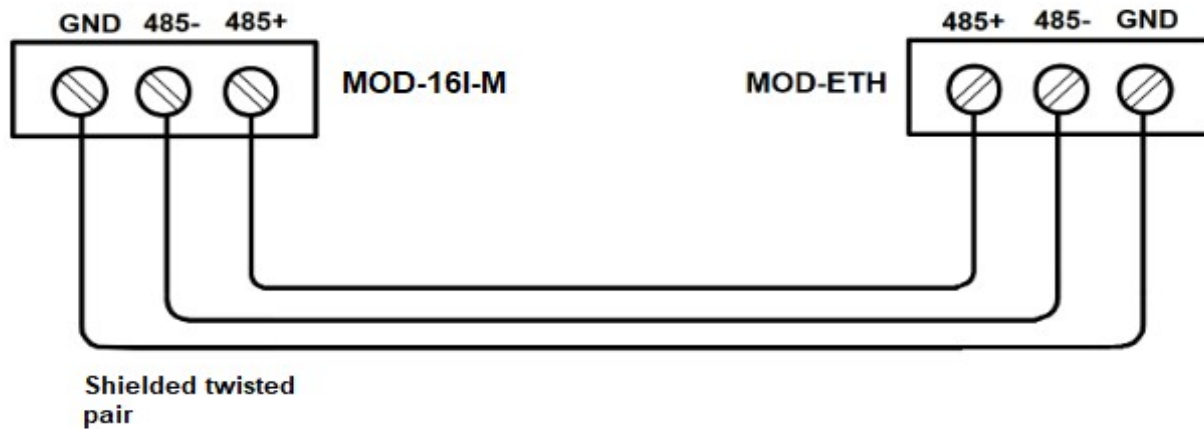
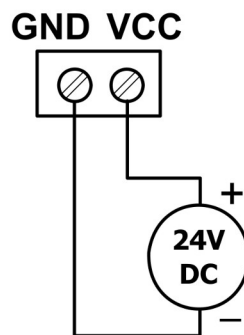


Example how to connect MOD-ETH with MOD-16I-M and read registers by Modbus TCP

- 1 Connect MOD-16I-M and MOD-ETH using RS485:



- 2 Connect power supply to MOD-16I-M and MOD-ETH.



- 3 Open IO Configurator

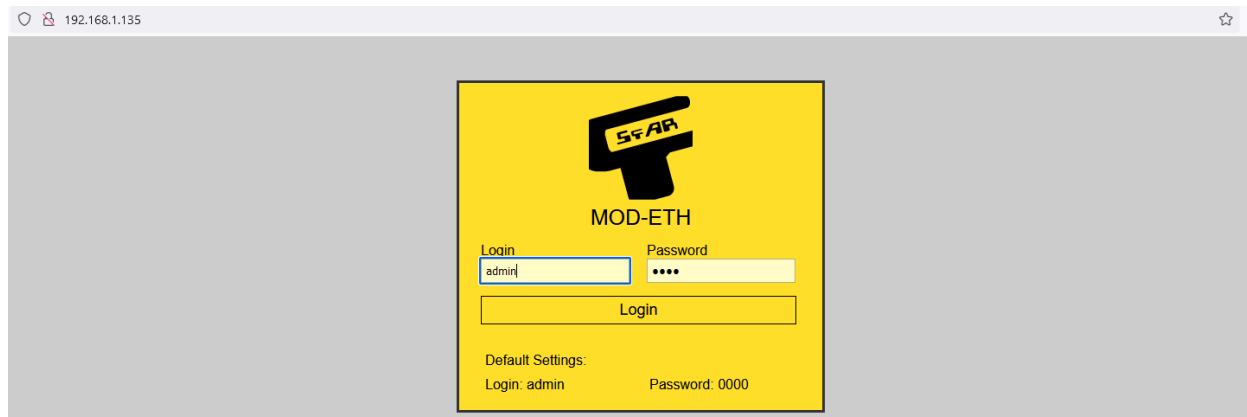
Link to download:

https://www.aspar.com.pl/katalogi/IOMODULES/KONFIGURATOR/software/Konfigurator_IO.zip

4 Set communication parameters in MOD-ETH and MOD-16I-M in IO Configurator - (TRANSMISSION):

<u>MOD-ETH</u>	<u>MOD-16I-M</u>
<p>Address source <input type="radio"/> Program <input checked="" type="radio"/> Switches</p> <p>Address <input type="text" value="1"/></p> <p>Baudrate <input type="text" value="19200"/></p> <p>Parity <input type="text" value="None"/></p> <p>Data bits <input type="text" value="8"/></p> <p>Stop bits <input type="text" value="1"/></p> <p>Response delay <input type="text" value="0"/></p> <p>Modbus type <input type="text" value="RTU"/></p>	<p>Address source <input type="radio"/> Program <input checked="" type="radio"/> Switches</p> <p>Address <input type="text" value="2"/></p> <p>Baudrate <input type="text" value="19200"/></p> <p>Parity <input type="text" value="None"/></p> <p>Data bits <input type="text" value="8"/></p> <p>Stop bits <input type="text" value="1"/></p> <p>Response delay <input type="text" value="0"/></p> <p>Modbus type <input type="text" value="RTU"/></p>

5 Connect MOD-ETH to your PC using Ethernet cable and open using web browser MOD-ETH: 192.168.1.135 (login: admin, password: 0000).



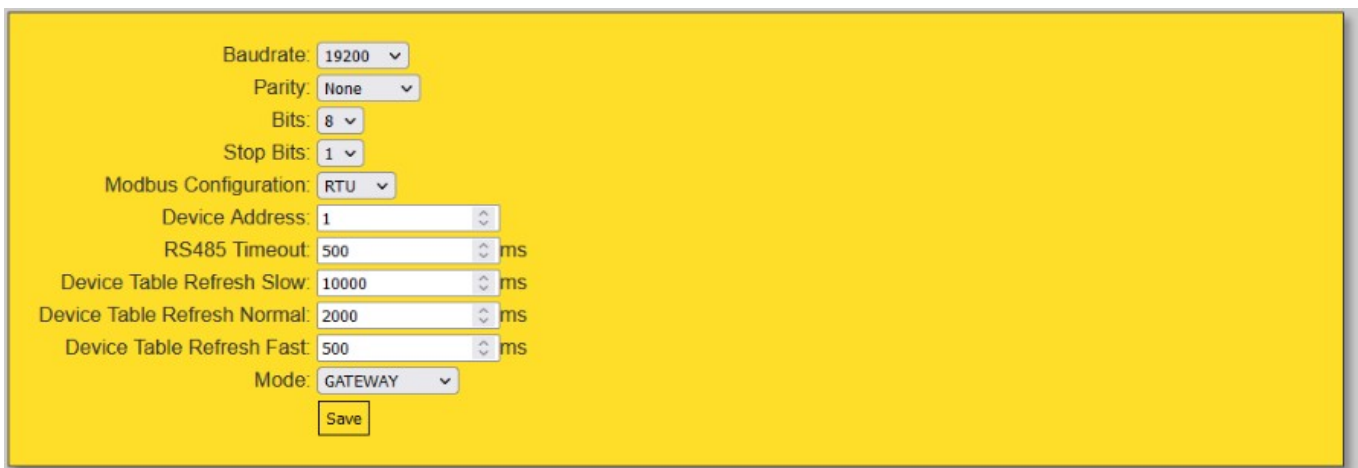
6 Set:

6.1 NETWORK



IP: 192.168.1.135
 Mask: 255.255.255.0
 Gateway: 192.168.1.1
 Modbus port: 502
 HTTP port: 80
 Connection Timeout: 60 s
 Save Reset Device

6.2 MODBUS CONFIG (GATEWAY MODE)



Baudrate: 19200
 Parity: None
 Bits: 8
 Stop Bits: 1
 Modbus Configuration: RTU
 Device Address: 1
 RS485 Timeout: 500 ms
 Device Table Refresh Slow: 10000 ms
 Device Table Refresh Normal: 2000 ms
 Device Table Refresh Fast: 500 ms
 Mode: GATEWAY
 Save

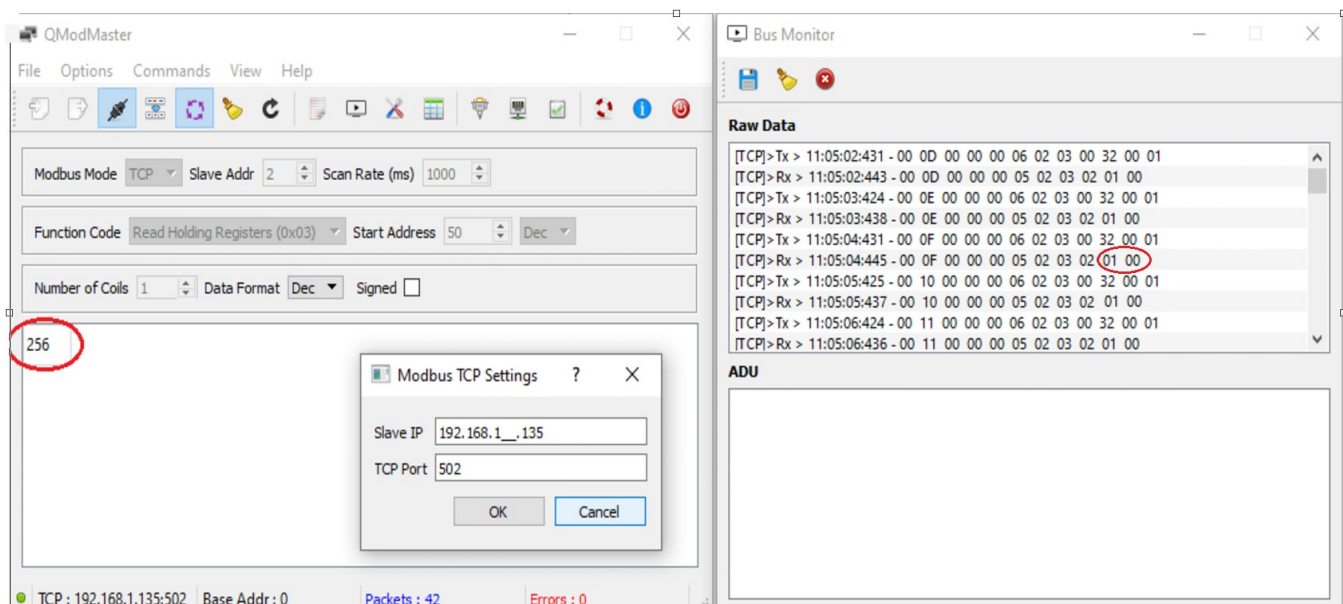
The MOD-ETH module has two different working modes. The first is the Modbus TCP GATEWAY, in which the device converts the frames of Modbus TCP into Modbus RTU/ASCII and sends them to the RS485 network's devices.

The second mode is the Device Table function, in which the module reads the RS485 network's devices only using the earlier-defined requests and ignores the requests addressed to other devices in the Modbus TCP network. The communication with external modules is only possible through the internal registers of the module in the range of addresses from 1000 to 1099.

7 The MOD-16I-M module has an active input **no. 9**. Read input register (**GATEWAY MODE**) using Modbus Master Device via Modbus TCP.

In this case Modbus Master Device is software – **QModMaster**.

Below the window with Modbus TCP settings – Master Device. **You have to use: address of MOD-16I-M: 2, READ HOLDING REGISTER – function 3, start address: 50 (input register)**



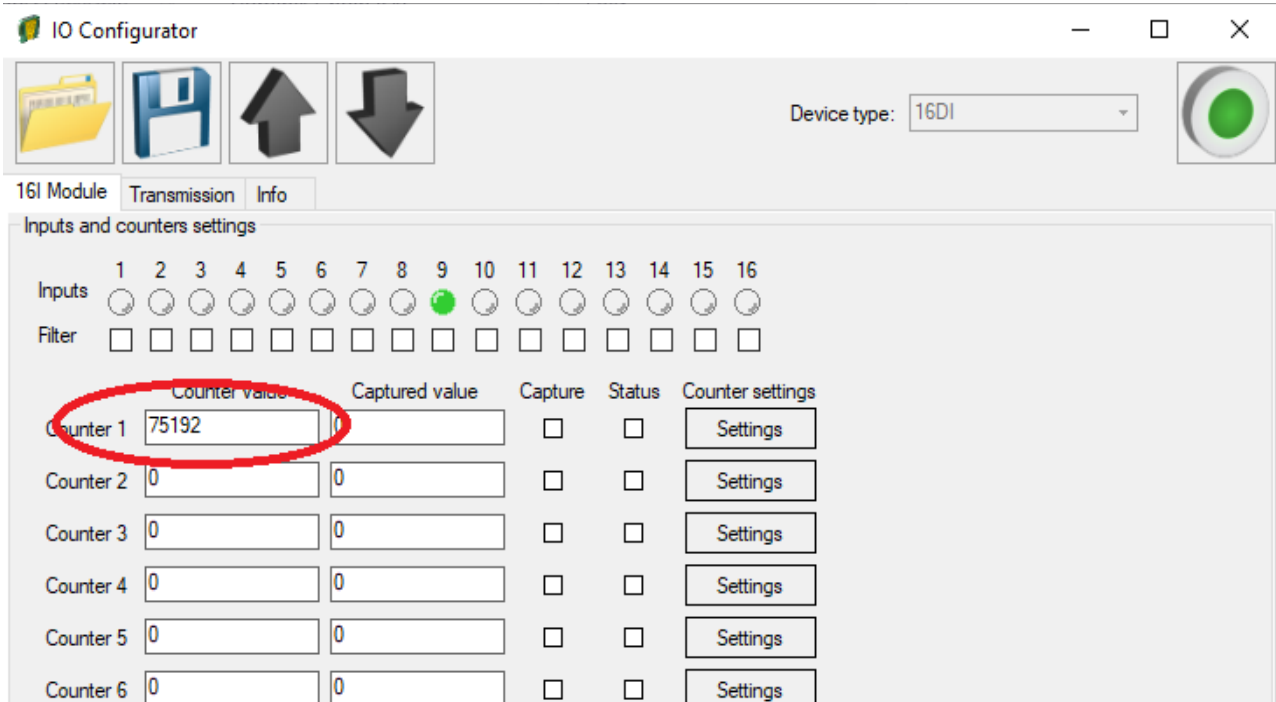
The value of input register:

256 (dec) - **100** (hex) - 0000000**1**00000000 (bin).

A "1" in bit 8 indicates that voltage is applied to input no. 9.

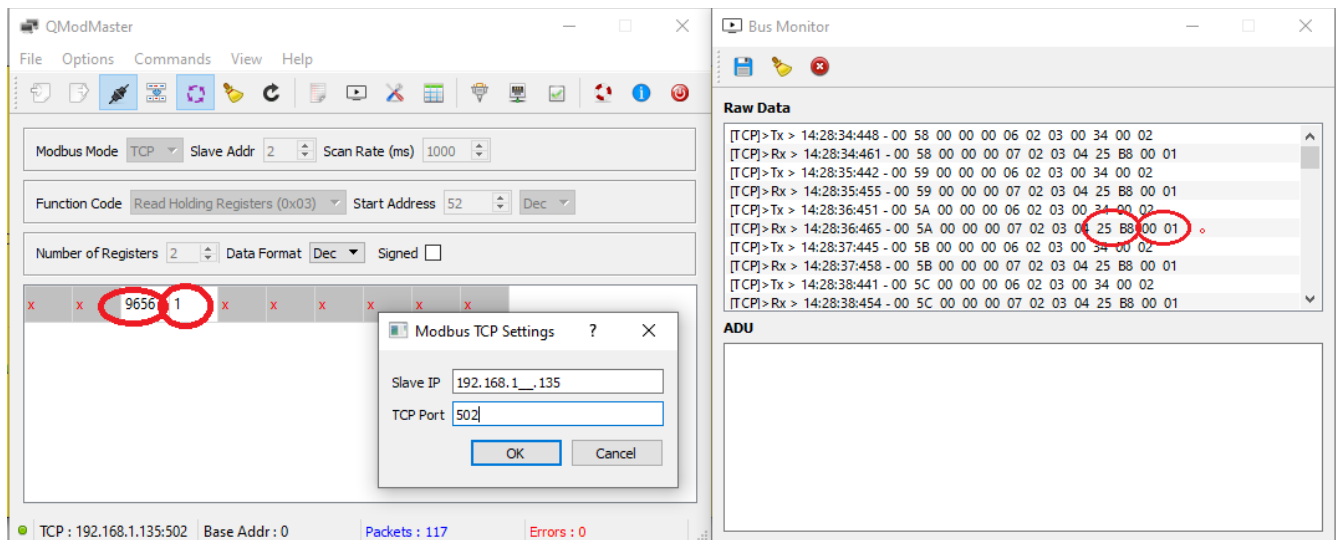
8 Read the value of Counter 1 (**GATEWAY MODE**) using Modbus Master Device via Modbus TCP.

The Modbus Master Device is software – **QModMaster**.



The Counter 1 value read by IO Configurator is **75192**.

Below the window with Modbus TCP settings – Modbus Master. You have to use: **address of MOD-16I-M: 2**, READ HOLDING REGISTER – Modbus function 3, start address (Counter 1): 52 and you need to read 2 consecutive registers because the value of Counter 1 is in two consecutive registers 52 (dec) and 53 (dec).



The value of Counter 1: **75192** (1 x 65536 + 9656)

9 MODBUS CONFIG (DEVICE TABLE MODE)

Baudrate: 19200
 Parity: None
 Bits: 8
 Stop Bits: 1
 Modbus Configuration: RTU
 Device Address: 1
 RS485 Timeout: 500 ms
 Device Table Refresh Slow: 10000 ms
 Device Table Refresh Normal: 2000 ms
 Device Table Refresh Fast: 500 ms
 Mode: DEVICE TABLE
 Save

9.1 Add new device (DEVICE TABLE MODE)

The navigation menu includes: Info, Network, Modbus Config, Local IO, **Device Table** (1), and Logout.

The 'Device Table' page shows two tabs: 'Internal Registers' and **Devices** (2). Below the tabs is a table with the following headers:

Device Address	Function	Size	Register Address	Internal Address	Speed	ON/OFF	Delete Device	Status
<div style="display: flex; justify-content: space-between;"> Add Device (3) Save Config Load Config </div>								

Device Address	Function	Size	Register Address	Internal Address	Speed	ON/OFF	Delete Device	Status
2	(0x03) Read Holding Registers	2	52	1000	Fast	ON	Delete	OK

52 (dec) – an address of Counter 1 LSB
 Size: 2 – reading of the two consecutive registers (52 LSB i 53 MSB).

The max amount of new devices is 25.

The communication with external modules is only possible through the internal registers of the module in the range of addresses from 1000 to 1099.

10 Read the value of Counter 1 (**DEVICE TABLE MODE**) using Modbus Master Device via Modbus TCP and save the read value in the table in registers 1000 i 1001.

10.1 Open the table of internal registers of MOD-ETH module.

Internal Registers		Devices								
Address	00	01	02	03	04	05	06	07	08	09
1000	9656	1	0	0	0	0	0	0	0	0
1010	0	0	0	0	0	0	0	0	0	0
1020	0	0	0	0	0	0	0	0	0	0
1030	0	0	0	0	0	0	0	0	0	0
1040	0	0	0	0	0	0	0	0	0	0
1050	0	0	0	0	0	0	0	0	0	0
1060	0	0	0	0	0	0	0	0	0	0
1070	0	0	0	0	0	0	0	0	0	0
1080	0	0	0	0	0	0	0	0	0	0
1090	0	0	0	0	0	0	0	0	0	0

The read value of Counter 1 is located in the internal registers:

Register 1000 (dec): **9656**

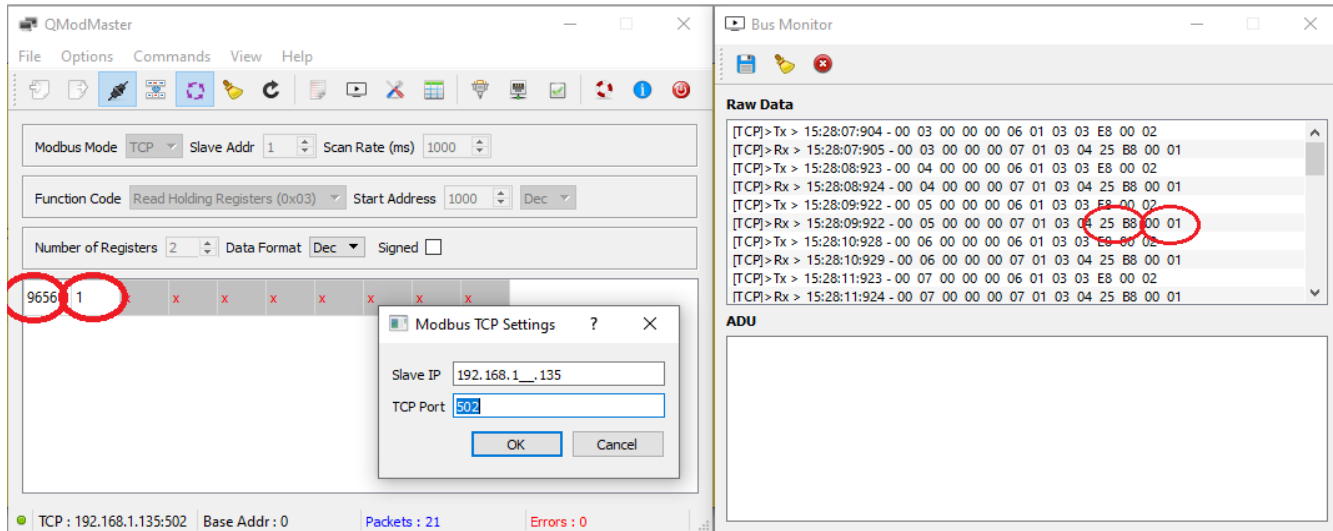
Register 1001 (dec): **1**

The value of Counter 1: **75192** (1 x 65536 + 9656)

11 Read the value of internal registers **1000 i 1001** using Modbus Master Device via Modbus TCP via Modbus TCP.

The Modbus Master Device is software – **QModMaster**.

Below the window with Modbus TCP settings – Modbus Master. You need to use: **address of MOD-ETH: 1**, READ HOLDING REGISTER - Modbus function 3, start address: 1000 (internal register in MOD-ETH), **Number of Registers: 2**



Register 1000 (dec): **9656** (25B8 hex)
 Register 1001 (dec): **1** (0001 hex)

The value of Counter 1: **75192** (1 x 65536 + 9656)