

# Industrial Sensor NB-IoT

MULTIFUNCTIONAL SENSOR FOR THE INTERNET OF THINGS

The Industrial Sensor LoRaWAN "Smartico IS-NB" is used in various fields of industry, utilities and automation, for remote data collection and transmission via **NarrowBand** networks. The device has universal digital inputs, analog inputs for measuring standard 4-20mA / 0-10V signals, serial interfaces RS485/232, 1-WIRE, inputs for monitoring the integrity of communication lines. The device is equipped with an internal battery and also has a built-in voltage converter that provides operation from an external DC voltage source. There are two outputs for controlling external devices. The design of the sensor in a waterproof housing allows external use. The compact size allows installation in confined spaces, and special adapters provide reliable mounting to a pipe or flat surface without opening the enclosure.

Specifications	
Compliance with LTE	Cat NB1
Frequency Bands	B1, B3, B5, B8, B20, B28
Data encryption	AES-128 CTR
Digital inputs	4
Analog inputs 4-20mA	2
Analog inputs 0-10V	2
Line control inputs	2
Serial interface	RS485/232, 1-WIRE
Outputs	2
Maximum output load current, mA	500
Connection of external antenna	Available
Magnetic sensor	Built-in
Accelerometer	Built-in
Archive of events and messages	100 000
External power supply, V	5-55
Built-in battery	Li-SOCI2 C
Battery capacity, mAh	6500
Ambient temperature, °C	-30 ...+75°C
Weight, g	250
Dimensions, WxDxH mm	100x100x40
Ingress protection	IP67



## KEY FEATURES:

- Flexible configuration of analog inputs (polling period, schedule, threshold values).
- Configurable signal type for digital inputs (dry contact / open collector / voltage pulse).
- The ability to operate serial port RS485/232 in a transparent mode, according to a given pattern or using communication protocols.
- Support for temperature sensors and iButton via 1-WIRE interface
- Management of external devices (open collector with load current up to 500mA).
- Inputs for line integrity monitoring with detection of short circuit, line break or external influences.
- Built-in protected output for powering external sensors with protection against overload, short circuit, reverse polarity, high voltage.
- Automatically switches to power saving mode when external power is lost.
- Ability to work only on the internal battery.
- Protection from external influences and transmission of an alarm message to the server.
- Monitoring and transmission of the following parameters:
  - the presence of an external magnetic field;
  - battery discharge;
  - monitoring the performance of internal sensors;
  - control of impacts and changes in position;
  - line control (connected, disconnected, short circuit);
  - external power source control.
- Built-in non-volatile memory for data logging, built-in real-time clock.
- High-level protocols support by customer's request: COAP, LWM2M, DTLS, MQTT
- Exclusion of the human factor when taking data measurements from metering devices.
- Available with an integrated chip antenna or an external antenna.
- Two LEDs for indication of operating modes located on the PCB
- Small dimensions, easy installation.
- Battery life is more than 5 years.



## FIELDS OF APPLICATION:

- remote reading from metering devices (water, electricity, gas, heat);
- automation of technological processes and equipment operation control;
- Energy Management Solutions;
- building smart home and smart city systems;
- pressure measurement in pipelines;
- leakage detection and remote valve control;
- measurement of climatic parameters, air quality, weather stations;
- agricultural sector;
- control of industrial units and domestic rooms.



## ADVANTAGES OF THE SYSTEM BASED ON NB-IoT:

No need to deploy a network, using the resources of mobile operators;

Strong network connectivity in dense building areas;

Huge network capacity (tens to hundreds of thousands of connected devices to one base station);

Autonomy of the end devices (more than 5 years from the built-in batteries);

Low cost of the end devices;

Transmission of data arrays with confirmation, data integrity control;

Using TCP / IP stacks for data transfer, including a secure DTLS connection;

Ability to expand and change the functionality of devices due to update by air (OTA);

Work in cloud technology in building client-server solutions;

Flexible custom reporting functionality and software analytics;

Export data to any analytical and billing systems.

**NB-IoT** (NarrowBand Internet of Things) - a cellular standard for telemetry devices with small amounts of data exchange. Data is transmitted using technology known as the Low-Power Wide-Area Network (**LPWAN**) using the operator's existing infrastructure.

Using NB-IoT network technology allows you to reduce the time it takes to deploy the system, focusing on solving technological tasks. At the same time, the mobile communications operator provides the network infrastructure.

The technology works on the basis of **LTE**, therefore it is stable, has a high level of information security and a long range. In this case, a rather high data exchange rate is used in comparison with the LoRaWAN network.

Service in the NB-IoT network is much cheaper than in GSM and LTE networks, which makes the transition to this technology profitable and quickly paid back. Cellular operators can provide their **Big Data** cloud-based data collection platforms to quickly deploy services.

