



SENSOR

CRYOGENIC TEMPERATURE SENSOR SOLUTIONS FOR LIQUEFIED NATURAL GAS (LNG) TANK STORAGE

Reliable and precision temperature
measuring and calibration for the gas industry





OIL & GAS

RELIABLE AND PRECISION CRYOGENIC TEMPERATURE SENSOR SOLUTIONS FOR LNG TANK STORAGE

Senmatic has more than 25 years of experience manufacturing and delivering highest quality cryogenic temperature sensors for LNG/LPG storage systems. We specialize in temperature measuring and calibration based on the standards for the gas industry and work closely with global leading instrumentation companies and EPCs, adding value to their business.

With integrated industrial sensor solutions for a broad range of industry segments, we draw on a wide range of in-house technologies for the efficient and agile development of customized sensor solutions. The technology areas where we excel include mechanical, electronic and software engineering for low and high-temperature sensors, humidity sensors and gas sensors.

We use the latest technologies to offer you the highest level of accuracy, reliability and flexibility for the most demanding applications in the oil and gas industry. Senmatic is the leading specialist in temperature sensor solutions for oil and tank gauging systems.

At Senmatic, we work using quality management systems and processes that live up to the requirements of global industry leaders and certification for compliance to standards in, for example, the oil and gas, marine and other industries. A Danish company founded in 1975, Senmatic supports our customers worldwide from sales and production facilities in Denmark and China.

The Senmatic range of temperature-intrinsic safe sensors for LNG/LPG

Skin temperature/Cooldown sensors:

Skin temperature sensors are used to monitor the temperature of the inner tank during cooldown phase. The sensors are routed and connected vertical to the inner tank wall and horizontal to bottom through pipes or guides welded to the tank.

The sensor tips are fixed by using protective sensor blocks welded to the tank.

Leak detection sensors:

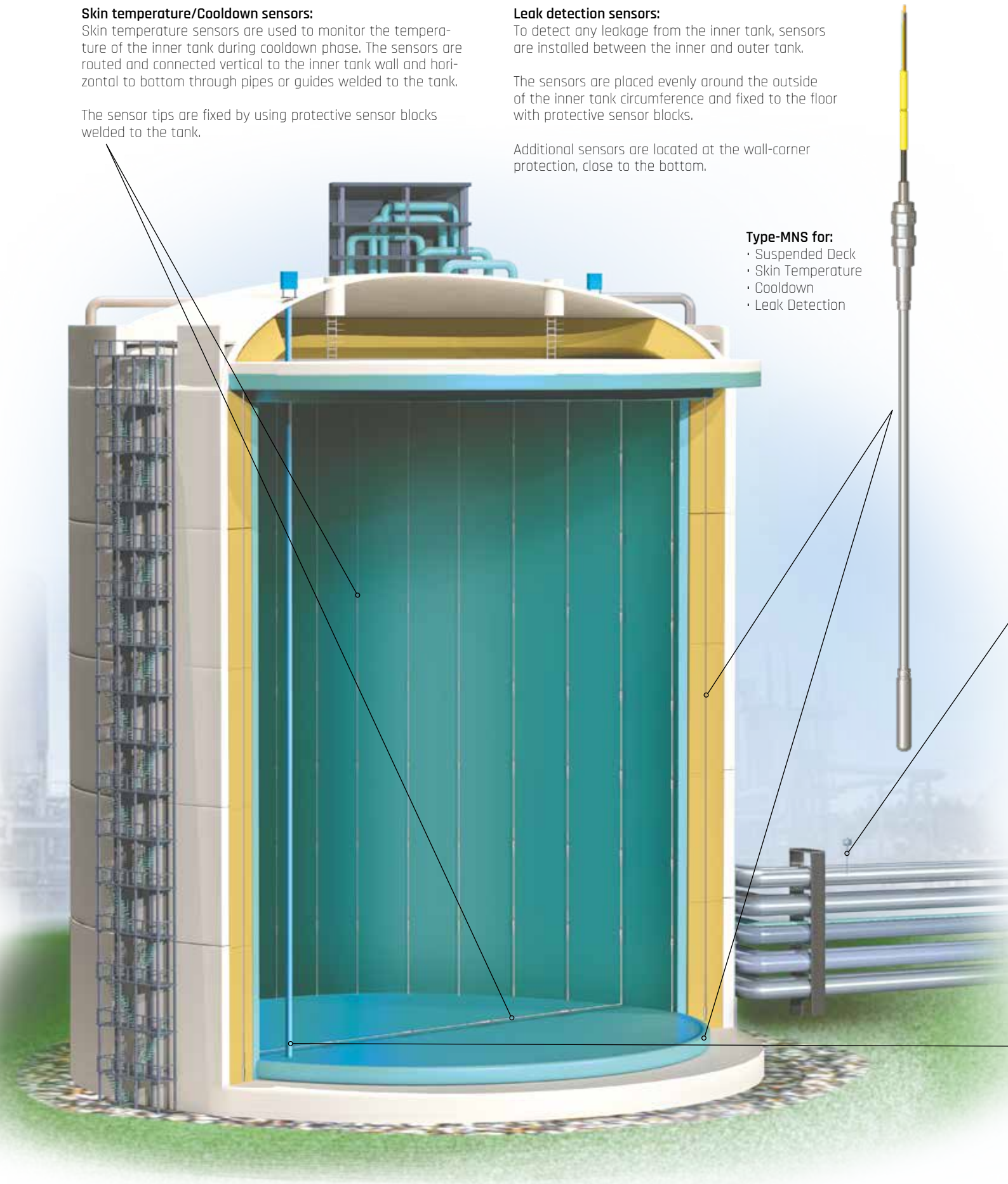
To detect any leakage from the inner tank, sensors are installed between the inner and outer tank.

The sensors are placed evenly around the outside of the inner tank circumference and fixed to the floor with protective sensor blocks.

Additional sensors are located at the wall-corner protection, close to the bottom.

Type-MNS for:

- Suspended Deck
- Skin Temperature
- Cooldown
- Leak Detection

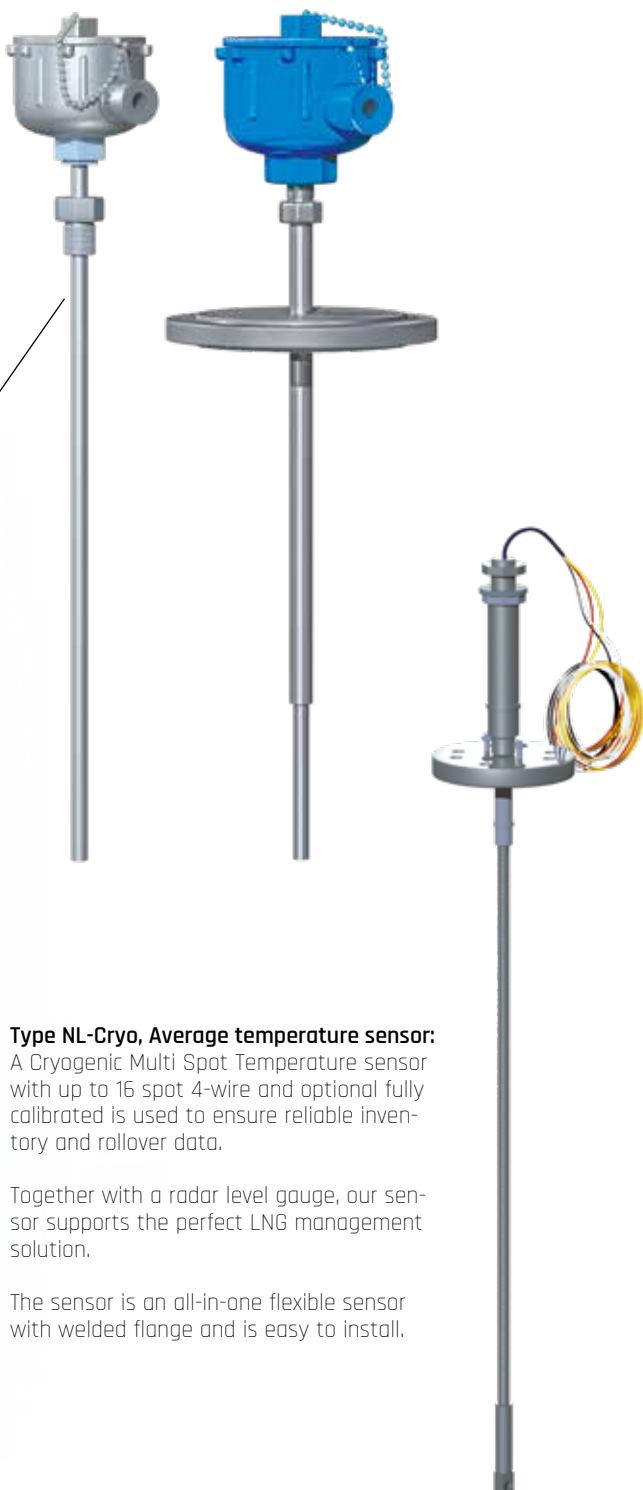


Transmitter:

ATEX approved Transmitters can be supplied as Multiplexer or factory programmable 4-20mA with HART or Modbus communication.

Pipeline temperature sensors:**Type OPE / OPX**

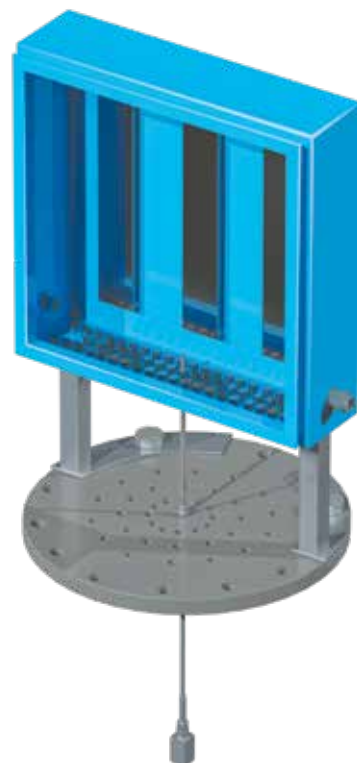
Temperature measured in the pipelines is done by using either our threaded immersion thermometer (OPE) in a thermowell or a flange mounted thermometer (OPX) in the pipeline. Both with Ex d connection head.

**Type NL-Cryo, Average temperature sensor:**

A Cryogenic Multi Spot Temperature sensor with up to 16 spot 4-wire and optional fully calibrated is used to ensure reliable inventory and rollover data.

Together with a radar level gauge, our sensor supports the perfect LNG management solution.

The sensor is an all-in-one flexible sensor with welded flange and is easy to install.

**Junction box:**

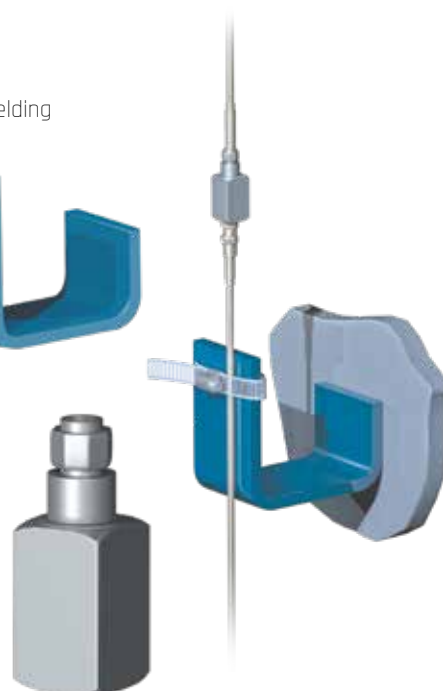
The sensors are connected to a flange with compression-fitting, and assembled in a junction box. Senmatic can supply junction boxes in various sizes, depending on the tank size.

All are ATEX and IECEx approved and made in stainless steel 316L for maximum environmental protection. The junction box can be equipped with various gland sizes.

Depending on the signal required, the junction box can be equipped with transmitters, or just connectors for further signal handling.

Accessories:

Senmatic offers customized solutions of accessories for our sensors depending of the construction.

Guides for welding**Sensor block**

Calibration and testing ensures precision and quality

The ability to test sensors in a wide range of temperatures with very high precision is your guarantee of a quality product that meets requirements.

Senmatic has state-of-the-art in-house testing and calibration laboratories set up in collaboration with leading Danish experts and certification bodies. Our facilities can handle very small and very large sensors.

For highest accuracy, we recommend our 4-wire calibrated sensors that are supplied with a certificate stating its own individual coefficients R0, A, B and C to substitute the standard coefficients in EN 60751 platinum curve.

Approvals and certifications

Type MNS (mineral-insulated thermometer)

Type NL-Cryo (multi-spot temperature sensor)



Ex ia IIC T6 Ga
FM13ATEX0019X
IECEx FME 13.0003X

Type OPE (threaded immersion thermometer)

Type OPX (flange mounted thermometer)



ATEX: ITS13ATEX17816X

Ex II 2 G Ex d IIC T4 Tamb -40°C - +95°C Ga/Gb
Ex II 2 D Ex ta IIIC T135 Tamb -40°C - +95°C Da

Junction Box



ATEX: DNV-2001-OSL-ATEX-0176X
DNV-2008-OSL-ATEX-42438U
IECEx: IECEx DNV 09.0005U
IECEx DNV 09.0004X
CSA: CSA 2036776
Standards: EN/IEC: 60079-0, 60079-7, 61241-0, 61241-1
Ex-Code: Ex e II T6/T5/T4 / Ex [ia] IIC T6
Ex tD A21 T85°C - T110°C
Ex II 2 G/D and EPL Gb/Db

Transmitter

Multiplexer
MTL831B: Ex ia IIC T4
Class 1, Div 1, Gps A-D
5335D/
6335D: Ex II 1 G Ex ia IIC T6 or T4 Ga





ABOUT SENMATIC

Senmatic is a Danish manufacturer specializing in quality integrated industrial sensor solutions, supplying low and high-temperature sensors, humidity sensors and gas sensors for a broad range of industry segments, as well as LED and controller technology for horticulture. We are technology pioneers within mechanical, electronic and software engineering, and we constantly strive to set new standards. With great accuracy, we develop state-of-the-art products and turnkey solutions with superior quality.

Since 1975 we have worked with global industry leaders, delivering sensor solutions tested, certified and compliant to the highest standards. Senmatic employs more than 90 dedicated people and is headquartered in Sønderød on the island of Funen. Senmatic A/S is a company in the Indutrade Group.

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