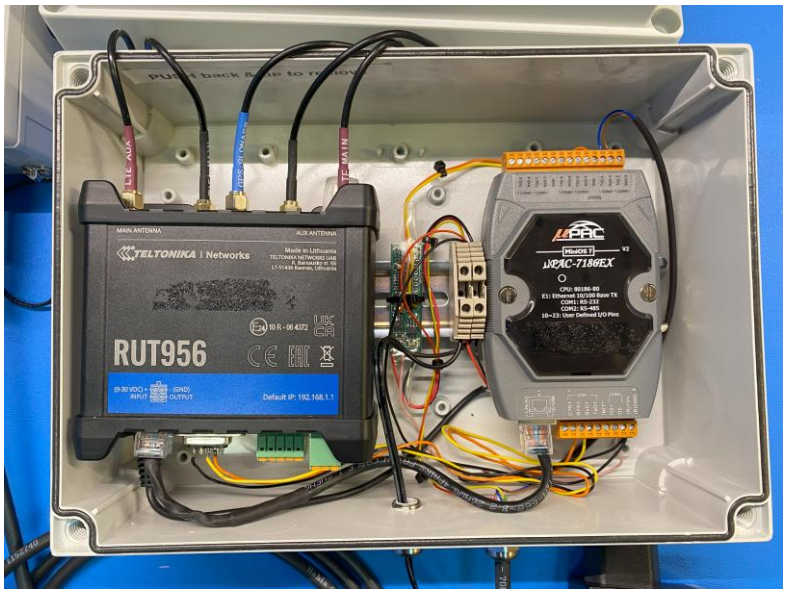
Communication Unit
CU801_WEB_server
Based on version 9.10 ex.

The CU801 Communication unit is designed for continuous data acquisition from SAIV products, including the TD30x and SD20x series, as well as additional units such as the Airmar weather station, Aanderaa current meter, and oxygen sensor.





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Contents:

Contents: 2
Getting started: 3
About CU801_WEB Server: 4
Specifications: 5
Unit 1: SD204/SD208/TD301 6
Unit 2: CU801_webserver 7
- CTD/TD Data: 8
- External and Internal FTP setup: 10
  - Internal FTP: 11
- Interval: 11
- Time and Date 12
  - Set time: 12
- Station name: 12
- Enable disable units/sensors: 13
- Change IP address on Cu801: 13
- Toggle instrument off and on: 13
- Number of Lines: 14
- Direct communication with the Instrument (TCP client): 15
  - To open connection: 15
  - Hidden menu: 15
  - Screen shot Minisd200w: 15
- Debug: 16
- Direct data collect with Minisoft sd200w: 17

Unit 3: GPRS/LTE router. (RUT956) 19
- Getting access to the system remotely. 20

Sizes of boxes: 21

Getting started:

System Startup Guide – Checklist and Quick Info
In most cases, no changes to the default settings are necessary to get the system up and running. Follow these steps for a smooth setup:

1. **Power Supply**
    - If the system is not delivered with power (battery or adapter), supply it with DC power between 10-30V.
    - Total continuous power consumption is approximately 2.5-3 watts.
2. **Network SIM Card Installation**
    - If the SIM card was not pre-installed by the manufacturer, obtain a SIM card from a local provider.
    - Insert the SIM card into **Slot 1**. Ensure the SIM card has the **PIN code deactivated**.
    - The APN settings are typically set to **AUTO**, as most SIM cards carry this information.
    - Once the SIM card is inserted, the system should operate without further configuration.
3. **External FTP Data Transmission**
    - Data transmission to an external FTP server is enabled by default.
    - To access data, use an FTP client with the following details:
        - **URL:** station.saivas.net
        - **Username:** (as labeled on the controller)
        - **Password:** (same as router password)
    - For instructions on changing these settings, refer to the "FTP Settings" section.
4. **Internal FTP Data Storage**
    - Internal FTP storage is also enabled by default.
    - A **32 GB USB memory stick** is included for local data storage.
    - To access internal data, use an FTP client with the following details:
        - **URL:** 192.168.1.1
        - **Username:** admin
        - **Password:** (as labeled on the router)
    - **Note:** The "Version 906-up ex" only sends data to the **CTD** folder. The full path is /root/usb/ctd and cannot be modified. The RDCP and Sonar units do not currently support internal FTP storage.
5. **Power On and Access**
    - Turn on the power and swipe the **Mag-Key** over the start/confirm label on the instrument.
    - Access the system's index page via **192.168.1.2** in your web browser, where all relevant links will be available.

About CU801_WEB Server:

The CU801_WEB server is designed for displaying measurement data on a web page and transmitting data to both local and remote FTP servers. It works with measurements from the SD204/208 and TD30xx stations provided by SAIV AS. Additionally, it can integrate with external sensors, including:

- **AADI current meter**
- **AADI oxygen sensor**
- **AIRMAR weather station** (measuring air pressure, wind speed and direction, temperature, and GPS position)

Internet Access Requirements:
To access the CU801_WEB server from the World Wide Web (WWW), it must be connected to a network router. The router can be:

- A **GPRS/LTE router** for areas without cable internet.
- An **ADSL/cable router** for wired internet access.

The GSM/GPRS/LTE network offers global coverage, though there are limitations. Coverage may be limited in remote regions such as:

- Areas far from the coastline (typically beyond 5-10 km)
- High mountains and other unpopulated areas

Coverage can typically be verified through online coverage maps.

Power Requirements:
The CU801_WEB server requires a continuous power supply, consuming approximately **1.5-2 watts**.

- A **replaceable built-in backup battery** maintains the real-time clock during power loss.
- If the external power supply is interrupted, the real-time clock will need to be reset once the backup battery is replaced or recharged.
- The **programmed setup** will remain intact, even if the backup battery is removed or depleted.

Configuration:
The CU801_WEB server can be configured via a web-based interface. Available settings include:

- Station name
- Time and date
- Start/stop control for connected instruments

Network Settings:
The CU801_WEB server uses **TCP/IP (Transport Control Protocol/Internet Protocol)** with the following default settings:

- **IP Address:** 192.168.1.2
- **Gateway:** 192.168.1.1
- **Subnet Mask:** 255.255.255.0

It can be accessed from any browser within a LAN network without requiring a router. A hub, switch, or crossover cable is sufficient. Ensure your computer's IP address is within the same range (e.g., **192.168.1.3**).

- To access the server, enter: **192.168.1.2/data.htm** in your browser’s address bar.

Specifications:

Dimensions: CU 801_WEB
Length 111mm. Wide 72 mm Height 33 mm

Weight: 130g

Power: 10-30 VDC 1,5 – 2 Watt

Data I/O: 6 - RS232_
100 BASE-T Ethernet.

CPU: 16 bit, 80 MHz,
Boot time 1 sec.



Model: µPAC-7186EX-FD

The standard system has three units that have to work together.

Unit1(Instrument)	Unit2(Controller)	Unit3(router)
SD204/208/TD301	CU801_WEB	GPRS/LTE - network.

Unit 1: SD204/SD208/TD301

Instrument Configuration Before Connecting to the CU801_WEB Server

Before connecting your instrument to the CU801_WEB server, ensure the **interval** and **baud rate** are correctly configured to avoid communication issues.

Interval Settings:
- Set the **interval** to **10 seconds or longer**.
- Shorter intervals will not allow sufficient time for the controller to send data via FTP, leading to frequent access interruptions and slower performance.

Data Handling and Storage:
- The web server uses a **FIFO** (First In, First Out) system.
- A maximum of **48 data lines** can be stored before overwriting begins.
- If **FTP** is enabled, the server will attempt to send data before overwriting existing records.
- For example: With a **1-hour interval**, data will be retained for approximately **2 days** before being overwritten on the web page.
- The number of data lines can be adjusted between **3 and 48 lines**.

RS232 Communication Settings:
- The **default baud rate** is **9600**.
- Configuration: **7 data bits, 1 stop bit, even parity.**
- The baud rate can be adjusted as needed.

Instrument Setup Tools:
- Refer to the instrument's **operation manual** for guidance.
- Use the **SD200W Mini-Soft** program for configuration.
- The latest version of **SD200W** and the **manual** can be downloaded from: http://saiv.no.

Unit 2: CU801_webserver

CU801_WEB Server Access – No Critical Adjustments Needed

The CU801_WEB server is pre-configured to function with its default settings, and no critical adjustments are required for standard operation.

Accessing the CU801_WEB Server:
You can connect to the CU801_WEB server using either **Wi-Fi** or a **network cable**.

Wi-Fi Connection:

1. Locate the **station number** labeled on the controller in your device's available Wi-Fi networks list.
2. Select the corresponding network and log in using the **password** found on the router's label (same as the router password).

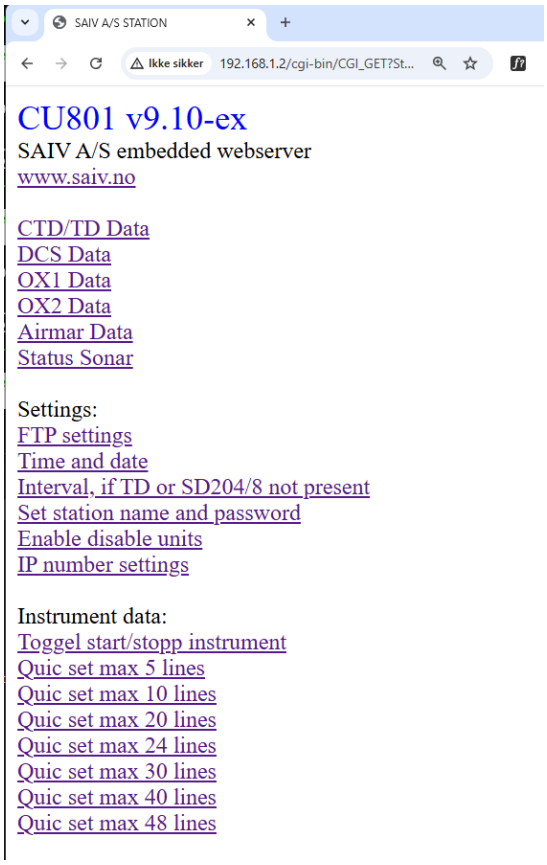
Network Cable Connection:

- Simply connect the CU801_WEB server directly to your device using a network cable.

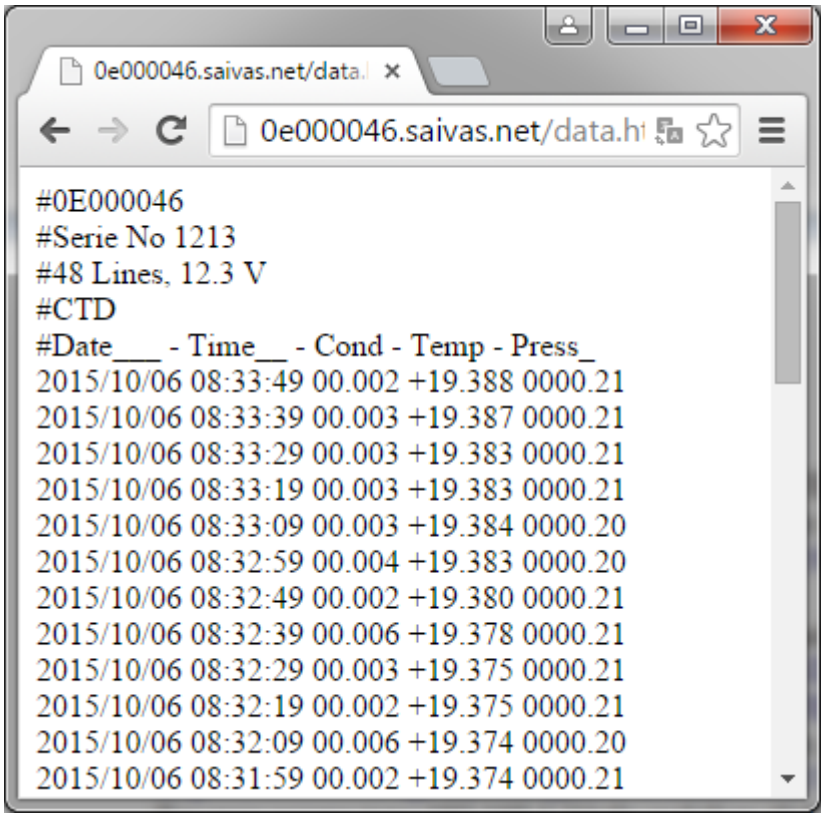
Accessing the Web Interface:

- Open any web browser.
- Enter **192.168.1.2** in the browser's address bar.

You're now connected to the CU801_WEB internal index page for further monitoring and configuration if necessary.


SAIV A/S STATION
Ikke sikker
192.168.1.2/cgi-bin/CGI_GET?St...
CU801 v9.10-ex
SAIV A/S embedded webserver
www.saiv.no
CTD/TD Data
DCS Data
OX1 Data
OX2 Data
Airmar Data
Status Sonar
Settings:
FTP settings
Time and date
Interval, if TD or SD204/8 not present
Set station name and password
Enable disable units
IP number settings
Instrument data:
Toggel start/stopp instrument
Quic set max 5 lines
Quic set max 10 lines
Quic set max 20 lines
Quic set max 24 lines
Quic set max 30 lines
Quic set max 40 lines
Quic set max 48 lines

CTD/TD Data:

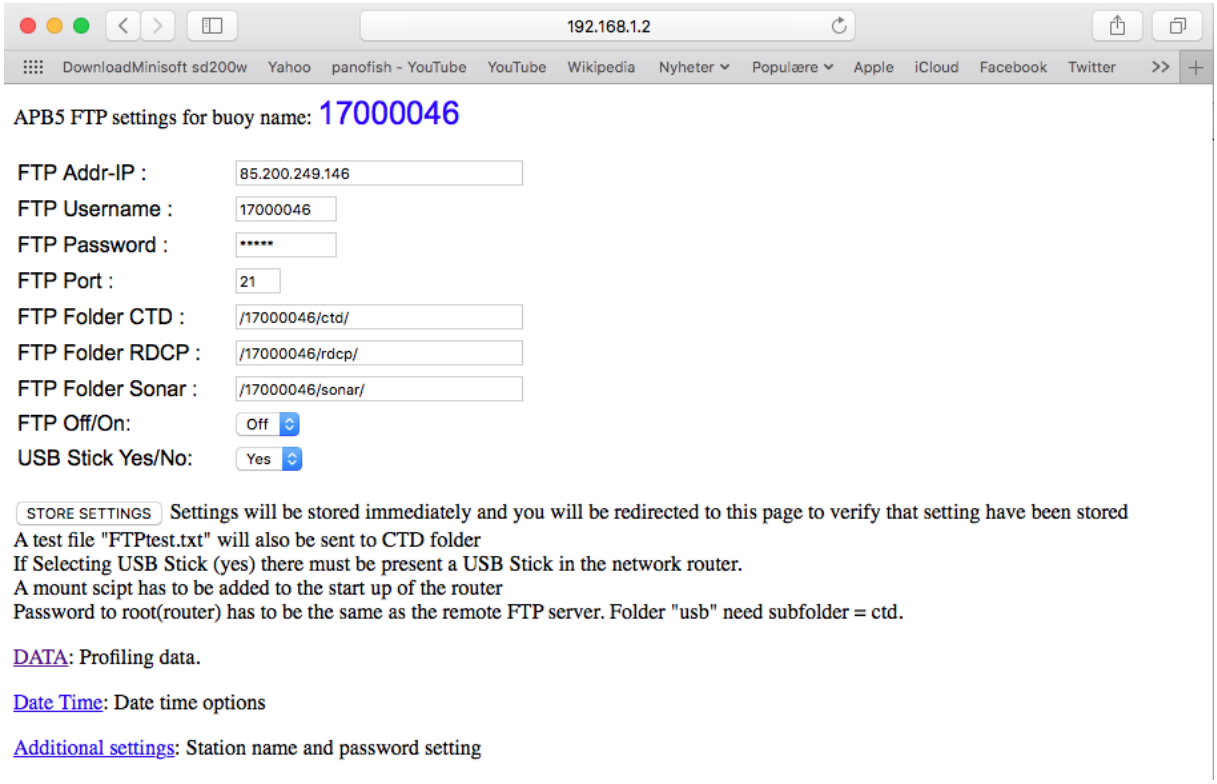

0e000046.saivas.net/data.
0e000046.saivas.net/data.ht
#0E000046
#Serie No 1213
#48 Lines, 12.3 V
#CTD
#Date___ - Time__ - Cond - Temp - Press_
2015/10/06 08:33:49 00.002 +19.388 0000.21
2015/10/06 08:33:39 00.003 +19.387 0000.21
2015/10/06 08:33:29 00.003 +19.383 0000.21
2015/10/06 08:33:19 00.003 +19.383 0000.21
2015/10/06 08:33:09 00.003 +19.384 0000.20
2015/10/06 08:32:59 00.004 +19.383 0000.20
2015/10/06 08:32:49 00.002 +19.380 0000.21
2015/10/06 08:32:39 00.006 +19.378 0000.21
2015/10/06 08:32:29 00.003 +19.375 0000.21
2015/10/06 08:32:19 00.002 +19.375 0000.21
2015/10/06 08:32:09 00.006 +19.374 0000.20
2015/10/06 08:31:59 00.002 +19.374 0000.21

The following outlines the structure of data lines displayed on the CU801_WEB server:

Line 1 – Station Name:
  - Displays the name of the station for easy identification.
- **Line 2 – Serial Number:**
  - Shows the serial number of the connected instrument for traceability.
- **Line 3 – Data Storage and Overwrite Management:**
  - Specifies the number of data lines stored before overwriting occurs (**FIFO – First In, First Out**).
  - If **FTP** is enabled, data is sent each time the specified number of lines is reached, with a one-line overlap before the count resets.
  - **System voltage** is also displayed on this line, which is especially relevant when using battery power or solar cells.
- **Line 4 – CTD Setup Information:**
  - Provides details about the configuration of the **CTD sensor** (Conductivity, Temperature, and Depth).
- **Line 5 – Data Header:**
  - Displays the header information for the data columns recorded.

This structure applies consistently to all additional connected sensors.

External and Internal FTP setup:
FTP = File Transport Layer on the TCP/IP network
Click link from index or use address
http://192.168.1.2/cgi-bin/CGI_GET?APFTP=
or “192.168.1.2/cuf”



- The **FTP server** must be addressed using a **direct IP address**, not a DNS name.
- An **FTP folder** is only required for the sensors that are enabled.
- By default, data is sent to **Station.saivas.net**, a free server provided by SAIV A/S.
- Data is transmitted once the specified number of data lines is reached, with a **one-line overlap** before the count resets.
- When **"Store Settings"** is clicked, the CU801 will send a test file to the **CTD** folder on the FTP server. Internet access through the connected router is required for the test file to be sent successfully.
- FTP On/Off toggles data transmission to the FTP server.

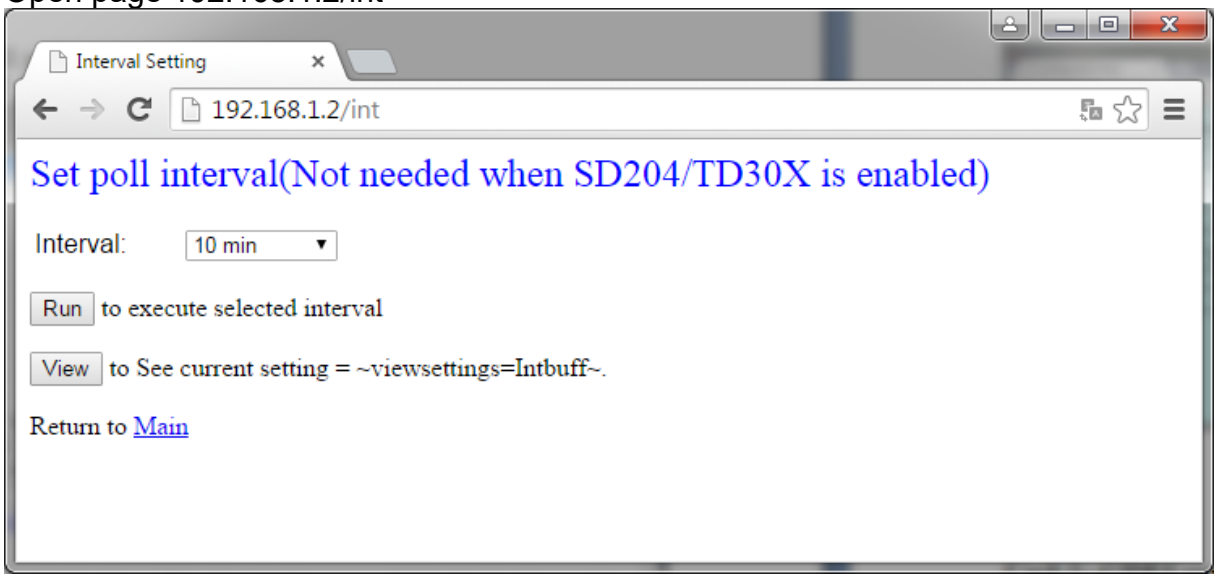
Internal FTP:
The **Internal FTP server** must be installed on the router. By default, a **32 GB USB flash drive** is included with version **906 and above**, and all necessary settings are pre-configured by the manufacturer.

A **VSFTPD server** and a **mount script** are added to the startup sequence. A third-party **VSFTPD** program is installed via the **CLI** terminal. The CLI is accessible from the router's web page—refer to the **RUT956** manual for guidance.
If the router firmware is updated, the FTP server setup must be reinstalled using the following commands:
opkg update --force_feeds /etc/opkg/openwrt/distfeeds.conf
opkg install vsftpd --force_feeds /etc/opkg/openwrt/distfeeds.conf

Note: As of **January 1, 2025**, the latest firmware supporting **VSFTPD** is **RUT9M_R_00.07.06.10 (April 4, 2024)**.

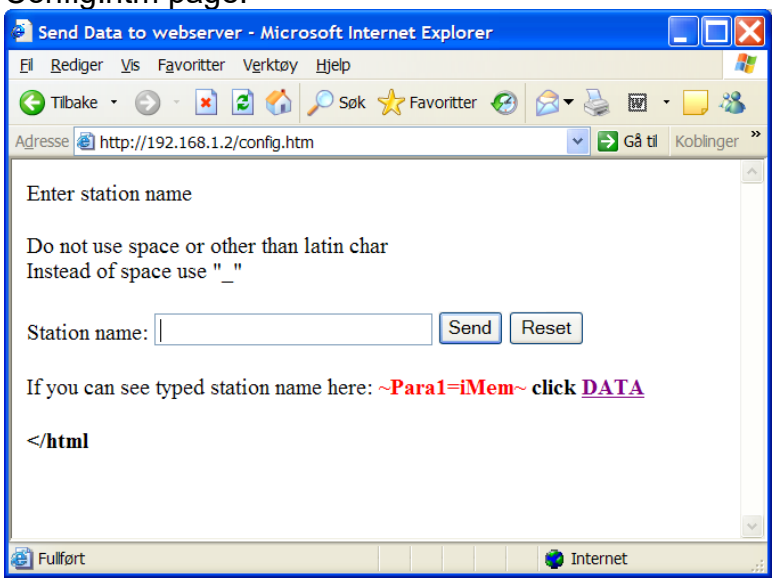
- The folders that are added in root directory will also be deleted by a firmware update Therefore, a "mkdir usb" command has to be done from the root folder.
- The startup script must mount the disk. "mount /mnt/sda1 /root/usb" has to be added to do this and the same command can be run from the CLI.
- For restart ftp do «./vsftpd restart» from CLI
- If the USB pen need to be replaced is only need a "ctd" folder in the root, insert it and power up. To access the internal USB, Use a client FTP program, such as Filezilla
  Server = 192.168.1.1, user = admin, password =label on router (both internal and external FTP uses same password).

Interval:
If CTD/TD is not present and only an OX or Doppler is present the interval has to be done by the CU801 controller. To set this interval:
Open page 192.168.1.2/int



Time and Date
Set time:
There is no page for this setting, use the browsers address line to set time.
http://IP/cgi-bin/CGI_GET?Timeset=HH-MM-SS
The IP is the IP number for the specific CU801_WEB server
For direct connection (crossover cable/hub) and set time 23/59/59:
http://192.168.1.2/cgi-bin/CGI_GET?Timeset=23-59-59

Station name:
Config: name change page
192.168.1.2/config.htm
Router: “IP”/config.htm or “domain”/config.htm
Config.htm page:



Enter Station Name in the text box and use the send button for update the CU801_web station name.
When successful the new name will be displayed in red coloured text. Use hyperlink “DATA” for accessing the data.htm page.

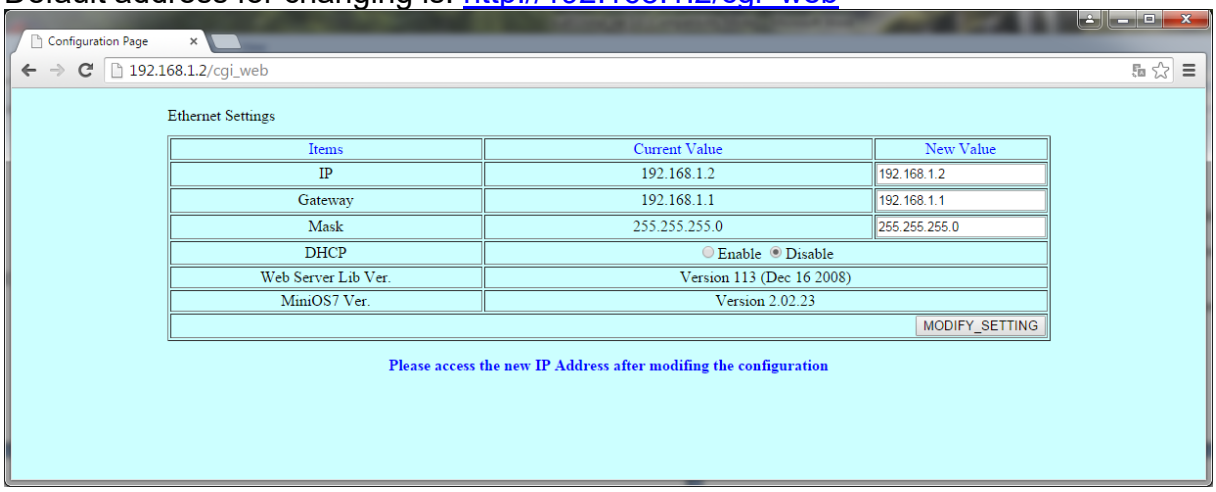
Enable disable units/sensors:
Open page 192.168.1.2/cus will redirect to
http://192.168.1.2/cgi-bin/CGI_GET?cuset=

For enable and disable sensor:
After connecting a new sensor to following Comport:

Inst:	Comport:	Baud
TD/CTD (SAIV)	= Com 3	9600, 7, 1, 1
Watchdog	= Com 4	9600, 8 ,0 ,1
RDCP (Aundrea)	= Com 5	9600, 8, 0, 1
Optical OX (Aanderaa)	= Com 6	9600, 8, 0, 1
Optical OX / SONAR	= Com 7	9600, 8, 0, 1/57600, 8, 0, 1
GPS/ Wheater Station (AIRMAR)	= Com 8	4800, 8, 0, 1

Change IP address on Cu801:
If CU801 is to be working on a different IP network it is possible to change IP number on the server. Be aware that change on these settings will give the router a different address and it will not work as default according to this manual. Remember to make a note when changing this address for later.

Default address for changing is: http://192.168.1.2/cgi_web



Toggle instrument off and on:
If instrument need to be started or stopped.
There is no page for this, use the browsers address line for initiate.
http://IP/cgi-bin/CGI_GET?Start =I
For direct connection (crossover cable/hub/switch)
http://192.168.1.2/cgi-bin/CGI_GET?Start =I
There is no verification for start and stop of instrument. User has to see if new data is updated or not in the data.htm web page.
If there is no change try again.

Number of Lines:
Note: There is some hyper link for QUIC setting, but it can also be done via URL for setting other line numbers. Default is 10 lines (If instrument has 10 sec interval a if enable a FTP message will be sent every 100 sec.)

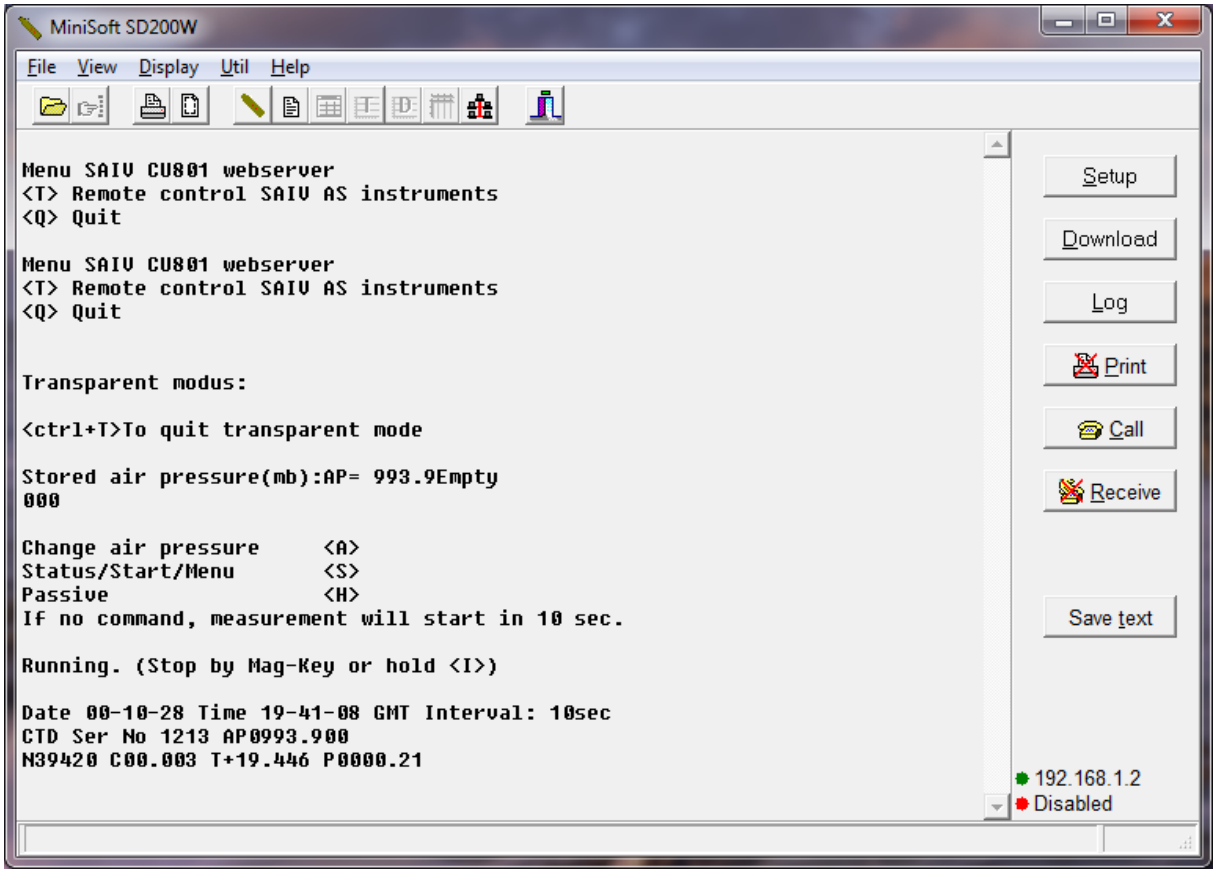
Change number of lines to for example 09: (Minimum = 03.)
http://192.168.1.2/cgi-bin/CGI_GET?lines=09
The server confirms successful registration when it returns main page.
If FTP is enabling data will be send every nine line.

Direct communication with the Instrument (TCP client):
It is possible to communicate directly with the Instrument by using the SD200w program from SAIV A/S. TCP/IP connection

To open connection:
If not familiar with the Minisoft sd200w, see manual “saiv.no”
Under the “setup”- “comport” connection is a TCP/IP option, click this option and type the web address for CU801 and end it with “:10000” = 192.168.1.2:1000
Important: Look at the bottom right corner of the minisoft sd200w, a green led will be shown in front of the IP address. See also screenshot of minisd200w
press any key and a menu will be displayed.
Use menu char <T> to open communication with instrument. All function that is used inn sd200w will now be available.
When transparent communication is active the web update stops. When <ctrl+T> is pressed the web update is active again. Remember to start the instrument before closing connection; else the web measurement will not be updated.

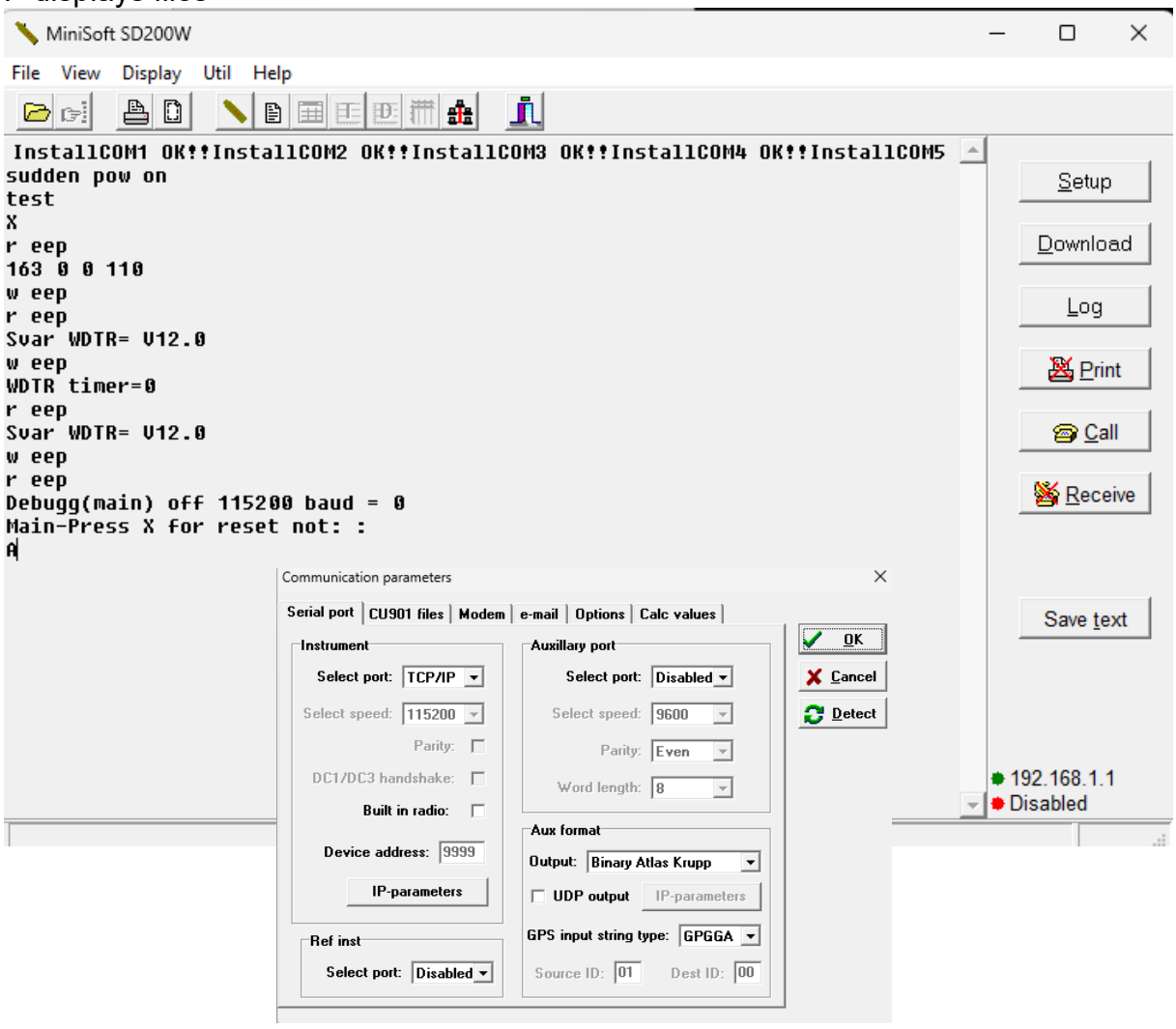
Hidden menu:
After main menu is displayed. Press <P> and then <L>. A menu will be displayed.
Type <P> for programming menu. It possible to activate password on the html page form here.
Username default: Admin
Password default: 12345 (max 5 letter)
To change password: use config.htm page.

Screen shot Minisd200w:



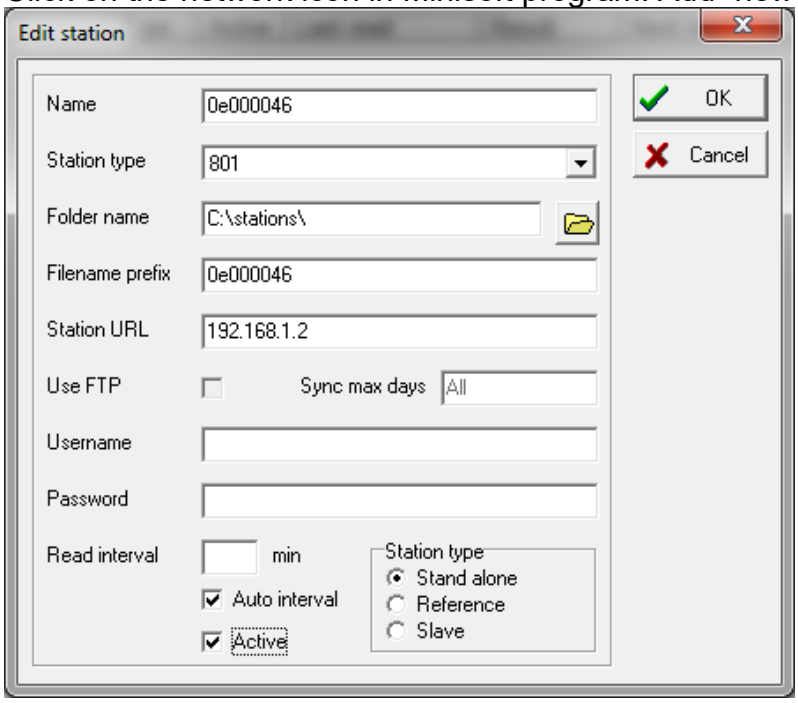
Debug:

There is possible to see some action on the controller via COM1 that is connected via the routers serial port. To access use SD200w Minisoft and open a TCP connection via IP “192.168.1.1” port “10001” Type
D for debug.
ESC reset controller. (same as power off and on)
P displays files



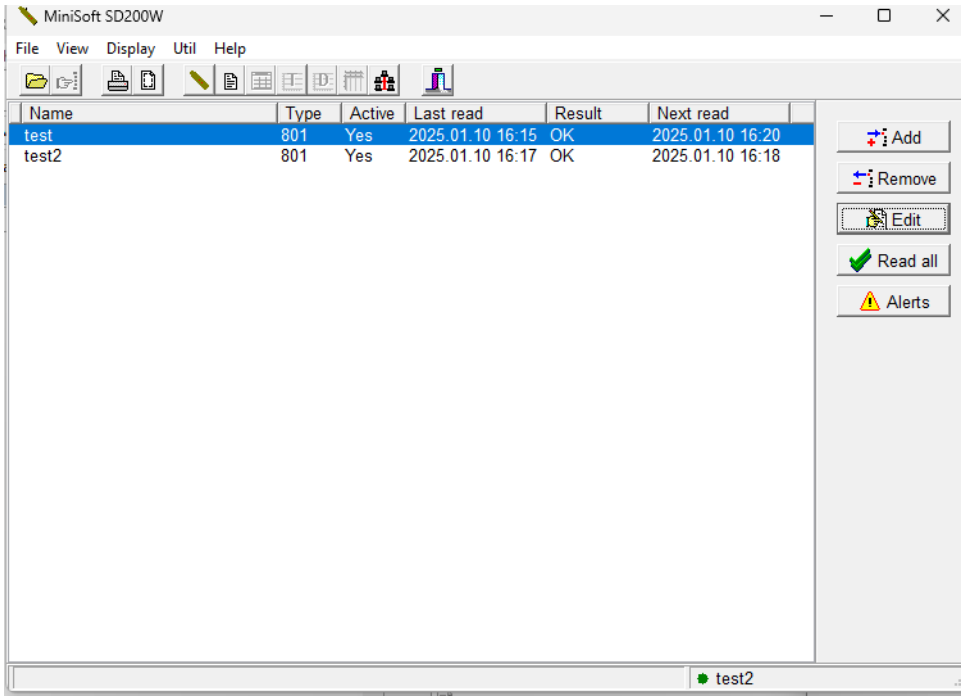
Direct data collect with Minisoft sd200w:

Click on the network icon in Minisoft program. Add “new” station

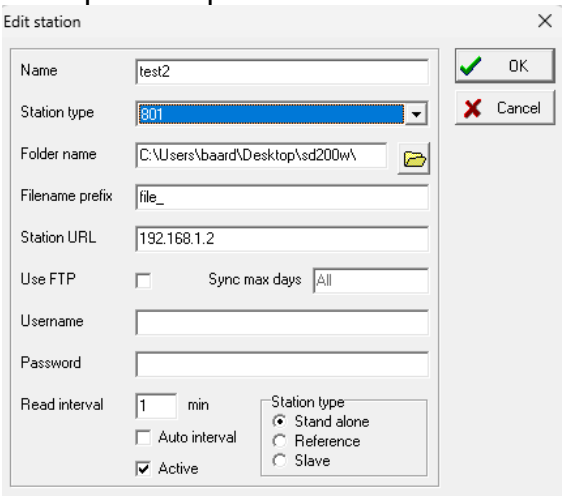


Http retrive:
If password is activated by user (see hidden menu) than username and password as to be added. Remember to activate the station. It possible to use time-based collection or auto.
Data will be stored as one TXT file in selected folder. It also possible to compare data if there is a turbidity sensor involved. And send alarm if sensor reading is to over alarm limit.

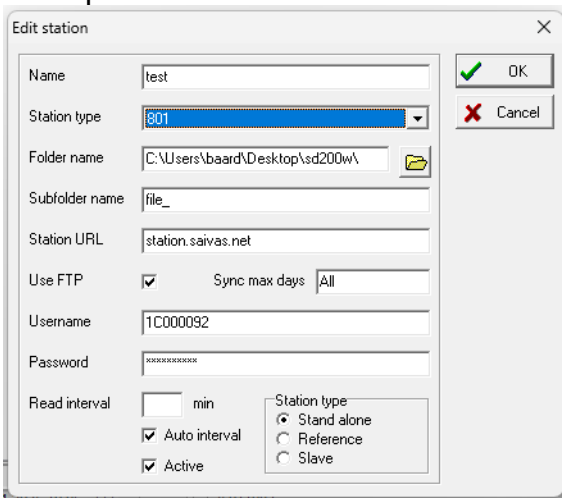
FTP retrieve: Data can be collected from an FTP server.



Example of http retriever with interval 1 min (without password enabled):

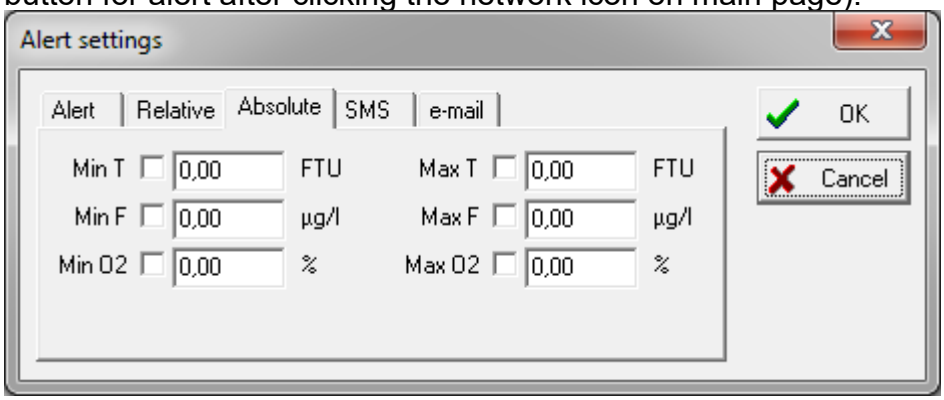


Example of FTP retrieve:



Graph view and Alert (e-mail/SMS)

When having extra sensors as FTU (turbidity) and OX (Oxygen) on the instrument it possible to view a graph of present Turbidity over time (right click with mouse on the station and activate graph) Alarm will be sent by e-mail or SMS (setup has to be done) if values go higher or lower than set point. To access Alert setting, click on button for alert after clicking the network icon on main page).



Unit 3: GPRS/LTE router. (RUT956)

Any type of router can be used. The default IP is 192.168.1.1 Gateway is 192.168.1.1 and net mask is 255.255.255.0
Default TCP port is 80.

The GPRS/LTE router is not covered in this manual, but the basic settings and name of configurations tools are the same for most routers. Use the router manual for additional information. Search internet for RUT956 manual.

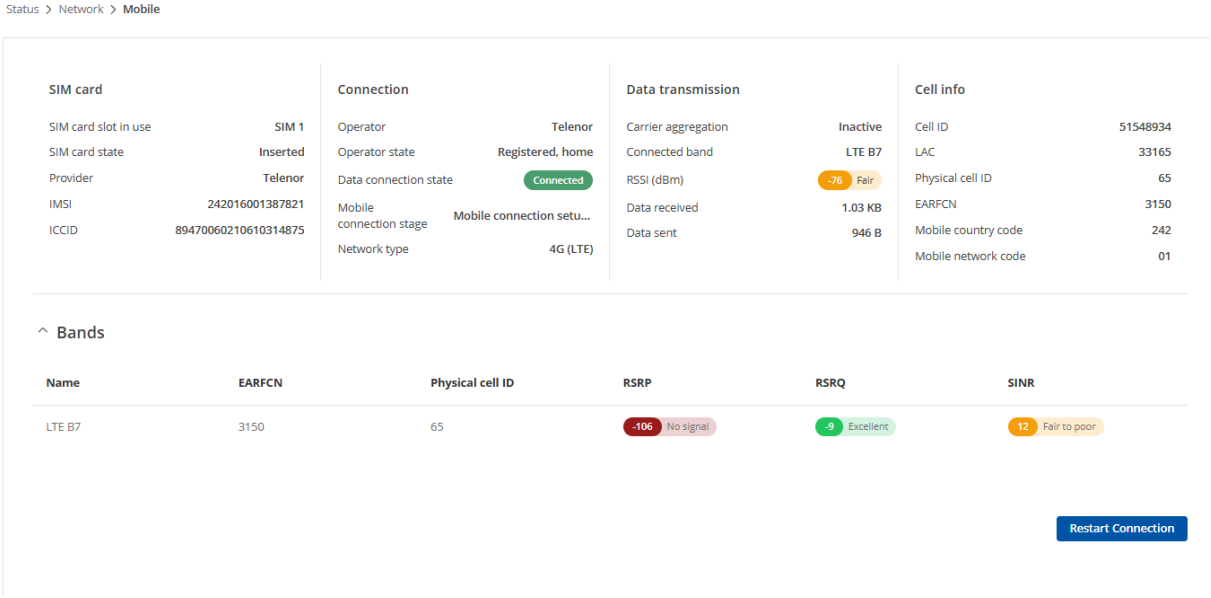
Insert mobile SIM card in SIM1 and turn on the router (This should in most cases be adequate to get the … up and running).

Use WIFI (SSID = LABEL on unit 2) or cable, connect to GPRS/LTE router via address: 192.168.1.1. Type the default IP 192.168.1.1 in the browser address line:

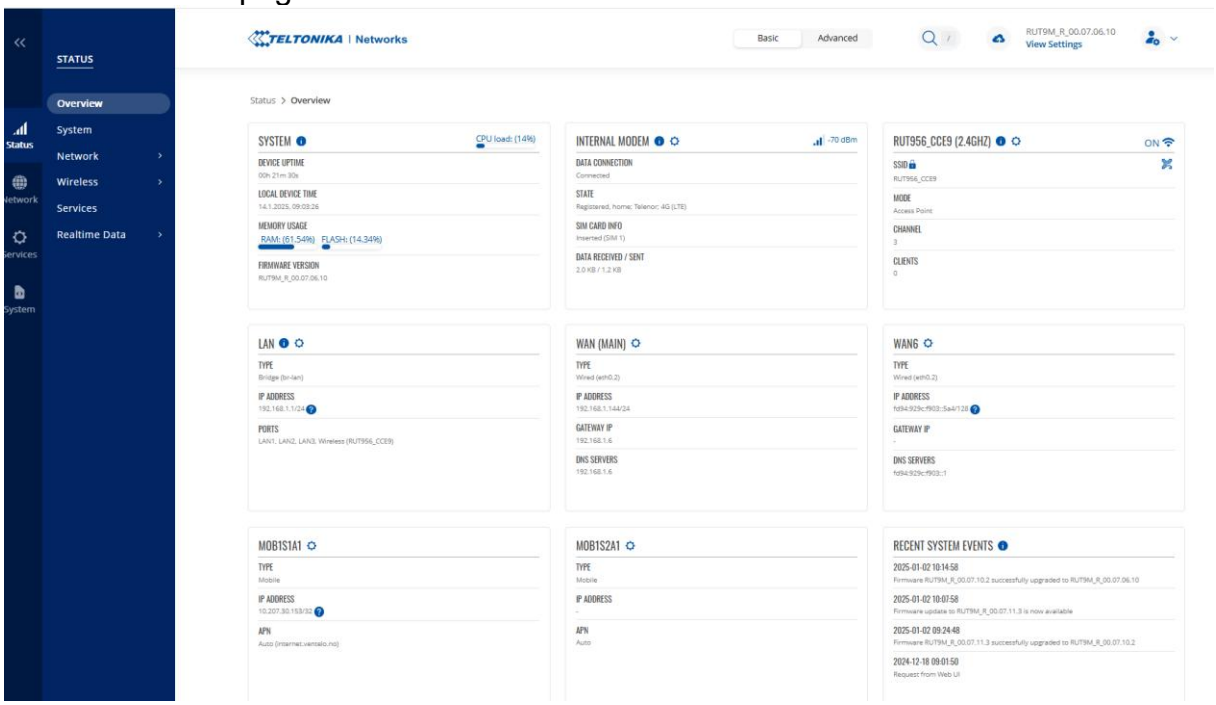
Use admin as user name and see label for password. If you reset the router, the default password is written on the backside. Rember FTP server has to be reinstalled and usb disk mount must be added in startup script if do a firmware update or order a new unit.

Normally after insert SIM the auto APN is retrieved from the SIM and used for connection to network supplier. If special APN is need use custom setting via routers webpage. Use router manual for this purpose. To avoid accessing the router, the pin of the SIM needs to be deactivated. If not, it has to be added into Network->Mobile->General-> SIM1 settings.

This is how a mobile network status looks like in Teltonica/Rut956 router.



View of a status page RUT956:



To get manual. Search internet for Teltonika Rut956

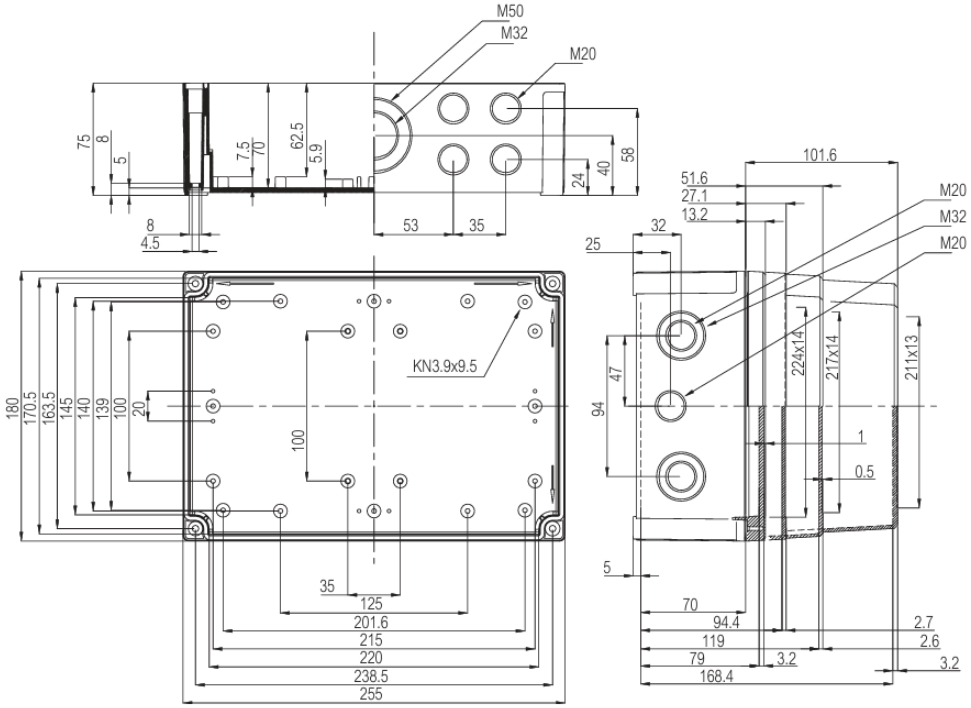
Getting access to the system remotely.

If you want to access the system, when installed in a remote area. Its 2 options.

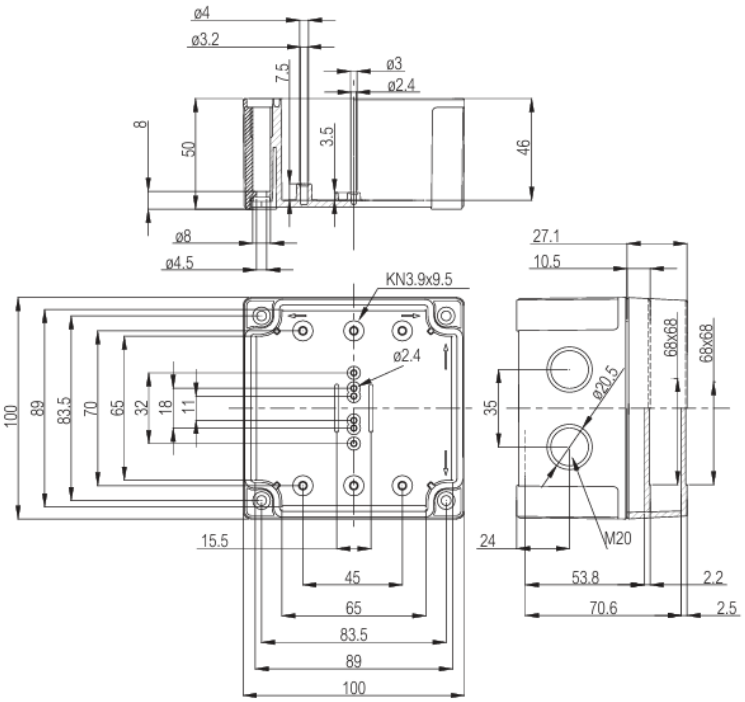
1. Is to get public IP on the SIM, the provide will arrange this if possible and use port forwarding for adding unit2 public.
2. Is to use the RMS (remote managing system from Teltonica) This will require a license in form of credit. See Teltonica for providers near you for getting credits, The RMS needs to be activated for working.

Sizes of boxes:

Main, includes Router, Cu801 controller and watchdog.



Air unit TD.



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