NB IoT BOX LITE PRESSURE

NB-IoT data logger for pressure measurement in gas networks – battery powered, one or two absolute pressure sensors

ATEX ZONE 2 | EX II 3G EX IC IIA T4 GC | ZONE 1 IN CERTIFICATION | NB-IOT · LTE CAT-NB2 | BATTERY 10+ YEARS | RANGES UP TO 0–100 BAR ABS. | IP65 | MQTT

Network pressure monitoring – without a mains connection

The **NB IoT BOX LITE PRESSURE** is a battery-powered data logger with integrated NB-IoT transmission for pressure measurement in gas networks. It records pressure via one or two absolute pressure sensors, with ranges from 0–100 mbar up to 0–100 bar depending on the measuring point. The readings are stored locally and transmitted to the backend via MQTT – without a mains connection or dedicated radio infrastructure.

Hardware, firmware and software are developed by VERAUT in Linz, where the devices are also manufactured; the pressure sensors come from qualified suppliers. The device is intended solely for data acquisition and does not perform any legally regulated metrological function, and therefore does not fall within the scope of the Measuring Instruments Directive (MID 2014/32/EU).

The sampling interval is freely configurable from 1 minute upwards. Data is transmitted hourly by default or, alternatively, once per day as a load profile. High- and low-pressure alarms trigger immediate transmission, with an increased sampling rate available if required.



10+ years

Battery life of more than 10 years – depending on transmission interval, signal strength and ambient temperature. Replaceable $LiSOCl_2$ cell.

0–100 bar

Absolute pressure measurement from 0–100 mbar up to 0–100 bar, with one or two channels depending on the application.

NB-IoT

LTE Cat-NB2 in licensed spectrum, transmission by MQTT – no gateway or dedicated radio infrastructure required.

Zone 2

Ex II 3G Ex ic IIA T4 Gc. A Zone 1 version (Ex II 2G Ex ib IIA T4 Gb) is currently undergoing certification.

Product features

- 1 or 2 absolute pressure sensors from 0–100 mbar up to 0–100 bar
- Battery powered – no mains connection required at the measuring point
- NB-IoT based on LTE Cat-NB2, transmission by MQTT
- Freely configurable sampling interval from 1 minute
- Transmission hourly or alternatively daily as a load profile
- High- and low-pressure alarms with immediate transmission
- Optional increased sampling rate in the event of an alarm
- Non-volatile storage for several days of measurement data
- Battery replacement without loss of data or configuration
- Time synchronisation via SNTP with time-zone and daylight-saving support
- Remote configuration via the MQTT broker
- IP65 enclosure for outdoor installation

Typical applications

- **Network pressure monitoring** – pressure trends in low, medium and high pressure networks
- **Regulator stations** – inlet and outlet pressure at transfer and regulator stations
- **Chambers and stations** – measuring points without local mains power or dedicated radio infrastructure
- **Network analysis** – pressure profiles as a basis for capacity and load calculation
- **Fault detection** – immediate reporting of pressure drops and pressure peaks
- **Commissioning and site supervision** – temporary pressure measurement on construction sites
- **Caverns and storage facilities** – pressure monitoring at remote locations
- **Industry** – process and supply pressure monitoring in potentially explosive atmospheres

WORKS WITH VERILOG web portal – analysis, alarms, export · NB IoT BOX LITE – logger for pulse and encoder meters · NB IoT BOX MINI – logger for volume converters · HES, MDM and ERP systems – data handover

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Subject to technical change. The information describes the product status at the time of preparation and does not constitute warranted characteristics in a legal sense. For use in potentially explosive atmospheres, the EC type examination certificate and the operating instructions are authoritative; binding delivery characteristics follow from the order confirmation.

01 Pressure measurement

Channels	1 or 2 – one cable gland per channel
Analogue inputs	1 or 2 × 0/4–20 mA for absolute pressure sensors
Measuring ranges	Depending on the sensor: from 0–100 mbar up to 0–100 bar absolute; selected to suit the measuring point
Sensors	From qualified suppliers, selected to match the measuring range

02 Measurement, sampling and alarms

Sampling interval	1–60 minutes, freely configurable
Transmission interval	Configurable from 1 minute; hourly by default, alternatively once a day as a load profile
Pressure alarms	Configurable high- and low-pressure alarms, immediate transmission when triggered
Alarm behaviour	Optional increase in sampling rate when an alarm is triggered

03 Explosion protection and approvals

Current approval	Ex II 3G Ex ic IIA T4 Gc (Zone 2)
Zone 1	Designed for Ex II 2G Ex ib IIA T4 Gb; certification in progress
Marking	In accordance with ATEX requirements

04 Communication

Technology	NB-IoT based on LTE Cat-NB2, licensed spectrum
Protocol	MQTT
SIM	SIM chip as standard, nano SIM card optional
Antenna	Integrated; external antenna on request
Backend	VERILOG web portal as well as HES, MDM and ERP systems

05 Power supply and energy management

Battery	Replaceable $LiSOCl_2$ battery, ATEX-certified standard cell
Battery life	10+ years – depending on signal strength, transmission interval and ambient temperature
Operation	Dynamic ultra-low-power energy management; measurement and radio functions are activated only at the configured intervals and in the event of an alarm
Battery monitoring	Status under load with every transmission, low-battery alert by e-mail via VERILOG

06 Mechanics and environment

Enclosure	IP65, suitable for outdoor installation
Dimensions	approx. 140 × 100 mm without pressure sensors
Mounting	Top and bottom mounting brackets for wall installation
Operating temperature	−20 °C to +55 °C
Humidity	10–90 % RH, non-condensing

07 Data storage, time and configuration

Memory	Non-volatile storage for several days of measurement data
Battery replacement	No loss of data or configuration
Time synchronisation	SNTP time server at configurable intervals, for example daily
Time zones	Time-zone and daylight-saving support
Sensor interface	Analogue 0/4–20 mA
Configuration	Remote configuration via the MQTT broker
Display	No local display; pressure readings, alarms and battery status are available in the VERILOG web portal or target system

08 Platform and compliance

Operation	VERAUT GmbH servers in Linz, Austria; GDPR-compliant, no public-cloud operation
Analysis	VERILOG web portal: pressure trends, limit alarms, export to CSV and XML
RoHS	Compliant with Directive 2017/2102/EU
WEEE	Material information available on request; recycling in accordance with WEEE requirements

09 Pressure sensor (external)

Ex marking	Ex II 1G Ex ia IIC T6 Ga – intrinsic safety, approved up to Zone 0; flameproof Ex db IIC T6 Gb on request
EU type examination	2014/34/EU, Annex III, Module B; ECM 23 ATEX-B CW00, notified body 1282 (ECM, Italy), valid until 19 October 2028
Standards	EN IEC 60079-0:2018 and EN 60079-11:2012
Accuracy	±0.2 % of full scale; ±1 % up to 100 mbar
Measuring medium	Natural gas and non-corrosive gases
Overload capacity	Proof pressure 1.25 × MOP without permanent deformation
Connections	Process 1/4″ NPT male; electrical M12 × 1, 2 m cable per order, reaction to fire class Cca to EN 50575
Protection and materials	IP65 to EN 60529; enclosure and wetted parts in stainless steel
Temperature	Ambient −20 to +85 °C; medium −30 to +105 °C

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