

G802

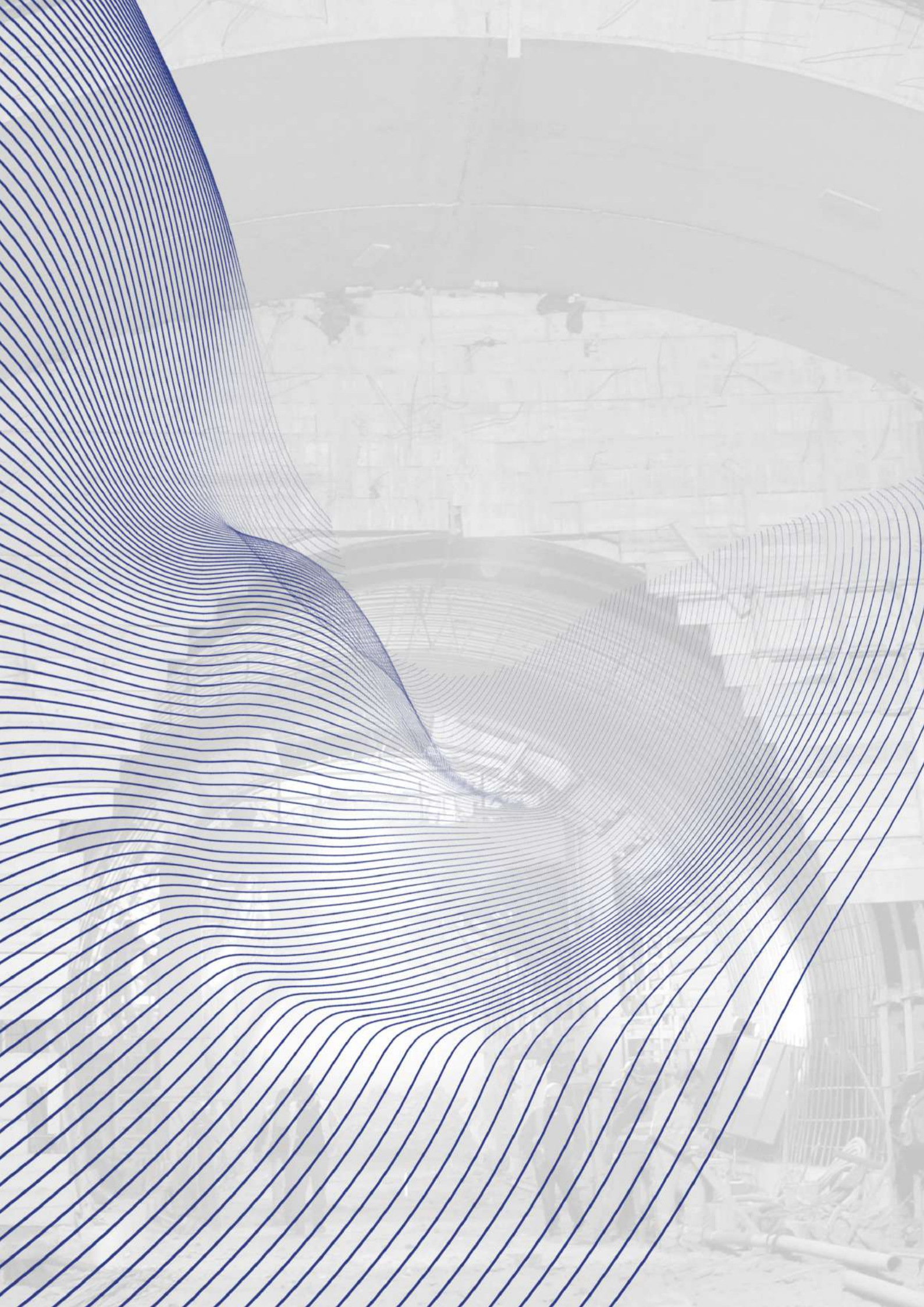


MAIN FIELDS OF APPLICATION

- Geotechnical engineering
- Hydrology
- Meteorology

**Digital and Interconnection
Logging Module
for managing of monitoring systems**







Digital and Interconnection Logging Module for managing of monitoring systems



Resources

- Inputs and Outputs:**
- 2 digital inputs
 - 2 analogue inputs
 - 2 voltage outputs
- Ports:**
- 2 isolated RS485 ports
 - 2 RS232 ports
 - 1 RS232TTL port
 - 1 USB port
 - 1 Ethernet port
 - 1 Bluetooth interface
 - 1 Wi-Fi interface
- Interface:**
- 2 alarms
 - 1 SD card slot
 - 1 graphic display
 - 1 12-key keyboard

Features

The features of the G802 module allow you to connect and manage different types of multiplexers or customised measurement systems. GMUX multiplexers acquire electrical signals from transducers and send them to the G802 management module via RS485 or RADIO. The G802 is designed with low-power technology and, by powering the system via a 12 V battery, an average life of at least one year is guaranteed in the Ultra Low Power configuration. This eliminates the inconvenience caused by 220 Vac mains power. To assist the operator during installation and for better control of the system, it is possible to manually interrogate any single instrument via the G802's keypad, obtaining the final data on the display.

Instruments

compatible with local channels:

- Pulse pluviometer
- Alarm triggered instruments
- Pulse or digital hydro geological instrumentation
- Pulse or digital meteorological instrumentation

compatible with multiplexer channels:

- Vibrating Wire strain gauges - Electrical strain gauges
- Extensimeters - Inclinometers and pendulums - Piezometers
- Load Cells - Crackmeters - Thermistors - Hydrological instruments - Meteorological instruments

THE NEW FEATURES OF THE G802 LOGGER

- it uses LoRa modules as a radio interface
- is able to communicate with the MODBUS-rtu protocol
- it can work with FIBRE OPTIC BRAGG sensors

Connections

All functions can be accessed by connecting to the G802 via an Ethernet connection from the local LAN, via WiFi or via a remote internet connection.







The graphical user interface allows you to read data from the G802 in an easy and intuitive way with all browsers (Windows, Linux and Mac) and also on tablets, smartphones or smart TVs. By keyboard or web server it is possible to modify the functions locally or remotely.

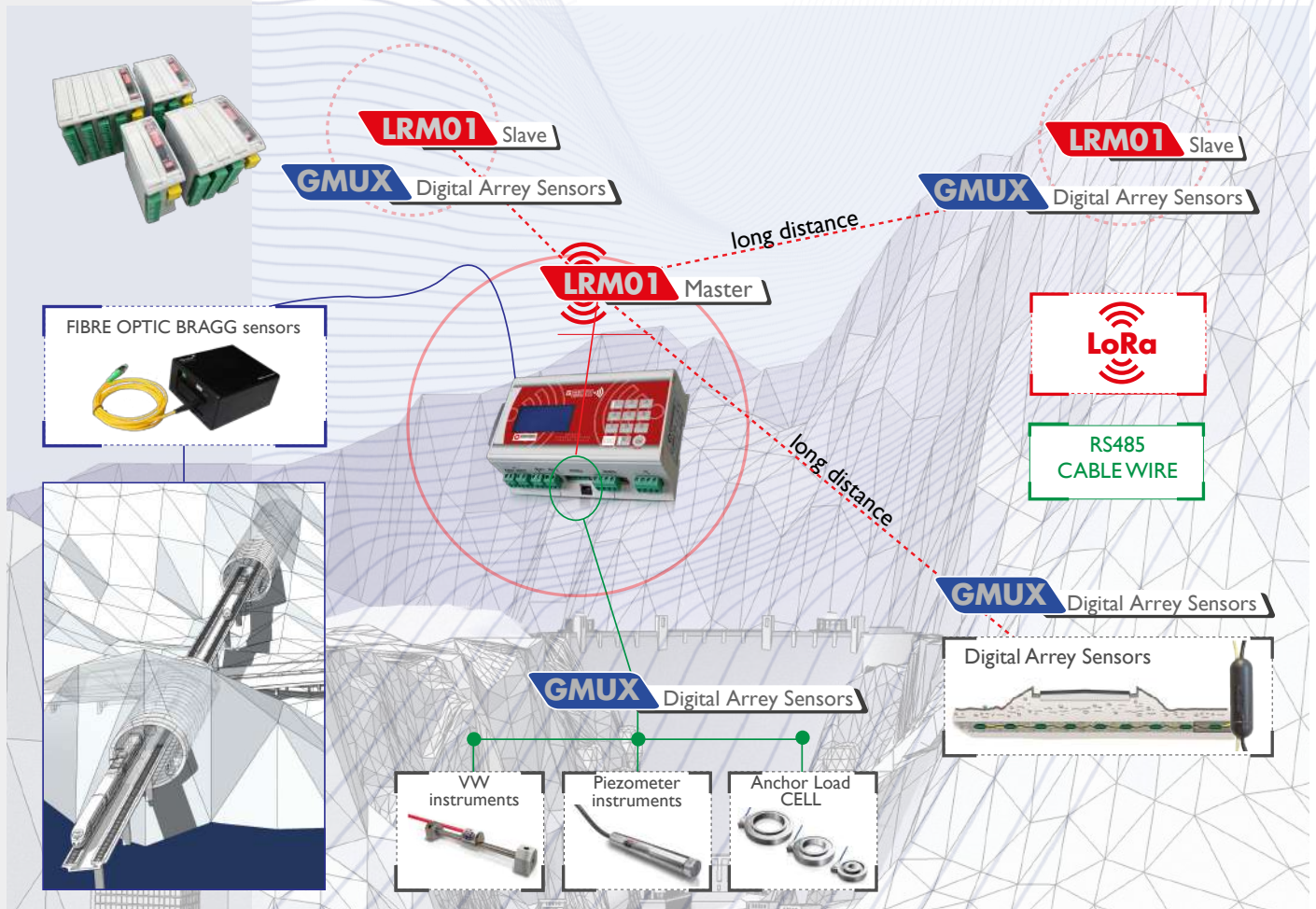
The configurations and working parameters are saved on an SD card, which allows for the rapid replacement of hardware components and system backup and recovery. It is also possible to create a backup copy on a USB key. To recover data, simply remove the USB devices or SD cards, insert them into an SD card reader or USB port on your computer and proceed to save the file in .xls or .csv format.

By connecting a GPRS / UMTS router to the G802, you can access its internal SSH server making it possible to control, configure and download data through any terminal such as PC, tablet, smartphone, etc..

By configuring the G802 as an FTP Client, you can automatically download data to an FTP Server.

External Connections

GMUX acquisition module 4, 8, 12 and 16 channels	DMUX multiple digital devices	UMTS-GEOL router
		
LoRa radio interface module	MODBUS-rtu protocol	BRAGG FIBER OPTIC interrogator
		



Radio interface module LoRa



LoRa (Long Range) is a technology that uses sub-gigahertz radio frequency bands thanks to which it is possible to obtain long range (over 10 km in rural areas, 3-5 km in highly urbanised areas) and low energy consumption transmissions. With this technology, a wide variety of smart IoT applications can be controlled and managed.

LoRa uses reserved frequency bands whereby a low-power emitter (called a node) transmits small data packets (from 0.3 to 5.5 kbps) to a receiver over a long distance.

It is a two-way routing protocol (uplink and downlink) and does not support direct communication between nodes. The main advantage is that it combines an excellent ratio between performance and consumption, through a long transmission range and the possibility of connecting up to a 254 nodes while maintaining low consumption.

LoRa Technical Features

- Supply: 6-14 Vdc, RS485 port Logger interface. 2x3.6 V 3600 mAh Size-A Lithium Batteries, field interface;
- Current supply: 45 mA Typ. operative mode, 30 μ A in standby;
- Operating temperature: from -20° to +70 °C;
- Protection: IP66;
- Installation: Wall mounting;
- LoRa MASTER Dim.: 80 x 70 x 57 mm;
- LoRa SLAVE Dim.: 80 x 70 x 57 mm;
- Lora SLAVE monoc. dim.: 125 x 80 x 57 mm;
- Weight: 300g appr. no batteries;
- Internal connections: Terminal blocks for RS485;
- External connections: 50 Ohm SMA panel antenna connector;
- Communication ports: 1 RS485 - 1 Radio - LoRa;
- LoRa details: 869.4 - 869.6 MHz.-118 dB to -135 dBm. 100 mW max.

MODBUS-rtu protocol



Modbus allows communication between different devices connected to the same network, for example a system that measures an instrumented section of a tunnel and communicates the result to the G802 logger.

Modbus is used to connect the G802 with a remote terminal unit (RTU) in control and data acquisition systems. The G802 logger uses the Modbus standard on the RS485 port.

BRAGG FIBRE OPTIC interrogator



The I-MON 512 USB interrogation monitors offer real-time spectrum monitoring of FBG sensors. The USB series is based on the I-MON 512 OEM series.

USB interface makes it possible to acquire spectra with up to 6 kHz, while maintaining sub-picometer wavelength fit resolution.

The G802 provides easy configuration and the and the I-MON can act as a stand-alone monitor in combination with the light source.

Applications

Stand-alone Interrogation Monitor and/or OEM Interrogation Monitor Modules:

- Temperature measurements
- Pressure monitoring
- Strain measurements
- Vibration analysis

BRAGG FIBRE OPTIC Technical Features

- Parameter Unit:	I-MON 512 USB;
- Max. number of FBG sensors:	> 70;
- Min. FBG spacing (pm):	1000 / 1200;
- Wavelength range (nm):	1275-1345/1510-1595;
- Wavelength fit resolution:	pm < 0.5;
- Repeatability (over any pol. state):	pm 3 (5 max);
- Wavelength accuracy:	pm 5 (typ);
- Wavelength drift:	pm / deg C 1 (3 max);
- Dynamic range:	dB 30;
- Input optical power range:	dBm -80 to -20;
- Measurement frequency:	Hz 3000;
- Interface:	USB 2.0;
- Current consumption:	mA 250;
- Size (LxWxD)	mm 110 x 94 x 49;
- Operating temperature:	deg C 0° to 50°;
- Storage temperature:	deg C -20° to 70°.

Peripheral

GMUX



GMUX is an acquisition module for analog and vibrating wire instrumentation.

It is created as a device for GEI's readout logger unit G802 with which it communicates digitally via RS485 or radio. GMUX reads various types of signal, according to the standards 4/20mA, mV/V, V, Pt100, NTC and vibrating wire instrumentation.

During the data acquisition on one of G802 input digital channels, GMUX provides the correct power supply to the analog channel requested and performs the acquisition of the electrical data at the predetermined period.

The information returns to the G802 module that has requested it, always on the same digital channel. One or more GMUX can be connected on the same digital channel, for this reason every device should have its own unique code.

The product's power supply can be realized in different ways, depending on the monitoring system's configuration and on the type of digital channel, used for communication with the other system's devices.

In cases where devices are connected together via the cable (RS485), the maximum distance between the two farthest modules directly depends on cable cross-section, but it is possible to supply the GMUX module directly, using the bus cable.

Therefore, one or more G802 module, used in your monitoring system, manages the power supply of every device in this system. In case the signal cables are particularly long or when the radio connection is used, the GMUX must be equipped with a local battery power supply. According to the system's configuration parameters or technical requirements, considering the very low consumption of GMUX, you can use only a battery power supply, or, for more complicated systems, 110/220Vac or photovoltaic panels can be considered.

GMUX is available in four versions, from 4 up to 16 channels through (also 8 and 12 channels). Each channel is characterized by a four poles terminal block which is used to supply power to the transducer connected to it and to receive analog signals. The function of 4 poles terminal block depends on the type of the instrument connected.

Optional Functions

UMTS-GEOL



The G802 can be provided with a GPRS/UMTS router, which will make possible the total module's remote control, configuration and data logging by means of any PC, tablet, smartphone, etc..

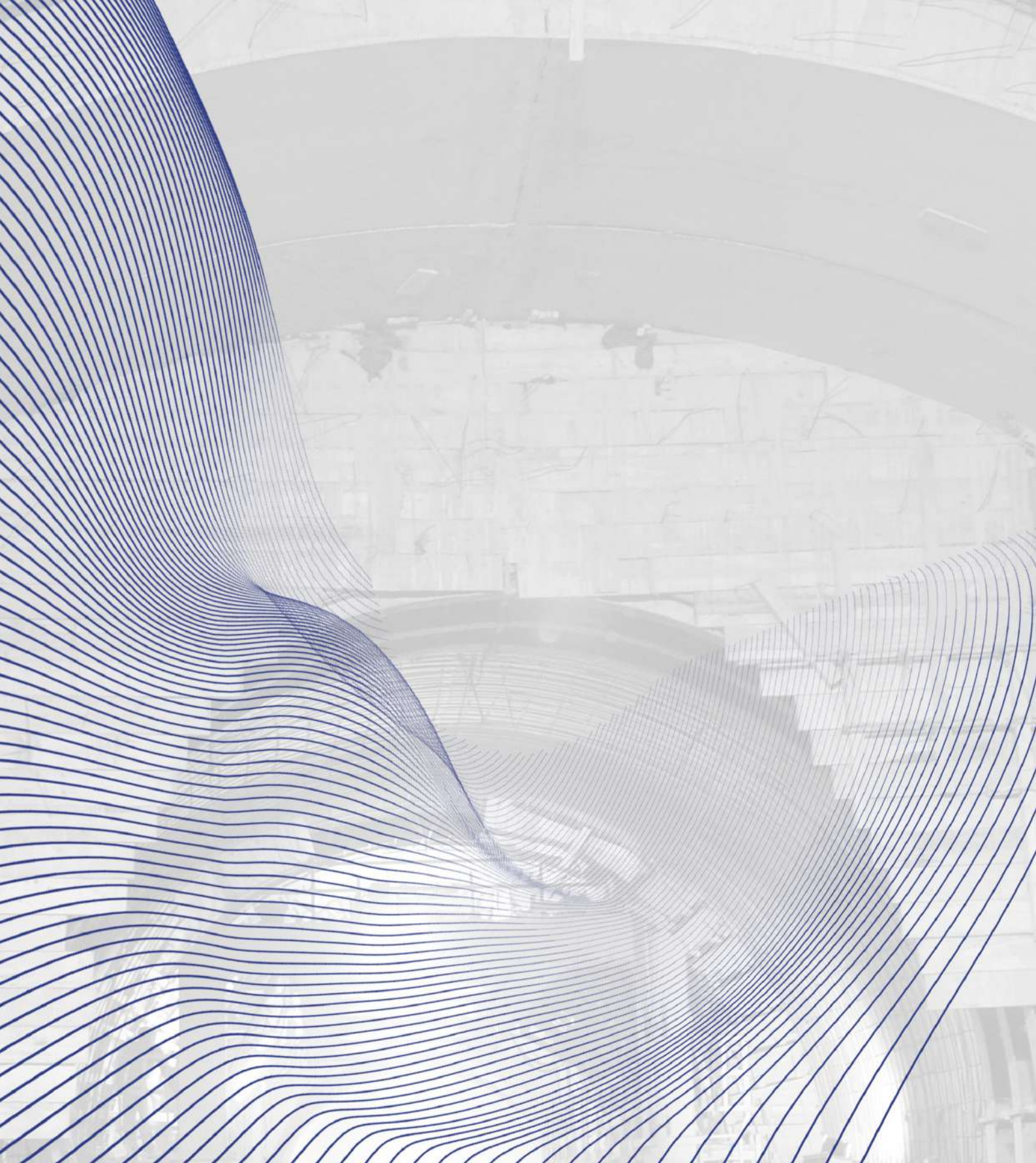
It can also be configured as an FTP client to download the data automatically to an FTP server.

G802 Technical Features

- Supply: 12 VDC. Optional 110/220 Vac or solar panel;
- Current supply: 30 μ A in standby;
- Operating temperature: from -20° to +70°C;
- Protection: defined by the box type;
- Dimensions: 159 x 110 x 54 mm;
- Weight: 500g appr.;
- Digital Local Input: 2 Channels, Trigger/Pulse counter;
- Local Analog Inputs: 2 Channels, 4-20 mA/0-3 Vdc/0-10 Vdc;
- Digital Local Outputs: 2 Alarm, relay contact max. 24 VAC/DC 3 A;
- Communication ports: 1 Ethernet 2 RS485 optoisolated 2 standard 2 static switch, 12 V 0,3 A;
1 RS232 PORT TTL;
- User interface: backlit LCD display 128 x 64 12 buttons keypad;
- Internal clock: with 3 V lithium battery;
- Memory: SDcard;
- Internal Resources: 512 Mb internal ROM - 512 Mb internal RAM;
- Sampling period: 1/min – 1 /23h - 1/10 days;
- Remote data connection: - via GPRS / UMTS - via ethernet - via LoRa;
- Ethernet connection type: - Local Web server with module remote control via cable and/or Wi-Fi;
- FTP Local Server (SSH LOCAL SERVER)
- FTP Client (automatic data download to an FTP server);
- Alarm notification e-mail;
- Download data period settings: 1/59 min. - 1/23 h - 1/10 days;
- Number of stored acquisition: more than 2.000.000 in max. configuration;
- Read/written data frequency: 1 MHz;
- Data backup: SDcard and USB;
- Backup period settings: 1/365 days;
- **Power consumption:**
 - Full function: All the system's features are always available Average power consumption 60 mA.
 - Low power consumption: Features available only in some periods of the day. Periods can be set daily or hourly. Average power consumption 30 mA.
 - Ultra low consumption: Features available only at the moment of data acquisition. Average power consumption 30 μ A.

GMUX Technical Features

- Supply: 12 VDC. Optional 110/220 Vac or solar panel;
 - Current supply: 120mA, V input, No load;
95mA, mV/V input, No load;
125mA, 4/20mA 2 Wires input;
85mA, PT100 input;
70mA, NTC input;
83mA, VW input;
 - Current Stanby: 0uA, Communication and supply trough RS485 port;
320uA, Communication RS485 port, supply by local battery;
0uA, Communication RS485 port, supply by local battery trough BSM;
30uA, Communication Radio port, supply by local battery.
 - Operating temperature: From -20° to +70°C;
 - Protection: Defined by the box type;
- | | | | | |
|---------------------------|--------|--------|--------|---------------|
| - MUX channels nr: | 4 + 4 | 8 + 8 | 12+12 | 16 + 16 |
| - Dimensions mm: | 48 | 72 | 97 | 122 x101 x119 |
| - Weight: | 277 g. | 405 g. | 533 g. | 656 g. |
- Measuring type: V, mV/V, 4/20 mA, VW, Pt100, NTC;
 - N ° Multiplexer supported: Up to 254 for RS485 port, max 508;
 - N ° Channels supported: Up to 32 for MUX, max 16320;
 - Measurement resolution: 24 bit: V mV/V, 4/20mA, Pt100, NTC;
0.1 Hz: vibrating wire;
 - Supply voltage: + 20 V, + 12 V, +/-12 V, + 5 V;
 - MUX communication type: RS485, LoRa radio.



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