Smart IoT
Pressure & Temperature Sensor

VADTel Sens

Smart cellular pressure & temperature sensor for utility and industrial networks

Key platform fit
Remote alarms • Secure backend • GPRS / NB-IoT telemetry

VADTel Sens is designed for autonomous monitoring of pressure and temperature in gas facilities, hydraulic and pneumatic systems, water treatment plants, heat networks, boiler automation, water utilities and heating substations where reliable remote measurement is required.

Pressure & temperature
Gauge or absolute pressure with integrated temperature acquisition.

Configurable telemetry
Measurement cadence, heartbeat interval and alarms are remote-configurable.

Rechargeable battery
Built-in LiPo battery with 2 / 4 / 6 Ah options.

Utility network monitoring
Gas, water, heat and general industrial utility points.

Typical applications

- Gas distribution and pressure-reduction stations
- Water supply, pumping stations and water-treatment systems
- Heat supply, boiler rooms and district-heating substations
- Hydraulic / pneumatic systems and selected oil & fuel applications

Operating logic

The sensor measures locally at a configurable interval. If values remain within configured thresholds, the device enters a low-power state and reports according to the heartbeat schedule. When a threshold is exceeded, event-driven transmission is triggered and the dispatcher receives an alarm notification.

Process media and installation summary

For media compatible with stainless steel AISI 316L / AISI 304 (e.g. gases, steam, water and mildly aggressive liquids). The device is mounted similarly to a pressure gauge; pressure should be introduced preferably from below, with measures against vibration, severe pulsation, condensation and freezing where relevant.

Documented pilot-operation evidence

Source pilot reports document approximately 4,000 server sessions in 7 months on one low-pressure unit and approximately 10,000 sessions in 17 months on another, without battery replacement during the test period.

Technical specifications

Parameter	Value
MEASUREMENT	
Pressure type	Gauge or absolute
Pressure accuracy	±1.0 / ±1.5 / ±2.0 / ±2.5 %FS
Permissible overload	1.5 × full scale
Process temperature range	-40...+85 °C
Temperature accuracy	±1.0 °C standard; ±0.1 °C option
TELEMETRY & CONTROL	
Cellular communications	GSM/GPRS or NB-IoT
Measurement interval	5...600 s
Heartbeat / health report	30 min...24 h
Alarm-zone reporting interval	5...60 min
Alarm thresholds	Server-configurable min./max. pressure and temperature limits
System integration	Secure Linux backend; IIoT / OPC UA / SCADA
POWER	
Power supply	Built-in rechargeable LiPo battery, nominal 3.7 V
Battery capacity options	2000 / 4000 / 6000 mAh
Guaranteed telemetry sessions	5,000 / 7,500 / 10,000 server sessions
Autonomous operation	Up to 5 years typical; application-dependent
Battery service	Recharge / replacement by authorized service personnel only
ENVIRONMENTAL & MECHANICAL	
Ambient operating temperature	-40...+60 °C
Storage / transport	-50...+60 °C; up to 95% RH at +35 °C
Ingress protection	IP65 (IEC 60529)
Process connection	M20 × 1.5
Wetted media compatibility	Stainless-steel-compatible media (AISI 316L / AISI 3
Housing / installation form	Field-mount sensor; installed similarly to a pressure
Dimensions	Approx. 125 × 210 × 90 mm
Weight	Approx. 1.0–1.2 kg, depending on housing/options
Recommended recalibration interval	36 months

Available pressure ranges

- Gauge: low-pressure gas-network variant and 0...40 kPa version
- Absolute: 0...160 kPa, 0...400 kPa, 0...600 kPa, 0...1.0 MPa, 0...1.6 MPa, 0...2.5 MPa, 0...4.0 MPa
- Custom ranges up to 60 MPa on request

Low-range source documents reference both 5 kPa and 7 kPa variants; confirm the exact low-pressure range in the RFQ.

Configuration options

- Accuracy class: +/-1.0 / +/-1.5 / +/-2.0 / +/-2.5 %FS
- Battery: 2000 / 4000 / 6000 mAh
- Remote temperature probe option
- Process cooler + remote temperature probe option
- Hazardous-area housing version

Standard delivery / accessories

- Sensor unit
- External GSM / NB-IoT antenna
- Product passport / datasheet
- Operating manual and calibration method on request

Engineering notes

- The datasheet uses EU / IEC terminology such as %FS and IEC 60529 ingress ratings.
- Ambient operating temperature and measured/process temperature are stated separately.
- Conservative ratings were selected where legacy source documents differed.

Adapted for engineering and tendering use; final product definition is configuration-specific.

Remote setpoint configuration interface

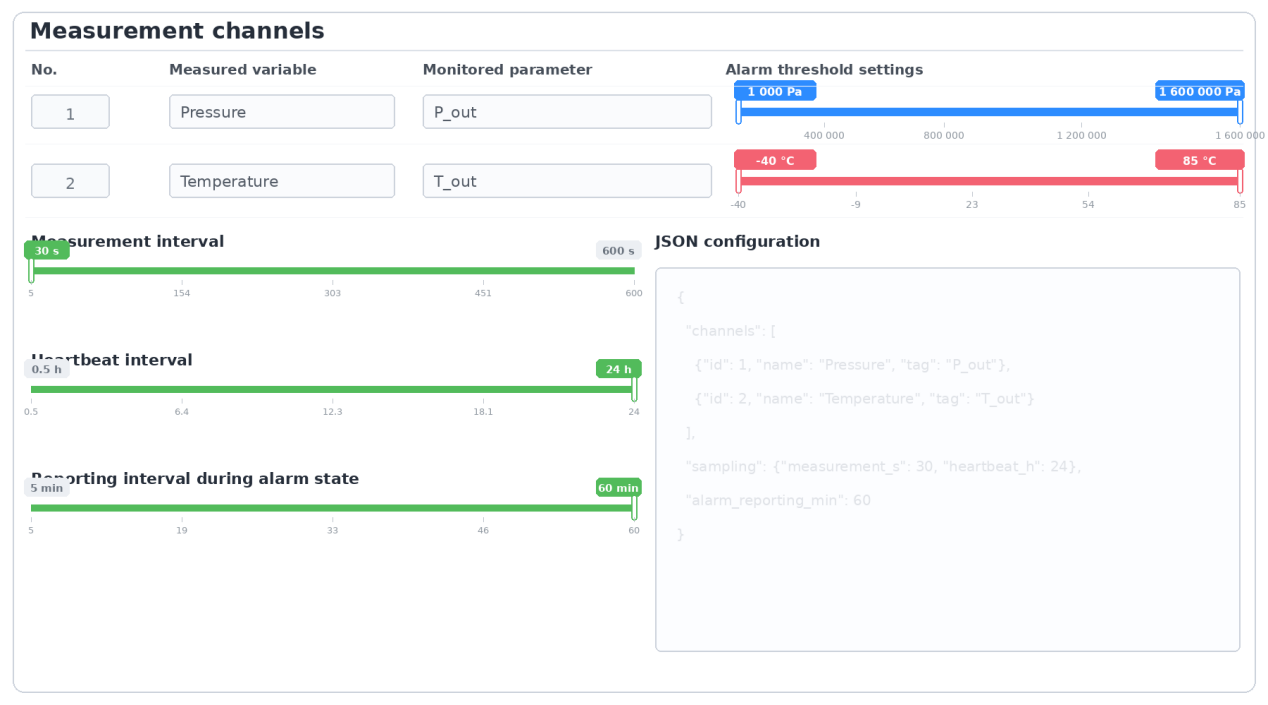
Server-configurable parameters

- Measurement interval and reporting schedule
- Threshold values for event-driven transmission
- Min. / max. alarm setpoints per channel

What the translated screen shows

- Pressure P_out and temperature T_out
- Alarm threshold bars for both channels
- Measurement, heartbeat and alarm-state intervals
- JSON view of the active configuration

Translated device parameter setup screen



Illustrative English reconstruction of the VADTel Sens operator interface shown in the brochure. Channel names, tags and JSON schema remain backend-version and project dependent.

Alarm / telemetry interpretation for VADTel Sens

In normal operation the sensor reports according to schedule; when configured pressure or temperature limits are exceeded, the device switches to event-driven reporting until the alarm condition clears.

EU compliance, configuration and installation notes

Regulatory adaptation for the EU market

- RoHS status: a manufacturer RoHS declaration is published for V.A.D. products (2011/65/EU and (EU) 2015/863).
- For a marketed cellular version, the applicable EU legislation typically includes RED 2014/53/EU, RoHS 2011/65/EU and WEEE 2012/19/EU.
- The hazardous-area version in source documents carries marking 1Ex d IIC T6 Gb X; in EU / IEC notation this corresponds to a flameproof concept Ex db IIC T6 Gb.
- Use in hazardous areas within the EU requires a version carrying valid ATEX / IECEx marking and the corresponding declaration and certificate set.
- CE marking is product-specific and may only be applied after final conformity assessment of the placed-on-market EU variant.

No unverified CE or ATEX claim is made in this adapted datasheet.

Installation and service precautions

- Mount similarly to a pressure gauge; apply mechanical load only to the process connection, not to the housing.
- Avoid severe vibration, shocks and pressure pulsation above approximately 10% of nominal range.
- If process temperature exceeds the permitted device limit, use an impulse line or cooler.
- Protect the housing against condensation and freezing in low-temperature service.
- Do not open the unit in a hazardous area; battery service must be carried out by authorized personnel only.

Configurable telemetry workflow

1 Measure
Pressure and temperature are measured locally every 5…600 seconds.

2 Compare
Measured values are checked against configured minimum and maximum thresholds.

3 Sleep / heartbeat
If values are normal, the unit returns to low power and reports every 30 min…24 h.

4 Alarm report
If thresholds are exceeded, event-driven transmission starts every 5…60 min until the condition clears.

Published field evidence

- A interregional-gas pilot protocol documents approximately 4,000 server sessions in 7 months on one test unit and approximately 10,000 sessions in 17 months on another test unit.
- The same pilot notes average monthly traffic of approximately 60 kB and regular reporting by schedule and on threshold events.
- A pilot letter reports 93–94% remaining battery charge after 267 communication sessions in a pilot installation and observed pressure-measurement accuracy not worse than ±20 Pa on a 0…40 kPa unit.

Tender / order-sheet checklist

- Pressure type: gauge or absolute
- Required pressure range and accuracy class
- Battery capacity and expected reporting profile
- Communication technology and antenna arrangement
- Need for remote temperature probe or cooler
- Whether a hazardous-area certified variant is required for the final EU installation

Product page

Source basis: VADTel Sens product page, passport, brochure, V.A.D. RoHS declaration and published pilot-operation documents. Parameters remain configuration-dependent and subject to final EU conformity assessment of the marketed variant.