User manual
Media Monitor



Dear Customer

Thank you very much for choosing our product. At the same time, please read this manual carefully before using it, as it indicates the most appropriate ways to handle this appliance, taking into account basic safety and maintenance principles. Please also retain the manual for future reference.

Remember!

The manufacturer will not be held liable for any damage caused by improper use of the device or improper handling, nor for any malfunctions of the controller resulting from improper operation.

Spis treści:

Spis treści: 3
1 Preliminary information 4
2 Warranty and liability of the manufacturer 4
3 Safety of use 5
3.1 Storage, operating conditions 5
3.2 Installation and use of the modulemodułu 5
3.3 Disposal and decommissioning 5
4 Purpose of the device 5
5 Construction of the device 6
5.1 Technical data: 6
5.2 Dimensions 7
5.3 General view 7
6 Configuring the unit 9
6.1 Entering the module page via the Discoverer programme 9
6.2 Changing the subnet of the configuration computer 9
7 Web page of the device 11
8 Home tab 12
9 Counter tab 13
10 Log tab 14
11 Network tab 14
12 Zakładka SNMP 15
13 Administration tab 15
14 Windows command line control program 16
15 Linux control program 18
16 Communication with the module via the modbus TCP protocol 19
17 Communication with the module from an external network 20
18 Restoring the factory settings 20
19 Software update 20

1 Preliminary information

Before using the controller, please read the User Manual carefully and strictly follow the instructions contained therein.

Description of symbols used in this manual:

Warning	This symbol indicates that it is necessary to read a specific section of the User Manual that contains important information and warnings. Ignoring these warnings may lead to injury or damage to the equipment.

Directions	Important instructions and information. Observing the texts marked with this symbol facilitates operation.

The screenshots presented in this manual may not reflect the exact appearance of the actual interface. Due to constant software updates, certain features may differ from those shown in this document. The manufacturer is not responsible for any consequences resulting from software discrepancies.

2 Warranty and liability of the manufacturer

Warning	The manufacturer provides a one-year warranty for the device and a post-warranty service for a period of 10 years from the date the device was placed on the market. The warranty covers all material and manufacturing defects.

The manufacturer undertakes to comply with the warranty agreement if the following conditions are met:

- all repairs, modifications, extensions and calibrations of the appliance are carried out by the manufacturer or an authorised service centre,
- the mains power supply system complies with the applicable standards in this respect,
- the appliance is operated in accordance with the instructions given in in this manual,
- the appliance is used in accordance with its intended use.

The manufacturer shall not be held liable for any consequences resulting consequences of incorrect installation, improper use of the appliance, non-compliance with the operating instructions and repairs carried out by unqualified persons.

Warning	There are no parts in the appliance that the user is allowed to replace himself.

3 Safety of use

The module was designed with the latest electronic components, reflecting contemporary trends in global electronic technology. Particular emphasis has been placed on guaranteeing safety during use and the operational reliability of the control. The housing of the unit is made of plastic of a high quality standard.

3.1 Storage, operating conditions

The device should be stored indoors where the atmosphere is free of vapours and corrosive agents and:

- an ambient temperature of -30°C to +60°C,
- humidity between 25% and 90% (no condensation allowed)
- an atmospheric pressure of 700 to 1060hPa.

The unit is designed to operate under the following conditions:

- ambient temperature of -10°C to +55°C,
- humidity between 30% and 75%,
- atmospheric pressure of 700 to 1060hPa.

Recommended transport conditions:

- ambient temperature from -40°C to +85°C,
- humidity 5% to 95%,
- atmospheric pressure 700 to 1060hPa.

3.2 Installation and use of the modulemodułu

The module should be operated as recommended later in this manual.

3.3 Disposal and decommissioning

In the event that it becomes necessary to dispose of the unit (e.g. at the end of its useful life), contact the manufacturer or the manufacturer's representative, who is obliged to respond appropriately, i.e. to collect the unit from the user. The user may also contact companies dealing with the disposal and/or decommissioning of electrical or computer equipment. Under no circumstances should the appliance be placed with other waste.

4 Purpose of the device

The Media Monitor module is used for monitoring and counting electrical impulses, resulting in the monitoring of, for example: current consumption. It is equipped with four opto-isolated inputs, allowing the connection of devices such as electricity meters, water meters or infrared barriers. It allows remote access and control via LAN, using the built-in website or available communication protocols.

5 Construction of the device

5.1 Technical data:

Power supply:

10-24 VDC (3.5mm screw connector) or passive PoE 10-24VDC
Power consumption: 1,5 W

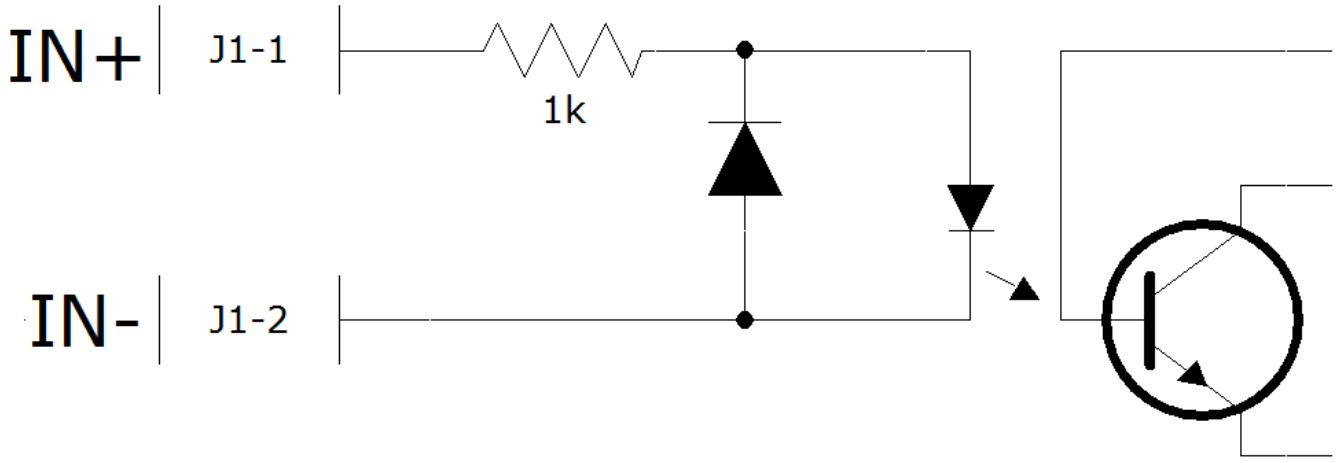
Inputs:

4 opto-isolated binary inputs
Input type: optocoupler
Maximum input voltage 24V

LAN:

Ethernet 1x10Mbps, RJ45

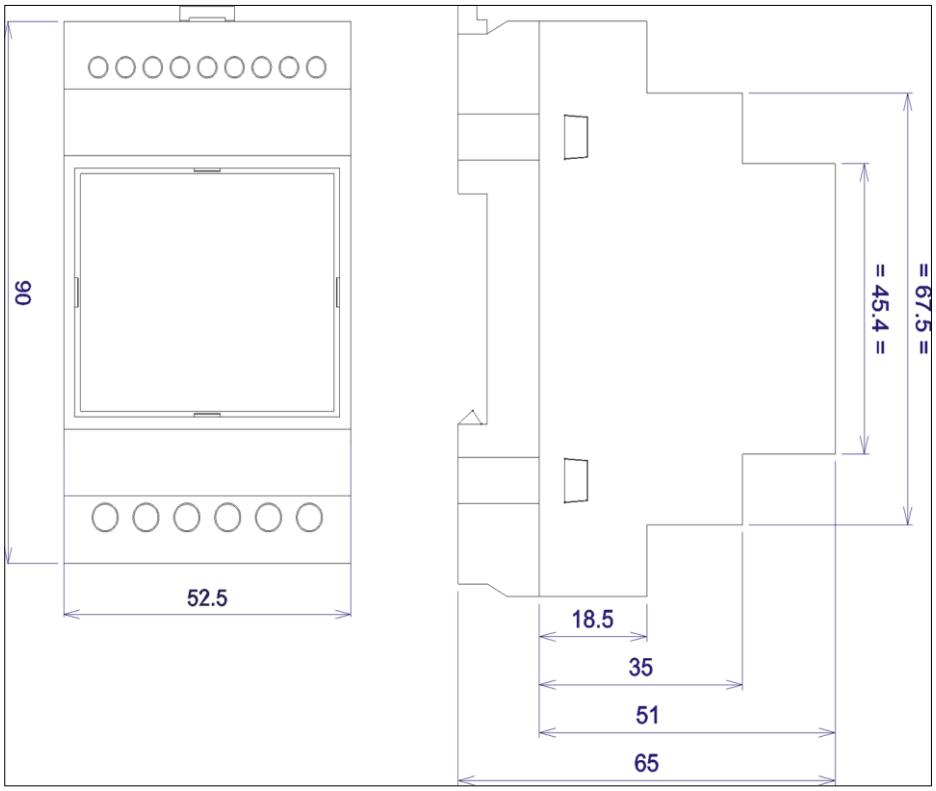
The diagram of the binary input is shown in the figure below.



The input is designed for a DC input voltage of 10-24V.
Each input is protected by a reverse polarity protection diode
polarity.

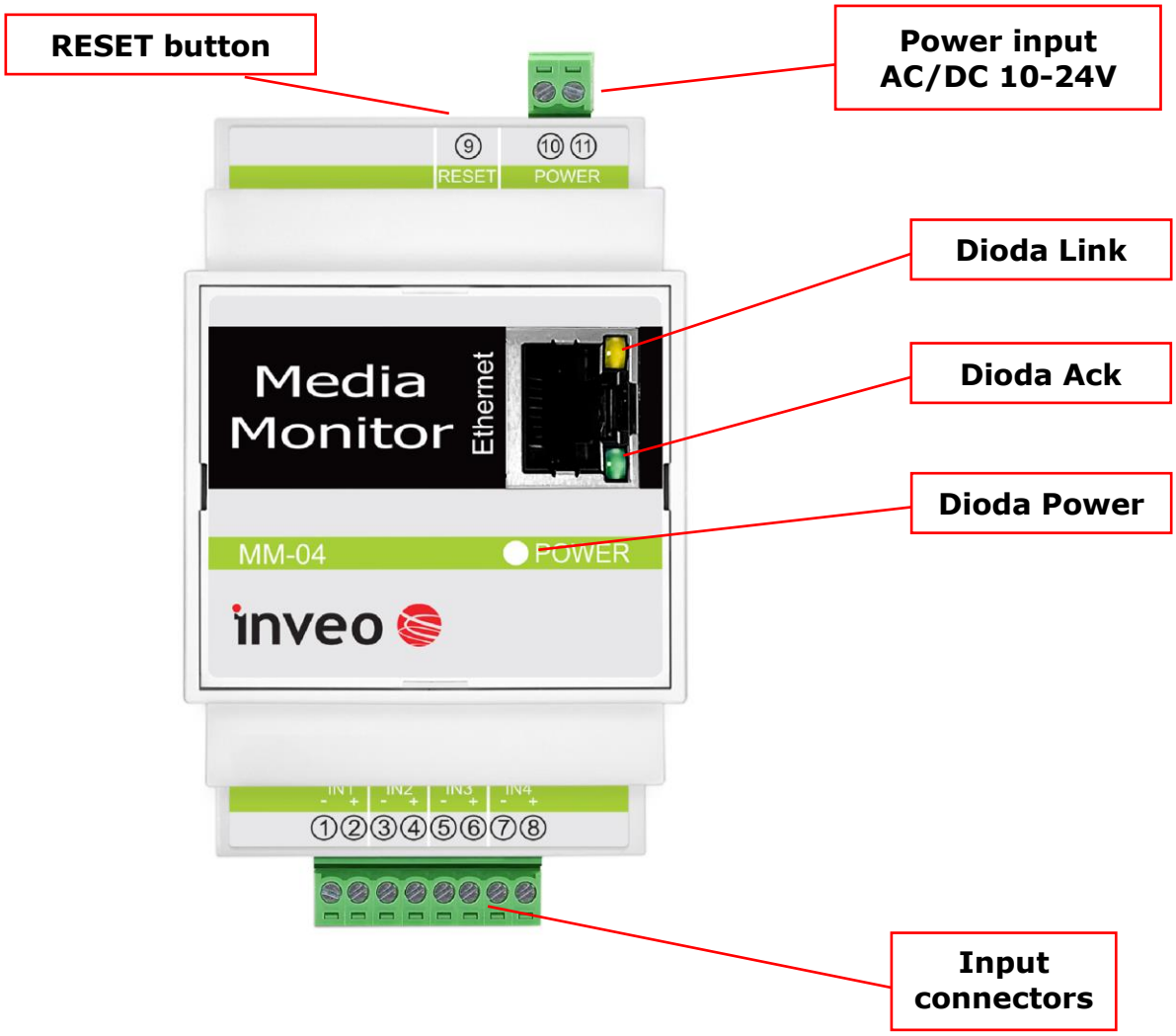
5.2 Dimensions

All dimensions are in millimetres.



5.3 General view





***Input connectors**
1-2 - counter channel 1
3-4 - counter channel 2
5-6 - counter channel 3
7-8 - counter channel 4

Indicator lights:

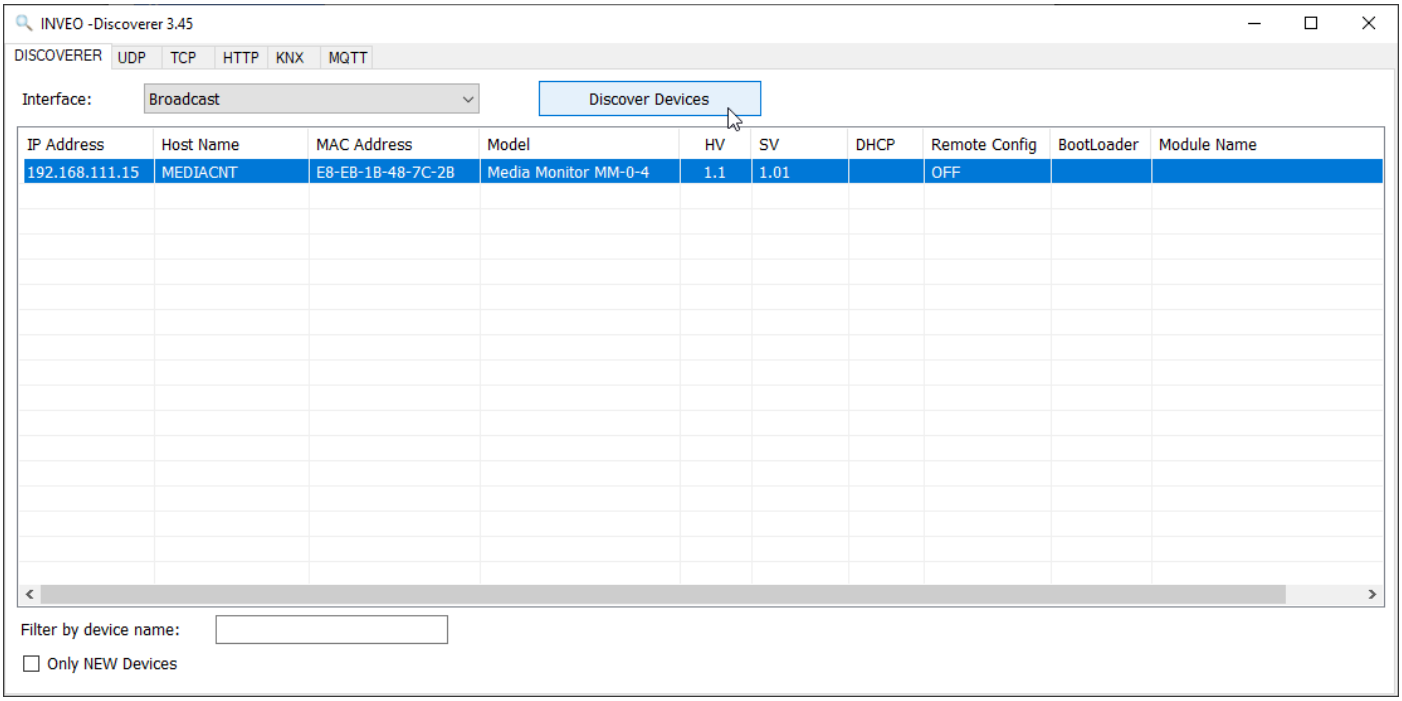
Name	Description
POWER	supply of the module
LINK	active LAN connection indication
ACK	signalling active LAN connection

6 Configuring the unit

On first start-up, it is necessary to configure the device. This can be done in 2 ways. The simplest method is to use the Discoverer programme from Inveo.

6.1 Entering the module page via the Discoverer programme

Once you have enabled Discoverer and found the appropriate device, simply double-click to open the device page in your browser.



6.2 Changing the subnet of the configuration computer

When configuring the device bypassing the Discoverer application, you must first change the subnet address of the computer connected to the same network.

To do this, go to the network configuration of the computer:

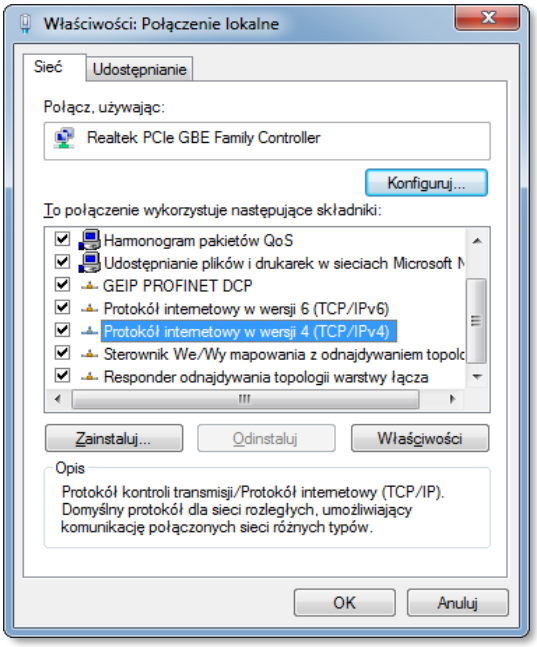
- Press Win + R, type ncpa.cpl and press Enter,

OR

- Start → Control panel → Network and Internet → Network centre

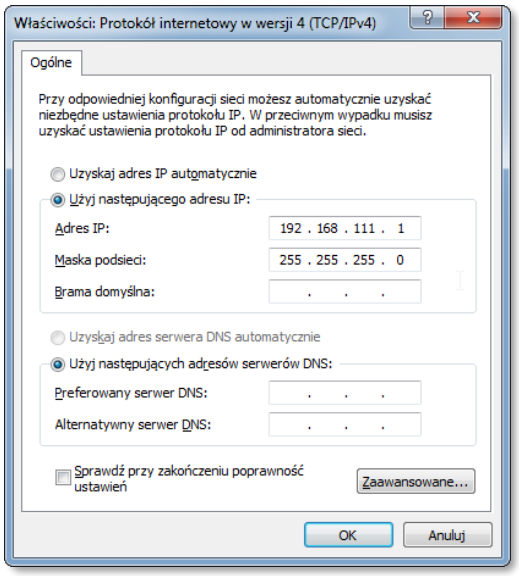
and Sharing → Change network adapter settings.
Select your network connection, press the right mouse button and click Properties.

Once selected, the configuration screen will appear:



Changing the network configuration in WINDOWS

Then select the "Internet Protocol (TCP/IP)" setting and enter the following parameters:



Examples of TCP/IP protocol settings

After accepting the settings with the OK button, start your web browser and enter the address: 192.168.111.15. (Default user and password: admin/admin00).

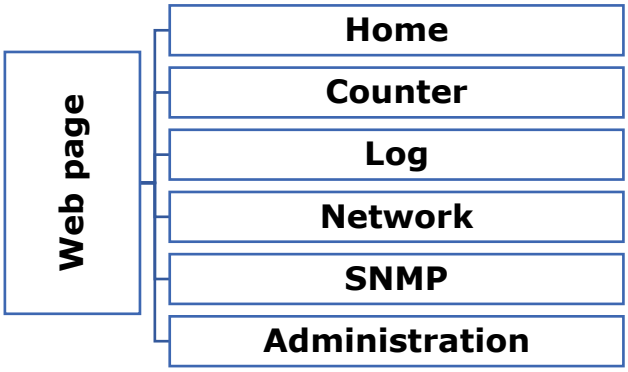
In the Network tab it is possible to change the LAN parameters.

7 Web page of the device

The management and configuration of the Media monitor is carried out via a web browser. Access to all the device's functions is not only simple, but also clear and transparent. An extensive menu offers full control over the device's functions, allowing its operation to be precisely tailored to individual needs.
After starting the web page, the main window is displayed, containing basic information about the model, software version of the device:



Block diagram of the device menu:



8 Home tab

The Home tab makes it possible to display the current status of the counters. The Current Time and Current Date fields show the current time of the built-in RTC clock.
Each meter channel is presented in the form of a table, with the channel name displayed in the header. The table consists of two rows for low and high tariff respectively:

Energy1

Rate	Counter	Value	Cost	Total
Low	0	0.00 -	0.00	0.00
High	0	0.00 -	0.00	0.00

Water

Rate	Counter	Value	Cost	Total
Low	0	0.00 -	0.00 -	0.00 -
High	0	0.00 -	0.00 -	0.00 -

Energy2

Rate	Counter	Value	Cost	Total
Low	0	0.00 -	0.00 -	0.00 -
High	0	0.00 -	0.00 -	0.00 -

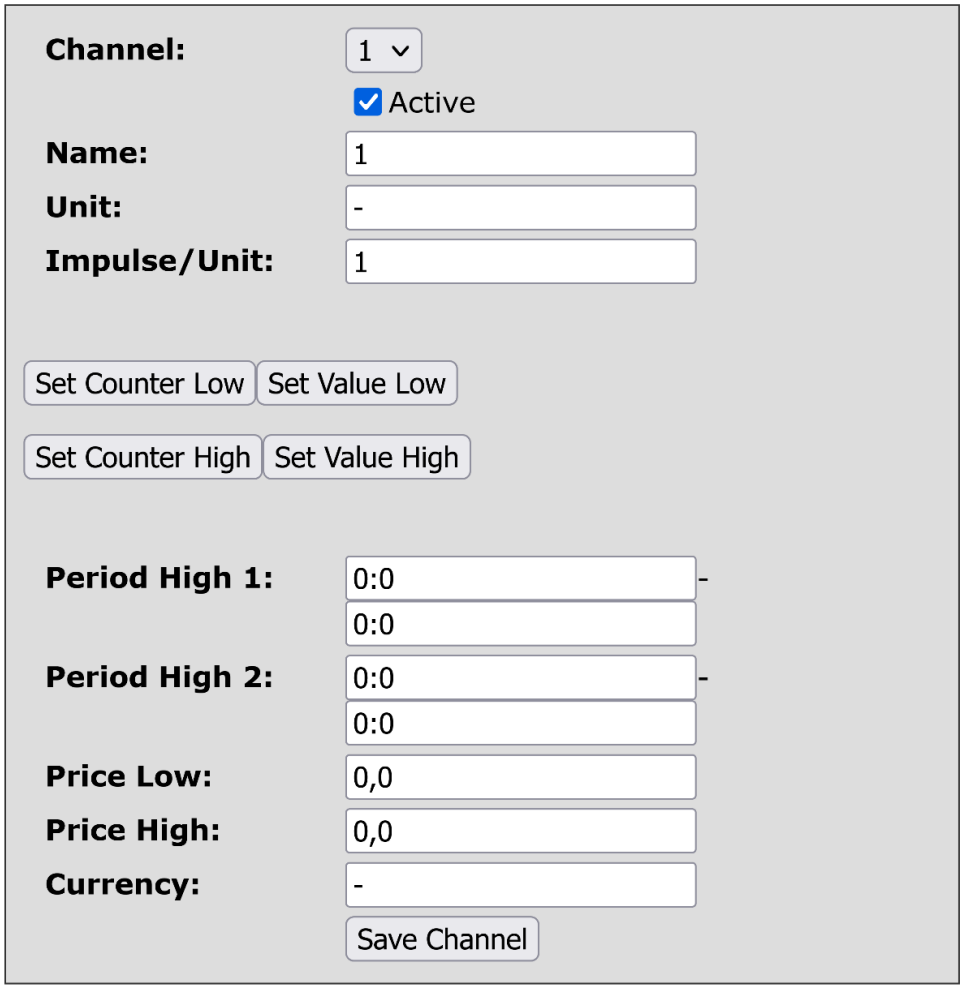
Energy3

Rate	Counter	Value	Cost	Total
Low	0	0.00 -	0.00 -	0.00 -
High	0	0.00 -	0.00 -	0.00 -

- **Rate** – tariff. The active tariff is highlighted in green.
- **Counter** – counted pulses.
- **Value** – pulses converted into units.
- **Cost** – unit price.
- **Total** – total price.

9 Counter tab

The Counter tab is used to configure the counters.



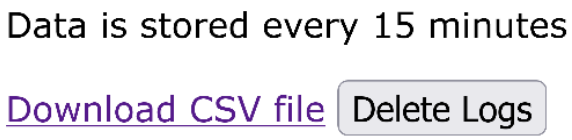
- **Channel** – selection of the counter channel to be set (1-8).
- **Active** – activation of the counter input. Deactivating the counter hides the channel in the main menu.
- **Name** – user name for the channel (e.g. "Current"). Max. 7 characters.
- **Unit** - unit of measured quantity (e.g. "kWh"). Max 4 characters.
- **Impulse/Unit** – number of pulses per unit - e.g. if the electricity meter has 800 pulses/kWh, enter 800.
- **Set Counter Low/High** – initial setting of the counter value.
- **Set Value Low/High** – preset the counter value (the counter will be multiplied by the Impulse/Unit value.
- **Period High 1 i Period High 2** – 2 periods of the high tariff. If the high tariff is not used, enter the time from 0:0 to 0:0.
- **Price Low i Price High** – prices of the measured unit for the low and high tariff respectively.
- **Currency** – price currency (e.g. "PLN"). Max 4 characters.



Update Clock – RTC clock settings sets the clock according to the computer time.
Default Values – restores the factory setting of the channel.

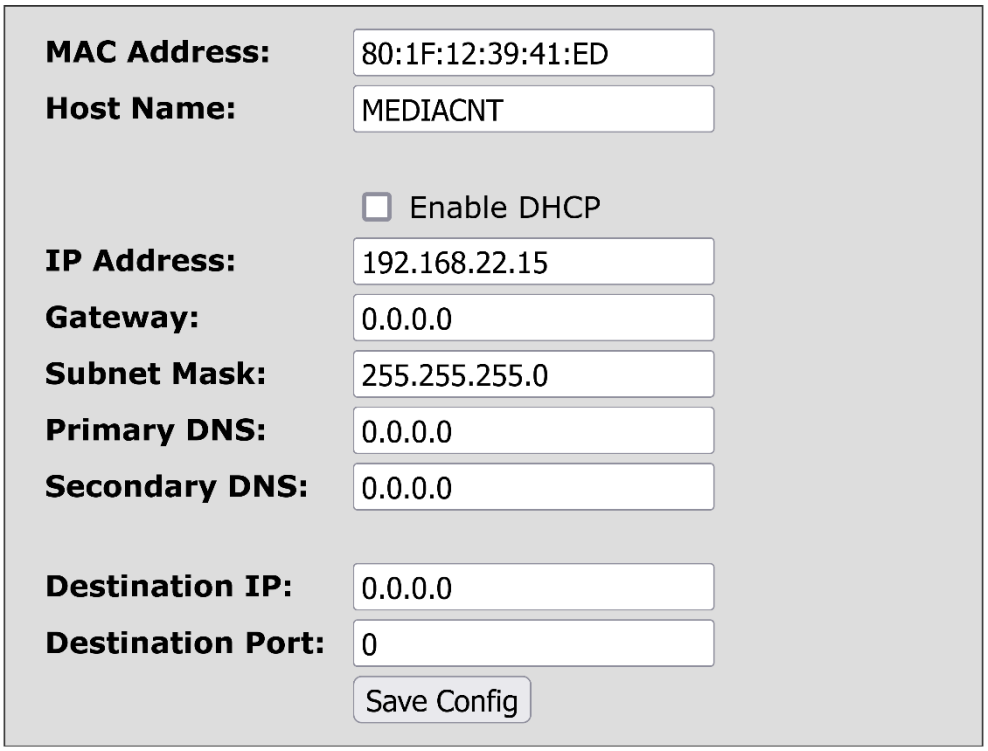
10 Log tab

Every 15 minutes, the device records the states of the various counters. In the Log tab, you can download this information as a CSV file. Using the Delete Logs button, you can delete the data collected so far from the device's internal memory.



11 Network tab

In the Network tab it is possible to change the parameters of the LAN.



The fields for network configuration are:

- **Host Name** – the name of the NetBios,
- **Enable DHCP** – enabling the DHCP client, checking this field forces the use of the address assigned by the DHCP server,
- **IP Address** – IP address of the module,
- **Gateway** – network gateway,
- **Primary DNS, Secondary DNS** – addresses of DNS servers,
- **Destination IP** – IP address of the module to which input or output states are to be transferred in the case of one-to-one communication,
- **Destination Port** – port on which the remote device listens.

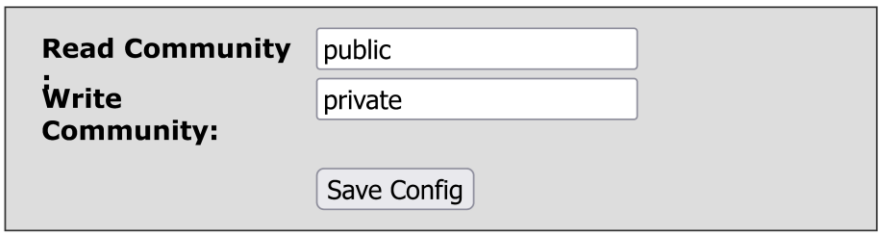
Confirm the changes made with the Save config button.

12 Zakładka SNMP

Moduł wyposażony jest w serwer SNMP v2c. Załączenie funkcji jest możliwe w zakładce Administration → Enable SNMP:

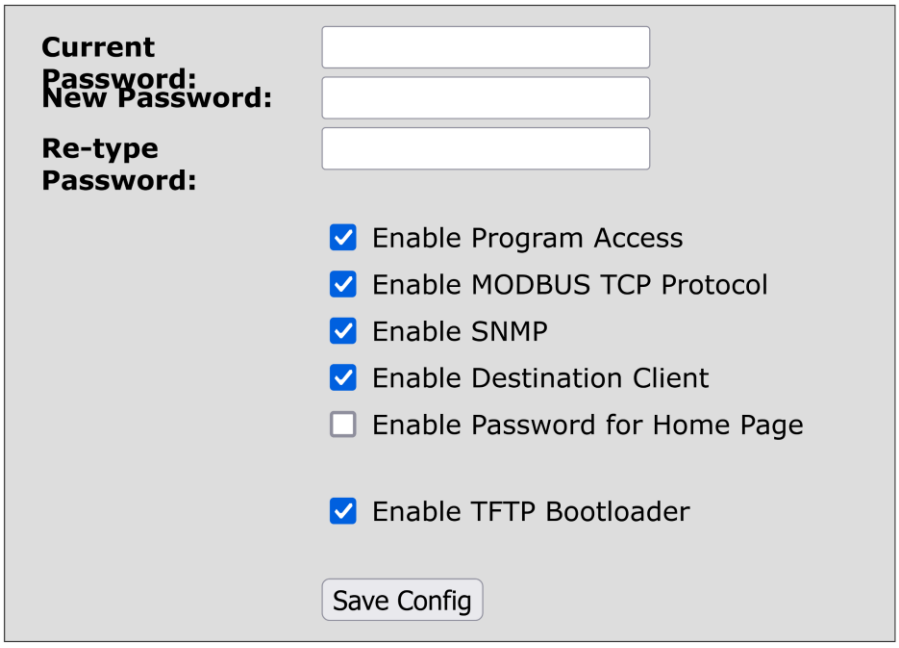


Protokół SNMP umożliwia pobranie stanów liczników.
Plik MIB opisujący strukturę jest do pobrania w zakładce SNMP Download MIB file.



13 Administration tab

In the Administration tab, the user can decide which services on the device are active and also change the access password.



Changing the password
To change the password, enter the current password in the Current Password field. In the fields New Password and Re-type Password fields, enter the new password and confirm with Save Config.
Setting up services
It is possible to decide on the availability of specific services on the device. Activation of a service can be done by ticking the appropriate box next to its name.

The following services are available:

- **Enable Program Access** – connection via software on the computer (Windows, Linux),
- **Enable MODBUS TCP Protocol** – MODBUS TCP server,
- **Enable SNMP** – SNMP server,
- **Enable Destination Client** – onnection to remote server (optional),
- **Enable Password for Home Page** – entry to the home page requires a password.

14 Windows command line control program

For command line control, the cURL program can be used. First enable the **Program Access** service in the **Administration** tab.

Example:
Access to the stat.php resource requires the entry of authentication. In this situation, the command is preceded by "-u login:password".

```
curl –u admin:admin00 http://192.168.0.231/stat.php
```

In response, the device will send the following information:

```
<response>
<prod_name>MM-0-4</prod_name>
<out>0000</out>
<on>0000</on>
<in>1111</in>
<cH0>0</cH0>
<cL0>0</cL0>
<cH1>0</cH1>
<cL1>0</cL1>
<cH2>0</cH2>
<cL2>0</cL2>
<cH3>0</cH3>
<cL3>0</cL3>
<names>'Energy1','Water','Energy2','Energy3'</names>
<imp>1,1,1,1</imp>
<priceL>0.0,0.0,0.0,0.0</priceL>
<priceH>0.0,0.0,0.0,0.0,</priceH>
<unit>'-','-','-','-'</unit>
<curr>'','-','-','-'</curr>
<active>1,1,1,1</active>
<currTime>45:85:85</currTime>
<currDate>20165-25-45</currDate>
<rate>0000</rate>
</response>
```

Section	Description
<prod_name>MM-04</prod_name>	Module type
<out>0000</out>	
<on>0000</on>	
<in>1111</in>	
<cH0>0</cH0>	
<cL0>0</cL0>	
<names>'Energy1','Water','Energy2', 'Energy3'</names>	Names of individual meters
<imp>1,1,1,1</imp>	
<priceL>0.0,0.0,0.0,0.0</priceL>	prices of the measured unit for the low tariff respectively
<priceH>0.0,0.0,0.0,0.0,</priceH>	the price of a measured unit for the high tariff respectively
<unit>'-','-','-','-'</unit>	unit of measured quantity
<curr>'','-','-','-'</curr>	
<active>1,1,1,1</active>	
<currTime>45:85:85</currTime>	
<currDate>20165-25-45</currDate>	
<rate>0000</rate>	

15 Linux control program

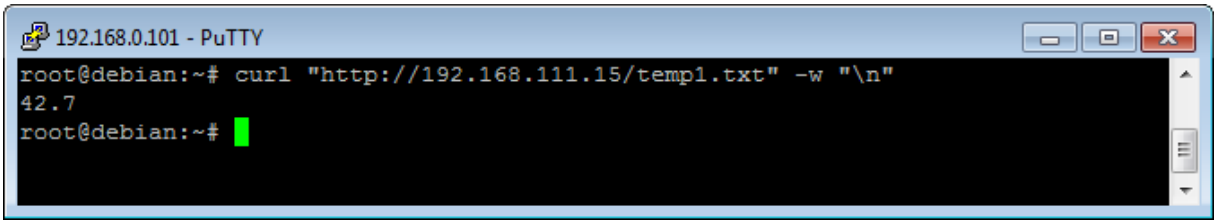
The cURL programme can be used in the Linux programme:

Directions

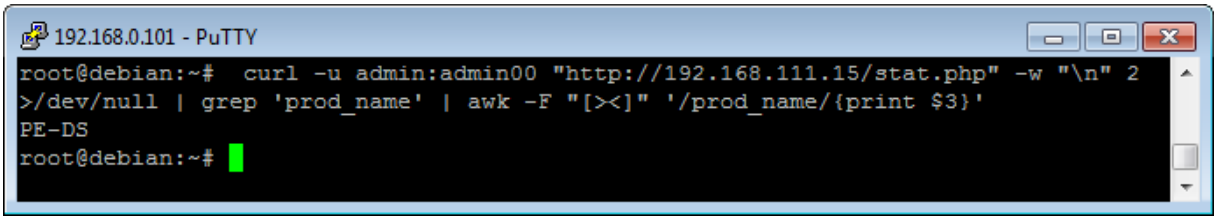
Access to the resource stat.php requires authorisation to be entered.

Access to the resources status.xml and temp1.txt does not require authorisation.

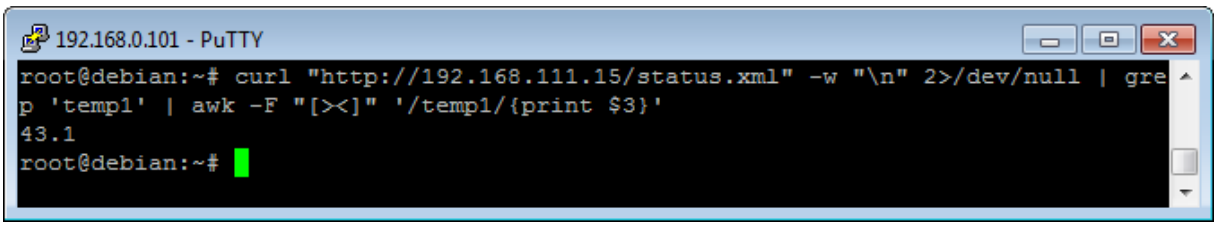
```
curl "http://192.168.111.15/temp1.txt" -w "\n"
```




```
curl -u admin:admin00 "http://192.168.111.15/stat.php" -w "\n" 2>/dev/null | grep 'prod_name' | awk -F "[><]" '/prod_name/{print $3}'
```




```
curl "http://192.168.111.15/status.xml" -w "\n" 2>/dev/null | grep 'temp1' | awk -F "[><]" '/temp1/{print $3}'
```



16 Communication with the module via the modbus TCP protocol

The MODBUS TCP protocol uses port 502.
The device supports modbus functions such as:
- 0x03 Read Holding Register,
- 0x06 Write Single Register,
- 0x10 Write Multiple Registers.

MODBUS TCP - Holding Registers.

Register No	Name	R-read W-write	Description	
4000	Counter Low LSB	R/W	Lower word (16bit) of low tariff counter	Parameters for channel 1
4001	Counter Low MSB	R/W	Older word (16bit) of the low tariff counter	
4002	Counter High LSB	R/W	Younger word (16bit) of counter tariff high	
4003	Counter High MSB	R/W	Older word (16bit) of high tariff counter high	
4004	Impulse per Unit	R/W	Number of pulses per unit	
4005	Rate High 1 Enable	R/W	Start of rate high 1. MSB - hours; LSB - minutes. E.g. decimal value 2561 represents the hour 10:01	
4006	Rate High 1 Disable	R/W	End of rate high 1. Format as above.	
4007	Rate High 2 Enable	R/W	Begin of Rate High 2. Format as above	
4008	Rate High 2 Disable	R/W	End of rate high 2. Format as above.	
4009	Cost 1	R/W	Low tariff unit price. MSB - portion integer part; LSB - decimal part. E.g. decimal 261 represents 1.5	
4010	Cost 2	R/W	Unit price of the high tariff. Format As above.	
4011	Active	…	Input status: 1- active, 0- inactive	
4012	Kanał 2	…	Same parameters as above for channel 2	
4024	Kanał 3	…	Same parameters as above for channel 3	
4036	Kanał 4	…	Same parameters as above for channel 4	
4096	RTC sec	R/W	RTC clock seconds	
4097	RTC min	R/W	RTC clock minutes	
4098	RTC hour	R/W	RTC clock hours	
4099	RTC date	R/W	RTC clock day	
4100	RTC month	R/W	RTC clock month	
4101	RTC year	R/W	RTC clock year	
4102	Update EEPROM	W	15 - Write changed data to EEPROM	
4103	HW_ID	R	Hardware ID	
4104	SW_ID	R	Software version	

17 Communication with the module from an external network

If the module is on a different LAN from the computer connecting to it, port forwarding is required. Depending on the selected method of communication with the module, consult your network administrator for port forwarding of the following ports.

For access via the website:
TCP/IP port 80

For access via a program on the computer or a dedicated application:
TCP/IP port 9761

For communication via MODBUS TCP protocol:
TCP/IP port 502

18 Restoring the factory settings

To restore the factory setting of the device, hold down the reset button for 10 seconds.
After performing the above steps, the device will set the following parameters:

- IP address: 192.168.111.15
- IP mask: 255.255.255.0
- User: admin
- - Password: admin00

19 Software update

The module is equipped with the possibility of updating the software. The program is supplied as a file with the .bin extension.


Directions

Incorrect use of the software update function may cause damage to the module..

In order to carry out the software update operation it is necessary to:

- check the Enable TFTP Bootloader option, which can be found on the device page in the Administration tab,
- run the Windows command line (Start->Run, type 'cmd' and confirm with the Enter key),
- go to the directory where the .bin file is located,
- enter the command:

tftp -i <address_ip_module> PUT file.bin
where: <address_ip_module> is the IP address of the module,
file.bin is the file with the update program.

Programming takes approximately 1 minute. Completion of programming is confirmed by the 'File Transferred' message.



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