

EMMS

Electric
and
Magnetic
Measurement
System



Data Sheet



CONTENT

System Overview

Highlights

Technical Data and Illustrations





System Overview

STL's unique 26 bit ADC's in a novel underwater system to measure magnetic and electric fields, called EMMS (Electric and Magnetic Measurement System). Three or more sensor platforms are connected to a base station in a chain configuration by a single cable used for power and data transmission as well as for deployment and recovery.

In addition the system can be equipped with sensors to measure acoustic and pressure signatures as well as environmental information like water current vector, temperature and conductivity. The sensor system also includes DGPS and, therefore, is able to track the target traces with high precision. All signal channels can be read out and visualized in quasi real-time.



Highlights

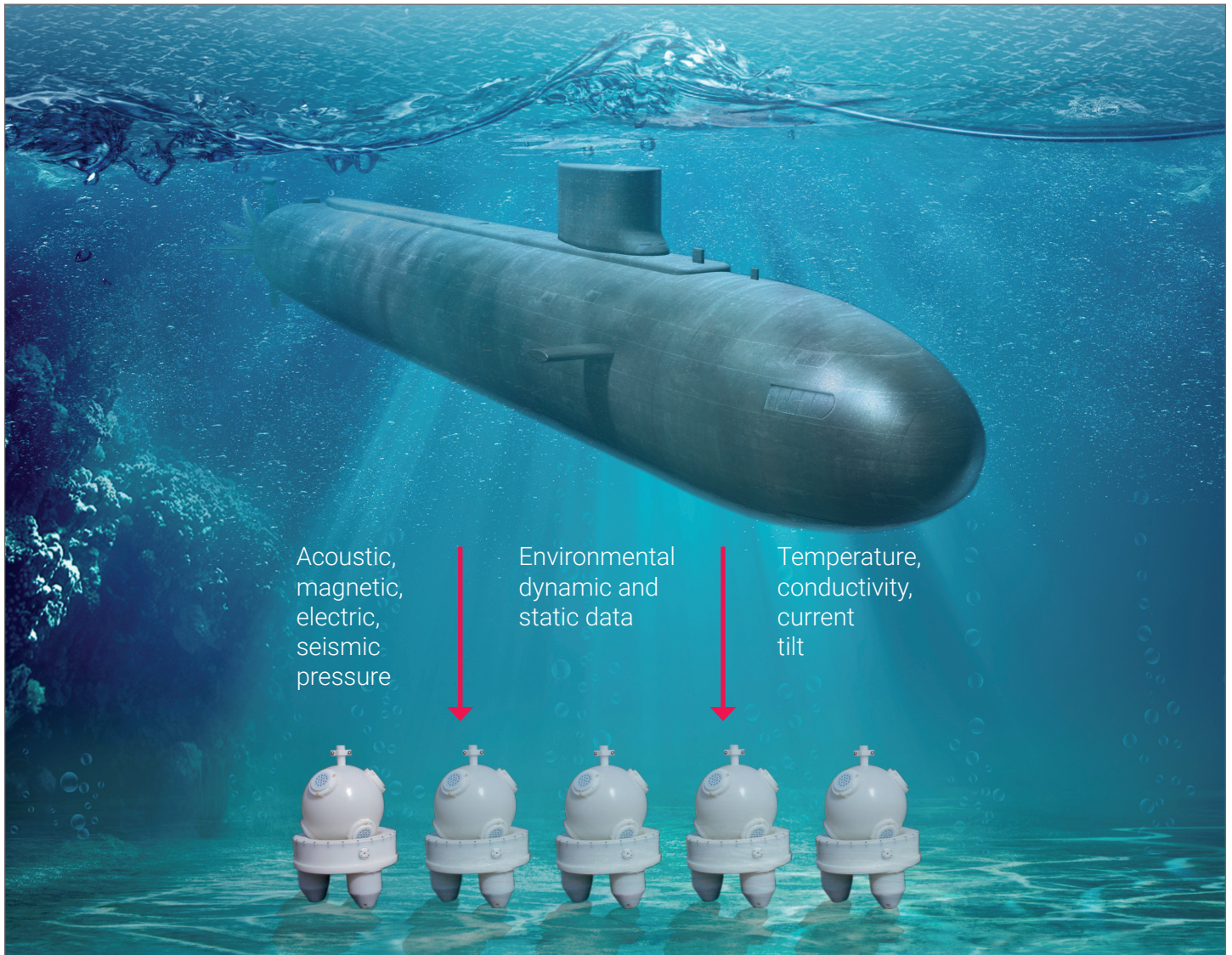
- Real-time signal monitoring
- Fully digital with 8 digits dynamic
- Bandwidth up to 20 kHz
- E- and B-field synchronously measured
- DGPS precision tracking
- Geodetic autoleveling
- 100 m water depth

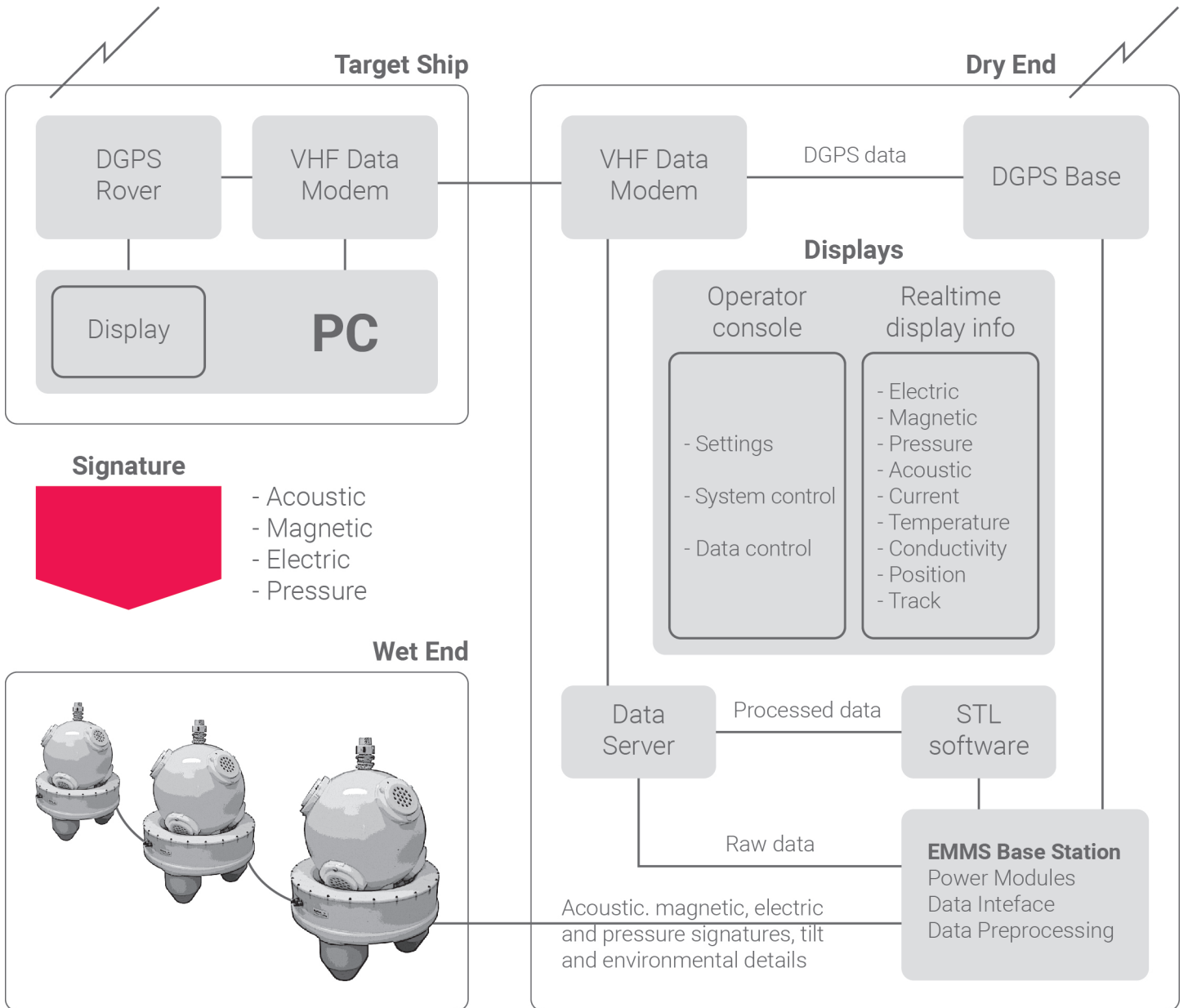


Technical Data and Illustrations

Part	Item	EMMS
Sensors	No. of sensor modules	Typically 3, up to 11
	Sensor types signature	Electric, magnetic, acoustic, pressure
	Sensor types environment	Temperature, pressure, current, conductivity, tilt
Magnetic field sensors	No. of axes per sensor module	3
	No. of magnetic sensors	3, orthogonal
	Sensor noise level	< 10 pT/ $\sqrt{\text{Hz}}$ @ 1 Hz
	Field range	$\pm 80 \mu\text{T}$
	Frequency range	DC–3 kHz
	Resolution	0.2 pT
	Accuracy	< 0.1 %
	Magnetometer Type	Fluxgate
Electric field sensors: carbon electrodes	No. of axes per sensor module	3
	No. of electrodes	6
	Electric field noise level	< 10 pT/ (mV/Hz) @ 1 Hz
	Field range	$\pm 50 \text{ mV/m}$
	Frequency range	DC–3 kHz
	Resolution	100 pV/m
	Accuracy	0.1 %
	Electrode Type	Carbon
Acoustic	Dynamic range	100 dB
	Frequency range	1 Hz – 20 kHz
	Noise	< -200 dBZ/ μPa
	Characteristic	Omnidirectional
Tilt meter	No. of tilt meters	6
	Resolution	< 0.01°
Temperature sensor	Range	500 kPa
	Resolution	< 0.2 °C
	Accuracy	0.5 %

Pressure sensor	Range	500 kPa
	Resolution	< 500 mPa
	Frequency range	DC–250 Hz
	Accuracy	0.5 %
Current	Dynamic range	± 3 m/s
	Resolution	1 mm/s
	Accuracy	0.5 %
Conductivity	Dynamic range	0.01 S/m – 10 S/m



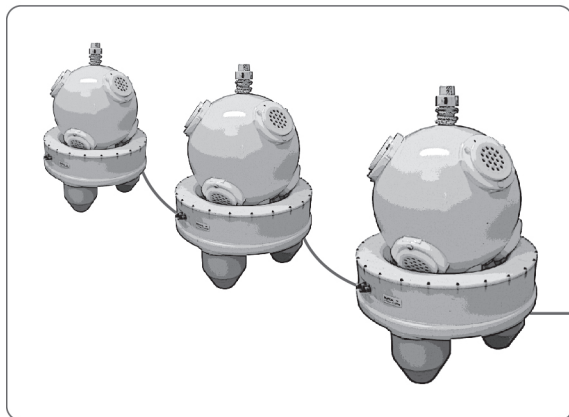


Signature



- Acoustic
- Magnetic
- Electric
- Pressure

Wet End



Environmental Information

- Pressure
- Tilt
- Conductivity
- Current
- Temperature