

ARGUS 26

Manual

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1 Introduction

The ARGUS 26 premium ISDN combi-tester supports all of the functions needed when installing or maintaining BRI, 2Mbit/E1, X.21, PRI and U interface accesses or POTS.

In particular, service technicians, who increasingly work on larger, networked telephone systems and switching systems, will quickly find the ARGUS 26 an indispensable tool. With its rechargeable batteries and internal charger, the ARGUS is exceptionally well suited for use in field service. The intuitive menu operation combines convenient cursor keys and softkeys with a four-line backlit display.-

Besides TE/NT simulation on BRI and PRI accesses, the ARGUS 26 also supports TE simulation on U interfaces (optional) and POTS as well as convenient BRI and PRI D-channel monitoring. The 16 megabytes of internal Flash memory enables the tester to record and save the monitoring data without requiring a connection to computer.-

The Flash-ROM technology permits you to upgrade your ARGUS at any time by download software updates from a PC (free software updates are available at www.argus.info).

If you use the ARGUS on a BRI or PRI interface in an ISDN system whose specifications deviate from the (DIN ETS 300 102) standard (e.g. 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.

For the optional test of X.21 permanent circuits, you can connect the ARGUS to the X.21 network via an X.21 Adapter.-

As an option, a V5.x monitor is available for the ARGUS 26: This monitor can be used to record the V5.1 or V5.2 protocol, which can then be decoded in detail with the WINanalyse software.

The ARGUS Functions - Overview:

Protocol Recognition and B-Channel Test for ISDN Accesses

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

Telephone connections

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

Service Tests

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

Additionally, 3 user-specific services can be saved in the ARGUS and tested on the access under test.

Bit error tests (BERT)

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.

The integrated MegaBERT extends the bit error test to a bandwidth of a full 2 Mbit/s. Any distribution of time slots (n x 64 kBit/s) may be used.

Supplementary Services

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

Leased Line Tests – tests permanent circuits with BERT and speech

NT simulation of a BRI or a PRI access

D-channel monitoring on a Basic Rate Interface and on a Primary 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.

POTS (analog) Functionality

Does the analog access support call number transfer?

The ARGUS will display the charges, if the access supports

this feature.

Monitoring an analog line (passive listening-in)

CF Interrogation

The ARGUS will check, whether a call diversion has been setup on the access under test. The ARGUS can setup or clear down call diversions in the exchange.

MSN interrogation (only on a BRI access)

On a P-MP access using the DSS1 protocol, the ARGUS will determine the MSNs of the access under test.

X.21 test (optional)

The ARGUS will perform a bit error test on the X.21 access in accordance with the ITU guidelines G.821 and G.826.

The Access Acceptance Report

When the ARGUS is linked to a PC via the serial interface, it is, as an example, possible - with the aid of WINplus - to create and print a comprehensive test report on the PC.

Testing Features with the Keypad

Supports manual tests 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.

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2 Safety Instructions

The ARGUS may only be used with the included accessories. Usage of other accessories may lead to erroneous measurements and may even cause damage to 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 100V!
- 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 15 Replacing the accumulators), disconnect all the test leads and switch the ARGUS off.
Make certain that the polarity is correct when connecting the batteries!

3 Technical data

Dimensions / Weight Height 229 mm Width 72 mm Depth 35 mm Weight 350 g (without batteries and protective case) Keypad 21 Keys	Inputs / Outputs 1 RJ-45 for BRI, PRI, U-interface (optional) or POTS 1 jack for an external power supply 1 RJ45 for connecting to an X.21 network or a PC
LCD display LCD display with switchable background lighting 4 lines with 16 characters	Temperature Ranges Ambient-temperature: 0 °C to +50 °C Operating temperature: -5 °C to +55 °C
Memory EEPROM Non-volatile memory: 2048 Bytes Flash program memory: 1 Mbyte S-RAM: 256 Kbytes +128 Kbytes Data memory: 16 Mbyte (Flash)	Power Supply 3 NiMH accumulators or 9 V, plug-in power supply or BRI feed

4 Operation



Power-Key:

- To switch the ARGUS ON/OFF
- To start up again after a power down
- Switches on the display backlighting (to save power, in accu / battery mode the backlighting is switched OFF automatically after 5sec.)
- To switch the ARGUS OFF (must be pressed somewhat longer if it is switched off when the power supply is connected the accumulators will be recharged (see Chapter 4.1 Charging the accumulators)



Confirmation key:

- Select menu or continue



Menu control:



- Open the menu list
- Scroll through lists
- Select a menu
- Select a function in an open menu



Telephony (pickup and hang up)

- Simplified overlap signalling: Press the telephone key twice.



Layer 1 Measurement:

start the Layer 1 measurement (Level/Voltage)



Number Pad:

- Entry of the digits 0....9 and of the special characters *, # (e.g. the call number or a numerical entry in a function)-
- Direct function call
(see page 39 Using the numeric keys to start a function:)



Softkeys:

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

Connectors on the end:



9 V-

Connection for the external power supply. When the power supply is plugged into this connector, the rechargeable batteries will be disconnected.-

Line

Pin Assignment

3/4/5/6 **BRI**

7/8 **POTS**

PIN assignment for a **PRI** see Chap.

Connection for BRI lines

(TE simulation or monitoring)

Connection for a BRI terminal (NT simulation)

Connection for a PRI terminal (NT simulation)

Connection for a POTS network

Connection for a U-interface Adapter (optional)

Connection for a PRI network

(TE simulation or monitoring)



Connector for a headset

X.21/PC

Connection for the X.21 Adapter

Connection to a PC via a serial cable

Connection of a PC via the included USB Adapter

Replacing the accumulators

The battery compartment for the three 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.

Use Golden-Power 1800 mAh NiMH accumulators. The state of the accumulator charge will be displayed graphically.

A battery symbol begins to blink in the LCD display, when there is still approximately 15 minutes reserve. During this period, it is possible that there may be audible interference and in rare cases even malfunctions.

Power Down

In accu/battery operation, if the ARGUS is idle for 15

minutes, it will automatically switch to the power-down mode (power-down). From this mode, the system can only be reactivated by pressing the Power-Key.

In the power-down mode, the accumulators will last several years. Therefore, this mode serves as effective protection against discharging the rechargeable batteries-.

Naturally, when the loopback function is active on the ARGUS or it is in Trace mode, the ARGUS will **not** switch to power-down mode.

As an alternative, it is possible to operate the ARGUS using the included power supply.- When the power supply is connected, the accumulators are automatically disconnected.

The ARGUS can also be powered from the BRI line. In this case, it does not need accumulators or the plug-in power supply.

Whenever the ARGUS is powered from the plug-in power supply or the BRI line, the power-down mode is reasonably enough not active.



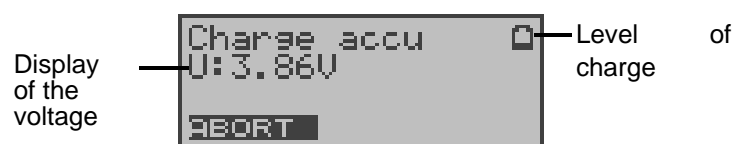
Regardless of the type of supply used, you should always operate the ARGUS with accumulators installed. This will ensure the uninterrupted operation of the real-time clock.

4.1 Charging the accumulators

The accumulators will begin charging when:

- the ARGUS is switched off
- the rechargeable batteries are inserted
- the plug-in power supply is plugged in
- the accumulator voltage is less than 3.90 volts

The following is shown while the device is charging: "Charge accu" with the current accumulator voltage displayed below. The Line Power LED will flash. To return to the normal operational state, press on "ABORT".



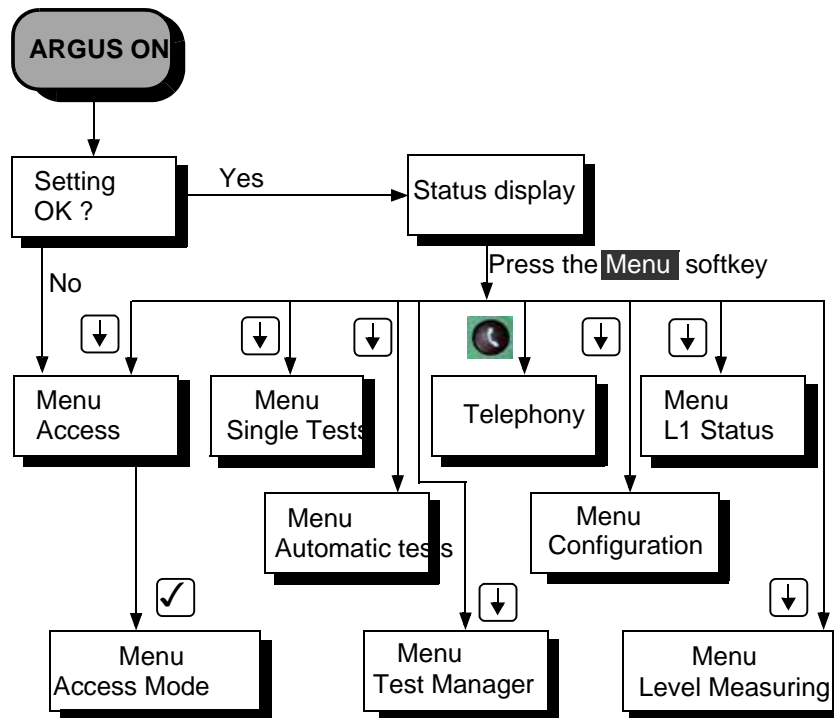
If you press and hold the ON key depressed, the ARGUS can be switched off entirely.

See "Chapter 16.5.10 Accu servicing " for additional information about charging and servicing the accumulators.



- You should only use the included accumulators (Golden Power; NiMH; 1800 mAh rechargeable batteries).
- The accumulator voltage must be less than 3.90 V before the system will allow them to be recharged.- This is intended to protect the accumulators from being recharged too often.

5 Menu Hierarchy



Access Menu

Selection of the physical access:

BRI access

PRI access

POTS (analog) interface

Automatic

automatic detection of the interface used

X.21 test (optional)

Access Mode Menu

The **Access Mode** menu opens automatically once the physical access is selected (in the **Access menu**).

Operation on a BRI (S-Bus) access:

TE Automatic (TE simulation automatically)

TE P-P (TE simulation point-to-point)

TE P-MP (TE simulation point-to-multipoint)

NT P-P (NT simulation point-to-point)

NT P-MP (TE simulation point-to-multipoint)

BRI Monitor

The ARGUS records all D-channel signals on the BRI access and passes them on via the serial interface-. Layer 1 will not be affected by the monitor function.

BRI Recorder

The ARGUS records all of the D-channel signals on the BRI access and saves them in the internal Flash memory. Layer 1 will not be affected by the Recording function-.

Permanent circuit

for telephony, BERT, loopbox

Operation on a PRI access:

TE P-P (TE simulation point-to-point)

NT P-P (NT simulation point-to-point)

PRI Monitor

The ARGUS captures all of the D-channel signals on the PRI access and sends them to the connected PC via the serial interface. The bus and Layer 1 will not be affected by the monitoring.-

PRI Recorder

The ARGUS records all of the D-channel signals of the PRI access and saves them in the internal Flash memory. The bus and Layer 1 will not be affected by the recording.

Permanent circuit

for telephony, BERT, loopbox

Operation on a U-interface access: (optional)

When using a U-interface Adapter, you must select BRI as the physical access in the Access menu.

TE Automatic (TE simulation automatically)

TE P-P (TE simulation point-to-point)

TE P-MP (TE simulation point-to-multipoint)

Permanent circuit

for telephony, BERT, loopbox

Operation on a POTS access:

POTS terminal

The ARGUS behaves like a POTS (analog) terminal.

POTS monitor

High impedance tap without influencing the interface

Operation on an X.21 access (optional):

The Argues behaves like an X.21 terminal.
(Layer 1 only)

The Single Tests

Supplementary Services

Supports, for 1TR6 (only on a BRI or U-interface access (optional)), automatic query of the available supplementary services as well as, for DSS1, manual selection of - and then automatically run -- tests of the most important supplementary services.

Service Tests

Tests all important services by setting up a self call-. The prerequisite for a complete execution of this test is that two B-channels are available .

Bit Error Test

Performs a simple bit error test, which can be run as either an extended call to itself, to a loopbox or "end-to-

end“.

During the test, the ARGUS shows the bit errors and the remaining measurement time in seconds. The test-results of the bit error rate test will be displayed in exponential form-. Additionally, the results will be evaluated in accordance with ITU-T G.821 and G.826.

On a permanent circuit on a PRI access, a MegaBERT can be run with any distribution of time slots (n x 64 kBit/s).

The ARGUS will perform a bit error test on the X.21 access in accordance with the ITU guidelines G.821 and G.826.

X.31 Test

The ARGUS will perform your choice of various tests on both the D-channel and B-channel.

The test results will be shown in the display.

CF Interrogation

The ARGUS checks whether call diversions are active in the exchange for the access under test (either CFU, CFNR or CFB).- The ARGUS will display the existing call-diversions (up to 10). Any call diversion setup in the exchange can be cleared with the ARGUS.

CF Activation

With the ARGUS, you can setup call diversions in the exchange.

MSN interrogation (only on a BRI access)

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.-

MSN interrogation is not supported by every exchange.

Traffic generator (only on a PRI access)

The ARGUS will determine which B-channels are available on a -PRI access by automatically setting up connections.

Time measuring

The ARGUS measures the setup time, the data's propagation time and the transit time differential of the data in two B-channels (interchannel delay).

Connection

The call will be set up to the dialed number and the ARGUS will display the number called, the charges, other information (e.g. SUB, T.o.n etc.) and the B-channel used.

In the case of the service Telephony, the speech channel will be switched onto either the integrated handset or an optional headset.

The Test Manager

It is possible to simultaneously and independently run multiple tests (or connections).-

The tests running in parallel are administered by the Test Manager.-

Automatic Tests

Start

The ARGUS automatically executes the test sequence and saves the results in the internal Flash memory.

View

The ARGUS displays the saved test results.

Test data to PC

The test data saved on the ARGUS will be sent to the connected PC (when WINanalyse is running on the PC). WINanalyse presents the measured data in a clear test log.-

Printing

With a special (optional) cable, it is also possible to print a simplified test report on a Centronics printer.-

Delete

The ARGUS will delete the results of the tests stored in the internal Flash memory.

The Level Measuring

Level measuring on a BRI access

Measures the signal level of the remote end on a BRI access

Feed voltage on a U interface access (optional)

Level measuring on a POTS access

The L1 Status Menu

The ARGUS displays the current status of the Layer 1 on a BRI access and the Layer 1 parameter on a PRI access.

Configuration Menu**Trace mode**

The ARGUS passes the recorded D-channel data to the connected PC or saves it in the internal FLASH memory.--

ISDN

Settings in ISDN:

- L1 permanent?

Determines, whether Layer 1 should be permanently active for a BRI connection in NT mode.

- Protocol

Besides offering automatic recognition of the D-channel protocol, the ARGUS also allows you to manually switch between the protocols 1TR6, DSS1, CorNet-N, CorNet-T, QSIG and VN4.

- Alerting mode

Setting to display numbers dialed after an incoming call is setup on a BRI point-to-point access.

- Clock mode

Here, you can select where - regardless of whether in TE or NT operating mode - the clock for the ISDN access is generated.

- BRI termination

Options for the terminating resistor for the BRI access regardless of whether in TE or NT operating mode.

- PRI termination

Options for the terminating resistor on the PRI access.

- Sensitivity

Use to set the sensitivity of a PRI access

- Setting the Sa5 bits

Set the Sa5 bits sent on a PRI access

- **Setting the Sa6 bits**

Set the Sa6 bits sent on a PRI access

- **Setting the A-Bit**

Set the A-Bit on a PRI access

- **CRC4 Mode**

CRC4 monitoring can be switched on or off manually.-

- **Call parameter**

The following parameters can be set for an ISDN call generated on either the network-side (ARGUS in NT mode) or the user-side (ARGUS in TE mode):-

- **Type of Number (TON)** for the CGN or CDN element of a SETUP signal
- **Numbering plan (NP)** for the CGN or CDN element of a SETUP signal

- **Services**

Up to three user-specific services (BCAP, HLC or LLC) can be entered and stored in the ARGUS for further tests.

- **Call accepted**

Sets, which calls the ARGUS should signal on a P-MP access in TE mode: only calls whose destination address matches the MSN or DDI of the access under test receive or all incoming calls-

- **Voice coding**

Sets the coding of the voice data in the B-channel. A-Law or μ -Law

- **DTMF / Keypad**

During a ISDN connection, the keypad can be used to send not only DTMF tones but also keypad elements.-

BERT

Options for the BERT

- **BERT time**

Enter the duration of the BERT in minutes.

- **Error level**

Enter the error level for the automatic Good/Bad

evaluation of the bit error test

- HRX value

Set the HRX value (hypothetical reference connection see ITU-T G.821)-

- Bit pattern

Select the bit pattern used in the bit error test

POTS

Settings for a POTS (analog) access

- POTS dial

Sets the POTS dialing mode:
DTMF or pulse dialing

- POTS CLIP

Set the transfer procedure used to pass the call number:- FSK or DTMF

- AOC pulse

Specifies the country-specific type of AOC pulse for a POTS access:
12 kHz or 16 kHz

- DTMF parameter

Settings for the parameters Level, Duration and Interval of the DTMF signals generated during POTS (analog) operation.-

- FLASH time

Set the duration of the FLASH (time): 40 ms to 1 second

ARGUS config.

Settings for the ARGUS

- **Menu language**

Select the language to be used in the menus

- **LCD contrast**

The contrast setting for the display

- **Date entry**

Enter the date and time. The time is kept by a built-in real time clock.

- **Printer**

Setup the printer used for the print function-

- **Baud rate**

Sets the maximum baud rate (used in linking the ARGUS to a PC)

- **Handset**

Selection of the speech channel:
internal handset or external headset

- **Alarm**

Switches the ARGUS's alarm on or off (e.g. in the event of an error)

- **Feed**

Select the supply for the ARGUS.

As an example, you can switch off the option for feed from the BRI network.

- **Battery type**

Select the type of power supply: Accumulators or batteries

- **Accu servicing**

Charge or discharge the accumulators in the ARGUS

- **Software option**

Enabling software options

Enter numbers

Enter a maximum of ten (24 place) call numbers in the speed dialing memory.

The first number in the speed-dialing memory must be the own call number of the access under test. This call number will be need later for the service check as well as for use in all outgoing calls as your own call number (CGPN or OAD).

The ARGUS expects the X.25 access number for the X.31 test to be stored in the X.31 test number memory location.

Reset

Resets all of the settings to the original factory (default) settings-

The speed-dialing memory and the results of all of the automatic tests will also be deleted from the internal memory of the ARGUS.

Telephony

Simplified telephoning using the telephone key. Pressing the telephone key twice seizes the exchange line. Once the call number is entered the call will be setup.-

6 Automatic Access Test

Using the included cable, connect the ARGUS to the access to be tested.

Power-Key: Switch the ARGUS on.

The starting window will open displaying the access and mode parameters selected last.

Displayed in the first line:

The software version number: 2.6 (in the example)

Country code: U (=Great Britain), E (=Spain),

F=(France). . .

Level of batteries' charge

Displayed in the third line:

Type of access: BRI, U-interface (optional) , PRI , POTS
or X.21

Operation mode: NT = NT Simulation mode
TE = TE Simulation
Perman.swit.
Monitor
Terminal (only on a POTS (analog)
access)

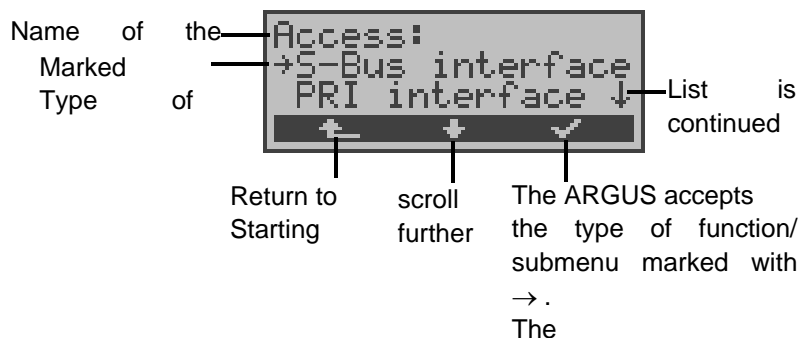
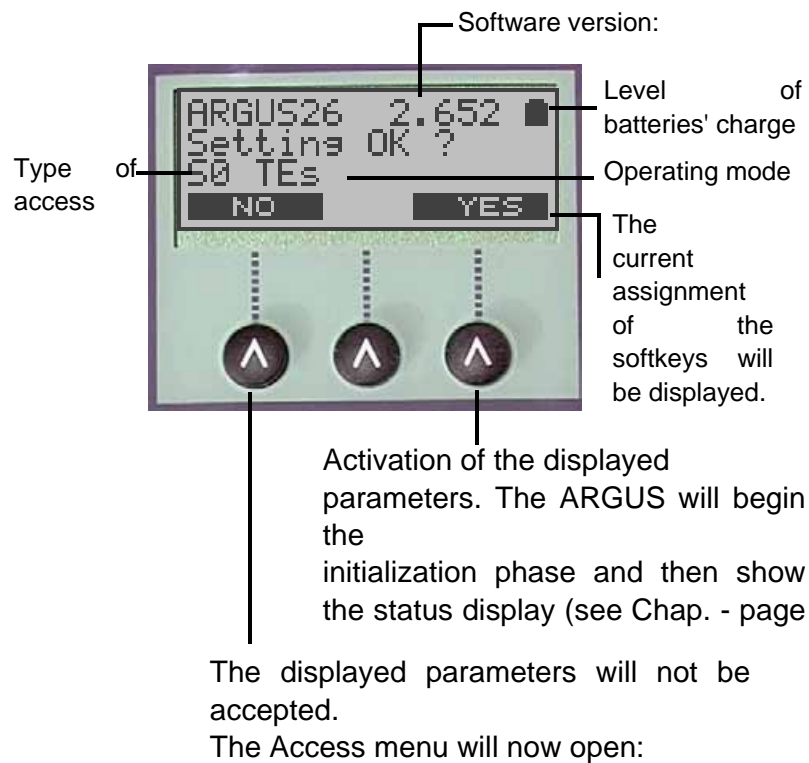
Displayed in the fourth line:

The fourth line displays the current assignment of the three softkeys below.

The ARGUS is in largest part operated with the two↓ ↑ -
Keys, the confirmation key ✓ and the three softkeys.

On the following pages, only the softkey's meaning in the
respective context is shown - enclosed- in brackets < > ,
e.g. < NO >.

The < ✓ > softkey serves the same function as the ✓
confirmation key and the < ↓ > softkey performs the same
function as the corresponding arrow key on the ARGUS
keypad.

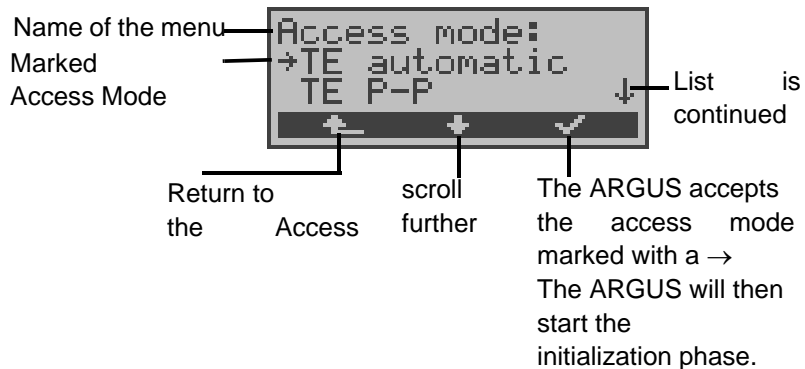


If **Automatic** is selected in this menu, the ARGUS will automatically determine the physical access (BRI, U interface (optional) or POTS). In this case, the ARGUS sets the BRI access to TE-mode (see Chap. 7.2 page 42).



In this case, the Access Mode menu will not open and consequently functions such as BRI Monitor, BRI Recorder and Permanent Circuit will not be available.

If BRI, POTS or PRI is selected, the **Access Mode** menu will open.(see Chap. 8 page 44).



Initialization phase:

- Operating the ARGUS on a BRI or U-interface access (optional) or operation as a BRI NT simulator:

Once the access and access mode parameters have been selected or accepted, Layer 1 will be setup. While Layer 1 is being setup, the L1 LED above the display will blink. If an error occurs, the ARGUS will display the message "No Net". As soon as Layer 1 is successfully setup, LED L1 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.

The ARGUS indicates both the Layer 2 setup phase and the successfully setup Layer 2 by lighting the L2 LED.

If no error occurs, the ARGUS will display the successfully found access and access mode in the third line. Additionally, a qualitative assessment of the level will be displayed.

The ARGUS will, regardless of whether it is in TE or NT mode, automatically determine the protocol -(see "Select the D-channel protocol" on page 173) and attempt to setup Layer 3 (the L3 LED will light). At the same time, the B-channel test will be started and the results will be displayed.

The ARGUS will then idle in the status display.

Status display example:



```
ARGUS26 BRI
B12 Level: OK
TEs P-MP DSS1
MENU RESTART
```

The test found that it is a BRI multiple device access using the DSS1 protocol

The bus configuration is displayed in the third line:

P-P = point-to-point

P-MP = point-to-multipoint

In the example, both B-channels are available.

B12 both channels are available

B1- only B-channel 1 is available

B-2- only B-channel 2 is available

B-- no B-channel available



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

In the example, the level is in order (the level can only be evaluated on a BRI access):

OK the level is in order

<< the level is too low

>> the level is too high

-- no level

NTs = NT Simulation Slave Mode

(see "Clock mode" on page 175)

NTm = NT Simulation Master Mode

TEs = TE Simulation Slave Mode

TEm = TE Simulation Master Mode

On a bilingual access, the ARGUS uses the DSS1 protocol and thus behaves as a "DSS1 terminal".

You can manually switch the ARGUS to the 1TR6 protocol using the Protocol function in the Configuration/ISDN menu (see "Select the D-channel protocol" on page 173).

- Using an ARGUS on a PRI access

As soon as Layer 1 is setup, LED L1 will light continuously.- The ARGUS will automatically determine and display, whether or not the PRI access uses CRC4-monitoring. CRC4 monitoring can be switched on or off manually -(see "CRC4 mode" on page 183).

The ARGUS will begin the automatic detection of the access configuration. After Layer 2 is setup, the L2 LED will also light.

The ARGUS will, regardless of the mode of operation (TE or NT mode), determine the D-channel protocol and attempt to setup Layer 3. At the same time, the B-channel test will also be started.

With the B-channel test, the ARGUS checks the availability of all 30 B-channels by placing an outgoing call on each B-channel one after the other. If the call can be setup, it is assumed that the B-channels are available from both ends.

If the connection is rejected with Cause 44 (see Appendix B), the B-channel will be assumed to be only available for incoming calls.

If the connection is rejected for any other cause, the B-channel will be identified as unavailable. In the case of a cause, which indicates that the B-channel is occupied, the connection will be tried up to two times and, if a connection can still not be setup, it will then be marked as unavailable.

**Displayed in the first line:**

Type of access: PRI

Displayed in the second line:

Available B-channels: The light squares represent the available B-channels ordered in two blocks of 15. The upper row of squares represent the B-channels that are available for outgoing connections,

the lower row represents those that can be used for incoming calls.-

left: B-channel 1

right: B-channel 30

Displayed in the third line:

Operation mode: NTs = NT Simulation Slave Mode
 (see “Clock mode” on page 175)
 NTm = NT Simulation Master Mode
 TEs = TE Simulation Slave Mode
 TEm = TE Simulation Master Mode

Layer 1 mode: With (CRC) and without CRC4
(NoCRC)

D-channel protocol: 1TR6, DSS1, none, BILINGUAL, Auto,
CorNetN , CorNetT, QSIG or VN4

Displayed in the fourth line:

The ARGUS displays the current assignment of the three softkeys below.

Test sample:



- The test found that it is a PRI multiple device access using CRC4-monitoring and the DSS1 protocol. All 30 B-channels are available and can be used for outgoing or alternating connections.

The B-channel test cannot distinguish between alternating and exclusively "outgoing" B-channels.



- The ARGUS is in the NT-Simulation Master mode and is connected to a terminal using the D-channel protocol DSS1 without CRC4-monitoring. B-channel 11 is not available.



```
ARGUS26 PRI
.....
NTmNoCRC DSS1
MENU RESTART
```

- The first 10 B-channels are configured in the exchange as incoming -channels only (seen from the viewpoint of the terminal), while B11-B30 can be used for outgoing or alternating connections.



```
ARGUS26 PRI
No Network
TEs
MENU RESTART
```

- The ARGUS is not properly connected (e.g. wrong cabling) or the network is not in order.

- Operating the ARGUS on a POTS access

The following will be displayed:



```
ARGUS26 POTS
Voltage: 35.5V
MENU RESTART
```

Power measurement
idle

- Status display

The ARGUS automatically determines the configuration of the access and the protocol used and inserts both parameters in the remaining tests. Thus manual configuration of the ARGUS is unnecessary. However, it is possible to manually change the protocol using the Configuration menu (see Chap. 16.2.2 Select the D-channel protocol page 173).

The status of the access under test (PRI, U-interface (optional), BRI or POTS) is always displayed in the first line.

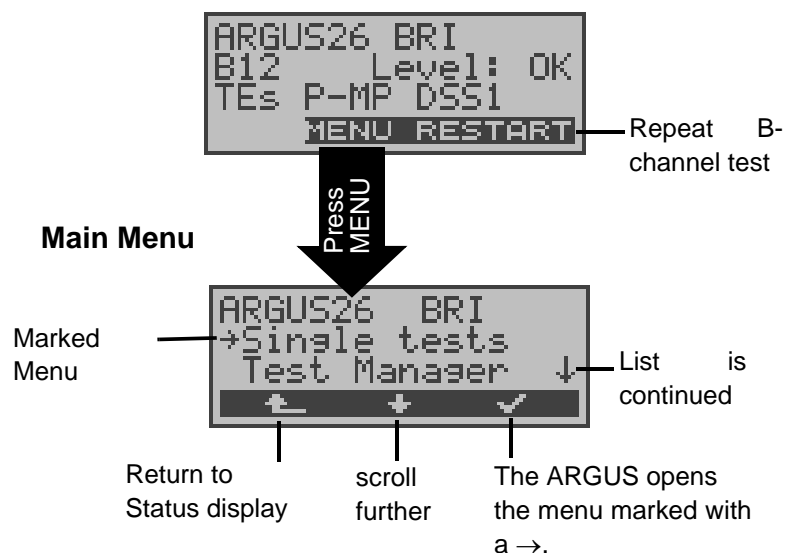
It must be mentioned again, that the ARGUS only determines the general bus status once when switched on or when the ARGUS first connected.

On the other hand, the status of the protocol stacks for Layer 1, 2 and 3 will be continually monitored and displayed.

If an error occurs in the B-channel test (e.g. access is not plugged-in), the ARGUS will depending on the class of error (see "Error messages" on page 86) either repeat the initialization or show an error message.-

In the Main menu, you can scroll through the available

Status display



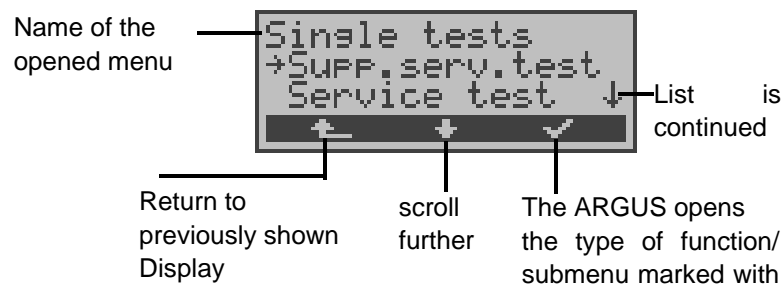
menus with the < ↓ > key:

PRI access	BRI access	U-interface access (optional)	POTS access
Single Tests	Single Tests	Single Tests	Single Tests
Test Manager	Test Manager	Test Manager	_____
Automat.Tests	Automat.Tests	Automat.Tests	Automat.Tests
_____	Level	Level	Level
	Measuring	Measuring	Measuring
L1 Status	L1 Status	_____	_____
Configuration	Configuration	Configuration	Configuration
access	access	access	access

X.21

Single Tests
Automat.Tests
Configuration
access

With the <✓>, you can open the menu currently marked with the → (in the example Single Tests).



Using the numeric keys to start a function:

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

- Numeric key 2** Start Service Test
- Numeric key 3** Start Supplemental Service Test

Numeric key 4 Start Auto. Test

Numeric key 6 Start Test Manager

Numeric key 7 Entry of your own and remote
call numbers in the speed-dialing memory

numeric key 8 Trace ON/OFF

Numeric key 9 Start Bit Error Rate Test (BERT)



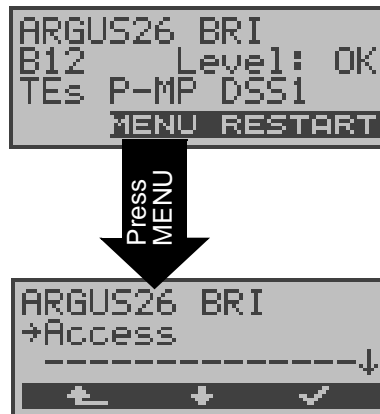
If a function is called where the ARGUS expects the entry of a digit, pressing a number key will be interpreted as the expected input.

7 Access menu

7.1 Open the Access menu

If the parameters displayed at power on are not accepted, the Access menu will open automatically.

However, you can also open the Access menu at any time from the Main menu:



Operation	
< RESTART >	Repeat B-channel test
< MENU >	Open the Main menu
< ↓ >	Select the Access menu
< ✓ >	Open the Access menu
< ↶ >	Return to the status display

Operation table:

Throughout the remaining manual, under each display, you will find a table that briefly describes the operation of the ARGUS in the current situation.

On the left side of the table, you will find all of the ARGUS keys that are available for the user to press in the current state (e.g. ↓ for the ↓-key or < ↓ > for the corresponding softkey).

On the right side of the table, you will find an explanation of the function of each key in this context.



means for example, that the ARGUS expects the user to enter data on the numeric keypad at this point

7.2 Selection of the physical access

In the Access menu, the user must select the type of physical access to which the ARGUS is connected. When the ARGUS is restarted, the settings used last will be suggested as the default.-

If **Automatic** is selected, a fully-automatic process will be started: The ARGUS will automatically determine the type of interface (BRI, PRI or POTS) and set the access to TE-mode.

To test a U-interface access, the ARGUS must be connected via the optional U-interface adapter to the U-interface access. In this case, the ARGUS must be set to the physical access **BRI**:-



The Access Mode menu will open automatically: In the case of a U-interface access, you must choose - as Access Mode - TE Automatic, TE P-P or TE P-MP.

Connection of the ARGUS to a U-interface access: (optional)



What the LED on the U-Interface Adapter indicates:

LED is red: not activated, e.g. cable not connected correctly-

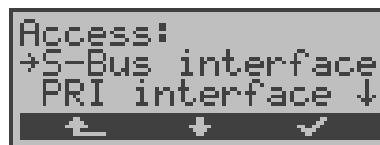
LED flashing slowly - once per second - (green/red): U-interface is activated; the ARGUS, however, is deactivated

LED flashing quickly - twice per second - (green/red): ARGUS is activated, U-interface is deactivated

LED is green: everything correct

On a BRI or U-interface access, the Access Mode will be determined automatically (PP or P-MP); on a PRI access, it will be set to PP.

The ARGUS will determine which D-channel protocol is used on the BRI, PRI or U-interface access and perform the B-channel test - after the level has been measured (only on a BRI access), the ARGUS will return to the Main menu.



Operation	
< ↓ >	Select desired access
< ✓ >	confirm
If you select a	
	S-Bus Interface (BRI)
	POTS (analog) interface
	S2M interface (PRI)
the Access Mode menu will open automatically:	
< ↶ >	Return to the Main menu

8 Select the Access Mode

The Access Mode menu is **not** selectable from the Main menu. It opens automatically once the physical access is selected in the Access menu.



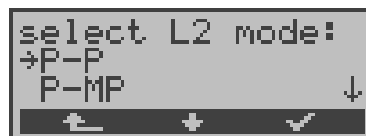
8.1 Operation on a BRI or PRI access

The following settings are possible:

8.1.1 TE-Simulation mode

TE automatic

On a BRI 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, the following Configuration menu will open:



< ↓ >

< ✓ >

< ↶ >

Operation

Select the desired **L2 mode**.

Confirm and the ARGUS will return to the Main menu.-

Return to the Access Mode menu

TE P-P or TE P-MP

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

When the ARGUS finds a PRI access, it will enter TE P-P mode.

The ARGUS will then jump to the Main menu.

8.1.2 NT-Simulation mode P-P or P-MP

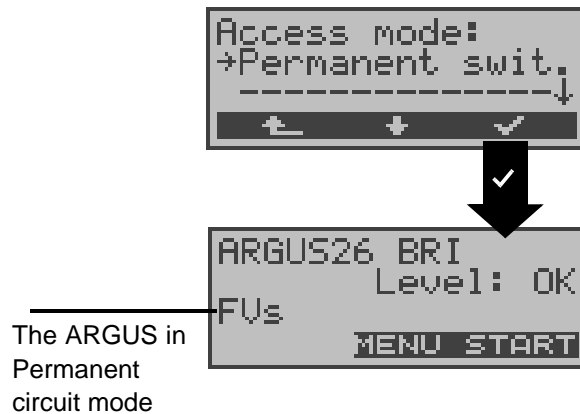
NT P-P or NT P-MP

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

When the ARGUS finds a PRI access, it will enter TE P-P mode.

The ARGUS will then jump to the Main menu.

8.1.3 Permanent circuit




Besides dial-up connections to any subscriber, ISDN also supports the use of permanent circuits switched to a specific remote location.

These 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 Chap. 16.2.4 Clock mode page 175).

As a quick test of a permanent circuit, you can simply call the opposite end using a selected B-channel.-
However, for a more revealing test of a permanent circuit, you should perform a bit error rate test.
Both ends of the permanent circuit must use the same channel.

Telephony on permanent circuits

The function can be started with the -Key or via the **Phone / connec.** function in the **Single tests** menu (see Chap. 11 page 125).

After the B-channel for the permanent circuit is selected, the telephone connection will be setup automatically.

Permanent switch	
Telephony B 01	B-channel used
Durat. 13:45:59	Duration of the
ABORT TM	Permanent

< ABORT >

< TM >

Operation

Terminate permanent circuit

Call the Test Manager
(see "Test Manager" on page 140)

BERT on permanent circuits

A number of variations are possible in testing the permanent circuit with the bit error rate test.

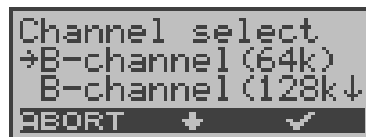
In the simplest case, a B-channel loop will be set up at the remote end.

Start the BERT from the **Single tests menu / BERT submenu / BERT start** (see “BERT startwait” on page 94). After selection of the channel to be tested (B-channel or D-channel), 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 Chap. 10.3 Bit error test page 92), you simply need not enter call numbers or select a service.

In the case of a BRI access in end-to-end mode (see “Bit error test” on page 92 and on page 100 “Bert wait”), it is also possible to run a BERT in the D-channel.

In this case, the channel select window will open:
On a BRI access:



Operation	
<↓>	Selecting a channel
<✓>	Confirm the selected channel and start the test. When selecting a B-channel, the B-channel select window will open to allow you to choose the desired B-channel.
<ABORT>	Close window and discard any selection that was made-

On a PRI access:

In the case of a PRI access in end-to-end mode (see “Bit

error test" on page 92 and on page 100 "Bert wait"), a BERT can be run

- in the D-channel
- in all B-channels
- in all B-channels and in the D-channel (all framed)
- in selected B-channels
- in all channels and time slot 0 (all unframed)
- .



In the channel selection window, the upper squares represent time slot 0 (upper display line left square), the D-channel is represented by the left square on the lower display line and the B-channels are assigned to the two blocks of 15 (upper display line B-channels 1 to 15, lower display line channels 16 to 30). The selected channels are indicated in the upper row by hidden squares.-- The hidden squares in the lower row indicate the current position of the cursor.

The cursor is moved with the arrow keys:

↓-Key moves the cursor one position to the left

↑↔-Key moves the cursor one position to the right.

The channels can also be marked with the cursor directly using the numerical keypad: If you enter the digits 18, the cursor will jump to B-channel 18. If you enter *, the cursor will move to time slot 0 and the entry of the # will move the cursor to the D-channel.

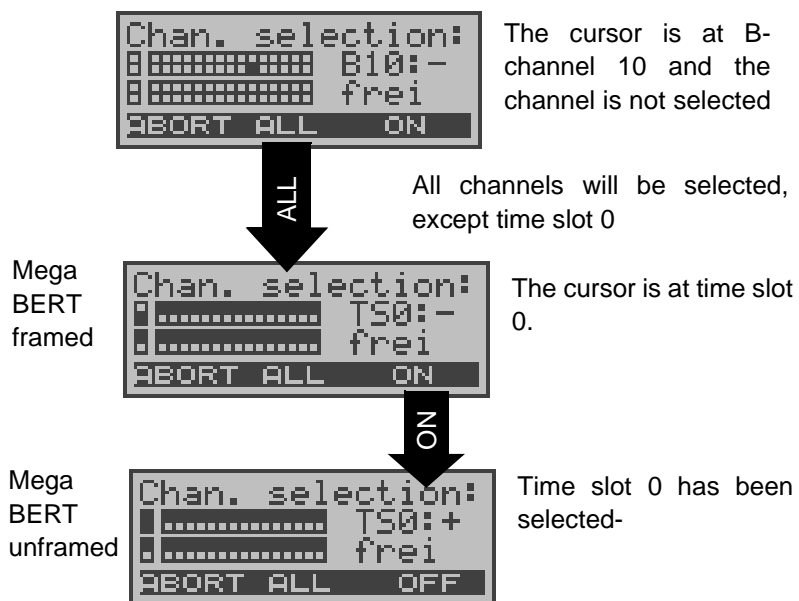
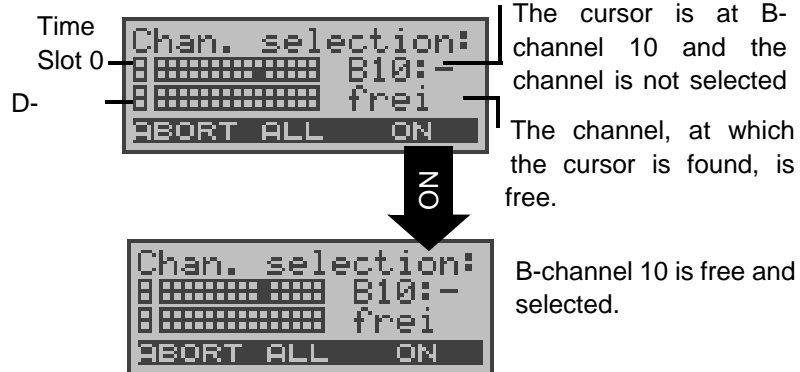


Time slot 0 can only be selected, when all other channels (all B-channels and the D-channel) are selected (i.e are free).-

If the right softkey shows <ON>, pressing the softkey <ALL> will select all B-channels and the D-channel (Mega BERT framed). When the right softkey shows <OFF>, pressing the softkey <ALL> will deselect the currently selected channels.

Examples of channel selection:

No channel has been selected
and the cursor is at B-channel
10.-



```

Chan. selection:
B ..... B08: +
B ..... frei
ABORT ALL OFF

```

The channels 5 to 8 were individually marked with the cursor and selected with **-<ON>-**; the cursor is at B-channel 8.

```

Chan. selection:
B ..... B24: -
B ..... belegt
ABORT ALL ON

```

Channels 5 to 8 and 20 to 23 have been selected.

The cursor is at channel 24. Channel 24 cannot be selected, since it is busy.

After the channels have been selected, the BERT is started with the **✓**-Key.

The ARGUS displays the following during the BERT:

	Bit	Bit rate or busy channel	
Remaining time of the Synchronicity of the bit pattern	<pre> BERT 2^15 1984k 00:24:12 synchron LOS: 0 ABORT TM ERROR </pre>		Detected Bit errors
			LOS-counter

Operation

- < ERROR >** Injects an “artificially generated” bit error (to check the reliability of the test)
- < TM >** Call the Test Manager (see “Test Manager” on page 140)
- <ABORT >** Test - interrupting

Loopbox with a permanent circuit

A loopbox can be setup for the permanent circuit by selecting in the **Single tests** menu / **Bit error test** submenu / the **B-channel LOOP** (see "B-channel loop" on page 101).

The channel select window will open:

On a S-Bus



The loopbox can be setup for B-channel 1 or B-channel 2. If "All framed" is selected, not only both B-channels but also the D-channel will be looped.

On a PRI



The loopbox can be setup for B-channel 1 to 30. If "All framed" is selected, not only the B-channels but also the D-channel will be looped. If "All unframed" is selected, not only the B-channels and the D-channel but also time slot 0 will be looped.



Channel used
Duration of the
Loopbox activation

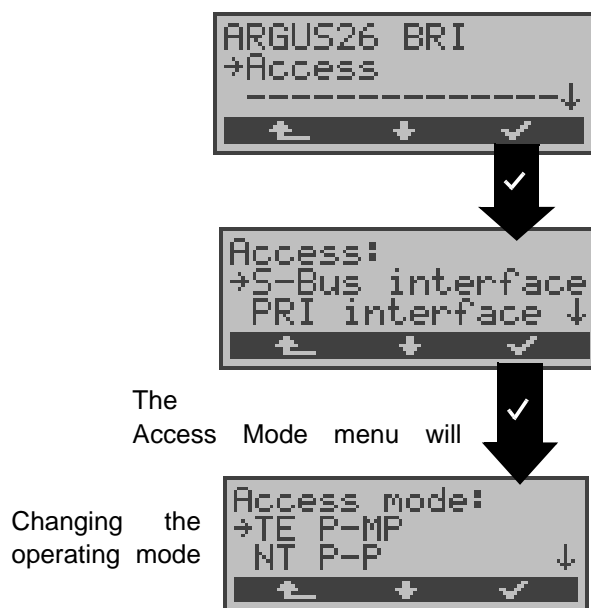
<ABORT >

Operation

End loopbox activation

< TM >

Call the Test Manager (see "Test Manager" on page 140)

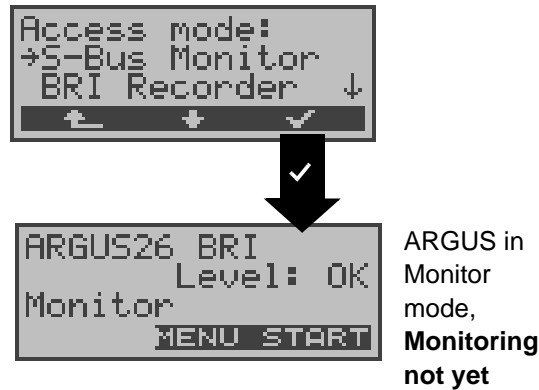
Once you leave the permanent circuit mode

In the Main menu, open the Access menu. The Access Mode window will open automatically. In this window, you can change the operating mode of the ARGUS.

8.1.4 BRI/PRI Monitor

The ARGUS accepts all of the D-channel signals from the BRI or PRI access and sends these D-channel signals over the serial interface to a PC, which must be running ARGUS WINplus or WINAnalyse.- The bus and Layer 1 are not influenced by the monitoring.

Display during operation on a BRI access:



After starting the *Monitor* function, the ARGUS will first be in Monitor mode (the monitor is not yet active): the second line shows the evaluation of the level on the NT-side (OK or << (too low), >> (too high) or _ (no level)).

Display during operation on a PRI access:

```
ARGUS26 PRI
Monitor
MENU START
```

Operation

- < MENU > Opens the list of menus that are available in Monitor mode.
- < START > **Start Monitor** , automatically opens the associated display window



< LISTEN >

The speech path will be switched onto a B-channel: First the B-channel select dialog will open. After selecting a B-channel, it will be possible to listen to the voice data (in the direction Network --> User) on this channel.

< ABORT >

Once Monitoring is stopped, the ARGUS will return to the Monitor display (Monitoring **not active**)

While the PRI Monitor is active, the ARGUS displays the L1 status (see L1 status in PRI Monitor Mode)-

When the Monitor function is active, the Trace LED will be on.

The captured D-channel signals will be sent via the serial interface to the connected PC, which must be running either ARGUS WINplus or ARGUS WINAnalyse.

ARGUS messages on a PRI access

As soon as a change occurs, the ARGUS will send a time-stamped report of the following alarms/states to the PC, which will evaluate them:

- Signal
- FAS
- CRC4det
- A-Bit
- AIS

The ARGUS will check the following values and counters every second and, in the event of a change, will pass them on the PC:

- Sa5-Bit (Rx)
- Sa6-Bit (Rx)
- E-Bit
- Ecnt
- CRC Err.
- Cod.Err.

- Frm.Err.

Parallel call display in the BRI Monitor mode

When the Monitor mode is active, the ARGUS will search all of the D-channels signals sent for a SETUP.- As soon as a SETUP is found, the **-<CALL>** softkey will appear in the ARGUS display.

```
Monitoring
Signals:    52
Time:      00:04:16
ABORT LIST. CALL
```

Operation

- < LISTEN >** The speech path will be switched onto a B-channel: First the B-channel select dialog will open. Afterwards, it will be possible to listen to the voice data (in the direction Network --> User).
- < CALL >** The ARGUS displays the data for the call (incoming or outgoing). The ARGUS will automatically process the last SETUP received.
- <ABORT >** Once Monitoring is stopped, the ARGUS will return to the Monitor display (Monitoring **not active**)

Call Direction		N -> U	FaxG3	Service
Network	->	125670	B01	Channel used
Own		to: 023519017204		Destination
Number		↑	↓	SIGNAL

Operation

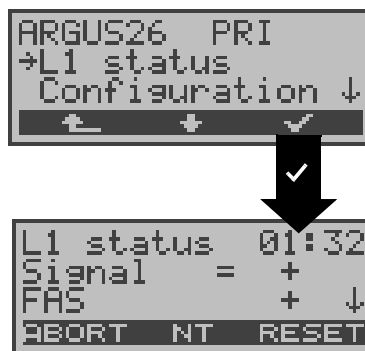
- < ↓ >** The sub-address, User-User-Info, DSP messages (if existent), Type of number (T.o.n) and Numbering Plan (NP) will be displayed in this order.
- < ↑ >** When Monitoring is stopped, the ARGUS will be in the mode Monitoring (**not active**).

< SIGNAL > The ARGUS switches to the **active** Monitor window. Now, if you press **<CALL>**, the ARGUS will again display the call parameters.

L1 Status in PRI Monitor mode

The L1 status function is only available in the PRI Monitor mode.- The Layer 1 alarms and messages are presented in several windows, which permit detailed statements regarding the state of the PRI access and the transmission line (For further information, see the CCITT/ITU guidelines G.703 and G.704).-

When the function is started, it will first automatically open the “L1 status TE” function, which shows the “TE-side parameter”. For a comprehensive explanation of the displayed information: see “The L1 status of a PRI access” on page 165.



	Operation
< ↓ >	Select <i>L1 status</i>
< ✓ >	Open the <i>L1 status</i> function
< ↶ >	Return to the Monitor Mode window
↓ -Key	Scroll through the display
< NT >	Switch to the “L1 status NT” function; the “NT-side parameter” will be displayed
< RESET >	Reset the History function and all counters
< ABORT >	Quit the function and return to the menu list

8.1.5 BRI / PRI Recorder

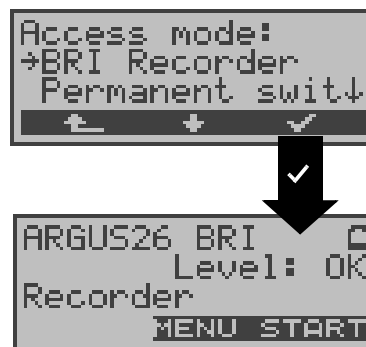
In the Recorder mode, the ARGUS passively monitors the connected BRI or PRI access.

The ARGUS records all of the D-channel signals sent in both directions without affecting the access or Layer 1.

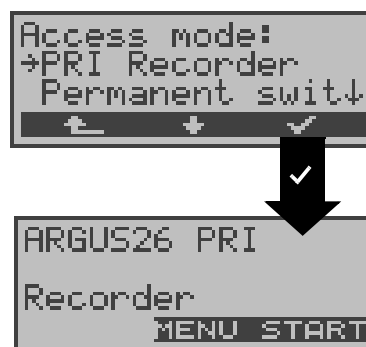
Unlike in the Monitor mode, the recorded D-channel signals will be saved in the ARGUS's internal Flash memory and not sent to a PC.

The storage is organized as a ring buffer, i.e. as soon as the Flash memory is full, the ARGUS will automatically overwrite the oldest data.-

On a S-Bus



On a PRI



< ↓ >

Operation

Mark BRI Recorder or PRI Recorder

< ✓ >	Start the Recorder function. The ARGUS is now in Recorder mode (Monitoring is not yet active!) and will check the levels on the NT and TE sides of the BRI access. Displayed in the second line: Level on the NT-side (<< too low, >> too high, OK, ____ no level), level on TE-side (<< too low, >> too high, OK, ____ no level)
< ↶ >	Return to the Main menu
< MENU >	Opens a list of menus or functions, which are available in Recorder mode.
< START >	Start Recording , automatically opens the associated display window

Recording function - activated

When the Recording function is active, the Trace LED will flash. The ARGUS displays the number of signals received and the duration of the recording in hours:minutes:seconds. Operation on a BRI access:

```
Recording
Signals:    120
Time:       0:03:21
ABORT LISTEN
```

During the recording, the ARGUS also displays incoming and outgoing calls (see "Parallel call display in the BRI Monitor mode" on page 56).

Operation on a PRI access:

```
Recording    TS16
Signals:     120
Time:        0:03:21
ABORT LISTEN
```

Time Slot 16

Operation

< ABORT >	Quitting the active recording function. The ARGUS is now in the "Recording" mode.
-----------	---

< LISTEN >

The speech path will be switched onto a B-channel. First the B-channel select dialog will open. After selecting a B-channel, it will be possible to listen to the voice data (in the direction Network -----> User) on this channel.

The ARGUS saves a timestamped report of any changes in the following alarms/states:

- Signal
- FAS
- CRC4det
- A-Bit
- AIS

The ARGUS will check the following values and counters every second and, in the event of a change, will save them:-

- Sa5-Bit (Rx) / (Tx)
- Sa6-Bit (Rx) / (TX)
- E-Bit
- Ecnt
- CRC Err.
- CRC rel.
- Cod.Err.
- Cod.rel
- Frm.Err.

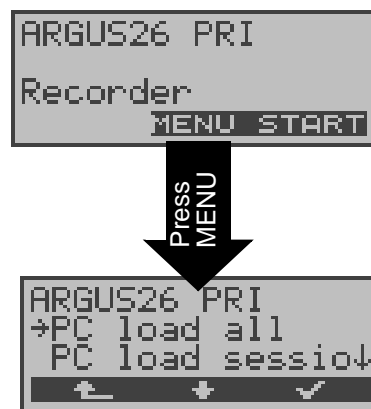
Flash Data Management

In the Recording mode, several functions are available to manage the data recorded and saved in the Flash memory:

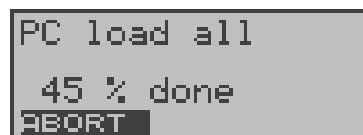
- PC load all
- PC load session
- Reset Flash
- Info Flash

• PC load all

With the **PC load all** function, all of the contents of the Flash memory will be downloaded via the serial interface to the PC, which must be running either WINplus or WINanalyse.



Operation	
< MENU >	Starting/opening the functions/submenus available in Recorder Mode.-
< ↓ >	Select PC load all
< ✓ >	The download to the PC begins.
< ↑ >	Return to Recorder mode (Recording not active)



Operation	
< ABORT >	The download is stopped. Return to the menu.

Once the download has been successfully completed, the ARGUS will ask whether the Flash memory should be deleted:

```
PC load session
Loading done
Delete flash?
ABORT YES ALL
```

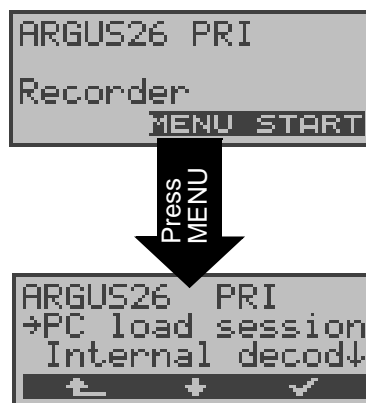
Operation

- < DELETE > The contents of the Flash memory will be deleted.
- < ABORT > The contents of the Flash memory will not be deleted. Return to the menu.

- **PC load session**

In the ARGUS, the storage in the internal Flash is organized as a ring buffer, which can hold the data from a series of several sessions (i.e. independent trace recordings).-- At the start of each session, the date and time will be written in the ring buffer.-

The **PC load session** *function* transfers all of the data session-by-session to the PC on which either WINplus or WINanalyse must be running. The time and date that the session was started will be displayed in WINplus/ WINanalyse.



	Operation
< MENU >	Starting/opening the functions/submenus available in Recorder Mode.-
< ↓ >	Select PC load session .
< ✓ >	The loading of the individual sessions will start.
< ↶ >	Return to Recorder mode (Recording not activate)

```
PC load session
 45 % done
ABORT
```

	Operation
< ABORT>	Stop loading the session. Return to the menu.

Once a session has been successfully loaded, the ARGUS will ask whether another session should be loaded:

```
PC load session
Session done
Another session?
ABORT      CONT.
```

	Operation
< CONT. >	The next session will be downloaded to the PC.
< ABORT>	Stop the loading and return to the menu.

Once the download has been successfully completed, the ARGUS will ask whether the Flash memory should be deleted:

```
PC load session
Loading done
Delete flash?
ABORT YES ALL
```

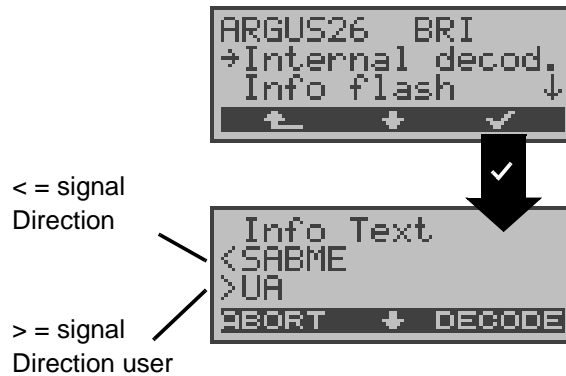
	Operation
< DELETE >	The contents of the Flash memory will be deleted.

< ABORT >

Continue to the menu without deleting the contents of the Flash memory.

• Internal decoding

The ARGUS will decode the D-channel data stored in the Flash memory:



	Operation
< ↓ >	Select Internal Decoding
< ✓ >	Start the Internal Decoding function
< ↶ >	Return to Recorder mode (Recording not active)
↓ -Key	Scroll through the display
< DECODE >	Start decoding one level deeper for a more detailed view (select from 3 levels)
< ABORT >	Continue to the menu

• Info Flash

With this selection, you can read the status of the data in the Flash memory:

- The number of saved sessions
(displayed in the second line)
- Free memory in MB and in percent
(displayed in the third line)


```

ARGUS26 PRI
→Info flash
Reset flash ↓
← ↑ ✓

```



```

Info flash
Sessions: 45
Free:2.00kB 50%
←

```

Operation

<↓>	Select Info Flash
<✓>	View information about the status of the data in the Flash memory.
< ↶ >	Return to Recorder mode (Recording not active)
< ↶ >	Continue to the menu

- **Reset Flash**

The **Reset Flash** function will delete the entire contents of the data Flash memory.

```

ARGUS26 PRI
→Reset flash
Automatic test↓
← ↑ ✓

```



```

Reset flash
Delete flash?
ABORT YES ALL

```

Operation

<↓>	Select Reset Flash
-----	---------------------------

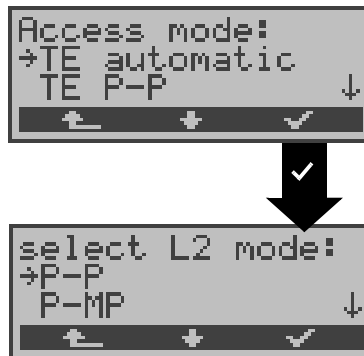
< ✓ >	Start the Reset Flash function
< ⬆ >	Return to Recorder mode (Recording not active)
< DELETE >	<p>The contents of the Flash memory will be deleted. The procedure can take several seconds.- The ARGUS will show the progress of the deletion as the percentage done.-</p> <p>It is not possible to stop the process of deletion.</p> <p>As soon as the entire FLASH memory is erased, the ARGUS will automatically return to the next higher menu.-</p>
< ABORT>	Return to the menu; the contents of the Flash memory will not be deleted.

8.2 Operation on a U-interface access (optional)

8.2.1 TE simulation mode

TE automatic

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, the following Configuration menu will open:



< ↓ >

< ✓ >

< ↶ >

Operation

Select the desired **L2 mode**.

The ARGUS will switch to the L2 mode and return to the Main menu

Continue to the Access Mode menu

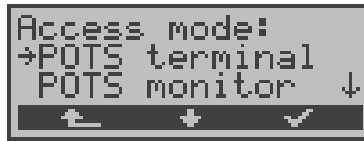
TE P-P or TE P-MP

Afterwards, the access and the protocol stack will be initialized in accordance with the selected setting. The ARGUS will then jump to the Main menu.

8.2.2 Permanent circuit

similar to a BRI access

8.3 Operation on a POTS (analog) access



8.3.1 POTS terminal

The Argus behaves like a POTS (analog) terminal. The ARGUS will then jump to the Main menu.

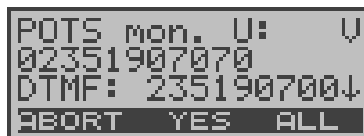
8.3.2 POTS monitor

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 or otherwise influence the interface.--



Operation

- < MENU > Opens a list of the menus available in Monitor mode-
- < START > **Start Monitor** , automatically opens the associated display window



Operation

- ↓ -Key Display further information (e.g., transferred charges)
- < DELETE > The display will be cleared.
- < ABORT> Quits the POTS Monitor function.

If the access supports CLIP, the ARGUS will display the

caller's number.

The DTMF characters dialed by both telephone subscribers will also be displayed.

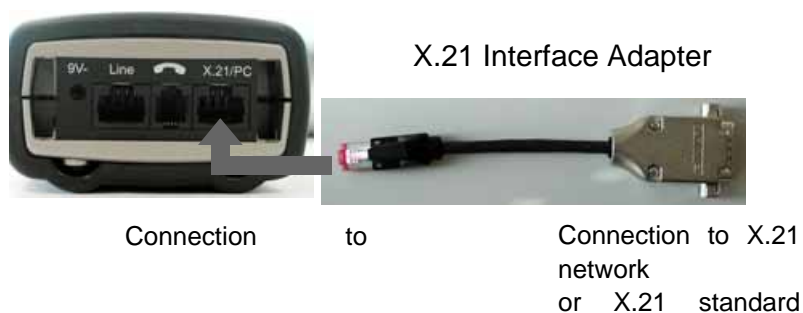
Any additional DTMF-characters will be appended to the line, which will shift left for each character once it is full.

An incoming call will be signalled acoustically.

9 Operation on an X.21 access (optional)

The ARGUS will perform a bit error test on the X.21 access in accordance with the ITU guidelines G.821 and G.826. Besides the measurement results, the ARGUS will also display the X.21 data rate.

Use the adapter cable - available as an option - to connect the ARGUS to the X.21 network.



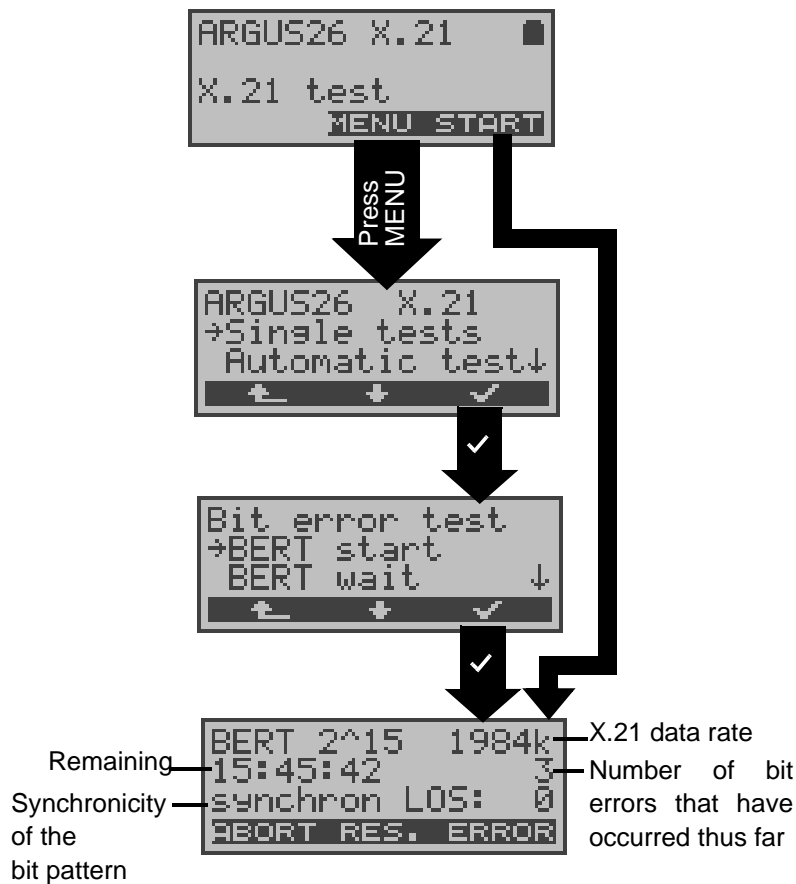
In the Access menu, select "X.21":



Operation	
< ↓ >	Select X.21
< ✓ >	Confirm, the ARGUS will jump to the status display
< ↶ >	Any access change will be ignored,- the ARGUS will jump to the status display

9.1 BERT start

The ARGUS will detect the clock of the X.21 permanent circuit, calculate the data rate and then automatically search for the channels used. On these channels, the ARGUS will send the test pattern (see Chap. 16.3.4 Selecting the BERT bit pattern page 195) selected, receive it again and evaluate it in accordance with the ITU guidelines G.821 and G.826 (loopbox required at the remote end).



During the test, the ARGUS will show the X.21 data rate, the remaining test time in hours:minutes:seconds, the number of bit errors that have occurred so far and the synchronicity of the bit pattern.

Operation

< ERROR >

Injects an “artificially generated” bit error, which can demonstrate the reliability of the measurements when running end-to-end tests

< RES . >	Restart the bit error test: The test time and number of bit errors will be reset.-
<ABORT >	Abort the bit error test



When a bit error is detected, this will be signaled by a brief alarm (if the alarm is enabled); in the event that the synchronization is lost, a constant alarm will sound.- These alarm bells can be switched ON/OFF (see Chapter 16.5.7 Alarm bell)

The measurement time for the BERT can be specified with the **Configuration** function (see Chap. 16.3.1 BERT - duration page 191).

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

```
BERT 2^15 1984k
Result: 10309Kb
10 9,7E-07 OK
MENU MORE
```

Operation	
< MORE >	Display additional test results
< MENU >	Return to the Bit error test menu

Display results:

First line:	Bit pattern and X.21 data rate
Second line:	Transferred data in kBits (in the example 10309 kBits)
Third line:	<p>Number of the bit errors that have occurred (in the example 10)</p> <p>Bit error rate (in the example $9.7 \cdot 10^{-7}$ (= 0.00000097))</p> <p>The evaluation of the results depends on the error threshold that you set (see "BERT - Setting the Error level" on page 193).</p> <p>OK = bit error rate is less than the error threshold (set by the user) and NO = bit error rate is above the error threshold.</p>

Furthermore, it is possible to display more characteristic values (with the <MORE> softkey), the ARGUS will determine

the following in accordance with the ITU-T G.821 and G.826:
See Chapter 10.3.1 BERT startwait page 94

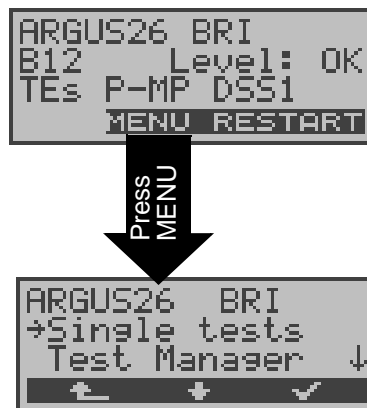
The BERT test results can be saved in the ARGUS:- on page
98 "Saving BERT test results in the ARGUS".

BERT wait

In this mode, the BERT will wait for the BERT at the remote
end which is necessary for an end-to-end test: see "Bert
wait" on page 100.

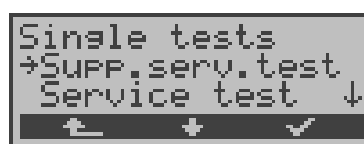
10 Single Tests

Open the Single menutest menu:



	Operation
< RESTART >	Repeat B-channel test
< Press MENU >	Open the Main menu
< ↓ >	Select the <i>Single tests</i> menu
< ✓ >	Open the Single tests menu
< ↶ >	Return to the status display

Open the functions in the Singletests menu:



	Operation
< ↶ >	Return to the Main menu
< ↓ >	Mark the desired function
< ✓ >	Open the function marked with the →

10.1 Supplementary Services Test

The ARGUS checks, which supplementary services are supported by the access being tested.-

10.1.1 Supplementary Service Test - 1TR6

(Only on a BRI or U-interface (optional) access)

Description

The ARGUS checks, which of the services listed below are supported by the exchange for the BRI or U-interface access (running the 1TR6 protocol) that is being tested:

Sperre	Blocking enabled for outgoing calls
AWS1	Call forwarding type 1 enabled (continuously)
AWS2	Call forwarding type 2 enabled (case by case)
Anschluss GBG	Access belongs to a Closed Users Group
Geb.anzeige	Display of charges is setup
Rufnummern-Id	Setup call number identification - against malicious calls

```
Single tests
→SUPP.serv.test
Service test ↓
← ↓ ✓
```

< ↑ >

< ↓ >

< ✓ >

Operation

Return to the status display

Select **Supplementary services**

Open **Supplementary services**

```

SUP.ser.req.1TR6
1TR6 SS test
ABORT
  
```

After the test is over,
the results window
will open
automatically

```

SUP.ser.req.1TR6
Sperre      +
AWS 1      -↓
↑           ↓
  
```

	Operation
< ABORT >	Abort the test Return to the Single tests menu
	As soon as the supplemental services interrogation is finished, the ARGUS will display the results in the second and third lines of the display:
< ↓ >	Scroll through the test results + means that the suppl.service is enabled - means that the suppl.service is not enabled
< ↑ >	Continue to the Single tests menu

10.1.2 Suppl.service interrogation in DSS1

Currently, the ARGUS can individually test the following DSS1 supplementary services:

On a BRI access:

TP	Terminal Portability	Moving the terminal on the bus
HOLD	Hold	Hold/Broker
DDI	Direct dialling in	Direct dialling in to an extension on a PBX (on a P-P)
MSN	Multiple Subscriber Number	Direct dialing into a P-MP
CLIP	Calling Line Identification Presentation-	Display the caller's number
CLIR	Calling Line Identification Restriction-	Suppress the caller's number
COLP	Connected Line Identification Presentation	Display the call number of the called subscriber with whom one is connected
COLR	Connected Line Identification Restriction	Suppress the number of the subscriber with whom one is connected
CFU	Call Forwarding Unconditional	Call Forwarding (Anrufweitzerschaltung) continuously
CFB	Call Forwarding Busy	Forward calls when busy
CFNR	Call Forwarding No Reply	Forward calls when no answer
CW	Call Waiting	Call waiting
CCBS	Completion of Calls to Busy Subscriber	automatic callback if the party called is busy
CCBS-T	Completion of Calls to Busy Subscriber	automatic callback if the party called is busy (on P-P)
CCNR	Call Complete No Response	automatic callback if the party called does not answer
CCNR-T	Call Complete No Response	automatic callback if the party called does not answer (on P-P)

MCID	Malicious Call Identification	Identification of malicious callers (call tracing)
3pty	Three party	Three party conference
ECT	Explicit Call Transfer	Call transfer or directed call forwarding
CD	Call deflection	active call diversion in the call setup phase - by the party called-
AOC	Advice of Charge	Advice of charges
SUB	Sub-addressing	Sub-addressing is possible
UUS	User-to-User Signalling	Transfer of user data
CUG	Closed User Group	Access belongs to a Closed Users Group

On a PRI access

On a PRI access, the following supplementary services will be tested:

**CLIP, CLIR, COLP, COLR, DDI, CFU,CFB
CFNR-T, CW, CCBS-T, MCID, CUG, CD, AOC,
SUB, UUS**

```
Single tests
+Supp.serv.test
Service test ↓
← + ✓
```



```
Numbers
Own number
0235190700
← DEL ✓
```

< ↑ >

< ✓ >

< ↓ >

Operation

Return to the Main menu

Select the **Supplementary service test**

Confirm your selection

The window, Enter numbers, will now open:



< DEL >

< ✓ >

< ↵ >

Enter your **Own number**; the suppl.services test is performed in part with a self call.

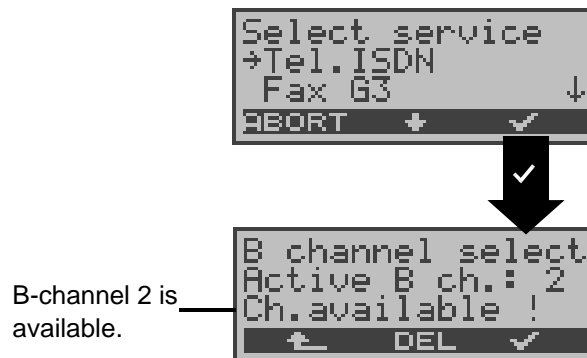
Delete individual digits

confirm

Continue to the Single tests menu

Select the service and B-channel:

Select the service and B-channel for the complete supplementary service test.:



Operation

< ↓ >

Select service

< ✓ >

Confirm the service and the B-channel selection dialog will open.

< ↵ >

Abort and return to the Single tests menu



Enter the B-channel (by default, the last B-channel used will be suggested). If you enter an *, the ARGUS will choose any B-channel that is free.

< DEL >

Delete the B-channel digit-by-digit

< ✓ >

Confirm

< ↵ >

Abort and return to the Single tests menu

Select TestSelect:

<↓>

OperationSelect a test (e.g. **TP test**)

<✓>

Start the test

<↶>

Return to the Single tests menu

Test case TP

The ARGUS will setup a self call to test the TP supplemental service.

**Operation**

The test results are displayed in the second line:

<↶>

+ = TP possible on this access

- = TP not possible on this access

Return to the *Suppl.serv.test* menu, where you can select the next type of test.

HOLD Test

For this test, the ARGUS will make a self call.

Result: + = HOLD is possible on this access
 - = HOLD is not possible on this access

CLIP Test (CLIP / CLIR / COLP / COLR)

For this test, the ARGUS will make up to three self calls one

after the other. In this test, the ARGUS checks whether the 4 supplementary services CLIP, CLIR, COLP and COLR are supported on the access under test.

The test will be performed automatically for all four supplementary services.



Operation

<↓>

Scroll through the test results

< ↶ >

Return to the Suppl.serv.test menu

Test results:

CLIP

Will the calling subscriber's number be displayed at the called subscriber?

- = no += yes

CLIR

Will the display of calling subscriber's number at the called subscriber be suppressed or is it possible to temporarily suppress the display?-

- = no t = temporary p = permanent

* = no result, since CLIP is not setup

COLP

Will the call number of the subscriber who answered be displayed on the caller's phone?

- = no += yes

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?-

- = no t = temporary p = permanent

* = no result, since no COLP is setup



The suppl. services CLIP and CLIR as well as COLP and COLR will be tested in pairs. If a -CLIR or COLR is setup constantly, **it is not possible** to make a statement with any degree of certainty

DDI Test

Can a caller directly dial in to an extension on the PBX access under test?-

- = no += yes

MSN Test

Is the supplemental service MSN available?

- = no += yes

CF Test (CFU / CFB / CFNR)

This test checks whether the 3 supplementary services CFU, CFB and CFNR are supported on the access under test. The test is automatically performed for all three supplementary services.



The CF test attempts to setup a call diversion to the call number that is in the speed-dialing memory location for "destination no. 1". 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.



Operation

< ↓ >

Scroll through the test results

< ↑ >

Return to the Suppl.serv.test menu

Test results:

CFU

Can this access immediately forward an incoming call?

- = no += yes

CFB

Can this access forward an incoming call when it is busy; in other words does it support Call Forwarding Busy?-

- = no += yes

CFNR

Can this access forward an incoming call when it is not answered?

- = no += yes

CW Test

Does the access under test support call waiting?

- = no += yes

CCBS or CCBS-T Test on a P-P Access

Will the access under test automatically recall a remote subscriber, if the number called was busy?

- = no += yes

CCNR or CCNR-T Test on a P-P Access

Will the access under test automatically recall a remote subscriber if the call was not answered?

- = no += yes

MCID Test

Does the access tested allow identification of malicious callers (call tracing)?

- = no += yes

3pty Test

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.

- = no += yes

ECT Test

Is an explicit call transfer supported by the access under test?

For this test, you need the assistance of a remote subscriber, whose call number must be entered.-

- = no += yes

CD Test

Is an active call transfer supported in the calling phase on the access under test?-

For this test, you need the assistance of a remote subscriber, whose call number must be entered.-

- = no += yes

AOC Test

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).-



< ↑ >

Operation

Return to the *Suppl.serv.test* menu

SUB Test

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?

- = no += yes

UUS Test

Does the access under test support the transfer of user data?

- = no += yes

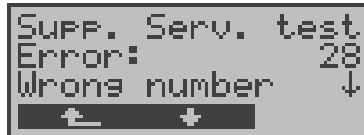
CUG Test

The ARGUS will setup a self call. It then checks whether the access under test belongs to a closed user group.-

- = no += yes

10.1.2.1 Error messages

If an error occurs during a `suppl.serv.test` or if it is not possible to setup a connection, the ARGUS will display the corresponding error code (second line in display) plus the error class in clear text (third line in the display).



In the example, an error with the code 28 has occurred. The error 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 228).

Distributing the error codes into error classes:

Error class	Description	Cause network) 1 TR6	(from 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	49,57,58,63 65,70,79	—

For further information regarding error codes: "ARGUS Error Messages" on page 232, "CAUSE-Messages – 1TR6 Protocol" on page 230 and "CAUSE-Messages – DSS1 Protocol" on page 228.

10.2 Service check

The ARGUS checks, which of the following services are

supported by the access under test:

Service	Name in the ARGUS display / abbreviation
Language	Language / Lang
Unrestricted Digital Information	UDI 64kBit / UDI 64
3.1 kHz Audio	Tel.analog / Tel.
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 basis mode	Teletex / Ttx64
International inter working for Videotex	Videotex
Telex	Telex
OSI application according to X.200	OSI
7 kHz Telephony	Tel.7kHz / Tel7k
Video Telephony, first connection	Videotel.1 / Vid.1
Video Telephony, second connection	Videotel.2 / Vid.2
Three user-specific services (optional)	Userspec.1 / Userspec.2 /
(see "Services" on page 186)	Userspec.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.

```

Single tests
+Service test
Bit error test↓
┌──────────┴──────────┐
└──────────┬──────────┘

```



```

Numbers
Own number
0235190700
┌──────────┴──────────┐
└──────────┬──────────┘

```

Operation

< ✓ >

Select **Service check**

< ↓ >

Confirm the selection and the Enter numbers dialog will open

< ↶ >

Return to the Main menu



In the dialog, Enter numbers, enter your **own call number** and the **Service check** will be performed using a self call.-

< DEL >

Delete the digit before the cursor

< ✓ >

confirm

< ↶ >

Continue to the Single tests menu



There are PBXs that use separate call numbers for incoming and outgoing calls.

In this case, for the Service checks, enter a “**remote**” call number that corresponds to the “own” number that is not 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.

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

```
Service check
Speech      ++
UDI 64 kBit++ ↓
←           →
```

< ↓ >

< ↑ >

Operation

Scroll through the test results

Continue to the Single tests menu

Interpreting the test results:

The ARGUS makes a distinction between outgoing calls (the first +, - or *) and incoming calls (the second +, - or *).

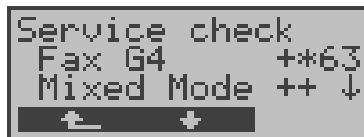
- + Service supported
- Service not supported
- * Result not definite

The reason that it is not possible to make a definite statement is given in the adjacent error code.

Displayed	Description
+ +	The self call functions OK or the remote end can take the call for this service
+ -	Call was sent successfully, however, it was rejected on the remote end due to missing 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)
+ *	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). (Error class B, C or E in a B-channel message)
*	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.

Example:



For outgoing, the Fax G4 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 Mixed Mode service is possible in both directions.

If an error of error class A occurs (see “Error messages” on page 86) 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.

10.3 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 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 Guidelines G.821 and G.826.

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

The duration of the BERT can be set in the *Configuration/BERT* (see "BERT - duration" on page 191) menu (default setting = 1 minute).

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.

3. BERT end-to-end

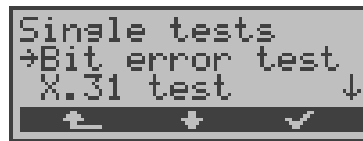
This test requires a waiting remote tester such as an ARGUS in the **BERT wait mode** .(see Chap. 10.3.2 page 100)

A bit pattern is sent to this tester.

Independent of the received bit pattern, the remote tester uses the same algorithm to generate the bit-pattern that it sends back.

Therefore, both directions are tested independently.-

10.3.1 BERT startwait




Operation

- < ↓ > Select the **Bit error test**
- < ✓ > Open the **Bit error test** menu
- < ↵ > the ARGUS will jump to the status display



Operation

- < ↵ > Return to the Single tests menu
- < ↓ > Select **BERT start**
- < ✓ > Confirm your selection
The window, Enter numbers, will now open.
-  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
- < ✓ > Confirm call number
The Select service window will now open.
- < ↓ > Select the service under which the connection should be setup
- < ✓ > Confirm the selection
and the B-channel select dialog will open.
- < ↓ > Select B-channel for the connection (enter an * to select any free B-channel)

< ✓ >	Start the bit error test
<ABORT >	Abort and the ARGUS will return to the Single tests menu

After the ARGUS has setup the connection and synchronized the send and receive directions, it will display the B-channel used, the remaining test time in hours:minutes:seconds, the number of bit errors that have occurred and the synchronicity of the bit pattern.

Remaining	BERT 2^15	B02	B-channel used
Synchronicity	15:45:42	3	Number of bit errors that have occurred thus far
of the bit pattern	synchron LOS: 0		
	ABORT TM ERROR		

Operation

< ERROR >	Injects an “artificially generated” bit error, which can demonstrate the reliability of the measurements when running end-to-end tests
< TM >	Call the Test Manager (see “Test Manager” on page 140)
0 -Key	Restart the bit error test: The test time and number of bit errors will be reset.-
<ABORT >	Abort the bit error test

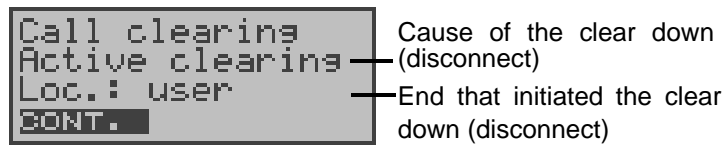


When a bit error is detected, this will be signaled by a brief alarm (if the alarm is enabled); in the event that the synchronization is lost, a constant alarm will sound.- These alarm bells can be switched ON/OFF (see Chapter 16.5.7 Alarm bell)

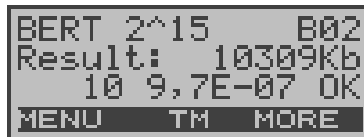
The measurement time for the BERT can be specified with the **Configuration** function (see Chap. 16.3.1 BERT - duration page 191).

After the test is done, the ARGUS will display the cause on the second line and the location which initiated the disconnect will be shown on the third line.

If the test ran normally, the ARGUS will display “Active clearing” on this line.



< CONT. >	Operation Display the test results
-----------	--



< MORE >	Operation Display additional test results Return to the Bit error test menu Call the Test Manager (see “Test Manager” on page 140)
< MENU >	
< TM >	

Display results:

- First line: B-channel used (in the example B-channel 2)
- Second line: Transferred data in kBits (in the example 10309 kBits)
- Third line: Number of the bit errors that have occurred (in the example 10)
 Bit error rate (in the example $9.7 \cdot 10^{-7}$ (= 0.00000097))
 The evaluation of the results depends on the error threshold that you set (see “BERT - Setting the Error level” on page 193).
 OK = bit error rate is less than the error threshold (set by the user) and NO = bit error rate is above the error threshold.

Furthermore, it is possible to display more characteristic values (with the <MORE> softkey), the ARGUS will determine the following in accordance with the ITU-T G.821 and G.826:

- HRX** (G821 and G826)
Defines the hypothetical reference connection
The HRX for G.826 cannot be set separately, it corresponds to the HRX for G.821.
- EFS** **Error Free Seconds** (G.821)
All the seconds in which no error occurred.
- ES821** **Errored Seconds** (G.821)
All the seconds in which one or more errors occurred.
- SES821** **Severely Errored Seconds** (G.821)
All the seconds in which the bit error rate is $>10^{-3}$.
In one second, 64,000 bits are transferred, thus $\text{BitError}=10^{-3}$ equates to 64 bit errors.
- US** **Unavailable Seconds** (G.821)
All the sequentially adjacent seconds (at least 9 sec) in which $\text{BER}>10^{-3}$.
- AS** **Available Seconds** (G.821)
All the sequentially adjacent seconds (at least 9 sec) in which $\text{BER}<10^{-3}$.
- DM** **Degraded Minutes** (G.821)
All the minutes in which the bit error rate is $>10^{-6}$. In one minute, 3,840,000 bits are transferred, thus a $\text{BER} = 10^{-6}$ corresponds to 3.84 bit errors (3 errors = NO (no DMs), 4 errors = OK (DM)).
- LOS** **Loss of Synchronisation**
Synchronisation is lost at an error rate $>$ or $= 20\%$ within a second. The absolute number of synchronisation losses will be shown.
- EB** **Errored Block** (G.826)
All the blocks with one or more errors
- ES826** **Errored Second Rate** (G.826)
Seconds with at least one block error
- SES826** **Severely Errored Second Rate** (G.826)
All of the seconds with many errors, i.e. more than 30% of the blocks have errors or at least one SDP (see below)

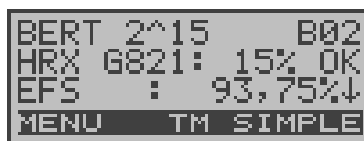
BBE *Background Block Error Rate* (G.826)

Background block error rate: The ratio of the defective blocks to the total number of blocks in the measured period without counting the SES blocks

SDP *Severely disturbed Period* (G.826)

Severely disturbed period due to the occurrence of errors (LOS, LOF, AIS,) or an "out of service" BER $\geq 10^{-2}$.

All the values are displayed in % (percentages).



```
BERT 2^15 B02
HRX G821: 15% OK
EFS : 93,75%↓
MENU TM SIMPLE
```

Operation

< MENU >

The ARGUS returns to the **BERT** menu.

↓ -Key

Scroll through the test results

< SIMPLE >

The ARGUS returns to the "simple" evaluation

< TM >

Call the Test Manager (see "Test Manager" on page 140)

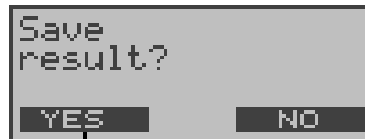
The ARGUS evaluates whether the test results satisfy the limits specified in the CCITT G.821 and G.826 under consideration of the defined hypothetical reference connection HRX (displaying OK or NO).-

Saving BERT test results in the ARGUS

The ARGUS can save the test results from several BERTs or automatic test sequences as records (see "Automatic Test" on page 148).

Once the ARGUS displays the results window, you can save the results of the BERT just run by pressing the confirmation

key  .-

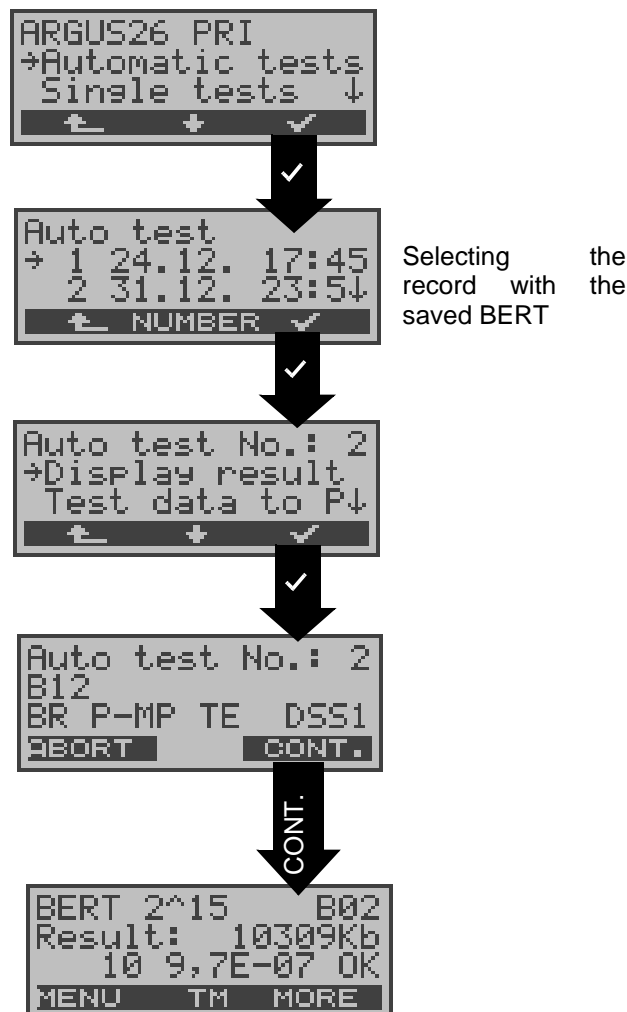


The results will be saved

The ARGUS saves the results together with the date, time and call number of the access under test (if this number is entered as the "own" number in the speed-dialing memory) under the next free record number.-

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.

The ARGUS will now show the results of the saved BERT (see "Display Results" on page 154) in the display:

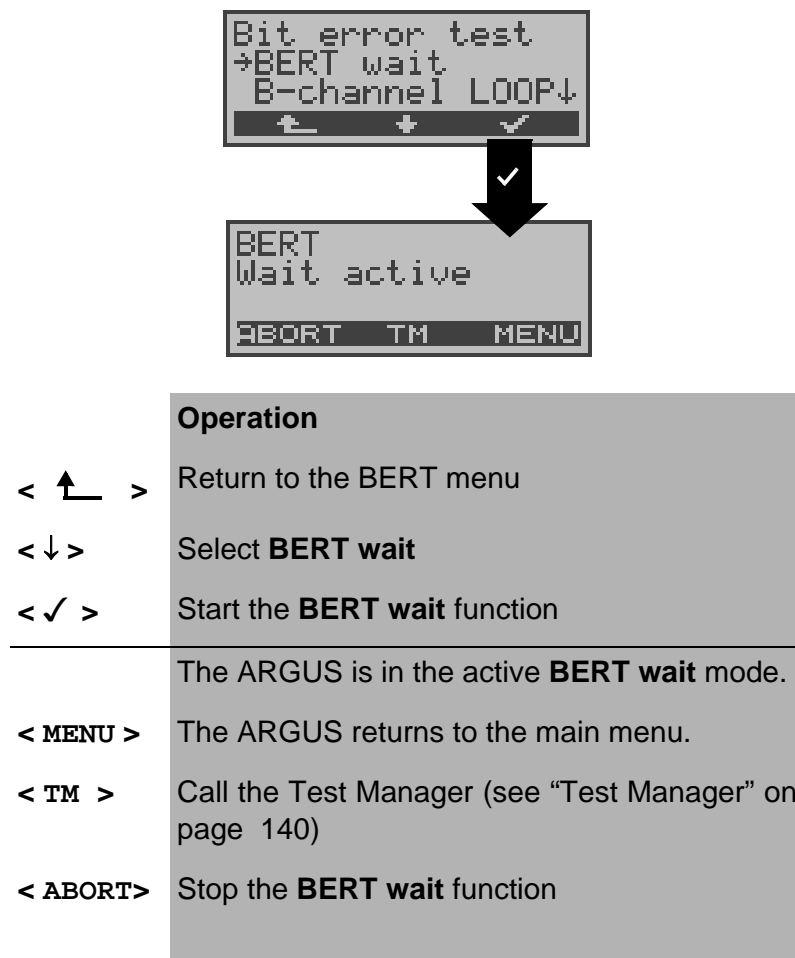


10.3.2 Bert wait

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

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.-



For description of the displays, see Chapter 10.3.1 BERT startwait page 94.

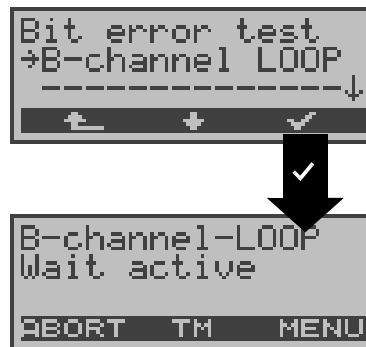
The time shown is the current amount of time that the BERT wait function has run.

10.3.3 B-channel loop

B-channel loop mode is required in order to run a bit error test using a loopbox at the remote end as well as to test permanent circuits.

The ARGUS will initially wait for a call.

An incoming call (for any service) will be taken automatically. 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.



Operation	
< ⬅️ >	Return to the Single tests menu
< ↓ >	Select B-channel loop
< ✓ >	Start the B-channel loop function
<p>The ARGUS is waiting for a call. An incoming call will be taken immediately and switched in a loop to the appropriate B-channel. The ARGUS displays the call number and the B-channel.</p>	
< MENU >	The ARGUS returns to the main menu.
< TM >	Calls the Test Manager see "Test Manager" on page 140
< ABORT >	Quit the B-channel loop function

If a call is taken, the ARGUS will open the B-LOOP connect. window, which is similar to the normal connection window, will open:-

The number of
Dialed
Number



B-channel used
↓
Display
additional
connection -data

Operation	
↓ -Key	Display additional information (e.g. UUS...)
< MENU >	The ARGUS returns to the main menu.
< TM >	Calls the Test Manager see "Test Manager" on page 140
< ABORT >	Disconnect B-channel loop

A second B-channel loop connection can be started via the Test Manager or directly from the Main menu - (see "Simultaneously Starting Several Tests" on page 141).

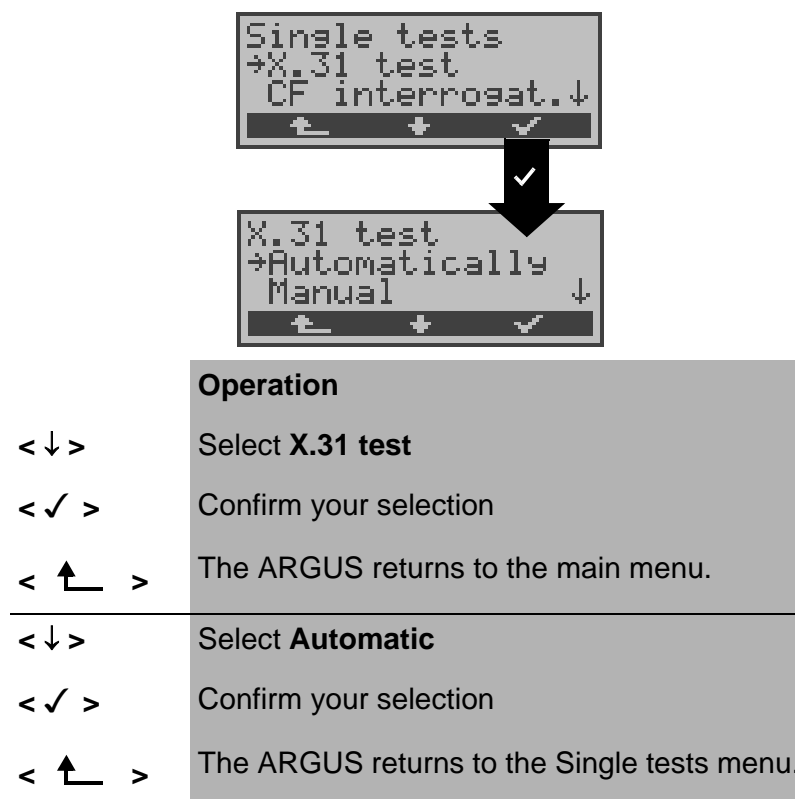
10.4 X.31 Test

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 setup the D-channel connection (via the B-channel only in the case of X.31) 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 setup 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.-

10.4.1 Automatic X.31-Test

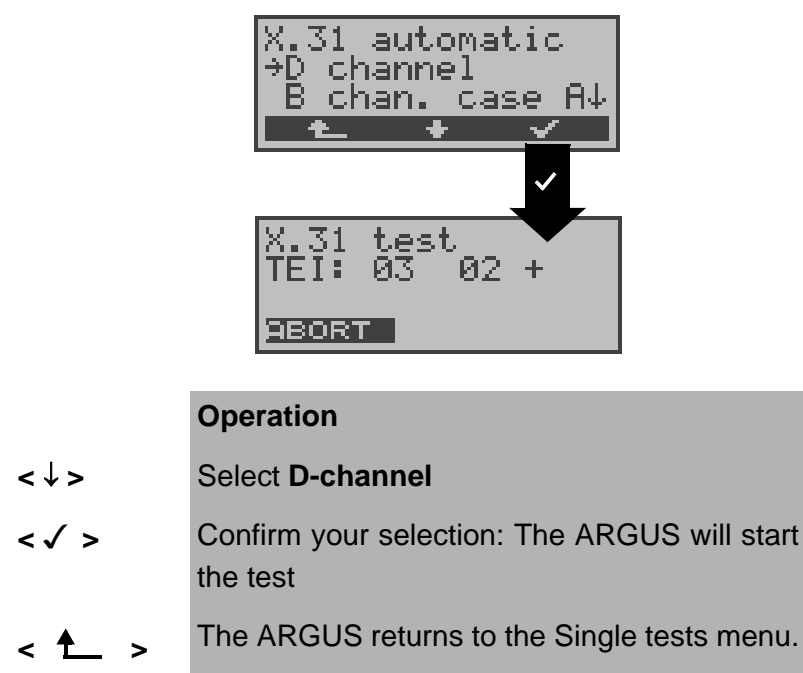


There are three possible variants of the Automatic X.31 Test:

10.4.1.1 D-Channel:

The "X.31 Automatic, D-channel" test consists of two steps:

1. 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 shown on the display.
2. 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** ("Saving Call Numbers" on page 218).
With the entry of the X.25 access number, you can - if you wish - select a logical channel (LCN) other than the default. For this purpose, append a "#" plus desired the LCN to the access number (default: LCN = 1).



The test can take up to 4 minutes during which the ARGUS will display a rotating bar. In the second line, beginning at the left, you will find the just tested TEI and its result:
 + = X.31 is available for this TEI
 - = X.31 is not available for this TEI

<ABORT > Stop the test and return to the Single tests menu

After the test sequence is completed, the ARGUS will show whether the X.31 service is available for Layer 3 for the TEIs found in Step 1.

```
X.31 test
TEI:02++
TEI:03+-  13  67
ABORT
```

Operation

<↓> Scroll through the test results (only available when the ARGUS finds more than two TEIs)

<ABORT > Return to the Single tests menu

Test results:

TEI 02 = the first valid TEI value is 02.

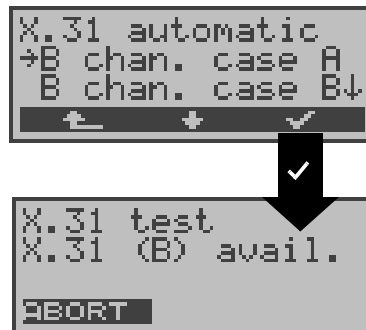
- + + = Both test steps were successful
- + - = the first test step was successful, the second step not In this case, the ARGUS will display the relevant X.31 cause for the failure (in the example above: 13) and an associated diagnostic code (in the example: 67), if there is one (see "X.31 Test – Error messages" on page 233).

If the X.31 service is not available in the D-channel, the ARGUS will display the message "x.31(D)n. impl.".

10.4.1.2 B-Channel - Case A

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 with LCN (will be saved in the speed-dialling memory as the **X.31 test number**. on page 218 “Saving Call Numbers”).

The ARGUS will first setup a D-channel connection and then attempt to set up a X.31 connection on the B-channel.



Operation	
<↓>	Select B-Channel - Case A
<✓>	Confirm your selection: The ARGUS will start the test
<↑>	Return to the Single tests menu
If the test can be completed successfully, the ARGUS will display “X.31(B) avail.”. In the event of an error, the X.31 cause and a diagnostic code will be displayed.	
<ABORT>	Abort and return to the Single tests menu

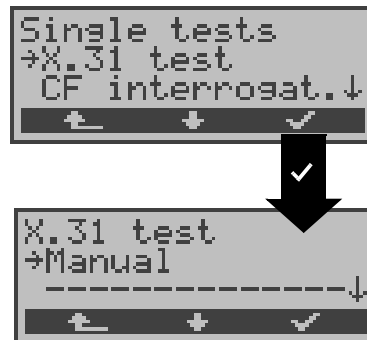
If the test fails, because the ARGUS cannot setup a D-channel connection, a corresponding message will be displayed.

10.4.1.3 B-Channel - Case B

This test is identical with the “B-Channel Case B” test, except that it is not necessary to enter a D-channel call number.

The ARGUS will first setup a D-channel connection (via the service) and then attempt to set up a X.31 connection on the B-channel.

10.4.2 Manual X.31 Test



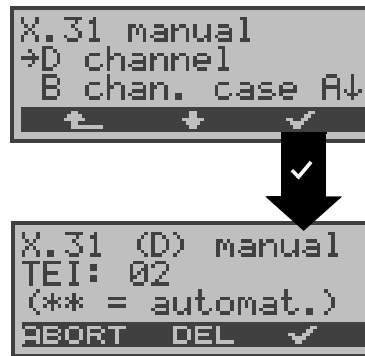
Operation	
< ↓ >	Select X.31 test
< ✓ >	Confirm your selection
< ↶ >	Return to the Main menu
<hr/>	
< ↓ >	Select Manual
< ✓ >	Confirm your selection
< ↶ >	Return to the Single tests menu


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

10.4.2.1 D-Channel:

In this test variant, the ARGUS will first request a TEI and a X.31 number with LCN (will be saved in the speed-dialling memory as the **X.31 test number**. on page 218 "Saving Call Numbers"). If a " ** " is entered for the TEI, the ARGUS will automatically determine a TEI.

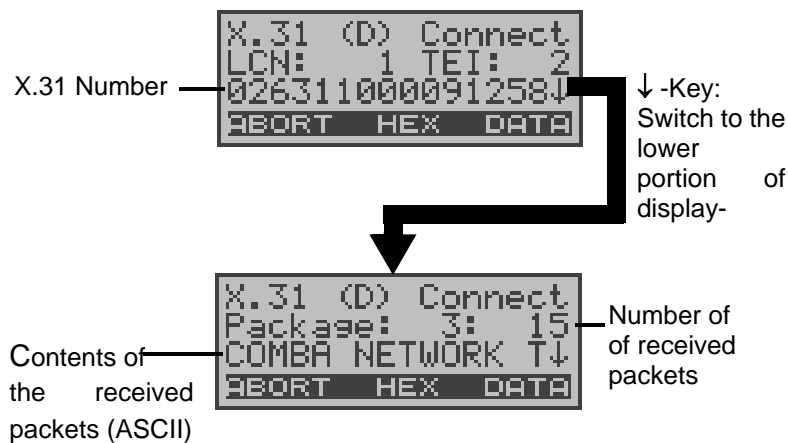
Using the first TEI with which X.31 is possible, the ARGUS will begin to setup an X.31 connection.



Operation	
<↓>	Select D-channel
<✓>	Confirm your selection
< ↶ >	Return to the Single tests menu
	Enter the TEI If ** is entered, a TEI will be selected automatically
	Delete the TEI
<✓>	Setup a X.31 connection
<ABORT>	Return to the <i>X.31 Manual</i> submenu

Once a connection has been successfully setup, you can begin to send predefined data packets. The ARGUS will count the data packets sent and received and will display (as far as possible) the contents of the data packets received.-

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.



Operation

- < DATA > Sends a predefined data packet
In the example, 3 packets have been sent thus far.
- < HEX > Displays the contents of the received data packet (in hexadecimal)-
- < ABORT > Clear the connection

10.4.2.2 B-Channel - Case A

For this test variant, a D-channel call number and a X.31 number with LCN must be entered.

The ARGUS will first setup a D-channel connection.

Once the D-channel connection has been setup, the ARGUS will setup a X.31 connection via a B-channel:

```
X.31 (B) Connect
LCN: 1 TEI: 2
026311000091258↓
ABORT HEX DATA
```

If the X.31 connection cannot be setup, 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.

Once a connection has been successfully setup, you can begin to send predefined data packets. The ARGUS will count the data packets sent and received and will display (as far as possible) the contents of the data packets received.



```
X.31 (B) Connect
Package: 10: 23
ARGUS44 V2.28 ↓
ABORT HEX DATA
```

For further information about the display, please see “Chapter 10.4.2.1 D-Channel: ”.

10.4.2.3 B-Channel - Case B

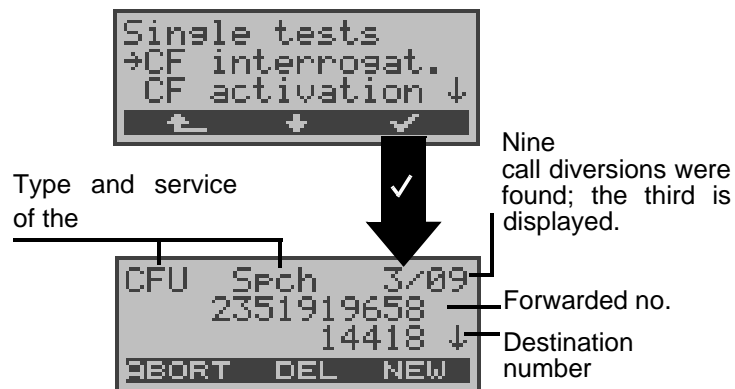
This test is identical with the “B-Channel Case B” test, except that it is not necessary to enter a D-channel call number.

10.5 CF Interrogation

The ARGUS will check whether a call diversion has been setup in the exchange for the access under test.-

After the test, 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 setup call diversions.

Any call diversion setup in the exchange can be cleared with the ARGUS.



Operation	
< ↓ >	Select CF interrogation
< ✓ >	Confirm your selection
< ↑ >	Return to the Main menu
The test can take several seconds.	
↓ -Key	Scroll through the test results
< DEL >	The displayed call diversion will be cleared - after you have been prompted to confirm that you really wish to do this - in the exchange
< NEW >	Repeat the CF interrogation
< ABORT >	Close the results display and open the Single tests menu

Clearing a Call Diversion

After you press , a query will appear asking whether you are sure.

```
CFU Spch 3/09
2351919658
Delete CF?
ABORT YES ALL
```

Operation

< DELETE >

The ARGUS clears the displayed call diversion in the exchange.

<ABORT >

Abort the process; the displayed call diversion will not be cleared

Once the call diversion has been successfully cleared in the exchange, the ARGUS will display:

```
Diversion/s
deleted!
CONT.
```

If the call diversion could not be cleared, the ARGUS will report:

```
Call diversion/s
not erasable!
CONT.
```



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 acknowledgment of the interrogation of call diversions, implying that no call diversions have been setup.--

Therefore, in the event of a negative acknowledgment, the ARGUS will request that you enter your **own** MSN.-

The call diversion interrogation will be repeated **MSN-specific**.

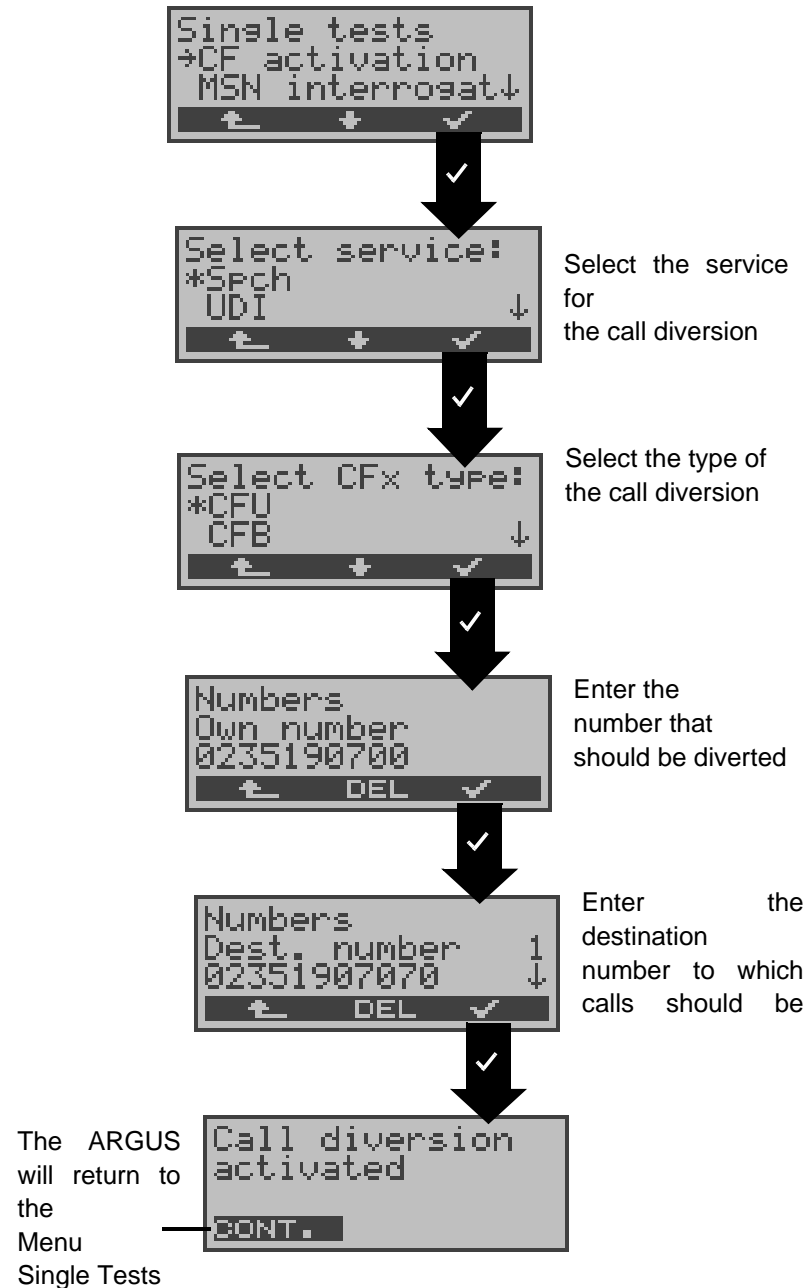
Naturally, in this case, the results of the interrogation of the call diversion only apply for the entered MSN and **not** for the entire access.

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



Basic Service	Abbreviation
All services	A11
Voice (speech)	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
Unknown Basic Service	Unkno

10.6 CF Activation

Using the ARGUS, call diversions can be setup in the exchange.



Operation	
<↓>	Select CF activation
<✓>	Confirm your selection
<↑>	Return to the Main menu
<↓>	Select the call diversion service

< ✓ >	Confirm your selection and the CFx Type dialog will open
< ↵ >	Return to the Single tests menu
< ↓ >	Select the call diversion type
< ✓ >	Confirm the selection and the Enter numbers dialog will open
< ↵ >	Return to the Single tests menu
	Enter the number which should be diverted under "own" call number-
< DEL >	Delete the digit before the cursor
< ✓ >	Confirm your entry and the Enter numbers dialog will open
< ↵ >	Return to the Single tests menu
	Enter the call number to which calls should be diverted
< DEL >	Delete the digit before the cursor
< ✓ >	confirm The call diversion has now been setup.
< ↵ >	Return to the Single tests menu

10.7 MSN Interrogation

(only on a BRI access with DSS1)

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.

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

```
Single tests
→MSN interrogat.
Phone / connect↓
← ↓ ✓
```

```
MSN      1/03
      2351919658
TON:national ↓
← ↓ NEW
```

The ARGUS will display the first of three MSNs found

Operation	
< ↓ >	Select MSN interrogation
< ✓ >	Confirm your selection
< ↶ >	Return to the Single tests menu
< ↓ >	Scroll through the test results Depending on the Type of Number (TON), the ARGUS will display the call numbers in different versions: <ul style="list-style-type: none"> • only the MSN (without area code) • with national area code without leading the "0" • with country code without leading the "00" • complete call number
< NEW >	Repeat the MSN interrogation
< ↶ >	Continue to the Single tests menu

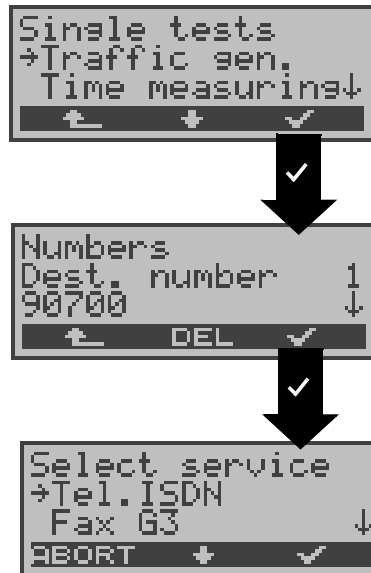


Due to differences in the protocol, some exchanges do not support MSN interrogation.- In this case, the ARGUS will report:
MSN interrogation not possible!

10.8 Traffic generator

(only on a PRI access)

The ARGUS will automatically setup as many as 30 connections and will display which B-channels on the PRI access are available for incoming and outgoing calls.



<↓>

Operation

Select **Traffic Gen.**

<✓>

Confirm your selection

<┐>

The ARGUS returns to the Single tests menu.

<↓>

The speed-dialing memory, which can be used to store and dial your own plus up to 8 other call numbers, will open automatically -(see "Saving Call Numbers" on page 218).

Scroll to the desired call number


or

enter the new call number.




< DEL >



Delete individual digits

<  >	The ARGUS returns to the Single tests menu.
< ✓ >	The Select service window opens
< ↓ >	Select the Service
< ✓ >	Confirm the Service selected and the B-channel entry dialog will open
<ABORT >	The ARGUS returns to the Single tests menu.

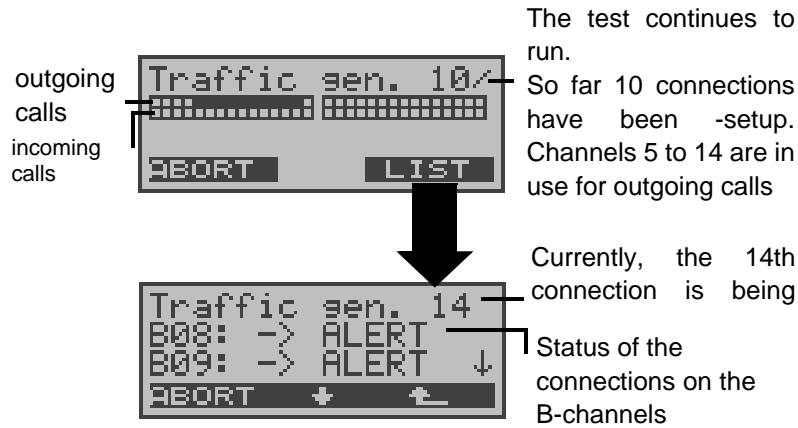
B channels
Quantity: 20
Start with: 5
ABORT DEL ✓



Call interval
length: 500 ms
ABORT DEL ✓

	Operation
	Second line: Enter the number of channels on which the ARGUS should setup connections.- Move to the lower line with the ↓ -Key Third line: Enter the B-channel on which the first connection should be setup. All further connections will be setup on the sequentially following B-channels.-
	< DEL > Delete the digit before the cursor
	< ✓ > confirm The window, Call interval , will now open.
<ABORT >	The ARGUS returns to the Single tests menu.
	Enter the call interval (pause between outgoing calls) Valid values are between 100ms and 15000ms. If the call interval is too short, some exchanges will have problems handling the calls.

< DEL >	Delete the digit before the cursor
< ✓ >	The test will start
< ABORT >	The ARGUS returns to the Single tests menu.



The test must be terminated manually with < ABORT >.

Operation

During the test, the number of attempts to setup a connection are shown in the upper display line--.

In the second line, the ARGUS will show the number of connections setup on the individual B-channels (incoming and outgoing).

< List >	Displays the status of the individual connections
< ABORT >	Ends the test; the ARGUS will clear down all established connections.-
< ↓ >	Scroll through the list
< ↑ >	The ARGUS will return to the previous display
< ABORT >	Ends the test. The ARGUS will display a list of the causes responsible for the disconnect.

After the test has ended, the `< List >` function can be used to view the causes responsible for disconnecting the individual B-channels.

```
Traffic gen. 14
B08: -> DIS 0
B09: -> DIS 0↓
ABORT ↑ ↓
```

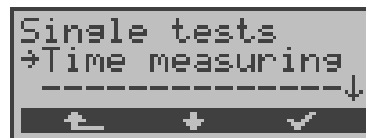
The cause which led
to the
connection being
cleared down

10.9 Time measuring

The ARGUS measures three different times:

- **Connection setup time**
- **Propagation time of the data and**
- **Transit time differential (interchannel delay)** of the data in two B-channels.

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



<  >

<  >

<  >

Operation

Return to the status display

Select **Time measuring**

Open the **Time measuring** menu

10.9.1 Connection setup time

The ARGUS places an outgoing call and measures the time between sending the SETUP and receiving the ALERT or CONN.

After the Connection setup time function is started, you must enter the call number, the service and the B-channel (see "Setting up an ISDN connection" on page 125). The ARGUS disconnects automatically as soon as the measurement is completed.



Result:



The ARGUS will show the measured time in seconds and the received L3 message, which terminated the

Operation	
< ↓ >	Select Conn.up time
< ✓ >	Start measurement
< ↶ >	Return to the Single tests menu
< ABORT >	Closes the results window, the ARGUS returns to the Time measuring menu.

If the ARGUS cannot perform the measurement, e.g. because the call number entered was wrong or no B-channel was free, the corresponding cause will be displayed.

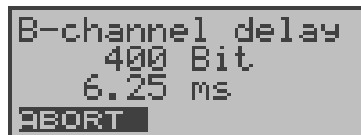
10.9.2 B-channel delay

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 B-channel delay is given in multiples of the time required for sending one bit at 64 kBit/s. (The time for sending 1 bit at 64 kBit/s = approx. 15.26 µs.)

After the B-channel delay function is started, you must enter the call number, the service and the B-channel -(see "Setting up an ISDN connection" on page 125). The ARGUS disconnects automatically as soon as the measurement is completed.



Result:



The ARGUS shows the difference in the B-channel (propagation) delays

Operation	
< ↓ >	Select B-channel delay
< ✓ >	Start measurement
< ↶ >	Return to the Single tests menu
< ABORT >	Closes the results window, the ARGUS returns to the Time measuring menu.

If the ARGUS cannot perform the measurement, e.g. because the call number entered was wrong or no B-channel was free, the corresponding cause will be displayed.

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".

10.9.3 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 B-channel delay is given in multiples of the time required for sending one bit at 64 kBit/s.

(The time for sending 1 bit at 64 kBit/s = approx. 15.26 µs.)

After the Interchannel delay function is started, you must enter the call number, the service and the B-channel (see "Setting up an ISDN connection" on page 125).

The ARGUS disconnects automatically as soon as the measurement is completed.



Result:



The ARGUS displays the difference in the propagation times in bits and milliseconds.

Operation	
<↓>	Select Interchan.delay
<✓>	Start measurement
<↑>	Return to the Single tests menu
<ABORT>	Closes the results window, the ARGUS returns to the Time measuring menu.

If the ARGUS cannot perform the measurement, e.g. because the call number entered was wrong or no B-channel was free, the corresponding cause will be displayed.

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".

11 Connection

11.1 Setting up an ISDN connection

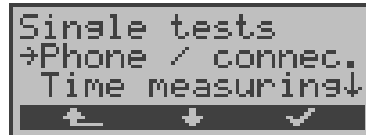
- a) The ARGUS can setup a connection for the following services:


Service	Name in the ARGUS display / abbreviation
Language	Language / Lang
Unrestricted Digital Information	UDI 64kBit / UDI 64
3.1 kHz Audio	Tel.analog / Tel.
7 kHz Audio	7 kHz audio / 7 kHz
Unregistered 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 basis mode	Teletex / Ttx64
International inter working 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	Videotel.1 / Vid.1
Video Telephony, second connection	Videotel.2 / Vid.2

Additional three user-specific services (see "Services" on page 186)

- b) In the case of a telephone connection, you can either use the integrated handset or attach an optional external handset.
- c) When an ISDN connection is setup, pressing the number keys (0-9) or the * or # will generate and send the corresponding DTMF tones.

Procedure Incoming Call (ISDN)



Operation	
<↓>	Select Connection
<✓>	Confirm the selection and the Connection dialog will open
<⬆>	Return to the Main menu
Alternative:	Regardless of the currently active menu level, the ARGUS will begin to setup a connection.
 -Key	The Connection dialog will now open.

- **Select the numbers**

The Connection dialog will open automatically. Here you can choose between overlap and en-bloc signaling. When overlap signaling is chosen, the digits will be individually dialed as the number keys are pressed. In en-bloc signaling, the complete dialing information will be sent in one block.

En-bloc:

In the case of en-bloc signaling, the call number is dialed from the speed-dialing memory.-



<↓>

Operation

Select **overlap** or **en-bloc** signaling. Overlap is used as the default to permit the simplest access to the dialing tone

<✓>

Confirm your selection

or



-Key

In the case of overlap signaling, the Select service dialog opens immediately.

Select the Select service entry mask and the *B-channel select* will be skipped. The ARGUS will immediately display the *Outgo.call* window.

<↶>

Return to the Single tests menu

Only with en-bloc signaling:

The speed-dialing memory, which can be used to store and dial your own plus up to 8 other call numbers, will open automatically -(see "Saving Call Numbers" on page 218).

<↓>

Scroll to the desired call number

or



enter the new call number.

< DEL >

Delete individual digits

<↶>

Return to the Single tests menu

<✓>

The Select service dialog opens

or



-Key

Select the Select service entry mask and the *B-channel select* will be skipped. The ARGUS will immediately display the *Outgo.call* window.



The extension is separated from the access number by a #. 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).

example:

02351 / 9070-20 is entered as 023519070#20.

Call numbers can be deleted digit for digit with the < DEL>-Key (DELeTe).



Simplified overlap signaling using the telephone key:

Regardless of the currently open menu, you can quickly and easily place a call:

press the telephone key .

The ARGUS will jump to the Overlap/Connect function (in the Single tests menu). Press the telephone-key again (you will hear the dialing tone). The call number can now be entered and dialed digit-by-digit. The connection will be setup-.

- **Selectservice**



Operation

- <↓> Select the **Service**
- <✓> Confirm the **Service** selected and the *B-channel select* entry dialog will open.
- <ABORT > Return to the Single tests menu

- **B-channel select**

B-channel 2
is



When entering a new B-channel, first press DEL once.



Operation

- Enter the **B-channel** (by default, the last B-channel used will be suggested) If you enter an *, the ARGUS will choose any B-channel that is free.
- < DEL > Delete B-channel
- <✓> Confirm your selection and the *Outgo.call* window will open
- < ⬅ > Return to the Single tests menu

- **Connection**

Own number
Dialled No.

Outgo.call Tel.	Service
90700	B02
to: 01191	↓
CLEAR TM	



Operation

In overlap signaling mode, the call number is entered and dialed digit-by-digit (third line).--

< ABORT >

Quit the dialling procedure
The ARGUS returns to the Single tests menu.

< TM >

Call the Test Manager (see "Test Manager" on page 140)

The connection is setup on B-channel 2 status:

Connect.	Tel.
90700	B02
to: 01191	↓
CLEAR TM	

Operation

↓ -Key

Display additional call data e.g. charges

< ABORT >

Disconnect
The ARGUS returns to the Single tests menu.

< TM >

Call the Test Manager (see "Test Manager" on page 140)

- **Display additional call data**

If the ARGUS displays a ↓ on the right on the third line, additional information can be viewed by simply pressing a button (τηε ↓-key) :

- **Subaddress**

The sub-address of the caller (second line) and the dialed sub-address will be displayed.

```

Connect.   Tel.
SUB:808076
to: 01191   ↓
CLEAR TM

```

- **User-User Information**

```

Connect.   Tel.
UUI:HALLO
          ↓
CLEAR TM

```

- **Display Information**

- **Type of number (T.o.n.)**

- **Numbering Plan (NP)**

- **Advice of charge**

The up-to-date AOC information will be presented on the third line of the display as it is received. With the < ↓ > you can scroll through additional information (if there is any).

```

Connect.   Tel.
AOC:
Units      24↓
CLEAR TM

```

Operation	
< ABORT >	Disconnect The ARGUS returns to the Single tests menu.
< TM >	Call the Test Manager (see "Test Manager" on page 140)
↓-Key	Additional information will be shown in the display.

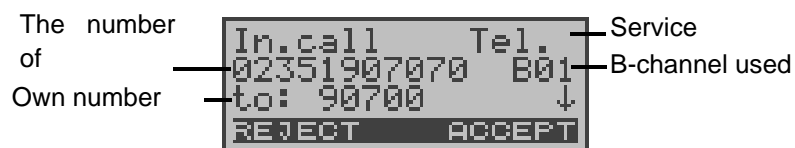
If the charges are not given in units, rather directly as currency, the ARGUS will display the current charges in currency.

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 DISPLAY message's character string will be displayed.

Procedure for an Incoming Call (ISDN)

An incoming call can be taken at any time even when a test (e.g. BERT) is in process (see “Simultaneously Starting Several Tests” on page 141).

The ARGUS will signal an incoming call with an audible tone and a message on the display.



< ACCEPT >
or



< REJECT >

↓ -Key

Operation

Accept the incoming call

Reject the incoming call

Additional information is available (optional: indicated by the ↓ on the display) and can be displayed (e.g., SUB, UUS)-

The 16-digit call number (DDI) will be displayed in its entirety, as long as the “Alerting mode” in the “Parameter” menu has been set to “manual” (see Chap. 16.2.3 Alerting mode page 174).

On a P-MP access, you can use the Call acceptance (-see "Call Acceptance" on page 188) 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 218) and the incoming call has a destination MSN.

After a call is taken, the following display will appear:

```

Connect.  Tel.
02351907070 B01
to: 90700 ↓
CLEAR TM

```

A telephone connection to the subscriber with the call number 02351907070 now exists on B-channel 1.-

< ABORT >

Operation

Disconnect.
Continue to the Single tests menu.

< TM >

Call the Test Manager
(see "Test Manager" on page 140)



If an external handset has been connected (see "Handset" on page 211), the following will be displayed when the call is accepted:

```

Connect.  Tel.
02351907070 B01
to: 90700 ↓
CLEAR TM INTERN

```

Switches to the internal handset

< INTERNAL >
>

Operation

Switches to the internal handset
(necessary in order to take a call, if no headset is connected.)

< ABORT >

Disconnect
Continue to the Single tests menu

< TM >

Call the Test Manager (see "Test Manager" on page 140)

Charge information in NT mode:

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

11.2 Setting up an ISDN connection

To clear (disconnect) the connection: press < **CLEAR** > or the



-Key

When the ARGUS is clearing the connection or when it has been disconnected, it will display the following:

```
Call clearing
Normal clearing
Loc.: user
CONT. TM
```

Cause
↓

↓ -Key

< **TM** >

< **CONT.** >

Operation

Display further information

Call the Test Manager (see "Test Manager" on page 140)

Continue to the Single tests menu

The second line in the display will show the cause (see the table below) of the disconnect.

In the third line, the ARGUS shows the location of the party that initiated the disconnection or where the fault (causing the disconnect) occurred.-

If the charges are sent at the end of the connection, the charges will be displayed accordingly.

The connection has now been cleared-down and the B-channel is released.

The following causes are shown in clear text:

Cause	Display	Explanation
255	Active clearing	User actively initiated the disconnection
Long 0	Normal clearing	Cause element with Long 0 is mostly used by 1TR6

01	Unalloc. number	"No access under this call number" is signaled
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. Objectives	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"-

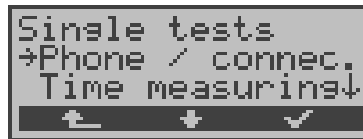
Other causes are not shown in clear text, rather as decimal codes (see Appendix B and C).

11.3 Operation on a POTS (analog) access

Procedure for an Outgoing Call (POTS)

The ARGUS sets up a connection to another terminal.
If the remote terminal is a telephone, you can use the integrated handset or an optional external headset to hold a conversation with the remote party.

The charges due will be displayed, if the information is available for the access under test.



Operation	
< ↓ >	Select Connection
< ✓ >	Confirm the selection and the Connection dialog will open-
< ⬆ >	Return to the Main menu



Simplified overlap signaling using the telephone key:

press the telephone key .

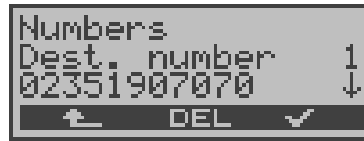
The ARGUS will jump to the Overlap/Connect function (in the Single tests menu).

Press the telephone-key again (you will hear the dialing tone). The call number can now be entered and dialed digit-by-digit. The ARGUS will setup the connection.



Operation	
< ↓ >	Select overlap or en-bloc signaling
< ✓ >	Confirm your selection and continue to the next display
< ⬆ >	Return to the Single tests menu

In the case of en-bloc dialing, the call number is dialed from the speed-dialing memory.-



< DEL >

< ✓ >

↓ -Key
or
↑ -Key

< ⏮ >

Operation

Enter the number digit-by-digit. The last number dialed will always be used as the default (simplified last number redial)-

Delete the number digit-by-digit

Confirm the number and continue to the next display

Scroll through the stored numbers

Return to the Single tests menu

In “**overlap sending**”, the call is started immediately, the dial tone is audible and the ARGUS is displaying its dialing window.- In contrast to en-bloc signaling, you can now enter the call number digit-by-digit using the numeric keypad.



< ABORT >

< ⚡ >

Operation

Disconnect

Return to the Single tests menu

Generate a FLASH signal

As soon as the remote party answers, a voice connection will be set up.

The charges will be displayed in the third line, if the access supports this feature.

Procedure for an Incoming Call (POTS)

The ARGUS signals an incoming call both audibly and on the display.



< ACCEPT >
or



-Key

Operation

Accept the incoming call

If the access supports CLIP, the ARGUS will display the number of the caller on the second line (-see "POTS CLIP" on page 198).

After accepting the call:



< ABORT >

< ⌋ >

Operation

Disconnect
and return to the Single tests menu

Generate a FLASH signal

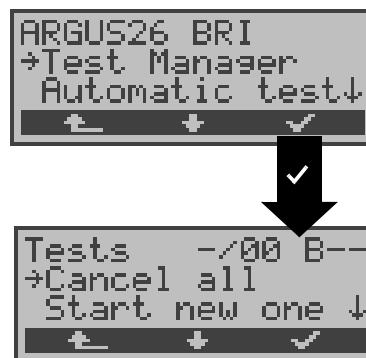
12 Test Manager

The ARGUS can simultaneously start several tests or “connections” fully independently of each other.

A maximum of 31 simultaneous “connections” are possible. 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.

Calling the Test Manager in the Main menu:



	Operation
< ↓ >	Select the Test Manager menu
< ✓ >	Confirm your selection
< ↑ >	Return to the status display
< ↓ >	Select the desired menu item e.g. Start new one
< ✓ >	confirm
< ↑ >	Return to the Main menu



If the ARGUS has currently opened the Single tests or Configuration menu or one of the Single test functions, the Test Manager can be opened using the **6-Key** or via the < **TM** >softkey.

12.1 Simultaneously Starting Several Tests

Starting a new test or connection during an existing connection

The ARGUS has an existing connection (see Chap. 11.1 Setting up an ISDN connection page 125). Open the Test Manager (6-Key or < TM >).

Number of existing connections
 ↓

Tests -/01 B--
 →Start new one
 Outgo. connect↓
 ← ↓ ✓

↓
 ✓

ARGUS26 BRI
 →Single tests
 Test Manager ↓
 ← ↓ ✓

	Operation
< ↓ >	Select the <i>Start new one</i> function
< ✓ >	the ARGUS will jump to the status display
< ↶ >	Returns to the existing connection
The ARGUS jumps to the Main menu from which you can start other tests as usual.	

```

Single tests
→Bit error test
X.31 test ↓
← ↓ ✓
  
```

Start another test, e.g. the bit error test from the Single tests / Bit error test menu (see Chap. 10.3.1 BERT startwait page 94). Similar to Chap. 6.6.5.1, the ARGUS will perform a bit error test independent of the currently existing connection.

```
BERT 2^15      B02
15:45:42      3
synchron LOS:  0
ABORT TM ERROR
```

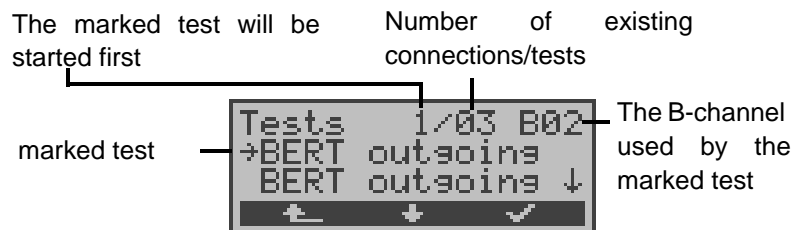
Operation

- < TM >** The ARGUS jumps to the Test Manager
- < ERROR >** Injecting an "artificially generated" bit error-
- <ABORT >** Cancels the bit error test and displays the BERT results. In the BERT results window, press the <TM> softkey to return to the Test Manager.

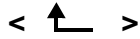
Test - aborting

If a test (or connection) is cancelled, the ARGUS will return to the Test Manager if there are any other tests (or connections) running in the background.

All of the existing connections (and/or tests) will be displayed by the Test Manager:

**Operation**

- < ↓ >** Scrolls through all of the existing connections or tests. The ARGUS displays the B-channel used for the currently selected test (in the example a BERT) in the first line.
- < ✓ >** The ARGUS will jump to the marked test.



The ARGUS will return to the point from which the Test Manager was called (e.g. to a test running in parallel). If this is not reasonable, because e.g. no other test is running, the ARGUS will return to the Main menu.



Some tests use so many resources that they cannot be run in every combination with other tests. In this case, the ARGUS will display the message “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	30	Yes
Outgoing call	30	Yes
BERT	1	Yes
LOOP	2	Yes
Service Tests	1	No
Suppl.serv.tes t	1	No
Time measurement: Setting up call	1	No
Time measurement: B-channel delay	1	No
Time measurement: Interchannel delay	1	No
X.31 Test	1	No
CF Interrogation	1	No

MSN Interrogation	1	No
Traffic Gen.	1	No
Auto. Test	1 When the Auto. Test is running all of the resources are in use and no other tests or connections are possible-	No
BRI level	1	No
BRI level, remote end	1	No
U voltage	1	No
U power	1	No
POTS voltage	1	No

Accepting an incoming call/connection when a test is running.

The ARGUS signals an incoming call with a corresponding message on the display and an audible signal (see Chap. 11.1 Setting up an ISDN connection page 125).

The incoming call can be accepted without influencing the currently running test. If either the **B-channel loop** or **BERT wait** function is active, the call will be accepted automatically.

The manner that multiple connections are handled is illustrated in the following example of an incoming call that arrives during a BERT, but it is identical for all other tests.

The ARGUS is performing a bit error test as an incoming call is signaled on the display:


```

In.call    Tel.
02351907070 B01
to: 90700  ↓
REJECT    ACCEPT

```

< REJECT >

Operation

Reject the incoming call. The ARGUS returns to the running test (in the example: to the BERT)

< ACCEPT >

Accept the incoming call. The ARGUS will then jump to the Connections dialog. The connection is active and in the foreground.-

The BERT continues to runs in the background and can be viewed via the Test Manager (6-Key).-

6 -Key

The ARGUS jumps to the Test Manager

```

Tests  1/02 B02
→BERT outgoing
Incom. connect↓
←  +  ✓

```

Operation

< ↓ >

Select the **BERT outgoing**

< ✓ >

The ARGUS jumps to the BERT

< ↑ >

The ARGUS will then return to the "Connections" dialog.



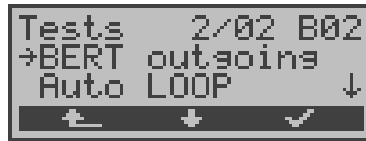
If available, the internal handset will be assigned to the currently started (voice) connection.-

Only one speech channel can be active at a time.

The assignment of the handset to a given connection is also retained in the background.

12.1.1 Switching Between Tests

First call the Test Manager.



Operation

- <↓> Mark the test/connection that you wish to switch to
- <✓> The ARGUS will jump to the selected test.
- <⬆> The ARGUS will return to the point from which the Test Manager was called

12.1.2 Cancel all

First call the Test Manager.



Operation

- <↓> Select **Cancel all**
- <✓> The ARGUS will cancel all of the currently running tests/connections and then return to the Main menu.
- <⬆> The ARGUS will return to the point from which the Test Manager was called

13 Automatic Test

The ARGUS performs an automatic test series and displays the test results.

With the special optional cable (RJ45 to Centronics connector), you can print out a simple test report on a Centronics printer.

The test results can also be saved on a PC (with the Intec software WINplus or WINanalyse installed) and then be viewed and printed as a comprehensive test report.--

The ARGUS automatically performs the following sequence of tests:

On a BRI or U-interface access(optional) (ARGUS in TE Mode)

- Status
- Level Measuring
- Service Tests
- BERT in an extended call to oneself
- Suppl.serv.test
- CF Interrogation
- MSN Interrogation
- X.31 test

On a PRI access (ARGUS in TE Mode)

- Status
- Service Tests
- BERT in an extended call to oneself
- Suppl.serv.test
- CF Interrogation
- X.31 test
- Read the L1 counter and measurement time

On a BRI or U-interface permanent circuit (optional)

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

On a PRI permanent circuit

- Status
- BERT in end-to-end mode (e.g. with a loopbox on the remote end)
- Read the L1 counter and measurement time

The test results and the time will be saved in the ARGUS together with the date (assuming the exchange sent it via the D-channel).-

Additionally, settings such as your own plus a remote call number will also be saved.

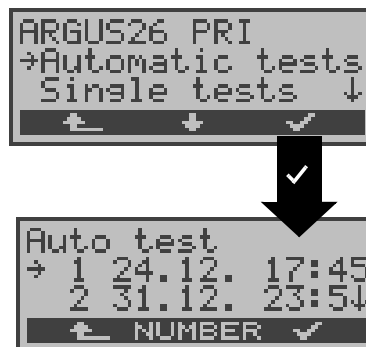
The test results are stored in non-volatile memory and are not lost when the ARGUS is switched off.




The ARGUS saves the results of multiple test series (records 1,2,3...).

Each function in the Automatic test menu refers to one of the test series saved as a record.

Therefore, a window will open first showing a list of the records saved.



Operation	
< ↓ >	Select Automatic Test Tests Menu
< ✓ >	Confirm your selection
< ↶ >	Return to the status display
< ↓ >	Select record: Each data record (holding the results of a saved test) is identified by a sequential number plus the date and time "Free" data records have only a number.

<NUMBER>	The number of the access tested will be shown with each of the saved records of test results, if the number was entered under own number in the speed-dialing memory. (see "Saving Call Numbers" on page 218).
< ✓ >	confirm A menu with various functions for processing the selected data record will open automatically.
<  >	Return to the Main menu


If an automatic test sequence is started by pressing function key 4 instead of via the Automat.Tests menu, a data record will be selected automatically and the Automatic test will begin immediately.

The result will be saved in the first data record that is free (e.g. No.3 when two test series are already saved).

If all of the records are used, the ARGUS will return to the "Autom. Test" menu and request permission to overwrite the oldest test results.

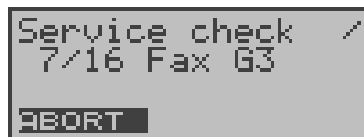
13.1 Starting the Automatic Test



Operation	
<↓>	Select Start
<✓>	Confirm your selection
<⬅>	Return to the Auto.Test menu
	Enter your Own number
	Only on accesses with the DSS1 protocol: also enter a remote call number
<✓>	Confirm and the Select service window will open.
<↓>	Select service (will be used for the suppl.serv.test)-
<✓>	Start test



Before running a BERT, check and, if necessary, modify the measurement time and error level (threshold) (see Chap. 16.3.1 BERT - duration page 191).



During the test series, the first three lines in the display will reflect the Single test currently being run. If the test series is canceled (< **ABORT** > softkey), another menu will open:



In this menu, you have the option of either aborting the automatic series of tests or skipping individual tests (e.g. service check).

Test - aborting

An automatic test series can be terminated before it is finished:



<↓>

<✓>

<ABORT >

Operation

Select **Interrupt test**

Confirm that the test should be stopped

Continue the test series

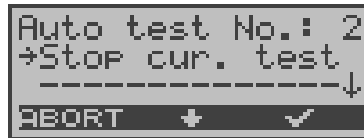


If the automatic test is interrupted, the test results gathered up to this point will **not** be saved.

Any “old” data stored under this data record number from a prior test will be retained.

Skipping individual tests

A single test (e.g. BERT) can be skipped:



Operation

<↓>

Select **Stop cur. test**

<✓>

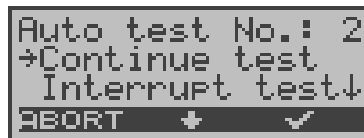
The test currently being performed will be skipped (e.g. BERT) and the next test in the automatic sequence will start.-

<ABORT >

Resume Automatic Test

Resume Automatic Test

A test series, which was interrupted with <ABORT>, can be resumed. In this case, the interrupted single test (e.g. BERT) will be repeated.



Operation

<↓>

Select **Continue test**

<✓>

In this case, the interrupted single test (e.g. BERT) will be repeated and the test series resumed.-

<ABORT >

Resume Automatic Test

The ARGUS displays the result of the automatic test .



The results of the individual tests will be displayed in the following order:-

circuit

For: **PRI permanent circuits**

- ARGUS 26



```
Auto test No.: 2
Tel. ISDN  ++123
Fax G3     ++   ↓
ABORT  +   CONT.
```

Operation

< ↓ >	Scroll through the results of a single test
< CONT.>	Jump to the results of the next single test
< ABORT>	Return to the Auto.Test No.2 menu

The interpretation of the test results is described in the individual sections (e.g. in Chapter 10.2 Service check page 86) .

13.3 Test results – sending to a PC

To visualize and archive the test results on the PC, the data records can be transferred to the PC via the serial interface using the included cable (connect the cable between the ARGUS “L-Test” jack ---- PC’s serial interface).

Connect the ARGUS to your PC.

Procedure

Start ARGUS WINanalyse on the PC.-

First select the data record, which should be transferred to the PC (in the following example Test No.2) and then start the transfer of data:



<↓>

<✓>

< ↶ >

Operation

Select **Test data to PC**

Start transfer of data to PC

Return to the Auto.Test menu

13.4 Printing the test results (optional)

With a special (optional) cable, it is also possible to print a simplified test report on a Centronics printer.

Plug the matching end of the special cable into the **L-Test** jack on the ARGUS. Plug the Centronics connector into the printer.

Select the data record that you wish to print (in the following example Test No.2).



< ↓ >

Operation

Select **Print data**

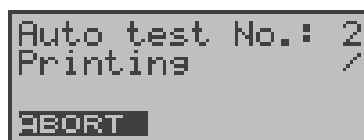
< ✓ >

Start printing

< ↶ >

Return to the Auto.Test menu

While printing, the following will be shown on the display:



< ABORT >

Operation

Quit printing

If an error occurs while printing, the ARGUS will show "No reply" in the second line of the display; if the data is transferred properly "Transfer OK" will be displayed.-

13.5 Deleting test results

The results of a test sequence can be deleted (Delete the results of all test sequences: see “Reset” on page 220).

Select the test sequence that you wish to delete (in the example Test No.2).



<↓>

<✓>

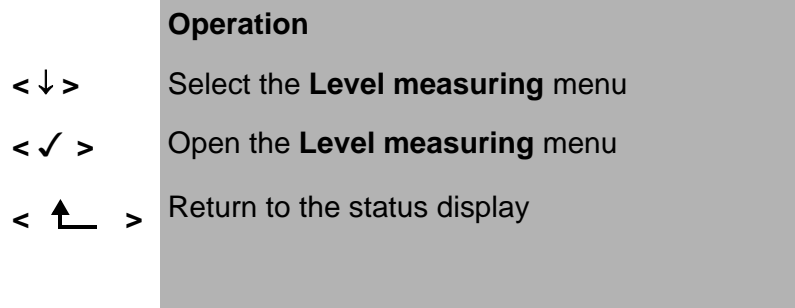
< ↶ >

Operation

Select **Delete**

The deletion will begin

Return to the Auto.Test menu

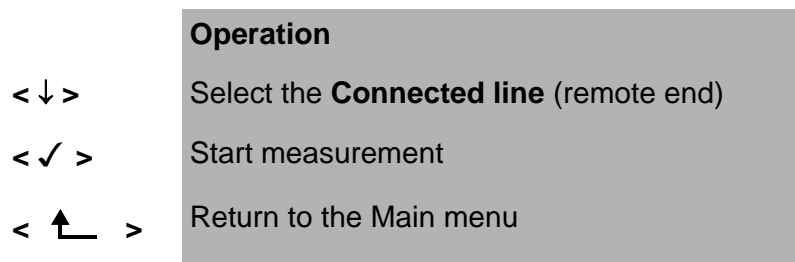


- **Level measurement – connected line**

Level measuring
→ Connected line
Other TE ↓
← + ✓

↓ ✓

Level: 0,64V OK
Voltage:
38,2V OK NORM
ABORT R>ON NEW



< NEW >	Layer 1 will setup again to ensure a proper measurement on a Layer 1 that is not permanently active
< R>ON >	insert a 100Ω resistor.
or	or
< R>OFF >	remove a 100Ω resistor.
<ABORT >	Return to the Level measuring menu

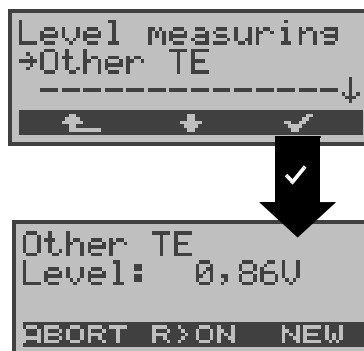
Measurement results:

1. line: The level of the useful signal in volts. An evaluation of the level follows:
 << level is too low
 >> level is too high
 OK level is in order (0.75V ^{+20%}_{-33%})
 ___ no voltage
3. line: The level of the feed in volts. An evaluation of the level follows.
 Afterwards, the type of supply will be displayed:
 NORM normal feed (40V ^{+4.25%}_{-13.75%})
 REV_ inverted phantom feed
 NONE no feed

• Level measurement other TE

In TE mode, the ARGUS will measure the level of a terminal connected in parallel. In this case, the ARGUS is **passive**.

Layer 1 must be active on the terminal, whose level will be measured. The ARGUS updates its measurement continuously.



	Operation
< ↓ >	Select Other TE
< ✓ >	Start measurement
< ↶ >	Return to the Main menu
< NEW >	Layer 1 will setup again to ensure a proper measurement on a Layer 1 that is not permanently active
< R>ON > or < R>OFF >	insert a 100Ω resistor. or remove a 100Ω resistor.
<ABORT >	Return to the Level measuring menu

Measurement results: The level of the useful signal in volts.

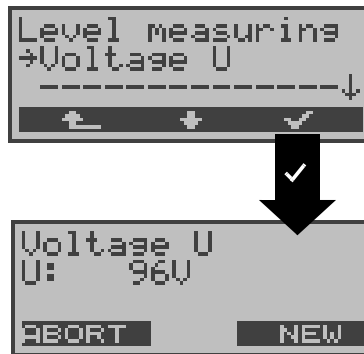


This measurement is only possible when the ARGUS is **not** supplied by the BRI.

14.2 Voltage measurement on a U-interface

- **Measurement of feed voltage - U-interface (optional)**

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

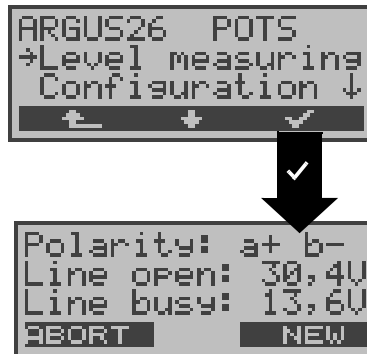


Operation	
<↓>	Select Voltage U
<✓>	Start measurement
< ↶ >	Return to the Main menu
<ABORT >	Return to the Level measuring menu

Measurement results: The level of the supply in volts.

14.3 Voltage measurement on a POTS access

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



Operation	
< ↓ >	Select the Connected line (remote end)
< ✓ >	Start measurement
< ↶ >	Return to the Main menu
< NEW >	Repeat measurement
< ABORT >	Return to the Level measuring menu

Measurement results:

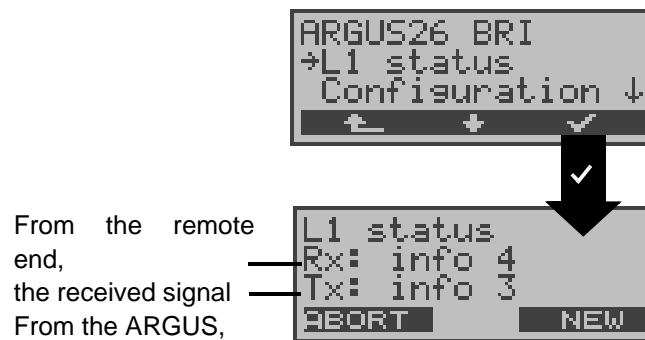
1. line: The polarity of the analog line (2 wire)
 Red plug: a
 Black plug: b
2. line: The normal voltage level in V
3. line: The voltage level when the line is “busy” in V

The measurement will be updated continuously.

15 L1 Status

15.1 The L1 status of a BRI access

The ARGUS displays in TE mode the current status of Layer 1: which signal is received from the remote end (Rx) and which signal the ARGUS sends (Tx).



	Operation
< ↓ >	Select the <i>L1 status</i> menu
< ✓ >	Open the L1 status function
< ↑ >	Return to the status display
< NEW >	Layer 1 will be setup, if it is not already
< ABORT >	Return to the Main menu

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

15.2 The L1 status of a PRI access

The ARGUS displays the Layer 1 alarms and messages in several windows, which provide detailed information regarding the state of the PRI access and the transmission line (For further information, see the CCITT/ITU guidelines G.703 and G.704).



The measurement time and all Layer 1 alarms and messages are updated continuously.

On the first line, you will find the time (in minutes and seconds) that has elapsed since the ARGUS was initially started or since it was last reset.



Operation

- <↓> Scroll through the display
- <x> The PRI relay for the Rx/Tx pin assignment will be toggled to its other position, regardless of the state that it was in before.
This function is only available with the L1 status menu, if there is currently no signal. The state of the relay will remain unchanged when you close the L1 status menu.
signal=means that Rx/Tx are normal
signal=means that Rx/Tx are inverted
- <RESET> Reset the History function and all counters
- <ABORT> Quits the function; the ARGUS will return to the Main menu

OK symbol: +
Error symbol: -
History symbol: ! this symbol means that regardless of
 the current Status (+ or -) an error
 has occurred during the measurement
 time.

The meaning of the individual displays:

Signal: On its receiving-side, the ARGUS has the correct

signal sent from the remote end (access or terminal depending on the operation mode TE or NT simulation) -and indicates this by a + . If Rx and Tx are connected normally a "=" will be shown after the signal; in the event that they are inverted (swapped) a " x" will be displayed.

FAS: (= **F**rame **A**lignment **S**ignal)
Indicates whether the ARGUS could correctly synchronize with the incoming 2 Mbit data stream's alternating frame identification word or message word and the, perhaps present, CRC4-superframe structure.-

CRC det: If CRC4-monitoring is active for the access or the terminal

and the ARGUS is able to synchronize itself to the CRC4 superframe, it will indicate this by displaying "CRC det +".

If "CRC det -" is displayed together with "Signal +" and "FAS +", this indicates that no CRC4 is active.

To o prevent power up effects (transients), we recommend that you set the display and counter to a defined initial state with a RESET.

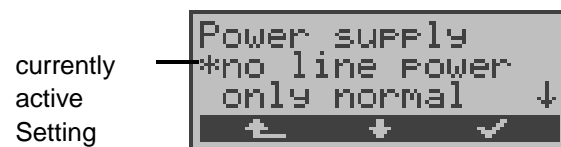
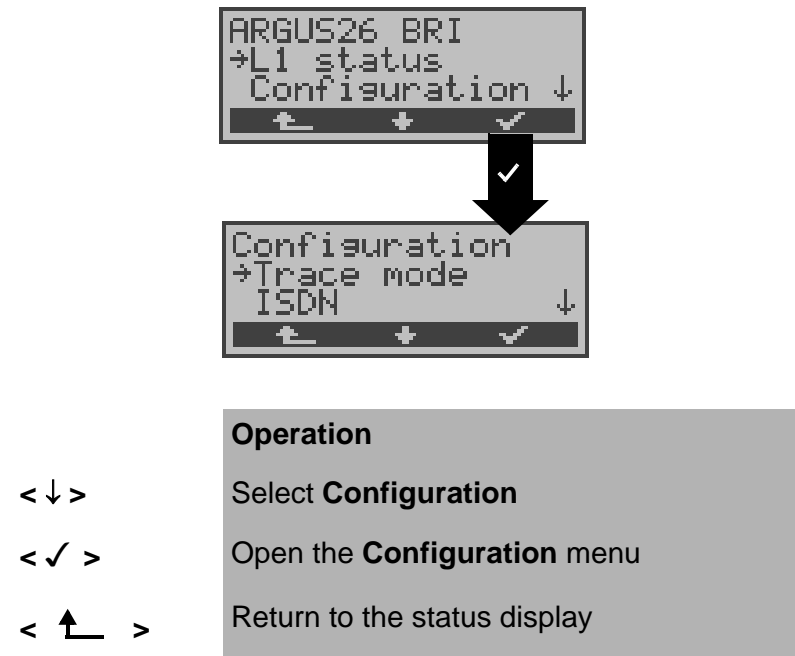
Code HDB3: Displays the transmission code used (currently fixed to HDB3)

noA-Bit: With the A-Bit, the remote end can indicate whether the route on its receive-side is no longer available

noA-Bit + means A=0: Idle state

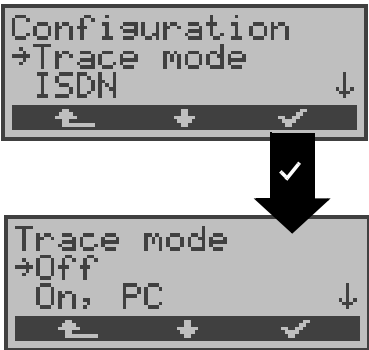
noA-Bit - means A=1: Return direction is not available

- noAIS:** (**A**larm **I**ndication **S**ignal)
AIS will be set if a component on the transmission line determines that the signal they have received is faulty (e.g., in the event, that they lose frame synchronization) and afterwards they will send a Time -1 (=AIS).
noAIS = + : No AIS occurred.
- Sa5-Bit (Rx ,Tx):** The Sa5-bit (Rx) sent by the ARGUS can be set in the Configuration menu (see "Setting the Sa5 Bits" on page 179)
- Sa6-Bit (Rx ,Tx):** The Sa6-bit (Rx) sent by the ARGUS can be set in the Configuration menu (see "Setting the Sa6 Bits" on page 180)
- E-Bit:** With the two E-Bits, E1 and E2, the remote end will report any CRC4-errors that it finds on its receive side in the first or second submultiframe (the E-Bit will be set to 0)
E-Bit11+ : if both E-Bits are set to 1, no error occurred
E-Bit11+! : A CRC4-error was found (indicated by the "!"), however the circuit is in largest part OK (see the E-Bit counter Ecnt or CRC4 error counter CRCErr)
- Ecnt:** The E-Bit counter counts the reported E-Bit errors individually; in other word, all the cases in which a faulty CRC4 submultiframe was received (counts at a maximum of 1kHz).
- CRC Err:** The CRC4 error counter totals the number of CRC4 submultiframes in which errors were detected...-
- CRC rel:** Gives the CRC4 error rate, in other words, the number of faulty CRC4 frames relative to the total number of CRC4 frames received.
- Code Err:** Counter for the detected HDB3 transmission code errors-
- Code rel:** Transmission code - error rate
- Frame Err:** Counter for faulty 2Mbit frames




16.1 Trace mode

The ARGUS passes the recorded D-channel data to the connected PC or saves it in the internal FLASH memory.



Operation	
< ↓ >	Select the Trace mode
< ✓ >	Open the Trace mode selection dialog
< ⬅ >	Return to the Main menu
<hr/>	
< ↓ >	Select the Trace mode
< ✓ >	Accept the Trace mode setting and return to the Configuration menu
< ⬅ >	Return to the Configuration menu without making any changes

 The *Trace mode* setting is only saved temporarily. In other words, Trace mode is always off when the ARGUS is first switched on.

With the setting Trace mode “*On, PC*”, the ARGUS remains active and sends all of its own D-channel messages and those that it receives from the network to the PC.-

When the trace mode is active, the LED labeled “Trace” will be on continuously. If the ARGUS cannot send the data to the PC without errors, the LED will flash at 5Hz (5 times per sec).

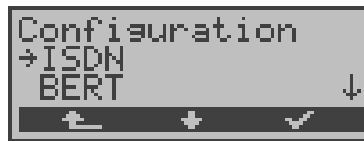
In the Trace mode “On, Recording”, the ARGUS remains active, but saves the D-channel messages in the internal

Flash memory. If the ARGUS has been configured with this setting, the LED will flash slowly (once per sec) when tracing.-



The D-channel data saved in the Flash memory can be transferred to the PC in the “Recorder” mode (see “BRI / PRI Recorder” on page 58).

16.2 Configuration: ISDN

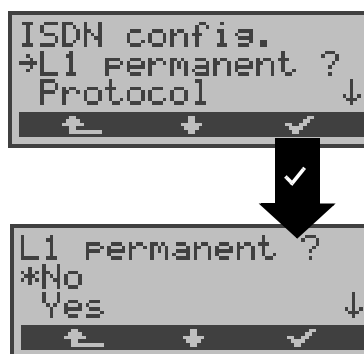


Operation	
<↓>	Select the ISDN configuration menu
<✓>	Open the ISDN configuration menu
< ↶ >	Return to the Main menu

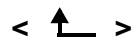
16.2.1 Layer 1 permanent

(only on a BRI access)

Layer 1 (L1) on a **BRI connection** in NT mode is permanently active.



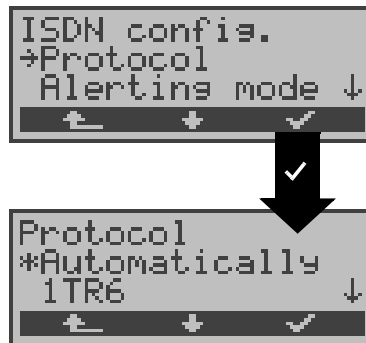
Operation	
<↓>	Select L1 permanent?
<✓>	Open the L1 permanent? selection dialog
< ↶ >	Return to the Configuration menu
<↓>	Select the desired L1 mode.
<✓>	Accept setting and return to the ISDN configuration menu



Return to the ISDN configuration menu
without making any changes

16.2.2 Select the D-channel protocol

Besides automatic protocol recognition (Setting: Automatic), the ARGUS also allows you to manually set the Layer 3 D-channel protocol. The ARGUS will save the protocol setting and will use this protocol the next time that it is switched on.-



Operation	
<↓>	Select the Protocol
<✓>	Open the Protocol selection dialog
< ↑ >	Return to the Configuration menu
<hr/>	
<↓>	Select the Layer 3 protocol
<✓>	Accept protocol setting and return to the ISDN configuration menu
< ↑ >	Return to ISDN configuration menu without changing the protocol

16.2.3 Alerting mode

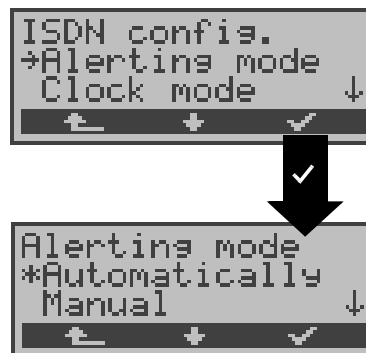
For an incoming call on a BRI point- to-point access, the ARGUS will display either the access number alone without extension or the complete number with extension.

If you select **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.).



With the **Manual** setting, an incoming call must be answered within 20 seconds or it will be lost. Furthermore, you should not 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.



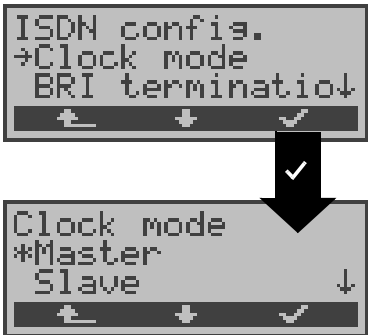
Operation	
<↓>	Select the Alerting mode
<✓>	Open the Alerting mode selection dialog
<⬆>	Return to the Configuration menu
<↓>	Select the desired alerting mode.
<✓>	Accept setting and return to the ISDN configuration menu
<⬆>	Return to the ISDN configuration menu without making any changes

16.2.4 Clock mode


When the ARGUS is operated on a BRI or PRI access, you can specify where the clock is generated (regardless of whether the operation mode is TE or NT).

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.

The default setting is Master for NT simulations or Slave for TE simulations and permanent circuits.



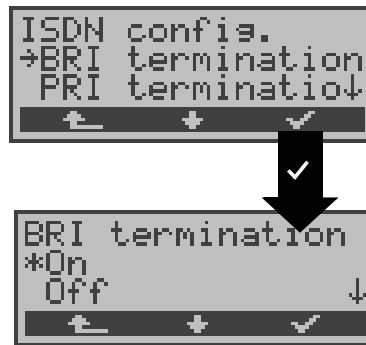
Operation	
<↓>	Select the Clock mode
<✓>	Open the Clock mode selection dialog
< ↶ >	Return to the Configuration menu
<hr/>	
<↓>	Select the desired clock mode
<✓>	Accept clock mode setting and return to the ISDN configuration menu-
< ↶ >	Return to the ISDN configuration menu without making any changes

 This setting will not be saved permanently, rather only applies for the current measurement. When the ARGUS is switched off, the setting is lost.

16.2.5 BRI termination

Independent of the operation mode (TE or NT), a terminating resistor can be switched in for the BRI access.

No terminating resistor will be switched in when the Argus is in TE simulation mode or on a permanent circuit.- In the NT simulation mode, the terminating resistors are switched on.



Operation	
<↓>	Select BRI termination
<✓>	Open <i>BRI termination</i> selection dialog
< ↶ >	Return to the Configuration menu
<hr/>	
<↓>	Select setting
<✓>	Accept setting and return to the ISDN configuration menu-
< ↶ >	Return to the ISDN configuration menu without making any changes



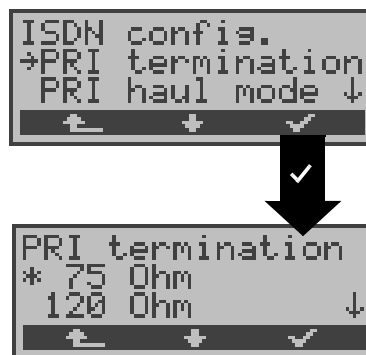
This setting will not be saved permanently When the ARGUS is switched off, the setting is lost.

16.2.6 PRI termination

Depending on the transmission technique (75 Ohm coaxial-cable or twisted-pair cable with an impedance of 120 Ohms) used, the PRI termination resistor must be selected accordingly.

The default setting is country-specific and corresponds to the system most common in the respective country:

Germany, Austria, England, Netherlands, France, ...	120 Ohm
Spain, Italy, Greece, ...	75 Ohm

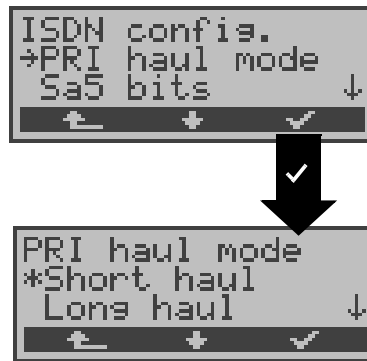


Operation	
<↓>	Select PRI termination
<✓>	Open the <i>PRI termination</i> selection dialog
< ↑ >	Return to the Configuration menu
<↓>	Select the value of the terminating resistor
<✓>	Accept setting and return to the ISDN configuration menu-
< ↑ >	Return to the ISDN configuration menu without making any changes

16.2.7 PRI haul mode

The ARGUS supports the setting of the haul mode (sensitivity) of the PRI access.

By default, short haul will be suggested.



Operation	
<↓>	Select PRI haul mode
<✓>	Open the PRI haul mode selection dialog
< ↵ >	Return to the Configuration menu
<hr/>	
<↓>	Select <i>PRI haul mode</i>
<✓>	Accept setting and return to the ISDN configuration menu
< ↵ >	Return to the ISDN configuration menu without making any changes

Setting:

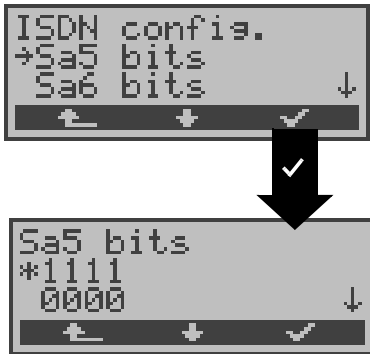
Short haul: Normal sensitivity, i.e. signal reception with cable attenuation of up to ca. -10dB.

Long haul: Increased sensitivity, i.e. signal reception with cable attenuation of up to ca. -35dB. This corresponds to a distance of 1600m with 22AWG twisted pair cable.

When using greater sensitivity (Long haul mode) on longer lines, feedback on the line can cause faulty synchronization.-

16.2.8 Setting the Sa5 Bits

The ARGUS can set the Sa5 bits on a PRI access.
By default, the Sa5 bits are set to 0000.



Operation	
<↓>	Select Sa5 bits
<✓>	Open the Sa5 bits selection dialog
< ⬅ >	Return to the Configuration menu
<↓>	Select <i>Sa5 bits</i>
<✓>	Accept setting and return to the ISDN configuration menu
< ⬅ >	Return to the ISDN configuration menu without making any changes

Options for the Sa5 bits:

Sa5-Coding	Meaning (Network Terminal)	--> Meaning (Terminal Network) -->
0000	Direction code	Acknowledgment for loop command
1111	-----	Direction code



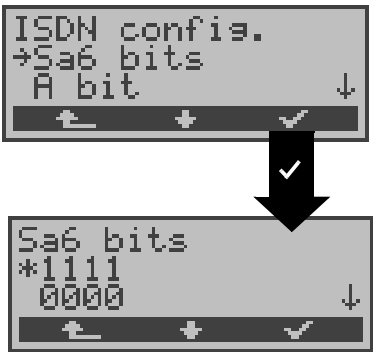
The Sa5 bits have no significance between an NTPM and a PBX system.



This setting will not be saved permanently. If the ARGUS is switched off, the setting will be lost.

16.2.9 Setting the Sa6 Bits

The ARGUS can set the Sa6 bits on a PRI access.
By default, they are set to 0000.



Operation	
< ↓ >	Select Sa6 bits
< ✓ >	Open the Sa6 bits selection dialog
< ↶ >	Return to the Configuration menu
< ↓ >	Select the desired Sa6 bits
< ✓ >	Accept setting and return to the ISDN configuration menu
< ↶ >	Return to the ISDN configuration menu without making any changes

Options for the Sa6 bits:

Sa6 Coding	Meaning (Network --> Terminal)	Meaning (Terminal Network) -->
		.
0000	Setting for normal operation (default)	Setting for normal operation, idle (default)

- 1010 Switches a loop in the _____
NTPM. In the permanent
circuit mode, a BERT can
then be performed using the
loop setup there.- Important:
The ARGUS **must** be set to
“**Permanent switch-**” even if
it is a dialup access!
- 1111 Switches a loop in the AIS on U2an of
LEPM. In the permanent the NTPM
circuit mode, a BERT can
then be performed using the
loop setup there.- Important:
The ARGUS **must** be set to
“**Permanent switch-**” even if
it is a dialup access!



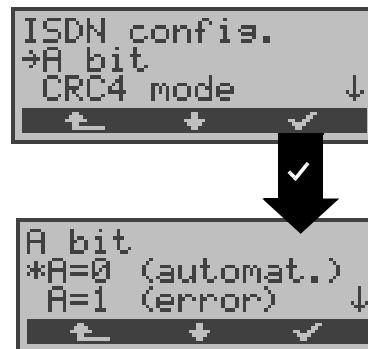
The Sa6 bits have no significance between an NTPM and a PBX system.



This setting will not be saved permanently When the ARGUS is switched off, the setting is lost.

16.2.10 Setting the A-Bit

Using the ARGUS, you can set the A-Bit on a PRI access.
By default, A=0 (automatic).



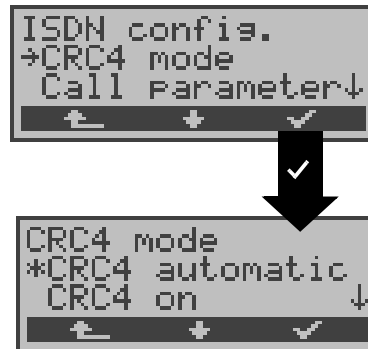
Operation	
<↓>	Select A bit
<✓>	Open the A bit selection dialog
< ↶ >	Return to the Configuration menu
<↓>	Select the desired setting
<✓>	Accept setting and return to the ISDN configuration menu
< ↶ >	Return to the ISDN configuration menu without making any changes



This setting will not be saved permanently
When the ARGUS is switched off, the setting is lost.

16.2.11 CRC4 mode

CRC4 monitoring can be switched on or off manually.
By default, CRC4 is set to automatic.



Operation	
<↓>	Select CRC4 mode
<✓>	Open the CRC4 mode selection dialog
< ↶ >	Return to the Configuration menu
<↓>	Select the desired setting
<✓>	Accept setting and return to the ISDN configuration menu
< ↶ >	Return to the ISDN configuration menu without making any changes

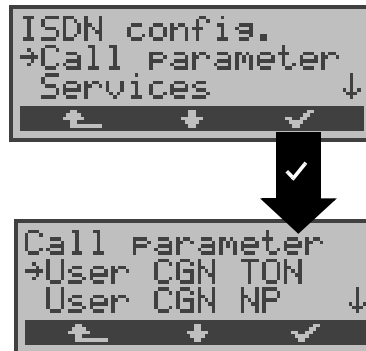


This setting will not be saved permanently
When the ARGUS is switched off, the setting is lost.

16.2.12 Call parameter

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):

- **Type Of Number (TON)** for the CGN (=CGPN) or CDN (=CDPN) element of a SETUP signal
- The **Numbering Plan (NP)** for the CGN (=CGPN) or CDN (=CDPN) element of a SETUP signal



Operation	
< ↓ >	Select Call parameter
< ✓ >	Open the <i>Call parameter</i> selection dialog
< ↑ >	Return to the Configuration menu
< ↓ >	Select the desired call parameter: Network-side: Net CGN TON /Net CDN TON User-side: User CGN TON /User CDN TON Set the Type Of Number (TON) for the CGN or CDN element of a SETUP signal Network-side: Net CGN NP /Net CDN NP User-side: User CGN NP /User CDN NP Set the Numbering Plan (NP) for the CGN or CDN element of a SETUP signal
< ✓ >	Open the selection dialog
< ↑ >	Return to the ISDN config. menu

**Operation**

<↓>	Select the desired setting
<✓>	Accept settings and return to the Call parameter menu
<↶>	Return to the Call parameter menu without making any changes

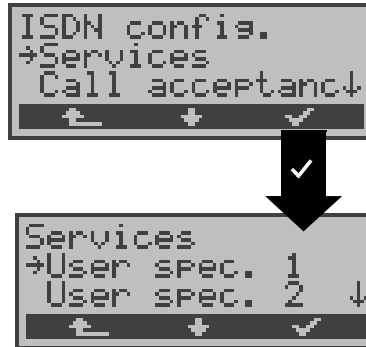
Possible settings:

For TON: unknown, international, national, network spec., subscriber, abbreviated.

For NP: unknown, ISDN/telephony, data, telex, national stand., private

16.2.13 Services

Up to three user specific services (BCAP, HLC and LLC) can be entered into and stored in the ARGUS in hexadecimal.



Operation	
<↓>	Select Service
<✓>	Open the Service menu
<↑>	Return to the Configuration menu
<hr/>	
<↓>	Scroll to desired User spec.
<✓>	A dialog will open in which the info-elements BCAP, HLC and LLC of the user specific service must be entered in hexadecimal.
<↑>	Return to the ISDN configuration menu



Operation	
	Enter the BCAP info-element using the keypad (0....9) and

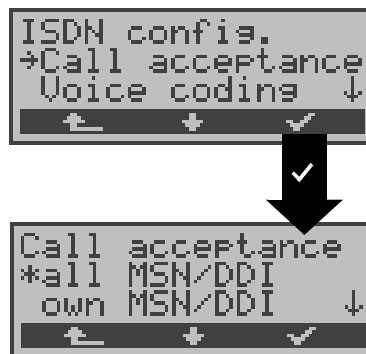
< A...F >	To enter the hexadecimal numbers A,B...F (e.g. to enter a B press the softkey <A...F> twice. When you press <OK> the cursor move to the next entry point.)
< DEL >	Delete the digit before the cursor
< ↓ >	To scroll to the next info-element (HLC and LLC)
<ABORT >	Return to the Services menu

This setting will be saved permanently.

16.2.14 Call Acceptance

In TE mode on a P-MP access (P-P access), the ARGUS will signal either all incoming calls or just those calls whose destination address matches the MSN of the access under test.-

The function is only available, when your own call number has been saved in the speed-dialling memory under “own number” (see Chap. 16.6 Saving Call Numbers page 218) and the incoming call has a destination MSN (DDI).



Operation	
<↓>	Select Call acceptance
<✓>	Open the Call acceptance menu
<↑>	Return to the Configuration menu
<↓>	Select the desired setting: only own MSN/DDI: The ARGUS signals the incoming call, if its destination MSN/DDI matches your “own” number.- all MSN/DDI: The ARGUS signals all calls
<✓>	Accept setting and return to the ISDN configuration menu-
<↑>	Return to the ISDN configuration menu without making any changes

The default setting is all MSN/DDI.

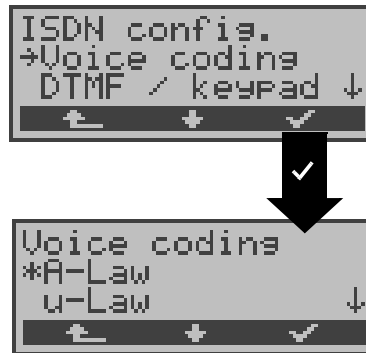
This setting will be saved permanently.

16.2.15 Voice coding

There are two options for coding voice data in a B-channel:

- A-Law
- μ -Law

The default setting is A-Law.

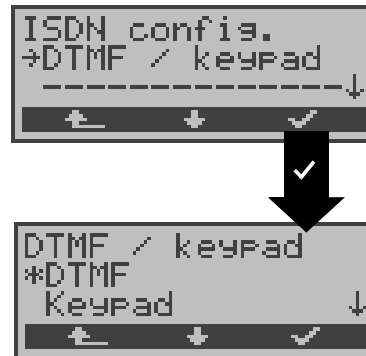


Operation	
<↓>	Select Voice coding
<✓>	Open the Voice coding menu
<↑>	Return to the Configuration menu
<↓>	Select the desired setting
<✓>	Accept setting and return to the ISDN configuration menu-
<↑>	Return to the ISDN configuration menu without making any changes

16.2.16 DTMF / Keypad

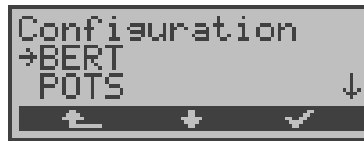
During a ISDN connection, the keypad can be used to send either DTMF tones or keypad elements.

By default, this parameter is set to DTMF.



Operation	
<↓>	Select DTMF / Keypad
<✓>	Open the DTMF / Keypad menu
<↶>	Return to the Configuration menu
<↓>	Select the desired setting
<✓>	Accept setting and return to the ISDN configuration menu-
<↶>	Return to the ISDN configuration menu without making any changes

16.3 Configuration: BERT



<↓>

<✓>

<↶>

Operation

Select the **BERT** configuration menu

Open the **BERT** configuration menu

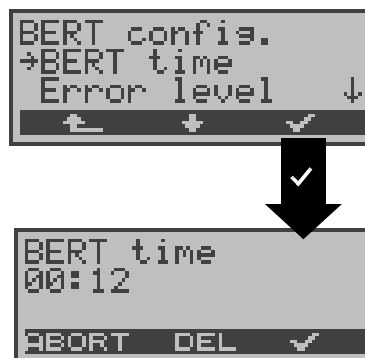
Return to the Main menu

16.3.1 BERT - duration

The default setting for the duration of the bit error rate test is 1 minute. The measurement time may be set to a limited period of no more than 99:59 (99 hours and 59 minutes) or an unlimited time (by entering 00:00).



If the BERT is set to an unlimited measurement time, the test will **not** stop automatically, rather it must be stopped by the user (see Chap. 10.3.1 page 94).



<↓>

<✓>

<↶>

Operation

Select **BERT time**

Open the **BERT time** menu

Return to the Configuration menu



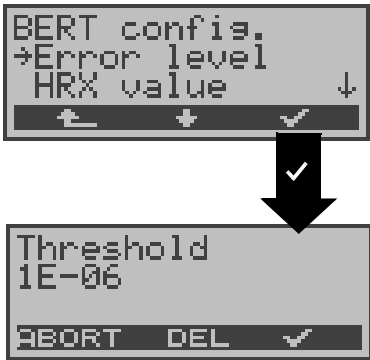
Enter the desired duration of the BERT


- < DEL >** Delete the digit before the cursor
- < ✓ >** Accept setting and return to the BERT configuration menu-
- < ABORT >** Return to the BERT configuration menu without changing the setting.

16.3.2 BERT - Setting the Error level

The default threshold (error level) 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 test will be evaluated as OK.

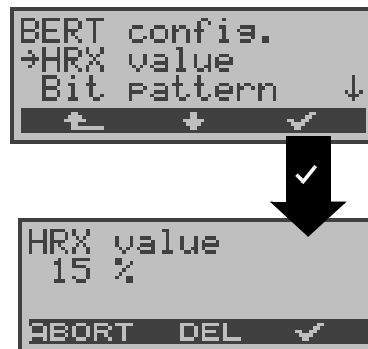
If the bit error rate is greater than the error level value, the ARGUS will display NO. This parameter can be set to any value from 01 ($= 10^{-01}$) to 99 ($= 10^{-99}$).




Operation	
< ↓ >	Select clock mode
< ✓ >	Open the Error level menu
< ↶ >	Return to the Configuration menu
	Enter desired value for the error level: 01 ($= 10^{-01}$) to 99 ($= 10^{-99}$)
< DEL >	Delete the digit before the cursor
< ✓ >	Accept settings and return to the BERT configuration menu
< ABORT >	Return to the BERT configuration menu without changing the setting.

16.3.3 HRX value

Here the HRX value is set in % (**H**ypothetical **R**eference **C**onnections ITU-T G.821):

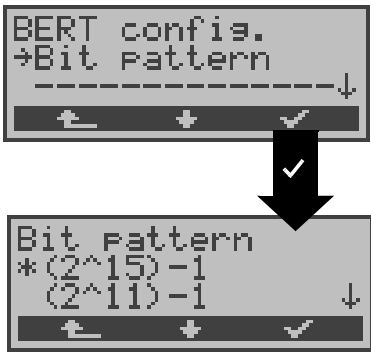


	Operation
< ↓ >	Select HRX value
< ✓ >	Open the HRX value menu
< ⬆ >	Return to the Configuration menu
	Enter the desired HRX value Values from 0 to 100 %
< DEL >	Delete the digit before the cursor
< ✓ >	Accept the HRX value and return to the BERT configuration menu.
< ABORT >	Return to the BERT configuration menu without changing the HRX value.

16.3.4 Selecting the BERT bit pattern

There are two predefined bit patterns available:
 $2^{11}-1$, $2^{15}-1$, $2^{20}-1$, $2^{23}-1$ normal and inverted as well as constant 0 and constant 1.
Additionally, it is also possible to enter a 16 bit long pattern of your choice in binary.-

The default pattern is $2^{15}-1$.



Operation	
< ↓ >	Select bit pattern
< ✓ >	Open the Protocol menu
< ↶ >	Return to the Configuration menu
<hr/>	
< ↓ >	Select the desired bit pattern
< ✓ >	Accept setting and return to the BERT configuration menu-
< ↶ >	Return to the BERT configuration menu without changing the setting.

If the "user defined" bit pattern is selected, a dialog will open in which the 16 bit long bit pattern must be entered in binary. In the BERT, the ARGUS will either send this bit pattern cyclically or compare it with the received bit pattern.





< ← >

< ✓ >

<ABORT >

Operation

Enter the desired bit pattern in binary.

The digit selected by the cursor can be directly overwritten.

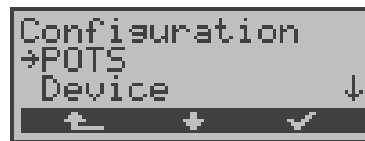
Moves the cursor to the left.

Accept the settings and return to the BERT configuration menu.

The bit pattern entered will be stored permanently.

Return to the *BERT* configuration menu without changing the bit pattern.

16.4 Configuration: POTS

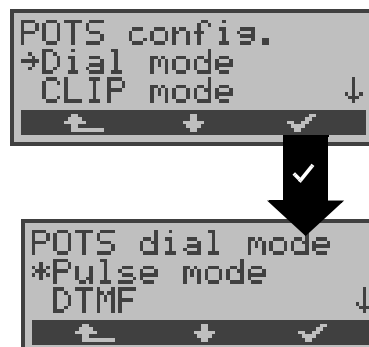


Operation

- | | |
|--|--|
| <p><↓></p> <p><✓></p> <p><↵></p> | <p>Select the POTS configuration menu</p> <p>Open the POTS configuration menu</p> <p>Return to the Main menu</p> |
|--|--|

16.4.1 POTS dial mode

On a POTS access, there are two methods available for dialing (DTMF and pulse dialing):-



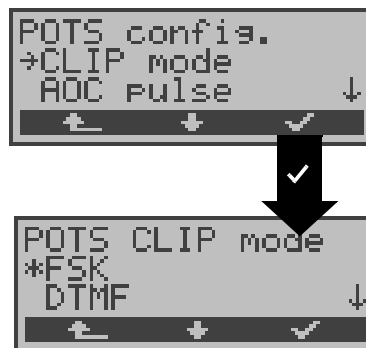
Operation

- | | |
|--|--|
| <p><↓></p> <p><✓></p> <p><↵></p> | <p>Select POTS dial mode</p> <p>Open the POTS dial mode menu</p> <p>Return to the Configuration menu</p> |
| <p><↓></p> <p><✓></p> <p><↵></p> | <p>Mark the desired dialing mode.</p> <p>Confirm your entry and return to the POTS configuration menu</p> <p>Return to the POTS configuration menu without changing the dialing mode</p> |

16.4.2 POTS CLIP

You can choose from two different methods for transferring the call number on a POTS access:

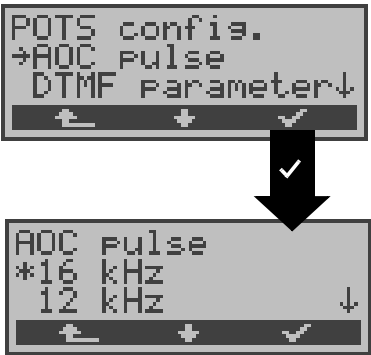
- **FSK** CLIP via a method similar to a modem:
for Germany as well as some other parts of Europe
- **DTMF** CLIP via DTMF:
for Scandinavia and the Netherlands
The ARGUS will automatically detect that a CLIP was sent using DTMF with the polarity reversal and will set itself accordingly - (e.g. Netherlands).



Operation	
< ↓ >	Select POTS CLIP mode
< ✓ >	Open the POTS CLIP mode menu
< ↑ >	Return to the Configuration menu
< ↓ >	Select the desired CLIP method
< ✓ >	Accept setting and return to the POTS configuration menu-
< ↑ >	Return to the POTS configuration menu without making any changes

16.4.3 AOC pulse

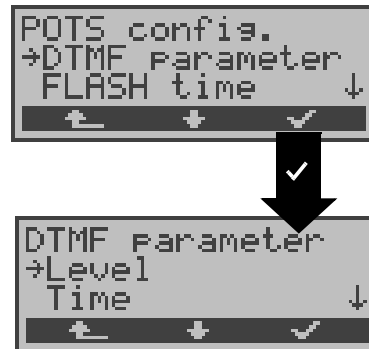
On a POTS access, the country-specific AOC pulse can be selected (12 or 16 kHz).



Operation	
<↓>	Select the AOC pulse
<✓>	Open AOC pulse menu
<↶>	Return to the Configuration menu
<↓>	Select the AOC pulse
<✓>	Accept setting and return to the POTS configuration menu
<↶>	Return to the POTS configuration menu without making any changes

16.4.4 DTMF parameter

The ARGUS can set the parameters Level, Duration and Interval of the DTMF signals that are generated during POTS operation.



<↓>

Select **DTMF parameter**

<✓>

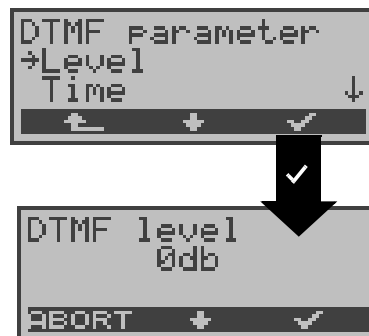
Open the **DTMF parameter** menu

<↶>

Return to the Configuration menu

Setting the DTMF level:

The default value is -3dB. The level can take a value between -21dB and +12dB and can be raised or lowered by 3dB.



<↓>

Select the **level**

<✓>

Open the **Level** menu

<↶>

Return to the POTS configuration menu.

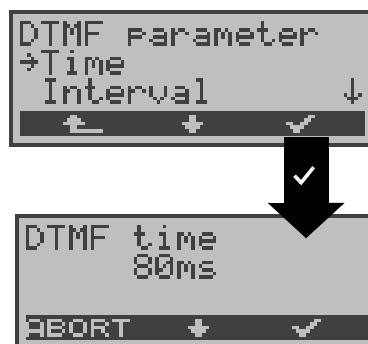
<↓> or ↓-Key	To lower the level by 3dB
↑-Key	To raise the level by 3dB
<✓>	Accept settings and return to the DTMF parameter submenu
<ABORT>	Return to the DTMF parameter submenu without making the changes

Setting the DTMF time:

The default setting is 80ms. The duration of the signal can take a value between 40ms and 1s. The duration can be raised or lowered using the arrow keys as follows:

In the range 40...200ms	in 10ms increments
In the range 200...300ms	in 20ms increments
In the range 300...1000ms	in 100ms increments

When the upper limit is reached (1000ms), the softkey <↑> will automatically change to a <↓> and vice versa when the lower limit (40ms) is reached.



Operation	
<↓>	Select the Time
<✓>	Open the Time submenu
<←>	Return to the POTS configuration menu.
<↓> or ↓-Key	Lower the duration
↑-Key	Increase the duration

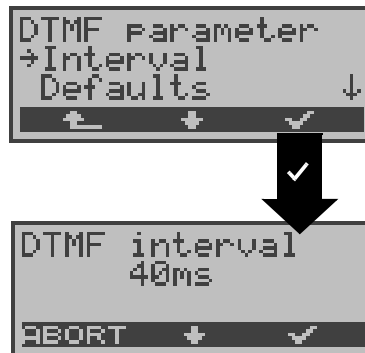
< ✓ >	Accept settings and return to the DTMF parameter submenu
< ABORT >	Return to the DTMF parameter submenu without making the changes

Setting the interval between two DTMF characters:

The default value is 80ms. The interval between two DTMF characters can take a value between 40ms and 1s. The interval can be raised or lowered by using the arrow keys as follows:-

In the range 40...200ms	in 10ms increments
In the range 200...300ms	in 20ms increments
In the range 300...1000ms	in 100ms increments

When the upper limit is reached (1000ms), the softkey < ↑ > will automatically change to a < ↓ > and vice versa when the lower limit (40ms) is reached.



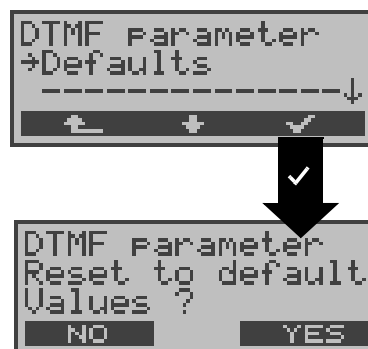
Operation	
< ↓ >	Select the DTMF interval
< ✓ >	Open the DTMF interval submenu
< ↑ >	Return to the POTS configuration menu.
< ↓ > or ↓ -Key	Lower the DTMF interval
↑ -Key	Raise the DTMF interval

< ✓ >	Accept settings and return to the DTMF parameter submenu
< ABORT >	Return to the DTMF parameter submenu without making the changes

Restore the defaults:

The following defaults can be restored at any time:

- Level = -3 dB
- Time = 80 ms
- Interval = 80 ms



Operation	
< ↓ >	Select Reset to default
< ✓ >	You will be asked whether you are sure.
< ↶ >	Return to the POTS configuration menu.
< YES >	Reset to default settings and return to the DTMF parameter menu
< NO >	Return to the DTMF parameter menu without resetting to the default settings

16.4.5 FLASH time

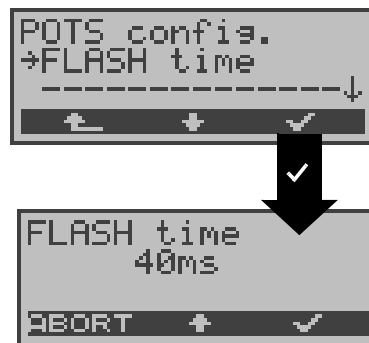
With this selection, you can set the length of a flash when operating on a POTS.

This function is required in order to use the special features of a PBX.

The FLASH time can take a value between 40ms and 1s.- It can be raised or lowered using the arrow keys as follows:

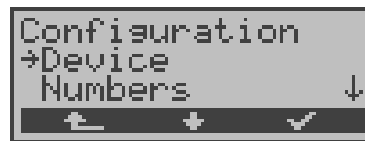
In the range 40...200ms	in 10ms increments
In the range 200...300ms	in 20ms increments
In the range 300...1000ms	in 100ms increments

When the upper limit is reached (1000ms), the softkey <↑> will automatically change to a <↓> and vice versa when the lower limit (40ms) is reached.



Operation	
<↓>	Select FLASH time
<✓>	Select the FLASH time menu
<↑>	Return to the POTS menu
<↓> or ↓-Key	Reduce FLASH time
↑-Key	Increase FLASH time
<✓>	Accept settings and return to the POTS menu
<ABORT>	Return to the POTS menu without making the change

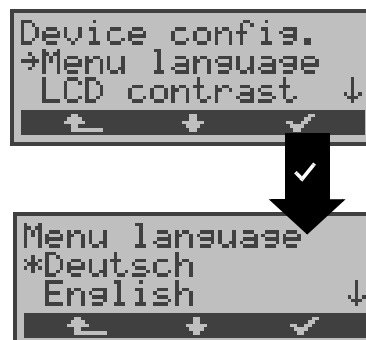
16.5 Configuration: ARGUS



Operation

- <↓> Select the **ARGUS** configuration menu.
- <✓> Open the **ARGUS** configuration menu.
- <↶> Return to the Main menu

16.5.1 Selecting the menu language



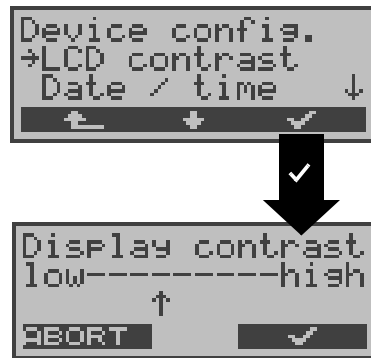
Operation

- | | |
|---|--|
| <ul style="list-style-type: none"> <↓> <✓> <↶> | <ul style="list-style-type: none"> Selecting the Menu language Open the Menu language menu Return to the Configuration menu |
| <ul style="list-style-type: none"> <↓> <✓> <↶> | <ul style="list-style-type: none"> Select the desired language Confirm your selection and return to the ARGUS configuration menu Return to the ARGUS configuration menu without changing the setting. |

16.5.2 Setting the display contrast

The contrast of the ARGUS display can be adjusted to suit the individual user. The contrast can be adjusted in 16 steps.

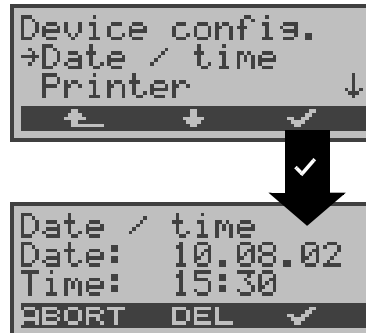
In the third line, the display shows a vertical arrow, which indicates the current setting on a scale from "low to high contrast".





Operation	
<↓>	Select LCD contrast
<✓>	Open the LCD contrast menu
<↑>	Return to the Configuration menu
↓-Key	Decrease contrast
↑-Key	Increase contrast
<✓>	Change the LCD contrast and return to the ARGUS configuration menu.
<ABORT>	Return to the ARGUS configuration menu without changing the setting.

16.5.3 Enter date / time

Enter the date and time. The ARGUS will use these two values on the D-channel in NT mode and in the **automatic test-**.



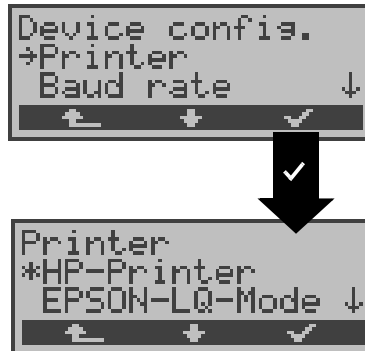
Operation	
<↓>	Select the Date / Time
<✓>	Open the Date / time menu
<↑>	Return to the Configuration menu
	Enter the desired date
↓-Key	The cursor moves to the left
↑-Key	The cursor moves to the right
	Enter the desired time
	Delete the digit before the cursor
<✓>	Accept setting and return to the BERT configuration menu-
<ABORT>	Return to the ARGUS configuration menu without making the changes

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 batteries), 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.

16.5.4 Printer

This function is used to set the printer options.- The default is ARGUS EPSON LQ.



Operation	
<↓>	Select Printer
<✓>	Open the Printer menu
<↑>	Return to the Configuration menu
<↓>	Select desired printer
<✓>	Accept setting and return to the ARGUS configuration menu-
<↑>	Return to the ARGUS configuration menu without changing the setting.

If you wish to use a printer that is not compatible with either the HP-Laserjet or the EPSON LQ, select the **ESC sequence** setting.

An entry mask will open in which you can enter an ESC-sequence character-by-character, which will permit the optimum adaptation to your printer.

Up to 9 different ESC sequences can be entered and saved in the EEPROM in the ARGUS so that these will still be available after the ARGUS has been switched off and then back on.-



Does not work with what are known as Windows printers.


```
Esc sequence 1
Enter:
#14#78#89#128
FINISH DEL ✓
```



< DEL >

< ✓ >

< EXIT >

Operation

Enter the ESC sequence (see the information from the manufacturer of your printer) in decimal format. The character codes are each separated by a “#”.

Delete the digit before the cursor

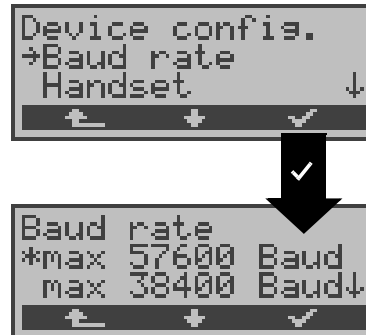
Save the entered ESC sequence in EEPROM. The display is setup for the entry of the next ESC sequence.

Return to the *Configuration* menu

16.5.5 Baud rate

There is a selection of baud rates available for use when connecting the ARGUS to a PC.

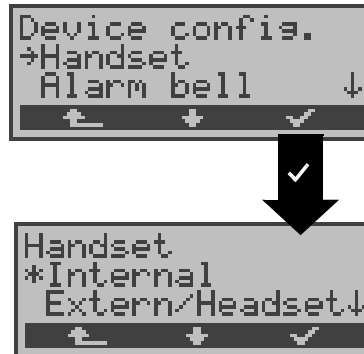
The default setting is 57600 baud.



Operation	
<↓>	Select Baud rate
<✓>	Open the Baud rate menu
<↑>	Return to the Configuration menu
<↓>	Select the desired setting
<✓>	Confirm the selection and return to the ARGUS configuration menu
<↑>	Return to the ARGUS configuration menu without changing the setting.

16.5.6 Handset

The ARGUS makes a distinction between the integrated handset and an external headset:

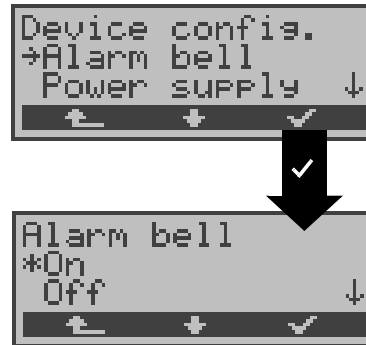


Operation	
<↓>	Select the Handset
<✓>	Open the Handset menu
<↶>	Return to the Configuration menu
<↓>	Select the desired handset
<✓>	Accept setting and return to the ARGUS configuration menu-
<↶>	Return to the ARGUS configuration menu without changing the setting.

With the softkey, an existing connection can be switched back and forth between an external headset and the integrated handset (-see "Setting up an ISDN connection" on page 125).

16.5.7 Alarm bell

The ARGUS signals with an alarm in a variety of situations, e.g. when a bit error occurs in a BERT. The alarm bells can be switched off.

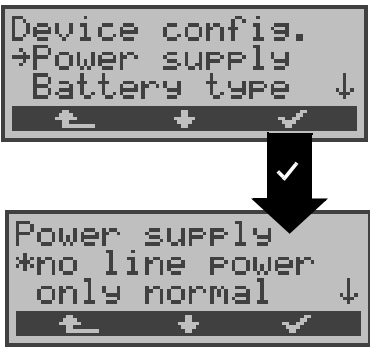


Operation	
<↓>	Select Alarm bell
<✓>	Open the Alarm bell menu
<┐>	Return to the Configuration menu
<↓>	Select the desired setting
<✓>	Accept setting and return to the ARGUS configuration menu-
<┐>	Return to the ARGUS configuration menu without changing the setting.

This setting is not lost when the ARGUS is switched off and back on again.

16.5.8 Feed

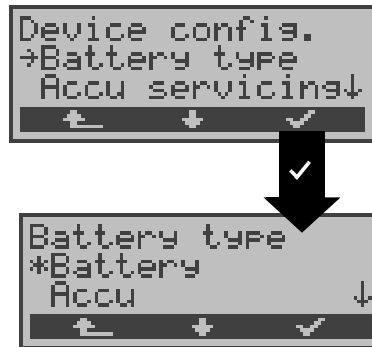
The ARGUS will automatically draw its power from one of the following sources:
starting with the power supply, when this is not possible, the BRI line and, if all else fails, the rechargeable batteries. On some accesses, powering the ARGUS from the BRI line may lead to trouble. Therefore, the ARGUS permits you to disable drawing power from the BRI line (with the "no line power" setting).



Operation	
<↓>	Select Power supply
<✓>	Open the Power supply menu
<↶>	Return to the Configuration menu
<hr/>	
<↓>	Select the desired setting
<✓>	Accept setting and return to the ARGUS configuration menu-
<↶>	Return to the ARGUS configuration menu without changing the setting.

16.5.9 Battery type

Specify whether the ARGUS will be operated with batteries or accumulators (rechargeable batteries).- If you select "Accu", the ARGUS will display the current level of charge of the accumulators (rechargeable batteries).



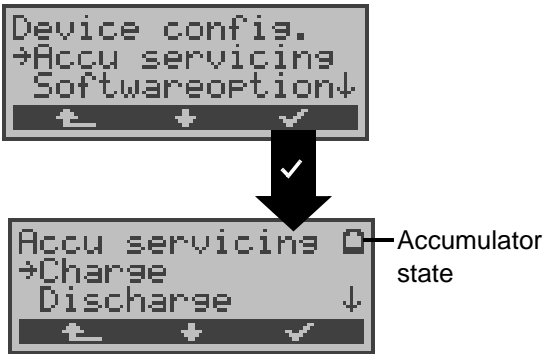
Operation	
<↓>	Select Battery type
<✓>	Open the Battery type menu
<↑>	Return to the Configuration menu
<hr/>	
<↓>	Select the desired setting
<✓>	Accept setting and return to the ARGUS configuration menu-
<↑>	Return to the ARGUS configuration menu without changing the setting.

If you select "Battery", the "Accu servicing" function in the ARGUS configuration menu will be disabled.

16.5.10 Accu servicing

The ARGUS will display the current charge of the accumulators.

As soon as 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 6 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).

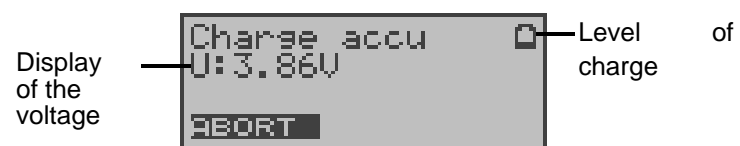


Operation	
< ↓ >	Select Accu servicing
< ✓ >	Open the Accu servicing menu
< ↶ >	Return to the Configuration menu
< ↓ >	Select the desired setting Connect the power supply!
< ✓ >	Start the charging or discharging process. The ARGUS will then jump to the ARGUS configuration menu
< ↶ >	Return to the ARGUS configuration menu without starting the charging or discharging process

Discharging the accumulators:



Charging the accumulators:



16.5.11 Enabling a software option


To enable a software option (e.g. additional functions), you must first enter the corresponding software key.



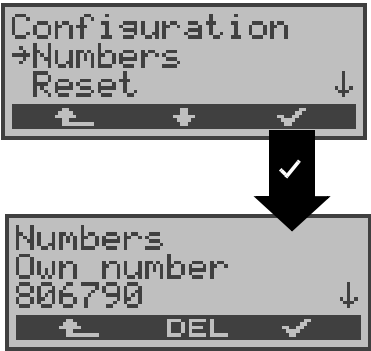
Operation	
< ↓ >	Select Software option
< ✓ >	Open the Software option dialog
< ↶ >	Return to the Configuration menu
	Enter the key
< DEL >	Delete the digit before the cursor
< ✓ >	Confirm the key and return to the ARGUS configuration menu.
< ABORT >	Return to the ARGUS configuration menu without accepting the key.


16.6 Saving Call Numbers

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

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

In the **Remote No.1-8** memory locations, you can save remote call numbers. In the memory location **X.31 test number** , the ARGUS expects the entry of the X.25 access number for the X.31 test (see Chap. 10.4 page 103).



Operation	
< ↓ >	Select Numbers
< ✓ >	The Call number memory will open
< ⬅ >	Return to the Main menu
	Enter the desired number The first number must be the own call number of the access under test.
↓ -Key	Scroll to the next speed-dialing memory and enter the next number
< ✓ >	Save call numbers. The dialog is setup for entry of the next call number.
< DEL >	Delete the digit before the cursor
< ⬅ >	Return to the Configuration menu

When entering a 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.

16.7 Reset

The ARGUS will reset all of the settings to their default values.

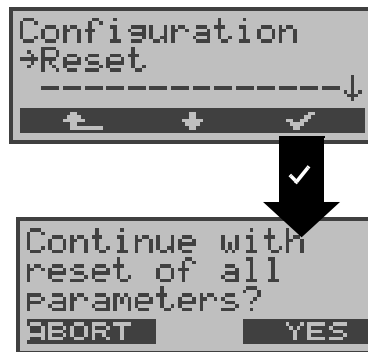


The speed-dialing memory and the results of all of the automatic tests will be deleted.

The following settings are possible:

	Default	
BERT time	1 min	
BERT error level	10^{-06}	
BERT bit pattern	$10^{15}-1$	
BERT-HRX	15%	
Bit pattern "freely-defined"	0000000000000000	
PRI terminating resistance	120 Ohm	only for PRI
PRI haul mode	SHORT HAUL	only for PRI
Sa5 bits	0000	only for PRI
Sa6 bits	0000	only for PRI
Alerting mode	Automatic	
Call acceptance	all MSN/DDI	
L1 permanent?	No	only for BRI NT
Clock mode	For NT, Master For TE, Slave	
DTMF / Keypad	DTMF	
POTS dialing mode	DTMF	
POTS CLIP	FSK	
POTS AOC pulse	16 kHz	
POTS FLASH time	80 msec	
DTMF parameter	-3dB/80ms/80ms	
Menu language	Depends on country (national variant)	
LCD contrast	Average value	
Headset	Internal	
Printer	EPSON LQ	
ESC sequence (Printer)	none	
Baud rate	57.600	
Alarm bell	Off	

Call numbers 0-9	All memory locations empty
Auto Test results	All memory locations empty




Operation	
<↓>	Select Reset
<✓>	Call up the security query
<⬅>	Return to the Main menu
<YES>	Reset all settings, the ARGUS will then return to the Configuration menu
<ABORT>	Return to the Configuration menu without resetting the parameters.

17 Testing Features with the Keypad

This feature is only relevant for 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.

An outgoing call containing a keypad message is placed from the ARGUS by pressing the -Key.

To distinguish the call from a normal call, the first character sent is the '#'. Each step is acknowledged either acoustically (handset) or via special protocol elements (cause). These causes are displayed by the ARGUS.

To simplify the use of these functions, you can use the ARGUS's speed-dialing memory.

An example for an application:

Speed-dial number 0	4711	own number of the access under test
Speed-dial number 1	124527	tel. no. of own company
Speed-dial number 2	#*67#	Code for activating CFB
Speed-dial number 3	##67#	Code for deactivating CFB-
Speed-dial number 4	##*67#	Code for querying CFB (interrogation)
Speed-dial number 5	##*21#	Code for querying CFU (interrogation)
Speed-dial number 6	##*61#	Code for querying CFNR(interrogation)
Speed-dial number 7	<i>free</i>	
Speed-dial number 8	<i>free</i>	
Speed-dial number 9	<i>free</i>	

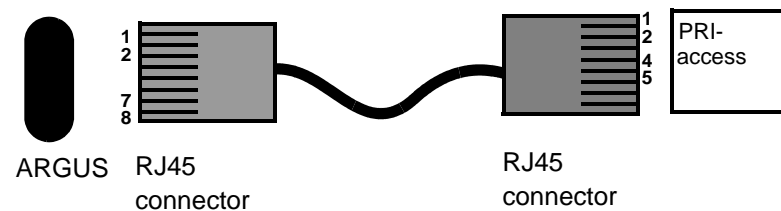
18 Connection for a PRI network

Since there is no commonly accepted standard for the connections in the 2 Mbit sector, you will be confronted with different forms of connectors depending on the type of terminal and the network termination used.

The ARGUS changes the connector pin assignments automatically in accordance with the mode, TE or NT. Additionally, it is also possible to change the pin assignments manually in the L1-Status menu.

18.1 Connector Pin Assignments on the ARGUS

In TE mode, the ARGUS sends on lines 4 and 5, in NT-Mode on 1 and 2 (see illustration). An adapter cable, which is suitable for the respective ISDN network/system, can be connected using the RJ45-RJ45 adapter.-



PIN	PIN	Function NT TE
1	1	Tx Rx
8	2	Tx Rx
2	4	Rx Tx
7	5	Rx Tx

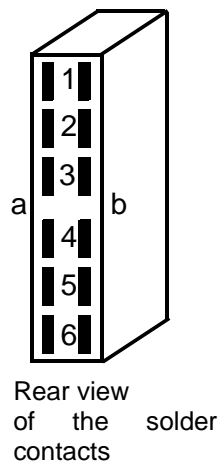
18.2 Connection to DTAG NTPM

An optional RJ45-to-splitting-plug adapter cable is available to permit connecting the ARGUS to the test jack on the front of the NTPM from “Deutsche Telekom AG (DTAG)”.

18.3 The ARGUS 26 as Terminal

Use the RJ45 coupling to connect the RJ45-to-splitting-plug cable to the ARGUS access cable. First switch the ARGUS ON and afterwards plug the ARGUS into the NTPM.

Once you have selected the **TE simulation** mode, the ARGUS will serve as a PRI terminal.



Splitting plug pin assignment:

The ARGUS in TE Mode

1b	Receive NT (Rx)
2b	Receive NT (Rx)
5b	Send NT (Tx)
6b	Send NT (Tx)

The ARGUS in NT Mode

PIN	Function
1a	Send TE (Rx)
2a	Send TE (Rx)
5a	Receive TE (Tx)
6a	Receive TE (Tx)

19 Appendix

A) Acronyms

3PTY	Three party service / Three party conference
AI	Action Indicator
AOC	Advice of Charge
AOC-D	Advice of Charge Charging information during the call and at the end of the call
AOC-E	Advice of Charge Charging information at the end of the call
AWS	Call Forwarding (Anrufweilerschaltung)
BC	Bearer Capability
BER	Basic Encoding Rules / Bit Error Rate
BERT	Bit Error Rate Test
CALL PROC	CALL PROCeeding message
CCBS	Completion of Calls to Busy Subscriber
CCNR	Call Complete No Response Automatic Callback if the called party did not answer
CD	Call Deflection
CDPN	Called Party Number
CF	Call Forwarding
CFB	Call Forwarding Busy Forward calls when busy
CFNR	Call Forwarding No Reply Forward calls when no answer
CFU	Call Forwarding Unconditional Forward all calls
CGPN	CallinG Party Number
CLIP	Calling Line Identification Presentation Display caller's number
CLIR	Calling Line Identification Restriction Suppress display of the caller's number
COLP	Connected Line Identification Presentation Display the number of the party -called
COLR	Connected Line Identification Restriction Suppress the display of the number of the party with whom one is connected
CONN	CONNect Message

CONN ACK	CONNect ACKnowledge Message
CR	Call Reference
CT	Call Transfer
CUG	Closed User Group
CW	Call Waiting Call waiting
DAD	Destination Address (1TR6)
DDI	Direct Dialling In Direct dialling in to an extension on a PBX-
DISC	DISConnect Message
DM	Supplementary services (Dienstmerkmal)
DTMF	Dual Tone Multi Frequency
EAZ	Terminal Ident. No. (Endgeräteauswahlziffer - 1TR6)
ECT	Explicit Call Transfer Call transfer or directed call forwarding
E-DSS1	European Digital Subscriber Signalling System Number 1
GBG	Closed user group (CUG) (Geschlossene Benutzer Gruppe)
HLC	High Layer Compatibility
HOLD	Call Hold Hold
ISDN	Integrated Services Digital Network
INFO	INFOrmation Message
LAPD	Link Access Procedure for D-channels channels
LCN	Logical channel number Channel number in X.25
LLC	Low Layer Compatibility
MCID	Malicious Call Identification
MSN	Multiple Subscriber Number
NSF	Network Specific Facilities
NT	Network Termination
OAD	Origination Address (1TR6)
PD	Protocol Discriminator
REL	RELease Message
REL ACK	RELease ACKnowledge Message
REL COMPL	RELease COMPLete Message
SCI	Sending Complete Indication
SIN	Service Indicator (1TR6)
SUB	Sub-addressing / Sub-addressing is possible

SUSP	SUSPend Message
TE	TErминаl, TErминаl Equipment
TEI	TErминаl Endpoint Identifier
TP	TErминаl Portability Moving the terminal on the bus
UUS	User-to-User Signalling Transfer of user data

B) 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	"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 unspecified or 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)

C) 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. (only significant locally)
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	Connection not possible due to negative CUG 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	<p>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.</p>
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	<p>Sent in a REL Disconnect due to local errors (e.g., not valid messages or parameters, time-out, ...).</p> <p>Sent in a SUSP REJ Due to another already active supplementary service, the connection may not be "suspended".</p> <p>Sent in a RES REJ There is no "suspended" connection.</p> <p>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.</p>
113	Remote procedure error	Caused by error at 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	<p>The message USER INFO is rejected locally. The cause is given in the message CON CON.</p> <p>Length entry (=0)</p> <p>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.</p>

D) ARGUS Error Messages

Fault Number	Fault Class	Cause	Description
0	E	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	B,C,D,E	Network	DSS1 or 1TR6 causes
150	E	ARGUS	An error occurred during the supplementary service test. Frequent cause: no response from network
152	B	ARGUS	The CF-Test was started with the wrong own number.
153	E	ARGUS	no HOLD is available, but HOLD is required to test the supplementary service (ECT, 3pty)
154	E	ARGUS	CLIR or COLR could not be tested, since CLIP or COLP is not available
161	B	ARGUS	The party called did not answer within the prescribed time (approx.10 sec)
162	B	ARGUS	A call was setup to a remote subscriber, instead of being setup – as was expected – to your own number.
163	E	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). Therefore, it was not possible to accept the call and test.
199	B	ARGUS	A call number was entered.
200		ARGUS	Internal error
201	A	ARGUS	Network did not confirm acceptance of the call (CONN sent, no CONN_ACK received from network)

204	A	ARGUS	- Layer 2 connection was cleared-down - No response to SETUP (call setup) - Layer 2 connection could not be setup
205	A	ARGUS	Reestablish the Layer 2 Connection
206		ARGUS	The selected B-channel is already busy.
210	A	ARGUS	No response to the clear-down (REL sent, no REL_CMP/REL_ACK received from network)
220	A	ARGUS	Remote end signaled that it is in State 0.
245	E	ARGUS	Keypad sent via ESC, but no response was received from network
250	E	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.
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

E) Package Contents

Included in the package are:

- ARGUS
- 1.2 V Mignon AA accumulators
- BRI connecting cable
- PRI connecting cable
- 9V plug-in power supply
- TAE adapter
- RJ45-RJ45 adapter
- Shock-absorbing PVC jacket
- Cable for POTS and U-interface accesses
- User's Guide

- WINanalyse CD
- Serial cable Type P2A3
- USB Adapter
- Registration
- ARGUS carrying case with strap