



- Category 1 4G modem
- Excellent value for money
- Can also be configured via DAK software
- Ultra-low power
- MODBUS and SDI12 interfaces

Description

The NanoSUM data acquisition and communication system was designed by SIAP+MICROS as a compact, cost-effective and low-power solution for environmental monitoring in meteorological and civil protection applications. Depending on the type of application, it can be housed in various enclosures, with or without an integrated battery and solar panel power supply system. In all cases, both the data acquisition frequency and the frequency of data transmission via FTP or FTPS can be programmed on the device. The system has been designed for extremely low power consumption and to be used even in systems without an external power supply. NanoSUM has been designed to interface with systems and sensors featuring RS-232, RS-485 and RS-422 serial outputs using the MODBUS protocol, as well as SDI-12 sensors. Its basic functions include data acquisition, processing, local storage and transfer via the public telephone network (xG) to an FTP/FTPS server. The device is capable of powering (ON/OFF) external equipment at a nominal voltage of 12 Vdc. NanoSUM is equipped with two digital inputs to which a sensor with a pulse output (e.g. rain gauge) can be connected. The device is also equipped with two digital outputs for enabling external power supplies. NanoSUM is fully configurable via the DAK software.

Main features

- **Data acquisition and communication system in a single device**
- **Compact system for digital sensors**
- **Ultra-low power consumption < 0.4 mA (shutdown mode)**
- **Low-power management system in both active and shutdown modes**
- **Easy to configure and programme**
- **Integrated solar battery charger**
- **Also available in an IP68-rated version**



Technical Specifications

Hardware Specifications

Processor	Dual Core: ARM Cortex A7 1.3 GHz; ARM Cortex M4 32 Mhz
RAM	16 Mb
Flash storage	4 Mb
µSD card (optional)	Typically 2 GB for data backups
Watchdog	Hardware and software

Communication interfaces

Acquisition	<ul style="list-style-type: none"> • Modbus: RS-485, RS-232 e RS-422 • SDI-12
Configuration	µUSB

Frequency bands for data transmission

Category 1 4G	B1 (2100), B2 (1900), B3 (1800), B4 (AWS 1700), B5 (850), B8 (900), B8 US, B9 (1800), B12 (700), B13 (700), B14 (700), B18 (800), B19 (800), B20 (800), B25 (1900), B26 (850), B28 (700)
3G	B1 (2100), B2 (1900), B4 (AWS 1700), B5 (850), B6 (850), B8 (900), B19 (800)
2G	B2 (1900), B3 (1800), B5 (850), B8 (900)

Diagnostic parameters

Battery voltage [V]
Solar panel voltage [V]
Signal strength, RSSI [dBm]
Internal temperature [°C]
Internal humidity [%]

Power supply

BAT Entrance	12 Vdc lead-acid battery
With PP input photovoltaic panel	Solar panel 28 VDC MAX
LiON Entrance	Lithium battery or power supply 6–30 VDC
With battery charger	<ul style="list-style-type: none"> - For lead-acid or LiFePO4 batteries - Classic three-stage algorithm with MPPT - BMS for threshold and temperature monitoring - Self-limited power (60 W MAX) - Self-limited current (3.2 A MAX)

Consumption

Normal	< 8 mA (data collected every minute, transmitted hourly)
Shutdown	< 0.4 mA (hourly acquisition, transmitted every 4 hours)

Operating conditions

Temperature	-40°C ÷ +80°C
Humidity	0% ÷ 100% (uncondensed)

Order code

NanoSUM	PEM-E016E-NANO
NanoSUM IP68	PEM-E016F-NANO-IP