User Manual

Modbus Ethernet Gateways (G01 - G03 & G14 - G16)

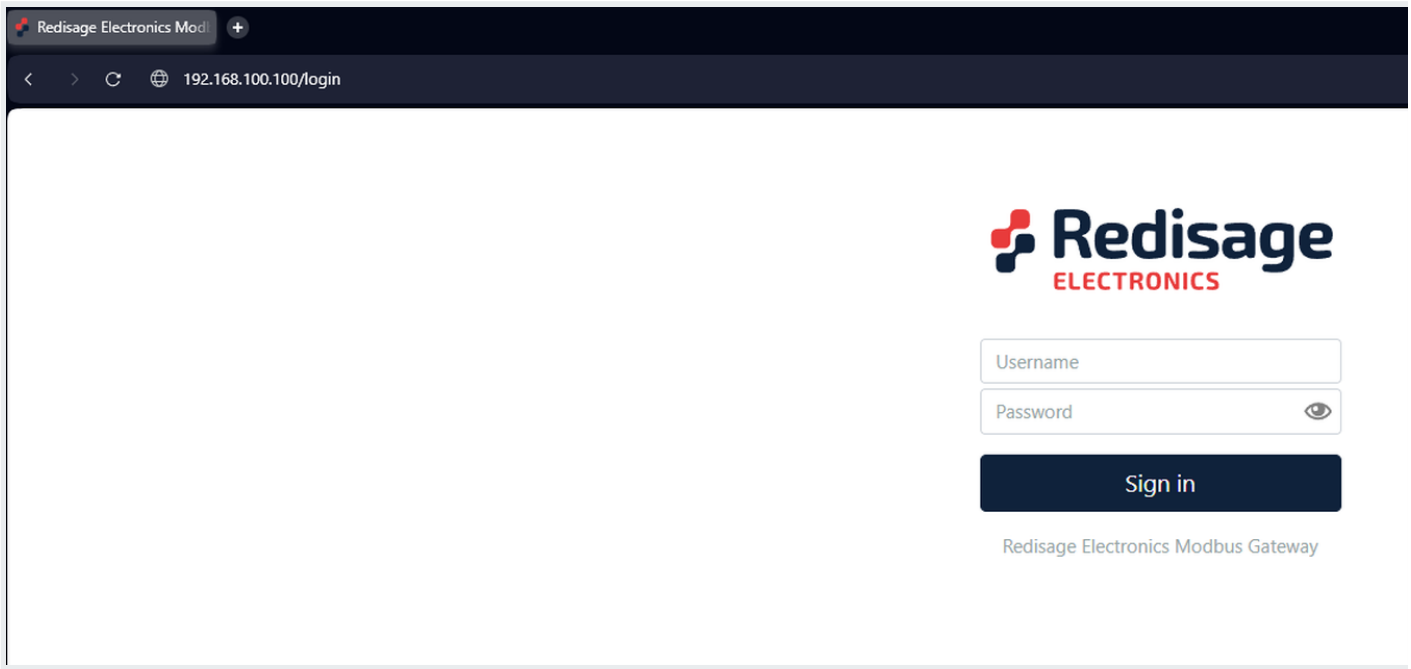
Configuration by the Web Page

Modbus Ethernet Gateways (G01 - G03 & G14 - G16)

This page presents capabilities of the Ethernet Converters configuration. First of all, make sure that converter is connected to power supply and to the LAN using a patch cord. If the device has no static IP set up, it will be necessary to obtain its IP address in the local network. User interface is mostly similar for all gateways but some subpages might be different for several models depending on amount of interfaces. In order to avoid issues, click on a “Help” button in the top right corner on every page.

Login

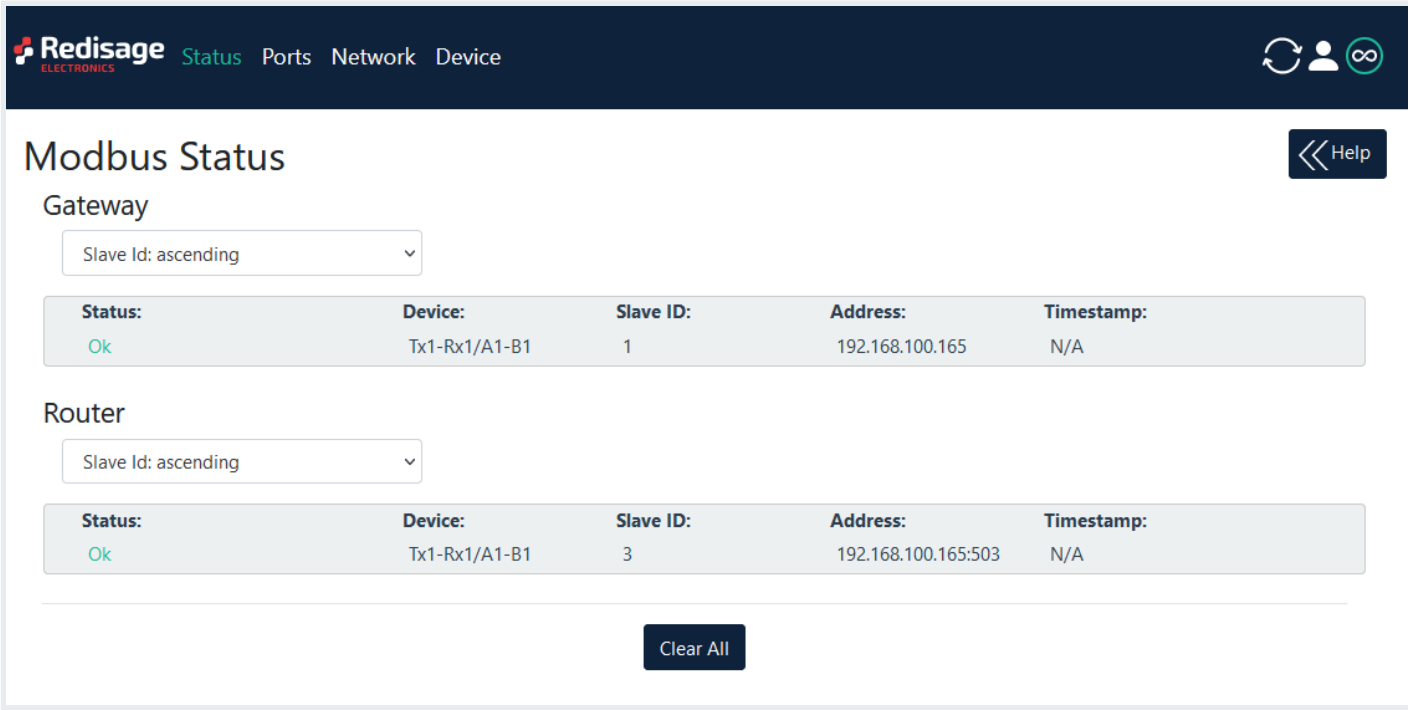
To access the web page open the browser, type device’s IP address of the converter (default is **192.168.100.100**). Then log in using user’s personal credentials. If it is a first configuration or the converter had a factory reset, use default login details (login: **admin**, password: **admin123**).



> The configuration is available only if devices are connected to the same Local Area Network as the computer used for it.

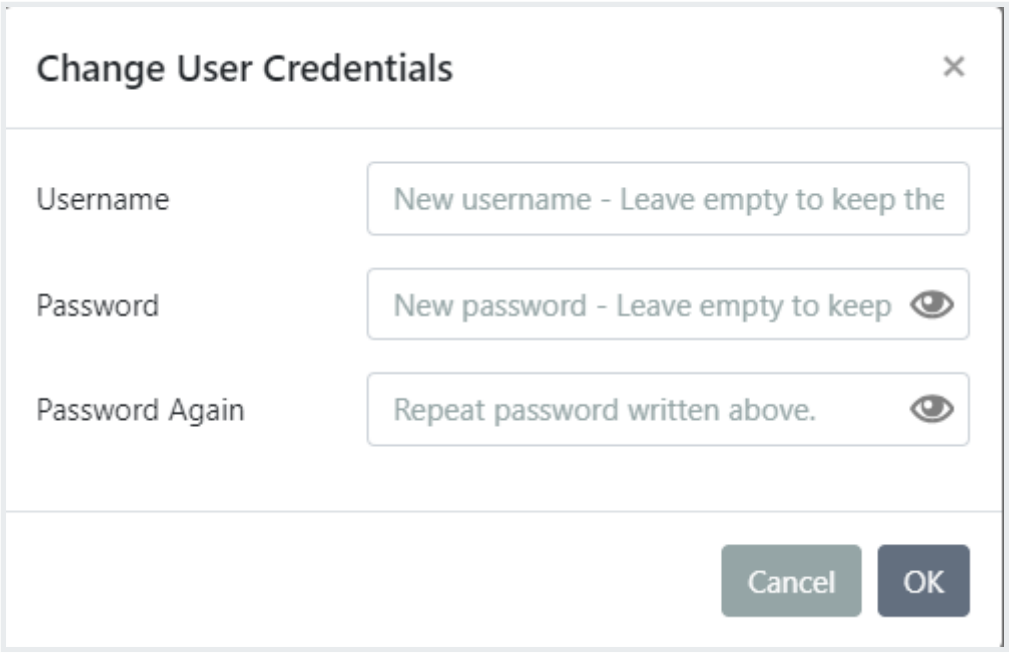
Status page

After a successful login, there should be an insight to a list of available connections. If there is more than one connection, it is possible to sort them by ID, timestamp or status.



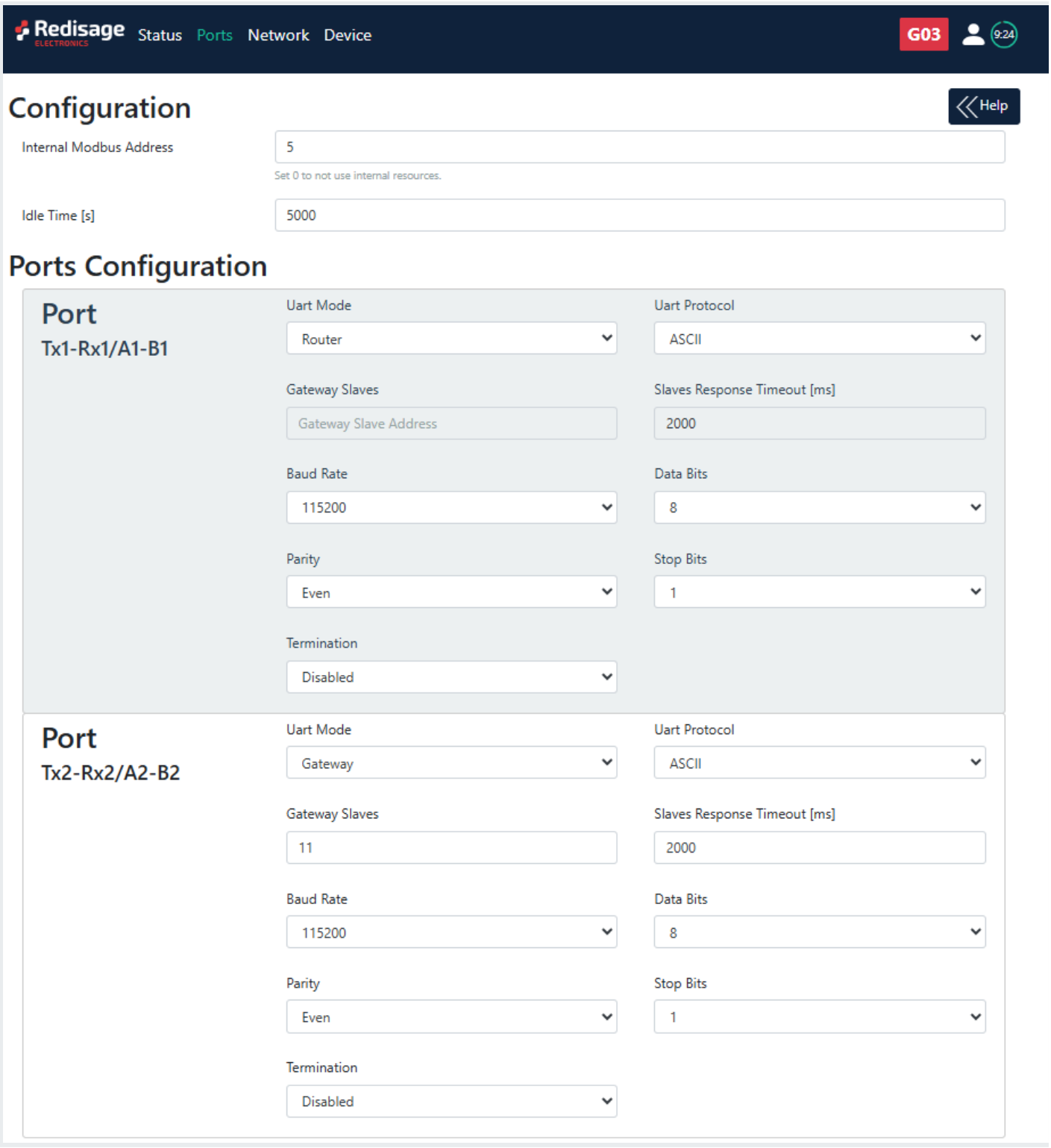
Changing username or password

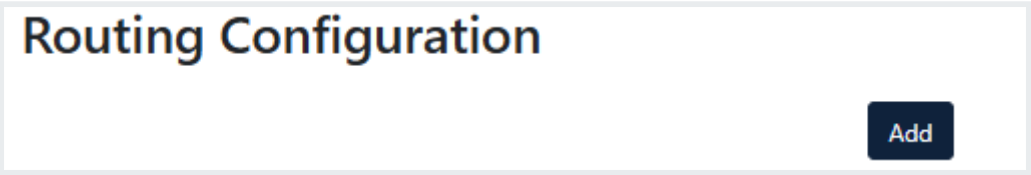
After clicking “Edit User” under the user icon, it is possible to change the username or the password.

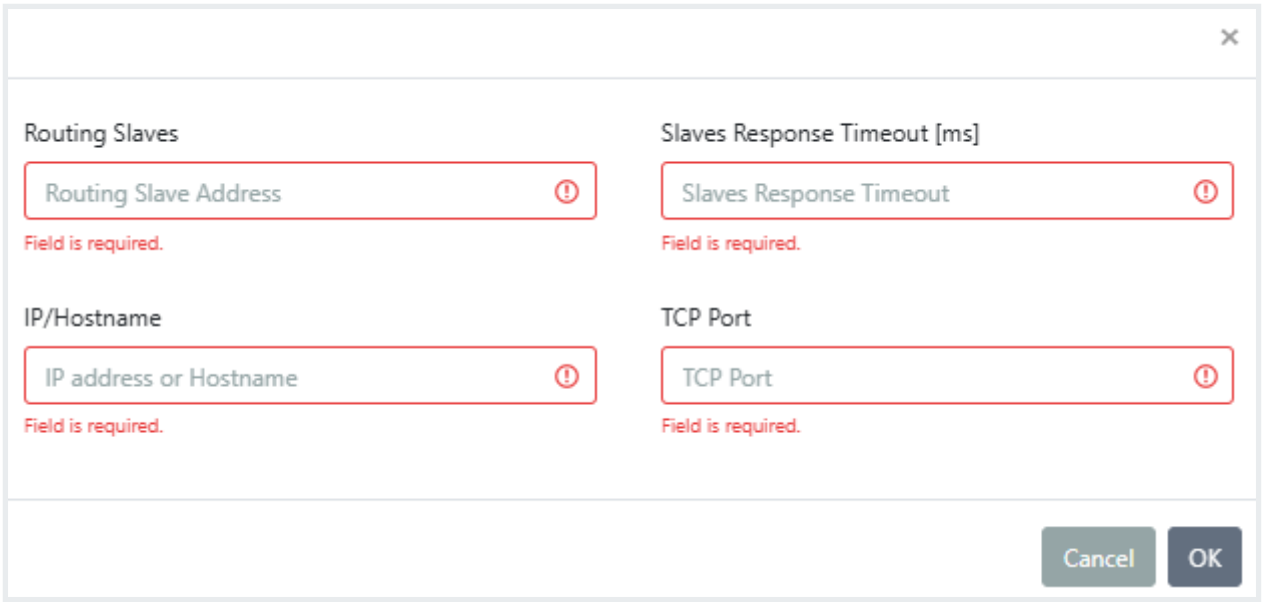


If login details were forgotten, it would be necessary to do a factory reset via a USB/UART converter and a serial console.

Ports configuration


Redisage
ELECTRONICS
Status
Ports
Network
Device
G03
9:24
Configuration
Help
Internal Modbus Address
5
Set 0 to not use internal resources.
Idle Time [s]
5000
Ports Configuration
Port
Tx1-Rx1/A1-B1
Uart Mode
Router
Uart Protocol
ASCII
Gateway Slaves
Gateway Slave Address
Slaves Response Timeout [ms]
2000
Baud Rate
115200
Data Bits
8
Parity
Even
Stop Bits
1
Termination
Disabled
Port
Tx2-Rx2/A2-B2
Uart Mode
Gateway
Uart Protocol
ASCII
Gateway Slaves
11
Slaves Response Timeout [ms]
2000
Baud Rate
115200
Data Bits
8
Parity
Even
Stop Bits
1
Termination
Disabled


Routing Configuration
Add



Item		Description
Internal Modbus Address		Internal Modbus Address is qualified by the Gateway/Router as a request for internal resources. The Internal Modbus Address has a higher priority than the Gateway Slave Address.
Idle Time [s]		Determine a time thread waits for the TCP connection. If time expired, the connection and thread are closed. **Used only in Gateway Mode.**
UART Mode	Gateway	Define the port's role in the system. In the Gateway Mode the port is used to communicate with Modbus Slave.
	Router	Define the port's role in the system. In the Router Mode the port is used to communicate with Modbus Master. Note the Routing Configuration section below if the Router Mode is chosen.
	Disabled	Disable the port.
UART Protocol		Determine a protocol used for a communication.
Gateway Slaves		Addresses of Modbus Slave Devices connected to Gateway UART ports. Multiple addresses can be written in one field, e.g. *9;11;14-17;80*. This field is available only in the Gateway Mode. Use * to select all not assigned addresses.
Slaves Response Timeout [ms]		Specify how long the device will wait for response from Modbus Slave.

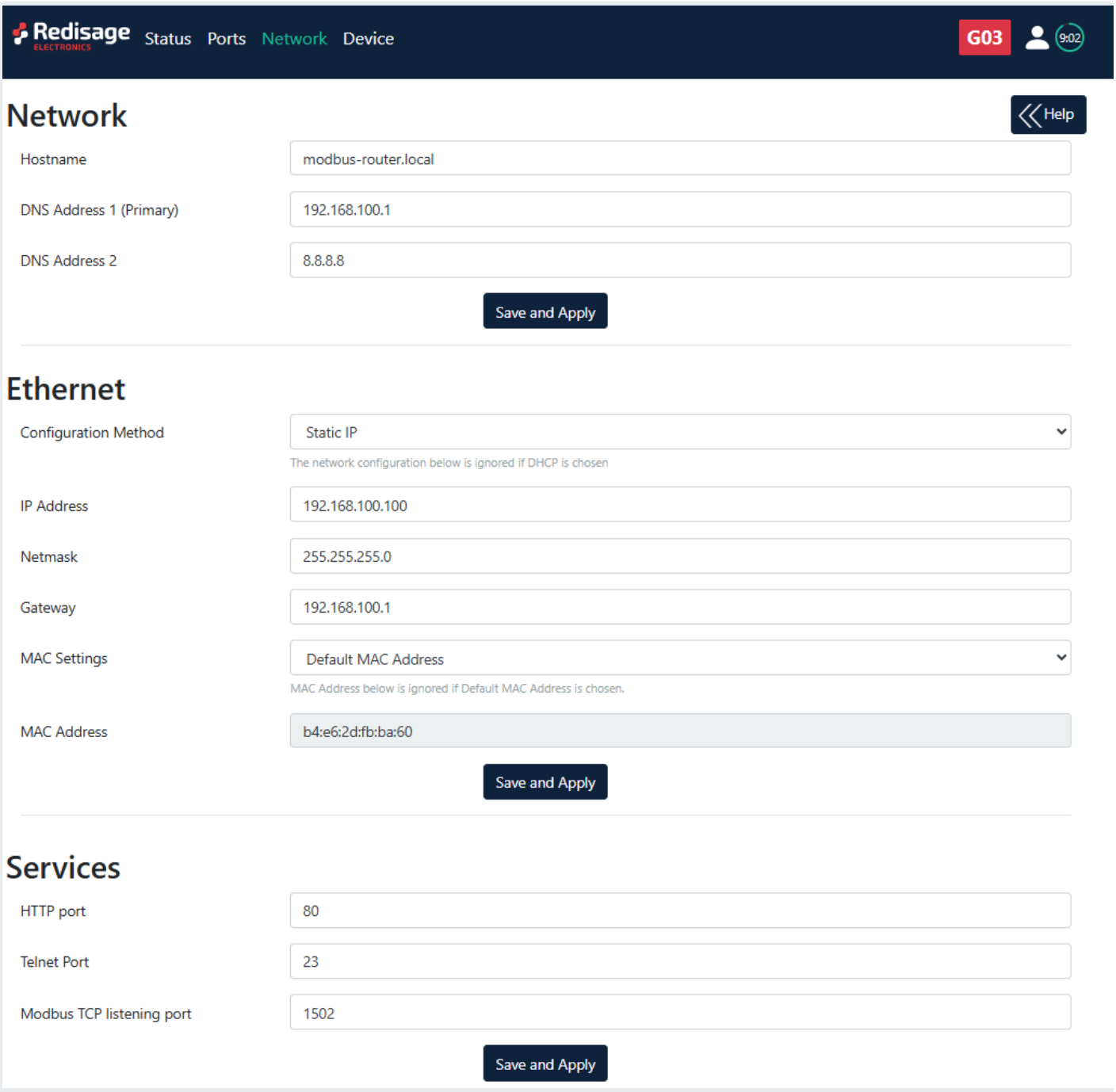
Item	Description
Baud Rate	Determine the port's transmission speed over the data channel.
Data Bits	Determine the number of data bits in the port's message frame.
Parity	Enable/disable the parity check in the port's message frame.
Stop Bits	Determine the number of stop bits in the port's message frame.
Termination	Enable/disable termination on RS line.
Routing Slaves	Addresses of Modbus Slaves connected to Modbus Router. Multiple addresses can be written in one field, e.g. 9;11;14-17;80. Use * to select all not assigned addresses.
Slaves Response Timeout [ms]	Specify how long the device will wait for response from Modbus Slave.
IP/Hostname	Determine IP address or Hostname of Modbus Slave.
TCP Port	Determine TCP port of Modbus Slave.

> Make sure to save all the changes with “Save and Apply” button located on the bottom of the page.

> In the UDP mode, port number 15051 is reserved for UDP broadcast service.

Network settings

In this section, network settings can be changed according to target LAN parameters.



Item	Description
Hostname	Label that is assigned to the device.
Configuration Method	Enable/disable the DHCP server. If the DHCP server is disabled, the IP address of the device has to be set manually.
IP Address	IP address of the device.
Netmask	Netmask associated with the IP address.
Gateway	Gateway address currently used by the device.
DNS Address	Domain Name System used by the device.

Item	Description
MAC Settings	Allow setting the default MAC address or typing it manually.
MAC Address	Allow changing the physical address of the device.
HTTP Port	Determine the port of the control panel.
Telnet Port	Allow connection with the device via Telnet.
Modbus TCP Listening Port	Used as an entry point for new Modbus TCP connections.

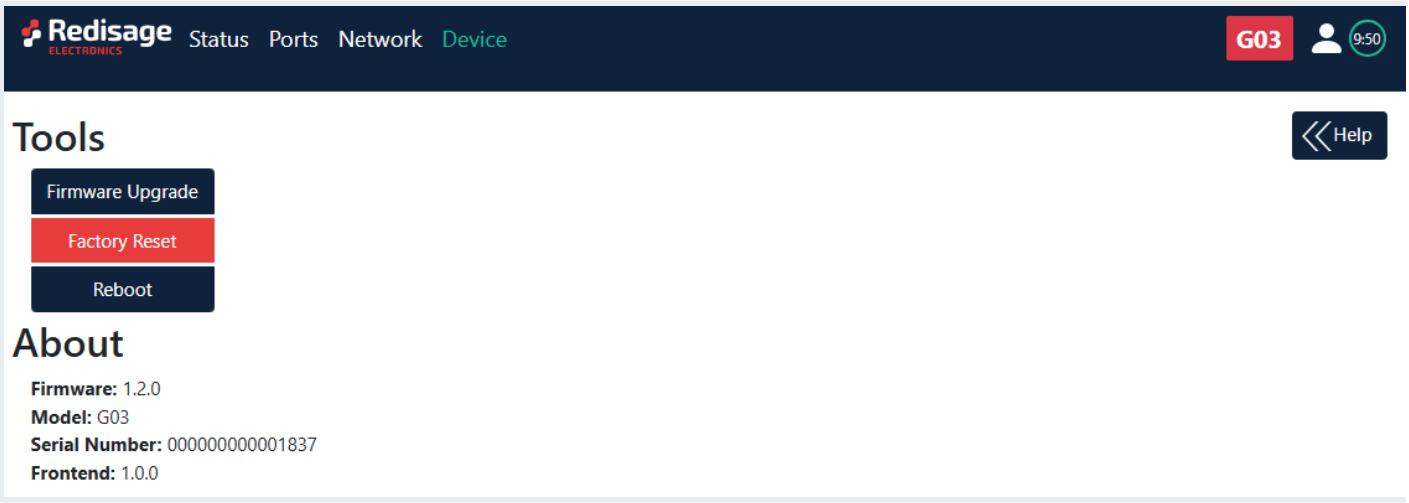
It is possible to obtain dynamic IP address. Just switch configuration method from static IP to DHCP (automatic). This process may cause some issues with identifying converters in LAN unless there is an access to the device which is responsible for allocating IP addresses.

Keep in mind that in case of changed IP address user needs to type new IP in the address bar and log in again.

> Make sure to save all the changes with “Save and Apply” button located on the bottom of the page.

Device page

On the device page there are tools used to a firmware update, a factory reset and a device reboot. There are also some information about the device.

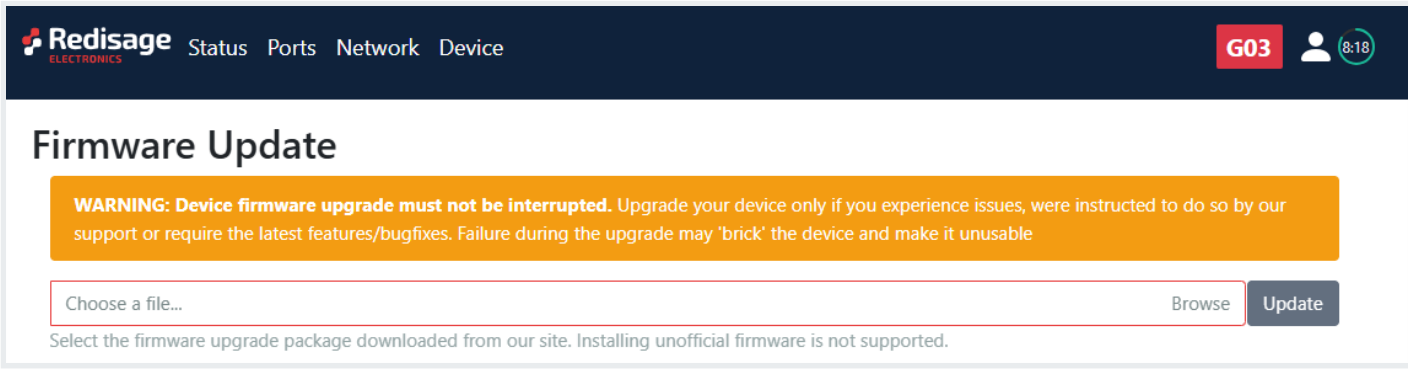


Item	Description
Firmware Update	Update firmware.
Factory Reset	Restore default ports settings and default network configuration.
Reboot	Reboot the device.

Item	Description
About	Basic information about the device.

Firmware update

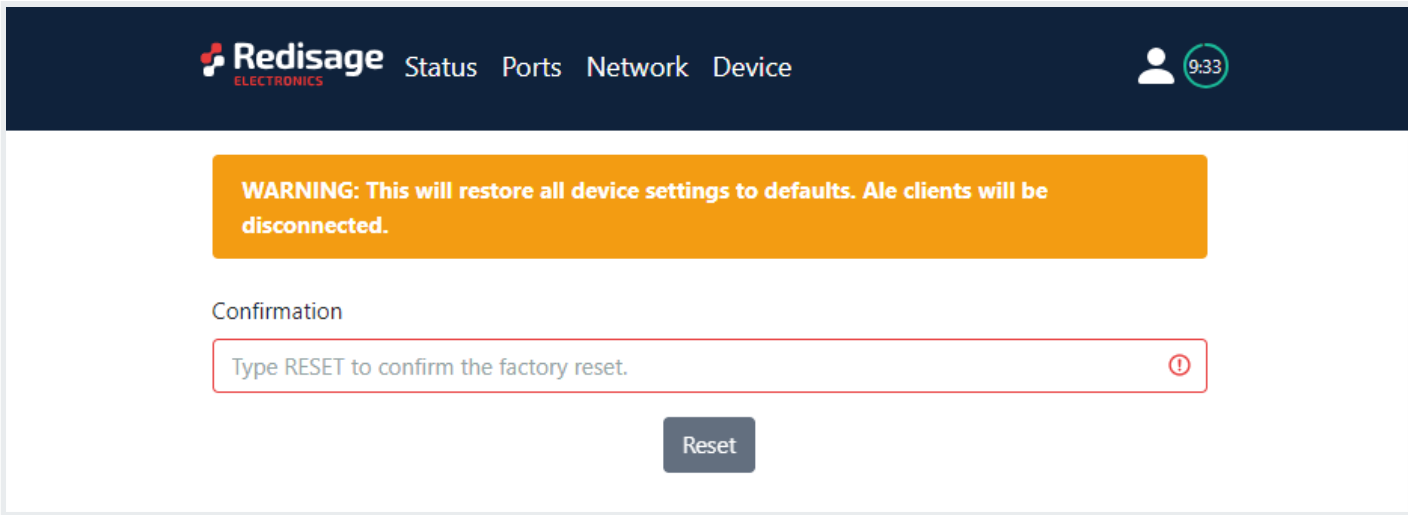
The device firmware update must not be interrupted. Update the device only if experiencing issues, being instructed to do so by our support or requiring the latest features/bugfixes. Failure during the update may 'brick' the device and make it unusable.



> Use the **modbus-gateway-mcu-esp32.fir** file for a firmware update.

Factory reset

To restore default settings, press the red button. After that, user will be asked to type “RESET”. Then it will take a few seconds to reload the web page and restart the device. After reset use default login details (login: **admin**, password: **admin123;** default IP: **192.168.100.100**).



Configuration by the Telnet Console

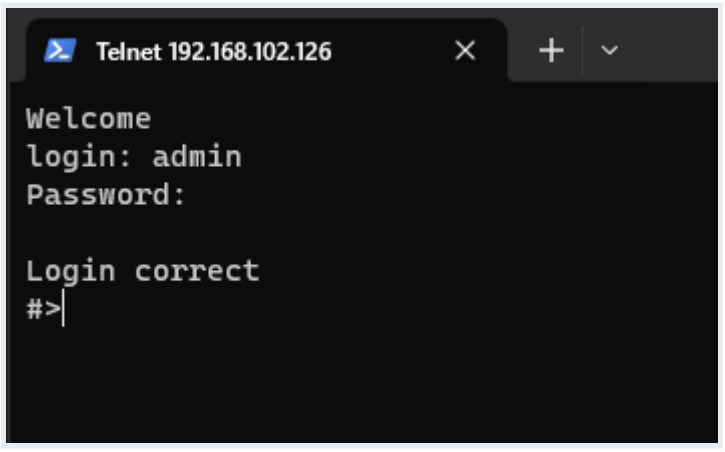
Modbus Ethernet Gateways (G01 - G03 & G14 - G16)

The device can be also configured via the Telnet Console. Firstly, make sure that converter is connected to the power supply and to the LAN using a patch cord. Knowledge of the device's IP address (default is **192.168.100.100**) and Telnet port number (default is **23**) is necessary to establish a connection.

Use command below in a terminal window to connect to the device:

```
telnet <ip_address> <port_number>
```

If the connection is successful there will be login prompt visible. Login using user's personal credentials or the default login details (login: **admin**, password: **admin123**). If login is successful, it will be possible to start typing configuration commands.



> The configuration is available only if devices are connected to the same Local Area Network as the computer used for it.

List of all commands

Command	Description
help	Print the help.
conn	Print active TCP connections.
net_stat	Print lwIP statistics.
eth_mac	Print or change MAC address.
ipconfig	Print or change the network configuration.
http_port	Print or change default http port.
telnet_port	Print or change default telnet port.
modbus_tcp_port	Print or change modbus port.
ping	Check internet connection with the desired host.
restart	Restart the system.
user	Print or change user configuration.
sys_heap_usage	Print current heap usage.
modbus	Print or changes modbus settings.
modbus_ports	Print or changes modbus ports settings.
modbus_routing	Print or change modbus routing settings.
exit	Exit console.

Modbus ports configuration commands

- **modbus**
  - **modbus help**
    Print command help.

  - **modbus int_addr VALUE**
    Set internal Modbus address.

    Example:
    modbus int_addr 5

  - **modbus idlet VALUE**
    Show or set the idle TIME (in seconds) of the TCP connection after which the TCP connection is terminated by the converter and the TCP socket is released.

    Example:
    modbus idlet 720

If a subcommand that normally sets a value is not given an argument, it will print the current value.

Example:
modbus idlet
Set idle time is 5000

- **modbus_ports**
  - **modbus_ports help**
    Print command help, does not require com_number.

  - **modbus_ports PORT_NUMBER add_slaves [SLAVE_ADDR ;/- SLAVE_ADDR, *]**
    Set all addresses of slaves connected to com_port. A star in value means fill rest free slaves. It means all slaves that are not set to other ports will be set to this one.

    Example:
    modbus_ports 1 addslaves 124

    Example:
    modbus_ports 1 addslaves 12-124

    Example:
    modbus_ports 1 addslaves 12;14;18

    Example:
    modbus_ports 1 addslaves 12;14-17;150-200

    Example:
    modbus_ports 1 addslaves 12;14-17;150-200, *

  - **modbus_ports PORT_NUMBER show_slaves**
    Show addresses of slaves connected to com_port.

    Example:
    modbus_ports 1 showslaves

  - **modbus_ports PORT_NUMBER mode [ascii/rtu]**
    Set Modbus port mode to ASCII or RTU.

    Example:
    modbus_ports 2 mode ascii

  - **modbus_ports PORT_NUMBER baud [RATE]**
    Set the baud rate to RATE. For a list of acceptable baud rates, please refer to the manual.

Example:
modbus_ports 1 baud 9600

- **modbus_ports PORT_NUMBER bits [CPS]**
  Set bit count to C, parity to P, and stop bits to S. Valid values are:
  C: 7, 8 or 9
  P: N, E or O (N- none, E- even, O- odd)
  S: 1 or 2

  Example:
  modbus_ports 1 bits 8N1

  Example:
  modbus_ports 2 bits 7O1

- **modbus_ports PORT_NUMBER state [GATEWAY/ROUTER/DISABLE]**
  Enable or disable uart functionality.

  Example:
  modbus_ports 1 state GATEWAY

  Example:
  modbus_ports 2 state DISABLE

- **modbus_ports PORT_NUMBER termination [on/off]**
  Enable or disable termination on RS485 port.

  Example:
  modbus_ports 1 termination on

- **modbus_ports PORT_NUMBER slave_response_timeout TIMEOUT**
  Set response timeout (serial slave) in ms. When this timeout expires, delayed frames are dropped.

  Example:
  modbus_ports 1 slave_response_timeout 2000

  If a subcommand that normally sets a value is not given an argument, it will print the current value.

  Example:
  modbus_ports 2 baud
  Set baud rate is 115200

> PORT_NUMBER is a number of ports in modbus gateway and it is counted from 0.

- **modbus_routing**
  - **modbus_routing help**
    Print routing's help.

  - **modbus_routing show**
    Display all active routing table in system.
    [LP]: [SLAVES NUMBERS] [IP/HOSTNAME] [PORT] [TIMEOUT]

  - **modbus_routing add SLAVE_ADDR HOSTNAME PORT TIMEOUT**
    SLAVE_ADDR with HOSTNAME PORT is used by uarts working in Modbus router mode. TIMEOUT (in ms) is used to close the connection if a slave is not responding. The maximum records is 8. One record for one address/ip.

    Example:
    modbus_routing add 18 192.168.0.10 502 2000

    Example:
    modbus_routing add 18;25 192.168.0.10 502 2000

    Example:
    modbus_routing add 18-25 192.168.0.10 502 2000

    Example:
    modbus_routing add 18-25;* 192.168.0.10 502 2000

    Example:
    modbus_routing add 18-25 modbus.local 502 2000

  - **modbus_routing remove [HOSTNAME_NUMBER/all]**
    Remove Modbus Routing Table record. HOSTNAME_NUMBER is line number from /show/ command.

    Example:
    modbus_routing remove 2

    Example:
    modbus_routing remove all

Network settings

The following commands might be helpful to change network settings according to target LAN parameters,

- **ipconfig**
  - **ipconfig addr ADDRESS**
    Set IP address to ADDRESS.

Example:
ipconfig addr 192.168.0.10

- **ipconfig mask NETMASK**
  Set subnet mask to NETMASK (in dot-decimal format).

  Example:
  ipconfig mask 255.255.255.0

- **ipconfig mask BIT_COUNT**
  Set subnet mask to BIT_COUNT bits.

  Example:
  ipconfig mask 24

- **ipconfig gateway GATEWAY_IP**
  Set network gateway to GATEWAY_IP.

  Example:
  ipconfig gateway 192.168.0.1

- **ipconfig dhcp [enable/disable]**
  Enable or disable DHCP client.

  Example:
  ipconfig dhcp enable

- **ipconfig dns1 ADDRESS**
  Set primary DNS to ADDRESS, disable getting DNS from DHCP if enabled.

  Example:
  ipconfig dns1 192.168.100.1

- **ipconfig dns2 ADDRESS**
  Set secondary DNS to ADDRESS, disable getting DNS from DHCP if enabled.

  Example:
  ipconfig dns2 1.1.1.1

- **eth_mac**
  - **eth_mac help**
    Print the help message.

  - **eth_mac default**
    Set device’s MAC address to factory-default one.

- **eth_mac set MAC_ADDR**
  Set device's MAC address to MAC_ADDR. Accepts both dash and colon-separated formats.

  Example:
  eth_mac set 01-02-03-04-05-06

  Example:
  eth_mac set 01:02:03:04:05:06

- **http_port**
  - **http_port help**
    Print the help message.

  - **http_port PORT_NUMBER**
    Set http port to PORT_NUMBER. A PORT_NUMBER value must be in range: 1-65535.

    Example:
    http_port 80

  - **http_port status**
    Print current http port.

    Example:
    http_port status
    A current http port is 80

- **telnet_port**
  - **telnet_port help**
    Print the help message.

  - **telnet_port PORT_NUMBER**
    Set Telnet port to PORT_NUMBER. A PORT_NUMBER value must be in range: 1-65535.

    Example:
    telnet_port 23

  - **telnet_port status**
    Print current Telnet port.

    Example:
    telnet_port status
    A current telnet port is 23

- **modbus_tcp_port**

- **modbus_tcp_port help**
  Print the help message.

- **modbus_tcp_port PORT_NUMBER**
  Set http port to PORT_NUMBER. A PORT_NUMBER value must be in range: 1-65535.

  Example:
  modbus_tcp_port 502

- **modbus_tcp_port status**
  Print current Modbus port.

  Example:
  modbus_tcp_port status
  A current modbus port is 502

Changing username or password

To change username or password, use user command. Available commands:

- **user help**
  Print the help message.

- **user mod_name USER_NAME NEW_NAME**
  Change the user name to NEW_NAME. It fails if the name is used by another user.

  Example:
  user mod_name admin NEW_NAME

- **user passwd USER_NAME**
  Change USER_NAME's password.

  Example:
  user passwd admin
  ****** <- here is entered password, but '*' appears instead

  Note: Everyone can change the password for themselves.

Additional notes

After some time of inactivity, session will be disconnected automatically.

In order to avoid issues like connecting to host, type “help” to get more information.

To get more details about every particular command, append “help” after each commands (example: "ipconfig help").

Factory reset is not available from the Telnet Console level.

Configuration by the Serial Console

Modbus Ethernet Gateways (G01 - G03 & G14 - G16)

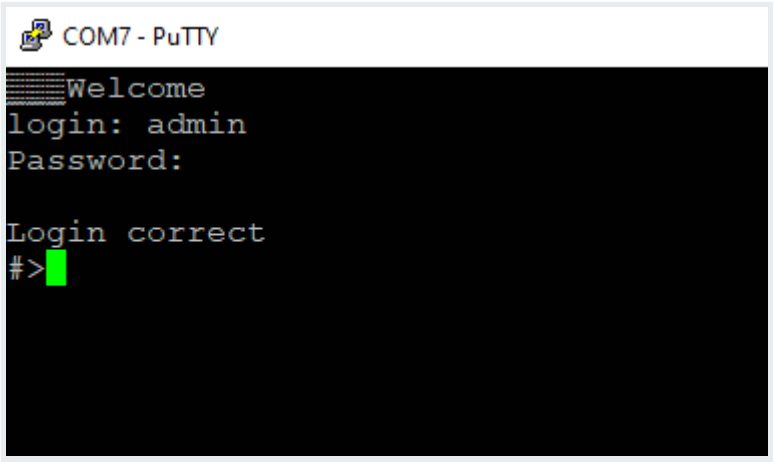
Another way to configure the device is via a serial console. In case of the G01 - G03 Modbus gateways an additional USB/UART converter is needed.

Procedure to enter serial console mode on G01 - G03

- Turn off the power of the device.
- Connect Ethernet converter to the dedicated USB/UART converter via the microUSB port.
- Connect the USB/UART converter to the PC.
- Open the serial console (default baud rate is 115200 bps).
- Press and hold the S1 button.
- Turn on the power.
- Wait until the ST indicator (orange LED) lights up (it should light up after red light - service mode).
- Release the S1 button.
- Login using user’s personal credentials or default login details.
- If the process is successful, configuration command can be typed into the terminal.

Procedure to enter serial console mode on G14 - G16

- Install STM32 Virtual COM Port Driver.
- Turn off the power of the device.
- Connect Ethernet converter directly to the PC (the dedicated USB/UART converter is not obligatory).
- Open the serial console (default baud rate is 115200 bps).
- Press and hold the S1 button.
- Turn on the power.
- Wait until the ST indicator (yellow LED) lights up.
- Release the S1 button.
- Login using user’s personal credentials or default login details.
- If the process is successful, configuration command can be typed into the terminal.



List of all commands

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ipconfig	Print or change the network configuration.
http_port	Print or change default http port.
telnet_port	Print or change default telnet port.
modbus_tcp_port	Print or change modbus port.
ping	Check internet connection with the desired host.
restart	Restart the system.
user	Print or change user configuration.
sys_heap_usage	Print current heap usage.
modbus	Print or changes modbus settings.
modbus_ports	Print or changes modbus ports settings.
modbus_routing	Print or change modbus routing settings.
exit	Exit console.

Modbus ports configuration commands

- **modbus**
  - **modbus help**
    Print command help.

- **modbus int_addr VALUE**
  Set internal Modbus address.

  Example:
  modbus int_addr 5

- **modbus idlet VALUE**
  Show or set the idle TIME (in seconds) of the TCP connection after which the TCP connection is terminated by the converter and the TCP socket is released.

  Example:
  modbus idlet 720

  If a subcommand that normally sets a value is not given an argument, it will print the current value.

  Example:
  modbus idlet
  Set idle time is 5000

- **modbus_ports**
  - **modbus_ports help**
    Print command help, does not require com_number.

  - **modbus_ports PORT_NUMBER add_slaves [SLAVE_ADDR ;/- SLAVE_ADDR, *]**
    Set all addresses of slaves connected to com_port. A star in value means fill rest free slaves. It means all slaves that are not set to other ports will be set to this one.

    Example:
    modbus_ports 1 addslaves 124

    Example:
    modbus_ports 1 addslaves 12-124

    Example:
    modbus_ports 1 addslaves 12;14;18

    Example:
    modbus_ports 1 addslaves 12;14-17;150-200

    Example:
    modbus_ports 1 addslaves 12;14-17;150-200, *

  - **modbus_ports PORT_NUMBER show_slaves**
    Show addresses of slaves connected to com_port.

Example:
modbus_ports 1 showslaves

- **modbus_ports PORT_NUMBER mode [ascii/rtu]**
  Set Modbus port mode to ASCII or RTU.

  Example:
  modbus_ports 2 mode ascii

- **modbus_ports PORT_NUMBER baud [RATE]**
  Set the baud rate to RATE. For a list of acceptable baud rates, please refer to the manual.

  Example:
  modbus_ports 1 baud 9600

- **modbus_ports PORT_NUMBER bits [CPS]**
  Set bit count to C, parity to P, and stop bits to S. Valid values are:
  C: 7, 8 or 9
  P: N, E or O (N- none, E- even, O- odd)
  S: 1 or 2

  Example:
  modbus_ports 1 bits 8N1

  Example:
  modbus_ports 2 bits 7O1

- **modbus_ports PORT_NUMBER state [GATEWAY/ROUTER/DISABLE]**
  Enable or disable uart functionality.

  Example:
  modbus_ports 1 state GATEWAY

  Example:
  modbus_ports 2 state DISABLE

- **modbus_ports PORT_NUMBER termination [on/off]**
  Enable or disable termination on RS485 port.

  Example:
  modbus_ports 1 termination on

- **modbus_ports PORT_NUMBER slave_response_timeout TIMEOUT**
  Set response timeout (serial slave) in ms. When this timeout expires, delayed frames are dropped.

Example:
modbus_ports 1 slave_response_timeout 2000

If a subcommand that normally sets a value is not given an argument, it will print the current value.

Example:
modbus_ports 2 baud
Set baud rate is 115200

> PORT_NUMBER is a number of ports in modbus gateway and it is counted from 0.

- **modbus_routing**
  - **modbus_routing help**
    Print routing's help.

  - **modbus_routing show**
    Display all active routing table in system.
    [LP]: [SLAVES NUMBERS] [IP/HOSTNAME] [PORT] [TIMEOUT]

  - **modbus_routing add SLAVE_ADDR HOSTNAME PORT TIMEOUT**
    SLAVE_ADDR with HOSTNAME PORT is used by uarts working in Modbus router mode. TIMEOUT (in ms) is used to close the connection if a slave is not responding. The maximum records is 8. One record for one address/ip.

    Example:
    modbus_routing add 18 192.168.0.10 502 2000

    Example:
    modbus_routing add 18;25 192.168.0.10 502 2000

    Example:
    modbus_routing add 18-25 192.168.0.10 502 2000

    Example:
    modbus_routing add 18-25;* 192.168.0.10 502 2000

    Example:
    modbus_routing add 18-25 modbus.local 502 2000

  - **modbus_routing remove [HOSTNAME_NUMBER/all]**
    Remove Modbus Routing Table record. HOSTNAME_NUMBER is line number from /show/ command.

    Example:

modbus_routing remove 2

Example:
modbus_routing remove all

Network settings

The following commands might be helpful to change network settings according to target LAN parameters,

- **ipconfig**
  - **ipconfig addr ADDRESS**
    Set IP address to ADDRESS.

    Example:
    ipconfig addr 192.168.0.10

  - **ipconfig mask NETMASK**
    Set subnet mask to NETMASK (in dot-decimal format).

    Example:
    ipconfig mask 255.255.255.0

  - **ipconfig mask BIT_COUNT**
    Set subnet mask to BIT_COUNT bits.

    Example:
    ipconfig mask 24

  - **ipconfig gateway GATEWAY_IP**
    Set network gateway to GATEWAY_IP.

    Example:
    ipconfig gateway 192.168.0.1

  - **ipconfig dhcp [enable/disable]**
    Enable or disable DHCP client.

    Example:
    ipconfig dhcp enable

- **ipconfig dns1 ADDRESS**
  Set primary DNS to ADDRESS, disable getting DNS from DHCP if enabled.

  Example:
  ipconfig dns1 192.168.100.1

- **ipconfig dns2 ADDRESS**
  Set secondary DNS to ADDRESS, disable getting DNS from DHCP if enabled.

  Example:
  ipconfig dns2 1.1.1.1

- **eth_mac**
  - **eth_mac help**
    Print the help message.

  - **eth_mac default**
    Set device’s MAC address to factory-default one.

  - **eth_mac set MAC_ADDR**
    Set device’s MAC address to MAC_ADDR. Accepts both dash and colon-separated formats.

    Example:
    eth_mac set 01-02-03-04-05-06

    Example:
    eth_mac set 01:02:03:04:05:06

- **http_port**
  - **http_port help**
    Print the help message.

  - **http_port PORT_NUMBER**
    Set http port to PORT_NUMBER. A PORT_NUMBER value must be in range: 1-65535.

    Example:
    http_port 80

  - **http_port status**
    Print current http port.

    Example:
    http_port status
    A current http port is 80

- **telnet_port**
  - **telnet_port help**
    Print the help message.

  - **telnet_port PORT_NUMBER**
    Set Telnet port to PORT_NUMBER. A PORT_NUMBER value must be in range: 1-65535.

    Example:
    telnet_port 23

  - **telnet_port status**
    Print current Telnet port.

    Example:
    telnet_port status
    A current telnet port is 23

- **modbus_tcp_port**
  - **modbus_tcp_port help**
    Print the help message.

  - **modbus_tcp_port PORT_NUMBER**
    Set http port to PORT_NUMBER. A PORT_NUMBER value must be in range: 1-65535.

    Example:
    modbus_tcp_port 502

  - **modbus_tcp_port status**
    Print current Modbus port.

    Example:
    modbus_tcp_port status
    A current modbus port is 502

Changing username or password

To change username or password, use user command. Available commands:

- **user help**
  Print the help message.

- **user mod_name USER_NAME NEW_NAME**
  Change the user name to NEW_NAME. It fails if the name is used by another user.

  Example:

user mod_name admin NEW_NAME

- **user passwd USER_NAME**
  Change USER_NAME's password.

  Example:
  user passwd admin
  ****** <- here is entered password, but '*' appears instead

  Note: Everyone can change the password for themselves.

Service mode

Procedure to enter service mode for G01 - G03 gateways

- Turn off the power of the device.
- Connect Ethernet converter to the dedicated USB/UART converter via the microUSB port.
- Connect the USB/UART converter to the PC.
- Open the serial console (default baud rate is 115200 bps).
- Press and hold the S1 button.
- Turn on the power.
- Wait until the ST indicator (red LED) lights up.
- Release the S1 button.
- If the process is successful, service commands can be typed into the terminal.

Procedure to enter service mode for G14 - G16 gateways

- Install STM32 Virtual COM Port Driver (if it was not done before).
- Turn off the power of the device.
- Connect Ethernet converter directly to the PC (the dedicated USB/UART converter is not obligatory).
- Open the serial console (default baud rate is 115200 bps).
- Press and hold the S1 button.
- Turn on the power.
- Wait until the ST indicator (red LED) lights up.
- Release the S1 button.
- If the process is successful, service commands can be typed into the terminal.

List of commands in the service mode

Command	Description
help	Print the help.

Command	Description
credits	Print current credits value for this device.
dev_ident	Print the device identification value.
restart	Restart the system.
serial_num	Print the serial number of this device.
version	Display the bootloader version.
xmodem	Download image to the internal flash using xmodem.
defaults	Reset application variables to defaults.
ipconfig	Print or change the network configuration.

> In the service mode, the “ipconfig” command can only show a last static IP address.

Factory reset

To restore default settings, type “defaults”. After that, user will be asked for type “default network” to reset the network settings as well. Then user will be informed if the process is successful.
Default login details:
- login: **admin**
- password: **admin123**
- IP: **192.168.100.100**

Additional notes

In order to avoid issues like connecting to host, type “help” to get more information.

To get more details about every particular command, append “help” after each commands (example: "ipconfig help").