UCP-Config

– Program Version: 3.28 –

HG 76342-A

English, Revision 01	Dev. by: C.M.
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Contents

1 General Function

UCP-Config is a program that runs on a PC with Microsoft® Windows® (Version XP and above). With the UCP-Config-Program the user can realize the following functions in the context of one (connection via LAN) or several (connection via WLAN) radio modems HG 76342-A:

- Discovering of radio modems (WLX + ESCG) in the network (via LAN or WLAN)
- Configuration of the radio modems parameter including saving and restoring of configuration data to or from files.
- Performing firmware updates
- Rebooting the radio modems
- Resetting the radio modems parameter to the factory default state
- Monitoring the connection parameter of the radio modems

2 First Time Setup

At first setup, the radio modem can communicate only over the LAN interface, because usually there is no WLAN with a matching SSID.

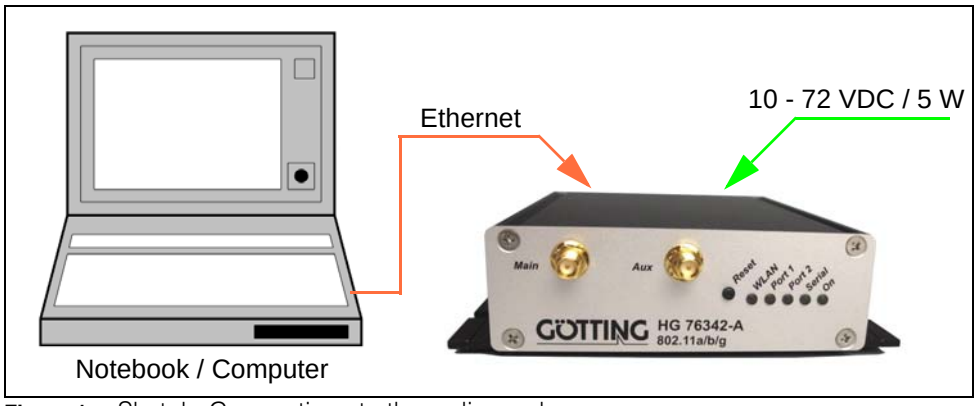


Figure 1 Sketch: Connections to the radio modem

The radio modem has to be connected to a PC with an ethernet interface. The PC has to run the UCP-Config-Program.

The user should note:

- The connected PC (Notebook) should have a fixed IP address on the LAN interface (no DHCP).
- The LAN interface at the PC must be recognized by the operating system as "connected."
- When the PC LAN interface has the right IP press the „refresh“ button at the UCP-Config-Program. Then the connected radio modems will be discovered.
- An active firewall program on the PC could prevent the communication to the radio modem.

3 Using the UCP-Config-Program

3.1 List View

After startup the UCP-Config-Program determines all network-interfaces that are active on the PC. Then Broadcast-UDP requests are sent to these interfaces. The answering radio modems are registered and are shown in a list.

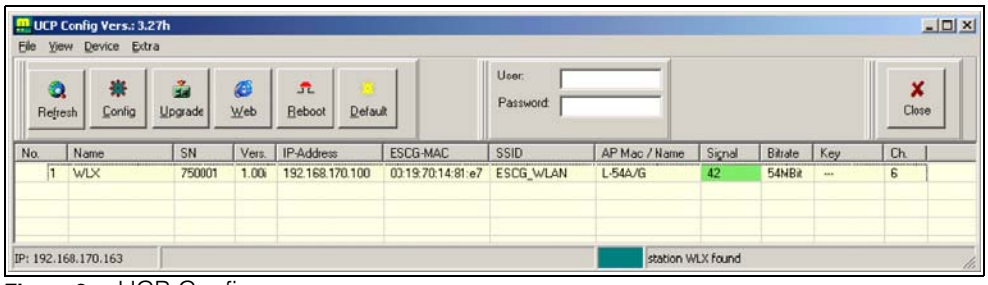


Figure 2 UCP-Config

In the first columns of the list the device data like name, serial number, program version, IP-Address and MAC-Address will be shown. The other columns show the data of the WLAN connection and the status of the other interfaces. The signal strength value can be interpreted as follows:

- Signal ≥ 40 → very good connection
- Signal ≥ 30 → good connection
- Signal ≥ 20 → connection is OK, the device starts to search for better APs
- Signal < 20 → connection restricted, the bit rates will be lowered

The currently used bit rate to transmit data is shown at the column „Bitrate“. The column „Key“ shows the used encryption mode. The column „Ch“ shows the channel number the AP is working.

- LAN shows the status of the LAN connection of the device.
  UP + yellow → active 100MBit Connection
  UP + green → active 10MBit Connection
  DOWN → no Connection
- LAN 2 (like LAN)
- SER1 shows the status of the serial Port 1
  --- → no Connection
  CONN TCP-connection active
- Relay shows the status of the relay.
- USB (Progvers.: >= 3.28r) shows the status of a connected USB device.

The connection status of any captured radio modem is been updated continuously. The main buttons of the UCP-Config program have the following functions:

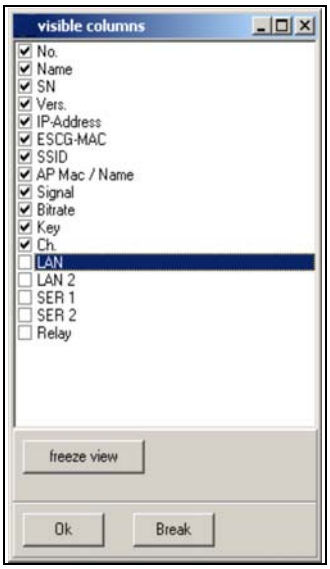
NOTE! The sign in the first column means that the configuration of the radio modem is protected by a given user and password definition.

Button	Function
Refresh	Refresh clears the list of detected radio modems. The IP-network interfaces of the PC are new detected and initialized. Use this function if radio modems are missed in the list although they are connected but not seen by the application.
Config	Starts a configuration dialog for the selected radio modem.
Upgrade	Starts a firmware upgrade dialog for the selected radio modem.
Web	Starts the website of the radio modem with the standard web browser of the PC. It must be noted that the IP address of the radio modem and the PC must be configured appropriately to use this function.
Reboot	Reboots the radio modem.
Default	Sets the radio modem to the factory default configuration.

Table 1 Main buttons of the UCP-Config program

3.2 List view adjustments

Figure 3 Select the visible columns



The list view of the UCP-Config-Program can be configured. The user can show or hide the different columns of the list view. The dialog to adjust the list view is reached via the menu: „View → select visible columns“.

With „freeze view“ these settings can be protected with a password. The settings are saved on closing the program and used again after a re-start.

3.3 Main View of the Program

The following illustration shows all the functions of the UCP-Config-Programs

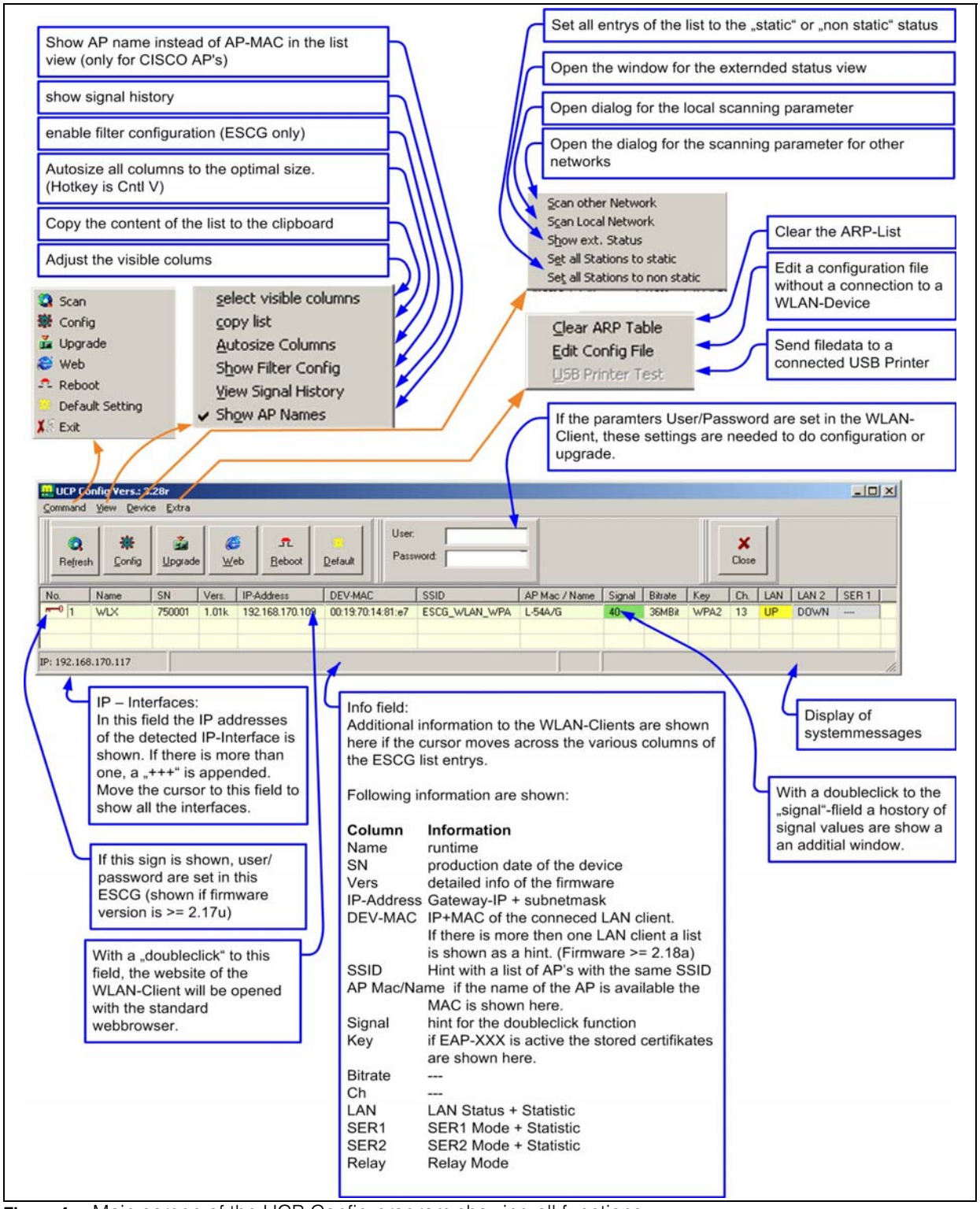


Figure 4 Main screen of the UCP-Config program showing all functions

3.4 Setup the Radio Modem Parameters

If several radio modems are listed, you have to select the radio modem you want to setup by clicking the list entry. The list can be sorted by clicking a column head. When clicking the “config”- button a download is started that transfers all configuration data from the radio modem to a text file. If a user/password is defined you must first enter this information in the space provided.

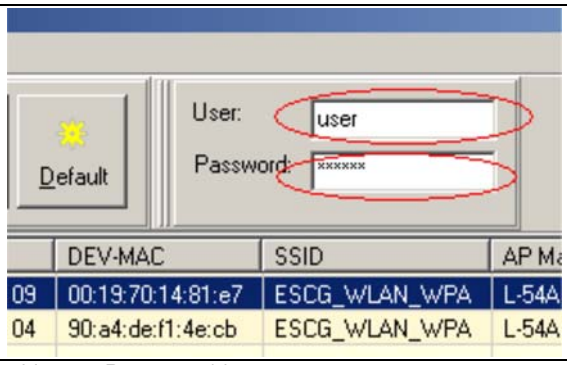


Figure 5 User + Password input

On clicking the Config button the program detects the settings of the selected radio modem and shows them as follows:

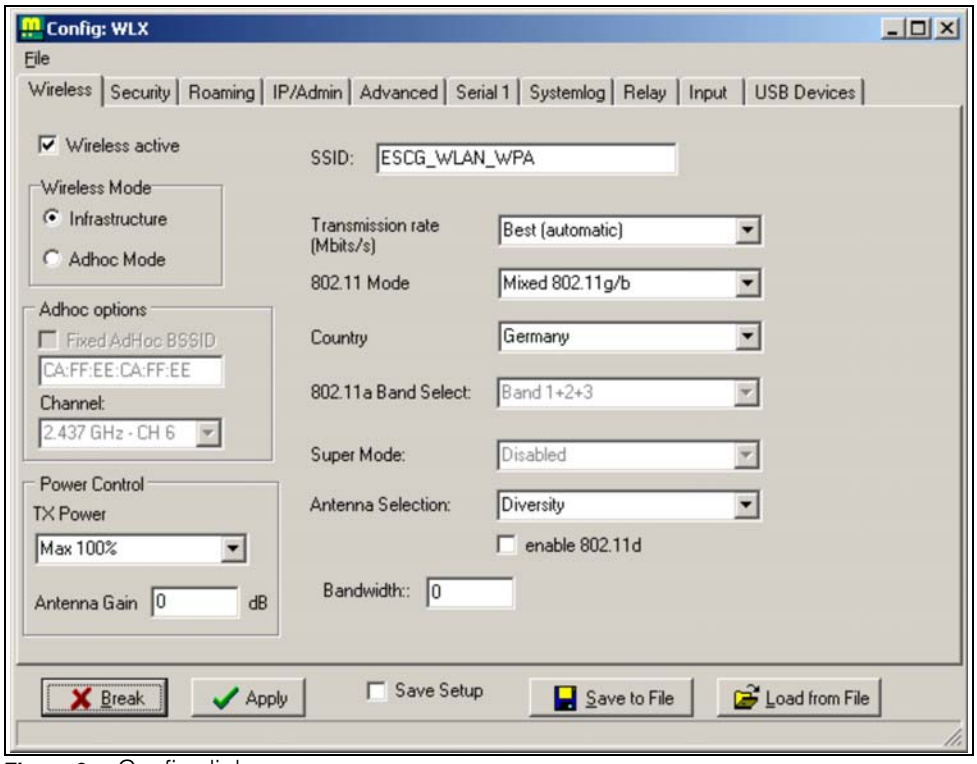


Figure 6 Config dialog

The Parameters are shown on file-cards (Tabs). Each file-card contains the parameters, that belongs

to a http-web-page of the web interface of the radio modem. You can look up the meaning of the parameters in the manual for the radio modem in the description of the web interface. The UCP-Config-Program offers the advantage that you can also perform the configuration of all parameters if the current IP address of the radio modem doesn't go with the IP-Address of the connected PC.

With the buttons „Load from File“ and „Save to File“ it is possible to save and restore settings to or from a file. The button “Apply” transfers the setting to the radio modem. After the transfer is completed, the WLAN-Device will automatically reboot with the new setting.

3.4.1 Save Setup Function

This function is useful if the configuration is done over the WLAN connection of the radio modem. This function is intended to ensure that a change in the configuration does not lead to discontinuation of the wireless connection.

With activated "Save Setup" function, the existing configuration is first secured before the modified setup is saved and activated. After the radio modem restarts with the new configuration, a timer is set to monitor if the user confirms the new configuration within 60 seconds. If this timer expires without confirmation, the old backup configuration is re-enabled.

The pending confirmation is displayed as follows:

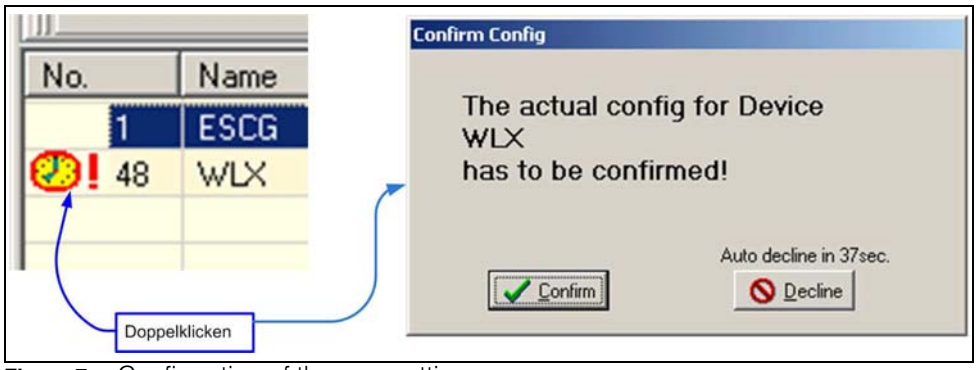


Figure 7 Confirmation of the new setting

The time to the reactivation of the old configuration is displayed in column 1.

3.4.2 Certificate management

If certificates are required, they must be stored in the radio modem. With the button „certificate management“ you get to a dialog where the certificates can be selected.

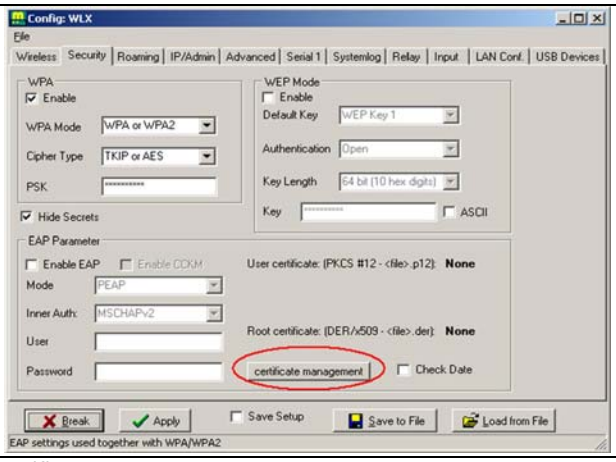


Figure 8 Certificate management

The UCP-Config-Program can transfer certificates that are required for the 802.1x authentication methods to the radio modem. On the "security" – file card you can adjust the different possible security options. If you want to use an 802.1x authentication-method, activate the corresponding checkbox and select the procedure you want to use.

Different methods require different parameters as well as certificates. The following table shows the prerequisites of the different methods.

Method	User	Password	Server Cert.	Client Cert.
EAP-PEAP	X	X	O	
LEAP	X	X		
EAP-TLS	X		O	X
EAP-TTLS	X	X	O	X
X = must be defined O = can be defined				

Table 2 Prerequisites for different certificate types

The following dialog shows the already stored certificates and gives the options to delete existing certs or to upload new certificates to the radio modem.

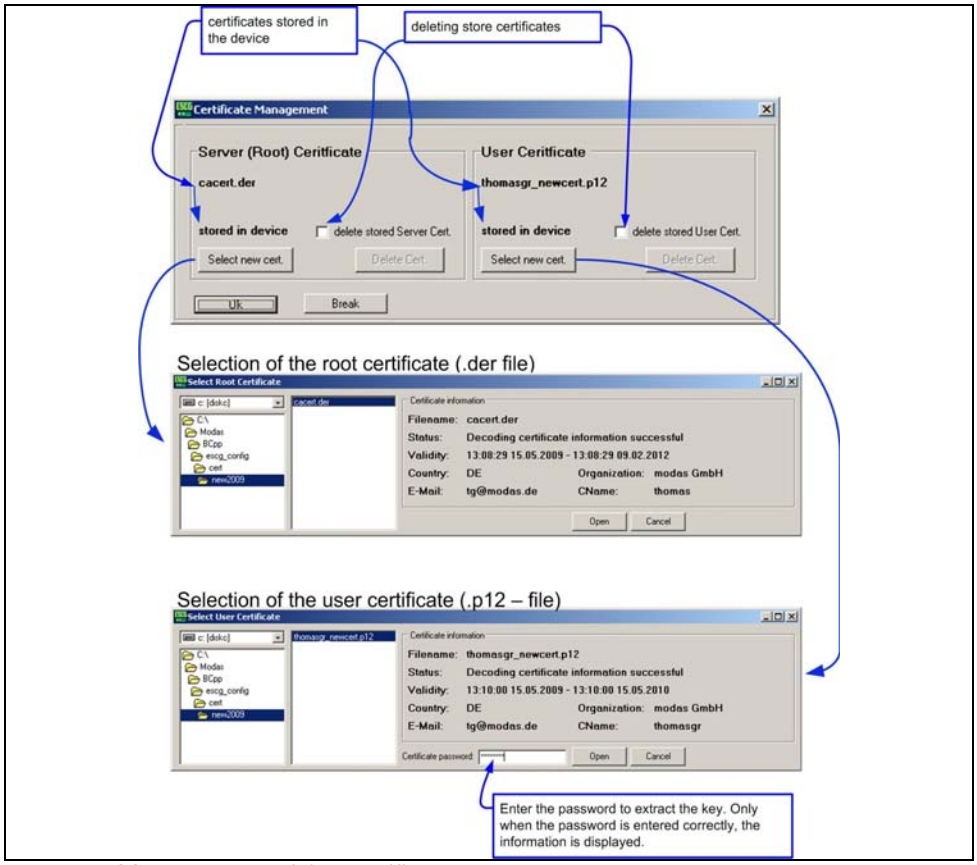


Figure 9 Management of the certificates

The root certificate file has the type „.der“ and must be a DER coded binary X.509 format file. The user certificate file has the type“.p12“ and must be a PFX (Personal Information Exchange) coded data file. After confirming with “Ok” the defined certificates will be transferred to the radio modem.

Depending on what kind of client is connected, the certificate data is part of the config setting or is handled separately. The HG 76341 devices will upload the new certificate data immediately and will restart afterward. HG 76342-A devices integrate the certificate data into the config setting.

ATTENTION! If both certificates are needed, they must be uploaded together. Single upload is not possible.

3.5 Saving and Loading the Radio Modem Configuration

Via the Config dialog you can save your specific settings into a file. This file can then be used to setup other radio modems with the same parameters. All parameters including the IP address are stored in the file.

Please keep in mind that restoring these settings on another radio modem also changes that modem‘s IP address. You can prevent this by editing the file. This can be done easily since the file‘s content is pure text.

3.5.1 Example of a Parameter File

The values are stored in the form `Parameter = Value`:

```
# [ADMIN] -------------------------------
username=82c913ceffc6   # encrypted
password=e6c622ecaa0448   # encrypted
# [ ] ------------------------------
devname="ESCG "
ip_mode=0
subnet_mask=255.255.255.0
ip_gateway=192.168.170.1
ip_address=192.168.170.100
# [ADMIN-FLAGS] -------------------------------
TelnetConfigActive=0
UdpConfigActive=0
NoBridgeFunction=0
AutoIpConfigActive=0
```

Figure 10 Configuration File

So if you e.g. don't want other devices to load the IP_address setting delete the line or comment it out by putting a '#' character to the front of the line.

3.5.2 Encrypted Parameters

The example file shown above includes settings for „Username" + „Password". Those values are encrypted when written to the file. This means that they can be transferred to other radio modems but you can't read them nor can you edit them. The same goes for the PSK and WEP key as well as the 802.1x login information.

After transferring the file to a radio modem the new settings are stored permanently in the device. Around 3 seconds afterwards the radio modem performs a re-start.

3.6 Firmware Updates

The UCP-Config-Program offers the opportunity like the radio modem web interface as well to transfer firmware-files on the radio modem. By clicking the button "Upgrade" a dialog to select the firmware file is shown. The firmware file has always the type ".bin". After selection the file is transferred to the radio modem.

The firmware file is stored in a special flash memory area. It is possible to break the upload without any loss of functionality. After the transfer is finished, the radio modem checks if the uploaded file is a proper firmware file. If yes, an acknowledge is send to the UCP-Config-Program. After that, the uploaded file is processed and is stored in the flash memory area where the main program is running.

WARNING! It is very important, that the radio modem is not interrupted by reset or power failure in this situation. If this happens, the radio modem must be send back to the producer for repairing.

3.7 Security

The access to the radio modem can be protected by setting a username and password. (See web interface on the admin page or the “Admin” file card in the UCP-Config). To read or write the setting or to do an firmware upgrade the user has to input the proper values.

3.8 Reboot

When clicking the „Reboot“ button the selected radio modem performs a restart.

3.9 Setting the default parameter

When clicking the „Default” button the selected radio modem is set to its factory default parameters. A restart is done automatically after 3 seconds. This operation needs the “user” and “password” values when these are set.

3.10 Web

When clicking the „WEB” button the default WEB browser of the PC is started with the IP address of the selected radio modem.

3.11 Configuration and Monitoring of Radio Modems in Different Networks

3.11.1 Searching for Radio Modems in the Local Network

In recent times, more and more wireless solutions are used to control all access points of a WLAN system on a central controller. It is customary to configure the wireless controller so that broadcast-data will not be sent via the access points. The result is that the UCP-config program can’t reach the radio modems over WLAN, since the data packet to discover the radio modems is a broadcast packet.

Because of that, a function has been implemented that continuously scans a defined IP range to find radio modems. The dialog to adjust the scan parameter will open by selecting Device → Scan local Network.

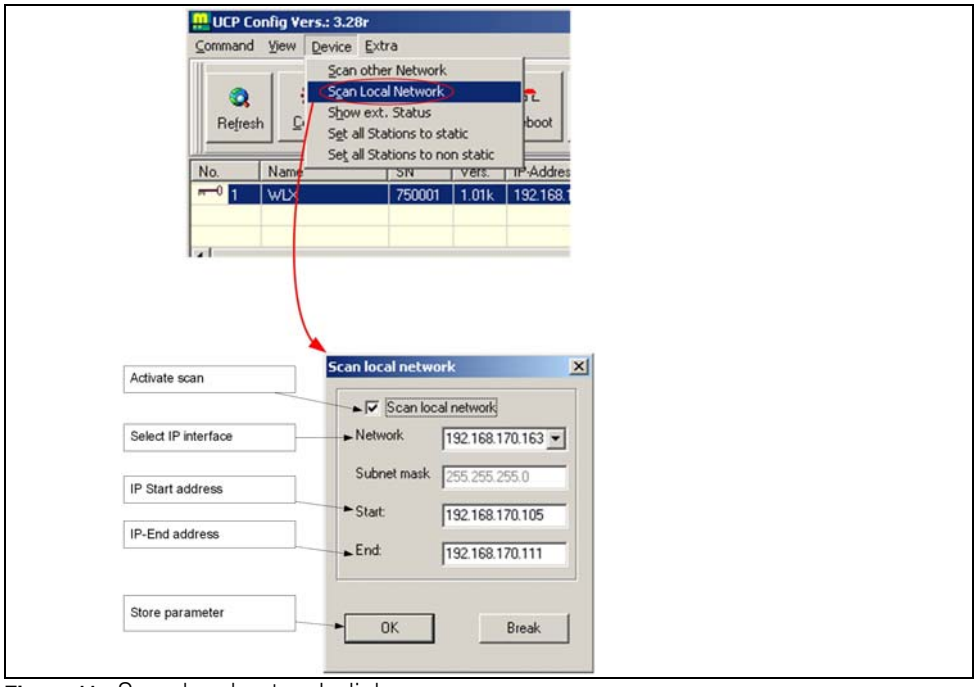


Figure 11 Scan local network dialog

If a scan is active an additional panel with scan information is shown in the main window.

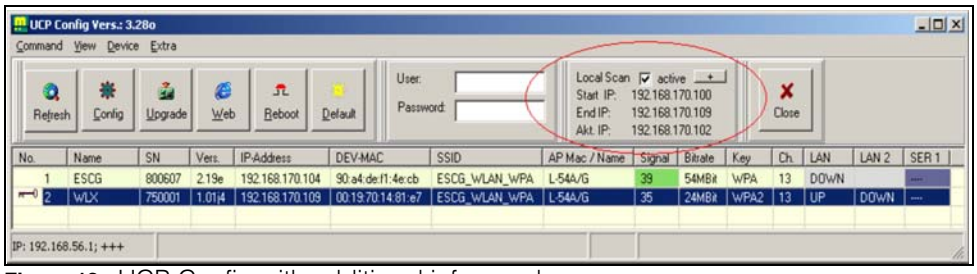


Figure 12 UCP-Config with additional info panel

These parameters will be store and recovered at program stop and start.

3.11.2 Scanning Other Networks for Radio Modems

If the radio modems are working in another network that is reachable from the PC with the UCP-config program only through a gateway, a slightly different method is used to connect with these radio modems. The function „scan other networks“ can be used by selecting „Device → Scan other Network“.

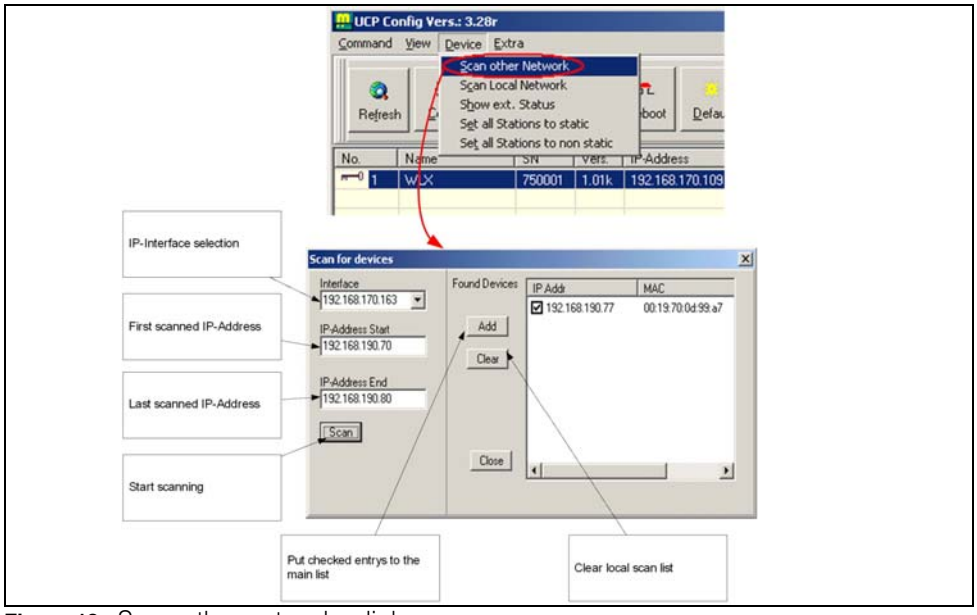


Figure 13 Scan other networks dialog

At first, the user must choose an IP interface through which the requests will be sent. Then an IP address area in the other network has to be defined. When scanning starts special UDP packets are send to a determined port. A radio modem will respond to it appropriately. From the response, the UCP-Config program determines the MAC address of the radio modem and transfers this information into a list of "Found Devices".

After the scan has been completed, the user can choose the radio modems that will be transferred to the main list view of the program. These entries in the main list will get the „static entry“ attribute.

NOTE! The parameters „subnet mask“ + „gateway IP“ have to be configured properly on both sides (PC + radio modems).

3.12 Viewing extended status information from radio modems

By selecting „Device → Show ext. Status“ an additional window opens where extended status infos of all WLAN-Clients are shown.

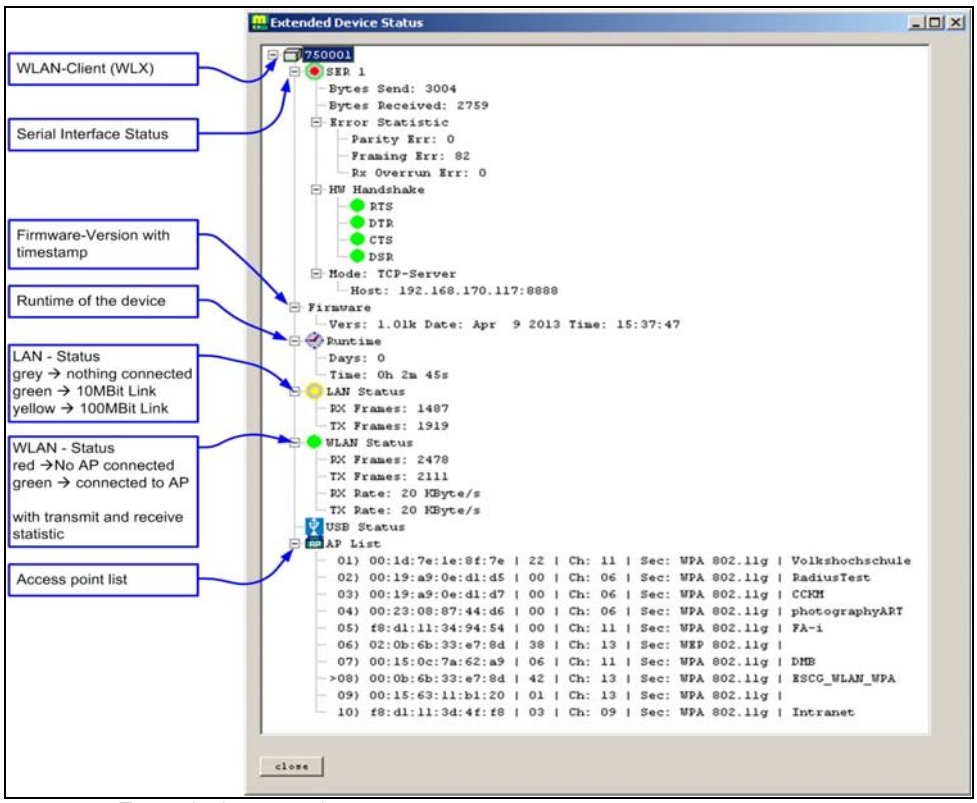


Figure 14 Extended status view

3.13 Recording debug messages

If the user wants to analyze a (faulty) processing of a WLAN-Client, is it possible to record debug messages to a file. To start a logging file the user must click a list entry with the right mouse button and select “Debug Logging”.

Then the user has to define a logfile name. The UCP-Config-Program will then show an special area where the infos for the actual logging activities are displayed.

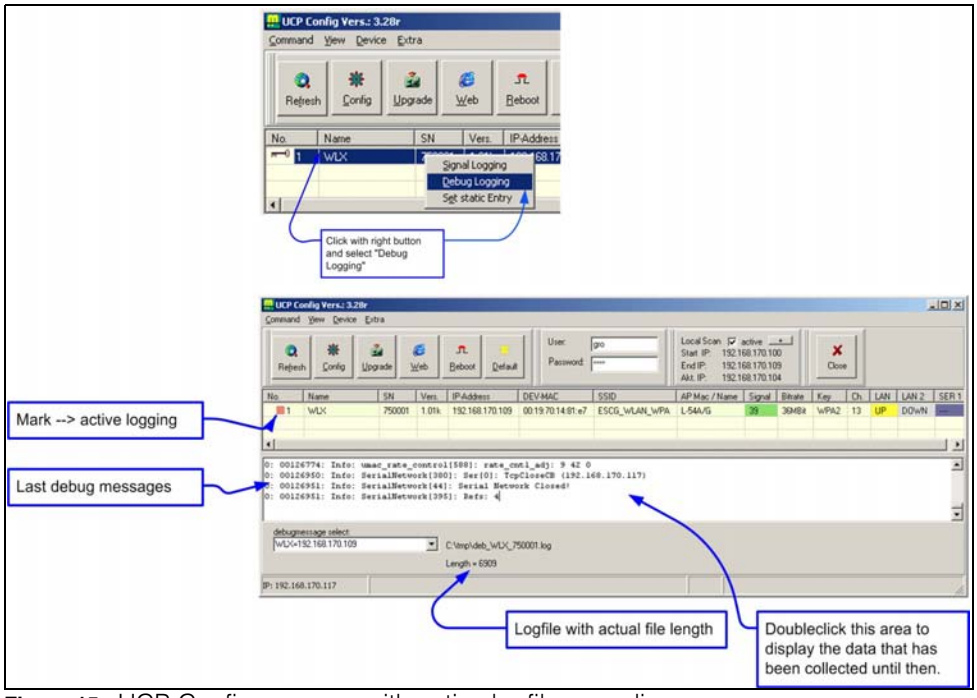


Figure 15 UCP-Config-program with active logfile recording

The recorded logfiles are exclusively meant for passing them to the system programmer that can make an analysis. This function can only be used when the PC with the UCP-Config-Program and the WLAN-Client have a proper IP address configuration to establish a IP connection.

3.14 Signal history

This function allows you to get an overview of the RF signal strength a WLAN-Client detects when it communicates via WLAN. The user also gets a information about the access points that are connected by the WLAN-Client. The presentation covers a period of the last 2 hours.

The signal history view can be opend by:

1. the main menu (View --> Show Signal History)
2. when double-clicking the signal value of a WLAN-Client entry in the list view.

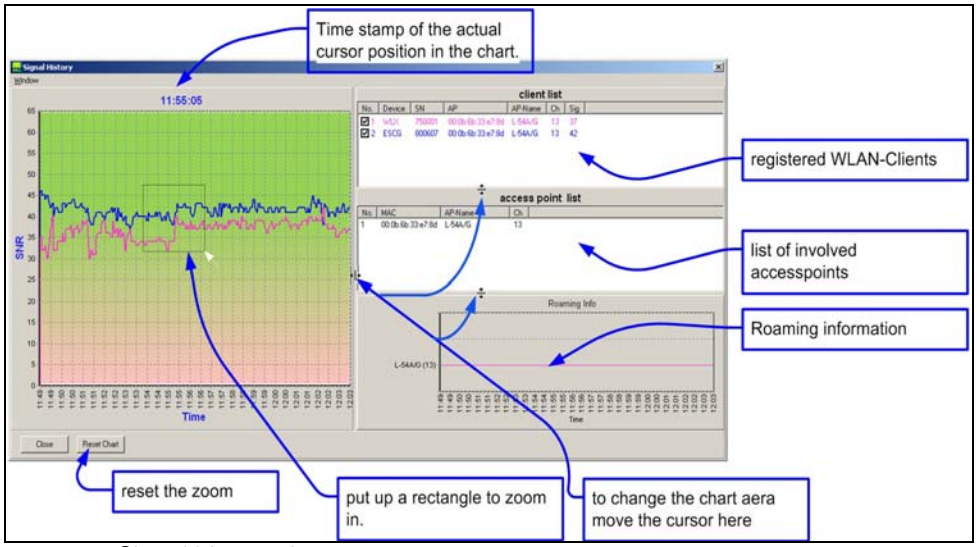


Figure 16 Signal history view

If the UCP-Config-Program gets no information about the RF signal quality from a WLAN-Client, SNR values between 0 - 1 are registered in the chart for that time period.

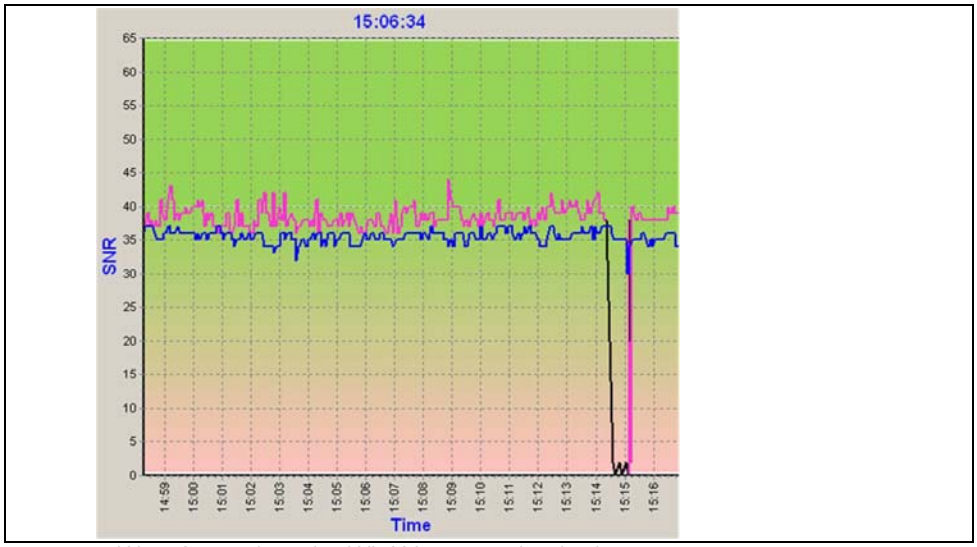


Figure 17 Waveform when the WLAN connection is down

4 List of Figures

5 List of Tables

6 Handbook Conventions

At the time this manual was printed, the following symbols and marks were used in all Götting KG documentations:

- For security advice, the following symbols stand for different degrees of danger and importance:

NOTE!

ATTENTION!

WARNING!

- Further information or advice are indicated as follows:

TIP!

- Program texts and variables are indicated through the use of the `Script Courier`.
- Whenever the pressing of letter keys is required for program entries, the required Letter Keys are indicated as such (for any programs of Götting KG small and capital letters are equally valid).
- Sections, drawings and tables are subsequential numbers throughout the complete document. In addition, each documents includes a list of contents showing the page numbers following the front. If a document exceeds 10 pages, it also has a drawings list and a list of tables on the last few pages. If required, in case a document is correspondingly long and complex, a index is added in the back.
- Each document shows a small table including meta information, such as developer, author, revision and date of issue, on the front page. The information regarding revision and date of issue are also included in the bottom line on each page of the document. This way it is possible to clear identify the source document for each bit of information.
- Online version (PDF) and printed handbook are always generated from the same source. Due to the consequent use of Adobe FrameMaker for these documentations, it is possible to use the cross hints and content entries (including page numbers of the index) of the PDF file for automatic transfer to the corresponding content.

7 Copyright and Terms of Liability

7.1 Copyright

7.2 Exclusion of Liability

Any information given is to be understood as system description only, but is not to be taken as guaranteed features. Any values are reference values. The product characteristics are only valid if the systems are used according to the description.

This instruction manual has been drawn up to the best of our knowledge. Installation, setup and operation of the device will be on the customer's own risk. Liability for consequential defects is excluded. We reserve the right for changes encouraging technical improvements. We also reserve the right to change the contents of this manual without having to give notice to any third party.

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