

MANUAL



RESI-1RS485-ETH RESI-1RS232-ETH



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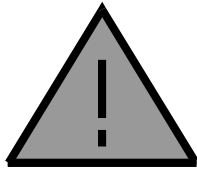
1 History

Date	Editor	Description
10.10.18	DI HC Sigl, MSc	Initial version
15.10.18	DI HC Sigl, MSc	Some minor corrections
23.09.20	DI HC Sigl, MSc	Adding configuration with MODBUS Doctor software

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3 IMPORTANT SECURITY NOTES



Danger to life through electrical current!

Only skilled personal trained in electro-engineering should perform the described steps in the following chapters. Please observe the country specific rules and standards. Do not perform any electrical work while the device is connected to power.

Pay attention to the following rules:

1. Disconnect the system from power
2. Secure the system against automatic power on
3. Check that the system is de-energized
4. Cover other energized parts of the system

IMPORTANT HINT: Before you start with the installation and the initial setup of the device, you have to read this document and the attached installation guide and the actual manual for the device very carefully. You have to follow all the herein given information very accurate!

- ☐ Only authorized and qualified personnel are allowed to install and setup the device!
- ☐ The connection of the device must be done in de-energized state!
- ☐ Do not perform any electrical work while the device is connected to power!
- ☐ Disable and secure the system against any automatic restart or power on procedure!
- ☐ The device must be operated with the defined voltage level!
- ☐ Supply voltage jitters must not exceed the technical specifications and tolerances given in the technical manuals for the product. If you do not obey this issue, the proper performance of the device cannot be guaranteed. This can lead to fail functions of the device and in worst case to a complete breakdown of the device!
- ☐ You have to obey the current EMC regulations for wiring!
- ☐ All signal, control and supply voltage cables must be wired in a way, that no inductive or capacitive interference or any other severe electrical noise disturbance may interfere with the device. Wrong wiring can lead to a malfunction of the device!
- ☐ For signal or sensor cables you have to use shielded cables, to avoid damages through induction!
- ☐ You have to obey and to apply the current safety regulations given by the ÖVE, VDE, the countries, their control authorities, the TÜV or the local energy supply company!
- ☐ Obey country-specific laws and standards!
- ☐ The device must be used for the intended purpose of the manufacturer!
- ☐ No warranties or liabilities will be accepted for defects and damages resulting from improper or incorrect usage of the device!
- ☐ Subsequent damages, which results from faults of this device, are excluded from warranty and liability!
- ☐ Only the technical data, wiring diagrams and operation instructions, which are part to the product shipment are valid!

- ☐ The information on our homepage, in our datasheets, in our manuals, in our catalogues or published by our partners can deviate from the product documentation and is not necessarily always actual, due to constant improvement of our products for technical progress!
- ☐ In case of modification of our devices made by the user, all warranty and liability claims are lost!
- ☐ The installation has to fulfill the technical conditions and specifications (e.g. operating temperatures, power supply, ...) given in the devices documentation!
- ☐ Operating our device close to equipment, which do not comply with EMC directives, can influence the functionality of our device, leading to malfunction or in worst case to a breakdown of our device!
- ☐ Our devices must not be used for monitoring applications, which solely serve the purpose of protecting persons against hazards or injury, or as an emergency stop switch for systems or machinery, or for any other similar safety-relevant purposes!
- ☐ Dimensions of the enclosures or enclosures accessories may show slight tolerances on the specifications provided in these instructions!
- ☐ Modifications of this documentation is not allowed!
- ☐ In case of a complaint, only complete devices returned in original packing will be accepted!

4 General Information

The RESI-1RS232-ETH and RESI-1RS485-ETH converter are useful in situations, where you have to integrate RS485 or RS232 based devices either with MODBUS/RTU protocol or other serial protocols into an Ethernet based solution.

The converters offer the following features:

- RESI-1RS485-ETH: Serial communication with RS485 devices with 300-115200 baud, no, even or odd parity, 7 or 8 data bits, 1 or 2 stop bits.
- RESI-1RS232-ETH: Serial communication with RS232 devices with 300-115200 baud, no, even or odd parity, 7 or 8 data bits, 1 or 2 stop bits.
- Transparent mode: The incoming data on the socket is directly written to the serial line. The received serial characters are directly written to the socket
- MODBUS/TCP to MODBUS/RTU conversion: The incoming MODBUS/TCP frame is internally converted to a MODBUS/RTU frame and send to the serial line to the corresponding MODBUS/RTU slave device. The serial answer of the MODBUS/RTU slave device is received by the gateway, converted into a MODBUS/TCP frame and send to the socket.
- Gateway configuration via special MODBUS/RTU or MODBUS/TCP frames.
- IP configuration via DIP switches and web page
- Serial interface is electrically isolated from the Ethernet interface
- Ethernet connection via 10/100Mbit Ethernet interface
- 12-48V= power supply

Type	Description	Voltage	Power	Weight
RESI-1RS485-ETH	Ethernet gateway RS485-SOCKET, bidirectional transport of plain socket data to serial RS485 interface with automatic direction control, MODBUS/TCP to MODBUS/RTU converter, DIP switch for settings	12-48 V=	<0.8W	90 g
RESI-1RS232-ETH	Ethernet gateway RS232-SOCKET, bidirectional transport of plain socket data to serial RS232 interface, MODBUS/TCP to MODBUS/RTU converter, DIP switch for settings	12-48 V=	<0.8W	90 g

4.1 Technical data for RESI-1RS485-ETH

Technical Data		RESI-1RS485-ETH
Power supply		
Supply voltage		12-48 V= +/-10%
Power LED		Yes
Power consumption		<0.8W
Serial interface		
Protocol		transparent MODBUS/RTU master MODBUS/TCP to MODBUS/RTU conversion
Type		RS485, automatic direction switching
Baud rates		300,600,900,1200,2400,4800, 9600,19200,38400,57600, 115200,230400,250000
Parity		none, even, odd
Data bits		7 or 8 bits
Stop bits		1 or 2 stop bits
Cable Connection		Via clamps
LED indicator		Yes
DIP switches		Yes
Galvanic insulation to serial interface		Yes
Clamps		
Clamp wire cross section		Max. 1,5 mm ²
Tightening torque		Max. 0.5Nm
		Storage temperature -20...85 °C Operating Temperature 0...60°C Humidity 25...90 % rH non- condensing Protection Class IP20 (EN 60529) Dimensions LxWxH 35.8mm x 90mm x 58mm Weight 90g Mounting on DIN EN50022 rail
		Factory settings Modbus address for configuration 254 IP address 192.168.0.198 standard socket 1024 standard user name RESI standard password RESI serial speed 9600bd data format 8 data bits, 2 stop bit parity no parity
		CE conformity Yes

4.2 Technical data for RESI-1RS232-ETH

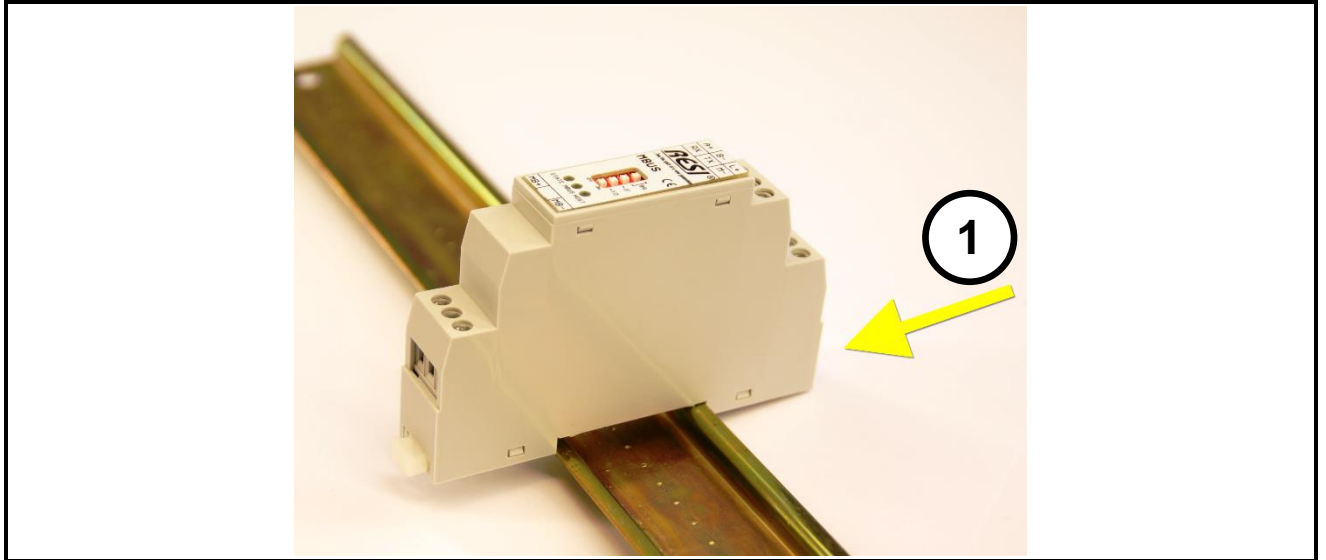
Technical Data		RESI-1RS232-ETH	
Power supply			
Supply voltage		12-48 V= +/-10%	Storage temperature -20...85 °C
Power LED		Yes	Operating Temperature 0...60°C
Power consumption		<0.8W	Humidity 25...90 % rH non-condensing
Serial interface			Protection Class IP20 (EN 60529)
Protocol		transparent MODBUS/RTU master	Dimensions LxWxH 35.8mm x 90mm x 58mm
		MODBUS/TCP to MODBUS/RTU conversion	Weight 90g
Type		RS232	Mounting on DIN EN50022 rail
Baud rates		300,600,900,1200,2400,4800, 9600,19200,38400,57600, 115200,230400,250000	
Parity		none, even, odd	Factory settings
Data bits		7 or 8 bits	Modbus address for configuration 254
Stop bits		1 or 2 stop bits	IP address 192.168.0.199
Cable Connection		Via clamps	standard socket 1024
LED indicator		Yes	standard user name RESI
DIP switches		Yes	standard password RESI
Galvanic insulation to serial interface		Yes	serial speed 9600bd
Clamps			data format 8 data bits, 2 stop bit
Clamp wire cross section		Max. 1,5 mm ²	parity no parity
Tightening torque		Max. 0.5Nm	CE conformity Yes

5 Mounting and Connections

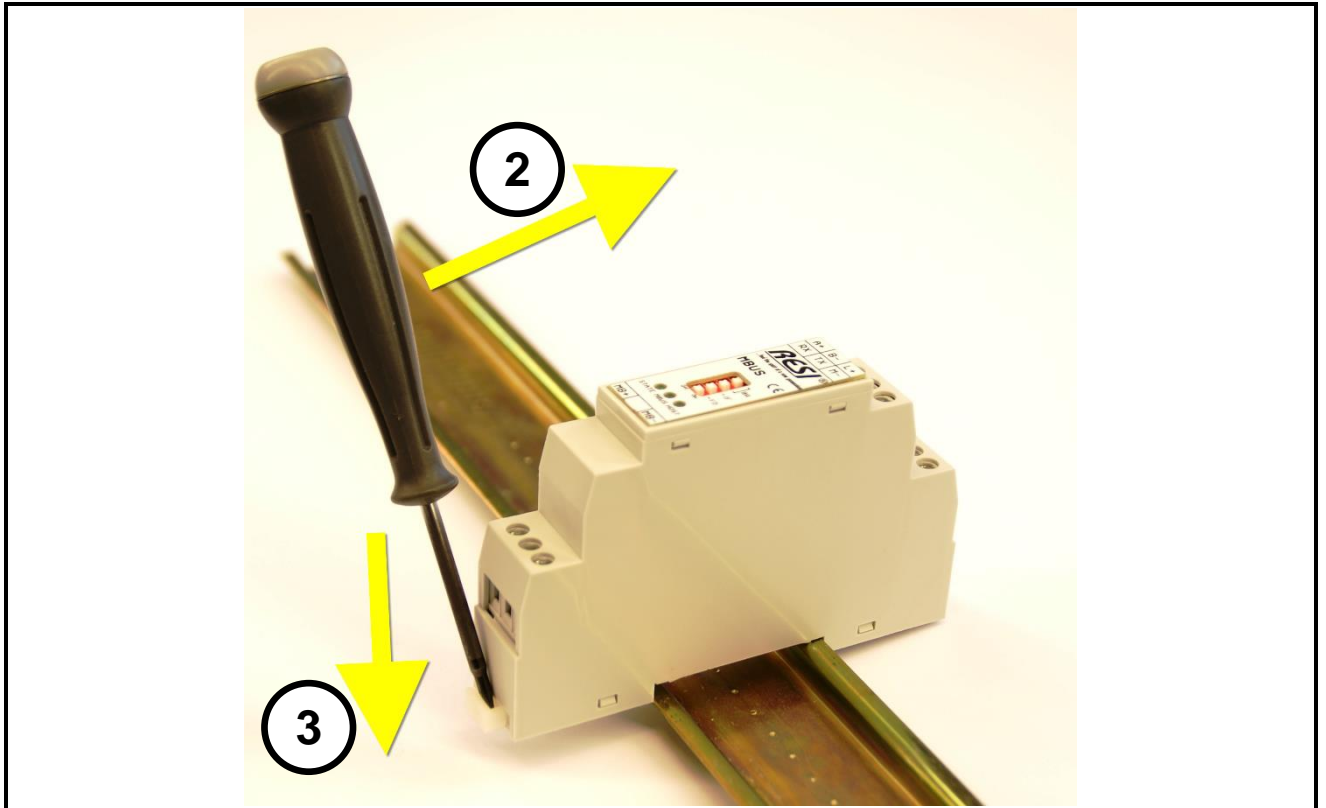
5.1 Assembling

Our RESI-1RS485-ETH and RESI-1RS232-ETH converters are designed for mounting on a 35mm DIN-EN50022 rail. Please note, we use symbol pictures in our manual.

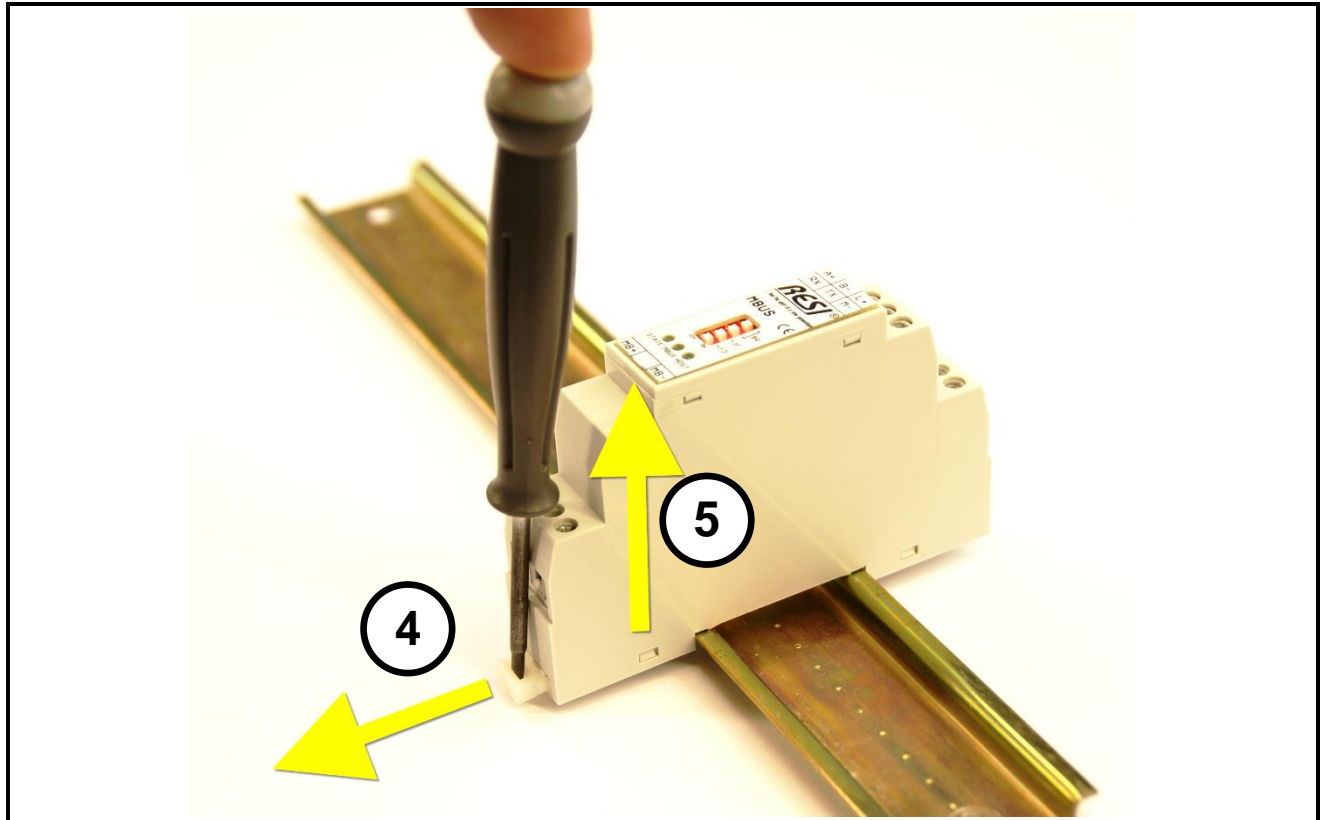
At first, put the converter with the top side on the DIN rail (1).



Then open the clamp lever on the bottom side with a screw driver (2) and press the device on the DIN rail (3). Release the clamp lever. The module is now placed correctly on the DIN rail.



To dismount the module from the DIN rail first open the clamp lever with a screwdriver on the bottom side (4). Hold the clamp lever opened while you lift the module from the DIN rail (5). Then remove the converter from the bar with while pulling it on the top side.



5.3 DIP switch settings and terminals of RESI-1RS485-ETH

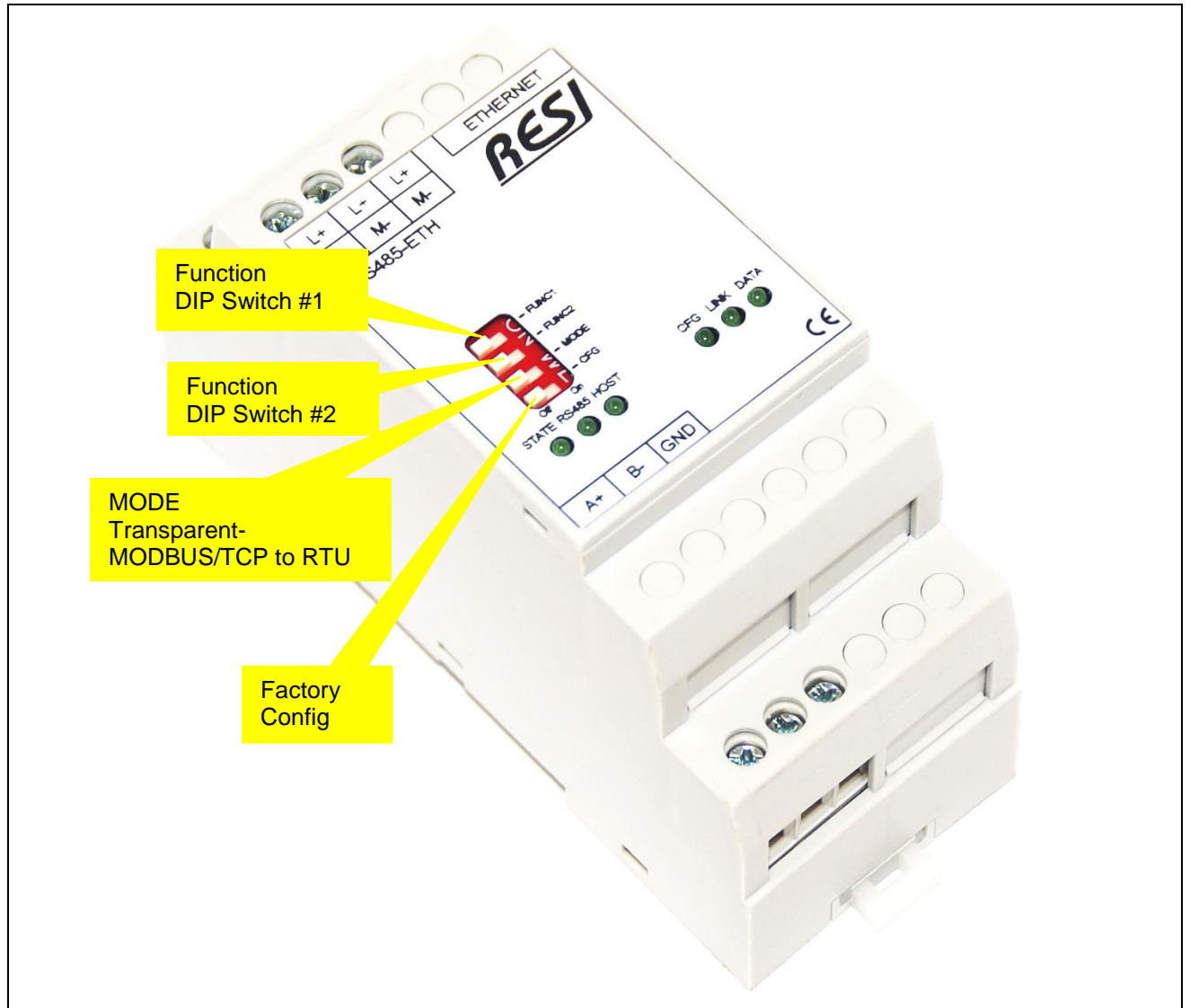


Illustration: DIP Switch settings for the RESI-1RS485-ETH converters

DIP Switch	Description
Function FUNC1	=ON: while restarting the module, the module switches to STATIC IP configuration with the standard IP settings: IP address: 192.168.0.198 IP mask: 255.255.255.0 Gateway: 192.168.0.1 =OFF: the current configured IP settings are used
Function FUNC2	=ON: while restarting the module, the module switches to DHCP IP configuration. =OFF: the current configured IP settings are used
Mode MODE	Selects a operation mode for factory reset: =OFF: While factory reset, the unit is configured to transparent socket mode =ON: While factory reset, the unit is configured to MODBUS/TCP to MODBUS/RTU conversion mode
Factory config CFG	=ON: while restarting the module, the module restores the factory defaults for the system. Wait for approx. 30 seconds until the STATE+CFG LED flashes very fast. Then reset the DIP switch. The module will restart automatically and is ready for operation. =OFF: Normal start of module
HINT	After changing the DIP switches the converter reboots immediately, so no power off or on is necessary. After reboot all the LEDs are on for half a second to signal the power on sequence.

Table: Description of DIP Switch functions RESI-1RS485-ETH

CLAMPS/LEDS	RESI-1RS485-ETH
L+ M-	Power supply L+: 12-48Vdc M-: Ground
ETHERNET	Ethernet connection for transparent or MODBUS/TCP or internet access. 10M/100Mbit adaptive, support AUTO-MDIX
A+ B- GND	Interface to serial RS485 line A+: DATA+ (positive) signal B-: DATA- (negative) signal GND: ground for serial RS485 line
STATE	State-LED, flashes, when converter is ok flash rhythm is 1s in normal mode and 0,1s in configuration mode
RS485	Whenever there is a data flow on the serial line, this LED flashes for a short time
HOST	HOST-LED, flashes, when host sends/receive data over the socket
CFG	Factory config LED: In normal mode this LED flashes in the same way like the STATE LED. If CFG switch=ON while rebooting, the STATE LED is always ON and this LED flashes slowly. When this process is finished, both LED blink very fast.
LINK	This LED is on if Ethernet port is connected correctly to network
DATA	The LED shows the data flow on the Ethernet port

Table: Description of connectors and LEDs of RESI-1RS485-ETH

5.4 DIP switch settings and terminals of RESI-1RS232-ETH

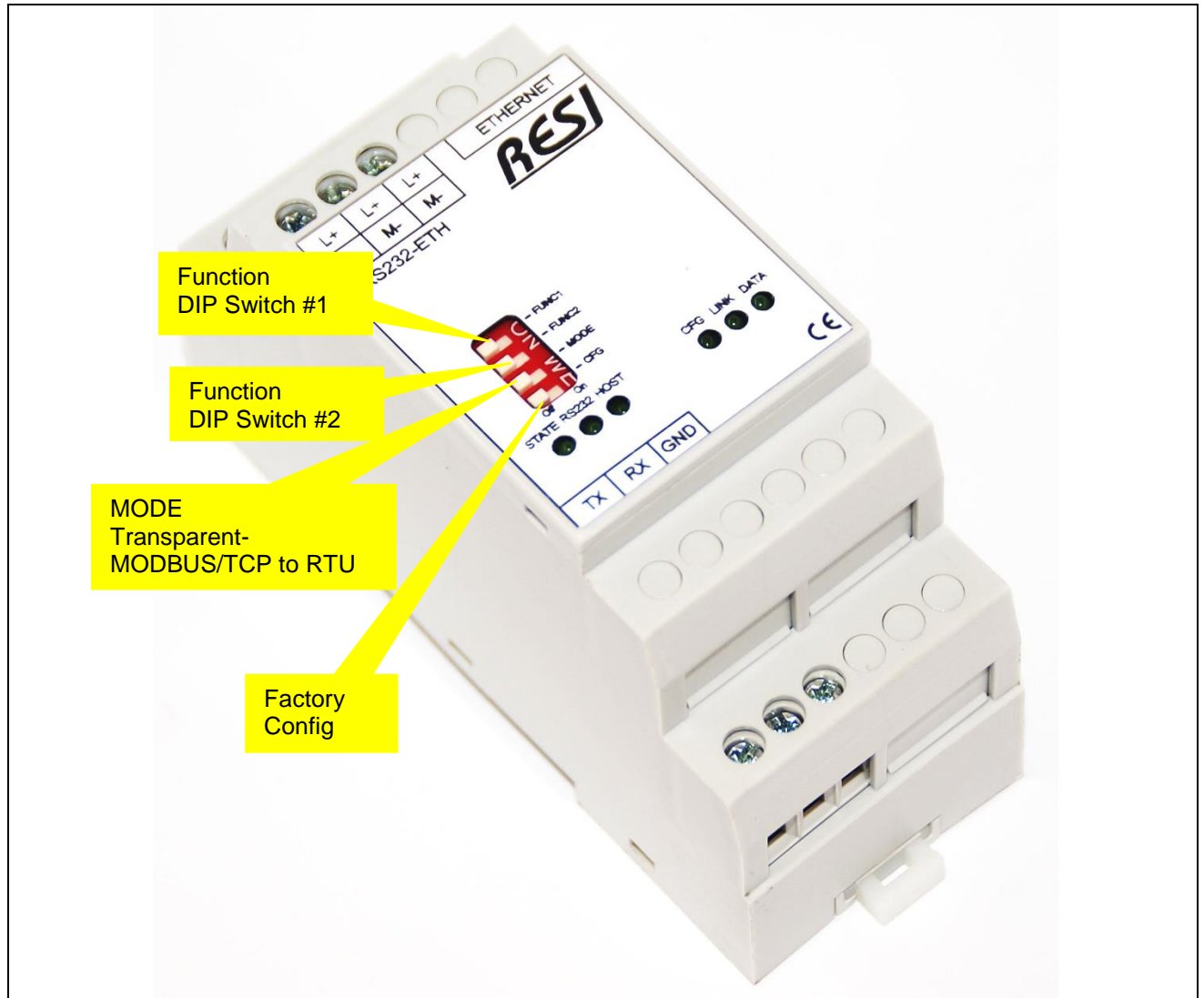


Illustration: DIP Switch settings for the RESI-1RS232-ETH converters

DIP Switch	Description
Function FUNC1	=ON: while restarting the module, the module switches to STATIC IP configuration with the standard IP settings: IP address: 192.168.0.199 IP mask: 255.255.255.0 Gateway: 192.168.0.1 =OFF: the current configured IP settings are used
Function FUNC2	=ON: while restarting the module, the module switches to DHCP IP configuration. =OFF: the current configured IP settings are used
Mode MODE	Selects a operation mode for factory reset: =OFF: While factory reset, the unit is configured to transparent socket mode =ON: While factory reset, the unit is configured to MODBUS/TCP to MODBUS/RTU conversion mode
Factory config CFG	=ON: while restarting the module, the module restores the factory defaults for the system. Wait for approx. 30 seconds until the STATE+CFG LED flashes very fast. Then reset the DIP switch. The module will restart automatically =OFF: nothing happens
HINT	After changing the DIP switches the converter reboots immediately, so no power off or on is necessary. After reboot all the LEDs are on for half a second to signal the power on sequence.

Table: Description of DIP Switch functions RESI-1RS232-ETH

CLAMPS/LEDS	RESI-1RS232-ETH
L+ M-	Power supply L+: 12-48Vdc M-: Ground
ETHERNET	Ethernet connection for transparent or MODBUS/TCP or internet access. 10M/100Mbit adaptive, support AUTO-MDIX
TX RX GND	Interface to serial RS232 line TX: data transmit signal RX: data receive signal GND: ground for serial RS232 line
STATE	State-LED, flashes, when converter is ok flash rhythm is 1s in normal mode and 0,1s in configuration mode
RS232	Whenever there is a data flow on the serial line, this LED flashes for a short time
HOST	HOST-LED, flashes, when host sends/receive MODBUS/TCP telegrams
CFG	Factory config LED: In normal mode this LED flashes in the same way like the STATE LED. If CFG switch=ON while rebooting, the STATE LED is always ON and this LED flashes slowly. When this process is finished, both LED blink very fast.
LINK	This LED is on if Ethernet port is connected correctly to network
DATA	The LED shows the data flow on the Ethernet port

Table: Description of connectors and LEDs of RESI-1RS232-ETH

5.5 Wiring diagram RESI-1RS485-ETH

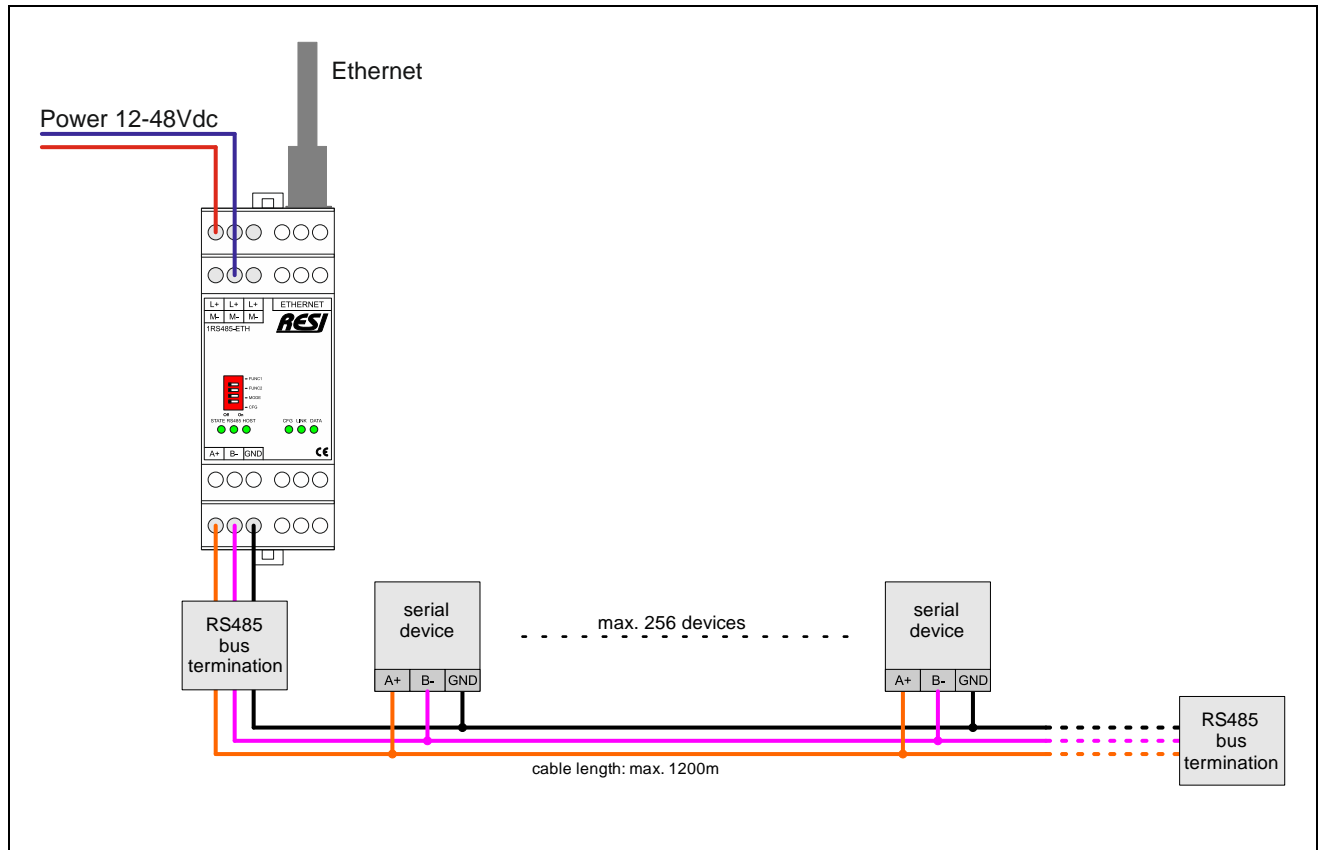


Illustration: wiring diagram for RESI-1RS485-ETH converter

5.6 Wiring diagram RESI-1RS232-ETH

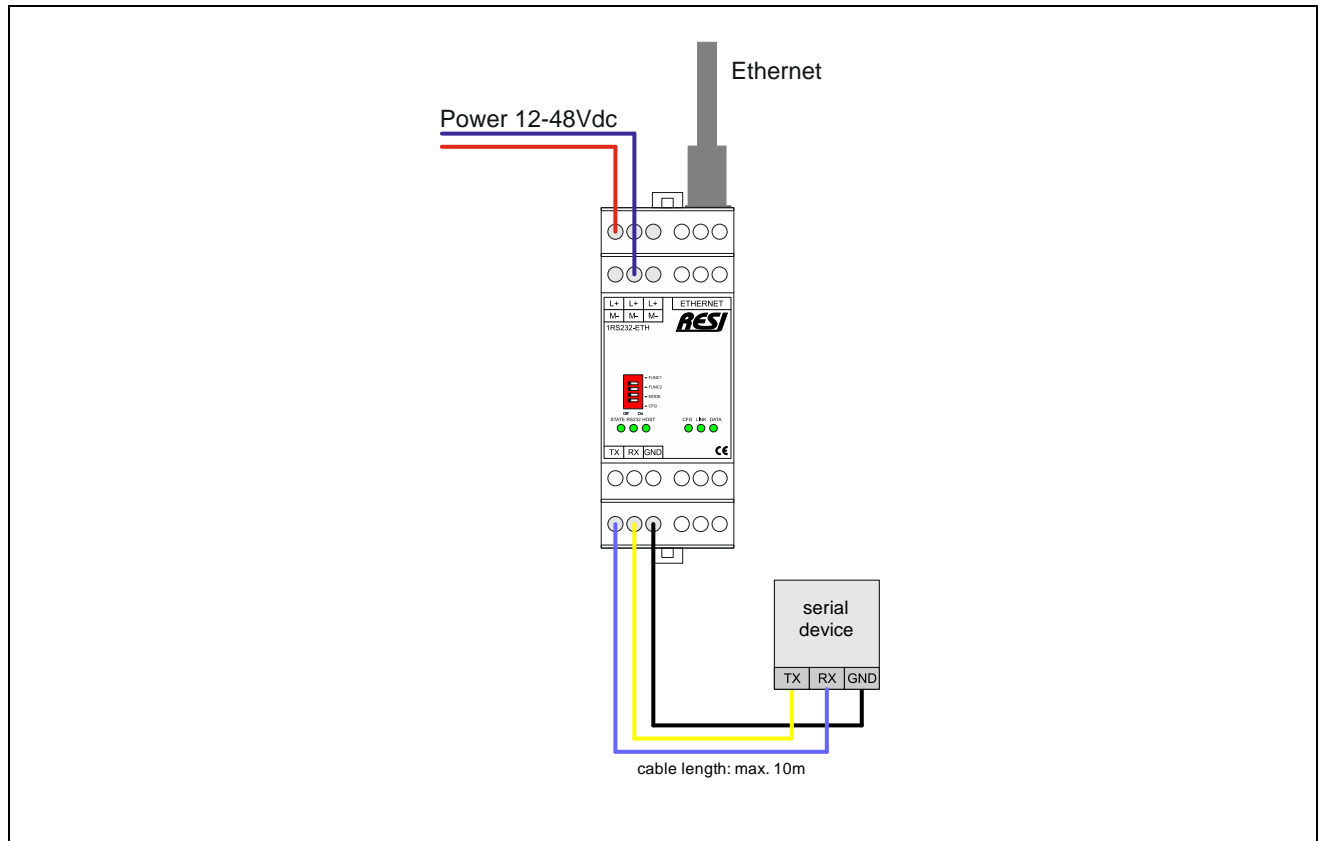


Illustration: wiring diagram for RESI-1RS232-ETH converter

6 RESI-1RSxxx-ETH operation modes

The gateway supports basically two different operation modes:

- **TRANSPARENT MODE:** Bidirectional transparent gateway between Ethernet socket data and serial line. All incoming data on the Ethernet socket is directly forwarded to the serial line. All received data from the serial line is directly forwarded to the Ethernet socket.

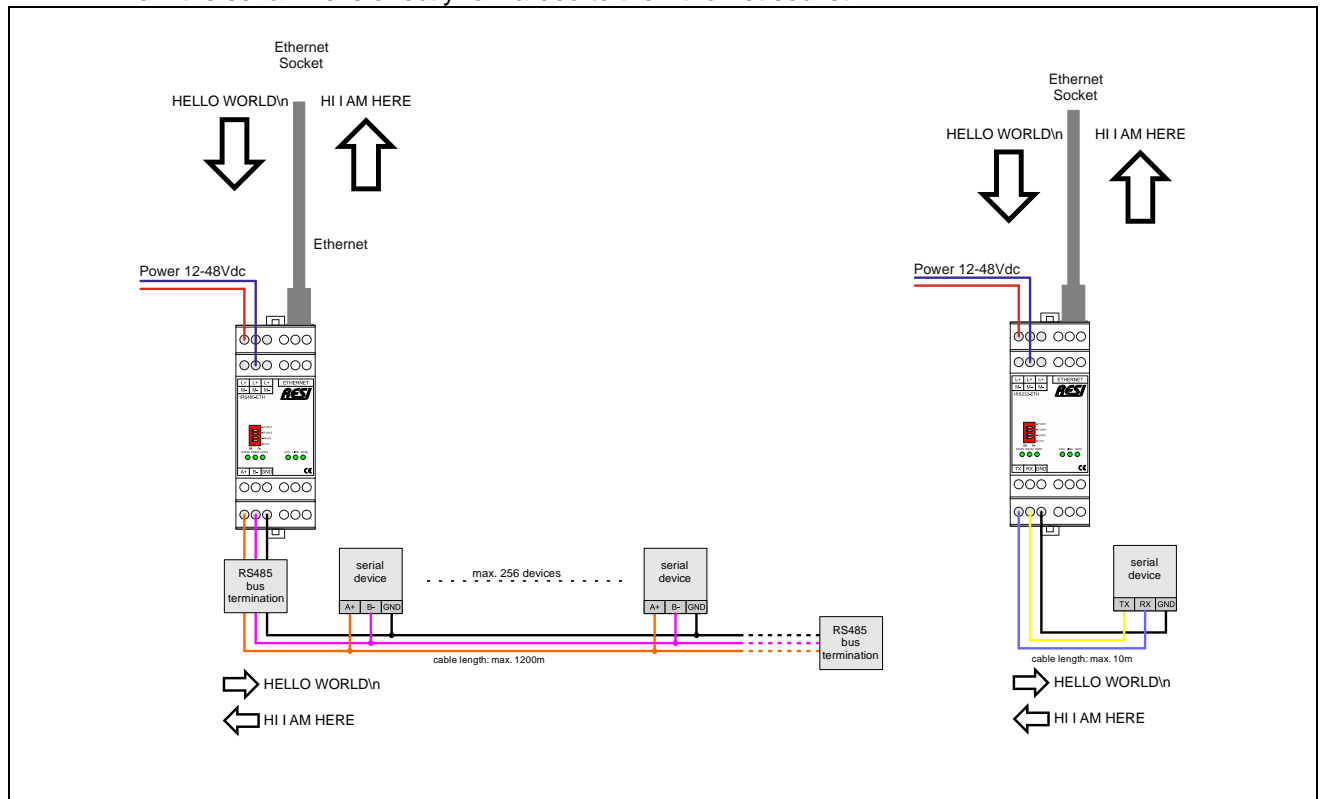


Illustration: TRANSPARENT MODE on RESI-1RSxxx-ETH converters

In this mode you can also use a MODBUS/RTU protocol over Ethernet to communicate with MODBUS/RTU slave devices on the serial line. We use internally MODBUS/RTU in this mode to configure the gateway itself.

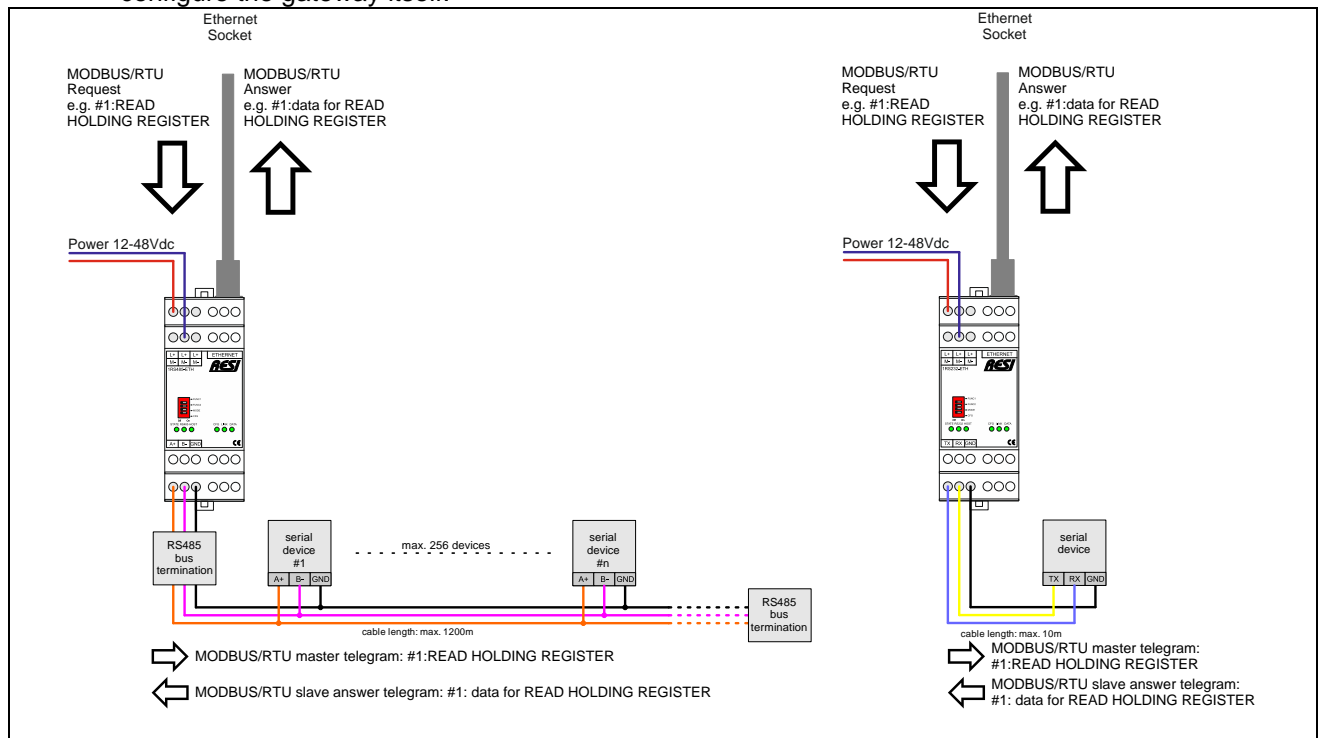


Illustration: MODBUS/RTU over Ethernet MODE on RESI-1RSxxx-ETH converters

- MODBUS/TCP to MODBUS/RTU: Bidirectional gateway between MODBUS/TCP Client and serial line. Gateway is acting as MODBUS/RTU master on the serial line. A host with MODBUS/TCP protocol can directly communicate with MODBUS/RTU slave devices on the serial line.

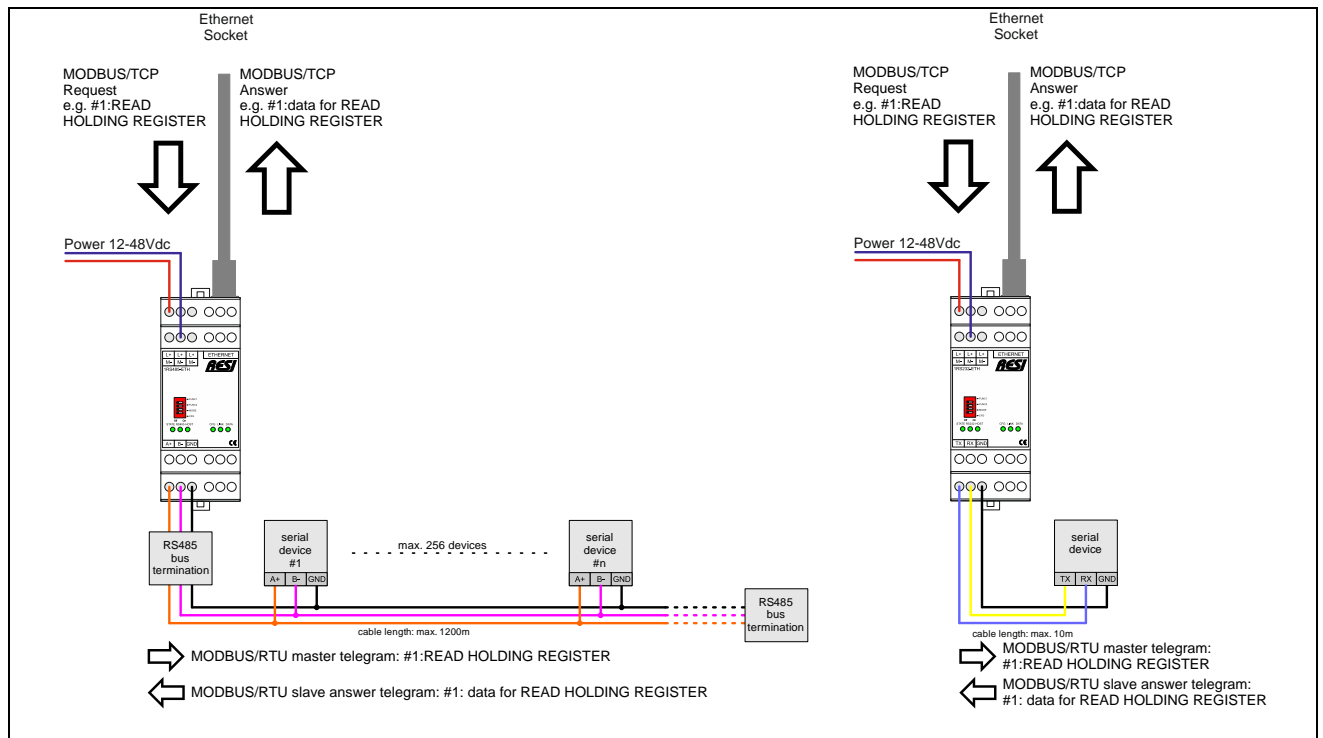


Illustration: MODBUS/TCP to MODBUS/RTU MODE on RESI-1RSxxx-ETH converters

7 RESI-1RSxxx-ETH web configuration

All our RESI-1RS485-ETH and RESI-1RS232-ETH gateways have a build in web server to configure basic access to the Ethernet interface. Therefore open an Internet explorer and type in the configured IP address of the selected gateway.

The standard configuration for STATIC IP (See DIP switch selection of RESI-1RSxxx-ETH gateways) is:

- RESI-1RS485-ETH: IP: 192.168.0.198 Mask: 255.255.255.0 Gateway: 192.168.0.1 Socket: 1024
- RESI-1RS232-ETH: IP: 192.168.0.199 Mask: 255.255.255.0 Gateway: 192.168.0.1 Socket: 1024

The standard user name is RESI and the standard password is also RESI.

You should see the following page:

The screenshot shows a web browser window with the address bar set to 192.168.0.198. The page title is "RESI-1RS485-ETH". The interface is divided into three main sections: "Current Status", "Current settings", and "help".

Current Status:

- Local IP Config
- TTL1
- Misc Config
- Reboot

Current settings:

- Module Name: **RESI-1RS485-ETH**
- Firmware Revision: 3014
- Current IP Address: 192.168.0.198
- MAC Address: d8-b0-4c-d6-81-27
- Run Time: 0day: 1hour: 10min:45
- TX Count(ETH) : 106419 bytes
- RX Count(ETH) : 141252 bytes
- Conn Status(ETH)A: CONNECTED(1)
- Conn Status(ETH)B: IDLE

help:

- **Run time:** run time means the minutes since latest reboot
- **TX/RX Count:** TX/RX count give us a calculation of the total byte we have been received or send.

At the bottom of the page, it says: Copyright © 2009 - 2019 · by RESI Informatik & Automation GmbH and DI HC SIGL, MSc. website: www.RESI.cc

7.1 HOWTO setup IP address

Choose page "Local IP Config". Use the following mask to edit the IP settings:

V3014 [Visit RESI webpage...](#)

RESI

RESI-1RS485-ETH RESI-1RS485-ETH

Current Status

Local IP Config

TTL1

Misc Config

Reboot

Current settings

IP Type:
 for RESI-1RS485-ETH select DHCP for automatic IP addressing or STATIC for manual configuration of the IP settings

Static IP: . . .
 for RESI-1RS485-ETH enter your desired module IP address here

Submask: . . .
 for RESI-1RS485-ETH enter your desired Subnet mask here

Gateway: . . .
 for RESI-1RS485-ETH enter your desired gateway IP address here

DNS Server: . . .
 for RESI-1RS485-ETH enter your desired DNS server IP address here

help

- **IP type:** StaticIP or DHCP
- **StaticIP** Module's static ip
- **Submask** usually 255.255.255.0
- **Gateway** Usually router's ip address

- **IP type:** Select between STATIC IP to use a own static IP or DHCP mode for automatic assignment of IP address
- **Static IP:** Select your desired IP address in IPv4 format
- **Submask:** Define you desired subnet mask in IPv4 format
- **Gateway:** Define your desired gateway IP address in IPv4 format
- **DNS Server:** Define your desired DNS Server IP address in IPv4 format

Click on save to store your data but don't forget to reboot the device, so that the new IP settings are effective. If you have problems, set the CFG DIP switch to ON and reboot the device. Wait for more than 30 seconds. The gateway will do a factory reset to the standard IP settings defined above. Don't forget to put the DIP switch to OFF position after successful factory reset.

7.2 HOWTO change socket number

Select the page TTL1 and you will see the below screen.

V3014 Visit RESI webpage...

RESI

RESI-1RS485-ETH RESI-1RS485-ETH

Current Status	Current settings	help
Local IP Config	<p>Baud Rate: 115200 bps for RESI-1RS485-ETH always 115200</p> <p>Data Size: 8 bit for RESI-1RS485-ETH always 8 bit</p> <p>Parity: None for RESI-1RS485-ETH always None</p> <p>Stop Bits: 1 bit for RESI-1RS485-ETH always 1</p> <p>Flow Control: None for RESI-1RS485-ETH always None</p> <p>UART Packet Time: 2 (0~255)ms for RESI-1RS485-ETH should be 2</p> <p>UART Packet Length: 0 (0~1460)chars for RESI-1RS485-ETH should be 0</p> <p>Sync Baudrate(RF2217 Similar): <input type="checkbox"/> for RESI-1RS485-ETH always OFF</p> <p>Enable Uart Heartbeat Packet: <input type="checkbox"/> for RESI-1RS485-ETH always OFF</p>	<p>• local port 1~65535, when TCP Client, set this to 0 means use random local port</p> <p>• remote port 1~65535</p> <p>• packet time/length default 0/0, means automatic packet mechanism; you can modify it as a none-zero value</p>
TTL1	<p>Socket A Parameters</p> <p>Work Mode: TCP Server None for RESI-1RS485-ETH always TCPServer+Modbus TCP</p> <p>Socket Number: 1024 23 (1~65535) for RESI-1RS485-ETH default is 502</p> <p>PRINT: <input type="checkbox"/> for RESI-1RS485-ETH always OFF</p> <p>ModbusTCP Poll: <input type="checkbox"/> Poll Timeout : 200 (200~9999) ms for RESI-1RS485-ETH always OFF+200ms</p> <p>Enable Net Heartbeat Packet: <input type="checkbox"/> for RESI-1RS485-ETH always OFF</p> <p>Registry Type: None Location Connect With for RESI-1RS485-ETH always None</p> <p>Socket B Parameters</p> <p>Work Mode: NONE for RESI-1RS485-ETH always NONE</p> <p>Save Cancel</p>	
Misc Config		
Reboot		

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HINT: Don't change the TTL communication parameters (eg Baudrate,...). You can lose the connection to the gateway!

- **Work mode:** Here you can select TCP Server/none if you want to communicate in transparent mode. All the incoming data on the socket is directly outputted to the serial line. If you want to use the internal MODBUS/TCP to MODBUS/RTU converter, you have to select TCP server/MODBUS TCP. If you select TCP Server/None, you can communicate also with MODBUS/RTU protocol over Ethernet.
- **Socket number:** Here you can select your desired socket number, you want to use for the Ethernet connection. Default for our converters is 1024, for MODBUS/TCP is 502

Please let the rest of the parameters unchanged. They are for expert usage only!

7.3 HOWTO change user name and password

If you select the page Misc config you will see the current configured username and password. Also you will see the current module name.

The screenshot shows a web browser window with the address 192.168.0.198. The page title is 'RESI-1RS485-ETH'. The main content area is titled 'RESI-1RS485-ETH' and 'RESI-1RS485-ETH'. The left sidebar has a menu with 'Misc Config' highlighted. The main content area is divided into 'Current Status' and 'Additional settings'. The 'Additional settings' section contains the following fields:

- Module Name: RESI-1RS485-ETH (for RESI-1RS485-ETH enter your own module name)
- Websocket Port: 6432 (for RESI-1RS485-ETH default is 6432)
- Webserver Port: 80 (for RESI-1RS485-ETH default is 80)
- MAC Address: d8-b0-4c-d6-81-27
- Username: RESI (for RESI-1RS485-ETH default is RESI)
- Password: RESI (for RESI-1RS485-ETH default is RESI)
- Buffer Data Before Connected: ☐ (for RESI-1RS485-ETH always OFF)
- Reset Timeout: 3600 (60~65535) s (for RESI-1RS485-ETH default is 3600s)

At the bottom of the 'Additional settings' section are 'Save' and 'Cancel' buttons. The right sidebar contains a 'help' section with the following information:

- module name**: max length is 15 char
- Web port**: default 80
- ID and ID type**: we could use it for D2D
- Mac address**: user could modify this MAC address
- Buffer data**: default not checked, buffer data before tcp connection established
- reset timeout**: default 0, 0-60 mean no timeout, >60 mean when there is no data received during this time, the device will restart

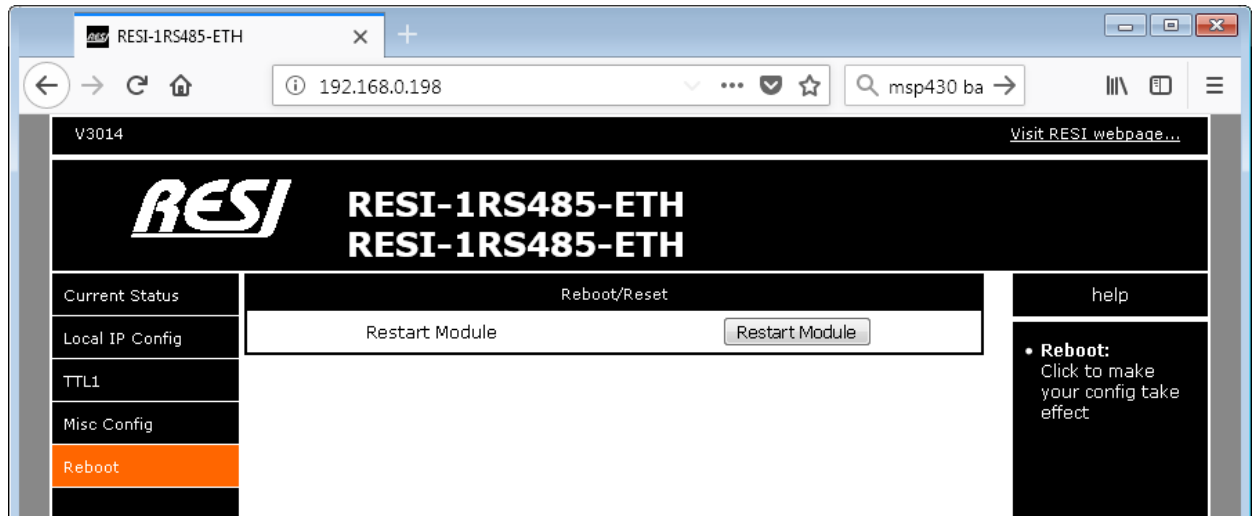
- **Module name:** Here you can enter a new module name. It's for better identification if you have more than one gateway in your network.
- **Username:** Here you can enter a new user name for accessing the web configuration.
- **Password:** here you can enter a new password for accessing the web configuration.

Don't forget to save the new settings with the button SAVE below!

Please let the rest of the parameters unchanged. They are for expert usage only!

7.4 HOWTO restart the module via Ethernet

First select page Reboot. Then select button Restart Module to perform a software reboot.



8 HOWTO configure the serial interface

After you have successfully changed the IP parameters via Web page, you can configure the serial line parameters with this steps.

8.1 MODBUS holding register table for configuration

The following table show the registers for setup of the serial line.

The module holds internally a list of 16 bit wide holding register. Those registers can be read by the host with the function READ HOLDING REGISTER (function code: 3). If the register can also be modified by the host, the host can use the functions PRESET SINGLE REGISTER (function code: 6).

The MODBUS convention defines 65535 possible holding register with the notation 4x00001 to 4x65536. Please refer the software MODBUS POLL as a sample for this notation. Internally in the MODBUS/RTU frames an index notation is used, which starts with 0 and ends with 65535. So we decided to note in the following document a register with: 4x00100 for the holding register 100, and in addition also the real index of the protocol index 99 with the notation I:99. Also we have added the hexadecimal number of the real index with H:0xNNNN.

HINT: Standard unit ID for internal configuration is 254. You can change this unit ID with a special holding register!

Register	Description
4x65521 I:65520 H:0xFFFF0 R/W RESET SYSTEM	<p>If the host writes the value 1 (0x0001) to this register, the module executes a soft reset (reboot).</p> <p>Reading this register will always return 0.</p>
4x65522 I:65521 H:0xFFFF1 R/W STANDARD CONFIG	<p>With this register you can select various standard configurations for the serial line: Reading this register will always return 0.</p> <p>Write the following value to select the serial configuration you want to use. The Unit ID for configuration is always set to 254 and the pause time before entering the configuration mode is set to 2000ms.</p> <p>10: 300bd, no parity, 8 data bits, 1 stop bit 11: 600bd, no parity, 8 data bits, 1 stop bit 12: 900bd, no parity, 8 data bits, 1 stop bit 13: 1200bd, no parity, 8 data bits, 1 stop bit 14: 2400bd, no parity, 8 data bits, 1 stop bit 15: 4800bd, no parity, 8 data bits, 1 stop bit 16: 9600bd, no parity, 8 data bits, 1 stop bit 17: 19200bd, no parity, 8 data bits, 1 stop bit 18: 38400bd, no parity, 8 data bits, 1 stop bit 19: 57600bd, no parity, 8 data bits, 1 stop bit 20: 115200bd, no parity, 8 data bits, 1 stop bit 21: 230400bd, no parity, 8 data bits, 1 stop bit 22: 250000bd, no parity, 8 data bits, 1 stop bit</p> <p>30: 300bd, no parity, 8 data bits, 2 stop bits 31: 600bd, no parity, 8 data bits, 2 stop bits 32: 900bd, no parity, 8 data bits, 2 stop bits 33: 1200bd, no parity, 8 data bits, 2 stop bits 34: 2400bd, no parity, 8 data bits, 2 stop bits 35: 4800bd, no parity, 8 data bits, 2 stop bits 36: 9600bd, no parity, 8 data bits, 2 stop bits 37: 19200bd, no parity, 8 data bits, 2 stop bits 38: 38400bd, no parity, 8 data bits, 2 stop bits 39: 57600bd, no parity, 8 data bits, 2 stop bits 40: 115200bd, no parity, 8 data bits, 2 stop bits 41: 230400bd, no parity, 8 data bits, 2 stop bits 42: 250000bd, no parity, 8 data bits, 2 stop bits</p>

Register	Description
4x65522	50: 300bd, even parity, 8 data bits, 1 stop bit
I:65521	51: 600bd, even parity, 8 data bits, 1 stop bit
H:0xFFFF1	52: 900bd, even parity, 8 data bits, 1 stop bit
R/W	53: 1200bd, even parity, 8 data bits, 1 stop bit
STANDARD	54: 2400bd, even parity, 8 data bits, 1 stop bit
CONFIG	55: 4800bd, even parity, 8 data bits, 1 stop bit
	56: 9600bd, even parity, 8 data bits, 1 stop bit
	57: 19200bd, even parity, 8 data bits, 1 stop bit
	58: 38400bd, even parity, 8 data bits, 1 stop bit
	59: 57600bd, even parity, 8 data bits, 1 stop bit
	60: 115200bd, even parity, 8 data bits, 1 stop bit
	61: 230400bd, even parity, 8 data bits, 1 stop bit
	62: 250000bd, even parity, 8 data bits, 1 stop bit
	70: 300bd, even parity, 8 data bits, 2 stop bits
	71: 600bd, even parity, 8 data bits, 2 stop bits
	72: 900bd, even parity, 8 data bits, 2 stop bits
	73: 1200bd, even parity, 8 data bits, 2 stop bits
	74: 2400bd, even parity, 8 data bits, 2 stop bits
	75: 4800bd, even parity, 8 data bits, 2 stop bits
	76: 9600bd, even parity, 8 data bits, 2 stop bits
	77: 19200bd, even parity, 8 data bits, 2 stop bits
	78: 38400bd, even parity, 8 data bits, 2 stop bits
	79: 57600bd, even parity, 8 data bits, 2 stop bits
	80: 115200bd, even parity, 8 data bits, 2 stop bits
	81: 230400bd, even parity, 8 data bits, 2 stop bits
	82: 250000bd, even parity, 8 data bits, 2 stop bits
	90: 300bd, odd parity, 8 data bits, 1 stop bit
	91: 600bd, odd parity, 8 data bits, 1 stop bit
	92: 900bd, odd parity, 8 data bits, 1 stop bit
	93: 1200bd, odd parity, 8 data bits, 1 stop bit
	94: 2400bd, odd parity, 8 data bits, 1 stop bit
	95: 4800bd, odd parity, 8 data bits, 1 stop bit
	96: 9600bd, odd parity, 8 data bits, 1 stop bit
	97: 19200bd, odd parity, 8 data bits, 1 stop bit
	98: 38400bd, odd parity, 8 data bits, 1 stop bit
	99: 57600bd, odd parity, 8 data bits, 1 stop bit
	100: 115200bd, odd parity, 8 data bits, 1 stop bit
	101: 230400bd, odd parity, 8 data bits, 1 stop bit
	102: 250000bd, odd parity, 8 data bits, 1 stop bit
	110: 300bd, odd parity, 8 data bits, 2 stop bits
	111: 600bd, odd parity, 8 data bits, 2 stop bits
	112: 900bd, odd parity, 8 data bits, 2 stop bits
	113: 1200bd, odd parity, 8 data bits, 2 stop bits
	114: 2400bd, odd parity, 8 data bits, 2 stop bits
	115: 4800bd, odd parity, 8 data bits, 2 stop bits
	116: 9600bd, odd parity, 8 data bits, 2 stop bits
	117: 19200bd, odd parity, 8 data bits, 2 stop bits
	118: 38400bd, odd parity, 8 data bits, 2 stop bits
	119: 57600bd, odd parity, 8 data bits, 2 stop bits
	110: 115200bd, odd parity, 8 data bits, 2 stop bits
	111: 230400bd, odd parity, 8 data bits, 2 stop bits
	112: 250000bd, odd parity, 8 data bits, 2 stop bits
	HINT: You have to perform a reset to activate the new serial configuration!

Register	Description
4x65523 I:65522 H:0xFFFF2 R/O 1RSxxx-ETH TYPE	While reading, the return value defines the type of the module: 1: RESI-1RS485-ETH 2: RESI-1RS232-ETH
4x65524 I:65523 H:0xFFFF3 R/O SOFTWARE VERSION	While reading, the return value defines the current software version: 0xMMNN -> e.g. 0x100 means version 1.00
4x65525 I:65524 H:0xFFFF4 R/W BAUD RATE	Read: The current configured baud rate for the serial line Write: In configuration mode: define the new baud rate for the serial line. The following values are accepted: 3: 300bd 6: 600bd 9: 900bd 12: 1200bd 24: 2400bd 48:4800bd 96: 9600bd 192: 19200bd 384: 38400bd 576: 57600bd 1152: 115200bd 2304: 230400bd 2500: 250000bd HINT: You have to perform a reset to activate the new serial configuration!
4x65526 I:65525 H:0xFFFF5 R/W PARITY	Read: The current configured parity for the serial line Write: In configuration mode: define the new parity for the serial line. The following values are accepted: 0: no parity 1: even parity 2: odd parity HINT: You have to perform a reset to activate the new serial configuration!
4x65527 I:65526 H:0xFFFF6 R/W DATA BITS	Read: The current configured data bits for the serial line Write: In configuration mode: define the new data bits for the serial line. The following values are accepted: 7: 7 data bits 8: 8 data bits HINT: You have to perform a reset to activate the new serial configuration!
4x65528 I:65527 H:0xFFFF7 R/W STOP BITS	Read: The current configured stop bits for the serial line Write: In configuration mode: define the new stop bits for the serial line. The following values are accepted: 1: 1 stop bit 2: 2 stop bits HINT: You have to perform a reset to activate the new serial configuration!
4x65529 I:65528 H:0xFFFF8 R/W PROTOCOL	Read: The current configured protocol for the serial line Write: In configuration mode: define the new protocol for the serial line. The following values are accepted: 0..65535 (0x0000-0xFFFF) For future applications reserved HINT: You have to perform a reset to activate the new serial configuration!

Register	Description
----------	-------------

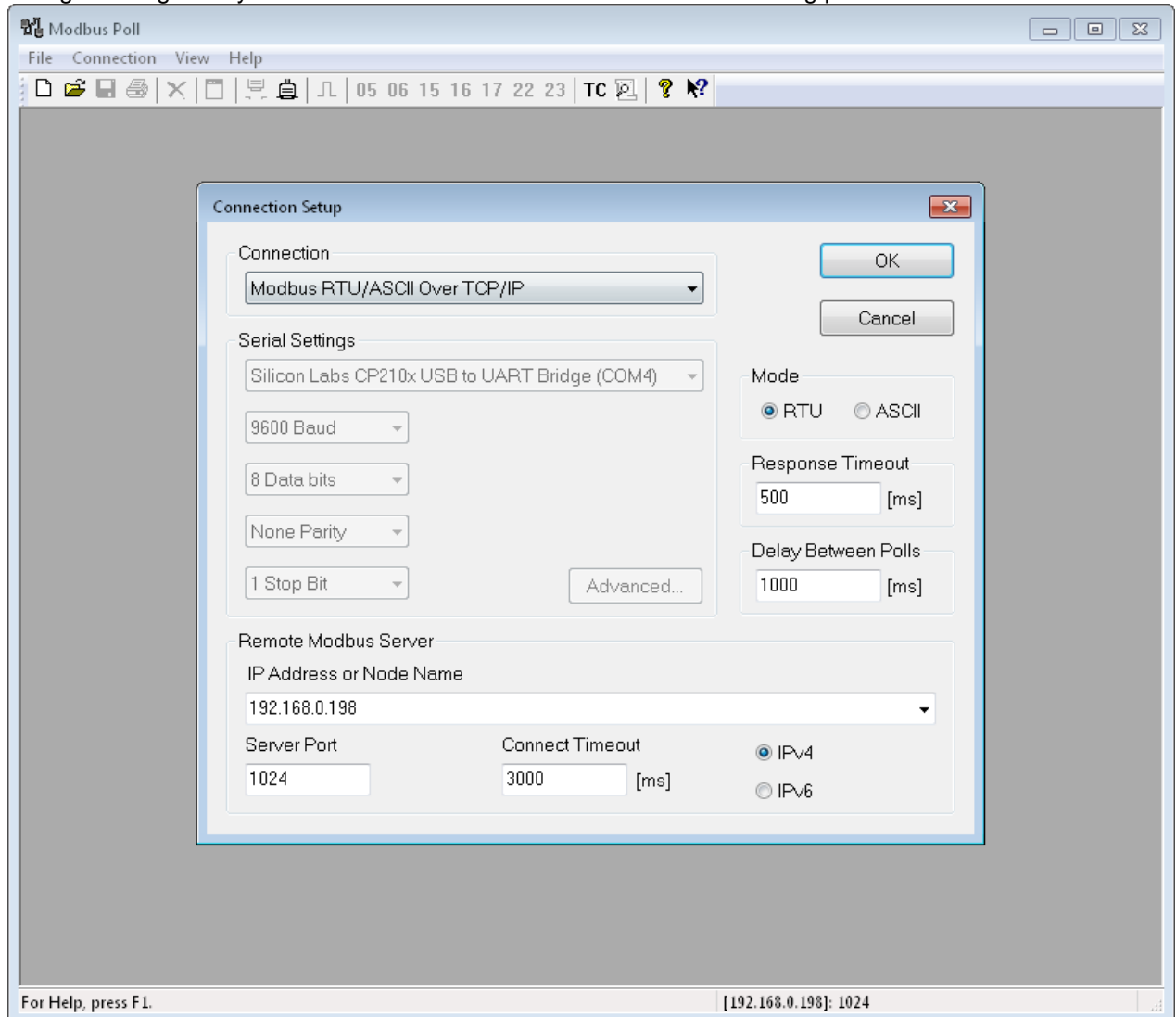
4x65530 I:65529 H:0xFFFF9 R/W CONFIG UNIT ID	<p>Read: The current configured unit id for the configuration mode Write: In configuration mode: define the new unit id for the configuration mode.</p> <p>Standard unit ID for configuration is 254. You can change this unit ID, if you have conflicts with connected Modbus devices on the serial line.</p> <p>Allowed values 0-255 (0x0000-0x00FF)</p> <p>HINT: You have to perform a reset to activate the new serial configuration!</p>
4x65531 I:65530 H:0xFFFFA R/W CONFIG PAUSE	<p>Read: The current configured pause in ms for the configuration mode Write: In configuration mode: define the new pause time in ms for entering the configuration mode.</p> <p>Standard pause time for configuration is 2000ms (2 seconds).</p> <p>Allowed values 0-65535 (0x0000-0xFFFF)</p> <p>HINT: You have to perform a reset to activate the new serial configuration!</p>
4x65532-35 I:65531-34 H:0xFFFFB-0xFFFFE R/W RESERVED	Reserved for future use
4x65536 I:65535 H:0xFFFF R/W ENTER CONFIG MODE	<p>Read: The current status for the configuration mode: =0: normal mode is active =1: configuration mode is active</p> <p>Write: write the magic number 21321 (0x5349) to this register to activate the configuration mode. Write the value 0 to deactivate the configuration mode. The STATUS LED will flash fast to indicate that the configuration mode is activated. In normal mode, the STATE LED flashes with a period of 1 second.</p> <p>HINT: Only in the configuration mode, you can write new parameters to the configuration register. Don't forget to reset the converter after configuration changes to make them active.</p>

8.2 Initial step: Select transparent or MODBUS/RTU over Ethernet mode

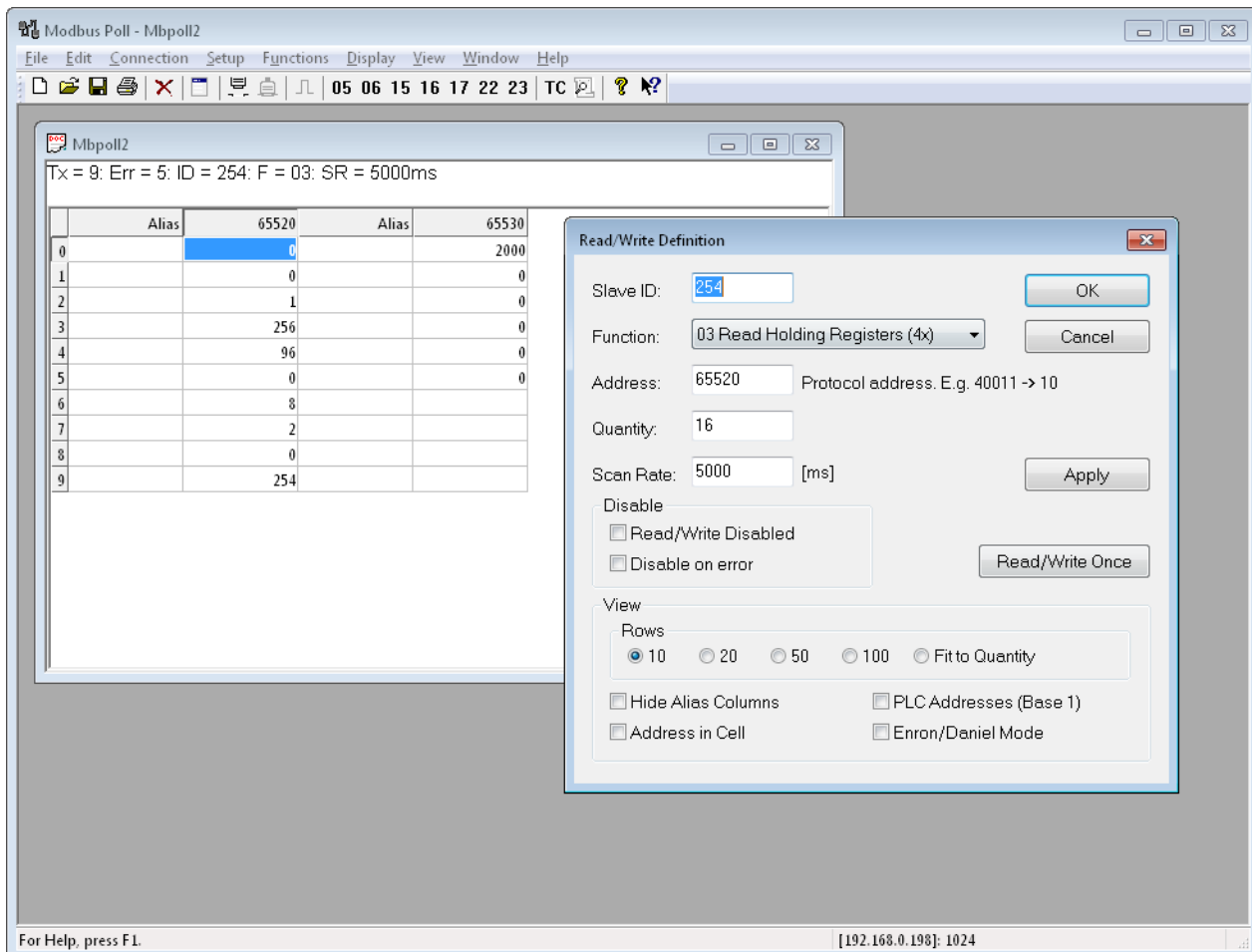
A gateway can be switched very fast to one of the following states:

1. Deactivate DIP switch 3: MODE
2. Activate DIP switch 4: CFG
3. Wait for approx.. 30s. The gateway will flash very fast
4. Deactivate all DIP switches

Now you have done a factory reset to the IP standard settings and you have selected transparent mode. To configure the gateway use the software MODBUS POLL with the following parameters:



Then select the function Setup/Read-Write Definition.. and configure the shown parameters. If successful you should see the following values:

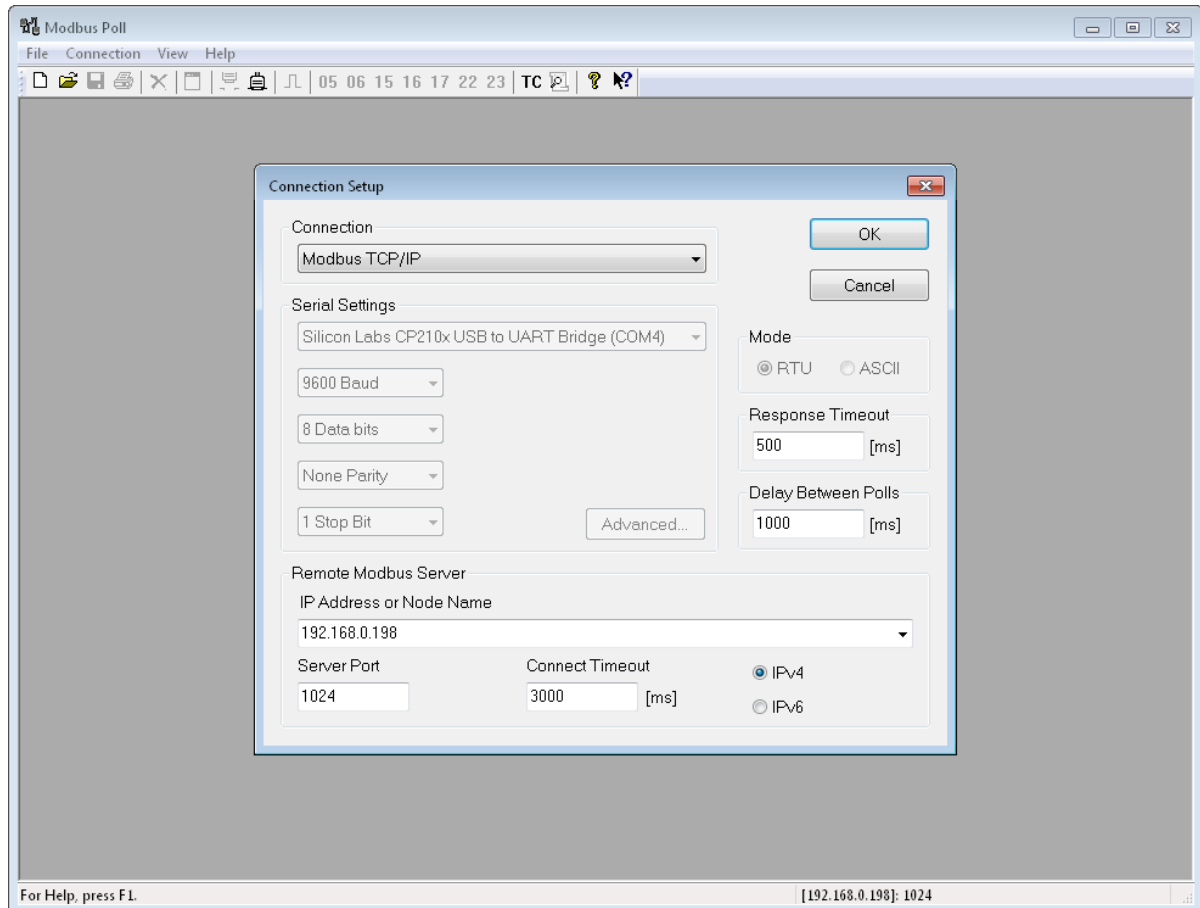


8.3 Initial step: Select MODBUS/TCP to MODBUS/RTU gateway mode

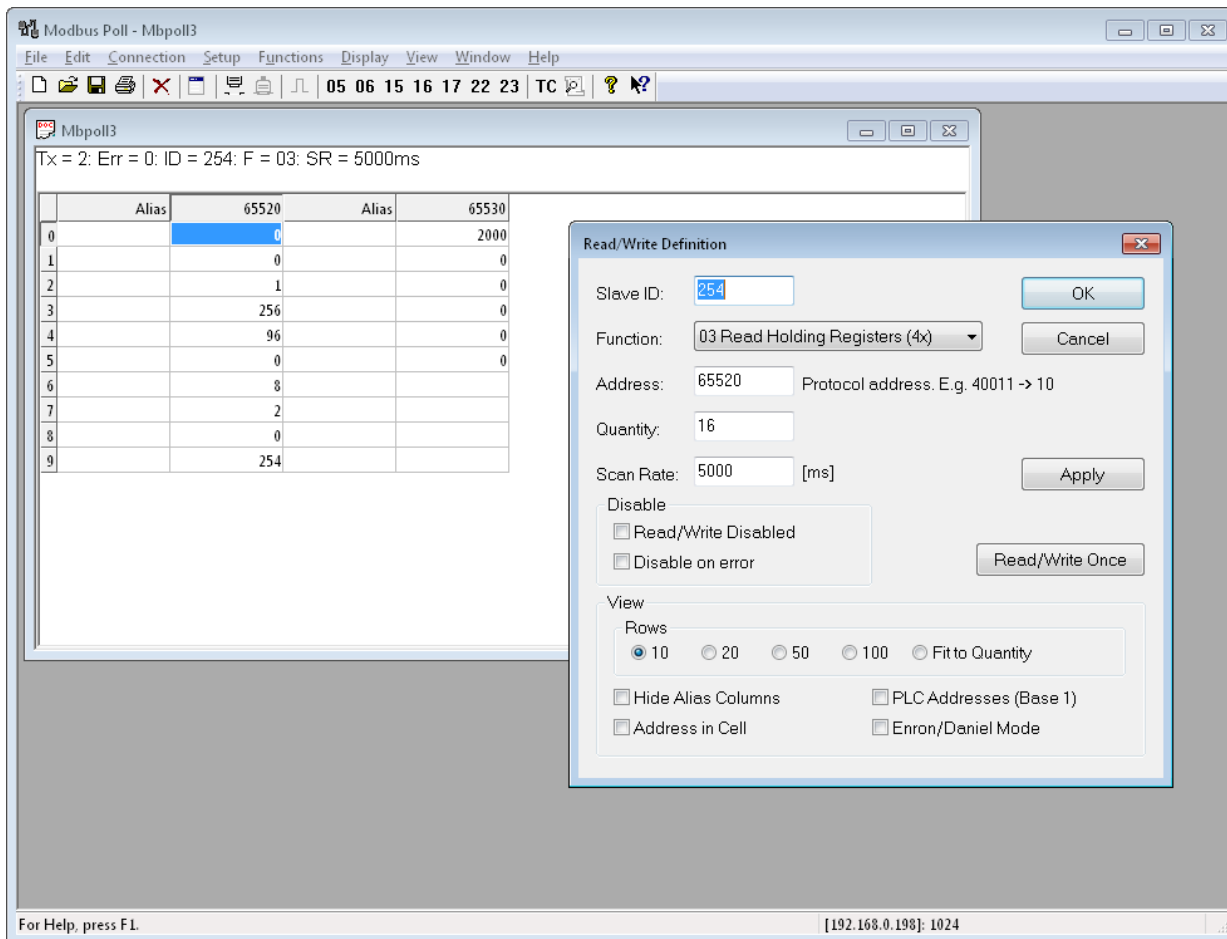
A gateway can be switched very fast to one of the following states:

5. Activate DIP switch 3: MODE
6. Activate DIP switch 4: CFG
7. Wait for approx.. 30s. The gateway will flash very fast
8. Deactivate all DIP switches

Now you have done a factory reset to the IP standard settings and you have selected MODBUS/TCP to MODBUS/RTU gateway mode. To configure the gateway use MODBUS POLL with the following parameters:

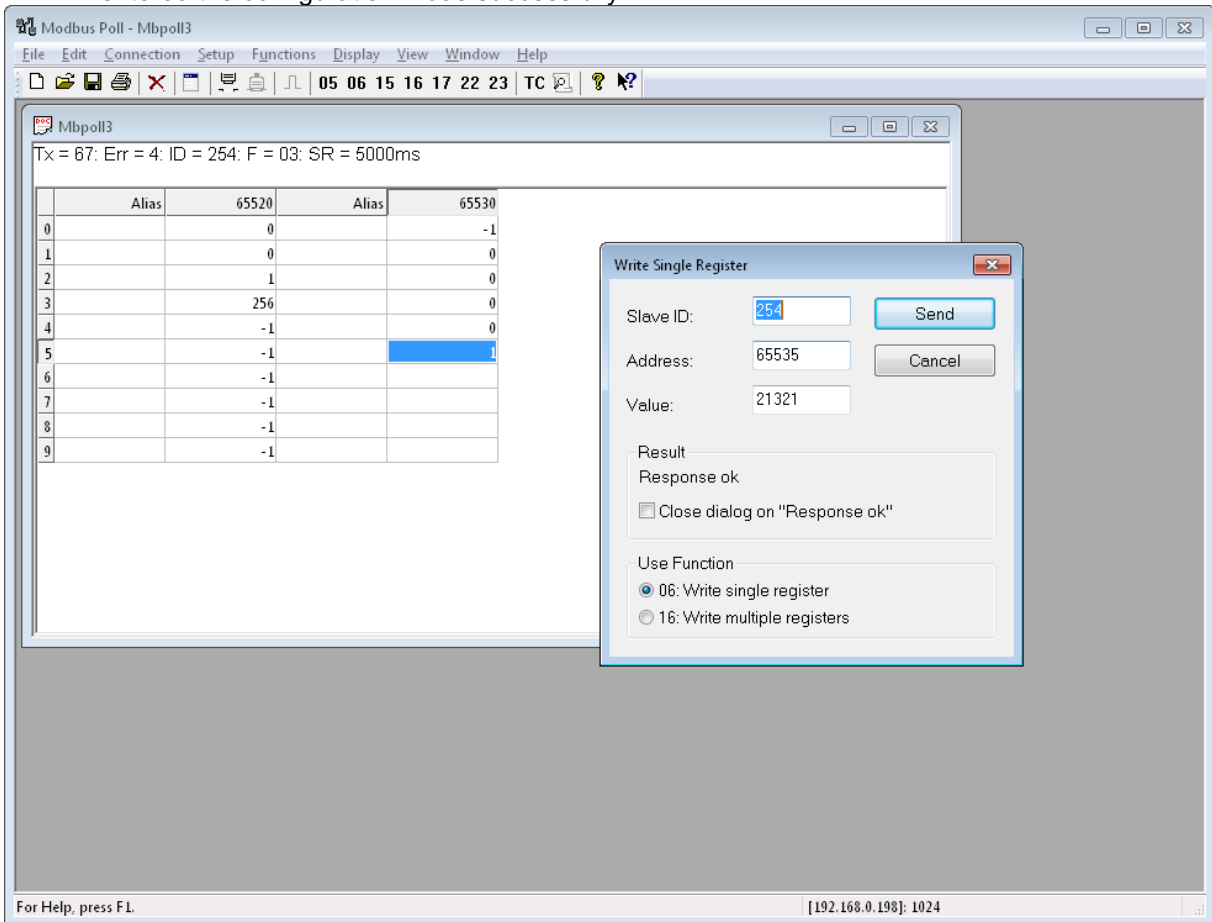


Then select the function Setup/Read-Write Definition.. and configure the following parameters. If successful you should see the following values:

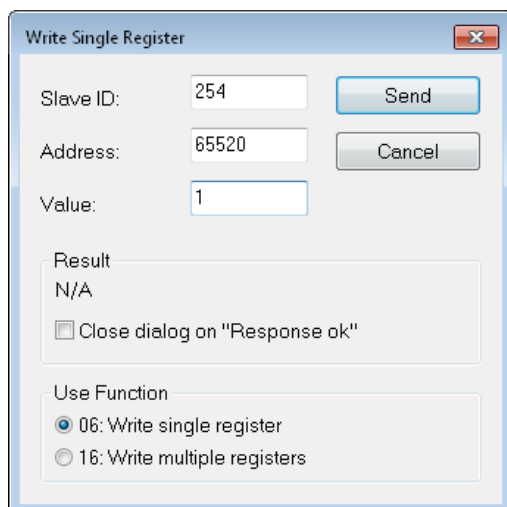


8.4 HOWTO enter configuration mode

- **Step 1:** First of all, there must be at least 2 seconds silence on the socket (no data transfer), before you can switch to configuration mode for changing serial parameter. If you have changed the parameter CONFIG PAUSE you have to wait at least you configured pause time in ms.
- **Step 2:** Write the magic number 21321 (0x5349) to the register 4x65536 I:65535 H:0xFFFF. As a result the content of the register will show the value 1 and the STATE LED flashes faster. You have entered the configuration mode successfully.



- **Step 3:** Change now the register contents according to the register table for your purposes.
- **Step 4:** Don't forget to reset the gateway either by shortly unplugging the power or by writing 1 to the RESET register. 4x65521 I:65520 H:0xFFFF0 RESET SYSTEM

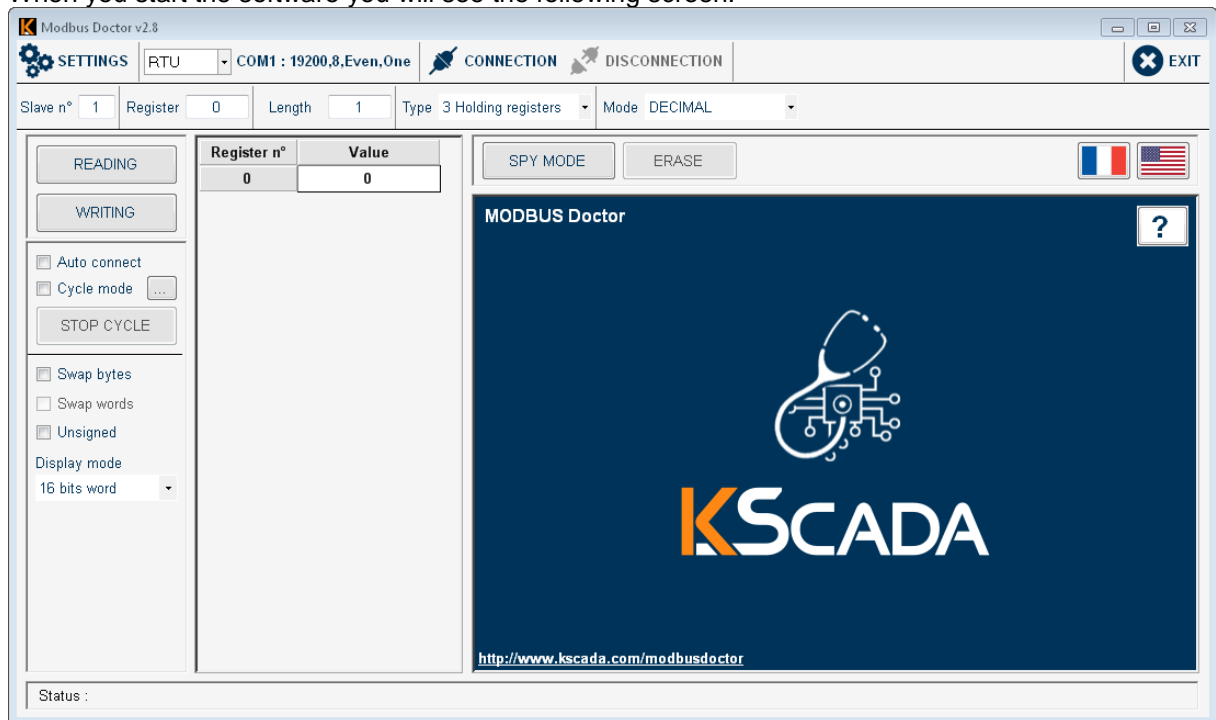


- **Finished:** Your gateway works with your new settings.

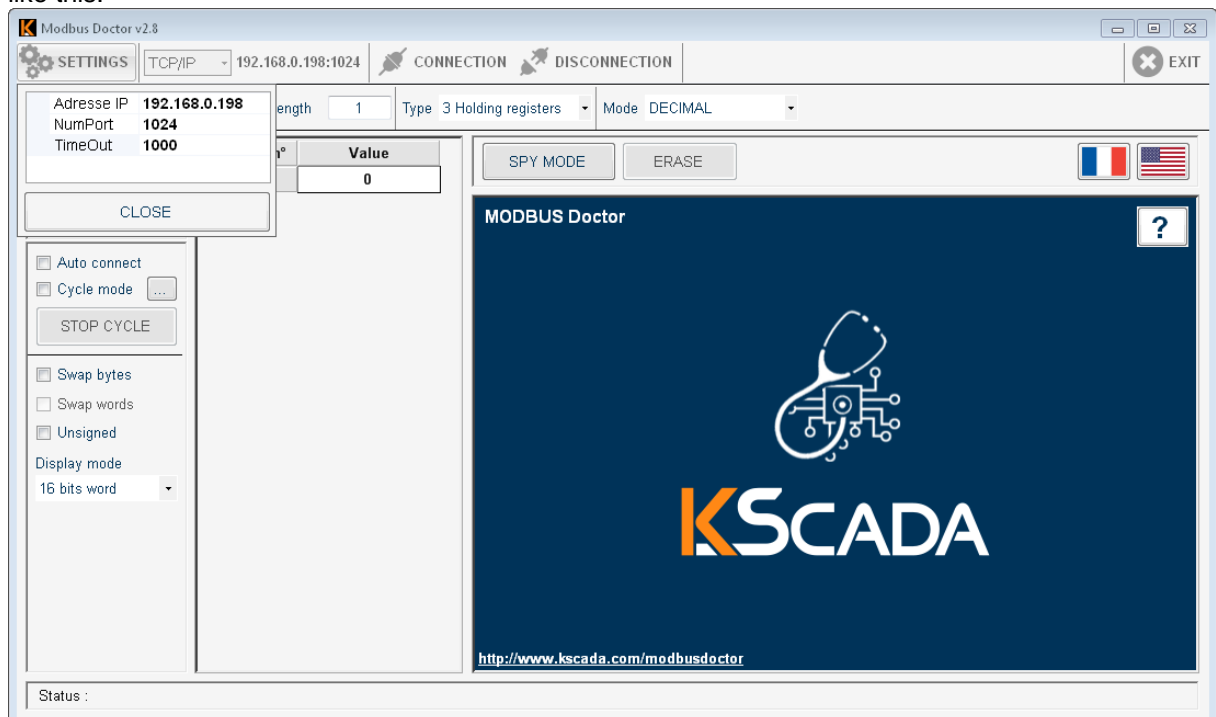
9 Using software MODBUS Doctor to configure

In this chapter we show the configuration with software MODBUS Doctor. You can download this free software under <https://www.kscada.com/modbusdoctor.html>

When you start the software you will see the following screen:



Now click on the drop down field RTU and select TCP/IP mode. Then open the settings. The result will look like this:



Enter the following data into the settings field:

- IP address of your gateway e.g. 192.168.0.198
- Socket for MODBUS/TCP communication e.g. 1024
- Timeout for polling e.g. 1000ms

Then we set the correct register range to enter setup mode of the gateway:

- Slave ID 254 for setup of gateway
- Register 65535 to enter configuration mode
- Length to 1, only one register should be read out

Now open the web page of our gateway and select the page TTL1:

RESI-1RS485-ETH

Current Status

Local IP Config

TTL1

Web to Serial

Misc Config

Reboot

Current settings

Baud Rate: 115200 bps
for RESI-1RS485-ETH always 115200

Data Size: 8 bit
for RESI-1RS485-ETH always 8 bit

Parity: None
for RESI-1RS485-ETH always None

Stop Bits: 1 bit
for RESI-1RS485-ETH always 1

Run Serial Mode: RS232
for RESI-1RS485-ETH always RS232

Flow Control: NONE
for RESI-1RS485-ETH always None

UART Packet Time: 2 (0~255)ms
for RESI-1RS485-ETH should be 0

UART Packet Length: 0 (0~1460)chars
for RESI-1RS485-ETH should be 0

Sync Baudrate(RF2217 Similar): ☐
for RESI-1RS485-ETH always OFF

Enable Uart Heartbeat Packet: ☐
for RESI-1RS485-ETH always OFF

Socket A Parameters

Work Mode: TCP Server None
for RESI-1RS485-ETH always TCPServer+Modbus TCP

Socket Number: 1024 23 (1~65535)
for RESI-1RS485-ETH default is 502

PRINT: ☐
for RESI-1RS485-ETH always OFF

ModbusTCP Poll: ☐ Poll Timeout : 200 (200~9999) ms
for RESI-1RS485-ETH always OFF+200ms

Enable Net Heartbeat Packet: ☐
for RESI-1RS485-ETH always OFF

Registry Type: None Location: Connect With
for RESI-1RS485-ETH always None

Socket B Parameters

Work Mode: NONE
for RESI-1RS485-ETH always NONE

help

- **local port**
1~65535, when TCP Client, set this to 0 means use random local port
- **remote port**
1~65535
- **packet time/length**
default 0/0, means automatic packet mechanism; you can modify it as a none-zero value

Save Cancel

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Concentrate on the current mode of the gateway. Usually it is in transparent mode:

Socket A	Parameters
Work Mode:	<div>TCP Server ▼ None ▼</div> <div>for RESI-1RS485-ETH always TCPServer+Modbus TCP</div>
Socket Number:	<div>1024 23 (1~65535)</div> <div>for RESI-1RS485-ETH default is 502</div>

In this mode the gateway simple sends all commands incoming from the socket to the serial line and sends all received bytes from the serial line to the socket.

To configure our gateway, we use MODBUS/RTU protocol. The software MODBUS Doctor supports on the TCP side only MODBUS/TCP protocol. So we have to activate the mode MODBUS/TCP to MODBUS/RTU conversion in our gateway. You can do this in two ways:

First way:

1. Set DIP switch 3 MODE to ON
2. Now our gateway will initialize all parameters
3. Wait until the gateway has rebooted
4. Now the gateway works in MODBUS/TCP to MODBUS/RTU conversion mode
5. Set DIP switch 3 MODE to OFF
6. Wait until the gateway has rebooted

Second way: You can also change the behaviour with the web interface. Open the page TTL1 and select the following parameters:

V3015 [Visit RESI webpage...](#)

RESI-1RS485-ETH

RESI-1RS485-ETH

Current Status

Local IP Config

TTL1

Web to Serial

Misc Config

Reboot

Current settings

Baud Rate: 115200 bps
for RESI-1RS485-ETH always 115200

Data Size: 8 bit
for RESI-1RS485-ETH always 8 bit

Parity: None
for RESI-1RS485-ETH always None

Stop Bits: 1 bit
for RESI-1RS485-ETH always 1

Run Serial Mode: RS232
for RESI-1RS485-ETH always RS232

Flow Control: NONE
for RESI-1RS485-ETH always None

UART Packet Time: 2 (0~255)ms
for RESI-1RS485-ETH should be 0

UART Packet Length: 0 (0~1460)chars
for RESI-1RS485-ETH should be 0

Sync Baudrate(RF2217 Similar): ☐
for RESI-1RS485-ETH always OFF

Enable Uart Heartbeat Packet: ☐
for RESI-1RS485-ETH always OFF

Socket A Parameters

Work Mode: TCP Server ModbusTCP
for RESI-1RS485-ETH always TCPServer+Modbus TCP

Socket Number: 1024 23 (1~65535)
for RESI-1RS485-ETH default is 502

PRINT: ☐
for RESI-1RS485-ETH always OFF

ModbusTCP Poll: ☐ Poll Timeout : 200 (200~9999) ms
for RESI-1RS485-ETH always OFF+200ms

Enable Net Heartbeat Packet: ☐
for RESI-1RS485-ETH always OFF

Registry Type: None Location: Connect With

Socket B Parameters

Work Mode: NONE
for RESI-1RS485-ETH always NONE

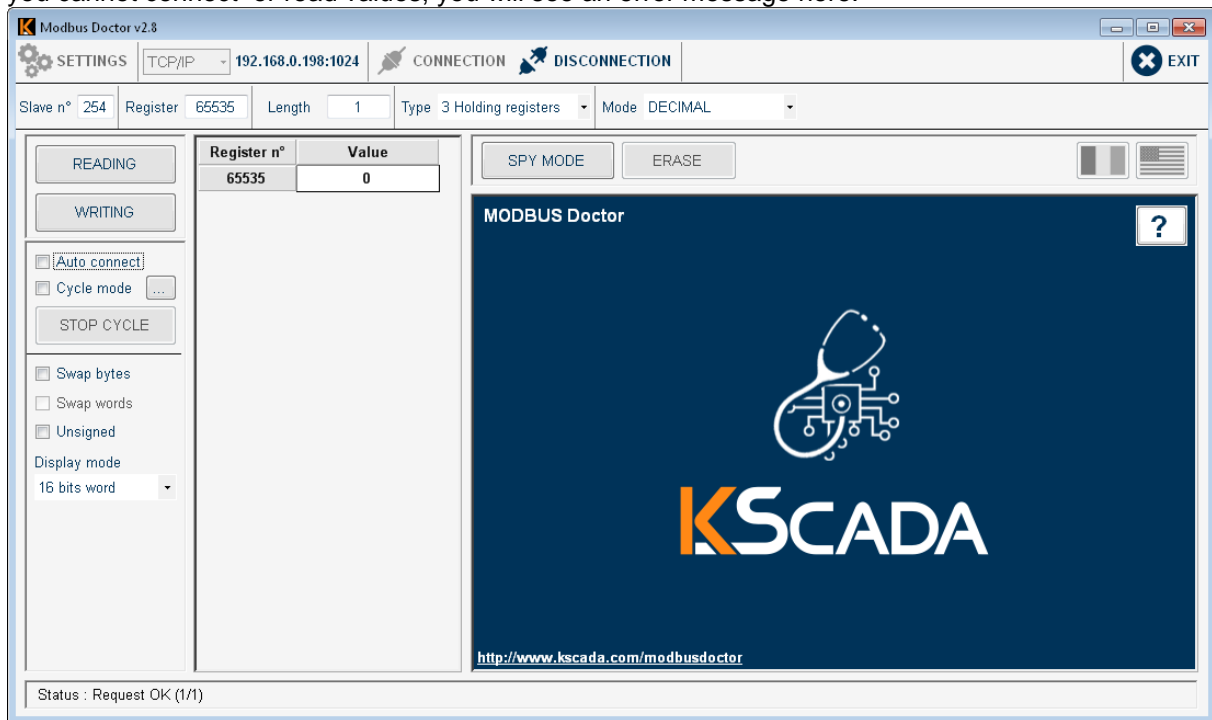
help

- local port**
1~65535, when TCP Client, set this to 0 means use random local port
- remote port**
1~65535
- packet time/length**
default 0/0, means automatic packet mechanism; you can modify it as a none-zero value

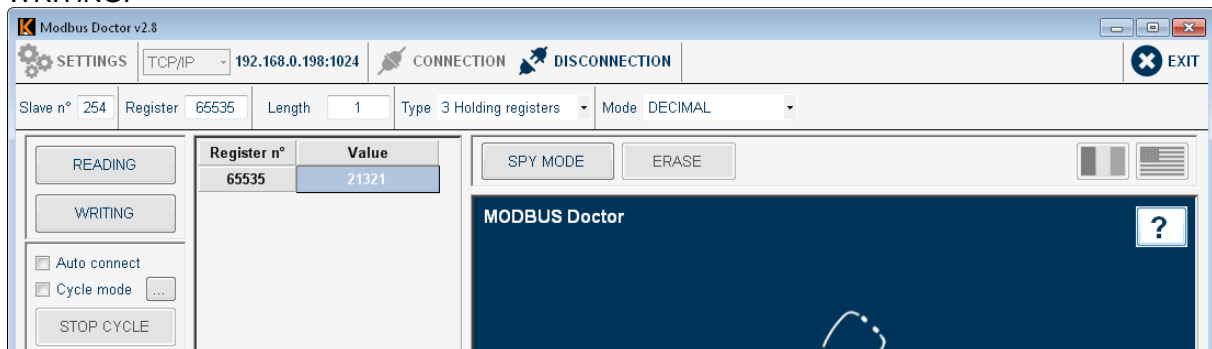
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After you have changed the parameters, lick on save and then on "Restart Module" button in the web interface. Now you have activated the MODBUS/TCP to MODBUS/RTU conversion.

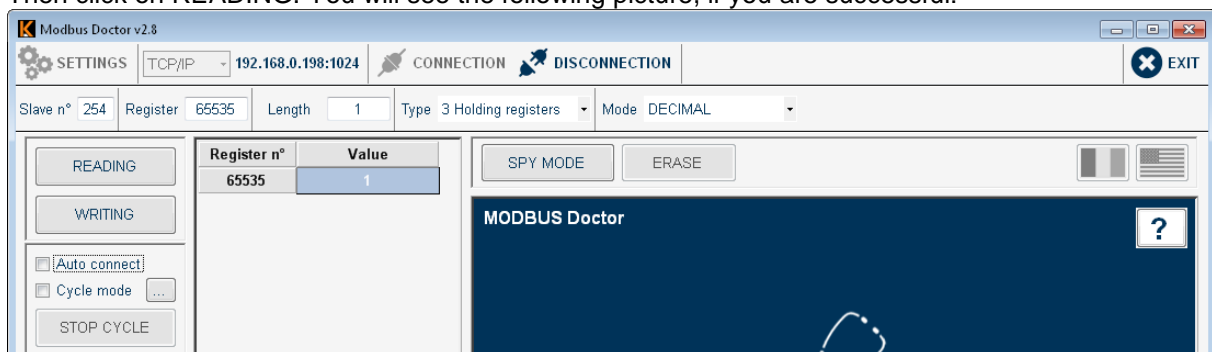
The next step is to test the communication with the gateway via the MODBUS Doctor software. First lick on CONNECTION to establish a TCP/IP connection, then select the button READING to test the readout of register 65535. If everything is ok, you will see in the Status in the left bottom corner the hint Request OK. If you cannot connect or read values, you will see an error message here.



In the next step enter the magic number 21321 into the field Value beside the Field 65535 and click on WRITING:



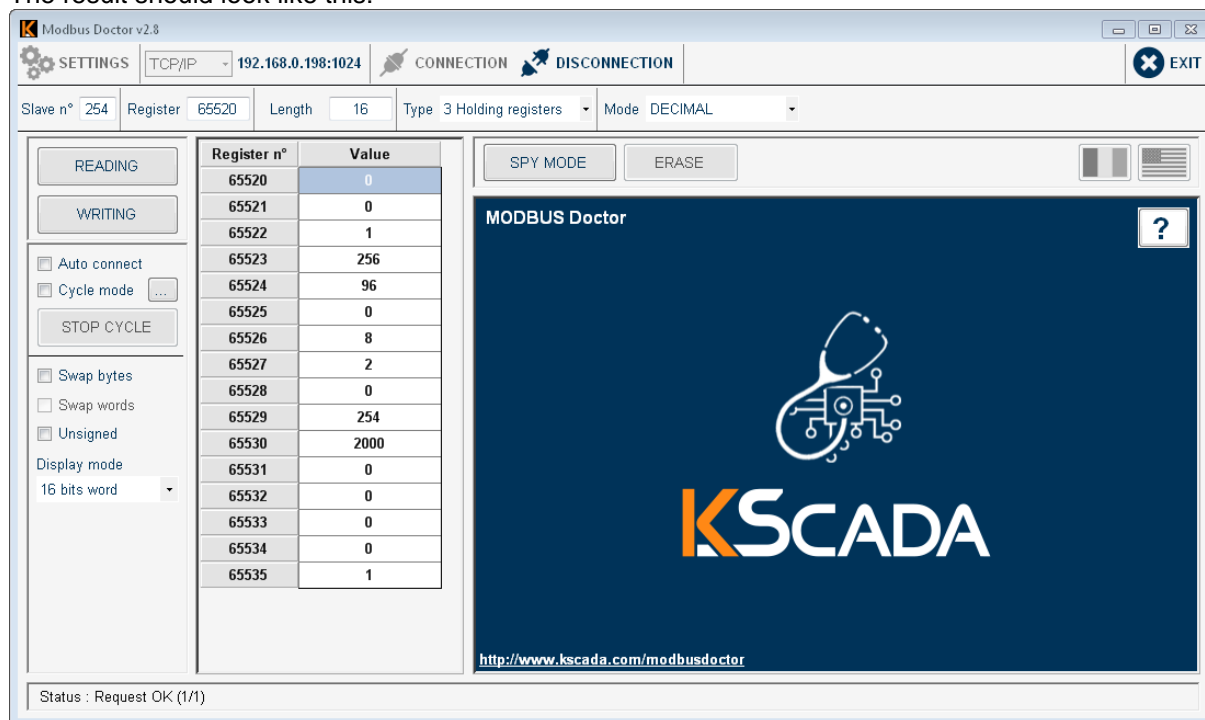
Then click on READING. You will see the following picture, if you are successful:



The displayed 1 indicates, that you are in configuration mode. Now we change the field Register to I:65520 and the field Length to 16 and click on READING.

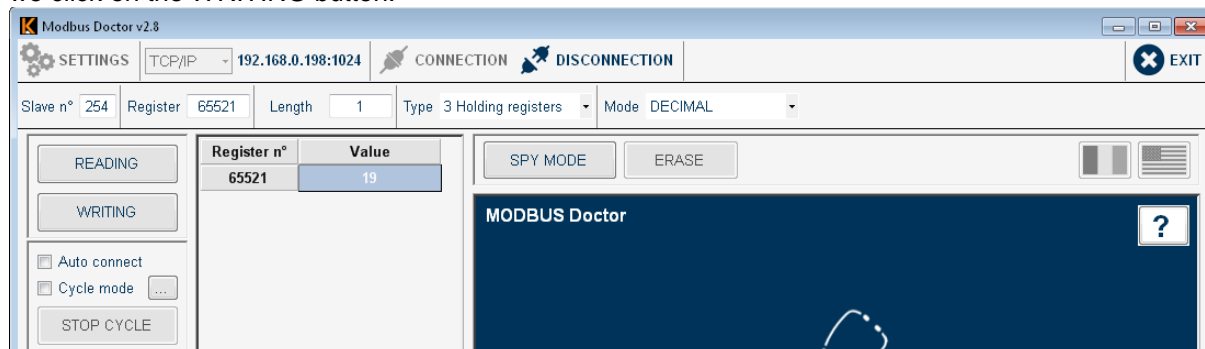
Be aware, that the software uses the protocol indexes starting with 0, not the MODBUS index of registers starting with 1!

The result should look like this:

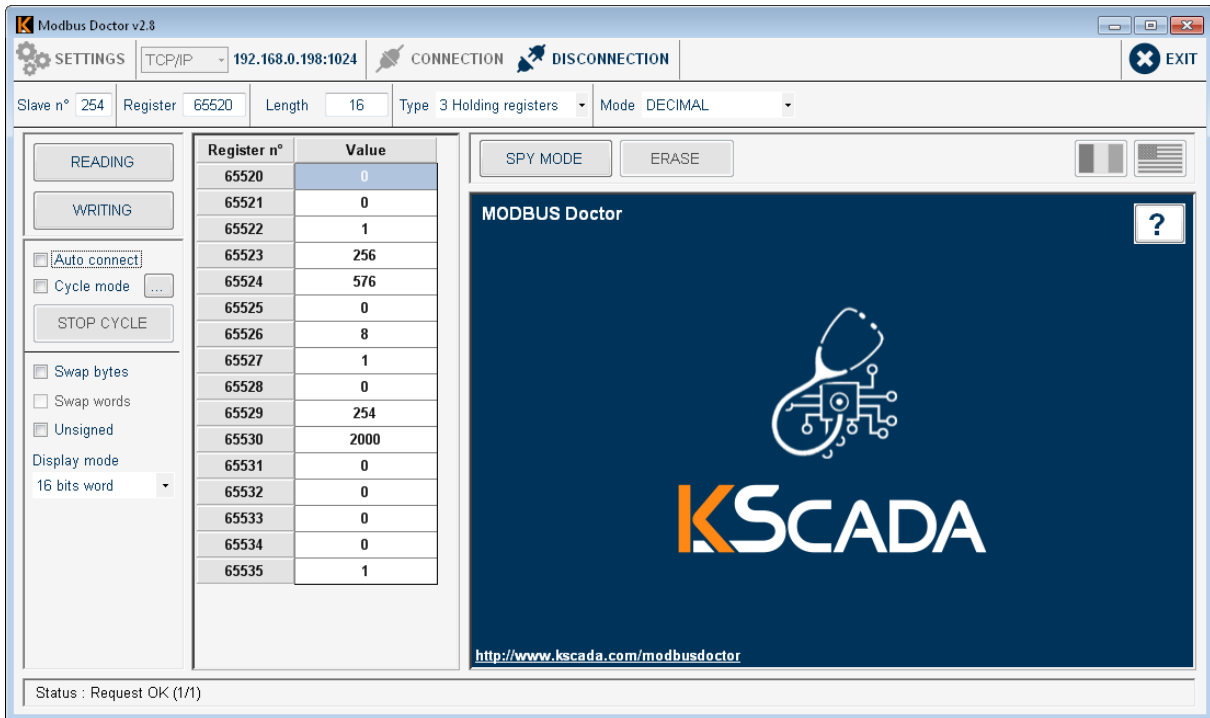


You will see all current selected parameters. In our example we want to connect to a RESI-12AOU-SIO module to the gateway, which uses 57600Bd, 8 data bits, no parity and 1 stop bit.

Therefore we use the quick setup register 4x65522, I:65521 STANDARD CONFIG, and we want to write the value 19 into it. For that we do the following steps: We change Register to 65521 and Length to 1. Then we click on READING. The Value should be 0, After that we enter the new value 19 into the field Value and then we click on the WRITING button:



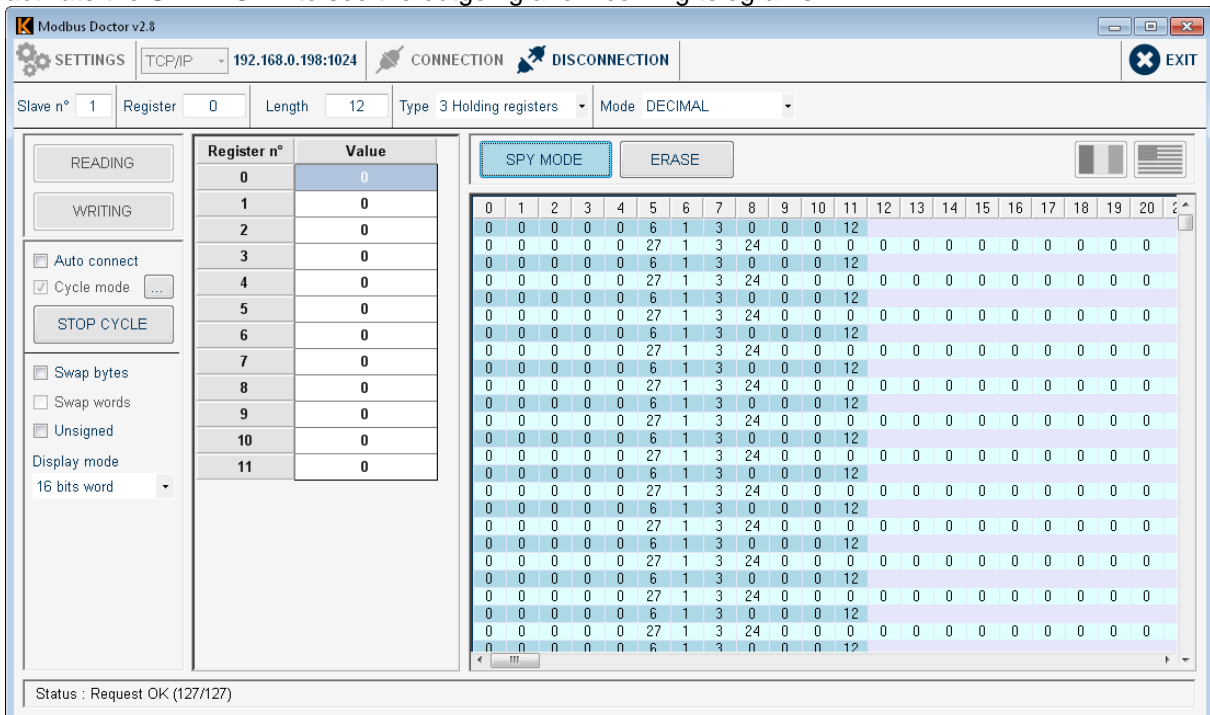
Then we change the field Register back to 65520 and the field Length to 16 and click on READING. We see the new settings:



Now we have to reboot the gateway to leave the setup mode. Therefore we set the field Length to 1 and we write 1 into the register 65520 Value in the list and click on WRITING. The gateway will reboot.

Now the gateway works in MODBUS/TCP to MODBUS/RTU mode and will convert incoming MODBUS/TCP requests into MODBUS/RTU requests on the serial line.

We will test this with our RESI-12AOU-SIO module, which is connected to the RS485 line and which is configured to UnitID 1 with 57600bd, 8 data bits, no parity and 1 stop bit. We disconnect the gateway and reconnect it, because the gateway has done a reset and the previous socket connection is lost. Then we change the screen parameters to the values shown here and activate the cycle mode for readout. We also activate the SPY MODE to see the outgoing and incoming telegrams:



At the end it depends now on your project demands. If you want to use the feature of the gateway to convert MODBUS/TCP into MODBUS/RTU frames, your setup is finished. If you want to use the transparent mode of the gateway you have to set the DIP switch 3 MODE to OFF and change the parameters in the web page TTL1 to the shown parameters:

RESI-1RS485-ETH

192.168.0.198

V3015

Visit RESI webpage...

RESI RESI-1RS485-ETH
RESI-1RS485-ETH

Current Status

Local IP Config

TTL1

Web to Serial

Misc Config

Reboot

Current settings

Baud Rate: 115200 bps
for RESI-1RS485-ETH always 115200

Data Size: 8 bit
for RESI-1RS485-ETH always 8 bit

Parity: None
for RESI-1RS485-ETH always None

Stop Bits: 1 bit
for RESI-1RS485-ETH always 1

Run Serial Mode: RS232
for RESI-1RS485-ETH always RS232

Flow Control: NONE
for RESI-1RS485-ETH always None

UART Packet Time: 2 (0~255)ms
for RESI-1RS485-ETH should be 0

UART Packet Length: 0 (0~1460)chars
for RESI-1RS485-ETH should be 0

Sync Baudrate(RF2217 Similar): ☐
for RESI-1RS485-ETH always OFF

Enable Uart Heartbeat Packet: ☐
for RESI-1RS485-ETH always OFF

Socket A Parameters

Work Mode: TCP Server
for RESI-1RS485-ETH always TCPServer+Modbus TCP

Socket Number: 1024 23 (1~65535)
for RESI-1RS485-ETH default is 502

PRINT: ☐
for RESI-1RS485-ETH always OFF

ModbusTCP Poll: ☐ Poll Timeout: 200 (200~9999) ms
for RESI-1RS485-ETH always OFF+200ms

Enable Net Heartbeat Packet: ☐
for RESI-1RS485-ETH always OFF

Registry Type: None Location: Connect With

Socket B Parameters

Work Mode: NONE
for RESI-1RS485-ETH always NONE

Save Cancel

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help

- local port**
1~65535, when TCP Client, set this to 0 means use random local port
- remote port**
1~65535
- packet time/length**
default 0/0, means automatic packet mechanism; you can modify it as a none-zero value

Due to the fact, that MODBUS doctor software does not support the mode MODBUS/RTU telegrams over TCP/IP socket we switch to MODBUS Poll software.

We configure the connection:

Connection Setup

Connection: Modbus RTU/ASCII Over TCP/IP

Serial Settings: Silicon Labs CP210x USB to UART Bridge (COM4)

57600 Baud

8 Data bits

None Parity

1 Stop Bit

Advanced...

Mode: ☒ RTU ☐ ASCII

Response Timeout: 1000 [ms]

Delay Between Polls: 100 [ms]

Remote Modbus Server

IP Address or Node Name: 192.168.0.198

Server Port: 1024

Connect Timeout: 3000 [ms]

☒ IPv4 ☐ IPv6

OK

Cancel

And then we change the polling parameters, finished:

Modbus Poll - Mbpoll1

File Edit Connection Setup Functions Display View Window Help

05 06 15 16 17 22 23 TC ?

Mbpoll1

Tx = 413: Err = 0: ID = 1: F = 03: SR = 100ms

	Alias	00000	Alias	00010	Alias	00020	Alias	00030	Alias	00040	Alias	00050	Alias
0		0		0		0		0		0		0	
1		0		0		0		0		0		0	
2		0		0		0		0		0		0	
3		0		0		0		0		0		0	
4		0		0		0		0		0		0	
5		0		0		0		0		0		0	
6		0		0		0		0		0		0	
7		0		0		0		0		0		0	
8		0		0		0		0		0		0	
9		0		0		0		0		0		0	

Read/Write Definition

Slave ID: 1

Function: 03 Read Holding Registers (4x)

Address: 0 Protocol address: E.g. 40011 -> 10

Quantity: 125

Scan Rate: 100 [ms]

Disable

☐ Read/Write Disabled

☐ Disable on error

Read/Write Once

View

Rows: ☒ 10 ☐ 20 ☐ 50 ☐ 100 ☐ Fit to Quantity

☐ Hide Alias Columns ☐ PLC Addresses (Base 1)

☐ Address in Cell ☐ Error/Daniel Mode

OK

Cancel

Apply

Read/Write Once

For Help, press F1

[192.168.0.198]: 1024

10 Specifications

10.1 Dimensions RESI-1RSxxx-ETH

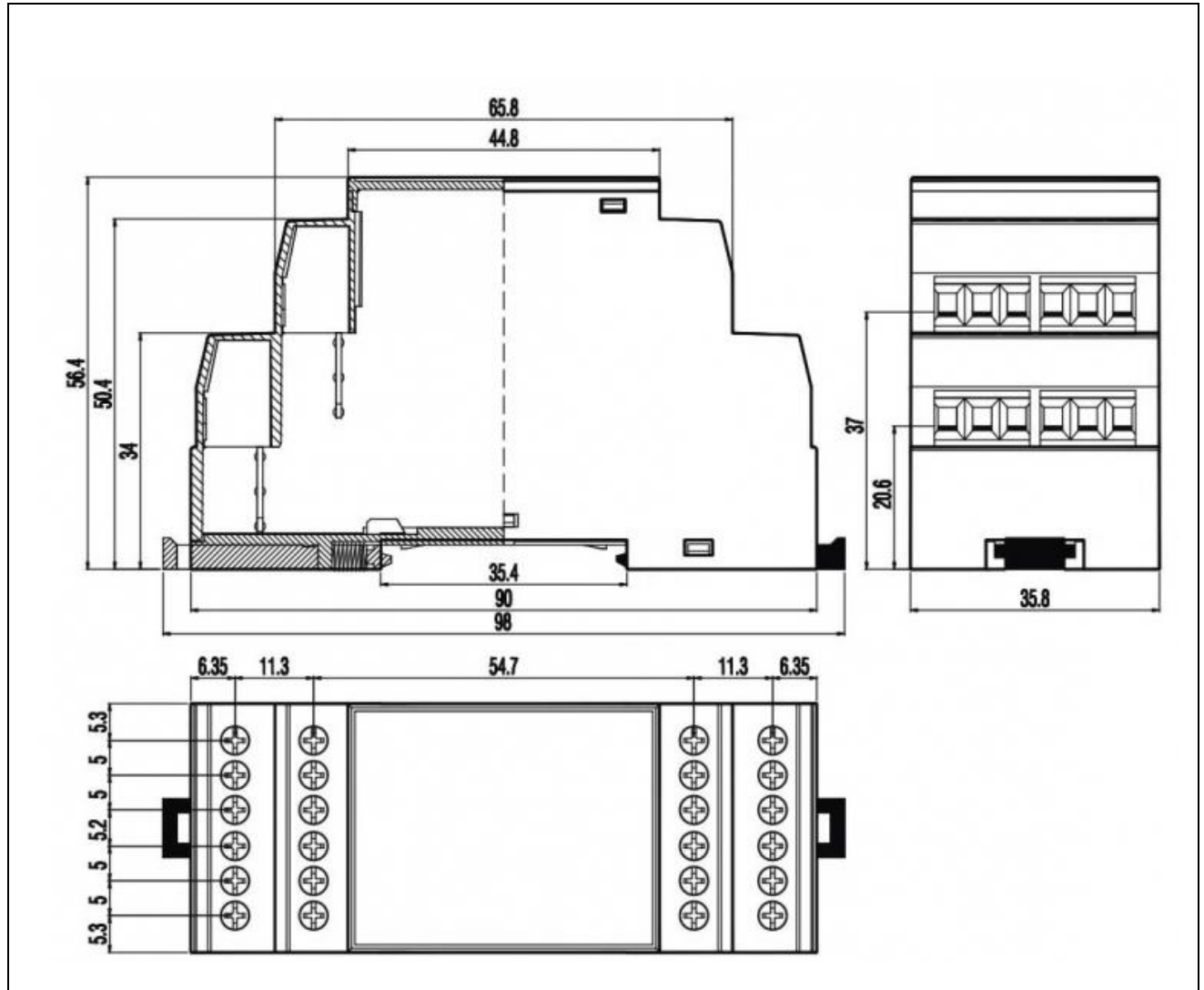


Illustration: dimension illustration in mm for RESI-1RSxxx-ETH

Dimensions	
Enclosure dimensions L x W x H (mm)	35.8 x 90 x 58
Weight	90 g
Colour	Grey RAL7035
Material	PA - UL 94 V0
Protection class	IP20 based on DIN 40050/EN 60529

Table: Data of enclosure for RESI-1RSxxx-ETH

10.2 3D drawing

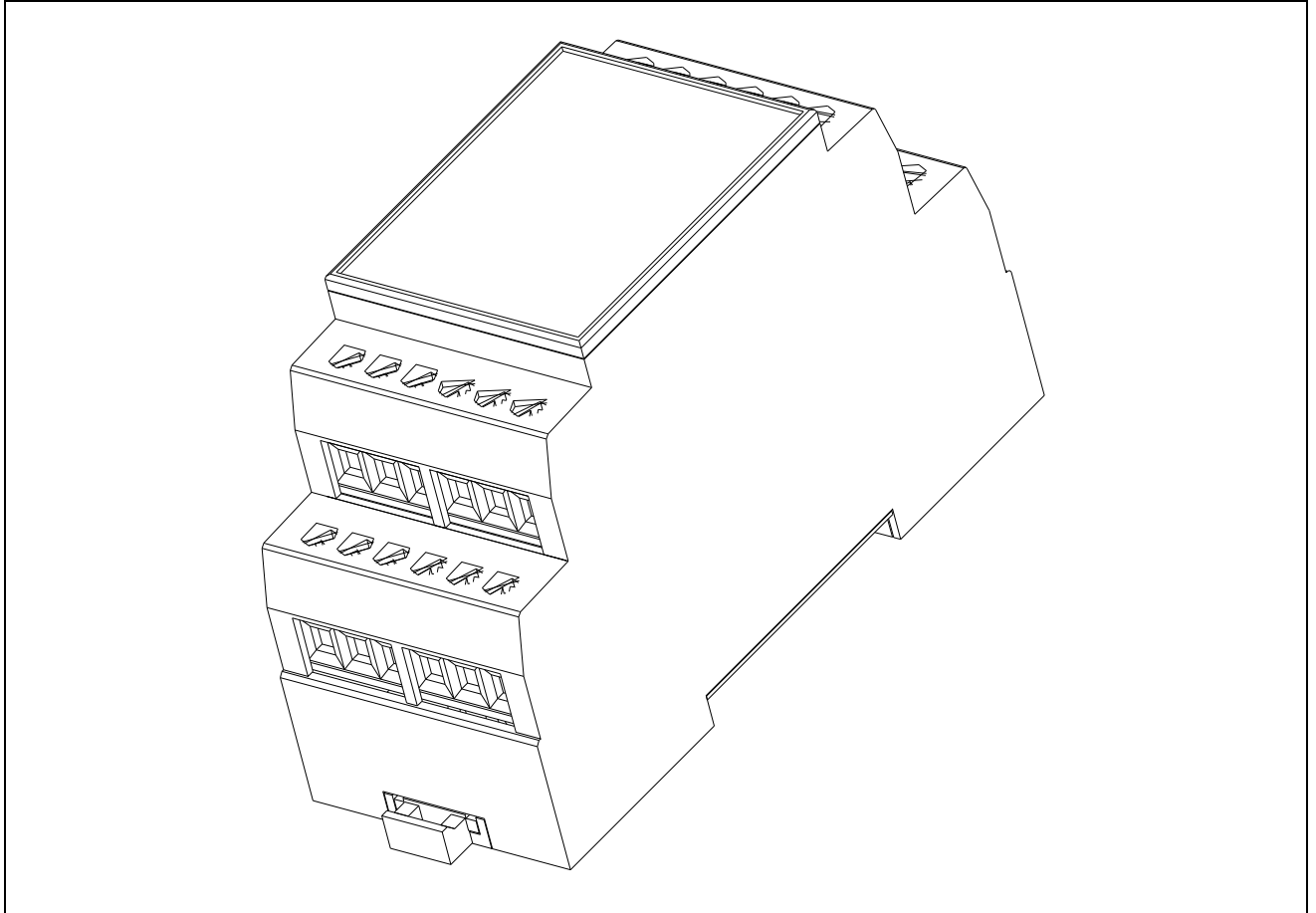


Illustration: Housing in 3D