

# UCP-Config

Program-Version: 3.28

## Manual



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## General function

The UCP-Config is a Program that runs on a PC with a Windows operation system (WINXP, WIN7) to **locate** and **config** WLAN-Client-Devices from **modas**.

The compatible modas WLAN-Clients that can be configured are:

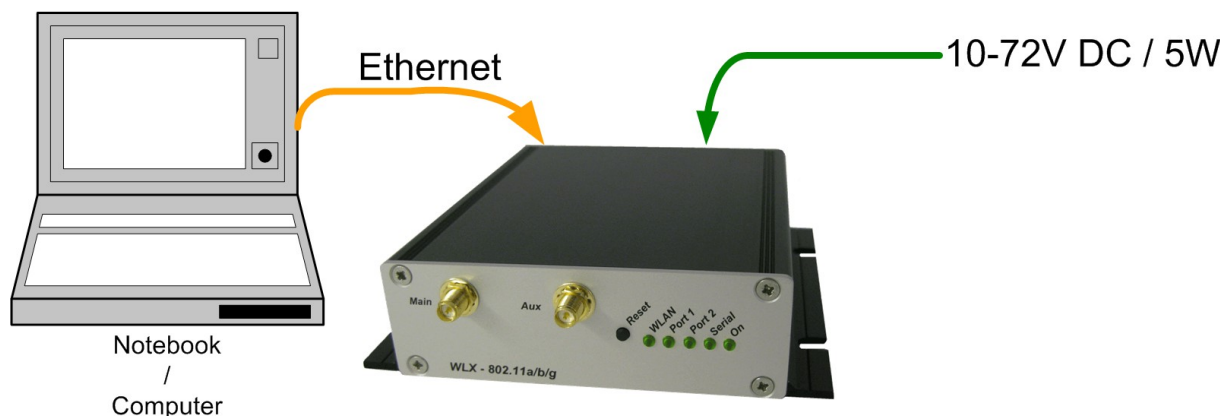
- 1) WLX
- 2) WLXS
- 3) ESCG
- 4) ESCGX
- 5) ESCG-SW5
- 6) ESCG-R
- 7) RMEG

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) WLAN-Clients:

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

## First time setup

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



**Illustration 1: Connections to the WLAN-Client**

The WLAN-Client 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-Adresse 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 WLAN-Client will be discovered.
- An active firewall program on the PC could prevent the communication to the WLAN-Client.

## UCP-Config 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 WLAN-Clients are registered and are shown in a list.

No.	Name	SN	Vers.	IP-Address	DEV-MAC	SSID	AP Mac / Name	Signal	Bitrate	Key	Ch.	LAN	LAN 2	SER 1	Relay	USB
1	wLX	750001	1.01k	192.168.170.109	00:19:70:14:81:e7	ESCG_WLAN_WPA	L-54A/G	37	36MBit	WPA2	13	UP	DOWN	---	OFF	

IP: 192.168.170.117

**Illustration 2: List View**

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  $\geq 40$  → very good connection

Signal  $\geq 30$  → good connection

Signal  $\geq 20$  → connection still sufficient

Signal  $< 20$  → connection restricted, the bit rate will be reduced to transfer data

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.:  $\geq 3.28r$ ) shows the status of a connected USB device.

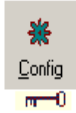




The connection status of any captured WLAN-Client is been updated continuously.

The sign  in the first column

means that the configuration of the WLAN-Client is protected by a given user and password definition.

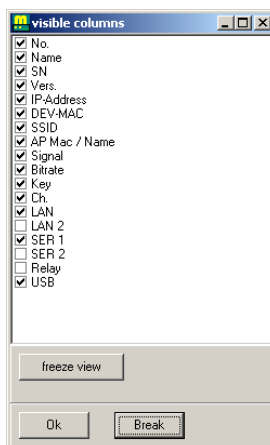
The main buttons of the UCP-Config program have the following functions:

Taste	Funktion
	<i>Refresh</i> clears the list of captured WLAN-Clients. The IP-network interfaces of the PC are new detected and initialised. Use this function if WLAN-Clients are missed in the list although they are connected but not seen by the application.

	Starts a configuration dialog for the selected WLAN-Client.
	Starts a firmware upgrade dialog for the selected WLAN-Client.
	Starts the website of the WLAN Client with the standard web browser of the PC. It must be noted that the IP address of the WLAN-Client and the PC must be configured appropriately to use this function.
	Reboots the WLAN-Client
	Sets the WLAN-Client – to the factory default configuration.

## List view adjustments

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“



**Illustration 3: select the visible columns**

With „freeze view“ these settings can be protected with a password.

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

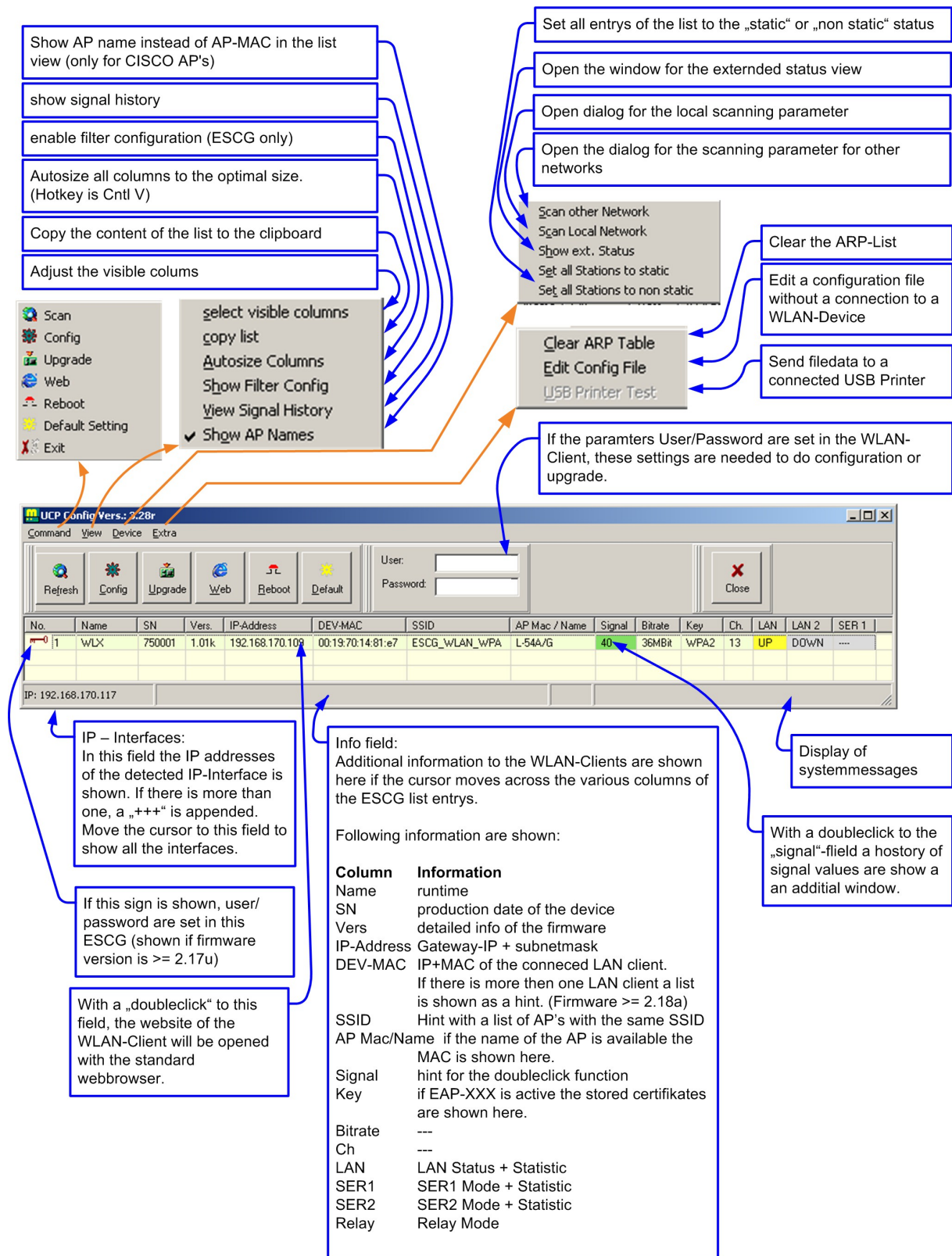
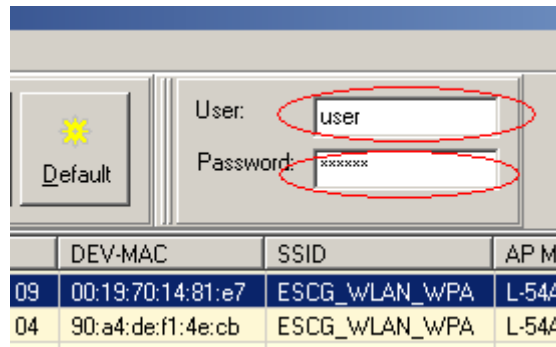


Illustration 4: UCP-Config

## Setup the WLAN-Client parameter

If several WLAN-Clients are listed, you have to select the WLAN-Client 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 WLAN-Client to a text file. If a user/password is defined you must first enter this information in the space provided.

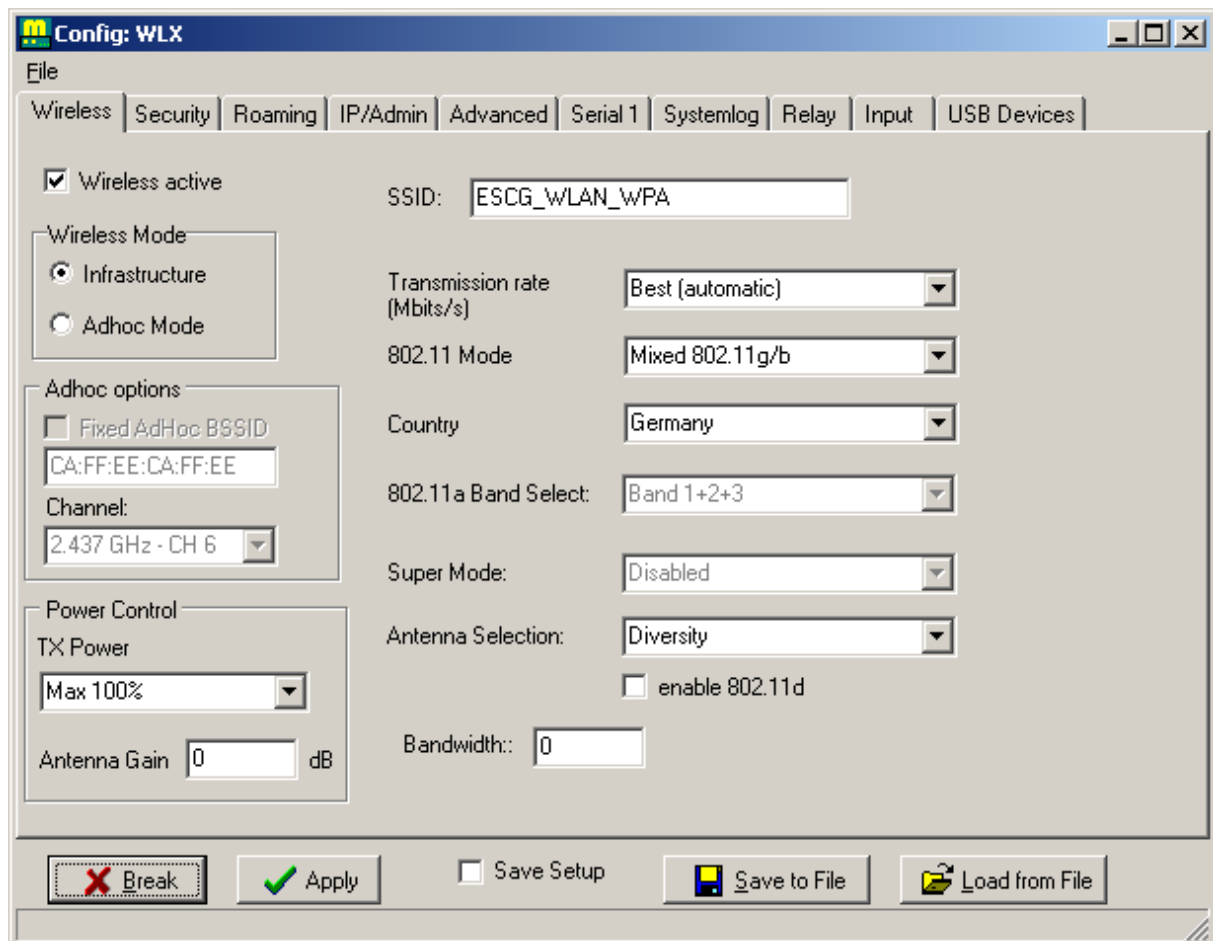


The screenshot shows a configuration window with a 'Default' button on the left. To its right are two input fields: 'User:' containing the text 'user' and 'Password:' containing a series of asterisks. Below these fields is a table with four columns: 'DEV-MAC', 'SSID', and 'AP M.'. The table contains two rows of data.

	DEV-MAC	SSID	AP M.
09	00:19:70:14:81:e7	ESCG_WLAN_WPA	L-54A
04	90:a4:de:f1:4e:cb	ESCG_WLAN_WPA	L-54A

Illustration 5: user + password definition

The content of this text file is shown as follows:



The screenshot shows the 'Config: WLX' window with several tabs: 'Wireless', 'Security', 'Roaming', 'IP/Admin', 'Advanced', 'Serial 1', 'Systemlog', 'Relay', 'Input', and 'USB Devices'. The 'Wireless' tab is active. It contains several sections: 'Wireless active' (checked), 'Wireless Mode' (Infrastructure selected), 'Adhoc options' (Fixed AdHoc BSSID unchecked, Channel: 2.437 GHz - CH 6), 'Power Control' (TX Power: Max 100%, Antenna Gain: 0 dB), 'SSID: ESCG\_WLAN\_WPA', 'Transmission rate (Mbits/s): Best (automatic)', '802.11 Mode: Mixed 802.11g/b', 'Country: Germany', '802.11a Band Select: Band 1+2+3', 'Super Mode: Disabled', 'Antenna Selection: Diversity', 'enable 802.11d' (unchecked), and 'Bandwidth: 0'. At the bottom are buttons for 'Break', 'Apply', 'Save Setup', 'Save to File', and 'Load from File'.

Illustration 6: WLAN-Client config

The Parameters are shown on file-cards (Tabs). Each file-card contains the parameters, that belongs to a http-web-page of the webinterface of the WLAN-Client. You can look up the meaning of the parameters in the manual for the WLAN-Client in the description of the webinterface.

The UCP-Config-Program offers the advantage that you can also perform the configuration of all parameters if the current IP-Adresse of the WLAN-Client doesn't go with the IP-Address of the connected PC.

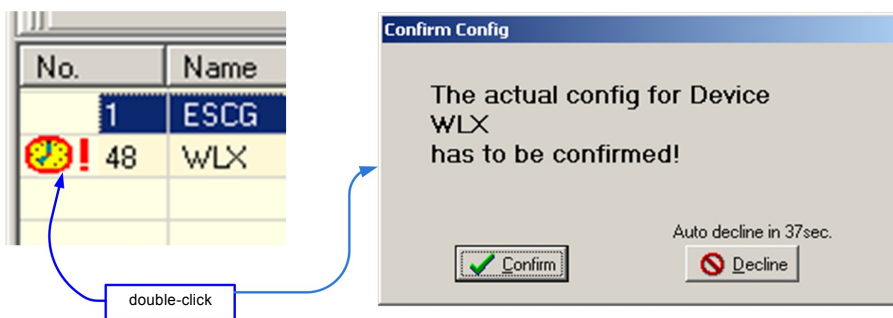
With the buttons „Load from File“ and „Save to File“ it is possible to save and restore settings to or from a file. The button “Apply” transfers the setting to the WLAN-Client. After the transfer is completed, the WLAN-Device will automatically reboot with the new setting.

## Save Setup Function

This function is useful if the configuration is done over the WLAN connection of the WLAN-Client. 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 WLAN-Client 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:



**Illustration 7: confirmation of the new setting**

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

## Certificate management

The UCP-Cpnfig-Program can transfer certificates that are required for the 802.1x authentication methods to the WLAN-Client.

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.

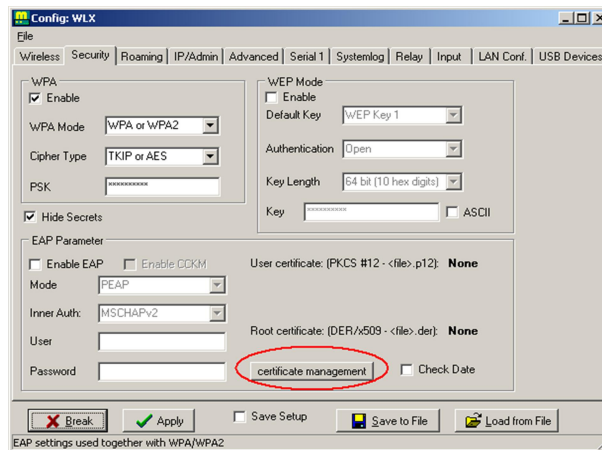
Method	User	Password	Server Cert.	Client Cert.
EAP-PEAP	X	X	O	
LEAP	X	X		
EAP-TLS	X		O	X
EAP-TTLS	X	X	O	X

X = must exist

O = can be exist

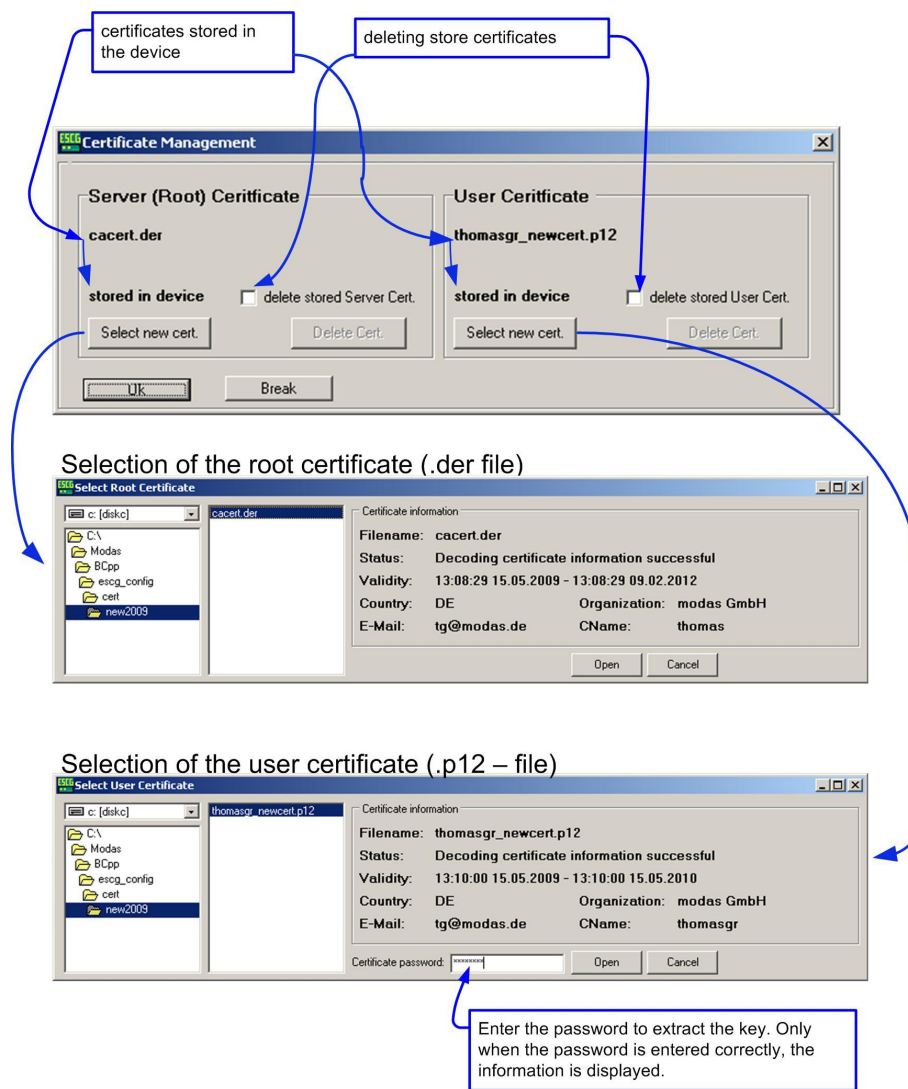


If certificates are required, they must be stored in the WLAN-Client. With the button „certificate management“ you get to a dialog where the certificates can be selected.



**Illustration 8: security file card**

The following dialog shows the allready stored certificates and gives the options to delete existing certs or to upload new certificates to the WLAN-Client.



**Illustration 9: certificat management**

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 WLAN-Client. Depending on what kind of client is connected, the certificate data is part of the config setting or is handled separatly. The ESCG devices will upload the new certificate data immediately and will restart afterward. WLX devices integrate the certificate data into the config setting. If both certificates are needed, they must be uploaded together. Single upload is not possible.

## ***Firmware-Updates***

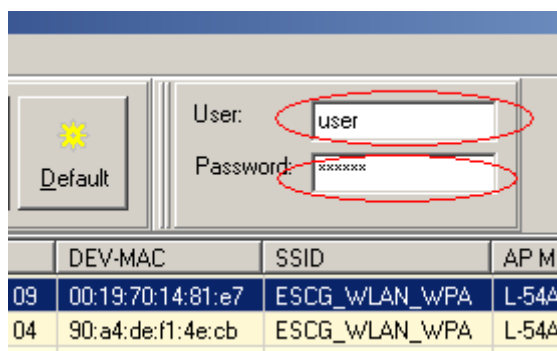
The UCP-Config-Program offers the opportunity like the WLAN-Client web interface as well to transfer firmware-files on the WLAN-Client. By clicking the button “Upgrade” a dialog to select the firmware file is shown. The firmware file has always the type “.bin”. After selection the file is transferred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

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 WLAN-Client 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.

**It is very important, that the WLAN-Client is not interrupted by reset or power failure in this situation. If this happens, the WLAN-Client must be send back to the producer for repairing.**

## ***Security***

The access to the WLAN-Client 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 here:



**Illustration 10: user + password definition**

## ***Reboot***

When clicking the „Reboot“ button the selected WLAN-Client processes an restart.

## ***Setting the default parameter***

When clicking the „Default“ button the selected WLAN-Client 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.

## Web

When clicking the „WEB” button the default WEB browser of the PC is started with the IP address of the selected WLAN-Client.

## Configuration and monitoring of WLAN-Clients in different networks

### Searching for WLAN-Clients 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 WLAN-Clients over WLAN, since the data packet to discover the WLAN-Clients is a broadcast packet. Because of that, a function has been implemented that continuously scans a defined IP range to find WLAN-Clients.

The dialog to adjust the scan parameter will open by selecting: “Device → Scan local Network”.

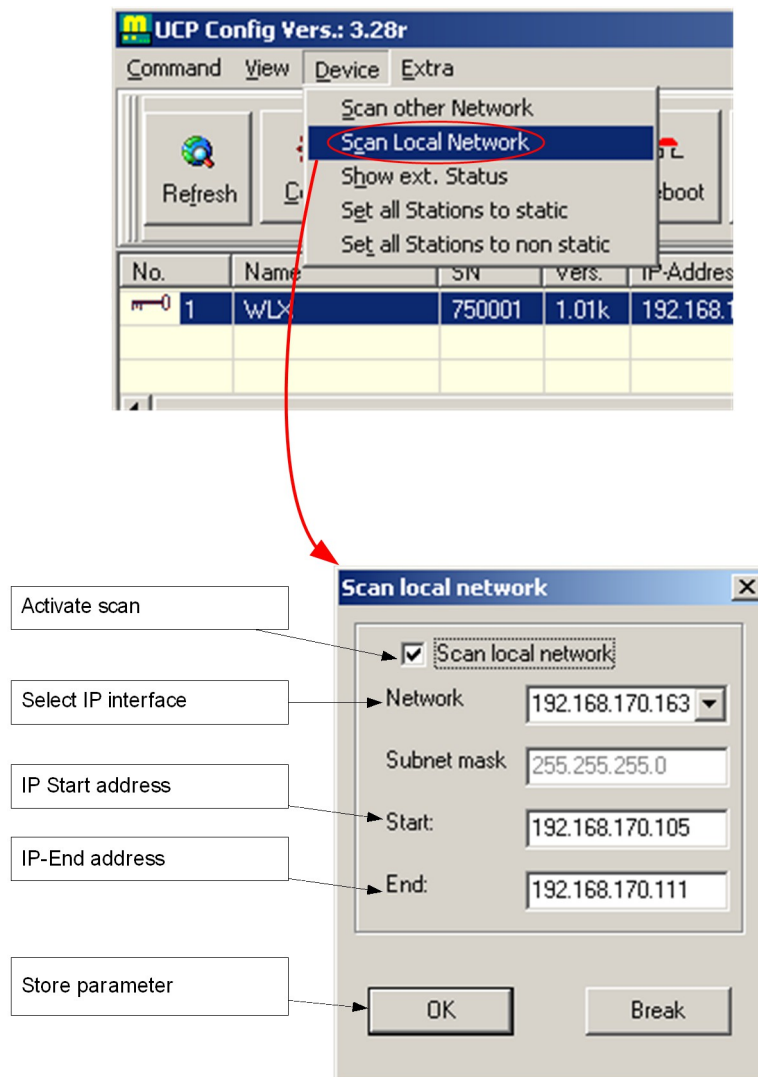
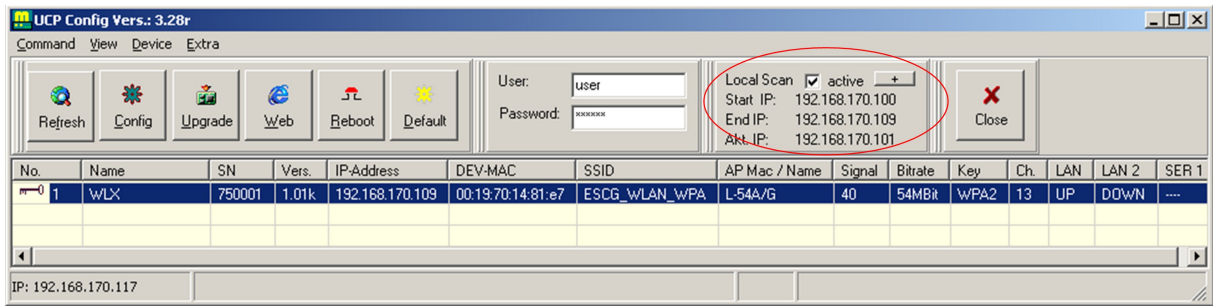


Illustration 11: Scan local network dialog

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



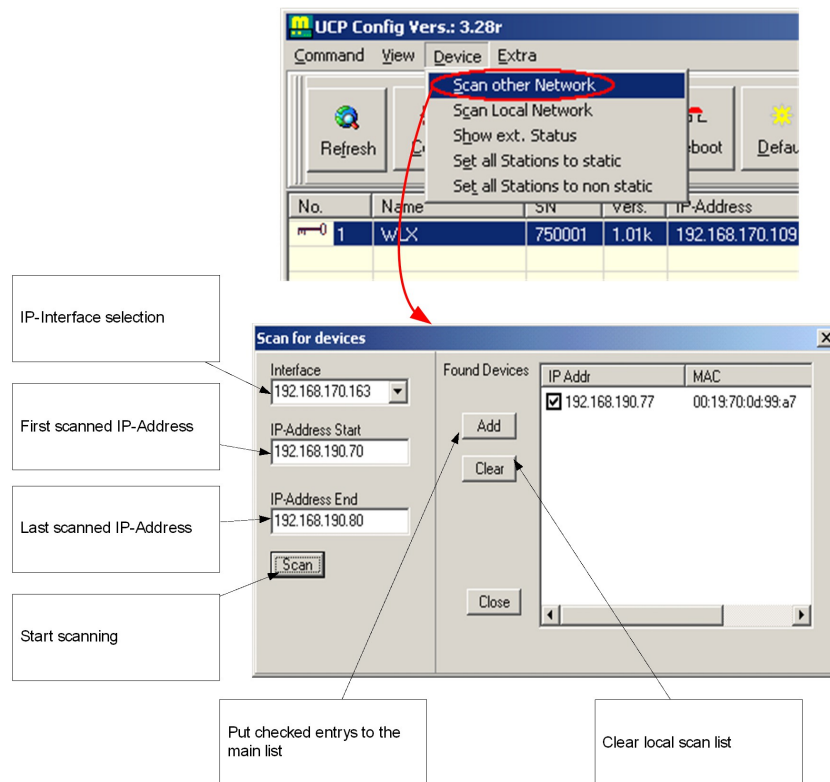
**Illustration 12: UCP-Config with additional info panel**

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

### Scanning other networks for WLAN-Clients

If the WLAN-Clients 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 WLAN-Clients.

The function „scan other networks“ can be used by selecting „Device --> Scan other Network“.



**Illustration 13: Scan other networks dialog**

At first, the user must choose an IP interface through which the requests will be sent. Then a IP-Address area in the other network has to be defined. When scanning starts special UDP packets are send to a determined port. A WLAN-Client will respond to it appropriately. From the response, the UCP-Config program determines the MAC address of the WLAN-Client and transfers this information into a list of "Found Devices". After the scan has been completed, the user can choose the WLAN-Clients that will be transfered 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 + WLAN-Clients)

## Viewing extended status information from WLAN-Clients

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

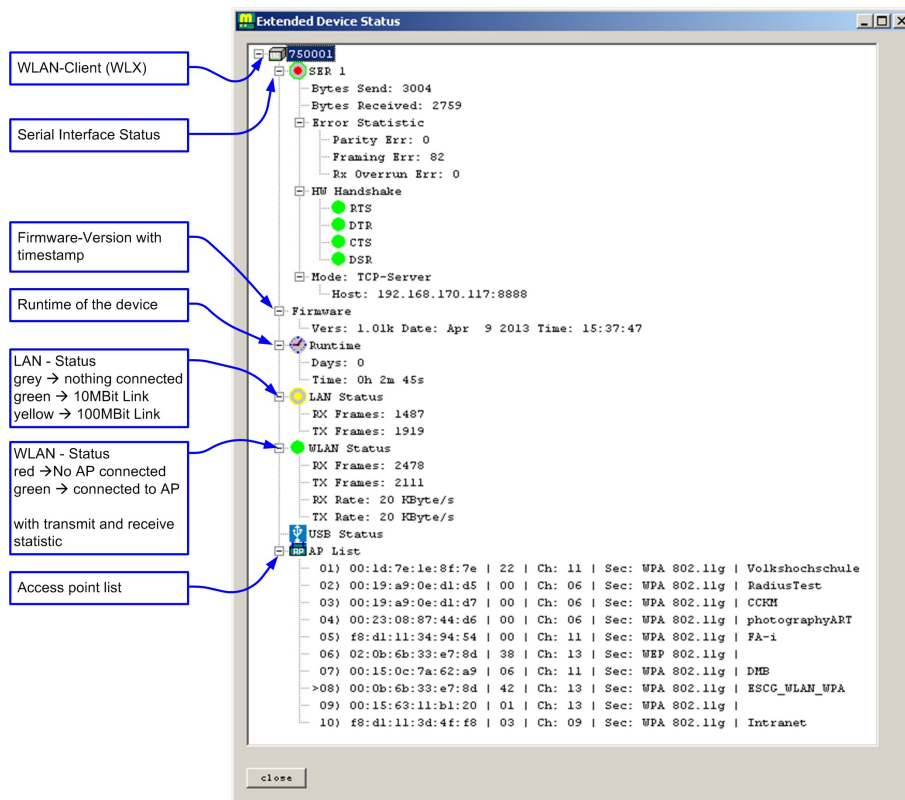
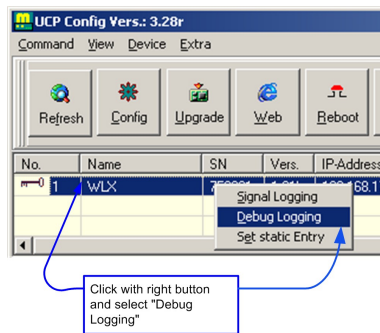


Illustration 14: Extended status view

## Recording debug messages

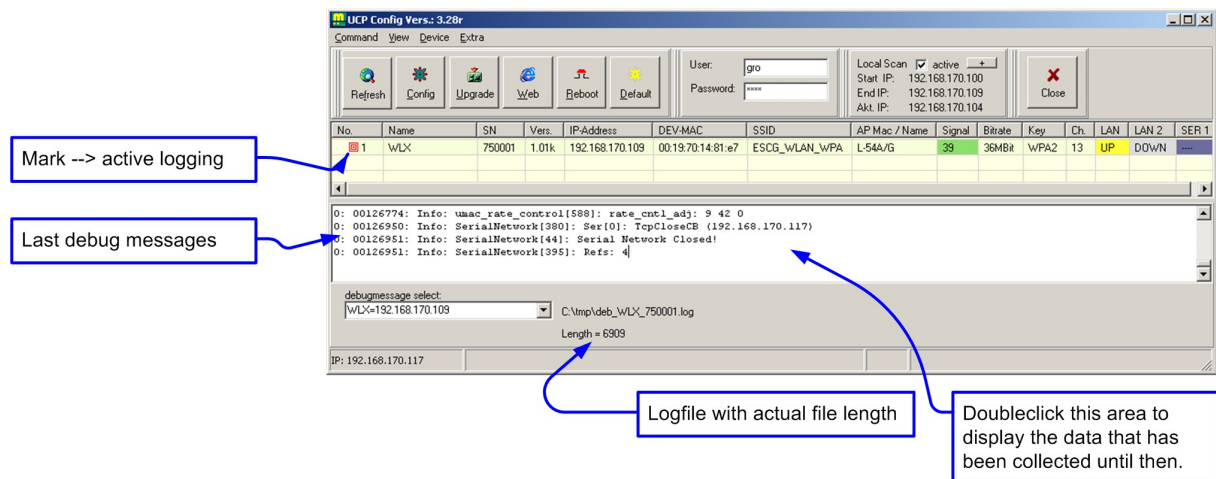
If the user wants to analyse a (faulty) processing of a WLAN-Client, is it possible to record debug messages to a file. To start a logging file the user must click a list entry with the right mouse button and select “Debug Logging”



**Illustration 15: Starting a debug message record**

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.



**Illustration 16: 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.

## 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 accesspoints that are connected by the WLAN-Client. The presentation covers a period of the last 2 hours.

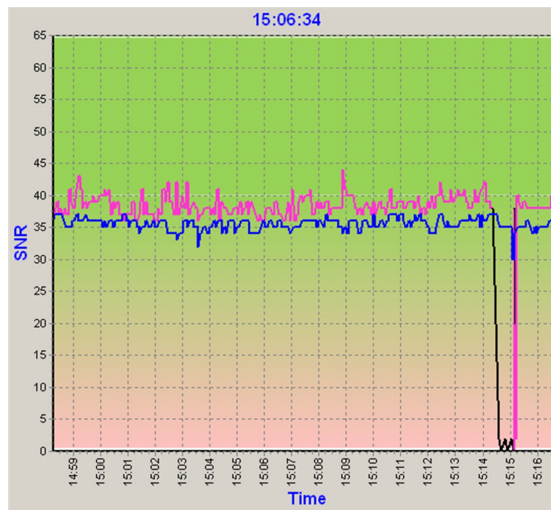
The signal history view can be opened by:

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



**Illustration 17: Signal history view**

If the UCP-Config-Programm 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.



**Illustration 18: Waveform when the WLAN connection is down**