NB IoT BOX MINI

ATEX data logger for zones 1 and 2 with integrated NB-IoT communication – volume converters, remote meter reading, process and level monitoring

ATEX ZONE 1 + 2 | EX II 2G EX IB IIC T4 GB | NB-IOT · LTE CAT-NB2 | BATTERY 10+ YEARS | 4 DI · 3 AI · 2 DO | ENCODER SCR / SCR+ | RS232 · RS485 · TTL | MQTT · COAP

Readings from the hazardous area – no mains supply, no gateway

The **NB IoT BOX MINI** is a battery-powered data logger with ATEX approval for zones 1 and 2. It reads meters, volume converters and sensors, stores the readings locally and transmits them by NB-IoT to the backend – with no power supply at the measuring point.

Devices are connected through four digital inputs, three analogue inputs, one encoder input (SCR/SCR+) and serial interfaces. Common volume converters are read directly. Two digital outputs provide switching and alarm functions on site.

Data is transmitted by **NB-IoT** based on LTE Cat-NB2 in licensed spectrum. At 164 dB MCL, NB-IoT offers around 20 dB more link budget than GSM and therefore reliable communication even in shafts and basements. If the connection drops, readings are buffered and retransmitted automatically with their time stamp.



Zone 1

Ex II 2G Ex ib IIC T4 Gb, intrinsically safe. Suitable for zone 1 and zone 2.

10+ years

Battery life – guide value at hourly transmission. Lithium primary cell, no mains or auxiliary power connection required.

NB-IoT

LTE Cat-NB2 in licensed spectrum, 164 dB MCL – direct transmission without a gateway or dedicated radio infrastructure.

50,000+

Devices in service worldwide; the product family has been proven in the field for more than 30 years.

Product features

- ATEX approval for zones 1 and 2, type of protection intrinsic safety (Ex ib)
- Battery-powered – no mains connection at the measuring point
- NB-IoT based on LTE Cat-NB2 (3GPP Rel. 13/14), licensed spectrum
- 4 digital inputs for pulse, reed, S0 and NAMUR signals
- 3 analogue inputs for 0 – 10 V and 0 – 20 mA plus PT1000
- Encoder input for absolute encoders SCR and SCR+
- Serial reading via RS232, RS485 and TTL; Modbus RTU/ASCII
- Protocol support for common volume converters (section 07)
- 2 digital outputs for switching and alarm functions on site
- Load profile at hourly intervals with local storage and retransmission
- Transmission by MQTT or CoAP over TLS, payload AES-encrypted
- Sealable enclosure for measuring points subject to metrological control

Typical applications

- **Gas networks** – reading volume converters at transfer, regulator and metering stations
- **Water supply** – remote meter reading, pressure and level measurement
- **Tank and vessel monitoring** – level monitoring in hazardous areas
- **Process monitoring** – pressure, temperature, flow via analogue signals
- **Remote measuring points** – no mains connection, no dedicated radio infrastructure
- **Industry and chemicals** – data acquisition in zones 1 and 2
- **Submetering** – pulse and meter data as the basis for billing
- **Fault signalling** – limit and device alarms to the backend and by e-mail

WORKS WITH VERILOG web portal – analysis, alarms, export · NB IoT BOX LITE – logger for pulse and encoder meters · NB IoT BOX LITE PRESSURE – pressure measurement · VUSWM – ultrasonic water meter · 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 hazardous areas the EC type examination certificate and the operating instructions apply; binding delivery characteristics are given in the order confirmation.

01 Inputs and outputs

Digital inputs	4 × pulse, reed, S0 or NAMUR
Encoder	Absolute encoders SCR and SCR+, Gray code registers, NAMUR
Analogue inputs	3 × 0 – 10 VDC and 0 – 20 mA
Temperature	PT1000
Serial interfaces	RS232, RS485, TTL; Modbus RTU and ASCII
Digital outputs	2 × digital outputs for switching and alarm functions

02 Data acquisition and alarms

Load profile	Hourly intervals with 24 values per day
Buffering	Local memory with automatic retransmission and time stamp
Alarms	Limit, event and device alarms
Signalling	Transmission to the backend, forwarding by e-mail
Switching	Two digital outputs for control on site

03 Explosion protection and approvals

Marking	Ex II 2G Ex ib IIC T4 Gb
Zones	Zone 1 and Zone 2
Standards	EN 60079 (explosion protection), CE marking

04 Communication

Technology	NB-IoT based on LTE Cat-NB2 (3GPP Rel. 13/14), licensed spectrum
Protocols	MQTT(S) or CoAP(S) over TLS; payload encrypted with AES-128/256
Antenna	Internal; external antenna connection via FME for difficult reception conditions
Send interval	Freely configurable, hourly by default
Backend	VERILOG web portal as well as HES, MDM and ERP systems; export as CSV/XML

05 Power supply and environment

Power supply	Lithium primary cell, no mains connection required
Battery life	> 10 years – guide value at hourly transmission and good reception (ECL 0)
Operating temperature	−20 … +60 °C
Operating mode	Autonomous ultra-low-power operation

06 Mechanics and enclosure

Dimensions	approx. 185 × 135 × 60 mm
Weight	approx. 680 g including battery
Enclosure	Sealable industrial enclosure
Mounting	Wall mounting

07 Volume converters and meters supported directly

The serial interfaces read common volume converters directly – meter readings, load profiles and status. Meters and sensors are recorded via the pulse, encoder and analogue inputs. Further devices and protocols on request.

VOLUME CONVERTERS · SERIAL READ-OUT

- Honeywell / Elster EK260 and EK280
- Instromet 444 and 999
- RMG / Kamstrup TME-400
- SICK Flowsick
- ITRON Corus and Evo+
- Dresser MicroSeries
- American Meter iMeter
- Flonidan UniFlo
- Plum MacBat
- Elgas Elcor

METERS AND SENSORS · PULSE, ENCODER AND ANALOGUE INPUTS

- Gas meters with pulse output: reed, S0 or NAMUR
- Encoder meters with absolute encoders SCR and SCR+
- Registers with Gray code output
- Water and energy meters with pulse or encoder output
- Pressure, temperature and level sensors with an analogue signal
- Temperature measurement via PT1000

08 Platform, data retention and support

Operation	Servers of VERAUT GmbH in Linz, Austria, GDPR compliant; no public cloud
Data retention	5 years as standard, longer retention optional
Encryption	TLS between device and broker; payload additionally with AES-128 or AES-256
Support	German, English and Hungarian; response within 3 working days

09 From the field



NB IoT BOX MINI at a gas metering station



NB IoT BOX MINI at an EK260 volume converter

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