User Manual

- Configuration by the Web Page
- Configuration by the Telnet Console
- Configuration by the Serial Console

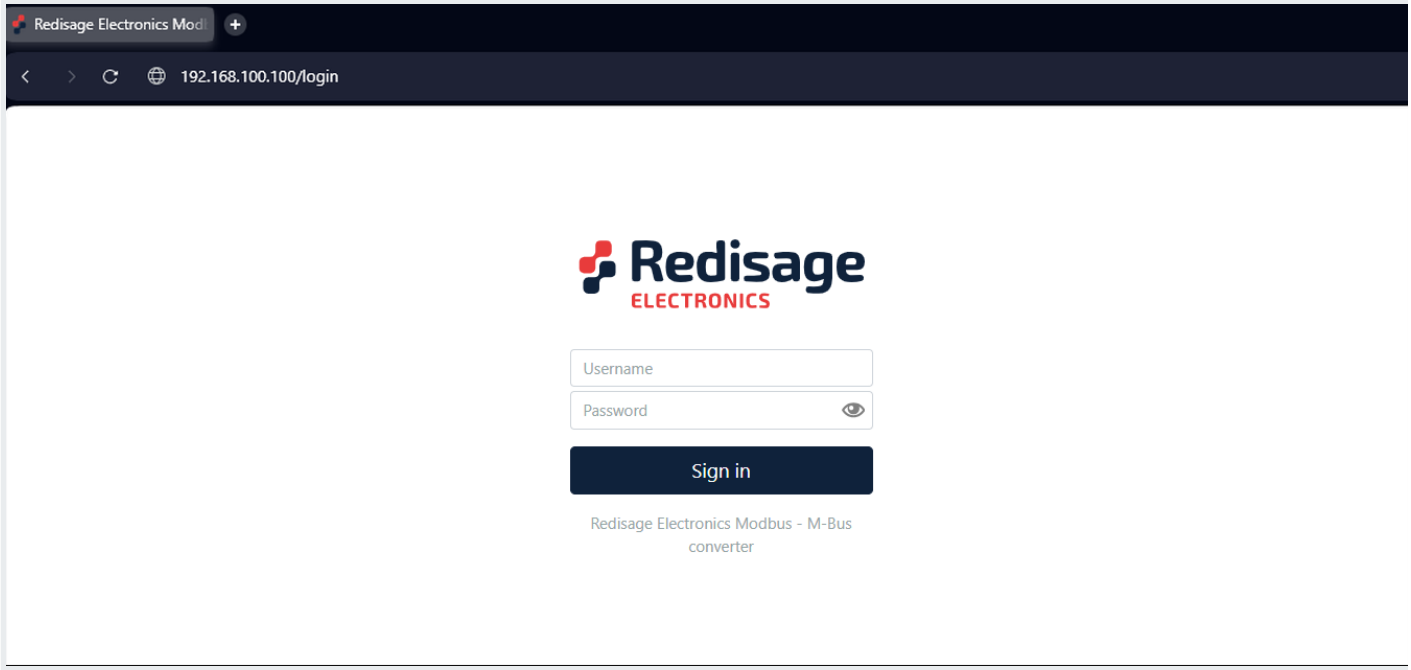
Configuration by the Web Page

Modbus TCP/RTU M-bus Gateways (G20, G30)

This page presents capabilities of the Converters configuration. First, make sure that the converter is connected to the power supply and to the LAN using a patchcord or wireless via Wi-Fi. 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

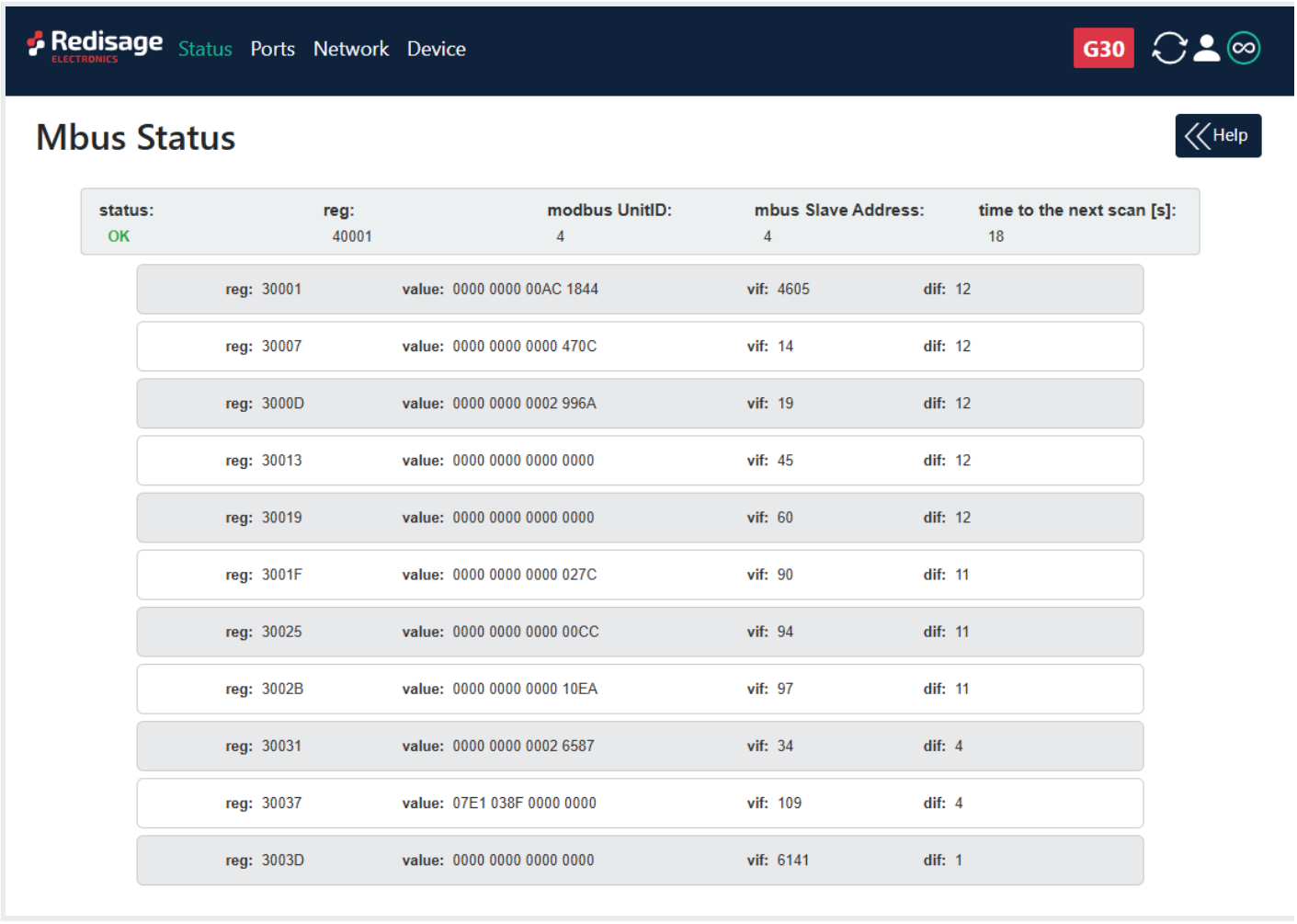
To access the web page, open the browser, type the device’s IP address of the converter (default is **192.168.100.100**). Then log in using user’s personal credentials. If it is a first configuration or the converter had a factory reset, use default login details (login: **admin**, password: **admin123**).



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

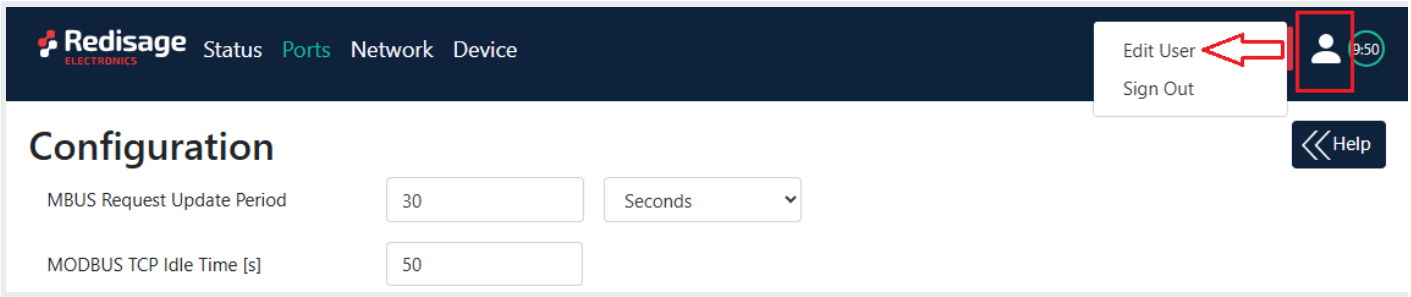
Status page

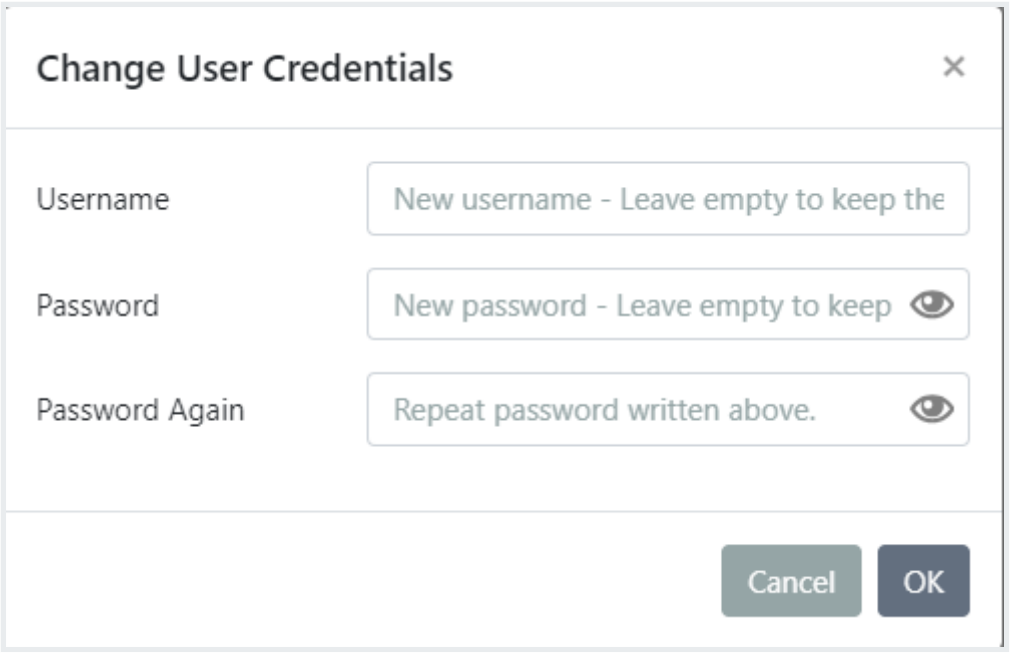
After a successful login, there should be an insight to a list of available connections. If there is more than one connection, it is possible to sort them by ID, timestamp or status.



Changing username or password

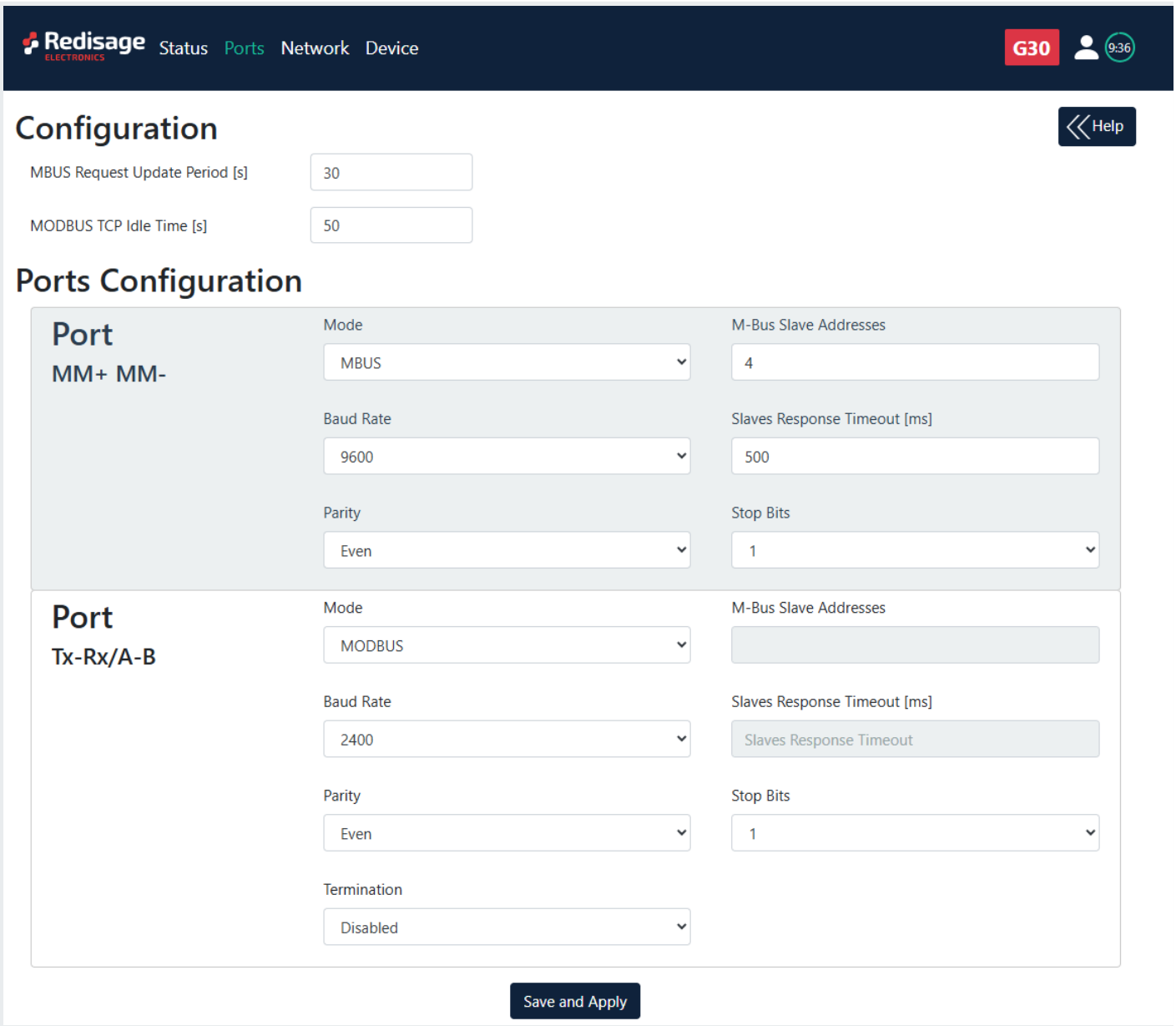
After clicking “Edit User” under the user icon, it is possible to change the username or the password.





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



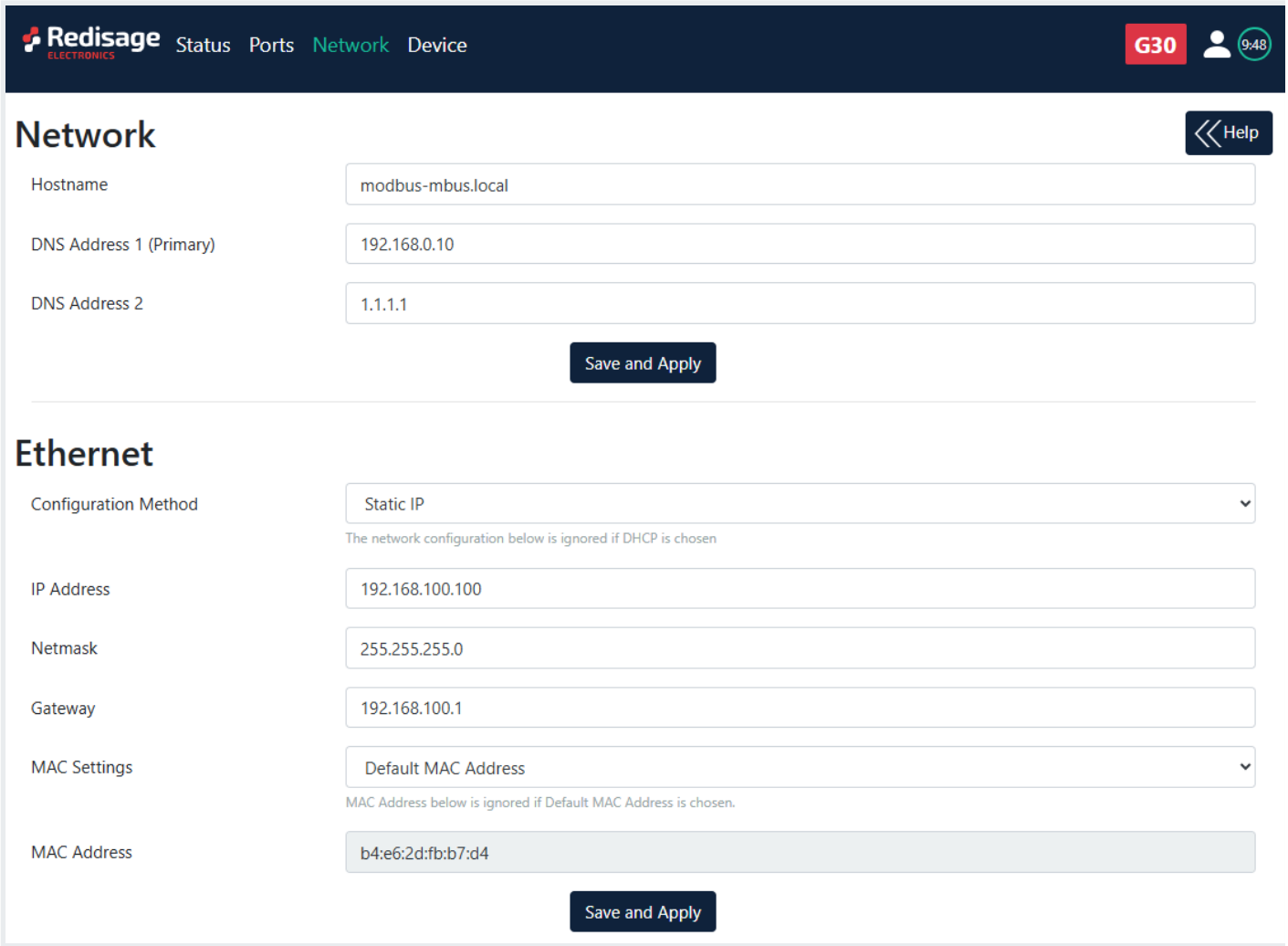
Item		Description
MBUS Request Update Period		Choose M-BUS Request Update period.
MODBUS TCP Idle Time		Choose Modbus TCP Idle Time.
Mode	MBUS	Switch device's mode to M-Bus.
	MODBUS	Switch device's mode to Modbus slave.
Slaves		Type slave device address. Multiple addresses can be written in one field, e.g. *9;11;14-17;80*.

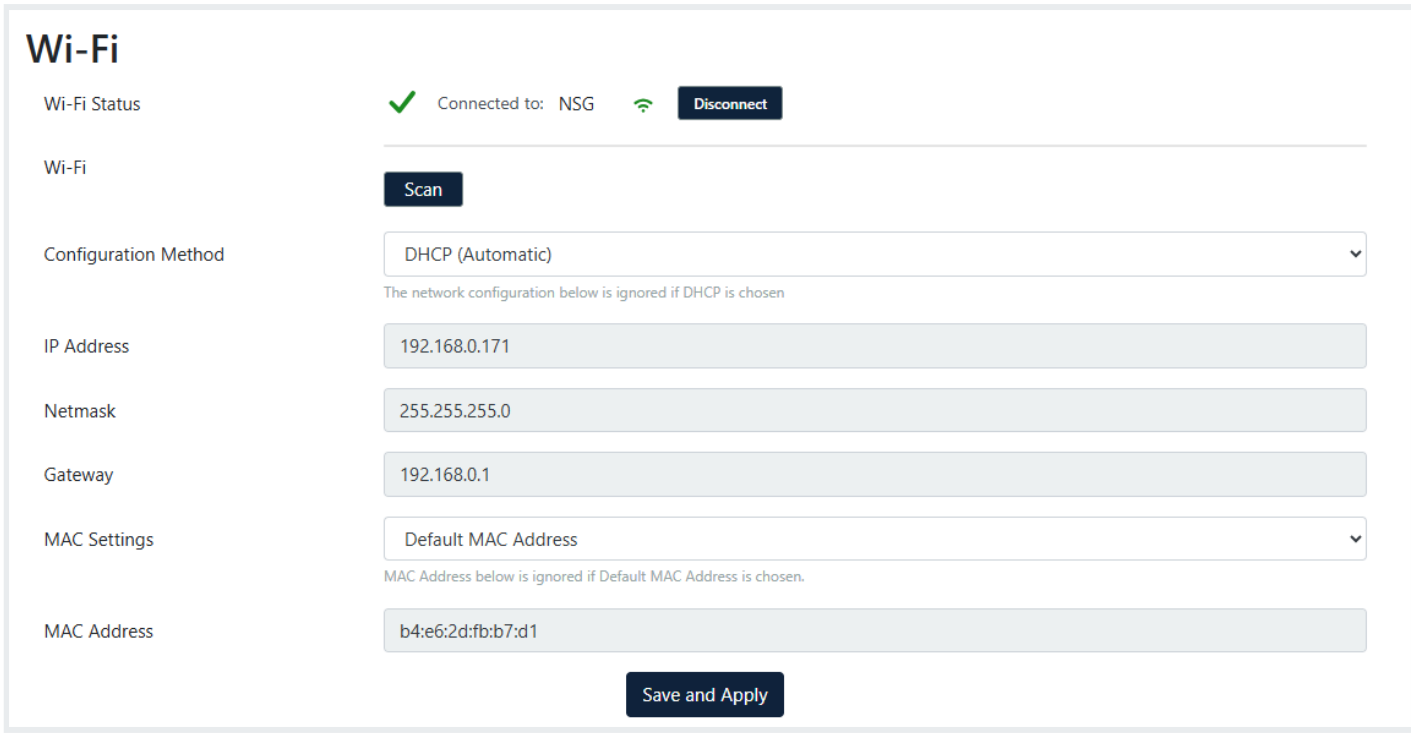
Item	Description
Slaves Response Timeout	Type slave devices response timeout.
Baud Rate	Choose baud rate.
Parity	Type of parity.
Stop Bits	Number of stop bits.
Termination	Enable RS termination.

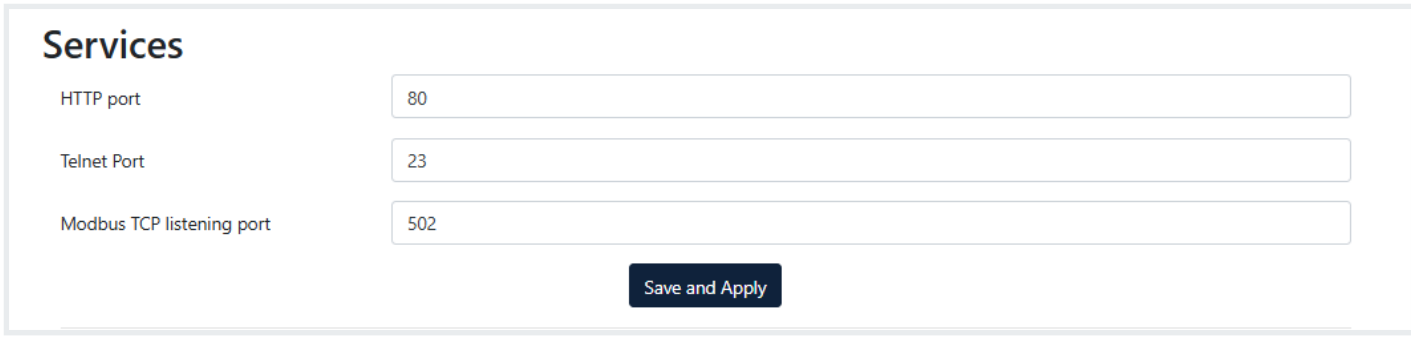
> Make sure to save all the changes with “Save and Apply” button located on the bottom of the page.

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.
MAC Settings	Allow setting the default MAC address or typing it manually.

Item	Description
MAC Address	Allow changing the physical address of the device.
Wi-Fi (**G30 only**)	Scan and choose your network. Click on chosen and type password.
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.

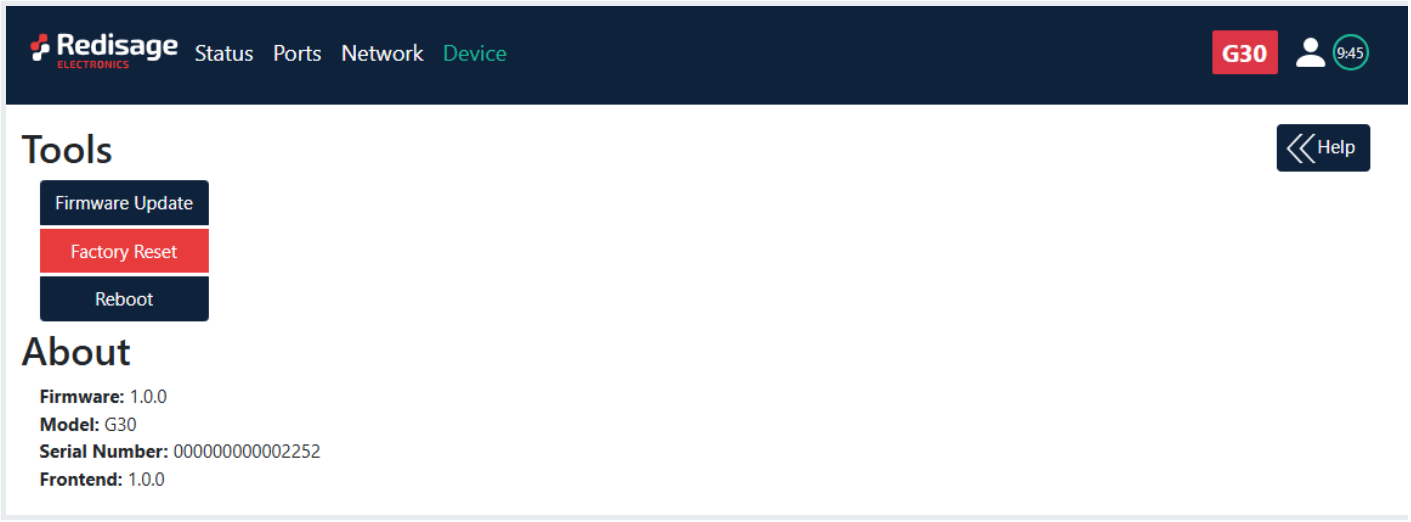
It is possible to obtain dynamic IP address. Just switch configuration method from static IP to DHCP (automatic). This process may cause some issues with identifying converters in LAN unless there is access to the device which is responsible for allocating IP addresses.

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.

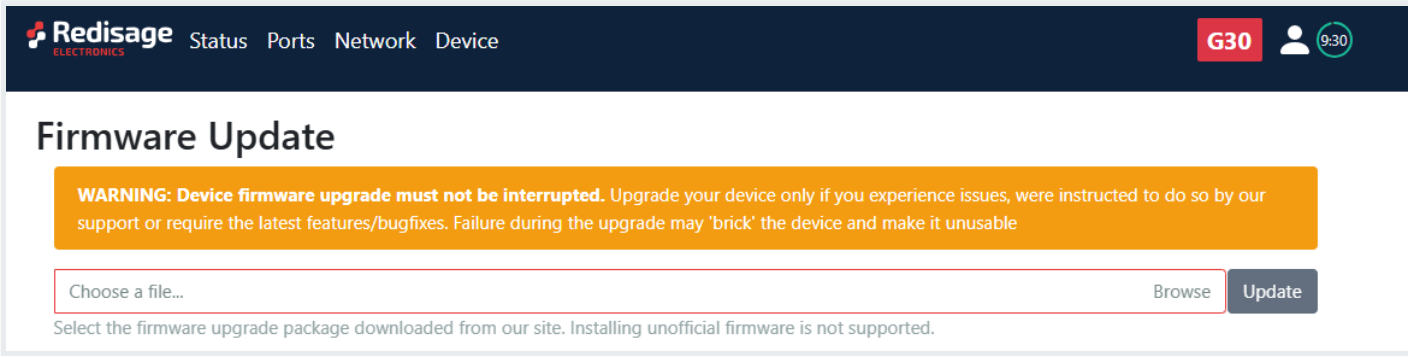


Item	Description
Firmware Update	Update firmware.
Factory Reset	Restore default ports settings and default network configuration.

Item	Description
Reboot	Reboot the device.
About	Basic information about the device.

Firmware update

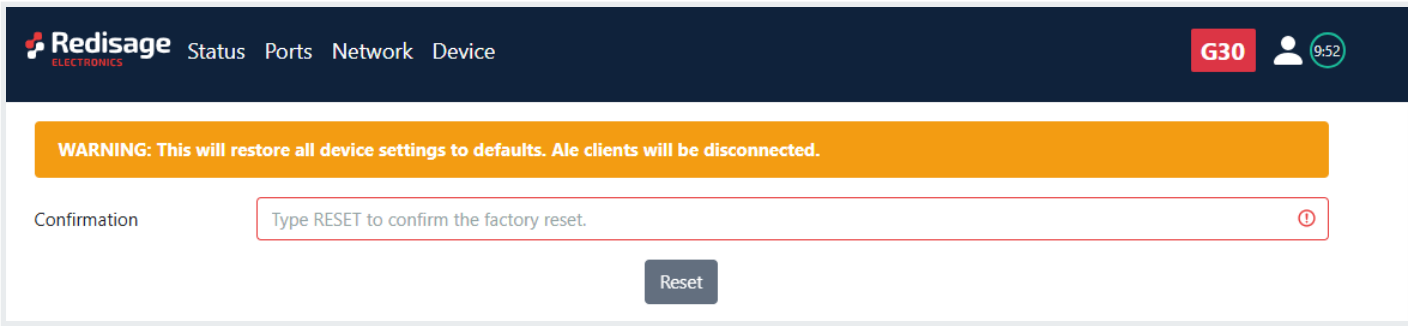
The device firmware update must not be interrupted. Update the device only if experiencing issues, being instructed to do so by our support or requiring the latest features/bugfixes. Failure during the update may 'brick' the device and make it unusable.



> Use the **modbus-mbus-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

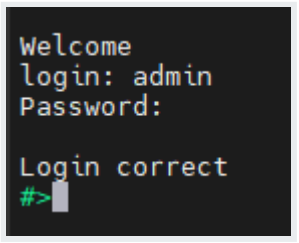
Modbus TCP/RTU M-Bus Gateways (G20, G30)

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.
wifi_mac	Print or change Wi-Fi 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	Print or changes modbus settings.
ping	Check internet connection with the desired host.
defaults	Reset application variables to defaults
restart	Restart the system.
user	Print or change user configuration.
sys_heap_usage	Print current heap usage.
mbus	Print or changes M-Bus ports settings.
wificonf	Wi-Fi interface configuration
exit	Exit console.

Modbus ports configuration commands

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

  - **modbus tcp_port PORT_NUMBER**
    Set modbus port to PORT_NUMBER. A PORT_NUMBER value must be in range: 1-65535
    Example: modbus tcp_port 502

  - **modbus tcp_port PORT_NUMBER**
    Set modbus port to PORT_NUMBER. A PORT_NUMBER value must be in range: 1-65535
    Example: modbus tcp_port 502

  - **modbus idle_time TIME**
    Set the timeout when waiting for the client's data [in miliseconds].
    A TIME value must be in range:

0-4294967295
Example: modbus idle_time 50000

- **modbus status**
  Print current modbus tcp_port as well as idle_time.
  Example: modbus status
  A current tcp port is 502.
  A current idle time is 50000 [ms].

M-Bus ports configuration commands

- **mbus {com_number} {subcommand} [arguments]**
  Print or change mbus_ports configuration
  com_number - COM port number, as labeled in device's manual, to which mbus applies. This field is ignored for the subcommands 'period', 'availability' and 'help'
  subcommand - subcommand to execute
  arguments - subcommand parameters

  - **mbus help**
    Print current modbus tcp_port as well as idle_time

  - **mbus mode [MBUS/MODBUS/DISABLED]**
    Sets port mode.
    MBUS - Operates as an M-Bus master polling slave devices.
    MODBUS - Acts as a Modbus slave, providing access to MBUS register data.

  - **mbus add_slaves [SLAVE_ADDR ;/- SLAVE_ADDR, *][]**
    Sets 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: mbus 1 add_slaves 124
    Example: mbus 1 add_slaves 12-124
    Example: mbus 1 add_slaves 12;14;18
    Example: mbus 1 add_slaves 12;14-17;150-200
    Example: mbus 1 add_slaves 12;14-17;150-200, *

  - **mbus availability**
    Lists the actually reachable slaves
    Example: mbus available

  - **mbus show_slaves**
    Show addresses of slaves connected to com_port
    Example: mbus 1 show_slaves

- **mbus baud [RATE]**
  Sets the baudrate to RATE. For a list of acceptable baudrates please refer to manual.
  Example: mbus 1 baud 9600

- **mbus bits [PS]**
  Sets parity to P and stop bits to S. Valid values are:
  P: N, E or O
  S: 1 or 2
  Example: mbus 1 bits N1
  Example: mbus 2 bits O2

- **mbus data**
  Show data at desired address. 'com_number' is an address of MBUS slave
  Example: mbus 4 data

- **mbus period TIME**
  Sets the period of readouts from the slaves to TIME [in seconds].
  A TIME value must be in range:
  1-4294967295
  Example: mbus period 30

- **mbus resp_to TIME**
  Sets the response timeout to TIME [in miliseconds].
  A TIME value must be in range:
  0-65535
  Example: mbus 1 resp_to 30

- **mbus termination [on/off]**
  Enable or disable termination on RS485 port
  Example: mbus 1 termination on

If a subcommand which normally sets a value is not given an argument, it will print the current value.
Example:
#>mbus 2 baud
Set baudrate is 9600

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 dns<num> ADDRESS**
  Set DNS to ADDRESS, disable getting DNS from DHCP if enabled.

  Example:
  ipconfig dns1 192.168.100.1
- **ipconfig default_netif [NETIF_NAME]**
  Sets interface as a default. If interface name is not given,
  displays current default interface.
  Example: default_netif e02

- **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

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.

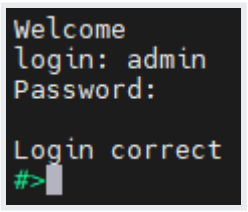
Configuration by the Serial Console

Modbus TCP/RTU Gateways (G20, G30)

Another way to configure the device is via a serial console. In case of the G11 - G13 Modbus gateways an additional USB/UART converter is needed.

Procedure to enter serial console mode

- Turn off the power of the device.
- Connect Ethernet converter to the dedicated USB/UART converter via the microUSB port (for example our C38 converter).
- Connect the USB/UART converter to the PC.
- Open the serial console (default baud rate is 115200 bps).
- Short the FG and GND ports.
- Turn on the power.
- Wait until the ST indicator (orange LED) lights up (it should light up after red light - service mode).
- Open the the FG and GND ports.
- 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

Command	Description
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Command	Description
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net_stat	Print lwIP statistics.
eth_mac	Print or change MAC address.
wifi_mac	Print or change Wi-Fi 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	Print or changes modbus settings.
ping	Check internet connection with the desired host.
defaults	Reset application variables to defaults
restart	Restart the system.
user	Print or change user configuration.
sys_heap_usage	Print current heap usage.
mbus	Print or changes M-Bus ports settings.
wificonf	Wi-Fi interface configuration
exit	Exit console.

Modbus ports configuration commands

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

  - **modbus tcp_port PORT_NUMBER**
    Set modbus port to PORT_NUMBER. A PORT_NUMBER value must be in range: 1-65535
    Example: modbus tcp_port 502

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    Example: modbus tcp_port 502

  - **modbus idle_time TIME**
    Set the timeout when waiting for the client's data [in miliseconds].
    A TIME value must be in range:

0-4294967295
Example: modbus idle_time 50000

- **modbus status**
  Print current modbus tcp_port as well as idle_time.
  Example: modbus status
  A current tcp port is 502.
  A current idle time is 50000 [ms].

M-Bus ports configuration commands

- **mbus {com_number} {subcommand} [arguments]**
  Print or change mbus_ports configuration
  com_number - COM port number, as labeled in device's manual, to which mbus applies. This field is ignored for the subcommands 'period', 'availability' and 'help'
  subcommand - subcommand to execute
  arguments - subcommand parameters

  - **mbus help**
    Print current modbus tcp_port as well as idle_time

  - **mbus mode [MBUS/MODBUS/DISABLED]**
    Sets port mode.
    MBUS - Operates as an M-Bus master polling slave devices.
    MODBUS - Acts as a Modbus slave, providing access to MBUS register data.

  - **mbus add_slaves [SLAVE_ADDR ;/- SLAVE_ADDR, *][]**
    Sets 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: mbus 1 add_slaves 124
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  - **mbus availability**
    Lists the actually reachable slaves
    Example: mbus available

  - **mbus show_slaves**
    Show addresses of slaves connected to com_port
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- **mbus baud [RATE]**
  Sets the baudrate to RATE. For a list of acceptable baudrates please refer to manual.
  Example: mbus 1 baud 9600

- **mbus bits [PS]**
  Sets parity to P and stop bits to S. Valid values are:
  P: N, E or O
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  Example: mbus 1 bits N1
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- **mbus data**
  Show data at desired address. 'com_number' is an address of MBUS slave
  Example: mbus 4 data

- **mbus period TIME**
  Sets the period of readouts from the slaves to TIME [in seconds].
  A TIME value must be in range:
  1-4294967295
  Example: mbus period 30

- **mbus resp_to TIME**
  Sets the response timeout to TIME [in miliseconds].
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  0-65535
  Example: mbus 1 resp_to 30

- **mbus termination [on/off]**
  Enable or disable termination on RS485 port
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Example:
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Set baudrate is 9600

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  Set IP address to ADDRESS.

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  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 dns<num> ADDRESS**
  Set DNS to ADDRESS, disable getting DNS from DHCP if enabled.

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  ipconfig dns1 192.168.100.1
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  Sets interface as a default. If interface name is not given,
  displays current default interface.
  Example: default_netif e02

- **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

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:
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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").

Service mode

Entering the service mode is almost the same as entering the serial console. One different is to open FG and GND ports earlier (when the red LED is still blinking).

Available commands in the service mode:

Command	Description
help	Print the help.
credits	Print current credits value for this device.
dev_ident	Print the device identificator 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.
flash_read	Read bytes from flash memory.
md	Read bytes from memory address.