OMNIALOG datalogger

NI-816

NEXT industries
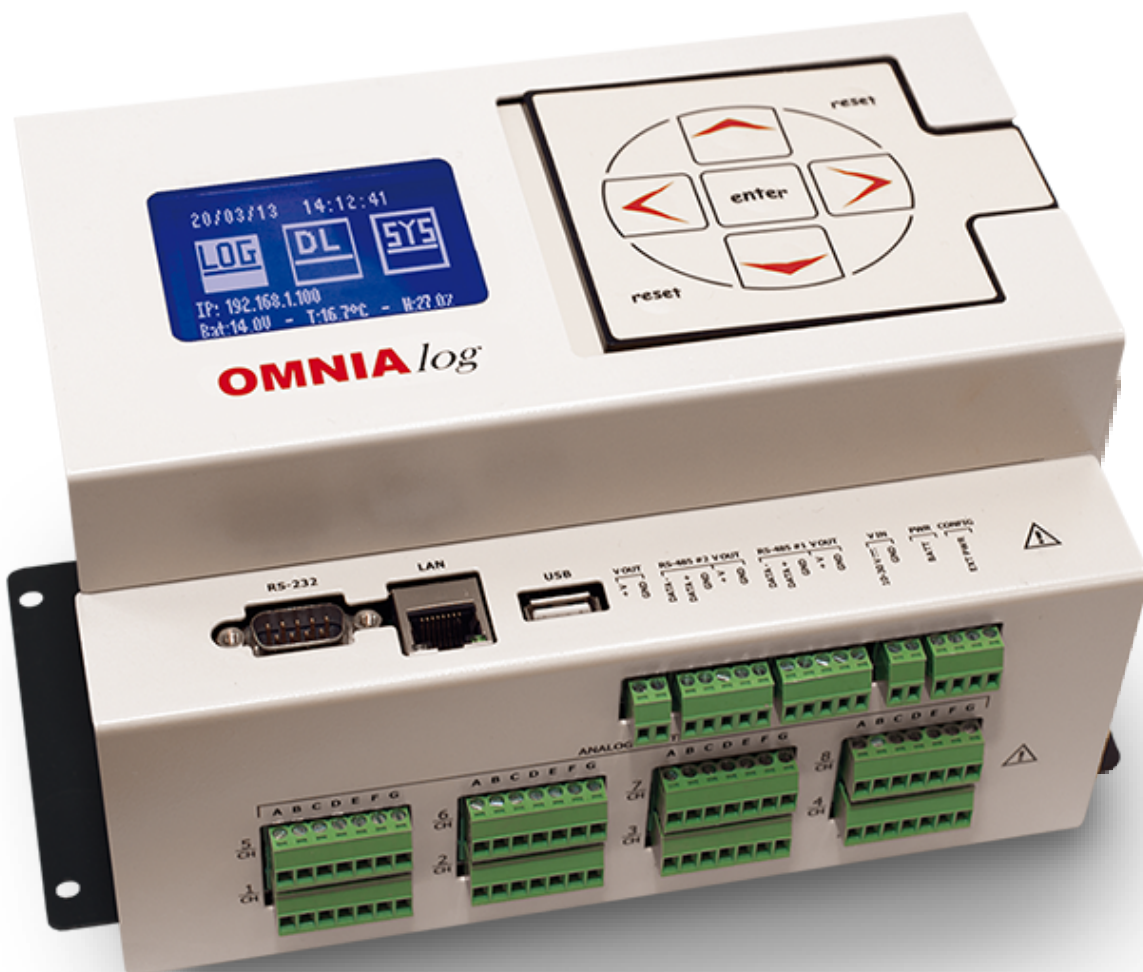
OMNIALOG datalogger

Applications

INDUSTRY MONITORING

HVAC MONITORING
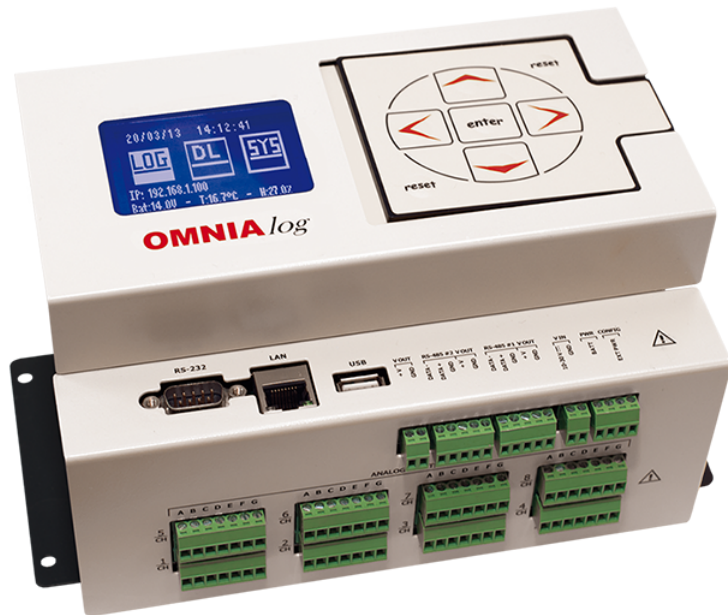
LOGISTIC MONITORING

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 Sisgeo srl have produced OMNIALog – a versatile, high accurate "smart" data acquisition system - with 8/16 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
• 8/16 differential analog channels
• Expandable up to 384 channels
• Ethernet, RS485, RS232 and USB connections
• Available Measures: mV, mA, mV/V, PT100, NTC
• Thermocouples

Available Measures

voltage   current   temperature

DATALOGGER
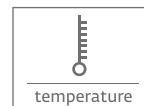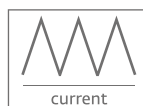
Specifications

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 ±1%), measured inside the datalogger

INPUT

Analog differential inputs	**Cod. NI816MAVT** 8/16 differential, individually configured. Channel expansion provided by multiplexers.
Digital inputs	Two opto-isolated digital inputs individually selectable for switch closure, high frequency pulse and trigger. Independent 32-bit counters for each input. 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 16 or FAT 32), 5 V 200 mA
RS485#1 opto-isolated	5 screw clamp: DCE port for max. No. 253 digital Modbus 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 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.

DATALOGGER

ANALOG MEASUREMENTS

Measurement rate (MR)	MAXIMUMUM SPEED	STANDARD SPEED
	Init. analog: 1.70 sec*	Init. analog: 7.10 sec
	Instrument warm-up: depending on sensor configuration	Instrument warm-up: depending on sensor configuration
	Measurement: 80mS* Accuracy: 0.13% FS	Measurement: 1.57 sec Accuracy : 0.01% FS
	*Note: Times referred to measures with scale ± 10V	
Type of measurements	mA, mV, V, mV/V, °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	
	Power supply (selectable by the software, up to 100 mA): 24V DC, 10V DC, external	
	Transmitter (3-4 wires): range 0÷25mA	
	Power supply (selectable by the software, up to 100 mA): 24V DC, 10V DC, external	
	Voltage (4 wires): range ±10mV, ±100mV, ±1V, ±10V	
	Power supply (selectable by the software, up to 100 mA): 24V DC, 20V DC, 10V DC, 5 V DC ,external	
	Servo inclinometer: range ±5V	
	Power supply (selectable by the software): ±12V DC (dual), external	
	Wheatstone bridge (6 wires, with sensing): range ±10mV/V	
	Power supply (selectable by the software, up to 80 mA): 10 V DC , 5 V DC, external	
	Maximum bridge resistance: 10 kΩ, minimum bridge resistance: 200 Ω	
	Platinum RTD (Pt100): range -50°C to +150°C	
	Power supply: 1.2 mA	
	Potentiometer: range ±2.5V	
	Power supply (selectable by the software): 10V DC , 5V DC	
	Thermistor (NTC): range -50°C to +150°C	
	Power supply: 0.05mA / 0.1mA / 1.2mA	
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 Pt100 - 0.1 °C for NTC - 0.1 Hz at FS 6000 Hz - 0.001 mV/V at FS ±10 mV/V	
Measurement accuracy	0.01% FS (0.1% FS for Pt100 and NTC) - with Standard Measurement 0.1% FS (0.1% FS for Pt100 and NTC) - with Standard Measurement	
Temperature drift	< 10 ppm / °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 GΩ typical	

NEXT industries

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	Electro-mechanical relays for each measuring channel: Electrical endurance: min. 2.5x106 operations, Mechanical endurance: 100x106 operations.
	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.
	Overvoltage and reverse polarity protection.
	Short circuit protection on every outputs.
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/SOCl2), nominal voltage 3.6 V, min 2 A continous current, min 4 A pulse capability, low self discarge (<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)	Sleep mode: 100 µA ON: 62 mA - ON with ethernet connected: 87 mA - ON with display ON: 115 mA ON with display ON and ethernet connected: 142 mA Analog initialisation: 115 mA Measurement: 123 mA (with 12 mA @ 24 V sensor consumption)
Typical current drain (@7.2 V, internal batteries)	Sleep mode: 100µA On (with ethernet disabled and display off): 15 mA Analog initialisation: 105 mA Measurement: 110 mA (with 12 mA @ 24 V sensor consumption)

ENVIROMENTAL CONDITIONS

|	
Operating temperature	-30 to +70℃ (display -20 to +70℃)
Storage temperature	-40 to +85℃ (display -30 to +80℃)
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
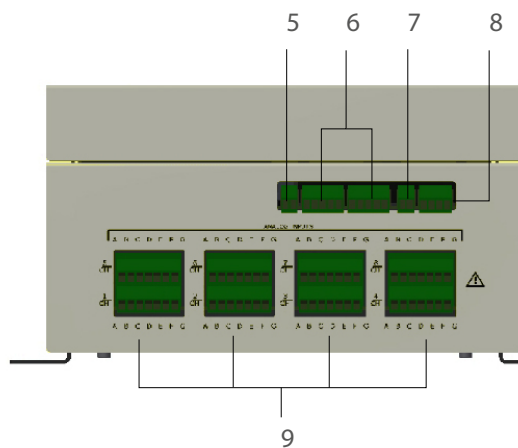Languages: Italian, English and French

PHYSICALCHARACTERISTICS

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

TOP VIEW
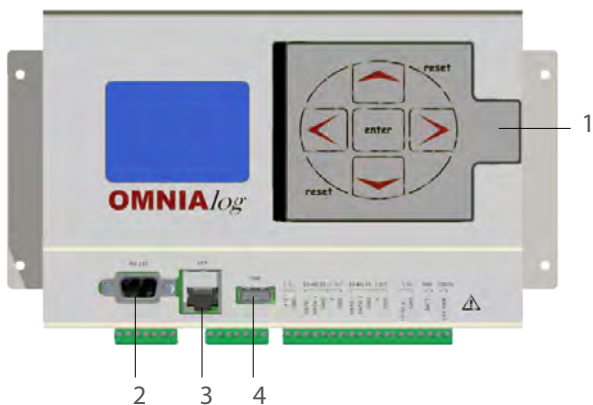
FRONT VIEW

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