— MINI
OMNIALOG

READOUT UNITS
AND DATALOGGERS

OMNIAlog®

MINI GT-401 W-3G

SISGEO

MINI OMNIALOG

Mini OMNIAlog is a four-channel logger that can be factory-configured to read specific types of sensors: it reads analog (current, voltage, NTC, Wheatstone bridge), vibrating wire and RS-485 digital instruments. Readings are accurate, repeatable and stable over a large temperature range.

Mini OMINIAlog has special algorithms for VW sensors that reliably capture the resonant frequency even in cases when there is environmental noise or a poor signal.

Stored readings can be retrieved via USB connection with a PC or with a USB flash drive if a PC is not available. With 3G-Wi-Fi module, readings can be transmitted wirelessly through 3G technology; readings and alarms can be automatically transmitted to the user FTP folder or email. The Wi-Fi technology now permits to manage the logger also with a table or a smartphone. If connected through Wi-Fi, is not needed to stop the data acquisition and data sending.

Mini OMNIAlog is designed for low power consumption. It runs on 6 AA batteries, but can accept auxillary power from a small solar panel, AC/DC charger or batteries with higher capacity. To preserve the internal batteries life, during the PC connection the Mini OMNIAlog is powered by the USB cable.

The mini OMNIAlog monitoring schedule, conversion parameters, and alarm thresholds are configured via your PC's web browser. No special software is required.

It is possible to update the firmware / web pages using the USB flash drive.

Meet the essential requirements of RED directive 2014/53/EU, EMC directive 2014/30/UE and Low Voltage Directive (LVD) 2014/35/UE

MINI
OMNIA

TECHNICAL SPECIFICATIONS

MODELS

0OMNIAMINIB	mini OMNIAlog
0OMNIAMINI3	mini OMNIAlog with 3G-Wi-Fi module

CPU AND MEMORY

Processor	ARM Cortex - M3 MCU with 1 MB Flash, 20 MHz CPU, ART Accelerator, Ethernet
RAM Memory	128 Kbyte internal RAM
Mass storage	SD CARD 2 GB for data (about 5 Mega data points) and WEB pages
Clock accuracy	High precision RTC (real time clock with battery back-up) self compensated in temperature (3ppm @ 25°C, 10ppm @ -30..70°C)
On-board sensors	Temperature measured on the electronic board (accuracy ±1%)

INPUT

Analog differential inputs	4 differentials channels, individually configured at factory. Each channel is able to acquire data from the following sensors: 4-20 mA current loop (2 wires) 4-20 mA (3-4 wires) Voltage (4 wires) Vibrating wire Thermistor Vibrating wire + Thermistor Wheatston bridge (6 wires, utilize 2 channels)
Digital input	max 64 Sisgeo digitized sensors (external power supply is requested)
Wiring	Removable connector with screw (wire range: 28-16 AWG 1.5 mm²)

INTERFACES

|	
Display & Keyboard	7 segment LED display and two selection keys for the minimal local management without PC: device status, data download and FW/web pages update by USB flash drive
Serial port	Only for 3G-Wi-Fi module connection
USB Host	USB 2.0 full speed (Type A connector) 5V, max 500 mA, flash drive only (FAT 32)
USB Device	USB 2.0 full speed (Mini B connector) 5V, max 500 mA, PC connection only
RS485	5 screw clamp: DCE port for max. 64 SISGEO digitized sensors. Communication interface: RS485 Communication protocol: MODBUS RTU (SISGEO Protocol) The voltage 'V OUT' is switched on and off from the software. V OUT is the unregulated power supply input 'V IN' (1 A) Power supply management (always on or energy safe)
3G-Wi-Fi module (Only with 0OMNIAMINI3)	2 bands GSM | GPRS EDGE 900/1800 MHz 2 bands UMTS | HSPA 900/2100 MHz Extended temperature range (-40° to 85°C). Stubby antenna with SMA connector Wi-Fi: 802.11b/g/n 16mbps
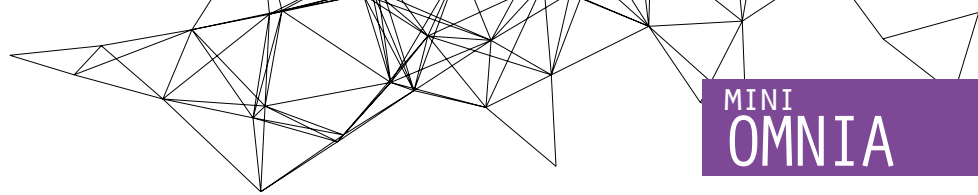
3G-Wi-Fi module
(Only with 0OMNIAMINI3)

Security:WPA/WPA2 PKS

Access Point mode only (no client Wi-Fi)

3G Standard module is not compatible with North America and Canada providers

ANALOG MEASUREMENTS

Measurement rate (MR)	**High precision measurement (low speed 5 SPS):** Init. analog (with auto-calibration): 15,5 sec Instrument warm-up: depending on sensor configuration Measurement: 3 sec **Standard measurement (20 SPS):** Init. analog (with auto-calibration): 3.4 sec Instrument warm-up: depending on sensor configuration Measurement: 0.9 sec **Fast measurement (high speed 40 SPS):** Init. analog (no auto-calibration): 1.1 sec Instrument warm-up: depending on sensor configuration Measurement: 0.5 sec Note 1: times indicated not valid for vibrating wire measures Note 2: init. analog phase is made only one time before the measurement cycle
ADC	24-bit (22 true bit) differential Analog-to-Digital Converters, 5SPS, 0-24 Average Function, auto-calibration and auto-range
Measure type and power supply (configured at factory)	**Current loop (2 wires):** range 0÷25 mA Power supply: 24V DC, 12V DC (up to 25 mA), external **Transmitter (3-4 wires):** range 0÷25mA Power supply: 24V DC, 12V DC (up to 50 mA), external **Voltage (4 wires):** range ±100mV, ±1V, ±10V Power supply: 24V DC, 12V DC, 5 V DC (up to 50 mA), external **Wheatstone bridge (6 wires, with sensing, 2 channels used):** range ±10mV/V Max bridge resistance: 10 kΩ, min. bridge resistance: 200 Ω Power supply: 5 V DC (up to 50 mA) **Thermistor (NTC 3KΩ):** range -50°C to +150°C Power supply: 0.05mA / 0.1mA **Vibrating Wire:** range 400 to 6000Hz Excitation sine wave signal (adaptive): ± 10V
Reading resolution	1 µA at FS 20 mA - 1 µV at FS ±10 mV - 10 µV at FS ±100 mV - 100 µV at FS ±1 V - 1 mV at FS ±10 V 0.1 °C for NTC - 0.1 Hz at FS 6000 Hz - 0.001 mV/V at FS ±10 mV/V
Measurement accuracy	< 0.05% FS (0.1% FS for NTC) - with Standard Measurement Calibration in Sisgeo laboratories recommended every 2 years
Temperature drift	< 10ppm/°C, range -30°C to +70°C
Input noise voltage	5,42 µVpp
Input limits	±12V
Sustained input voltage w/o damage	±50V DC max
DC common mode rejection	>105dB
Normal mode rejection	>90dB
Input impedance	20 MΩ typical

OUTPUT

Digital output	One relay output (for alarm, etc.): volt-free closure (low voltage 30V, 1A)

PROTECTIONS

Electro-mechanical relays for each measuring channel:
Electrical endurance: min. 2×10^5 operations,
Mechanical endurance: 10×10^8 operations.
Circuit protection: Gas Discharge Tubes (GDT):
DC Breakdown Voltage 75V (± 20%@100V/μs)
Impulse Breakdown Voltage 250V (@100V/μs) typical
Reverse polarity protection on power supply input.
Short circuit protection on every outputs of sensor power supply.

SYSTEM POWER REQUIREMENTS

Voltage	7.2 to 14 V DC (reverse polarity protected), max 12 W
External rechargeable battery (i.e. solar panel system)	12V DC nominal
Internal non-rechargeable batteries (no external power supply)	6 batteries size AA, chemistry Lithium/ Iron disulfide (Life s2), nominal voltage 1.5 V, min 2 A continous current discharge, min 2 A pulse capability, min 3 Ah capacity
Operating time with internal batteries	> 2 months with 1 acquisition every 1 hour with 4 instruments (24V DC @12 mA @25 °C, 5 sec warm up), data transmitted via FTP/email after every acquisition, datalogger configured in "Timed mode" > 6 months with 1 acquisition every 1 hour with 4 instruments (24V DC @12 mA @25 °C, 5 sec warm up), data transmitted via FTP/email once a day, datalogger configured in "Timed mode". > 7 months with 1 acquisition every 1 hour with 4 instruments (24V DC @12 mA @25 °C, 5 sec warm up), no data transmission, datalogger configured in "Timed mode".
Typical current drain (@9 V)	Sleep mode: 60μA On: 10 mA On with display on: 40 mA Analog initialisation: 27 mA Measurement: 70 mA (with 12 mA @ 24 V sensor consumption) On with 3G module: 130 mA (typically), 900 mA peak

ENVIROMENTAL CONDITIONS

Operating temperature	-30 to +70°C (batteries -20 to +60°C)
Storage temperature	-40 to +85°C (batteries 0 to +40°C)
Protection	IP67
Humidity	80%
Overvoltage category	II
Pollution degree	2
Sound levels	< 74dBA
Maximum height of use	3000m

SOFTWARE & FIRMWARE

Web server on board (independent OS platform)
"mini OMNIAlog communication tool" for the dial-up connection with USB cable
Live update notification (firmware and web pages)
FTP client to sent data/alarms on a FTP server (SFTP not supported)
MAIL to sent data/alarms to max 5 email address (SMTPS / SSL not supported)
SMS to sent alarms to max 5 telephone numbers
Data download (readings, logs) in .csv file (compatible with Microsoft Excel)
Virtual channels management (max 16 channels)
Languages: Italian, English and French

PHYSICAL FEATURES

	mini OMNIAlog	external battery box
Weight (internal batteries included)	780 grams	2000 grams
Dimensions (W x H x D)	125 x 151 x 90 mm	230 x 140 x 95 mm
Material	Polycarbonate	ABS

1	Antenna
2	External power supply
3	RS485 input
4	Analogue instruments
5	Digital output

MINI GT-401W-3G

125 mm

151 mm
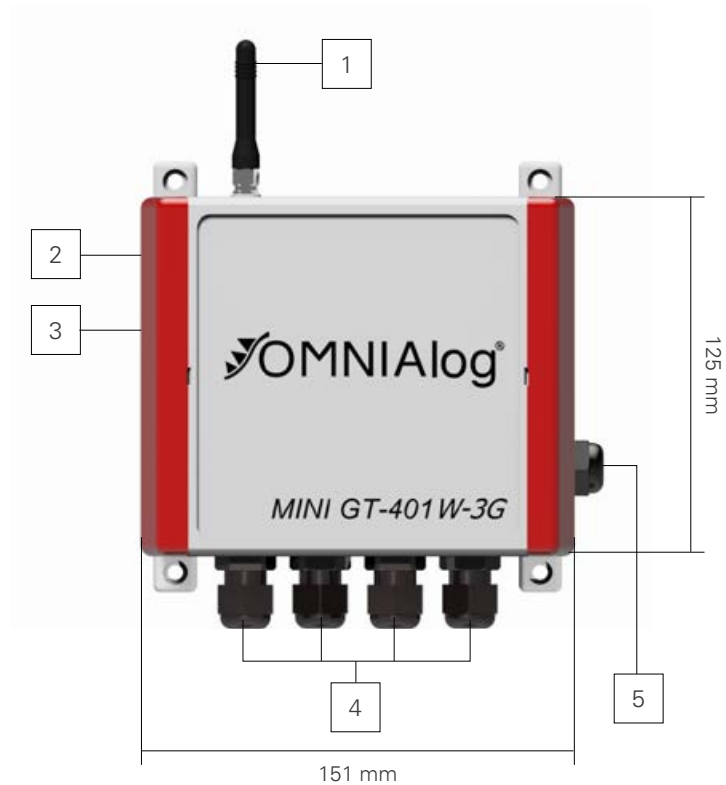
MINI OMNIALOG COMMUNICATION FEATURES

INTERFACE	LOCAL DATA DOWNLOAD	DATA PUSHING		ALARMS			REMOTE CONNECTION
		EMAIL	FTP	SMS	EMAIL	FTP	
MiniOMNIAlog without modem 0OMNIAMINIB	USB CABLE OR FLASHDRIVE	NO	NO	NO	NO	NO	NO
MiniOMNIAlog with 3G-Wi-Fi 0OMNIAMINI3	Wi-Fi, USB CABLE OR FLASHDRIVE	YES	YES	YES	YES	YES	NO

NOTE: all of these features may not work if the ISP selected by the user blocks these types of services.
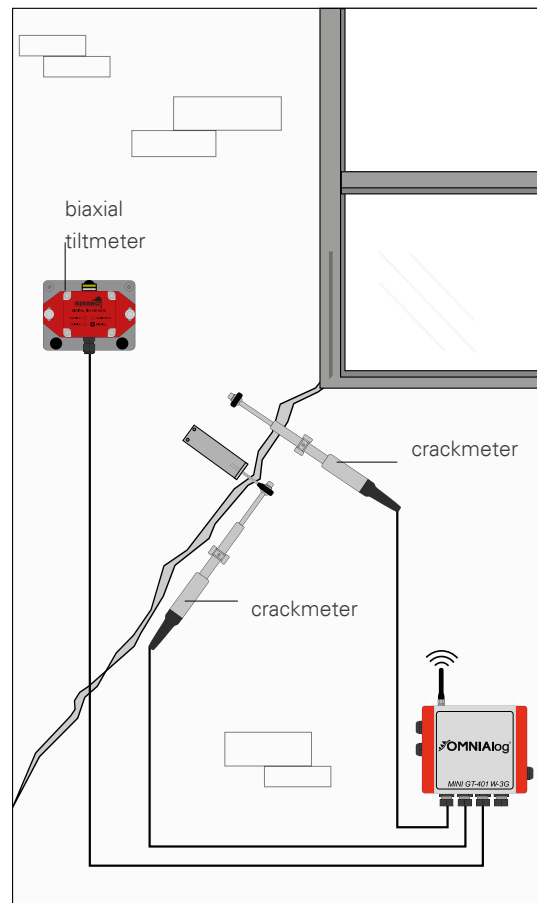It's always customer responsibility to make sure that the SIM you will use enables these services.
In order to preserve the batteries, Wi-Fi is always off. To connect your device through Wi-Fi module, it is needed to switch it on by opening the logger and selecting the right voice in the menu.

MINI OMNIA

DIGITAL BH PROFILE WIRELESS MONITORING

- solar panel
- supporting pole (not supplied)
- external battery box with charge controller and digital power supply
- BH profile digital chain
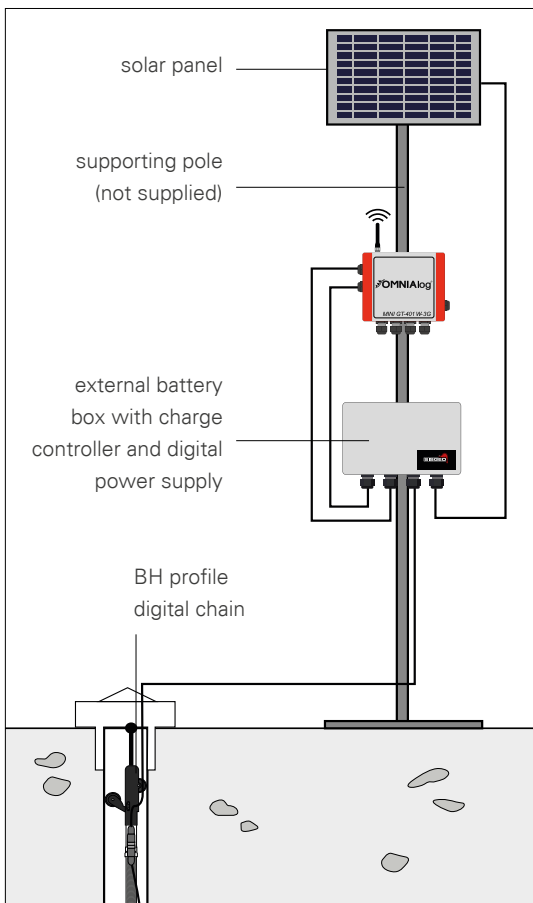
ANALOGUE WIRELESS STRUCTURAL MONITORING

- biaxial tiltmeter
- crackmeter
- crackmeter

ACCESSORIES AND SPARE PARTS

DIGITAL SENSOR KIT 0OMX24V030W

Electronic boards for powering and wire up to 4 digital instrument chains. This kit allow miniOMNIAlog to manage maximum 64 digital instruments.

MAINS POWER SUPPLY 0AXBC022010

AC/DC charger housed in a plastic box with a 2.3 Ah battery. Vin 85-265 Vac, 50-60 Hz, Vout 13.4 Vdc/0.9 A. The box, IP67, is ready for digital sensor kit.

SOLAR POWER KIT 0AX10W003AH

It is composed by a 10W solar panel with 10m cable and a plastic box housing the 2.3 Ah battery and charge controller. The box, IP67, is ready for digital sensor kit.

SISGEO S.R.L.
Via F. Serpero 4/F1
20060 Masate (MI) Italy
Phone +39 02 95764130
Fax +39 02 95762011
info@sisgeo.com

TECHNICAL ASSISTANCE
SISGEO offers customers e-mail and phone assistance to ensure proper use of instruments and readout and to maximize performance of the system.

For more information, email us: *assistance@sisgeo.com*