

SMS Vibration™

Subsea Vibration Monitoring Made Easy



Technical Data Sheet

The SMS Vibration™ is an autonomous vibration sensor and data logger containing a 3-axis MEMS accelerometer (with the option a 3-axis MEMS gyro). Subsea vibration monitoring in combination with advanced computer simulations is a valuable tool for monitoring the state and fatigue life of subsea pipework and structures.

Applications

Applications include 1) vibration of subsea rotating machinery such as booster pumps, 2) Vortex Induced Vibrations (VIV) of pipelines and risers, 3) Flow Induced Vibration (FIV) of manifolds and subsea production systems and 4) Flow Induced Pulsation (FIP/FLIP), often connected with flexible risers as well as monitoring of slugging in risers and subsea jumpers.

Wireless Configuration and Data Transfer

The sensor is equipped with an optical port which makes it possible to transfer data to a topside computer via a ROV-carried SMS Magic Hand™ modem. Subsets of raw data or statistical data from a logging campaign can be made available topside with a single mouse-click.

Retrofit Solution

The sensor can easily be installed by ROV, and it can also be retrieved by ROV for battery replacement or downloading of memory card.

State-of-the-art Technology

The logging frequency can be user configured from 5Hz - 1024Hz depending on the application. SMS Vibration™ is fully autonomous and battery operated with a capacity to log and store raw data continuously for two years at 50Hz or for 2 months at 1024Hz.

Synchronized Data

Several sensors can be connected by cable in a “Sensors in network” configuration in order to synchronize data logging. This facilitates phase analysis at multiple measurements points. This configuration makes it possible to access all sensors via the optical port of the sensor configured as BusMaster. This feature reduces valuable ROV time.

Acoustical Transfer

The sensor is prepared for integration with an acoustical modem to facilitate transfer of key statistical data to the surface at regular intervals.

4Subsea helps operators reduce cost of operations and maximise life of assets using autonomous sensors in combination with data analytics and specialist engineering competence. Products in the Smart Monitoring Sensors (SMS) range are **SMS Gyro™**, **SMS Vibration™**, **SMS Strain™**, **SMS Magic Hand™**, **SMS Gateway™**, **SMS Pressure™**, and **SMS Satellite™**. Technology applications include monitoring of wellhead integrity, risers, mooring lines, subsea spools and manifolds, as well as monitoring of pipelines and subsea structures.

Acceleration Sensor

Range +/- 16 g (optional 2, 4, and 8)
Sampling rate 50 Hz - 1024 Hz configurable
Bandwidth 20 Hz (optional 5 or 10)
Noise level, Ax, Ay 0.0013 g rms (20 Hz bandwidth)
Noise level, Az 0.0019 g rms (20 Hz bandwidth)

Topside Communication Port

Use Configuration, setup, data transfer (via hot stab)
Type RS485, half duplex (two signal wires)
Baud rate Max 115200
Power input +5.0 V to +26 V

SenseBus Communication Port

Use Communication with other sensors & modules
Type RS485, half duplex (two signal wires)
Baud rate 115200
Power input +3.6 V

Optical Communication Port

Use Configuration, setup, data transfer via ROV
Optical modem SMS Magic Hand™
Range 0.5 m to 1.0 m in water (6 m in air)
Baud rate 115200
Mode of operation Half duplex
Wavelength 890 nm
Eye safety Class 1 (IEC60825-1), i.e. eye-safe under all operating conditions

LED Indicator

Type Red LED heartbeat indicator

Logging Features

Logged data Ax, Ay, Az (acceleration) standard,
Gx, Gy, Gz (gyroscope) optional
Logging mode Continuous (no inactive periods)
Logging frequency Same as sampling rate



Housing

Material Stainless steel 316L
Length 393 mm
Diameter 114 mm (top section)
Weight in air 9.4 kg (with two batteries)
Weight in water 7.4 kg (with two batteries)
Sealing 2 x O-rings (axial)
Optical window Polycarbonate

Environmental

Operating temperature 0° C - 30° C
Storage temperature -5° C - 50° C
Pressure rating 3000 m water depth

Battery Operation

Standard batteries 2 x single D-cell 3.6V Lithium
Battery capacity 34000 mAh (nominal at 25° C and 10 mA)
Battery capacity 26000 mAh (nominal at 0° C and 10 mA)
Current consumption 3.5 mA
Service life 20 months @ 50Hz / 2months @ 1024 Hz



4Subsea is a leading provider of technology and services that help operators maintain production from subsea oil and gas fields and offshore wind farms. By combining expert engineering competence, practical experience and a digital service, we ensure the integrity of assets all the way from reservoir to deck.

We deliver solutions on a unique digital platform, aiming to be in the forefront of digitising oil, gas and offshore wind operations worldwide. The company was established in 2007, and clients include all the major oil and gas operators as well as the large suppliers of subsea equipment.

Click [here](#) to view a short video of our solutions and offerings.

4Subsea - Share ideas, move forward

Contact

+47 66 98 27 00
contact@4subsea.com
www.4subsea.com

Asker (HQ)

Hagaløkkv. 26
1383 Asker
Norway

Bergen

Nordåsdaalen 25
5235 Rådalen
Norway

Kristiansand

Narviga 21
4633 Kristiansand
Norway

Rio de Janeiro

Rua da Quitanda 86, 2nd
floor, 212A - Centro
RJ 27091-005 Brazil

Macaé

Rua Sergio R Franco,
Quadra 3 S/N - Macaé
RJ 27932-354 Brazil

Aberdeen

440 Union Street
Aberdeen AB10 1TR
United Kingdom