AERINOS™

ADS-700 NBIoT/LTE-M RTU

Introduction

ADS-700 is an ultra low power NBIoT/LTE-M End Node with multiple sensor support. The unit incorporates a built in modem, a USB serial port, 3 digital input/counter, an analog input, a 3-axis digital accelerometer with gyroscope, built in temperature sensor. a Coulomb meter and multiple excitation options for powering and measuring transducers. The device supports acquisition of up to 15 measurement channels, based on the popular SDI-12 and MODBUS communication protocol. An ultra low power ARM M33 microcontroller is utilized for data sampling, subsystem activation and overall system control. The unit incorporates a Lithium Thionyl battery supplying system operation for up to 10 years.

Modes of operation

Modes of operation include autonomous battery operation or via mains power supply. The USB and BLE interface can be used for unit configuration.
During battery supplied operation, only the low power microntroller is awake. The microcontroller activates the modem during data transfer, as well as other subsystems for sampling and logging.

Features

- Power network independent NBIoT/LTE-M End Node
- Up to 10 years maintenance free operation
- Quick and easy installation
- 3 digital input (1also counter), 1 analog input, Built in 3-axis digital accelerometer with gyroscope
- Built in temperature sensor
- Built in battery monitoring
- SDI-12 and MODBUS sensor data acquisition
- Several excitation options for external sensors

Applications

- Security systems
- Power network, Cable fault monitoring
- Building Management & Home Automation
- Oil & Gas distribution
- Asset management
- Greenhouse controls & irrigation systems
- M2M systems

Technical characteristics

Power supply	
Battery	Internal 13.0 Ah Lithium Thionyl
External	5V (USB power)
Consumption	20µA max (Low power operation) 2 mA (AI sampling w/o sensors) ~50mA (Alarm messaging)
Digital inputs	3, 0-30VDC or potential free contact inputs
Analog inputs	1, 0-1V, 12 bit resolution
Counters	1, kHz max.
Excitation	5VDC/200mA or 12VDC/200mA max.
Serial port	USB serial, 9600 to 115200 bps
Bluetooth LE	Wireless BLE
Modem	LTE Cat-M1/NBIoT with 2G fallback, Sierra Wireless HL Series 78xx with GPS GNSS
Antenna	internal or external, LTE
Indications	2 LED, network status, device status
Temperature	-40°C…+70°C operating
Protection	IP66/68
Dimensions	124 x 79.5 x 70 mm, (with cable gland)
Weight	0.3 kg (w/o Battery)

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Data Acquisition

Sampling period and data send rate are user defined. Ultra low power mode is user configurable to allow frequent data recordings and transmissions, while maximizing the battery life.

SDI-12 Serial Bus

Compliant to the SDI-12 Standard Version 1.2. The ADS-700 can collect data from several SDI-12 sensors for a total amount of 15 measurement channels.

RS-485 Serial Bus (MODBUS)

ADS-700 supports acquisition from sensors with RS-485 interface using the MODBUS protocol for a total amount of 10 measurement channels.

Transducer excitation

A user adjustable 5V/12VDC excitation output is available for powering low power external sensors.

Tilt Sensing

The unit has a built-in accelerometer with gyroscope for precision measurements and alarming.

Coulomb Meter

A user enabled Coulomb Meter allows for the monitoring of the battery's consumption.

Setup and programming

The unit can be programmed locally through the USB or BLE interface using simple ASCII configuration commands. The command set features commands for configuring scaling and timing parameters. The unit can be remotely configured and controlled.

Enclosure

Plastic enclosure (IP66/68) for in- and outdoor use.

Firmware features

Digital/Analog alarming	Threshold alarming for all channels
Accelerometer	Rotation, Tilt, 3 axial gyroscope
SDI-12	Compliant to SDI-12 Version 1.2
MODBUS	MODBUS ASCII protocol
Sampling interval	1-65535 minutes
Sensor warm-up time	1-65535 sec
Transmission rate	0-65535 hours
Communication	MQTT messages
Security	TLS1.2 support with user defined SSL certificates
Programming	ASCII command set, remote configuration and operation capability
Local setup	via USB serial port or BLE wireless

Ordering information

Code	ADS-700

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