Modbus TCP Slave Send SMS example

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The information on this page is updated in accordance with **00.07.03.2** firmware version.

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Introduction

Modbus is a serial communications protocol. Simple and robust, it has become a de facto standard communication protocol and is now a commonly available means of connecting industrial electronic devices.

In this configuration example, we will configure Modbus TCP Slave and Modbus TCP Master. We will send a Set Parameters request from Modbus TCP Master to Modbus TCP Slave, which will send an SMS message provided in the Modbus TCP Master Set PArameter request.

If you're having trouble finding this page or some of the parameters described here on your device's WebUI, you should **turn on "Advanced WebUI" mode**. You can do that by clicking the "Basic" button under "Mode", which is located at the top-right corner of the WebUI.

Prerequisites

- At least one TRB/RUT device with the SIM card, for this example we will be using one device
- One end device (PC, Laptop, Tablet, Smartphone) to configure the router
- One Mobile Phone in order to test the configuration

Configuring Modbus TCP Slave and Modbus TCP Master

Firstly, we will configure **Modbus TCP Slave** on the router and then on the same device we will configure **Modbus TCP Master** in order to send Modbus requests to the same device.

Configuring Modbus TCP Slave

In order to start our configuration you will need to open your device's WebUI (by entering the device's IP address of your device), then navigate to **Services → Modbus → Modbus TCP Slave**.

In order to configure Modbus TCP Slave follow the steps provided below:

Explanation:

1. Enable the Modbus TCP Slave
2. Select the port on which Modbus TCP Slave will communicate with the Modbus TCP Master (for this example: 502)
3. Enable persistent connection (not mandatory)
4. Save the configuration

Configuring Modbus TCP Master

Lets continue with the configuration, now we will configure Modbus TCP Master on the same device. Navigate to **Services → Modbus → Modbus TCP Master**. Press the button **ADD** and follow the steps provided below:

Explanation:

1. Enable the instance
2. Create a name for Modbus TCP Master
3. Provide the Slave ID (in this case: 1)
4. Provide IP address of the Slave ID, in this case, this router's IP (192.168.1.1)
5. Provide Modbus TCP Slave ID (in this case 502)
6. In this part we will configure two different SMS messages (hex and ASCII formats) and one send a request to send those messages, we will configure it a little bit later, so leave this part empty for now.
7. Save the configuration

Configuring Modbus TCP Master Request Configuration

Now that we have **Modbus TCP Master** and **Modbus TCP Slave** configurated, we will need to create **Request Configuration**. The Request configuration will be used to store the SMS message and the number of the recipient. Lastly, we will send the SMS message to the recipient with the set Command. To store Phone numbers and SMS messages we will use **ASCII** and/or **HEX** Data Types, you can configure either one of them, and both of them will work.

So first of all, we will create a Request in which we will store the Recipient number and SMS message, we will use **ASCII Data Type**, **Set Multiple holding registers(16) Function** and **398 Register**.

In the **Register Count / Values** field we will be written the **ASCII** format (human-readable format) and in the **Data Type** we will select **ASCII** format, so there will be no data conversion that it is why we will be writing in the human-readable format.

The first 10 registers are reserved for the phone number (**1 register = 2 symbols**) additionally you will require to put in front '+' which is equal to 00 here. If your number (together with 00) does not take 10 registers we will require you to fill out the left registers with 0 values, that's why we use the **\u0000 symbol**, which means 0 value.

Here we will explore two examples, one for the ASCII data type and one for the HEX.

Example Message request for ASCII:

003706xxx1594\u0000\u0000\u0000\u0000\u0000\u0000\u0000test

Explanation:

- **00** - + symbol
- **3706xxx1594** - phone number
- **\u0000\u0000\u0000\u0000\u0000\u0000\u0000** - our number only takes up to 6 and a half registers(2 symbols = 1 register), all other registers will be filled with 0 value
- **test** - the message that will be sent

Second example Message request for HEX:

30 30 33 37 30 36 78 78 78 31 35 39 34 00 00 00 00 00 00 00 74 65 73 74

Explanation:

- **30 30** - equals to 00(+ symbol)
- **33 37 30 36 78 78 78 31 35 39 34** - equals to 3706xxx1594 number (keep in mind that 78 in hex equals **x** symbol, this whole part has to be changed in accordance to your phone number)
- **00 00 00 00 00 00 00** - our number only takes up to 3 registers(4 symbols = 1 register), all other registers will be filled with 0 value
- **74 65 73 74** - equals to 'test' in HEX

For this example you will need to use ASCII to HEX converter which will convert your number and

message to HEX format, the one used in this example was:
https://www.utilities-online.info/ascii-to-hex

Example of the conversion:

Finishing the configuration

Lastly we will need a Request which would send the text message that we loaded previausly, to do so you will need to create a send Request. The Send Request should look like this:

Explanation:

Firstly, we select **Set single holding register**, then we select Register **397** and value to **1** which will send the loaded message.

Testing the configuration

Now that we have everything configurated, we need to test the configuration.

First of all, we will execute **Test** Request, which will store the phone number and message "test" into the registers and then we will send the message to provided phone number with **Test_send** Request.

Execute the first request, if everything was configured correctly you should receive the confirmation message after that execute the **Test_send** request which will send the message to your phone number.

The example of message received:

References

- **https://wiki.teltonika-networks.com/view/RUT955_Modbus#Set_Parameters** Modbus Set Parameters manual
- **https://www.utilities-online.info/ascii-to-hex** ASCII to HEX converter