

WE CONNECT
TO THE
REAL WORLD



DATALOGGERS



**INTERNET OF THINGS
SENSORS**



WEB SOFTWARE



“We connect to the real world” through Internet in **ecologic** and **sustainable** way.

We image technology with **fresh design** and valuable things.

INTRODUCTION

NI-100-SMG is a compact and low-cost solution for environment, construction and process applications, with **9 inputs**.



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monitoring



HVAC
monitoring



Building
monitoring



Water quality
monitoring



Oil gas
monitoring



Energy
monitoring

NI-100-SMG FEATURES



- ✓ **N.9** Built in Inputs
- ✓ **N.1** **Vibrating Wire Input** expandable from 24 up to 3072
- ✓ **3G**, WiFi, Ethernet available
- ✓ **Web** Server on board
- ✓ **Internet** Of Things Technology
- ✓ **Cloud** Base Dashbord Management



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NI-100-SMG BENEFITS



- ✓ **One NI-100-SMG** to control all measure points
- ✓ **Easy** configuration
- ✓ **N. 4 0-30 V** Input
- ✓ **N. 2 Thermocouple** Input
- ✓ **N. 2 Digital** Input
- ✓ **N. 1 Vibrating Wire**
- ✓ **Expandable** up to **3072** Vibrating Wire inputs with Smart Mux
- ✓ **Heavy Duty** RS485 communication between Gateway and Smart Mux
- ✓ **Ethernet Onboard** and Web Server for fast setup



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NI-100SMG - Smart Mux Overview



Each node is equipped with a Smart Mux, allowing 24 vibrating wire sensors or 12 vibrating wire sensors with NTC each. RS485 dorsal link nodes in a daisy chain.



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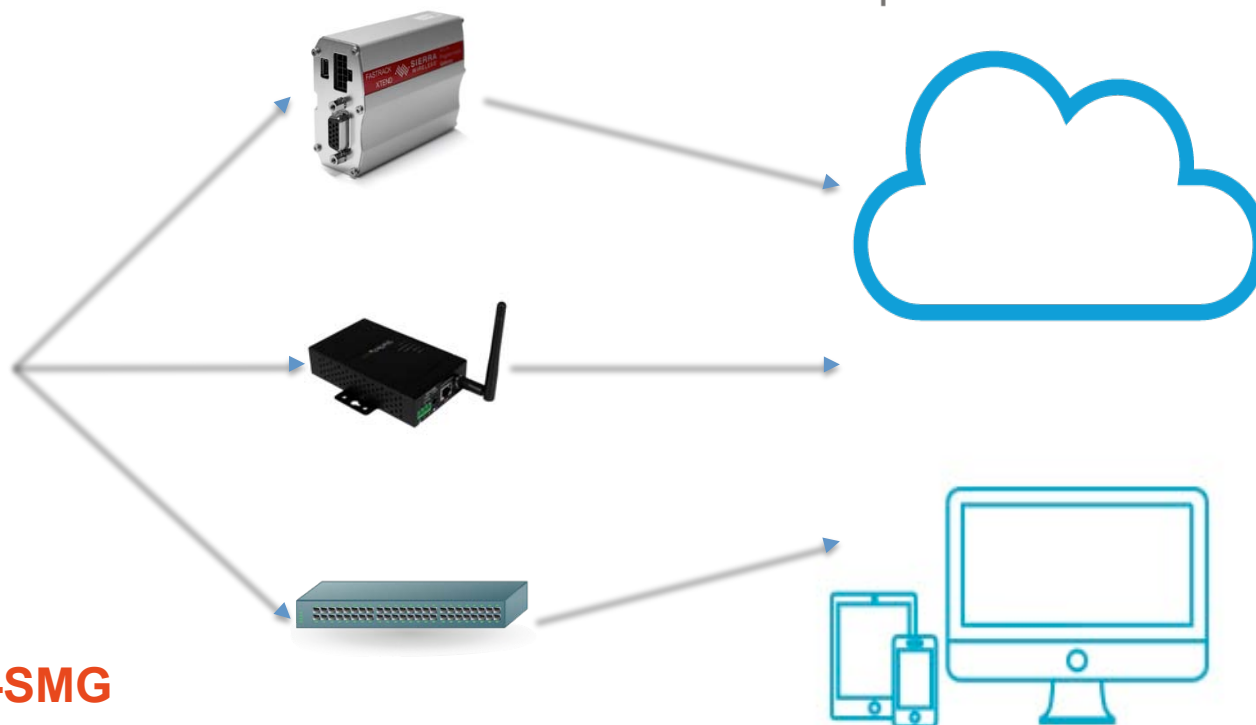


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NI-100-SMG – Internet Communication



Transmission between **NI-100-SMG** and cloud/pc is performed via Wifi/ Ethernet or 3G Modem.



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WEB SERVER SOFTWARE



With **NI-100-SMG** integrated web server it is possible to **configure** sampling rate, transmission parameters, **start** and **stop acquisitions**, download measures, event log and **alarm** log. It offers a deep **modbus sensors** configuration tool to make it compliant with virtually every device.

Datalogger

miniOMNIAlog

Alarm

FW 6.41.74

Ext.Pwr Supply 4.8 V

25/11/16 15:12

Logout Reboot

Menu

- Status
- Configuration
- Channels Configuration
 - **Local**
 - Digitals
 - Virtuals
 - Pepperl+Fuchs
- Data Monitor
- Advanced

Local Channels Enabling

This page allows to enable OMNIAlog local analog channels and to display its wiring scheme.

Copy Paste

☒ Enable	Edit	Channel	Acquisition	Identification	Description	Measure Type	Wiring scheme	Selection
☒	Edit	1	DEFAULT	AN_1		4-20mA Current Loop (2 wires)	Wiring scheme	
☒	Edit	2	DEFAULT	AN_2		4-20mA Current Loop (2 wires)	Wiring scheme	
☒	Edit	3	DEFAULT	AN_3		4-20mA Current Loop (2 wires)	Wiring scheme	
☒	Edit	4	DEFAULT	AN_4		4-20mA Current Loop (2 wires)	Wiring scheme	

Save Cancel

ALARMS

Our data loggers provide an awesome configurable tool for **alarm management**.

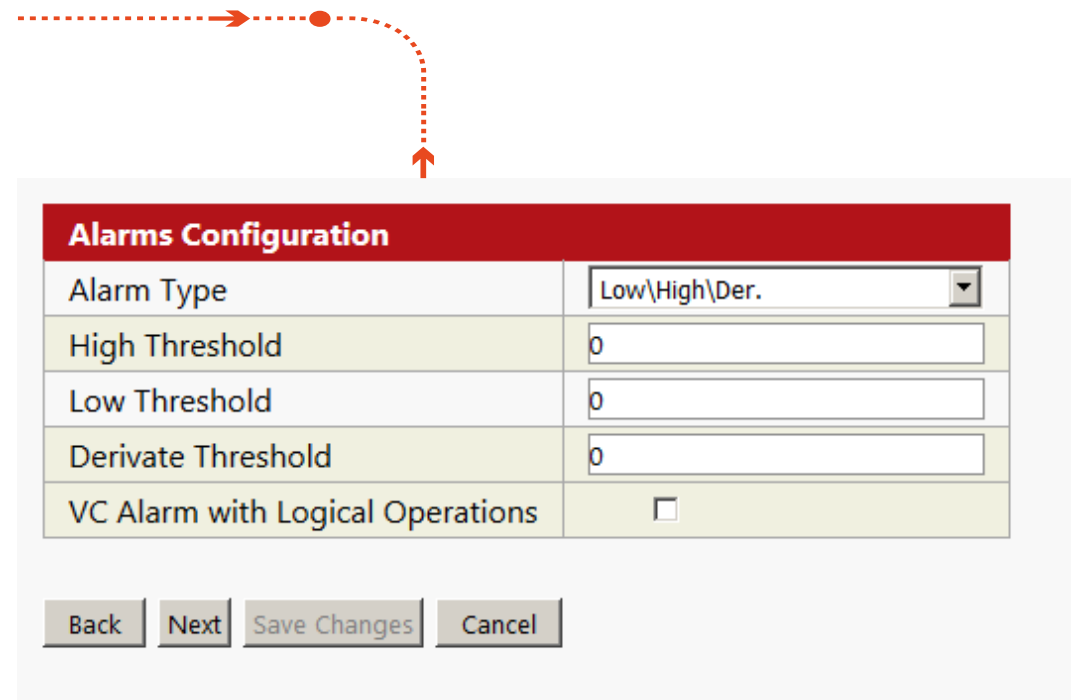
From **all channel** page is possible to select alarm thresholds for each configured channel.

Available thresholds are:

- ✓ **High** threshold
- ✓ **Low** threshold
- ✓ **Derivate**
- ✓ **A combination** of the above

NI-100-SMG can automatically send alarms via **email** (requires smtp server/internet connection) and **sms** (requires 2G/3G modem).

On alarms page, NI-100-SMG can be programmed to increase sample frequency or react on his digital output.

A screenshot of the 'Alarms Configuration' form. A red dotted arrow points from the text 'From all channel page' to the 'Alarm Type' dropdown menu. The form has a red header 'Alarms Configuration'. It contains a table with four rows: 'Alarm Type' (dropdown menu), 'High Threshold' (text input), 'Low Threshold' (text input), and 'Derivate Threshold' (text input). Below the table is a checkbox for 'VC Alarm with Logical Operations'. At the bottom are four buttons: 'Back', 'Next', 'Save Changes', and 'Cancel'.

Alarms Configuration	
Alarm Type	Low\High\Der.
High Threshold	0
Low Threshold	0
Derivate Threshold	0
VC Alarm with Logical Operations	☐

Back Next Save Changes Cancel

ALARMS

A further function provided by NI-100-SMG web server is **Virtual Channels Alarm** with **Logical Operations**.

It allows to use logical operators AND, OR, XOR, NOT on alarm state of channels, to create complex alarm rules.

With NI-100-SMG web server you can select the action to take when an alarm condition has occurred.

Alarm Configuration

This page allows to configure actions in case of alarm for both configured sensor and OMNIAlog.

SENSOR

Enable	Action	Event Nr.	End
☐	SMS	1	2
☐	email	1	2
☐	FTP	1	2
☐	Digital Output	1	2
☐	Frequency Increase	1	2

OMNIAlog

Enable	Action	Event Nr.	End
☐	SMS	1	2
☐	email	1	2
☐	FTP	1	2
☐	Digital Output	1	2

Save Changes

Cancel

email Configuration

SMS Configuration

FTP Configuration



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MEASUREMENT TRANSFER

NI-100-SMG can be programmed to send measure logs after each measurement or daily.

Transfers can happen via **SMTP** (mail) or **FTP**.

An active network/internet connection is required for these actions.

Measure log data transfer

This page allows to configure the parameters for the measure log on an FTP server or MAIL scheduled sending (or in case of alarm). Select the type of protocol to enable measure log sending; if not enabled, if the alarms are configured, will be sent only the alarm. In case of FTP sending failure, OMNIAlog will send max. 2 delayed acquisition cycles. Selecting "Timed" in the "Energy Management" page in the "Communication Device Power Supply (V OUT)" field the FTP sending could take a few minutes. In "Server" field is highly recommended to insert only IP address and not the domain (in 'www.domain.com' version).

Measure Log Sending

Sending Enable:	FTP
Sending Frequency:	After acquisition

FTP Configuration

FTP parameters

Server:	my.ftp.server.org
Folder (/folder):	/
Username:	username
Password:	••••••••
Port:	21
Tries:	1

Supported protocols: FTP



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VIRTUAL CHANNELS

We use usually **sensors** to get a measure value. Anyway, we could need a way to **modify that number** because we need either a derivated measure (airflow/airspeed) or an expression calculated on more than 1 sensor (dewpoint or Δ_t between two zones for instance). We can calculate this with spreadsheet or just **let our data logger do the work**. Alarms are available on virtual channels too.

Script Editor

This page allows to edit previously created script and create virtual channels. For each virtual channel can be added max. 9 elements: this check is executed pressing "Add" button.

Virtual Channel:						
CV4						
an	sin	and	+	1	2	3
dig	cos	or	-	4	5	6
mux	tan	xor	*	7	8	9
cv	pi	not	/	.	0	CE
(	)	☐ Logical		C		

Add

Cancel

Virtual Channel	Delete	Edit	Configure
CV1=an(1.A)-an(2.A)	<button>Cancel</button>	<button>Edit</button>	<button>Config</button>
CV2=an(1.A)/an(2.A)	<button>Cancel</button>	<button>Edit</button>	<button>Config</button>
CV3=cv1*cv2	<button>Cancel</button>	<button>Edit</button>	<button>Config</button>

Back

Save



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MODBUS LIBRARY

Modbus enables communication among many devices connected to the same network, for example a **system** that measures **temperature** and **humidity** and communicates the results to a computer, or our **NI10** Vibrating Wire Modbus interface connected to the **NI-100-SMG** data logger. You can connect virtually every Modbus device to our data logger, as you can set every needed parameter.

Sensor Number:

1

Modbus Address

1

Pre Measure Actions

Action	Enabled	Modbus Function	Reg Address (hex)	Comparision	Value	Endianess
Send Command	☐	Force Multiple Reg (0x10) ▼	0		0	Big ▼
Wait Condition	☒	Wait Time (in seconds) ▼	0	= ▼	3	Big ▼

Acquire Measures

Action	Enabled	Modbus Function	Reg Address (hex)	Data Type	Registers Number&Order	Endianess
Measure 1	☒	Read Holding (0x3) ▼	1f78	Unsigned Integer ▼	W2 W1 (32 bit) ▼	Big ▼
Measure 2	☒	Read Holding (0x3) ▼	1d32	Unsigned Integer ▼	W2 W1 (32 bit) ▼	Big ▼

Post Measure Actions

Action	Enabled	Modbus Function	Reg Address (hex)	Value	Endianess
Send Command	☐	Force Multiple Reg (0x10) ▼	0	0	Big ▼

CLOUD



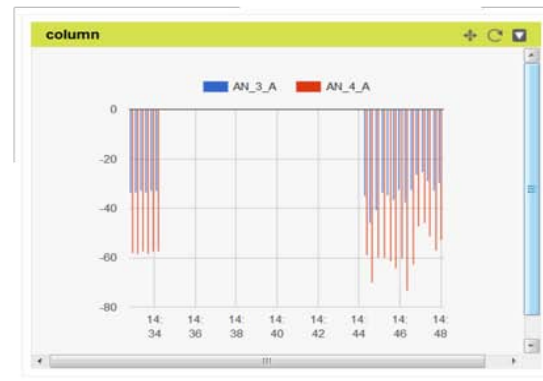
NI-100-SMG connection to our Cloud software is fast and easy. When data logger and the internet (LAN, external modem) are connected, all data will be available in real time, everywhere.

It's possible to set different kind of widgets:

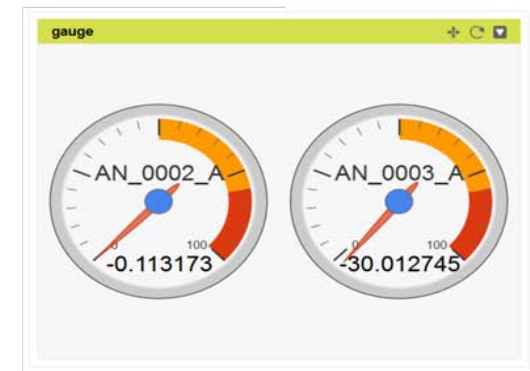
- ✓ **Column** Chart
- ✓ **Gauge** Chart
- ✓ **Map** Chart
- ✓ **Image** Overlay Chart

Gathered data can be downloaded by selecting a single sensor or all sensor connected to a device.

column chart:



gauge chart:



map chart:

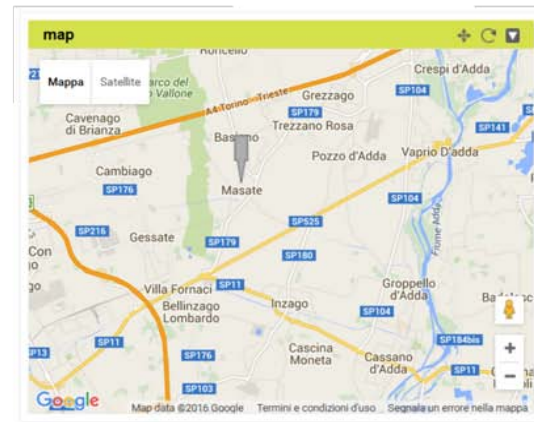


image overlay chart:



CLOUD



View **Data in Cloud** *



*Optional



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COMPARISON



	NI-100-SMG Smart MUX Gateway	OMNIAlog 816	NI-2400
Channels	N.9	N.8	N.24
Expandibility	EXPANDABLE up to 3072 Channels for Vibrating Wire Sensors	EXPANDABLE with multiplexers	EXPANDABLE with multiplexers
Internet	Ethernet on board, RS232 for modems	Ethernet on board, RS232 for modems	Ethernet on board, RS232 for modems

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