



User manual One Wire Explorer



Soft >= v0.96

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Dear Customer!

Thank you very much for choosing our product. Before its use, please read these instructions carefully. There are given here the most appropriate ways of dealing with this device, the basic principles of safety and maintenance. Please also keep the user manual so that you can read it during later use.

Remember!

The manufacturer is not liable for any damage caused by improper use of the device for its intended purpose or improper handling, as well as fault driver resulting from improper use.

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1 Preliminary informations

Before starting work with the module, read The user manual and follow the instructions contained therein!

Description of visual symbols used in this user manual:



This symbol is responsible for reviewing the appropriate place in the user instructions, warnings and important information. Failure to follow warnings could cause injury or damage to the module



Important informations and guidelines



Following this guidelines makes the use of the module easier

Attention: The appearance of the screen shots shown in this manual may differ slightly from the actual work with the module. The differences may relate to the size and font type and size of symbols. There are no differences in the content of the information.

2 Purpose of the device

The device OW Explorer is used to collect data from sensors connected to the 1-Wire bus. It is possible to connect sensors to measure physical quantities such as temperature, humidity, pressure. The data can be shared to other devices via RS485 (Modbus RTU) or LAN (Modbus TCP, SNMP, HTTP).

For each sensor can be assign a minimum and maximum value, above which will be sent a notification via LAN (TCP, UDP, IP-KNX).

Power can be supplied by an external 12V DC or PoE. The device is contained in a metal housing designed for 1U servers and teletechnical racks.

3 Warranty and liability of the manufacturer



The manufacturer provides a 2-year warranty on the module. The manufacturer also provides post-warranty service for 10 years from the date of the introducing the module on the market. The warranty covers all defects in material and workmanship

The manufacturer undertakes to comply with the contract of guarantee, if the following conditions are met::

- all repairs, alterations, extensions and device calibrations are performed by the manufacturer or authorized service,
- supply network installation meets applicable standards in this regard,
- the device is operated in accordance with the recommendations outlined in this manual
- the device is used as intended..

The manufacturer assumes no responsibility for consequences resulting from improper installation, improper use of the module, not following this manual and the repairs of the module by individuals without permission.



This device doesn't contain serviceable parts. The repairs can be done only by manufacturers approved repair service.

4 Safety guidelines

The module has been constructed using modern electronic components, according to the latest trends in the global electronics. In particular, much emphasis was placed on ensuring optimum safety and reliability of control.

The device has a metal casing with a layer of powder paint.

4.1 Power Supply



The device depending on the version is adapted to supply:

- PoE: 48V via LAN port or by a 12V DC connector.
- 12V: 12V DC connector.

4.2 Storage, working environment and transportation

The module has to be used in closed environments free from fumes and corrosive atmosphere. Environmental conditions for storage:

- Temperature: -40°C – +85°C,
- Relative humidity: 5 – 95%,
- Atmospheric pressure: 700 – 1060hPa

Environmental conditions for use:

- Temperature: -10°C – +60°C,
- Relative humidity: 5% – 95%,
- Atmospheric pressure: 700 – 1060hPa

Recommended conditions for transportation:

- Temperature: -40°C – +85°C,
- Relative humidity: 5 – 95%,

- Atmospheric pressure: 700 – 1060hPa

4.3 The installation and operation



The module should be used following the guidelines shown in next part of the user manual.

4.4 Utilisation of the module

When it becomes necessary to liquidate the device (e.g., after the time of use), please contact the manufacturer or its representative, who are obliged to respond appropriately, i.e., collecting the module from the user. You can also ask the companies involved in utilization and / or liquidation of electrical or computer equipment. Under no circumstances should you place the device along with other garbage

5 Device components

5.1 General Features

Front view of the device is shown on the following illustration.



On the front side are placed connectors and LEDs that indicate the status of the device:

- POWER – power supply of the module,
- ACT – activity on the 1-Wire bus
- STAT – status of the device
- Ethernet LINK – signaling an active LAN connection
- Ethernet ACT – signaling an active LAN connection

Connectors:

- USB - connector for use in later versions OW Explorer
- 1-WIRE PORT 1 – socket for connecting sensors (terminal block)
- 1-WIRE PORT 2 – socket for connecting sensors (RJ12)
- 1-WIRE PORT 3 – socket for connecting sensors (RJ12)
- Ethernet – LAN socket
- COMMUNICATION PORT 1 - connector for RS485
- COMMUNICATION PORT 2 - connector for RS485
- DC 12V – socket for power supply

The device supports the following network protocols:

- SNMP (+Trap)
- MODBUS TCP
- MODBUS RTU available on 2 independent RS485 ports
- HTTP/HTTPS
- E-mail SMTP (sending notifications)
- Syslog
- any frame TCP or UDP
- sending KNX-IP (routing mode)
- sending HTTP GET requests

Others:

- service 1-Wire bus (temperature, humidity, pressure)

- RTC clock with battery backup with synchronization SNTP

Device management is carried out by the WEB interface.

5.2 Technical data

Power supply	Ethernet POE IEEE 802.3af 48v or 12VDC złącze 5,5/2,1
Power consumption	2W
Limitations of current 1-Wire bus	350mA
The maximum length of 1-Wire bus	100m

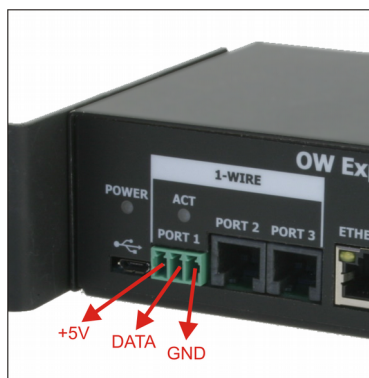
5.3 Description of the terminals

5.3.1 1-Wire connectors

The device is equipped with 3 independent communication ports of the 1-Wire bus. Damage to the port (eg. short circuit) does not affect the other ports.

Port 1 is provided with screw connection:

Terminal number	Terminal name
1	+5V
2	Data
3	GND



Ports 2 and 3 have RJ12 connector:

Terminal number	Terminal name
1,2	+5V
3,4	Data
5,6	GND



5.3.2 Communication interfaces RS485

The device has 2 independent RS485 ports.

Numer wyprowadzenia	Nazwa wyprowadzenia
1	GND
2	Data+ (B)
3	Data- (A)

6 Device configuration

If using the device for the first time it is needed to configure the controller as shown below

6.1 Changing the PC settings for controller configuration

After connecting the controller to the network there is a need to change the PC setting. In order to do that navigate to: Start->Control Panel->Network connections. Then right click on the current network connection and click „Properties“. Choose the „Internet Protocol (TCP/IP)“ and press „Properties“. Tick the box „Use the following IP address“ and enter:

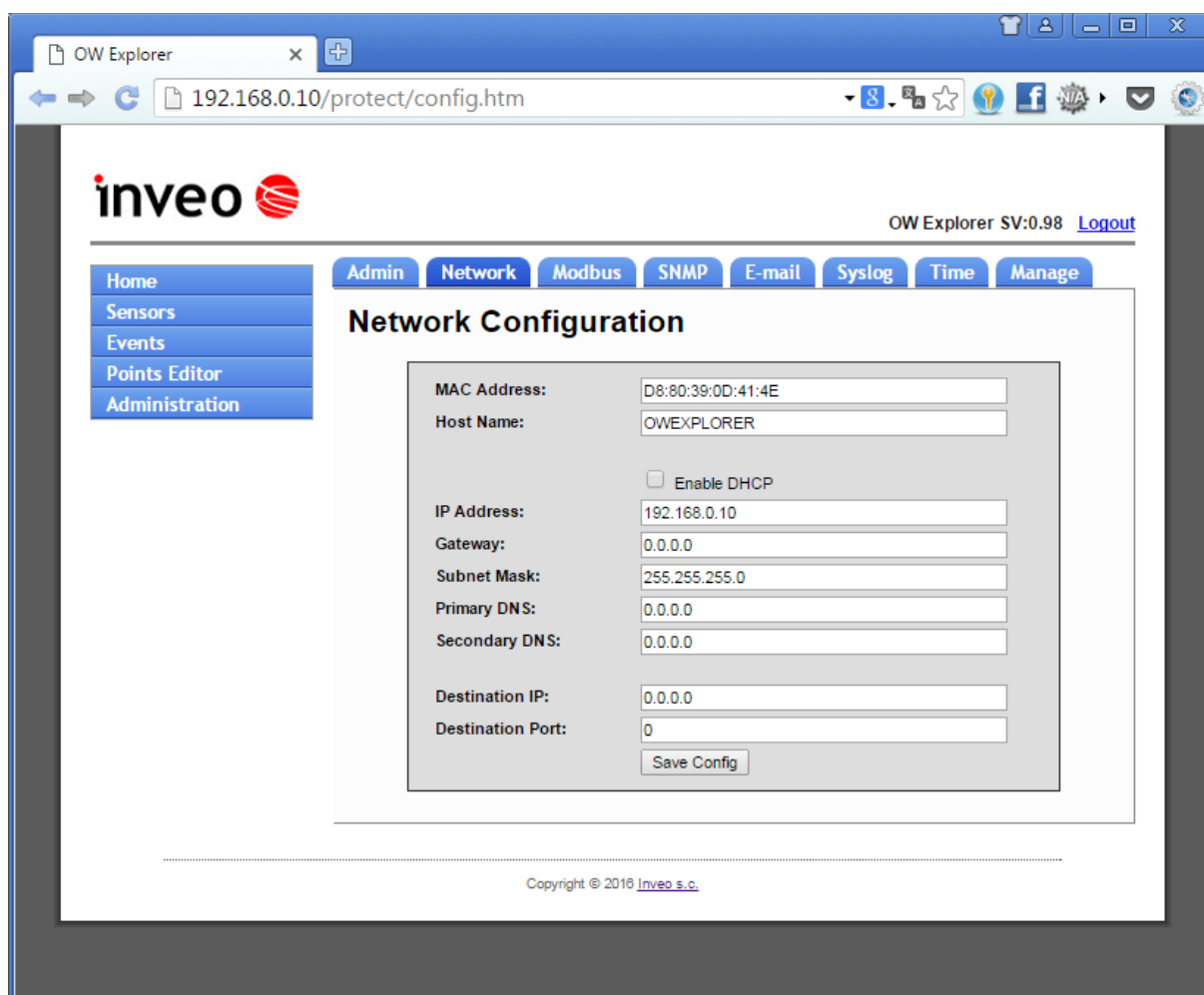
- IP address: 192.168.0.9
- Subnet mask: 255.255.255.0

The rest of the setting can be left blank. Press OK to accept the changes and open a Web browser and enter the address: **192.168.0.10** .

6.2 Configuring the network through a web browser

Network configuration is performed in the sub-page Network.

The default user name and password is admin / admin



Web site for network configuration of the module.

To configure the network adapter of the module are fields:

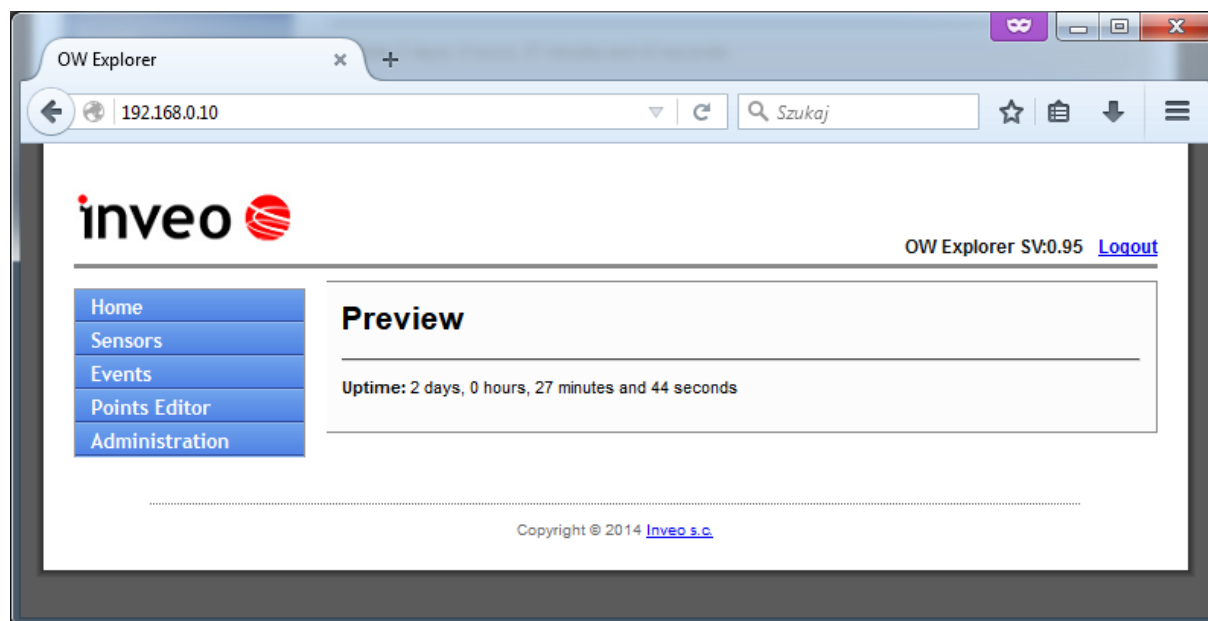
- *MAC Address* – MAC network address of the module,
- *Host Name* – NETBIOS name,
- *Enable DHCP* – Checking this box forces using the address assigned by the DHCP server
- *IP Address* – IP address of the module (at the following module will be visible on the network)
- *Gateway* – network gateway,
- *Subnet Mask* – subnet mask of the module
- *Primary DNS, Secondary DNS* – DNS servers addresses

To apply changes press **Save Config** button.



6.3 HOME tab

After logging into the device user can check the time elapsed since it launch.



7 Configuring and Using the external sensors

The menu **SENSORS** is carried out configuration of the sensors connected to the 1-Wire bus.

After pressing **SCAN** the bus is searched and the found sensors are display in the table **Discovered**. Scanning also takes place after each power-up.

Meaning of the table columns:

No - sequence number of found sensor

Port - number of the 1-Wire port on which the sensor was detected

Address - unique serial number of the sensor

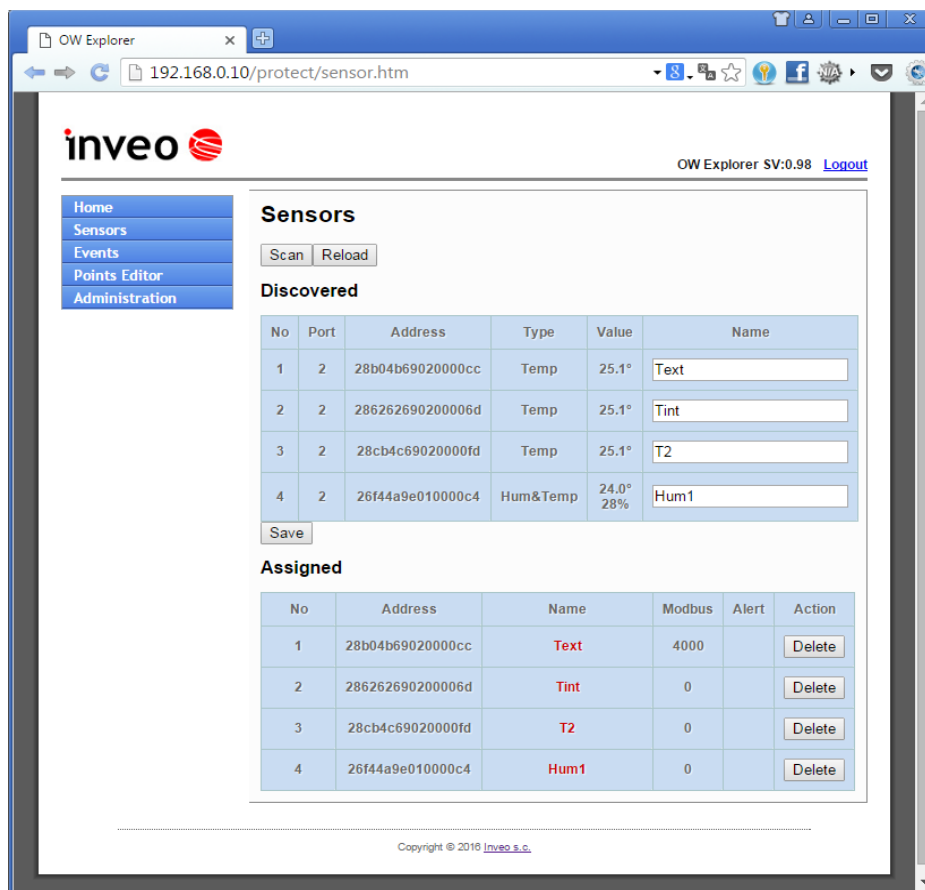
Type - type of found sensor (TEMP / TEMP & HUM)

Value - value received from the sensor

Name - name assigned to the sensor

In the table **Assigned** are shown the sensors with names assigned by the user that are available in the system. By clicking the name it is possible to set up minimum and maximum threshold beyond which can be triggered an event and to determine the Modbus address at which the sensor is to be visible.

When next to sensor number is displayed exclamation mark, it means that the sensor is defective or has been disconnected. In the columnne **Alert** are indicated the thersholds exceedings.



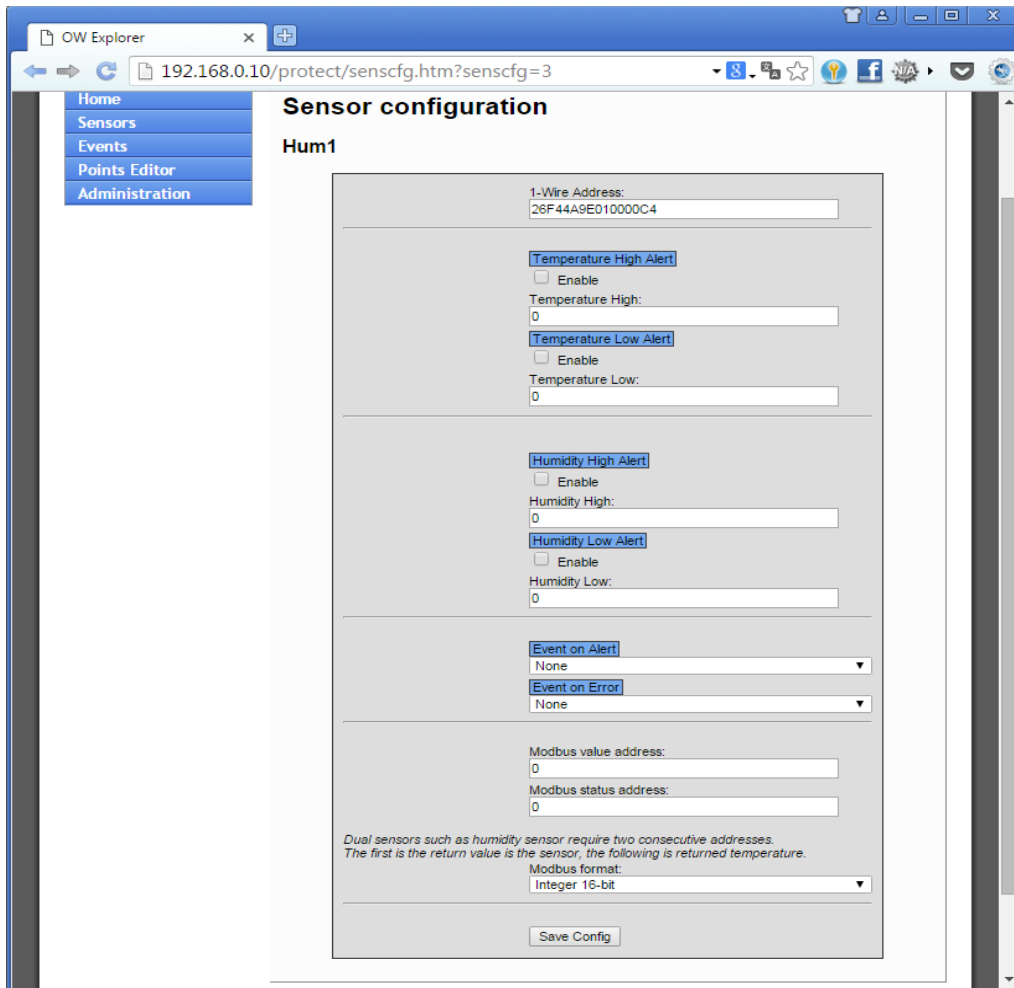
7.1 Setting the Modbus address and alarm for the sensor

The configuration is available by clicking on the name of the sensor in the table **Assigned**. For each sensor can be set a minimum (Low) and maximum (High) threshold beyond which the notification is sent (Event or Alert). It is also possible to enable or disable the threshold by selecting **Enable**.

Error of the sensor such as damage or disconnection may also result in notification (Event on Error); the events are described in the section **Configuring the Event**.

7.1.1 Address Modbus of the sensor

The sensors to be available in the Modbus address space must have in the *Modbus value address* field set the address where the data from the sensor will be available. If the sensor measures the 2 values (eg. temperature and humidity) the data occupy 2 consecutive addresses, wherein the first is always the temperature. For example, by selecting the address 4000, the reading at 4000 will be placed at the measured temperature, and at 4001 is available moisture. Data from the sensors are available by using the command *Modbus Holding Registers*.



The field *Modbus Status Address* is the address of the function Coil and indicates the status of of the sensor:

- 0 – no sensor or an error
- 1 – sensor ok

7.1.2 Format of the Modbus value

There are 5 formats of measured values (Modbus format):

Integer 16-bit

The values are cut to signed integers

Value*10 Integer 16-bit

The value is multiplied x10

Eg. If the measured temperature is 25.2 ° C, to the register will be transferred the value of 252.

Integer 16-bit Sign-Magnitude

Values are cut to integers

The number is a code sign-module, ie. if the set is the oldest bit, it means that the number is negative.

Value*10 Integer 16-bit Sign-Magnitude

The value is multiplied x10

Eg. If the measured temperature is 25.2 ° C, to the register will be transferred the value of 252.

The number is a code sign-module, ie. if the set is the oldest bit, it means that the number is negative.

Float IEEE-754 32 bit

32bit floating point value. It takes 2 registers.

Attention: if the sensor measures 2 values and will be chosen this format, the address for the second measured value is shifted by 2.

Eg. Selecting address 4000 for the temperature and humidity sensor will be:

4000-4001 – the temperature in the format of IEEE-754

4002-4003 – the humidity in the format of IEEE-754

7.2 Data from the sensors – Web

Data from the sensors are available through the website subpage **Sensors** as described above.

7.3 Data from the sensors – HTTP XML

Data from the sensors are available as a regular XML file. Downloading the file is possible by calling HTTP GET resource 'ow.xml'. The test can be performed on a regular web browser by typing in the address field: http://adres_ip/ow.xml

The file is divided into sections corresponding to each of the sensors<dev>

<address> is the address of the sensor

<temp> and <hum> are values of the temperature and the humidity

<port> the port to which the sensor is connected

<name> is the name assigned by the user

Example file:

```
<owtable>
<dev>
<address>28b04b69020000cc</address>
<temp>25.1</temp>
<port>2</port>
<name>Text</name>
</dev>
<dev>
<address>286262690200006d</address>
<temp>25.2</temp>
<port>2</port>
<name>Tint</name>
</dev>
```

```

<dev>
<address>28cb4c6902000fd</address>
<temp>25.2</temp>
<port>2</port>
<name>T2</name>
</dev>
</owtable>

```

7.4 Data from the sensors – SNMP

The SNMP agent can retrieve data only from the assigned sensors of the table Assigned. OID of the data is in the form: .1.3.6.1.4.1.42814.1.3.20.no.param
no is the number of the sensor, *param* is a parameter from the list below.

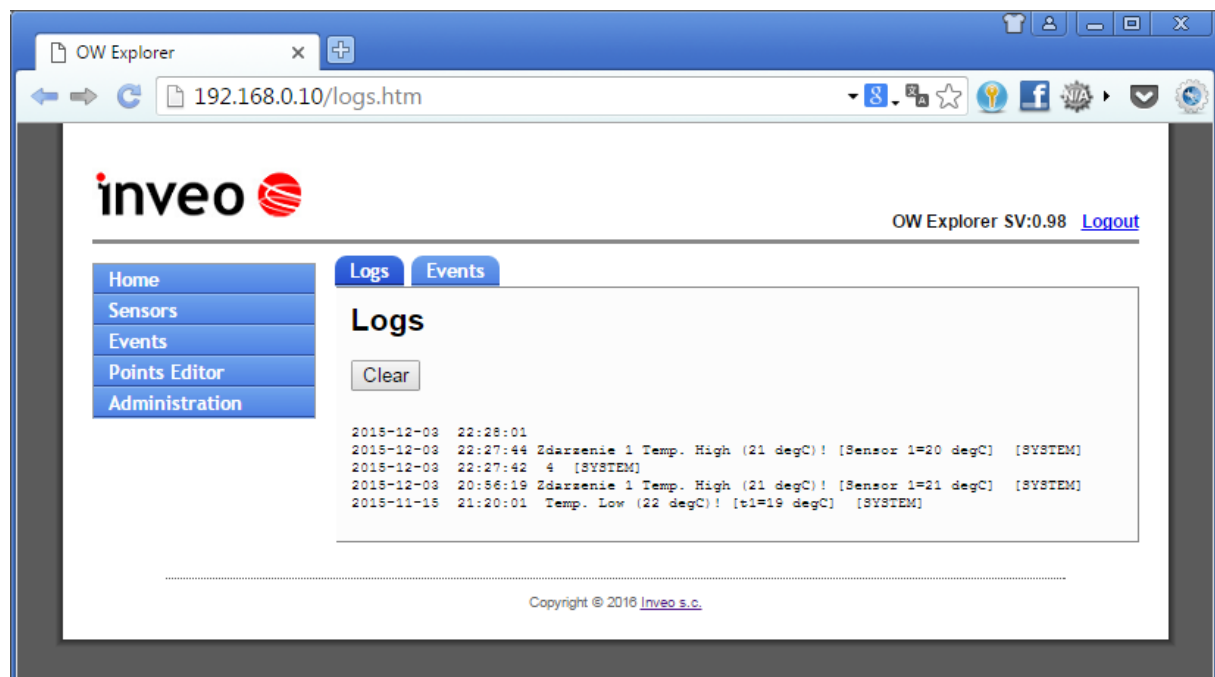
There are available the following fields:

- sensorId – equivalent to field *No* from the table *Assigned*
- sensorExist – 1 – sensor ok; 0 – no sensor or an error
- sensorType – type of the sensor
- sensorName – name assigned by the user
- sensorTemp – temperature
- sensorValue2 – in dual sensors is a second value (eg. humidity, pressure)

8 Logs and Actions of events

8.1 Events Logs

The device records events in the nonvolatile memory. Event preview is available in the tab **Events->Logs**.



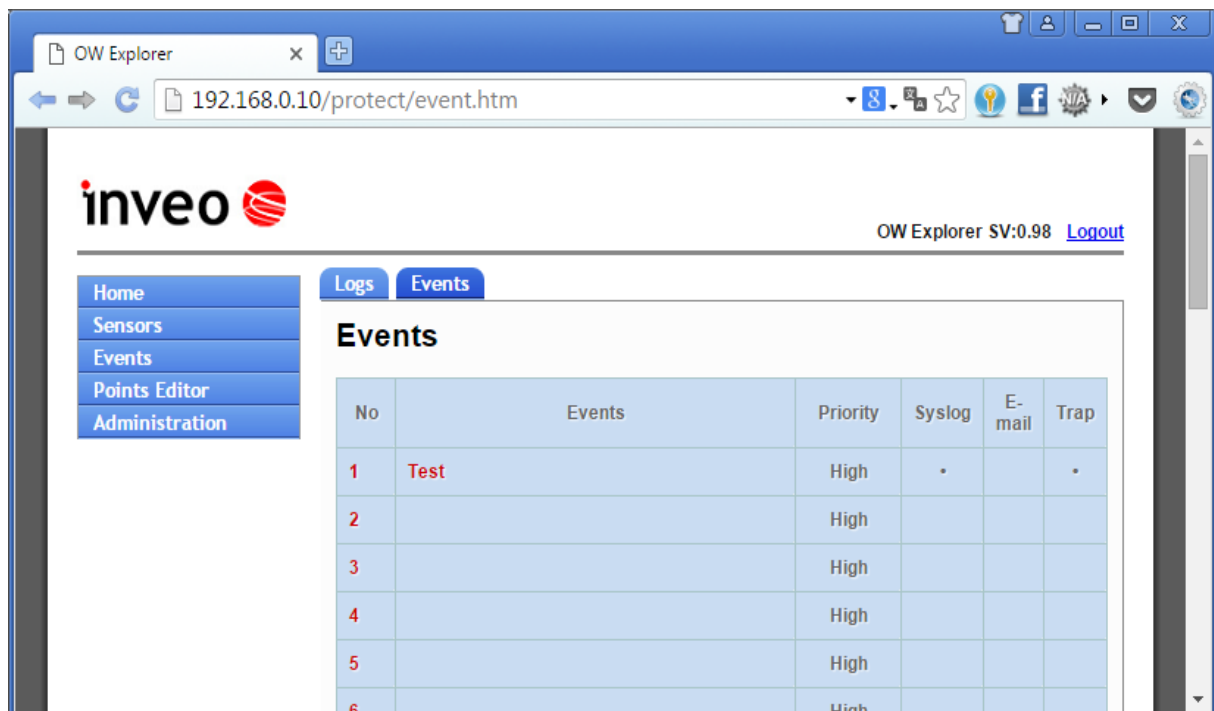
8.2 The events

In the system 32 events are available, each of them can be individually configured.

Each event can be configured to send the notification by the network. Following services of notifications are available:

- Syslog
- E-mail
- Trap SNMP

Review and configure the actions of events is available in the tab **Events->Events**



8.3 Configuration of Event

Each event may result in sending notifications. To configure a notification, click on the name of the event in the Events tab.

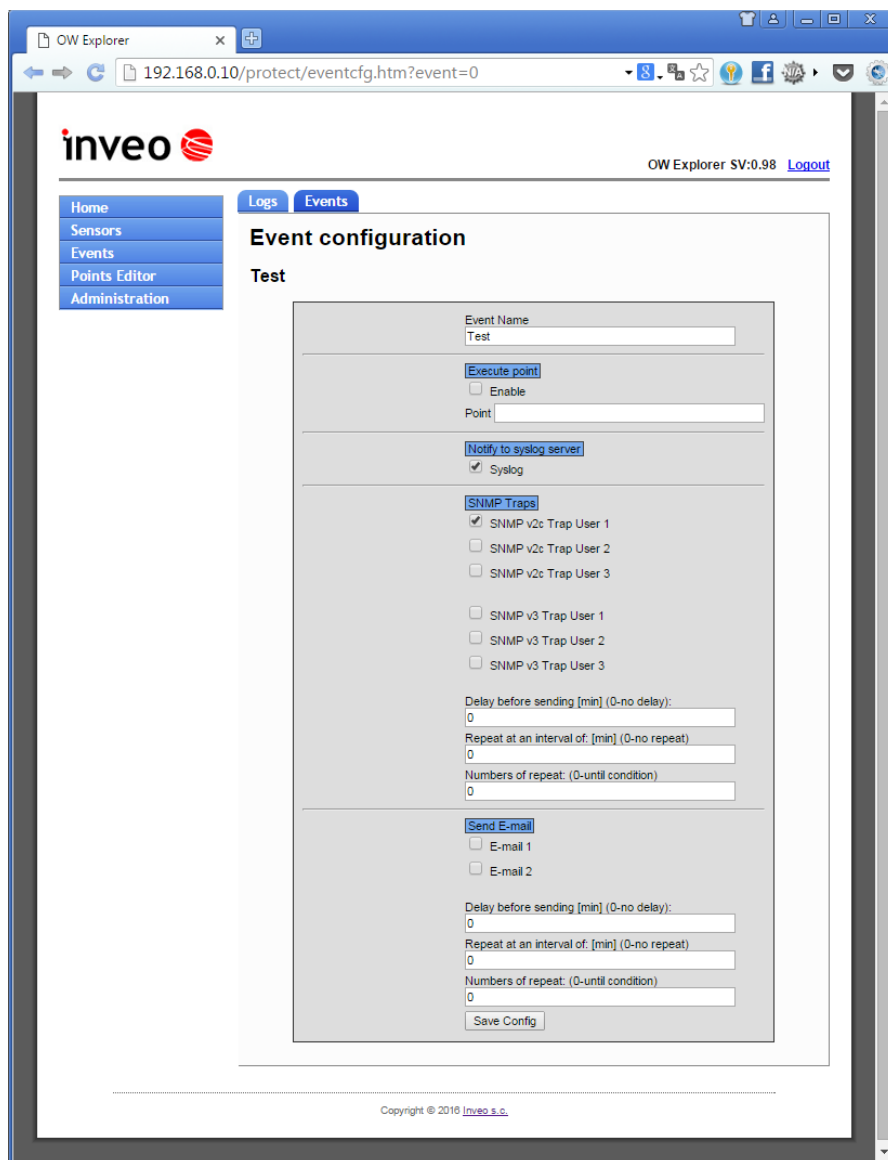
The event has the following properties:

Event Name – name of the event - text is attached also to sent notifications

Execute point –if the event is to send a message via the LAN TCP / UDP / IP-KNX, then here must be enter the name of a point which is defined in the Points tab.

SNMP Trap groups are configured in the **Administration->SNMP**

Groups of E-mail receivers are configured in the **Administration->E-mail**



When sending a notification via SNMP and SMTP it is possible to set the repetition of the delays of sending

Delay before sending – time of delay before sending the first notification in minutes. Setting 0 causes immediately send a notification. This option is useful with eg. the temporary exceeding of the set temperature thresholds.

Repeat at an interval of – the repeat time of the next repetition notice. Setting 0 will cause the notification will be sent only once, exactly as in the case of single event. Setting the time eg. 5 minutes will result in sending alerts every 5 minutes until the cessation of the cause of the event (eg. the temperature drop) or to the maximum number of repetitions specified by the parameter *Numbers of repeat*.

Numbers of repeat – the maximum number of repetitions of sending notifications.

9 Points Editor

OW Explorer has the ability to send control frames to other devices using TCP / IP, UDP and KNX and HTTP GET requests.

Format of control frame				
<i>Point</i>	<i>Protocol</i>	<i>Address</i>	<i>Port</i>	Data

Point – any user name (this is also the name that can be entered in the configuration of events as Execute Point).

Protocol - the protocol used to send the frame(UDP, TCP, GET, KNX)

Address – a destination address

Port – the port to send the frame on

Data – data to send

Data can be entered as plain text and / or as the hex. Hex values are entered in the format \xhh.

For example, if the data to send is 'a = 1' and the newline character, type:

on=1\x0A

Examples of control frames:

Name	Protocol	Address	Port	Data	Description
<i>pwrn</i>	<i>TCP</i>	<i>192.168.111.15</i>	<i>9761</i>	<i>\x00\x01\x02\x03</i>	
<i>test1</i>	<i>UDP</i>	<i>192.168.111.23</i>	<i>1000</i>	<i>\x12abcdefg</i>	
<i>lock</i>	<i>GET</i>	<i>192.168.111.24</i>	<i>80</i>	<i>/stat.php?inv=1 YWRtaW46YWRtaW4wMA== A==</i>	*
<i>lamp</i>	<i>KNX</i>	<i>2/1/2</i>		<i>\x01</i>	

* When on calling HTTP GET authentication is required, then user name and password [user:pass] need to be coded in Base64 format and attach after a space call. In the example coded admin:admin00 to *YWRtaW46YWRtaW4wMA==*

Calling the multiple points

If event is expected perform a few Points, a macro can be defined in format:

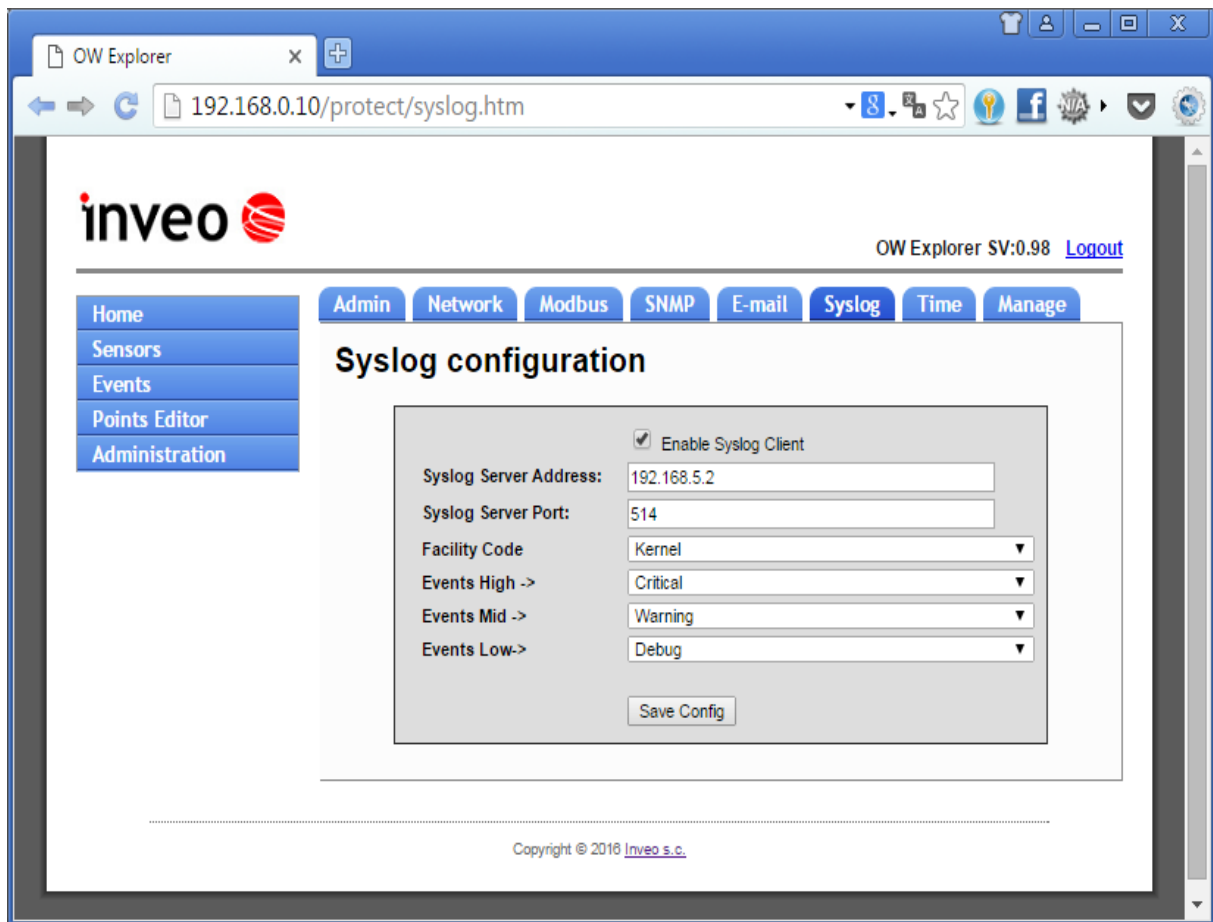
Name CALL point1,point2,...

eg. send CALL pwrn,test1

Calling the point *send* causes performing of points *pwrn* and *test1*

10 Setting Syslog notifications

The built-in Syslog client supports sending messages about device operation to a Syslog server.



Configuration is possible in the tab **Administration->Syslog**

Enable Syslog Client – Syslog client activation.

Syslog Server Address – Syslog server IP address to which messages will be sent.

Syslog Server Port – port for sending messages (standard 514).

Facility Code – information about the type of program from which the message comes (According to Syslog standard)

Fields Critical, Warning, Informational attribute to the set severity of events (Severity code) of the Syslog standard.

11 SNMP

The SNMP protocol allows to retrieve and set the outputs status, to retrieve the input status and to read the state of the sensors.

The module is equipped in SNMP v2c and SNMP v3 agents.

Enabling the function takes place in the tab: Administration → SNMP → Enable SNMP v1/v2c or Administration → SNMP → Enable SNMP v3

After selecting required agent and type in the configuration data click Save Config. The MIB file witch describes the structure is to download in the tab SNMP.

For each version of SNMP (v2c/c3) can be set 3 users with individual Read/Write Community(v2c) settings and passwords. Each user has assigned the server destination address wich is to recive the Trap SNMP datagrams.

It is important in case of sending notofications about events when different kind of information has to reach a different groups of recivers.



12 E-mail setup

In the E-mail tab the SMTP client can be defined. Thanks to that the device can send notifications to the E-mail address. The recipients are divided into two groups.

Sending notifications is limited to:

- send email without encryption
- sending email with encryption SSL v3.0 (Cipher: TLS_RSA_WITH_RC4_128_MD5, TLS_RSA_EXPORT_WITH_RC4_40_MD5)

SMTP Server – the address of the e-mail server

Port -port on which the server is listening closely

User Name – user name

Password – user password

From – user name which is supposed to be shown in the coming message

Recipients 1, Recipients 2 - e-mail addresses of recipients of the message separated with commas

13 Time synchronization - NTP

The OW Explorer module is equipped with an internal real time clock (RTC) .

In addition, the module has the ability to synchronize the internal clock with the SNTP time server.

The configuration of the settings is to make in the tab Administration → Time.

Auto update (SNTP) - enabling time synchronization with the time server via SNTP.

Daylight Savings – enabling winter/summer time correction

Time Zone – setting the appropriate time zone

Server IP – the IP address of the time server to which the device is to synchronize.

Pooling Interval – the time interval of synchronization frequency
 If the **Auto update (SNTP)** is disabled the user can set the time on his own.
 Button **PC Time Synchro** sets the same time as in the PC.
 All settings will be saved at the touch of a button **Save Config**.

14 Configuration of the Modbus RTU and TCP

The module poses two independent ports to communicate by RS485 with protocol Modbus RTU and the Modbus TCP server.

Protocols supported by LAN:

- Modbus TCP
- Modbus RTU via TCP
- Modbus UDP
- Modbus RTU via UDP

The tab Administration → Modbus is to configure the Modbus



The meanings of the fields:

RS485 PDU - the PDU address of the module in the modbus net

Port X Baudrate - the RS485 communication rate (1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400)

Port X Parity – parity configuration (None, Even, Odd)

15 Resetting

Hold down the RESET button for 8 seconds to return to the factory setting.

After performing the above steps, the unit will set the following parameters:

- IP address: 192.168.0.10
- IP Mask: 255.255.255.0
- User: admin
- Password: admin

16 Software Update

The module is equipped with the ability to update the program. The program is delivered as a file with the extension .bin.

Warning! Improper use update function may damage the module.

The program must be loaded in a tab Administration->Manage->Firmware

After loading the program, the page is displayed MD5 checksum and the length of the loaded file.

The sum must be the same as the total given in the file sum.md5 supplied with the program file.

If the sum is correct, click "Burn".

Emergency loading software

If for any reason after updating the device does not respond, the LEDs are dimmed and the display is dark, it is able to run the device in bootloader mode of emergency.

1. Turn the device off
2. Hold the SELECT button and turn on the device
3. With the console windows command:
tftp -i 192.168.0.10 put firmware.bin

Safe mode always reports to address 192.168.0.10/24 - sometimes is required to change the network configuration of the computer.

TFTP program on Windows sometimes requires a turn on in system services.

On Linux systems, use the switch to send the file by tftp in binary mode.

17 Accessories

Contents of the package:

- module OW Explorer
- patchcord LAN 1m
- mounting to 19 "rack with screws
- CD with user manual
- temperature sensor with cable 1m

Additional accessories:

- SENS-DS - temperature sensor in sleeve with cable 1m
- SENS-RACK-HUM - temperature and humidity sensor for mounting with straps
- SENS-RACK-TEMP - temperature sensor for mounting with straps
- SENS-DRY - flooding sensor

18 Dimensions

