MINI
OMNIA

MINI
OMNIALOG

READOUT UNITS
AND DATALOGGERS

SISGEO®

MINI OMNIA_EN_08_01/2022

MINIOMNIALOG

MiniOMNIAlog 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.

MiniOMNIAlog 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 MiniOMNIAlog is powered by the USB cable.

The miniOMNIAlog 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.

CE *Meet the essential requirements of EMC directive 2014/30/UE and Low Voltage Directive (LVD) 2014/35/UE*

TECHNICAL SPECIFICATIONS

MODELS	
0OMNIAMINIB	miniOMNIAlog

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 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
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)

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. $2x10^5$ operations, Mechanical endurance: $10x10^8$ 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	> 7 months with 1 acquisition every 1 hour with 4 instruments (24V DC @12 mA @25 °C, 5 sec warm up), 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)

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 (miniOMNIA only)	5000m (Safety test EN 61010-1)

SOFTWARE & FIRMWARE	
	Web server on board (independent OS platform) "miniOMNIAlog communication tool" for the dial-up connection with USB cable Live update notification (firmware and web pages) Data download (readings, logs) in .csv file (compatible with Microsoft Excel) Virtual channels management (max 16 channels) Languages: Italian, English and French

PHYSICAL FEATURES

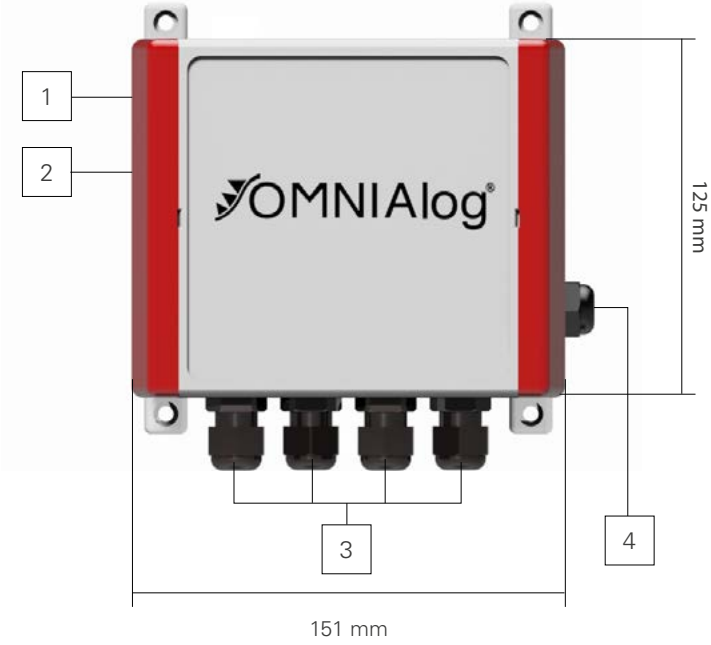
	miniOMNIAlog	external battery box
Weight (internal batteries included)	780 grams	2000 grams
Dimensions (W x H x D)	125 x 151 x 90 mm	230 x 140 x 95 mm
Material	Polycarbonate	ABS

1 External power supply

2 RS485 input

3 Analogue instruments

4 Digital output



ACCESSORIES AND SPARE PARTS

DIGITAL SENSOR KIT 00MX24V030W

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

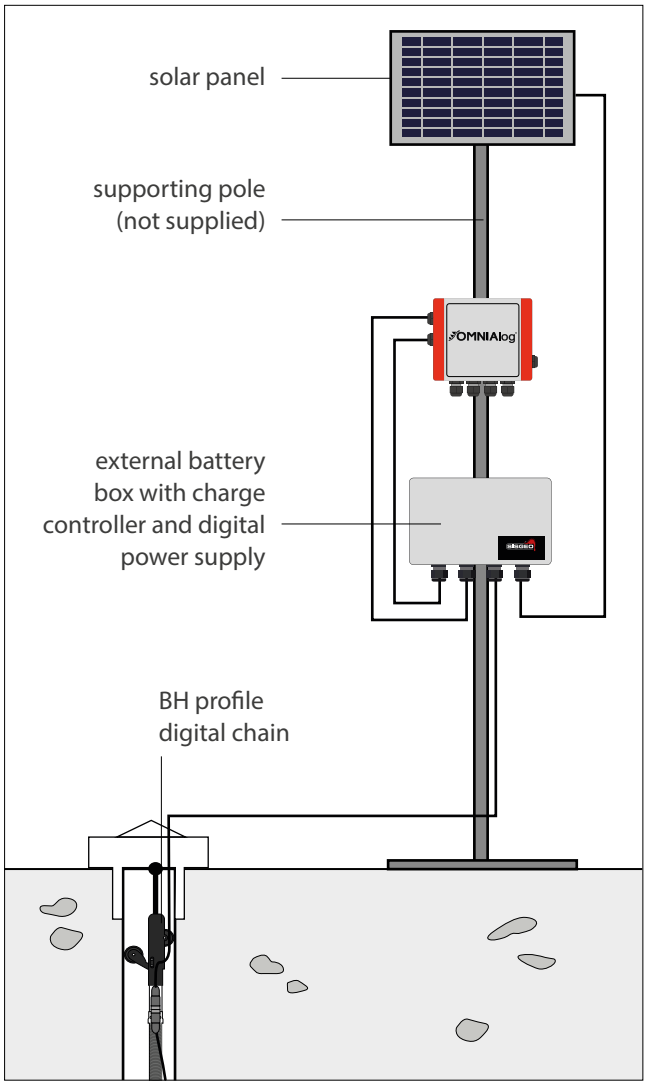
MAINS POWER SUPPLY 0AXBC022010

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.

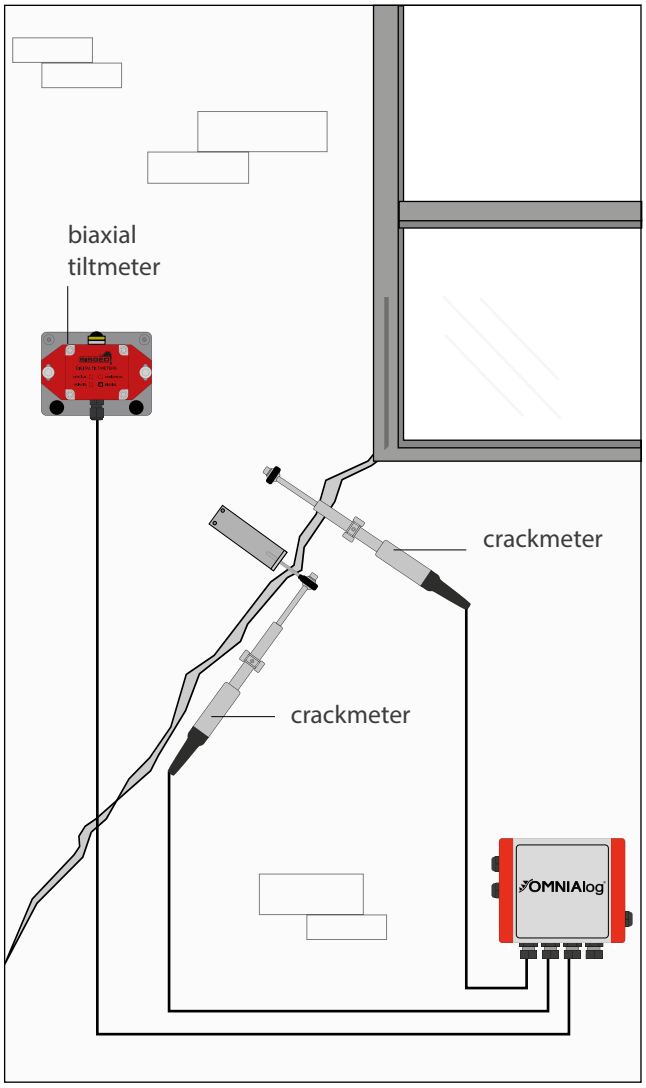
SOLAR POWER KIT 0AX10W003AH

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.

DIGITAL BH PROFILE WIRELESS MONITORING



ANALOGUE WIRELESS STRUCTURAL MONITORING



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*