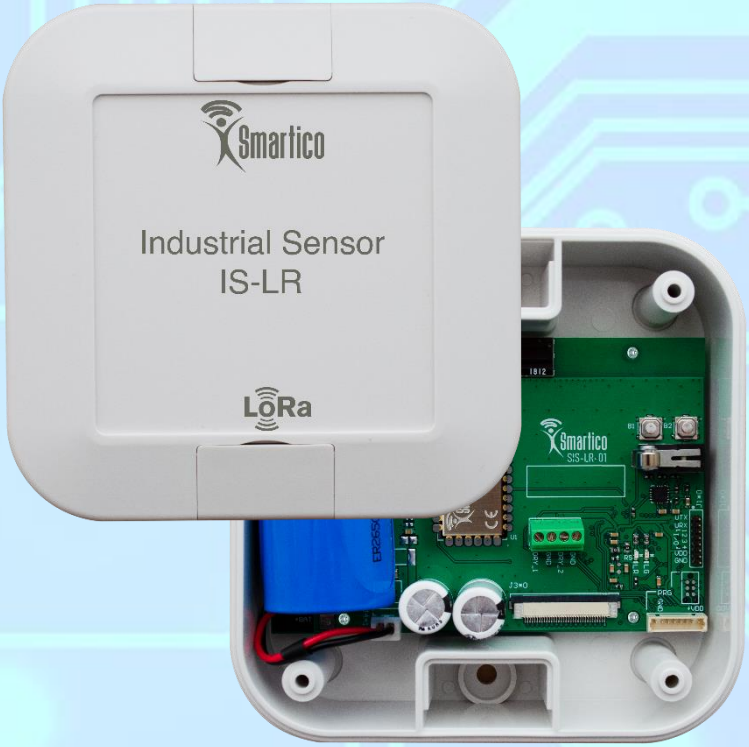
SIMPLE ENGINEERING SOLUTIONS FOR COMPLEX TECHNOLOGICAL TASKS

Industrial Sensor LoRaWAN

MUTLIFUNCTIONAL SENSOR FOR THE INTERNET OF THINGS

The Industrial Sensor LoRaWAN "Smartico IS-LR" is used in various fields of industry, utilities and automation, for remote data collection and transmission via LoRaWAN 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 LoRaWAN	1.0.2 Class A,C
Frequency plan of LoRaWAN	EU868/US915
Power of transmitter, mW	25/100
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-SOCl2 C
Battery capacity, mAh	9000
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.
- Data transmission in the unlicensed frequency range.
- 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 10 years.

LoRaWAN™

http://smartico.biz/ 82G O. Polya AVE, Dnipro 49061 Ukraine tel: +38 097 580 91 56 E-mail: ivashkevich.eugene@smartico.biz

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 LoRaWAN™:

Unlimited network scaling;

Long range communications (up to 15 km with direct visibility);

Autonomy of the end devices (more than 10 years from the built-in batteries);

Low cost of the end devices;

Network intelligence: adaptive data transmission rate and individual power adjustment for battery save;

Interference immunity (the possibility of demodulating a signal with a level of up to 20 dB below noise and interference);

The use of an unlicensed frequency range that does not require additional costs;

Two-level data encryption at the gateway and application level;

The ability to expand and change functionality without additional investment in the network;

Flexible adjustable functionality reporting and software analytics;

Export data to any analytical and billing systems.

The **LoRaWAN** (Long Range Wide Area Networking) protocol is a global standard that offers a long range bi-directional communications with very low power consumption. LoRaWAN is using the unlicensed **ISM** (Industrial, Scientific, Medical) radio bands for cost-efficient network deployments.

LoRaWAN network architecture is a **star-of-stars** topology in which gateways relay messages between end-devices and a central network server. The gateways are connected to the network server via standard IP connections and act as a transparent bridge, simply converting RF packets to IP packets and vice versa.

Deploying the LoRaWAN network allows you to save on monthly payments due to the **absence** of the need to use mobile operators' **SIM cards** in end devices. And with the increase in monitored devices, the savings become very significant.

The indisputable advantage of the proposed solution based on LoRaWAN technology is the possibility of its unlimited scalability. Moreover, with the increase in controlled devices, the unit cost of the network in terms of one device is significantly reduced.

Thus, after the introduction of the first stage of the system, the Customer has a powerful and versatile radio network that allows you to quickly and without additional costs add an unlimited number of monitored smart sensors and metering devices for water, gas or any other energy source.

To reduce initial investment, network deployment functions can be outsourced to local LoRaWAN providers. In this case, the operator provides the **Network** layer and transfers **encrypted** data to the customer's **Application** layer.

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