SMS Strain™

Retrofittable strain sensor

Technical Data Sheet

The patent pending SMS Strain™ is an autonomous, retrofittable strain sensor that can be easily installed. As opposed to strain gage installation that requires a clean environment and specialised technicians and equipment, the SMS Strain™ can be installed by hand with no special requirements. The sensor measures dynamic strain with high resolution (better than 1 µStrain) and accuracy. Like all 4Subsea SMS sensors, the SMS Strain™ has extremely low power consumption, enabling continuous logging and data storage at 10 Hz sampling frequency for more than 360 days.

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 potentially also by using an ROV subsea. The sensor is mounted using internal magnets that enable the sensor to grip directly onto the steel.

Multiple Sensors
Up to four SMS Strain™ sensors can be connected by cable to SMS Motion™ sensor/logger, or SMS Gateway™ facilitating synchronised data sampling and logging and thus measurement of both bending moment and tension in a structure.

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 Motion™**, **SMS Strain™**, **SMS Magic Hand™**, **SMS Gateway™**, **SMS ComCentral™**, and **SMS Guard™**. Technology applications include monitoring of wellhead integrity, risers, mooring lines, subsea spools and manifolds, as well as monitoring of pipelines and subsea structures for oil & gas and offshore wind sub-structures.

Sensor Specifications
Full scale range +/- 2700 µStrain
Measurement frequency 10Hz
Resolution <0.5 µStrain
Noise level <0.4 µStrain rms
Magnetic force 50 N

Physical Dimensions
Material Stainless steel 316L
Length 80 mm
Width 50 mm
Height 62 mm
Weight in air 950 g

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

Electrical
Operating voltage 3.6 V
Current consumption <0.5 mA (logging at 10Hz)

Typical Service Life Using Batteries
System current consumption < 6mA
Typical service life 12 months (2° C)
Optional battery pack 36 months (2° C)

SMS Strain™ kit prepared for installation on BOP

Offshore deployment of SMS Strain™

4Subsea is a leading provider of technology and services that help operators optimise energy production from subsea oil & gas fields and offshore wind farms. We combine domain expertise with data analytics and digital services to maximise lifetime of assets, reduce operational cost and optimise future projects through data-driven design.

The company was established in 2007 and clients include the major energy operators as well as the large suppliers of subsea equipment. 4Subsea is headquartered in Asker, Norway with additional offices in Bergen, Kristiansand, Stavanger, Rio de Janeiro, and Aberdeen. 4Subsea is a company in the Subsea 7 Group. More info at www.4subsea.com.

4Subsea - Share ideas, move forward

Contact	*Asker (HQ)*	*Bergen*	*Kristiansand*	*Stavanger*	*Rio de Janeiro*	*Aberdeen*
+47 66 98 27 00	Hagaløkkvn 26	Nordåsdalen 25	Narviga 21	Kvålkroken 30	Av. Rio Branco 89,	18 Chattan Place
contact@4subsea.com	1383 Asker	5235 Rådal	4633 Kristiansand	4323 Sandnes	Room 802 - Centro	Aberdeen, AB 10 6RD
www.4subsea.com	Norway	Norway	Norway	Norway	RJ 20040-004 Brazil	Scotland, UK