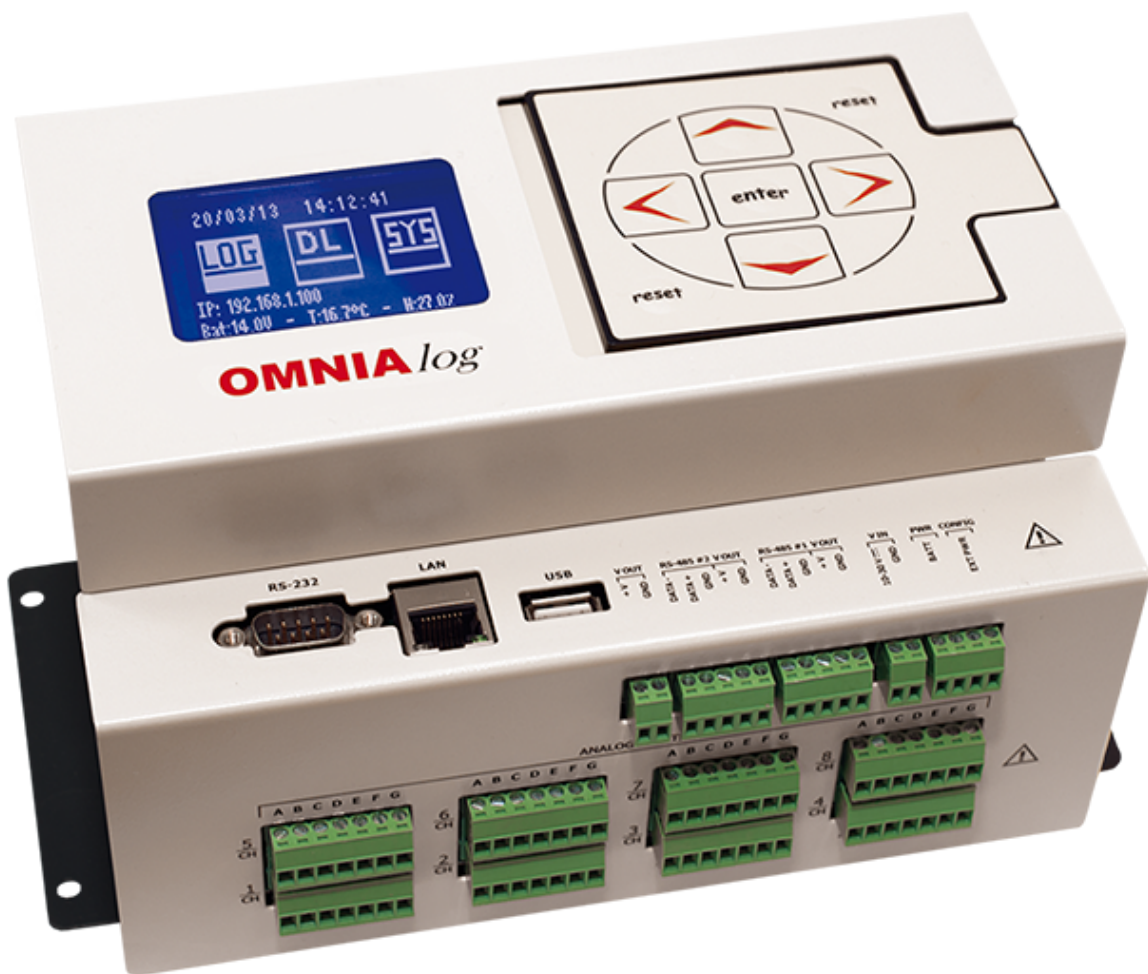


# OMNIALOG datalogger

NI-2400



# OMNIALOG datalogger

## Applications



INDUSTRY MONITORING



HVAC MONITORING



LOGISTIC MONITORING



OIL & GAS MONITORING



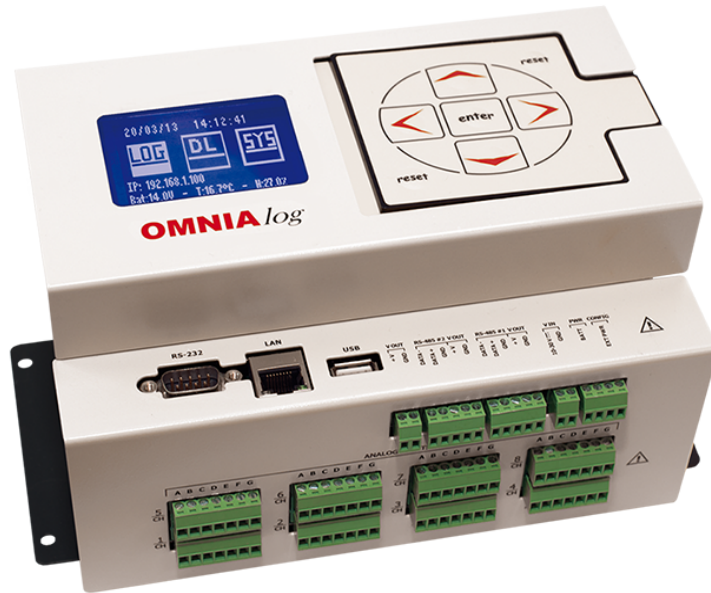
WATER QUALITY MONITORING



ENERGY MONITORING



BUILDING MONITORING



## OMNIALog

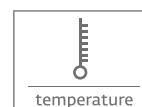
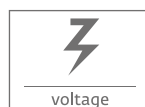
Technology skills of Next Industries plus 25 years of expertise in geotechnical instruments of Siggeo srl have produced OMNIALog – a versatile, high accurate “smart” data acquisition system - with 24 analog inputs.

With OMNIALog no other configuration/analysis software package is needed as it is provided with web server on board; just a browser and it is ready to use. Logged data is ready to be showed in graphic “real time” mode or exported in CSV file.

### Features

- 2 GB internal memory and real time data
- Available GPRS version
- 0,01% F.S. Accuracy
- 24 differential analog channels
- Expandable up to 384 channels
- Ethernet, RS485, RS232 and USB connections
- Available Measures: mV, mA, mV/V, PT100, NTC
- Thermocouple

### Available Measure



## Specifications

### CPU AND MEMORY

Processor	ARM Cortex-M3 MCU with 1 MB Flash, 120 MHz CPU, ART Accelerator, Ethernet
RAM Memory	1 Mbyte RAM with backup
Mass storage	SD CARD 2 GB for data (about 5Mega 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 and humidity (accuracy $\pm 1\%$ ), measured inside the datalogger

### INPUT

Analog differential inputs	24 differential, individually configured. Channel expansion provided <b>multiplexers</b> .
Digital inputs	Two opto-isolated digital inputs individually selectable for switch closure. Max Input Voltage: 24V (Max Current: 10mA) Min Input Voltage: 5V (Max Current: 2mA)

### INTERFACES

Display & Keyboard	Small backlight graphic LCD 128x64 dpi with membrane keyboard for the minimal local management without the PC. Keyboard for start a uniscan, sequential display of the last memorized readings for each channel (sensor ID, converted unit reading, UM), device status, data download and FW/web pages update by USB pen drive, safe mode (back-up/format/restore internal SD card)
LAN ethernet isolated	10/100 Mbps, RJ45
RS232	9-pin, DE9: DCE port for GSM/GPRS modem connection Baud Rates: selectable from 9600 bps to 115.2 kbps Default Format: 8 data bits; 1 stop bits; no parity
USB	USB 2.0 pen drive only (FAT 32), 5 V 200 mA
RS485#1 opto-isolated	5 screw clamp: DCE port for max. No.253 SISGEO digital bus sensors Communication interface: RS485 Communication protocol: MODBUS RTU The voltage 'V OUT' is switched on and off under program control. V OUT is the unregulated input power supply 'V IN' (1 A) Power supply management (always on or energy safe)
RS485#2 opto-isolated	5 screw clamp: DCE port for max. 16 SISGEO multiplexer boards connection. Communication interface: RS485 Communication protocol: MODBUS RTU The voltage 'V OUT' is switched on and off under program control. V OUT is the unregulated input power supply 'V IN' (1 A) Every channel of each multiplexer board is completely independent.

## ANALOG MEASUREMENTS

Measurement rate (MR)	<b>MAXIMUM SPEED</b> Init. analog: 1.70 sec* Instrument warm-up: depending on sensor configuration Measurement: 80mS* Accuracy: 0.13% FS	<b>STANDARD SPEED</b> Init. analog: 7.10 sec Instrument warm-up: depending on sensor configuration Measurement: 1.57 sec Accuracy : 0.01% FS
	*Note: Times referred to measures with scale $\pm 10V$	
Type of measurements	mA, mV, V, mV/V, $^{\circ}C$	
ADC	24-bit (22 true bit) differential Analog-to-Digital Converters, 5SPS, 0-24 Average Function, auto-calibration and auto-range	
Range and power supply	Current loop (2 wires): range 0÷25 mA Transmitter (3-4 wires): range 0÷25mA Voltage (4 wires): range $\pm 10mV, \pm 100mV, \pm 1V, \pm 10V$ Servo inclinometer: range $\pm 5V$ Wheatstone bridge (6 wires, with sensing): range $\pm 10mV/V$ Maximum bridge resistance: 10 k $\Omega$ , minimum bridge resistance: 200 $\Omega$ Platinum RTD (Pt100): range $-50^{\circ}C$ to $+150^{\circ}C$ Potentiometer: range $\pm 2.5V$ Thermistor (NTC): range $-50^{\circ}C$ to $+150^{\circ}C$ Termocouple R: range $-50^{\circ}C$ to $1768^{\circ}C$ Termocouple T: range $-200^{\circ}C$ to $400^{\circ}C$ Termocouple J: range $-200^{\circ}C$ to $1200^{\circ}C$ Termocouple B: range $250^{\circ}C$ to $1820^{\circ}C$ Termocouple E: range $-200^{\circ}C$ to $1000^{\circ}C$ Termocouple K: range $-200^{\circ}C$ to $1372^{\circ}C$ Termocouple N: range $-200^{\circ}C$ to $1300^{\circ}C$ Termocouple S: range $-50^{\circ}C$ to $1768^{\circ}C$	Power supply:24/10VDC,external Power supply:24/10VDC,external Power supply:24/20/10/5VDC,external Power supply: $\pm 12VDC$ (dual),external Power supply:10/5VDC,external(max 10VDC) Power supply:10/5VDC,external(max 10VDC) Power supply:1.2mA Power supply:10/5VDC Power supply:0.05mA / 0.1mA / 1.2mA Accuracy: $\pm 2.10^{\circ}C$ Accuracy: $\pm 0.42^{\circ}C$ Accuracy: $\pm 0.62^{\circ}C$ Accuracy: $\pm 2.44^{\circ}C$ Accuracy: $\pm 0.78^{\circ}C$ Accuracy: $\pm 0.87^{\circ}C$ Accuracy: $\pm 0.87^{\circ}C$ Accuracy: $\pm 2.81^{\circ}C$
Cold junction Compensation Accuracy	$\pm 0.25^{\circ}C$	
Reading resolution	1 $\mu A$ at FS 20 mA - 1 $\mu V$ at FS $\pm 10$ mV - 10 $\mu V$ at FS $\pm 100$ mV - 100 $\mu V$ at FS $\pm 1$ V - 1 mV at FS $\pm 10$ V 0.1 $^{\circ}C$ for Pt100 - 0.1 $^{\circ}C$ for NTC - 0.1 Hz at FS 6000 Hz - 0.001 mV/V at FS $\pm 10$ mV/V	
Measurement accuracy	0.01% mV/mA FS (0.1% FS for Pt100 and NTC) - with Standard Measurement 0.1% mV/mA FS (0.1% FS for Pt100 and NTC) - with Standard Measurement	
Temperature drift	< 10 ppm / $^{\circ}C$ , range $-30^{\circ}C$ to $+70^{\circ}C$	
Input noise voltage	5,42 $\mu Vpp$	
Input limits	$\pm 12V$	
Sustained input voltage w/o damage	$\pm 50V$ DC max	
DC common mode rejection	>105dB	
Normal mode rejection	>90dB	
Input impedance	20 G $\Omega$ typical	

SWITCHED OUTPUT POWER SUPPLY	The voltage 'V OUT' is switched on and off under program control. V OUT is the unregulated input power supply 'V IN' (2 A)
OUTPUT	
Digital output	One relay output (for alarm, etc.): volt-free closure (low voltage 30V, 2A)
DIGITAL INPUTS	
Measurement rate (MR)	Max frequency 1kHz
Accuracy	0.1 Hz
PROTECTIONS	<p>Electro-mechanical relays for each measuring channel: Electrical endurance: min. 2.5x10<sup>6</sup> operations, Mechanical endurance: 100x10<sup>6</sup> operations.</p> <p>Circuit protection: Gas Discharge Tubes: DC Breakdown Voltage ( @100v/s ) 90; tolerance of DCBV ± 20%; impulse Breakdown Voltage ( @100v/μs ) 250. impulse Breakdown Voltage ( @1kv/μs ) 500.</p> <p>Overvoltage and reverse polarity protection.</p> <p>Short circuit protection on every outputs.</p>
SYSTEM POWER REQUIREMENTS	
Voltage (external power supply)	10 to 30 V DC (reverse polarity protected), max 5 A
External rechargeable batteries	12V DC nominal
Internal non-rechargeable batteries (no external power supply)	2 batteries size D, chemistry Lithium Thionyl Chloride spiral (Li/SOCl <sub>2</sub> ), nominal voltage 3.6 V, min 2 A continuous current, min 4 A pulse capability, low self discharge (<1% per year)
Autonomy with internal batteries	1 year with 1 acquisition every 3 hours with No.8 4-20 mA (current loop) instruments @ 25 °C, datalogger in "timed mode"(display off, ethernet off, no remote communication device)
Typical current drain (@12Vdc, external power supply)	<p>Sleep mode: 100 μA</p> <p>ON: 62 mA - ON with ethernet connected: 87 mA - ON with display ON: 115 mA</p> <p>ON with display ON and ethernet connected: 142 mA</p> <p>Analog initialisation: 115 mA</p> <p>Measurement: 123 mA (with 12 mA @ 24 V sensor consumption)</p>
Typical current drain (@7.2 V, internal batteries)	<p>Sleep mode: 100μA</p> <p>On (with ethernet disabled and display off): 15 mA</p> <p>Analog initialisation: 105 mA</p> <p>Measurement: 110 mA (with 12 mA @ 24 V sensor consumption)</p>

ENVIROMENTAL CONDITIONS

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

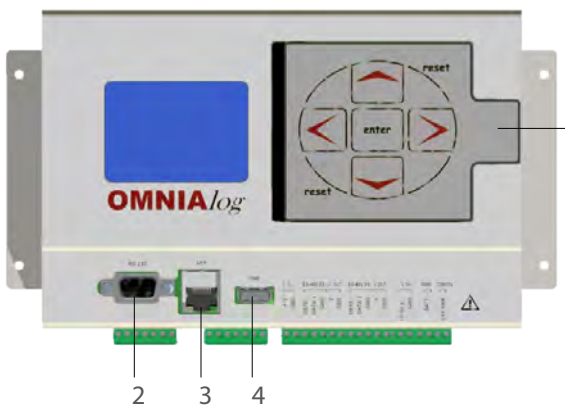
SOFTWARE & FIRMWARE

Web server on board (independent OS platform).  
 Live update (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  
 Languages: Italian, English and French

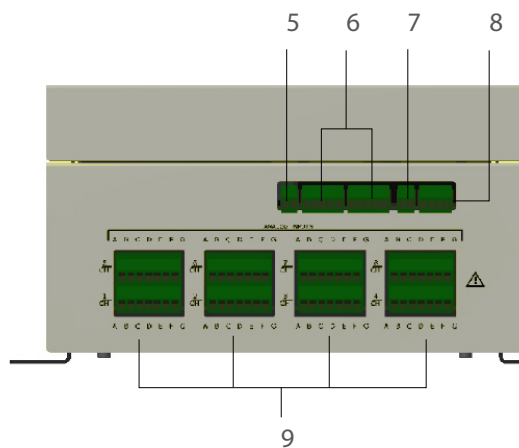
PHYSICAL CHARACTERISTICS

Weight	980 grams
Dimensions (L x W x H)	231 x 138 x 117 mm
Material	Plastic and metal
Wiring	Removable connector

TOP VIEW



FRONT VIEW



- |                 |           |                     |
|-----------------|-----------|---------------------|
| 1 Batteries box | 4 USB     | 7 "V" IN            |
| 2 RS-232        | 5 "V" OUT | 8 PWR input         |
| 3 LAN           | 6 RS-485  | 9 Analogical inputs |