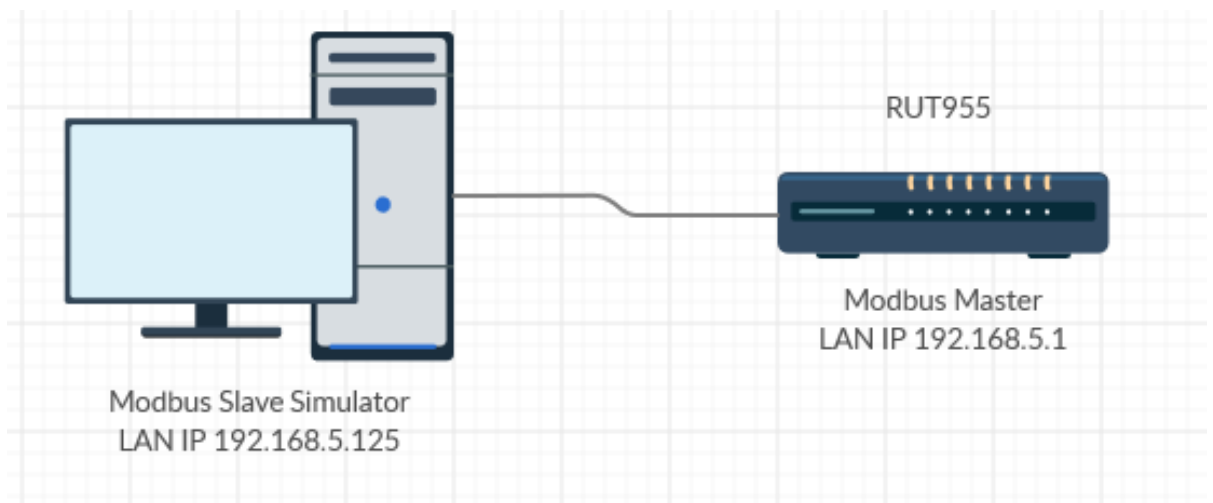


# Modbus Serial Master



A Modbus **master** device can request data from Modbus slaves.

RUT955 will be used throughout this guide

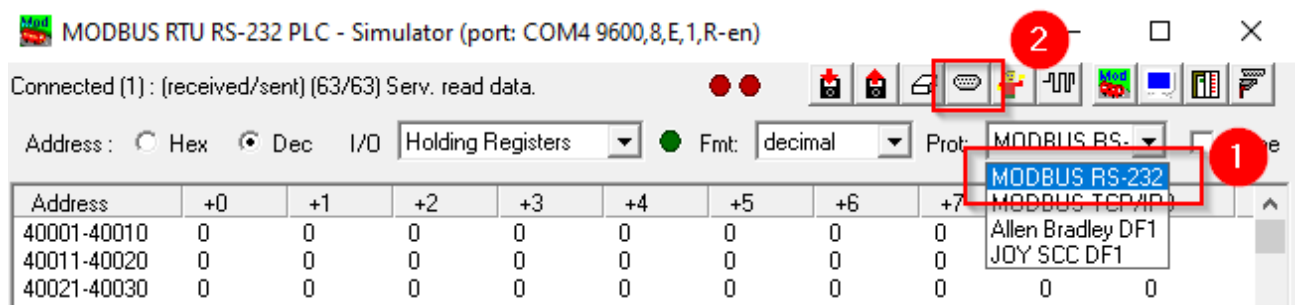
Prerequisites:

- ModRssim ( <https://sourceforge.net/projects/modrssim/> )

**ModRssim** is Slave device simulator software which simulates real Modbus Slave device.

## Configuring ModRssim

1. Select Protocol as **MODBUS RS-232**.
2. Click **Setup the communication Serial or TCP/IP port**.



1. Select the port which you used to connect RS232 cable to (to find which port you are using go to Windows search bar and write **Device Manager** then select **Ports** and see which one you are using).
2. Select **Parity** Even.
3. Click **OK**

RS-232 MODBUS PLC Sim-server Settings

RS-232 Port

Port **1** COM4 \* **3**

Baud rate 9600

Parity **2** Even

Data bits 8

Stop bits 1

RTS control Enable

OK Cancel

If you see a little \* next to the COM port, it is the current port, or being used by another program.

Server settings

Responsiveness (ms) 0 (0 to 10 000 ms)

☐ Load register values at startup.

☐ Units are all off at start-up

Advanced settings

☐ Perform MODBUS - MODSCAD (row/table) checks

☐ Allen-Bradley master mode PLC

Checksum calculation is using CRC (2-byt)

## Configuring Modbus Serial Master

Open router's WebUI and navigate to **Services > Modbus > Modbus Serial Master**.

1. Press **Enable**.
2. Select **Baud rate** (9600, it must match slave's Baud rate).
3. Select **Parity** (Even).
4. Press **Save**.

Modbus
Modbus TCP Master
Modbus Serial Master
Modbus Data to Server

RS232
RS485

### RS232

**RS232 configuration**

☒ Enabled

Baud rate

9600

Data bits

8

Parity

Even

Stop bits

1

Flow control

None

**RS232 slaves**

Name	Enabled	Slave ID	
Testas	Yes	2	<div style="display: flex; gap: 5px;"> <div>Edit</div> <div>Delete</div> </div>

Add

Save

Now create **RS232 slave** by writing a name, pressing **Add** button. It should appear like in the example and then press **Edit**.

**RS232 slaves**

Name	Enabled	Slave ID	
Testas	Yes	2	<div style="display: flex; gap: 5px;"> <div style="border: 1px solid #ccc; padding: 2px 5px;">Edit</div> <div>Delete</div> </div>

Add

Modbus	Modbus TCP Master	Modbus Serial Master	Modbus Data to Server
--------	-------------------	----------------------	-----------------------

RS232	RS485
-------	-------

### Slave 'Testas' configuration

Settings

☒ Enabled 1  
 Slave ID  2  
 Period  3

Slave requests

Name	Enabled	
testas	Yes	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Slave alarms

Name	Enabled	
test	No	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

4

1. Check **Enable**.
2. Type in **Slave ID** (any number from 1 to 255).
3. Add **Period** (Query period).
4. Press **Save**.

Go back to the **Slave configuration** window and create **Slave request** by writing a name, pressing **Add** button. It should appear like in the example and then press **Edit**.

Slave requests

Name	Enabled	
testas	Yes	<input checked="" type="button" value="Edit"/> <input type="button" value="Delete"/>

Modbus	Modbus TCP Master	<b>Modbus Serial Master</b>	Modbus Data to Server
--------	-------------------	-----------------------------	-----------------------

RS232	RS485
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### Request 'testas' configuration

Request configuration

Enabled ☒

Function Read Holding Registers

First register 1

Register count 10

Back to Overview

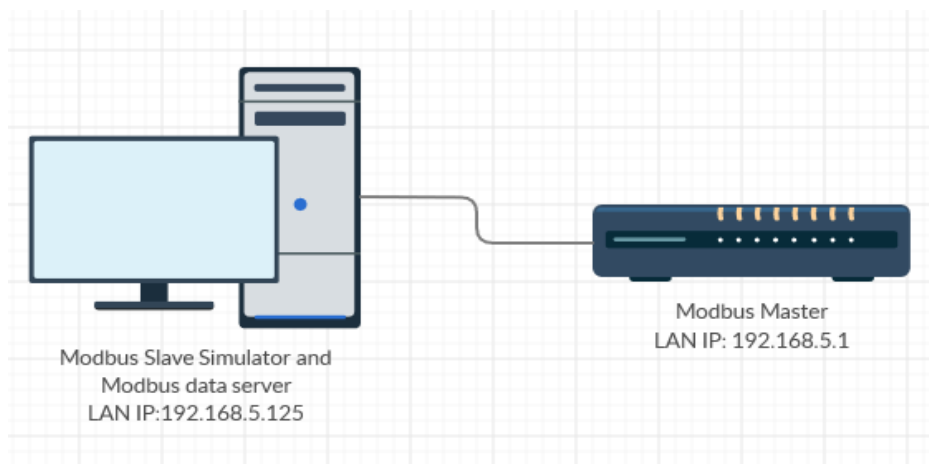
Save

1. Check **Enable**.
2. Select **Function** (Read Holding Registers).
3. Write **First register** (1).
4. Write **Register count** (10).
5. Press **Save**.

In order to test the functionality you will need to setup **Modbus Data to Server** (you can setup server on the same computer you used as a slave simulator).

Prerequisites:

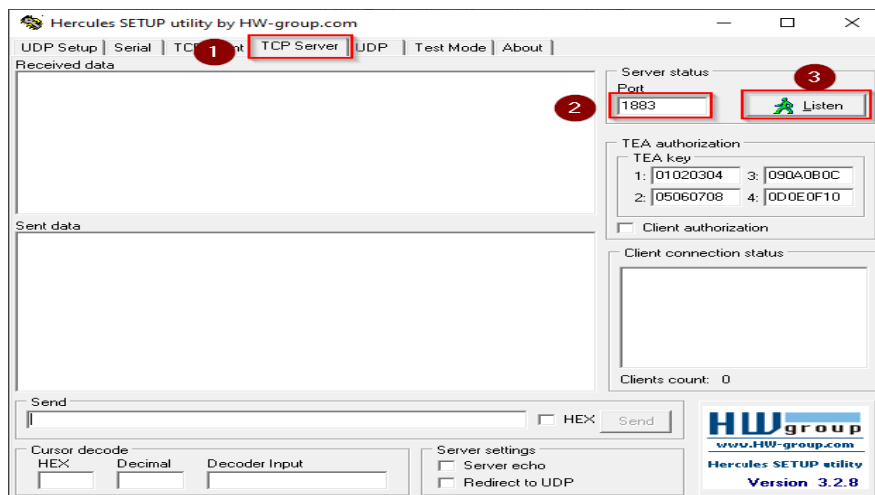
Windows Hercules app - <https://www.hw-group.com/software/hercules-setup-utility>



## Configuring PC

First of all download the Hercules app, install it and then open it.

1. Select **TCP Server** tab
2. Enter **port** (In this example default 1883 is used)
3. Click **Listen**



## Configuring RUT955

Open router's WebUI and navigate to **Services > Modbus > Modbus Data to Server**

Protocol	URL	Period	
HTTP(S) <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">1</span>	192.168.5.125:1883 <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">2</span>	1 <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">3</span>	Add <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">4</span>

1. Select **Protocol** (In this example HTTP(S) will be used).
2. Enter **IP** and **port** of the PC with the Hercules software.
3. Enter **Period** (minutes, how often router should send data to server).
4. Click **ADD**.

**Data sender configuration**

1

☒ Enabled

Name

Protocol HTTP(S) ▼

JSON format   

```
{
  "ID": "%i",
  "TS": "%t",
  "ST": "%s",
  "VR": "%a"
}
```

Modbus slave ID - %i  
 Modbus slave IP - %p  
 Date (Linux timestamp) - %t  
 Date (Day/Month/Year Hour:Minute:Second) - %d  
 Start register - %s  
 Register data - %a

Segment count 1 ▼

URL

Period

Data filtering By slave ID ▼

Slave ID

Retry on fail ☐

Custom Header  + -

TLS type Certificate based ▼

CA File Browse... No file selected.

Client certificate Browse... No file selected.

Private key Browse... No file selected.

Back to Overview

2

Save

You will be redirected to **Advanced sender settings**

1. Enter **Name** (It can be anything you want).
2. Click **Save**.



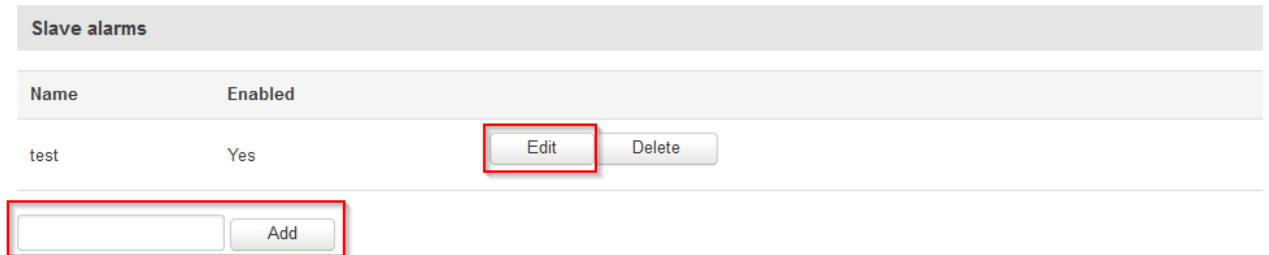




## Configuring Slave alarms

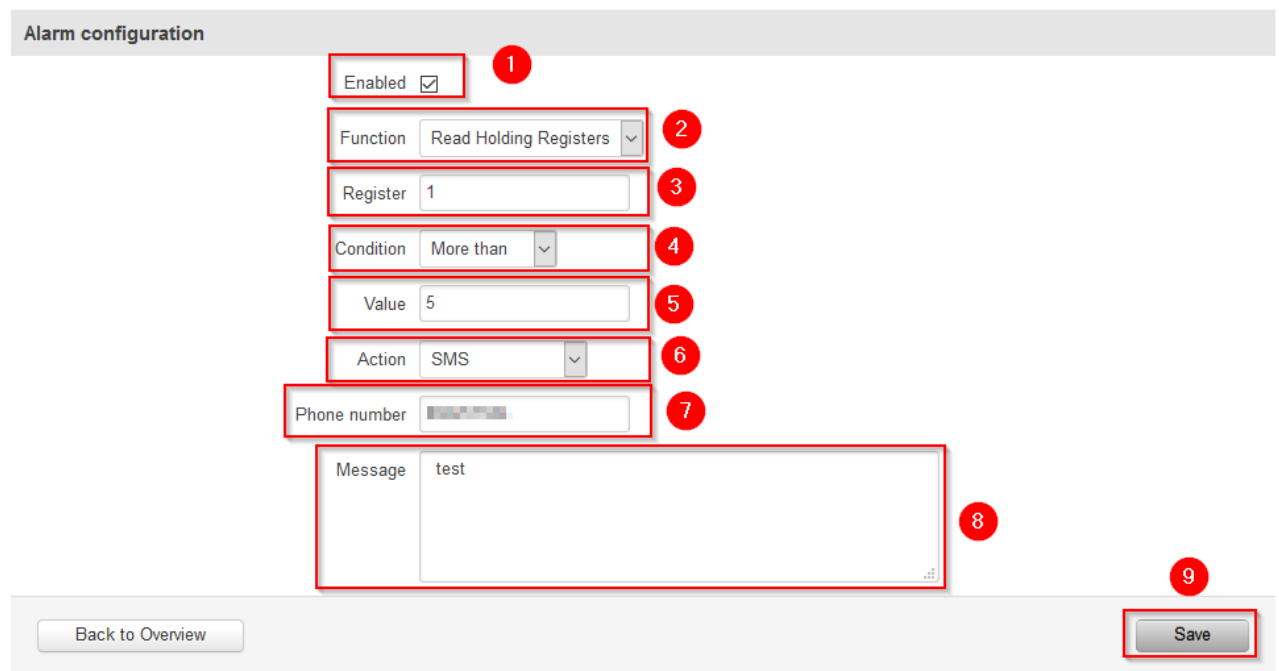
(In order to perform this test sim card is required)

Go back to **Services > Modbus > Modbus Serial Master** and press edit the same Slave configuration or create a new one. There will be section called **Slave alarms**. Create a name, then press **Add** button. When it appears like in the example, press **Edit**.



Name	Enabled
test	Yes

### Alarm 'test' configuration



Alarm configuration

Enabled ☒

Function: Read Holding Registers

Register: 1

Condition: More than

Value: 5

Action: SMS

Phone number: [masked]

Message: test

1. **Enable** instance.
2. Select **Function** (Read Holding Registers).
3. Write **Register** (1).
4. Select **Condition** (More than).
5. Write **Value** (5).
6. Select **Action** (SMS).
7. Write **Phone number** (the number you want to receive the messages to).
8. Create **Message** (type anything you want to receive).
9. Press **Save**.

Now go back to **Modbus slave simulator** and edit this window:

MODBUS RTU RS-232 PLC - Simulator (port: COM4 9600,8,E,1,R-en)

Connected (1) : (received/sent) (95/95) Serv. read data.

Address : ☐ Hex ☒ Dec I/O  Fmt:  Prot:  ☐ Clone

Address	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
40001-40010	4	10	10	10	0	0	0	0	0	0
40011-40020	0	0	0	0	0	0	0	0	0	0
40021-40030	0	0	0	0	0	0	0	0	0	0
40031-40040	0	0	0	0	0	0	0	0	0	0
40041-40050	0	0	0	0	0	0	0	0	0	0
40051-40060	0	0	0	0	0	0	0	0	0	0
40061-40070	0	0	0	0	0	0	0	0	0	0
40071-40080	0	0	0	0	0	0	0	0	0	0
40081-40090	0	0	0	0	0	0	0	0	0	0
40091-40100	0	0	0	0	0	0	0	0	0	0
40101-40110	0	0	0	0	0	0	0	0	0	0
40111-40120	0	0	0	0	0	0	0	0	0	0
40121-40130	0	0	0	0	0	0	0	0	0	0
40131-40140	0	0	0	0	0	0	0	0	0	0
40141-40150	0	0	0	0	0	0	0	0	0	0
40151-40160	0	0	0	0	0	0	0	0	0	0
40161-40170	0	0	0	0	0	0	0	0	0	0
40171-40180	0	0	0	0	0	0	0	0	0	0
40181-40190	0	0	0	0	0	0	0	0	0	0
40191-40200	0	0	0	0	0	0	0	0	0	0

00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25  
26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

T Comms

Change the value to anything below 5, you should not receive messages. Then change the value to anything above 5, you should start receiving messages.