OMNIALOG datalogger

NI-48XX

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 4/8 analog inputs and expandable up to 384 analog channels.

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
- 4/8 differential analog channels
- Expandable up to 384 channels
- Ethernet, RS485, RS232 and USB connections
- Available Measures: mV, mA, mV/V, PT100, NTC
- Thermocouples

Available Measure

voltage	current	temperature

DATALOGGER
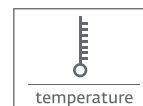
Specifications

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. NI480 MAV:** 4/8 differential, individually configured. Channel expansion provided by multiplexers. **Cod. NI4866 MAVT:** 4/8 differential, individually configured. 6 Digital input 6 digital output. Thermocouple reading. Channel expansion provided by multiplexers.
Digital inputs	**Cod. NI480 MAV:** Two opto-isolated digital inputs (BACK PANEL) Max Input Voltage: 24V (Max Current: 10mA) Min Input Voltage: 5V (Max Current: 2mA) **Cod. NI4866 MAVT:** Two opto-isolated digital inputs (BACK PANEL) Six opto-isolated digital inputs (FRONT PANEL) Max Input Voltage: 24V (Max Current: 10mA) Min Input Voltage: 5V (Max Current: 2mA)

INTERFACES

Display & Keyboard	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 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.

ANALOG MEASUREMENTS

Measurement rate (MR)	MAXIMUM SPEED Init. analog: 1.70 sec* Instrument warm-up: depending on sensor configuration Measurement: 80mS* Accuracy: 0.13% FS *Note: Times referred to measures with scale ± 10V	STANDARD SPEED Init. analog: 7.10 sec Instrument warm-up: depending on sensor configuration Measurement: 1.57 sec Accuracy : 0.01% FS
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	**Cod. NI480 MAV** Current loop (2 wires): range 0÷25 mA Transmitter (3-4 wires): range 0÷25mA Voltage (4 wires): range ±10mV, ±100mV, ±1V, ±10V Servo inclinometer: range ±5V Wheatstone bridge (6 wires, with sensing): range ±10mV/V Maximum bridge resistance: 10 kΩ, minimum bridge resistance: 200 Ω **Cod. NI4866 MAVT:** Current loop (2 wires): range 0÷25 mA Transmitter (3-4 wires): range 0÷25mA Voltage (4 wires): range ±10mV, ±100mV, ±1V, ±10V Servo inclinometer: range ±5V Wheatstone bridge (6 wires, with sensing): range ±10mV/V Maximum bridge resistance: 10 kΩ, minimum bridge resistance: 200 Ω Platinum RTD (Pt100): range -50°C to +150°C **Thermocouple (NI-4866):** Termocouple R: range -50°C to 1768°C Termocouple T: range -200°C to 400°C Termocouple J: range -200°C to 1200°C Termocouple B: range 250°C to 1820°C Termocouple E: range -200°C to 1000°C Termocouple K: range -200°C to 1372°C Termocouple N: range -200°C to 1300°C Termocouple S: range -50°C to 1768°C	Power supply:external Power supply:external Power supply:external Power supply:external Power supply:external Power supply:external Power supply:24/10VDC,external Power supply:24/10VDC,external Power supply:24/20/10/5VDC,external Power supply: ± 12VDC(dual),external Power supply:10/5VDC,external(max 10VDC) Power supply:10/5VDC,external(max 10VDC) Power supply:1.2mA Accuracy: ± 2.10°C Accuracy: ± 0.42°C Accuracy: ± 0.62°C Accuracy: ± 2.44°C Accuracy: ± 0.78°C Accuracy: ± 0.87°C Accuracy: ± 0.87°C Accuracy: ± 2.81°C
Cold juntion Compensation Accuracy	± 0.25°C * With stable temperature conditions. Tested in climatic chamber. Model NI4866	
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% 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 / °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
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	**Cod. NI480 MAV:** One relay output (for alarm, etc.): volt-free closure (low voltage 30V, 2A) **Cod. NI4866 MAVT:** Back panel: One relay output (for alarm, etc.): volt-free closure (low voltage 30V, 2A) Front panel: Six relay outputs (general purpose):volt-free closure (low voltage 30V,2A)
DIGITAL INPUTS	
Measurement rate (MR)	Max frequency 1kHz (NI-480 model)
Accuracy	0.1 Hz
PROTECTIONS	Electro-mechanical relays for each measuring channel: Electrical endurance: min. $2x10^5$ operations (1A 30V DC resistive) Mechanical endurance: $100x10^5$ 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)	* from September 2015, OMNIAlog has no more batteries
Autonomy with internal batteries	* from September 2015, OMNIAlog has no more batteries
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	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

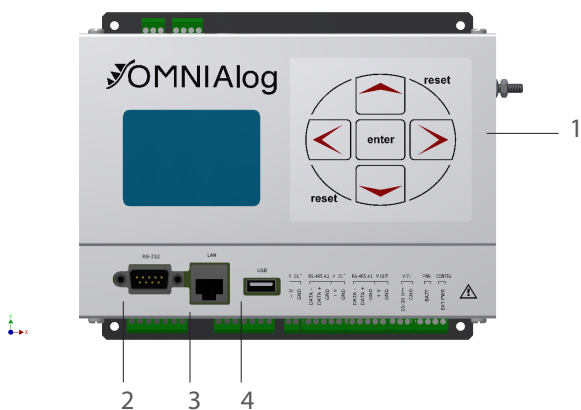| Operating temperature	-30 to +70℃ (display -20 to +70℃)
Storage temperature	-40 to +85℃ (display -30 to +80℃)
Humidity	80%
Overvoltage category	II
Pollution degree	2
Sound levels	< 74dBA
Maximum height of use	3000m

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)
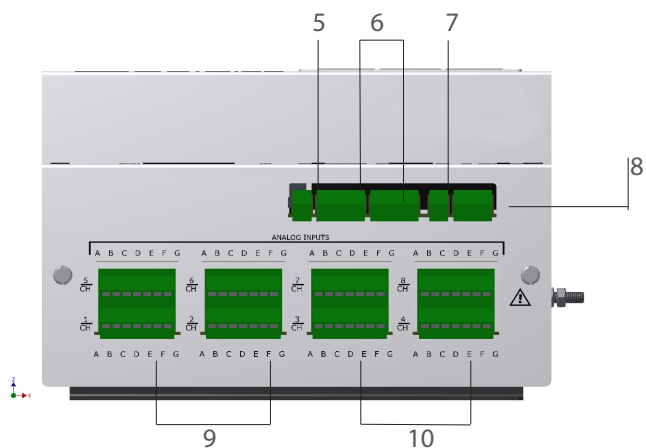Virtual channels management
Languages: Italian, English and French

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	Keyboard	4	USB	7	"V" IN	10	Digital Input/Output *
2	RS-232	5	"V" OUT	8	PWR input		
3	LAN	6	RS-485	9	Analogical inputs		

There are no digital channels in NI-480 model

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