

# SMS Strain™

## ROV Installed Strain Sensor



### *Technical Data Sheet*

The patent pending SMS Strain™ is an autonomous subsea strain sensor that can be installed by ROV. The goal of this development has been to create a sensor that allows large installation tolerances for ROV installation, while still measuring strain with high resolution (better than 1 $\mu$ Strain) and accuracy. Like all 4Subsea SMS sensors, the SMS Strain™ has extremely low power consumption, enabling continuous logging and data storage at 10 Hz for a period of 11 months.

#### **Ongoing Pilot Testing**

After having gone through an extensive test program to verify accuracy and sensitivity, we are now in the middle of the first offshore pilot project where we are measuring wellhead loads from a BOP during a drilling operation from a semi-submersible rig. In the pilot, project measurements are verified and compared with conventional strain measurements.

#### **Wireless Configuration and Data Transfer**

The sensor can be configured via the SMS Magic Hand™ optical modem during mobilisation, and raw data and statistical data can easily be transferred to a topside computer during a logging campaign by letting an ROV hold the SMS Magic Hand™ modem in front of a sensor.

#### **Retrofit Solution**

The sensor is developed for easy retrofit installation on subsea structures. It can be installed in the field by hand on deck or using ROV subsea. The sensor is mounted using internal magnets that enable the sensor to grip directly onto the steel. The pilot system was installed offshore on the rig BOP in two days.

#### **Multiple Sensors**

Up to four SMS Strain™ sensors can be connected by cable to one SMS Gyro™ sensor/logger, facilitating synchronized data sampling and logging and thus measurement of both bending moment and tension in a structure. A topside computer can via a ROV-carried SMS Magic Hand™ download data or reconfigure the sensors.

---

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.

### Sensor Specifications

Full scale range +/- 2700 uStrain  
Resolution 0.5 uStrain  
Measurement frequency 10Hz  
Magnet force 300N

### Physical Dimensions

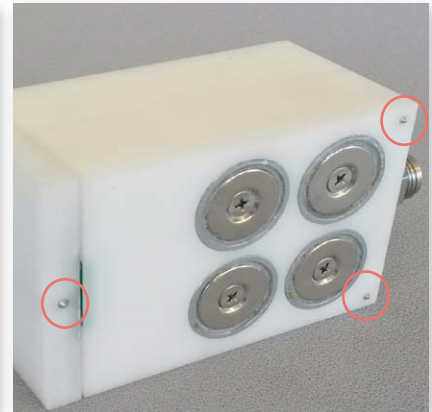
Material POM  
Length 120 mm (without connector)  
Width 80 mm  
Height 62 mm (without handle)  
Weight in air 1.1 kg

### Environmental

Operating temperature 0° C to 30° C  
Storage temperature -5° C to 50° C  
Pressure rating 500m water depth

### Electrical

Operating voltage 3.6 V  
Current consumption < 4mA (logging at 10Hz)  
Power Via Seacon connector



*The SMS Strain™ sensor has magnets that facilitate simple manual- or ROV based mounting to a steel structure. The sensor lands on three sharp pins (red circles), two fixed and one flexible, and strain is measured by a highly sensitive internal displacement sensor connected to the flexible pin structure.*



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 Rådal  
Norway

#### Kristiansand

Narviga 21  
4633 Kristiansand  
Norway

#### Rio de Janeiro

Rua da Quitanda 86, 2nd  
floor, 212A - Centro  
RJ 20091-005 Brazil

#### Macaé

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

#### Aberdeen

440 Union Street  
Aberdeen AB10 1TR  
United Kingdom