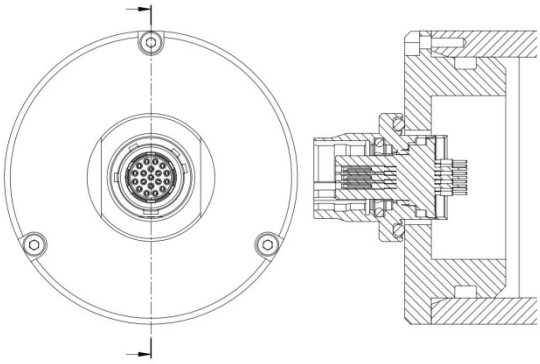
3. **Versatile system**: The system can be used for manual inspection and ROV integration, both onshore and underwater. The integration can be performed by the customer. Sensima provides support on demand.

A stainless steel casing and UW connectors ensure the robustness required for UW applications. UWEC's testers have demonstrated outstanding durability at the occasion of many NDT projects conducted underwater, on offshore oil and gas platforms and windmills, and on UW components for hydro power infrastructures such as valves and protecting grids.

Being the most compact EC tester in its category, it is much valued by divers for its minimal impact on underwater maneuverability.

The UWEC inspection setup is best utilized together with a full duplex audio connection and simultaneous display of the impedance plane on an UW monitor. This enables both the diver - carrying the tester and manipulating the probe - and the inspector located on the surface with the control PC to view the same information. In particular, the diver can directly monitor the probe response as displayed by the Sensima "UPECView" software.

The most compact underwater EC tester:
Comfortable for the diver and easy to mount on a ROV.



Uncompromising robustness
Stainless steel enclosure with a maximum operating depth of 1000m or 3200 ft.

Intuitive and practical acquisition software is provided with the tester. All the common features in conventional testers interface are provided in a easy to use panel configuration optimized for tactile devices. Testing settings can be saved and retrieved easily and reporting can be done instantaneously.

Features Highlights

- Plug-and-play: connect to USB/RS422 and start measuring
- Both direct impedance and reflection measurements
- Multifrequency (time multiplexed)
- Compatible with most of your legacy eddy current probes (may required an adaptor)
- Field proven robustness
- Enables the inspection of UW welds according to BS 1711:2000
- Working distance up to 1'000 m

Customization

- System can be customized with your favorite connectors/cables
- ROV integration
- UW monitor

UPECView Acquisition Software

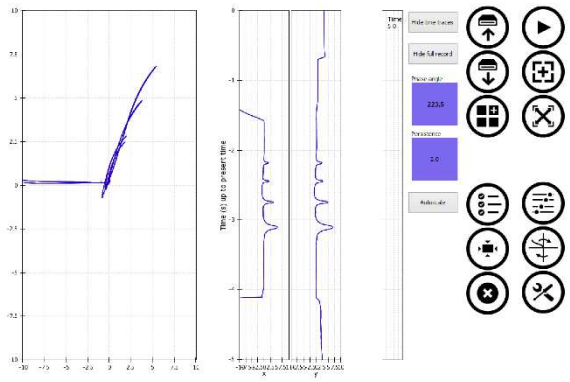
The software provides touch access to all the instrument and filter settings, but it can be used on a normal PC as well (Windows 8 or later). You benefit from all the modern features of windows, such as remote access for troubleshooting and speech recognition.

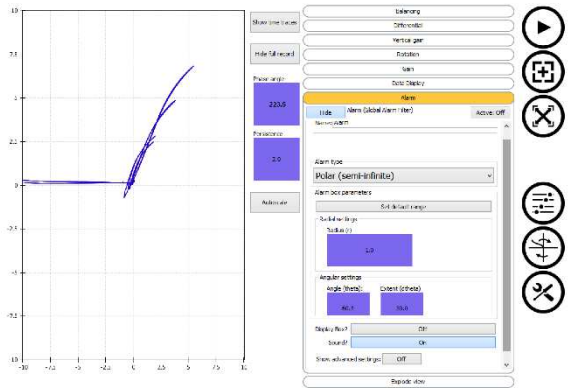
No dongle: The UPECView software can be installed on any PC in your company to perform remote data processing and assessment.
Presets: Store all instrument and filter settings for all your inspection tasks and recall themsimply by tapping on a windows tile.
Reporting: Generate a Microsoft Word and/or HTML report next to your saved data[b]. The report contains all the data processing settings.

Ordering information

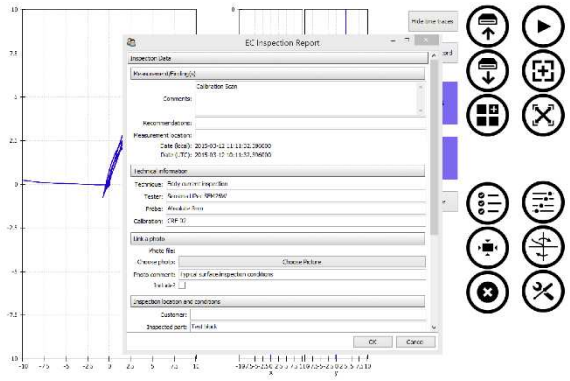
Product number: UW0100-ECT-2CJM3GI

All functions at your fingertips:
All advanced functions are available in one click or tap. Traces can be displayed or hidden.





Advanced filter settings:
Completely configurable signal processing chain and alarms. Phase angleand gains (horizontal and vertical) can be altered on each channel individually.

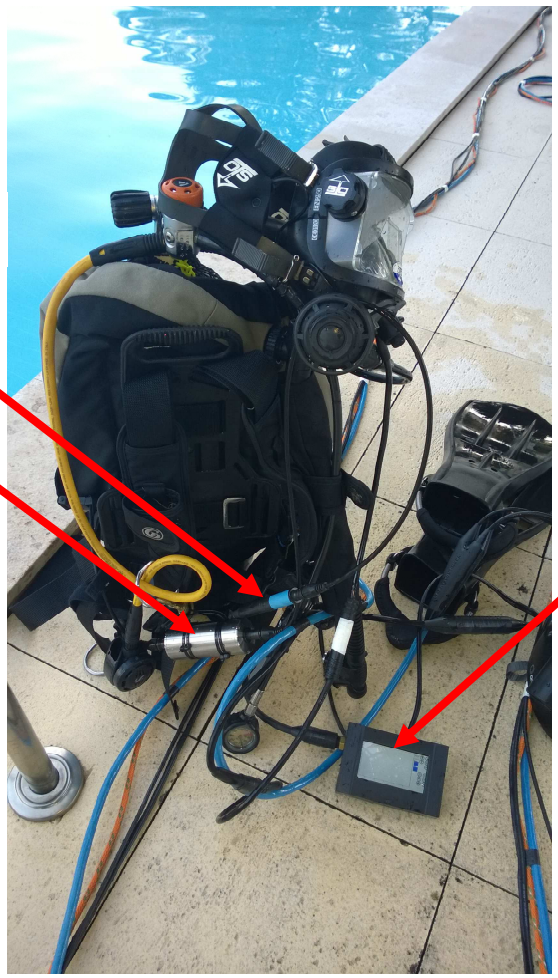
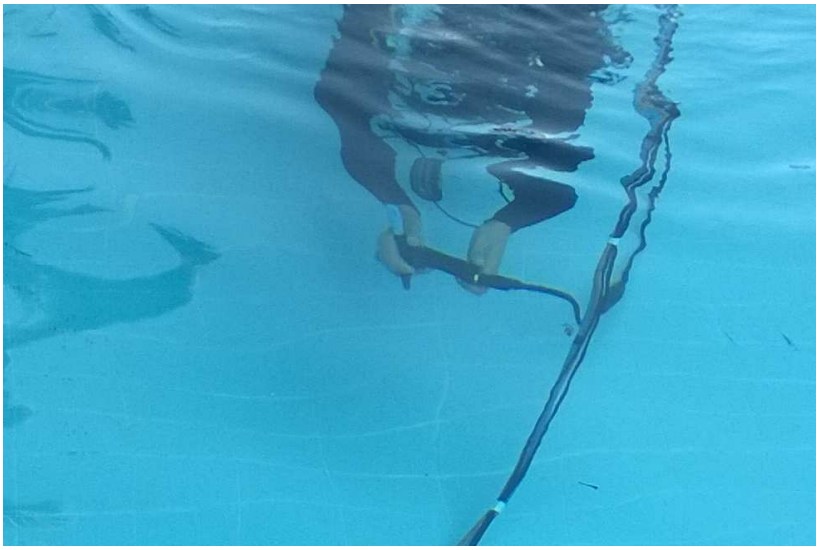
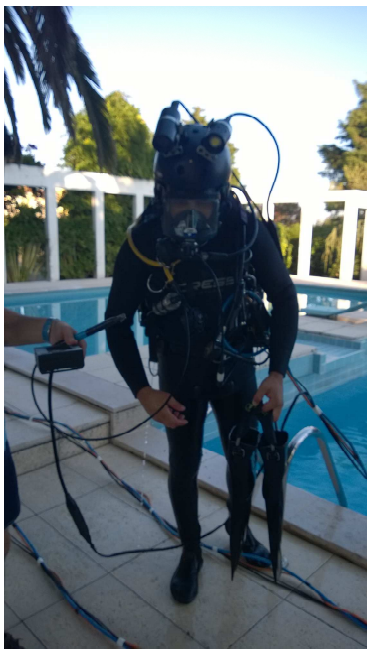


Report generation:
A word and/or html report is generated each time the data is saved.

Type of instrument	General purpose eddy current instrument	
Power supply	5 V USB powered, 100 mA typ. current draw	
Safety	CE, FCC Part 15B,RoHS,	
Technology	Signal proc.:	Analogue preamplification and demodulation Digital outputs and filtering
	Settings:	Manual, remote controlled, stored, preset
	Outputs:	Digital components outputs, optional TTL alarms
	Single frequency, multifrequency (time multiplexed)	
Physical presentation	Weight:	90g (3.2 oz.)
	Size:	45 x 60 x 18 mm^3 (1.8 x 2.4 x 0.7 in^3)
	Connectors:	USB mini A socket, Fischer 102 4-pin
Environmental effects	Warm-up time:	0s for typical use 200s for full precision
	Ingress protection:	IEC 60529 CODE IP67
	Operating temp.:	-40 °C to 60 °C
	EMC compatibility:	Compliant with CE, FCC Part 15B
Generator unit	Single frequency, multifrequency (time multiplexed)	
	Frequency range:	20 kHz to 10 MHz 1 Hz to 10 MHz with reduced data rate
	Current mode:	1-10 mA, up to 9 V p-p > 10000 Ω source impedance
	Voltage mode:	9 V p-p, 90 mA maximum 50 Ω impedance
Input Stage	Input impedance:	100 kΩ
	Max. input voltage:	5V
Balance	Hardware balancing before the vector amplifier Software balancing after A/D conversion	
HF amplification	Gain setting range:	2 - 20, 2.9 dB steps
	Bandwidth:	10 MHz
	Linear input range:	1.0 V
Demodulation	Bandwidth:	10 MHz
	Wave shape:	square
Vector amplification	Gain setting range:	1 – 100, 2.7 dB steps
LF filtering	Digital filters	
Phase setting	Range:	0 – 360°
	Step size:	0.05°
Digitized outputs	Data protocol:	USB 2.0 full speed and/or long range Bluetooth
Digitization	Digitization technique:	Sigma-delta
	Sampling rate:	375 Hz to3 kHz
	A/D resolution:	14 to 16 bits
	Stage:	After vector amplification and balancing

UW Absolute EC Probe

UWEC Tester



Diver's monitor