SENSAiO

www.sensa.io

2026

PRODUCT CATALOG

LoRaWAN® Sensors for Hazardous Environments

V1.0

“I came from the field. I spent days rigging up sensors in remote and hazardous areas just to collect data. SENSAiO exists because of my own pain figuring out how technology could solve that problem permanently: hardware engineered to outlast the infrastructure around it, and a wireless range that makes the site visit optional. We built the company around that standard because anything less doesn't survive the TCO* calculation.”

Thomas Guillet
Founder & CEO of SENSAiO

*Total Cost of Ownership

Table of Contents.

Company Overview.

SENSAiO is the trusted hardware partner for industrial operators digitizing assets in hazardous environments. We deliver ATEX/IECEx-certified LoRaWAN® sensors engineered for near-zero maintenance, full safety compliance, and lowest lifecycle cost.

SENSAiO was founded to solve a persistent industry problem: how to bring continuous, wireless monitoring into environments where legacy wired infrastructure is impractical, hazardous, or cost-prohibitive. Every product we design begins with the constraints of Zone 0 classification and works outward from there.

The SENSAiO Balance.

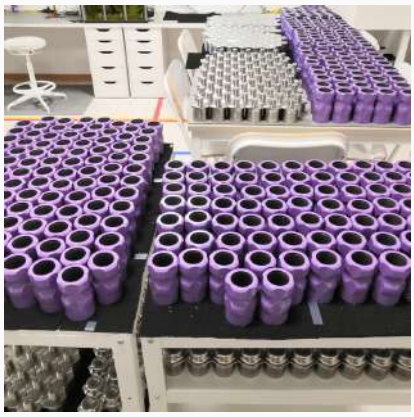
“Safe Monitoring. Zero Maintenance. Full Ownership.”

For Operations	No site visits. No more Consumables. No production stoppage.
For Finance	Lowest Total Cost of Ownership (TCO) over 10 years 40-60% lower than short-life alternatives.
For Engineering & HSE	Zone 0 certified out of the box. Hardware-isolated security. Seamless integration into your IIoT stack.

"Open Standards. Turnkey Deployment." **SENSAiO** is fully platform-agnostic: you retain full control of your data and network architecture. Yet through certified partners, pre-validated integrations, and field-proven deployment guides, we deliver a production-ready solution from day one.

We Design, Test and Manufacture.







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Why Operators Choose SENSAiO.

The market has moved beyond Proof of Concept. Industrial operators require infrastructure that delivers data continuity without maintenance liability.
SENSAiO is the proven standard for industrial asset integrity.

Industrial-Grade Durability

Die-cast aluminium and stainless steel 316L construction. Zone 0 certification simplifies inventory management across Zone 1 and Zone 2 applications. Our patented design is engineered to match the lifespan of the assets it monitors, not a consumable to be replaced every 2–3 years.

Operational Efficiency

Real-time telemetry eliminates manual inspection rounds. Our proprietary mounting system allows non-intrusive installation on active valves without process interruption. Field-replaceable battery in-situ eliminates regular site visits and production stoppage.

Advanced Edge Architecture

On-board Cortex® 150 MHz M4 processor performs threshold detection and event triggering at the edge, transmitting only validated anomalies, not raw data streams. A dedicated Hardware Secure Element guarantees end-to-end encryption independent of the main processor.

10-Year Battery Autonomy

Primary Li-MnO2 D-size SAFT M 20 EX SV battery. 12.4 Ah nominal capacity at 20 °C. ATEX and IECEx certified. Up to 10 years at default transmission rates, eliminating three replacement cycles compared to alternatives.

At-a-Glance Our Product.

All **SENSAiO** sensors share a common platform: LoRaWAN® Class A communication, secure Bluetooth®, Up to 10-year battery autonomy, IP65 & 67 ingress protection, and ATEX II 1 GD Zone 0 intrinsic safety certification.

Sensor	Measurement	Principle	Range
	Rotary Valve Open/Close Position	Inertial Measurement Unit (IMU)	Full range 0–100% (±3% FS accuracy)
	Absolute / Relative Pressure	Piezoresistive	–1 bar to 1,000 bar (–14.5 to 14,500 psi)
	Process / Surface / Immersion Temperature	RTD (PT100 Class A) / Thermocouple (Type K)	–40 to +650 °C / –40 to +1,200 °F
	Differential Pressure	Piezoresistive	±1 kPa to ±4 MPa (±4 to ±16,050 inH_2O)

All models available in Aluminium powder-coated (L) or Stainless Steel 316L (H) housing. Stainless steel ideal for mining and offshore. Option available: Inconel 625 (Sour, H2S)

LORAWAN®

VALVE POSITION SENSOR.

The **SENSAiO** Valve Position Sensor monitors the open/close position of rotary valves: ball valves, butterfly valves, gate valves, using an embedded Inertial Measurement Unit (IMU) with an on-board sensor fusion algorithm.

Its universal clamp mounting system attaches directly to the valve handwheel or actuator, and calibration is performed in two steps via the SensaLink app: close fully, then open fully. No mechanical coupling to the valve stem is required.

See Specifications

KEY SPECIFICATIONS

Measuring principle	Inertial Measurement Unit (IMU)
Embedded calculation	Sensor fusion algorithm
Measurement range	Full range 0–100%
Accuracy	3% FS
Long-term stability	0.5° (0.05% FS) max
Process connection	M10 female
Mounting	Universal clamp (patented)
Operating temperature	–40 to +72 °C / –40 to +161.6 °F
Protection rating	IP65/67

MOUNTING METHOD

The universal clamp bracket attaches directly to the valve handwheel or actuator housing using four M4 bolts. No mechanical coupling to the valve stem is required. Installation is non-intrusive and does not require process isolation or shutdown.

KEY APPLICATIONS

- Process Control
- Distribution Automation
- Predictive Maintenance
- Manufacturing Automation
- Safety Lock Systems
- Water Treatment
- ATEX Zone Safety
- Level Monitoring

SPECIAL OPTIONS

Calibration is mandatory after each battery replacement and/or dismantlement of the device on the handwheel. Calibration performed via SensaLink app.

Part number prefix:
SENSA.VALV-IMU-1-1-1-[Housing]-[Standard]-[Frequency]
Full ordering details: see Section 12

LORAWAN®

VALVE PRESSURE SENSOR.

The **SENSAiO** Pressure Sensor delivers absolute and relative pressure monitoring across a wide measurement range in environments where wired instrumentation is impractical or unsafe.

Piezoresistive technology ensures accuracy from vacuum to ultra-high pressure, with long-term stability rated at max 0.2% FS/year — making it suitable for continuous asset monitoring without recalibration cycles.

See Specifications

KEY SPECIFICATIONS

Measuring principle	Piezoresistive
Measurement ranges	0…1 bar to 0…1,000 bar (Absolute) / −1…1 bar to 0…30 bar (Relative)
Accuracy	0.15% FS (up to 600 bar) / 0.25% FS (up to 600 bar) / 0.35% FS (1,000 bar)
Long-term stability	Max 0.2% FS / Year
Operating temperature	−40 to +72 °C / −40 to +161.6 °F
Protection rating	IP65/67
Wetted material	Stainless steel 316L

PROCESS CONNECTIONS

① ISO 228 G1/2 EN	④ DIN 19213 Dual Port	⑦ Other on demand
② ASME ½" NPTM	⑤ IEC 61518 Dual Port	
③ ASME ½" NPTF	⑥ IEC 61518 Flange	

KEY APPLICATIONS

- Hydraulic Monitoring
- Equipment Safety
- Process Optimization
- Gas Line Monitoring
- Pneumatic Control
- ATEX Zone Safety
- Filtration Systems
- Fluid Distribution

SPECIAL OPTIONS

- High temperature variant (up to 400 °C)
- Hydrogen service compatible

Part number prefix:
SENSA.PRES-PRT-[Range]-[Connection]-[Material]-[Housing]-[Standard]-[Frequency]
Full ordering details: see Section 12

LORAWAN®

TEMPERATURE SENSOR.

The **SENSAiO** Temperature Sensor supports two measurement technologies: PT100 RTD Class A for precision industrial process monitoring, and Nickel-alloy Type K thermocouple for extreme temperature applications up to 1,200°F / 650°C.

Three mounting configurations cover the majority of installation scenarios without process interruption or structural modification.

See Specifications

KEY SPECIFICATIONS

Measuring options	Single Resistance Temperature (RTD) Double Resistance Temperature (RTD)
Accuracy Up to 450°C Up to 650°C	 PT100 Class A ± (0.15 + 0.002 x t) °C PT100 Class B ± (0.30 + 0.005 x t) °C
Measurement range	−200 °C to +650 °C / −328 °F to +1,200 °F
Immersion tube Ø	Ø6 mm or Ø5 mm
Tube length	150mm or 300mm (other on request)
Operating temperature	−40 to +70 °C / −40 to +158 °F
Protection rating	IP65 & 67

PROCESS CONNECTIONS / MOUNTING

① Thermowell-mounted spring loader ½" NPT (in-line, spring-loaded swivel)	② Surface-mounted with deported cable 3 m (10 ft) — M12 connector	③ Pipe pressure-mounted with deported cable 3 m (10 ft) — ¼" NPT / M12 connector

KEY APPLICATIONS

- Safety Monitoring
- Cold Chain
- Process Control
- ATEX Surveillance
- Chemical Processes
- Storage Safety
- Industrial Regulation
- Boiler Monitoring

SPECIAL CONDITIONS

Sufficient thermal insulation must be maintained between process and housing to prevent thermal backflow exceeding max ambient temperature specification.

Part number prefix:
SENSA.TEMP-[RTD]-[Range]-[Connection]-[Probe Length]-[Housing]-[Standard]-[Frequency]
Full ordering details: see Section 12

LORAWAN®

DIFFERENTIAL PRESSURE SENSOR.

The **SENSAiO** Differential Pressure Sensor measures the pressure difference between two process points across six selectable ranges. Designed for filtration monitoring, flow measurement, and level detection in hazardous zones, its DIN 19213 dual-port process connection is compatible with standard 3-way manifold configurations.

The sensor handles bidirectional measurement with single-side overload protection from 1kPa to up to 40 MPa on the highest range.

See Specifications

KEY SPECIFICATIONS

Measuring principle	Piezoresistive
Measurement ranges	±1 kPa · ±6 kPa · ±40 kPa · ±100 kPa · ±400 kPa · ±4 MPa
Accuracy	≤0.20% FS (±1 to ±40 kPa range) / ≤0.16% FS (±100 to ±400 kPa)
Long-term stability	≤0.03% FS / Year
Operating temperature	−40 to +72 °C / −40 to +161.6 °F
Protection rating	IP65/67
Process connection	DIN 19213 dual port (ASME ¼" NPT)
Wetted material	Stainless steel 316L or SS316L gold plated

PROVIDED EQUIPMENT

1/4 NPT Bleed Plug (Part No. 438-00017) included as standard.

KEY APPLICATIONS

- Filtration Monitoring
- Ventilation Optimization
- Gas Leak Detection
- Level Measurement
- Air System Monitoring
- Fluid Distribution
- HVAC Systems
- Flow Measurement

OPTIONAL EQUIPMENT

3-way manifold (Part No. 995-00001) available as accessory for isolation and zeroing.

Part number prefix:
SENSA.DPRE-PRT-[Range]-[Connection]-[Material]-[Housing]-[Standard]-[Frequency]
Full ordering details: see Section 12

Technology Across All Products.

Every SENSAiO sensor is built on a common certified platform. This shared architecture simplifies network planning, spares management, and fleet maintenance — and ensures that your investment in commissioning and integration is reusable across all sensor types.

LORAWAN COMMUNICATION

Class	Class A — lowest power bi-directional
Range	Up to 10 km
Mode	OTAA with External Join Server
Adaptive data rate	Available
RF Power	Max. 14 dBm ERP
Update rate	100 frames/day (default, configurable)
Frequency plans	EU863, US902, AU915, KR920, IN865, RU864, AS923 (×4)

BLUETOOTH COMMISSIONING

Standard	Bluetooth® 5 Low Energy
Operating OS	Android 11+ / iOS 12+
Beacon mode	Available for live pulling data
App	SensaLink (iOS & Android)

SECURITY

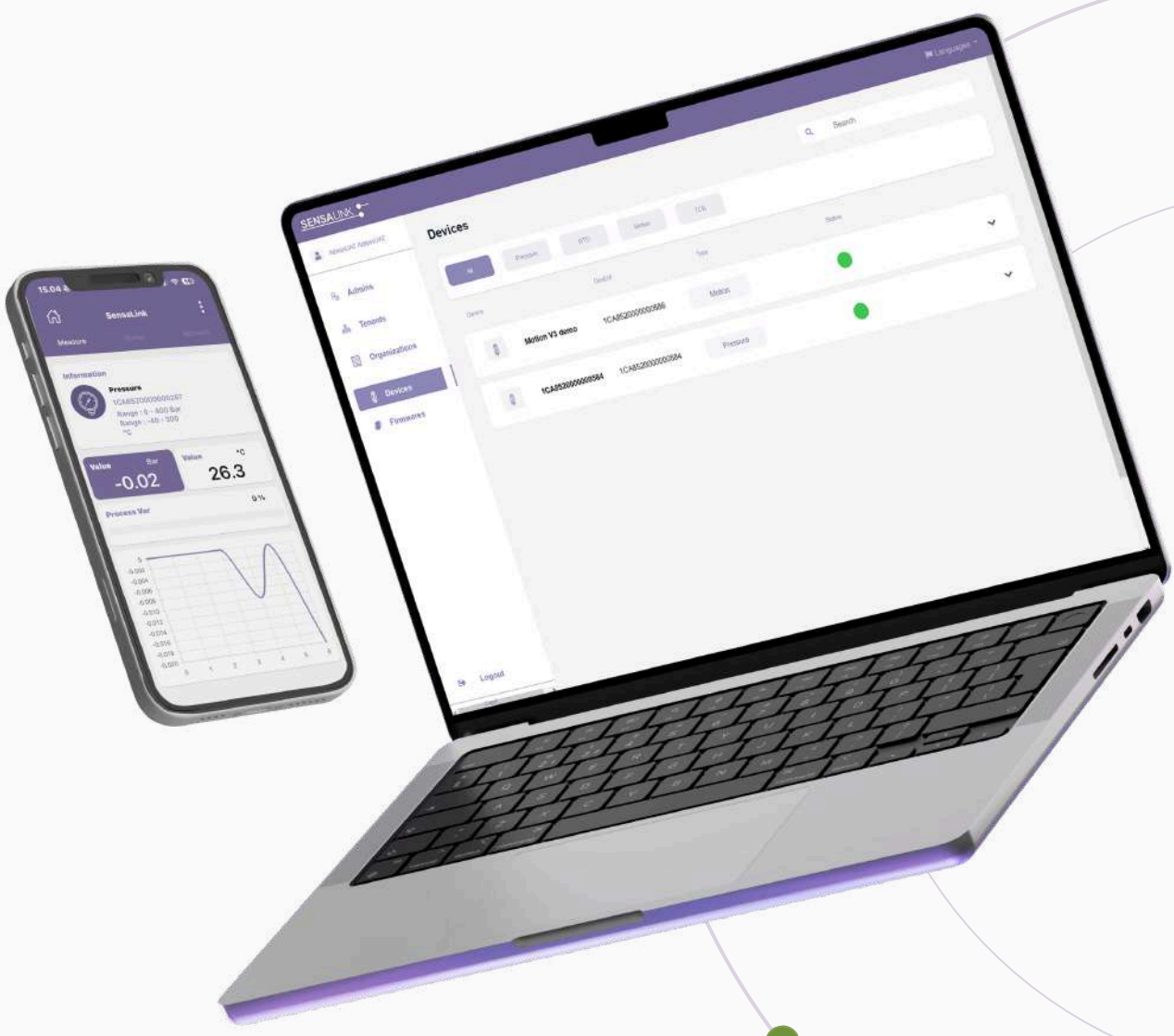
Encryption	AES-128 bits end-to-end
Security element	Dedicated trusted Hardware Secure Element
Roaming	Activation via HSM
MFA	Multi-factor authentication included

BATTERY (ALL MODELS)

Model	SAFT M 20 EX SV
Format	Field-replaceable D-size
Type	Primary Li-MnO2
Capacity @ 20 °C	12.4 Ah / 3.0 V nominal
Autonomy	Up to 10 years @ default SF7
Container	Stainless steel, hermetic glass-to-metal seal
Certification	ATEX and IECEx certified

SENSALINK

The SensaLink is available on website (monitoring only) and mobile applications. The mobile application (iOS and Android) is used for sensor commissioning, calibration, live data verification, and battery status monitoring. At first installation, the technician opens the app, pairs via Bluetooth, sets measurement range parameters, calibrates the sensor against a reference value, and confirms LoRaWAN network registration. No laptop or specialist tooling required.



Field Deployment Guide.

The following guidance applies generically across all SENSAiO sensor families. Detailed installation procedures, torque specifications, and zone-specific requirements are documented in each product's Installation Manual. This section is intended to give engineering and procurement teams an overview of the deployment process and what to expect on site.

GENERAL PREREQUISITES

Before installation, confirm:

LoRaWAN® network coverage has been validated at the installation point.

The correct safety standard variant has been ordered for the applicable zone classification (ATEX Zone 0/1/2, HAZLOC Class I Div. 1/2, mining).

Hot-work permit status: **SENSAiO**'s patented Hot-swappable electronic design makes it field replacement battery and maintenance easy without process interruption.

STEP-BY-STEP OVERVIEW

01 Site Survey & Network Validation

Confirm LoRaWAN® signal strength (RSSI ≥ −120 dBm recommended) at the intended mounting location using a portable LoRaWAN tester or the SensaLink app's signal strength indicator. Identify cable routing for antennas if obstruction is present.

02 Sensor Mounting

Pressure / Differential Pressure: Thread sensor into process connection per the applicable standard (ISO, ASME, DIN, IEC). Apply appropriate thread sealant. For differential pressure sensors, use the 3-way manifold to allow zeroing under live process conditions.

Temperature: For thermowell mounting, insert immersion tube into the thermowell to full insertion depth and secure swivel. For surface mounting, attach the clamp bracket to the pipe and secure cable with cable ties at minimum 300 mm intervals.

Valve Position: Attach the universal clamp bracket to the valve handwheel or actuator body. No mechanical coupling to the valve stem is required. Ensure the antenna cap is oriented pointing upward or in a clear line-of-sight direction.

03 Commissioning via SensaLink

Open the SensaLink app (iOS / Android) and sign in with your authorised credentials. Enable Bluetooth on your mobile device. Wake the sensor with a double-tap on the antenna cap — it advertises for 30 seconds. Select 'Connect' in the app, then tap your device from the list. Navigate to 'MEASURE' to verify live data (pressure and temperature for SENSA.PRES, etc.).

Navigate to 'STATUS' to confirm battery level and signal strength. Navigate to 'NETWORK' to configure the LoRaWAN® parameters (DevEUI, AppEUI, Mode, Region). Apply settings. Note: LoRaWAN® transmission resumes only after BLE disconnection.

04 LoRaWAN® Network Registration

The sensor uses OTAA (Over The Air Activation) with an External Join Server. Enter the DevEUI, AppEUI, and AppKey into your Network Server (TTN, Chirpstack, Actility, or equivalent). Confirm the sensor registers and uplinks are received. SENSAiO accepts LoRaWAN® downlink configuration and data log restore up to 10 last payload locally store. Default transmission: 100 frames/day.

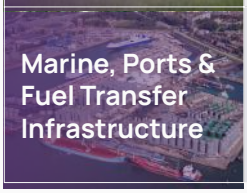
05 Verification & Handover

Monitor the first transmission cycle in your Network Server (TTN, Chirpstack, Actility, or equivalent). Confirm uplinks are received. Check battery status and signal strength via SensaLink STATUS tab. Record sensor serial number, part number, and installation date in your asset management system.

> Tools required: Allen key (supplied). Ensure sealing gasket is not damaged prior to reassembly. Replace battery only when no gas atmosphere is present.

Sector Use-Case Matrix.

SENSAiO sensors are deployed across all major process industries that operate equipment in hazardous areas.

Industry	Applicable Sensors	Representative Use Case
 Oil & Gas - Production	Valve Position, Pressure, Temperature, Differential Pressure	Wellhead Valve Position Verification, Tubing & Casing Pressure Monitoring, Artificial Lift Vibration Monitoring.
 Oil & Gas - Pipeline and Terminal	Valve Position, Pressure, Temperature, Differential Pressure	Pig Launcher / Receiver Valve Position Monitoring, Pipeline Pressure Transient & Surge Monitoring, Loading Arm Pressure Monitoring and Pneumatic Fender Pressure Monitoring
 Oil & Gas - Downstream & Refining	Valve Position, Pressure, Temperature, Differential Pressure	Pipeline Valve Position Verification, Burner Fuel Pressure Monitoring, Tank Overpressure Monitoring, Heat Exchanger Temperature Monitoring and Refinery Pump Vibration Monitoring
 LNG & Cryogenic Infrastructure	Valve Position, Pressure, Temperature, Differential Pressure	LNG Transfer Line Pressure Monitoring, Cryogenic Valve Position Verification, Cryogenic Filter Differential Pressure Monitoring and Boil-Off Gas (BOG) Pressure Monitoring
 Chemical & Petrochemical	Valve Position, Pressure, Temperature, Differential Pressure	Reactor Valve Position Monitoring, Solvent Line Pressure Monitoring, Reactor Temperature Monitoring, Dust Filtration Differential Pressure Monitoring (ATEX/IECEx)
 Mining & Metals	Valve Position, Pressure, Temperature, Differential Pressure	Conveyor Belt Valve/Actuator Position Monitoring, Dewatering Pump Pressure Monitoring, Slurry Pipeline Pressure Monitoring and Explosive Storage Temperature Monitoring
 Hydrogen Infrastructure	Valve Position, Pressure, Temperature, Differential Pressure	Hydrogen Valve Position Verification, Hydrogen Line Pressure Monitoring, Hydrogen Storage Overpressure Monitoring and Hydrogen Purification Filter Differential Pressure Monitoring
 Biogas & Waste-to-Energy	Valve Position, Pressure, Temperature, Differential Pressure	Gas Valve Position Monitoring, Digester Pressure Monitoring, Gas Storage Overpressure Monitoring, Digester Temperature Monitoring and Biogas Upgrading Differential Pressure
 Marine, Ports & Fuel Transfer Infrastructure	Valve Position, Pressure, Temperature, Differential Pressure	Cargo Transfer Valve Position Monitoring, Bunkering Pressure Monitoring, Fuel Tank Pressure Monitoring and Pipeline Filter / Strainer Differential Pressure Monitoring

Certifications.

All SENSAiO sensors carry the following safety and conformity certifications. Zone 0 certification provides full backward compatibility for Zone 1 and Zone 2 applications, simplifying regional inventory management and procurement.
All models available in Aluminium powder-coated (L) or Stainless Steel 316L (H) housing. Stainless steel ideal for mining and offshore. Option available: Inconel 625 (Sour, H2S)

SAFETY CERTIFICATIONS BY REGION

ATEX / IECEx / UKCA (Gas/Dust) — Standard	ATEX II 1 GD, IECEx Ex ia IIC T4 Ga, Ex ia IIIB T135 °C Da — Zone 0/20 gas/dust
ATEX / IECEx / UKCA (Mining)	ATEX I M1, Ex ia I Ma — Category M1 underground mining
HAZLOC NEC USA	Class I/II/III Groups ABCDEFG T4 — Div. 1 rated
HAZLOC CSA Canada	CSA Class I Div. 1 Groups A/B/C/D T4
Safety classification	Intrinsically safe (Ex ia) — maximum energy limitation

CONFORMITY DIRECTIVES

RoHS	Directive 2011/65/EU — Restriction of Hazardous Substances
RED	Directive 2014/53/EU — Radio Equipment Directive
ATEX	Directive 2014/34/EU — Equipment for Explosive Atmospheres
PED	Directive 2014/68/EU — Pressure Equipment Directive
IEC	IEC61010-1:2020 + A1:2016 — Safety of Measurement Equipment

ENVIRONMENTAL & MECHANICAL

Ingress protection	IP65/67 — dust-tight and immersion rated
Vibration	20 g, 5–2,000 Hz, X/Y/Z axes
Shock	50 g / 11 ms — 100 g / 6 ms
Endurance @ 25 °C	› 10 million full-scale cycles
Humidity	0 to 100% non-condensing
Operating temp.	−40 to +72 °C / −40 to +161.6 °F (all models)

QUALITY & CYBERSECURITY

Manufacturing	ISO 9001:2015
Explosive Atmospheres	ISO 80079-34
Cybersecurity	EN 18031-x

Part Number Builder.

SENSAiO part numbers are structured to fully define the sensor configuration at the point of order. Each position in the part number string encodes a specific attribute. Use the table below to construct your part number, then submit to your regional contact or certified partner.

PART NUMBER STRUCTURE

SENSA. [MODEL] - [TYPE] - [RANGE] - [CONNECTION] - [MATERIAL] - [HOUSING] - [STANDARD] - [FREQUENCY] - [OPTION]

MODEL	VALV (Valve Position) · PRES (Pressure) · TEMP (Temperature) · DPRE (Differential Pressure)
TYPE	IMU (Inertial) · PRT (Piezoresistive) · TCK (Type K thermocouple) · RTD (PT100 resistance)
RANGE	Sensor-specific — see individual product sections 04–07
CONNECTION	Sensor-specific — ISO, ASME, DIN, IEC process connection variants
MATERIAL	S = Stainless steel 316L · I = Inconel 625 (PRES only)
HOUSING	L = Aluminium powder-coated · H = Stainless steel 316L (mandatory for mining)
STANDARD	1 = ATEX/IECEx/UKCA gas/dust · 2 = HAZLOC NEC · 3 = ATEX/IECEx mining · 4 = INMETRO · 5 = HAZLOC CSA
FREQUENCY	1 = EU863-870 · 2 = US902-928 · 5 = AU915-928 · 7–9 = AS923-1/2/3 · 10 = KR920 · 11 = IN865 · 12 = RU864 · 13 = AS923-4
OPTION	N = Standard (null) · T = High temperature up to 400 °C · H = Hydrogen service

Battery (SAFT M 20 EX SV) is sold separately — restricted transport Class 9.
Order with your regional distributor.

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SENSAiO supports customers and partners worldwide with engineering expertise and hazardous-area monitoring solutions.

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Safe Monitoring. Zero Maintenance. Full Ownership.

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