

# Template:Networking rut955 manual modbus serial

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## Summary

**Modbus** is a serial communications protocol originally published by Modicon (now Schneider Electric) in 1979 for use with its programmable logic controllers (PLCs). Modbus has become a de facto standard communication protocol and is now a commonly available means of connecting industrial electronic devices. The main reasons for the use of Modbus in the industrial environment are:

- developed with industrial applications in mind;
- openly published and royalty-free;
- easy to deploy and maintain;
- moves raw bits or words without placing many restrictions on vendors.

Modbus enables communication among many devices connected to the same network, for example, a system that measures temperature and humidity and communicates the results to a computer. Modbus is often used to connect a supervisory computer with a remote terminal unit (RTU) in supervisory control and data acquisition (SCADA) systems. Many of the data types are named from its use in driving relays: a single-bit physical output is called a coil, and a single-bit physical input is called a discrete input or a contact.

This article provides a brief example on how to use Modbus serial to monitor a slave device, send data to server and how to configure slave alarms. To find more information about this feature visit [RUT955 Modbus](#) and [RUT955 RS232/RS485](#) pages.

## Prerequisites

- One RUT955 router
- Windows 10 computer

- Hercules and modRSsim applications
- RS232 to USB cable

## Topology



## Configuring Modbus serial slave device

In this example we are going to be using our Windows 10 computer as a slave. To do so you will need to install **modRSsim** application, which you can download [here](#).

When you are done with that, open the app and apply the following configuration.



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



1. Select the **Port** which you connected 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**.

## Configuring Modbus serial master

Open router's WebUI, navigate to **Services > Modbus > Modbus Serial Master** and apply the following configuration.



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

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



Then apply the following configuration.



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**.



Then apply the following configuration.



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

## Modbus data to server

### Creating server

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In order to test the functionality, you will need to set up a server (you can run a server on the same computer you use as a slave simulator).

There are many ways how you can create a server to which Modbus will send data to. In this example we are going to be using Windows 10 computer and Hercules app, which you can download [here](#), to create a test server. Download, install the app and apply the configuration below:



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

And that is it, now you will be able to see the data coming from Modbus in the Received data section.

### RUT Modbus data to server configuration

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In order to setup your router to send Modbus data to server you will need to navigate to **Services > Modbus > Modbus Data to Server**.



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**.

Then you will be redirected to **Advanced sender settings**.



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

## Receiving data

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Open Hercules again, press **Listen** and you should start receiving Modbus Data messages.



Try to change some data in the Modbus Slave simulator.



Received data should change.



## Slave alarms

In order to setup the following configuration 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**.



Then apply the following configuration:



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:



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.