



USER MANUAL **CSLTools** for desktop & web app



<https://cloudscalelink.com>



<https://www.youtube.com/precizsi>

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1. Description

This manual describes usage of CSLTools software which is simple software for configuration and testing/debugging communication between serial device and third party software eg. ERP, Cloud, TCP server etc..

With CSLTools you can configure interface settings:

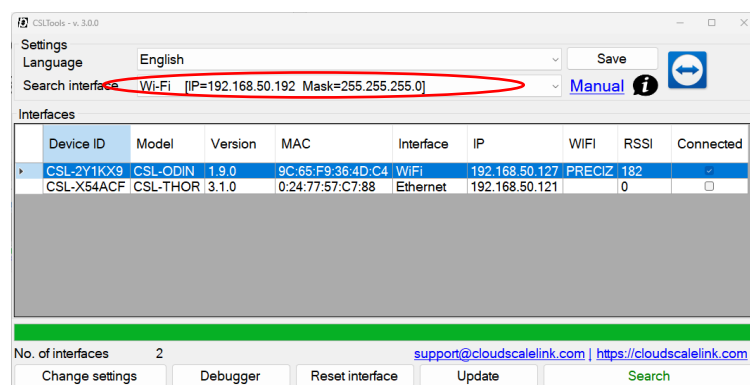
- General settings
- Ethernet settings (only for interfaces with Ethernet)
- WIFI settings (only for interfaces with WIFI)
- TCP server/client settings
- MQTT settings
- Common settings (variables and DNS)
- Serial interface settings
- Modbus settings

2. Search interface

For CSLTools to work we have to first select search interface – this is interface over which CSLTools will try to find all available interfaces.

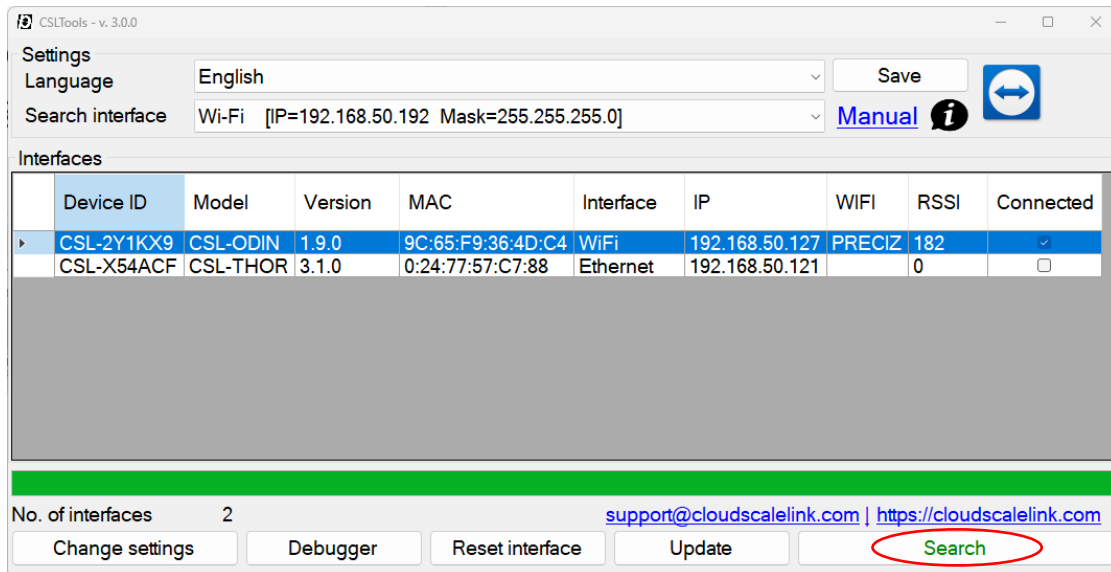
For instance, if you have desktop PC you usually have only one Ethernet card so there will be only one option. If you have a laptop you usually have WIFI and Ethernet interface – but with laptop we usually use WIFI so in that case we have to selected WIFI interface as search interface.

Please note that only working interfaces (this are interfaces with active connection) are shown.

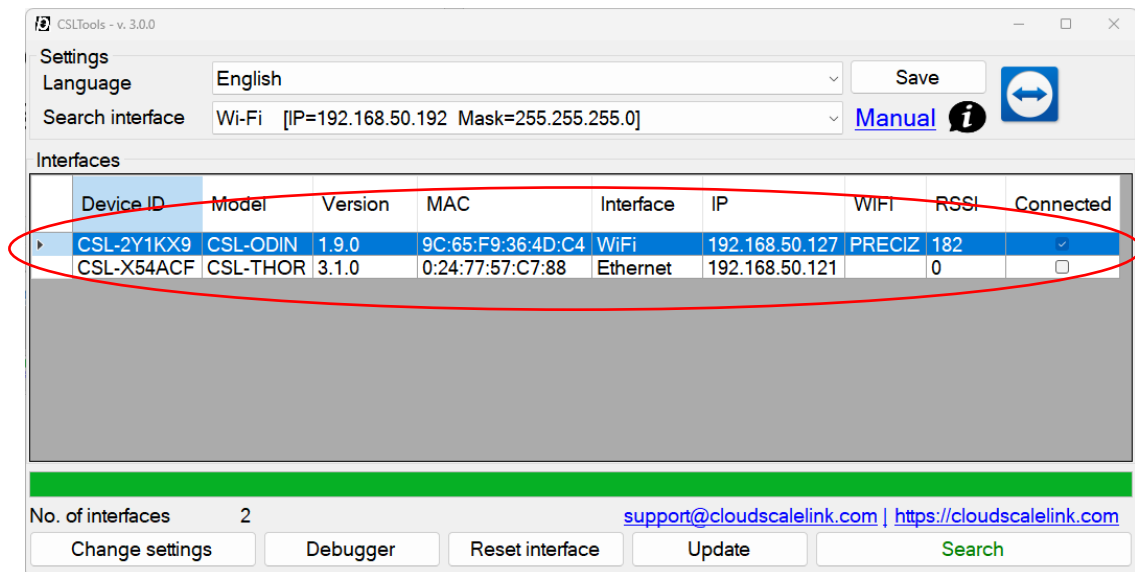


3. Searching for interfaces

After you selected interface on which you wish to perform search you should press Search button.



After that search process will start and progress is shown in a progress bar. All found interfaces are displayed under interfaces:



Where also common data of interface are displayed:

1. Device name
2. Ser. Number of interface
3. Firmware version
4. MAC of interface
5. Interface over which device was found (Ethernet or WIFI)
6. Ethernet IP
7. SSID
8. WIFI IP

9. RSSI – signal strength for WIFI
10. And status, there is active connection on the interface (TCP or MQTT)

4. Configuration

After you see interface which you would like to configure click on it and selected device will be blue. After that you can press Change settings button and new window will open where you can configure dedicated settings.

The screenshot shows a window titled "Interface settings: CSL-2Y1KX9". It has several tabs: General, Cloud, WIFI, Bluetooth, TCP, HTTP, MQTT, Common, Serial interface 1, Serial interface 2, and Modbus. The "General" tab is active. It contains the following fields and controls:

- Interface ID: CSL-2Y1KX9
- Serial no.: 2Y1KX9
- Model: CSL-ODIN
- Firmware: 1.9.0
- MAC: 9C:65:F9:36:4D:C4
- New PIN: ☐
- Retype pin:
- Debug: no (dropdown menu)

At the bottom of the window, there are four buttons: "Initialize interface", "Export settings", "Import settings", and "Firmware update". Below these buttons, there is a "PIN:" label followed by an input field, and two more buttons: "Save settings" and "Reset interface".

4.1. Saving settings

Please note that when saving settings only settings of currently selected tab are saved.

4.2. General settings

In General setting tab we can set the following settings:

- Device ID: name/id of device to easier distinct different devices.
NOTE: that this ID is also used for DHCP where device id will have suffix -E for Ethernet and -W for WIFI.
NOTE: device id is also used in JSON response for HTTP/REST
`{"deviceid":"CSL-THOR","data":""}`
- SERIAL NUMBER: We can set the serial number manually.*
- Model of interface.
- Firmware version

- MAC: the MAC address of interface
NOTE: MAC address is different for every interface so for Ethernet is different than for WIFI interface.
- PIN setting
- Debug – if you want to enable debugging you must set this option to yes and save settings. After saving settings green light on interface will blink – the interface will wait until you connect with debugger to proceed with starting DNS and MQTT service so you will be able to debug also both services. Please follow instruction in chapter 6. Communication and debugging.

4.2.1. PIN protection of interface

By default, all interfaces CSL-THOR (before name PCS-232) since firmware 2.9.0 and CSL-ODIN (since firmware 1.4.0) have factory default PIN. PIN is printed on the label of interface, and it is marked CSL.



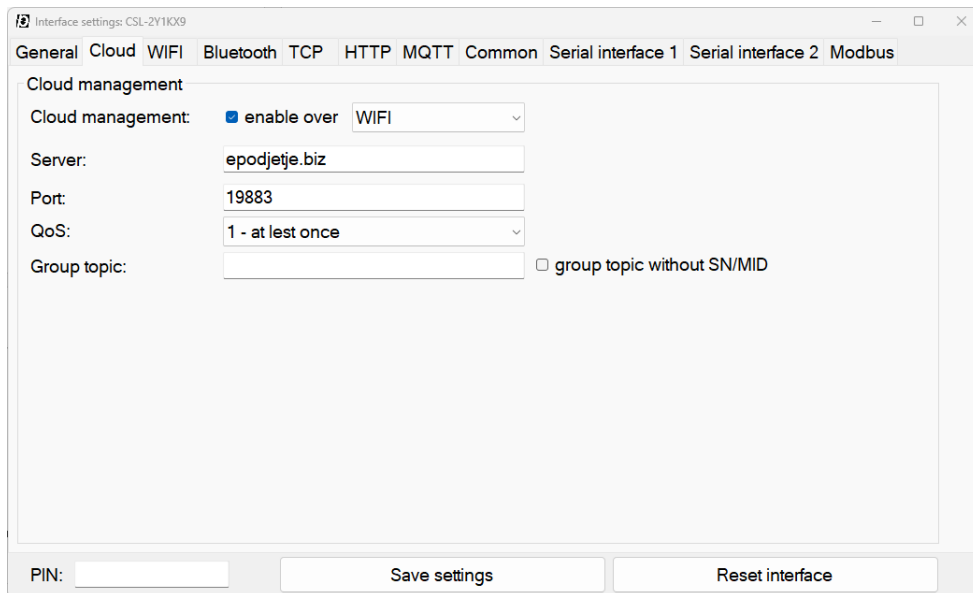
If you want to change PIN, you must check box right to new pin and enter new PIN. In PIN in left corner, you must enter current PIN in order to change settings.

You can always view all interface settings, but you cannot change settings, if PIN is set and not entering correct PIN.

If you initialize interface (factory reset) PIN will be reset to factory PIN.

4.2.2. Cloud management

Cloud management is enabled by default.



When you want to use cloud management of your module you must enable it and select interface over which cloud management will be connecting to cloud server.

Since we have multiple servers, you have possibility to change server and port to which module will connect to.

By default, this server is: `cslc.scale-monitor.com` and port is: 19883.

4.2.2.1. Group topic

If you want to communicate with multiple modules, you should enter group topic name. If you do not want MID in topic then check group topic without SN/MID.

Group topic is further explained in our CSL API documentation.

4.2.3. Cloud Management Platform - CMP

If you register at <https://register.scale-monitor.com> you will be able to manage and monitor all your modules via cloud management platform.

CMP gives you same possibilities as CSLTools directly from your browser where you can monitor all your interfaces that have enabled Cloud management and are connected to internet from anywhere in the world via any device you want.

CMP gives you possibility to see connection status, you can see WIFI signal strength, you can test connectivity, you can blink lights on your module to identify module in case you multiple modules nearby, you can remotely reboot your module and change all settings like IP, WIFI connection etc. and you can even debug your communications remotely.

MID: [REDACTED] CSL: [REDACTED] M: CSL-THOR V: 3.1.0 IP: [REDACTED]

General

Wi-Fi

Ethernet

TCP

Serial interface

MQTT

HTTP

Common

Modbus

Cloud scale link

Other

Version:

3.1.0

Device name:

[REDACTED]

Device model:

CSL-THOR

New PIN: ☐

PIN:

Save

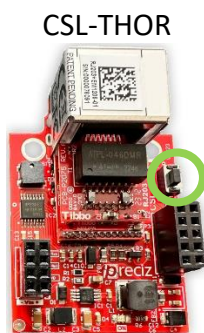
Save and reboot

Reboot

Factory reset

4.2.4. Factory reset – initialization of default settings

In general, we can also initialize settings to factory default by pressing button Initialize interface or by pressing button on module for more than five seconds.



4.2.5. Import/export settings

Via CSLTools program you can export and import configuration settings.

If you want to save your settings, you just click on Export save settings button in General tab and save dialog will open where you can specify file name and path where to store it.

NOTE: All settings except WIFI and MQTT password are saved.

If you want to import settings click on Import button and open file dialog will open. Select XML file from which you would like to import settings.

NOTE: Settings are not automatically sent to interface. To save settings on interface you must click on button Save settings in every tab you want to save settings to interface.

4.2.6. Reboot – reset of interface

Interface can be rebooted via app by pressing button reset interface.

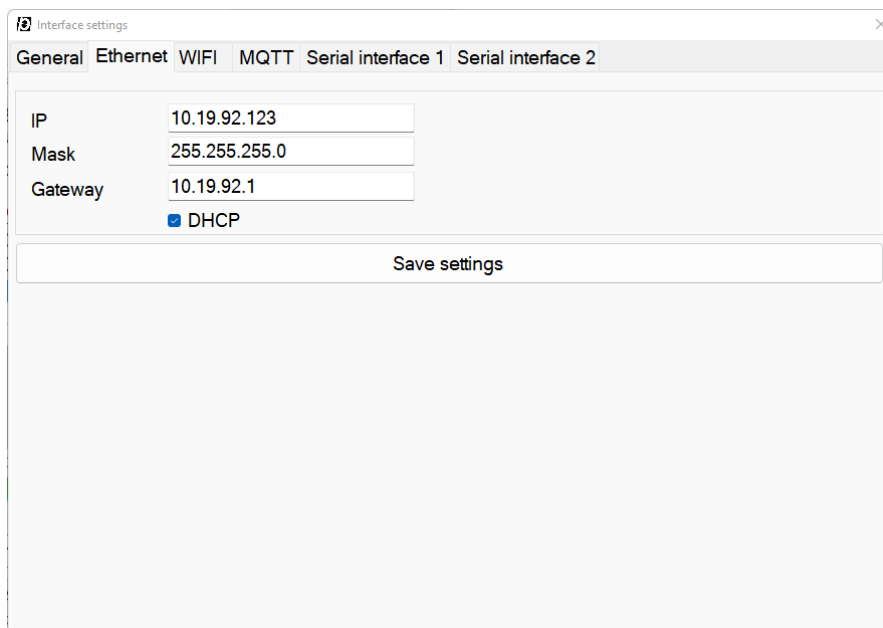
4.3. Ethernet configuration

Under the Ethernet tab we can set:

- IP address,
- Mask
- Gateway

or we can enable DHCP.

To apply changes, you must click on Save settings button. Interface will be automatically rebooted.



The screenshot shows a window titled 'Interface settings' with a close button in the top right corner. It has several tabs: 'General', 'Ethernet' (which is selected), 'WIFI', 'MQTT', 'Serial interface 1', and 'Serial interface 2'. Under the 'Ethernet' tab, there are three input fields: 'IP' with the value '10.19.92.123', 'Mask' with the value '255.255.255.0', and 'Gateway' with the value '10.19.92.1'. Below these fields is a checkbox labeled 'DHCP' which is checked. At the bottom of the dialog is a button labeled 'Save settings'.

4.4. WIFI configuration

Under the WIFI tab we can set static or dynamic IP:

- IP address
- Mask
- Gateway

or we can enable DHCP for dynamic IP.

For WIFI we must enter:

- SSID
- Select encryption type, if WIFI is not OPEN
- Enter key/password

To apply changes, you must click on Save settings button. Interface will be automatically rebooted.

Interface settings: CSL-2Y1KX9

General Cloud **WIFI** Bluetooth TCP HTTP MQTT Common Serial interface 1 Serial interface 2 Modbus

WLAN settings

WIFI name:

WIFI password: ☐

Enable DHCP:

IP:

Mask:

Gateway:

Encryption type:

TX power: range 4~15

WIFI band:

Quick connect: ☒ Yes

PIN:

NOTE: if WIFI name is left blank the WIFI will not be enabled.

NOTE: if you want to change password you have to check checkbox before input field.

4.4.1. WIFI encryptions

You can choose between four types of encryption:

1. Open – encryption disabled
2. WEP64
3. WEP128
4. WPA – tkip algorithm
5. WPA2 – aes algorithm

We strongly advise to use WPA2 encryption.

In case you use WEP64 you must enter passphrase in hexadecimal format which must be 10 characters long.

In case you use WEP128 you must enter passphrase in hexadecimal format which must be 26 characters long.

Please note that WEP64/128 encryption will only work with one static key (not dynamic where keys are changed).

4.5. TCP configuration

Under the TCP tab we can configure TCP settings. First, we have to define TCP type of connection.

Interface can present itself as server (programs establish connection with interface) or as client – interface establish TCP connection with program.

The screenshot shows the 'Interface settings' window with the 'TCP' tab selected. The 'TCP settings' section has 'TCP connection type' set to 'server'. The 'String no connection' field is empty. The 'Redirection' checkbox is unchecked. The 'Server configuration' section shows 'Communication port' as 10010 and 'Debugger port' as 10011, both with 'TCP' as the protocol. The 'Client configuration' section has 'Server IP to connect' and 'Server port to connect' (with 'TCP' as the protocol) both empty. A 'Save settings' button is at the bottom.

4.5.1. TCP mode (server or client)

For server mode we must specify TCP port on which interface will be listening – by default this is 10010.

If we want that interface establish TCP connection, we have to first select type of connection which can be client (Ethernet) or client (WIFI) – if we select client (Ethernet) connection will be established over Ethernet interface or if we selected client (WIFI) connection will be established over WIFI interface.

In client mode we have to enter IP and TCP port to which interface will connect.

Interface also monitors connection so, if connection is lost for instance WIFI signal is lost or server is down – interface will automatically try to reconnect until connection is established again.

4.5.2. TCP bridge to MQTT

In case you want to redirect TCP connection you can enable on some interfaces TCP bridge to MQTT. In that case all data received on TCP port (server or client) will be send to MQTT.

This is very useful for instance, if you want to connect your label printer like Zebra directly to MQTT broker.

TCP to MQTT bridge is further explained in our CSL API documentation.

4.5.3. String no connection

Interface is monitoring connection status over TCP and MQTT. In case connection is lost it will send over serial interface string to device so device will be notified that connection was lost.

4.5.4. Redirection TCP/serial

We can enable redirection which is meant to directly pass data received on socket to serial interface and data received on serial interface to socket. This is useful for heavy duty applications to reduce time for processing data.

By default, this option is disabled. If you enable this option debugger mode where you can monitor traffic between serial interface and socket will not work as CPU does not process data.

When you enable MQTT this option is automatically disabled in interface because MQTT does not support redirection.

4.6. Bluetooth

For interfaces which support Bluetooth one can set Bluetooth debugging to debug over Bluetooth or to use Bluetooth for communication instead of Ethernet or WIFI.

Interface settings: PCW-232-2

General WIFI **Bluetooth** TCP HTTP MQTT Common Serial interface 1 Serial interface 2

Bluetooth settings

Bluetooth debug no

Bluetooth redirect to serial yes

String terminator CRLF

Save settings Reset interface

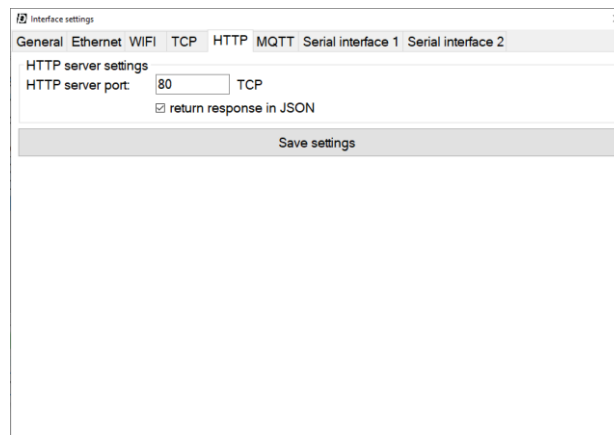
Note: Bluetooth can be used also for configuration of interface.

If your module has Bluetooth you can use also Bluetooth to configure your module by visiting <https://apps.scale-monitor.com/>

4.7. HTTP configuration

Under HTTP tab we can configure HTTP server port and response format where you can set that response will be changed to JSON format.

In case you set response to be in JSON format the format will be:
`{"deviceid":"your_device_id_set_in_genral_tab", "data":"response"}`



4.8. MQTT configuration

Under the MQTT tab we can configure interface to connect to MQTT server/broker.

First, we must select interface over which connection should be performed this can be Ethernet or WIFI.

Then we must enter:

- MQTT broker/server IP/host/url
- TCP port
- Client ID
- Topic
- QoS – quality of service
- Retain message – if checked broker will get instruction to retain messages.
- If you want to receive messages on topic, you have to check checkbox subscribe to topic.
- If you want that interface encapsulate returned string into JSON format you must check checkbox return response in JSON – returned response will be: `{"deviceid":"your_device_id", "data":"response"}`
- Keep alive – set period (seconds) when to client should send keep alive message.
- Last will topic and message – when client disconnects or lose connection broker will publish his last will message on set topic.
- Message on connect – if you enter message client will publish this message on last will topic when connection with broker will be established.
- If broker/server you are connecting to require authentication you have to enter also username and password.

4.9. Common (variables and DNS)

In tab common you can set specific DNS – if you enter under MQTT server url interface detects automatically that it needs to resolve it to IP therefore DNS specified will be used. If not, DNS is specified and URL is entered interface uses Google DNS 8.8.8.8 to resolve IP.

If you need to send additional data with string you can use variables. There are three variables available where you can specify key and value.

NOTE: maximum length of key is 24 characters and maximum length of value is 48 characters.

If key is specified than variable is automatically included in JSON response.

NOTE: you must check return response in JSON in MQTT or HTTP tab so data from RS-232 device are automatically converted into JSON.

Example:

Returned response in JSON:

```
{
  "deviceid": "Mettler Toledo SICS",
```

```
"data": "SIX1 S 2 N N R 0 0 1 M 1.0996 1.0200 0.0794 kg",  
"deviceUUID": "13a33eec-cec4-11ed-afa1-0242ac120002",  
"msgPath": "preciz/test",  
"originID": "pcs-232"  
}
```

NOTE: maximum length of JSON response is 256 characters.

4.10. Serial interface configuration

Under the serial interface tab, we can configure the following serial interface settings:

- Baud rate
- Data bits
- Parity
- String terminator

String terminator is used to determine end of data so it can correctly show data in debugger mode. Usually, serial device has string terminator set to CR (carriage return) and LF (line feed) which is also default value. In case your device uses different terminator, you can insert ASCII character in decimal form for instance for ETX – which is ASCII 3 you should enter 3.

Interface settings: CSL-2Y1KX9

General Cloud WIFI Bluetooth TCP HTTP MQTT Common Serial interface 1 Serial interface 2 Modbus

Serial interface

Baud rate: 9600

Data bits: 8

Parity: none

String terminator: CRLF ASCII:

PIN:

Save settings Reset interface

4.11. ModBus

Some interfaces support ModBus communication. If you set ModBus mode to RTU than you can communicate via TCP/IP or MQTT with ModBus device.

Please note that string you send to device must be in HEX format and must include string terminator. When you send command to ModBus device you do not have to calculate CRC checksum also interface does automatically check, if response checksum is valid, if not you will not get any response.

Example of command to be sent to device:

01030000000A

Byte	Value	Description
1	01	Modbuse device address
2	03	Modbus function
3	00	Starting register MSB
4	00	Starting register LSB
5	00	No. of registers MSB
6	0A	No. of registers LSB

In above example we send command to ModBus device with address 1, we execute function 03 to read holding register AO from register 40001 and we want 10 registers (#0A).

Response will be like this:

0103140000202B0000202B0004030F0000000000000000

5. Default settings

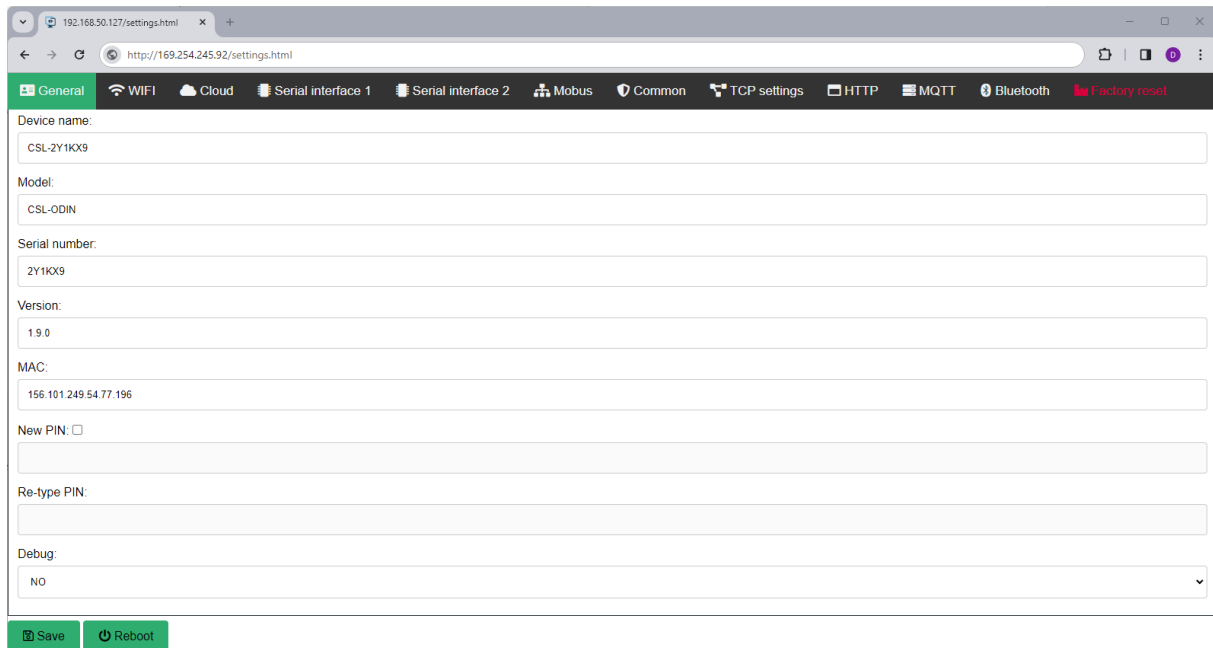
5.1. Ethernet interface default settings

Ethernet IP:	169.254.245.92
Subnet:	255.255.0.0
DHCP:	Enabled
TCP Server port:	10010
TCP Debugger port:	10011
DNS	1.1.1.1
Redirection:	disabled
Baudrate:	9600
Databits:	8
Parity:	None
String terminator:	CRLF (ASCII 13 and 10)

By default, Ethernet interface has IP: **169.254.245.92** which is APIPA – automatic private IP addressing.

You can configure interface also via web browser by visiting:

<http://169.254.245.92/settings.html>



The screenshot shows a web browser window with the address bar displaying `http://169.254.245.92/settings.html`. The page has a dark navigation bar with tabs: General, WIFI, Cloud, Serial interface 1, Serial interface 2, Mobus, Common, TCP settings, HTTP, MQTT, Bluetooth, and Factory reset. The 'General' tab is active. Below the navigation bar, there are several input fields for device configuration:

- Device name: CSL-ZY1KX9
- Model: CSL-ODIN
- Serial number: ZY1KX9
- Version: 1.9.0
- MAC: 156.101.249.54.77.196
- New PIN:
- Re-type PIN:
- Debug: NO (dropdown menu)

At the bottom of the form, there are two buttons: 'Save' and 'Reboot'.

5.2. WIFI interface default settings

WIFI IP:	169.254.245.192
Subnet:	255.255.0.0
DHCP:	Enabled
TCP Server port:	10010
TCP Debugger port:	10011
DNS	1.1.1.1
Redirection:	disabled
Baudrate:	9600
Databits:	8
Parity:	None
String terminator:	CRLF (ASCII 13 and 10)

You can configure interface also via web browser by visiting:

<http://169.254.245.192/settings.html> if you connected over WIFI.

NOTE:

You can also connect interface directly to computer via Ethernet cable. In CSLTools you select ethernet interface to which you connected, and press Save and after that Search button which is the easiest and fastest method.

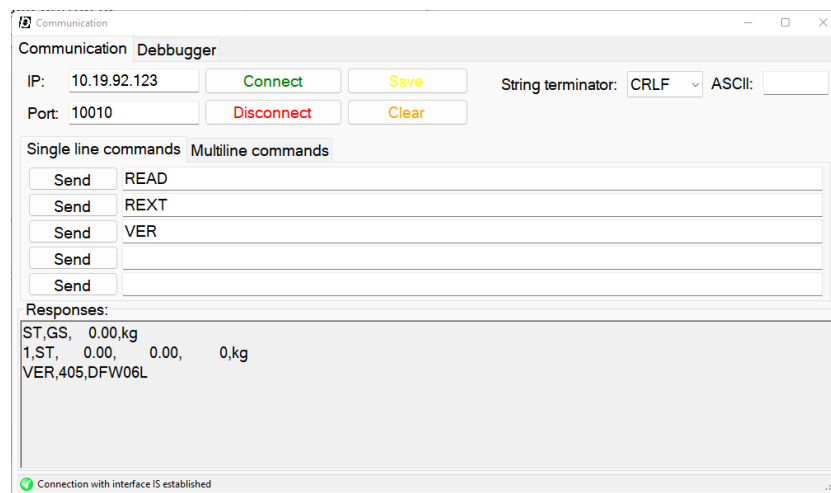
6. Communication and debugging

6.1. Communication

Communication/debugging is used to quickly test, if interface is working – you just select interface and click Debugger button. After that new window is opened where you have two tabs:

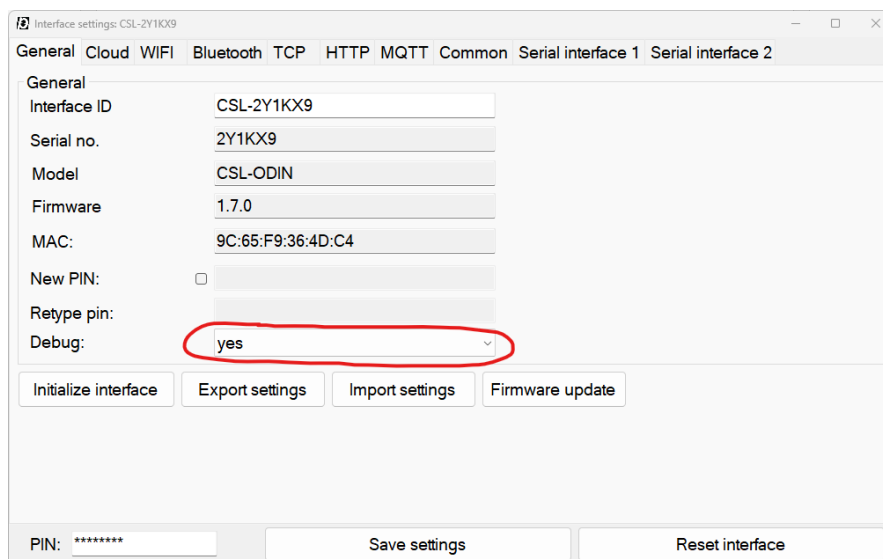
- Communication – it is used to test and simulate commands.
- Debugger – it is used to monitor traffic between interface/device and program – please see chapter 6.2.

If you wish to send command, you first press Connect (status of connection is shown in bottom left corner). After connection is established, you can put into textbox command and press Send button or press Enter. Responses are shown in response field. If device is continuously sending data, they will be immediately shown in responses field after connection is established.



6.2. How to debug

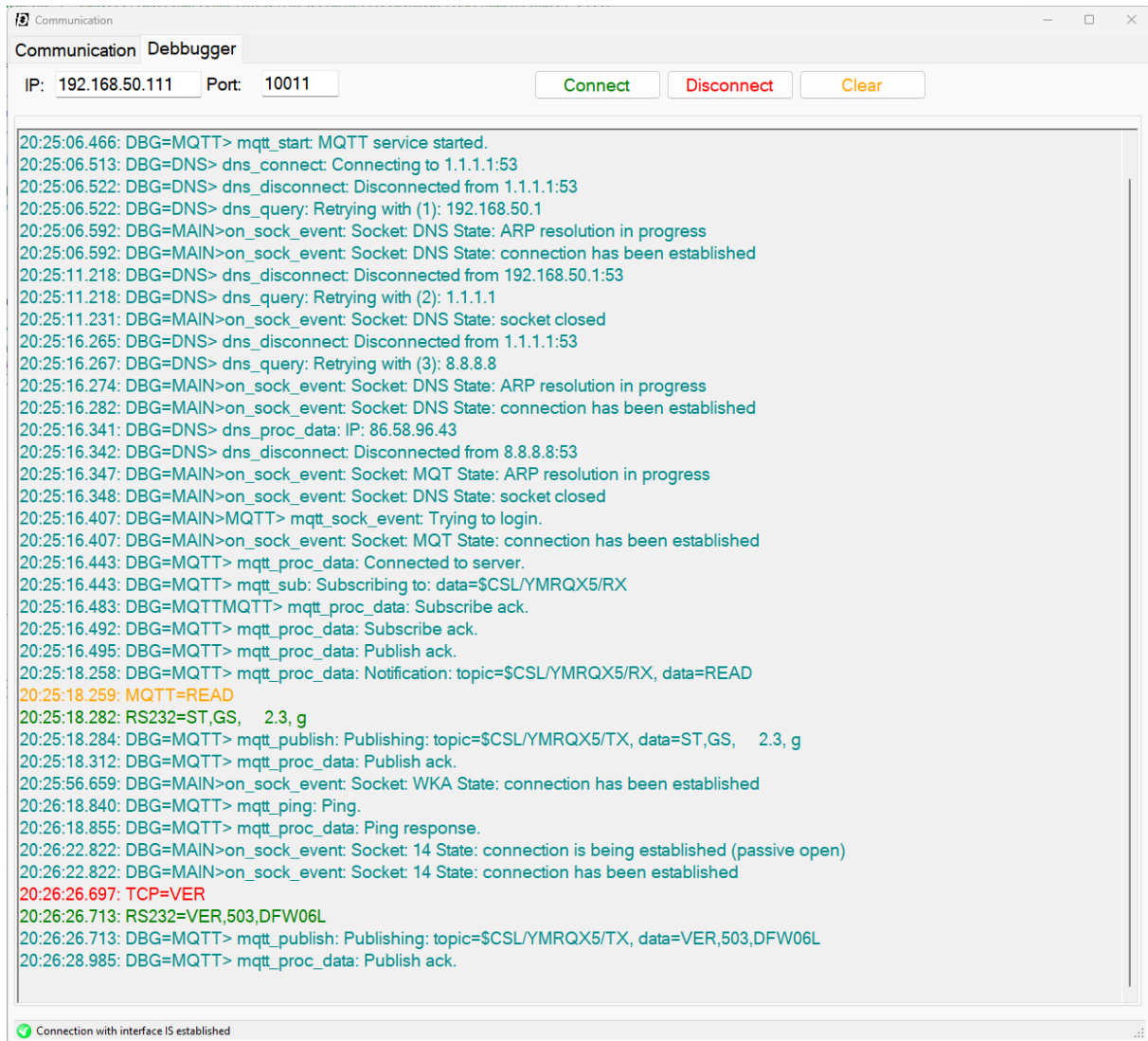
If you wish to monitor traffic you must first enable debugging in module settings:



After you saved settings, you must reboot module. When module is rebooted, it will wait that you establish connection with debugger and after that it will proceed with starting services as DNS and MQTT so you will be able to see information and status from these services too.

You will see which data was send and over which socket was it send.

RS232 is the response from the device while all other data TCP, HTTP and MQTT are received string to interface.



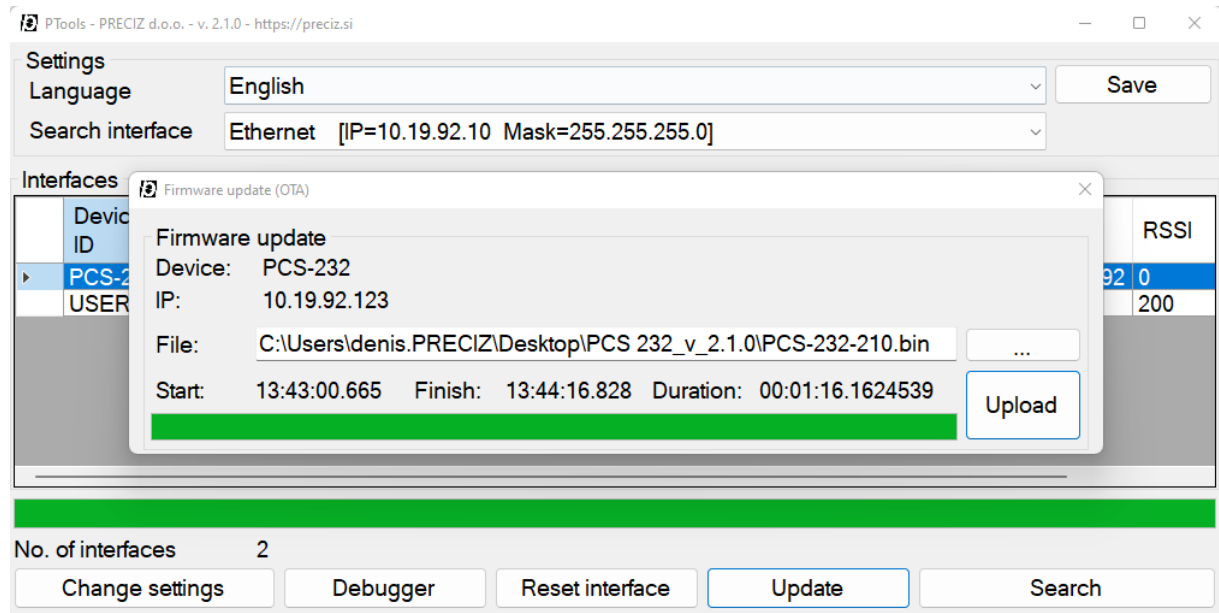
NOTE: if you wish to use debugger – redirection must be disabled otherwise connection is refused.

NOTE: debugging must be set to yes in general settings tab otherwise connection is refused.

7. Firmware update (OTA-Over The Air)

You can update firmware by selecting interface and after that pressing button update. You have to select file with new firmware and after that press upload button to start process.

After update process is finished you will get message with information if process was finished successfully or not. If process failed (eg. WIFI signal lost) you can restart process.



8. Troubleshooting

8.1. Interface not found in CSLTools

If you cannot find interface with CSLTools there can be several reasons:

1. If you are not in same network (subnet) than UDP broadcast is probably disabled. In this case, please connect interface into same network so that interface and computer are in the same LAN.
2. If you are connected directly to Ethernet interface via PC and your DHCP is enabled than you will not be able to find interface as DHCP disables UDP broadcast. In this case you have two options – first is to wait around 60 seconds and then you will hear four beeps – this means DHCP service has been stopped and now you will be able to find interface with CSLTools. Second option is that you disconnect interface from power and connect it back with Ethernet cable unplugged from PC. After you hear two beeps you can plug in cable, and you will be able to find interface.
3. Firewall is blocking communication – in that case either allow UDP port 3108 or disable firewall.