

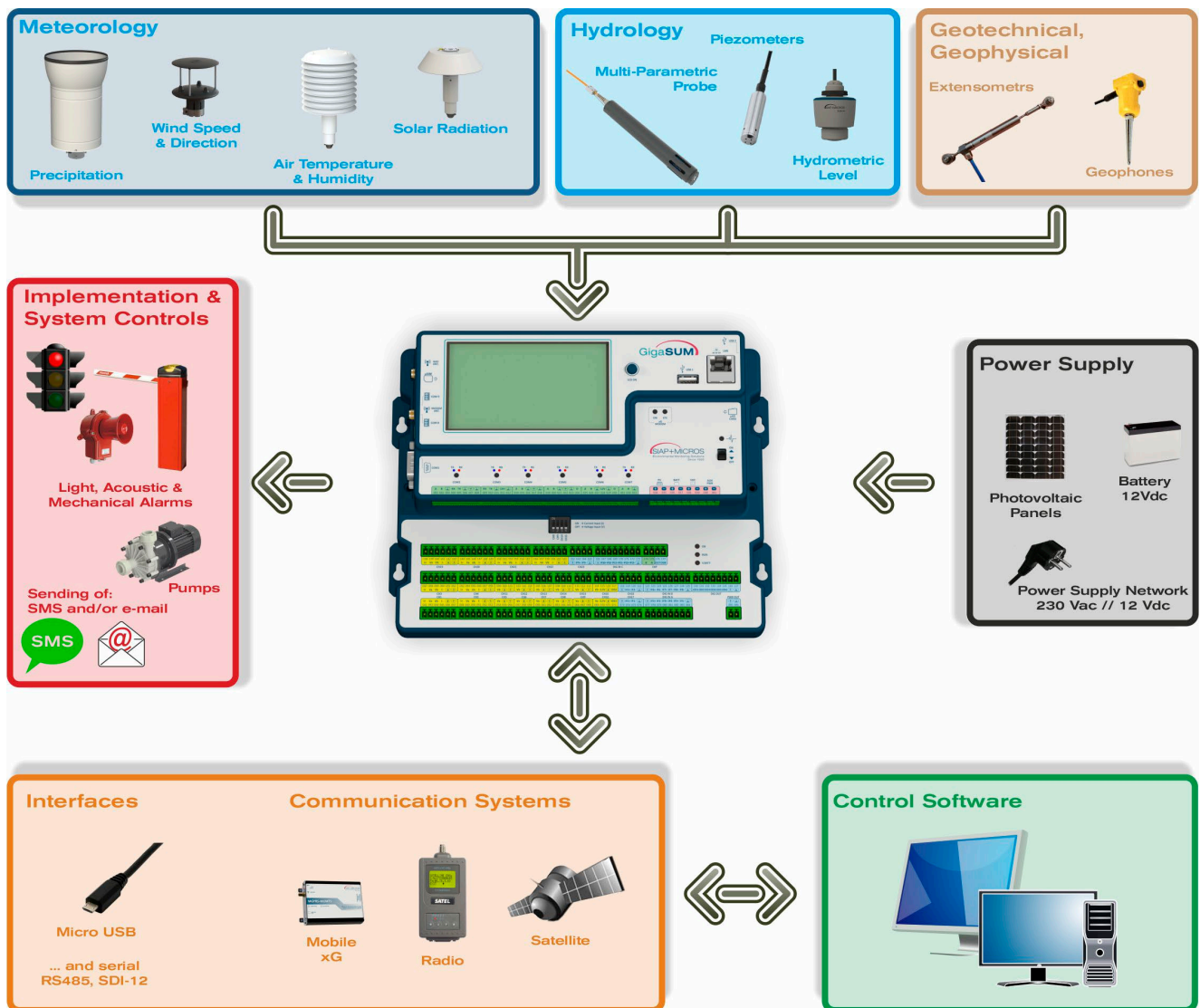
- High level of customization thanks to Linux O.S.
- Bluetooth and Wi-fi modules on-board
- Integrated 2G/3G/4G/5G modem (optional)
- More than 10 different internal diagnostic parameters
- Analog inputs with 24 bit ADC
- Designed for long-term use in harsh environmental conditions

Description

The GigaSUM is the most powerful data-acquisition unit designed by Siap+Micros in terms of computational capacity. It is equipped with Linux embedded operating system in order to expand the company product-line and meet new market requirements. This device is the result of years of improvements in developing flexible and reliable solutions for the environmental data acquisition, storage and elaborations. The GigaSUM is fitted out with a wide variety of analog and digital communication interfaces for the connection of monitoring sensors and probes as well as with digital outputs for the activation of external devices. The unit can manage multiple data transmission devices for remote data sending such as radio-modems in free or licensed band (UHF, VHF, HF, SRD, ...), GPRS/UMTS/LTE/5G modem/router, satellite equipment (Iridium, Inmarsat, Meteosat, Goes, ...). The datalogger is fully compliant with the most used standards communication protocols such as TCP-IP, FTP, SDI-12, MODBUS-RTU and MODBUS-TCP/IP.

Furthermore, the datalogger has been thoroughly designed to ensure maximum performance even in the harshest climate conditions, ranging from the typical coldest temperatures of the high altitudes, to the warmest of the tropical and desert areas. The device is supplied with the DAK configuration wizard software, but it has been possible also to program customized applications using available open libraries, functions and / or specific procedures for the interoperability with third-party systems.

Logical scheme



Main Features

DISPLAY

User friendly touch screen display for both instant data and elaborated data (average, minimum, maximum, etc), data memory status, connection status, general status, operating system diagnostics, date and time.

DATA PRE-PROCESSING (instantaneous measurements)

- Data validation (check of the measure);
- Data processing (for example: corrective formulas, calculation algorithms, application of forecast models).

STATISTICAL ELABORATIONS (stored data)

GigaSUM acquires the instantaneous values of measured samples and store it in a temporary file. At the end of a configured time period, and using the overall data, GigaSUM computes the desired statistical parameters. For each measure it's possible to define the time period and the statistical parameters. The main statistical parameters are: instantaneous value, arithmetic average, trigonometric average, vector average, cumulate, integrate, period, integral.

STORAGE

- Different safety data storages in which instantaneous, statistical and alarm values can be separately memorized; Data can also be stored on a removable memory;
- Memory management in linear mode (continuous storage up to full memory card capacity) or circular mode (data are overwritten once the memory card is full);
- Dynamic format structure for data transmission length optimization. This feature reduces the data volume, reducing transmission time and communication costs.

CUSTOMIZATION

A high level of flexibility is ensured through the following customization possibilities:

- Open source Linux development environment;
- Customizable formulas for the creation of calculated parameters;
- Fully programmable algorithms for control and validation of the acquired data;
- Customizable alarms thresholds and settings;
- Customizable alarm messages and dissemination methods.

CONFIGURATION

Very flexible configuration software that can operate in the following ways:

- Through wireless connection to the unit with a portable device (smartphone, tablet);
- Locally by means of either a keyboard and touch-screen display, or an USB terminal (notebook, tablet);
- Remotely through the communication system or in web client mode.

COMMUNICATION / TRANSMISSION

- Wi-fi and bluetooth connection for: datalogger configuration, data download/upload, remote navigation;
- Data transmission by: radio-modems in free or licensed band, GPRS/UMTS/LTE/5G modem/router, satellite devices, RS232 or RS485 serial connection or by any combination of the aforementioned;
- Message dissemination through SMS, e-mail;
- Communication protocols TCP/IP, FTP, SDI-12, MODBUS-RTU, MODBUS-TCP/IP and IoT protocols family.

SELF-DIAGNOSTICS

GigaSUM keeps under control more than 10 different internal parameters:

- Voltage, current and power of: solar panel, battery charger, charge;
- Internal Temperature;
- Status of acquisition channel;
- Memory capacity;
- Communication performance;
- Power supply blackouts.

CONFIGURABLE PARAMETERS

- Unit of measurement expressed in engineering units;
- Range: define minimum and maximum value registered by the sensor (lower and upper scale value);
- Decimals: number of decimals that define the measure;
- Conversion formula: mathematical formula to convert the input electrical signal in to engineering units;
- Offset: define a measure offset (e.g. water level respect referring level).

ALARMS MANAGEMENT

It's possible to define two alarm thresholds, one for minimum value and one for maximum value;

- Once a threshold is exceeded, GigaSUM can send alarm messages or sms and define actions to undertake, through a specific pre-configuration.



Technical Specifications

Hardware features

Processor	Cortex™-A7 - 528 Mhz
Operating System	Linux Embedded
Real Time Clock	32.768Hz quartz oscillator
Memory	RAM 512Mb e 4Gb eMMC
Additional memory (optional)	MicroSD card
Display	Colour touch screen 4.3"
Resolution	480 x 272

Communication interfaces	COM1: RS232 (DB9)
	COM2: RS232/RS485
	COM3: RS232
	COM4: RS485
	COM5: RS485/SDI-12
	COM6: RS485/SDI-12
	COM7: RS485
	COM8: RS232
	COM9: RS485
	n.2 type A USB connector n.1 Ethernet

24 bit Analog Inputs	± 2.5V inputs: 4 differential (or 8 single ended) 4 Pt100
	± 10V inputs: 4 differential (or 8 single ended)
	4 4-20 mA inputs

Digital Inputs	8 optoisolated 5kVrms configurable: - frequency (0.5 ÷ 5000 Hz) - counter - digital state
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Outputs	8 digital open drain 2 analog 0 ÷ 2.5 V, 12 bit
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Power supply

Input power supply	Photovoltaic Panel PMAX 100 W 12V battery External power 9-24V Service power supply 12 V (not rechargeable)
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Switched auxiliary power outputs	3 12V-5A outputs on COM2-4-5 2 12V-5A outputs on COM3-6 18 12V-200mA
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Protections	Protection against overvoltages, reverse polarity, overcurrents fuse (self-restoring) and filter Internal control of the battery voltage in case of deep discharge
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Battery charger integrated circuit	MPPT dynamic control
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Communication protocols

Serial	MODBUS SDI-12
Ethernet	TCP/IP Modbus TCP
Modem	FTP TCP SMS

Other features

Control functions	- Battery status monitor - Process watchdog (30 seconds of power off) - Charge current measurement - Power supply current measurement - PCB temperature measurement
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Environmental operating conditions	-40 ÷ + 80 °C Maximum humidity 99% without condensation
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Other characteristics	Internal clock with automatic leap years management Watchdog
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Extended version

24 bit Analog Inputs	± 2.5V inputs: 8 differential (or 16 single ended) 8 Pt100
	± 10V inputs: 4 differential (or 8 single ended) 4 4-20 mA inputs

Digital Inputs	8 optoisolated 5kVrms configurable: - frequency (0.5 ÷ 5000 Hz) - counter - digital state
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Outputs	8 digital open drain 2 analog 0 ÷ 2.5 V, 12 bit
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