ARGUS 145 Manual

Version: 1.80 / **EN**

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1 Introduction

With all of its options, the ARGUS 145 offers a comprehensive suite of test functions for SHDSL (2-wire and 4-wire), ADSL, ADSL2 and ADSL2+ accesses as well as for analog, U-interface and BRIaccesses.
The basic unit is equipped with ADSL2+ / ADSL2 / ADSL test functions; support for other interfaces is optional (for a list of the standard equipment, see the included data sheet).

With an IP-PING and Traceroute functions (HTTP and FTP download as well as FTP upload), the ARGUS 145 is also well equipped for checking Internet connections. Additionally, the ARGUS 145 has a Router Replacement mode with support for DHCP (Client and Server) and an Ethernet Through mode so that data packets can be exchanged with Internet providers to determine the transmission quality on an Internet connection. An 10/100BaseT Ethernet interface is also included.

A VoIP simulation and an IPTV analysis function are also available as options with which you can test the upper layers and evaluate speech and video data.

The ARGUS 145 is also a comprehensive ISDN tester, complete with a D-channel monitor. When used on a 2-wire interface, it supports high-impedance monitoring with voltage measurement (with an automatic check for interference voltage).

In addition, the ARGUS 145 measures the resistance (loop) and capacitance (open) of the voltage-free (disconnected) two-wire line.

The ARGUS 145's integrated USB interface supports the rapid transfer of data between the ARGUS and a PC or notebook - for example to download measurement data previously saved in the tester's memory.

An overview of some important ARGUS functions:

Determining the ADSL connection parameter

Displays the connection's most important upstream/downstream parameters.

- maximum ATM bit rate
- fast or interleaved ATM bit rate
- signal to noise ratio
- output power
- line attenuation
- relative capacitance

etc.

Displays the upstream/downstream ATM cell errors and - in conjunction with an Alcatel ATU-C - bit error statistics

- Cyclic Redundancy Check (CRC)
- Forward Error Correction (FEC)
- Header Error Checksum (HEC)
- Fast / Interleaved Bit Error
- Fast / Interleaved Errored Seconds

etc.

- Displays the maker of the ATU-C chip.

ATM Tests

- VPI/VCI scan
- ATM ping
- ATM statistics

ATM BERT (optional)

IP Functions

- IP ping
- Traceroute function
- Download tests (HTTP and FTP)
- FTP upload test

VoIP terminal simulation (optional)

IP video tests (optional)

- Broadcast TV (IPTV)
- Video on Demand (VoD)
- TV scan
- MDI analysis
- Online trace

Ethernet Functions

R/C measurement on two-wire lines

Measurement of the loop resistance and the capacitance of the open (voltage-free) line

SHDSL Functions (optional)

- Displays all of the important SHDSL connection parameters
- Displays the error counters
- Supports all “ATM/IP functions”

ISDN Functions (optional):

- Protocol recognition and B-channel test

After you select the operation mode, the ARGUS will automatically determine the protocol used by the access under test and will then test the availability of the B-channels.

- Telephony function

Can a telephone call be placed from this access to every other number and/or can this access receive a call?

- Automatic service test

Does the access being tested support connections with the most important services, such as, ISDN telephone service, Group 4 - facsimile or data transmission at 64 kbit/s etc.?

- Bit Error Tests - BERT (evaluation in accordance with G.821)

Performs a BERT in an extended call to itself, via a loopbox or in end-to-end operation. The ARGUS will, if needed, handle the loopbox function itself.

- Automatic supplementary services test

The ARGUS automatically tests the supplementary services made available by the exchange.

- Leased line tests – tests permanent circuits with BERT and speech

- Automatic detection of the MSN of the access being tested

- Automatic and Manual X.31 Test

- D-channel monitoring on the Basic Rate Interface

All of the D-channel signals are captured and passed to the serial interface.
When passively monitoring, the ARGUS does not affect Layer 1.

- Layer 1 and Bus Feed Test

Measures and evaluates the phantom feed and the levels of the ISDN send and receive signals of the NTBA or PBX.

- Testing Features with the Keypad

Manual test possibilities in the so-called keypad mode. If the network supports this feature, the user can send a command sequence and can then test service features in a dialog.

POTS Functions (optional):

- POTS (analog) functionality

Tests CLIP and other Caller-ID services in accordance with ETS 300 659/778.

- Monitoring a POTS line (high-impedance listening-in)

- POTS - Voltage and Polarity Measurement

- The Access Acceptance Report

When the ARGUS is linked to a PC via the USB interface, it is, as an example, possible to create and print a comprehensive test report on the PC.

Should you have any further questions, please contact us:

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2 Safety Instructions

ARGUS ISDN-Testers may only be used with the included accessories. Usage of other accessories may lead to erroneous measurements and could even damage the ARGUS and the connected installation. The ARGUS is only to be used in accordance with the instructions in this documentation. Any other usage may result in bodily injury and destruction of the ARGUS.

- To prevent electrical shocks or damage to the ARGUS, do not connect it to lines with voltages in excess of 100 V!

- Never attempt a measurement with the case open!

- The ARGUS is not watertight. Protect the ARGUS from exposure to water!

- Before replacing the battery (see Page 16), disconnect all the test leads and switch the ARGUS off.

- Make certain that the polarity is correct when connecting the accumulators!

- Unplug the power supply from the mains, once the ARGUS is switched off and will no longer be used (for example after recharging the accumulators)!

Return and environmentally acceptable disposal

The RoHS (EU Directive on the “Restriction of Hazardous Substances”) guidelines, which restrict the use of certain hazardous substances in electrical and electronic equipment, apply in eight of the ten categories of the WEEE (EU Directive on “Waste Electrical and Electronic Equipment”) guidelines. Devices which are in Category 9 “Monitoring and Control Instruments” are currently excluded from the scope of the Directive. The ARGUS products fall into Category 9 and are thus not subject to the RoHS guidelines. Nonetheless, we have decided to voluntarily ensure that ARGUS products built since 1 January 2007 satisfy all of the RoHS guidelines.

Since October 2005 in compliance with WEEE (EU Directive on Waste of Electrical and Electronic Equipment) 2002/96/EU and the German Electrical and Electronic Equipment Act (ElektroG - Elektro- und Elektronikgerätegesetz), we have begun marking our testers with the following symbol

() (DIN EN 50419).

In other words, the ARGUS may not be disposed of in the household waste.

Regarding the return of old equipment, please contact our Service department.

3 Technical data

Dimensions / Weight	**Inputs / Outputs**
Height 235 mm, width 97 mm, depth 55 mm Weight 600 g (without accumulators)	- RJ-45 for the ISDN interface - RJ-45 for the 2-wire interface - RJ-45 10/100 Base-T Ethernet for Bridge Mode and Ethernet - 1 DC jack for an external power supply - USB-B jack USB Client interface - 1 RJ-11 (serial interface) - 2.5 mm jack to connect a headset
Keypad	
25 Keys	
LC display	**Temperature ranges**
LCD display with switchable background lighting 67mm x 40mm 128 x 64 pixels	Operating Temperature: 0 °C to +50 °C Storage temperature: -15 °C to +70 °C Humidity: up to 95% relative humidity, non-condensing
Memory	**Power supply**
RAM: 32 Mbyte Flash: 64 Mbyte	4 NiMH AA accumulators or 9 V/800 mA ARGUS electronic plug-in power supply

4 Operation - a brief guide

Power key

- Switch the ARGUS ON
- To start up again after a power down
- To switch on the display backlighting
  In battery mode to save power, the backlighting will switch off automatically after an adjustable period of time - see Page 210.
- Switch off the ARGUS (must be pressed somewhat longer)
  If the ARGUS is connected to its power supply, it will automatically charge its accumulators when switched off (see Page 218).

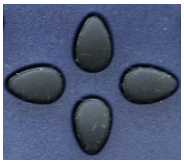
Confirmation key

- Open menu
- The ARGUS will open the next display.
- Start the test
- Confirm the entry

Return key

- The ARGUS will return to the previous display and ignore any entries made at this level, e.g. changes to the settings
- Test - interrupting

Cursor keys



- Scroll through the display lines (vertical cursor keys)
- Scroll through a display line (horizontal cursor keys)
  Select a menu
  Select a function or a test

Telephony

- Pickup or hang up
- Simplified overlap signalling: press the Telephone key twice

Layer 1 measurement

- BRI or U-interface access: start the Layer 1 measurement (level/voltage)
- ADSL or SHDSL access: display the line parameters

Numerical keypad

- Entry of the digits 0....9, letters and special characters
- Direct function call

Softkeys

The function of the 3 softkeys varies with the situation. The current function of each softkey is shown in the bottom, highlighted line of the display.

Shift key

In some tests, an “S” will be shown in the uppermost line in the display. This indicates that the softkeys are assigned twice. In such a case, press the Shift key to change the function of the softkey (see Page 90).

Connectors at top

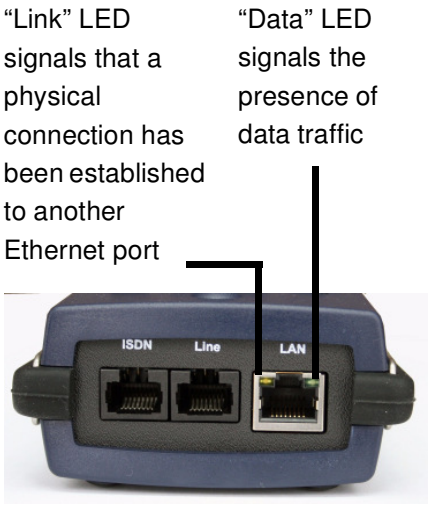
PWR
Connection for the external plug-in power supply.
If the plug-in power supply is connected, the ARGUS will disconnect the accumulators and, when it is switched off, the ARGUS will automatically recharge the accumulators (see Page 218).

SER.
Serial interface to connect a PC

USB
USB interface to connect a PC

Connector for a headset

Connections at bottom



S0/BRI
Connection for a BRI (S-Bus) Pin assignment 3/4/5/6

Line
Connection to an SHDSL access Pin assignment 3/6 and 4/5
Connection to a POTS or U interface Pin assignment 7/8
Connection to an ADSL access Pin assignment 7/8

LAN
Connection to the PC's network card via the X-crossed patch cable
(Access mode: ARGUS Bridge and ARGUS Router)

Connection to the Ethernet interface of the ADSL modem via the 1:1 patch cable
(Ethernet Connection)

Replacing the accumulators

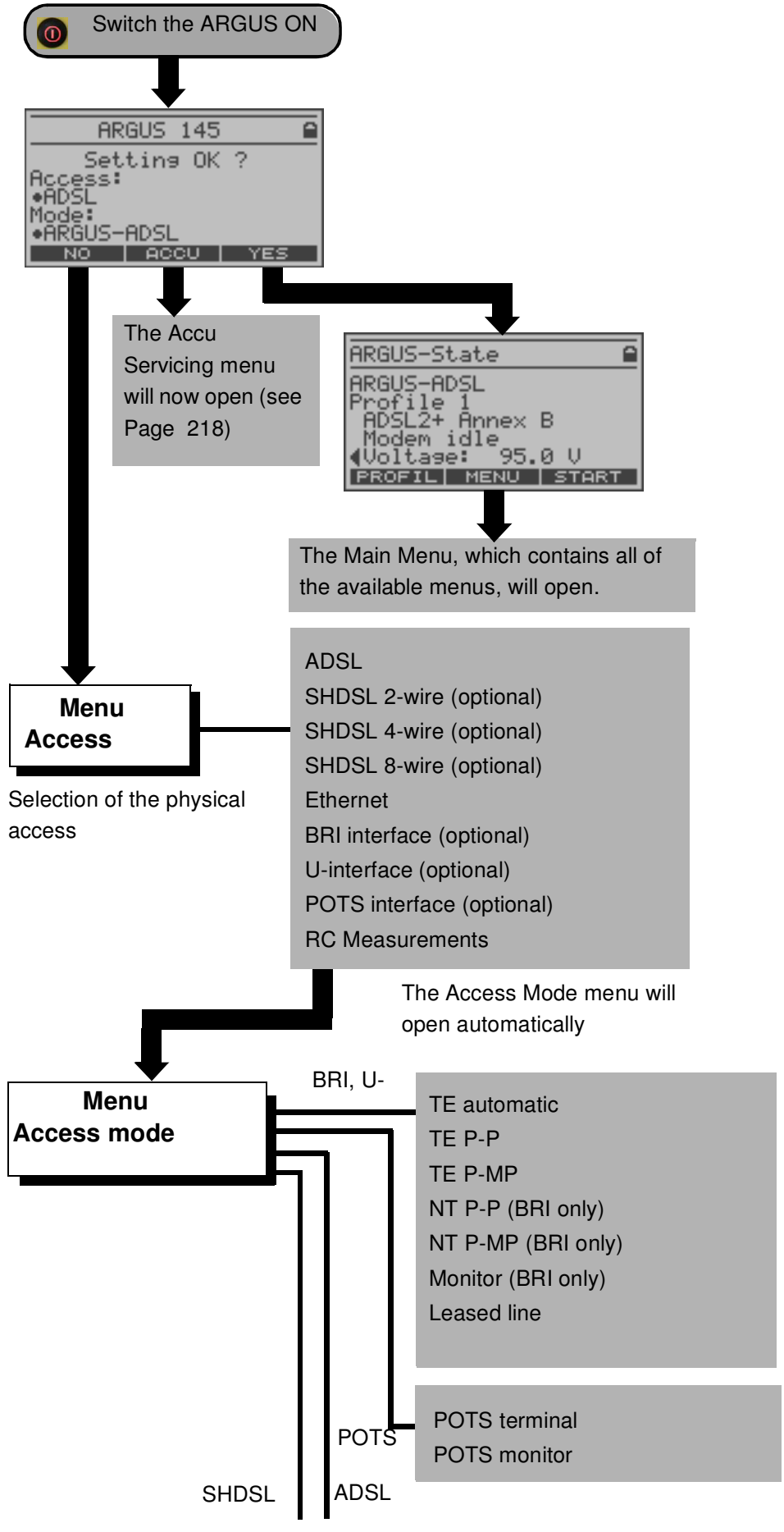
The compartment for the four accumulators (rechargeable batteries) is located on the back of the case. Unscrew the screws to remove the cover of the case and insert the accumulators in accordance with the polarity marking. For important information regarding the accumulators, please see Page 218

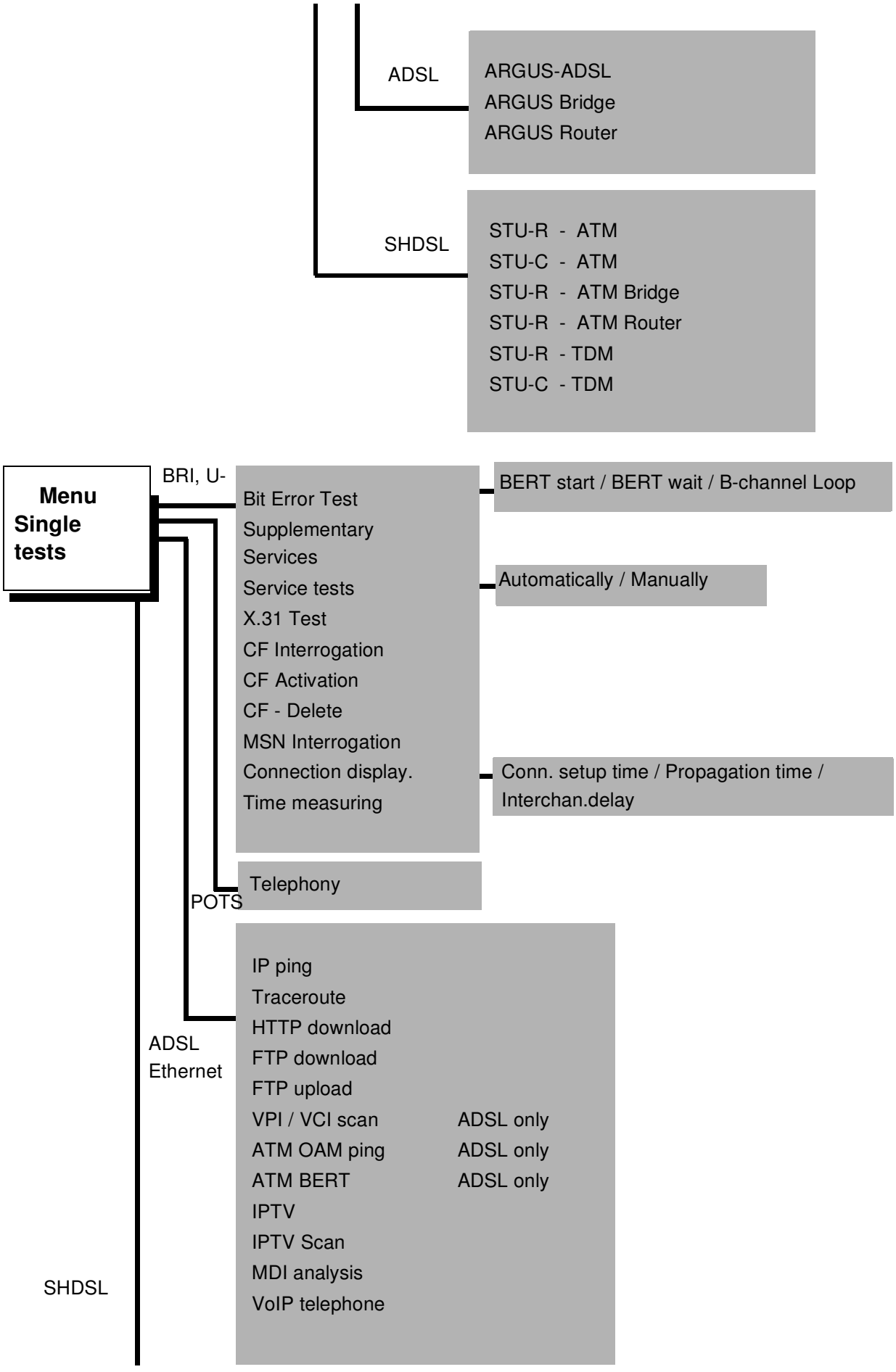
Power Down

In accu/battery operation, if the ARGUS is idle for an adjustable period of time (see Page 210), it will automatically switch to power-down mode (power down). The ARGUS will remain in power-down mode until the Power-Key is pressed again.
Reasonably enough, the ARGUS will not enter power-down mode during a test (e.g. Loopbox) or when it is in Trace mode.

As an alternative, it is possible to operate the ARGUS using the included power supply. If the ARGUS is connected to the plug-in power supply, it will automatically disconnect the accumulators and will not enter power-down mode.

5 Menu Hierarchy




ADSL
ARGUS-ADSL
ARGUS Bridge
ARGUS Router
SHDSL
STU-R - ATM
STU-C - ATM
STU-R - ATM Bridge
STU-R - ATM Router
STU-R - TDM
STU-C - TDM
Menu Single tests
BRI, U-
Bit Error Test
Supplementary Services
Service tests
X.31 Test
CF Interrogation
CF Activation
CF - Delete
MSN Interrogation
Connection display.
Time measuring
BERT start / BERT wait / B-channel Loop
Automatically / Manually
Conn. setup time / Propagation time / Interchan.delay
POTS
Telephony
ADSL Ethernet
IP ping
Traceroute
HTTP download
FTP download
FTP upload
VPI / VCI scan
ATM OAM ping
ATM BERT
IPTV
IPTV Scan
MDI analysis
VoIP telephone
ADSL only
ADSL only
ADSL only
SHDSL

SHDSL

In Access mode	**STU-R - ATM** **STU-R - ATM Router**
IP ping	
Traceroute	
HTTP download	
FTP download	
FTP upload	
VPI / VCI scan	
ATM OAM ping	
ATM BERT	(not for router)
IPTV	
IPTV Scan	
MDI analysis	(only for router)
VoIP telephone	

In Access mode	**STU-C - ATM**
VPI / VCI scan	
ATM OAM ping	
ATM BERT	

In Access mode	**STU-R - ATM Bridge**
MDI analysis	

Menu
Line - Status

ADSL, SHDSL

Display the current connection parameters,

Can also call up the display by pressing the -

Menu
Test Manager

BRI

Start new one
End all

Administration of tests or connections
running in parallel

Menu
Test Results

The ARGUS displays the saved test results and sends them to the PC. An automatic test sequence can be run on a BRI access.

- View
- Test data to PC
- Delete
- All tests to PC
- Start (ISDN only)

Menu
Level Measuring

- BRI
  - Remote end
  - other TE
- PO
  - POTS a/b polarity
- U-
  - Feed voltage U
  - Power U
- ADSL
  - Voltage
  - Polarity

Menu
L1 status

- BRI
  - The ARGUS displays the current status of Layer 1.

Menu
Settings

The ARGUS can be configured to suit special requirements.
The parameters are clearly organised in submenus (e.g. all the ISDN parameters are in the ISDN submenu)
The default (factory) settings can be restored by selecting “Reset”.

PC/Trace

Profile

Line parameters	ADSL	ADSL mode Rated value and Shutdown mode
	SHDSL	Spectrum Clock/framing Channel selection (TDM) Data rate (ATM) Power back off EOC usage Sync word Message mode Vendor Info Field Wire pair
	Protocol	PPPoE, PPPoA, IPoA, IP, EoA, and PPTP
	PPP	User name Password Setting the WAN IP Activation delay

PPTP	Server IP address	
ATM	Default VC	VPI / VCI
		Encapsulation
	Multicast VC	VC used
		VPI / VCI
		Encapsulation
	Auto ATM	
LAN	IP mode	
	own IP address	
	IP netmask	
	Gateway IP address	
	DHCP server	Start / End address
		Domain
		Reservation period
	DHCP timeout	
	MAC address	
	VLAN	VLAN used
		ID
		Priority
WAN	IP mode	
	own IP address	
	IP netmask	
	remote IP address	
	DHCP timeout	
	MAC address	
	VLAN	VLAN used
		ID
		Priority
Bonding	Auto	
	IMA 1.0	
	IMA 1.1	
Router	NAT on/off	
DNS server	DNS Server 1 and 2	
Data Log		
DHCP Vendor ID	Format	
	ASCII data	
	Hex data	
DHCP Vendor Info	Format	
	ASCII data	
	Hex data	
DHCP User Class I.	Format	
	ASCII data	
	Hex data	
DHCP Userdef.Option	Number	
	format	
	ASCII data	
	Hex data	

Test parameters	IP ping	IP address	
		Number of pings	
		Pause	
		Packet size	
		Fragmentation	
	Traceroute	IP address	
		Maximum hops	
		Probes	
		Timeout	
	HTTP download	Server profile -	Server
			Download filename
			Upload filename
			Upload file size,
			User name
			Password
			Qty
			Profile name
	FTP download	Server profile -	Server
			Download filename
			Upload filename
			Upload file size
			User name
			Password
			Qty
			Profile name
	FTP upload	Server profile -	Server
			Download filename
			Upload filename
			Upload file size
			User name
			Password
			Qty
			Profile name
	VPI / VCI scan	VPI	
		VCI	
		Qty	
		Timeout	
	ATM OAM ping	VPI / VCI	
		Number of pings	
		Timeout	
		OAM cell type	

	ATM BERT	Duration	
		VPI / VCI	
		Bit pattern	
		Error level	
		HRX value	
		Data rate	
	IPTV	IPTV profile	Type of stream
			Server Address
			Multicast address
			Port
			Filename
			IGMP version
			RTSP type
			Jitter buffer
			Limit values
			Profile name
	VoIP	VoIP profile	Objectives
			SIP
			Protocol
			User name
			Password
			Call Acceptance
			Silence detection
			Jitter buffer
			Jitter buffer size
			Codec
			Profile name
	IPTV Scan	Scan profile	Channel selection
			IGMP Version
			Max. switchover time
			Profile name
	MDI analysis	Mode	
		Scan time	
		Multicast address	
		Port	
		IP Header used	
		MDI limit values	Delay factor
			Media loss rate
			Packet loss in %
Profile name			

ISDN	L1 permanent?	
	Protocol	
	Alerting mode	
	Clock mode	
	Call parameter	
	Services	
	Call acceptance	
	Voice coding	
	DTMF / Keypad	
	Destination number	
	MSN	
	CUG Index	
	Keypad	
BERT	BERT time	
	Bit patt. BRI/U	
	Bit pattern SHDSL	
	Error level	
	HRX value	
POTS	Dial mode	
	POTS CLIP	
	DTMF parameter	Level
		Duration
		DTMF interval
		Defaults
	FLASH time	

X.31 profile	X.31 profile	Packet number
		TEI
		LCN
		packet size
		Agree packet size
		Window size
		Agree window size
		Throughput
		Agree throughput
		Enter user data
		CUG
		CUG Index
		D bit
		Facilities
		Profile name
ARGUS settings	Menu language	
	LCD contrast	
	Enter date / time	
	PC Interface	
	V.24 Baud rate	
	Alarm bell	
	Power Down	
	Software option	
Numbers		
Reset		

Menu
Accu Servicing

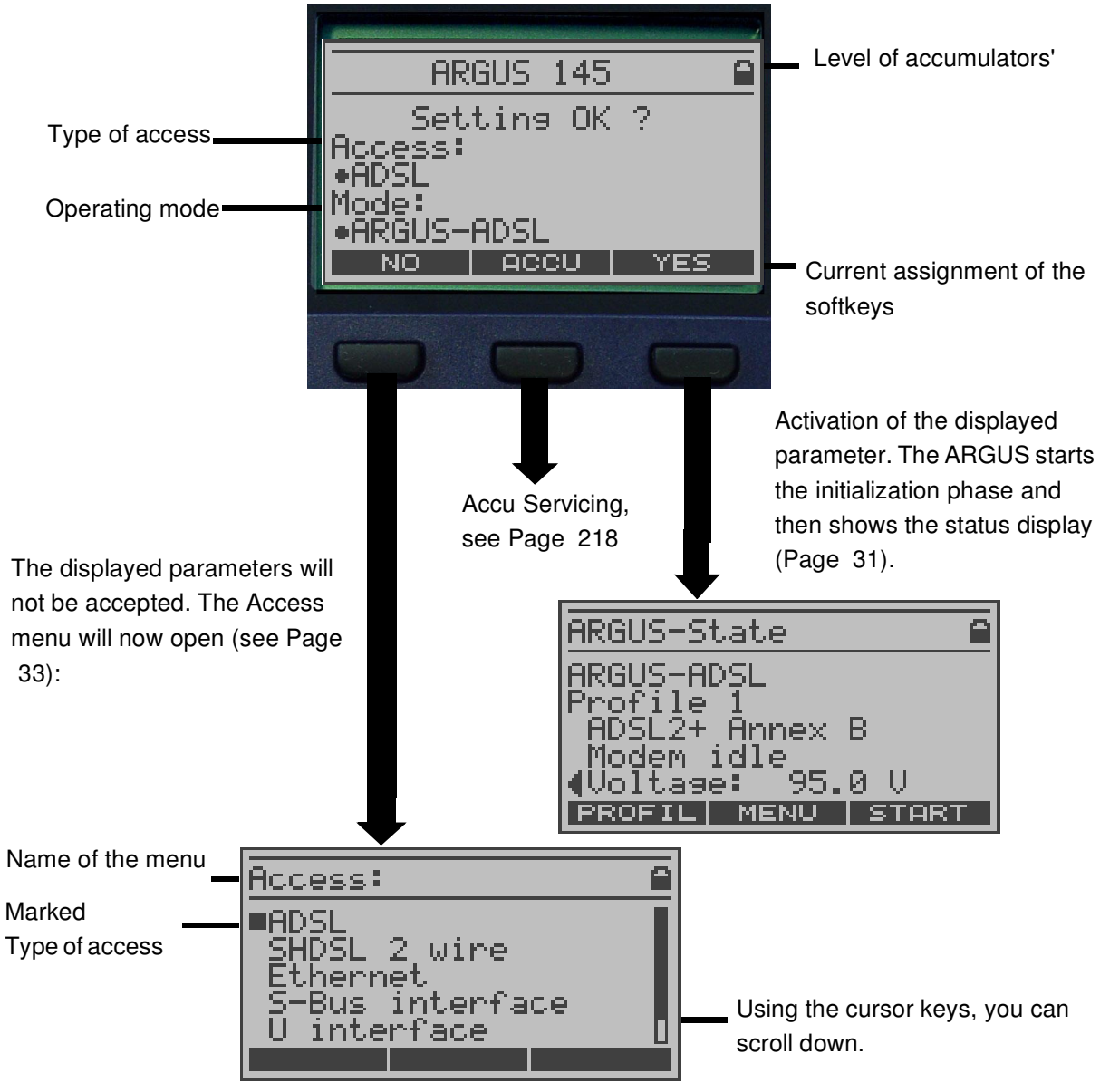
Loading
Discharging &
Charging

6 Start-Up

Using the included cable connect the ARGUS to the access to be tested and then switch the ARGUS on by pressing the -key.

The ARGUS is in largest part operated with the four cursor keys, the confirmation key ✓, the return key X and the three softkeys. The current assignment of the three softkeys is shown in the lower line of the display.
On the following pages, only the softkey's meaning in the respective context is shown - enclosed in brackets< >, e.g. < NO>.

Start-Up Display: Display the last set up access, access mode and the state of accumulator charge (when operating on battery power – power supply not connected)



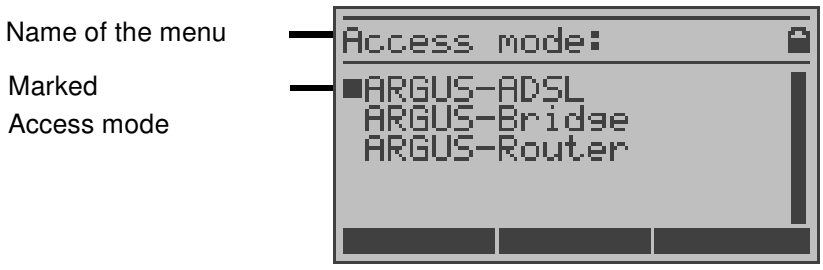
Press  The ARGUS will set the type of access to the one marked with the ■.
If you set the type of access to BRI,U-interface, ADSL or SHDSL 2-wire (4-wire), the Access mode menu will open.

Press  Select a type of access; the selected type will be marked with a ■ (in the example, ADSL)

Press  Return to the previous display without changing to marked type of access

Use the cursor keys to select which type of physical access is to be tested. The Access Mode menu will open automatically(see Chapter. 8 Page 36).

Example - on an ADSL access:



Press  The ARGUS will set the type of access to the one marked with the ■.
Afterwards, the ARGUS will start the initialisation phase.

Press  Select a type of access; the selected type will be marked in the display with a ■ (in the example, ARGUS-ADSL)

Press  to return to the previous display without changing to the marked type of access

Initialization phase on a BRI or U-Interface access:

Next the ARGUS will setup Layer 1. While it is setting up Layer 1, the L1 LED above the display will blink. If the ARGUS cannot setup Layer 1, it will display the message “No Net”. As soon as Layer 1 is successfully setup, LED L1 Sync will light continuously.
When the ARGUS is operated on a U -interface access, it can take up to 2.5 minutes to activate Layer 1.

Once Layer 2 has been setup, the “L2 Rx/Tx” LED will light.

If both modes (P-P / P-MP) are found when Layer 2 on the D-channel is checked, the mode must be selected manually (see Page 36).

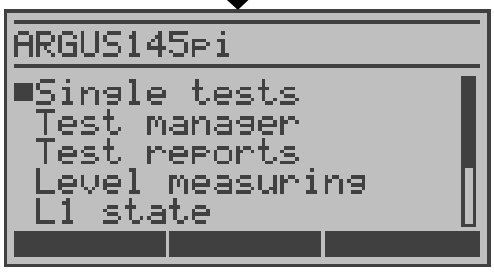
If everything has been correctly detected, the ARGUS will display the type and mode of access found. Additionally, a qualitative assessment of the level will be displayed.
The ARGUS will automatically determine the protocol (in both TE and NT mode) or use the manually selected protocol (see Page 198). On a bilingual access, the ARGUS will use both (DSS1/1TR6) protocols.

The “L3 Conn” LED will light after the ARGUS has setup Layer 3.
At the same time the ARGUS will start the B-channel test. The results will be displayed on the ARGUS. If an error occurs in the B-channel test (e.g. access is not plugged-in), the ARGUS will either repeat the initialization or show an error message ((see page 231 ARGUS Error Messages)). The ARGUS will then show the Status display.

ARGUS State display

Status display on a BRI access

ARGUS Main Menu



The ARGUS displays the following:

- Access type (e.g. BRI)

- Access mode

TEs	TE Simulation Slave Mode (see Page
TEm	199)
NTs	TE Simulation Master Mode
NTm	NT Simulation Slave Mode
FVs	NT Simulation Master Mode
	Leased Line Slave Mode, see

- Bus configuration (D-channel Layer 2 mode)

P-P	Point-to-Point
P-MP	Point-to-Multipoint

D-channel protocol (in the example, DSS1)

- The availability of the B-channels

B12	Both B-channels are available
B1-	Only B-channel 1 is available
B-2	Only B-channel 2 is available
B--	No B-channel is available

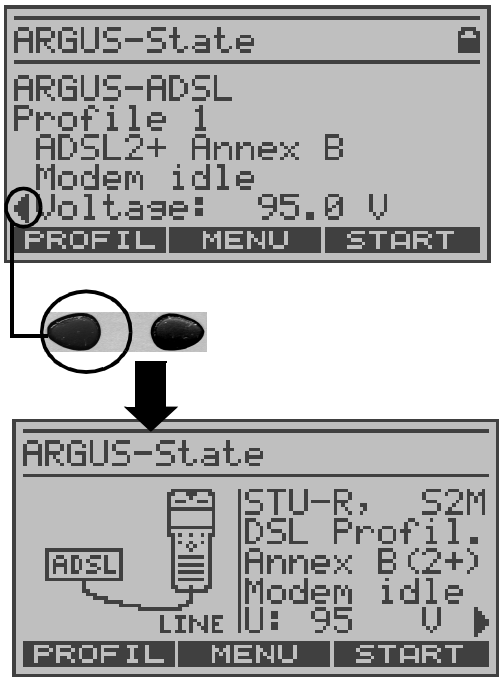
If only one B-channel is available, this can have an impact on the service check and the testing of the supplementary services.

- Level and voltage evaluation

OK	Level/Voltage is OK
<<	Level/Voltage is too low
>>	Level/Voltage is too high
None	No level/voltage
OK Rev	Emergency supply
<START>	Repeat the B-channel test.
<MENU>	The ARGUS will return to the Main menu.Page 32
<CONFIG>	The ARGUS opens the configuration menu (see Page 198)

It must be mentioned again, that the ARGUS only determines the general bus status once when switched on or when the ARGUS first connected. On the other hand, the status of the protocol stacks for Layers 1, 2 and 3 will be continually monitored and displayed.

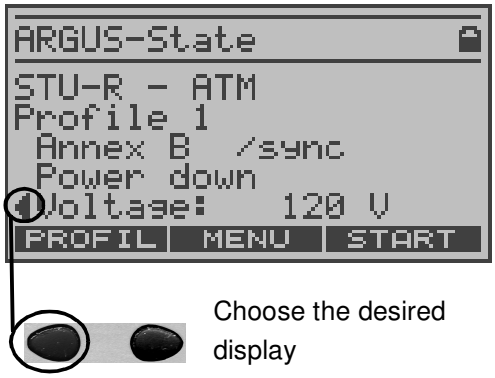
ARGUS State display on an ADSL access



The ARGUS displays the following:
- Access mode (e.g. ARGUS ADSL)
- Profile used (see Page 179)
- ADSL mode
- Access interface's DC voltage

<START>	Setup an ADSL connection (see Page 179)
<MENU>	The ARGUS will return to the Main menu.Page 32
<PROFIL>	The ARGUS opens the configuration menu (see Page 179)
	Choose between the two display options

ARGUS State display on an SHDSL access



Choose the desired display

The ARGUS displays the following:
- Access mode
- Profile used (see Page 179)
- SHDSL mode (e.g. Annex B)
- Supply voltage on the SHDSL line

<START>	Setup an SHDSL connection (see Page 107)
<MENU>	The ARGUS will return to the Main menu.Page 32
<PROFIL>	The ARGUS opens the configuration menu (see Page 179)

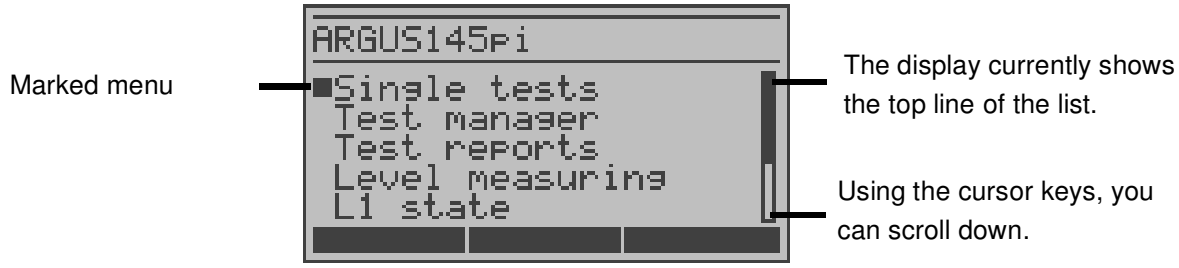
ARGUS State display on a POTS access

Display:
Voltage when idle

ARGUS - Main menu

For clarity, all of the available “actions” (commands) are logically organised in menus. All of the menus, which are available for the type of access under test, are listed in the Main menu.

Example - on an ADSL access:



Press

to have the ARGUS open the menu marked with the ■.

Press

to select a menu. The selected menu will be marked in the display with a ■.

Press

to return to the previous menu (in the example, the Status display).

Available menus:

BRI or U-interface	**POTS access**	**ADSL access**	**SHDSL access**	**Ethernet**
Single Tests	Single Tests	Single Tests (dependent on the Access mode)	Single Tests (dependent on the Access mode)	Single Tests
Test results	Test results	Test results	Test results	Test results
Test Manager		Line - Status	Line - Status (dependent on the Access mode)	
Level measuring	Level measuring	Level measuring		
L1 state				
Configuration	Configuration	Configuration	Configuration	Configuration
Access	Access	Access	Access	Access
Accu servicing	Accu servicing	Accu servicing	Accu servicing	Accu servicing
Help	Help	Help	Help	Help

7 Setting the Type of Access

If the parameters displayed at power on are not accepted, the Access menu will open automatically. The Access menu can, however, be opened from the Main menu at any time.
In the Access menu, select the type of physical access to which the ARGUS will be connected. When the ARGUS is restarted, the settings used last will be suggested as the default.

If you use the ARGUS on a BRI in an ISDN system, whose specifications deviate from the (DIN ETS 300 102) standard, such as those of some networked PBXs, you must take these manufacturer-specific modifications into account. In such cases, please contact the distributor of your ISDN PBX for assistance.

Using the cursor keys select the desired type of access.

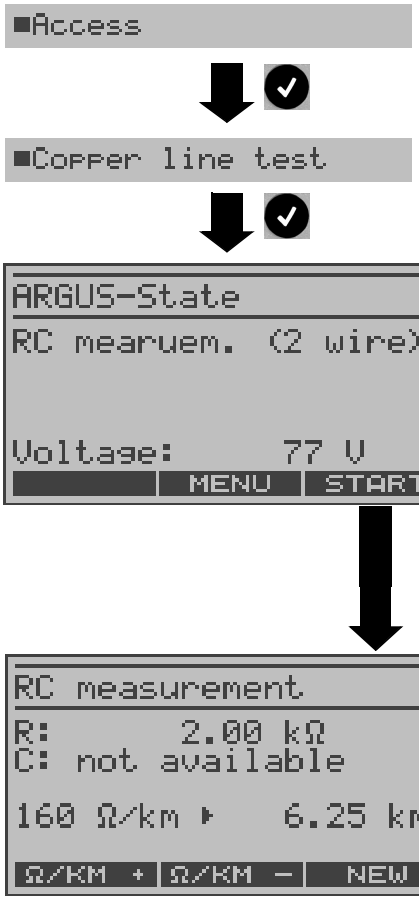
Confirm the access. If you set the type of access to BRI,U-interface, ADSL or SHDSL 2-wire (4-wire), the Access mode menu will open (see Page 36).

Return to the previous display without changing to marked type of access. The following applies for all displays: The ARGUS will return to the previous display and ignore any changes made.

7.1 RC Measurements

In a copper line test, the ARGUS will measure the line's resistance (loop) and capacitance (open). Use the included cable to connect the ARGUS (Line jack) to the test points. Switch the ARGUS on.

The line must be voltage-free (out of service) for the RC measurement!



Open the Main menu and select the Access menu.

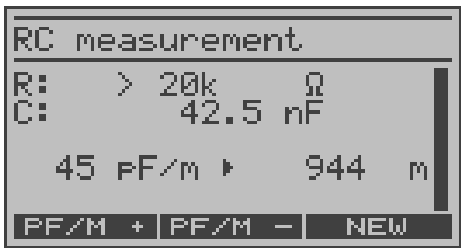
Select RC Measurements

The ARGUS will first determine the resistance. If the resistance test shows that the line is open (infinite resistance), the ARGUS will determine the capacitance.

The ARGUS displays the resistance measured. The capacitance will not be displayed, since it is a closed line.
In addition, the ARGUS calculates the approximate line length based on the line-specific resistance of the line (in the example 6.25 km based on a line-specific resistance of 160 Ohm/km).

<Ω/KM +>	increase the line-specific resistance (max. value of 300 Ohm/km)
<Ω/KM –>	decrease the line-specific resistance (min. value of 20 Ohm/km)
<NEW>	Repeat the test.

Resistance measurement:
200 Ohm to 20 kOhm (precision 4%)



The ARGUS displays the capacitance. The resistance is out of the range of the ARGUS (greater than 20 kOhm). The line is open.

<pF/M +>	increase the line-specific capacitance (max. value of 55 pF/m)
<pF/M ->	decrease the line-specific capacitance (max. value of 35 pF/m)
< NEW >	To repeat the measurement

Capacitance measurement:
1 nF to 1 µF (precision 10%)

8 Selecting the Access mode

The Access mode menu is not selectable from the Main menu. It opens automatically once the physical access has been selected in the Access menu.

Using the cursor keys, select the type of access (e.g. ARGUS-ADSL).

Confirm the Access mode.
The ARGUS will open the State display.

8.1 Operation on a BRI or U-interface access

8.1.1 TE-Simulation mode

TE automatic

On a BRI or U-interface access, the ARGUS will automatically determined the D-channel Layer 2 mode (PP or P-MP). If the ARGUS determines that the access supports both modes, a configuration menu will open in which you can select the desired L2 mode

TE P-P or TE P-MP

Afterwards, the access and the protocol stack will be initialized in accordance with the selected setting.

8.1.2 NT-Simulation mode (optional)

NT P-P or NT P-MP

Afterwards, the access and the protocol stack will be initialized in accordance with the selected setting.

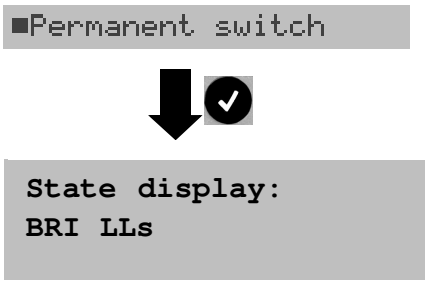
8.2 Leased Lines on an ISDN Access

Besides dial-up connections to any subscriber, ISDN also supports the use of permanent circuits switched to a specific remote location (leased lines). These leased lines (permanent circuits) are available after setting up Layer 1, in other words after synchronizing both terminals by exchanging HDLC-frames. The location where the clock is generated can be selected (see Page 199).

As a quick test of a permanent circuit, you can simply set up a voice call to the opposite end using a selected B-channel. However, for a more revealing test of a leased line, you should perform a bit error rate test.

Both ends of the leased line (permanent circuit) must use the same channel.

8.2.1 Voice connections on a leased line



In the Access mode menu select the setting LL (leased line, i.e. permanently switched line). The ARGUS State display will open (showing LL) .

The ARGUS will open the B-channel selection.
The ARGUS displays the B-channels available. Use the vertical cursor keys to select a B-channel or enter the number of the B-channel on the keypad (first press < **DEL**>).

The ARGUS will setup the voice connection and display the B-channel used (e.g. B01) together with the duration of the permanent switch circuit (leased line connection) in hours:minutes:seconds.

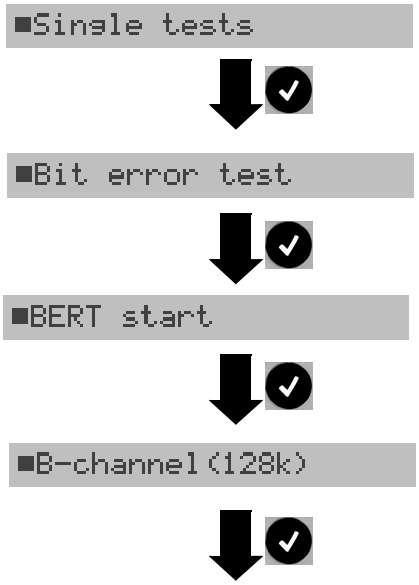
<LOUD> Increases the volume.

<TM> Start Test Manager (see Page 160). Another connection can be setup.

Terminate leased line,
the ARGUS will open the Status display.

8.2.2 BERT on leased lines (permanent circuits)

A number of variations are possible in testing permanent circuits with the bit error rate test.
In the simplest case, a B-channel loop will be set up at the remote end.
After the channel to be tested (B-channel or D-channel) is selected, the ARGUS will send the test pattern, receive it back and evaluate it accordingly.



The displays and operation are, in largest part, similar to those of a BERT on a dial-up connection (see Page 130) with the exception that you need not enter call numbers or select a service.
In the case of a BRI access in end-to-end mode (see Page 128), it is also possible to run a BERT in the D-channel.

Select the channel to be tested: B-channel (64k or 128k) or D-channel

Start BERT

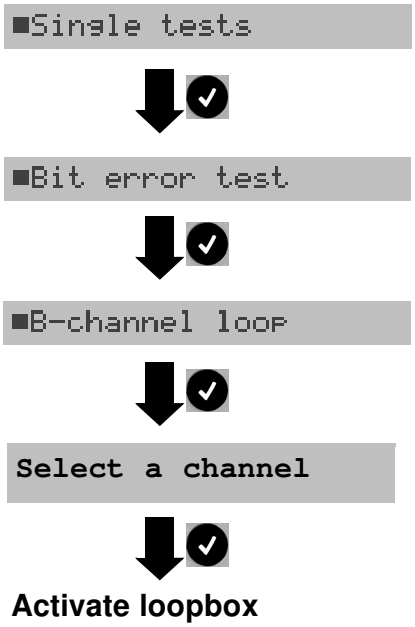
The ARGUS will display

- the bit pattern and B-channel
- the synchronicity of the bit pattern (synchron)
- Sync. time in h:min:sec
  (how long the ARGUS has been synchronised
  in sending and receiving the bit pattern)
- LOS-counter
- the bit errors that have occurred.

<ERROR>	to insert artificial bit errors to test the reliability of the BERT.
<RESET>	test time and bit error counter will be reset to zero.
<TM>	Start Test Manager (see Page 160).

Once it is over, the ARGUS will display the results of the BERT (see Page 130).

8.2.3 Loopbox with a leased line

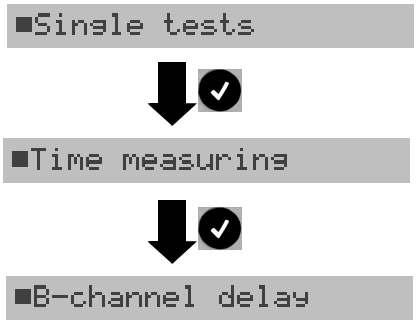


On a permanent circuit, the ARGUS can be configured as a loopbox.
It will loop either one B-channel (Channel selection: B-channel) or both B-channels and the D-channel (Channel selection: All framed).

The ARGUS will display the channel used and the amount of time (in h:min:sec) that the Loopbox has been active (see Page 137).

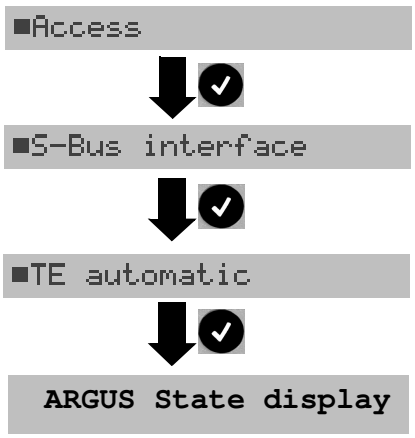
to deactivate the loopbox.

8.2.4 Time measurements on leased lines



The ARGUS will measure your choice of the propagation delay for data on the selected B-channel (B-channel delay) or the propagation delay for data on both B-channels and the resulting interchannel delay (see Page 149). Neither the call numbers nor service need be entered.

Switching from leased line mode

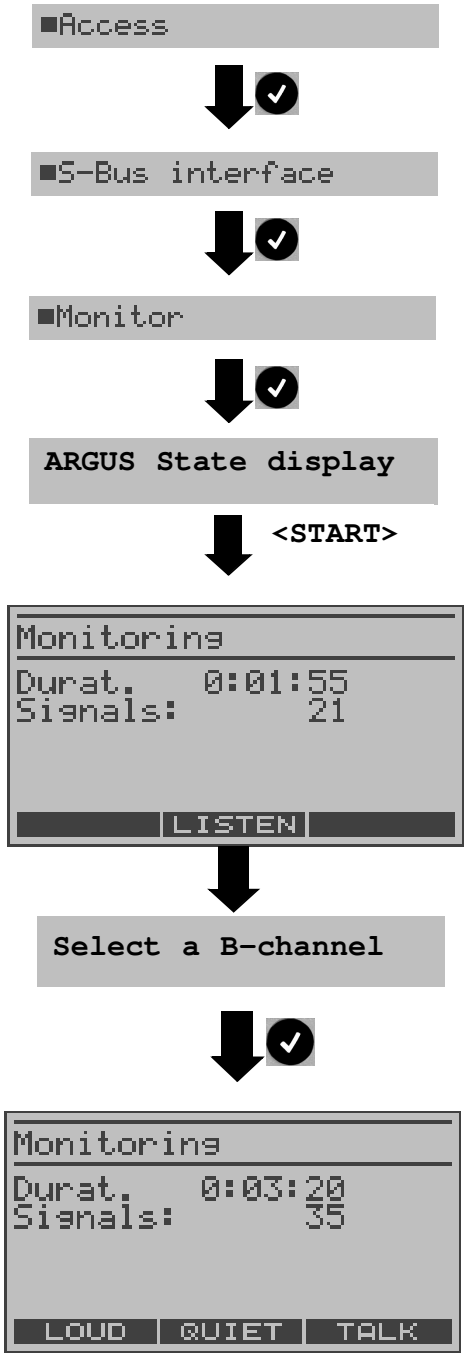


In the Main menu, open the Access menu

Select the type of access

Select the Access mode

8.2.5 Monitor



The ARGUS monitors all of the D-channel signals on the BRI access and sends these D-channel signals over the serial interface or via the USB interface (see Page 210) to a PC which must be running ARGUS WINplus or WINAnalyse. Neither the S-Bus nor Layer 1 are influenced.

The ARGUS displays the level evaluation for the NT side.
D-Channel Monitoring not yet active!

Start D-Channel Monitoring

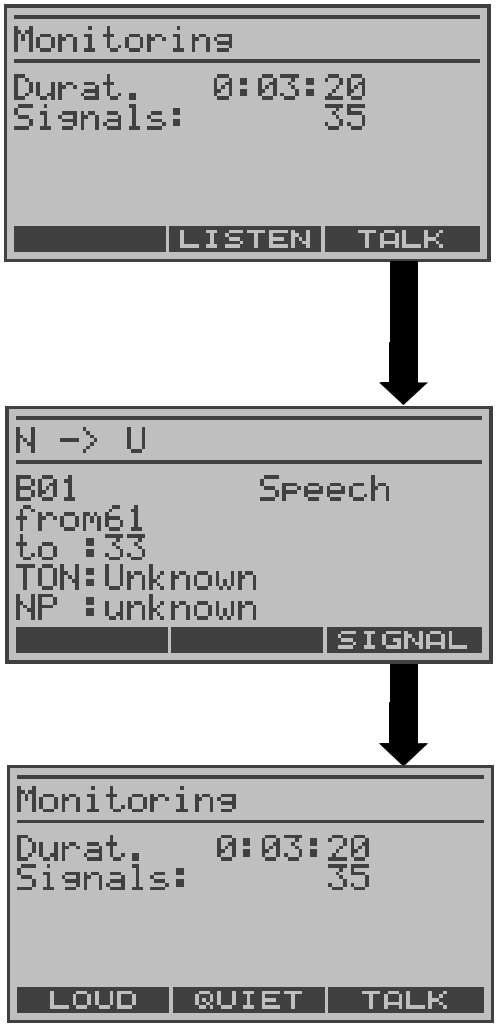
The ARGUS displays the number of recorded signals (e.g. 25) and the recording time in h:min:sec.

Stop D-Channel Monitoring

First the B-channel select dialog will open. After a B-channel has been selected, the ARGUS will switch the speech path onto this channel. Afterwards, it will be possible to listen to the voice data (in the direction Network ---> User).

<LOUD>	to increase the listening volume
<QUIET>	to stop listening
<TALK>	Page 41

Stop D-Channel Monitoring



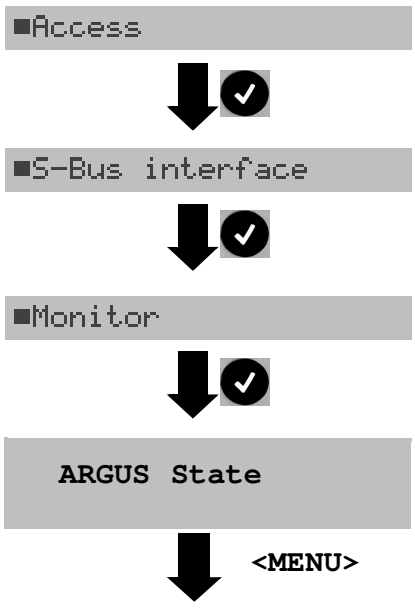
During D-Channel Monitoring, the ARGUS will search all of the D-channels signals sent for a SETUP. If a SETUP is detected, the <TALK> softkey will be displayed.

Display the call parameters of the last SETUP received.

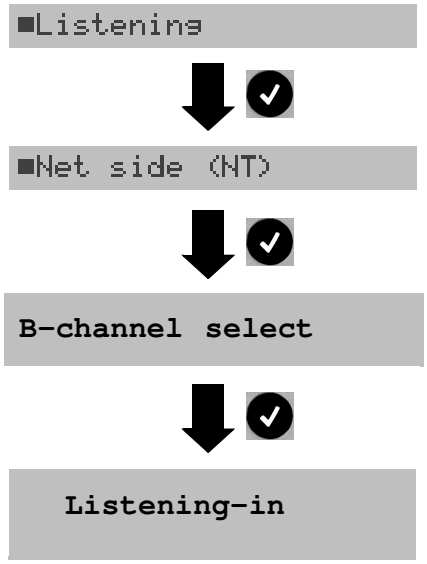
The ARGUS displays the call direction (Net -> User), the channel used (in the example, B01), the service (in the example. Speech), the own number (in the example, 61) and the destination number (in the example, 33).
Display of other parameters:

- Type of number (TON)
- Numbering plan (NP)
- Sub-address (SUB),
- User-User-Info (UUI),
- DSP messages (if existent),

Listening-in when D-Channel Monitoring is not active



D-Channel Monitoring not active!



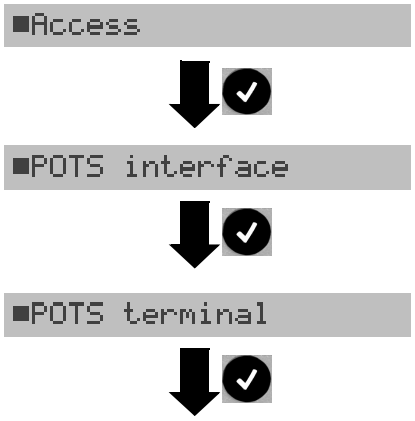
It is possible to passively listen-in on the network-side, the terminal-side or both sides.

Select the B-channel (with the cursor keys)

to stop listening-in.
The ARGUS will return to the Main menu.

9 Operation on a POTS access

9.1 The ARGUS as a POTS terminal



In the Main menu, open the Access menu

The Argus behaves like a POTS (analog) terminal.

<TALK>	Call setup
<MENU>	The ARGUS will return to the Main menu.
<CONFIG>	The ARGUS will open the POTS configuration menu (see Page 204).

9.1.1 Connection display.

Outgoing Calls

The ARGUS sets up a connection to another terminal. If the terminal is a telephone, the handset integrated in the ARGUS can be used to hold a conversation.

ARGUS - State display

Setup the connection
(Alternatively: Open Single Tests in the Main menu and select Connection)

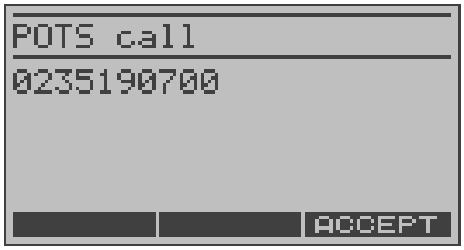
Enter the number on the keypad. Each of the number's digits will be dialed individually. The ARGUS will display the number dialed. As soon as the remote party answers, a voice connection will be set up.
The ARGUS will display the charges, if the information is available for the access under test.

<LOUD>	Increases the volume.
<No.>	Select the number from the call number memory or reenter the number on the keypad The last number dialed will always be used as the default (simplified last number redial).
<R>	Generate a FLASH signal
 or 	Clear the connection

Simplified overlap sending using the telephone key

Press the  key and the ARGUS will immediately open the POTS call display. Once the call number is entered, the call will be setup.

Incoming Call



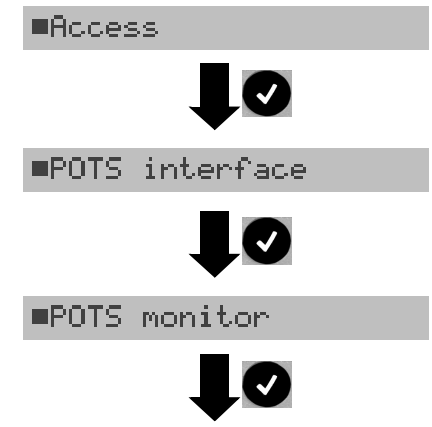
The ARGUS signals an incoming call both audibly and on the display.
If the access supports CLIP, the ARGUS will display the number of the caller (Page 204).

<ACCEPT> To take the call.

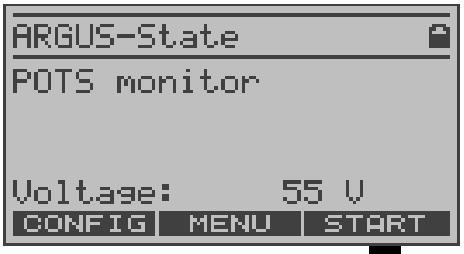
or

9.2 POTS Monitoring

Essentially, the POTS (analog) monitor provides a high impedance tap that does not influence the interface. You can listen to the line with the integrated handset without having the ARGUS send on the interface.



In the Main menu, open the Access menu



The ARGUS displays the voltage level on the line when it is “on hook” (not busy).

<MENU>	The ARGUS will return to the Main menu.
<CONFIG>	The ARGUS will open the POTS configuration menu. (see Page 204)

Start monitoring

The ARGUS displays the voltage (when "off hook"), the number of the caller (if CLIP is supported) and the DTMF characters dialed by both telephone subscribers and the SMSs received (optional).
Any received DTMF-characters will be appended to the line, which will shift left for each character once it is full. An incoming call will be signalled acoustically.

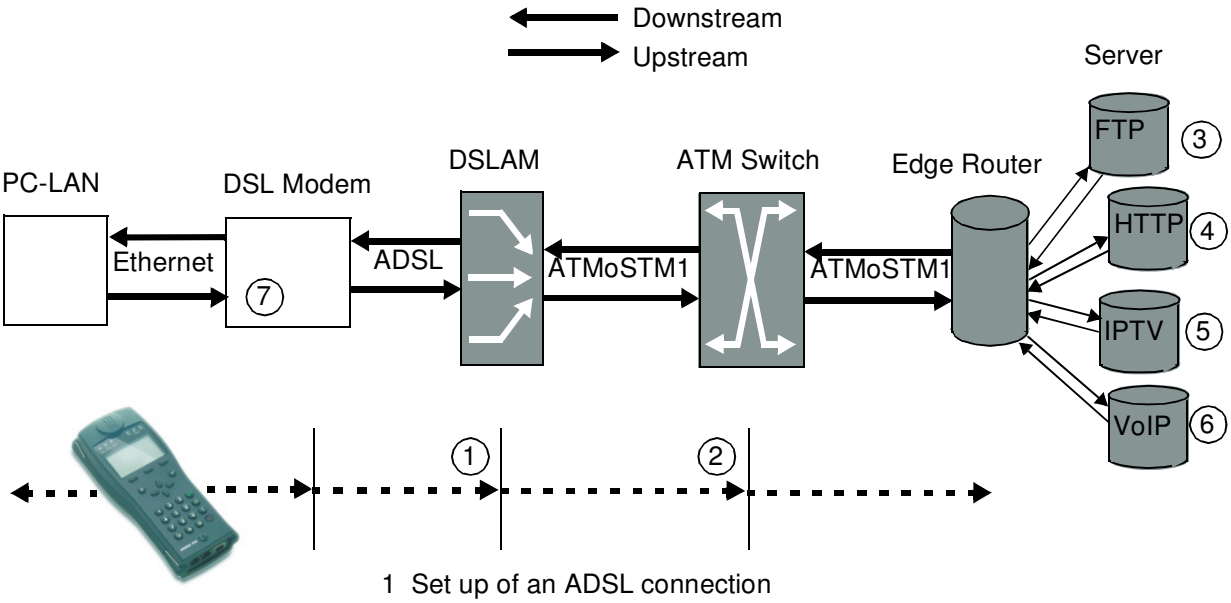
	Press to display additional information, if available on the access (e.g. advice of charges)
<LOUD>	Increases the volume.
<DEL>	Clears the display.
	Stop monitoring.

10 Tests on ADSL, ADSL2 and ADSL2+ Accesses

The ARGUS supports a variety of access types.

Depending on the access mode selected (and the protocol), the ARGUS support the following ADSL tests:

Access Mode	Tests
ARGUS ADSL (PC + modem replacement mode) Connection of the ARGUS directly to the ADSL access (before or after the splitter). The ARGUS replaces both the modem and the PC.	- IP ping - Trace route - HTTP download - FTP download - FTP upload - VPI/VCI scan - ATM OAM ping - ATM BERT - IPTV - IPTV Scan VoIP telephone
ARGUS Bridge Insertion of the ARGUS between the ADSL access and the PC. The ARGUS replaces the ADSL modem.	- MDI analysis
ARGUS Router Insertion of the ARGUS between the ADSL access and the PC. The ARGUS replaces both the ADSL modem and the router.	- IP ping - Traceroute test - HTTP download - FTP download - FTP upload - IPTV - IPTV Scan - MDI analysis - VoIP telephone



1 Set up of an ADSL connection
2 ATM ping, VPI/ VCI scan
3 FTP download, FTP upload
4 IP ping, Traceroute, HTTP download
5 IPTV
6 VoIP telephony
7 Bridge mode, Router mode

We must point out that the individual ADSL tests record and store data (e.g. in tracing IP data). The user must comply with the statutory regulations governing the collection and storage of such data and his obligation to give notice in this connection.

Starting functions with the numeric keys/key combinations

Using the digit keys, you can start important ARGUS functions/tests directly, regardless of the menu that the ARGUS is currently showing. If a function is called where the ARGUS expects the entry of a digit, pressing a number key will be interpreted as the expected input.

The ARGUS will display the "assignment" of the numeric keys.

The assignment of functions to the numeric keys can also viewed on the ARGUS display. Open the Main menu and select "Help".

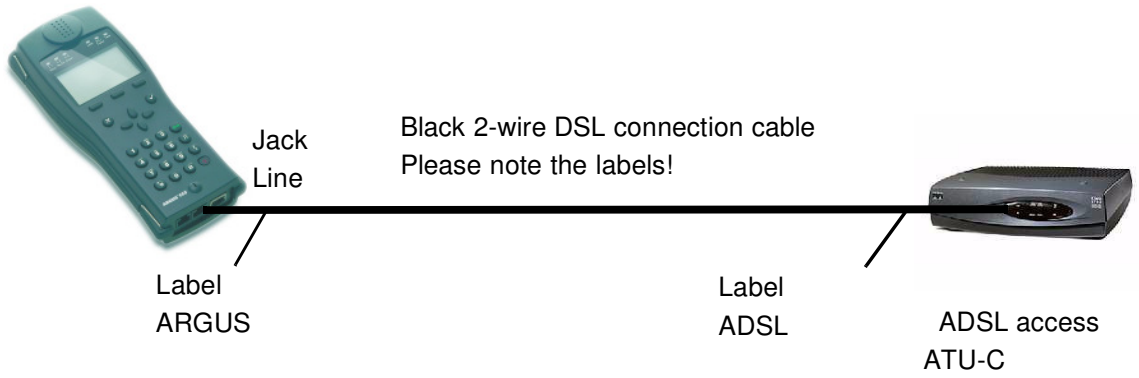
Operation on an ADSL access (Access mode: ARGUS-ADSL)

Numeric key 0	ARGUS Status display
Numeric key 1	Show the “Function assignment” on the ARGUS display
Numeric key 2	Start a VPI/VCI scan
Numeric key 3	Start a Ping test
Numeric key 4	Traceroute
Numeric key 5	Start HTTP download
Numeric key 7	Start FTP download
Numeric key 8	The ARGUS will open the PC/Trace Configuration menu
Numeric key 9	Start ATM BERT
	Display the Line status
	Start VoIP telephony
∗ 1	Display the available SW options
∗ 2	Reset all the parameters to their default values.
	The speed-dialing memory with the call numbers, PPP user name, PPP password, IP addresses, Profile names, User-specific services, Keypad Infos and all of the test results stored in the ARGUS (e.g. Automatic test sequence on an ISDN access, ADSL test results, profiles etc.) will be deleted.

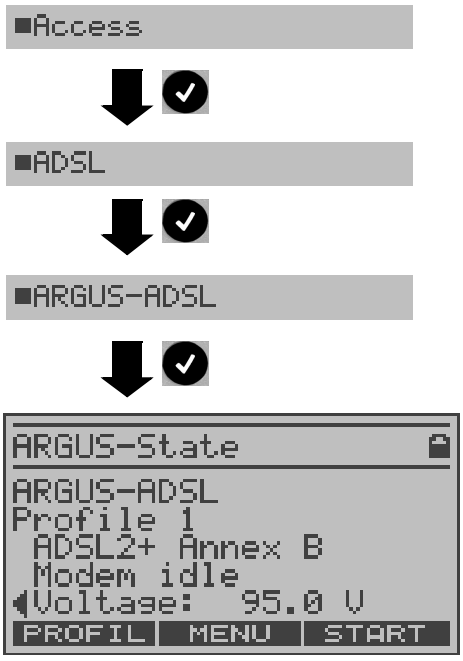
10.1 The ARGUS in the ARGUS-ADSL Access Mode

Using the ADSL 2-wire connection cable, the ARGUS is connected directly to the ADSL access (either before or after the splitter). In this case, the ARGUS replaces both the modem and the PC.

Use only the cables included in the package.



Setting the device to the ARGUS-ADSL access mode:

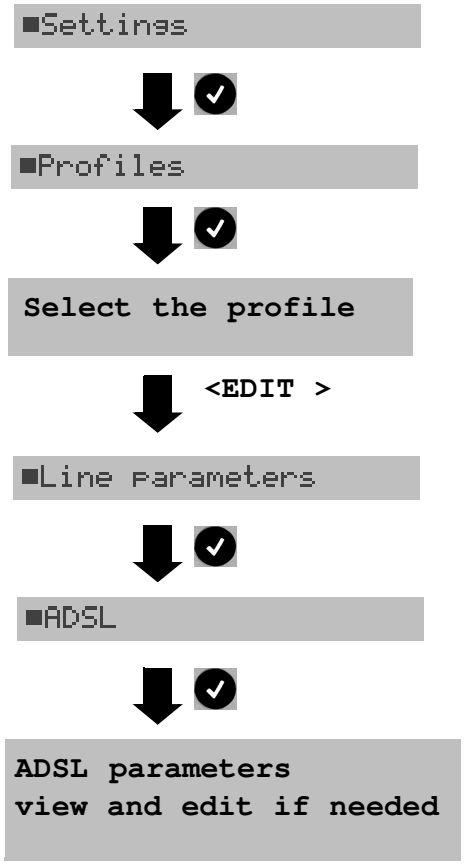


The ADSL connection is not yet set up.

10.1.1 Setting Up an ADSL Connection

The ARGUS will set up an ADSL connection and determine all of the relevant ADSL connection parameters. The ARGUS displays the ADSL connection parameters and saves them in the internal memory after the connection is cleared down if desired.

Parameter settings:



When setting up the connection, the ARGUS uses the parameters saved in the DSL profile.
(see Page 179).
- ADSL mode
- Rated value
- Shutdown mode

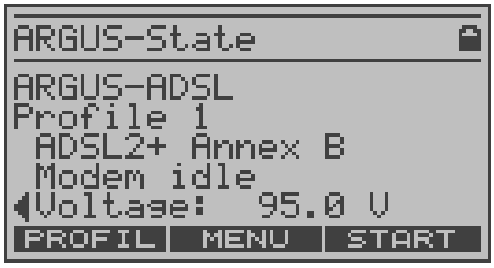
Setup an ADSL connection

ARGUS - State display

<PROFIL> Open the list of profiles.

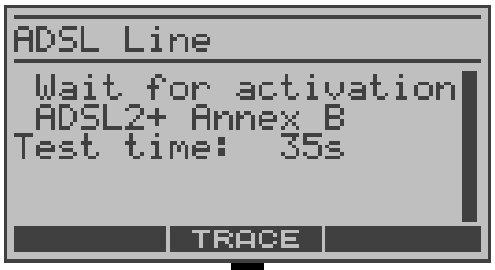
The ARGUS will use the parameters in the current profile when setting up the ADSL connection. In the display, the currently active profile is indicated by the ✚ (in the example, Profile 1).

Cursor keys	Select the profile
<EDIT >	Edit the marked profile. The parameters of the selected profile can now be edited to suit the respective test situation. (see Page 179).
✔	The ARGUS will load the selected profile - the one indicated by the ■.



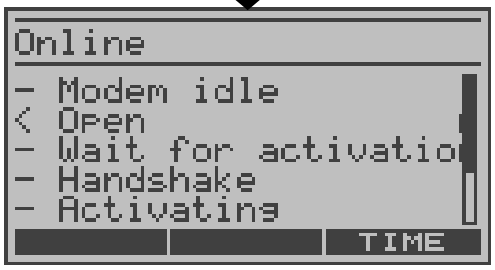
The ARGUS will load the selected profile and return to the ARGUS State display. The symbol used to mark the currently active profile ✚ will now appear in front of this profile.

<START> **Setting Up an ADSL Connection**



The ARGUS synchronizes with the DSLAM (the “L1/ Sync” LED will flash).

The ARGUS displays the current setup time and the ADSL mode.



Command symbols:

< = command sent from the ARGUS

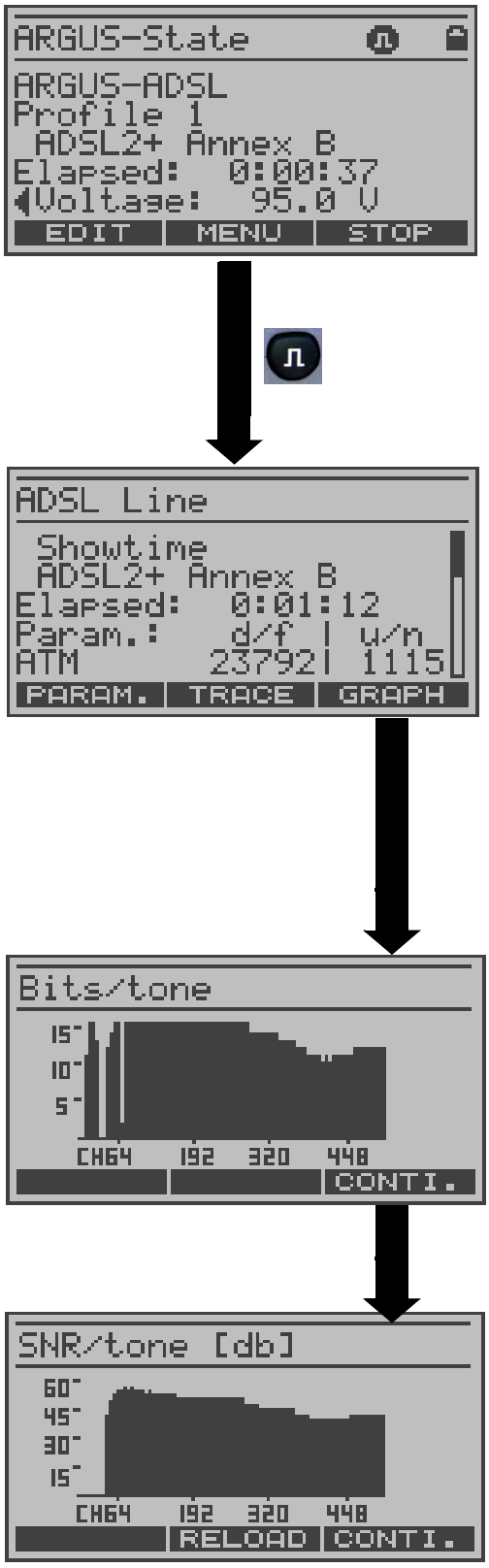
> = command sent from modem

- = modem state

<TIME>	The ARGUS will display the time stamp (indicating when the command arrived).
✖	The ARGUS will return to the previous display

Connection successfully setup

Once the connection has been setup (“L1/Sync” LED on constantly), the ARGUS will determine and display the ADSL connection parameters.



ARGUS – State display

The ARGUS displays the duration of the ADSL connection that has been set up.

<EDIT > The ARGUS will open the configuration menu for the current profile (in the example, Profile 1);
the ADSL line parameters (e.g. the ADSL mode) are write-protected.

<MENU> The ARGUS will return to the Main menu.

<STOP> Clear down the ADSL connection

The ARGUS will display the ADSL mode, the duration of the connection (Elapsed) and the ADSL connection parameter in tabular form.
(d/f: downstream/far, u/n: upstream/ near)

<PARAM.> Display the connection parameters for downstream (d) and upstream (u) (see the table on Page 55).

Scroll through the parameters.

<TRACE> Display the trace data.

Bit distribution display
i.e. bits transported per carrier frequency
y-axis: bits per carrier frequency (tone);
x-axis: carrier frequency
Based on the bit distribution, it is possible to detect line disturbances (e.g. HDB3, HDSL, RF.....)

The ARGUS will return to the previous display

Display of the signal-to-noise ratio for each tone
y-axis: SNR x-axis: carrier frequency
It is possible to detect disturbances on the individual frequencies.

<RELOAD> Determine the values for the graphs again.

<CONTI.> The ARGUS will return to the previous display

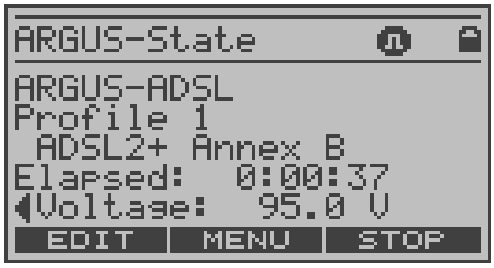
The ARGUS determines the following ADSL connection parameters:

Press <RESET> to reset all of the error counters (FEC, CRC, HEC, ATM Cells/sec and ATM Cell count) to zero.

ADSL Connection Parameters	
Rated value comparison	The rated value, which was set for the bit rate, is compared with the rate actually achieved (see Page 181)
ATM	The actual useable ATM datarate in kBit/s.
Attainable ATM	This is the theoretically attainable ATM data rate in kBit/s.
Relative Capacity Occupation	Utilization of the line as a percentage
Line Rate	This is the gross data rate, which is calculated from the bits/tone spectrum. In contrast to the ATM data rate, this value also includes the overhead for the ATM header, additional framing bits and checksums. This value is always higher than the ATM data rate!
SNR Margin	Signal-to-noise ratio in dB The SNR margin is a measure of how much additional noise the transmission can withstand and still achieve a BER (Bit Error Rate) of 10^{-7}.
Output power	Output power in dBm
Attenuation	The line's attenuation in dB over its entire length
FEC (Forward Error Correction)	The FEC shows the number of transmission errors corrected using the ATM cell checkbytes. f (far): Errors that the DSLAM has detected and informed the ARGUS. n (near): Errors which were detected by the ARGUS in the blocks it received.
CRC (Cyclic Redundancy Check)	The superframe checksum sent from the opposing end does not match the one calculated locally. f (far): Errors that the DSLAM has detected and informed the ARGUS. n (near): Errors which were detected by the ARGUS in the blocks it received. Possible cause: Fault on the line.

HEC (Header Error Checksum)	The HEC shows the number of ATM cells with bad header checksums. f (far): Errors that the DSLAM has detected and informed the ARGUS. n (near): Errors which were detected by the ARGUS in the blocks it received.
ATM Cells /sec	Counter for the sent (Tx) and received (Rx) ATM cells per second
ATM net in kb/s	The net data rate of the ATM cells calculated as ATM cells/sec.
ATM total in kb/s	The total data rate of the ATM cells calculated as ATM cells/sec.
ATM Cell count	Counter for the sent (Tx) and received (Rx) ATM cells
Vendor far	The manufacturer of the ATU-C side shown as a representation (see “Vendor identification numbers” on page 224.)
SW Version	The SW version of the ATU-C side (only available in ANSI mode)
Latency mode:	Depending on the configuration of the DSLAM (Interleaved or Fast Mode), the ARGUS will display either “int.” (for interleaved) or “fast”.

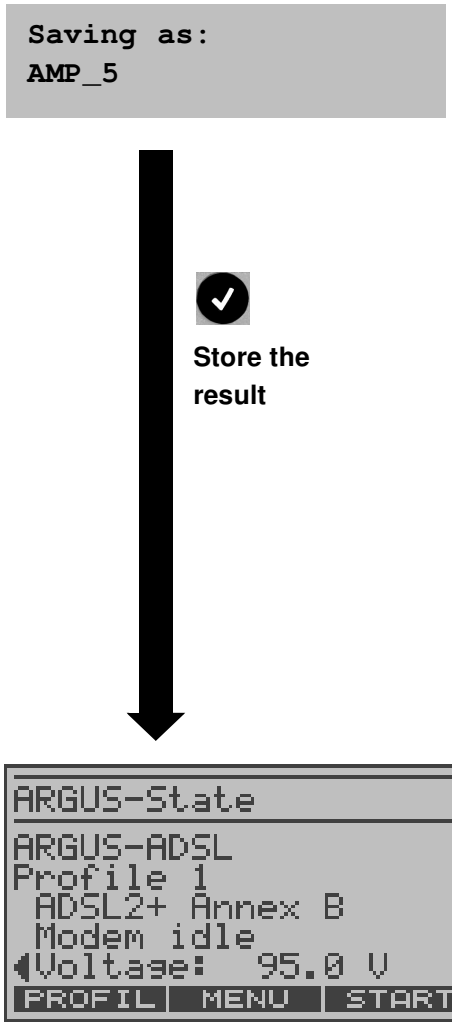
10.1.2 Clearing Down an ADSL Connection



ARGUS - State display

<STOP> **Clear down the ADSL connection**

Storing the result



The ARGUS saves the parameters together with the trace data in the first available record number in the memory; a name can be assigned to the record (see Page 57).
The record name is entered using the numeric keypad (default: AMP_1, AMP_2.... or the call number of the access under test if the number has been entered into the speed-dialling memory (see Page 211)).

When the right softkey is pressed it assumes a different meaning and thus influences the entries made from the keypad:

< 12>ab >	entry of the digits 0 to 9 plus * and #
< ab>AB >	entry of the lowercase characters and @, /,- and . (e.g. to enter a "c“ press the "2" on the keypad three times)
< AB>12 >	entry of the uppercase characters and @, /,- and .
<DEL>	Delete the character before the cursor
	Move the cursor

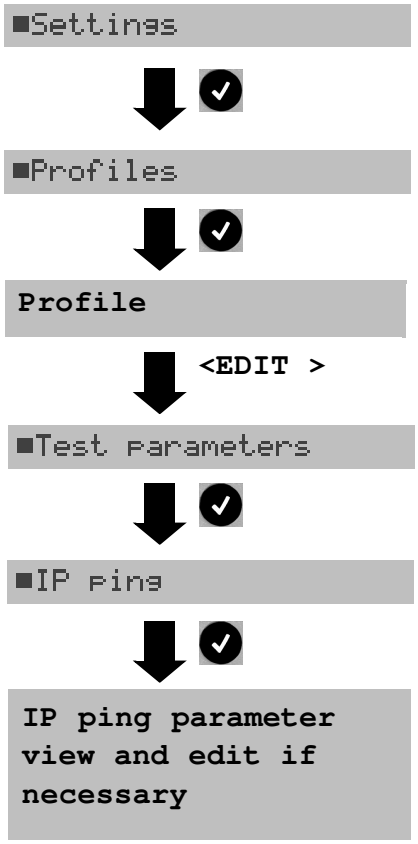
If all of the records have been written, you must manually select a memory location (record).

For information about displaying the saved results, **10.1.3 see Page 164.**

10.1.3 IPping

In the Ping test, the ARGUS checks whether it is possible to setup a connection to an Internet Service Provider (ISP) via the DSLAM and ATM network: The ARGUS sends a test packet to a predefined IP address (remote site) and then waits for a packet in reply.
Based on the received packet, it is possible to evaluate the ATM network availability and delay. It is also possible to determine the network's maximum data packet size.
The following parameters (which are stored in the DSL profile, see Page 179) are required for the ATM ping test: (The DSL profile can be opened – to view and edit – from the ARGUS State display by pressing <EDIT>. If an ADSL connection has been set up, the ADSL Line parameters, e.g. the ADSL Mode and the Rated value, will be write protected).

Protocol independent parameters



Select the profile.

Ping parameter (see Page 187)

IP address	address of the remote site
Number of pings	This sets the number of test packets that the ARGUS will send.
Pause	pause between sending two test packets
Packet size	size of the test packet
Fragmentation	this parameter sets the fragmentation of the test packets

PPP parameters (see Page 183)

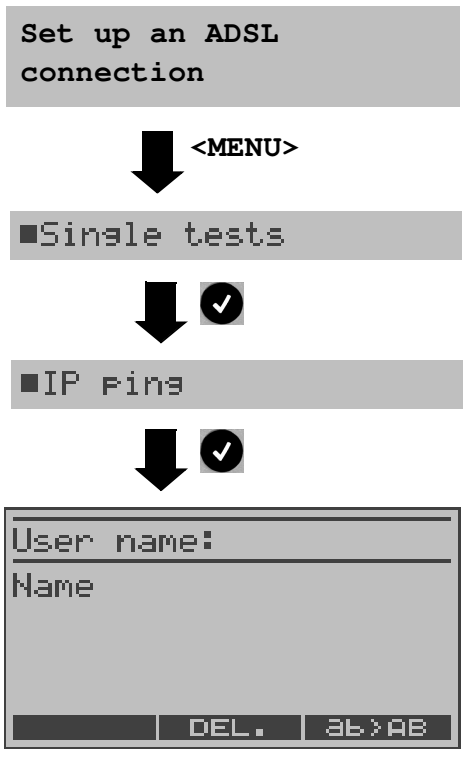
User name for the Internet connection

Password

Protocol dependent parameters

Protocol	PPPoE / PPPoA	IPoA / EoA (or IPoE)
Line parameters	ATM - VPI / VCI - Encapsulation	ATM - VPI / VCI - Encapsulation
	PPP - User name - Password	
	ADSL mode	ADSL mode
		WAN - IP mode (Static IP) - own IP address - IP network mask - remote IP address
		DNS server - DNS Server 1 - DNS Server 2

Starting a Ping test:



When setting up the connection (see Page 51), select the profile that also contains the parameters required for the Ping test.

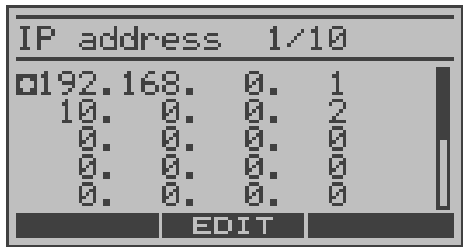
The ARGUS returns to the Main menu.

Depending on the protocol and access:
The ARGUS will first display the user name (if any has been saved in the profile). The user name can, however, be changed (see Page 183).

If the user name is changed here, it will only be placed in temporary storage; the profile itself is not modified.

If you change the user name, you must enter the password again (see Page 183

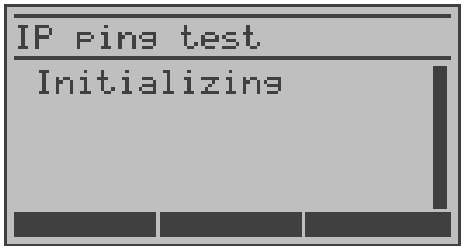
The password entered here, it will only be placed in temporary storage; the profile itself is not modified.



The ARGUS displays the IP address stored in the profile.

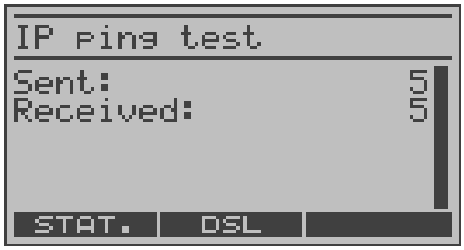
Select the IP address to use for the Ping; the default address is marked with an ■.

<EDIT > Opens the IP address for editing. (see Page 187)



After successfully initialising the connection with the ISP, the ARGUS will start the Ping test.

Display the ADSL connection parameters, trace data, bit distribution etc.



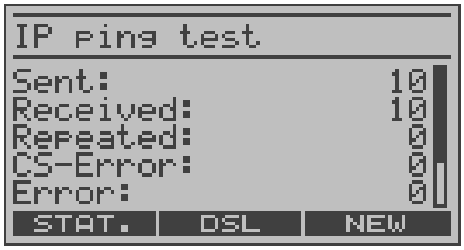
During the test, the ARGUS will display the current number of test packets sent and the number of packets received in reply.

<STAT.> Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.

<DSL> Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.

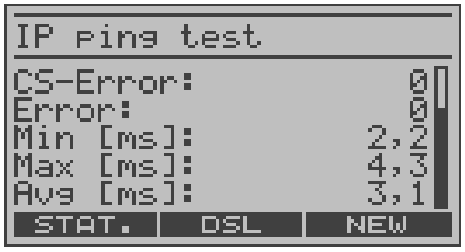
Cancel the test.

The ARGUS will display the results collected thus far and will inquire whether to save them (see Page 57).



Once the test is over, the ARGUS will display the results:

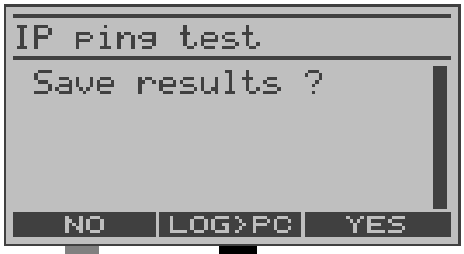
- Number of packets sent
- Number of packets received
- Number of packets sent again
- Checksum errors
- Faulty packets received
- Minimum packet round-trip delay
- Maximum packet round-trip delay
- Average packet round-trip delay



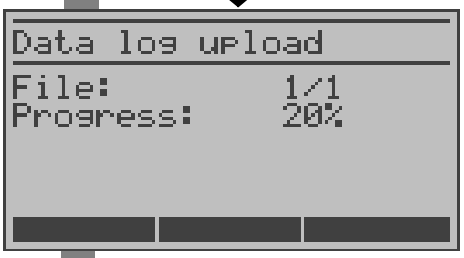
<STAT.> Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.

<DSL> Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.

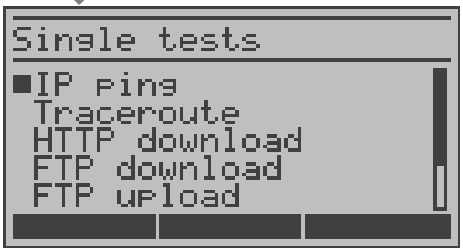
<NEW> Start a new Ping test



<YES> The ARGUS saves the results of the Ping test in the first available record in the internal memory
(see Page 164 and Page 169)

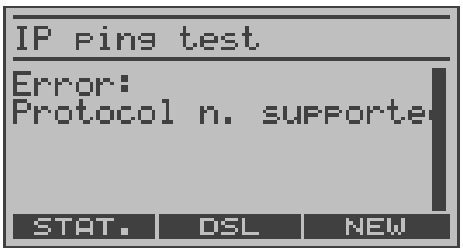


The ARGUS will send the trace file to the connected PC, which must be running WINplus or WINanalyse.
The data will be saved in the standard "pcap" format and can be decoded with a freeware tool (e.g. Wireshark or Ethereal).
In the example, 20% of the data was already uploaded to the PC.



A new ADSL test can be started.
The ADSL connection is still setup (to clear the connection down, press <STOP> in the ARGUS State display).

Ping test – Error messages



If an error occurs, the ARGUS will stop the test and display an error message.

<STAT.> Depending on the access mode and protocol, the ARGUS will display the LAN, WAN, PPP or ATM statistics.

<DSL> Depending on the access mode and protocol, the ARGUS will display the WAN, PPP or (optionally) the ATM or LAN statistics.

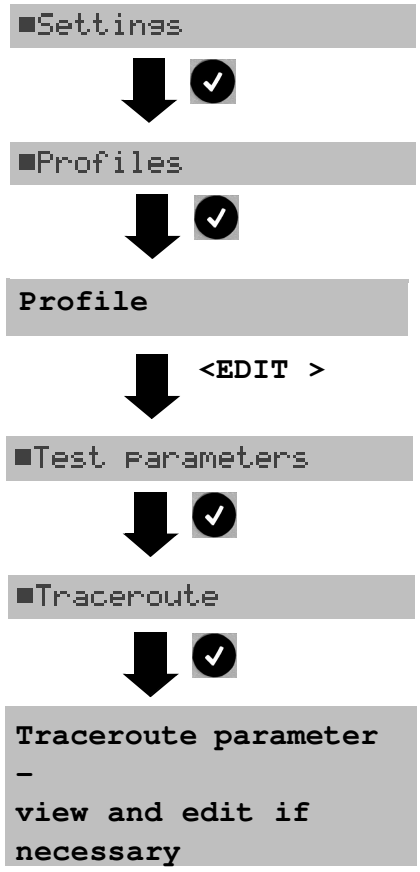
<NEW> Start a new Ping test

For a description of the error messages, please see the appendix.

10.1.4 Traceroute test

In a Traceroute test, the ARGUS sends a test packet and then displays a list of all of the network nodes (hops) and their response times on the way to the destination address. This information can then be used to precisely locate delays in the network.
The following parameters (which are stored in the ADSL profile, see Page 189) are required for the Traceroute test: The profile can be opened – to view and edit – from the ARGUS State display by pressing <EDIT> or via the Configuration menu. If an ADSL connection is currently set up, the connection parameters (e.g. the ADSL mode) will be write-protected.

Protocol-independent parameters:



Select the profile.

IP address	IP address of the destination node
Maximum hops	This sets the maximum number of network nodes to trace the path.
Probes	This sets the number of attempts that will be made to get a response from a network node.
Timeout	This sets the maximum amount of time that the ARGUS will wait for a response from a network node.

Protocol dependent parameters: (see Page 59)

Starting a Traceroute test

Set up an ADSL connection

<MENU>

■Single tests

■Traceroute

Display of the User name

Enter the password

Display of the IP address

Initialization

The profile with the required line parameters is selected before setting up an ADSL connection (see Page 51).

The ARGUS will return to the Main menu.

Depending on the protocol and access:
The ARGUS will first display the user name (if any has been saved in the profile). The user name can be edited (the change is, however, only stored temporarily, see Ping test Page 59) see Page 183.

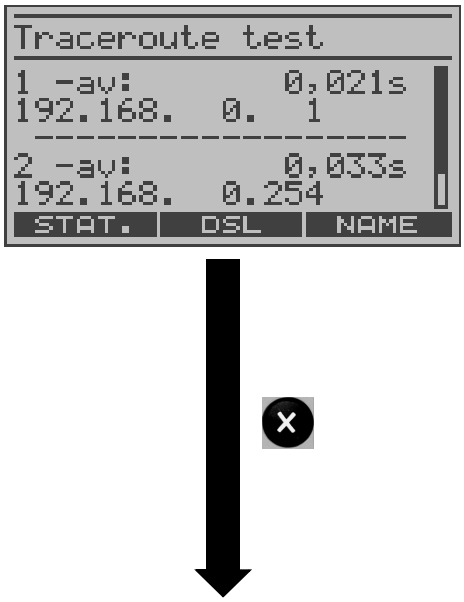
If you change the user name, you must enter the password again (the change is, however, only stored temporarily, see the Ping test Page 59).

The ARGUS will display the IP address saved in the profile
(see Ping test Page 59 and Page 189).

After successfully initialising the connection with the ISP, the test will start automatically.

The ARGUS displays the current hop and probe (in the example 1 -2: i.e. 1st hop and 2nd probe), the current response time of the hop in the current probe (0.015 seconds) and the IP address of the current hop (in the example: 192.168.0.1).

or **<DSL>**	Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.
<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.
	Cancel the test. The ARGUS will display the results collected thus far and will inquire whether to save them.



Close the display showing the results

After the test is done, the ARGUS will display all of the hops and their average response time (calculated for all of the probes). In this example: 1. hop (1 -av) with an average response time of 0.021sec and the IP address 192.168.0.1.

<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.
<DSL>	Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.
<NAME>	Displays the IP address of the hop as a name (if possible).

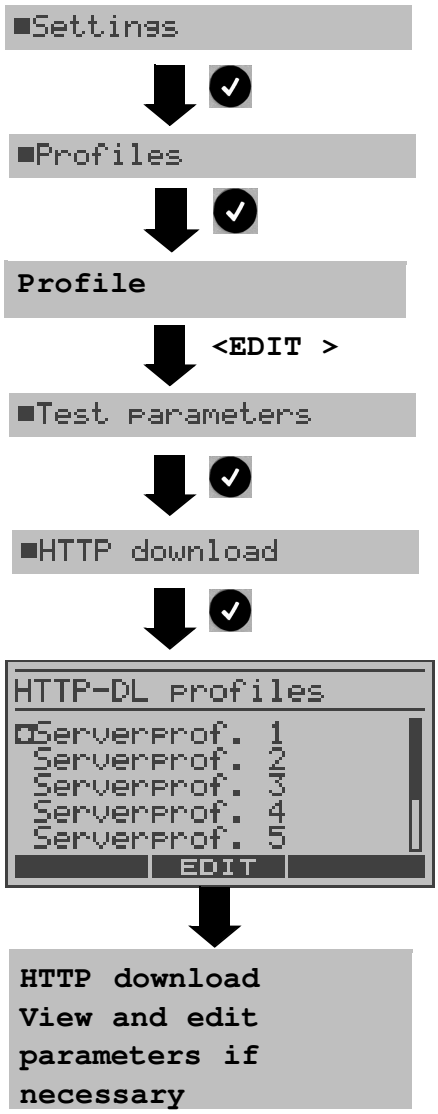
“Saving the Traceroute results”, see the Ping test Page 61

“Sending the Trace file to a PC”, see Ping test Page 61.

10.1.5 HTTP download

In the HTTP download test, the ARGUS will attempt to download data from a web site or file (the user data of the IP packet). The ARGUS will display the current net download rate and once the test is over the average speed (in the case of multiple download attempts).
The following parameters are required (The profile can be opened – to view and edit – from the ARGUS State display by pressing < EDIT> or via the Configuration menu): If a connection is currently set up, the ADSL connection parameters (e.g. the ADSL mode) will be write-protected.

Protocol-independent parameters:



Select the profile.

Ten user-defined server profiles are available which will also be used for both the FTP download and upload tests.

Server address	IP address of the server
Download filename	The path and name of the file to be downloaded in the test
User name	User name for the server
Password	Password for the server
Qty	This sets how often the data at the “Source” address should be downloaded
Profile name	The name of the server profile which can be set as desired.

Regarding the editing of the parameters (see Page 189)

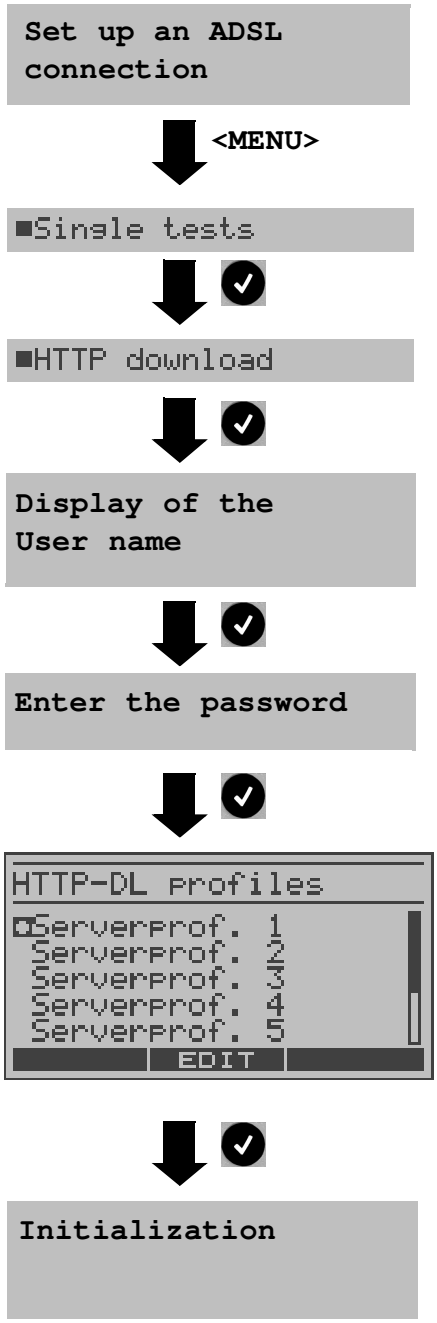
If an alias www address is entered as the "Source" address, the ARGUS will "only" download the one HTML page during the HTML download test. The ARGUS does not evaluate the HTML code, so any link to a “true” www address will be ignored. In this case, the ARGUS will not display an error message since the “Source” address specified will have been loaded without error.

Since it is not possible to accurately determine the transmission speed if the duration of the download test is less than 10 seconds, you should download a reasonably large file.

When entering the “Source” address (server address and download filename) make certain that you use the correct notation (upper and lower case), otherwise the ARGUS will report an Error 301 (Moved Permanently) or Error 404 (Not Found).

Protocol dependent parameters (see Page 59)

HTTP download test - starting



The profile with the required line parameters is selected before setting up an ADSL connection (see Page 51).

The ARGUS returns to the Main menu.

Depending on the protocol and access:
The ARGUS will first display the user name (if any has been saved in the profile). The user name can, however, be changed (see Page 183). The user name will only be stored temporarily (see the Ping test, Page 59).

If you change the user name, you must enter the password again (see Page 183 The user name will only be stored temporarily (see the Ping test, Page 59).

Select the server profile (the default profile is marked with a ■).

<EDIT > Edit the selected profile.
Regarding the editing of the individual parameters (see Page 189)

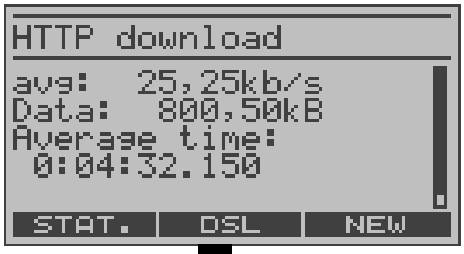
After successfully initialising the connection with the ISP, the test will start automatically.

HTTP download test

During the test, the display shows:
In the example, the first download of a total of three attempts (1/3) is shown. 13% of the data has already been downloaded. The current net download rate is 20 kBits per second.
Thus far 105.21 kBytes of the total of 800.50 kBytes have been downloaded.
The ARGUS also displays how much time has elapsed since the download began (in h:min:sec,msec) and how much longer it will take to complete the download.

 or **<DSL>**	Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.
<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.
	Cancel the test.

HTTP download results



Once the test is over, the ARGUS will display the results:
- the achieved average transfer rate of all the downloads (e.g. 25.25 kbit/s)
- the size of the file downloaded
- the average time needed for a download

<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.
<DSL>	Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.
<NEW>	Start a new download test

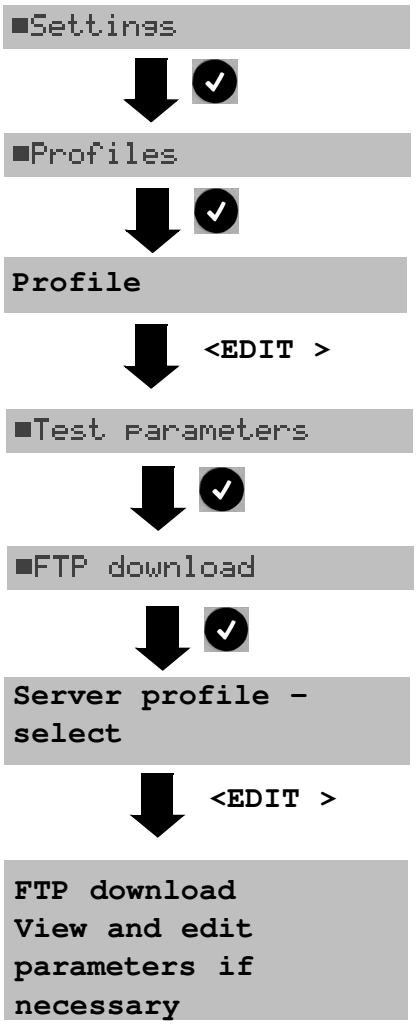
Close the display showing the results

"Saving the download results" (see the Ping test, Page 61)
"Sending the Trace file to a PC", see Ping test Page 61.

10.1.6 FTP download

In the FTP download test, the ARGUS will attempt to download the data of a file (the user data of the IP packet). The ARGUS will display the current net download rate and once the test is over the net average speed (in the case of multiple download attempts).
The following parameters (which are stored in the profile, see Page 190) are required for the FTP download test: (If an ADSL connection is currently set up, the connection parameters (e.g. the ADSL mode) will be write-protected.)

Protocol-independent parameters:



Select the profile.

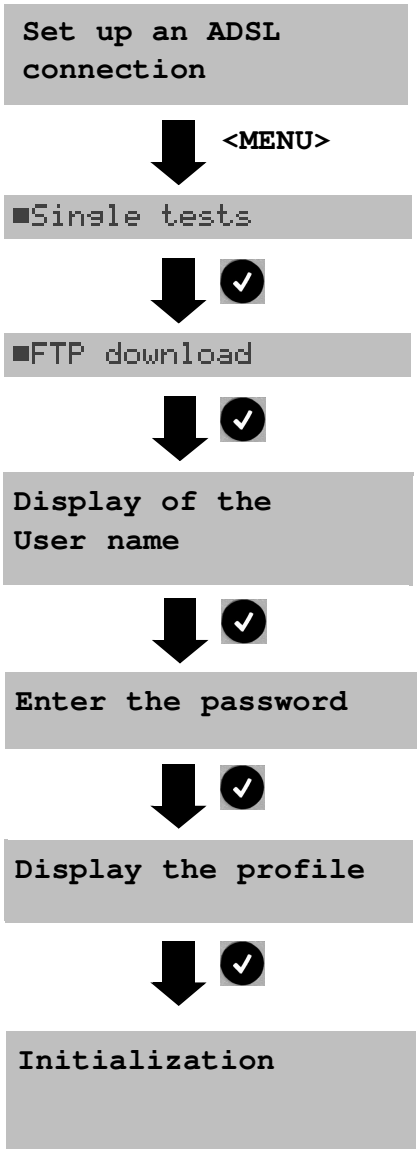
Ten user-defined server profiles are available which will also be used for both the FTP download and the FTP upload tests.

Server address	IP address of the FTP server
Download filename	The path and name of the file to be downloaded in the test
User name	User name for the FTP server
Password	Password for the FTP server
Qty	This sets how often the data at the “Source” address should be downloaded
Profile name	The name of the server profile which can be set as desired.

Since it is not possible to accurately determine the transmission speed if the duration of the download test is less than 10 seconds, you should download a reasonably large file.

Protocol dependent parameters (see Page 59)

Start FTP download



The profile with the required line parameters is selected before setting up an ADSL connection (see Page 51).

The ARGUS returns to the Main menu.

Depending on the protocol and access:
The ARGUS will first display the user name (if any has been saved in the profile). The user name can, however, be changed (see Page 183). The user name will only be stored temporarily (see the Ping test, Page 59).

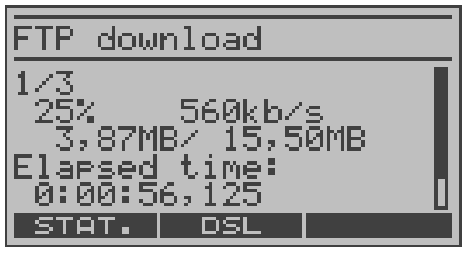
If you change the user name, you must enter the password again (see Page 183 The user name will only be stored temporarily (see the Ping test, Page 59).

Select the Server profile (the default profile is marked with a ✚).

<EDIT > Edit the selected Server profile. Regarding the editing of the individual profile parameters, see Page 189.

After successfully initialising the connection with the ISP, the test will start automatically.

FTP download test



During the test, the display shows:
In the example, the first download of a total of three attempts (1/3) is shown. 25% of the data has already been downloaded.
The current net download rate is 560 kbits per second.
Thus far 3.87 MBytes of the total of 15.50 MBytes have been downloaded.
The ARGUS also displays how much time has elapsed since the download began (in h:min:sec:msec) and how much longer it will take to complete the download.

<STAT.> Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.

	Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.
or **<DSL>**	
	Cancel the test.

FTP download - results

Once the test is over, the ARGUS will display the results:

- the achieved average transfer rate of all the downloads (e.g. 520.25 kbit/s)
- the size of the downloaded file
- the average time needed for a download

<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.
<DSL>	Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.
<NEW>	Start a new download test

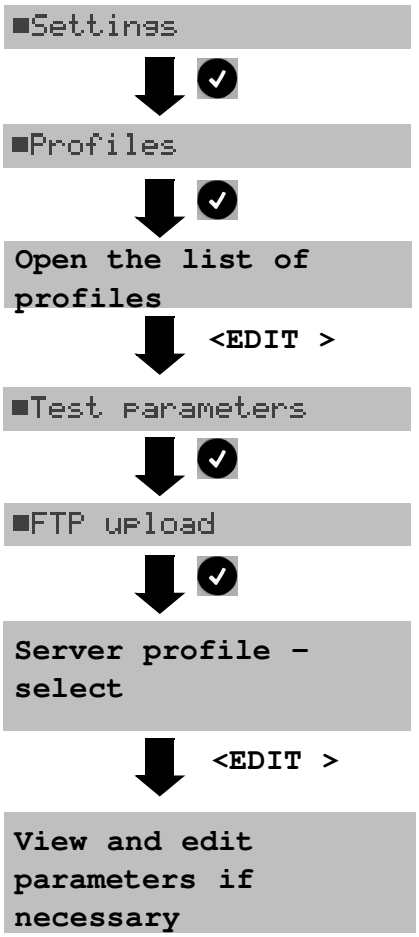
Close the display showing the results

“Saving the download results” (see the Ping test, Page 61)
“Sending the Trace file to a PC”, see Ping test Page 61.

10.1.7 FTP upload

In the FTP upload test, the ARGUS sends the data (the user data in the IP packet) in a file to a server. The Argus will display the current net upload rate and once the test is over the net average speed (in the case of multiple upload attempts).
The following parameters (which are stored in the profile, see Page 190) are required for the FTP download test: (If an ADSL connection is currently set up, the connection parameters (e.g. the ADSL mode) will be write-protected.)

Protocol-independent parameters:



Select the profile.

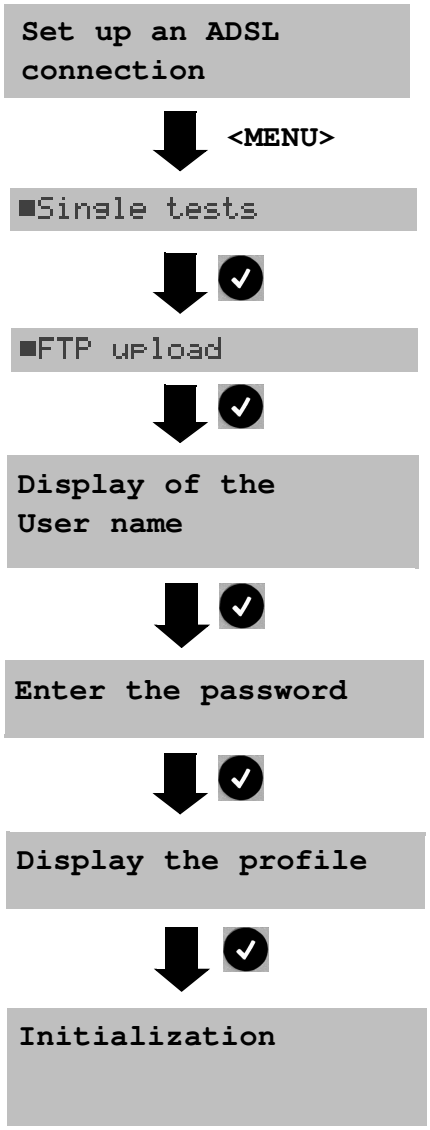
The user-defined server profile will also be used for both the HTTP download and FTP download tests.
Select the server profile.

Server	IP address of the FTP server
Upload filename	The path and filename under which the file that is sent in the test should be saved on the server.
Upload File size	The size of the file sent
User name	User name for the FTP server
Password	Password for the FTP server
Qty	Number of uploads
Profile name	The name of the server profile which can be set as desired.

Protocol dependent parameters (see Page 59)

Since it is not possible to accurately determine the transmission speed if the duration of the upload test is less than 10 seconds, you should send a reasonably large file to the server.

Start FTP upload



The profile with the required line parameters is selected before setting up an ADSL connection (see Page 51).

The ARGUS will return to the Main menu.

Depending on the protocol and access:
The ARGUS will first display the user name (if any has been saved in the profile). The user name can, however, be changed (see Page 183). The user name will only be stored temporarily (see the Ping test, Page 59).

If you change the user name, you must enter the password again (see Page 183 The user name will only be stored temporarily (see the Ping test, Page 59).

Select the Server profile (the default profile is marked with a ✤).

<EDIT > Edit the selected Server profile. Regarding the editing of the individual Server parameters (see Page 189)

FTP upload test

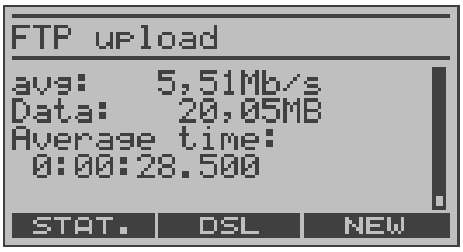
The FTP upload test starts automatically.
During the test, the display shows:

- current upload / total number of uploads
  In the example, the first upload attempt of a total of three attempts (1/3) is shown.
- the amount of data already sent
  (in the example, 25 %)
- current net upload data rate
  (in the example, 5.62 MBits per second)
- currently sent bytes
  (in the example 5.00 MBytes)
- Total file size (in the example 20.05 MBytes)
- current duration of the transmission
  (in h:min:sec,msec)

- remaining transfer time (sending)

 **or** **<DSL>**	Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.
<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.
	Cancel the test.

Result



Once the test is over, the ARGUS will display the results:

- the achieved average transfer rate of all the uploads (avg)
- the size of the file sent
- the average time needed for an upload

Results display – close

<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.
<DSL>	Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.
<NEW>	Starting a new FTP upload test

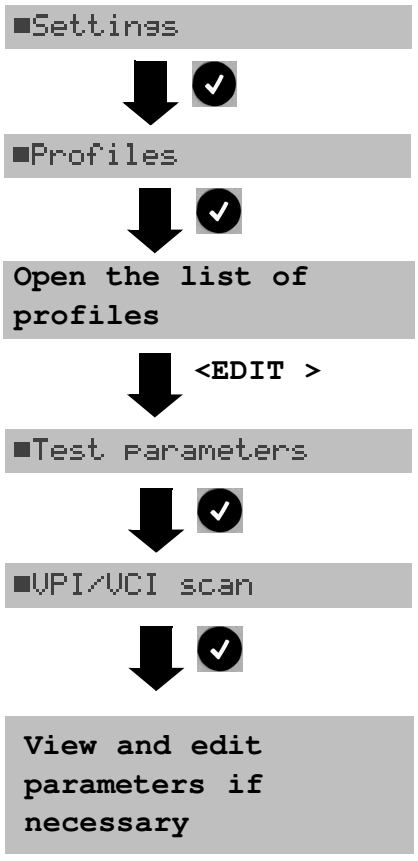
“Saving the results” (see the Ping test, Page 61)
“Sending the Trace file to a PC”, see Ping test Page 61.

10.1.8 VPI/VCI Scan

In a VPI/VCI scan, the ARGUS checks which VPI/ VCI combinations are active on the access under test: The ARGUS will send a test packet for each of the possible VPI / VCI combinations and wait for a packet in response.

The following parameters (which are stored in the profile, see Page 190) are required for the test:
(The profile can be opened – to view and edit – from the ARGUS State display by pressing < EDIT> or via the Configuration menu.) If a connection is currently set up, the ADSL connection parameters (e.g. the ADSL mode) will be write-protected.

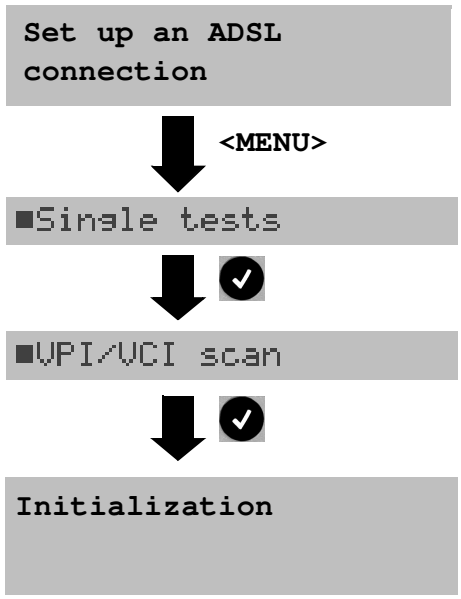
Protocol-independent parameters:



Select the profile.

VPI	Sets the limits of the VPI range checked by the ARGUS.
VCI	Sets the limits of the VCI range checked by the ARGUS.
Number of pings	Sets the number of test packets to be sent by the ARGUS.
Timeout	This sets the maximum amount of time that the ARGUS will wait for a response from an ATM network node.

Starting a VPI/VCI scan

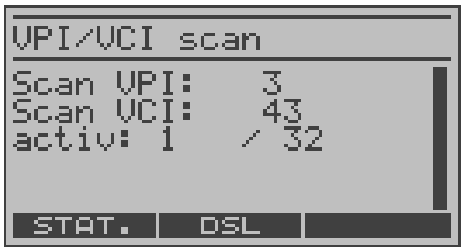


10.1.9

When setting up the connection (see Page 51), select the profile that also contains the parameters required for the VPI/VCI scan.

The ARGUS will return to the Main menu.

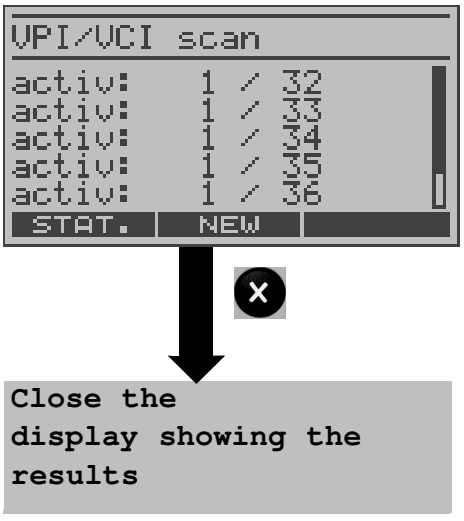
VPI / VCI scan



The VPI/VCI scan starts automatically.
The ARGUS displays the VPI/VCI combination currently being tested and the last VPI/VCI combination which was found to be active (in the example, 1/32).

Л or **<DSL>**	Display the ADSL connection parameters, trace data and bit distribution and signal-to-noise ratio per tone.
<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.
✕	Cancel the test.

Result



When the test is done, the ARGUS will display the VPI/VCI combination(s) currently active on the access under test.

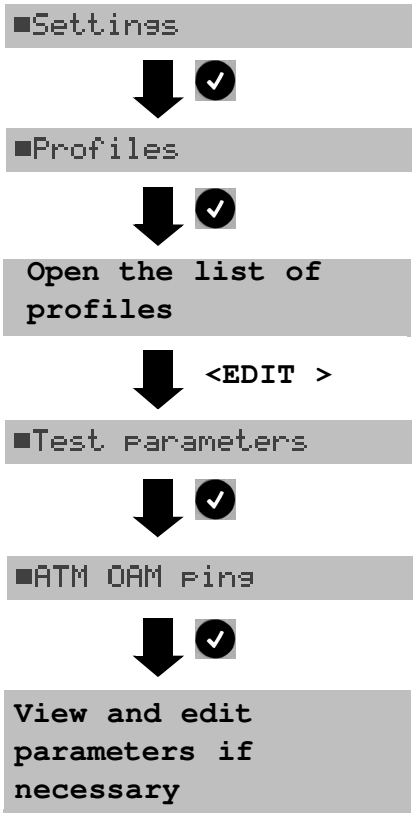
<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.
<DSL>	Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.
<NEW>	Starting a new VPI/VCI scan

"Saving the results" (see the Ping test, Page 61)

10.1.9. ATM OAM Ping

In the ATM OAM ping test, the ARGUS checks the availability of individual ATM network nodes or an ATM subnet.
The following parameters (which are stored in the profile, see Page 190) are required for the test:
(The profile can be opened – to view and edit – from the ARGUS State display by pressing < EDIT> or via the Configuration menu.) If a connection is currently set up, the ADSL connection parameters (e.g. the ADSL mode) will be write-protected.

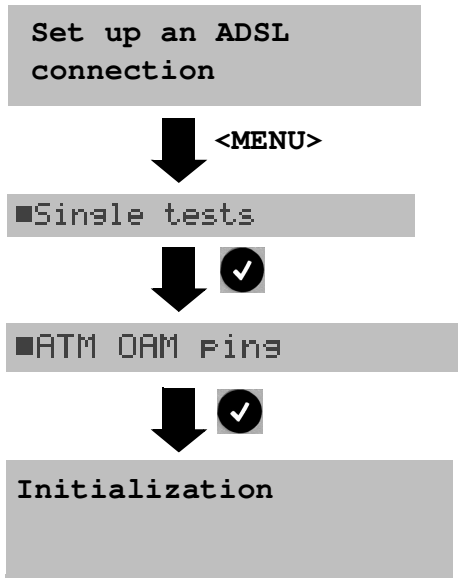
Protocol-independent parameters:



Select the profile.

VPI / VCI	Enter the VPI / VCI
Number of pings	The number of test packets that the ARGUS will send
Timeout	This sets the maximum amount of time that the ARGUS will wait for a response from an ATM network node.
OAM cell type	

Start ATM OAM ping



When setting up the connection (see Page 51), select the profile that also contains the parameters required for the ATM OAM ping test.

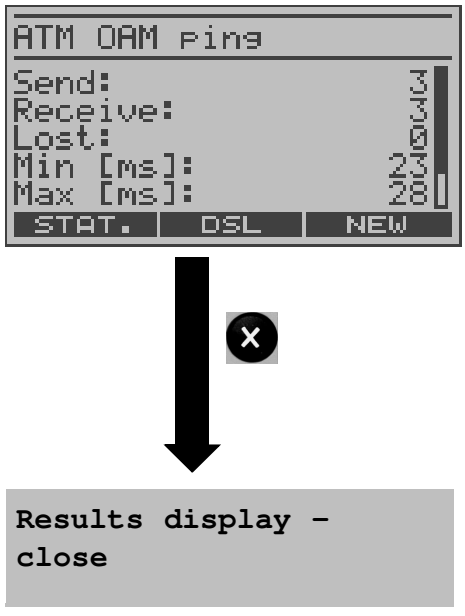
The ARGUS will return to the Main menu.

ATM OAM ping

The ATM OAM ping test will start automatically.
The ARGUS will display the current number of test packets sent, the current number of packets in response and the VPI/VCI on which the ping test is currently being run.

Л or **<DSL>**	Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.
<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.
✕	Cancel the test.

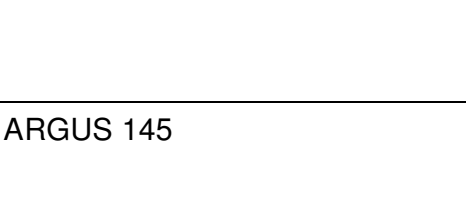
Result



The ARGUS will display the results of the test once it is done.

- Number of packets sent
- Number of packets received
- Number of packets lost
- Minimum packet round-trip delay
- Maximum packet round-trip delay
- Average packet round-trip delay

<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.



<DSL>	Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio for each tone.
<NEW>	Start a new ATM OAM ping test

“Saving the results” (see the Ping test, Page 61)

10.1.10 ATM BERT (optional)

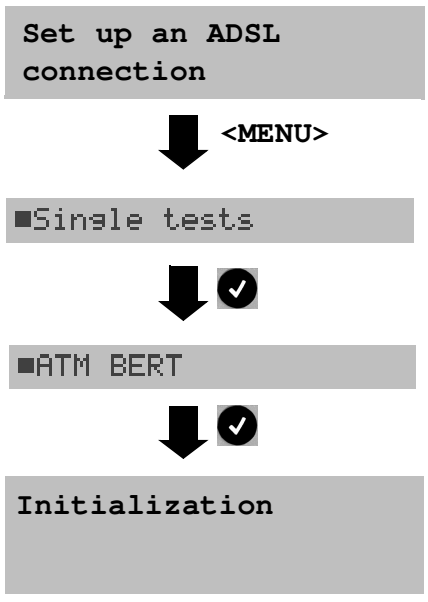
The ATM BERT (Bit Error Rate Test) is used to check the transmission quality of the ADSL line. In an ATM BERT, the ARGUS sets up an ADSL connection and sends a selectable bit pattern via a virtual ATM channel that must be looped at the remote end. The ARGUS compares the data received with the data known to have been sent.

During the test, the ARGUS counts the bit errors and after the test is done it calculates the bit error rate as well as other characteristic values (see Page 130). In addition the ARGUS displays ATM cell statistics.

Protocol independent parameters (see Page 191)

-	BERT time	Test duration (default duration: 1 minute)
-	VPI / VCI	Configuring the virtual channels and the virtual paths in the ATM cells
-	Bit pattern	Selection of the bit pattern
-	Error level	The level used to evaluate whether the bit error rate was "acceptable"
-	HRX value	Defines the hypothetical reference connection to be used for evaluation of the measured results in accordance with G.821.
-	Data rate (Upstream)	

Starting an ATM BERT



When setting up the connection (see Page 51), select the profile that also contains the parameters required for the ATM BERT test.

Initialization of the connection with the ISP

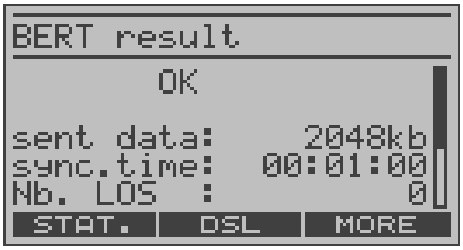
ATM BERT

The ATM BERT will start automatically.

During the test, the display shows:
- Bit errors
- Synchronicity of the bit pattern
- sync.time: how long the ARGUS has been synchronised to the bit pattern
- LOS counter

<Error>	generate an artificial bit error
<STAT.>	display the ATM statistics
0-Key	Restarts the BERT. The test time and number of bit errors will be reset.

Results



Close the display showing the results

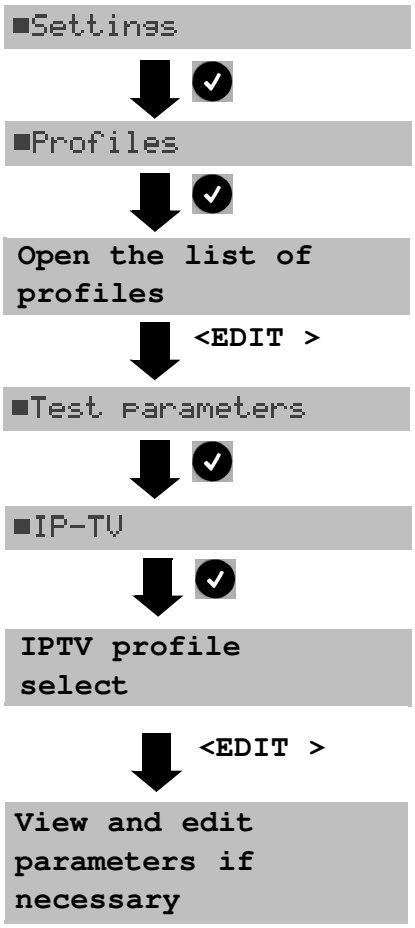
Once the test is over, the ARGUS will display the results:
- The evaluation of the results depends on the error level (in this case: OK)
- Transferred data (K= 1024 bits, k= 1000 bits)
- sync.time: how long the ARGUS has been synchronised to the bit pattern
- No. LOS: number of times that an LOS occurred
- abs. err.: number of bit errors,
- rel. err: the bit error rate (e.g. 1.4E-06 = $1.4 \cdot 10^{-6}$ = 0,0000014)

<MORE >	displays additional characteristic values (see Page 130)
<STAT.>	Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.

Saving the results (see Page 61)

10.1.11 IPTV (optional)

The ARGUS requests a stream from a server (Depending on the type of access, the ARGUS will substitute for a settop-box (STB) or modem and STB) and checks the regularity of the incoming packets, the loss of packets and the programme's switch on or switchover time.
Up to three user-defined IPTV profiles can be created (see Page 192) (The profile can be opened – to view and edit – from the ARGUS State display by pressing <EDIT> or via the Configuration menu.): If a connection is currently set up, the ADSL connection parameters (e.g. the ADSL mode) will be write-protected.
The following protocol independent parameters are required:

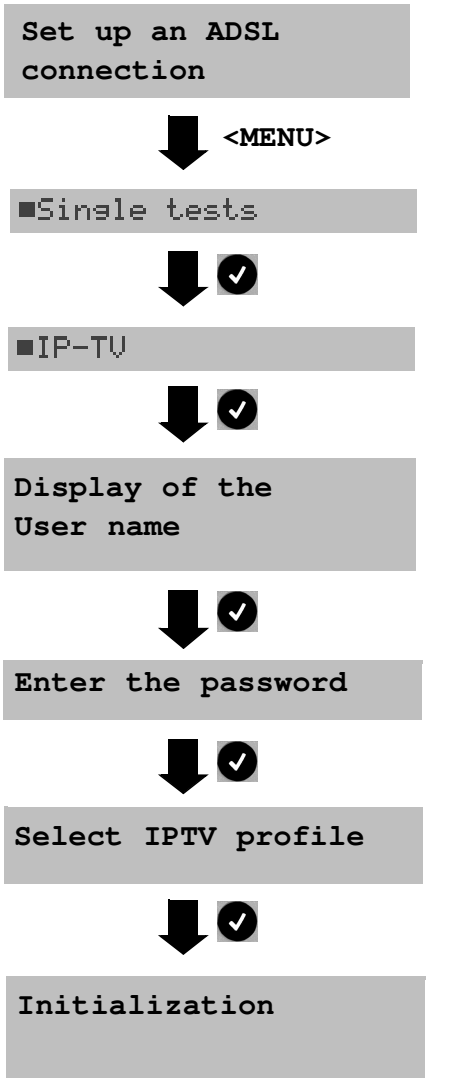


Select the profile.

Parameters:

Type of stream	Stream type
Server address	The address of the server from which the stream should be downloaded (only for VoD and UDP-SSM)
Multicast IP	IP address for the selected stream type “Multicast” (broadcast TV)
Port	Port number
Filename	Name of the file that should be downloaded from the server (in the case of VoD).
IGMP Version	Version of the multicast protocol to log on/off of a multicast group (broadcast TV)
RTSP type	Type of control protocol (for VoD)
Jitter Buffer	Size of the jitter buffer
Limit values	Entry of the limit values for the PCR jitter, the continuity errors (assessment of the picture quality) and the IGMP latency.
Profile name	The name of the IPTV profile which can be set as desired.

Start IPTV Test



The profile with the required line parameters is selected before setting up an ADSL connection (see Page 51).

The ARGUS will return to the Main menu.

Depending on the protocol and access:
The ARGUS will first display the user name (if any has been saved in the profile). The user name can, however, be changed (see Page 183). The user name will only be stored temporarily (see the Ping test, Page 59).

If you change the user name, you must enter the password again (see Page 183 The user name will only be stored temporarily (see the Ping test, Page 59).

IPTV Test

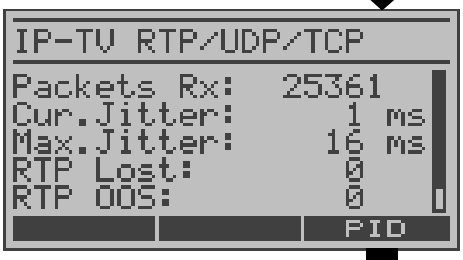
During the test, the ARGUS displays the current PCR jitter, continuity errors and latency.
The latency (switch on time of the program) is only determined once. If the measured values exceed the limits set in the parameters, the ARGUS will report that the test failed (FAIL).
The PCR jitter and continuity errors are determined continuously. If one of the limit values set is exceeded, the ARGUS will display “FAIL” until the measured value returns to a value less than the limit value once again.

<STAT.> Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.

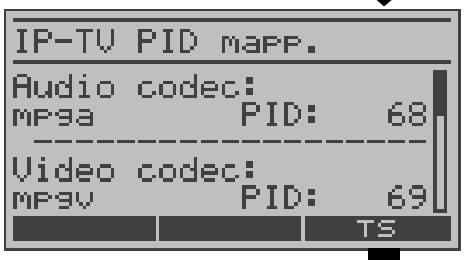
Cancel test

Display of the current values (e.g. Curr. PCR Jitter) and the maximum values measured (e.g. Max. PCR Jitter)

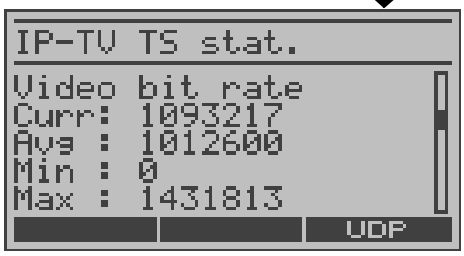
Display further information



RTP Lost: lost RTP packets (speech packets “Real time Transport Protocol”)
RTP OoS (RTP Packet OutofSequence): number of RTP packets delivered twice or repeatedly



PID (Packet Identifier): identifier for the audio/video and PCR components of the respective programme



Data rates (Min=Minimum, Max=Maximum, Avg= Average, Curr=Current)

Close the display showing the results

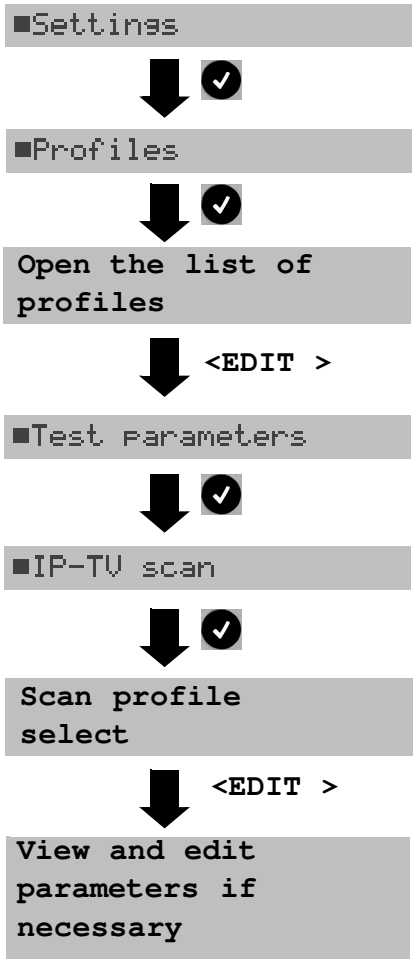
“Saving the results” (see the Ping test, Page 61**)**
“Sending the Trace file to a PC” (see Ping test) Page 61

10.1.12 IPTV Scan (optional)

The ARGUS will check the availability of the TV broadcaster. The ARGUS will also show the switchover time between the TV broadcasters.
The user can individually configure three “Scan Profiles” for use with the IPTV Scan (see Page 192): The profile can be opened – to view and edit – from the ARGUS State display by pressing <EDIT> or via the Configuration menu. If a connection is currently set up, the ADSL connection parameters (e.g. the ADSL mode) will be write-protected.

The following parameters are required for the IPTV Scan:

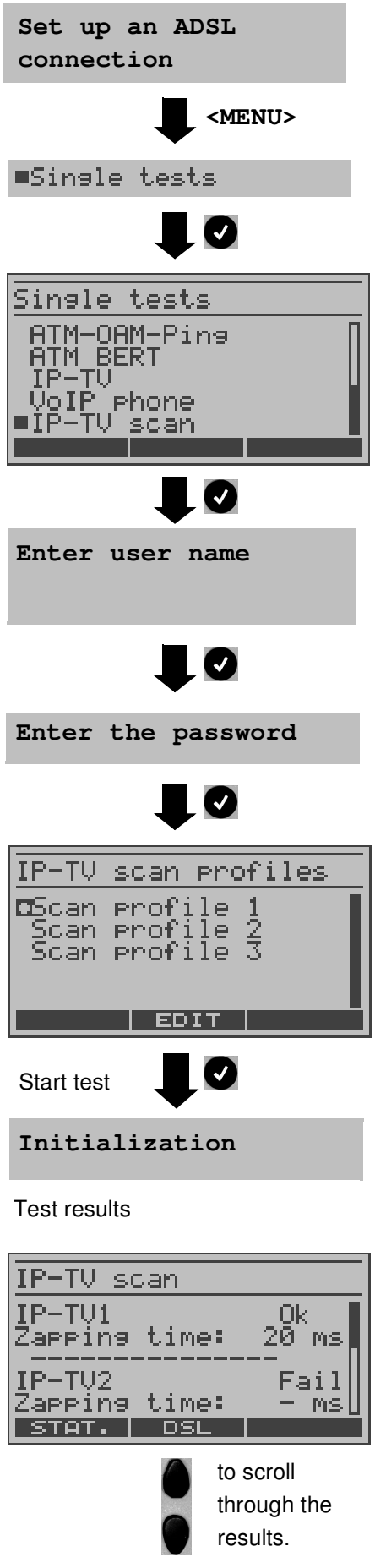
Protocol-independent parameters:



Select the profile.

Channel selection	Selection of the IPTV test channels: - Multicast IP - Port - Alias name (see Page 192)
IGMP Version	The IGMP protocol version
Switchover time	The ARGUS must have received the data of the (next) TV channel within this period of time during the test (see Page 194).
Profile name	The name of the Scan profile which can be set as desired.

Start the IPTV Scan



The profile with the required line parameters is selected before setting up an ADSL connection (see Page 51).

The ARGUS will return to the Main menu.

Depending on the protocol and access:
The ARGUS will first display the user name (if any has been saved in the profile). The user name can, however, be changed (see Page 183). The user name will only be stored temporarily (see the Ping test, Page 59).

If you change the user name, you must enter the password again (see Page 183 The user name will only be stored temporarily (see the Ping test, Page 59).

Select the profile

<EDIT > Edit the marked profile. The parameters of the selected profile can now be edited to suit the respective test situation (see Page 192).

The ARGUS will load the selected profile - the one indicated by the ■ to use for the test.

The ARGUS will indicate whether the TV channels could be received within the set period of time (switchover time, see Page 194) by displaying “OK” or “FAIL”.
If the ARGUS displays “OK”, it will also display the time required to switchover between TV channels.

Display of the minimum, the maximum and the average switchover time.

<STAT.> Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.

<DSL> Display the ADSL connection parameters,
trace data, bit distribution and signal-to-noise ratio for each tone.

Close the display showing the results

“Saving the results” (see the Ping test, Page 61)

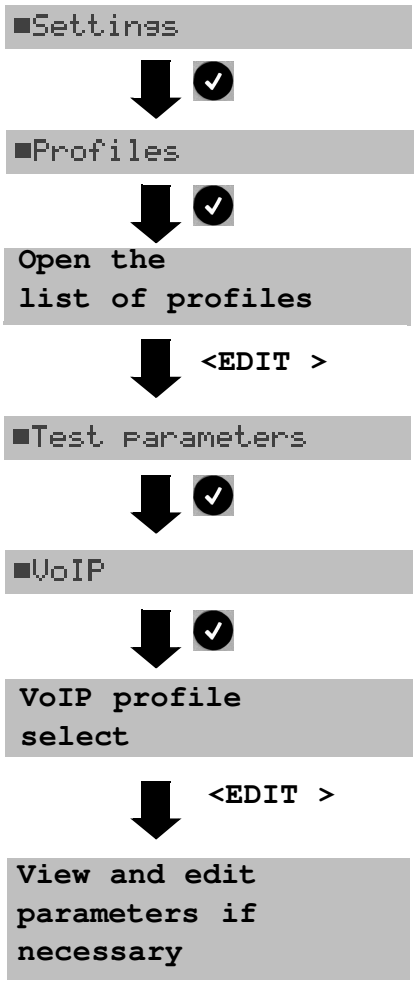
“Sending the Trace file to a PC” (see Ping test) Page 61

10.1.13 VoIP telephony (optional)

The ARGUS acts as a VoIP terminal with which a telephone (voice) call can be set up. The ARGUS uses the Session Initiation Protocol (SIP) as the signaling protocol for VoIP. VoIP calls can be set up with or without a registrar or proxy.
The user can individually configure three “VoIP Profiles” for use in VoIP telephony (see Page 192): The profile can be opened – to view and edit – from the ARGUS State display by pressing <EDIT> or via the Configuration menu. If a connection is currently set up, the ADSL connection parameters (e.g. the ADSL mode) will be write-protected.

The following parameters are required for VoIP telephony:

Protocol-independent parameters:

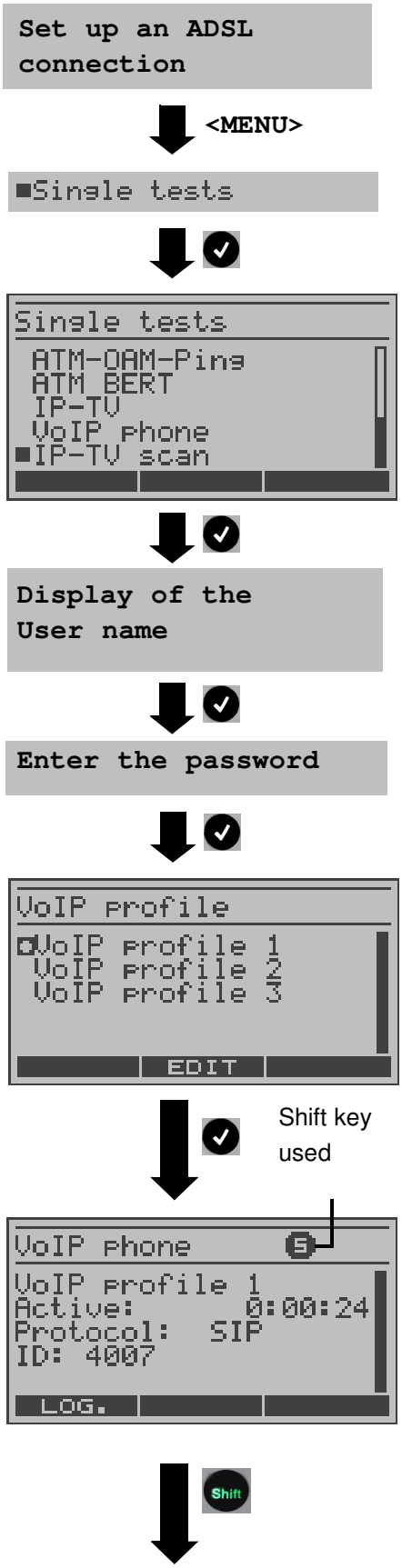


Select the profile.

Destination	VoIP destination
SIP	SIP Parameter (Session Initiation Protocol)
Protocol	currently only for SIP
User name	User name for the registrar
Password	The password to use with the registrar.
Call acceptance	Set call acceptance
Silence detection	on/off
Jitter buffer	Sets whether the size of the jitter buffer is fixed or dynamic.
Jitter buffer size	The size of the jitter buffer
Codec	Select the voice codec
Profile name	The name of the VOIP profile which can be set as desired.

Regarding the editing of the parameters (see Page 195)

Start VoIP telephony



The profile with the required line parameters is selected before setting up an ADSL connection (see Page 51).

The ARGUS will return to the Main menu.

Depending on the protocol and access:
The ARGUS will first display the user name (if any has been saved in the profile). The user name can, however, be changed (see Page 183). The user name will only be stored temporarily (see the Ping test, Page 59).

If you change the user name, you must enter the password again (see Page 183 The user name will only be stored temporarily (see the Ping test, Page 59).

Select the VOIP profile.

<EDIT > Edit the marked profile.
The parameters of the selected profile can now be edited to suit the respective test situation.
(see Page 179).

✓ The ARGUS will load the selected profile - the one indicated by the ■.

The ARGUS will display the VoIP profile used, the protocol and the user ID (own number).
If a registrar is used, the ARGUS will display how long it has been registered.
Press the Shift key to switch between softkey sets.

<LOG> Display the signaling protocol; the SIP message status codes are displayed in numerical form

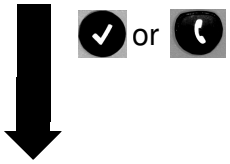
<STAT.> Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.

Display the ADSL connection parameters,
trace data, bit distribution and signal-to-noise ratio for each tone.

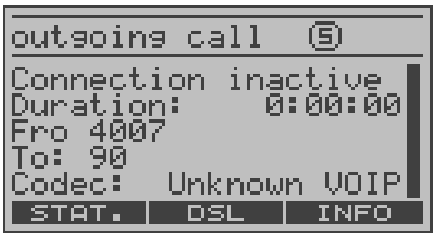
or
<DSL>

The ARGUS displays the destination address stored in the first memory location in the VoIP profile. There are a total of ten memory locations available for destination addresses.
Use the cursor keys to scroll through the memory locations for the destination addresses.

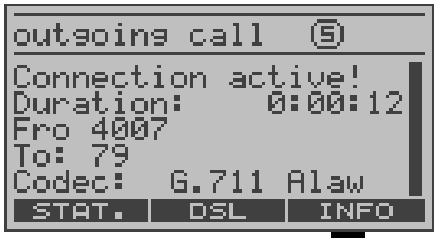
<EDIT > Open the marked memory location to edit it or to enter a new destination address in an empty memory location
(see Page 195).



Setup the connection



The ARGUS will display its “own” number (From 4007) and the number of the subscriber called (To: 90). The subscriber called, however, did not accept the call; the display shows “Connection inactive”.



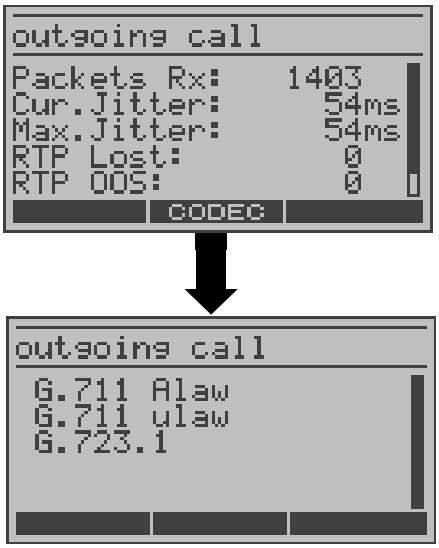
As soon as the subcriber called answers, the ARGUS will display “Connection active!”. The ARGUS will also display the duration of the active connection, the numbers of the two parties and the voice codec currently used.
.

<STAT.> Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.

Display the ADSL connection parameters,
trace data, bit distribution and signal-to-noise ratio for each tone.

or
<DSL>

Disconnect



Display of the other VoIP results:
- Packet statistics, e.g. jitter, packets lost, etc.

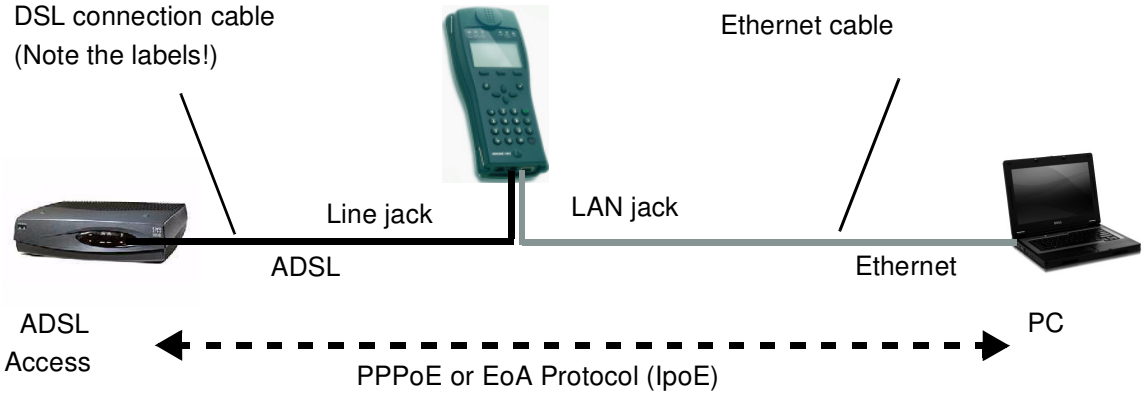
Return to the previous display

The ARGUS will display the codecs available at the other end.

Return to the previous display

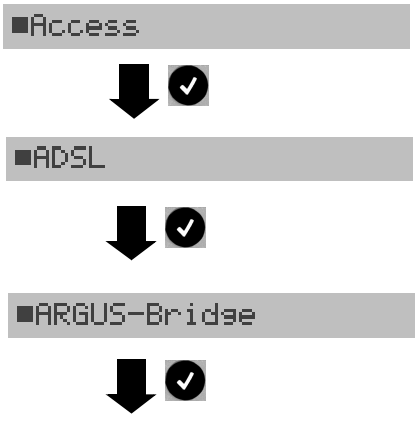
10.2 The ARGUS in the ARGUS-Bridge Access Mode

The ARGUS is connected to the PC with the (x-crossed) Ethernet cable and to the ADSL access with the black DSL cable.
In Bridge mode, the ARGUS acts like an ADSL modem, i.e. the ARGUS passively passes all packets from the Ethernet side to the ADSL access (and vice versa). In this case, the PC is responsible for setting up the connection.

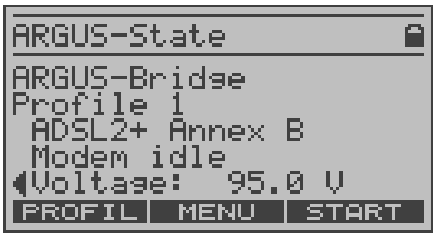


10.2.1 Setting the ARGUS-Bridge Access Mode

The ARGUS - Main menu



The ADSL connection is not yet set up.



Set up an ADSL connection -

Bridge mode active!

Switch to alternative display of the ARGUS State display

<PROFIL> Select the profile (see Page 51)
Required parameters:
Line parameters for setting up the connection
- ADSL: ADSL mode, Rated value, and Shutdown mode

ATM parameters
- ATM VPI / VCI
- Encapsulation (Page 184)

or

<MENU>

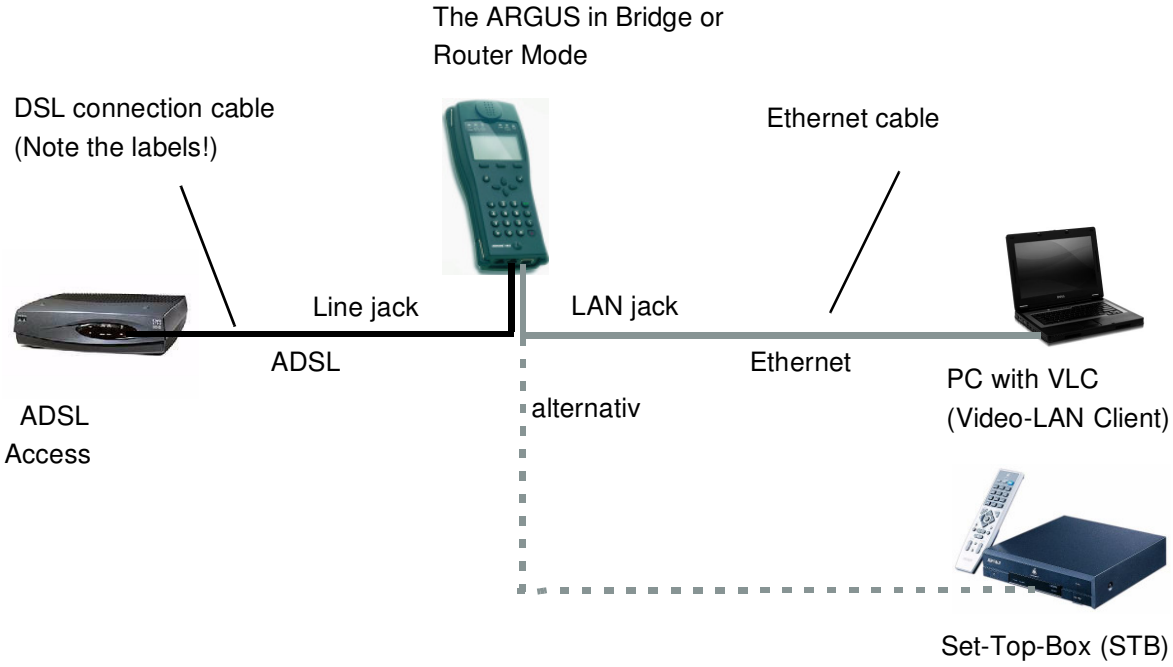
and then Line - Status

Display the ADSL connection parameters,
Trace data,
Bit distribution and
Signal-to-noise ratio per tone

<STOP> Deactivate Bridge mode and clear down the ADSL connection

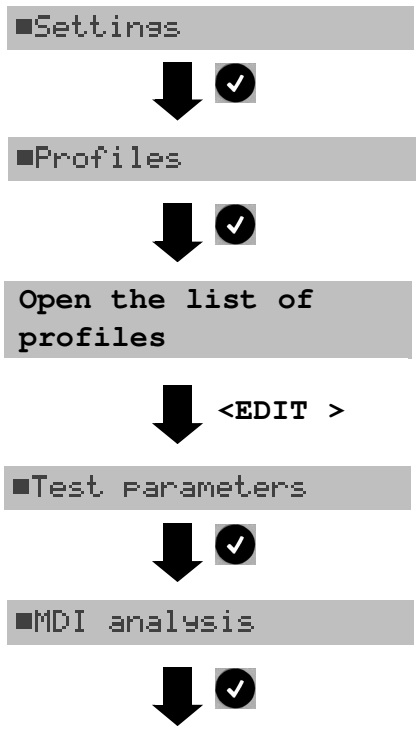
10.2.2 MDI analysis

The ARGUS analyses a UDP/RTP data stream in the passive Bridge or Router mode and determines the MDI (Media Delivery Index) in accordance with RFC 4445 and displays the Media Loss Rate and the Delay Factor.



The following parameters (see Page 194) are required for the MDI Analysis:

Protocol-independent parameters:



Select the profile

View and edit parameters if necessary

Mode	Automatically search for a channel with a data stream or manually enter a channel with a data stream
Scan time	Duration of the automatic search
Multicast IP	The Multicast IP of the channel to be tested
Port	The port number of the channel to be tested
Use IP Header	Specify whether the IP Header should be used.
MDI limit values	Enter the limit values for the Delay Factor (DL in accordance with RFC 4445), the Media Loss Rate (MLR in accordance with RFC 4445) and the packet loss in percent (PLR “Packet Loss Ratio”) to be used in MDI Analysis evaluation (displayed as OK or FAIL). Comments about the PLR: The PLR percentage shows the relationship between the number of packets lost to the number of packets expected (received and lost).

Start the MDI Analysis

Set up an ADSL connection

The profile with the required line parameters is selected before setting up an ADSL connection (see Page 51).

<MENU>

The ARGUS will return to the Main menu.

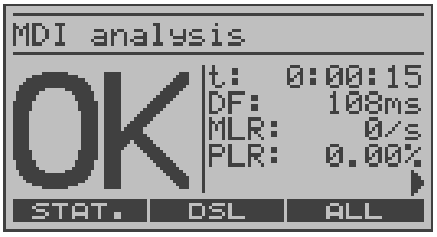
■Single tests

Initialization

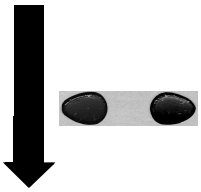
Waiting for stream

The waiting time for a stream is dependent on the Mode setting (see Page 194).

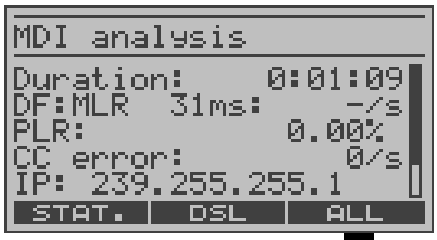
Quit waiting, cancel MDI Analysis



During the MDI Analysis, the display shows:
- Test duration in hours:minutes:seconds
- Delay Factor (DF) in milliseconds
- Media Loss Rate (MLR) (number of lost or out-of-order data packets per second)
- Packet loss (PLR) in percent
- Evaluation with OK or FAIL dependent on the MDI limit values set (see Page 195)



Switch the display



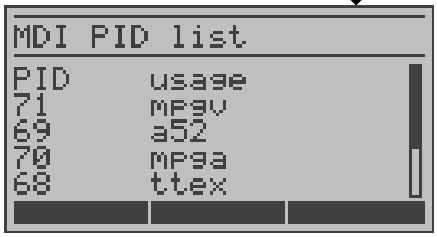
to show the
- Duration of the MDI analysis
- Delay Factor in msec and Media Loss Rate per second
- Packet loss (PLR) in percent
- Number of the errors that have occurred in the continuity counter (CC) in the MPEG packets per sec.
- IP address of the channel with the data stream which is being analysed
- The channel's port number

<STAT.> Depending on the access mode and protocol, the ARGUS will display the WAN, PPP, ATM or LAN statistics.

Display the ADSL connection parameters,
or
<DSL> trace data, bit distribution and signal-to-noise ratio for each tone.

Display the number of lost or out-of-order data packets as well as the number of errors in the continuity counter during the MDI Analysis.

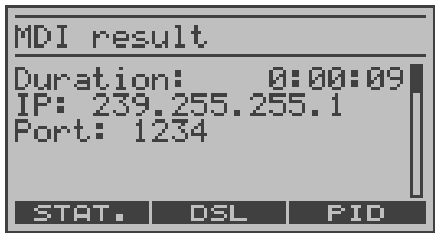
<RESET> Reset Packet Loss and CC errors



Display the PIDs and their usage

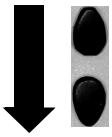
Stop MDI Analysis

Test results

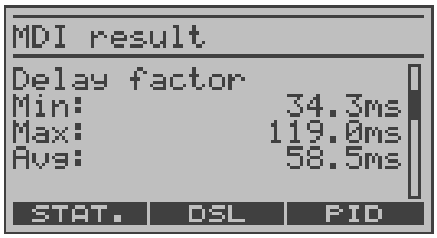


Display:

- MDI Analysis duration in hours:minutes:seconds
- IP address of the channel with the analysed data stream
- The channel's port number



Display additional results



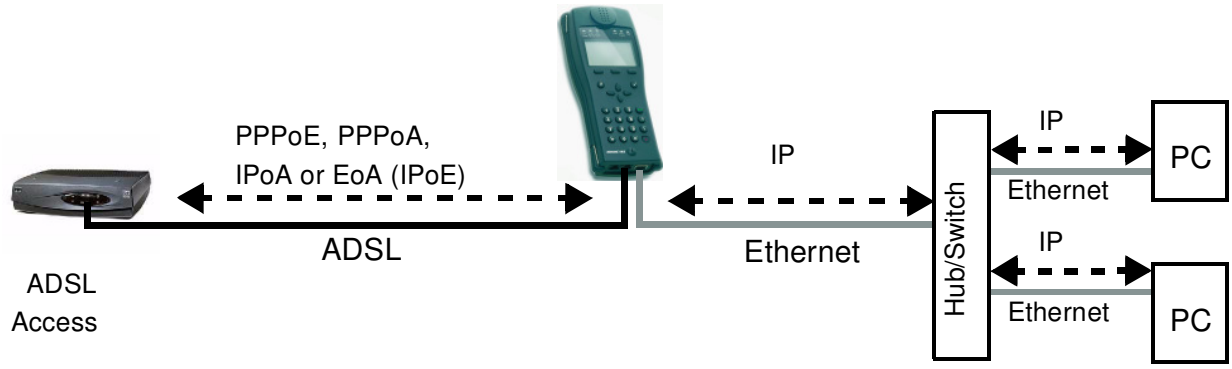
Display of the delay factor:
the minimum or maximum delay factor that occurred and the average value of the delay factor.

Scroll through the other test results

10.3 The ARGUS in Access mode - Router

The ARGUS is connected to the PC with the (x-crossed) Ethernet cable and to the ADSL access with the black DSL cable.
In Router mode, the ARGUS replaces not only the modem but also the router. In this case, several PCs (connected via a hub/switch) can access the connection to a network operator. The network IP addresses can either be assigned statically or the ARGUS can serve as a DHCP server and assign IP addresses to the connected PCs.

The ARGUS does not have a firewall!

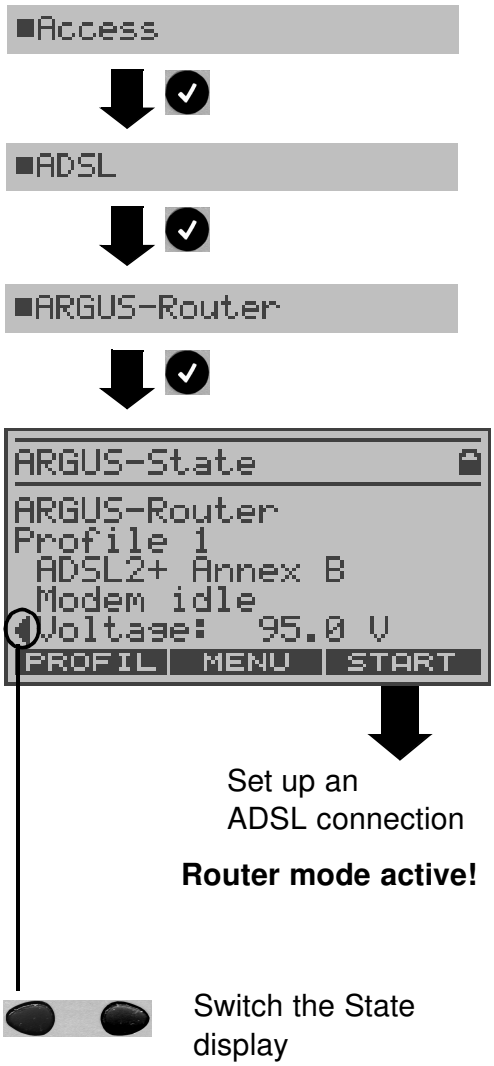


Protocol dependent parameters

Setting the parameters (see Page 179)
Parameters for protocol IP: LAN parameters see Page 185

Protocol	PPPoE / PPPoA		IPoA / EoA (or IPoE)	
Line parameters	ADSL mode		ADSL mode	
	ATM:	- VPI / VCI - Encapsulation	ATM:	- VPI / VCI - Encapsulation
	PPP:	- User name - Password	LAN:	- IP mode - own IP address - IP network mask - IP mode - DHCP server - DHCP timeout
	LAN:	- IP mode - own IP address - IP network mask	WAN:	- IP mode (static) - own IP address - IP network mask - remote IP address - DHCP timeout
			DNS server:	- DNS Server 1 - DNS Server 2

Setting the ARGUS-Router Access Mode



The ARGUS in its Main menu

The ADSL connection is not yet set up.

<PROFIL> Select the profile (see Page 51)

Set up an ADSL connection

Router mode active!

or

<MENU>

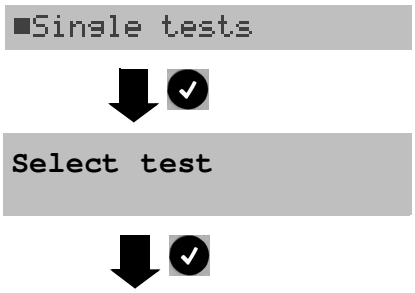
Display the ADSL connection parameters, trace data, bit distribution and signal-to-noise ratio per tone

and then Line - Status

Switch the State display

<STOP> Deactivate Router mode and clear down the ADSL connection

Tests with Router Mode Active



Start test

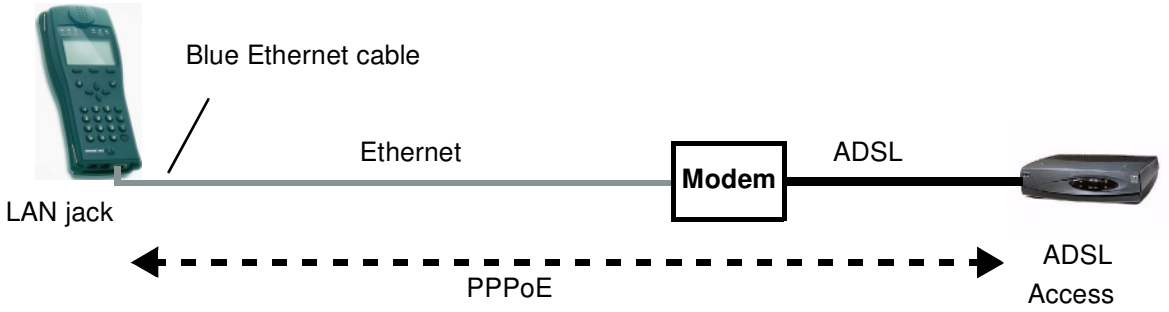
The following tests can be performed:

IP ping	Performing (see Page 58)
Traceroute	Performing (see Page 63)
HTTP download	Performing (see Page 66)
FTP download	Performing (see Page 70)
FTP upload	Performing (see Page 73)
IPTV	Performing (see Page 83)
IPTV Scan	Performing (see Page 86)
MDI analysis	Performing (see Page 95)
VoIP telephone	Performing (see Page 89)

10.4 The ARGUS on an Ethernet Access

In this case, the ARGUS serves as a replacement for the PC and is connected to the ADSL modem's Ethernet interface with the (blue) Ethernet cable.

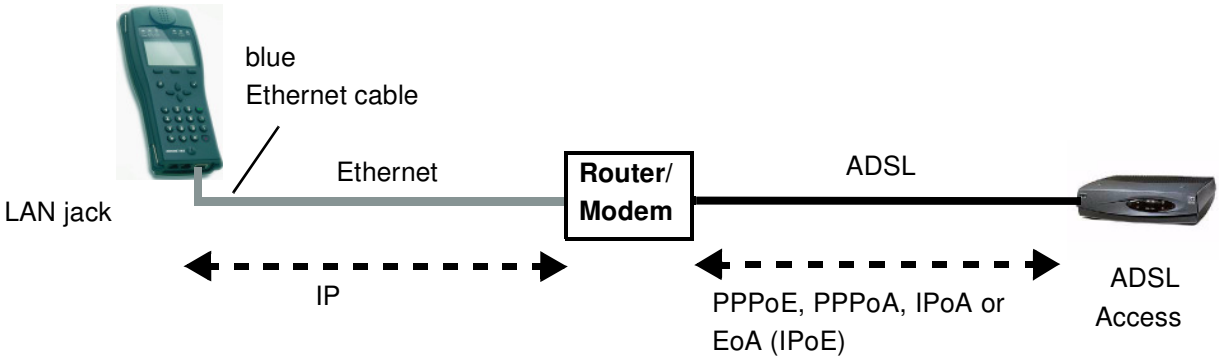
Connection to the modem:



Parameter settings in the profile:

- Protocol: PPPoE
- PPP parameters: User name and password

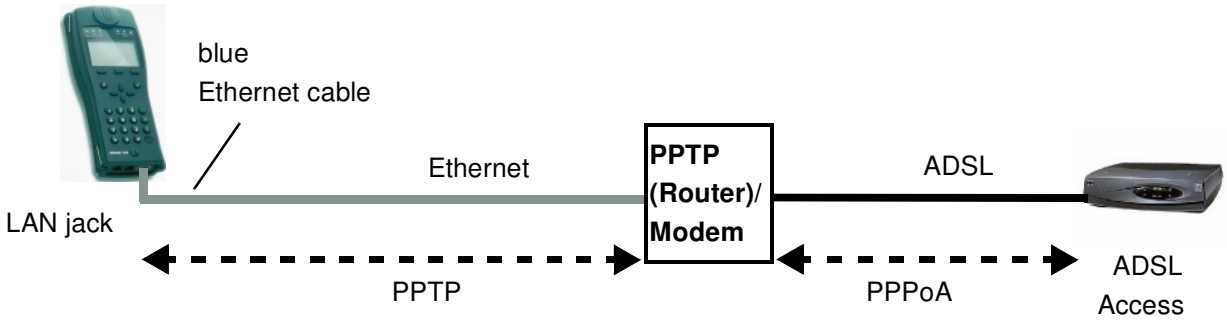
Connection to the router/modem:



Parameter settings in the profile:

- Protocol: IP
- LAN: IP mode, own IP address (static IP), IP netmask (static IP), gateway IP (static IP under PPPoE and PPPoA)
- DNS Server: DNS Server 1 (static IP under PPPoE), DNS Server 2 (static IP under PPoE)

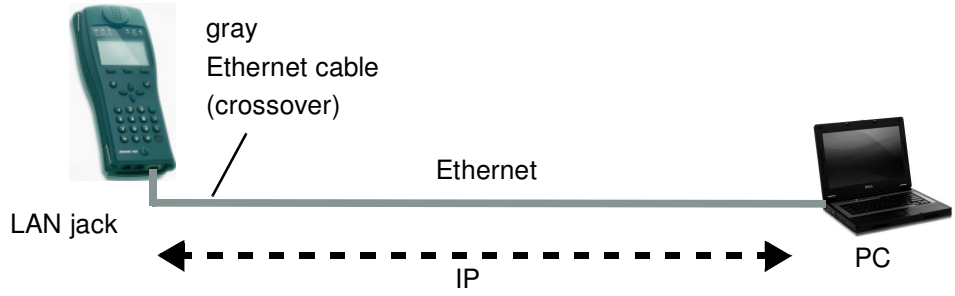
Connection to a PPTP router/modem:



Parameter settings in the profile:

- Protocol: PPTP
- PPTP: IP address of the PPTP modem
- PPP: User name and password

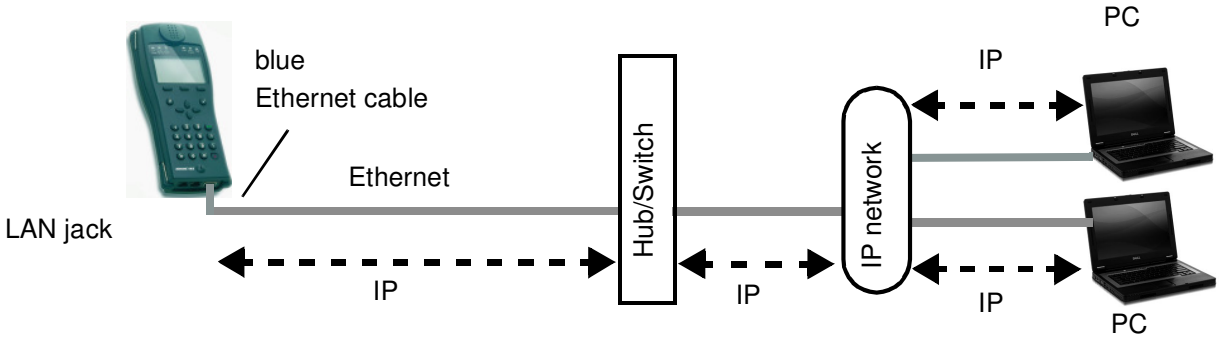
Connection to PC via IP



Parameter settings in the profile:

- Protocol: IP
- LAN: IP mode, own IP address (Static IP), IP netmask (Static IP), gateway IP (Static IP)
- DNS Server: DNS Server 1, DNS Server 2

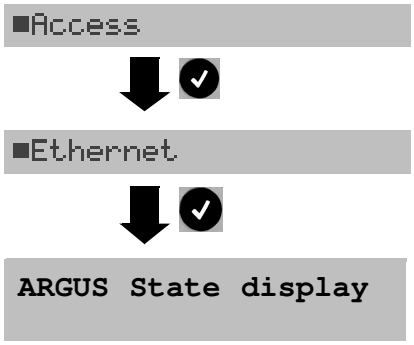
Connection to IP network



Parameter settings in the profile:

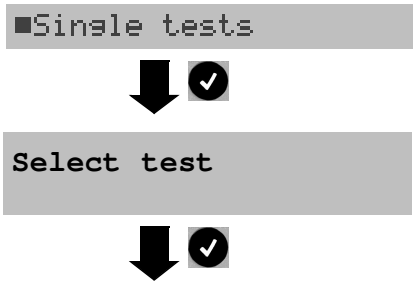
- Protocol: IP
- LAN: IP mode, own IP address (Static IP), IP netmask (Static IP), gateway IP (Static IP)
- DNS Server: DNS Server 1, DNS Server 2

Selecting Ethernet access



The ARGUS - Main menu

Tests in Ethernet mode



Start test

The following tests can be performed:

IP ping	Performing (see Page 58)
Traceroute	Performing (see Page 63)
HTTP download	Performing (see Page 66)
FTP download	Performing (see Page 70)
FTP upload	Performing (see Page 73)
IPTV	Performing (see Page 83)
IPTV Scan	Performing (see Page 86)
MDI analysis	Performing (see Page 95)
VoIP telephone	Performing (see Page 89)

11 Tests on an SHDSL Access (optional)

The ARGUS supports a variety of access types.
Depending on the access mode selected and the protocol, the following single tests are supported:

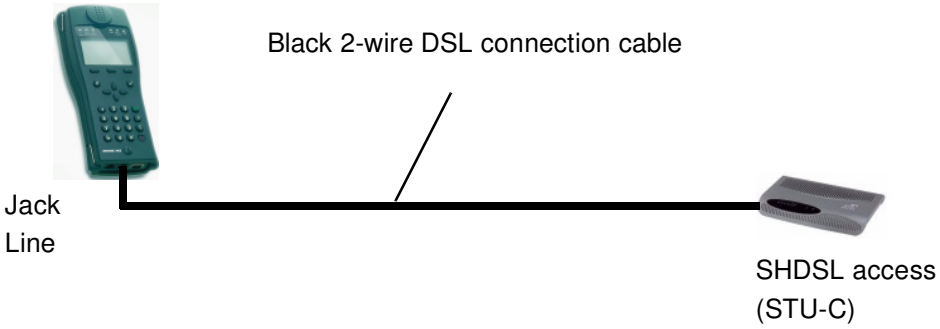
Access Mode	Single Tests
STU-R - ATM The ARGUS simulates the customer side of the SHDSL connection (Remote) and evaluates the ATM data.	- Connection parameters - IP ping - Trace route - HTTP download - FTP download - FTP upload - VPI/VCI scan - ATM OAM ping - ATM BERT - IPTV - IPTV Scan - VoIP telephone
STU-C - ATM The ARGUS simulates the central office side of the connection and evaluates the ATM data.	- Connection parameters - VPI/VCI scan - ATM OAM ping - ATM BERT
STU-R - ATM Bridge The ARGUS simulates the customer side of the connection and evaluates the ATM data. In Bridge mode, the ARGUS behave like an SHDSL modem and passively passes on all of the packets sent back and forth between the Ethernet side and the SHDSL access (see Page 93).	MDI analysis

STU-R - ATM Router The ARGUS simulates the customer side of the connection and evaluates the ATM data. In Router mode, the ARGUS replaces both the modem and the router. In this case, several PCs can access the connection to the network provider (see Page 99).	- Connection parameters - IP ping - Trace route - HTTP download - FTP download - FTP upload - VPI/VCI scan - ATM OAM ping - IPTV - IPTV Scan - MDI analysis - VoIP telephone

We must point out that the individual SHDSL tests record and store data (e.g. in tracing IP data). The user must comply with the statutory regulations governing the collection and storage of such data and his obligation to give notice in this connection.

11.1 Setting Up an SHDSL 2-Wire Connection

The ARGUS is connected directly to the SHDSL access via the SHDSL 2-wire connection cable. The ARGUS will set up an SHDSL connection and determine all of the relevant SHDSL connection parameters. The ARGUS displays the connection parameters and saves them in the internal memory after the connection is cleared down if desired.



Setting the Access mode:

The ARGUS in its Main menu

Select the type of access

Select the Access mode

ARGUS - State display

The SHDSL connection is not yet setup!

<PROFIL> Open the list of profiles.

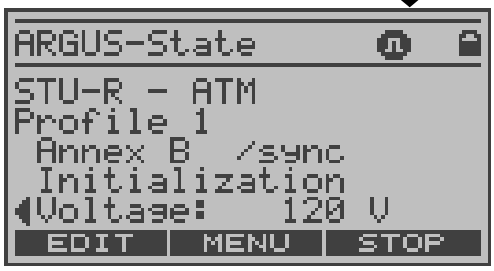
The ARGUS will use the parameters in the current profile when setting up the SHDSL connection.
The currently active profile is indicated by the ✤
(in the example: Profile 1)

Select the profile.

<EDIT > Edit the marked profile.
).The parameters of the profile can now be edited to suit the respective test situation (see Page 179).

The ARGUS will load the selected profile - the one indicated by the ■ - and return to the ARGUS State display. The symbol used to mark the currently active profile ✚ will now appear in front of this profile.

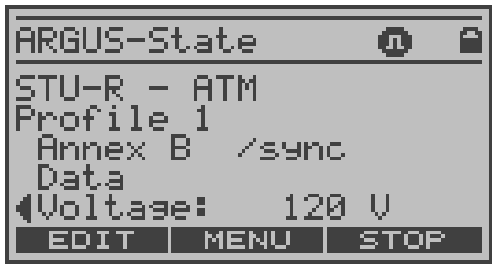
The ARGUS displays the access mode, the profile used, the SHDSL mode and the voltage on the SHDSL line.



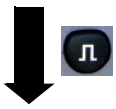
The hardware will first be initialized and then the ARGUS will synchronize with the other end (the “L1/ Sync” LED will flash).

The ARGUS displays the states as they are stepped through, the data rate and the voltage on the line.

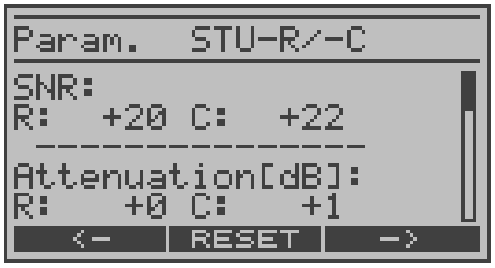
In the event that there are synchronisation problems, compare the SHDSL parameter settings with the corresponding ones for the remote end.



The SHDSL connection is setup (the display shows “Data”).



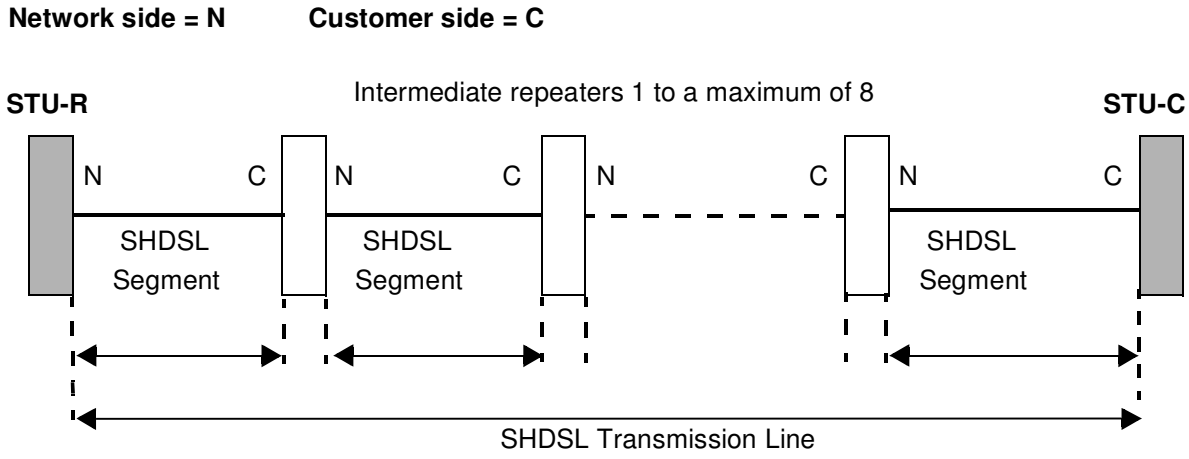
The ARGUS displays the data rate and and voltage on the SHDSL line (if the 4-wire or 8-wire option is enabled, it will also show the wire pair used, see Page 182).



Display showing the SHDSL connection parameters

The ARGUS displays the SHDSL line's connection parameters for both the remote end (R) and the central office end (C) (see "SHDSL Transmission Line" in the illustration below) as well as for each SHDSL line segment (see "SHDSL Segment" in the illustration below).
The parameter “EOC usage” must be set to “on” (see Page 182).

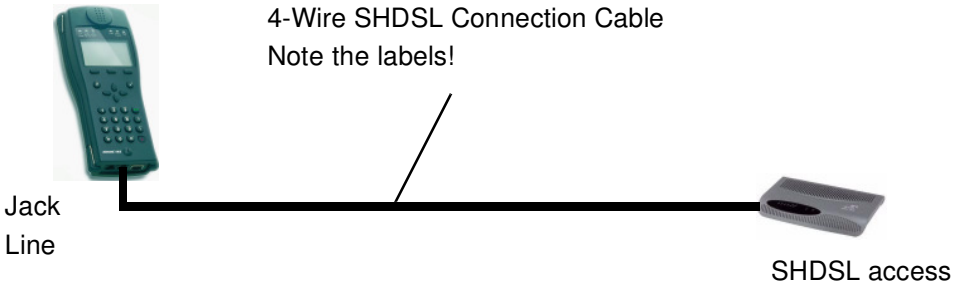
<RESET>	All of the error counters (CRC Count, ES Count, SES Count, LOSWS and UAS Count) will be reset to zero (see the table “SHDSL Connection Parameters”).
< <– > **< –> >**	Scroll through the displays of the connection parameters (see Page 110) for the individual line segments. The ARGUS indicates in the top line which line segment’s parameters are currently being displayed.
<SEG >>	Only available when the SHDSL 4-wire or 8-wire option is enabled: Scroll through the displays of the parameters for the individual line segments. The ARGUS indicates in the top line which line segment’s parameters are currently being displayed.
	Scroll through the connection parameters.
	The ARGUS will open the status display.



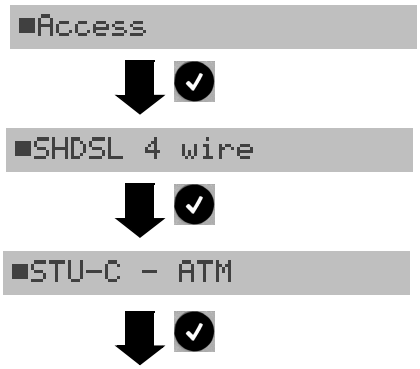
SHDSL Connection Parameters	
SNR Margin	Signal-to-noise ratio in dB The SNR margin is a measure of how much additional noise the transmission can withstand and still achieve a BER (Bit Error Rate) of 10^{-7}.
SNR	Signal-to-noise ratio in dB
Attenuation (dB)	The line's attenuation in dB over its entire length
Power (dBm)	Power referenced to 1mW
CRC Count **Cyclic Redundancy Check Counter**	The number of CRC6 checksum errors
LOSWS **Loss of Sync Defect Word Seconds**	Number of faulty sync words per second
ES Count **Errored Second Count**	Number of errored seconds (seconds with CRC errors)
SES Count **Several Error Second Count**	Number of seconds with more than 50 CRC errors
UAS Count **Unavailable Second Count**	Number of seconds in which no SHDSL connection was available

11.2 Setting Up an SHDSL 4-Wire Connection

The ARGUS is connected directly to the SHDSL access via the SHDSL 4-wire connection cable. The ARGUS will set up an SHDSL connection and determine all of the relevant SHDSL connection parameters for two wire pairs (Line 1 and Line 2). The ARGUS displays the connection parameters and saves them in the internal memory after the connection is cleared down if desired.



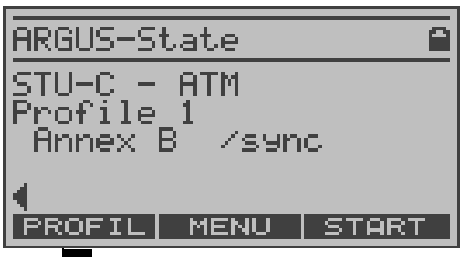
Setting the Access mode:



The ARGUS in its Main menu

Select the type of access

Select the Access mode



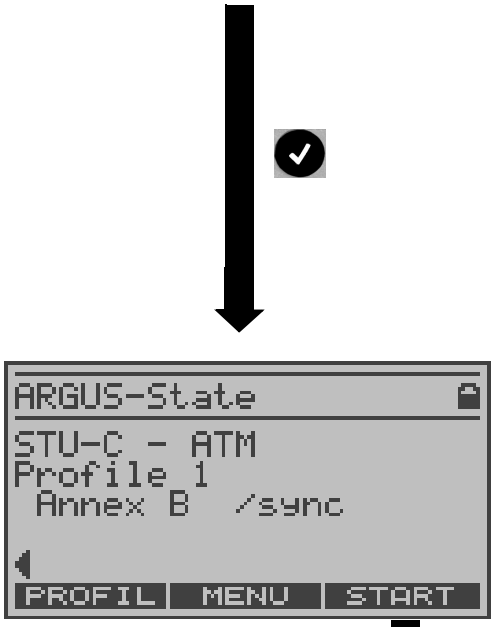
ARGUS - State display

The SHDSL connection is not yet setup!

<PROFIL> Open the list of profiles.

The ARGUS will use the parameters in the current profile when setting up the SHDSL connection. The currently active profile is indicated by the ✤ (in the example, Profile 1)

Select the profile.



<EDIT > Edit the marked profile.
The parameters of the selected profile can now be edited to suit the respective test situation.
(see Page 179).

The ARGUS will load the selected profile - the one indicated by the ■ - and return to the ARGUS State display. The symbol used to mark the currently active profile ✚ will now appear in front of this profile.

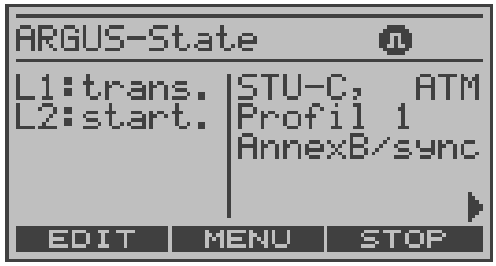
The ARGUS displays the access mode, the profile used and the SHDSL mode.

The hardware will first be initialized and then the ARGUS will synchronize with the other end (the “L1/ Sync” LED will flash).

The ARGUS displays the states as they are stepped through, the data rate and the voltage on both lines.

In the event that there are synchronisation problems, compare the SHDSL parameter settings with the corresponding ones for the remote end.

Switch the State display



The ARGUS displays the states as they are stepped through on Line 1 and Line 2.

As soon as an SHDSL connection has been set up on both lines (“Data” is shown for both lines), the “L1/ Sync” LED will light.

The ARGUS displays the data rate and the voltage on Line 1 as well as the wire pair used (see Page 182).

<LINE 2> The ARGUS displays the bitrate and the voltage on Line 2 plus (if you press <PARAM.>) the connection parameters for Line 2.

The ARGUS displays the connection parameters (for Line 1 – “L1/2” and for Line 2 – “L2/2”) for both the remote end (R) and the central office end (C) (see "SHDSL Transmission Line" in the illustration on Page 110) as well as for each SHDSL line segment (see "SHDSL Segment" in the illustration on Page 110).
The parameter “EOC usage” must be set to “on” (see Page 182).

<RESET> All of the error counters (CRC Count, ES Count, SES Count, LOSWS and UAS Count) will be reset to zero (see the table “SHDSL Connection Parameters” on Page 110).

< SEG> > Scroll through the displays of the connection parameters for the individual line segments. The ARGUS indicates in the top line which line segment’s parameters (see Page 110) are currently being displayed.

Scroll through the connection parameters (see Page 110).

The ARGUS will open the status display.

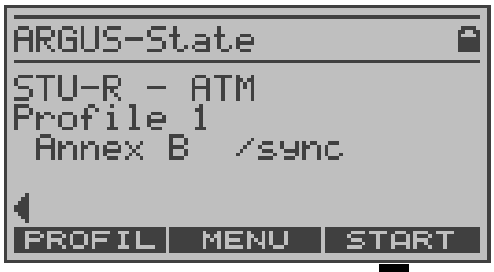
11.3 Setting Up an SHDSL 8-Wire Connection

The ARGUS is connected directly to the SHDSL access via the SHDSL 8-wire connection cable. The ARGUS will set up an SHDSL connection and determine all of the relevant SHDSL connection parameters for all four wire pairs. The ARGUS displays the connection parameters and saves them in the internal memory after the connection is cleared down if desired.

Setting the Access mode:

The ARGUS in its Main menu

Select the type of access



ARGUS - State display

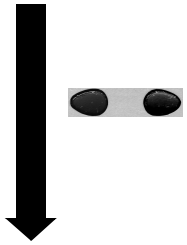
The SHDSL connection is not yet setup!

<PROFIL> Select the profile (see Page 107).

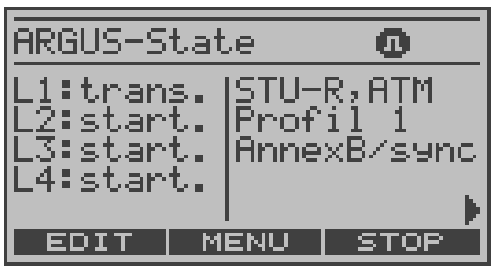
The hardware will first be initialized and then the ARGUS will synchronize with the other end (the “L1/ Sync” LED will flash).

The ARGUS displays the states as they are stepped through, the data rate and the voltage on all four lines.

In the event that there are synchronisation problems, compare the SHDSL parameter settings with the corresponding ones for the remote end.

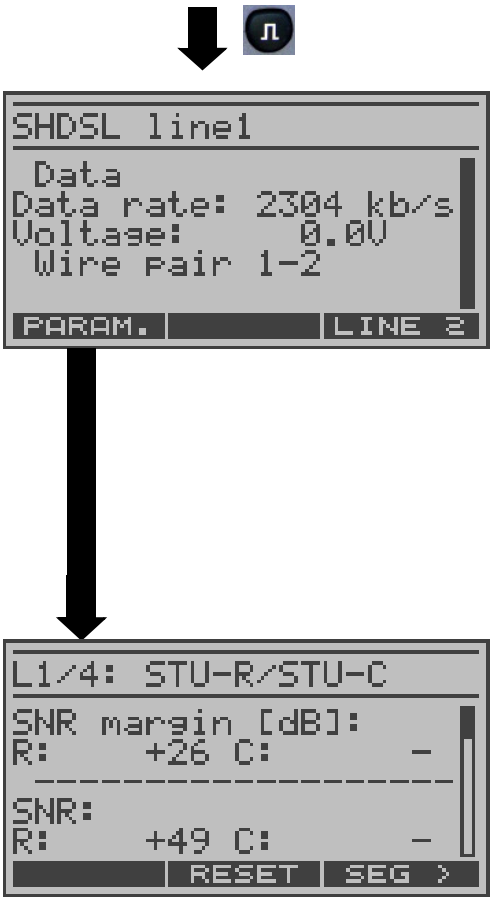


Switch the State display



The ARGUS displays the states on all four wire pairs (Line 1 to Line 4) as they are stepped through.

As soon as an SHDSL connection has been set up on all four lines (“Data” is shown for all four lines), the “L1/ Sync” LED will light.



The ARGUS first displays the data rate and the voltage on Line 1 as well as the wire pair used (see Page 182).

right softkey (in the example <LINE 2>)	The ARGUS will scroll through the 4 lines and display the bitrate and voltage on the corresponding line as well as the associated connection parameters (with <PARAM.>).

The ARGUS displays the connection parameters on all four wire pairs (for Line 1 – “L1/4”, for Line 2 – “L2/4”, for Line 3 – “L3/4”, and for Line 4 – “L4/4”) for both the remote end (R) and the central office end (C) (see "SHDSL Transmission Line" in the illustration on Page 110) as well as for each SHDSL line segment (see "SHDSL Segment" in the illustration on Page 110).
The parameter “EOC usage” must be set to “on” (see Page 182).

<RESET>	All of the error counters (CRC Count, ES Count, SES Count, LOSWS and UAS Count) will be reset to zero (see the table “SHDSL Connection Parameters” on Page 110).
<SEG >>	Scroll through the displays of the parameters for the individual line segments. The ARGUS indicates in the top line which line segment’s parameters (see Page 110) are currently being displayed.
	Scroll through the connection parameters (see Page 110).
	The ARGUS will open the status display.

11.4 Tests in the STU-R – ATM mode (2 and 4 wire)

In this mode, the ARGUS evaluates the ATM data on the SHDSL line and can perform the following tests after the SHDSL connection has been setup:

- **IP ping** For more information, see Page 58
- **Trace route** For more information, see Page 63
- **HTTP download** For more information, see Page 66
- **FTP download** For more information, see Page 70
- **FTP upload** For more information, see Page 73
- **VPI/VCI scan** For more information, see Page 76
- **ATM OAM ping** For more information, see Page 78
- **ATM BERT** For more information, see Page 81
- **IPTV** For more information, see Page 83
- **IPTV Scan** For more information, see Page 86
- **VoIP telephony** For more information, see Page 89

11.5 Tests in the STU-C – ATM mode (2 and 4 wire)

The following tests can be performed:

- **VPI/VCI scan** For more information, see Page 76
- **ATM OAM ping** For more information, see Page 78
- **ATM BERT** For more information, see Page 81

11.6 Tests in the STU-R – ATM Router mode (2 and 4 wire)

The following tests can be performed:

- **IP ping** For more information, see Page 58
- **Trace route** For more information, see Page 63
- **HTTP download** For more information, see Page 66
- **FTP download** For more information, see Page 70
- **FTP upload** For more information, see Page 73
- **VPI/VCI scan** For more information, see Page 76
- **ATM OAM ping** For more information, see Page 78

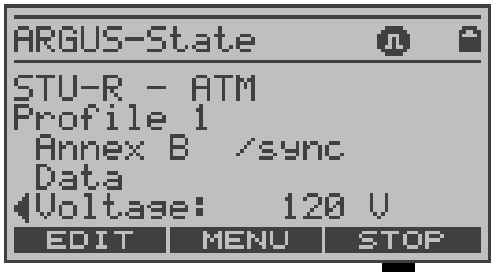
- **IPTV** For more information, see Page 83
- **IPTV Scan** For more information, see Page 86
- **MDI analysis** For more information, see Page 95
- **VoIP telephony** For more information, see Page 89

11.7 Tests in the STU-R – ATM Bridge mode (2 and 4 wire)

The following test can be performed:

- **MDI analysis** For more information, see Page 95

11.8 Clearing Down an SHDSL Connection



Clear down an SHDSL connection

Save the result?

Prompt whether the results should be saved.

<YES> Store the result

The ARGUS saves the connection parameters in the first available record number in memory; a name can be assigned to the record (see Page 164).
The record name is entered using the numeric keypad (default: AMP_1, AMP_2.... or the call number of the access under test if the number has been entered into the speed-dialling memory (see Page 211)).

When the right softkey is pressed it assumes a different meaning and thus influences the entries made from the keypad:

<12>ab>	entry of the digits 0 to 9 plus * and #
< ab>AB >	entry of the lowercase characters and @, /,- and . (e.g. to enter a "c“ press the "2" on the keypad three times)
< AB>12 >	entry of the uppercase characters and @, /,- and .
<DEL>	Delete the character before the cursor
	Move the cursor

If all of the records have been written, you must manually select a memory location (record).

12 Tests on an ISDN Access

Using the number keypad to start a function on a BRI access:

Using the numeric keys, you can start important ARGUS functions directly, regardless of the currently active menu level.

Operation on an ISDN Access

Numeric key 0	Display ARGUS Status
Numeric key 1	Show the “Function assignment” on the ARGUS display
Numeric key 2	Start the service check
Numeric key 3	Start Supplementary Service test
Numeric key 4	Start Auto-Test
Numeric key 5	Send test results to a PC
Numeric key 6	Start the Test Manager
Numeric key 7	Open the Speed-Dialling Memory
Numeric key 8	The ARGUS will open the PC/Trace Configuration menu
Numeric key 9	BERT start
	Level measuring
	Call setup
∗ 1	Display the available SW options
∗ 2	Reset all the parameters to their default values.

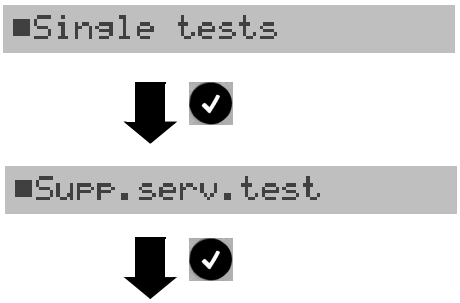
The speed-dialing memory with the call numbers, PPP user name, PPP password, IP addresses, Profile names, User-specific services, Keypad Infos and all of the test results stored in the ARGUS (e.g. Automatic test sequence on an ISDN access, ADSL test results, profiles etc.) will be deleted.

If a function is called where the ARGUS expects the entry of a digit, pressing a number key will be interpreted as the expected input.

12.1 Test the Supplementary Services

The ARGUS checks whether the ISDN access under test supports supplementary services in 1TR6 or DSS1 protocol.

12.1.1 Suppl.serv.test for the 1TR6 protocol



The ARGUS in its Main menu

Start the test

The test results are displayed automatically:

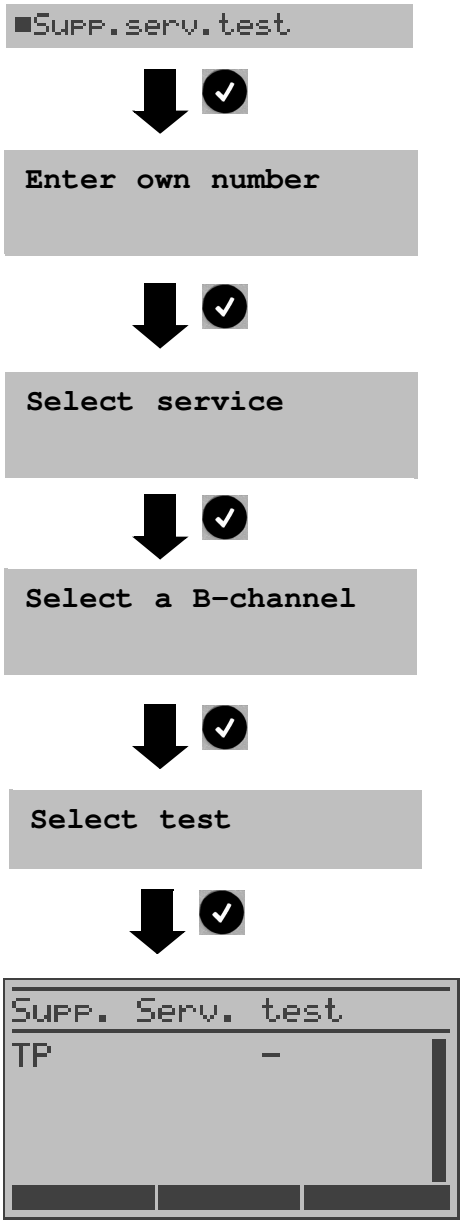
+ = suppl. service supported
– = suppl. service not supported

to scroll through the results.

The ARGUS returns to the Single tests menu.

Sperre	Blocking enabled for outgoing calls
AWS1	Call forwarding type 1 enabled (continuous)
AWS2	Call forwarding type 2 enabled (case by case)
Anschluss GBG	Access belongs to a Closed Users Group
Geb.anzeige	Advice of charge
Rufnummern-Id	Set up call number identifier - against malicious calls

12.1.2 Suppl.service interrogation in DSS1



Use the keypad to enter the "Own number" or select it (the number of the access under test) from the speed-dialing memory (see Page 211). The ARGUS will test the availability of the supplementary service (in part by placing a call to itself).

Using the cursor keys, select the service which should be used for the supplementary services test.

Enter the B-channel on the keypad. By default the channel used last will be suggested (press <DEL> first, if you wish to select a different B-channel). If you enter an *, the ARGUS will choose any B-channel that is free.

Using the cursor keys, select the supplementary service to be tested (e.g. the supplementary service TP).

Start the test

The ARGUS will automatically display the test results:

+ = suppl. service supported
– = suppl. service not supported

to scroll through the results.

Close the results display.
The ARGUS returns to the Single tests menu.

Test	Comments
TP	The ARGUS tests the TP (Terminal Portability) supplementary service by making a self call.
HOLD	The ARGUS tests the HOLD supplementary service by making a self call.

CLIP **(CLIP, CLIR, COLP, COLR)**	The ARGUS checks, one after the other, whether the 4 supplementary services CLIP, CLIR, COLP and COLR are supported. To do so, the ARGUS will set up as many as three calls to itself. CLIP: Will the calling subscriber's number be displayed at the called subscriber? (t = CLIP temporarily available p = CLIP permanently available) CLIR: Will the display of the calling subscriber's number at the called subscriber be suppressed or is it possible to temporarily suppress the display? If the ARGUS displays an *, it is not possible to determine the availability of the service, since no CLIP has been set up. (t = CLIR temporarily available p = CLIR permanently available) COLP: Will the call number of the subscriber who answered be displayed on the caller's phone? COLR: Will the display of the call number of the subscriber who answered be suppressed on the caller's phone or is it possible to temporarily suppress the display? If the ARGUS displays an *, it is not possible to determine the availability of the service, since no COLP has been set up. ⚠ The suppl. services pairs CLIP and CLIR as well as COLP and COLR will be tested. If CLIR or COLR is set up permanently, it is not possible to make a clear assessment.
DDI	Can a caller directly dial in to an extension on the PBX access under test?
MSN	Is the supplemental service MSN available?
CF (CFU, CFB, CFNR)	The ARGUS will check one after the other whether the 3 supplementary services CFU, CFB and CFNR are supported. CFU: Can this access immediately forward an incoming call? CFB: Can this access forward an incoming call when it is busy; in other words does it support Call Forwarding Busy? CFNR: Can this access forward an incoming call when it is not answered? ⚠ In the CF test the ARGUS attempts to set up a call diversion to the call number that is in the memory location for “remote call number 1” (see “Saving Call Numbers” on page 211.). The CF test cannot be performed, if this location does not contain a valid call number to which it is possible to divert a call.
CW	Does the access under test support call waiting?

CCBS	Will the access under test automatically recall a remote subscriber, if the number called was busy?
CCNR	Will the access under test automatically recall a remote subscriber if the call was not answered?
MCID	Does the access tested allow identification of malicious callers (call tracing)?
3PTY	Does the access under test support a three-party conference call? For this test, you need the assistance of a remote subscriber, whose call number must be entered.
ECT	Is an explicit call transfer supported by the access under test? To run the ECT test, you will need the assistance of a remote subscriber, whose call number must be entered.
AOC	The ARGUS checks whether the charges can be sent to the access under test. The test uses a call to oneself to check both AOC-D (AOC during a call) and AOC-E (AOC at the end of a call).
SUB	A call is made to oneself and answered to check the transfer of the sub-address in both directions. Are sub-addresses supported on the access under test?
UUS	Does the access under test support the transfer of user data?
CUG	The ARGUS then uses a self call to check whether the access under test belongs to a closed user group.
CD	An incoming call will be diverted immediately. This form of call diversion differs from the others in that it is invoked on a call-by-call basis, and is not preconfigured to a specific destination.

Supplementary Services Tests – Error messages

If an error occurs during the Supplementary Services Tests or if it is not possible to set up a call, the ARGUS will display the corresponding error code.
Example: The error code 28 belongs to the error class "wrong or invalid number".
In the table below, you will find that this is an error from the network and that it reports that the call number was incomplete or in the wrong call number format (see “CAUSE-Messages – DSS1 Protocol” on page 227.).

Distributing the error codes into error classes:

Error class	Description	Cause (from network) 1 TR6	DSS1	Cause (ARGUS internal)
A	no or another access	__	__	201, 204, 205, 210, 220
B	wrong or invalid number	53, 56	1, 2, 3,18, 21, 22, 28, 88	152,161,162,199
C	one or more B-channels busy	10, 33, 59	17,34,47	___
D	wrong service	3	49, 57, 58,6 3 65, 70, 79	___

For further information regarding error codes, please see Page 227, Page 229 and Page 231.

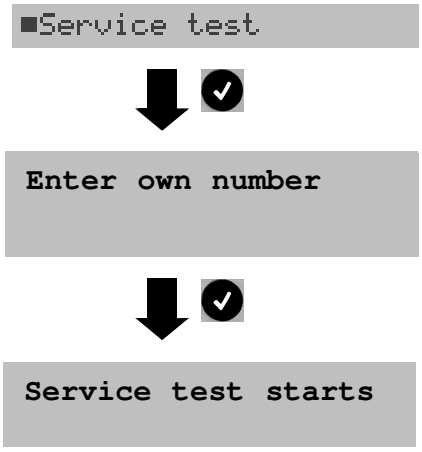
12.2 Service test

The ARGUS checks, which of the following services are supported by the access under test:

Service	Displayed Name
Language	**Language**
Unrestricted Digital Information	**DFU 64 kBit**
3.1 kHz Audio	**3.1 kHz audio**
7 kHz Audio	**7 kHz audio**
Unrestricted Digital Information with tones / display	**UDI-TA**
Telephony	**Tel.ISDN**
Facsimile Group 2/3	**Fax G3**
Facsimile Group 4 Class 1	**Fax G4**
Teletex service basis and mixed mode and facsimile service Group 4 Classes II and III	**Mixed Mode**
Teletex Service basic mode	**Teletex**
International interworking for Videotex	**Videotex**
Telex	**Telex**
OSI application according to X.200	**OSI**
7 kHz Telephony	**Tele.7 kHz**
Video telephony, first connection	**Bildtel. 1**
Video telephony, second connection	**Bildtel. 2**
Three user-specific services (optional, see Page 200)	**Userspec. 1 to 3**

The test runs automatically.
For each service, the ARGUS will place a call to itself (to the access under test). However, the call will not be answered so no charges will be incurred.

ARGUS in the Single tests menu

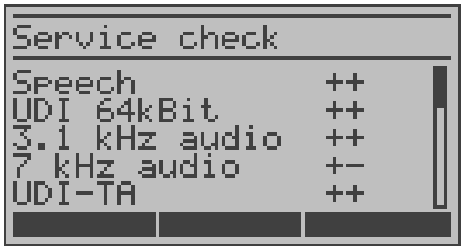


Enter the number of the access under test

There are PBXs that use separate call numbers for incoming and outgoing calls. In this case, for the Service tests, you can enter a “remote” call number that does not match the “own” number that is stored in the ARGUS.

If the Service check should extend outside of the local exchange, it is possible to perform the Service check in an end-to-end mode.
In this case, you must enter the remote call number for a second terminal device.
The ARGUS will then automatically check whether the remote terminal can accept the call under the various services – in other words, whether it is “compatible” with these services.
In the test results, the second part (second +, - or *) refers to the answer from the remote exchange.

Test results:



The ARGUS will display the results of the test once it is done.
Use the cursor keys to scroll through the results.
The ARGUS makes a distinction between outgoing calls (the first +, - or *) and incoming calls (the second +, - or *).

+ = Service supported
– = Service not supported
*** =** A definite statement cannot be given, see the displayed error code for the reason.

to scroll through the results.

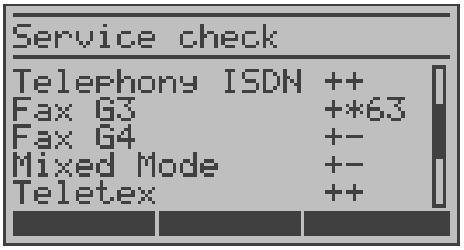
Close the results display.
The ARGUS will return to the previous display.

Interpreting the test results:

Display	Explanation
+ +	The self call functions OK or the remote end can take the call for this service
+ -	The call was sent successfully, however, it was rejected at the remote end due to a lack of authorization. (Error class D in a B-channel message e.g. in a SETUP_ACK or CALL_SENT)
-	An outgoing call with this service is not possible (Error class D without a B-channel message)
+ *	The call was sent successfully, the call back or call to the remote end failed (e.g., remote end busy or no B-channel available for the call back).
*	Wrong number, no B-channel available or other error (Error class B, C or E without a B-channel message)

If the outgoing call is not successful, it is not possible to make a statement about an incoming call.
Therefore, you will never see “- +” or “- *” on the display.

An example:



For outgoing, the Fax G3 service is OK. No statement is possible about incoming.
The error code 63 gives the coded cause of the error (see the table in the Appendix).
In this case, it is recommended that you have someone place a call to the access under test using this service.
The services Fax G4 and Mixed Mode are supported for outgoing calls. The Teletex service is supported in both directions.

If an error of error class A occurs (see “Supplementary Services Tests – Error messages” on page 124.) the Service test will be aborted. An error of any other error class will coded in decimal (in the example above 63), assigned to the respective service and then displayed.

12.3 Bit error test

The bit error rate test (BERT = Bit Error Rate Test) serves to check the transmission quality of the access circuit.

As a rule, the network operator will guarantee an average error rate of 1×10^{-7}, in other words in long-term operation 1 bit error in 10 million transmitted bits. A higher bit error rate will be especially noticeable in transmitting data.

The application program detects the errors in the data blocks transmitted and requests that the remote partner send them again, which reduces the effective throughput of the ISDN connection.

In the bit error rate test, the tester establishes an ISDN connection to a remote tester or places a call to itself, sends a standardized (quasi-) random number string and compares the received data with that which was sent. The individual bit errors are summed and depending on the test procedure and equipment evaluated in accordance with the ITU Guideline G.821.

During the test, the ARGUS counts the bit errors and after the test is done it calculates the bit error rate and other parameters in accordance with G.821.

Since the bit error rate test checks both B-channels in both directions at the same time, both B-channels are required.

As a rule, the quality of the network operator's access circuits is quite good. Therefore, no bit errors should occur in a 1-minute test.

However, if an error occurs, the test should be repeated with a measurement time of 15 minutes to achieve higher statistical precision. The access circuit is heavily distorted, if more than 10 bit errors occur within a test period of 15 minutes.

Contact the network operator or the supplier of the PBX equipment and ask them to test your access circuit.

The BERT can be performed in three different ways:

1. **BERT in an extended call to oneself**

   A remote number is not needed, since the ISDN connection is setup to oneself. In this case, the ARGUS requires two B-channels for the test.

2. **BERT with a loopbox**

   A loopbox (e.g., another member of the ARGUS family of testers at the remote end) is required. The test uses one B-channel.

2. BERT end-to-end

This test requires a waiting remote tester such as an ARGUS in the BERT wait mode (see Page 135). A bit pattern is sent to this tester.
Independent of the received bit pattern, the remote tester uses the same algorithm to generate a bit-pattern that it sends back.
Therefore, both directions are tested independently.

12.3.1 Start BERT

The following parameters are required for the BERT:

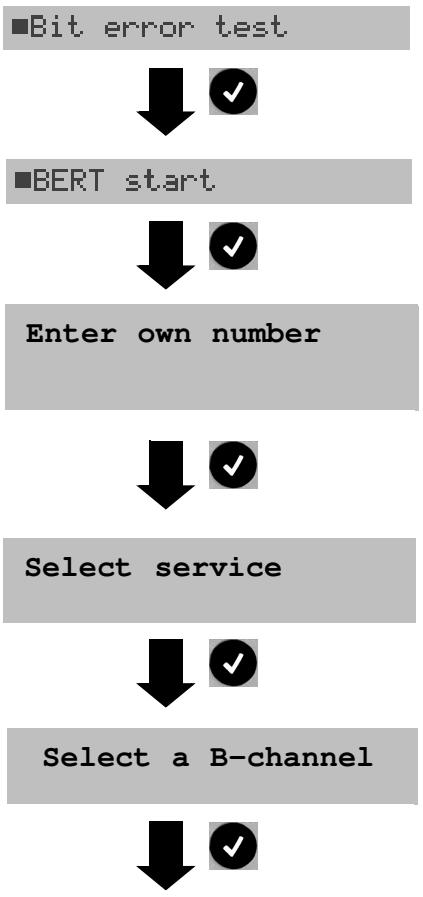
BERT time (default duration: 1 minute)

Error level If the bit error rate exceeds this limit, the ARGUS will display the test result NO. If the bit error rate is less than this limit, the ARGUS will display an OK (default setting = 10^{-5})

HRX value Hypothetical reference connection, see the ITU-T G.821 (default setting = 15%)

Bit pattern which will be sent during the test (default setting = 2^{15}-1)

The parameters can be changed individually and saved (see Page 202).



ARGUS in the Single tests menu

Enter your own number to perform the BERT in an extended call to oneself (2 B-channels).
or
a remote number for a BERT to a loopbox (1 B-channel) or end-to-end

Using the cursor keys, select the service which should be used for the BERT.

Enter the B-channel on the keypad (first press <DEL>). If you enter an *, the ARGUS will choose any B-channel that is free.

BERT start

After the ARGUS has set up the connection and synchronised the send and receive directions, it will display the bit pattern, the B-channel used (e.g. B1), the synchronicity of the bit pattern (synchronous or asynchronous), the sync time in h:min:sec (time in which the ARGUS can sync to the bit pattern) Sync.time in h:min:sec (the period of time that the ARGUS has been synchronised)
the LOS counter and the number of bit errors that have occurred.

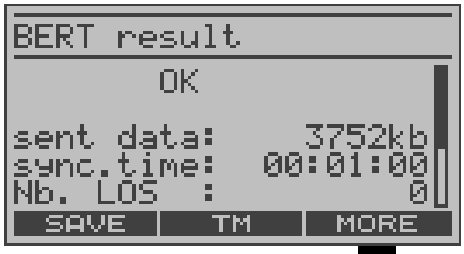
<ERROR> The ARGUS will generate an artificial bit error, which can be used to test the reliability of the measurement (in particular for end-to-end tests).

<TM> Opens the Test Manager (see Page 160)

<RESET> Restart the BERT: The test time and number of bit errors will be reset.

Stop the BERT

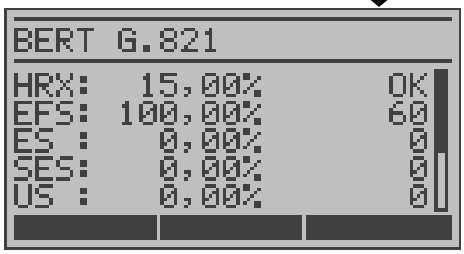
When a bit error is detected, this will be signaled by a brief alarm;
in the event that the synchronisation is lost, a constant alarm will sound (see page 210 Alarm bell).



After the test time is over, the ARGUS will display the cause and the location which initiated the disconnect. If the test ran normally, the ARGUS will display “active clearing” on this line.

The test results display:
The evaluation of the results depends on the error threshold (OK).
Transferred data (e.g. 3752kb, k=1000·bits), sync time and no. of LOS (LOS counter)
abs. err. - number of bit errors (e.g. 10),
rel. errors - The bit error rate (e.g. 9.7E-07 = $9.7 \cdot 10^{-7}$ = 0.00000097)

<SAVE> Save the results (see Page 134)



Display of other characteristic values (in accordance with ITU-T G.821)
All values are relative and given in percentages.
The ARGUS evaluates whether the test results satisfy the limits specified in the G.821 under consideration of the reference connection (HRX).
(The display will show either OK or NO).
Use the cursor keys to scroll through the results.

Characteristic values (in accordance with ITU-T G.821)

HRX Defines the hypothetical reference connection

EFS Error Free Seconds:
The number of seconds in which no error occurred.

ES821 Errored Seconds:
The number of seconds in which one or more errors occurred.

SES821 Severely Errored Seconds:
The number of seconds in which the bit error rate is $>10^{-3}$.
In one second, 64,000 bits are transferred, thus BitERror (BER)=10^{-3} equates to 64 bit errors.

US Unavailable Seconds:
The number of all sequentially adjacent seconds (at least 9 sec) in which BER>10^{-3}.

AS Available Seconds:
The number of all sequentially adjacent seconds (at least 9 sec) in which BER<10^{-3}.

DM Degraded Minutes:

The number of minutes in which the bit error rate is $>10^{-6}$.

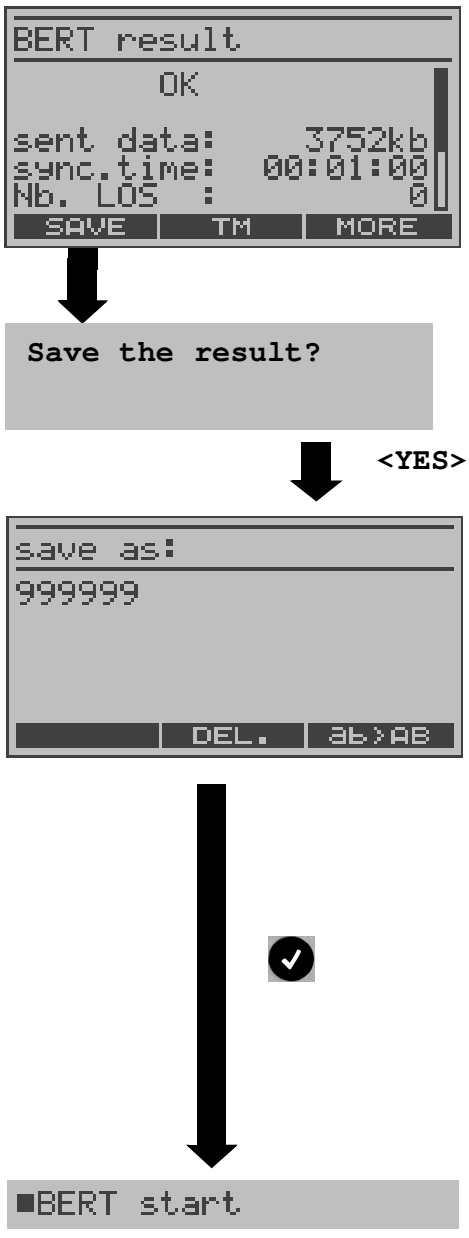
In one minute, 3,840,000 bits are transferred, thus a BER = 10^{-6} corresponds to 3.84 bit errors (3 errors = NO (no degraded minutes), 4 errors = OK (Degraded Minutes).

LOS Loss of Synchronisation:

Synchronization is lost at an error rate > or = 20% within a second. The absolute number of synchronization losses will be shown.

12.3.2 BERT - saving

The ARGUS can store the results of several BERTs. The ARGUS saves the results together with the date, time and call number of the access under test (if this number has been entered as the "own" number in the speed-dialing memory) under the next free record number (see Page 164).
If all of the records are used, the ARGUS will return to the Autom. Test dialog and request permission to overwrite the oldest test results.

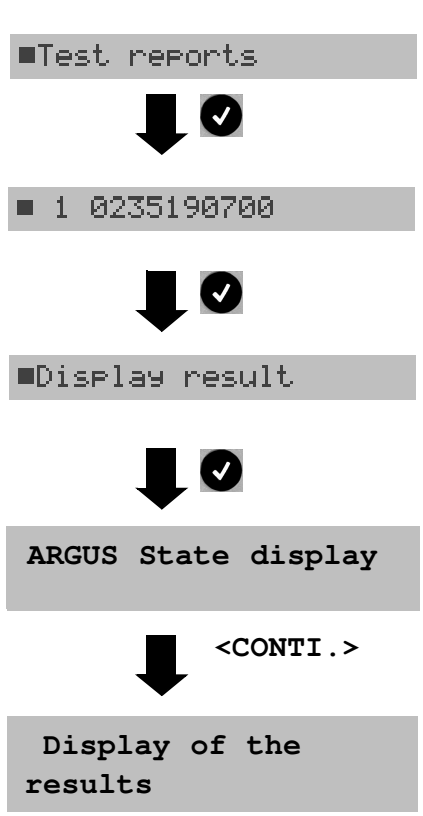


<YES> BERT - saving

Using the numeric keys enter the name under which the result should be saved (Default: AMP_1, AMP_2.... or the call number of the access under test if the number has been saved in the speed-dialing memory) When the right softkey is pressed it assumes a different meaning and thus influences the entries made from the keypad (letters or digits):

<12>ab>	entry of the digits 0 to 9 plus * and #
< ab>AB >	entry of the lowercase characters and @, /,- and . (e.g. to enter a "c“ press the "2" on the keypad three times)
< AB>12 >	entry of the uppercase characters and @, /,- and . To move the cursor right or left, use horizontal cursor keys.
<DEL>	Delete the character before the cursor.

12.3.3 Displaying the Saved BERT Results:



The ARGUS in its Main menu

Use the cursor keys to select the record with the saved BERT results
(in the example: Record 1 with the access number 0235190700)

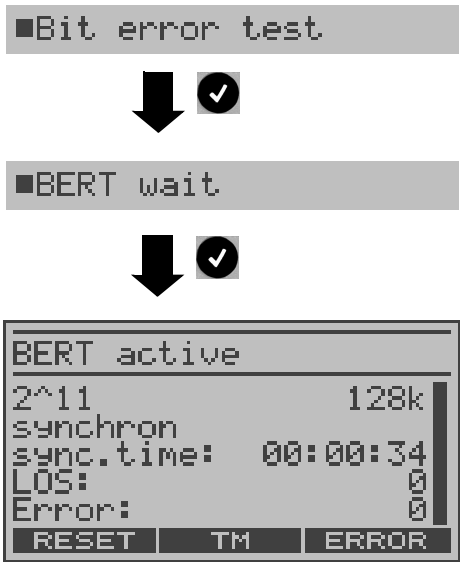
The ARGUS will first display the status of the access under test.

Display of the saved results (see Page 169).

12.3.4 Bert wait

In “BERT wait” mode, the ARGUS will wait for the BERT at the remote end which is necessary for an end-to-end test:

ARGUS in the Single tests menu



Activate “BERT wait”

The ARGUS first waits for a call and then sets up the connection.
During the connection, the received bit pattern will be evaluated and an additional independent bit pattern will be sent.

<TM> Opens the Test Manager (Page 160)

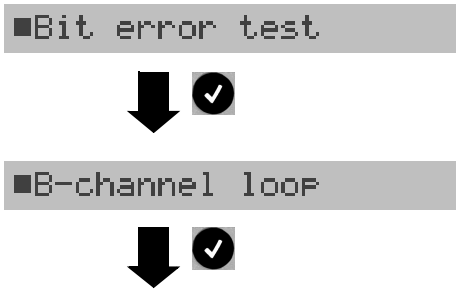
The ARGUS displays that will appear are the same as those in Chapter 12.3.1 Start BERT .

Exit “BERT wait” mode

12.3.5 B-channel loop

"B-channel loop" mode is required in order to run a bit error test using a loopbox (an ARGUS is the loopbox) at the remote end as well as to test leased lines.

ARGUS in the Single tests menu



Activate the B-channel Loop

The ARGUS will wait for a call. Any incoming call (regardless of the service) will be taken immediately.
The ARGUS will switch a loop back in the B-channel that is specified by the exchange and then send the received bit pattern back to the caller/sender.

<MENU> The ARGUS will return to the Main menu.
(The B-channel Loop remains active. In the Main menu, if <TM > is pressed, the ARGUS will return to "B-channel Loop, wait active" (see Page 163)).
In this case, a second B-channel Loop connection can be started (via <TM>).

<TM> Calls the Test Manager

Exit "B-channel Loop" mode

If the ARGUS takes a call, the caller's number will be shown in the display (e.g. 235190700),
along with the B-channel used (e.g. B01) and the number dialled (e.g. 907070).
Use the cursor keys to display additional information (e.g. UUS…) if available.

<MENU> The ARGUS will return to the Main menu.

<TM> Calls the Test Manager

Disconnect the "B-channel loop connection"
"B-channel LOOP" mode remains active.

12.4 X.31 Test

The ARGUS will either perform a “Manual X.31 Test” or an “Automatic X.31 Test”:
In the case of an automatic test, the ARGUS will first set up the D-channel connection and then begin setting up the X.31 connection. Afterwards, the ARGUS will automatically clear the connection and display the results.
In the case of a manual test, the ARGUS will set up a D-channel connection and an X.31 connection. The duration of this connection is determined by the user (or the opposing end). For the duration of the connection, the ARGUS will repeatedly send a predefined data packet.
The ARGUS will count all of the data packets sent and received and will display (where possible) the contents of the data packets received.

Optional: Several parameters can be configured and saved in three different X.31 profiles for the X.31 test (Page 206). Depending on the test variant, the ARGUS will retrieve and use the stored parameters. Values such as TEI and LCN will be shown as default values in the display.

12.4.1 Automatic X.31-Test

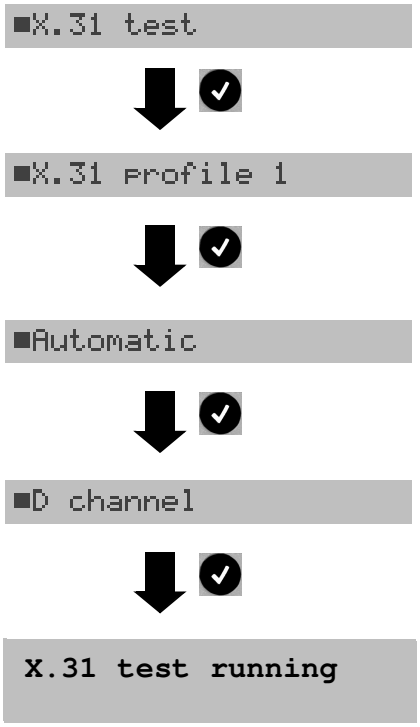
There are three possible variants of the Automatic X.31 Test:

1) D-channel

The “X.31 Automatic, D-channel” test consists of two steps:
First step:
The ARGUS tests whether it is possible to access the X.25 service via the D-channel on the BRI access under test. The ARGUS sequentially checks all the TEIs from 0 to 63. All the TEIs with which the X.31 service is possible on Layer 2 will be displayed.

Second step:
For each TEI with which X.31 is possible on Layer 2, a CALL_REQ packet will be sent and then the ARGUS will wait for an answer. Beforehand, the ARGUS will request the entry of the X.25 access number, which will be saved in speed-dialling memory under X.31 test number (see “Saving Call Numbers” on page 211) With the entry of the X.25 access number, you can - if you wish - select a logical channel (LCN) other than the default.

ARGUS iSingle tests menu



<EDIT > Press EDIT to open the menu for editing the profile (see Page 206).

Start the test

The test can take up to 4 minutes (a rotating bar will be displayed). Beginning on the left, the ARGUS will display the TEI currently being tested followed by the one previously tested and its result:
+ = X.31 is available for this TEI
- = X.31 is not available for this TEI

After the test is completed, the ARGUS will show whether the X.31 service is available for Layer 3 for the TEIs found in Step 1.
Use the cursor keys to scroll through the results.

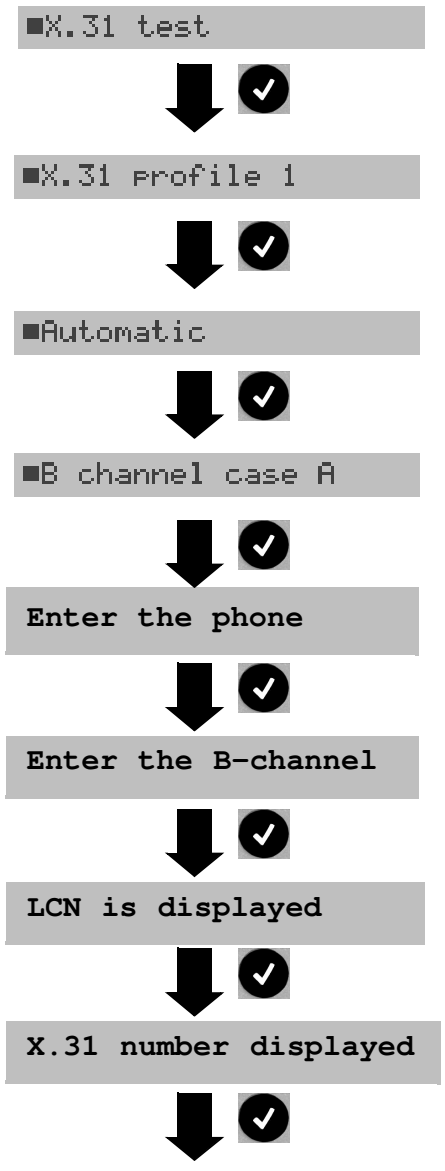
Test results:

TEI:02	= The first valid TEI value is 02.
+ +	= Both test steps were successful.
+ -	= The first test step was successful, The second test step was unsuccessful. In this case, the ARGUS will display the relevant X.31 cause for the failure (in the example above, 13) and the associated diagnostic code (in the example, 67) if available (see Page 232).

If the X.31 service is not supported, the ARGUS will report “X.31 (D) n. impl.”.

2) B-channel case A (optional)

For this X.31 test variant, the ARGUS requires the entry of a call number for the D-channel connection, a B-channel and the X.31 number; The ARGUS will use the number saved in profile as the default value (see Page 206) and the "X.31 test number" from the speed-dialling memory (see Page 211).
The ARGUS will first set up a D-channel connection and then attempt to set up a X.31 connection on the B-channel.



ARGUS in the Single tests menu

Select the profile.

<EDIT > Press EDIT to open the menu for editing the profile (see Page 206).

Entry of the call number for the D-channel connection

The ARGUS displays the LCN stored in the profile. It can be edited from the keypad.

The ARGUS displays the X.31 number saved in the speed-dialing memory (see Page 211).
It can be edited from the keypad.

The ARGUS shows whether the test could be completed successfully.
In the event of an error, the X.31 cause and a diagnostic code will be displayed.
If it is not possible to set up a D-channel connection (test not possible), an appropriate message will be displayed.

3) B-channel case B (optional)

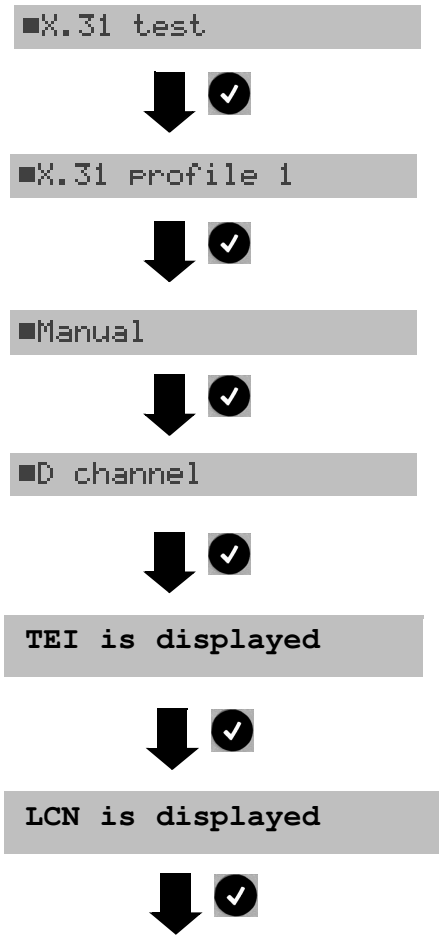
This test is identical with the “B chan. case A” test, except that it is not necessary to enter a D-channel call number.
The ARGUS will first set up a D-channel connection (via the service) and then attempt to set up a X.31 connection on the B-channel.

12.4.2 Manual X.31 Test

There are three possible variants of the Manual X.31 Test:

1) D-channel

In this test variant, the ARGUS first requests a TEI, LCN and an X.31 number (The ARGUS uses the values stored in the profile as default values - seePage 206).
If an ****** is entered for the TEI, the ARGUS will automatically determine a TEI.
Using the first TEI with which X.31 is possible, the ARGUS will begin to set up a connection.



ARGUS in the Single tests menu

Select the profile.

<EDIT > Press EDIT to open the menu for editing the profile (see Page 206).

The ARGUS displays the TEI stored in the profile.
You can edit the TEI from the keypad; If you enter ******, the ARGUS will automatically determine a TEI.

<DEL> Delete the TEI

The ARGUS displays the LCN stored in the profile. It is possible to edit the LCN from the keypad.

The saved X.31 number (speed-dialing memory) is displayed. It can be edited from the keypad.

Set up a X.31 connection

The ARGUS will display the LCN, TEI and X.31 number and the negotiated connection parameters.

<DATA>	Delete the TEI
<STAT.>	Press STAT. to display the L1/L2/L3 statistics.
<L2>	to scroll to the L2 statistics
<L3>	to scroll to the L3 statistics

The connection will be maintained until the user or the opposing end clears it. When the X.31 connection is cleared, the ARGUS will automatically clear the D-channel connection.

<YES>	The ARGUS saves the results. Display of the saved results - see Page 169.

2) B-channel case A (optional)

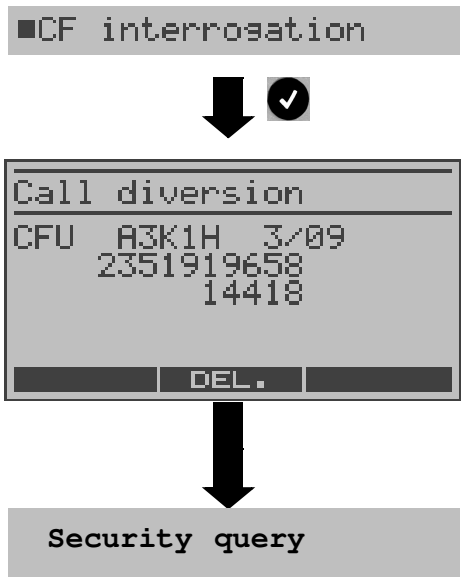
For this test variant, a D-channel call number and a X.31 number must be entered. The ARGUS will first set up a D-channel connection. Once the D-channel connection has been set up, the ARGUS will set up a X.31 connection via a B-channel.
If the X.31 connection cannot be set up, the ARGUS will automatically clear the D-channel connection. In this case, the ARGUS will display the X.31 cause and the associated diagnostic code (see Page 232).
Once a connection has been successfully set up, the ARGUS will send the number of data packets (number set in the parameter "Packet number" Page 206).
The ARGUS will count the data packets sent and received and will display (as far as possible) the contents of the data packets received.

3) B-channel case B (optional)

This test is performed in the same way as the “B-Channel Case B” test, except that it is not necessary to enter a D-channel call number.

12.5 CF Interrogation

The ARGUS will check whether - for the access under test (BRI with DSS1 or U-Interface optional) - a call diversion has been set up in the exchange.
The ARGUS will show the type of diversion (CFU, CFNR or CFB) and the call diversion's service. The display is limited to a maximum of 10 call diversions for all of the MSNs. The ARGUS will count any additionally set up call diversions.
Any call diversion set up in the exchange can be cleared with the ARGUS.



ARGUS - Single tests menu

Start the CF interrogation;
The test can take several seconds.

The ARGUS displays the type (e.g. CFU) and service (e.g. A3K1H) of the call diversion, which in this example is the third of a total of nine found (3/09).
The number 2351919658 is diverted to 14418.

Delete displayed call diversion

Security query

<YES>	Clear the displayed call diversion in the exchange
<ALL>	Delete all call diversions.

If the call diversion cannot be cleared an appropriate message will be displayed.

<CONTI.>	The ARGUS returns to the Single tests menu.

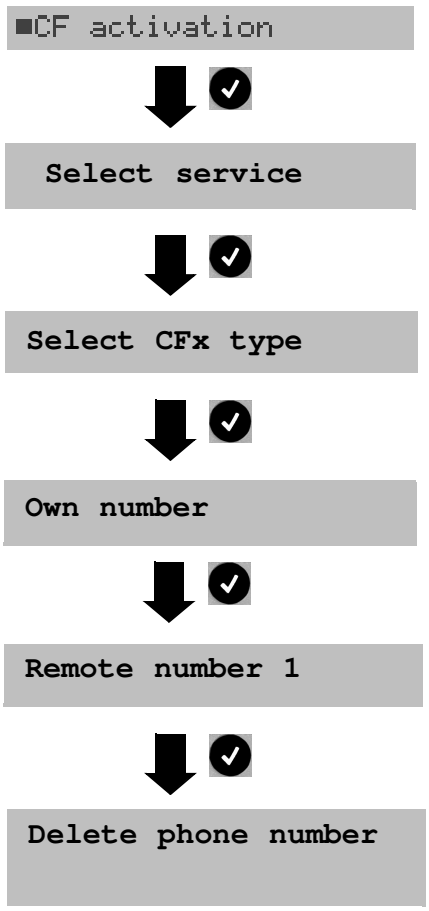
Some PBXs or exchanges do not permit the use of the mechanism used (by the ARGUS) for the interrogation of the call diversions for all MSNs or they return a negative acknowledgement of the interrogation of call diversions, implying that no call diversions have been set up.
In the event of a negative acknowledgement, the ARGUS will, therefore, request that the "Own" MSN be entered.
The call diversion interrogation will be repeated MSN-specific.
Naturally, in this case, the results of the interrogation of the call diversion only apply for the entered MSN and not for the entire access.

Abbreviations used for the services and service groups on the display:

Basic Service	Abbreviation
All services	**All**
Language	**Spch**
UDI 64 kBit	**UDI**
Audio 3.1 kHz	**A3k1H**
Audio 7 kHz	**A7kHz**
Telephony 3.1 kHz	**Tel31**
Teletext	**TTX**
Fax Group 4	**FaxG4**
Video syntax based	**ViSyB**
Video Telephony	**ViTel**
Telefax Groups 2/3	**FaxG3**
Telephony 7 kHz	**Tel7**
Unrestricted digital information	**UDI**
Unknown Basic Service	**Unkno**

12.6 CF - Activation

Using the ARGUS, call diversions can be set up in the exchange (BRI or U-Interface).



ARGUS iSingle tests menu

Using the cursor keys, select the service of the call diversion (e.g. SPch).

Using the cursor keys, select the **type of call diversion** (e.g. CFU).

Under "Own number", enter the number which should be diverted.

<DEL> Delete the digit before the cursor

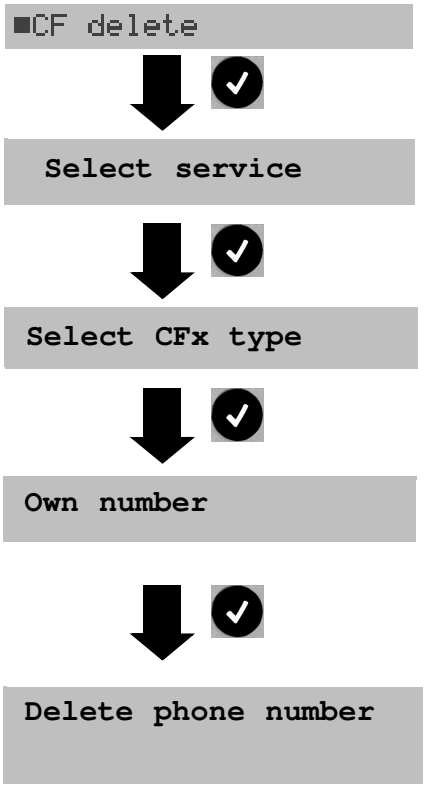
Enter the number to which calls should be diverted.

Set up the call diversion

<CONTI.> The ARGUS returns to the Single tests menu.

12.7 CF - Delete

Using the ARGUS, selected call diversions can be deleted/cleared in the exchange (BRI or U-Interface).



ARGUS - Single tests menu

Using the cursor keys, select the service of the call diversion (e.g. SPch).

Using the cursor keys, select the type of call diversion (e.g. CFU).

Under "Own number", enter the number which should no longer be diverted.

<DEL> Delete the digit before the cursor

Delete a call diversion

<CONTI.> The ARGUS returns to the Single tests menu.

12.8 MSN Interrogation

On a P-MP access using the DSS1 protocol, the ARGUS will determine the MSNs of the access under test. It will display a maximum of 10 call numbers. Depending on the Type of Number (TON), the ARGUS will display the call numbers in different versions:

- only the MSN (without area code)
- with national area code without leading the “0”
- with country code without leading the “00”
- complete call number

In order to interrogate the MSNs, the access under test must support the supplementary service “Call Forwarding (CF)”.

ARGUS in the Single tests menu

Start the MSN interrogation

In this example, the ARGUS displays the first MSN (2351919658) of a total of three found (1/03).
Use the cursor keys: to scroll through the results.

<NEW> Repeat the MSN interrogation

Due to differences in the protocol, some exchanges do not support MSN interrogation.
In this case, the ARGUS will report: MSN interrogation not possible!

12.9 Time measurements

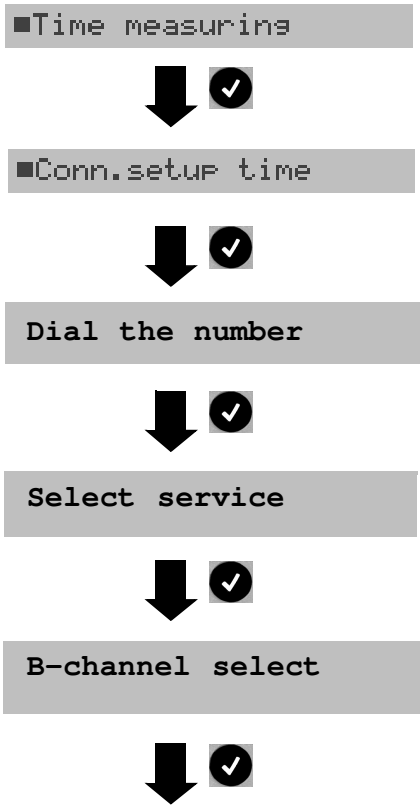
The ARGUS measures three different times:
- Connection set up time
- Propagation time of the data and
- Transit time differential (interchannel delay) of the data in two B-channels.

Time measurements on a BRI or U-Interface access are only possible in TE mode.

12.9.1 Connection set up time

The ARGUS places an outgoing call and measures the time between sending the SETUP and receiving the ALERT or CONN. The ARGUS disconnects automatically as soon as the measurement is completed.

ARGUS in the Single tests menu



Enter - or select from the speed-dialing memory - the call number for the outgoing call.

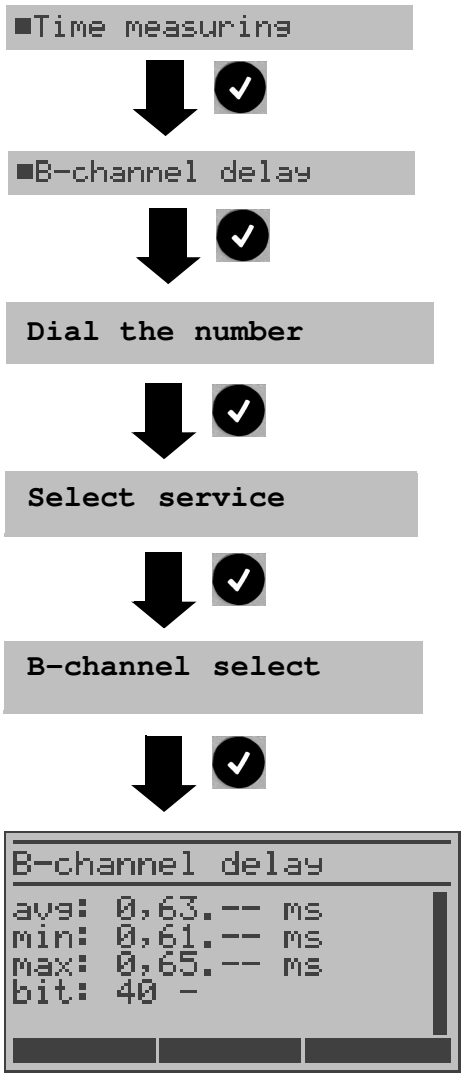
Enter the B-channel on the keypad.

Perform measurement

The ARGUS will display the connection setup time in seconds and the received L3 messages (end of connection setup).
If the measurement cannot be performed (e.g. because the call number entered was wrong or no B-channel was available) the ARGUS will display the corresponding cause.

12.9.2 Time measurement: B-channel delay

The ARGUS places a call to itself (self call) or to a remote loopbox and measures the propagation delay for the data in the selected B-channel.
The ARGUS disconnects automatically as soon as the measurement is completed.



ARGUS iSingle tests menu

Enter own number for self calls or remote number for connections to a remote loopbox.

Enter the B-channel on the keypad.

Perform measurement

The ARGUS displays the average (avg), the shortest (min) and the longest (max) B-channel delay as well as the average B-channel delay (bit) (in multiples of the time required to send a bit at 64 kbit/s).
(The time for sending 1 bit at 64 kBit/s = approx. 15.26 µs.)

The measurement will be repeated in cycles (continuous measurement).

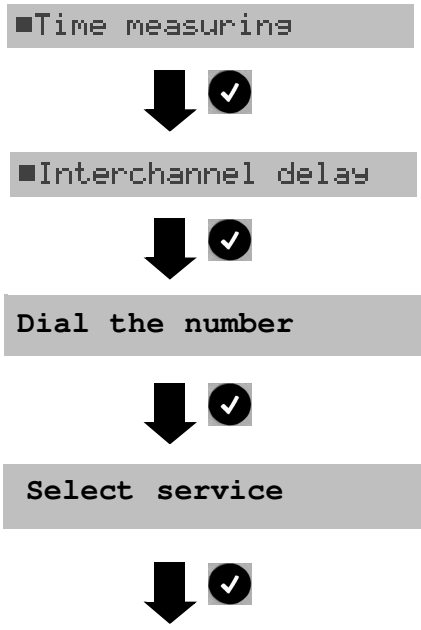
Terminate the measurement; the ARGUS displays the results of the last measurement.

If the measurement cannot be performed (e.g. because a mistake was made in entering the call number or no B-channel was available) the ARGUS will display the corresponding cause.
When it is connected to a loopbox, if the ARGUS does not receive the data back within 13 seconds, it will display the message “No LOOP”.

12.9.3 Time measurement: Interchannel delay

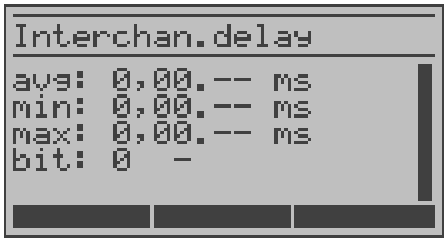
The ARGUS establishes two separate connections to a remote loopbox. The loopbox sends the respective B-channel data back on the same channel. The ARGUS measures the propagation delay for the data on each of the B-channels and determines the difference between the two propagation delays (interchannel delay).
The ARGUS disconnects automatically as soon as the measurement is completed.

ARGUS in the Single tests menu



Enter - or select from the speed-dialing memory - the call number of the loopbox

Perform measurement



The ARGUS displays the average (avg), the shortest (min) and the longest (max) interchannel delay in msec. as well as the average interchannel delay in bits (multiples of the time required to send a bit at 64 kbit/s) - it takes 15.26 µsec to send a bit at 64 kbit/s).

The measurement will be repeated in cycles (continuous measurement).

Terminate the measurement; the ARGUS displays the results of the last measurement.

If the measurement cannot be performed (e.g. because a mistake was made in entering the call number or no B-channel was available) the ARGUS will display the corresponding cause.
When it is connected to a loopbox, if the ARGUS does not receive the data back within 13 seconds, it will display the message “No LOOP”.

13 Connection

13.1 Setting up an ISDN connection

a) The ARGUS can set up a connection for the following services:

Service	Name in the ARGUS display / abbreviation
Language	**Language / Lang**
Unrestricted digital information	**DFU 64 kBit/ DFU64**
3.1 kHz Audio	**Tel.analog / Tel. / 3.1 kHz audio**
7 kHz Audio	**7 kHz audio / 7 kHz**
Unrestricted Digital Information with tones / display	**UDI+TA / UDI TA**
Telephony	**Tel.ISDN / Tel.**
Facsimile Group 2/3	**Fax G3 / FaxG3**
Facsimile Group 4 Class 1	**Fax G4 / FaxG4**
Teletex service basis and mixed mode and facsimile service Group 4 Classes II and III	**Mixed Mode / Mixed**
Teletex Service basic mode	**Teletex / Ttx64**
International interworking for Videotex	**Videotex / Vidtx**
Telex	**Telex / Telex**
OSI application according to X.200	**OSI / OSI**
7 kHz Telephony	**Tel.7kHz / Tel7k**
Video telephony, first connection	**Video telephony 1 / Vid.1**
Video telephony, second connection	**Video telephony 2 / Vid.2**

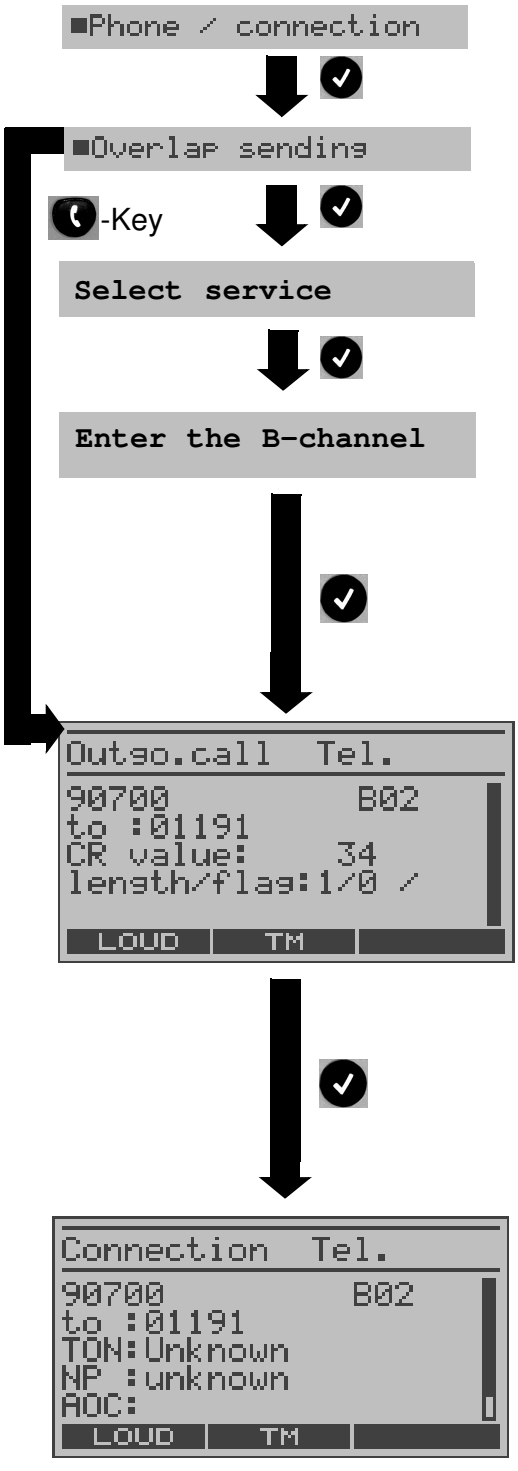
Additional three user-specific services (see “Services” on page 200.)

b) The integrated handset can be used as a phone during a telephone connection.

c) When an ISDN connection is setup, pressing the number keys (0-9) or the * or # will generate and send the corresponding DTMF tones.

13.1.1 Overlap sending (outgoing call)

In overlap sending, the digits entered for the call number are sent individually.



ARGUS - Single tests menu

The ARGUS will open the Outgo.call Tel. display

Using the cursor keys select the service that should be used for the connection.

Enter the B-channel via the keypad (by default, the ARGUS suggests the last B-channel used).
When entering a new B-channel, first press <DEL>. If you enter an * , the ARGUS will choose any B-channel that is available. The ARGUS will show whether the B-channel is available.

Setup the connection

Enter the number on the keypad.
The ARGUS displays the service (e.g. Tel.), the own number (90700), the B-channel (B02) and the number called (01191), the call reference (CR value) as well as its length and flag.

<TM> Starts the Test Manager (Page 160)

Cancel setup

or

The connection is set up using B-channel 2.
Use the cursor keys View additional information (if available)
- Subaddress of the caller
- Destination number
- User-to-User Information
- Display Information
- Type of number (TON)
- Numbering Plan (NP)

<LOUD> Increases the volume.

Disconnect
The ARGUS displays the cause of the disconnect (see Page 158).

or

- Display Advice of charges:

If the charges are not given in units, rather directly as currency, the ARGUS will display the current charges in currency. If, in DSS1, the call charges are not provided in accordance with the ETS 300 182 standard, rather in the form of the information element DISPLAY (DSP), the ARGUS will display the DISPLAY message's character string.

Note regarding the entry of the call number

Separate the extension from the access number with a # (e.g. 02351 / 9070-20 is entered on the ARGUS as: 023519070 #20).

For an outgoing call, the ARGUS uses the entire call number (without #) as the number called (CDPN or DAD) and, for the calling number, only the extension (DSS1-CGPN or 1TR6-OAD).

A “#” at the beginning of a call number is treated as a valid character. A ‘#’ at the end of the own call number instructs the ARGUS to not send the caller’s number for outgoing calls (CGPN or OAD).

Simplified overlap signaling using the telephone key

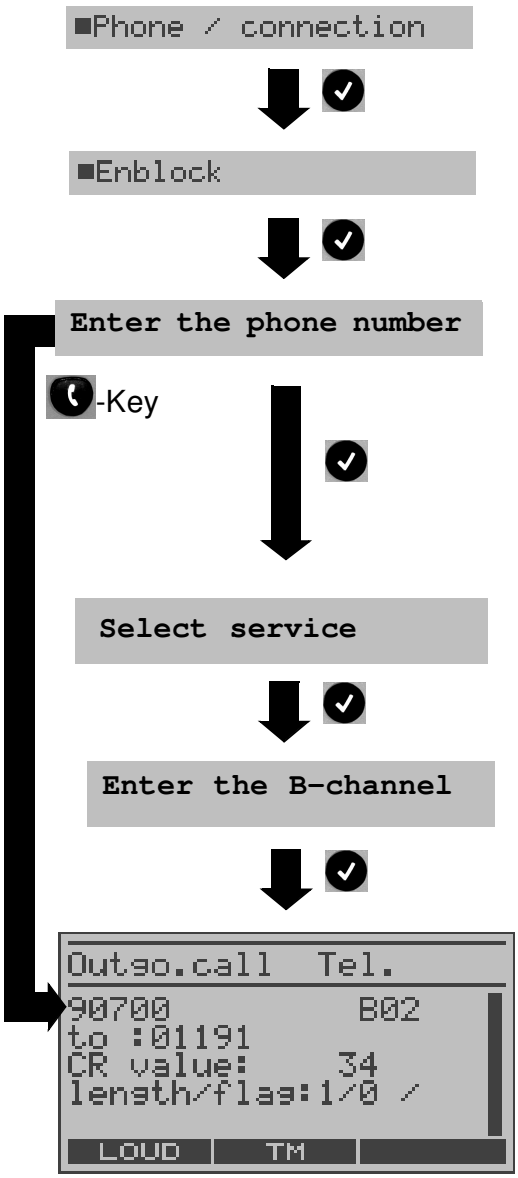
Press the  key to have the ARGUS open the Connection/Overlap window directly regardless of the currently open menu.

If you press the  key again, you will hear the dial tone. Once you enter a call number, the connection will be set up.

13.1.2 En-bloc sending (outgoing call)

In en-bloc sending, the ARGUS sends the entire dialing information in one block. The number is dialed from the call number memory (Page 211).

i ARGUS Single tests menu



Use the cursor keys to select the number from the speed-dialling memory or reenter the number on the keypad.

<DEL> Delete digit

The ARGUS will open the Outgo.call Tel. display

Using the cursor keys select the service that should be used for the connection.

Enter the B-channel on the keypad (for details on entry, see “Overlap sending”).

Start the dialing procedure
(for more displays and information see Overlap sending)

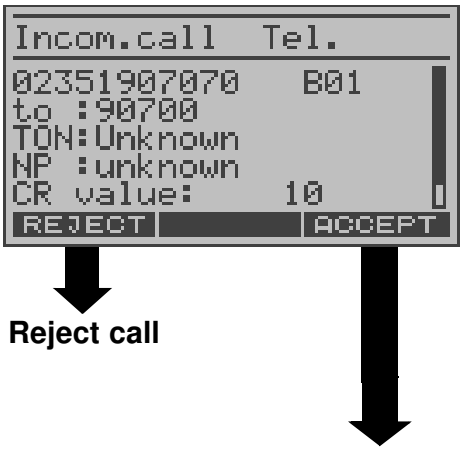
<LOUD> Starts the Test Manager (Page 160)

Disconnect
The ARGUS displays the cause of the disconnect (see Page 158), the call reference as well as its length and the associated flag.

or

13.1.3 Incoming Call (ISDN)

An incoming call can be taken at any time even when a test (e.g. BERT) is in process (see “Starting Several Tests to Run Simultaneously” on page 160.).
The ARGUS will signal an incoming call with an audible tone and a message on the display.
On a P-MP access, you can use the Call acceptance (see “Call Acceptance” on page 200.) function to configure the ARGUS to only signal incoming calls which are addressed to the MSN that corresponds to your own call number. This function can only be used when your own call number has been entered into the ARGUS’s speed-dialing memory (see “Saving Call Numbers” on page 211.) and the incoming call has a destination MSN.



The ARGUS displays the service (Tel.), the number of the caller (02351907070), the B-channel used (B01) and the number called (90700).
The ARGUS will display the complete destination number (DDI), if the Alerting mode is set to manual (see Page 199).
Use the cursor keys View additional information (if available)

To take the call.

<TM> Starts the Test Manager (Page 160)

Press the the cursor keys to view more information.

or

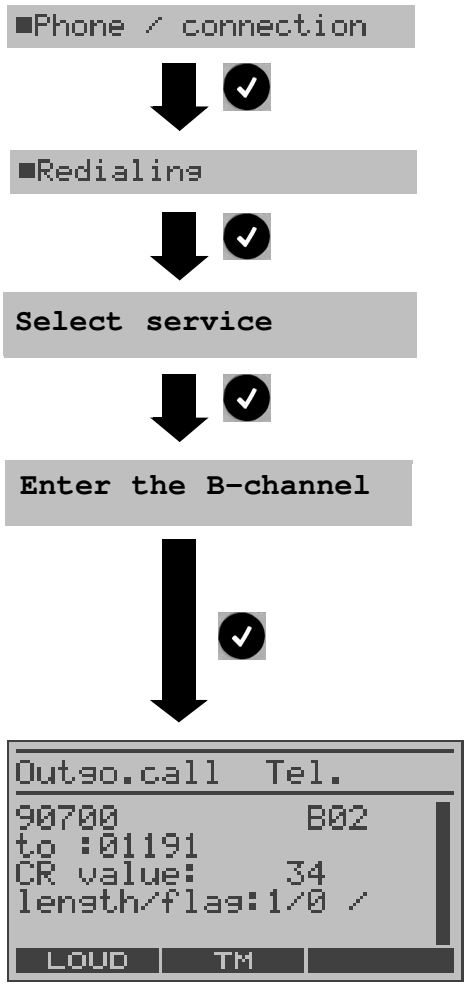
Clearing the connection.
The ARGUS displays the cause of the disconnect (see Page 158).

Charge information in NT mode (optional):

In NT mode, the ARGUS will – for incoming calls – send advice of charges in accordance with DSS1 as units and as currency (in Euro).

13.1.4 Redial

The ARGUS will set up a call using the last number dialed.



In the Single tests menu, select “Connection”.

Select “Redial”

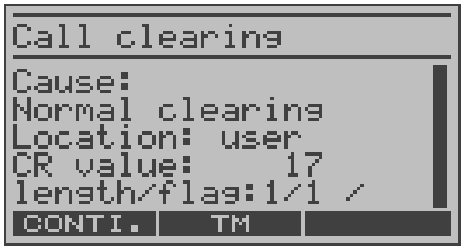
Using the cursor keys select the service that should be used for the connection.

Enter the B-channel via the keypad (by default, the last B-channel used will be suggested). When entering a new B-channel, first press <DEL>. If you enter an *, the ARGUS will choose any B-channel that is free. The ARGUS will show whether the B-channel is available.

The dialing procedure will begin using the number which was dialed last.
(for more displays and information see Overlap sending Page 153)

<LOUD>	Increases the volume.
<TM>	Start the Test Manager (see Page 160)
or	Disconnect

13.2 Clearing Down an ISDN Connection



or Clear the connection

The ARGUS will display the cause (see the table below) of the disconnect (e.g. Normal clearing) and the location where the cause occurred (e.g. subscriber).
Use the cursor keys to view additional information (e.g. charges, if available).

The following causes are shown in clear text:

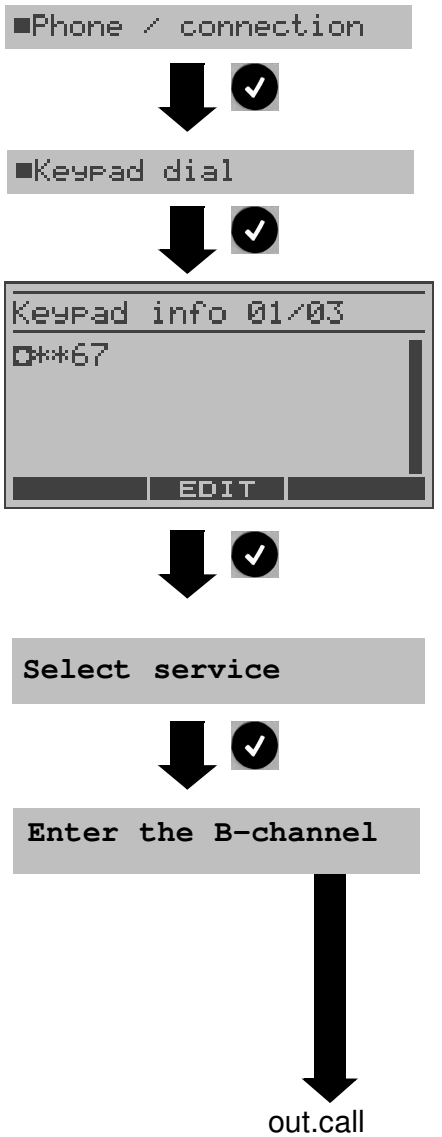
Cause	Display	Explanation
255	active clearing	User actively initiated the disconnection
Length 0	Norm. clearing	Cause element with Long 0 is mostly used by 1TR6
01	Unalloc. number	Signals “No access under this call number”
16	Norm. clearing	Normal disconnect
17	User busy	The number called is busy
18	No user respond	No answer from the number called
19	Call.time XX	Call time too long
21	Call reject	The call is actively rejected
28	Wrong number	Wrong call number format or call number is incomplete
31	Norm. clearing	Unspecified “normal class” (Dummy)
34	No B-chan.avail.	No circuit / B-channel available
44	Req.chan.unavail	Requested B-channel not available
50	Req.fac.not subs	Requested supplementary service (facility) not subscribed
57	BC not authoriz.	Requested bearer capability is not enabled
63	Srv./opt.n.avail	Unspecified for “Service not available” or “Option not available”
69	Req.fac.not impl.	Requested facility is not supported
88	Incompat. Destination	Incompatible destination
102	Timer expired	Error handling routine started due to time-out
111	Protocol error	Unspecified for “protocol error class”
127	Interworking err	Unspecified for “interworking class”

Other causes are not shown in clear text, rather as decimal codes (see Page 227).

13.3 Testing Features via the Keypad

This feature is only relevant on a BRI access.
Some network operators do not support the standard DSS1 features, rather they expect the user to control the network via so-called keypad command sequences.

In these cases, the desired facility is usually activated by entering a series of characters and then sending these characters within a DSS1-specific protocol element. These so-called Keypad-Elements are imbedded in a SETUP message. Each step is acknowledged either acoustically (handset) or via special protocol elements (cause). These causes are displayed by the ARGUS.



In the Single tests menu, select “Connection”.

Select “Keypad dial”

Select a Keypad Info entry

<EDIT > Select a Keypad Info entry to be edited. Afterwards, use the keypad to enter the Keypad Info (see Page 200).

Using the cursor keys select the service that should be used for the connection.

Enter the B-channel to be used for the connection via the keypad (by default, the last B-channel used will be suggested). When entering a new B-channel, first press <DEL>. If you enter an *, the ARGUS will choose any B-channel that is free. The ARGUS will show whether the B-channel is available.

Start the dialing procedure
(for more displays and information see Overlap sending Page 153)

14 Test Manager

The ARGUS can start multiple tests or “connections” on a BRI access simultaneously.
As an example, a BERT can be run at the same time that you make a phone call. The individual tests or “connections” use resources.

All of the tests that have been started will be administered by the Test Manager. Using the Test Manager you can start new tests, switch between tests running in parallel or terminate all of the tests that are currently running.

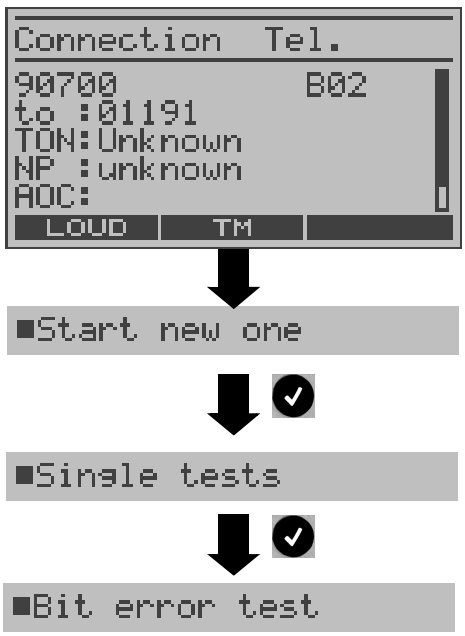
The ARGUS - Main menu

Open the Test Manager

If the ARGUS has setup a connection or if the Single tests menu is open (or a test is running), the Test Manager can be opened using the 6 key or via the <TM> softkey.

14.1 Starting Several Tests to Run Simultaneously

Starting a new test or connection during an existing connection

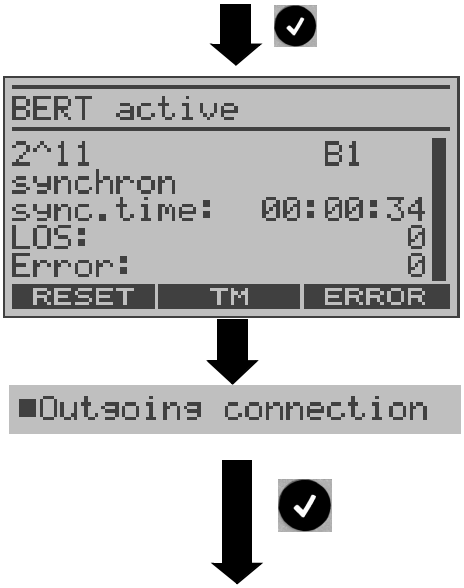


Example:
There is a connection on B-channel 2.

During this connection, the Test Manager can be started by pressing the 6 key or the <TM> softkey.

On the top line, the ARGUS will display the number of existing connections (-/01).

Select desired test
(e.g. bit error rate test, BERT)

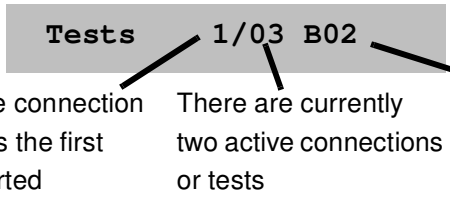


Start the test (in the example, a BERT)
The connection still exists

For information on running a BERT, seePage 130

The ARGUS will open the Connection display.

An example of



If a test (or connection) is cancelled or cleared, the ARGUS will return to the Test Manager if there is another test (or connection) running in the background.

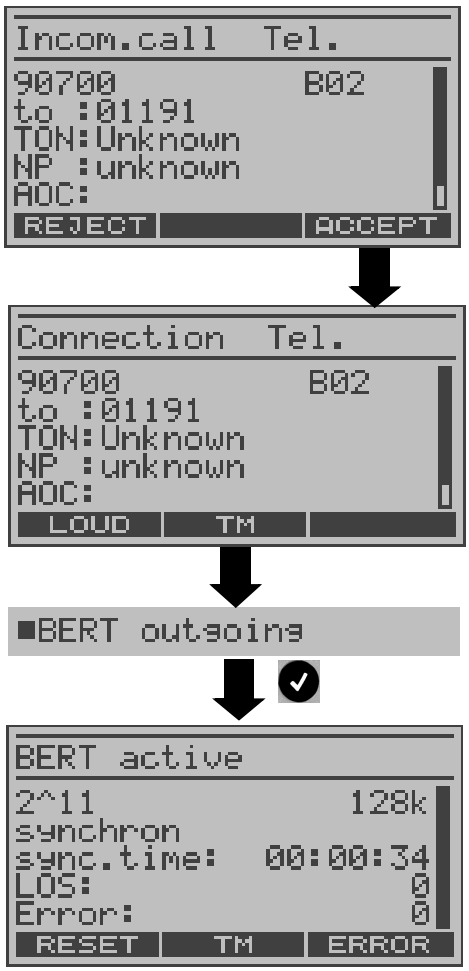
Some tests use so many resources that they cannot be run in every combination with other tests. In this case, the ARGUS will display “Test not possible at this time”.

Test/ Connection	**Number of times that this test/ connection can be started at the same time**	**It is possible to change to another test**
Incoming call	2	Yes
Outgoing call	2	Yes
BERT	2	Yes
LOOP	2	Yes
Service tests	1	No
Suppl.serv.test	1	No
Time measurement	1	No
X.31 Test	1	No
CF Interrogation	1	No

Auto. Test	1 Since the Auto. Test uses all of the resources, no other tests or connections are possible while it is running.	No
BRI level	1	No
POTS voltage	1	No

Accepting a call while a running test

The ARGUS signals an incoming call both audibly and on the display (see Page 152). The incoming call can be accepted without influencing the currently running test. If either the “B-channel loop” or the “BERT wait” function is active, the call will be accepted automatically. The handling of multiple connections is illustrated in the following example of an incoming call that arrives during a BERT, but it is identical for all other tests.



While running a BERT, the ARGUS displays information about an incoming call.

<REJECT> Reject the incoming call.
The ARGUS returns to the BERT.

To take the call.

The BERT will continue in the background.

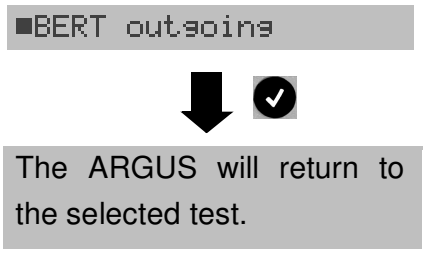
The ARGUS returns to the BERT

The connection is still active in the background, the handset is still switched to the connection.

If available, the internal handset will be assigned to the currently started (voice) connection. The assignment of the handset to a given connection is also retained in the background.

14.2 Switching Between Tests

Example:



Start the Test Manager

Select the test (connection) to which you wish to switch.

The ARGUS will return to the point from which the Test Manager was called (e.g. to a test running in parallel).
If no other test is running, the ARGUS will, reasonably enough, return to the Main menu.

14.3 Cancel All

Start the Test Manager

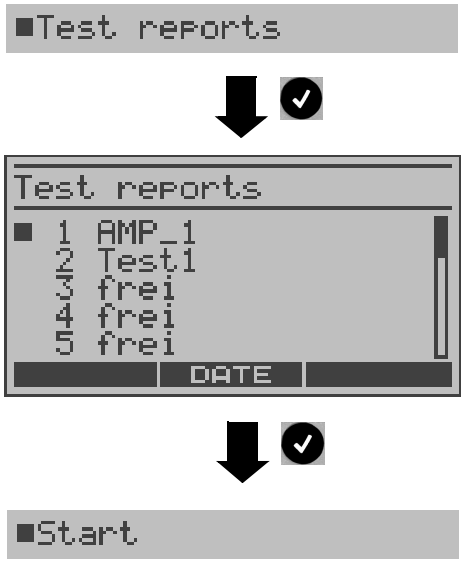
The ARGUS will cancel all of the currently running tests and/or connections and then return to the Main menu.

15 Test Results

The ARGUS displays the saved test results. Using the Intec software, WINplus or WINanalyse, the test results can also be saved on a PC. WINplus or WINanalyse can then be used to generate a comprehensive measurement report from these results.
The ARGUS saves the test results together with the date and time (from the internal clock of the ARGUS). Additionally, settings such as your own plus a remote call number will also be saved. The results are not lost when the ARGUS is switched off.

The ARGUS saves the results of various test series in sequentially numbered (1, 2, 3...) records. .

Each item in the Test reports menu refers to a record. Therefore, the first step will open a dialog in which you must select the desired data record.



The ARGUS in its Main menu

Use the cursor keys to select the record (saved test results). The ARGUS will display for each record number the associated name or the corresponding date and time. Empty records are labled as "free“.

<DATE>	Display the date and time
or	
<NAME>	Display the record names

Entering the record name:

The ARGUS will save the test results in the first free record. This record can be assigned any name (default: AMP_1, AMP_2.... or the call number of the access under test if the number has been entered into the speed-dialling memory, see Page 211).
If all of the records have been written, you must manually select a memory location (record).

The record name is entered using the numeric keypad. When the right softkey is pressed it assumes a different meaning and thus influences the entries made from the keypad (letters or digits):

<12>ab>	entry of the digits 0 to 9 plus * and #
< ab>AB >	entry of the lowercase characters and @, /,- and . (e.g. to enter a "c“ press the "2" on the keypad three times)
< AB>12 >	entry of the uppercase characters and @, /,- and .
	Move the cursor
<DEL>	Delete the character before the cursor

15.1 Start the automatic test

In this case, the ARGUS executes a test sequence automatically. The required parameters (e.g. measurement time and error level for the BERT see Page 202) should be checked before the automatic test series is begun.
The ARGUS automatically performs the following sequence of single tests:

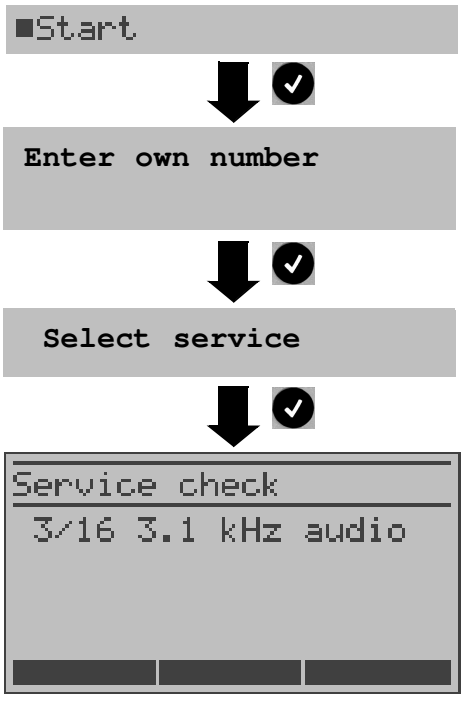
On a BRI or U interface access (ARGUS in TE mode)

- Status
- Level measuring
- Service tests
- BERT in an extended call to oneself
- Supplementary Services Test
- CF Interrogation (Call Diversions)
- MSN Interrogation
- X.31 test

On a BRI or U-interface leased line (permanent circuit)

- Status
- Level measuring
- BERT in end-to-end mode (e.g. with a loopbox on the remote end)

If the automatic test series is started by pressing function key 4 instead of via the Single tests menu, you must first enter a name for it to be saved under.



Enter “Own number”; on accesses using the DSS1 protocol, also enter the “remote number”.

Use the cursor keys to select the service.
(required for the suppl.serv.test)

Start the test

During the test sequence, the ARGUS will display the current single test.

Interrupting a test

Terminating the test (early):

The ARGUS is running an automatic test.

Interrupting a test

The ARGUS will terminate the test sequence, any test results already gathered will be lost.
Any “old” data stored under this data record number from a prior test will be retained.

The ARGUS will return to the next higher menu.

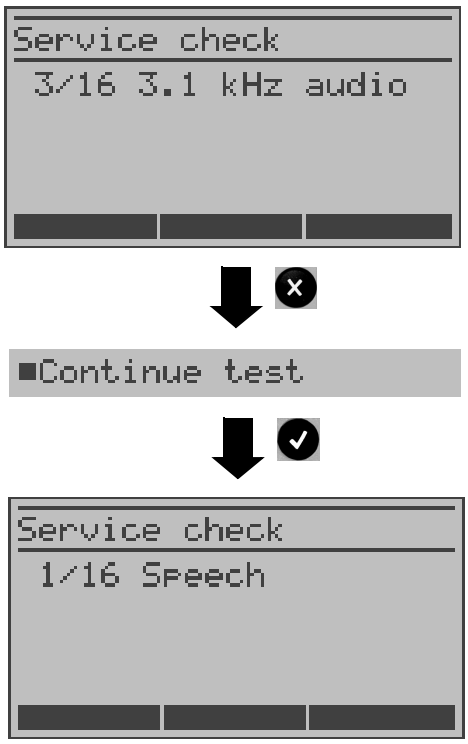
Skipping individual tests:

A single test can be skipped:
In this example, the ARGUS is running a Service test.

Test interrupted

The ARGUS will jump to the next test.
(in the example to the BERT)

Resuming a test:



The ARGUS can resume an interrupted single test: In this example, the ARGUS is running a Service test.

Test interrupted

The ARGUS repeats the interrupted single test.
(in the example, Service test)

15.2 Display saved results

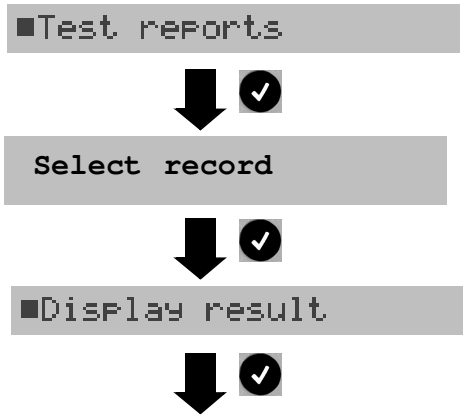
The results of the individual tests performed in the automatic test sequence will be shown on the display in the following order:

BRI (S-Bus) or U interface access

- Status
- Level measuring
- Service tests
- BERT in an extended call to oneself
- Supplementary Services Test (Suppl.serv.test)
- X.31 test
- CF Interrogation (Call Diversions)
- MSN Interrogation

BRI (S-Bus) or U interface leased line

- Status
- Level measuring
- BERT



The ARGUS in its Main menu

Display the test results
The ARGUS will first show the state of the ISDN access under test or on a DSL access the DSL state and line parameters.

<CONTI.> The ARGUS will display the results of the single tests. On a DSL access: bit distribution (ADSL), trace data ...

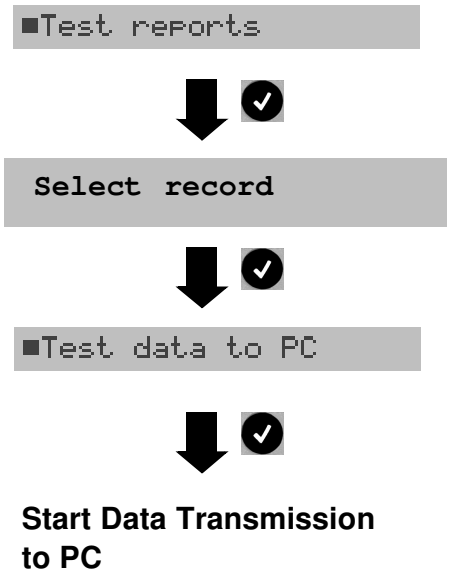
Use the cursor keys to scroll through the results of the single tests.

Close the results display.

15.3 Sending the Results of a Test to a PC

To visualize and archive the test results, the data records can be transferred to the PC via the USB interface using the included cable (connect the cable to the ARGUS “USB” jack). Connect the ARGUS to your PC and start the ARGUS WINplus program.

The ARGUS - Main menu

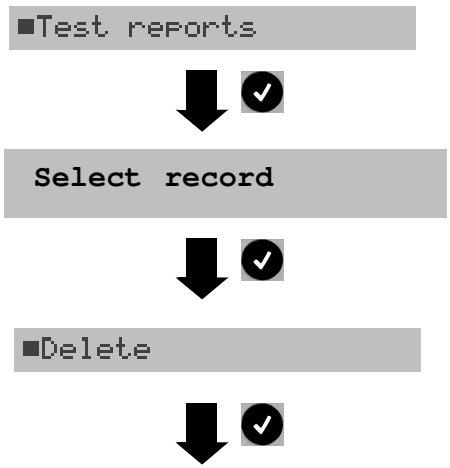


Use the cursor keys to select the record.

Start Data Transmission to PC

15.4 Deleting the results of a test

The ARGUS in its Main menu



Use the cursor keys to select the record.

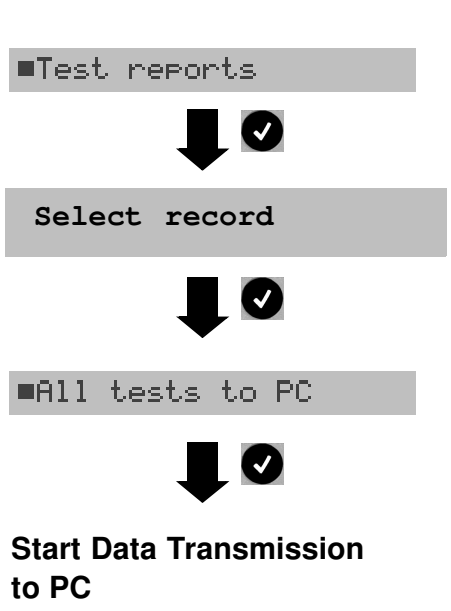
Delete the selected record.

For information on how to delete all records, see on page 212 “Reset”.

A deleted record will be shown as “free”.

15.5 Sending the results of all of the tests to a PC

The ARGUS will send the saved results of all of the tests to the PC.



ARGUS in the Main menu

Use the cursor keys to select the record.

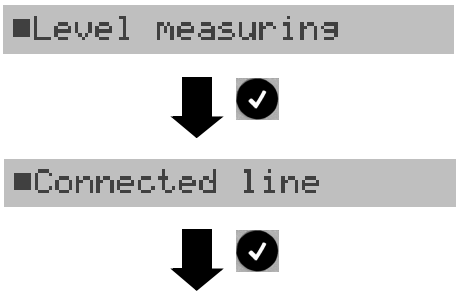
16 Level measuring

16.1 Level measuring on a BRI access

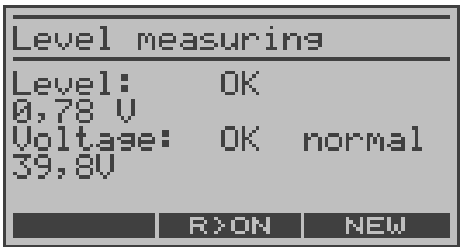
Level measurement – connected line

The ARGUS measures the level of the received useful signal. In TE mode, it also measures the phantom feed. The measurement will be updated continuously.

The ARGUS in its Main menu



Start measurement



The ARGUS displays the level of the useful signal (Level), the “Voltage” and the evaluation of the two levels.

- Evaluation of the useful signal level:

<<	Level is too low
>>	Level is too high
OK	Level is in order (0.75V $^{+20\%}_{-33\%}$) i. e. from 0.9 V to 0.5 V)
none	no level

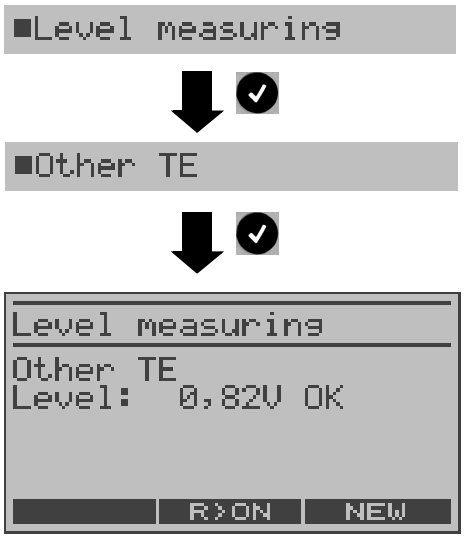
- Evaluation of the level of the feed (Voltage)

normal	Normal feed (40V $^{+4.25\%}_{-13.75\%}$), i. e. from 41.7 V to 34.5 V)
REV	Inverted phantom feed
NONE	No feed (Voltage)

< R>ON >	**100**Ω resistor switched in
<R>OFF >	**100**Ω resistor switched out
<NEW>	to set up Layer 1 again - to ensure a reasonable measurement.

Level measurement other TE

The ARGUS will measure the level of a terminal connected in parallel. In this case, the ARGUS is passive. Layer 1 must be activated on the terminal. The ARGUS updates its measurement continuously.



The ARGUS in its Main menu

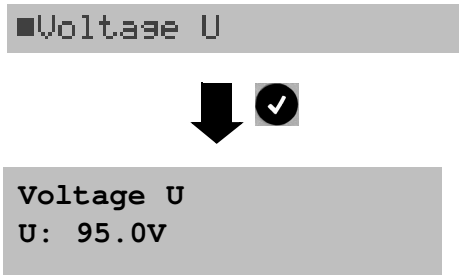
The ARGUS displays the level of the useful signal and an evaluation of this level:

<<	Level is too low
>>	Level is too high
OK	Level is in order (0.75V $^{+20\%}_{-33\%}$) i. e. from 0.9 V to 0.5 V)
none	no level

< R>ON >	**100**Ω resistor switched in
<R>OFF >	**100**Ω resistor switched out
<NEW>	to set up Layer 1 again - to ensure a reasonable measurement.

16.2 Level Measurement on a U-interface Access

16.2.1 Measurement of the voltage on a U-interface access (optional)



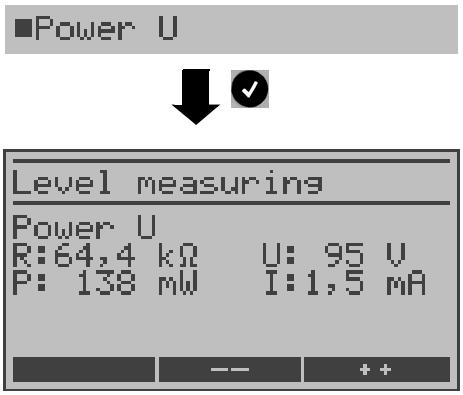
ARGUS in its Level measuring menu

Start measurement

The ARGUS will display the level of the feed voltage. The measurement will be updated continuously.

16.2.2 Measurement of the U-interface under load

The ARGUS measures the voltage on the U-interface under various selectable loads and displays the calculated current and power.
From these values, it is possible to estimate the length of the line.



ARGUS in its Level measuring menu

Start measurement

The ARGUS displays the switched-in load in **kΩ**, the measured voltage in Volts (should not exceed 100 V), the calculated power in mW and the calculated current in mA.

<++> to increase the load by one increment (i.e. the resistance will be lowered)

<--> to decrease the load by one increment (i.e. the resistance will be increased)

Step	**Load / kΩ**	**Maximum voltage / V**
1	64,4	Approx. 126.0 [1)]
2	28,1	Approx. 126.0 [1)]
3	19,2	Approx. 114.0 [1)]
4	13,9	Approx. 114.0 [1)]
5	11,3	Approx. 114.0 [1)]
6	9,2	Approx. 109.4 [2)]

7	7,98	Approx. 101.8 [2)]
8	6,88	Approx. 94.6 [2)]
9	6,13	Approx. 75.0 [1)]
10	5,46	Approx. 75.0 [1)]
11	5,0	Approx. 75.0 [1)]
12	4,55	Approx. 75.0 [1)]
13	4,21	Approx. 73.9 [2)]
14	3,90	Approx. 71.2 [2)]
15	2,72	Approx. 59.5 [2)]

[1)] The voltage is limited by the power capacity of the individual circuit elements

[2)] The voltage is limited by the maximum power (1300 mW)

When switching the load levels, the power limitations of the components within the ARGUS and the maximum permissible power (1300 mW) of the U-interface must be taken into consideration.

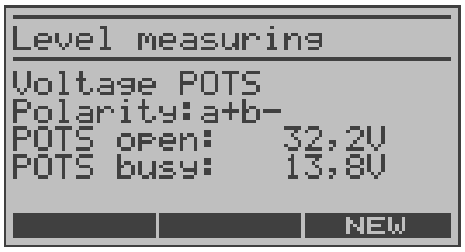
Therefore, the ARGUS will only permit the load to be switched another increment when the specified voltage will not be exceeded.

16.3 Level measuring on a POTS access

The ARGUS measures the voltage level in both the normal case and when the line is “busy” (trunk line).

The ARGUS in its Main menu

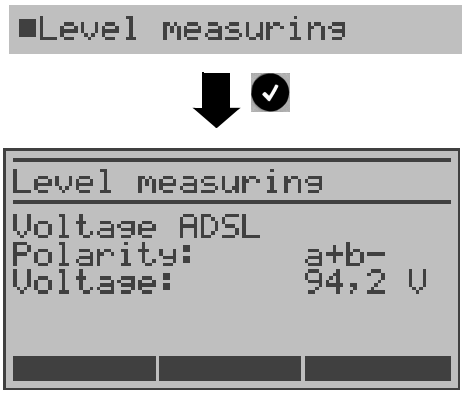
Start measurement



The ARGUS will display the polarity of the 2-wire POTS line (red plug "a"; black plug "b") as well as the "on hook" and "off hook" voltage levels.

<NEW> To repeat the measurement

16.4 Level measuring on an ADSL access



The ARGUS in its Main menu

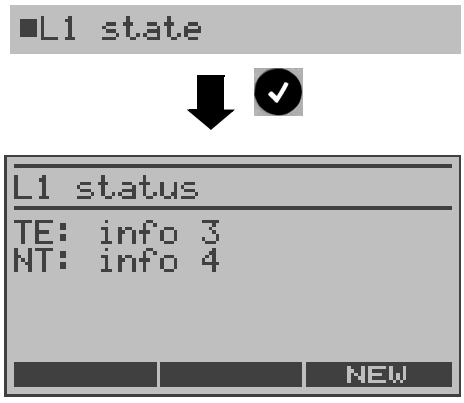
Start measurement

The ARGUS will display the polarity of the 2-wire POTS line (red plug "a"; black plug "b") and the voltage level.
The measurement will be updated continuously.

17 The L1 Status of a BRI Access

The ARGUS displays the current status of Layer 1: which signal is received from the remote end and which signal the ARGUS sends.

The ARGUS in its Main menu



The ARGUS displays the status of Layer 1 or of the signal, which is currently being sent (Info 0 .... Info 4).

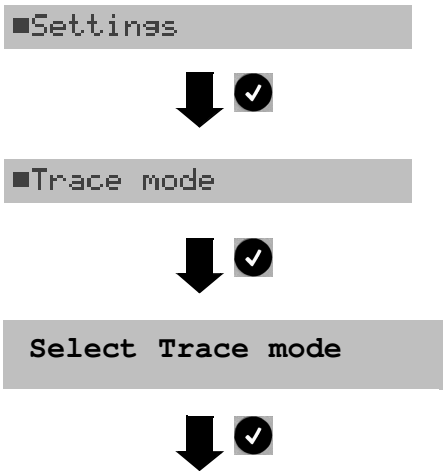
<NEW> to set up Layer 1 (if necessary).

18 Configuration

The ARGUS can be configured to suit your special requirements. The default (factory) settings can be restored by selecting “Reset” (see page 212 Reset).

18.1 PC/Trace

The ARGUS remains active and passes the data from the D-channel (all of the D-channel messages sent to and received from the network) online directly to the connected PC. The Remote function is optional.



Confirm the entry

The ARGUS in its Main menu

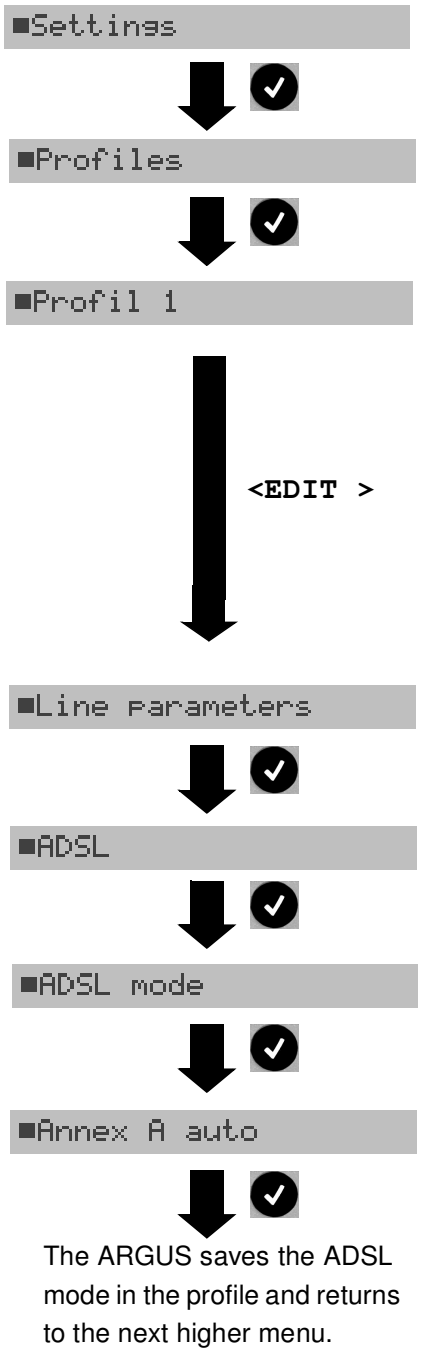
Auto PC sync.: Even after it is switched on again, the ARGUS remains in Trace mode and passes D-channel data to the PC (“PC/Trace” LED on continuously).
Manual PC sync.:
the ARGUS is set to Trace mode and will pass D-channel data to the PC until it is switched off. When it is switched on again, it will not return to Trace mode.

If the ARGUS cannot send the data to the PC without errors, the “PC/Trace” LED will flash at 5Hz (5 times per sec).
The “active” settings will be marked in the display with a ✚.

18.2 Configuring Profiles

The ARGUS stores all of the parameters for the various ADSL/SHDSL test varieties in the profiles. Up to 10 user-defined profiles can be created. A profile must be selected before an ADSL/SHDSL test is run.
Only those parameters which are relevant for the respective test situation will actually be used.

ARGUS in the Main menu



The ARGUS will use the parameters in the current profile when setting up the DSL connection. The currently active profile is indicated by the ✤

Activating a profile

Select the profile

The ARGUS will load the selected profile - the one indicated by the ■ and activate it.

<EDIT > Enter edit mode to configure the profile

Use the cursor keys to select the parameter (e.g. line parameters).

Use the cursor keys to select the parameter (e.g. ADSL).

Display the ADSL parameters
Use the cursor keys to select ADSL mode for example.

Use the cursor keys to select Annex A auto for example.

The ARGUS will return to the next higher menu without saving any change made to the parameter (e.g. ADSL mode).

Parameters in the profiles:

Parameter	Comment
Line parameters	
ADSL	This category is comprised of the following ADSL line parameters:
ADSL mode	Different ADSL modes can be selected depending on the national variant of the ARGUS. The selected ADSL mode must be compatible to ATU-C (network-side). If the ADSL mode “Annex A(B) Auto” is selected, the ARGUS will automatically determine the configuration of the DSLAM (G.DMT or ANSI) and set itself accordingly.
Rated value	Use the keypad to enter the upstream und downstream comparison value for ATM [kb/s].
Shutdown mode	The type of disconnect used for the ADSL connection.
SHDSL	This category is comprised of the following SHDSL line parameters:
Spectrum	Annex A, Annex F: American SHDSL standard Annex B, Annex G: European SHDSL standard
Clock/framing	Setting the clock: automatically, synchronous or plesiochronous
Channel selection (TDM) (optional)	Use the keypad to select the B and Z-channels. Up to 36 B-channels and up to 7 Z-channels can be selected. If an * is entered for the B and Z-channels, the ARGUS will automatically determine the channel assignment. Maximum selections: 36 B-channels and 1 Z-channel / 35 B-channels and 7 Z-channels Minimum selections: 3 B-channels 0 Z-channels
Data rate (ATM)	Setting the data rate in kbit/s

Power back off	Reducing the transmit power of the remote end. The default value is 0dB, i.e. the maximum transmit power. The power can be reduced by a maximum of 30 dB.
EOC usage	Using the EOC (Embedded Operations Channel) it is possible to transmit additional protocol commands. off: No display of the remote end's performance parameter. on (passive): No display of the remote end's parameter (except for Alcatel). Alcatel) on (active): Display the performance parameters of the local (own) and remote ends, if the remote end supports the own query (Default).
EOC mode	Setting the EOC mode
Sync word	The sync word is used to identify the SHDSL frame (cf. G.991.2 Chapter PMS-TC layer functional characteristics). Enter the sync word in hexadecimal from the keypad and the softkeys <A . . . F > (e.g. to enter a “C” press the softkey three times or to enter an “F” six times, then finish up by pressing <OK> to confirm your entry).  To use the sync word
Message Mode	Selection of the message mode The message mode determines the initiation of the handshake on the part of the STU-R or the reaction on the part of the STU-C (vgl. G.994.1 Chapter: transactions, entry in die Capability List)
Vendor Info Field	Entry in the vendor info field
Wire pair	Settings – Manual or Auto. If you select Manual, the ARGUS will, in the case of SHDSL 2-wire, choose the first wire pair in the list; in the case of SHDSL 4-wire, it will take the two pairs given in the first two entries in the list etc. The order of the wire pairs in the list can be changed: Use the down arrow softkey on the left to move the marked wire pair down one line; with the softkey on the right, the marked entry can be moved up one line.

Protocol:	This setting is used to define which protocol should be used by the ARGUS in the ADSL test.
PPP:	PPP parameter for the Internet connection

User name

Entry of the user name assigned (by the network operator)

Use the keypad to enter the user name. When the right softkey is pressed it assumes a different meaning and thus influences the entries made from the keypad (letters or digits):

< 12>ab >	entry of the digits 0 to 9 plus * and #
< ab>AB >	entry of the lowercase characters and @, /,- and . (e.g. to enter a “c” press the “2” on the keypad three times)
< AB>12 >	entry of the uppercase characters and @, /,- and .
	to move the cursor right or left.
<DEL>	Delete the character before the cursor
	Save the user name
	Do not save the user name

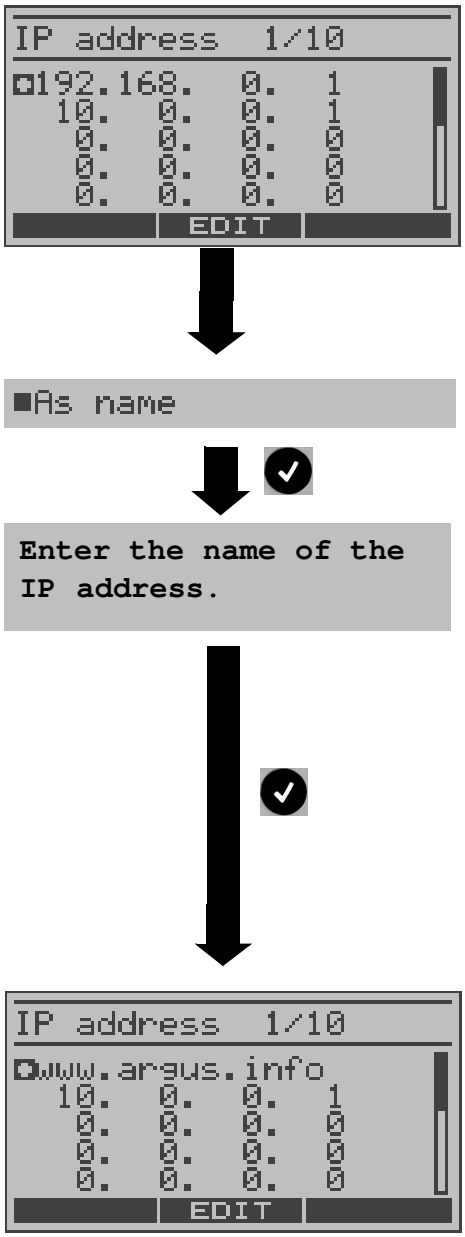
Password	Entry of the password assigned by the network operator: For instructions, see User name
	to save the password.
	Do not save the password
Set the WAN IP	If “Yes”, the IP address entered as WAN / own IP address (see Page 185) will be used for the connection.
Activation delay	After setting up the PPP connection, the ARGUS will first wait until the period specified in the “activation delay” has elapsed before beginning a test.
PPTP:	PPTP parameter
Server address	Use the keypad to enter the Server IP address.
	to move the cursor right or left.

	<DEL>	Delete the character before the cursor
ATM:		
Default VC or Multicast VC	VPI / VCI Encapsulation	The identifier of the virtual channel in the ATM cells - Virtual Path (Channel) Identifier This sets the encapsulation of the packets to be sent (LLC or VC-MUX). It is possible to use different VPI / VCI combinations at the same time, if you use multiple Multicast VCs (set Use VC = “Yes”)
Auto ATM	Setting: on or off If you select “on”, the ATM cells will be looped.	
LAN:		
IP mode	Setting the IP addresses Static IP: DHCP-Client: DHCP-Server: DHCP-Auto:	fixed IP addresses Assigned by the server (remote end) Assigned by the ARGUS The ARGUS will check whether there is a DHCP server in the network. If yes, the address will be assigned by this server. Otherwise, the ARGUS will assign the address.
Own IP address	This is the IP address (of the ARGUS) on the LAN side	
IP netmask	LAN IP netmask	
Gateway IP address	Gateway IP address in the LAN network	
DHCP server	Settings for the DHCP server: - Start and End IP addresses - The period for which the IP addresses are reserved - Domain Name	
DHCP timeout	This sets the amount of time that a client should wait for an IP address (relevant for the IP mode DHCP client)	
MAC address	This displays the LAN MAC address of the ARGUS.	

VLAN (Virtual Local Area Network)	Use VLAN:	Specify whether or not VLAN should be used: yes or no
	ID:	Identifies the VLAN to which the frame belongs. Every VLAN is assigned a unique number, the VLAN ID. A device, which belongs to the VLAN with the ID=1, can communicate with every other device in the same VLAN, but not with a device in a different VLAN (one with an ID other than 1, i.e. 2, 3, etc.).
	Priority:	User name - priority information An eight-level (3 bits) priority can be assigned to each frame. In this manner, it is possible e.g. to give priority to forwarding voice data (e.g. in the case of VoIP), while delaying HTTP data.
WAN:		
IP mode	This is used to set the assignment of IP addresses.	
Own IP address	This is the IP address (of the ARGUS) on the WAN side	
IP netmask	WAN IP netmask	
Remote IP address	Gateway IP address in the WAN network	
DHCP timeout	This sets the amount of time that a client should wait for an IP address (relevant for the IP mode DHCP client)	
MAC address	Display and editing of the WAN MAC address	
	<EDIT >	open the WAN MAC address for entry. Enter the address in hexadecimal from the keypad and the softkeys <A . . . F > (e.g. to enter a “C” press the softkey three times or to enter an “F” six times, then finish up by pressing <OK> to confirm your entry).
		to use the address. The new address is only saved temporarily and will not be available when the ARGUS is switched on again.
VLAN	see VLAN under LAN Page 185	

Bonding:	For SHDSL 8-wire only, bundling of wire pairs: Selection Auto, IMA 1.0 (Inverse Multiplexing over ATM), IMA 1.1
Router:	NAT (Network Address Translation) on or off The Router's NAT service automatically and transparently replaces the address information (e.g. the IP addresses of the LAN network) with other address information (e.g. the IP addresses of the WAN network)
DNS server:	
DNS Server 1	Entry of the IP address of the DNS server (DNS = Domain Name System)
DNS Server 2	Entry of the IP address of the DNS server
Data Log	Data Log ON or OFF
DHCP Vendor ID:	
Format	Selection of the format - ASCII or hexadecimal
ASCII data	Enter the DHCP Vendor ID in ASCII format
Hex data	Enter the DHCP Vendor ID in hexadecimal format For more information, see Page 183
DHCP Vendor Info:	
Format	Selection of the format - ASCII or hexadecimal
ASCII data	Enter the DHCP Vendor Info in ASCII format
Hex data	Enter the DHCP Vendor Info in hexadecimal format For more information, see Page 183
DHCP User Class I. (I. = Information):	
Format	Selection of the format - ASCII or hexadecimal
ASCII data	Enter the DHCP User Class I. in ASCII format
Hex data	Enter the DHCP User Class I. in hexadecimal format For more information, see Page 183
DHCP Userdef.Option:	
Number	
Format	Selection of the format - ASCII or hexadecimal
ASCII data	Enter the DHCP Userdef. Option in ASCII format

Hex data	Enter the DHCP Userdef. Option in hexadecimal format For more information, see Page 183
Test parameters	
IP ping:	
IP address	This is the address of the remote site. The ARGUS can save up to 10 IP addresses. The saved IP addresses are available to all of the profiles.



The ARGUS is displaying the memory location holding the first IP address of a maximum of 10 IP addresses (1/10).
Press the cursor keys to scroll to the next IP address.

Open the marked IP address to edit it.

The address can be entered as an IP address (number) and/or name.

Enter the name of the IP address.
Using the numeric keys to start a function: Use the softkey on the right to shift the keypad (the softkey on the right assumes a different meaning when pressed):

<12>ab>	entry of the digits 0 to 9 plus * and #
< ab>AB >	Entry of lowercase characters (e.g. to enter a “c” press the “2” on the keypad three times), @, /, -, .
< AB>12 >	entry of the uppercase characters and @, /,- and .
<DEL>	Delete the character before the cursor
✓	Set the marked IP-address as the default address

When entering the IP address as a number:

◄ ►	to move the cursor right or left.
<DEL>	Delete the character before the cursor

Number of pings	Enter the number of test packets (1 to 10) that the ARGUS should send to the IP address. If you enter "0", the ARGUS will send packets continuously until the test is stopped manually.
Pause	This setting determines the amount of time that the ARGUS will wait between sending test packets.

Packet size	This setting determines the size of the test packets. By varying the size, it is possible to determine the maximum data packet size and the relationship between size and response time.
Fragmentation	This parameter sets the fragmentation: **on** Depending on the network (or router), test packets may be divided into multiple packets. **off** Fragmentation is not permitted, i.e. the test packets may be rejected by the network (or router). In this case, the ARGUS will not receive a packet in reply. **auto** The ARGUS determines the maximum packet size for the path to the destination address (Path-MTU) and splits the test packet into smaller packets. These can then be sent with the minimum of delay (since the network/router need not fragment the test packet).
Traceroute:	
IP address	IP address of the destination node: This can be entered as an IP number or as a name (for instructions, see IP Ping/ IP address).
maximum hops	This sets the maximum number of hops that will be taken in the path to the destination node.
Probes	This sets the number of attempts that will be made to get a response from a network node.
Timeout	This sets the maximum amount of time that the ARGUS will wait for a response from a network node.
HTTP download:	A total of up to 10 user-defined server profiles can be created. These server profiles will then be used for the HTTP download, FTP download and the FTP upload tests. The profiles hold all of the parameters required for the HTTP download, FTP download and the FTP upload.
Server	Entry of the server address This is the server address used as destination address when the ARGUS uploads the file. For information on the softkeys, see Page 183

Download Filename	The name of the file that the ARGUS should retrieve in the download test (HTTP download or FTP download). (When entering a www address alias, please seePage 66)) For information on the softkeys, see Page 183
Upload Filename	The filename under which the data – sent in the FTP upload test – should be saved on the server.
Upload File size	Sets the size of the file that the ARGUS will send in the FTP upload test
User name	Entry of the user name for the (FTP / HTTP) server For more information, see Page 183
Password	Entry of the password for the (FTP / HTTP) server. For more information, see Page 183
Qty	This sets how often the ARGUS will retrieve the data from the "source" address in the download test. In the case of the upload test, this is number of times that the ARGUS will send the data to the destination.
Profile name	Entry of a name for the profile
FTP download: **FTP upload:**	A total of up to 10 user-defined server profiles can be created. These server profiles will then be used for the HTTP download, FTP download and the FTP upload tests. The profiles hold all of the parameters required for the HTTP download, FTP download and the FTP upload. For information about the parameters, please see "HTTP download".
VPI/VCI scan:	
VPI	This sets the VPI range, which the ARGUS should check with the VPI/VCI scan test.
VCI	This sets the VCI range, which the ARGUS should check with the VPI/VCI scan test.
Number of pings	This sets the number of test packets that the ARGUS will send (a number between 1 and 99).
Timeout	This sets the maximum amount of time that the ARGUS will wait for a response from an ATM network node to a test packet (ping) which it sent.

ATM OAM ping:	
VPI / VCI	Entry of the VPI and VCI
Number of pings	This sets the number of test packets that the ARGUS will send. If you enter "0", the ARGUS will send packets continuously until the ATM Ping test is stopped manually.
Timeout	This sets the maximum amount of time that the ARGUS will wait for a response from an ATM network node to a test packet (ping) which it sent.
OAM cell type	F5 loopback seg (segmented) F5 loopback ete (end-to-end)
ATM BERT:	
Duration	You can use the keypad to enter measurement times ranging from 1 minute (default setting) to 99 hours and 59 minutes (= 99:59). ⚠ If the time is set to 00:00 (=BERT with unlimited measurement time), the BERT will **not** stop automatically. In this case, the user must terminate the BERT (by pressing the ⊗).
VPI / VCI	The identifier of the virtual channel in the ATM cells - Virtual Path (Channel) Identifier
Bit pattern	This setting determines the bit pattern that the ARGUS will repeatedly send in an ATM BERT. There are several predefined bit patterns available. Additionally, you can enter a 16 bit long pattern of your choice in binary (see Page 202).
Error level	This is the level used to evaluate whether the BERT had an "acceptable" bit error rate. If the BERT has a bit error rate, which exceeds this error level, the ARGUS will display a "NO" as the test result. Using the keypad, this parameter can be set to any value from 01 (= 10^{-01}) to 99 (= 10^{-99}). The default threshold is 10^{-06}. That means that, in the event that the bit error rate is less than 10^{-06} (one error in 10^{6}= 1,000,000 sent bits), the bit error rate test will be evaluated as OK.

HRX value	Set the HRX value (hypothetical reference connection see ITU-T G.821) Using the keypad, you can enter a value ranging from 0 to 100 %.
Data rate	Sets the data rate To achieve meaningful results, the data rate must be the same as that set in the DSLAM. Default setting: 32 kbit/s
IPTV:	Up to 3 IPTV profiles can be created. **<EDIT >** The selected profile will be opened for editing.
Type of stream	Select the type of stream.
Server address	Entry of the server address; this is only necessary for VoD (Video on Demand) and UDP-SSM.
Multicast IP	Entry of one's own multicast IP address (for broadcast TV only)
Port	Entry of the port
Filename	Name of the video, which should be downloaded (only for VoD (Video on Demand))
IGMP Version	Version of the IGMP protocol (for broadcast TV only)
RTSP type	Type of control protocol (only for VoD)
Jitter buffer	Size of the jitter buffer
Limit values	These are used to set the limit values for PCR jitter, latency and continuity errors. If these values are exceeded during the IPTV test, the test will be said to have failed.
Profile name	Entry of a name for the IPTV profile
IPTV Scan:	Up to 3 Scan profiles can be created. **<EDIT >** The selected profile will be opened for editing.
Channel selection:	Selection of the test channels for the IPTV Scan:

Selection of the TV channels for the IPTV Scan:

The ARGUS will first show the selected TV channels, which should be tested using the IPTV Scan (in the example just TV channel IPTV 1 up to a maximum of 10 TV channels)

Open the list of available channels.

Select a channel.
IPTV channel 1 is not shown in the list of channels, since it was already selected as a channel see Channel selection display.

< EDIT >: Open selected channel for editing.

Select a Multicast IP, port or alias name

- Enter the address (multicast IP and port number) of the TV channel
- Enter any alias name desired for the TV channel: for information on the softkeys, see Page 187

Select the channel that should be added to the channel selection list as a TV channel (see above).

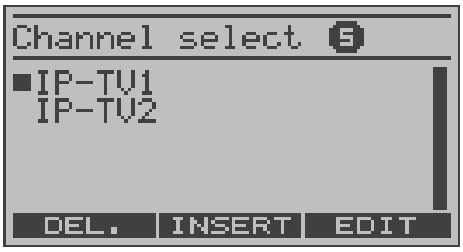
Add TV channel (in the example: IPTV channel 2).

Left Softkey The marked channel will be moved down one place in the list.

Right Softkey The marked channel will be moved up one place in the list.

<INSERT> A list of the still available channels will open.

Switch between softkey sets



<DEL> Delete the marked channel from the list.

Use the channel selection.

IGMP Version	Entry of the IGMP protocol version
Max. Switchover time	Enter the switchover (zapping) time: This is the period of time during the test within which the ARGUS must have received the data of the (next) TV channel. If the ARGUS does not receive the data of the TV channel within this period of time, it will consider the test to have failed and will accordingly display “FAIL”. Minimum: 1 sec. 25 sec.
Profile name	Entry of a name for the Scan profile
MDI analysis:	
Mode	Select either Automatic or Manual: Manual: The address of the TV channel, whose data stream should be analysed, must be entered under Multicast IP and Port. The time span within which the ARGUS will attempt to receive a data stream is unlimited. Automatic: The ARGUS will search for the data stream with the highest data rate of one of the TV channels available. You must enter the time span within which the ARGUS will attempt to receive a data stream under Scan time.
Scan time	The time span within which the ARGUS will attempt to receive a data stream.
Multicast IP	The multicast IP of the TV channel whose data stream should be analyzed.
Port	The port number of the TV channel whose data stream should be analyzed.

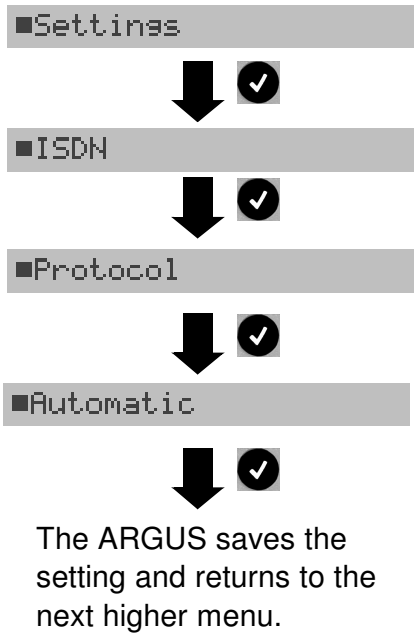
Use IP Header	Specify whether the IP Header should be used: yes or no. It is not possible to determine the packet loss (Media Loss Rate) of a data stream, which does not have a RTP header (UDP based only). In this case, it is possible to use the IP header to enable the ARGUS to determine the packet loss, if its ID field has been suitably maintained. ⚠ If Use IP Header has been set to “on”, but the ID field of the IP header has not been maintained, the ARGUS cannot correctly determine the packet loss (Media Loss Rate).
MDI Limit Values	Entry of the limit values for the Delay Factor (DF), the Media Loss Rate (MLR) and the packet loss in percent (PLR – Packet Loss Ratio). If one of these values is exceeded while running a MDI analysis, the ARGUS will consider the test to have failed and will accordingly display “FAIL”. To run an analysis in accordance with RFC 4445, the limit value for PLR must be switched off (enter PLR = 100.0 %).
VoIP:	Up to 3 VoIP profiles can be created.
	<EDIT > The selected profile will be opened for editing.
Destination	A maximum of 10 VoIP destinations may be entered as call numbers or as SIP-URI. For information on the softkeys, see Page 183
SIP	Use Registrar: Setting: yes or no. If an Internet Telephony Service Provider (ITSP) is used (you have dialed a normal telephone number), a registrar must be used. A registrar is not needed if you dial a VoIP telephone directly, e.g. via its IP address or the SIP-URI. Registrar Server: Entry of the registrar or proxy server address Use Proxy: This setting specifies whether or not to use Outbound Proxy. Outbound Proxy: Address of the Outbound Proxy User Agent: ID-string or terminal name

	SIP Domain	When using an Internet Telephony Service Provider (ITSP), you can enter its domain name here, e.g. sip.voipprovider.de
	Listen Port	The port used for the SIP signaling
	Use STUN	Setting: yes or no. If you do not connect to the Internet directly via the ADSL line but rather via a router, you will need STUN to determine the router's WAN IP address that is visible to the outside world.
	STUN Server	This is the domain name of the STUN server with which it is possible to determine the WAN IP address of your router, e.g. stun.voipprovider.de
	Authentication of additional user name	
	Caller ID	Here you can enter any text which you want to be displayed instead of your caller's phone number when he or she calls. For information on the softkeys, see Page 183
	Type of Service	Entry of the Type of Service. The Type of Service is used to prioritize the handling of VoIP data in the Internet (thus voice data is transferred faster). For information on the softkeys, see Page 182
	Qualify	Specifies whether or not the Proxy Server's availability should be checked continuously.
	Expiry	Specifies how long a registration with the Registrar Server is valid.
Protocol	The Session Initiation Protocol (SIP) as the signaling protocol for VoIP.	
User name	User name for the registrar For information on the softkeys, see Page 183	
Password	The password to use with the registrar. For information on the softkeys, see Page 183	
Call acceptance	Selection of the type of call acceptance If "Echo Test" is selected, incoming calls will be accepted automatically and the speech data will then be looped back.	

Silence detection	If this is set to “ON”, the ARGUS will not send speech packets when there is silence (a break in the speech). This can, however, lead to problems with the assignment of ports if there is a NAT router in the path.
Jitter buffer	Sets whether the size of the jitter buffer is fixed or dynamic.
Jitter buffer size	The size of the jitter buffer
Codec	Preparation of a list of voice codes to be used. If there are multiple codecs in the list, the priority is determined by the order in the list.  Switch between softkey sets **Left Softkey** The marked codec will be moved down one place in the list. **Right Softkey** The marked codec will be moved up one place in the list. **<INSERT>** A display of the still available voice codecs will open. If a voice codec is marked with a  in this list (Codec Selection list), it will be added to the Codec Priority list (in the active list of voice codecs) **<DEL>** Delete the marked codec from the list  Accept the list
Profile name	Enter or change the name of the edited VoIP profile
Profile name	Enter or change the name of the edited profile

18.3 Settings: ISDN

The operation is the same for all configurations and will be illustrated with a single example:



The ARGUS - Main menu

Use the cursor keys to select, e.g. . Protocol .

Use the cursor keys to select the setting for the protocol (e.g. Automatic).

The ARGUS saves the setting and returns to the next higher menu.

The ARGUS will open the ISDN menu without making any changes to the parameters.

Settings in ISDN:

Parameter	Comment
L1 permanent?	On a BRI connection in NT mode, Layer 1 (L1) is permanently active.
Protocol	Instead of using the automatic protocol detection (setting: Automatic), you can also set the Layer-3 D-channel protocol manually. This setting will be stored permanently and will also active when the tester is switched on again.
Alerting mode	You can specify whether, for an incoming call on a BRI point- to-point access, the ARGUS should only display the access number without extension or the complete number with extension. If it is set to “Manual”, the ARGUS will display the extension (An incoming call will be signaled. The ARGUS will send the Layer 3 message “Alert” when it accepts the call. The digits of the extension that have been sent by this point will be displayed).

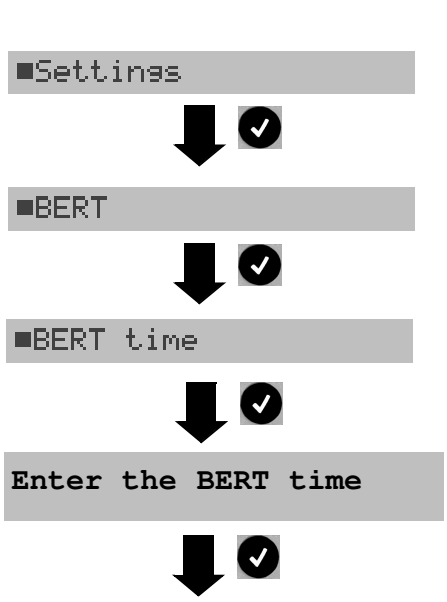
	⚠ When using the “Manual” setting, an incoming call must be answered within 20 seconds or it will be lost. Furthermore, you should note that the remote subscriber will not hear a ringing tone. If you select Automatic, the ARGUS will only display the access number without extension or, depending on the configuration of the access in the exchange, it may not display the number called at all.
Clock mode	This parameter sets where the clock will be generated in the case of a BRI access. You can either specify that the ARGUS generates the clock (is Master) or that it is the slave of a clock generated at the other end (Slave). Defaults NT mode: Master TE mode / Leased line: Slave This setting is not saved and will be lost when the ARGUS is switched off and then back on again.
BRI termination	Independent of the operation mode (TE or NT), a terminating resistor can be switched-in on the BRI access. This setting will not be saved. Default setting: NT mode: Terminating resistor switched-in TE mode / Leased line: no terminating resistor is switched in
Call parameter	Two different parameters can be set for (ISDN) calls generated on both the network-side (ARGUS in NT mode) and on the user-side (ARGUS in TE mode): 1. Type of number (TON) for the CGN (=CGPN) or CDN (=CDPN) element of a SETUP signal **Network-side: Net CGN TON** **Net CDN TON** **User-side: User CGN TON** **User CDN TON**
	2. Numbering Plan (NP) for the CGN (=CGPN) or CDN (=CDPN) element of a SETUP signal **Network-side: Net-CGN-NP** **Net-CDN-NP** **User-side: User-CGN-NP** **User-CDN-NP**

	Possible settings: For TON: unknown, international, national, network spec., subscriber, abbreviated. For NP: unknown, ISDN/telephony, data, telex, national stand., private
Services	Up to three user-specific services (user spec.1 to user spec.3) can entered and saved. For each “user spec. service”, you must enter the three info-elements BC, HLC and LLC in hexadecimal. To do so, use the keypad and the softkey < A . . F > (e.g. to enter a "C", press the softkey three times or for a "F", press it six times; finish up by pressing <OK> to confirm your entry). Using the left softkey, move to the displayed info-element (e.g. with < ->LLC > to the display of the LLC value)
Call Acceptance	If the ARGUS is set to “own MSN/DDI“ and is in TE mode on a P-MP access, it will only signal those calls which are placed to the MSN (on a P-P access, the DDI) of the access under test. If set to "all MSN/DDI“, the ARGUS signals all calls. Prerequisite: - the “own” number must be entered in the call number memory under “own number” (see “Saving Call Numbers” on page 211.) - the incoming call must have a destination MSN The default setting is “all MSN/DDI”. This setting will be saved permanently.
Voice coding	There are two options for coding voice data in a B-channel: - A-law (default) - µ-law This setting will not be saved.
DTMF / Keypad	DTMF or keypad setting
Dest. no. MSN	A destination number can be entered, which the ARGUS will use for MSN interrogation.
CUG Index	Entry of the CUG Index (Default: 148)
Keypad	Entry of up to three possible Keypad Infos. The keypad infos are saved permanently. Use the cursor keys to select one of the three available memory locations for Keypad Infos. **<EDIT >** Select a Keypad Info entry to be edited. Afterwards, use the keypad to enter the Keypad Info.

		Save Keypad Info

18.4 Settings: BERT

The operation is the same for all configurations and will be illustrated with a single example:



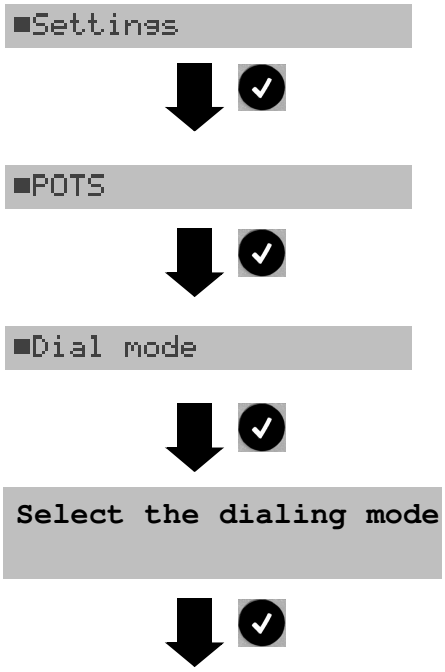
Settings for the BERT:

Shown in the ARGUS display	Comment
BERT time	You can enter measurement times ranging from 1 minute (default setting) to 99 hours and 59 minutes (= 99:59). If the time is set to 00:00 (=BERT with unlimited measurement time), the BERT will **not** stop automatically. In this case, the user must terminate the BERT (by pressing the).
Bit patt. BRI/U	This setting determines the bit pattern that the ARGUS will repeatedly send in a BERT. There are several predefined bit patterns available. (The default pattern is 2^{15}-1.) Additionally, it is also possible to enter a 16 bit long pattern of your choice in binary.

	 to move the cursor right or left. **<DEL>** Changes the digit before cursor (1 to 0)
Bit pattern SHDSL	The default pattern is 2^{15}-1. Additionally, it is also possible to enter a 16 bit long pattern of your choice in binary.
Error level	This is the level used to evaluate whether the BERT had an "acceptable" bit error rate. If the BERT has a bit error rate, which exceeds the error level set, the ARGUS will display a "NO" as the test result. Using the keypad, this parameter can be set to any value from 01 (= 10^{-01}) to 99 (= 10^{-99}). The default threshold is 10^{-06} . That means that, in the event that the bit error rate is less than 10^{-06} (one error in 10^6= 1,000,000 sent bits), the bit error rate test will be evaluated as OK.
HRX value	Setting for the HRX value (hypothetical reference connection, see the ITU-T G.821) Using the keypad, you can enter a value ranging from 0 to 100 %.

18.5 Settings: POTS

The operation is the same for all configurations and will be illustrated with a single example:



ARGUS iin its Main menu

Using the cursor keys, select a setting (e.g. POTS dial mode).

Use the cursor keys to select the desired dialling mode (e.g. Pulse mode).

The ARGUS will return to the “POTS config.” menu without making any changes.

The ARGUS saves the settings and returns to the next higher menu.

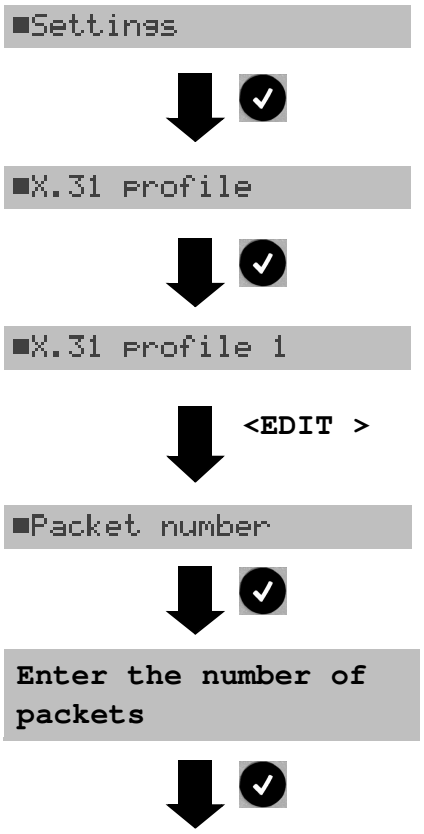
Settings on a POTS access:

Shown in the display on the ARGUS	**Comment**
Dial mode	Selection of the dialling mode: DTMF or pulse dialing
CLIP mode	Select the transfer procedure used to pass the call number: **FSK:** CLIP via a procedure similar to a modem (for Germany and some other places in Europe) **DTMF:** CLIP via DTMF (for Scandinavia and the Netherlands) The ARGUS will automatically detect that a CLIP was sent using DTMF with the polarity reversal and will set itself accordingly (e.g. Netherlands).

DTMF parameter	Settings for the three parameters Level, Duration and Interval of the DTMF signals generated during POTS (analog) operation.
Level	Setting the DTMF level: The level can range between -21dB and +12 dB. Use the vertical cursor keys to raise or lower the level by 3dB. Default: 0 dB
Duration	Setting the DTMF time: The duration of the signal can take a value between 40ms and 1 second (default: 80ms). Use the vertical cursor keys to raise or lower the value: In the range 40 - 200 ms: 10 ms steps In the range 200 - 300 ms: 20 ms steps In the range 300 - 1000 ms: 100 ms steps
DTMF interval	Setting the interval between two DTMF characters: The interval between the characters can take a value between 40ms and 1 second (default: 80ms). Use the vertical cursor keys to raise or lower the value: In the range 40 - 200 ms: 10 ms steps In the range 200 - 300 ms: 20 ms steps In the range 300 - 1000 ms: 100 ms steps
Defaults	Restores the default settings (Default): Level = 0 dB, Time = 80 ms, Separation = 80 ms
FLASH time	Sets the length of a FLASH. This setting is needed in order to use special features of a PBX. The FLASH time can take a value between 40ms and 1s. Use the vertical cursor keys to raise or lower the value: In the range 40 - 200 ms: 10 ms steps In the range 200 - 300 ms: 20 ms steps In the range 300 - 1000 ms: 100 ms steps

18.6 Settings: X.31 Profile (optional)

The ARGUS stores the parameters of all the various X.31 test varieties in the X.31 profiles. Up to three user-defined X.31 profiles can be created.



The ARGUS - Main menu

Use the cursor keys to select the profile.

Edit the selected profile.

Use the cursor keys to select, e.g. Packet number.

Using the keypad, enter the number of packets.

The ARGUS will return to the next higher menu without making any changes.

The ARGUS saves the setting and returns to the next higher menu.

Shown in the Display on the ARGUS	Comment
X.31 profile:	
Packet number	Number of packets sent
TEI	Entry (from the keypad) of the TEIs to be used in the X.31 test. If you enter **, the ARGUS will automatically select a TEI (Terminal Equipment Identifier).
LCN	Entry (from the keypad) of the LCN to be used in the X.31 test.

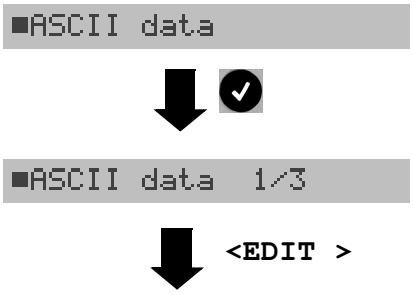
Packet size	The size of the data packets (Packet size)
Agree Packet size	Negotiate with the network side (DCE) an agreement regarding the data packet size (Packet size). If the desired data packet size is larger than the default, this parameter should be set to “on”.
Window size	Window size of Layer 3
Agree window size	Negotiate between the terminal (DTE) and the network (DCE) an agreement regarding the window size.
Throughput	Data throughput in bits per second

Enter user data

Content of the user data:

- Format setting for the user data
- Entry of the ASCII data

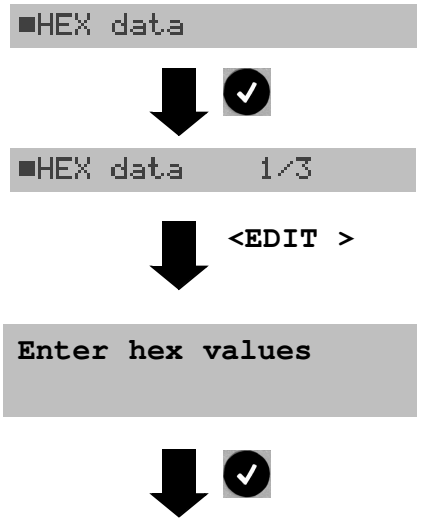
There are three memory locations available.



Use the cursor keys to select one of the three available memory locations for the ASCII data (in this example, the first location 1/3)

Use the keypad to enter the ASCII data. When the right softkey is pressed it assumes a different meaning and thus influences the entries made from the keypad (letters or digits):

<12>ab>	entry of the digits 0 to 9 plus * and #
< ab>AB >	entry of the lowercase characters and @, /,- and .
< AB>12 >	(e.g. to enter a "c“ press the "2" on the keypad three times) entry of the uppercase characters and @, / ,- and .
	Move the cursor
<DEL>	Delete the character before the cursor
	Do not save ASCII data.



- Entry of the hex data:

Select one of the three available memory locations for the hexadecimal data (in this example, the first location 1/3)

Edit the value

Use the keypad to enter the hex value. To enter the values A...F, use the softkey <A..F> (e.g. to enter a C, press the softkey <A..F> three times).
To confirm the entry of the hexadecimal characters A to F, press <OK> (the softkey in the middle changes from <DEL> to <OK>).

<DEL> Delete the character before the cursor

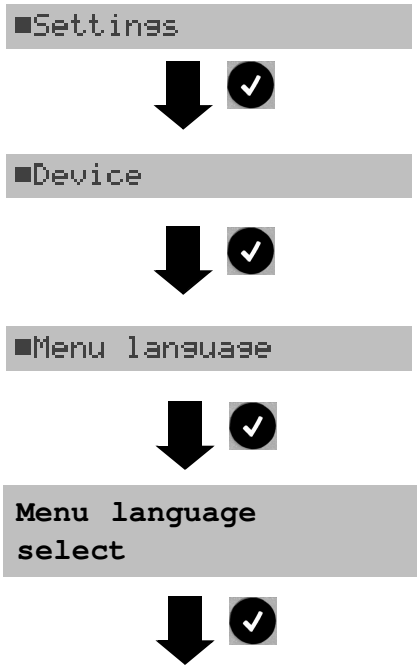
Do not save the hexadecimal values.

CUG	Closed User Group
CUG Index	Coding for Closed User Group
D bit	Local: DCE acknowledges data packets, i.e. flow control on local DTE-DCE path End-to-end: DTE -DTE flow control
Facilities	Coding for various supplementary services
Profile name	Use the keypad to enter any profile name desired for the X.31 profile. The ARGUS will later display this name.

18.7 Settings: ARGUS settings

The operation is the same for all configurations and will be illustrated with a single example:

ARGUS in the Main menu



Using the cursor keys, select a setting (e.g. Menu language).

Use the cursor keys to select desired language (e.g. German).

The ARGUS will return to the “Device settings” menu without making any changes.

The ARGUS saves the setting and returns to the next higher menu.

Settings on the ARGUS:

Shown in the display on the ARGUS	**Comment**
Menu language	Selection of the menu language
LCD contrast	The setting of the display contrast can be changed in 16 steps. Using the cursor keys, it is possible to increase or decrease the contrast. The vertical arrow on the display indicates the current setting on a scale from low to high contrast.

Enter date / time	Entry of the date and time (initialisation of the internal clock) via the keypad. Use the vertical cursor keys to scroll to the next line in the display. The entered time will be continuously updated by the ARGUS's real time clock as long as the power is not switched off. When the power is switched off (the ARGUS switched off without accumulators), the clock will run a few more weeks on its internal supply. If the backup supply is exhausted, the time will be undefined and must be set again.
PC Interface	Select the interface to be used for connecting to the PC.
V.24 Baud rate	Sets the maximum baud rate to be used by the ARGUS to communicate with a PC via the V.24 interface.
Alarm bell	The ARGUS signals with an alarm in a variety of situations, e.g. when a bit error occurs in a BERT. When this parameter is set to "off", all audible alarms are suppressed.
Power Down	- Set how long the ARGUS can remain idle before it will switch to power down mode. If power down mode is disabled, the ARGUS will display a message, when it is switched on, warning that this will lead to a shorter battery life. - Set how long the background lighting will remain before it will be switched off.
Software option	To enable a software option (e.g. additional functions), you must first enter a software key via the keypad.

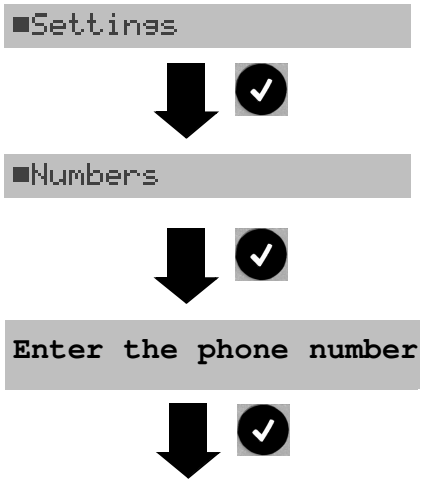
18.8 Saving Call Numbers

Ten call numbers with a maximum of 24-places can be entered in the speed-dialing memory.

⚠ The first speed-dial number **must** be the **own** call number of the access under test (this is especially important for the automatic Service check).

You can save remote call numbers in the memory locations “Remote No.1 – 8”. In the X.31 test number memory location, the ARGUS expects the entry of the X.25 access number for the X.31 test (see Page 139).

ARGUS in the Main menu



The ARGUS saves the number and returns to the next higher menu.

Use the cursor keys to scroll through the speed-dialling memory.
Enter the number via the keypad.

<DEL> Delete the character before the cursor

The ARGUS will return to the next higher menu without saving the number.

When entering an own call number with an extension (operation of the ARGUS on a PBX access), observe the following:
The extension is separated from the access number by a #.
For outgoing calls, the ARGUS uses the entire call number (without #) as the number called (CDPN or DAD) and, for the calling number (DSS1-CGPN or 1TR6-OAD), only the number after the #, in other words the extension. A "#" at the beginning of a call number is treated as a valid character.
Example:
02351/9970-45 is entered as 023519970#45

If the “# “ is at the end of a number, when the number is later dialed it will be done without CGPN or OAD. This is important for some PBXs.

18.9 Reset

The ARGUS will reset all of the parameters to their default values.

A reset deletes the speed-dialing memory with the call numbers, PPP user name, PPP password, IP addresses, Download addresses, profile settings (VoIP, IPTV etc.) and all of the test results saved in the ARGUS.

The following settings are possible:

Parameter	**Default**	
PC/Trace	Off	
Profile:		
Line parameters		
ADSL:		
ADSL mode	depending on the country and type of device	
Rated value	0/0	
Shutdown mode	Dying gasp	
SHDSL:		
Spectrum	Annex B	
Channel selection (TDM)	g.SHDSL	
Data rate (ATM)	g.SHDSL	
Power back off	0 db	
EOC usage	on (passive)	
Sync Word	3F 16 1F 03 3C 0C	
Message Mode	GHS Mode C	
Vendor Info Field	15 35	
Wire pair	Manual	
Protocol	PPPoE	
PPP	user name and password not entered	
	Set the WAN IP:	No
	Activation delay:	2 sec.
PPTP	Server IP address:	0.0.0.0 *

ATM	Default VC	
	VPI / VCI:	1/32
	- Encapsulation: LLC	LLC
	Auto ATM	depending on country version
LAN	IP mode:	DHCP Client
	LAN own IP address:	0 .0 .0 .0 *
	IP netmask:	255.255.255.0
	Gateway IP address:	0 .0 .0 .0 *
	DHCP server: Start address	0 .0 .0 .0 *
	End Address	0 .0 .0 .0 *
	Domain name	empty
	Reserv. time	240 hours
	DHCP timeout:	20 sec.
	MAC address:	Dependent on the device
	VLAN: Use LAN VLAN	No
WAN	IP mode:	Static IP
	Own IP address:	0 .0 .0 .0 *
	IP netmask:	255.255.255.0
	Remote IP address:	0 .0 .0 .0 *
	DHCP timeout:	20 sec.
	MAC address:	Dependent on the device
	VLAN: Use WAN VLAN	No
Bonding	Auto	
Router	NAT on	
DNS server	DNS Server 1 and 2:	0 .0 .0 .0 *
		* To run a test, an IP address must be entered.
Data Log	off	
DHCP Vendor ID	Format:	ASCII
	ASCII data:	ARGUS
DHCP Vendor Info	Format:	ASCII
	ASCII data:	ARGUS
DHCP User Class I.	Format:	ASCII
	ASCII data:	ARGUS
DHCP Userdef.Option	Number:	255
	Format:	ASCII
	ASCII data:	ARGUS

Test parameters

IP ping	IP address:	www.argus.info
	Number of pings:	10
	Pause:	1 sec.
	Packet size:	84 Bytes
	Fragmentation:	on
Traceroute	IP address:	www.argus.info
	Maximum hops:	25
	Probes:	3
	Timeout:	3 sec.
Server profile for - HTTP download - FTP download - FTP upload	Server address:	empty
	Download filename:	empty
	Upload filename:	file
	Upload filesize	1000000
	User name:	empty
	Password:	empty
	Number:	3
VPI / VCI scan	VPI: Start / End	0/8
	VCI: Start / End	32/48
	Number:	2
	Timeout:	0.500 sec.
ATM OAM ping	VPI / VCI:	1/32
	Number of pings:	3
	Timeout:	1 sec.
	OAM cell type:	F5 loopback ete
ATM BERT	Duration:	1 min
	VPI / VCI:	1/32
	Bit pattern:	2^{11-1}
	Error level:	1E-06
	HRX value:	30 %
	Data rate:	32 kbit/s
IPTV	Type of stream:	UDP-UNICAST
	Server address:	empty
	Multicast IP:	empty
	Port:	0
	Filename:	empty
	IGMP version:	2
	RTSP type:	TCP
	Jitter buffer:	300 ms
	Limit values:	PCR jitter: 8 ms Latency: 500 ms Continuity Error: 0,1 %

VoIP	Goal:	empty
	SIP: Use Registrar	no
	Registrar server	empty
	Use OutboundProxy	no
	Outbound Proxy	empty
	User agent	ARGUS
	SIP domain	empty
	Listen port	5060
	Use STUN	no
	STUN server	empty
	Authentication	empty
	Caller ID	empty
	Type of Service	18
	Qualify	no
	Expiry	3600 sec.
	Protocol:	SIP
	VoIP user name:	empty
	Password:	empty
	Call acceptance:	manual
	Silence detection:	off
	Jitter buffer:	static
	Jitterbuff.size: min/max	50/50
	Codec	G.711 Alaw

ISDN:

L1 permanent?	No
Protocol	Automatic
Alerting mode	Automatic
Clock mode	Slave
Call parameter	depending on country version
Services	empty
Call acceptance	all MSN/DDI
Voice coding	A-Law
DTMF / Keypad	DTMF
CUG Index	148
Keypad	empty

BERT:

BERT time	00:01 (1 minute)
Bit patt. BRI/U	2^{11}-1
Error level	10^{-06}
HRX value	15%

POTS:

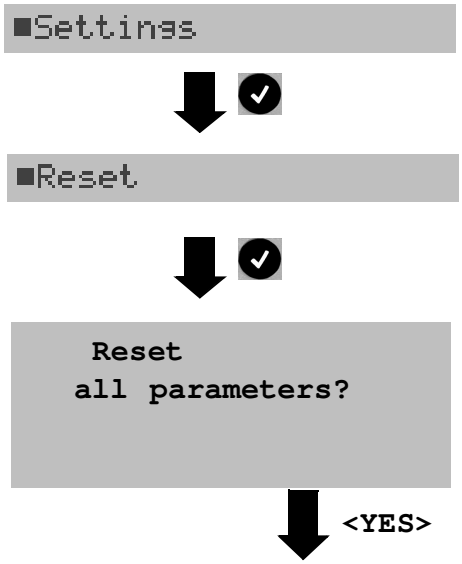
POTS dialing mode	DTMF	
POTS CLIP	FSK	
DTMF parameter	Level	- 3 dB
	Duration	80 ms
	DTMF interval	80 ms
FLASH time	80 ms	

X.31:

Packet number	10
TEI	Automatic
LCN	1
Packet size	128 Bytes
Agree Packet size	No
Window size	2 Packets
Agree Window size	No
Throughput	1200 bit/s
Agree Throughput	No
Enter user data	Format: ASCII
CUG	No
CUG Index	1
D bit	Local
Facilities	empty

Device:

Menu language	depending on country version
LCD contrast	Average value
PC Interface	USB
V.24 Baud rate	57,600 Baud
Handset	Internal
Alarm bell	Off
Power Down	Switch off automatically



ARGUS in the Main menu

Security query

Reset ARGUS to its default values

The ARGUS will return to the
to the next higher menu.

Alternative: Then press one after the other the keys * and 2. The ARGUS will first prompt you to confirm that you really want to do this (see above).

19 Accu Servicing

Replacing the accumulators

Switch the ARGUS off and disconnect the plug-in power supply. Afterwards replace the complete set of accumulators.

Accumulators - Usage

The accumulators used to run the ARGUS must have the same capacity and be charged to the same level. To ensure that this achieved, you must observe the following rules:

- The supplied accumulators must be charged and discharged in the ARGUS only.
- Do not use the supplied accumulators in other devices.
- Do not replace individual accumulators. Order a complete new set of accumulators from the manufacturer and replace the whole set.
- Discharge and recharge the accumulators fully at least once a month (even if the ARGUS is not used for a longer period of time).

Automatic recharging of the accumulators when the ARGUS is switched on

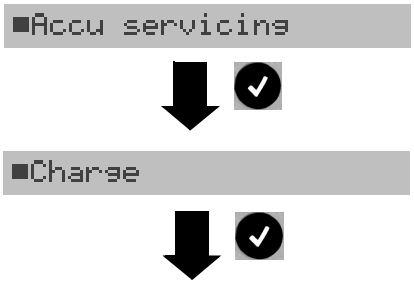
The ARGUS automatically recharges the accumulators (also shortened to “accus”), if the ARGUS is connected to the plug-in power supply and is switched off and the accumulator voltage is too low (only use the supplied accumulators). While charging, the ARGUS displays the message “Charge accu”.
If you press and hold the power switch, the ARGUS will switch off before the accumulators are recharged. Otherwise, the ARGUS will switch itself off automatically as soon as the accumulators are recharged.

Accu servicing

The ARGUS will display the current charge of the accumulators graphically, if no power supply is connected. In the LCD display, a battery symbol will begin to blink, when there is still approximately (depending on the mode of operation) 5 minutes reserve. During this period, it is possible that there may be audible interference and in rare cases even malfunctions. Connect the power supply.

When the power supply is connected, the accumulators in the ARGUS can be completely discharged or immediately (without being first discharged) recharged. The discharge procedure takes up to 7 hours. The ARGUS will automatically begin recharging the accumulators after a break of about 30 minutes (depending on the capacity of the accumulators, it can take up to 7 hours to recharge them).

ARGUS iin its Main menu



Start charging the accumulators
(the plug-in power supply must be connected)

The ARGUS will display the level of charge and the voltage while charging the accumulators.

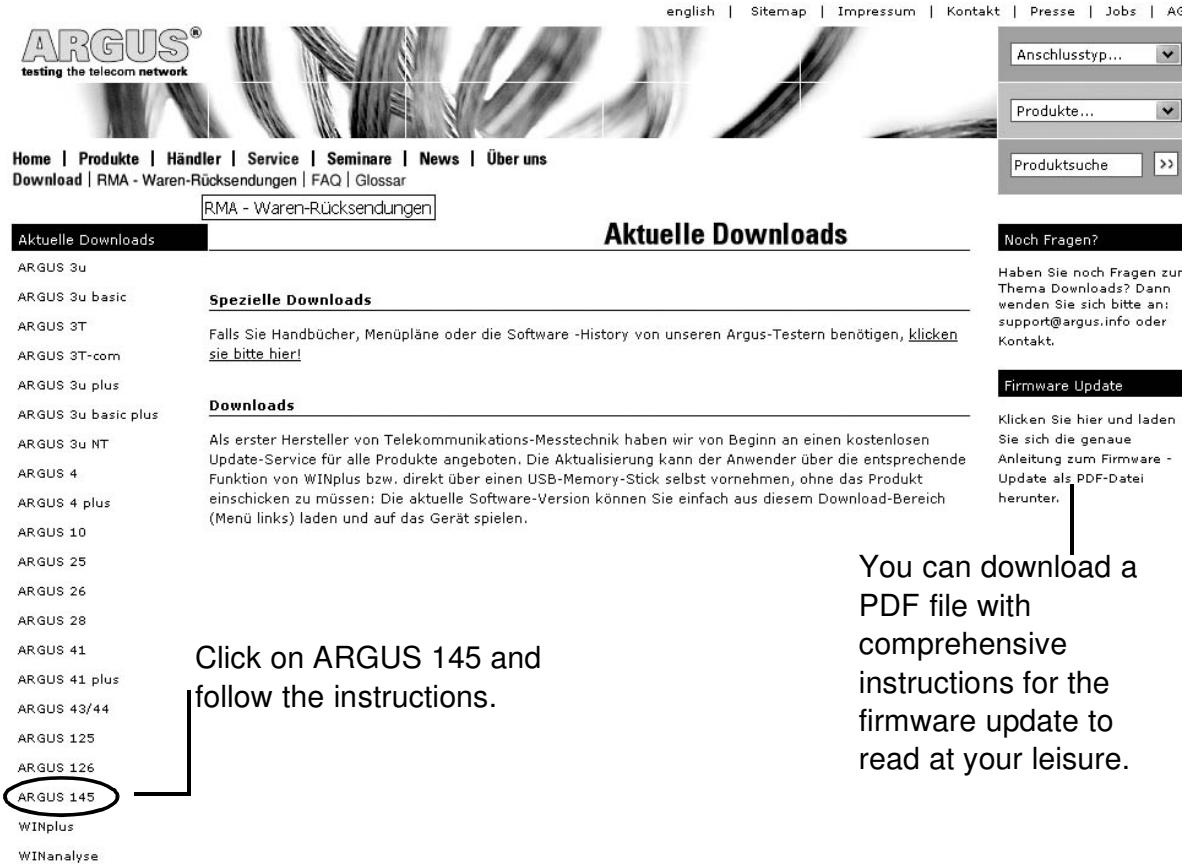
Discharging and recharging the accumulators

The accumulators will first be fully discharged and then - after a brief pause - automatically recharged.

20 Firmware Update

You can download a firmware update from www.argus.info free-of-charge and save it on your PC to later transfer to your ARGUS tester.
Open the Internet site www.argus.info :

Click on “Service”.



Click on ARGUS 145 and follow the instructions.

You can download a PDF file with comprehensive instructions for the firmware update to read at your leisure.

Important information regarding the ARGUS Firmware Update:

Do not, under any circumstances, start to update the firmware if the ARGUS is running on its batteries (accumulators).
First connect your ARGUS to the plug-in power supply, before you send the firmware update file from your PC to the ARGUS.

Do not disconnect the ARGUS from the PC while performing an update.

Do not switch the ARGUS off while an update is being performed.

You must also observe the messages on the ARGUS display – not just the instructions displayed by the Update Tool on the PC.

The update has not been successfully completed until the Update Tool displays a corresponding message on the PC and the ARGUS – after being automatically restarted by the Update Tool – shows the normal startup screen.

6 Appendix

A) ADSL Acronyms

ADSL	Asymmetric Digital Subscriber Line
ANT	ADSL Network Termination Unit
ANSI	American National Standards Institute
ATM	Asynchronous Transfer Mode (network-side transmission protocol)
ATU-C	ADSL Transceiver Unit - Central Office (network-side/DSLAM)
ATU-R	ADSL Transceiver Unit - Remote (ADSL modem)
BER	Bit Error Rate
CRC	Cyclic Redundancy Check (checksum)
CTRL-E	Control External
DMT	Discrete Multi-Tone
DRA	Dynamic Rate Adaptation
EOC	Embedded Operations Channel
ES	Errored Seconds
FEC	Forward Error Correction
HEC	Header Error Control
LOCD	Loss of Cell Delineation
LOF	Loss of Frame
LOP	Loss of Power
LOS	Loss of Signal
LT	Line Termination
ME	ADSL Management Entity
MIB	Management Interface Base
NIC	Network Interface Card (network adapter card)
NT	Network Termination (network-side)
OAM	Operations, Administration and Maintenance
OBC	On Board Controller
POTS	Plain Old Telephone Service (Analog)
PSD	Power Spectral Density
QOS	Quality of service
RA	Rate Adaptation
SAR	Segmentation and Reassembly Unit
SER	Severely Errored Seconds
SNR	Signal-to-Noise Ratio

B) Vendor identification numbers

0000 not allocated
0001 not allocated
0002 Westell, Inc.
0003 ECI Telecom
0004 Texas Instruments
0005 Intel
0006 Amati Communcations Corp.
0007 General Data Communications, Inc.
0008 Level One Communications
0009 Crystal Semiconductor
000A Lucent Technologies
000B Aware, Inc.
000C Brooktree
000D NEC
000E Samsung
000F Northern Telecom, Inc.
0010 PairGain Technologies
0011 Paradyne
0012 Adtran
0013 INC
0014 ADC Telecommunications
0015 Motorola
0016 IBM Corp.
0017 Newbridge Network Corp.
0018 DSC
0019 Teltrend
001A Exar Corp.
001B Siemens Telecom Networks
001C Analog Devices
001D Nokia
001E Ericsson Information Systems
001F Tellabs Operations, Inc.
0020 Orckit Communications, Inc.
0021 AWA
0022 Alcatel Network Systems, Inc.
0023 National Semiconductor Corp.
0024 Italtel

0025 SAT - Société Anonyme de Télécommunications
0026 Fujitsu Network Trans. Systems
0027 MITEL
0028 Conklin Corp.
0029 Diamond Lane
002A Cabletron Systems, Inc.
002B Davicom Semiconductor, Inc.
002C Metalink
002D Pulsecom
002E US Robotics
002F AG Communications Systems
0030 Rockwell
0031 Harris
0032 Hayes Microcomputer Products, Inc.
0033 Co-optic
0034 Netspeed, Inc.
0035 3-Com
0036 Copper Mountain, Inc
0037 Silicon Automation Systems, Ltd
0038 Ascom
0039 Globespan Semiconductor, Inc.
003A STMicroelectronics
003B Coppercom
003C Compaq Computer Corp.
003D Integrated Technology Express
003E Bay Networks, Inc.
003F Next Level Communications
0040 Multi-Tech Systems, Inc.
0041 AMD
0042 Sumitomo Electric
0043 Philips M&N Systems
0044 Efficient Networks, Inc.
0045 Interspeed
0046 Cisco Systems
0047 Tollgrade Communications, Inc.
0048 Cayman Systems
0049 FlowPoint Corp.
004A I.C.COM

004B Matsushita
004C Siemens Semiconductor
004D Digital Link
004E Digitel
004F Alcatel Microelectronics
0050 Centillium Corp.
0051 Applied Digital Access, Inc.
0052 Smart Link, Ltd.

C) CAUSE-Messages – DSS1 Protocol

Dec.	Cause	Description
01	Unallocated (unassigned) number	No access under this call number
02	No route to specified transit network	Transit network not reachable
03	No route to destination	Wrong route or routing error
06	Channel unacceptable	B-channel for the sending system not acceptable
07	Call awarded and being delivered in an established channel	Call awarded and connected in an already existing channel (e.g., X.25 SVC)
16	Normal call clearing	Normal disconnect
17	User busy	The number called is busy
18	No user responding	No terminal equipment answered (Timer NT303 / NT310 time-out)
19	No answer from user (user alerted)	Call time too long
21	Call rejected	Call rejected (active)
22	Number changed	Call number has been changed
26	Non-selected user clearing	Incoming call not awarded to this terminal
27	Destination out of order	Destination / access out of order
28	Invalid number format (address incomplete)	Wrong call number format or call number incomplete
29	Facility rejected	The facility is not offered
30	Response to STATUS ENQUIRY	Response to status enquiry
31	Normal, unspecified	Unspecified for "normal class" (Dummy)
34	No circuit / channel available	No circuit / B-channel available
38	Network out of order	Network not operational
41	Temporary failure	Network is temporarily not operational
42	Switching equipment congestion	Switching equipment is overloaded
43	Access information discarded	Access information could not be transferred
44	Requested circuit / channel not available	Requested circuit / B-channel is not available
47	Resources unavailable, unspecified	Unspecified for “resource unavailable class” (Dummy)
49	Quality of service unavailable	The requested quality of service is not available
50	Requested facility not subscribed	Requested service attribute is not subscribed
57	Bearer capability not authorized	The requested bearer capability is not enabled
58	Bearer capability not presently available	The requested bearer capability is not currently available
63	Service or option not available	Unspecified for "service unspecified or option not available class" (Dummy)
65	Bearer capability not implemented	Bearer capability is not supported
66	Channel type not implemented	Channel type is not supported
69	Requested facility not implemented	Requested facility is not supported

70	Only restricted digital information bearer capability is available	Only limited bearer capability is available
79	Service or option not implemented, service or unspecified, option not implemented class” (Dummy)	Unspecified
81	Invalid call reference value	Invalid call reference value
82	Identified Channel does not exist	Requested channel is invalid
83	A suspended call exists, but this call identity does not	The call identity entered is the wrong one for the parked call
84	Call identity in use	The call identity is already in use
85	No call suspended	No call has been parked
86	Call having the requested call identity has been cleared	The parked call has been cleared
88	Incompatible destination	Incompatible destination
91	Invalid transit network selection	Invalid format for the transit network identifier
95	Invalid message, unspecified	Unspecified for “Invalid message class” (Dummy)
96	Mandatory information element is missing	Mandatory information element is missing
97	Message type non-existent or not implemented	This type of message is in this phase not permitted, not defined or not supported
98	Message not compatible with call state or message type non-existent or not implemented	The content of the message is in this phase not permitted, not defined or not supported
99	Information element non-existent or not implemented	The content of the information element is in this phase not permitted, not defined or not supported
100	Invalid information element contents	Invalid content in information element
101	Message not compatible with call state	Message not valid in this phase
102	Recovery on timer expired	Error handling routine started due to time-out
111	Protocol error, unspecified	Unspecified for "protocol error class" (Dummy)
127	Interworking, unspecified	Unspecified for "interworking class" (Dummy)

D) CAUSE-Messages – 1TR6 Protocol

Dec.	Cause	Description
01	Invalid call reference value	Invalid call reference value
03	Bearer service not implemented	The service is not available in the central office or at another location in the network or the service has not been subscribed.
07	Call identity does not exist	Unknown call identity
08	Call identity in use	Call identity is already assigned to a “suspended“ connection.
10	No channel available	No further B-channel is free on the subscriber’s access.
16	Requested facility not implemented	The entered FAC-Code is unknown in this network.
17	Requested facility not subscribed	The requested facility is not available, because the initiating or the remote subscriber is not authorized.
32	Outgoing calls barred	Outgoing calls are not possible due to the barring
33	User access busy	If the sum of the number of free B-channels, the number of occupied B-channels, the number of awarded B-channels and the number of calls without B-channel assignment equals four, new incoming calls will be cleared from the network. The calling subscriber receives a DISC with the cause “user access busy“ (= first busy) and a busy signal.
34	Negative CUG comparison	A connection is not possible due to a negative CUG (GBG) comparison.
35	Non-existent CUG	This CUG (GBG) does not exist
37	Communication link as SPV not permitted	A connection is not possible, since for example, the RFNR-test was negative
53	Destination not obtainable	A connection cannot be made due to a wrong destination, service or supplementary services.
56	Number changed	Subscriber-B’s call number has changed.
57	Out of order	The remote terminal is not ready.
58	No user responding	No terminal has answered the incoming SETUP or the subscriber call was disconnected, it is assumed that someone is present (Time-out for ringing T3AA).
59	User busy	Subscriber-B is busy
61	Incoming calls barred	Subscriber-B has blocked incoming calls or the requested service is not supported by Subscriber-B.
62	Call rejected	**To Subscriber-A:** The requested connection is actively rejected by Subscriber-B (by sending a DISC as answer to the incoming SETUP). Another terminal is in the setup phase with the incoming call: The call has already been accepted by another terminal on the bus.
89	Network congestion	Network congested, e.g., switching equipment congestion, no conference set free,
90	Remote user initiated	Rejected or disconnected by remote end (subscriber or exchange).
112	Local procedure error	**Sent in a REL** Caused by a local error (e.g. invalid message or parameter, time-out, ...). **Sent in a SUSP REJ** Due to another already active supplementary service, the connection may not be “suspended”. **Sent in a RES REJ** There is no “suspended” connection. **Sent in a FAC REJ** No further supplementary service request is possible, since there is still one being processed or the supplementary service requested is not available in the current state of the connection.
113	Remote procedure error	Caused by an error at the remote end.

114	Remote user suspended	Connection at the remote end is in the “hold“ or “suspend“ state.
115	Remote user resumed	Connection at the remote end is no longer in the “hold” or “suspend” or “conference” state.
127	User Info discarded locally	The message USER INFO is rejected locally. The cause is given in the message CON CON. Length entry (=0) Normal disconnect (e.g., in REL as answer to a DISC from subscriber or a change of service in a DISC): Command to the terminal to release the B-channel.

E) ARGUS Error Messages

Error Number	Cause	Description
0	Network	The network is not in a state defined for DSS1 or 1TR6. It may be that this state is normal for a PBX.
1 to 127	Network	DSS1 or 1TR6 causes
150	ARGUS	An error occurred during the supplementary service test. Frequent cause: no response from network
152	ARGUS	The CF-Test was started with the wrong own number.
153	ARGUS	no HOLD is available, but HOLD is required to test the supplementary service (ECT, 3pty)
154	ARGUS	CLIR or COLR could not be tested, since CLIP or COLP is not available
161	ARGUS	The party called did not answer within the prescribed time (approx.10 sec)
162	ARGUS	A call was setup to a remote subscriber, instead of being setup – as was expected – to your own number.
163	ARGUS	The Auto-Test could not setup a connection and therefore the AOC/D supplementary service could not be tested.
170	ARGUS	During the Suppl.services test, a call came in without a B-channel (call waiting), which is why it was not possible to accept the call and perform the Suppl.services test.
199	ARGUS	A call number was entered.
201	ARGUS	Network did not confirm acceptance of the call (CONN sent, no CONN_ACK received from network)
204	ARGUS	- Layer 2 connection was cleared-down - No response to SETUP (call setup) - Layer 2 connection could not be setup
205	ARGUS	Reestablish the Layer 2 connection
210	ARGUS	No response to the clear-down (REL sent, no REL_CMP/REL_ACK received from network)
220	ARGUS	Remote end signaled that it is in State 0.
245	ARGUS	Keypad sent via ESC, but no response was received from network
250	ARGUS	FACility was sent, but no response was received from network

X.31 Test – Error messages

X.31 Causes

0 to 255	Network	See ISO 8208: 1987(E) Table 5- Coding of the clearing cause field in clear indication packets, page 35
257	ARGUS	no response from network (for a CALL-REQUEST or CLEAR-REQUEST)
258	ARGUS	Unexpected or wrong answer from network (no CALL-CONNECTED or CLEAR-INDICATION as response to a CALL-REQUEST)
259	ARGUS	The network has indicated in a DIAGNOSTIC message that the logical channel is invalid. Origin: No (=1) or a wrong LCN was set.
260	ARGUS	The Layer 2 connection was interrupted, e.g. by pulling the BRI plug.
512	ARGUS	It was not possible to determine an internal or external cause. Origin: Layer 2 could not be setup or remote end does not support X.31
65535	ARGUS	X.31 Layer 3 test was not performed. The error can only occur in a test log.

X.31 Diagnostic (only for a cause less than 256)

0 to 255	Network	See ISO 8208: 1987(E) Figure 14A page 121 Figure 14B page 123 et seq. and/or CCITT Recommendation X.25, Annex E

F) Error message: ADSL connection

ARGUS Error Message	Meaning of the Error Message
Incomp.linecon.	Incompatible line conditions: One or more of the following conditions could not be met on the line: ATM data rate, signal-to-noise ratio or transmit power.
No lock possib.	No lock possible: A connection to ATU-C is not possible.
Protocol error	An error occurred during the activation phase.
Message error	During the activation, a message arrived from the ATU-C side that could not be understood. (possibly the wrong format or a CRC error)
Spuri. ATU det.	Spurious ATU detected: This error will be displayed when: 1. An activation signal has been detected on the line, but it is not from the ATU-C. (Fault on the line) 2. An error occurred before the ARGUS received a complete message with a correct CRC sum..
Forced silence	The idle (silent) phase (1 minute) initiated by the ATU-C side was not kept. During this period, an activation may not be initiated.
Unsel.op.mode	Unselectable operation mode: Operation mode not supported.
Cancelled	The test was interrupted or timed out.

G) Error message: PPP connection

Display on ARGUS	Description
No error	No PPPD error occurred.
Fatal error	Fatal PPPD error occurred. Possible cause: system or memory error
Option erro	The PPPD options are faulty: wrong parameters for PPP setup
PPP: not root	The PPPD must be called by the Linux "root" user.
No PPPD support	Operating system does not support PPP connections.
Rec.sig.error	The PPP setup was canceled by a SIGINT, SIGTERM or SIGHUP signal, e.g. canceled by the user or because the waiting time has elapsed.
PPP: Port open error	PPPD communications error Serial port could not be locked.
PPP: Port open error	PPPD communications error. Serial port could not be opened.
Con.script err.	Error when calling the connection script.
PPP: Command erro	Not possible to start with the PPPD's pty option
Negotiation err	Cannot negotiate the network protocol for PPPD, so the remote site is not reachable.
Idle release	Connection was terminated, since there was no activity.
Time out rel	Connection was terminated, since the maximum connection time elapsed.
PPP Callback	Callback was initiated, an incoming call is expected soon.
PPP: Echo req. error	Remote site did not answer echo requests so the connection has been terminated. (PPP connections are tested at regular intervals by sending echo requests to the remote site.)
Hanging up rel	Disconnected by remote site.
Loopback erro	The setup of the PPP connection was cancelled, since a loopback was detected.
Init script err.	Error caused by the PPPD's init script.
Authent. Error	Authentication error: Wrong user name or password - rejected by remote site.
PADO timeout	No PADO packet received.
PADS timeout	No PADS packet received.

H) Error message: Download test

Display on ARGUS	Description
Download OK	No error occurred.
Buffer overflow	Buffer overflow when using base64 encoding.
Process error	Error when setting up the Exit handler.
Buffer too small	Buffer too smallBuffer too small for the extra_header.
Continue error	Download cannot be continued without specifying a file.
File fstat error	File system error when calling fstat().
Http redir.error	Fault: Too many HTTP redirects.
Http no response	No answer from HTTP server.
Http serv.error	HTTP server has returned an error. (for details see the table below "HTTP Error Messages")
Http encod.error	Due to an encoding problem, data transfer with HTTP is not possible.
Ftp open error	Error when opening the FTP connection.
Ftp login error	FTP login error: Wrong user name or password or anonymous login not supported.
Ftp passiv err.	FTP server does not support passive transmission mode.
Ftp rec. error	FTP receive error.
File write error	File system error when calling fwrite().
Network error	Network error
Ftp error	General FTP error.
URL error	Fault: No HTTP or FTP URL specified.
Socket error 1	Error when opening a socket.
Socket error 2	Error when connecting a socket. The server's HTTP service is not available.
FDopen error	Error when opening a file.
Http Head.error	Error in the header of the requested HTTP file.
Ftp no file	FTP download error: No such file or directory found.
Unknown address	Unknown host address. Possible cause: Error in the address entered, DNS resolution not working or network not accessable.
Unknown dl error	Unknown download error

HTTP Error Messages

Display on ARGUS: Code No.	Meaning
100	Client should continue its request.
101	The protocol is being changed at the Client's request.
200	The Client's request has succeeded.
201	The Client's request that a new document be created was successful.
202	The Client's request has been accepted for processing.
203	The Client's request will be answered with information from a source other than the server.
204	The Client's request was successful. The server sends [no content] only the HTTP header.
205	The Client's request was successful. The server [resets content] sends a new HTTP body.
206	The Client's request was successful. The server sends only part of the requested document [partial content].
300	The request was not precise enough so multiple documents have been returned.
303	The requested resource has been found at a different URI and should be retrieved from there.
304	The requested document has not been changed in the interim.
305	The requested document must be retrieved from a proxy instead of from
307	The requested resource has been temporarily relocated to a different URI [temporary redirect].
400	Syntax error in the Client's request [Client error].
401	The request requires user authentication.
402	Payment is required to process this request.
403	The Client's request has been refused. (e.g. because authentication failed).
404	The requested document was not found (e.g. because of an error in the URL entered or while the document is no longer available).
405	The method specified by the Client in its request is not allowed by the server.
406	The requested document in a format that is not supported by the Client.
407	The request requires that the Client authenticate itself with a proxy.
408	The Client did not place its request within the time allowed by the server [Request Timeout].
409	Due to a conflict (e.g.another request) the Client's request cannot be completed by the server.

410	The requested URL is [gone] no longer available on the server.
411	The Client sent data to the server without a defined Content Length.
412	The preconditions in the Client's request could not be satisfied by the server.
413	The Client's request has been refused by the server because the request entity is too large.
414	The Client sent a URL to the server that is too large (e.g. because of the form values contained).
415	The Client's data is not supported by the server.
416	The range (in a document) requested by the Client [is not satisfiable] does not exist.
417	The server could not (or did not wish to) satisfy the Client's expectation given in the Expect request header field.
424	For aesthetic reasons, the requested document will not be sent by the server.
500	Due to an unexpected condition, the server cannot fulfill the Client's request (e.g. faulty configuration, missing or wrong CGI program).
501	The server does not support the function required to fulfill the Client's request.
502	The server received an invalid response from an upstream server or proxy which it accessed in attempting to fulfill the request.
503	The server is currently unable to handle the request due to a temporary overloading of the server.
504	The Client's request (of a gateway or proxy) did not receive a response within the specified time.
505	The server does not support the HTTP protocol version that was used in the Client's request.

I) General Error Messages

Display on ARGUS	Description
Mode not supp.	Mode is not supported.
Prot. not supp.	The protocol (IP, PPPoE, etc.) is not supported in the selected mode.
Test not supp.	The test (Ping, Traceroute, etc.) is not supported for the selected mode and protocol.
Unknown error	Unknown error occurred.
No PPP connec.	No PPP connection can be setup. (for details see Page 38)
Test aborted	Test aborted by user.
Pingstart error	Error when starting the Ping test.
Fault: Unexp. IP down	Unexpected termination of the PPP connection. (for details see Page 38)
Unexp. PING end	Unexpected termination of the Ping test.
Interface error	Error while starting/terminating the network interface. (for details see the error codes of the interface script)
Fault: TR Start	Error when starting the Traceroute test.
Fault: TR Packet	The test timed out since the traceroute answer packet did not arrive within the specified time.
DHCP timeout LAN	DHCP Client timeout (LAN)
DHCP NAK err LAN	The DHCP server refused the DHCP client (LAN)
Download timeout	Error when starting the Download test.
No DL answer	Error while performing the Download test (for details see Page 39).
MASQ error	Error while starting/terminating the routing rules. (for details see the error codes of the routing rules)
TR unreachable	The destination host cannot be reached with UDP packets from traceroute. Possible Cause: Router or firewall is discarding UDP packets
DHCP timeout WAN	DHCP client timeout (WAN)

J) ARGUS Messages - Script Errors

Display on ARGUS Error Code	Description
0	No error occurred.
33	Wrong parameter. Possible parameters: PRE_UP, UP or DOWN
44	Mode not supported for selected parameter.
55	Protocol not supported for selected parameter and mode.
66	Selected modem replacement mode is not supported. Possible modes: BRIDGE or ROUTER

K) ARGUS Messages - Routing Rules

Display on ARGUS Error Code	Description
0	No error occurred.
77	Wrong parameter. Possible parameters: START and STOP
88	Packet filter mode is not supported. Possible modes: STRICT and ALL
99	Error in the selection of dynamic or static. Possible selections: DYNAMIC or STATIC

L) Software Licenses

The firmware of the ARGUS testers includes code from Open Source packages, which have been published under various licenses (GPL, LGPL, MIT, BSD, etc.).
Additional information can be found on the CD-ROM included in the package (see Software_License.htm) or you can view it at http://www.argus.info/web/download/Software_License.htm.
In the event that you are interested in the sources licensed under GPL or LGPL, please contact support@argus.info. A machine-readable copy of the source code can be obtained from intec Gesellschaft für Informationstechnik mbH for a minimal fee - to cover the cost of physically copying the code. This offer is valid for 3 years.

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