



User manual

Monitoring module

Depmon

Soft >= v0.97

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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 controller, read The User manual and follow the instructions contained therein!

Description of visual symboles 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

DepMon device is used to monitor binary inputs, environmental parameters such as temperature, humidity, pressure and control of electrical circuits in a user-programmed way. The device is contained in housing rack 19 "1U intended for installation in server and telecommunication 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 steel casing covered with a layer of powder paint.

4.1 Power supply



The controller depending on the version is adapted to supply 48V DC or 230V AC 50Hz.

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 Installation and use of the module



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 Construction of the device

5.1 General Features

Front of the device:



Back of the device:



General features:

- 4 outputs (IEC C13) 230V AC with a total output current of 10A
- 4 relay outputs NO / NC rated at 10A each
- 2 relay outputs NO / NC rated at 0.5A each
- 6 opto-isolated inputs
- 3 channels (RJ12) 1-wire bus (environmental sensors)
- + 48V power input monitoring voltage (power supply +48 optional)
- jack for the Ethernet
- OLED display
- LEDs indicating the current status of I / O and device status
- Standard enclosure 19 inches, 1U

The device supports the following network protocols:

- SNMP (+Trap)
- HTTP/HTTPS
- E-mail SMTP (notifications sendings)
- Syslog

Others:

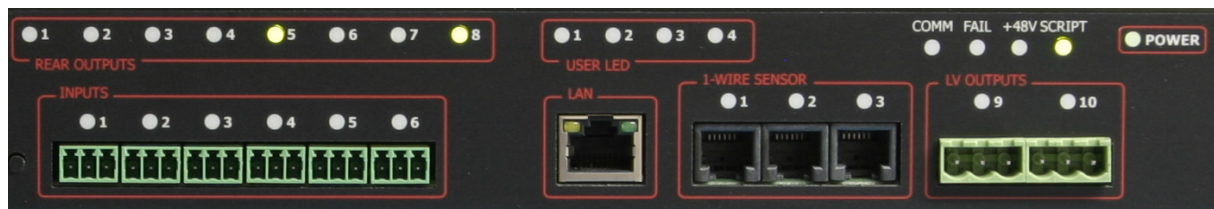
- built-in BASIC interpreter to build depending on input-output
- service 1-Wire bus (temperature, humidity, pressure)
- RTC clock with battery backup with synchronization SNTP
- grouping of outputs of the other devices

Device management is carried out by WEB interface.

5.2 LEDs

The module is equipped with several LEDs that indicate:

- POWER
- REAR OUTPUTS 1-8 – signaling activity outputs on the rear
- INPUTS 1-6 – signaling active input
- USER LED 1-4 – LEDs freely programmable by BASIC
- 1-WIRE SENSORS 1-3 – signaling activity of the 1-wire
- LOW OUTPUTS 1-2 – signaling activity of low-current outputs
- COMM – signaling communication with GSM modem (optional)
- FAIL – signaling an error
- +48V –status of the voltage + 48V
- SCRIPT – signaling a running script in BASIC language
- LINK – signaling an active LAN connection
- ACT – signaling an active LAN connection



5.3 Technical data

Supply voltage: 48VDC or 230VAC (depending on the version)

Maximum power consumption: 5W

Outputs 1-4:

Output type: Relay

Maximum working voltage: 250VAC,

The maximum load current of relays jointly 10A

Output NO (normally open),

Start time: 1ms,

Stop time: 5ms,

Work mode: bistable

The output is supplied to the power input 230V

Connector type: IEC C13

Outputs 5-8:

Output Type: Relay

Maximum working voltage: 250VAC

The maximum load current of relays: 16A,

Output NO / NC (normally open and normally closed)

Starts time: 1ms,

Stops time: 5ms,

Work mode: bistabilny,

Connector type: strip releasable 5mm

Outputs 9-10:

Outputs type: Relay

Maximum operating voltage: 125VAC

The maximum load current relays: 0,5A,

Output NO / NC (normally open and normally closed)

Starts time: 1ms,

Stops time: 5ms,

Work mode: bistabilny,

Connector type: strip releasable 5mm

Inputs 1-6:

Input type: opto-isolated, digital

The maximum input voltage of 24V

Connector type: strip releasable 3.5mm

LAN:

Ethernet 1x100Mbps, RJ45

Input +48VDC:

The supply voltage range and monitoring: 30-60VDC

Connector type: strip releasable 5mm

5.4 Opto-isolated digital inputs

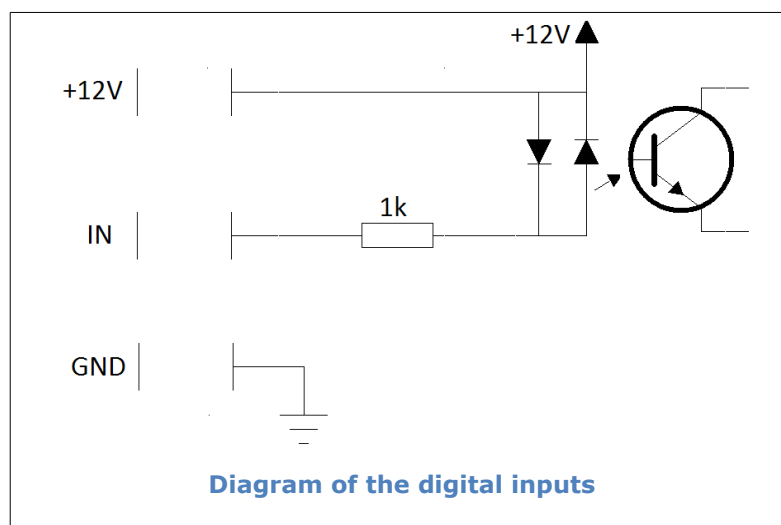
The inputs allows to connect any device equipped with a potential-free outputs, such as:

- detector alarm
- sensor water damage
- switches, limit switches, reed relays

It is also possible to use devices with open collector output (OC).

Each output is equipped with a 12V DC, which can be used to power eg. alarm sensors.

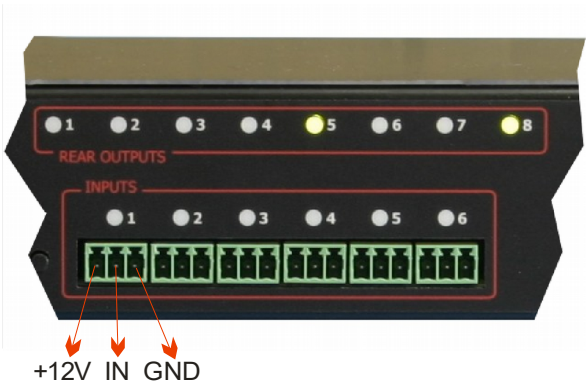
Diagram of the digital inputs are shown in the figure below.



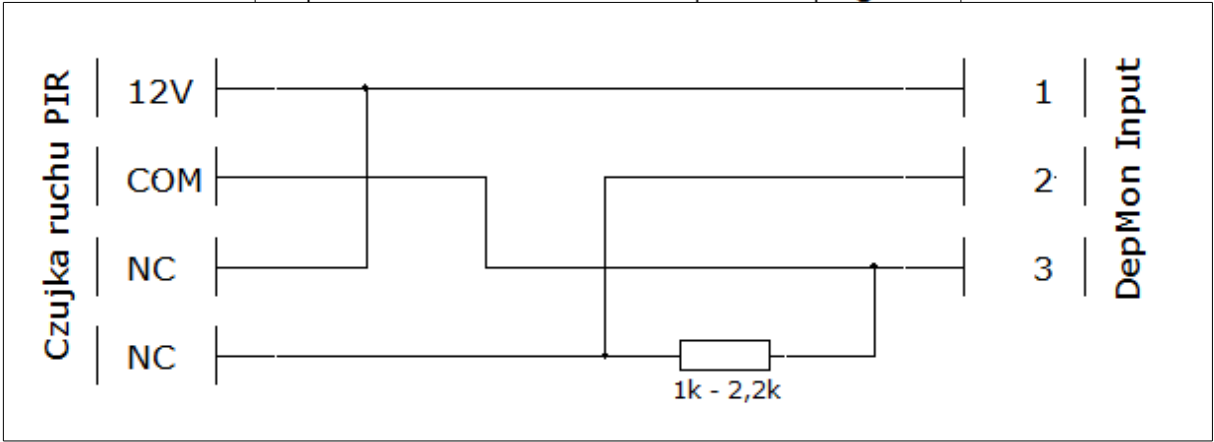
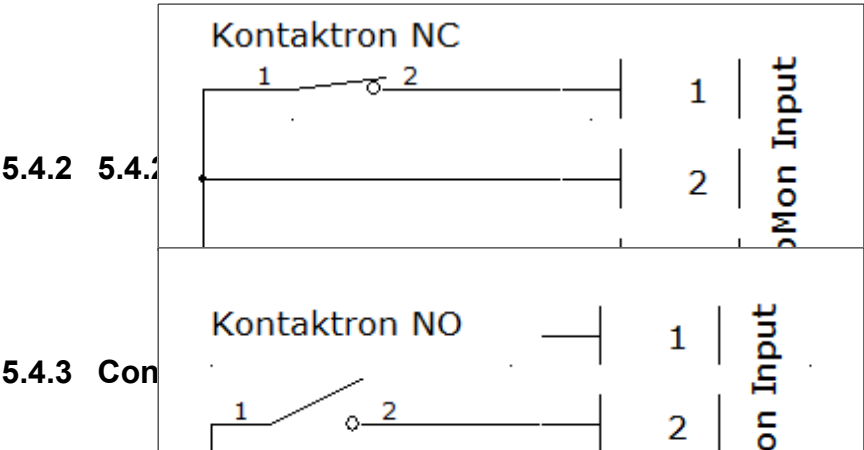
The inputs are located on the front panel in the "INPUTS" section.

Inputs terminal

Number	Name	Description
1	+12V	Wejście binarne
2	Input	
3	GND	



5.4.1 Connecting the reed normally closed (NC)



5.5 Module outputs

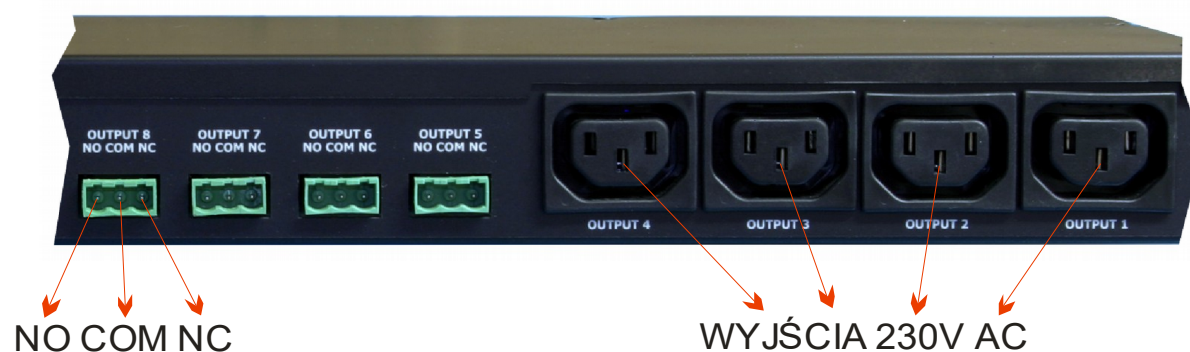
The module is equipped with a number of connectors used to connect the output circuits and power supply.

Section REAR OUTPUTS 1-4"

Number	Name	Description
1	OUTPUT 1	OUTPUT 230 VAC
2	OUTPUT 2	OUTPUT 230 VAC
3	OUTPUT 3	OUTPUT 230 VAC
4	OUTPUT 4	OUTPUT 230 VAC

Section „REAR OUTPUTS 5-8"

Number	Name		Description
1	OUTPUT 5	Normal Open	Relay output
		Common	
		Normal Close	
2	OUTPUT 6	Normal Open	Relay output
		Common	
		Normal Close	
3	OUTPUT 7	Normal Open	Relay output
		Common	
		Normal Close	
4	OUTPUT 8	Normal Open	Relay output
		Common	
		Normal Close	



5.6 SELECT button

SELECT button is multi-function

- after short pressing device displays it current IP address
- hold for approx. 8 seconds brings the device to the default settings
- holding the button and turning on the power at the same time causes emergency mode of software charging

6 Device Configuration

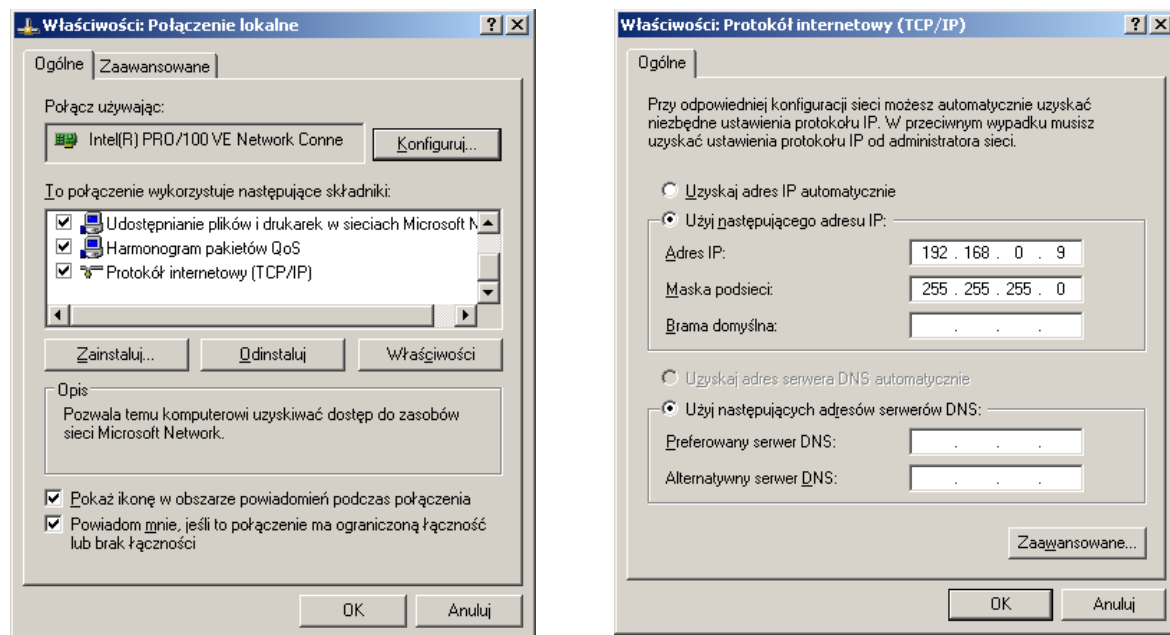
Before first use the device need to be configured.

6.1 Changing the computer's subnet for configuration

After connecting device to the network, the subnet of the computer connected to the same network must be changed.

To do this, go to the network configuration: Start->Settings->Control panel ->Network connections.

Then select the Network connection with right-click and click „Properties”. After selecting shows the configuration screen (see figure at left).



Then select "Internet protocol (TCP / IP)" and enter the following settings:

- IP address: 192.168.0.9
- Subnet mask: 255.255.255.0

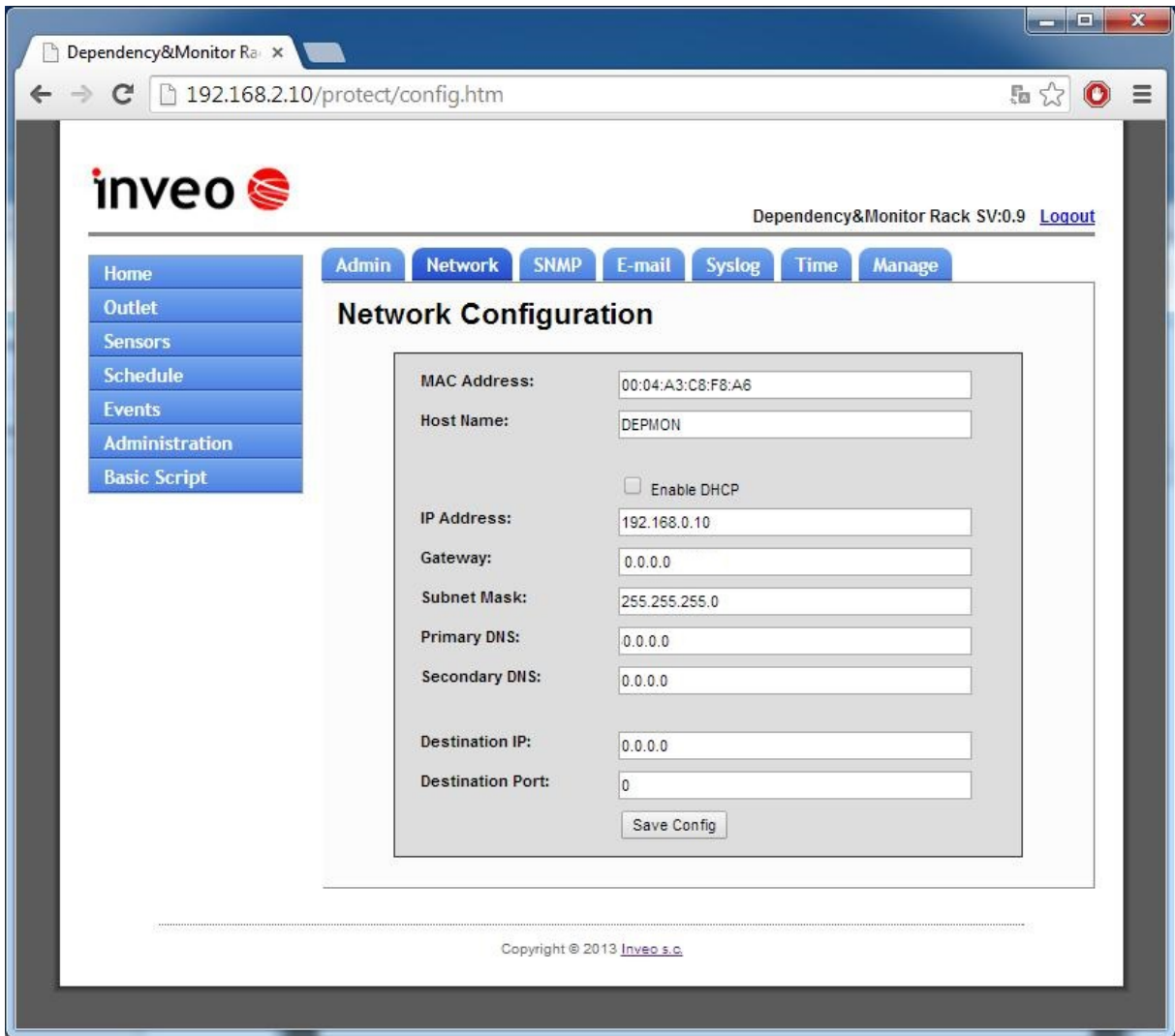
The other fields are unimportant.

After accepting the settings, click OK, 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 subsite **Network**.

The default username and password are: **admin/admin**



The screenshot shows a web browser window with the URL `192.168.2.10/protect/config.htm`. The page features the Inveo logo and a navigation menu on the left with links: Home, Outlet, Sensors, Schedule, Events, Administration, and Basic Script. A top navigation bar includes links for Admin, Network, SNMP, E-mail, Syslog, Time, and Manage. The main content area is titled "Network Configuration" and contains a form with the following fields: MAC Address (00:04:A3:C8:F8:A6), Host Name (DEPMON), IP Address (192.168.0.10), Gateway (0.0.0.0), Subnet Mask (255.255.255.0), Primary DNS (0.0.0.0), Secondary DNS (0.0.0.0), Destination IP (0.0.0.0), and Destination Port (0). There is an unchecked checkbox for "Enable DHCP" and a "Save Config" button at the bottom of the form. The footer of the page states "Copyright © 2013 Inveo s.p.a."

To configure the network adapter module are fields:

- *MAC Address*
- *Host Name* – NETBIOS name,
- *Enable DHCP* – Checking this box forces use the address assigned by the DHCP server
- *IP Address*
- *Gateway*
- *Subnet Mask*
- *Primary DNS, Secondary DNS*



After making changes, click **Save Config**.

6.3 Home

After logging into the device, user can check the current status of outputs, inputs and device status.

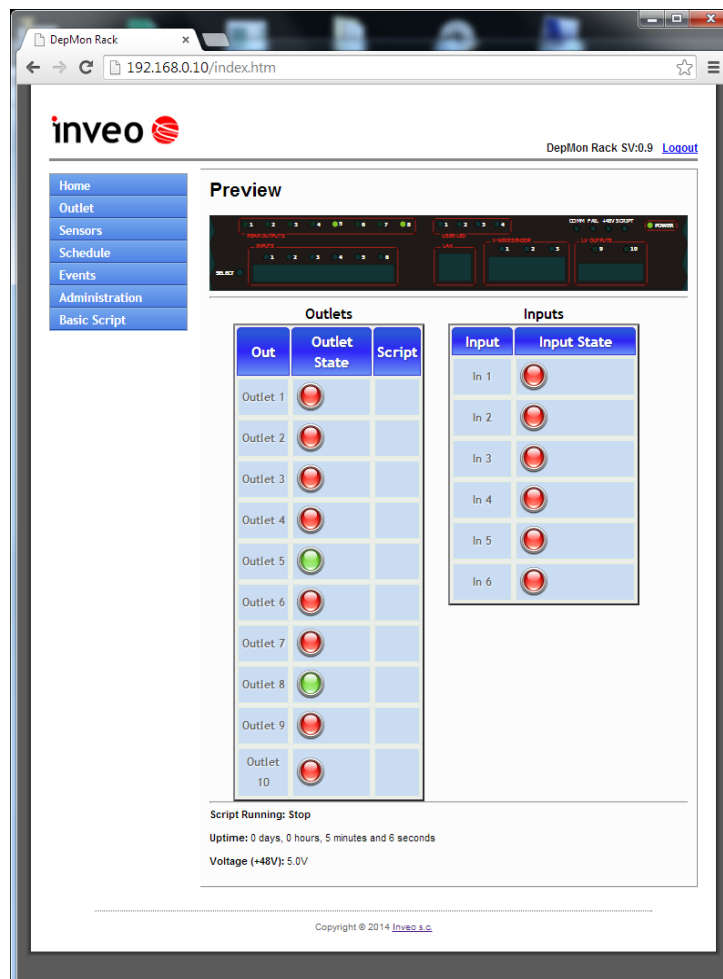
In table **Outlet**, column **OUT** contains the names of output channels that can be change.

OUTLET STATE column shows the current state of the output (on / off).

If the output has been used with the BASIC language script then in the column **SCRIPT** by the appropriate output appears OWN.

In **INPUTS** tab is shown the actual input status:

- active input color green
- inactive input color red.

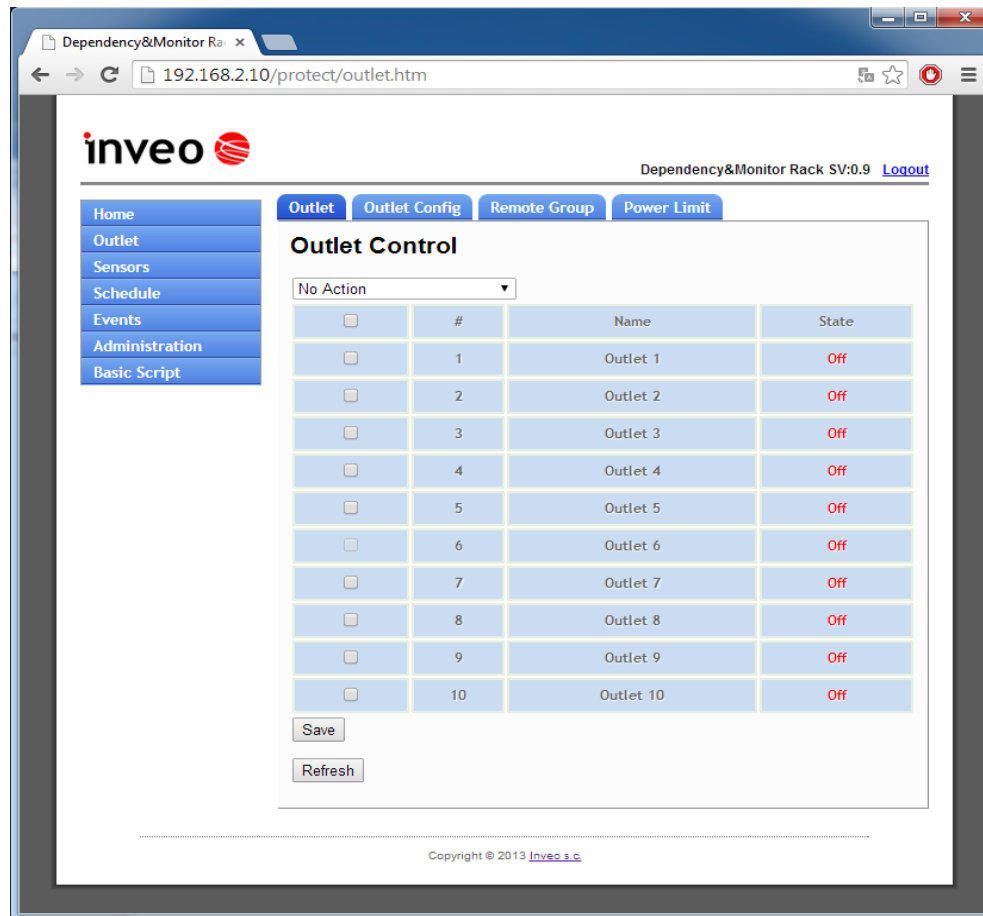


Under the table are placed information:

- **SCRIPT RUNNING** – currently running script [1..4].
- **UPTIME** – the time elapsed since the last reboot of the device.
- **VOLTAGE +48V** – voltage currently measured on analog input

6.4 Switching outputs through a web browser

Changing the status of the outputs is made from the **Outlet** tab in web browser.



To change the status of the outputs user must tick the appropriate box and then select the action to be done and confirm with **Save** key.

Current status of the output is displayed in the **State** column.

Available actions of outputs:

Action	Description
No Action	No action
On Immediate	Immediate switching on the output
On Delayed	Delayed switching on the output
Off Immediate	Immediate switching off the output
Off Delayed	Delayed switching off the output
Reboot Immediate	Immediate execution steps: Switching off the output → pause switching on the output, for all selected outputs
Reboot Delayed	Delayed execution steps: Switching off the output → pause switching on the output, for all selected outputs
Cancel Pending Commands	Cancellation of the shares which were assigned to the corresponding output

6.5 Configuration of outputs

For each output can be assigned a name, a status after power on and membership in the local or remote group.

DepMon Rack SV:0.9 [Logout](#)

Home
Outlet
Sensors
Schedule
Events
Administration
Basic Script

Outlet Outlet Config Remote Group Power Limit

Channels Configuration

This site provides Outlets configuration

No	Name	Power Up	Delay[x0.1s]	Local Group Member	Remote Group Member
1	Outlet 1	On Delay	21	Disable	
2	Outlet 2	No Action	100	Disable	
3	Outlet 3	No Action	30	Disable	
4	Outlet 4	No Action	35	Disable	
5	Outlet 5	On Immediate	40	Disable	
6	Outlet 6	No Action	45	Disable	
7	Outlet 7	No Action	50	Disable	
8	Outlet 8	On Delay	55	Disable	
9	Outlet 9	No Action	60	Disable	
10	Outlet 10	No Action	120	Disable	

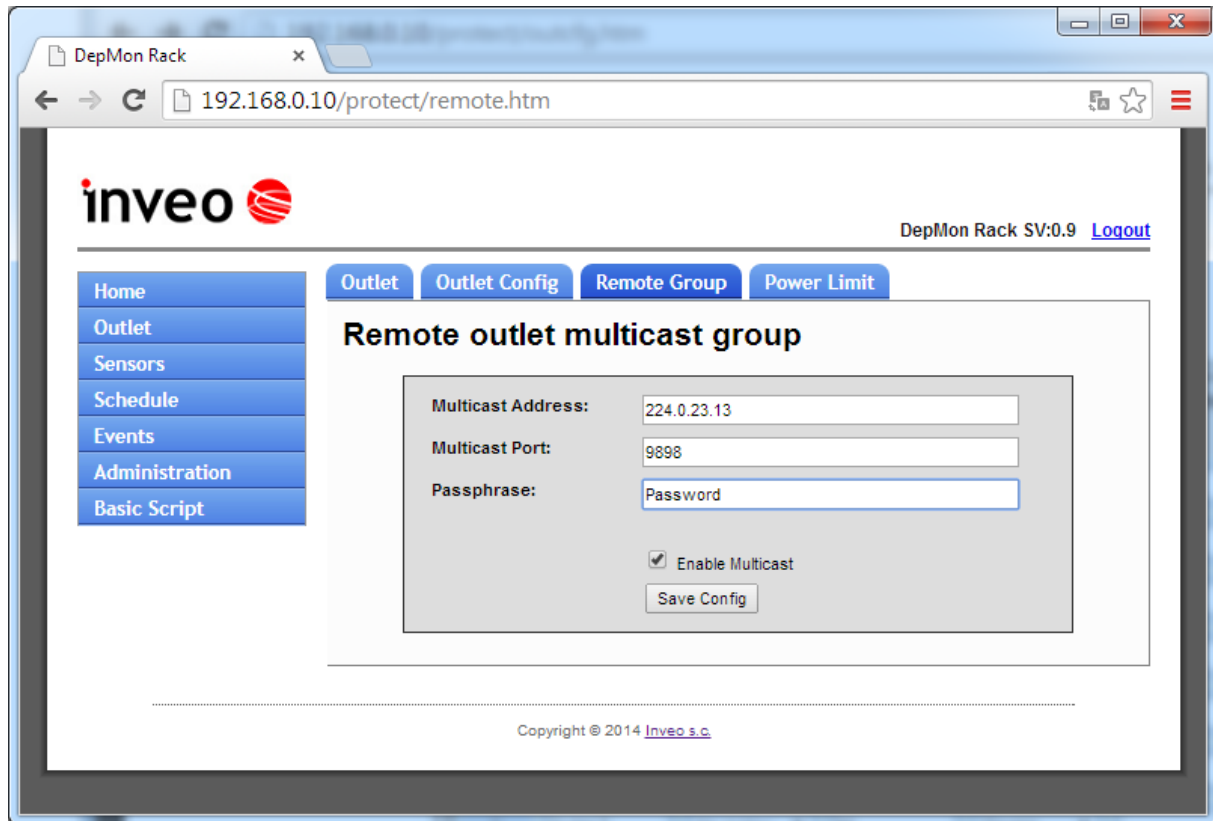
Save Config

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- Name – The name assigned to a given output
- Power Up – Action performed after power on devices
 - No Action → taking no action
 - On Immediate → switching on immediately
 - On Delayed → delayed switching on
- Delay[x0,1s] – output delay time
- Local Group Member – a combination of several outputs into one group. Switching on any output of the group will activate the rest output of this group.

- Remote Group Member – creates a multicast. If within 1 LAN operates several devices, the assignment of the same group for several outputs enables the control of all assigned channels simultaneously.

6.6 Multiple devices group control



In the tab Remote Group is set the broadcast group address to group outputs control of DepMon devices.

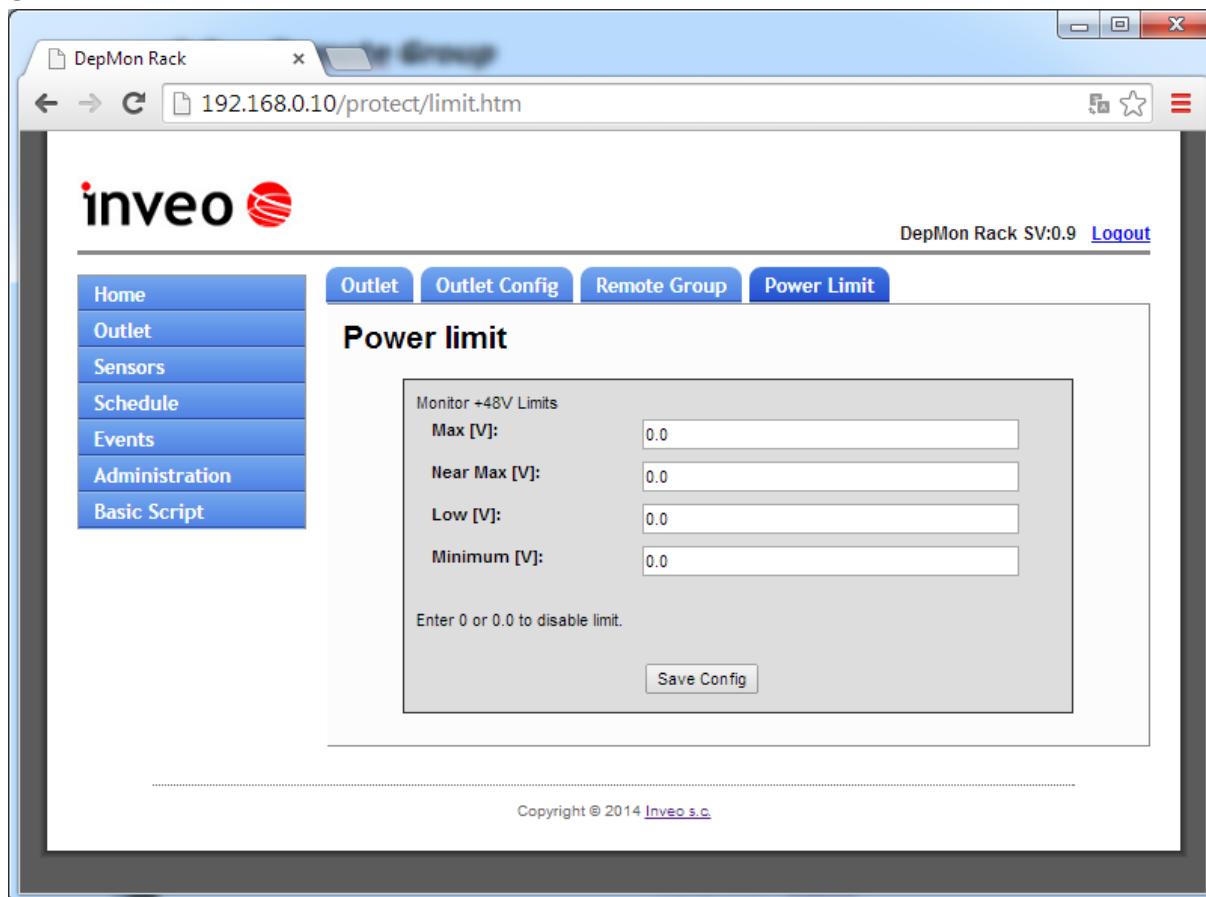
Assignment the outputs from multiple devices to the same group, enables simultaneous control of outputs on physical different devices.

Passphrase parameter sets the data encryption key.

6.7 Control power supply 48V

In the tab Power Limit can be set voltage limits for analog input intended to be measured of 48V rails voltage.

After exceeding one of the thresholds an event can be generated that may, depending on the configuration, send the information to a syslog server, send e-mail or information via SNMP.



The screenshot shows a web browser window with the address bar displaying `192.168.0.10/protect/limit.htm`. The page features the Inveo logo and a navigation menu on the left with options: Home, Outlet, Sensors, Schedule, Events, Administration, and Basic Script. The main content area is titled "Power limit" and includes a "Monitor +48V Limits" section with four input fields: Max [V], Near Max [V], Low [V], and Minimum [V], all set to 0.0. A "Save Config" button is located below these fields. A note at the bottom of the form states "Enter 0 or 0.0 to disable limit." The top right of the page shows "DepMon Rack SV:0.9" and a "Logout" link. The footer contains the copyright notice "Copyright © 2014 Inveo s.c."

7 Configuration and operation of external sensors

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

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

Column NO - order number of the sensor found

Column ADDRESS – unique serial number of the sensor

TYPE – type of sensor found (TEMP / HUM&TEMP)

VALUE – the value read from the sensor

NAME – name assigned to the sensor

In the table **Assigned** are presented sensors with names assigned by the user that are available in the system (by BASIC and events).

Clicking on the name assigned to the sensor allows to set minimum and maximum threshold beyond which can be caused an event.

When next to the sensor number is displayed an exclamation mark, it means that the sensor is defective or has been disconnected.

In the **Alert** column are indicated exceeded the thresholds set for the sensor.

DepMon Rack SV:0.97 [Logout](#)

Sensors

Discovered

[Scan](#) [Reload](#)

No	Address	Type	Value	Name
1	28b04b69020000cc	Temp	21.8°	temp1
2	286262690200006d	Temp	21.8°	
3	28cb4c69020000fd	Temp	21.9°	
4	26f44a9e010000c4	Hum&Temp	21.2° 29%	hum1

[Save](#)

Assigned

No	Address	Name	Alert	Action
1	28b04b69020000cc	temp1		Delete
2	26f44a9e010000c4	hum1		Delete

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7.1 Setting the alarm sensor

The configuration is available by clicking on the name of the sensor in the table **Assigned**.

For each sensor, you can set a minimum threshold (Low) and maximum (High), beyond which the notification is sent to one of the three configured events (Event Priority). Additionally, you can enable or disable the threshold by selecting **Enable**.

The events are described in the section Setting Up Event.

The screenshot shows a web browser window with the address bar displaying '192.168.0.10/protect/senscfg.htm?senscfg=1'. The page features the 'inveo' logo and a navigation menu on the left with links: Home, Outlet, Sensors, Schedule, Events, Administration, and Basic Script. The main content area is titled 'Sensor configuration' and shows the configuration for sensor 'hum1'. It includes three sections for alerts: 'Temperature High Alert', 'Temperature Low Alert', and 'Humidity High Alert'. Each section has an 'Enable' checkbox and a text input field for the threshold value, all currently set to '0'. There is also a 'Humidity Low Alert' section with similar controls. At the bottom, there is an 'Event priority' dropdown menu set to 'Low' and a 'Save Config' button. The footer of the page indicates 'Copyright © 2014 Inveo s.c.'.

7.2 The data from the sensors - Web

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

7.3 The data from the sensors – HTTP XML

Data from the sensors are available as an XML file. Downloading the file is possible by calling HTTP GET resource 'ow.xml'.

The test can be done in 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 the values of temperature and humidity

<name> is the name assigned by a user

Sample file:

```
<owtable>
<dev>
<address>28b04b69020000cc</address>
<temp>22.1</temp>
<name>temp1</name>
</dev>
<dev>
<address>286262690200006d</address>
<temp>22.2</temp>
<name/>
</dev>
<dev>
<address>28cb4c69020000fd</address>
<temp>22.3</temp>
<name/>
</dev>
<dev>
<address>26f44a9e010000c4</address>
<temp>21.6</temp>
<hum>30</hum>
<name>hum1</name>
</dev>
</owtable>
```

7.4 The data from the sensors – SNMP

The SNMP agent can retrieve data only from the sensors assigned in Assigned table.

OID data is: 1.3.6.1.4.1.42814.1.3.20.no.param

no is the number of sensor, *param* is a parameter from the list below.

Available are the following fields:

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

7.5 Status of input-output and devices

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

```
<response>
<out>00000000001</out>
<in>000011</in>
<led>01100000000000010000000010000000</led>
<uptime>0 days, 0 hours, 1 minutes and 0 seconds</uptime>
<script_run>1</script_run>
<script_use>110000000000</script_use>
</response>
```

The meanings of tags:

out – output status in order 10 – 1 (in the example output no. 1 is enabled)

in – inputs status in order 6-1 (in the example inputs 1 and 2 are enabled)

led – LEDs status

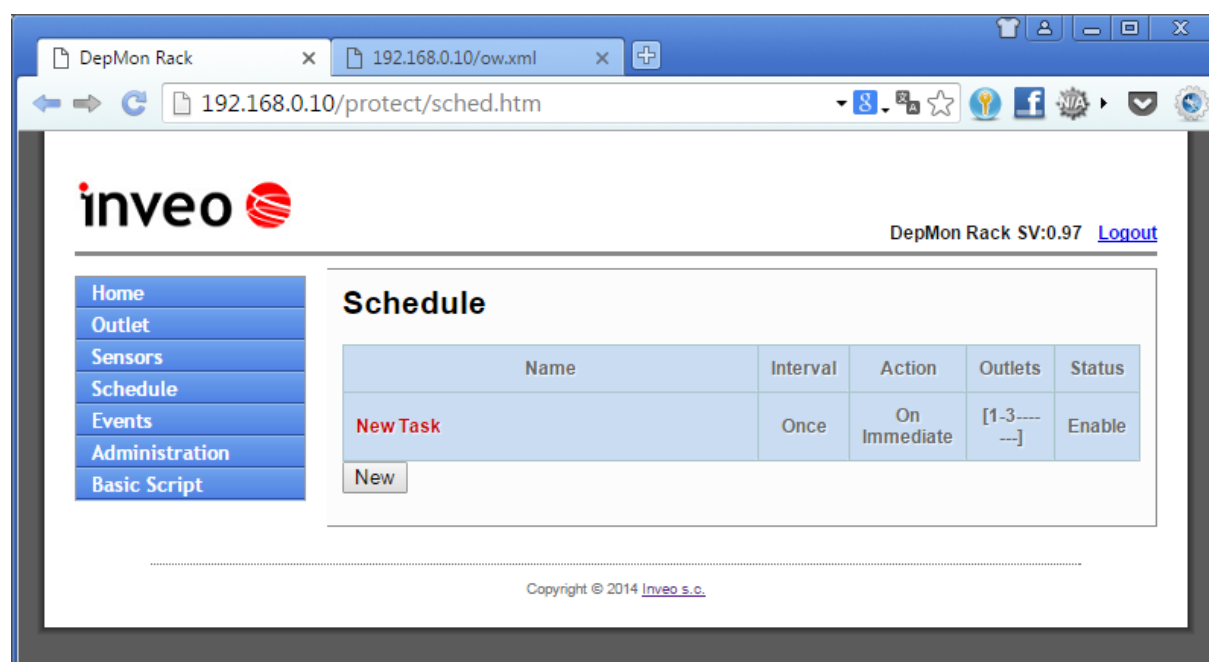
uptime – the time elapsed since the enabling of the device,

script_run – the number of running script BASIC. 0 - script stopped

script_use – output taken over by BASIC interpreter

8 Outputs time programming

In **Schedule** menu can be programmed periodic or single outputs switching on/off menu.



To program new tasks press **New**



To edit the task select **Enable** field.

Name – unique task name

Type – the frequency of the task (ONE TIME, DAILY, WEEKLY)

Action – type of performed action

- ON IMMEDIATE
- ON DELAYED
- OFF IMMEDIATE
- OFF DELAYED
- REBOOT IMMEDIATE
- REBOOT DELAYED

Time – task activation time

In case of **Type**:

ONE TIME:

Month [1-12]

Day [1-31]

Hour [0-23]

Min [0-59]

DAILY:

Hour [0-23]

Min [0-59]

WEEKLY

Week Day [Sun,Mon,Tue,Wed,Thu,Fri,Sat]

Hour [0-23]

Min [0-59]

After setting the time, select the output whose state is modified by the task.

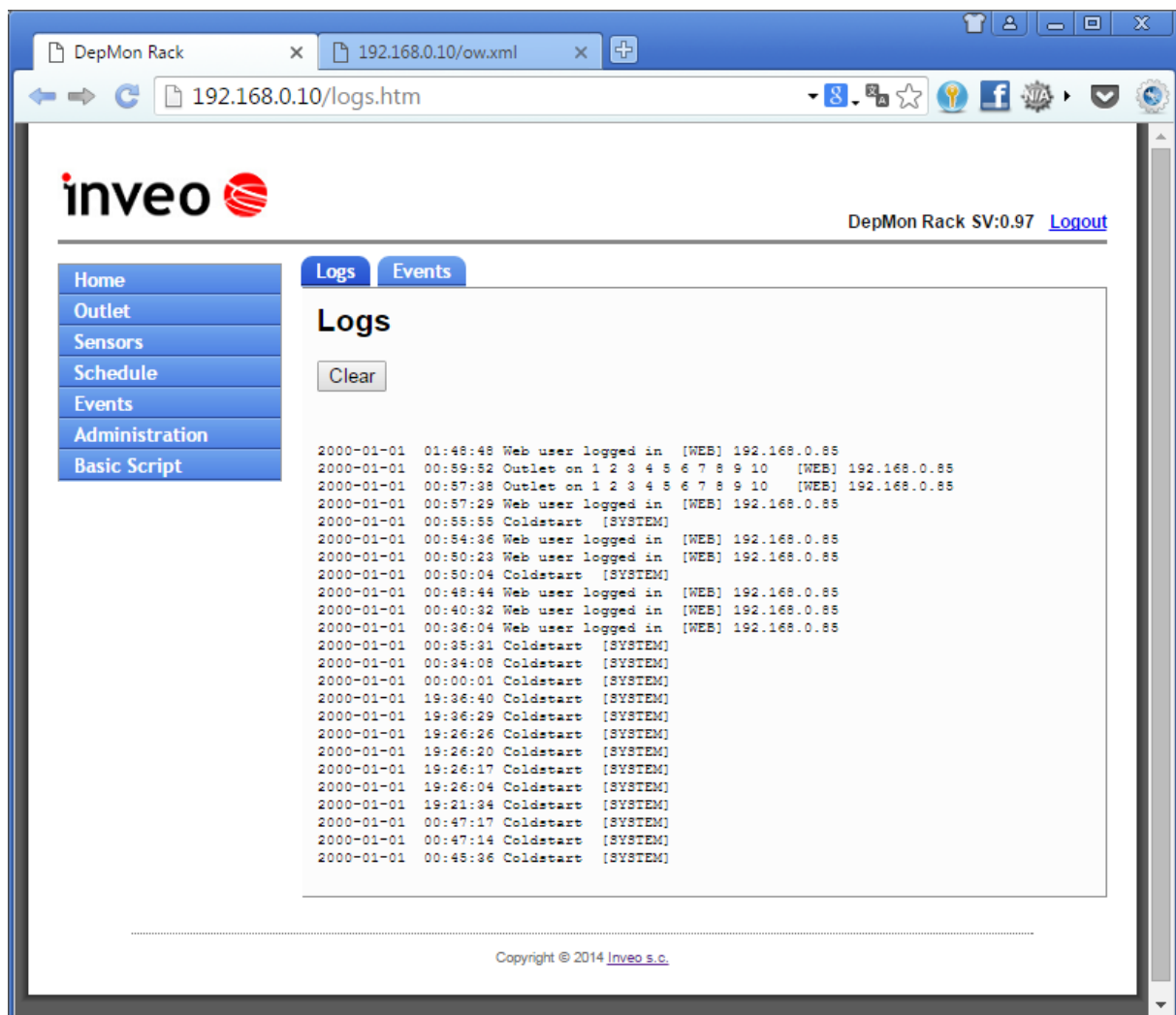
OUTLETS [ALL, 1-10]

Save Action button saves the set task.

9 Logs and actions of events

9.1 Events logs

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

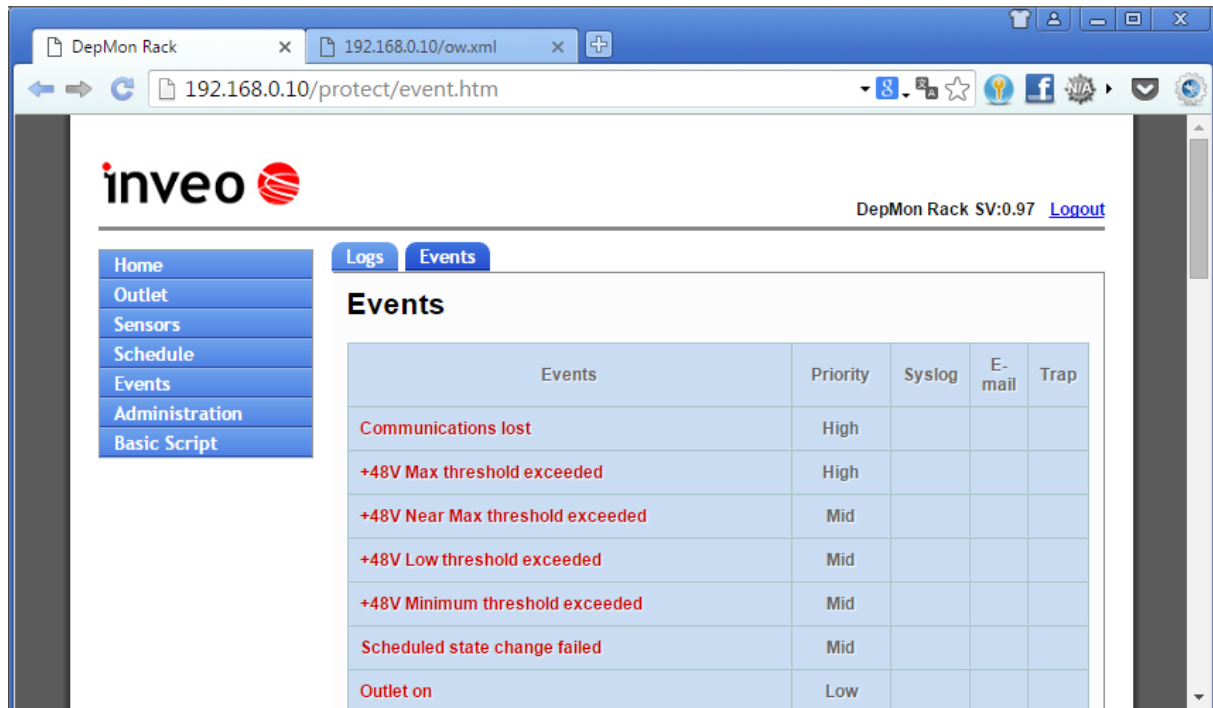


9.2 Events

Each event is able to send its own network notification. Following notification services are available:

- Syslog
- E-mail
- Trap SNMP

Review and configuration of events action is available in the tab **Events->Events**



Available events are summarized in the following table:

Event name	Priority
Communications lost	High
+48V Max threshold exceeded	High
+48V Near Max threshold exceeded	Mid
+48V Low threshold exceeded	Mid
+48V Minimum threshold exceeded	Mid
Scheduled state change failed	Mid
Outlet on	Low
Outlet off	Low
Outlet reboot	Low
Outlet state changed	Low
Device configuration change	Low

Outlet configuration change	Low
Outlet command cancelled	Low
Input 1 Change	Low
Input 2 Change	Low
Input 3 Change	Low
Input 4 Change	Low
Input 5 Change	Low
Input 6 Change	Low
Scheduled state change initiated	Low
Scheduled state change deleted	Low
Coldstart	High
SNMP configuration change	Mid
Detected an unauthorized user attempting to access the Control Console interface	Mid
Detected an unauthorized user attempting to access the Web interface	Mid
Password changed	Mid
Detected an unauthorized user attempting to access the SNMP interface	Mid
Restarting	Low
Console user logged in	Low
Web user logged in	Low
Reset to Defaults	Low
Console user logged out	Low
Web user logged out	Low
Data Log cleared	Low
Configuration change	Low
Script Event High	High
Script Event Mid	Mid
Script Event Low	Low
Sensor Alert	Low

Sensor Alert	Mid
Sensor Alert	High
Sensor Error	High

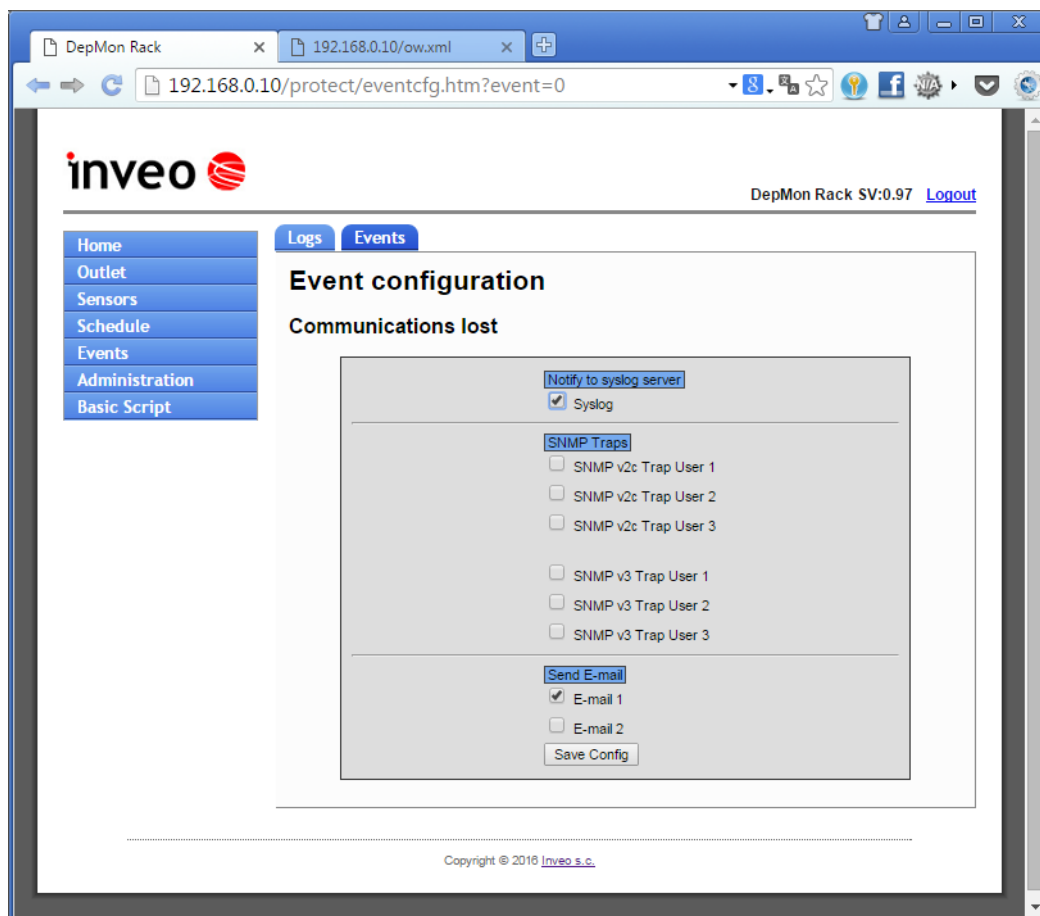
9.3 Configuration of the events

Each event may result in sending notifications. To configure a notification, click on the event name. The event can be single (eg. switching on output) and permanent (eg. excess temperature can last for a long time).

In case of **single event** it is possible only to set up way of notifications only for previously set groups

Groups SNMP Trap are configured in **Administration->SNMP**.

E-mail receivers are configured in **Administration->E-mail**



Permanent events are those that can last for a long time. For example excessive temperature in a facility. The configuration of this type of event is extended by delay sending and repetition in relation to single events.

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

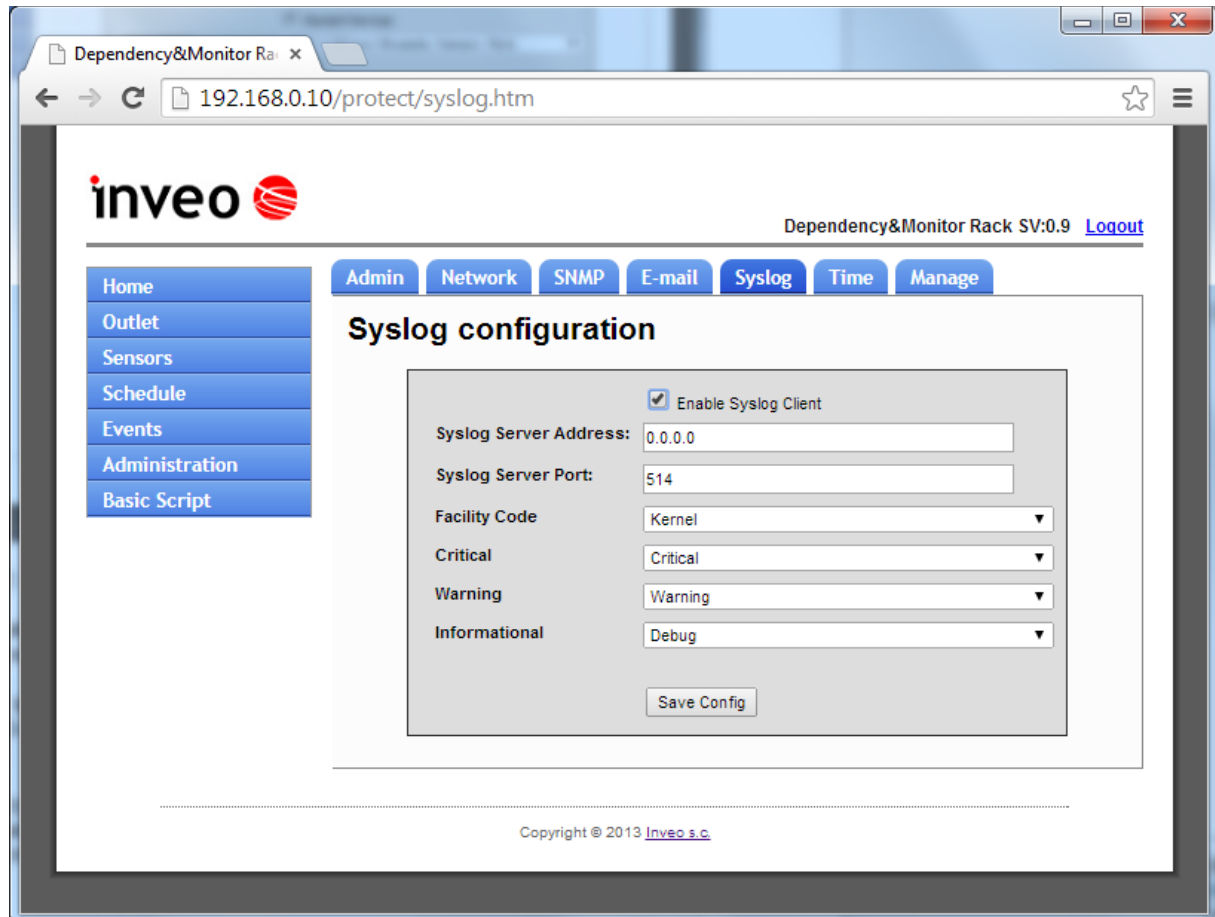
Repeat at an interval of – the time of repeat subsequent repetition notice. Setting „0” will cause the notification will be sent only once in the same way as in the case of single events. Setting „5 minutes” will result in sending alerts every 5 minutes until ending the cause of the events (eg. the temperature drop) or to maximum number of repetitions specified by parameter „Number of repeat”

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

The screenshot shows a web browser window with the URL `192.168.0.10/protect/eventcfg.htm?event=38`. The page is titled "inveo" and "DepMon Rack SV:0.97 Logout". A left sidebar contains a menu with "Home", "Outlet", "Sensors", "Schedule", "Events", "Administration", and "Basic Script". The main content area is titled "Event configuration" and "Sensor Alert". It contains three sections: "Notify to syslog server" with a "Syslog" checkbox; "SNMP Traps" with checkboxes for "SNMP v2c Trap User 1", "SNMP v2c Trap User 2", "SNMP v2c Trap User 3", "SNMP v3 Trap User 1", "SNMP v3 Trap User 2", and "SNMP v3 Trap User 3"; and "Send E-mail" with checkboxes for "E-mail 1" and "E-mail 2". Each section has input fields for "Delay before sending [min] (0-no delay)", "Repeat at an interval of: [min] (0-no repeat)", and "Numbers of repeat: (0-until condition)". A "Save Config" button is at the bottom of the form. The footer of the page reads "Copyright © 2016 Inveo s.r.o."

10 Setting of Syslog notifications

The built-in Syslog client allows you to send messages about operation of the device to a Syslog server.



Configuration is possible in the tab **Administration** → **Syslog**

Enable Syslog Client - select

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

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

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

Tabs Critical, Warning and Informational assign to a set severity of events (Severity code)
from Syslog standard.

11 SNMP

SNMP allows you to retrieve and set the output status, retrieve the input states and reading the state of the sensors.

The module is equipped with an SNMP v2c and SNMPv3.

Enabling is possible in the tab: Administration > SNMP > Enable SNMPv1/v2c or Administration > SNMP > Enable SNMP v3

After selecting the right agent and entering the configuration data, save the settings by pressing the Save Config.

MIB file describing the structure is to download from the SNMP tab.

For each version SNMP (v2c / v3) it is possible to set 3 users with separate settings Read / Write Community (v2c) and passwords (v3).

Every user has also assigned destination address of the server that will receive the SNMP Trap datagrams. It is important because of event notifications sending, when different messages have to reach different receivers

The screenshot shows a web browser window with the URL `192.168.0.10/snmp/snmpconfig.htm`. The page is titled "inveo" and "DepMon Rack SV:0.97". A navigation menu on the left includes Home, Outlet, Sensors, Schedule, Events, Administration, and Basic Script. The main content area is titled "SNMP Configuration" and contains two sections for enabling SNMP.

Enable SNMP v1/v2c

- ☒ Enable SNMP v1/v2c
- User 1 (dropdown)
- Read Community: public
- Write Community: private
- Trap Community: (empty)
- Trap IP Address: 0.0.0.0

Enable SNMP v3

- ☒ Enable SNMP v3
- User 1 (dropdown)
- User name: (empty)
- Authentication Passphrase: (empty)
- Privacy Passphrase: (empty)
- Authentication Protocol: None (dropdown)
- Privacy Protocol: None (dropdown)
- Trap IP Address: 0.0.0.0
- Save Config button

Below the configuration fields, there is a link "Download MIB file". At the bottom of the page, it says "Copyright © 2016 Inveo s.p.a."

12 E-mail configuration

In the tab E-mail can be configured the SMTP client so that the device can send notifications by e-mail.

Recipients are divided into two groups, which gives the choice which notifications are getting into a particular group.

Restriction of the device is the ability to send mail:

- send e-mail without encryption
- send e-mail encryption SSL v3.0 (Cipher: TLS_RSA_WITH_RC4_128_MD5, TLS_RSA_EXPORT_WITH_RC4_40_MD5)

The screenshot shows a web browser window with the URL `192.168.0.10/email/index.htm`. The page title is "inveo" and the version is "DepMon Rack SV:0.97". The navigation menu includes: Home, Outlet, Sensors, Schedule, Events, Administration, Basic Script, Admin, Network, SNMP, E-mail (selected), Syslog, Time, and Manage. The "SMTP Configuration" section contains the following fields:

- Enable SMTP:** ☒
- SMTP Server:** **Port:**
- Use SSL:** ☒
- User Name:**
- Password:**
- From:**
- Recipients 1 (comma separated):**
- Recipients 2 (comma separated):**
- Save:**

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SMTP Server – address of the mail server

Port – port on which the server is listening

User Name

Password

From – the user name displayed in the incoming message

Recipients 1, Recipients 2 – e-mail addresses, separated by commas

13 Time Synchronization – NTP

DEPMON module is equipped with an internal real time clock (RTC).

The module also has the ability to synchronize the internal clock with the time server via SNTP protocol.

The configuration settings can be made in the tab Administration > Time.

The screenshot shows a web browser window with the URL `192.168.0.10/protect/time.htm`. The page is titled "Time Configuration" and is part of the "inveo" system. The interface includes a sidebar with navigation links: Home, Outlet, Sensors, Schedule, Events, Administration, and Basic Script. The main content area has tabs for Admin, Network, SNMP, E-mail, Syslog, Time, and Manage. The "Time" tab is selected, displaying the "Time Configuration" form. The form includes the following fields and options:

- ☐ Auto update (SNTP)
- ☒ Daylight Savings
- Time Zone: (GMT +1:00 hour) Brussels, Warsaw, Paris (dropdown menu)
- Hours: 15
- Minutes: 52
- Seconds: 50
- Day: 22
- Month: 03
- Year: 2016
- Server IP: 0.0.0.0
- Pooling Interval (16 - 65000 sec): 0
- Save Config button
- PC Time Synchro button

At the bottom of the page, there is a copyright notice: "Copyright © 2016 Inveo s.c."

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

Daylight Savings –switching time correction winter / summer

Time Zone – setting an appropriate time zone

Server IP –IP address of the time server to synchronize with.

Pooling Interval – The time interval of synchronization

Without the use of a time server, user can manually enter clock settings by typing in the appropriate fields time and date.

PC Time Synchro button enables to set the the time, such as on a computer.

All settings will be saved by clicking the **Save Config**.

14 Programming in BASIC

DepMon device has a built-in BASIC interpreter that enables control the outputs depending on the state of the inputs, or perform periodic programmed activities. The memory of the program is divided into 4 banks. Each bank can contain an independent program, that can be selected depending on the situation. At one time might be running only one program. The user can choose which program at the device startup.

BASIC SCRIPT menu consists of three tabs:

- INTERACT – script interaction with user tab
- SCRIPT – startup script tab
- EDITOR – teditor BASIC tab

14.1 Communication with the user tab - Interact

Through tab INTERACT is possible an interaction with the program written in BASIC. For example, if the program controls the fan depending on the temperature, it is possible to read the value of the measured temperature and set the threshold at which turns on the fan.

The LCD field displays the same data as on the display placed on the front side of the device.

To display data from a script BASIC is designed 10 boxes marked as READ. In the field WRITE can be entered the parameters that will be read by the control program.

Examples of use fields READ and WRITE are presented in the *Examples* section.

DepMon Rack
192.168.0.10/script/interact.htm

inveo

DepMon Rack SV:0.9
Logout

Home
Outlet
Sensors
Schedule
Events
Administration
Basic Script

Interact
Script
Editor

Script Interact

Script running: 1

LCD

hu: 41%
T: 22.3

hst: 50
22:26

Read

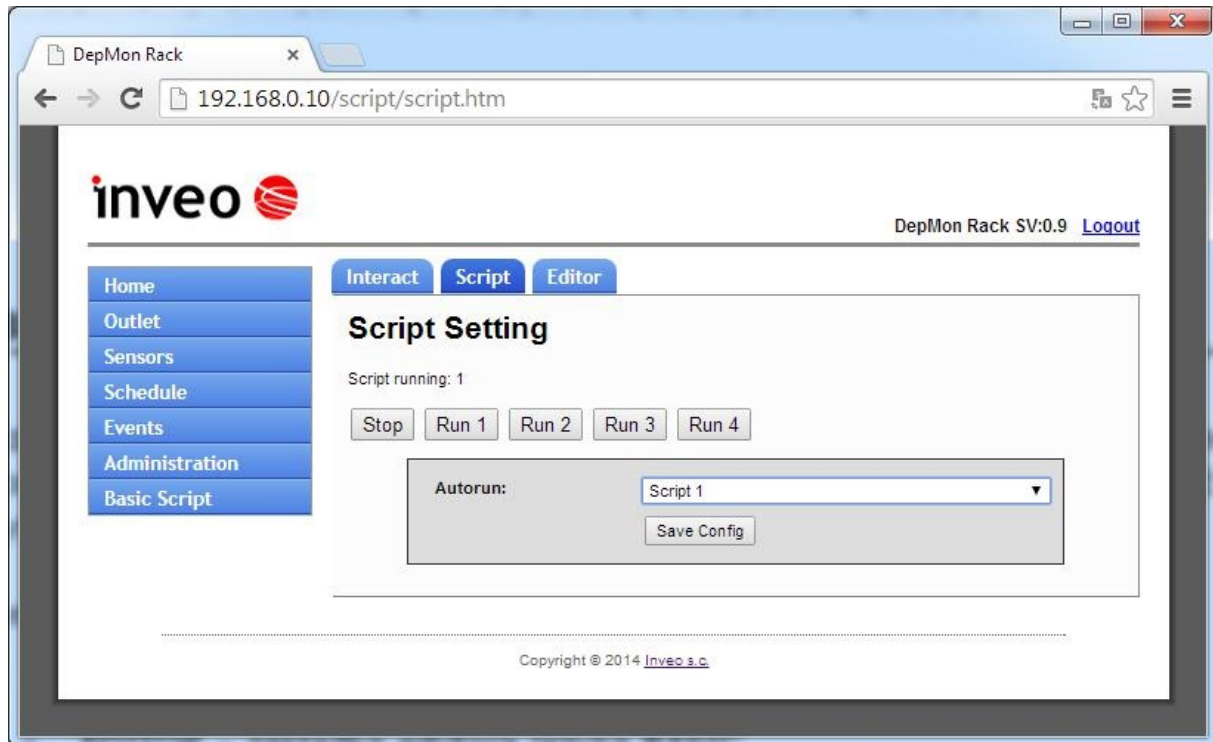
Label	Value
Wentylator	0
Wilgotnosc[%]	41
Temperatura 1	22.3

Write

Label	Value	Set
Nastawa wilgotnosci	50	Set
		Set
		Set

14.2 Running the Script - Script

In the tab SCRIPT can be start or stop the script placed in one of the four memory banks. In the selection Autorun can be set the script to be run when starting device.



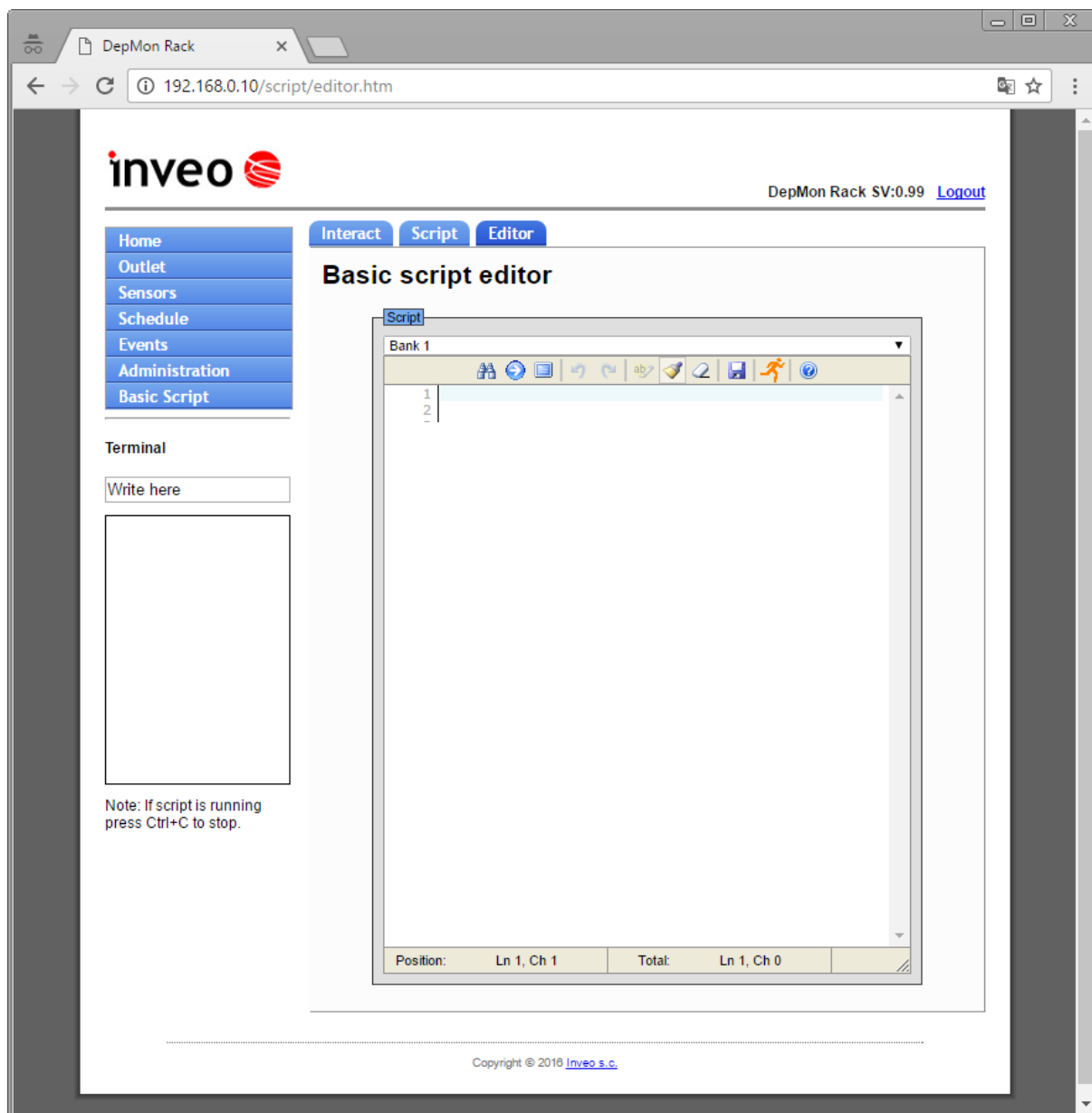
14.3 Script Editor - Editor

The tab Editor is used to edit the program from any bank.

After entering in the edit field program code, save the program to memory (disk icon) and run created program (running man icon).

Any errors can be followed in the console window on the left.

After stopping the program, in the console can be entered and executed individual BASIC orders.



14.4 BASIC commands

Command	Description
DIM <i>var(dim)</i> , [<i>var(dim)</i>]...	The definition of a variable.

or DIM var\$(dim) LENGTH n Example: DIM nbr(50) DIM str\$(20) DIM a(5,5,5), b(1000) DIM str\$(200) LENGTH 20	Specifies a variable that is a table single or multi-dimensional.
DO <statements> LOOP	Loop DO
DO WHILE expression <statements> LOOP	Loop DO .. WHILE
DO <statements> LOOP UNTIL expression	Loop DO .. LOOP UNTIL
FOR counter = start TO finish [STEP increment]	Loop FOR
ELSEIF exp THEN	Conditional for IF
ENDIF	End of a conditional statement IF
END	End of program
END FUNCTION	End of function
END SUB	End of subroutine
FOR next	Loop FOR
GOSUB	Go to subroutine
GOTO	Go to instructions
IF THEN	IF statement
PRINT expression [[,;]expression] ... etc	Writing to the console
RANDOMIZE nbr	Reinitialization of the generator of pseudorandom numbers
REM string	Comment
RETURN	Back from the subroutine
SETOUT x Example: SETOUT 1 - activation of output 1 SETOUT 9 - activation of output 9	Activates output x [1..10] It must be remembered that the output must already be initiated by command USEOUTS
CLROUT x Example: CLROUT 1 - disables output 1 CLROUT 9 - disables output 9	Disables output x [1..10] It must be remembered that the output must already be initiated by command USEOUTS
OUT x , y Example: OUT 2,1 - activation of output 2 OUT 2,0 - disables output 2 OUT 10,0 - disables output 10	Set the output status x [1..10] to the value y [0..1]
SETLED [1..4] Example: SETLED 1 -activation of USER LED 1 SETLED 3 -activation of USER LED 3	Enables control of the group USER LED on the front panel.

CLRLED [1..4] Example: CLRLED 1 - disable USER LED 1 CLRLED 2 - disable USER LED 2	Disables control group USER LED on the front panel.
LED x , [0,1] Przykład: LED 1,0 - disable USER LED 1 LED 4,1 - enable USER LED 4	Sets the state of the control "x" in the USER LED to the value [0..1]
SETTIMER (x , y)	Sets the timer x on time y Available timers 1-10 The timers are decremented every 1ms If the timer reaches 0, then there is no further reduced and the function CHKTIMER (x) returns 0
LCDPRINT (string\$)	Writing on the LCD Syntax as PRINT. The screen must be taken over by BASIC with command USELCD
LCDGOTOXY (x , y)	Setting the cursorLCD
LCDCLR	Clearing LCD
USEOUTS x , y , z Example: USEOUTS 1 USEOUTS 1,3,8	Determines Which output will be controlled from the BASIC The outputs used in the script are marked with tag OWN on page HOME
USELCD	The takeover the screen by the BASIC interpreter
UNLCD	Returning the screen by the interpreter
CHKTIMER (x)	Checking if the timer 1-10 is reset 0 – the timer is reset (preset time has elapsed) 1- timer had not finished counting down the preset time
GETIN (x) Example: x=GETIN (1)	Returns the state of the input number x [1..6]
GETOUT (x) Example: x=GETOUT (3) -the variable x assign the output state 3	Returns the state of the input number x [1..10]
GETTEMP ("name") Example print GETTEMP ("t1") x=GETTEMP ("temp1")	Returns the temperature read from sensor named „name”.
GETHUM("name")	Returns the moisture read rom the sensor named „name”
ISSENSOR("name")	Returns 1 – sensor ok 0 – sensor error
LABELRD #[1..10]; "name" Example: LABELRD #2;"Temperature of rack 1"	Typing to tab Interact the name in the reading table

LABELWR <i>#[1..10]; "name"</i> Example: LABELWR #2; "Temperature max:"	Typing to tab Interact the name in the record table
VALUERD #2; wart Example VALUERD #2; GETTEMP("name")	Typing to tab Interact the value in the reading table
GETVALSTR (<i>x</i>)	Returns the value from tab Interact from the record table in the form of string
GETVALINT (<i>x</i>)	Returns the value from tab Interact from the record table in the form of number
timesec ()	Returns seconds RTC
timemin ()	Returns minutes RTC
timehour ()	Returns hours RTC
timedate ()	Returns the day of the month RTC
timemonth ()	Returns the month RTC
timeyear ()	Returns the year RTC
timewday ()	Returns the day of week (0-sunday) RTC
EVENTHIGH <i>string\$</i>	Raises an event Script High with text <i>string\$</i>
EVENTMID <i>string\$</i>	Raises an event Script Mid with text <i>string\$</i>
EVENTLOW <i>string\$</i>	Raises an event Script Low with text <i>string\$</i>
ABS (<i>number</i>)	Returns the absolute value. If the number was negative returns a positive number. If the number was positive returns positive.
ASC (<i>string\$</i>)	Returns ASCII code for the first letter of <i>string</i>
ATN (<i>number</i>)	Returns Arcus tangens. The argument given in radians
BIN\$ (<i>number</i>)	Returns text representing binary value of the number
CHR\$ (<i>number</i>)	Returns the mark of given value ASCII
CINT (<i>number</i>)	Rounding:: 45.47 -> 45 45.57 -> 46 -34.45 -> -34 -34.55 -> -35 See also INT() and FIX().
COS (<i>number</i>)	Returns Cosinus. The argument given in radians
DEG (<i>radians</i>)	Converting radians to degrees.
EXP (<i>number</i>)	Returns the exponent
FIX (<i>number</i>)	Returns an integer value, ignoring the fractional part. The difference between INT and FIX is that negative values are not rounded down,

	as in INT()
FORMAT\$(nbr [, fmt\$])	Returns text formatted as printf in C. Examples: format\$(45) returns 45 format\$(45, "%g") returns 45 format\$(24.1, "%g") returns 24.1 format\$(24.1, "%f") returns 24.100000 format\$(24.1, "%e") returns 2.410000e+01 format\$(24.1, "%09.3f") returns 00024.100 format\$(24.1, "%+.3f") returns +24.100 format\$(24.1, "***%-9.3f**") returns **24.100 **
HEX\$(number)	Returns text hex from given numerical value
INSTR([start-position,] string-searched\$, stringpattern\$)	Returns the position in the text 'stringsearched\$' wherein is detected phrase 'string-pattern\$' starting from 'start-position'.
INT(number)	Returns an integer value. 9.89 returns 9 -2.11 returns -3
LEFT\$(string\$, numberof-chars)	Returns subtext from 'string\$' containing 'number-of-chars' from the beginning of the text 'string\$'
LEN(string\$)	Returns the number of marks(length) 'string\$'.
LOG(number)	Returns the value of the natural logarithm
LCASE\$(string\$)	Returns text in lowercase
MID\$(string\$, startposition-in-string[, numberof-chars])	Returns section of the text
OCT\$(number)	Returns text representing number in octal.
PI	Returns the value of PI
RAD(degrees)	Converting degrees to radians
RIGHT\$(string\$, numberof-chars)	Returns subtext of a given value to the end.
RND(number)	Returns pseudo random number between 0 and 0.99999.
SGN(number)	Returns the mark of the number: +1 for positive numbers, 0 for 0 -1 for negative
SIN(number)	Returns Sinus. The argument given in radians
SPACE\$(number)	Returns text filled spaces of predetermined length
SQR(number)	Returns the square root
STR\$(number)	Returns the text of a decimal number
STRING\$(number, asciivalue string\$)	Returns the text length 'number' which starts from the text 'string\$'. If string\$ is shorter than 'number'that text will be

	complemented with values ASCII
<i>TAN(number)</i>	Returns Tangens. The argument given in radians
<i>UCASE\$(string\$)</i>	Returns text in uppercase
<i>VAL(string\$)</i>	Returns the numerical value of the text. The function recognizes the prefixes: &H – for the hexadecimal value &O – for octal &B – for binary If the prefix is different that function returns 0

14.5 Example programs

14.5.1 Example 1

The program displays the value of temperature and humidity from the sensor called h1.

10 uselcd	Taking LCD
20 lcdclr	ClearLCD
30 lcdgotoxy 0,0	Position the cursor on 0,0
40 lcdprint "T:";gettemp("h1")"C"	Displays temperature from the sensor "h1"
50 lcdgotoxy 0,1	Position the cursor on 0,1
60 lcdprint "H:";gethum("h1")"%"	Displays humidity from the sensor "h1"
70 goto 30	Go to the line 30

14.5.2 Example 2

The program starts output 2 when the temperature sensor t1 rises above 41 degrees and turns off when the temperature falls below 39 °

10 useouts 2	Taking output 2
20 if gettemp("t1") < 39 then	If the temperature t1 below 40 turn off the
30 out 2,0	output 2
40 elseif gettemp("t1") > 41 then	If the temperature t1 above 41 turn on the
50 out 2,1	output 2
60 endif	End of the conditional function
70 goto 20	Go to the line 20

14.5.3 Example 3

Example of using a subroutine for switching the output depending on the preset humidity and inputs. If the inputs 1 and 2 are active, the humidity comparison is performed. If the inputs 1 and 2 are active, the output 1 is also active.

10 useouts 1,2	Taking output 1 and 2
30 if getin(1) AND getin(2) then	If the inputs 1 and 2 are active
40 out 1,1	turn on output 1
50 WENT	Call subroutine WENT
60 else	If any of the inputs 1 and 2 is not active,
70 out 1,0	turn off output 1
80 out 2,0	turn off output 2
90 endif	
110 goto 30	Go to the line 30
120 sub WENT	Subprogram WENT
130 if gethum("h1") < 50 then	If the humidity h1 below 50
140 out 2,0	turn of output 2
150 elseif gethum("h1") > 50 then	If the humidity h2 above 50
160 out 2,1	turn on output 2
170 endif	End of the conditional function
180 end sub	End of the subprogram

14.5.4 Example 4

The program turns on output 2 when the temperature of the sensor t1 rises above the user set and off when the temperature drops below the set. The current value and temperature setpoint is available in the tab **Basic script->Interact**

```
10 useouts 2
20 labelwr #1; "Temperature setting"
30 labelrd #1; "Temperature [C]"
40 valuewr #1; "20"
50 valuerd #1; gettemp("t1")
60 if gettemp("t1") < getvalint(1) then
70 out 2,0
80 elseif gettemp("t1") > getvalint(1) then
90 out 2,1
100 endif
110 goto 50
```

Taking output 2
Setting the label on the website
Setting the label on the website
The default setpoint 20 degrees
Typing temperature t1 on the website
If temp.t1 below the set
turn off the output 2
If the temperature t1 above set
turn on the output 2
End of the conditional function
Go to the line 50

The tab **Interact**

DepMon Rack SV:0.97 [Logout](#)

Interact Script Editor

Script Interact

Script running: 1

LCD

Label	Value
Temperatura [C]	28.5

Label	Value	Set
Nastawa temperatury	20	Set
		Set
		Set

15 Restore factory default settings

To restore device to factory default settings, hold the SELECT button for 8 seconds.

After the above steps the device 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:

- Depmon module
- power cable 230V
- mounting to 19 "rack with screws
- CD with user manual
- temperature sensor with cable 1m
- 6 resistors 2k2 for configuring the inputs

Optional 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

[illegible]