ESENSE

Wideband Underwater Electrometers

ESENSE product line sets a new standard for the detection of underwater electric field.

Our sensors provides an ultra-high sensitivity < 10 pV/m @1Hz, enabling the detection of low signals from further away on a very wide spectrum of frequencies.

KEY PERFORMANCES

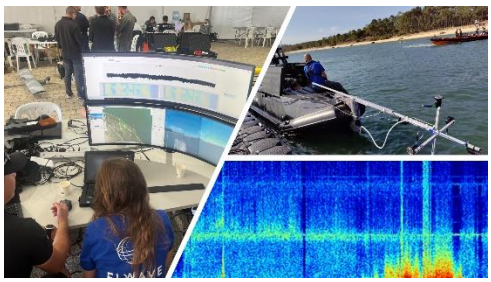
- Ultra-high sensitivity < 10 pV/m @1Hz
- Ultra-Low Noise Electrodes < -199 dB
- Large Bandwidth DC to 2000 Hz
- Self-Calibration – integrated automatic alignment channel

MAIN FUNCTIONALITIES

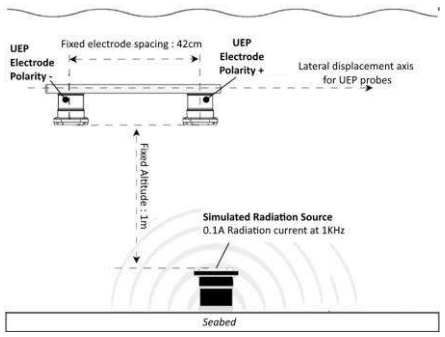
- Electric field components X,Y,Z (up to 3 pairs of electrodes)
- OEM or 300m depth rated system + OWLIA software
- Fits with Glider, AUV, ROV, buoys, subsea nodes…

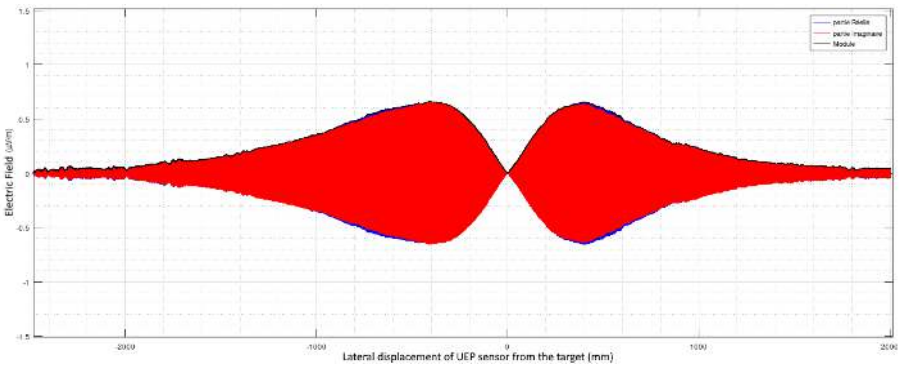
APPLICATIONS

- Area surveillance – intruder detection
- Anti-Submarine warfare
- Electromagnetic signature measurement
- Submarine power and communication cable tracking
- Electromagnetic noise impact monitoring
- Contactless cathodic protection survey



TRACKING AND LOCALISATION OF AN ELECTRIC RADIATION SOURCE AT SEA (water electric conductivity : 4,8 $S.m^{-1}$)





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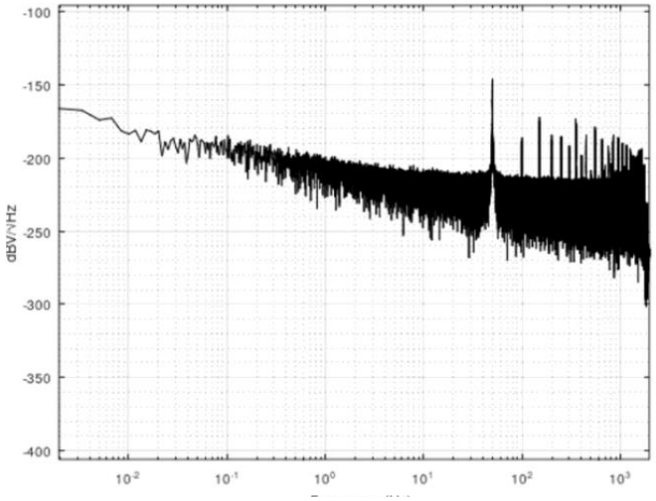
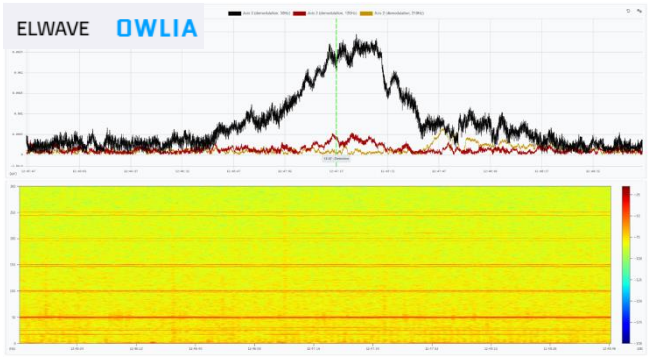
PERFORMANCES

Sensitivity (V/m)	< 10 pV/m @1Hz
Frequency Span (Hz)	DC to 2000 Hz
Noise level (nV/√Hz @1Hz)	< -199 dB
RMS noise	< 0.5 nV RMS/m
Amplitude range	Full scale amplitude: from +/- 5 µV/m to +/- 50mV/m
Gain (dB)	Selectable by command 40 / 60 / 80 / 100dB analog amplifier
Galvanic isolation	Yes, by insulation amplifier
Linearity (analog)	< 0.5%



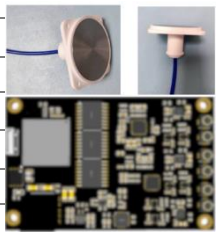
ESENSE Ultra-sensitive wideband electrometer noise spectral density performance. No numerical filter used, only raw data acquisition over 10 minutes in a protected environment.

Frequency (Hz)	Voltage Noise (nV/√Hz)	Equivalent Field Noise (nV/m/√Hz)
0.01	0.6	0.6
0.1	0.5	0.5
1	0.1	0.1
1–2000	<0.1	<0.1



ESENSE OEM

PCB dimensions	50mm * 79mm
Electrode fitted with coaxial cable	Ø40mm (customized on demand)
Electrode material	Titanium and specific coating on demand
Data output rate	Digital, serial – 4Khz
Power supply / consumption	5 - 48 VDC / < 1.5 W (for 3 pairs of electrodes)



ESENSE 300 + OWLIA software

POD dimensions	450mm * Ø145mm
Electrodes and Hub dimensions	113mm * Ø90mm
POD weight in air / water	6.5Kg / 1.3 Kg
Ethernet	10/100 Mbits, UDP/TCP (client / server)
Real time data output	NMEA UDP, ehternet – 4Khz
Internal data storage	SD card
Power supply / consumption	20 - 48 VDC / 14 W (for 3 pairs of electrodes°

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