ARGUS WINplus / WINanalyse Manual

Version: 2.56 / **EN**

Important Notice:.
Depending on the scope of the functionality of your ARGUS tester, some of the various functions of the WINplus / WINanalyse software may be unavailable.

1 Introduction

The PC software, WINplus, serves as a communication platform to link any of the ARGUS handheld testers with your PC. With it, you can view a clear tabular and graphic presentation of all of the test results on the screen and easily generate a printout of an access acceptance report – for example for xDSL, ISDN, VoIP, IPTV, copper tests and so on.

All of the ARGUS testers can be conveniently configured using a PC. WINplus also enables you to store ARGUS test configurations on the PC, to edit them there, or compare or archive them and then, if needed, to transfer them back to the tester.

The analysis software, WINanalyse, is an extension of the WINplus software. In addition to the functions mentioned above, however, WINanalyse can also capture errors that occur while setting up an xDSL connection or during an xDSL connection and then display them in their proper order in time and compare them to other various xDSL parameteres.

Furthermore, it is possible to perform long-term analyses using an xDSL or IPTV online trace. In this case, depending on the previously selected settings, the results will be either displayed in the form of statistics or presented graphically in their proper order in time on an axis. In this manner, you can analyse the bit rate, the signal to noise ratio or the error counter totals in connection with the loss of synchronization on the xDSL connection.

WINanalyse also supports an extensive set of ISDN functions: Using an ARGUS as a D-channel monitor, you can record data, pass it directly to WINanalyse and decode it in real-time. In addition, the software offers the option of displaying the D-channel data in a table and presenting the interpreted results in the form of clear text in a separate window. As an option, WINanalyse adds the feature of comprehensive D-channel protocol analysis to any of the supported ARGUS handheld testers. The software decodes DSS1, X.25 in the D-channel, V5.2 and other protocols and can simultaneously record the data from several D-channels.

2 Software at a Glance

WINplus

The PC software, WINplus, is a communication interface to link the ARGUS handheld testers with a PC. The software can be used to view both a clear tabular and a graphic presentation of all of the test results on the screen and to easily generate a printout of an access acceptance report – for example for xDSL, ISDN, VoIP, copper tests or IPTV.

Furthermore, WINplus can be used to configure ARGUS testers using a PC: A tester's existing configuration can be downloaded to a PC, where it can be edited or compared with other configurations and then archived on the PC or immediately saved back to the tester.

WINanalyse

WINanalyse supports not only all those WINplus features for presenting results from an ARGUS tester on a PC but also additional analysis functions for evaluating the results of tests. Using this software, it is possible to capture errors that occur while setting up an xDSL connection or during an xDSL connection. The captured errors will be displayed together with the various xDSL parameters in their proper order in time. The long-term results of these xDSL or IPTV online traces will be presented in the form of clear graphics. These graphics make it much easier to evaluate bit rates, signal-to-noise ratios or the error counters related to the loss of synchronization.

Furthermore, WINanalyse can be used to add an optional feature to the ARGUS®145*PLUS*, ARGUS®125 or ARGUS®126 testers that enables them to perform comprehensive D-channel protocol analysis on ISDN networks. The software decodes the D-channel data recorded by one of these ARGUS testers - acting as a D-channel monitor - in real-time. WINanalyse can then present this data as a table or in the form of interpreted clear text in a separate window. The software decodes DSS1, X.25 in the D-channel as well as other protocols and can simultaneously record the data from several D-channels.

When tests are run on PRI accesses, WINanalyse offers a graphic display of the results of a MegaBERT with analysis functions.

Update Tool

A free update tool is available to update ARGUS testers. This tool is also included on the CD-ROM with WINplus and WINanalyse. Using this tool, the tester's firmware can be kept up-to-date by downloading the latest version for the device from www.argus.info.

For the sake of clarity, the remaining description will only refer to WINanalyse. The features of WINplus simply constitute a subset of those of WINanalyse. The serial key entered during the installation determines whether the WINplus or WINanalyse software will be installed.

3 The WINanalyse Software

Both WINplus and WINanalyse are compatible with Windows XP, Windows Vista and Windows 7 (including 64 bit). To ensure proper operation and the best usability of either program, the PC should satisfy the following minimum requirements:

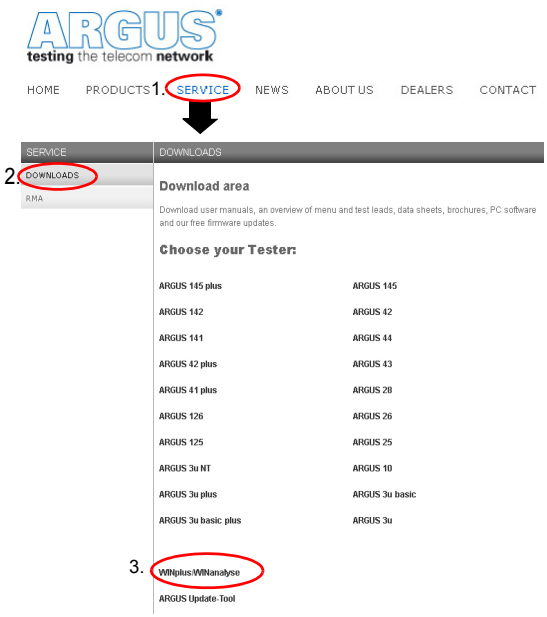
- CPU - 1 GHz clock
- At least 50 MB of space free on the hard disk
- RAM 256 MB
- One USB port free
- A COM port free (only required for older equipment)

3.1 Installing the WINanalyse software

The software can be installed in two different ways.

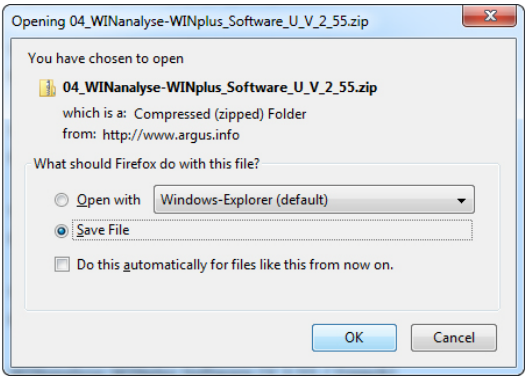
1. Installation from the included CD:
   The installation will begin automatically after the CD is placed in the drive (if the "Autostart" function is enabled on the PC).
2. Installation from the download area of the www.argus.info web page.

Download the WINanalyse software

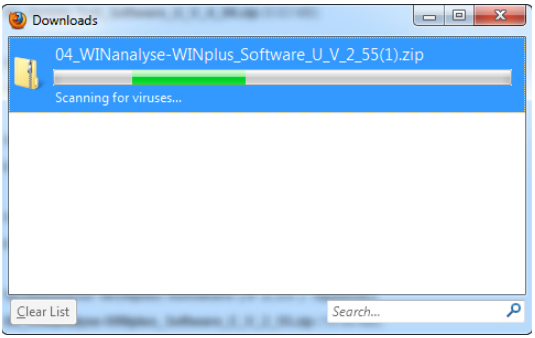


Besides the installing the software from the included CD, it is also possible to download the most recent version of the software from the ***www.argus.info*** web page.
1. Click on ***"Service"*** in the navigation bar.
2. Then click on ***"Downloads".***
3. In the now open window click on ***"WINplus/WINanalyse"***.

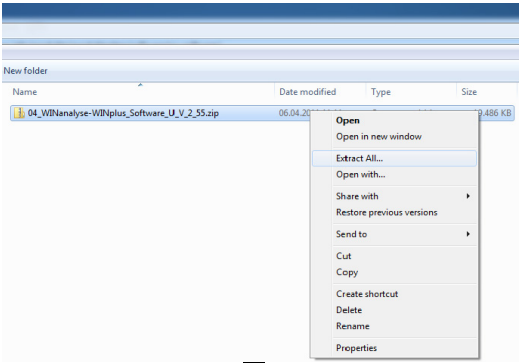
Select the variant appropriate for your equipment.
Start the download by clicking on ***"0x_WINanalyse-WINplus_Software_x_V_x_xx.zip"***.



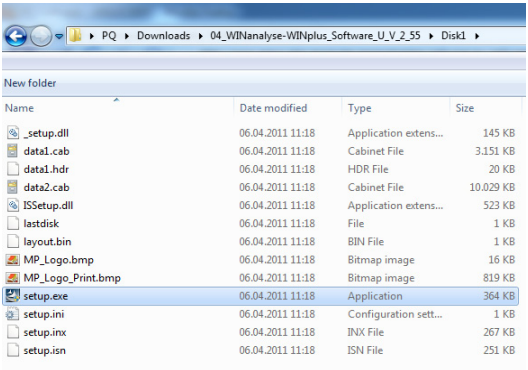
Confirm your choice by clicking on ***"OK"***.



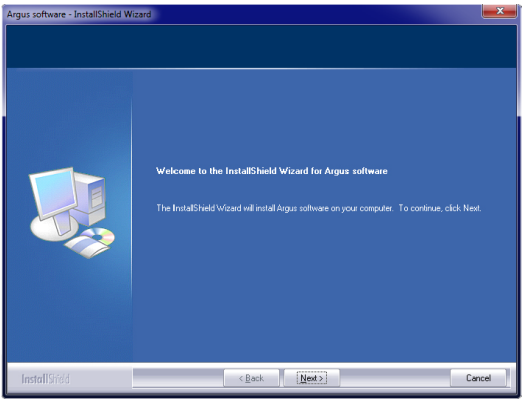
The download will begin.



Open the downloaded file and unpack it with a suitable program.

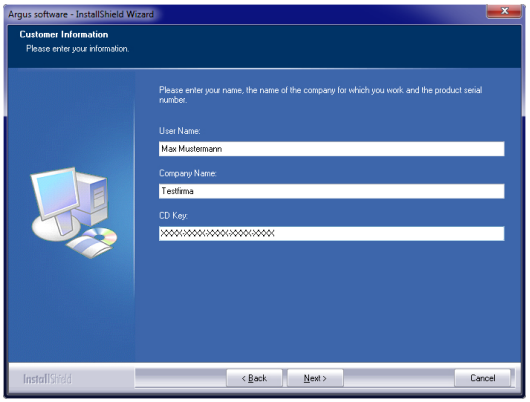


Open the unpacked directory ***"Disk1"*** and click on ***"setup.exe"*** to start the installation.



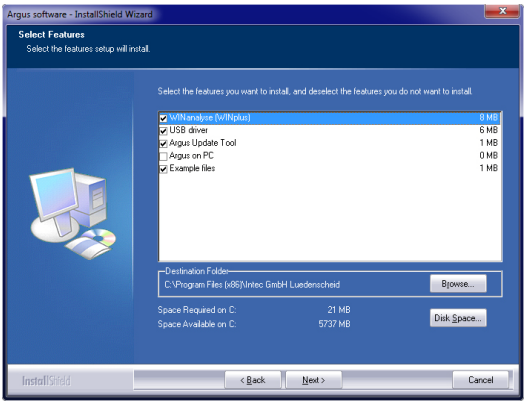
The start window for the installation will open.

Click on ***"Next"*** to continue.



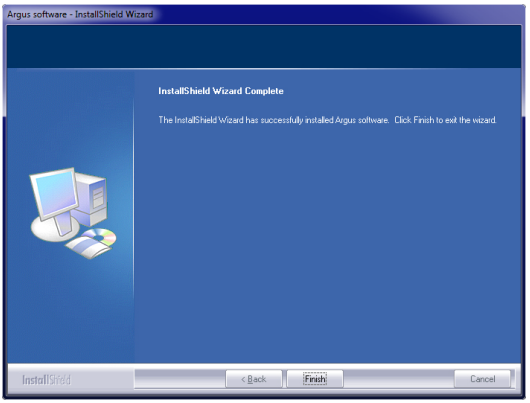
After entering a user name, a company name and a valid CD key (activation key) you can continue the installation by clicking on ***"Next".***

You will receive a valid activation key (serial key on the silver label on the sleeve) with your CD-ROM or can request one from our Support (support@argus.info).



After selecting the components to be installed, you can continue the installation by clicking on ***"Next"*** or you can first click on the ***"Browse"*** button and select where the files should be saved (the recommended components are already marked).

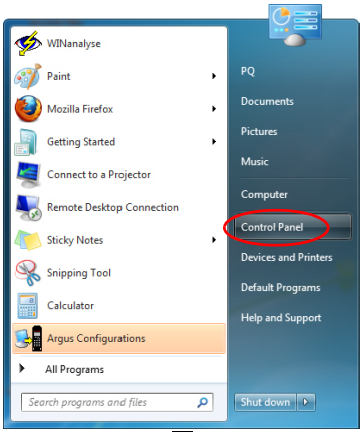
The procedure also includes installation of the USB driver required when connecting an ARGUS tester.



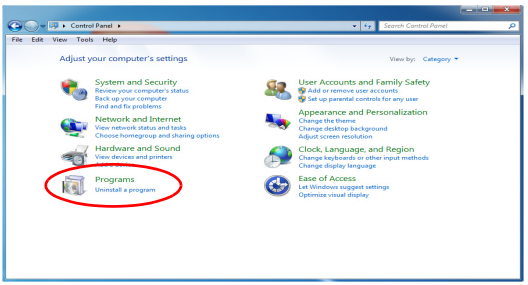
The software will be installed after you confirm your choices by clicking on ***"Finish"***.

The installation is now finished.

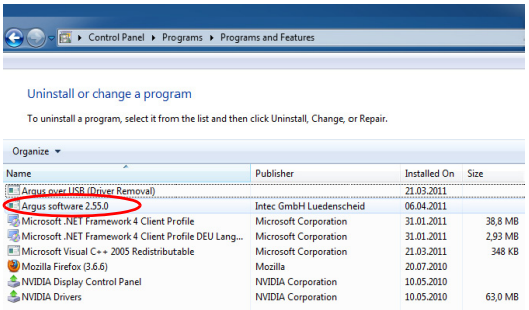
3.2 Uninstalling the WINanalyse software



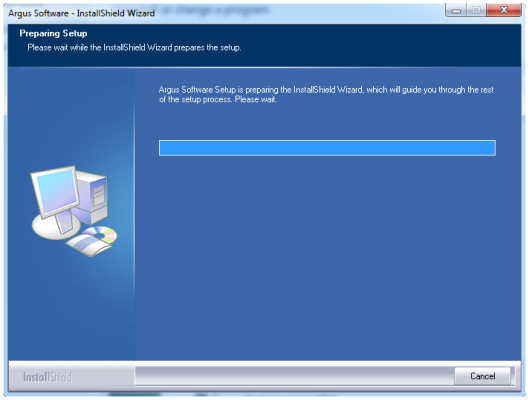
Select ***"Control Panel"*** in the Windows Start menu.



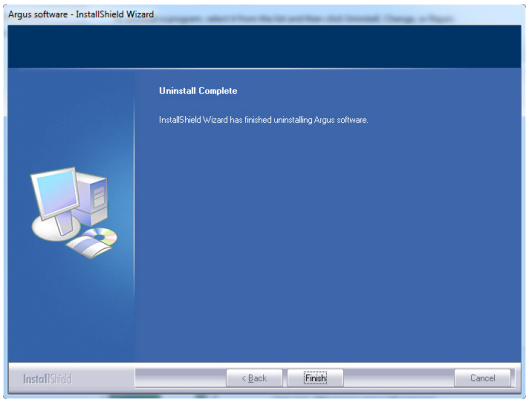
Click on ***"Programs"***.



Select the program to be uninstalled (in the example "ARGUS Software 2.55.0").



The software will be uninstalled.



The uninstallation is completed after you click on ***"Finish"***.

The trace data and test logs saved before uninstallation of the software remain untouched.

3.3 Getting Started

3.3.1 Connecting a hand-held tester

Use the USB cable included with WINanalyse or the USB serial adapter to connect your ARGUS tester to a free USB port on your PC.

Depending on the type of tester, the connection will be made using one of the following cables:

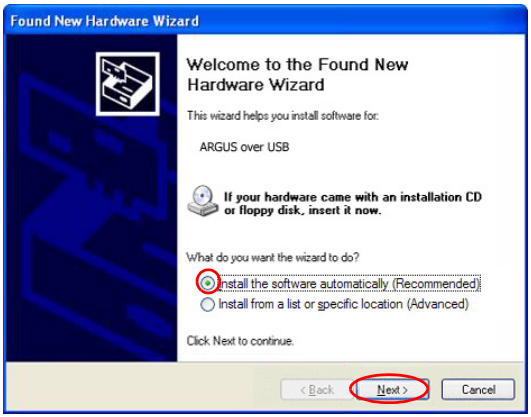
Connections	
145 plus, 145, 142, 141, 126, 125	USB cable or Mini-USB cable
42 plus, 42, 3u NT, 3u plus	Serial USB cable (RJ-11 to USB) USB serial adapter

On older devices, other cables are normally used. For more information, please contact our Support.

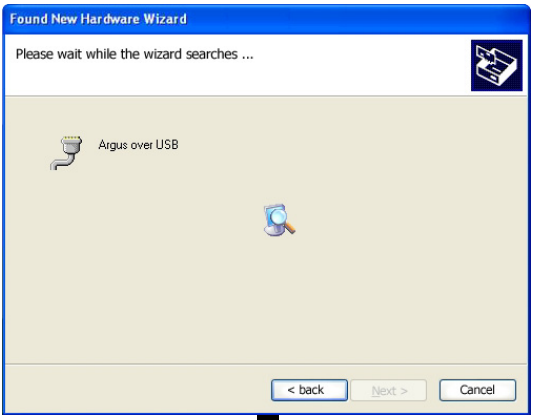
Once the ARGUS is connected, the installation of the necessary driver will begin automatically.

3.3.2 Installation of Hardware under Windows XP

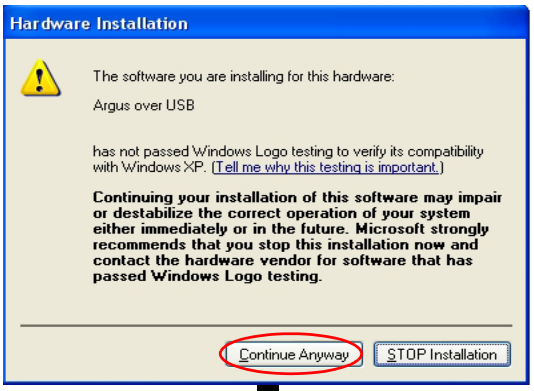
Hardware installation under Windows Vista is performed in the same manner as under Windows XP. Under Windows 7, the installation is performed automatically. Nonetheless, it is advisable to install WINanalyse and the associated USB driver before beginning the hardware installation.



In the current window select ***"Install the software automatically (Recommended)"*** and click ***"Next"*** to continue.



The system will automatically begin to search for the ***"ARGUS over USB"*** driver software.



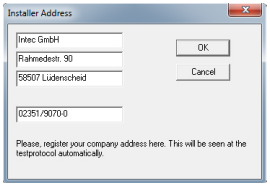
Click on the ***"Continue Anyway"*** button to proceed with the installation.

To quit the installation, click on ***"Finish"***.

3.4 Starting WINanalyse

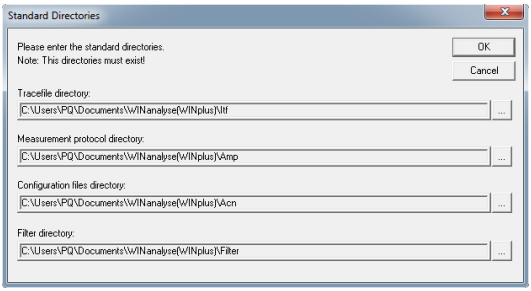
On your Desktop, double-click on the icon to start WINanalyse. If you did not have the icon on your Desktop, start the program via the Windows Taskbar. To do so click on and select ***"Programs"***. Afterwards, an overview of all installed programs will open in which the ***"ARGUS Software"*** directory can be found. In this directory, you can start WINanalyse by clicking on its icon or name.

Setting the installer (company) address



When WINanalyse is first started, a window will open automatically in which you can enter your company's address. This information will later be used in the measurement or test reports.

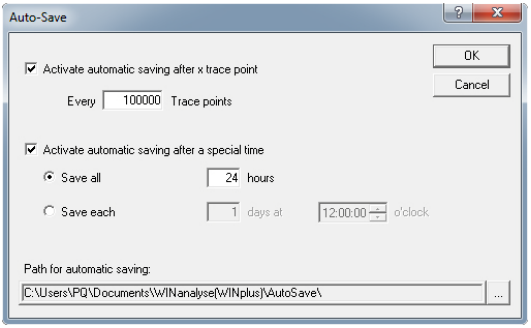
Setting the standard directories



To change the location where your files will be saved, open the "File" menu and select ***"Standard Directories"***.
A dialog box will open in which you can set the directories to be used for your

– Tracefiles,
– Measurement protocol,
– Configuration files and
– Filter
on your PC.

Configuration of the Auto-Save



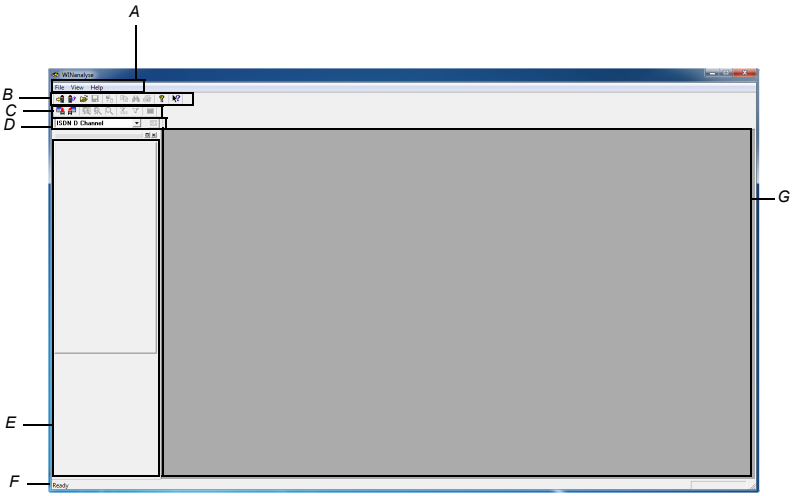
To configure the auto-save, click on ***"Auto Save"*** in the "File" menu.
A dialog box will open in which you can specify when your data should be automatically saved. When data is auto-saved, a new time-stamped file (with the date and time that the file was saved) will be created in the previously configured directory.

4 Workspace

The WINanalyse workspace is arranged to provide easy access to the functions needed to analyse and process test logs and also those for configuring the ARGUS. It includes menus and a multitude of functions which may change depending on the type of test log.

4.1 Basic Layout of the Workspace

A large number of functions are available to make the analysis or viewing of test logs or editing configurations more convenient. These functions are directly accessible in the workspace and can be configured to suit you individual needs.
The standard layout of the workspace, which is displayed when WINanalyse first starts, is as follows:



WINanalyse - Standard Workspace
***A.** Menu bar **B.** Standard toolbar **C.** Window toolbar **D.** Protocol selection **E.** ARGUS configuration*
***F.** Status line **G.** Work window*

The standard workspace can be customized to suit your specific needs. To customize the workspace, go to the menu and select ***"View/Toolbar"*** where you can enable both a graphics window and a decoder toolbar. The decoder toolbar will be displayed automatically when a test log is opened.

All of the toolbars may be moved within the workspace. Any changes made to the layout of the workspace will be automatically saved when the trace data is closed. The changed and saved layout becomes the new "standard" layout.

4.2 A - Menu bar

File	
Connect to the ARGUS Ctrl+N	Select the data source.
ARGUS Configuration Ctrl+R	Open the configuration management.
Open...	Open compatible files and the associated window settings.
Close	Close the currently open test log.
Save Ctrl+S	Save the test log currently used under its current (same) name.
Save as...	Save the test log currently used under a different name.
Close and new...	Close the current trace and begin recording a new trace from the same source.
Open trace file	Open a trace file and the associated window settings.
Open test log file...	Open a previously saved test log.
Export trace data...	Export an entire trace file or any portion of a trace as text.
Export Graphic...	Export the data of a selected graphic as a .csv file (e.g. bits/tone).
Export MP in csv...	Export the test log as a .csv file.
Print Ctrl+P	Print selected trace tables, decoded data or graphics.
Print Setup...	Configuration of the selected printer (e.g. print quality, format etc.).
Recent Files *Test logs*	Display the last four test logs opened.
Exit	Close WINanalyse.
If all files are closed:	
Standard Directories	Set the standard directories used when opening or saving files.
Installer Address	Save the address of the installing company for use in test logs.
Auto save	Automatically saves a trace recording after a previously set period of time or a specific number of trace entries.

Edit	
Copy Ctrl + C	Copy the marked content.
Find Ctrl + F	Search for any specified term in the decode and/ or trace windows (see page 21).
Filter	Both general and ISDN-specific filters can be configured in the Filter dialog.

View	
Toolbar	Display/Hide the selected windows and toolbars.
Status bar	Display/Hide the status bar.
ARGUS Terminal Log	Display ARGUS-specific content regarding a trace file.
Save Window Settings	Saves the custom window settings.
Load Window Settings	Loads window settings that were previously saved.
Export Window Settings	Exports window settings that were previously saved.
Import Window Settings	Imports window settings that were previously saved.
Change Active View ⇧ + ⇤⇥	Switches the view between various menu bars.
Maximize Trace Window	Maximizes the trace window while minimizing the decode window.
Maximize Decode	Maximizes the decode window while minimizing the trace window.
Trace and Decode	Set the trace and decode windows to the same size display.
Split Window	Display a second identical trace window.
New View	Restores the previously adjusted display of the trace and decode windows to the default settings.

Test Result	
Next page	Switches to the next page (tab) in a test log.
Previous page	Switches to the previous page (tab) in a test log.
Export in csv...	Export the test log as a .csv file.

Trace	
Connection	Connect to / Disconnect from the ARGUS.
Auto-scroll	Enable / Disable auto-scroll in a window.
Change Trace Direction	Change decode direction.

Decode	
Headline	Displays an extended header with additional information.
Hex. View	The signal will be presented in hexadecimal coding in the decode window under the heading Hex data.
Layer 2	Select the degree of analysis of Layer 2.
Layer 3	Select the degree of analysis of Layer 3.
Line Feed	Adjusts the text to fit the size of the decode window.
Protocol	Select the protocol.
Manual Data Input...	Analysis of a selected signal.
Segmented Messages	The ARGUS will automatically join segmented Layer 3 messages together and display them in the decode window.

Window	
New Window	Opens a copy of the active window.
Cascade	Displays all of the open windows overlapped at the same size.
Tile Horizontally	Displays all of the open windows at the same size tiled one above the other.
Tile Vertically	Displays all of the open windows at the same size tiled horizontally next to each other.
Arrange	Minimize the windows sorted at the lower edge of the display.
"Recent Files"	The selected file will be brought to the foreground.

Help	
Info...	Displays the information window.
Contents	Displays the help function.

4.3 B - Standard Toolbar

 Connect to ARGUS	A window of the available sources will open. To connect the ARGUS to the PC, select the PC port to which your tester is connected and then click on ***"OK"***.
 ARGUS Configuration	The ARGUS Configuration window will open in which you can manage the configurations.
 Open file	A dialog box will open displaying the saved test log files and trace recordings (e.g., Example ADSL.amp). Mark the desired file and then click on ***"Open"***. Afterwards, the selected file will open in the WINanalyse workspace. Multiple test logs can be opened and analysed at the same time.
 Save to file	Using the ***"Save"*** (and ***"Save As...")*** function(s), you can save your test logs / trace recordings (under any name). If the system crashes, WINanalyse will reconstruct your data.
 Close and New...	Click on ***"Close and New..."*** to close the current recording and save the results under any name desired. Afterwards, more data will be recorded from the trace source previously selected.
 Copy	Copies the marked data and places it on the clipboard.
 Find	A dialog box will open to allow you to search the decode or trace window for any term. The search process can be refined by selecting one or more of the available options. To display the various options, click on the  button.
 Print	A dialog box will open in which you can choose between printing a whole test log or just a specific portion of one. When printing a recording you can specify whether to print the entire trace table, the content of the decode window or a displayed graphic.

	Info	Information about WINanalyse and intec Gesellschaft für Informationstechnik mbH will be displayed if you click on this button. If you click on ***"www.argus.info"*** or ***"Internet",*** a connection to our home page will be established directly.
	Help	Depending on the version of WINanalyse that you have, if you click on this help tool and then a button, page (tab), or a test log you can read related information about it. In such cases, a window will open in which information about the object will be displayed (if it was automatically recognized) or in which you can search for the desired information.

4.4 C - Window Toolbar

 Save Window Settings	Click on this button to save the individual settings (e.g. column width) for a screen layout.
 Load Window Settings	A dialog box will open in which you can select and load window settings that were previously saved.
 Table	Click on the ***"Table"*** button to display just the trace window. All other windows will be minimized.
 Trace + Decode	Click on the ***"Table + Decode"*** button to display both the trace and the decode windows. All other windows will be minimized.
 Decode	Click on the ***"Decode"*** button to display just the decode window. All other windows will be minimized.
 Filter configuration	You can filter various signals in the trace window. To do so, click on the ***"Filter configuration"*** button. A window will open in which you can select the desired filter configuration. The configuration can then be saved for reuse at any time.
 Filter on/off	The filter configuration set up before can be activated or deactivated by clicking on this button.
 ARGUS Terminal Log	Click on ***"ARGUS Terminal Log"*** to open a window in which the ARGUS Info text for the currently open file or connection will be displayed. Later, the corresponding log file can be saved.

4.5 Decoder Toolbar

 Next page	Click on this button to open the first page (to the right).
 Previous page	Click on this button to open the first page (to the left).

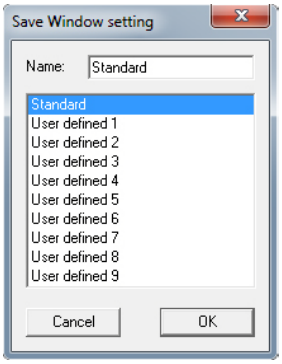
Scroll automatic	The recorded signals will be presented online on the screen of the PC. To analyse the signals at your leisure, you can “freeze” the screen. To do so, click on the ***"Scroll automatic"*** button. Click on the button a second time to deactivate the ***“Freeze screen”*** function. Signals received while the screen is "frozen" will be recorded in the background and can be viewed at a later point in time.
Data Record on/off	The recording of data can be interrupted at any time. To do so, click on the ***"Data Record on/off"*** button. Click on the button again to resume recording the signals.
Adjust Cell Height	Click on this button to adjust the height of the trace table cells so that all of the information in the cells will be displayed.
Normal Cell Height	This button restores the cells to their normal height.
Display Headline	General information will be displayed about the signal under the heading ISDN D-channel in the decode window.
Hex. View	The signal will be presented in hexadecimal code in the decode window under the heading HEX data.
Layer 2, depth of analysis = 1	General Layer 2 information will be displayed under the heading Layer 2 (L2).
Layer 2, depth of analysis = 2	Additionally, the L2 frame’s bits will be decoded and displayed.
Layer 3, depth of analysis = 1	The name of the Layer 3 message will be displayed under the heading Layer 3 (L3).
Layer 3, depth of analysis = 2	The content of the most important Layer 3 information elements will be displayed under the heading Layer 3 information elements.
Layer 3, depth of analysis = 3	All of the Layer 3 information elements will be displayed in clear text.
Layer 3, depth of analysis = 4	The bits of the signal frame will be decoded in addition.

4.6 D - Protocol Selection

 Segmented Messages	Related segmented messages will be decoded together.
 Protocol Selection	If other protocols are enabled, the protocol that should be used for decoding can be selected from the pull-down menu here.

4.7 Window Settings

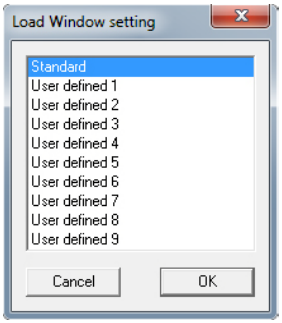
Save Window Setting



To save the current window settings, click on ***"Save Window Setting"*** in the View menu. Alternatively, you can also simply click on .

A dialog box will open displaying the ten window setting records. Select the record (memory location) to be used for saving the window settings.
You can enter a name for the window settings in the "Name:" field. Afterwards, click on ***"OK"*** to finish the procedure.

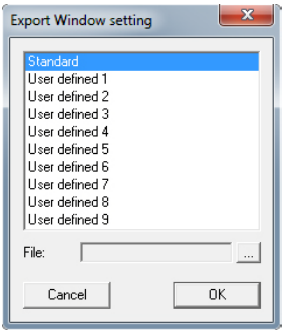
Load Window Setting



To load previously saved window settings or to restore the default (standard) settings, click on ***"Load Window Setting"*** in the View menu. Alternatively, you can also simply click on .

A dialog box will open from which you can open one of the ten possible window settings. Select the desired setting and click on ***"OK"***.

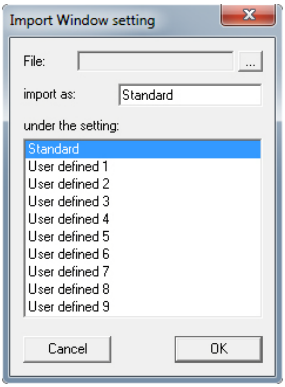
Export Window Setting



To use one of the saved settings on a different PC so that you can avoid having to define the same settings there, click on ***"Export Window Setting"*** in the View menu. Afterwards, a dialog box will open displaying the previously defined window settings. Select the window setting to be exported and then click on ***"OK"***.

You can also click on the ... button to specify where the file should be saved.

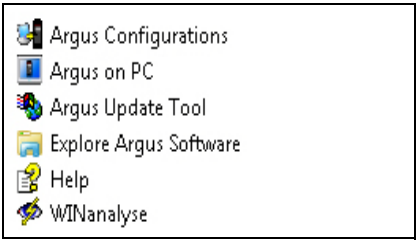
Import Window Settings



The export function is complemented by a corresponding import function. To import window settings which have previously been exported, click on ***"Import Window Setting"*** in the File menu. Afterwards, use the ... button to select the file to be imported.
In the list of settings, select the one to be overwritten. If you want to rename the window setting, enter the new name in the ***"import as"*** field. Afterwards, click on ***"OK"*** to finish the procedure.

5 Configurations

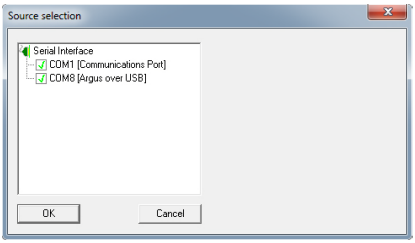
The ARGUS Configurations program can be started in the following manner:



The "ARGUS Software" program group

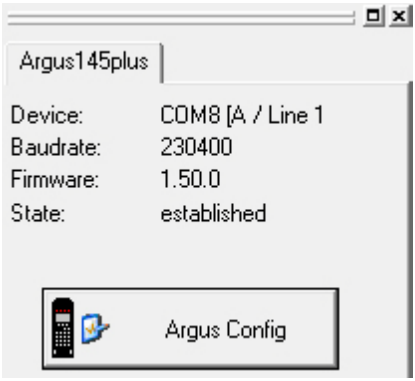
Start the configuration from the Windows Start menu . Begin by selecting the program group ***"ARGUS Software"*** and then click on the ***"ARGUS Configurations"*** icon.
If WINanalyse has already been started, configurations can be started by clicking on the icon in the standard toolbar or by selecting ***"ARGUS Configuration"*** in the "File" menu.

Selecting the port



Once you have started "ARGUS Configurations", the following window will open:
In this window, you can select - from the list of available sources - the data source that you want to edit or manage and then confirm your selection by clicking on ***"OK"***.

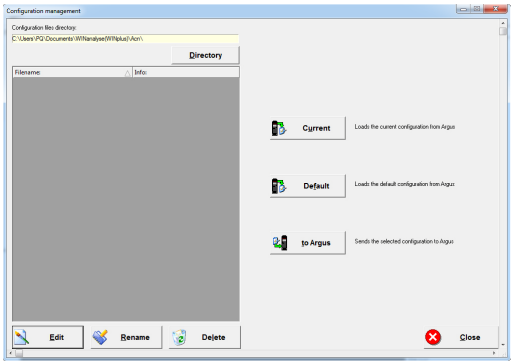
An Alternative for Starting ARGUS Configurations



If you have already connected your ARGUS to WINanalyse by clicking on the icon, you can open configurations by clicking on ***"ARGUS Config"***.

5.1 Configuration management

Once you have started the configuration management, you can use your PC to manage and edit various configurations for your ARGUS. These configurations include all of the parameters that you find under the "Settings" on your ARGUS.



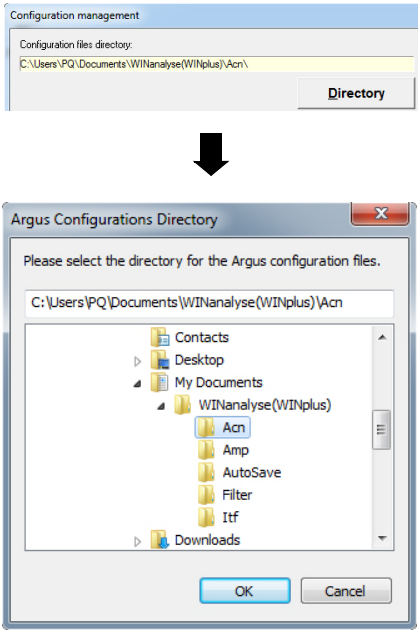
Configuration management

On the left side of the "Configuration management", you will find a list of all of the configurations that have been saved in the "Standard directories" directory on the PC. Whatever operation is selected by clicking on one of the buttons will be performed on the configuration selected in this list.

Functions

Directory	The directory used to store configurations on the PC can be changed temporarily by clicking on this button.
Current	Opens a new window into which the current configuration of the ARGUS can be loaded on the PC.
Default	Opens a new window into which the default configuration of the ARGUS can be loaded on the PC.
to Argus	Sends the currently selected configuration from the PC to the ARGUS.
Edit	Opens a new window in which the selected configuration can be edited.
Rename	Click this button to rename an existing configuration.
Delete	Deletes the selected configuration. This will also delete the configuration file from the PC's hard disk.
Close	Click on this button to close the configuration management window.

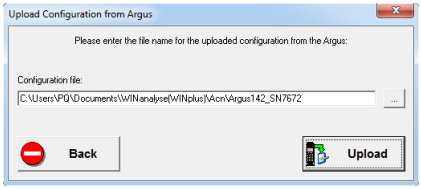
5.2 Saving a Configuration



Click on the ***"Directory"*** button to temporarily change the directory in which configuration files will be saved on the PC. After clicking on this button, a dialog box will open in which you can select the directory in which you wish to save configuration files. The desired directory can be either entered using the keyboard or you can select it with the mouse. Afterwards, confirm your entry with ***"OK"***.

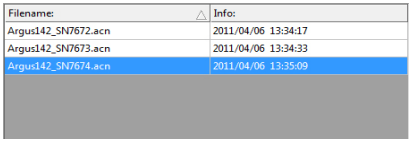
5.3 Uploading a Configuration from the ARGUS

The configuration management offers two options for copying configurations from the ARGUS to the PC. For one, if you click on ***"Current",*** the currently used configuration will be copied from the ARGUS to the PC. For another, if you click on ***"Default",*** the default configuration or the factory settings will be copied from the ARGUS to the PC. In both cases, the following window will open:

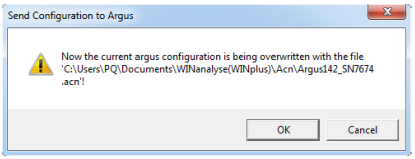


First, specify where the configuration file should be saved. Then click on ***"Upload"*** to copy the current or default configuration from the ARGUS to the PC. Afterwards, the newly created file will appear in the list on the left of the configuration management window.

5.4 Sending a Configuration to the ARGUS



Once you have started the configuration management program, select the directory in which the configuration file may be found. Afterwards, select the desired configuration file from the configurations table and then click on the ***"to ARGUS"*** button.



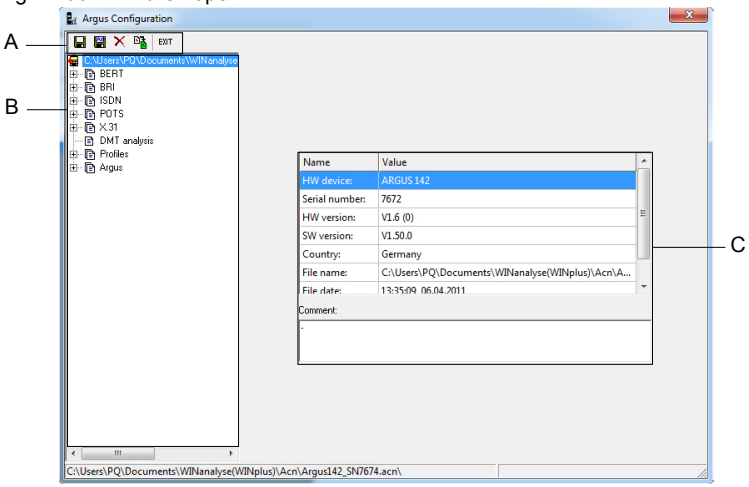
To begin the transfer, you must click on ***"OK"*** to confirm that you want to send the configuration to the ARGUS and thus overwrite the current configuration of the ARGUS.

ARGUS has to be in idle mode, when transferring configurations. The idle mode means that no test interfaces are in use or even tests are running. In this case, WINanalyse will show an error message. To continue, please terminate all running tests and disconnect ARGUS from the test interface(s).

5.5 Editing an Existing Configuration

The configuration management makes it easy for you to edit your configurations. The configuration settings supported are the same as those on the ARGUS itself.

To edit a configuration, select the desired configuration file in the configuration table and then confirm your selection by clicking on ***"Edit"*** or by double-clicking on the file name. The following window will then open:



ARGUS Configuration:
A. Administration toolbar **B**. Configuration overview **C**. Configuration window

The configuration overview provides a summary of all the configuration points available. These points can be edited and managed in the configuration window. If you have made changes, the branch altered will be marked in the configuration overview with an ***"x"*** at the end. Afterwards, the administration toolbar can be used save or discard these changes. Functions such as e.g. ***"Collapse branch"*** or ***"Discard changes"*** can be found in the context menu.

Administration toolbar

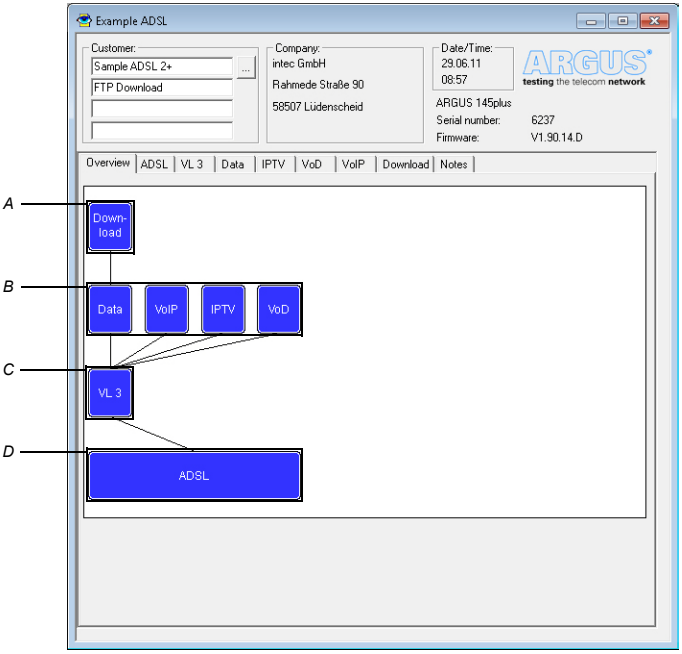
	Save the changes made.
	Save the changes made under the specified path and name.
	Discard all changes made in this session.
	Copy the content of a profile (includes: profile type, source and the destination).
EXIT	Close the window and discard the changes made.

6 Test Logs

6.1 General Structure of a Test Log

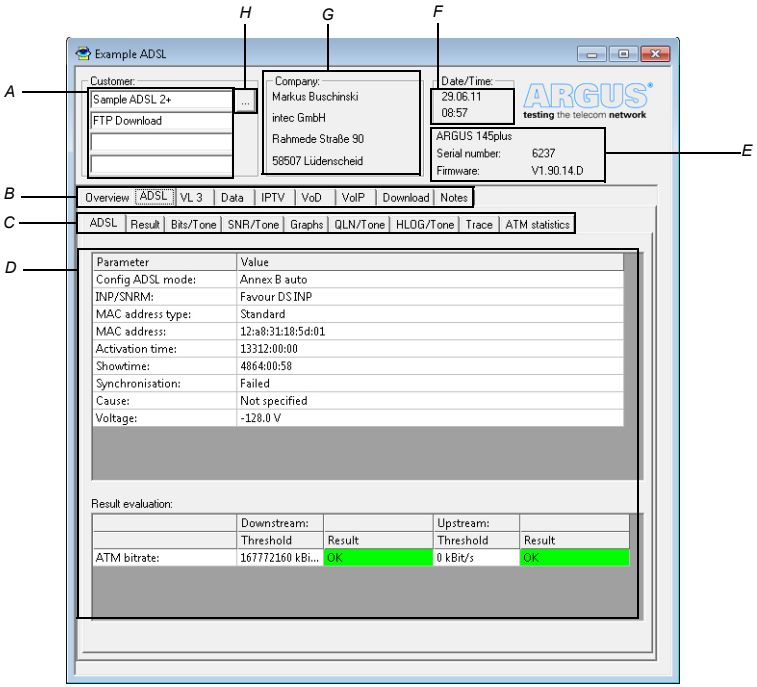
6.1.1 An Example of the Layout of a Test Log

The layout of a test log may differ depending on the access and configuration. The following examples illustrates the possible layouts.



Starts screen of an WINanalyse Test log
***A.** executed test **B.** type of Service **C.** Virtual Line **D.** Access*

In the overview it is possible to fade in or remove tabs when clicking an executed test (element A), a service (B), a virtual line (C) or the Layer 1 (D).



WINanalyse - Test Log
***A.** Customer information **B.** Tab Set 1 **C.** Tab Set 2 **D.** Test summary **E.** ARGUS information*
***F.** Date/Time **G.** Own company name **H.** Customer data selection*

6.1.2 The tabs

The following three tables show all of the possible tabs. These differ depending on the type of access. They show all of the access and test parameters as well as all recorded test results, sorted alphabetically in three hierarchical levels.
For more information on the various signals, test and connection parameters, please see the ARGUS manual.

Tab Set 1
(Section B of the test log, see page 34)

Tab	Category	Explanation
Access	all	Displays selected access and access mode.
ATM OAM ping	ADSL/SHDSL	Displays the availability of individual network nodes.
B-channels	ISDN	Displays the B-channels.
BERT	ISDN	Displays the results of a bit error rate test.
Call Forwarding	ISDN	Displays the type, service and destination of a call diversion set up.
Config.	DSL/ETH	Displays the configuration previously set.
Data	DSL/ETH	Displays all information about the Service Data.
Download	DSL/ETH	Displays the results of a download test and the configuration.
Features	ISDN	Displays the availability of supplementary services on the access under test.
IPTV	DSL/ETH	Displays the results of an IPTV test and the configuration.
L1 Alarm	ISDN	Displays Layer 1 alarms/messages and the status of the PRI access.
Line results	DSL/ETH	Displays detailed test results in the subordinate tabs (see Table: Tab Set 2, page 36).
Loading	DSL/ETH	Displays the results of an upload test and the configuration.
Loop	SHDSL/ETH	Displays the results of a loop and the configuration.
MDI	DSL/ETH	Displays the results of an MDI analysis and the configuration.
Notes	all	Field for entering additional information.
Overview	all	Gives an overview of the profile and its associated virtual lines and tests.
PESQ	all	Displays the PESQ value.
Ping	DSL/ETH	Displays the results of a Ping test and the configuration.
Services	ISDN	Displays the results of a Service Check.
Traceroute	DSL/ETH	Displays the results of a Traceroute test and the configuration.
VL x	DSL/ETH	Displays the used virtual lines.
VoD	DSL/ETH	Displays the used Video on Demand parameters.
VoIP	DSL/ETH	Displays the VoIP configuration, the results and the SIP log (for details please see Tab Set 2 page 36).
VoIP call	DSL/ETH	Displays the VoIP call parameters.
Voltage	ISDN	Displays the signal level and the supply voltage.
VPI/VCI	ADSL/SHDSL	Displays the VPI/VCI channels available.
X.31	ISDN	Displays the availability of the D-channel and any diagnostic codes.

Tab Set 2
(Section C of the test log, see page 34)

Tab	Category	Explanation
ADSL	ADSL	Displays the interface information and the evaluation of the results.
Assigned config.	DSL/ETH	Displays one of the DHCP assigned configurations.
Bits/Tone	ADSL/VDSL	Tabular or graphic display of the bit distribution (transported bits per tone, carrier frequency or channel).
Cap. List	SHDSL	Displays the SHDSL capability (feature) list.
Config.	DSL/ETH	Displays the configuration previously set.
DMT analysis	Cu test	Graphic display of the DMT analysis.
Ethernet	DSL	Displays the DSL bridge or router configuration on the LAN side.
Graphs	ADSL	Graphic presentation of the bits and SNR per tone.
HLOG/Tone	ADSL/VDSL	Graphic presentation of the amplitude component of the transfer function (HLOG) for each tone
IPTV test	DSL/ETH	Displays the results of an IPTV test and the configuration.
Line	VoIP	Display of the log of the SIP messages and status codes exchanged.
Line 1 - 4	SHDSL	Displays the results for each SHDSL wire pair used.
Line scope	Cu test	Graphic display of the Line scope results.
MOS	VoIP	Displays the MOS information (speech quality).
Packets	IPTV	Displays the IPTV packet information.
PPP Trace	DSL	Chronological presentation of the sequence of PPP messages.
QLN/Tone	ADSL/VDSL	Displays the quiet line noise (QLN) for each tone.
Result	ADSL	Tabular display of the ADSL connection parameters.
RTCP	VoIP	Displays the RTCP Infos sent from the remote end.
RTP	VoIP	Displays the packet statistics or RTP Infos.
SHDSL config.	SHDSL	Displays the interface information.
SNR/Tone	ADSL/VDSL	Tabular or graphic display of the signal-to-noise ratio (SNR) per tone.
Statistics	DSL/ETH	Displays WAN, LAN, ATM and PPP parameters.
Stream	IPTV	Displays the PID (Packet Identifier) information and error counters.
Talk	VoIP	Displays the call information.
TDR	Cu test	Graphic display of the TDR results.
Trace	DSL/ETH	Displays the Modem trace.
VDSL	VDSL	Displays the VDSL connection information. (for details, see Tab Set 3).
VL result	DSL/ETH	Displays the virtual line connection parameteres.
VoIP config.	DSL/ETH VoIP	Displays codec, telephone and SIP parameters.

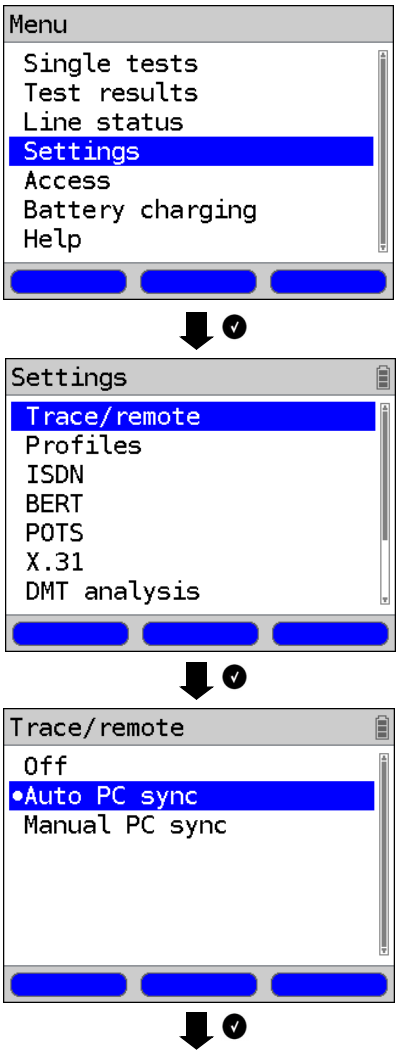
Tab Set 3

Tab	Category	Explanation
General	VDSL	Displays the interface information and the evaluation of the results.
EOC	SHDSL	Displays the EOC channel information.
Result	VDSL	Tabular display of the VDSL connection parameters.

6.2 Managing and Evaluating Test Logs

6.2.1 Establishing a connection to WINanalyse / WINplus

Activate the PC connection



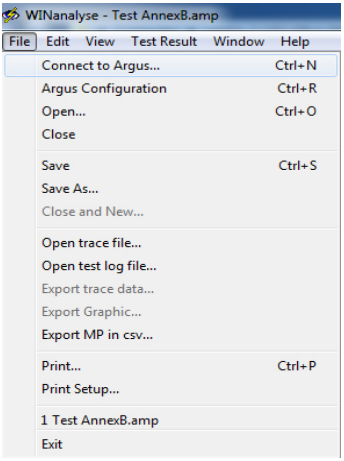
To connect the ARGUS to WINanalyse / WINplus, you must first activate the PC connection on the ARGUS (in this example, on an ARGUS 145 plus).

In the ARGUS Main menu, select ***"Settings"***.

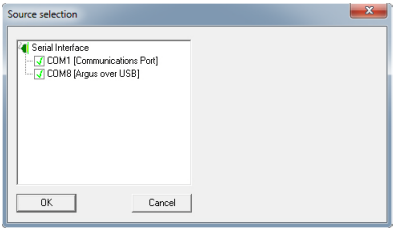
In the Settings menu select ***"Trace/ remote"***.

In the Trace/ remote menu, select ***"Auto PC sync"***.

Connecting WINanalyse / WINplus to the ARGUS

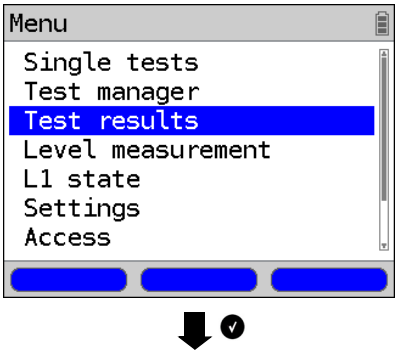


To connect the PC to the ARGUS, open the ***"File"*** menu and select ***"Connect to ARGUS".***
Alternatively, press the key combination Ctrl + N or click on the button.

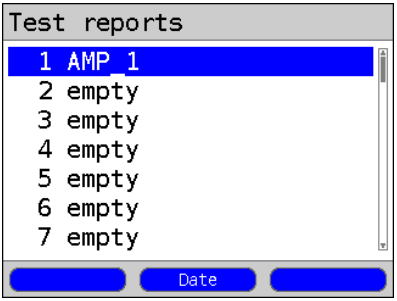


In this window, you can select - from the list of available sources - the data source that you want to open and then confirm your selection by clicking on ***"OK"***.
A window will open showing the current connection data.

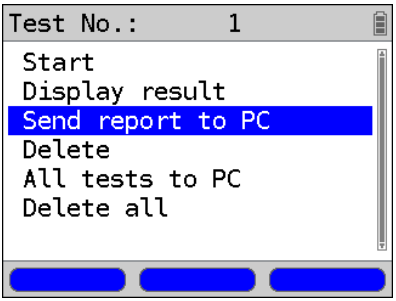
6.2.2 Sending test results to a PC



To send the desired test results from the ARGUS to the PC, select ***"Test results"*** in the Main menu.



Then select the test result to be sent.

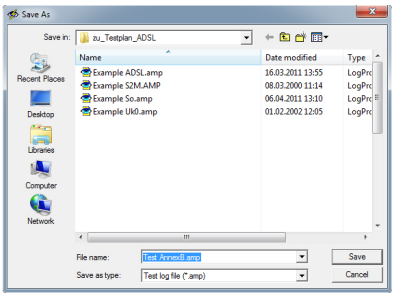


The desired function will be performed once you confirm with ✓. If you have selected ***"Send report to PC"***, the test result will be opened in WINanalyse / WINplus.

If instead you selected ***"All tests to PC"***, all of the test logs stored in the ARGUS will be sent to the PC one after the other. This could amount to as many as 50 logs.

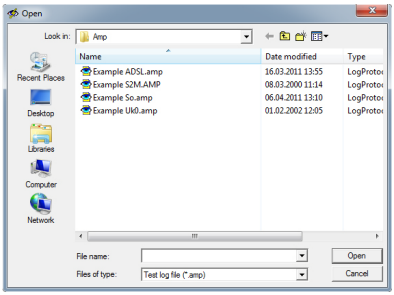
To send a test log to the PC, it is not necessary that the ARGUS be in the Trace/ remote setting***"Auto PC sync"*** or ***"Manual PC sync"***. To send a test log, it is enough if the corresponding COM port is open in WINanalyse.

6.2.3 Saving a test log



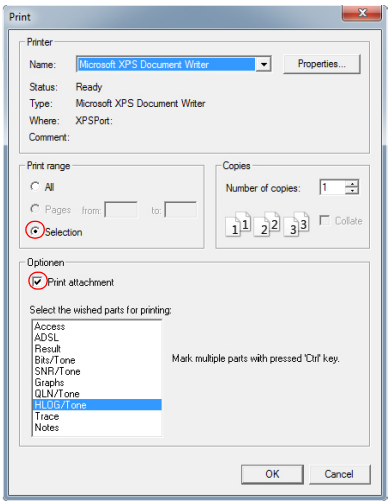
In the ***"File"*** menu, select ***"Save As..."***.
A dialog box will open in which you can enter the path and file name that should be used when saving the test log. Afterwards, click on the ***"Save"*** button.

6.2.4 Opening a previously saved test log.



In the ***"File"*** menu, select ***"Open test log"***. A dialog box will open that, on the left side, lists all of the previously saved test logs (e.g. customer1.amp). Select a log by clicking on its file name. Click on ***"Open"*** to open the test log in WINanalyse. Alternatively, you can also simply click on  .

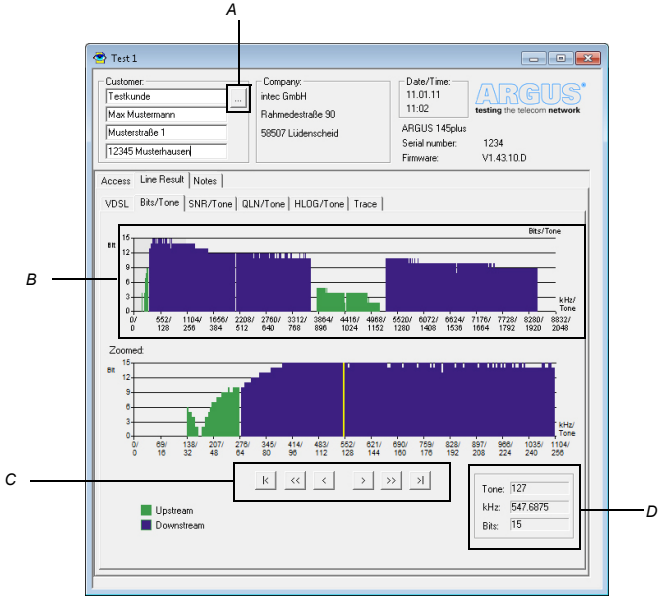
6.2.5 Printing a test log



Click on  to print the desired test log. Alternatively, you can open the ***"File"*** menu and click on the same function.
Afterwards, a dialog box will open in which you can select whether you want to print an entire test log or just a selected section of one.
If you only want to print part of a test log, the ***"Print range"*** setting ***"Selection"*** must be selected. When this is selected, the options list below will be then enabled to allow you to select which components should be printed.
If you also check the ***"Print attachment"*** box, the test log itself (ADSL only) with the entire tabular presentation of the counter values per tone for Bits, SNR, QLN and HLOG will be attached. This can, of course, grow up the print out considerably.
Additionally, you can set the print range, the printer and the number of copies as desired.

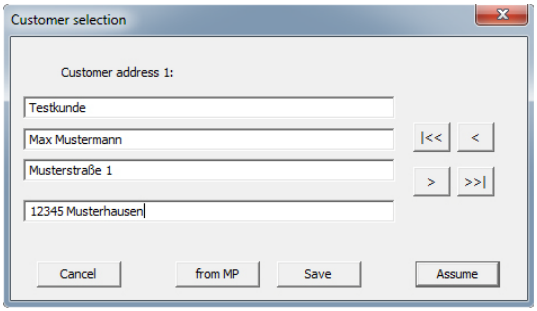
6.2.6 Test log functions

The following shows an example of the user interface of a test log. Various functions that can be performed within a test log are indicated in sections A to D.



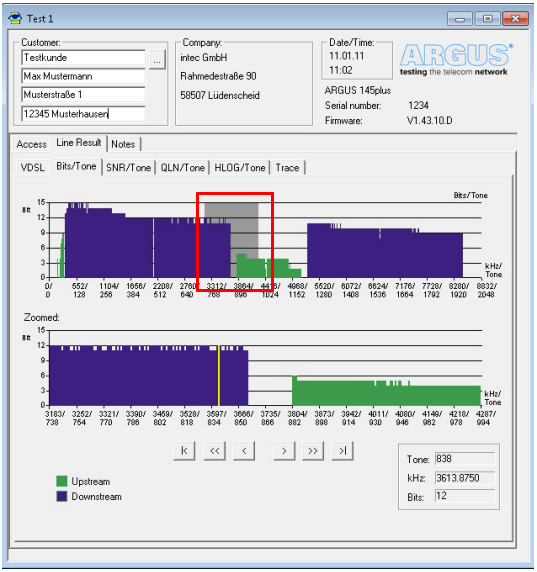
An overview of the functions illustrated in the example of a VDSL test log
***A.** Customer selection **B.** Quick selection of the analysis area*
***C.** Zoom box buttons **D.** Detailed measurement point information*

A. Customer selection



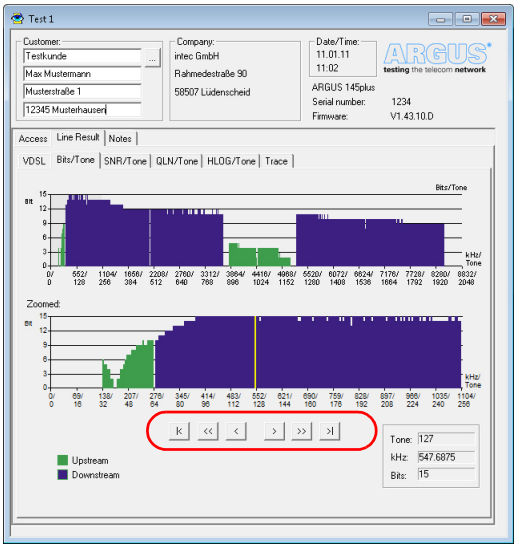
Up to 15 customer addresses, which can be selected using the arrow keys on the right edge, can be stored here.
The customer data from the currently open test log can be entered into this dialog box by clicking on ***"from MP".*** Afterwards, it can be saved. Click on ***"Assume"*** to transfer the customer address entered here into a new test log.

B. Quick selection of the analysis area



By selecting a point in the upper graphic with the mouse, the selected area will be shown in detail in the zoom box below.

C. Zoom box buttons (VDSL and Cu tests only)



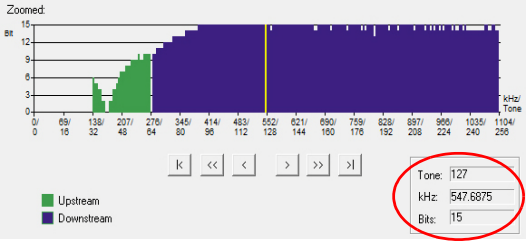
It is possible to adjust the area selected using the buttons for scrolling that are below the graph.

Jump to the beginning or end of the graph.

Move the measurement area by 1104 kHz or 256 tones.

Move the measurement area by 276 kHz or 64 tones.

D. Detailed measurement point information



By selecting a point in the ***"Zoom field"*** (below: Zoomed) with the mouse, you can select a detailed measurement point that will be marked in yellow in the graphic. If the scroll buttons below the graphic have not yet been activated, the marked measurement point can be moved right or left using the Ctrl + ← / → keys. The associated numerical values will be shown in the information box at the lower right.

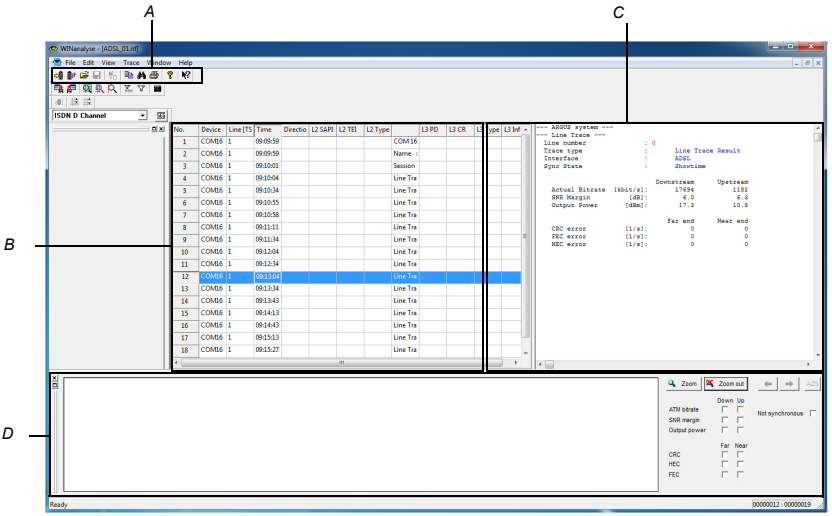
7 Online Trace

Basically this chapter covers two different types of trace:

1. Graphic online trace (for ADSL, VDSL, IPTV and MegaBERT on a PRI/E1 line)
2. D-channel protocol analysis (for an ISDN BRI access)

7.1 The basics of an online trace

To start an online trace, first establish a connection to the ARGUS (see page 36). The trace window will then open automatically. In this window, all of the received D-channel signals will be displayed online - organized in a table. The layout of the workspace for an online trace is shown below.



Workspace - Online Trace
***A.** see page 17 **B.** Trace table **C.** Decoder window **D.** Graphic display of the test signal*

In order to trace data online, the ARGUS must be connected to the access to be traced (ADSL, VDSL or ISDN) and an ongoing connection must be setup using the associated protocol. The ARGUS must run the tests (IPTV, MegaBERT) to be traced on the access under test.

If it is not already displayed, you can enable the display of the area marked "D", "Graphic display of the test signal", by selecting ***"View/Toolbar/Graphics"*** in the menu.

7.2 B. Trace table

WINanalyse will first save all the data sent to your PC during the online trace (on the PC's hard disk) before it displays the data in interpreted form on the screen. The original data can be displayed in any of eight different analysis levels and is also available to the user for renewed analysis at a later time.

No.	Device	Line [TS	Time	Directio	L2 SAPI	L2 TEI
1	COM16	1	09:09:59			
2	COM16	1	09:09:59			
3	COM16	1	09:10:01			
4	COM16	1	09:10:04			
5	COM16	1	09:10:34			

The table at the side shows the signals received by WINanalyse from the connection - presented in chronological order in the trace area.

If - due to lack of space - some of the information in the trace table was not displayed, you can display this information by moving the cursor over the desired cell and letting it hover there for a moment.

Trace Window Columns

Column	Meaning
No.	Consecutive number of the recorded signal.
Source	The source of the signal.
Line [TS]	The number of available accesses.
Time	The time that the signal was recorded.
Direction	Direction of the signal.
L2 SAPI Layer 2	Service Access Point Identifier.
L2 TEI Layer 2	TEI-number - terminal identifier.
L2 Type	Layer 2 message type.
	ARGUS trace information text.
L3 PD Layer 3	Protocol discriminator.
L3 CR Layer 3	Call Reference of the connection.
L3 message	Layer 3 message type.
L3 information element	The Layer 3 message information element.

Freezing the signal on the screen

The recorded signals will be presented online on the screen of the PC. To analyse the signals at your leisure, you can “freeze” the screen.
The signals sent in the meantime will still be recorded in the background.

Click on the  button, which can be found in the menu bar above the trace window. Click on the button a second time to deactivate the “Freeze screen” function.
If you select a data set to be decoded, the screen will also be "frozen".

Interrupting the Recording

The recording of data can be interrupted at any time. Click on the  button, which can be found in the menu bar above the trace window. Click on the button again to resume recording the signals.

Display trace window – decode window

In addition to the trace window, you can also open a decode window. All of the signals will be precisely analysed in this window.
The button bar over the trace window has three buttons to allow you to change how the two windows are displayed:

- Click on this button  if you only want to display the trace window.
- Click on this button  to display both the trace and decoder windows.
- Click on this button  to display just the decoder window.

Changing the column width, line height and window size

You can use the mouse to individually adjust the size of the two windows and the column widths in the trace window.
To do so, position the mouse pointer over the right or left line that separates the column from its neighbour  (or the outer edge of the window ) that you wish to resize. Press and hold the left mouse button while dragging the column's separating line (or the outer edge of the window) to drag it to the desired size.

The line (cell) height for the entire trace table can be adjusted using one of the two buttons found above the trace window (not available while recording, rather only during a later analysis of a saved trace).

Clicking on this button adjusts the height of the trace table cells  so that all of the information in all of the cells will be displayed.
If you click on the  the lines will be restored to their normal height.

Save screen layout

You can save your own individual screen layout and restore it at any time:
Click on  and the current window settings (column width etc.) will be saved.

Click on  to restore the saved window settings.

Split the trace window into two

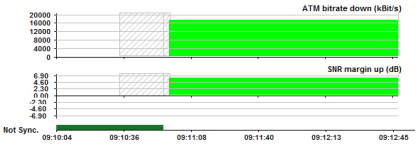
If needed, you can split the trace window into two partial windows. Each partial window can be scrolled independently. As an example, you can simultaneously view and analyse the signals 1 - 10 in one partial window and the signals 10 - 20 in another.
Using the mouse select the trace window and then select ***"Split Window"***.

Change the decoder direction

If you have connected the ARGUS incorrectly and the recorded signals are displayed in the wrong direction, you can select ***"Change Trace Direction"*** in the ***"Trace"*** menu or use the context menu to change the direction.

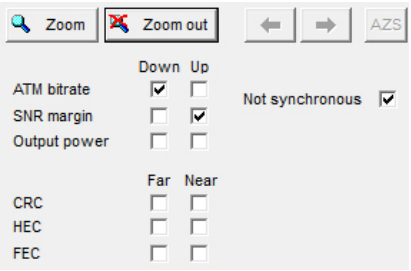
7.3 Graphic Display of the Recording

Besides the trace and decoder windows, WINanalyse also offers you the option of displaying the recorded traces graphically. Please note, however, that you must have marked an entry in the trace table and selected the signals in the graphic window that you want to view before a graphic will be displayed.



The graphics here at the side show a typical display of an ADSL online trace and the related functions for selection or operation. Depending on the type of access, there are a variety of error counters, connection parameters and signals which can be selected to be displayed graphically.

7.3.1 The Zoom function



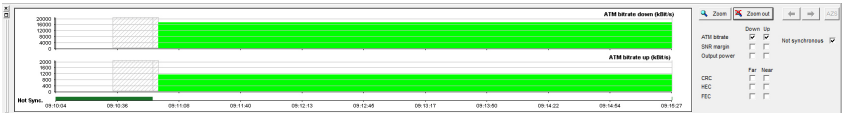
Using the Zoom function, you can enlarge selected sections of the displayed graph for more exact analysis. To do this, simply click on the Zoom button and then stroke the mouse over the area to be enlarged (to zoom in on). Afterwards, the cursor will change into the following symbol and you can confirm your selection by pressing the left mouse button.
Using the right mouse button, you can zoom out of this section again. The Zoom function affects all graphics. In other words, the zoom factor (magnification) always affects all graphs and signal states equally.
Using the arrow buttons , you can move the enlarged area left and right. If you zoom in on a graph during a recording and wish to lock in on the zoomed area, you can deactivate the automatic Zoom Shift of the zoomed area by clicking on the AZS button.
The Zoom out button will restore the normal display of the graphs and signal states.

7.3.2 Graphic display

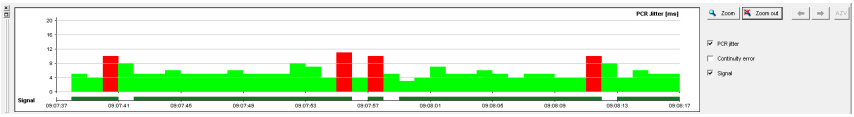
Depending on the type of connection and test, the individual signals, error counters and connection parameters can be displayed graphically in a number of ways.
For more information, see the ARGUS manual.
Otherwise, note that the number of graphs that can be displayed depends on the size of the window so it is wise not to select too many parameters at any one time.

Examples:

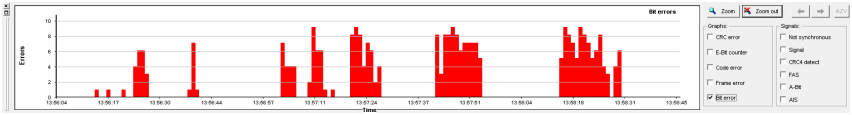
ADSL online trace



IPTV online trace

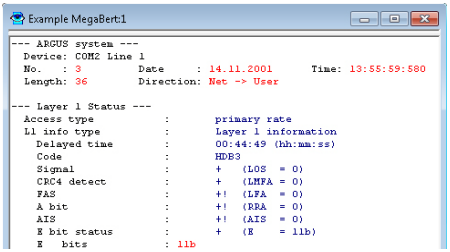


MegaBERT



7.4 Decode Window

The signals listed in the trace window will be displayed in an analysed form in the decode window. To open the desired decode window, select a signal in the trace table and mark it.



The standard display shows the trace and decode windows next to each other, however, it is also possible to display them stacked one above the other. To accomplish this, either open the ***"Window"*** menu and select ***"Tile Horizontally"*** or, open the ***"View"*** menu and select ***"Decode horizontal"*** before you open the trace file.

7.4.1 Special aspects when working with an ISDN BRI access

All of the D-channel data from the connected BRI access will be displayed online on your PC. WINanalyse saves the ISDN D-channel data on your PC, before displaying it decoded on the screen. The original data can be displayed in any of eight different analysis levels and is also available to the user for renewed analysis at a later time.

Setting the analysis depth

When working in the decode window, there are eight buttons in total to set the depth of the analysis.

General information about the signal will be displayed in the decode window under the heading ISDN D-channel.

The signal will be presented in hexadecimal coding in the decode window under the heading HEX data.

General Layer 2 information will be displayed under the heading Layer 2 (L2).

Additionally, the L2 frame's bits will be decoded and displayed.

The name of the Layer 3 message will be displayed under the heading Layer 3 (L3).

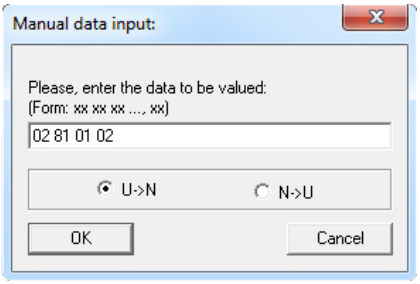
The content of the most important Layer 3 information elements will be displayed under the heading Layer 3 information elements.

All of the Layer 3 information elements will be displayed in clear text.

The bits of the signal frame will be decoded in addition.

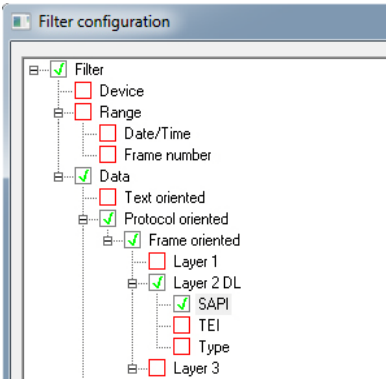
The ARGUS will automatically join segmented Layer 3 messages together and display them in the decode window.

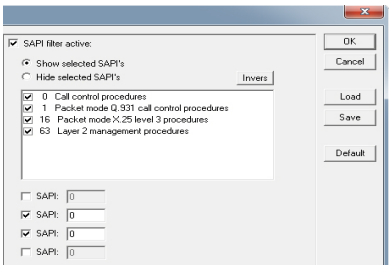
Decoding any selected signal



You can have any signal analysed in the decode window.
Open a decode window, open the "Decode" menu and select ***"Manual data input"***, enter the direction of the signal and the desired signal in hexadecimal and click on ***"OK"***. The corresponding decode window will open.

7.4.2 Filtering a signal





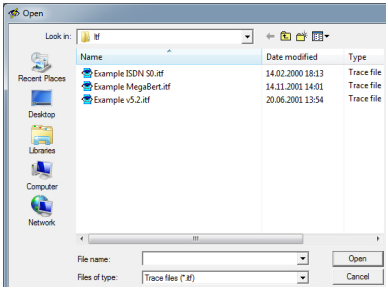
You can filter signals in the trace window using a variety of filters. Click on the  button.

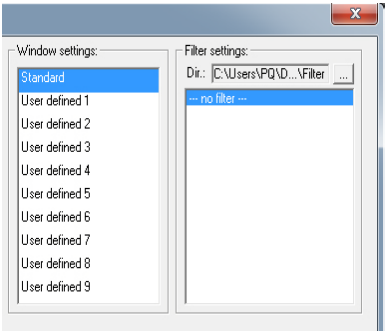
A window will open in which you can configure the desired filter settings. After you configured the desired filter settings, you can save these by clicking on the ***"Save"*** button.
Click on ***"Load"*** to access all of the saved filter configurations.
The filter settings made can be activated and deactivated by clicking on the  button.

The default settings can be restored by clicking on the ***"Default"*** button.

7.5 Additional Online Trace Functions

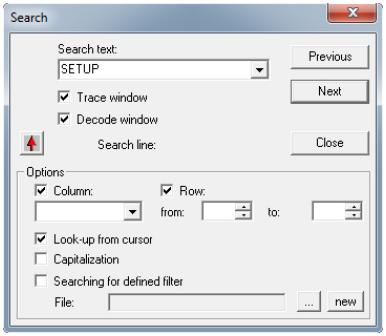
7.5.1 Opening a saved trace file





Trace files that have been saved on your PC can be viewed again, analysed or printed at any time. Click on the button or open the ***"File"*** menu and select ***"Open trace file..."***. In the window that opens, navigate to and select the trace file that you wish to open. You can also select which window and filter settings should be opened with the selected trace file. After you have chosen the desired settings, confirm your selections by clicking on ***"Open"***. The trace window will open displaying the saved trace data.
Multiple trace files can be opened simultaneously and e.g. displayed next to each other on the screen and analysed (in the ***"Window"*** menu select ***"Tile horizontally"***).

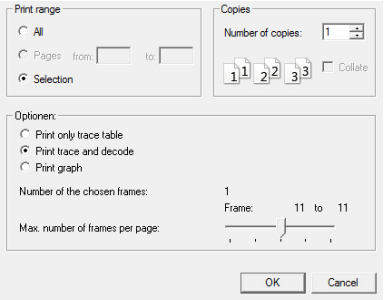
7.5.2 Text search in a trace record



You can search for any term (e.g. SETUP) in the decode and/or trace window. To do so, click on the button.

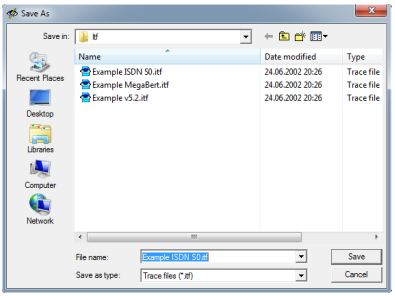
Enter the text that you wish to search for in the ***"Search text:"*** field.
The search process can be refined by selecting one or more areas (e.g. trace window, decode window and the column and row selections). To refine a search, click on the button and select the desired search options.
Start the search by clicking on the ***"Next"*** button. The hits (search terms found) in the trace and/or decode window will be marked. If there are multiple hits, you can jump to the next hit by clicking on ***"Next"***.

7.5.3 Printing



Click on  to print the desired trace record.
Alternatively, you can open the ***"File"*** menu and click on the same function.
Afterwards, a dialog box will open in which you can select whether you want to print the entire record or just a selected section.
Additionally, you can set the print range, the printer and the number of copies.

7.5.4 Stopping a recording



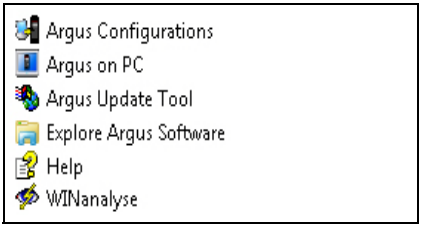
To stop your trace recording, select ***"Close"*** in the ***"File"*** menu. Afterwards, a dialog box will open offering the option of first saving your trace.
At this point, you can save the trace under any file name.
Additionally, you can set where the file should be saved under ***"Save in"***.
Finish up by clicking on ***"Save"***. Your trace recording will then be stopped and saved.

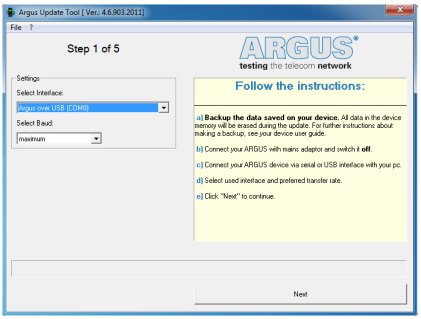
8 The ARGUS Update Tool

Please pay close attention to the messages in the notice window of the Update Tool as well as any that appear on the ARGUS display. The update is not complete until the Update Tool reports that the update was successful and the ARGUS has returned to the normal startup screen after being automatically restarted by the Update Tool.

Do not disconnect the ARGUS from the PC and power until the update is completely finished. Prematurely disconnecting the ARGUS from power or the PC or switching the ARGUS off prematurely may damage the tester to the extent that it must be sent in for repairs or may cause substantial errors.

Starting the ARGUS Update Tool
Start the ARGUS Update Tool from the Windows Start menu. Begin by selecting the program group ***"ARGUS Software"*** and then click on the ***"Update Tool"*** icon.



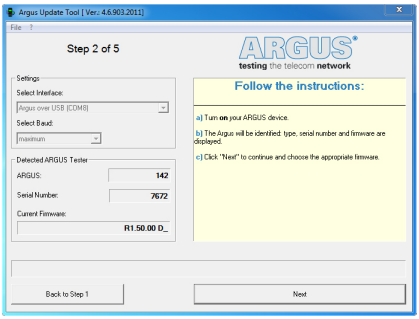


Setting the port and speed
In the window that opens, select the COM port to which your ARGUS is connected and the desired baud rate.
If the "Maximum" is selected for the speed, the Update Tool will select the maximum speed possible itself.
At this time, the connected ARGUS should be off.

Now connect the ARGUS to the included power supply and make certain that the power supply remains on. Connect the ARGUS to the PC's serial or USB interface and make certain that this connection also does not get interrupted during the update.

Finally, click on ***"Next"*** to continue.

Detection of the connected tester

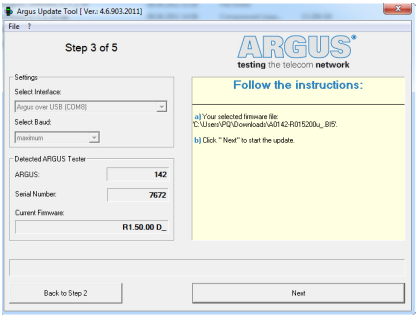


Now switch your ARGUS on.
The ARGUS's current firmware version and serial number will be read out automatically.
Afterwards, click on ***"Next"*** to open the "Select Firmware" dialog box.

Select the desired firmware file that should be sent to the ARGUS and then confirm your selection by clicking on ***"OK"***.
The Update Tool displays all of the firmware files that are suitable for the connected tester and can be used. If there are files in the selected directory that are suitable for the connected tester but are not shown by the Update Tool, it is likely that your Update Tool is an older version and cannot handle these firmware variants. The file type of firmware files for a specific ARGUS may differ. In this event, you can download an update for your Update Tool from www.argus.info.

Under no circumstances, should you manually rename a firmware file to change its file type. This could cause serious damage to your ARGUS.

Checking the settings and starting the update

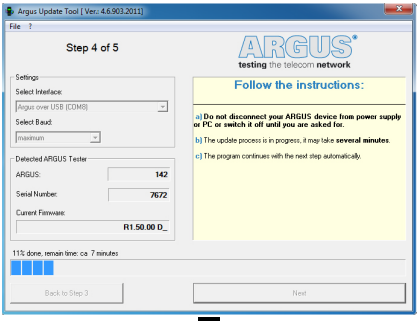


A summary of the settings made will be displayed. Check and make certain that all of the settings are correct.
To start the update click on ***"Next"***.

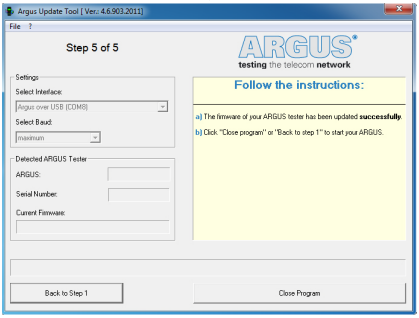
If any problems occur or in the rare event that it becomes clear that the selected file is not correct or possibly even damaged, you can click on ***"Back to Step 2"*** to select a different firmware file.

The update will begin automatically with the next step.

The update process



During the update, a bar chart will indicate how it is progressing and show both the percentage done and the time remaining before the update will be completed.



Once the transfer is done, the Update Tool will inform you as to whether the transfer was successful. Afterwards, you can close the program or update another tester. When you click on one of the two buttons, the tester that was just updated will automatically restart.

The update is not done until the ARGUS has restarted. Make certain that the connection between the ARGUS and the PC is not interrupted until the update is completely finished. The ARGUS may not be updated while operating in battery mode. It must be connected to its mains power supply.

9 Appendix

A) Acronyms

	Characters
3PTY	Three Party Conference
.amp	ARGUS measurement protocol - file format
.csv	Comma Separated Values - file format
.zip	ZIP archive - file format
	A
AI	Action Indicator
AOC	Advice of Charge
AOC-D	Advice of Charge during and at the end of the connection
AOC-E	Advice of Charge at the end of the connection
ATM	Asynchronous Transfer Mode
AZS	Automatic zoom shift
	B
BC	Bearer Capability
BER	Basic Encoding Rules / Bit Error Rate
BERT	Bit Error Rate Test
	C
CALL PROC	CALL PROCeeding message
CCBS	Completion of Calls to Busy Subscriber
CD	Call Deflection
CDPN	CalleD Party Number
CF	Call Forwarding
CFB	Call Forwarding Busy
CFNR	Call Forwarding No Reply
CFU	Call Forwarding Unconditional
CGPN	CallinG Party Number
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
COM	Component Object Model
CONN	CONNect Message
CONN ACK	CONNect ACKnowledge Message
CR	Call Reference
CRC	Cyclic Redundancy Check
CT	Call Transfer

Cu	Copper (from Latin: cuprum)
CUG	Closed User Group
CW	Call Waiting
	D
dB	Decibel
DHCP	Dynamic Host Configuration Protocol
DISC	DISConnect Message
DMT	Discrete Multitone Transmission
DSL	Digital Subscriber Line
DSS1	Digital Subscriber Signalling System No. 1
DTMF	Dual Tone Multi Frequency
	E
E1	Primary rate access (PRI), Leased Line
E-DSS1	European Digital Subscriber Signalling System Number 1
EOC	Embedded Operations Channel
ETH	Ethernet
	F
FEC	Forward Error Correction
	G
GHz	Gigahertz
	H
HEC	Header Error Checksum
HEX	Hexadecimal
HLC	High Layer Compatibility
HLOG	The amplitude component of the transfer function or each tone
HOLD	Call Hold
	I
IPTV	Internet Protocol Television
ISDN	Integrated Services Digital Network
INFO	INFOrmation Message
	K
kHz	kilohertz
Config.	Load configuration from PC
	L:
L1	Layer 1 in the OSI reference model
L2	Layer 2 in the OSI reference model
L3	Layer 3 in the OSI reference model
LAN	Local Area Network
LAPD	Link Access Procedure - D-channel
LLC	Low Layer Compatibility

	M
MB	Megabyte
MCID	Malicious Call Identification
MDI	Media Delivery Index (RFC 4445)
MegaBERT	E1 BERT on all B-channels simultaneously
MOS	Mean Opinion Score
MP	Test Log (measurement protocol)
	N
NSF	Network Specific Facilities
NT	Network Termination
	O
OAM	Operations, Administration and Maintenance
	P
PD	Protocol Discriminator
PESQ	Perceptual Evaluation of Speech Quality
PID	Packet Identifier
PPP	Point-to-Point Protocol
	Q
QLN	Quiet Line Noise
	R
REL	RELease Message
REL ACK	RELease ACKnowledge Message
REL COMPL	RELease COMPLete Message
RJ	Registered Jack for telephone lines
RTCP	RealTime Control Protocol
RTP	RealTime Transport Protocol
	S
BRI S/T	BRI (Basic Rate Interface) access (an access with an S-Bus)
PRI	Primary Rate Interface access (PRI access)
SAPI	Service Access Point Identifier
SCI	Sending Complete Indication
SEG	SEGmented messages
SHDSL	Single-Pair Highspeed Digital Subscriber Line
SIP	Session Initiation Protocol
SNR	Signal-to-Noise-Ratio
SUSP	SUSPend Message
	T
TDR	Time Domain Reflectometry
TE	TErminal, Terminal Equipment
TEI	Terminal Endpoint Identifier
TP	Terminal Portability

TS	Technical Specification
	U
USB	Universal Serial Bus
UUS	User-to-User Signalling
	V
VCI	Virtual Channel Identifier
VDSL	Very High Speed Digital Subscriber Line
VoIP	Voice over Internet Protocol
VPI	Virtual Path Identifier
	W
WAN	Wide Area Network
	X
xDSL	Collective term for different DSL variants

B) Index

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