MBus Gateway RTU

Introduction

This document is quick start to MBus Gateway. MBUS Gateway is designed for easy integration of M-BUS and TCP/MQTT/SNMP networks. With this device, M-BUS slave devices can be seamlessly added into an existing Modbus TCP network. It also has a remote web access panel that allows you to manage groups of devices. That makes integration customizable and easy.
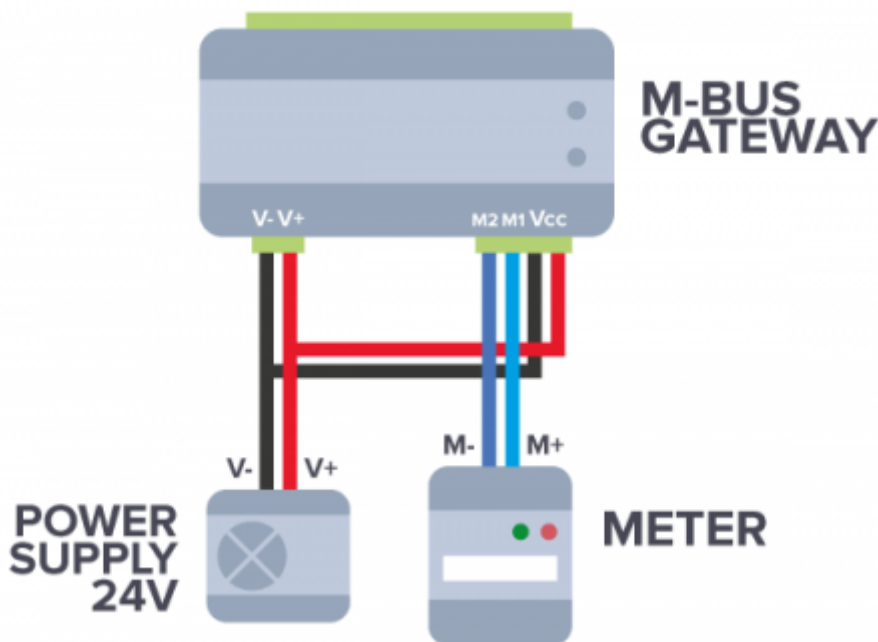
1. Powering up

To proceed this manual you need:

- Power Supply (24VDC, min. 20W)
- ETH cable
- PC with free ETH port

The first step is connect the power supply to the device and the meter to "M+" and "M-" connectors.

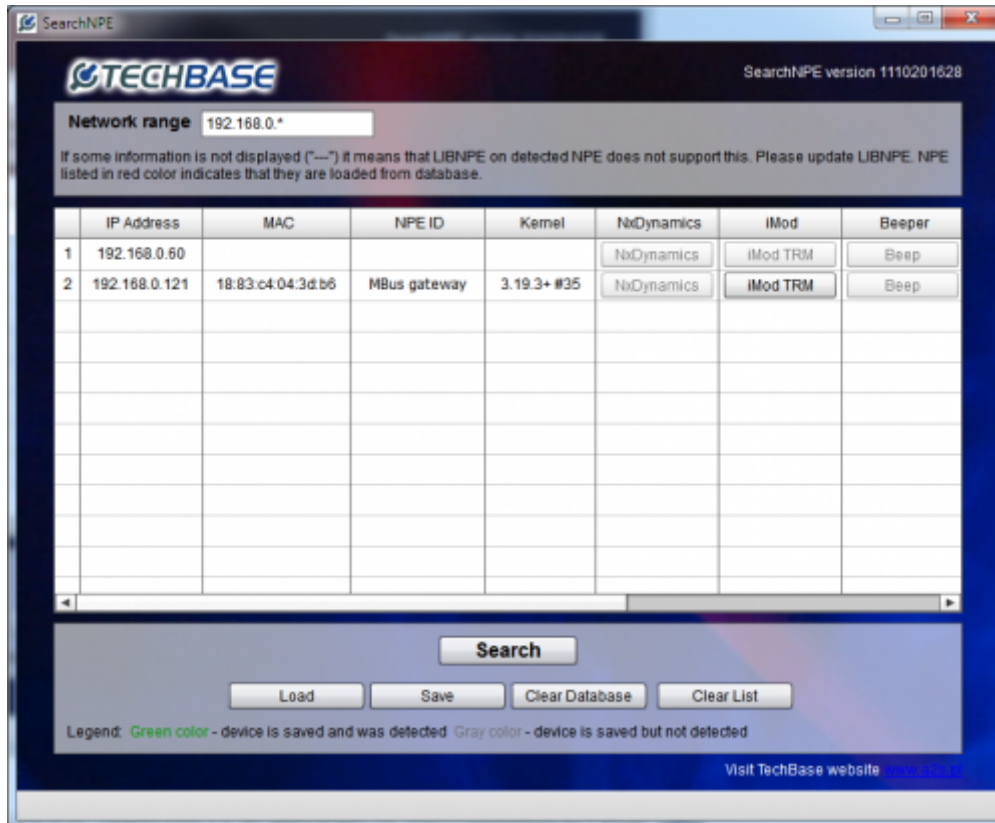> Remember! Please connect power supply to VCC on mBus side.
>
> - M1 ⇒ M+
> - M2 ⇒ M-

1.2 Find device in the LAN network

You can connect to the device using your PC. Please connect gateway device to the same network as your PC and use SSH to connect to the device e.g. using PuTTY in Windows or *ssh* command in Linux.

First find the device in the network using SearchNPE.

If you know IP address of the device, you can connect by SSH port.
You can find PuTTY at following address: http://the.earth.li/~sgtatham/putty/latest/x86/putty.exe

> **Port:** 22
> **Login:** root
> **Password**: techbase

2. Configuration MBus Gateway
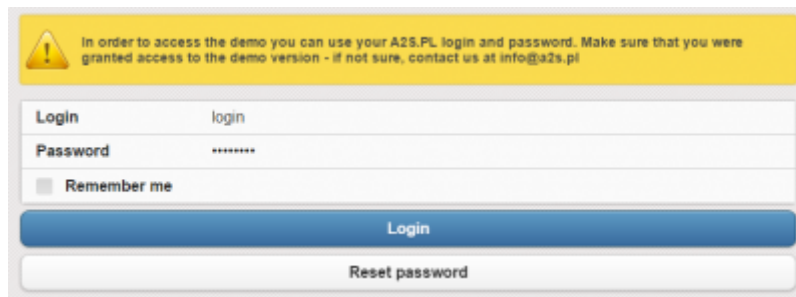
There is 2 ways to configurate device. Using our **iModCloud system** (http://www.a2s.pl/en/imodcloud-p-7572.html) or using **SSH**. You can choose one.

2.1 Configuration using iModCloud

2.1.1 Login to iModcloud

Please login into **iModCloud** with your account or create new account.

How to create new account and add device in iModCloud.
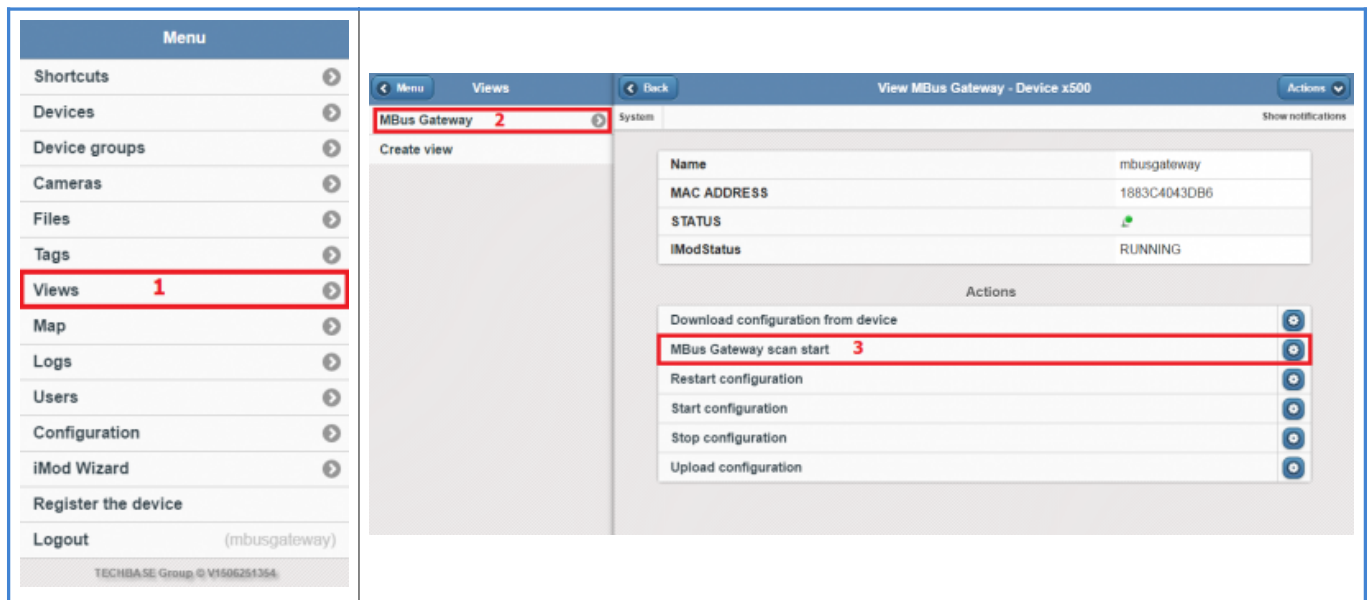
If you have an account, please contact us via http://support.techbase.eu/ to provide the appropriate MBus Gateway template for iModCloud. Then you can run to the next step.

2.1.2 Start MBus Gateway

Go to **MBus Gateway view (1,2)** and run **MBus Gateway scan start action (3)**.

Generating configuration may take a several minutes. Please be a patient. So please waiting for note about finish in notification bar.

2.1.3 Check configuration

For check please go to the Main Page of http://demo.imodcloud.com/ and then to the **devices** view. Next please choose your device and check iMod Parameters.

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1. Choose Devices label from side menu.
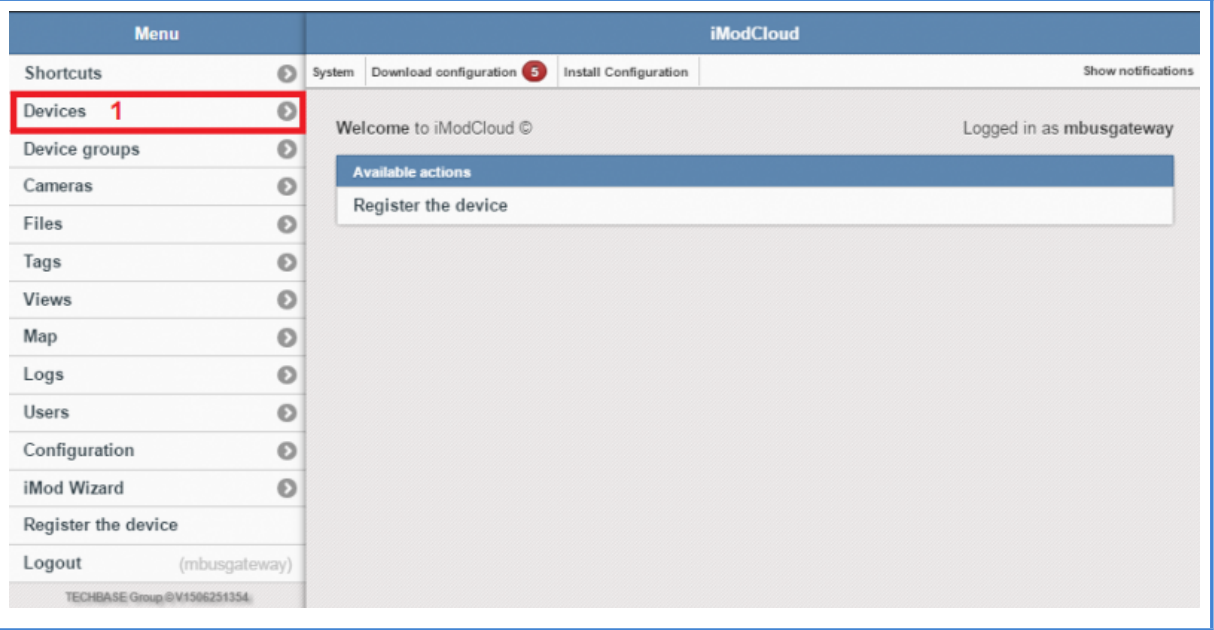
2. Next choose your device from device list.
3. Now you can check parametrs list.
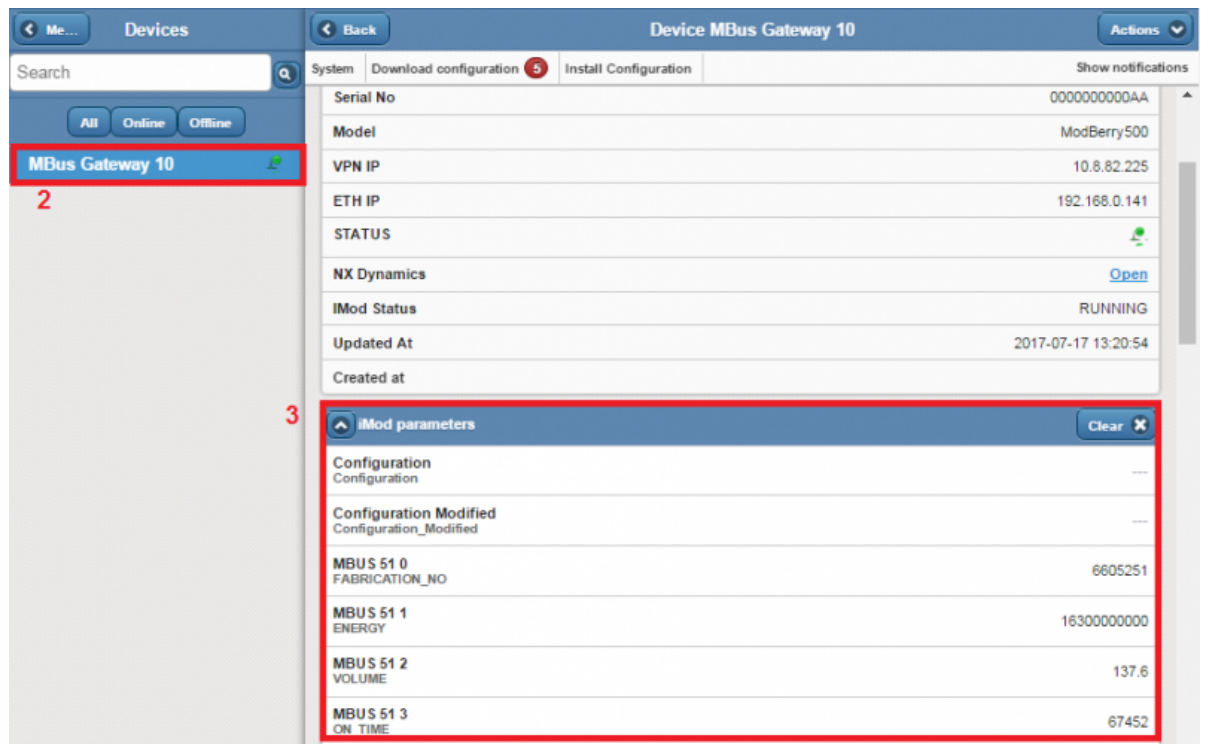
2.2 Configuration using SSH

2.2.1 Scan mbus network

MBus gateway can scan mbus network to find all the meters that are connected to the device. To scan mbus network please use following command:

MBus-to-ModbusRTU using COM2 for MBus and COM4 for ModbusRTU

> imod scan mbus -p /dev/ttySC0 -rtu-access COM4

MBus gateway create configuration file named **"MBusScan.xml"**. This configuration is contained all the available parameters detected during a scan.

Your configuration file is should look like this:

```
root@techbase:~# cat /mnt/mtd/iMod/config/MBUSScan.xml
<?xml version="1.0"?>
<imod version="1.0.0">
        <group name="channels">
                <access-channel name="Modbus_SMBUS">
                        <protocol name="MODBUS">
                                <property name="type" value="RTU" />
                        </protocol>
                        <port>"COM4-9600-8N1"</port>
                </access-channel>
                <source-channel name="MBUS_COM2">
                        <protocol name="MBUS" />
                        <port>"COM2-2400-8E1"</port>
                        <property name="device-id" value="51-MODEL_UNKNOWN" />
                        <gap>"0"</gap>
                        <cycle>"60"</cycle>
                        <read-timeout>"3000ms"</read-timeout>
                </source-channel>
        </group>
        <group name="MBUS_COM2:51 parameters group">
                <parameter type="int32">
                        <id>"MBUS_51_0"</id><!--Actual value: 06605251 (BCD:8)-->
                        <unit>"UNKNOWN"</unit>
                        <description>"FABRICATION_NO"</description>
                        <comment>"INST_VAL"</comment>
                        <source-channel channel-name="MBUS_COM2" parameter-id="51-0" />
                        <access-channel channel-name="Modbus_SMBUS" parameter-id="100" />
                </parameter>
                <parameter type="int32">
                        <id>"MBUS_51_1"</id><!--Actual value: 1630 (Integer) Scaled value: 1.63E10-->
                        <scale>"1e7"</scale>
                        <unit>"J"</unit>
                        <description>"ENERGY"</description>
                        <comment>"INST_VAL"</comment>
                        <source-channel channel-name="MBUS_COM2" parameter-id="51-1" />
                        <access-channel channel-name="Modbus_SMBUS" parameter-id="102" />
                </parameter>
```

Check that the generated file is correct parameters.

2.2.2 Parameters in configuration

In configuration file you can find parameters like following this one.

```
<parameter type="int32">
        <id>"MBUS_67296041_41_1"</id><!--Actual value: 0 (Integer)-->
        <scale>10e3</scale>
        <unit>"Wh"</unit>
        <description>"UNKNOWN"</description>
        <comment>"INST_VAL"</comment>
        <source-channel channel-name="MBUS_COM1" parameter-id="41-1"/>
        <access-channel channel-name="Modbus_SMBUS" parameter-id="302"/>
</parameter>
```

Following part of the configuration is responsible for mapping mbus to modbus. In this example parameter **1** from meter with ID **41** is mapping on modbus parameter ID **302**. You can change modbus ID in this place.

```
        <source-channel channel-name="MBUS_COM1" parameter-id="41-1"/>
        <access-channel channel-name="Modbus_SMBUS" parameter-id="302"/>
```

2.3 Run configuration

Properly configuration file have name - **MainConfig.xml**, so the next step is change name of configuration file to MainConfig.xml. To do this please do following steps:

```
cd /mnt/mtd/iMod/config
mv MBusScan.xml MainConfig.xml
```
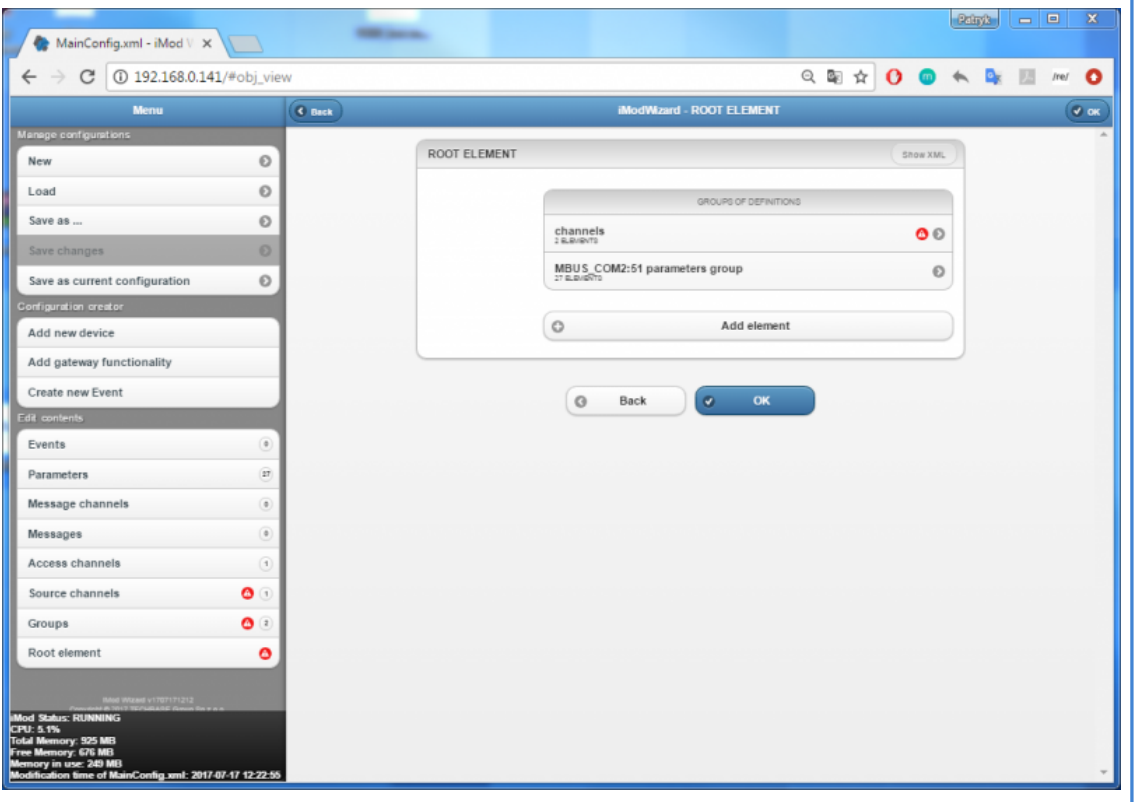
The last step is run the iMod:

```
imod start
```

3. Edit configuration.

3.1 iMod Wizard

iMod Wizard allow to simple edit and install configuration on MBus Gateway. Find IP Address of your device (1.2 Find device in the LAN network) and then please type it into address bar in the browser. Go to the MBus Gateway View and follow the instructions below. In this example you can shange RTU port configuration.

1. Main configuration file should be autoloaded after page loaded.
2. In the side menu you can choose elements which you want edit.
3. For change RTU port settings, please select the "Access channels" from menu.
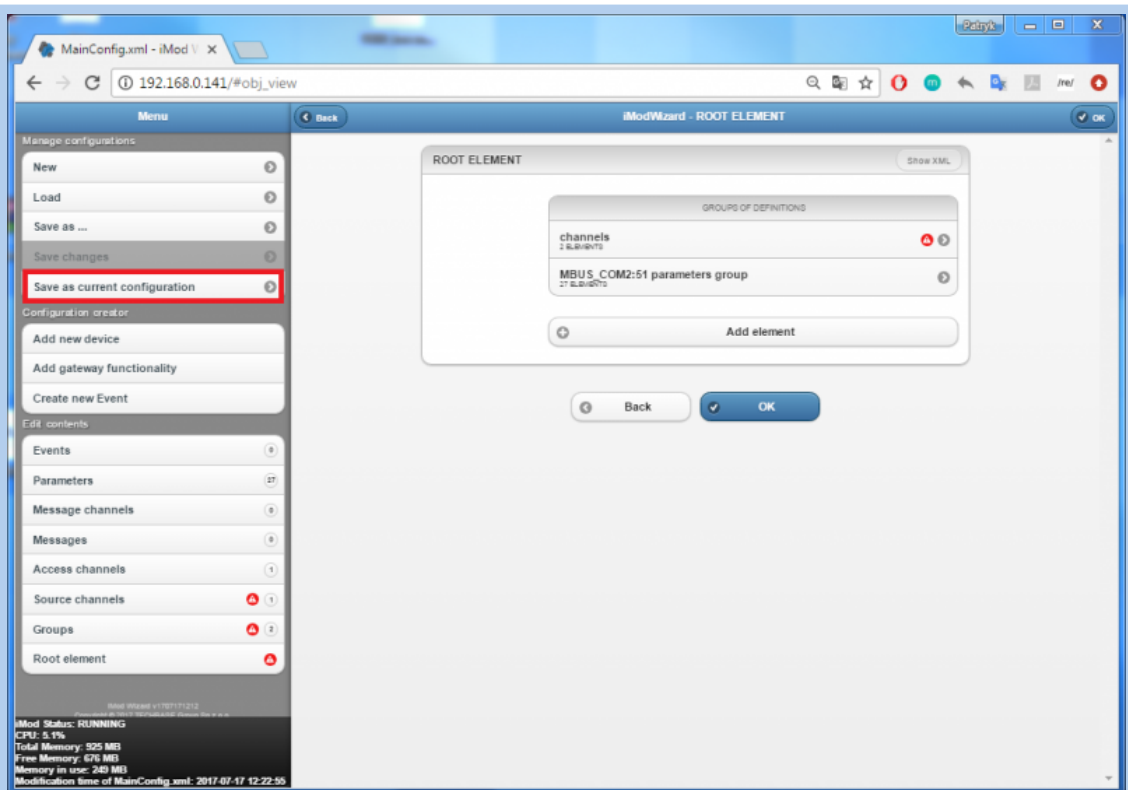
4. Select the "Modbus_SMBUS" channel
5. In this view you can change RTU port configuration (You can edit in the fields marked in red square)
6. For apply changes please click "OK" button.
7. Please click **Menu** button in side menu.
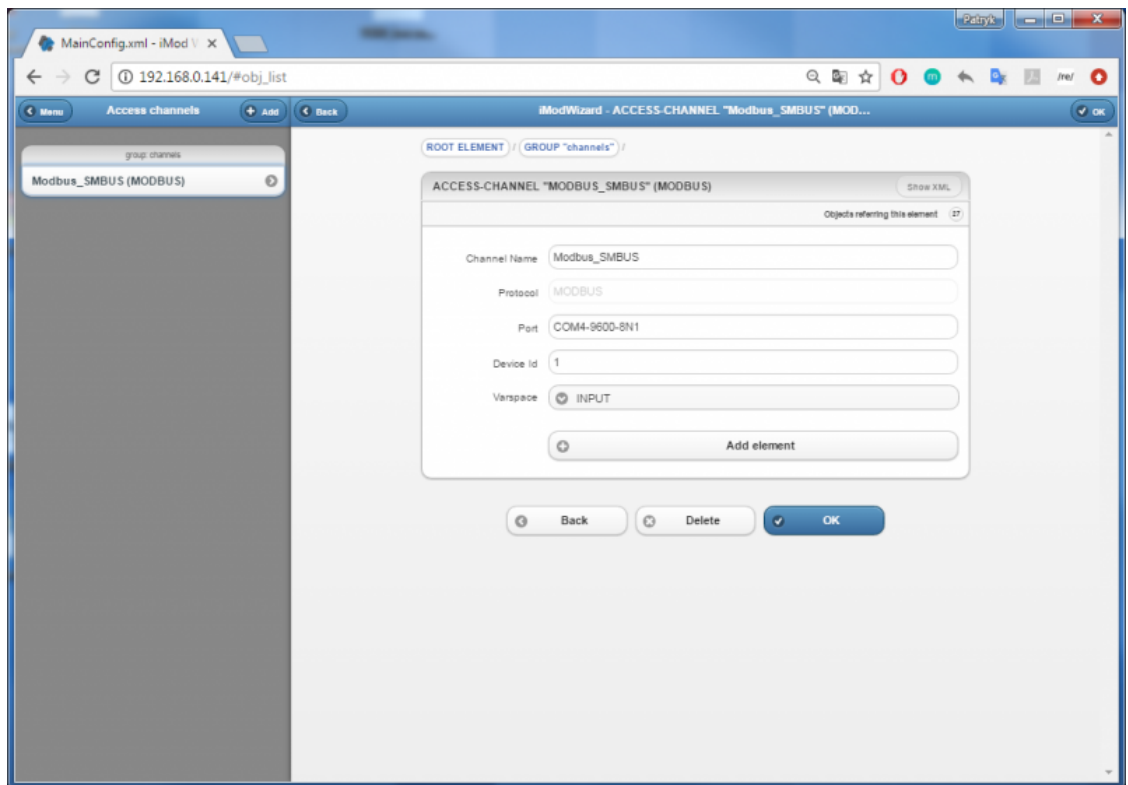
8. Please click **Save as current config** button.

Troubleshooting

1. Problem with detection meters

If you have problem with detection meters. First you need to check connection and then use mbus_scan. If you connect your meter in correct way, result of mbus_scan should look like in this example:

```
root@raspberrypi:/mnt/mtd/iMod/config# mbus_scan /dev/ttySC0 2400 p254
MBUS:Address: p41
MBUS:Address type: 1
MBUS:Sending short message
MBUS:Waiting for response: 2000

0x68 0x32 0x32 0x68 0x08 0x29 0x72 0x41 0x60 0x29 0x67 0x2d 0x2c 0x30 0x04
0x9d 0x00 0x00 0x00 0x03 0x06 0x00 0x00 0x00 0x43 0x06 0x00 0x00 0x00 0x03
0x14 0x00 0x00 0x00 0x42 0x6c 0xff 0x1c 0x02 0x2d 0x00 0x00 0x01 0xff 0x21
0x10 0x04 0xa5 0xff 0x21 0x97 0xe2 0x08 0x00 0xda 0x16
MeterID: 67296041
-----------------------------------------------------------------
Received MBus Data:
address: 41
deviceType (medium): HEAT
version: 48
manufacturer: KAM
-------------------------------1---------------------------------
VIB: 0x06
VariableDataBlock:
OBIS Code: 6-1:1.0.0*255
Data Information Block: 0x03
Value Information Block: 0x06
Data Bytes: 0x00 0x00 0x00
Data Field: 3
Function Field: INST_VAL
Data: 0
Scaler: 3
Unit: Wh
Description: UNKNOWN
```

2. Configuration doesn't generate or don't work properly.

Please update your device to latest version:

> softmgr update imod -b x500cm3-test