

ARGUS 300

User manual

Version: 5.10 / EN

Important note:

The basic package contains at least one Gigabit Ethernet interface, which includes a variety of functions and tests. All other interfaces and functions are optional (see datasheet). Thus, depending on the scope of function supplied, individual menu options may be hidden.

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D-58507 Lüdenscheid, Germany, 09/2026

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ARGUS testing the telecom network



<https://www.linkedin.com/company/441568>

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1 Introduction

ARGUS® 300: the universal broadband tester

The new ARGUS® 300 all-in-one tester delivers improved performance for testing broadband interfaces. The high-quality multifunction tester is ideally equipped for the Expansion of future networks.

Modern design and new housing concept

Its robust design combines the requirements for a compact hand-held meter in daily field use with the performance of a high-end tester. The ARGUS® tester with touch-screen display enables intuitive navigation of the familiar ARGUS® menu structure. Thanks to the use of numerous graphical elements, the redesigned GUI makes this sophisticated multifunction tester as easy to use as a smartphone. A new, innovative internal help function supports rapid, reliable interpretation of test results.

All necessary broadband interfaces

The ARGUS® 300 reliably tests all broadband interfaces, e.g. GPON, XGS-PON, FTTx (PtP) and G.fast (106 + 212 MHz), super vectoring, bonding, ADSL, VDSL and SHDSL accesses, in the uncompromising quality you have come to expect. It is also equipped with a wide range of further interfaces and test functions, such as Speedtests up to 10 Gbit/s, OTDR, WLAN, Copper, TDR, RFL, triple Play and many more. Extremely powerful hardware is provided specifically for out-of-service tests like RFC 2544 or Y.1564 in the Gigabit Ethernet range (up to 10 GigE).

Additional features

The integrated WIFI interface enables the ARGUS® 300 to communicate with its environment directly – a PC link is no longer required.

Once integrated in your job management system, the ARGUS® 300 marks the advent of a new generation of broadband testing.

Overview of key ARGUS functions:

Ethernet interfaces

- Ethernet tests with up to 10 Gbit/s (loop, traffic generator, RFC2544, Y.1564)
- LAN 10/100/1000 Base-T
 - +LAN1 additionally with 2.5 GBase-T (2.5GbE), 2500 BASE-T (IEEE 802.3bz, NBase-T, MGBASE-T)
 - +LAN2 additionally with 2.5/5 GBASE-T, 2.5GbE/5GbE, (IEEE 802.3bz, NBASE-T, MGBASE-T) and 10 GBASE-T (IEEE 802.3ak, IEEE 802.3an, NBASE-T, MGBASE-T), 2500/5000/10000 BASE-T
 - +LAN4 additionally with 2.5/5G BASE-T, 2.5GbE/5GbE, (IEEE 802.3bz, NBASE-T, MGBASE-T) and 10 GBASE-T (IEEE 802.3ak, IEEE 802.3an, NBASE-T, MGBASE-T), 2500/5000/10000 BASE-T
- SFP1: full SFP interface (FTTx, PtP)
 - 1000 Base-BX/LX/SX/ZX Active Ethernet (IEEE 802.3 Clause 38 or 802.3z)
 - 2.5 GBase-X (2.5GigE/2.5GbE)
- SFP2: full SFP+ interface (FTTx, PtP)
 - 10 GBASE-X (10GbE/10GE), 10000 BASE-X (IEEE 802.3ae)
 - 1000 BASE-BX/LX/SX/ZX Active Ethernet (IEEE 802.3 Clause 38 or 802.3z)
- SFP3: full SFP+ interface (FTTx, PtP)
 - 10 GBASE-X (10GbE/10GE), 10000 BASE-X (IEEE 802.3ae)
 - 2.5 GBASE-X (2.5GigE/2.5GbE), 2500 BASE-X
 - 1000 BASE-BX/LX/SX/ZX Active Ethernet (IEEE 802.3 Clause 38 or 802.3z)

Fiber interfaces

- GPON and XGS-PON
- Selective Optical Power Meter
- ARGUS Optical Power Meter (via SFP)
- Fiber Inspection Tool (external via USB)
- Optical Time Domain Reflectometer (OTDR)
- Visual Fault Locator (external, additional)
- Optical Light Source (external, additional); extension for Optical Loss Test Set
- PON Level Check
- PON Installation
- PLOAM Monitor

WLAN interface

- **WLAN Access Point Mode**
- **WLAN AP Scan**
- **WLAN Client**
- **WLAN Spectrum Analysis**
- **WLAN Management**
- **ARGUS® WLAN Analyzer (external via USB)**

G.fast and xDSL interfaces (ADSL, ADSL2, ADSL2+, VDSL2, VDSL2 profile 35b, SHDSL, G.fast)

- **Synchronisation with DSLAM (xTU-C) and determination of all relevant connection parameters and error counters**
- **Bridge, router and terminal-device modes, via IPv4 and IPv6**
- **SHDSL-DSLAM simulation (STU-C)**

IP tests via Ethernet, GPON, XGS-PON, FTTH, xDSL and WLAN

- **IP tests**
 - Ping and traceroute tests (BRAS information, PPP trace, VLAN), via IPv4 and IPv6
 - Download tests for determining throughput rate (HTTP download, FTP up/download)
 - Speedtests ARGUS® Real Speed Direct (iperf), ARGUS® Real Speed Formal (RFC6349)
 - FTP server test, up/download from ARGUS® to ARGUS®
 - Concurrent testing of multiple services (VoIP, IPTV, data)
- **VoIP tests**
 - VoIP terminal device simulation, including acoustics (var. codecs), via IPv4 and IPv6
 - OK/FAIL assessment of VoIP speech quality (QoS) according to:
 - MOS_{CQE} (ITU-T P.800), E-model (ITU-T G.107)
- **IPTV tests**
 - Stream request (STB mode), IPTV channel scan, IPTV passive
 - OK/FAIL assessment and display of quality parameters
 - Moving picture mode with live picture
 - Testing OTT (Over-the-Top) Services

ISDN functions

- BRI S/T interface according to ITU-T I.430 in TE mode
- PRI/E1 interface according to ITU-T I.431 and ITU-T G.703 in TE mode

POTS functions

- Fully functional integrated analogue handset (POTS)
- With DTMF and CLIP display, pulse dialling
- High-ohm 2-wire monitor with voltage measurement

Documentation and analysis

- **Documentation** of data through automatic access tests in access acceptance logs, in device and on PC in HTML format.
- Transmission of results to smart phone using **QR code**.
- Übertragung von Messprotokollen auf die ARGUS® Mobile App (optional / auf Anfrage)
- Free firmware updates via the **cloud**.
- **WLAN extension** for transferring measurements to systems for electronic job processing, access point mode (browsers, download) or remote control using smart phones.



Note:

You can download the latest manuals at <http://www.argus.info/service/downloads> or simply contact one of our service representatives:

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Rahmedestr. 90
D-58507 Lüdenscheid
Tel.: +49 (0) 2351 / 9070-0
Fax: +49 (0) 2351 / 9070-70
www.argus.info/en
support@argus.info

2 Safety information

The ARGUS may only be operated using the accessories supplied with the device. The use of other accessories can result in faulty measurements or even damage to ARGUS and the connected equipment. Only use the ARGUS according to the instructions contained in this accompanying document. Use in any other manner can cause harm to persons or destroy your ARGUS.



- Before connecting your ARGUS to a local access, ensure that no hazardous voltages/currents, or voltages/currents for which the ARGUS or its accessories are not designed, are present. Also keep in mind that the voltage can change over the time that the device is connected.
- Use the ARGUS only according to its intended purpose (standard) at all interfaces and accesses.
- Voltages over 50 V AC and 120 V DC can cause death.
- Never conduct measurements without the battery pack!
- The ARGUS is not waterproof. Therefore, protect the ARGUS against water penetration.
- Before replacing the battery pack, remove the power supply and all measuring leads and switch off your ARGUS instrument.
ATTENTION: Never remove the battery pack during operation.
- Remove the power adapter from the mains socket as soon as the ARGUS is switched off or no longer in use (e.g. after charging the battery pack)!
- The ARGUS may only be used by trained personnel.
- The ARGUS may only be operated using the power adapter supplied with the device.
- Only manufacturer-approved USB devices without mains connection may be connected to the USB host interfaces (USB-A). The instrument can be connected to a PC as a mass storage device.
- If external USB devices are used on the USB-host interface (USB-A), no warranty is assumed for occurrences outside the mechanical wear of normal plug-in.
- Only use the SFP slots for SFP types explicitly approved by intec GmbH. Never insert other objects or SFP modules into the SFP slots.
- When the SFP slots are not in use, always make sure that they are sealed using the supplied protective covers.
- When using the SFP slots and SFP modules, always be sure to observe normal cleanliness.
- When using SFP modules, always be sure to observe the module manufacturer's safety information and use them only for their intended purpose.



- The SFP modules typically approved for ARGUS are generally class 1 laser devices.

Normally, the use of class-1 laser products does not require any special protection measures.

However, for your own safety please note the following:

- Always cover the ends of the optical fibres and the SFP module when the connection is interrupted.
- Always avoid direct eye contact with the emitted laser light. Vision aids and long exposure times can make even low light doses extremely dangerous.
- The equipment may only be used by trained personnel.
- Please note that your ARGUS® may be equipped with port savers in the existing fiber-optic jacks to protect the jacks. These are designed to protect the jacks and should only be removed if they show signs of wear. Operating the device without port savers can lead to rapid wear of the jacks themselves.
- The electromagnetic compatibility (EMC) was tested according to the regulations specified in our declaration of conformity.

Your ARGUS instrument is a class A device, and can cause radio interference in residential areas. In this case, the user may be required to implement appropriate measures.

- The active charging of the battery pack (charging the battery) and automatic charging (on by default) may only be carried out in a temperature range of 0 °C to +40 °C.
- The device may not be used during thunderstorms.
- If the ARGUS is operated under extreme conditions, it can be set to energy-saving mode to protect the device and the user; this can interrupt the running test and drop the connection.

To ensure dependable extended operation of the ARGUS, always make sure that it is optimally protected against high temperatures.

- The device may not be opened.
- Please observe the following safety and transport information when using the lithium-ion battery pack.
- Before starting a test or synchronising on an interface, determine how you want to supply power to the ARGUS (battery pack or power adapter).
The car adapter is only intended for charging the device. When the ARGUS is connected to this adapter, you should not run any tests or synchronise on a DSL interface.
- The ARGUS contains extremely sensitive electronic components. Depending on the operating mode selected, an electronic discharge from the user can, in rare cases, result in impairment of device function. The user may need to restart the impaired test or function.

Return and environmentally compatible disposal

Current environmental law restricts the use of certain hazardous substances in electrical and electronic devices, in particular the concentration or use of lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium [Cr(VI)], polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE).

We hereby confirm that, according to the assurances, marking and documentation of our suppliers, ARGUS brand measuring products do not contain any substances in concentrations, compounds or applications whose marketing is prohibited according to the valid provisions of the RoHS Directive 2011/65/EU of the European Parliament and Council dated 8 June 2011.

Our registration number issued by the EAR is: WEEE REG. no. DE 92829367.

Since October 2005, we have been marking all our measuring devices with this symbol, in compliance with WEEE 2002/96/EC and the corresponding German statute ElektroG:



() (DIN EN 50419).

In other words, the ARGUS and its accessories may not be disposed of as household waste. Please consult with our Service department with respect to the return of old devices.

2.1 Safety and transport information for the battery pack

Transport

The battery pack has been tested according to the UN directive (ST/SG/AC.10/11/Rev. 4, part III., subchapter 38.3). Protective functions have been implemented to guard against short-circuit, destruction and dangerous reverse currents. The quantity of lithium contained in the battery pack is below current thresholds, and thus not subject to international regulations governing hazardous materials either as an individual part or mounted in the ARGUS. When transporting multiple battery packs, however, you may also need to observe these regulations. Further information is available on request.



Failure to observe the following danger and warning information can impair the protective functions of the battery pack. This can cause extremely high voltages and currents which can in turn result in abnormal chemical reactions, acid leaks, overheating, smoke, explosion and/or fire. Additionally, failure to observe this information can negatively impact both the performance capacity and the performance duration.

Hazard information and warnings

1. Do not disassemble or short-circuit the battery pack.
2. Do not throw the battery pack into fire or overheat it ($> 60\text{ }^{\circ}\text{C}$).
3. The battery pack must not become wet or damp.
4. Active charging of the battery pack and automatic charging (on by default) may only be carried out in a temperature range of $0\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$.
5. To maximise battery life, do not store the battery long-term at temperatures above $+50\text{ }^{\circ}\text{C}$.
6. The battery pack may only be charged using the corresponding ARGUS device.
7. Do not puncture the battery pack with a sharp object.
8. Do not throw the battery pack or expose it to shocks.
9. Do not use battery packs that have become damaged or deformed.
10. The battery pack contacts have a specific polarity (positive and negative); do not insert them in the ARGUS with reverse polarity.
11. Only connect the battery pack to the corresponding ARGUS in the intended manner.
12. The battery pack may not be directly connected to electrical outputs such as power adapters, car adapters etc.
13. Only use the battery pack with ARGUS.
14. Do not attach, transport or store the battery pack together with metallic objects.
15. Do not expose the battery pack to electrostatic charges.
16. The battery pack may not be charged or discharged together with primary batteries or other battery packs.

17. If the battery pack fails to charge by the end of the charging time, it can no longer be recharged.
18. Do not expose the battery pack to excessive pressure.
19. If the battery pack emits odours or heat, becomes discoloured or deformed or otherwise appears different from normal during operation, charging or storage, immediately remove the battery pack from the device and never use it again.
20. 20. In the event that acid leaks and comes in contact with eyes or skin, wash immediately with clean water. Do not rub. In both cases, seek medical attention immediately. Otherwise, permanent injury may occur.
21. Keep the battery pack away from children.
22. Read this manual and the corresponding safety information carefully before using the battery pack.
23. If odours, rust or other abnormalities are detected before the first use, contact intec GmbH to clarify the next steps.

Further details

Battery compartment

The battery pack compartment is on the rear of the device. Generally, you do not need to replace the battery pack.

If this should become necessary, unscrew the two screws of the battery compartment cover and remove the cover. The battery pack inside the compartment can easily be detached from the plug connector and removed. The plug is reverse polarity protected, so that you can insert a new battery pack with no difficulties.

Use only the battery pack supplied with the device.

First-time operation

Connect the switched-off ARGUS to the supplied plug-in power supply. The ARGUS will automatically switch on when the power supply is plugged in. After pressing the  key, select the option "Battery (status, charging)". The option "Status" displays further information, such as voltage and current level.

The Accesses display can vary depending on the configuration. You must first change the battery pack supplied with the device completely before full capacity is reached.

Automatic charging

Select this option to toggle the automatic charging functionality on or off. You can also do this in the ARGUS Manager, which you can access by swiping down or pressing the power key. Here, automatic charging can be toggled on and off. The ARGUS charges the battery automatically in the background when the power adapter is connected as soon as the battery status falls below a threshold value (battery symbol in display). When the ARGUS is disconnected from the power adapter before that battery is completely charged, the ARGUS does not automatically continue charging when it is subsequently reconnected because the charge is no longer below the threshold.

Power-saving mode

In battery mode, the ARGUS automatically switches off after five minutes of no activity (interval adjustable). The ARGUS does not switch off during a test (e.g. loop) or in trace mode. The device can alternatively be operated using the supplied external adapter. When the adapter is connected, power supply via the battery is automatically switched off. The ARGUS must always be operated with the battery, regardless of the power supply. This ensures e.g. uninterrupted operation of the real-time clock. Remove the power adapter from the mains socket as soon as the ARGUS is switched off or no longer in use (e.g. after charging the battery pack)!

Handling the battery pack

Power down the ARGUS and disconnect the power adapter. Then unscrew the screws holding the battery compartment cover. The battery pack inside the compartment can easily be detached from the plug connector and removed. The plug is reverse polarity protected, so that you can insert a new battery pack with no difficulties.

Use only the battery pack supplied with the device.

Attaching any other power supply to the device contacts will damage your ARGUS instrument.

- Only charge the supplied battery pack in the ARGUS.
- Do not use the ARGUS battery pack in other devices.
- Active charging of the battery pack and automatic charging (on by default) may only be carried out in a temperature range of 0 °C to +40 °C.
- The lithium ion battery pack should be stored with a charge of 40 to 60 %. When storing the device for longer periods, you should refresh this charge level every six months. To prevent full discharge, remove the battery pack from the device for long-term storage. To maximise battery life, do not store the battery long-term at temperatures above +50 °C.

Battery indicator

The ARGUS indicates the current state of the battery graphically in the display when no power adapter is connected. A battery symbol flashes in the display when it is down to a power reserve of approx. 8 minutes (depending on the operating mode). Tone errors, and in extreme cases malfunctions, can occur in this period. Connect the power adapter. The ARGUS can recharge the battery completely when the power adapter is connected. The ARGUS power pack does not require manual discharge. A complete charging process can take up to approx. 6 hours.

Power supply

Power supply unit for Argus 260/300 (with DC connector)

The following power supply units are approved for use with the ARGUS:

UMEC UP0301A-12PE60

UMEC EDAC EA1024HR(T03)

Contact:

Importer:

UMEC Europe GmbH

Kreuzenstraße 80

D-74076 Heilbronn

Tel. 07131/7617-0 Fax 07131/761720

E-Mail: info@umec.de

No other power supply units may be used

3 General technical data

Device specifications:

Dimensions/weight	Inputs/outputs (may vary depending on the device's features)
Height: 300 mm	- 1x RJ-45 und 1x RJ-11 (Line) for xDSL, G.fast, BRI S/T and POTS
Width: 128 mm	- 1x RJ-45 for SHDSL
Depth: 94 mm	- 1x RJ-45 for PRI
Weight: < 2 kg (4.41 lbs) (incl. battery pack)	- 2x Ethernet: 1x 10/100/1000/2500 base-T and 1x RJ-45 Test port - 1x RJ-45/Ethernet 10000 base-T/10 GigE - 3x SFP ports: 1x 1000 base-SX/LX/ZX/BX and 2x SFP+ for 10 GBase-X - 2x SC/APC for 5xOPM - 1x SC/APC for OTDR - 5 x 4 mm banana sockets, contact-protected for cable multimeter (DMM) - 1x USB 2.0 client type micro B, for accessing USB mass storage - 2X USB 2.0 host type A, for external devices - WLAN IEEE802.11a/b/g/n/ac/ax/be - 1x 12V DC socket
Control panel	
28 keys	
4 softkeys	
4 cursor keys	
Touch display	

Display TFT colour display, Touchscreen, illuminated 800 x 400 Pixel	Temperature range Temperature range for charging battery pack: 0 °C (+32 °F) to +40 °C (+104 °F) Max. Operating temperature (endurance tests): 0 °C (+32 °F) to +40 °C (+104 °F) Max. Operating temperature (battery mode): -10 °C (+14 °F) to +50 °C (+122 °F) Operating temperature (with power/car adapter): 0 °C (+32 °F) to +40 °C (+104 °F) Storage temperature: -20 °C (-4 °F) up to +60 °C (+140 °F) Humidity: up to 95 % rel. humidity, non-condensing
	Power supply Lithium ion battery pack with 7.2 V rated voltage (always observe the safety instructions!) or 12 V/1.5 A ARGUS power adapter Miscellaneous ARGUS user safety tested according to EN62368-1, RoHS conformity according to the WEEE Directive. The electromagnetic compatibility (EMC) was tested according to the regulations specified in our declaration of conformity. CE mark  The ARGUS 300 fulfils the EC directives for the CE mark. We will be happy to provide a detailed declaration of confor- mity on request.

Supported Standards:

GPON (SFP): ITU-T G.984 PON Installation Test	OTDR: SC/APC (8°) IEC 61754-4
XGS-PON (SFP): ITU-T G.9807	WLAN: IEEE802.11 a/b/g/n/ac/ax/be (WiFi7) IEEE802.11 a/b/g/n/ac (WiFi5) IEEE802.11 ax/be (WiFi6/7 detection)
Fiber Inspection (USB-A): IEC 61300-3-35 DIN EN 61300-3-35:2016 DIN EN 61300-3-35:2022	Ethernet (LAN/SFP): IEEE 802.3 - 10 base-T - 100 base-T - 1000 base-T - 10 Gbase-T - SFP (MSA) Autonegotiation auto-MDI(X)
VDSL (line): ITU-T G.993.2 (VDSL2) ITU-T G.993.5, G.vector (vectoring) ITU-T G.998.2, G.bond (bonding) ITU-T G.993.2, Annex Q (super vectoring) Profiles: 8a, 8b, 8c, 8d, 12a, 12b, 17a, 30a, 35b ITU-T G.998.4 (G.INP, retransmission)	SHDSL (line): ITU-T G.991.2, Annex A (G.SHDSL) ITU-T G.991.2, Annex B (G.SHDSL) ITU-T G.991.2, Annex F (G.SHDSL.bis) ITU-T G.991.2, Annex G (G.SHDSL.bis) ETSI TS 101 524 V 1.2.1 (ETSI SDSL) ETSI TS 101 524 V 1.2.2 (E.SDSL.bis) IEEE 802.3.ah (EFM) ITU-T G.994.1 (G.hs)
ADSL (line): ITU-T G.992.1, Annex A (ADSL) ITU-T G.992.2, Annex A (G.lite) ITU-T G.992.3, Annex A (ADSL2) ITU-T G.992.5, Annex A (ADSL2+) ITU-T G.992.1, Annex B (ADSL) ITU-T G.992.5, Annex B (ADSL2+) ITU-T G.992.5, Annex J (ADSL2+) ITU-T G.992.3, Annex L (RE-ADSL2 via analogue) ITU-T G.992.3, Annex L (RE-narrow PSD ADSL2 via analogue) ITU-T G.992.3, Annex M (ADSL2) ITU-T G.992.5, Annex M (ADSL2+)	

G.fast (line): ITU-T G.9700/9701 (profile 106a) ITU-T G.9700/9701 (profile 212a)	 Dielectric strength: Line: DC: max. +200 V AC: max. +100 V _{pp} (copper tests only) DC: max. +200 V (xDSL)
ISDN (BRI/PRI/E1): ITU-T I.430 ITU-T I.431 ITU-T G.703	Banana sockets: DC: max. +200 V AC: max. +200 V

4 Quick-start guide



Power key



- Switches on the ARGUS®
- Restart after power down
- Switches on display illumination (also possible with any other key). In battery mode, the display illumination switches off automatically after an interval that can be set in ARGUS®
- Opens the ARGUS® Manager from any point in the menu (press briefly).
- Return from the ARGUS® Manager to the original menu.
- Switches off the ARGUS® (key must be held down): after an adjustable interval (e.g. after 10 minutes), the ARGUS® automatically shuts down in battery mode (see page 292).
- Emergency switch off if pressed for more than 10 seconds

Enter key



- Opens menu
- Switches to next display
- Starts/opens test
- Accepts setting

Back key



- Switches the ARGUS® back to the previous display without saving current entries, e.g. changes in a configuration parameter
- Exits graphic displays
- After power-up: opens the main menu

Cursor keys



- Browse display lines page by page (vertical cursor keys) Cursor movement within a display line (horizontal cursor keys)
- In the lists of options or statistics, you can use the horizontal cursor keys to browse by pages
- Select a menu, a function or a test
- Define lead types for TDR
- Move display cursor in graphic displays
- Select functions in graphic status screen

Telephony



Analogue

- Answers and hangs up

G.fast, xDSL (access mode xTU-R, xTU-R router), WLAN, GPON, XGS-PON and Ethernet

- Starts VoIP telephony
- Accepts an incoming VoIP call

Level key



- G.fast and xDSL accesses: displays results
- Ethernet: opens results
- Start/stop function for realtime analyses (line scope/TDR)

Number pad



- Entry of numerals 0 through 9, letters and special characters
- Direct function call, depending on the selected access (hot key), e.g. page 304

Softkeys



- The function of the four softkeys depends on the respective situation. The currently assigned function appears in the bottom line of the display in the form of four touch areas, e.g.:
<Access> Opens the menu for selecting various accesses
<start>: establishes a connection or starts a test

Wheel key



- Opens the setup menu

Menu key



- Opens the quick menu

Shift key



- In some menus, the softkeys are assigned two functions. The Shift key switches the assignment of the softkeys.

The ARGUS® can be controlled using the four cursor keys, the Enter key , the Back key , the level key  and the four softkeys. The bottom line of the display shows the current assignments of the four softkeys. In the following pages of this manual, only the respective currently valid softkey function is displayed in angle brackets < >, e.g. <Access>. The softkey  has the same function as the Enter key .

The ARGUS® 300 can also be operated entirely using the touchscreen. You can access the next menu and enter and confirm settings by tapping the corresponding screen location. The softkeys displayed at the bottom can also be actuated using the touchscreen. Additionally, you can scroll up and down by swiping and zoom in and out in graphics with two fingers.

Top connections



PWR

For external power adapter.

When the external power adapter is connected,

The ARGUS® switches off the battery power supply.

USB-A or USB-A 1/2

USB host interface

Active Probe II, WLAN, LTE



The ARGUS® regularly checks whether USB devices are connected.

USB-B (micro USB)

USB client interface (PC connection)

a1/2 or b1/2

4 mm banana socket for copper tests

GND

4 mm banana socket for copper tests (ground reference)

LAN2, LAN3 or LAN4

Connection to a PC's network card. Connection to the Ethernet port of a modem, router (IAD), or hub/switch, or to another Ethernet port (Access: Ethernet).

SFP2 or SFP3

Connection of selected SFP modules from various manufacturers for use with fiber-optic interfaces (Ethernet, FTTx/GPON).

PON (OLT/ONT)*

Connection of GPON and/or XGS-PON lines via SC/APC toward the OLT or ONT side (Through Mode)

*not shown in the image

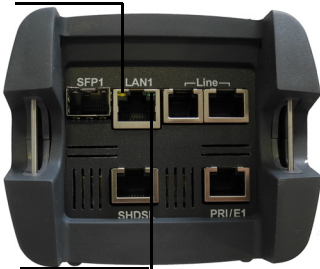


Further variants of the connector panel in the header area, e.g. with OTDR (SC/APC) or Gigabit Ethernet extension (LAN2, LAN3, SFP2), are explained in the corresponding manual or manual chapter.

Bottom connections

Yellow LED “Link/data” signals physical connection with another Ethernet port

- LED steadily illuminated: connecting
- Flashing LED: transmitting/receiving



Green LED “Speed” and yellow LED “Link/Data” signal Transmission speed

- LED on: 10/100 base-T
- Green Speed LED indicates transmission speed
- -LED on: 10/100/1000 base-T

PRI/E1

Access PRI/E1 Pin assignment: 1/2, 4/5

Line

The instrument is equipped with two line sockets: one RJ11 plugs and one for RJ45 plugs

Analogue/BRI S/T

access Pin assignment: 4/5

G.fast access Pin assignment: 4/5

xDSL access Pin assignment: 4/5

Copper access Pin assignment: 4/5

SHDSL

Access Pin assignment: fixed 4/5,
SHDSL n-wire variable 3/6, 1/2, 7/8

LAN1

Connection to a PC network card. Connection to the Ethernet interface of an xDSL modem, router (IAD) or hub/switch or another Ethernet interface (access: Ethernet).

SFP1

Connection of selected SFP modules from various manufacturers, for accessing fibre-based interfaces (Ethernet, FTTx/GPON).

LEDs

The LEDs next to the touch display indicate the following:



Power

Lights up green when the device is switched on.

Charge

A flashing green LED indicates that the device is charging.

Alarm

Visualizes configured alarms (e.g. DSL).

Test

This LED flashes green when a test, e.g. data, is started.

The LED is continuously green when a connection is established.

Protocol 1

This LED flashes green when a test, e.g. data, is started.

The LED is continuously green when a connection is established. If the connection could not be established, the LED is continuously red.

Sync 1

The LED flashes green while connecting.

The LED is continuously green when the connection is established.

Protocol 2

As Protocol 1, only second line, e.g. for bonding connections.

Sync 2

As Sync 1, only second line, e.g. for bonding connections.

Charging the battery in initial operation

The battery pack compartment is on the rear of the device. Attach the battery back by placing it against the retaining points at the top end and then screwing down the screws. Use only the battery pack supplied with the device. Observe the safety information given on page 14. Now connect your (switched-off) ARGUS® to the external power supply supplied with the device.

The ARGUS® switches on automatically. The following display appears (you may first need to acknowledge warnings or messages with <Continue>):



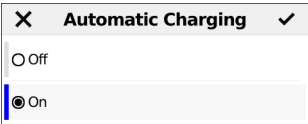
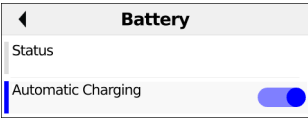
The Accesses display can vary depending on the configuration.

Current assignment of the softkeys

Quick Menu	
Status	
File Manager	
Save Test Result	
QR Code	
Test Results	
Hotkeys	
Long-Term Trace	▶
Firmware Update	▶
Battery	
Status	
Automatic Charging	☒

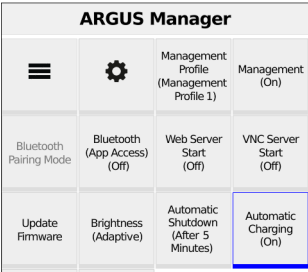
Battery Status	
State	Discharging
Power Supply Plugged In	No
Learning actual battery capacity	No
Remaining Charge	100 %
Battery Capacity	95 %
Discharge Cycles	40
Actual Voltage	8111 mV
Actual Current	-560 mA
Temperature	27,5 °C
Battery Type	100
Date (WW/YY)	13/17

After pressing the Menu key, select the option “Battery (Status, Charge)” (see image above left). Selecting “Status” (see image below left) displays further information, such as voltage and current level (see image at right).



Select “Automatic charging” to toggle the automatic charging functionality on or off.

You can also do this in the ARGUS[®] Manager, which you can access by pressing the power key or swiping from top to bottom. Here, touch to toggle automatic charging on and off.



You must first change the battery pack supplied with the device (see page 292, “Using the battery pack”) completely before full capacity is reached.

Power-saving mode

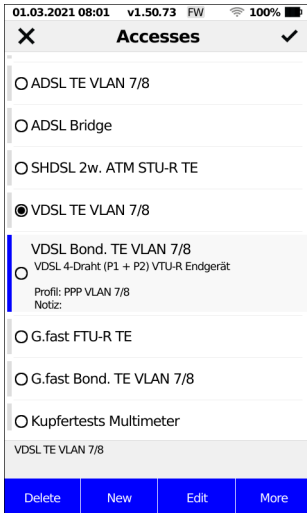
 In battery mode, the ARGUS[®] automatically switches off after five minutes of no activity (interval adjustable).The ARGUS[®] does not switch off during a test (e.g. loop box) or in trace mode.

The device can alternatively be operated using the supplied external adapter. When the adapter is connected, power supply via the battery is automatically switched off.

The ARGUS[®] must always be operated with the battery, regardless of the power supply. This ensures e.g. uninterrupted operation of the real-time clock.

 Remove the power adapter from the mains socket as soon as the ARGUS[®] is switched off or no longer in use (e.g. after charging the battery pack)!

5 Configuring accesses



If an access was selected the last time the instrument was used, the ARGUS® starts in the Access menu.

After selecting <Access>, the ARGUS® displays all configured accesses (up to 100 in all). The accesses most commonly used in Germany are preconfigured by default. When changing accesses, the last access used is indicated on the display with ●. You can select a different access using the cursor keys or the touchscreen. The selected access is marked with a vertical blue line on the left side. Press to confirm your access selection.

The marked accesses also provide a preview of the selected access settings.

In the example shown here, the access VDSL TE VLAN 7/8 is selected. The access VDSL Bond. TE VLAN 7/8 is highlighted, and a preview of the access settings is displayed.



The access VDSL TE VLAN 7/8 is highlighted and selected here.



The status line (above the softkeys) displays the selected access.

- <Delete>

Deletes the selected access.
- <New>

Creates a new access, see page 34.
- <Edit>

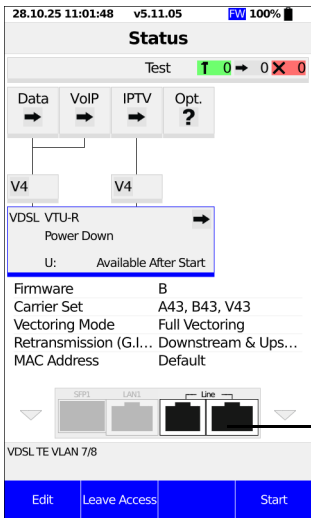
Edits an access, see page 34.
- <Filter>

Filters by accesses.
- 

The access marked in blue also moves when you scroll through the accesses using the ↑ and ↓ keys. In this way, ARGUS® enables you to create a series of configured accesses so that the most commonly required accesses are readily available.
- <↓>
- <↑>
- <Add as favourite>

The access is added or removed as a favourite.
- OR
- <Remove as favourite>
- 

Switches to ARGUS® status, or - if no connection is selected - to the “No connection” menu.



In the status display, the connection sockets that can be used for the selected connection are highlighted.

5.1 Access wizard

The access wizard prompts for different information depending on the access/interface. The prompts for the parameters depend on the parameters that were previously selected.

Access Wizard

Physical Parameters

Automatic Online Accesses

PPP Timeout

Profile

Note

Name

On

36 s

PPP VLAN 7/8

[Empty]

VDSL TE VLAN 7/8

X

Access

✓

☐ xDSL

☐ ADSL

☒ VDSL

☐ G.fast

☐ SHDSL

☐ Ethernet

☐ WLAN (USB)

☐ GPON

☐ POTS

Once the access has been selected, you can launch the access wizard in the menu using <Edit> (see image at left). The query parameters of the access wizard depend on the selected access (ADSL, VDSL, ...). You can now select the physical interface (see image at right).

X

VDSL Line

✓

☒ 2-Wire

☐ 4-Wire (P1 + P2)

X

Access Mode

✓

☒ VTU-R TE

☐ VTU-R Bridge

☐ VTU-R Router

Selecting the number of twisted pairs (see image at left). A twisted-pair connection (dual copper cores) is used for normal VDSL accesses and a 4-wire connection is used for VDSL bonding accesses. Once this is completed, you can select the access mode (see image at right).

✕

Profiles

✓

●

PPP VLAN 7/8

○

PPP ATM 1/32

○

IP DHCP Client

○

IP static

○

Profile 5

○

Profile 6

○

Profile 7

○

Profile 8

○

Profile 9

✕

Access Name

✓

VDSL TE VLAN 7/8

16/24 Characters

1234567890

QWERTZUIOP

ASDFGHJKL

▲

YXCVBNM

<X

123

7#@

✓

VDSL TE VLAN 7/8

Delete

Abc>ABC

These preconfigured accesses can be linked to up to 20 profiles. These profiles link the access settings with the access and test parameters. You can set various parameters here including those for service and virtual line. The selected profile appears in the display in blue. The preset profile is indicated in the display with ● (see image at left).

Once you have selected the profile, the ARGUS® suggests an access name, depending on the settings you made previously. You can enter up to 24 characters.

<Delete> Deletes access name



Clears mark and positions cursor keys to the start.



Clears mark and positions cursor keys to the end.

<Abc>ABC> Entry begins with upper-case letters and continues in lower-case.

<ABC>123> Entry of upper-case letters.

<123>abc> Numerical entry.

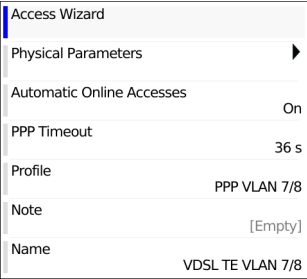
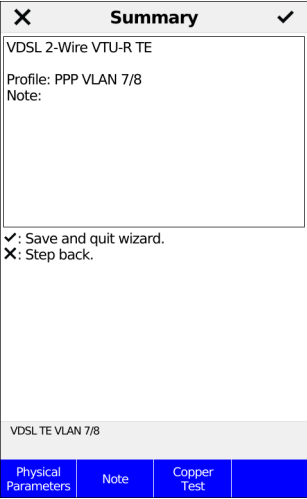
<abc>Abc> Entry of lower-case letters.



Entry of special characters, e.g. @, /, -, ., *, ?, %, =, &, ! etc.



Entry of special characters, e.g. _, :, +, # etc.



The ARGUS displays a summary of the configuration (see image at left).

<Physical Parameters> Edits the physical parameters, see page 37.

<Note> Entry of notes, see page 40.

<Copper Test> Editing of parallel copper tests possible.

 Go back one level.

 Save and exit the wizard.

Once you confirm with Enter, the ARGUS® switches to the editing view of the selected access (see image at right). To configure the services or test parameters, select <Profile>.

You need to exit the access wizard before the ARGUS® can use the configured access.

5.2 Physical Parameters

Access Wizard	
Physical Parameters	▶
Automatic Online Accesses	On
PPP Timeout	36 s
Profile	PPP VLAN 7/8
Note	[Empty]
Name	VDSL TE VLAN 7/8

Edits the physical parameters of the selected access. The physical parameters can also be opened and edited directly when the access wizard is finished.

5.3 Autostart access

Access Wizard

Autostart Access ☐

Profile PPP VLAN 7/8

Physics

Physical Parameters ▶

Long-Term Trace ▶

Service / Virtual Line

Automatic Online Accesses ☐

PPP Timeout 36 s

Miscellaneous

Note [Empty]

Access Wizard

Autostart Access ☒

Profile PPP VLAN 7/8

Physics

Physical Parameters ▶

Long-Term Trace ▶

Service / Virtual Line

Automatic Online Accesses ☒

PPP Timeout 36 s

Miscellaneous

Note [Empty]

If the selected access is to be started automatically, this can be activated quickly and easily using a slider.

VDSL TE VLAN 7/8 ▶▶

☒ VDSL Z-Wire VTU-R TE

Profile: PPP VLAN 7/8

Note: Dial-up with VLAN

Accesses that are started automatically are marked with a blue double arrow in the access menu. The access is started automatically when the device is switched on.

5.4 Profile

Access Wizard	
Physical Parameters	▶
Automatic Online Accesses	On
PPP Timeout	36 s
Profile	PPP VLAN 7/8
Note	[Empty]
Name	VDSL TE VLAN 7/8

✕	Profiles	✓
☒	PPP VLAN 7/8	
☐	PPP ATM 1/32	
☐	IP DHCP Client	
☐	IP static	
☐	Profile 5	
☐	Profile 6	
☐	Profile 7	
☐	Profile 8	
☐	Profile 9	

The preconfigured accesses can be linked up to 20 profiles. These profiles link the access settings with the access and test parameters. You can set various parameters here including those for service and virtual line.



Select the profile you wish to edit. The selected profile appears in the display highlighted in blue. The default profile is indicated with a ● in the display.

◀ Profile	
Services	▶
Router	▶
Bridge	▶
Test Parameters	▶
Profile Name	PPP VLAN 7/8

◀ Test Parameters	
IP Ping	▶
Traceroute	▶
Path MTU	▶
iperf Client	▶
iperf Server	▶
ARGUS® Real Speed (RFC 6349)	▶
HTTP Download	Server Profile 1
HTTP Upload (BRITT)	Server Profile 1
FTP Download	Server Profile 1

You can find more detailed explanations of the profiles on the following pages:
Services starting on page 114.
Profile name: for entering see Access name, page 35.

5.5 Notes

Access Wizard

Physical Parameters ▶

Automatic Online Accesses On

PPP Timeout 36 s

Profile PPP VLAN 7/8

Note [Empty]

Name VDSL TE VLAN 7/8

VDSL TE VLAN 7/8

VDSL 2-Wire VTU-R TE

Profile: PPP VLAN 7/8

Note: Dial-up with VLAN

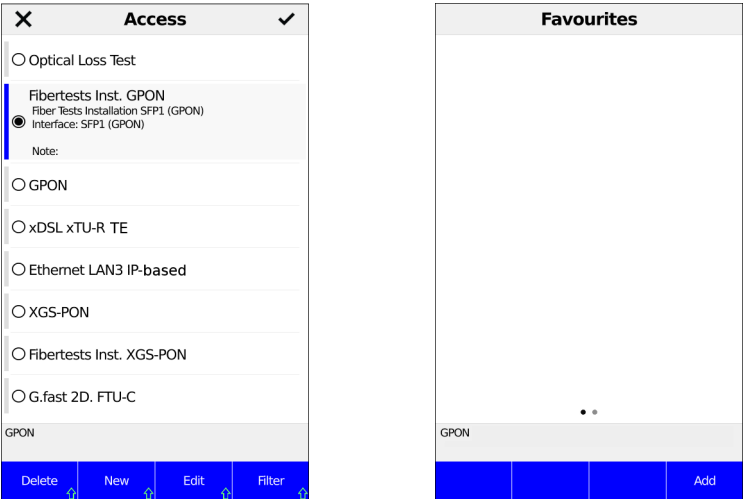
You can also add a note when editing an access. This note can be up to 49 characters long.

In addition to the selected access, the ARGUS® will display, for example, the xDSL mode, the access mode and a freely editable note in the preview (in this example: Dialup with VLAN).

For more on entering notices see “Access name” on page 35.

6 Favourites view

With the freely configurable favourites view in the ARGUS® 300, the most frequently used functions can be accessed even more quickly.



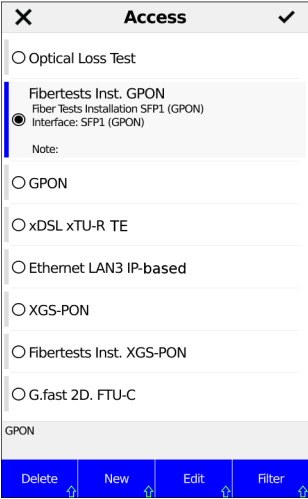
To access the favourites view, swipe from left to right on the display in the access menu. If you have not yet added any favourites, the favourites view is empty.

<Add> Favourites can be added here.



After selecting the <Add> softkey, you can select the following favorite types:

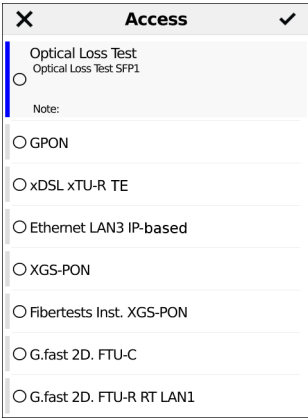
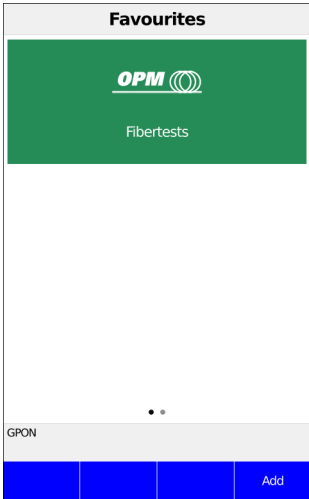
- Access
- Access filter
- Menu



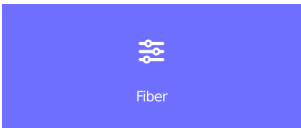
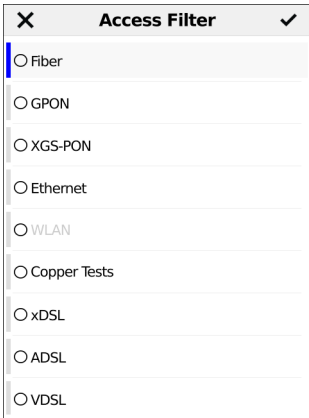
All accesses that have already been created can be selected, here:

- Optical Loss Test
- Fibertests Inst. GPON
- GPON
- xDSL xTU-R TE
- Ethernet LAN3 IP-based
- XGS-PON
- Fibertests Inst. XGS-PON
- G.fast 2D. FTU-C

To select one of the accesses, tap on it and then change the suggested short name if necessary, in this example fiber tests. Up to 10 characters can be entered.



After confirming with the check mark, the access appears in the favourites view. Accesses have a green background color there. Accesses that have already been added disappear from the list of connections to be selected in the favourites types. In this example, the fiber test access has already been added.



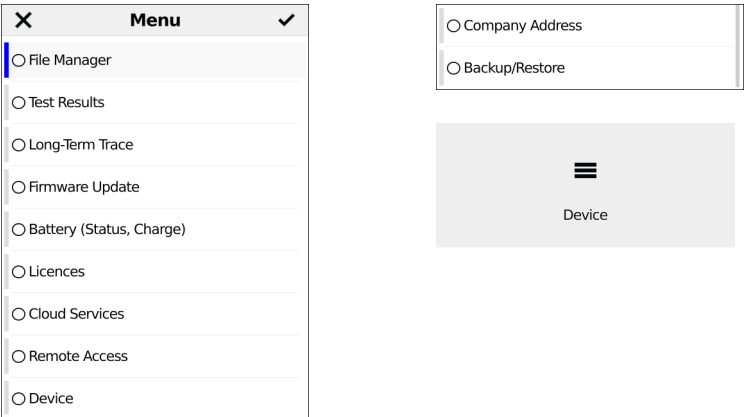
The following favorites can be selected for the access filters:

- Fiber
- GPON
- XGS-PON
- Ethernet
- WLAN
- Copper Tests

- xDSL
- ADSL
- VDSL

If no access has yet been created with one of these access filters, it is grayed out (here: WLAN).

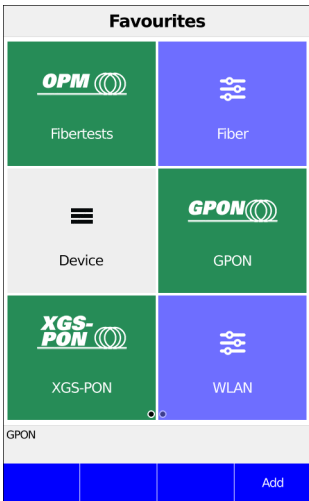
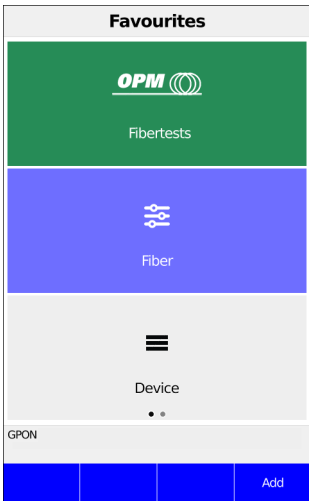
Access filters are displayed with a violet background color in the favourites view.



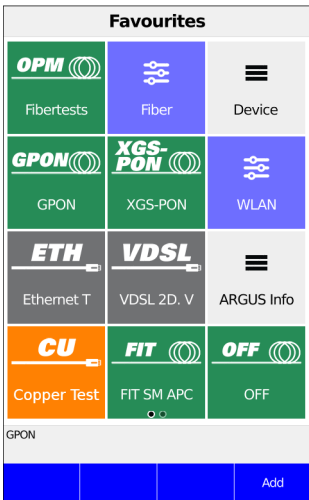
The following favourites can be selected in the Favourites type menu:

- File Manager
- Test Results
- Firmware Update
- Battery (Status, Charge)
- Open Manual
- Licences
- Cloud Services
- Remote Access
- Device
- Company Address
- ARGUS Info
- Backup/Restore

Access filters are displayed with a grey background color in the favourites view.

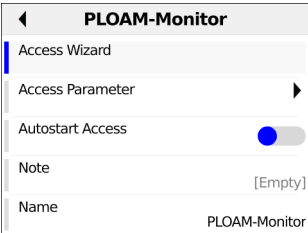


Depending on the number of favourites added, three large, six medium or twelve small tiles are displayed.

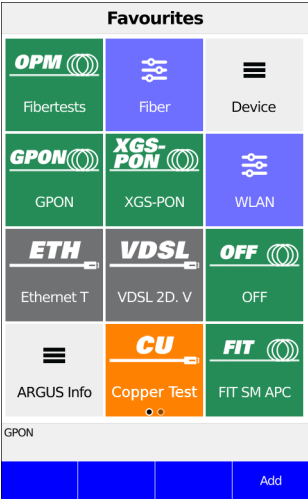
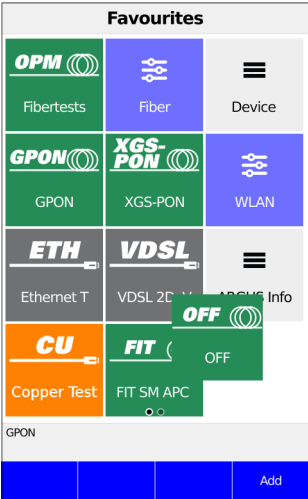


If you have added more than twelve favourites, they become visible when you swipe up from the bottom of the favourites view.

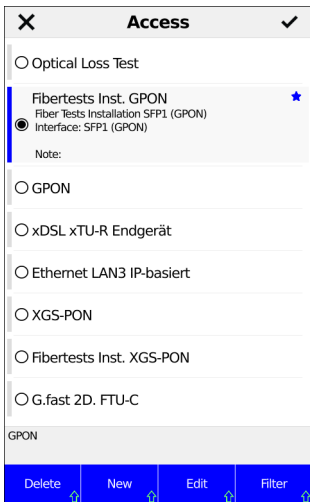
xDSL and Ethernet interfaces are displayed with a dark grey background color. Copper tests and a/b or ISDN interfaces have an orange background color.



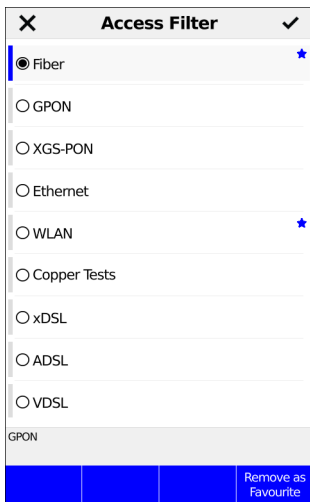
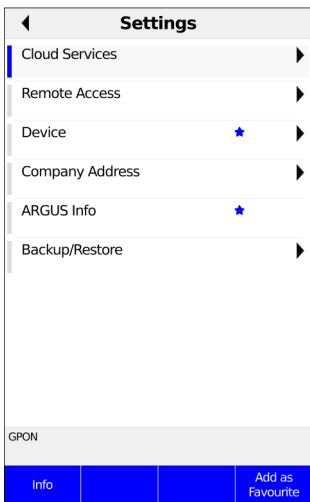
If you hold down one of the tiles, you can rename or remove it. Accesses can also be edited.



It is also possible to move the tiles. To do this, press and hold a tile and drag it to the desired position. In the example, the "OFF" tile was moved up one row.



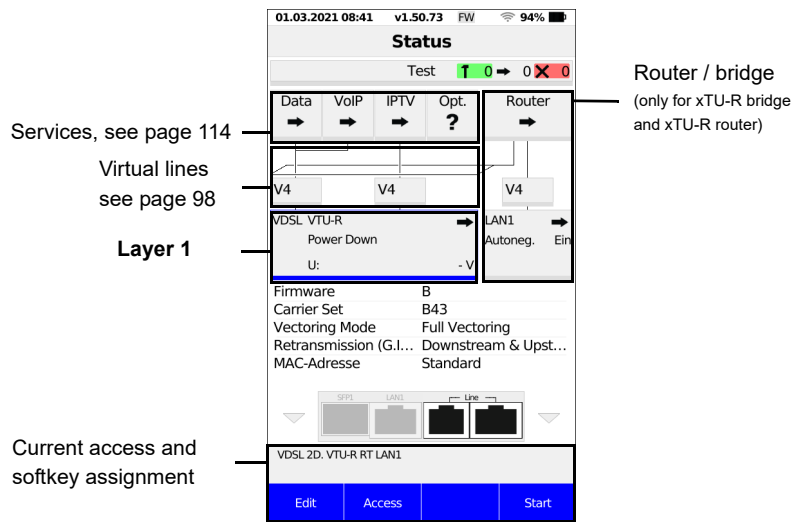
In the access menu, for example, the favourites are marked with a blue star, in this example Fibertests Inst. GPON.



Favourites can also be added in the settings (accessed via the wheel key) and via the “Filter” softkey in the access menu by selecting the “Add as favourite” softkey. If you select “Remove as favourite”, the favourite is removed again.

7 Physical layer

The physical layer (layer 1) is shown in the status screen (Fig. 2) with its own graphical element (here VDSL). The other elements in the status screen are initially only named. This is explained in more detail on page 98 (Virtual lines) and page 114 (Services). The physical layers for the G.fast, ADSL, SHDSL and Ethernet interfaces are presented in the same way as for VDSL. The selection of the VDSL access and the access mode VTU-R are directly adopted in the status screen. If the defaults are correct, layer 1 (synchronisation on VDSL) can be established directly on <start>. The most important information such as voltage (U) and modem states (power down) are displayed in the layer-1 box (blue). To change the VDSL configuration directly, press <edit>. To change the access type directly in the status screen (Fig. 2), press the softkey <Access> or the key combination  and .



- <Edit> Changing VDSL settings: see page
- <Access> Access selection: see page
- <Start> Synchronizing: see page

See page 114 for tests that can be run via layer 1.

8 Operation on G.fast and xDSL accesses

ARGUS® supports G.fast and the following DSL interfaces: ADSL, VDSL, SHDSL.

In this connection, ARGUS® supports the following access modes:

- xTU-R** Terminal device mode (fast/xDSL transceiver unit) see page 52.
The ARGUS® is connected to the xDSL access (in front of or behind the splitter). The ARGUS® replaces the modem and PC.
- xTU-R Bridge** Bridge mode (fast/xDSL transceiver unit) see page 73.
The ARGUS® is connected to the xDSL access and the PC.
The ARGUS® replaces the xDSL modem (for SHDSL only ATM and EFM).
- xTU-R Router** Router mode (fast/xDSL transceiver unit) see page 75.
The ARGUS® is connected to the xDSL access and the PC.
The ARGUS® replaces the xDSL modem and router (for SHDSL only ATM and EFM).
- STU-C** (STU-C: SHDSL transceiver unit-central office)
The ARGUS® simulates the central office side (DSLAM).



The individual DSL tests record and store data (e.g. traces of IP data). It is the user's responsibility to comply with the applicable legal requirements.



The line may not carry a DC voltage greater than 200 V DC and should be free of AC voltage components.



In principle, the operating temperature range set out in "Technical data" (see page 19) applies for SHDSL operation. For ambient temperatures just below +50 °C, extended operation in high-performance modes can trigger the temperature-dependent ARGUS® protection functions described in the safety information (see page 11).

8.1 Configuring G.fast and xDSL interfaces



In the ARGUS[®] status, the layer-1 box highlighted in blue is selected.

<Edit> Opens settings

Note:

accessing functions via number keys/key combinations

You can call important functions/tests directly using the keys of the ARGUS[®] keypad. You can find an overview of these key combinations on page 304.

8.2 G.fast and xDSL settings

The ARGUS[®] stores all relevant settings for a test with the accesses. Only the relevant settings are applied, depending on the test situation. You can restore the default settings at any time (see page 287).

You can make the following relevant settings:

- Rated / threshold value
- INP/SNRM (ADSL only)
- Firmware (VDSL only)
- Carrier Set (VDSL only)
- Vectoring Mode (VDSL only)
- Retransmission (ADSL and VDSL only)
- MAC address
- Gratuitous ARP
- VLAN mode(ADSL only)
- Spectrum (SHDSL only)
- Data rate (SHDSL only)
- Power back off (SHDSL only)
- EOC usage (SHDSL only)
- Sync word (SHDSL only)
- Message mode (SHDSL only)
- Vendor info field (SHDSL only)
- Wire pairs (SHDSL only)
- Line probing (SHDSL only)
- Interop bits (SHDSL only)



When the router box highlighted in blue is selected in the ARGUS® status, you can configure bridge/router settings.

<Edit> Opens settings

You can configure the following settings:

- IP version
- IPv4
- IPv6 (router only)
- VLAN (bridge only)
- Data log



You can obtain further information on settings in the ARGUSpedia on the instrument.

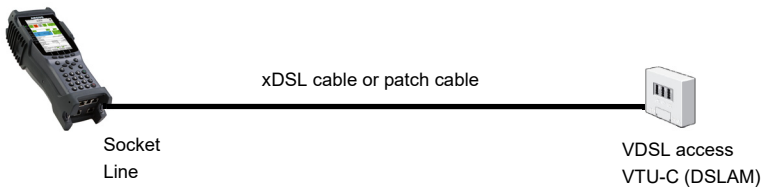
8.3 The ARGUS® in access mode xTU-R

Determining the G.fast xDSL connection parameters using VDSL as an example (procedures also apply for ADSL and SHDSL connections)

The ARGUS® is connected directly to the VDSL access via the supplied xDSL lead and the ARGUS® socket line (either in front of or behind the splitter). In this case, the ARGUS® replaces the modem and PC. It establishes a VDSL connection and determines all relevant VDSL connection parameters. The ARGUS® displays the VDSL connection parameters and, if desired, saves them when the link is disconnected.



Use only the patch cables supplied with the device.



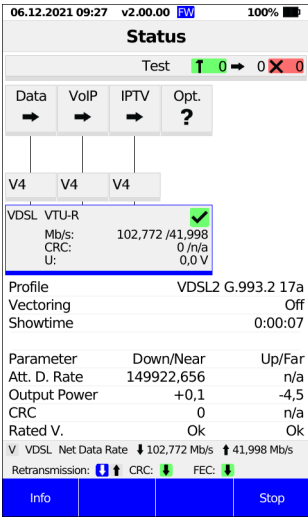
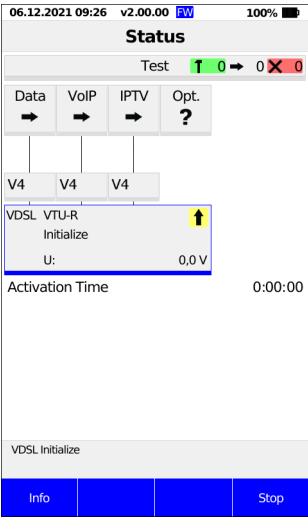
Establishing the G.fast and xDSL connection using VDSL as an example

Profile configuration:

The ARGUS® uses the settings and limit values stored in the respective profile for establishing a VDSL connection.

Additionally, the default profile is used.

- <Edit> Changes VDSL settings and MAC address.
- <Access> Selects a new access.



Establishing a VDSL connection

The ARGUS® synchronises with DSLAM (LED "Sync/L1" flashes, display shows arrow on yellow background).

The ARGUS® displays the current connection status (in this example "Initialize") in the layer-1 box (blue).

The activation time (elapsed time from the start of synchronisation in h:min:s) is displayed below the layer-1 box.

Connected

As soon as the connection is established (LED Sync/1 continuously illuminated and green check mark in the layer-1 box), the ARGUS® determines the VDSL connection parameters and displays these below the layer-1 box. After synchronising, the ARGUS® must remain connected to the VDSL access for at least 20 seconds. Only then can the ARGUS® save all VDSL connection parameters

The layer-1 box displays the following information:

- Access and access mode
- VDSL profile (8,12,17, 30 or 35 MHz)
- d: downstream net data rate
u: upstream net data rate
- Number of CRC and FEC errors in down- and upstream
- DC voltage on the interface

06.12.2021 10:15 v2.00.00 100%		
VDSL Line		
Common		
Modem State	Showtime	
Profile	VDSL2 G.993.2 17a	
Activation Time	0:00:31	
Showtime	0:00:08	
Vectoring	Off	
Parameter	Down/Near	Up/Far
Net Data Rate	102,772 Mb/s	41,998 Mb/s
Att. D. Rate	149,954 Mb/s	53,277 Mb/s
Output Power	0,1 dBm	-4,6 dBm
FEC	0	n/a
Retransmitted	0	-
CRC	0	n/a
Rated V.	Ok	Ok
V VDSL Net Data Rate ↓ 102,772 Mb/s ↑ 41,998 Mb/s		
Retransmission: CRC: FEC:		
Parameter	Statistic	Trace Graph

You can open a long-term view (see above) using the <Info> softkey.

Signalling of CRC/FEC error counters:

Symbol	Colour left and right	Explanation
 	green/green	No CRC/FEC errors occurred in the last second.
 	red/red	In the last second, CRC/FEC errors occurred in both upstream and downstream.
 	green/red	Only upstream CRC/FEC errors occurred in the last second.
 	red/green	Only downstream CRC/FEC errors occurred in the last second.

VDSL Parameter		
Net Data Rate	102,772	41,998
Att. D. Rate	151,184	51,272
Relative Capacity	Down	Up
[%]	67,9	81,9
SNR Margin	Down	Up
B0 [dB]	-	6,8
B1 [dB]	25,3	10,6
B2 [dB]	24,6	7,2
B3 [dB]	24,7	n/u
B4 [dB]	n/u	n/u
All [dB]	24,8	8,0

Loop Attenuation		
B0 [dB]	-	0,9
B1 [dB]	2,3	3,0
B2 [dB]	3,6	4,9
B3 [dB]	4,6	n/u
B4 [dB]	n/u	n/u
All [dB]	3,5	2,9
Signal Attenuation		
B0 [dB]	-	0,9
B1 [dB]	2,3	2,9
B2 [dB]	3,6	4,5
B3 [dB]	4,6	n/u
B4 [dB]	n/u	n/u
All [dB]	3,5	2,7

Select the softkey <Parameters> to open a detailed view of the parameters, in this example VDSL. You can view more parameters by swiping up and down on the touchscreen or using the softkeys (see images above and below).

Output Power	Down	Up
[dBm]	13,2	-3,5
Interleave Delay	Down	Up
[ms]	0,13	1,00
Impulse Noise Prot.	Down	Up
[Sym]	12,0	0,5
Error Counter	Near	Far
FEC	0	0
Retransmitted	0	-
CRC	0	0
ES	0	0
SES	0	0
Loss	0	0
UAS	0	0
Error Counter Reset	0	0

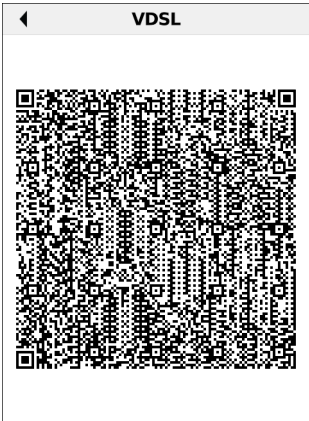
Resync		
Resync		0
Showtime (No Sync)		0
Bitswap Events	Down	Up
	4	0
Vectoring		
Mode		Off
Seamless Rate Adapt.	Down	Up
Mode	Off	Off
Retransmiss. (G.INP)	Down	Up
Mode	On	Off
Retransmitted	0	-
Corrected	0	-
Uncorrected	0	-
Retransmitted	96844	-

Electrical Length @ 1 MHz		
[dB]	1,80	1,80
DSLAM Settings	Down	Up
Max. Net Data Rate	102784	42000
Min. Net Data Rate	720	368
Max. Interleave Delay	-	-
Min. INP	-	-
Vendor Far		
Vendor		BDCM
Version		53382
Version Number	20.2.2.4 VE_13_1	
Serial Number	AA1610FE1JJ-27	

Vendor Near		
Vendor		IFTN
Version		36128
Version Number	B5.12.24D_	
Serial Number	ARGUS 300-10370-B5.12.24D_	

- n/a not available
- n/u not used
- n/r not received

 You can obtain further information on settings in the ARGUSpedia on the instrument.



If you select the `<QR code>` softkey from the parameters, a QR code is displayed that can be used to retrieve the results on your smartphone.

Statistics		
Ethernet	Rx	Tx
Frames	836	0
Bytes	45640	0

`<Statistic>` Displays the statistics.

G.fast and VDSL (EFM) - Ethernet statistics

- Frames number of all Ethernet frames received (Rx) and transmitted (Tx)
- Bytes number of all bytes received (Rx) and transmitted (Tx)

The softkey “Trace” opens the following view:

Trace		
Time		Info
09:09:00:000	<	Open
09:09:03:510	<	VDSL
09:09:03:510	--	Silent
09:09:06:580	--	Handshake
09:09:09:700	--	Modem Full Init.
09:09:33:630	--	Showtime

Display of commands:

- < = Command sent by ARGUS®
- > = Command sent by DSLAM
- = Connection status

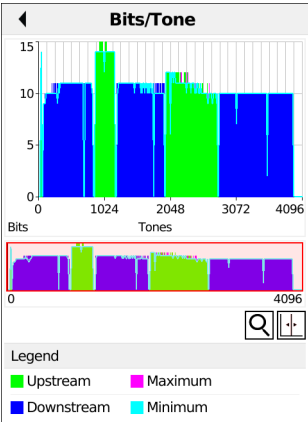
Explanation of modem states such as “modem idle” ADSL/VDSL, see page 66 and SHDSL, see page 67.

 When the ARGUS® status, physical box or DSL trace displays the state “no common mode”, this can indicate that the access in question is ADSL and not VDSL, or vice versa.

Display timestamp:

The ARGUS® indicates the time (internal clock) the commands are received.
You can display a variety of graphical functions using the <Graph> softkey. The <Menu> softkey provides a precise description of the available options.

 The following graphs and graph functions are only available for G.fast, ADSL and VDSL.



Graphic Functions

2- X-Zoom

*2- Y-Zoom

3- Cursor

9- X-Axis Setting

0- Minimum/Maximum

✓- Next

*✓- Previous

Tone

Displays the bit distribution, i.e. Transported bits per tone (channel)

y-axis: bits

x-axis: tones (channels)

Line interference sources (e.g. due to HDSL, RF, DPBO, etc.) can be identified on the basis of the bit distribution.

ARGUS® switches to the previous display.

<Continue> Switches to next graph.

Graph functions

The graph functions such as zoom, cursor and setting of the x-axis enable detailed analysis of the graphs:



Exits the menu without changing.



Two soft keys with arrows are displayed here, which can be used to scroll back and forth between the individual graphics.



You can also use this number key to toggle the zoom function within a graph.



These number buttons can be used to automatically turn the zoom function on and off (Y).



The function of the cursor is described on page 60.



Switching the x-axis from tone to frequency is described on page 61.



Setting the min/max is described on page 62.



Switches automatically to the next graph with the view and adopts all settings for this graph



Anzeige der vorherigen Grafik

If the symbol in the display is black and white () , the graph has not yet been zoomed.

The symbol is green and white when the graph is zoomed () .

<Zoom (y) +> Magnifies the middle section of the graph (100%).

<Zoom (y) -> Reverses <Zoom (y) +> and resets magnification



You can horizontally scroll through the zoomed range using the cursor keys or by tapping.

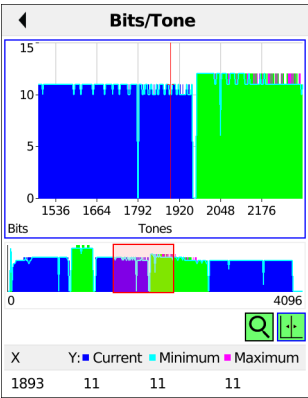


You can vertically scroll through the zoomed range using the cursor keys or by tapping.



The X-key returns the display to the unzoomed view.

The cursor functions enable precise determinations of the graphs.



Inserts the cursor directly.

When the Cursor function is started, a grey cursor line appears in the middle of the graph.

<Cursor> You can toggle the cursor on and off as needed using the Cursor softkey after activating it in the menu.

The values of the graph for the position under the cursor are displayed in the graph as follows:

x: 2107th tone

y: 7 bits



Use the left and right cursor keys to move the cursor to any point on the graph to measure it. Briefly pressing a cursor key causes the cursor to jump to by one position in the graph. When the cursor key is held down, the steps the cursor covers in the graph become progressively larger.



Use the vertical cursor keys to move the blue frame to the lower or upper graphic.

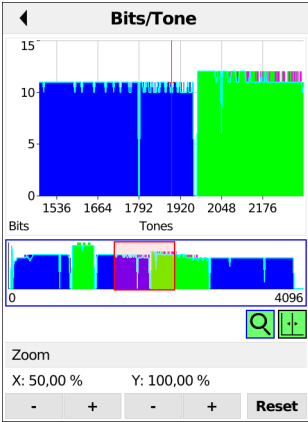
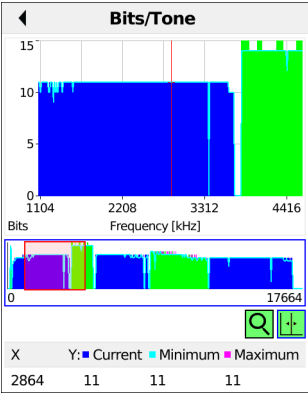
By toggling the x-axis (softkey 9) you can change its labelling from tone to frequency.



Available options:

- Tone:** Displays the values of the x-axis as tones
- Frequency:** Displays the values of the x-axis as frequencies

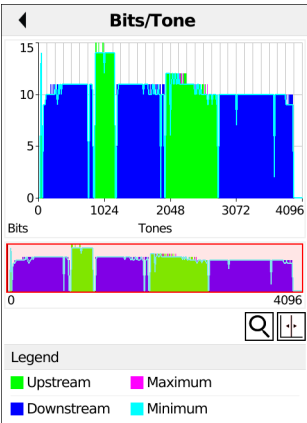
 Direct setting of x-axis.



 Use the left and right cursor keys to scroll through the range (in this example frequency).

The Zoom function and the Cursor function can also be combined. However, the starting position of the cursor can vary. The graph functions can be used for all graphs. If the cursor is displayed while the graph is zoomed, both symbols are green (see image at right).

With the Min/Max setting, the Bits/Tone and SNR/Tone graphs display the minimum and maximum values.



Magenta



Indicates the maximum value.

Light blue



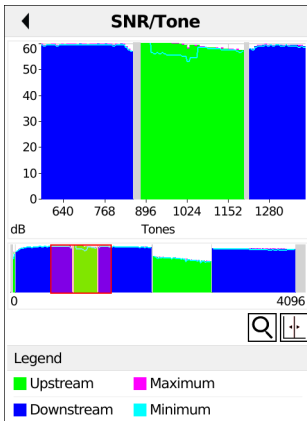
Indicates the minimum value

<Min/Max off> Hides min/max values.

<Min/Max Rst.> Resets min/max values.



Inserts softkeys directly.



<Continue> Display more graphs.

Display of signal-to-noise ratio (SNR) per tone (see image at left)

y-axis: SNR in dB

x-axis: tones (channels)

This enables interference sources for individual tones (channels) to be detected, in this example downstream power backoff (DPBO).

<Menu> Opens the graph functions (see page 59).

Display of quiet-line noise (QLN) per tone (see image at right). The QLN represents the quiet line noise of the twisted pair as a function of the frequency.

y-axis: QLN in dBm/Hz

x-axis: tones (channels)

The QLN enables detection of narrow-band interference sources due to e.g. coupling of medium-wave emission sources or defective switching components. These interference sources are represented as narrow peaks. The example at left shows a line with interference from a power supply.



Displays the amplitude component of the transmission function (HLOG) for each tone. HLOG shows the attenuation of a connection as a function of the frequency.

y-axis: Hlog in dB

x-axis: tones (channels)

On a nominally functioning line, the values drop off as the frequency increases; this function is virtually horizontal on short lines. This example shows a short line.

In the HLOG graphs, a shift can occur in calculating the upstream and downstream values from DSLAM compared to the downstream values from the ARGUS®. It can also happen that DSLAMs do not transmit the HLOG upstream values or send falsified values.

DSL connections are often possible even though one of the two cores is high-ohm or even interrupted (only capacitive coupling). This results in dropped connections and data losses. Such problems can be due to oxidized lines, poor contacts in the telephone sockets, loose terminals or improperly insulated lines. In connections like this, lower frequencies are attenuated much more than higher frequencies. This is recognisable as an atypical relationship between upstream and downstream attenuation, as well as in the HLOG curve. In the event of a problem on one of the wires, the values for the low frequencies are often less than for the higher frequencies.

<Menu> Opens the graph functions (see page 59).

<Continue> ARGUS® returns to the bits/tone graph.

Using the rule of thumb $L[m] = 50/f \text{ [MHz]}$, you can estimate the length of a stub line if you know the frequency in MHz (in this example 0.535 MHz):

$$L \text{ [m]} = 50/0,535 \text{ MHz} = 93 \text{ m}$$

There is a stub line approx. 93 m long.

In this example, given a frequency of approx. 3.85 MHz, the stub line is approx. 13 m long.

The ARGUS® determines the following xDSL connection parameters:

- Net data rate (ADSL, VDSL and G.fast only)
- Attainable data rate (ADSL, VDSL and G.fast only)
- Relative capacity (ADSL, VDSL and G.fast only)
- Latency mode (ADSL only)
- Attenuation (ADSL and SHDSL only)
- Loop attenuation (VDSL only)
- Signal attenuation (VDSL and G.fast only)
- Output power
- SNR margin
- Impulse noise prot. (ADSL, VDSL and G.fast only)
- Interleave delay (ADSL, VDSL and G.fast only)
- FEC (ADSL, VDSL and G.fast only)
- CRC
- LOSWS (SHDSL only)
- HEC (ADSL only)
- ES
- SES
- LOSS (ADSL, VDSL and G.fast only)
- UAS
- Reset (ADSL, VDSL and G.fast only)
- Resync (ADSL, VDSL and G.fast only)
- Showtime no sync (VDSL and G.fast only)
- Bitswap events (ADSL, VDSL and G.fast only)
- Vectoring (VDSL only)
- SRA (Seamless Rate Adaption) (VDSL and G.fast only)
- Retransmission (G.INP) (ADSL, VDSL and G.fast only)
 - Data transmission units (DTU) (VDSL and G.fast only)
 - INP REIN (VDSL and G.fast only)
 - INP SHINE (VDSL and G.fast only)
 - ETR (VDSL and G.fast only)
- Elec.length@1MHz (VDSL and G.fast only)
- Vendor far (ADSL, VDSL and G.fast only)
 - Version (ADSL, VDSL and G.fast only)
- Vendor near (ADSL, VDSL and G.fast only)
 - Version (ADSL, VDSL and G.fast only)



You can obtain further information on parameters in the ARGUSpedia on the instrument.

System information for transmission to the ADSL/VDSL remote station



When a modem is synchronised with a DSLAM, the vendor and device type of the modem is generally displayed in the control system of the DSLAM.

For ADSL and VDSL, this occurs according to ITU-T G.997.1.

When an ARGUS® device synchronises with a DSLAM, the latter reports to the control system the following:

Information	Display in DSLAM	Meaning
System vendor ID	0x04, 0x00 (hex)	Country code: Germany
	INGE or 0x49, 0x4E, 0x47, 0x45 (hex)	Provider code: intec Germany
	0x19, 1x01 (hex)	System FW version: 5.10.0
Version number	R5.10 U_	Device FW version: 5.10.0
Serial number	ARGUS300-9999-R5.10.0U_	Device type: ARGUS 300/device serial number 9999

Meaning of the modem states:

Colour	Short form	Explanation
red	■ DSL Idle	No-load
light blue	■ DSL Silent	ARGUS® transmits handshake tones (silence on the DSLAM side).
yellow	■ DSL Handshake	A handshake (G.hs) signal from the remote station was detected.
orange	■ DSL Full init.	Start of the training phase following successful handshake.
green	■ DSL Showtime / Data	Showtime achieved. The TC sublayer is established. ARGUS® is ready for operation.

System information for transmission to the SHDSL remote station

When a modem synchronises with DSLAM, the vendor and device type of this modem are normally displayed in the DSLAM's control system. In SHDSL, this is carried out according to "ITU-T G.991.2 table 9-10". When an ARGUS® device synchronises with a DSLAM, the latter reports to the control system the following:

Info:	Entry:	E.g. ARGUS:
Vendor ID	intec name	„intec“
Version model	Device type	„Argus300“
Vendor serial	Serial number	„9999“
Other vendor information	Device SW	„R5.10.0 U_“

Meaning of the running EFM states (from the STU-R perspective)			
Power down			STU-R / STU-C in idle state.
Initialization	red	■ SHDSL Initialization	Initialisation - „power on“.
GHS startup	light blue	■ SHDSL GHS startup	Handshake according to ITU-T G.994.1, G.hs is started.
GHS transfer	yellow	■ SHDSL GHS transfer	Replacement of the capability list completed.
Discovery			Start of the discovery phase.
Discovery accepted			Discovery probe accepted.
Discovery finished			Discovery phase finished.
Aggregation accepted			Aggregation probe accepted.
Aggregation finished			Aggregation phase finished.
GHS finished	orange	■ SHDSL GHS finished	Handshake (G.hs) successfully completed.
Data	green	■ SHDSL Data	Data mode achieved, showtime.
Data Error			An error, e.g. loss of sync. has occurred.

Disconnecting the G.fast and xDSL connection and saving the results

Status

Test 0 0 0 0

Data

VoIP

IPTV

Opt.

V4

V4

VDSL VTU-R

Mb/s: 102,772 /41,998

CRC: 0 /0

U: 0,0 V

Profile

VDSL2 G.993.2 17a

Vectoring

Off

Showtime

0:00:15

Parameter

Down/Near

Up/Far

Att. D. Rate

151915

51051

Output Power

+13,7

-3,5

CRC

0

0

Sollwert

Ok

Ok

V VDSL Net Data Rate

↓ 102,772 Mb/s

↑ 41,998 Mb/s

Retransmission:

↑

↑

CRC:

0

0

FEC:

0

0

Info

Stop

ARGUS Info

Do you want to save the results?

Select <Stop> to disconnect the live connection. You can now save the results (see image at right):

- <No>

Results are rejected
- <Back>

Results are not saved. The ARGUS returns to the status display.
- <Yes>

Saving the result

X

Test Result Name

✓

A300_11229_20251028_1120

24/24 Characters

@	-	_	\$	%	&	~	(	)	#
1	2	3	4	5	6	7	8	9	0
Q	W	E	R	T	Z	U	I	O	P
A	S	D	F	G	H	J	K	L	
▲	Y	X	C	V	B	N	M	⌫	
123								⌂	⌂
								⌂	✓

ARGUS Info

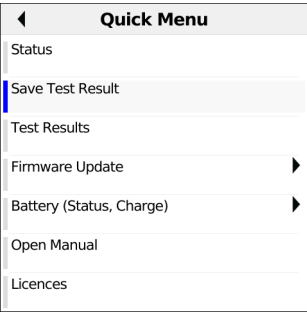
Do you want to save the results?

The ARGUS® saves the connection parameters together with the trace data in the first free slot. You can enter a user-definable name when saving (see page 263). The ARGUS® automatically suggests a name for saving the data that is made up of the following information:

- Device type (here A300)
- Serial number (here 1324)
- Configured date (here 01 March 2021)
- Set time (here 09:15)

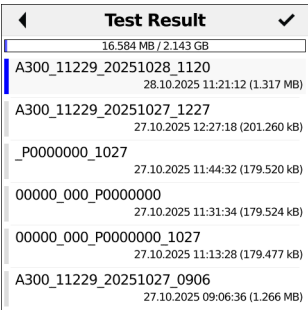
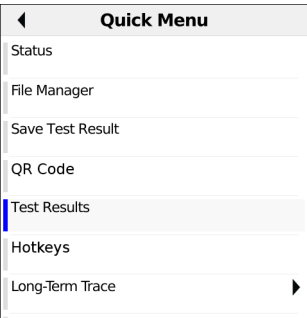
If all slots are occupied, you need to manually select a slot to overwrite. Press OK or check the box on the touchscreen to confirm saving the data.

Saving the results without disconnecting the G.fast or xDSL connection

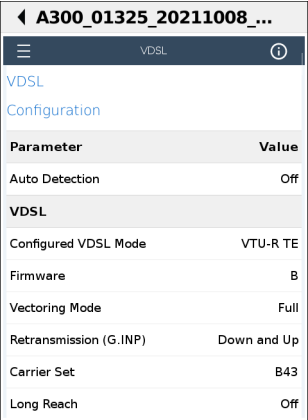
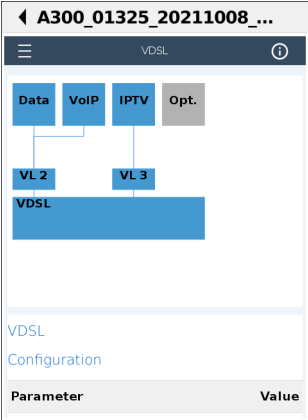


You can save the results while the connection is active in the quick menu, without disconnecting. The option “Save measurement log” is not greyed out while the connection is active. The save name is generated in the same way as for a disconnected connection.

Displaying saved test results



You can now select the various measurement logs using the option “Measurement logs” in the quick menu.



These are displayed in the browser. You can view the results in detail by swiping the touch-screen or using the cursor keys (status screen at left, configuration screen at right).

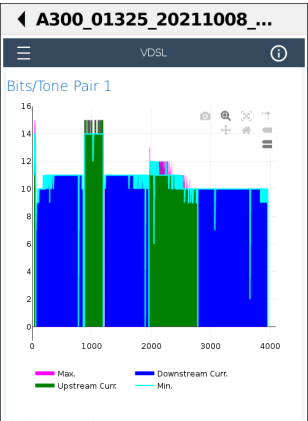
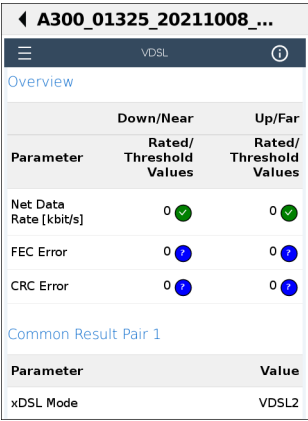
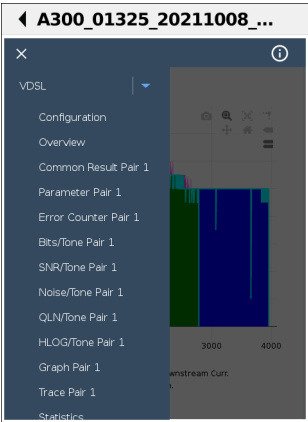


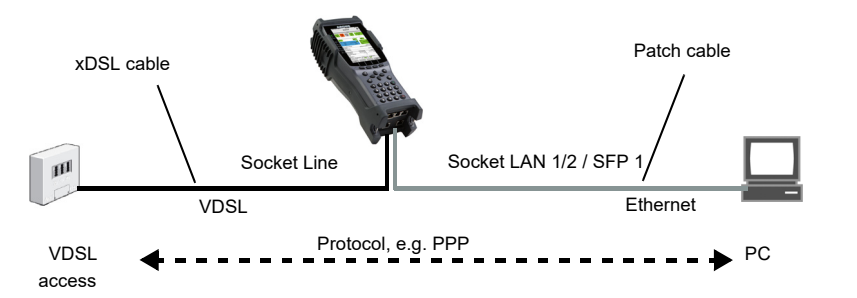
Illustration at left VDSL general, illustration at right bits/tonne pair 1.



Clicking the menu key () opens a menu that displays various details of the measurement log. The respective item opens at a touch.

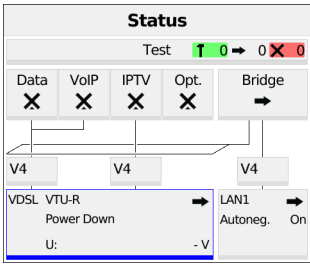
8.4 The ARGUS in access mode xTU-R bridge

Connect ARGUS to the PC using the patch cable and to the VDSL access using the xDSL cable. In bridge mode, ARGUS behaves like a VDSL modem, i.e. it passively conducts all packets from Ethernet to VDSL (and vice-versa). In this case, the PC is responsible for establishing the connection.



The ARGUS in access mode xTU-R bridge

In this example, VDSL VTU-R mode is configured and selected as described in Chapter 5, “Configuring accesses” (see page 31).

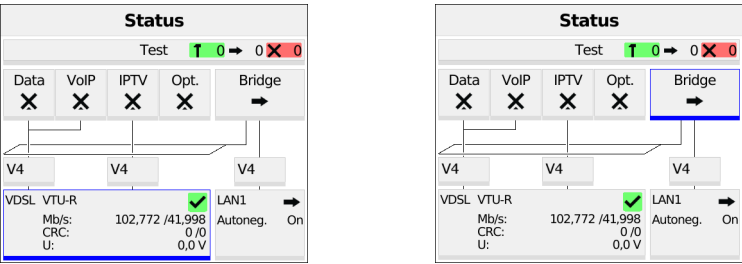


- <Edit> VDSL settings
- <Access> Change access
- <Start> Start VDSL



Switch to bridge mode using the cursor keys or touch display.

Establishing a VDSL connection

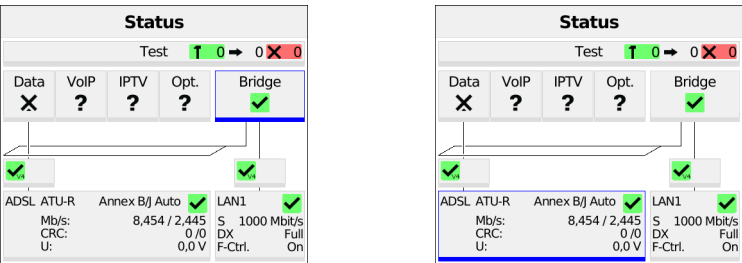


The VDSL connection is established (green check mark in the layer-1 box).

<Edit> Bridge/router parameter settings

The bridge can also be activated directly. If layer 1 has not yet been established, this is automatically started as well.

Establishing the VDSL bridge



<Stop> Deactivates bridge mode

<Info> Displays the activity of bridge mode.

When the physical layer is active (ADSL only), you can run the following tests using the softkey <Test>, see page 114.



No tests are available when bridge mode is active.



Displays the connection parameters.

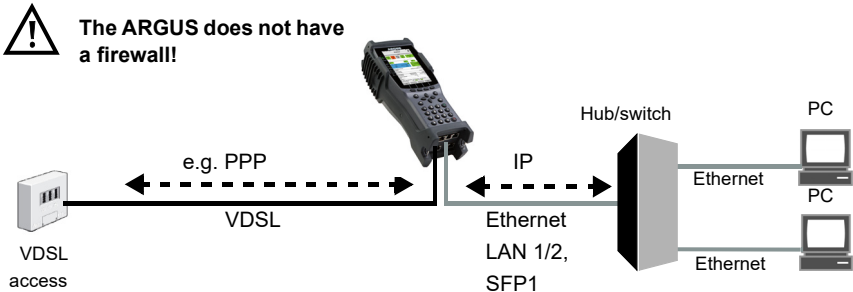
Switches to the layer-1 box and other elements, see page 99 for explanation.

<Info> or  Displays VDSL connection parameters, see page 55.

<Stop> Disconnects the VDSL connection and automatically deactivates the bridge.

8.5 The ARGUS in access mode xTU-R router

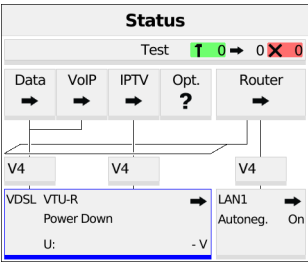
Connect the ARGUS to the PC using the patch cable and to the VDSL access using the xDSL cable. In router mode, the ARGUS replaces both the modem and the router, so that multiple PCs can access a network connection (via a hub/switch). The IP addresses of the network are either issued statically or the ARGUS is designated the DHCP server and assigns IP addresses to the connected PCs.



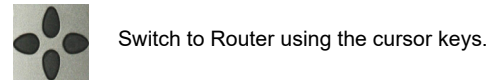
Settings for xDSL, see page 50:

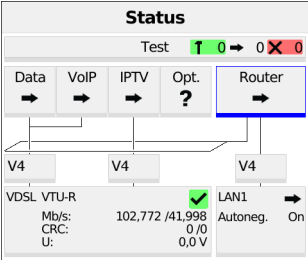
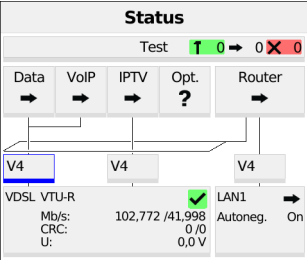
Settings in access mode xTU-R bridge

In this example, VDSL VTU-R router mode is configured and selected as described in Chapter 5, "Configuring accesses" (see page 31).



- <Edit> VDSL setting
- <Access> Change access
- <Start> Start VDSL





The VDSL connection is activated and the virtual line selected (see picture at right).

When the physical layer is active (ADSL only), you can run the following tests using the softkey **<Test>**, see page 114.



No tests are available when router mode is active.

<Edit> Parameter configuration, see Chapter 9 Virtual lines (VL) (see page 98).



Switch to "Router with the cursor keys or using the touch screen.

The router is selected (see image at right).

The router can also be activated directly. If layer 1 has not yet been established, this is automatically started as well.

<Edit> Configuring the bridge/router parameters.

<Start> See page 73 for bridge mode display and operation.

8.6 The ARGUS in access mode STU-C

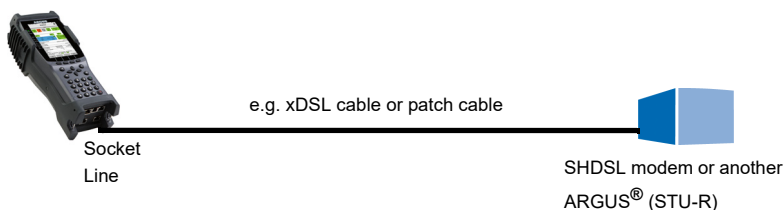
Determining the SHDSL connection parameters

The ARGUS is connected to the SHDSL modem directly using the supplied xDSL, patch, SHDSL 4-wire or SHDSL 8-wire banana cable. In this case, the ARGUS replaces the DSLAM (STU-C). The ARGUS establishes a SHDSL connection and determines all relevant SHDSL connection parameters. The ARGUS displays the SHDSL connection parameters and, if desired, saves them when the link is disconnected.

The procedure is the same for SHDSL 2-wire ATM, SHDSL 4, 6 and 8-wire connections and for EFM.



Use only the patch cable supplied with the device.



Configuring access mode STU-C:

SHDSL VTU-C mode is configured and selected as described in Chapter 5, “Configuring accesses” (see page 31).

Connecting SHDSL on the STU-C side:

Connect STU-C and display the connection parameters via <Info> as for VTU-R, see page 75.

When the SHDSL physical layer is active, you can run the following tests using the softkey <Test>, see page 114.

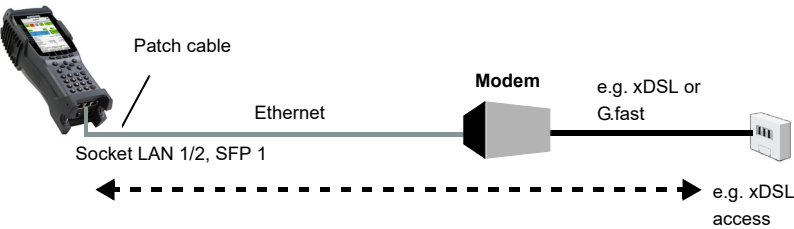
9 Operation on the Ethernet access

The ARGUS® supports the following in Ethernet operation:

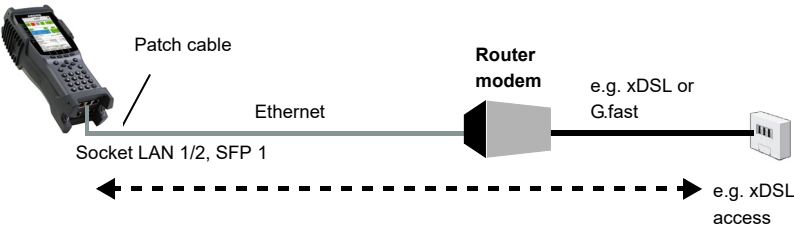


The individual tests acquire and store data. It is the user's responsibility to comply with the applicable legal requirements.

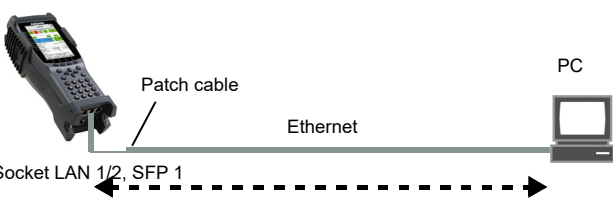
Connecting to a modem:



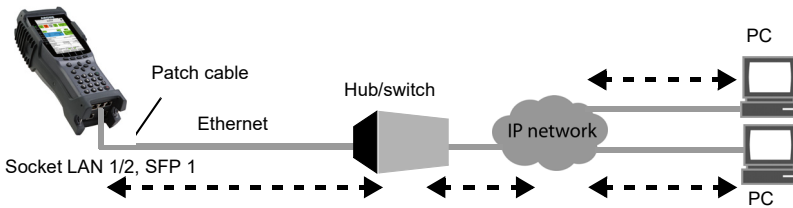
Connecting to a router modem:



Connecting to a PC via IP



Connecting to an IP network



9.1 Configuring Ethernet accesses

Configuring the Ethernet interface is described in Chapter 5, “Configuring accesses” (see page 31).

Note: accessing functions via number keys/key combinations

You can call important functions/tests directly using the keys of the ARGUS® keypad. You can find an overview of these key combinations on page 304.

9.2 Ethernet SFP

9.2.1 Create Ethernet SFP access

X

Access

✓

☐ Fiber Tests

☐ GPON

☐ XGS-PON

☒ Ethernet

☐ WLAN

☐ Copper Tests

☐ xDSL

☐ ADSL

☐ VDSL

X

Access Mode

✓

☒ IP-based

☐ IP-based Bridge

☐ IP-based Router

☐ Ethernet Performance (OoS)

To create an Ethernet SFP access, first select the Ethernet access in the access menu and then select the IP-based access mode.

X

ETH Interface

✓

☐ LAN1 (Up to 2.5 Gbit/s)

☐ LAN2 (Up to 10 Gbit/s)

☐ LAN3 (Up to 1 Gbit/s)

☐ LAN4 (Up to 10 Gbit/s)

☐ SFP1 (Up to 2.5 Gbit/s)

☐ SFP2 (Up to 10 Gbit/s)

☒ SFP3 (Up to 10 Gbit/s)

X

Autonegotiation

✓

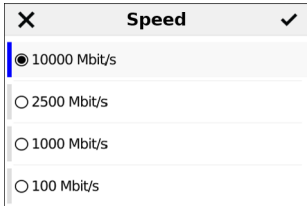
☒ Off (Default)

☐ IEEE

☐ Cisco PHY

☐ Cisco MAC

Then select the desired SFP as the Ethernet interface, in this case SFP3. The speed is specified behind the interface, in this case up to 10 Gbit/s.
Now you can select the auto-negotiation, in this case Off (default).



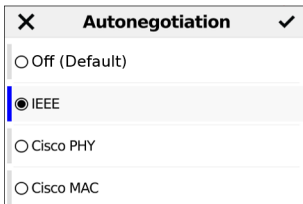
A dialog box titled "Speed" with a close button (X) and a checkmark button (✓). It contains a list of speed options: 10000 Mbit/s (selected with a radio button), 2500 Mbit/s, 1000 Mbit/s, and 100 Mbit/s.

With auto-negotiation off (default), the following speeds are possible:

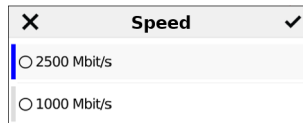
- 10000 Mbit/s,
- 2500 Mbit/s,
- 1000 Mbit/s,
- 100 Mbit/s

The speed is preset.

You can also specify whether flow control should be on or off. Flow control is fixed for the local side.



A dialog box titled "Autonegotiation" with a close button (X) and a checkmark button (✓). It contains a list of autonegotiation options: Off (Default), IEEE (selected with a radio button), Cisco PHY, and Cisco MAC.



A dialog box titled "Speed" with a close button (X) and a checkmark button (✓). It contains a list of speed options: 2500 Mbit/s (selected with a radio button) and 1000 Mbit/s.

If you select IEEE auto-negotiation, the following speeds are possible:

- 2500 Mbit/s
- 1000 Mbit/s

The speed is preset.

You can also configure the following pause settings:

- Symmetrical + Asymmetrical
- Symmetrical
- Asymmetrical
- Off

The pause settings are coordinated with the other side.

X

Autonegotiation

✓

☐ Off (Default)

☐ IEEE

☒ Cisco PHY

☐ Cisco MAC

X

Speed

✓

☐ 1000 Mbit/s

☐ 100 Mbit/s

If you select Cisco PHY auto-negotiation, the following speeds are possible:

- 1000 Mbit/s
- 100 Mbit/s

The speed is fixed. The other side (Cisco MAC) adopts the settings.

You can also specify whether flow control should be on or off. Flow control is fixed for the local side.

X

Autonegotiation

✓

☐ Off (Default)

☐ IEEE

☐ Cisco PHY

☒ Cisco MAC

If you select Cisco MAC auto-negotiation, the speed is specified by the other side (Cisco PHY) (1000 Mbit/s or 100 Mbit/s).

You can also specify whether flow control should be on or off. Flow control is specified for the local side.

✕

Profile

✓

☐ PPP VLAN 7/8

☐ PPP ATM 1/32

☒ IP DHCP Client

☐ IP static

☐ IP Profile 5

☐ IP Profile 6

☐ IP Profile 7

☐ IP Profile 8

☐ IP Profile 9

✕

Access Name

✓

Ethernet SFP3

13/24 Characters

! " \$ % & ' () =

1 2 3 4 5 6 7 8 9 0

Q W E R T Y U I O P

A S D F G H J K L

⬆ Y X C V B N M ⬅

123 ?#@ ✓

After setting the auto-negotiation and speed, you can select the profile, in this case IP DHCP Client. Then enter the connection name or accept the one specified by the device.

✕

Summary

✓

Ethernet SFP3 IP-based

Profile: IP DHCP Client

Note:

✓: Save and quit wizard.

✕: Step back.

A summary will then be displayed. Confirm this by checking the box, and the connection will be created.

9.2.2 Edit access

←

ETH Settings

Autonegotiation	Cisco PHY
Speed	1000 Mbit/s
Flow Control	☒
MAC Address	Standard
Gratuitous ARP	☒
Traffic-Shaping (US)	No

←

ETH Settings

Autonegotiation	Cisco MAC
Flow Control	☒
MAC Address	Standard
Gratuitous ARP	☒
Traffic-Shaping (US)	No

If you select the access in the access menu, you can use the <Edit> softkey to open the ETH settings, shown here using Cisco PHY and Cisco MAC as examples.

←

ETH Settings

Autonegotiation	IEEE
Speed	2500 Mbit/s
Pause	Symmetric + Asymmetric
MAC Address	Standard
Gratuitous ARP	☒
Traffic-Shaping (US)	No

✕

Pause

✓

☒ Symmetric + Asymmetric

☐ Symmetric

☐ Asymmetric

☐ Off

The pause settings are coordinated with the other side.

You can choose a combination of “Symmetrical” and “Asymmetrical,” or disable pause frame support altogether by selecting “Off.”

9.2.3 Runtime information

9.2.3.1 Autonegotiation off

Status

Test 1 0 → 0 ✖ 0

Data

VolP

IPTV

Opt.

V4

ETH Autonegotiation Off

SFP3 W/P 1310nm/-40,00dBm

Speed 10000 Mbit/s

Flow Control On

Autonegotiation Off

Speed 10000 Mbit/s

Flow Control On

MAC Address Standard

Gratuitous ARP Off

ETH Link is being established

Info

Stop

ETH phys. Param.	
Autonegotiation	
Own Side	Off
Set Parameters	
Speed	10000 Mbit/s
Flow Control	On

All selected settings are displayed in the status view. The link is established here. The <Info> softkey displays all selected link settings.

Status

Test 1 0 → 0 ✖ 0

Data

VolP

IPTV

Opt.

V4

ETH Autonegotiation Off

SFP3 W/P 1310nm/-1,01dBm

Speed 10000 Mbit/s Full

Flow Control On

Ethernet

00:12:A8:11:05:88

Speed: 10000 Mbit/s

Full Duplex

Info

Stop

ETH phys. Param.	
Autonegotiation	
Own Side	Off
Set Parameters	
Speed	10000 Mbit/s Full Duplex
Flow Control	On

The ETH link is set up here. All selected settings are displayed in the physics box in the status view. The <Info> softkey displays all selected link settings.

9.2.3.2 Autonegotiation IEEE

Status

Test 1 0 0 0

Data

VolIP

IPTV

Opt.

V4

ETH Autonegotiation IEEE

SFP3 W/P 1310nm/-40,00dBm

Speed 2500 Mbit/s

Autonegotiation IEEE

Speed 2500 Mbit/s

Pause Symmetric + Asy...

MAC Address Standard

Gratuitous ARP Off

ETH Link is being established

Info

Stop

ETH phys. Param.

Autonegotiation

Own Side IEEE

Set Parameters

Speed 2500 Mbit/s

Pause Symmetric + Asymmetric

All selected settings are displayed in the status view. The link is established here. The <Info> softkey displays all selected link settings.

Status

Test 1 0 0 0

Data

VolIP

IPTV

Opt.

V4

ETH Autonegotiation IEEE

SFP3 W/P 1310nm/-1,14dBm

Speed 2500 Mbit/s Full

Flow Control On

Ethernet

00:12:AB:11:05:88

Speed: 2500 Mbit/s Full Duplex

Info

Stop

ETH phys. Param.

Autonegotiation

Own Side IEEE

Opposite Side On

Negotiated Parameters

Flow Control On

Set Parameters

Speed 2500 Mbit/s Full Duplex

All selected settings are displayed in the Status view in the Physics box. This is where the ETH link is established. All link characteristics are displayed via the <Info> softkey.

9.2.3.3 Autonegotiation Cisco PHY

Status

Test T 0 → 0 X 0

Data

VolP

IPTV

Opt.

V4

ETH Autonegotiation PHY

SFP3 W/P 1310nm/-40,00dBm

Speed 1000 Mbit/s

Flow Control On

Autonegotiation Cisco PHY

Speed 1000 Mbit/s

Flow Control On

MAC Address Standard

Gratuitous ARP Off

ETH Link is being established

Info

Stop

ETH phys. Param.	
Autonegotiation	
Own Side	PHY
Set Parameters	
Speed	1000 Mbit/s
Flow Control	On

All selected settings are displayed in the status view. The link is established here. The <Info> softkey displays all selected link settings.

Status

Test T 0 → 0 X 0

Data

VolP

IPTV

Opt.

V4

ETH Autonegotiation PHY

SFP3 W/P 1310nm/-1,02dBm

Speed 1000 Mbit/s/Full

Flow Control On

Ethernet 00:12:A8:11:05:88

Speed: 1000 Mbit/s Full Duplex

Info

Stop

ETH phys. Param.	
Autonegotiation	
Own Side	PHY
Opposite Side	On
Set Parameters	
Speed	1000 Mbit/s Full Duplex
Flow Control	On

The ETH link is set up here. All selected settings are displayed in the physics box in the status view. The <Info> softkey displays all selected link settings.

9.2.3.4 Autonegotiation Cisco MAC

Status

Test 1 0 → 0 X 0

Data

VolIP

IPTV

Opt.

V4

ETH

Autonegotiation

MAC

SFP3

W/P

1310nm/-3,11dBm

Flow Control

On

Autonegotiation

Flow Control

MAC Address

Gratuitous ARP

Cisco MAC

On

Standard

Off

ETH Link is being established

Info

Stop

ETH phys. Param.	
Autonegotiation	
Own Side	MAC
Set Parameters	
Flow Control	On

All selected settings are displayed in the status view. The link is established here. The <Info> softkey displays all selected link settings. The speed is specified by the link partner and is not yet known.

Status

Test 1 0 → 0 X 0

Data

VolIP

IPTV

Opt.

V4

ETH

Autonegotiation

MAC

SFP3

W/P

1310nm/-1,12dBm

Speed

1000 Mbit/sFull

Flow Control

On

Ethernet

00:12:A8:11:05:88

Speed: 1000 Mbit/s

Full Duplex

Info

Stop

ETH phys. Param.	
Autonegotiation	
Own Side	MAC
Opposite Side	On
Negotiated Parameters	
Speed	1000 Mbit/s Full Duplex
Set Parameters	
Flow Control	On

The ETH link is established here. All selected settings are displayed in the physics box in the status view. All link settings are displayed via the <Info> softkey. The speed is specified by the link partner.

9.2.4 Create Ethernet LAN access

X	Access	✓
☐	Fiber Tests	
☐	GPON	
☐	XGS-PON	
☒	Ethernet	
☐	WLAN	
☐	Copper Tests	
☐	xDSL	
☐	ADSL	
☐	VDSL	

X	Access Mode	✓
☒	IP-based	
☐	IP-based Bridge	
☐	IP-based Router	
☐	Ethernet Performance (OoS)	

To create an Ethernet LAN access, first select Ethernet in the access menu and then select the IP-based access mode.

X	ETH Interface	✓
☐	LAN1 (Up to 2.5 Gbit/s)	
☐	LAN2 (Up to 10 Gbit/s)	
☐	LAN3 (Up to 1 Gbit/s)	
☒	LAN4 (Up to 10 Gbit/s)	
☐	SFP1 (Up to 2.5 Gbit/s)	
☐	SFP2 (Up to 10 Gbit/s)	
☐	SFP3 (Up to 10 Gbit/s)	

X	Autonegotiation	✓
☒	On	
☐	Off	

Then select the desired Ethernet LAN interface, in this case LAN4.

The speed is specified behind the interface, in this case up to 10 Gbit/s.

Now you can choose whether to enable or disable autonegotiation, in this case Enable.



One-sided auto-negotiation

If a terminal device with autonegotiation “on” encounters a device without autonegotiation, no information is transmitted from the other side. The speed is determined even without autonegotiation using the pulse method/idle pattern (parallel detection). In this case, the terminal device with autonegotiation usually falls back to half-duplex (duplex mismatch possible), which can lead to a conflict in the duplex mode with “poor throughput.”

X

Speed

✓

10000 Mbit/s Full Duplex

5000 Mbit/s Full Duplex

2500 Mbit/s Full Duplex

1000 Mbit/s Full Duplex

100 Mbit/s Full Duplex

10 Mbit/s Full Duplex

ARGUS 300

SN 1416

SW B5.01.09D_ [1102-2]

HW 1.3

Delete

X

Speed

✓

10000 Mbit/s Full Duplex

5000 Mbit/s Full Duplex

2500 Mbit/s Full Duplex

1000 Mbit/s Full Duplex

100 Mbit/s Full Duplex

ARGUS 300

SN 1416

SW B5.01.09D_ [1102-2]

HW 1.3

Delete

Add

Here you can select the speeds to be supported by your site. By default, all supported speeds are preselected.

The <Delete> and <Add> softkeys are available for customizing the list.

X

Autonegotiation

✓

☐ On

☒ Off

X

Speed

✓

☒ 100 Mbit/s Full Duplex

☐ 100 Mbit/s Half Duplex

☐ 10 Mbit/s Full Duplex

☐ 10 Mbit/s Half Duplex

If autonegotiation is disabled, 10 Mbit/s or 100 Mbit/s are available for explicit selection, each with full or half-duplex support.

X

Speed

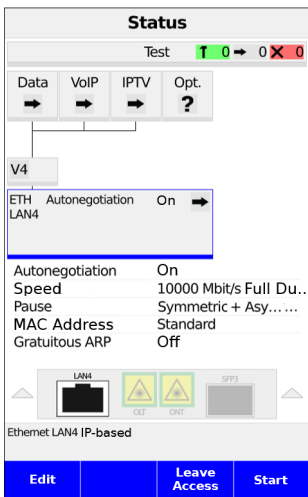
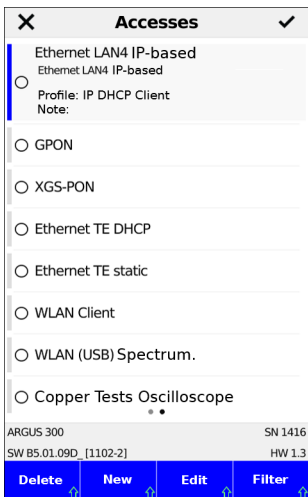
✓

☒ 100 Mbit/s Full Duplex

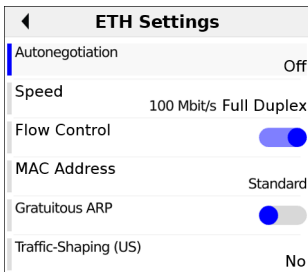
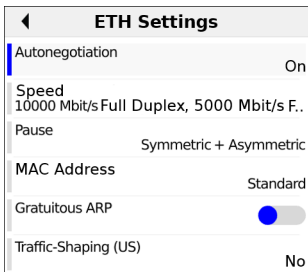
☐ 10 Mbit/s Full Duplex

Only the full-duplex variant is possible on LAN4.

9.2.5 Edit Ethernet LAN access



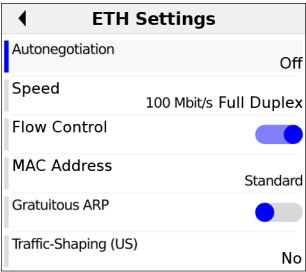
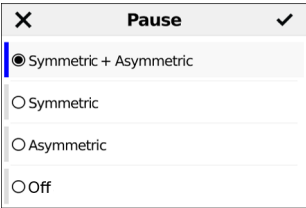
An access can be edited using the <Edit> softkey both in the access menu and in the status display.



When editing autonegotiation, the same speed settings are available as when creating the access.

Depending on the autonegotiation support, the “Pause” or “Flow control” configuration is available.

MAC address, Gratuitous ARP, and Traffic shaping (US) are always available.



When autonegotiation is enabled, the flow control setting is negotiated with the other side. You can select a combination of “Symmetric” and “Asymmetric,” or disable pause frame support altogether by selecting “Off.”

With autonegotiation disabled, the flow control setting for the ARGUS[®] can be specified:

- Flow control on/off (“Flow control on” only makes sense in full duplex mode),
Default: **On**

The position of the other side is unknown.

Depending on the combination of settings in ARGUS[®] and on the other side, pause frames can be transmitted. Whether the link partner responds to this depends on its “On”/“Off” setting.

9.2.6 Runtime information

9.2.6.1 Autonegotiation on

Status

Test 1 0 0 0

Data

VolP

IPTV

Opt.

V4

ETH Autonegotiation On

LAN4

Autonegotiation On

Speed 10000 Mbit/s Full Du..

Pause Symmetric + Asy...

MAC Address Standard

Gratuitous ARP Off

ETH Link is being established

Info

Stop

ETH phys. Param.

Autonegotiation

Own Side

On

Set Parameters

Speed

10000 Mbit/s Full Duplex

5000 Mbit/s Full Duplex

2500 Mbit/s Full Duplex

1000 Mbit/s Full Duplex

100 Mbit/s Full Duplex

10 Mbit/s Full Duplex

Pause

Symmetric + Asymmetric

The status view shows the highest speed set for support. The link is established here. The <Info> softkey displays all speeds set for support and the pause setting.

Status

Test 1 0 0 0

Data

VolP

IPTV

Opt.

V4

ETH Autonegotiation On

LAN4 Speed 1000 Mbit/s Full

Flow Control On

Ethernet 00:12:A8:11:05:88 Speed: 1000 Mbit/s Full Duplex

Info

Stop

ETH phys. Param.

Autonegotiation

Own Side

On

Opposite Side

On

Negotiated Parameters

Speed

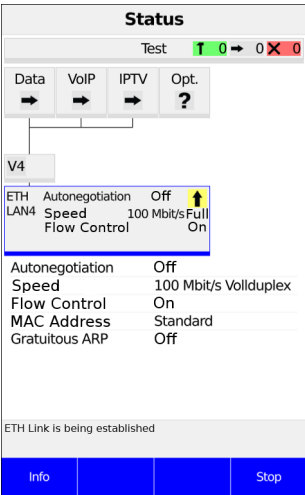
1000 Mbit/s Full Duplex

Flow Control

On

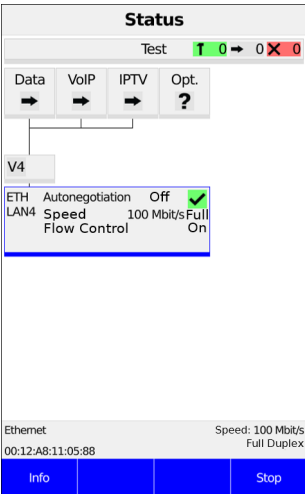
Here is the link. The settings negotiated with the other party are displayed in the Status view in the Physics box. The settings negotiated with the other party are displayed using the <Info> softkey.

9.2.6.2 Autonegotiation off



ETH phys. Param.	
Autonegotiation	
Own Side	Off
Set Parameters	
Speed	100 Mbit/s Full Duplex
Flow Control	On

All selected settings are displayed in the status view. The link is established here. Press the **<Info>** softkey to display all selected link settings.



ETH phys. Param.	
Autonegotiation	
Own Side	Off
Set Parameters	
Speed	100 Mbit/s Full Duplex
Flow Control	On

The link is established here. All selected link settings are displayed in the Physics box in the Status view. Press the **<Info>** softkey to display all selected link settings.

9.3 Ethernet configuration

You can modify the Ethernet settings as described for VDSL, see page 50.

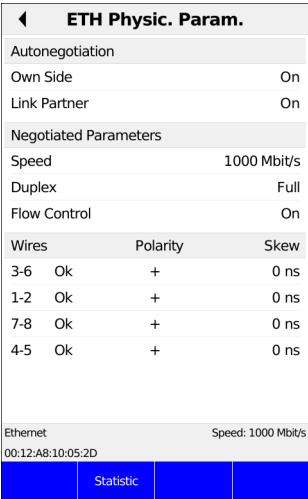
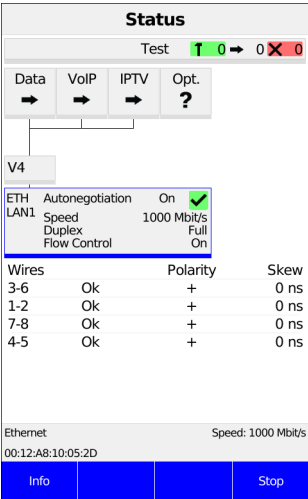
You can configure the following settings:

- Autonegotiation
- MAC address
- Gratuitous ARP
- Traffic Shaping (US)



You can obtain further information on settings in the ARGUSpedia on the instrument.

9.4 Establishing an Ethernet connection



The ARGUS® uses the default profile to establish an Ethernet connection.

<Info> Displays Ethernet connection parameters

<Stop> Terminates Ethernet connection

Display (see image at right):

- Autonegotiation setting
- Autoneg. at other end
- Negotiated speed
- Type of duplex mode
- Flow control setting

<Statistic> Opens Ethernet statistics

The polarity and offset between the wires are displayed beneath the layer-1 box and in Info.

- Wire allocation

Left
column

ARGUS® wire allocation

Right
column

ARGUS® wire allocation after autonegotiation with remote terminal. When the display shows "OK", the remote station has inverted the wire allocation.

- Polarity

- Offset in ns

<Statistic>

Opens Ethernet statistics

Statistics		
Ethernet	Rx	Tx
Frames	509	0
Bytes	39243	0
Errors	0	0
Collisions		0

Statistic display:

- Received (Rx) and transmitted (Tx) internet frames
- Received (Rx) and transmitted (Tx) bytes
- Number of errors on the receiver (Rx) and transmitter (Tx) side
- Number of collisions

Disconnecting the Ethernet connection and saving the results

You can disconnect and save the results from an Ethernet connection as described for VDSL, see page 68.

Saving the results without disconnecting from the Ethernet connection

You can save your results for an Ethernet connection without disconnecting in the same way as for VDSL, see page 70.

10 Virtual lines (VL)

Virtual lines (VL) compile the configurations of layer 2 and layer 3 into profiles, called VL profiles. These profiles contain e.g. information on protocols, VLANs and PPP data (stored in their own subordinate PPP profiles). Virtual lines can be used to conduct tests across multiple VLANs and across different protocols.

The ARGUS® allows you to define up to 20 such VL profiles. In a VL profile, you can edit e.g. the protocol configuration. The VL profiles can be assigned to one or more services independently of the state of the physical layer (layer 1). Thus, a data test (e.g. IP-ping) and a VoIP test (e.g. VoIP call) can be performed on a single active access without having to re-establish layer 1 (G.fast, DSL, Ethernet) in spite of differing protocols.

10.1 Virtual lines in the status screen

The virtual lines in the status screen are explained using the access VDSL VTU-R router as an example:

Status

Test ↑ 0 → 0 ✗ 0

Data

VoIP

IPTV

Opt.

Router

V4

V4

V4

VDSL VTU-R

Power Down

U:

LAN1

Autoneg.

On

VL Profile

Protocol

PPP Profile

VLAN Mode

IP Mode

Own IP Address

VLAN 7 (PPP)

PPP

PPP Profile 1

1: 7

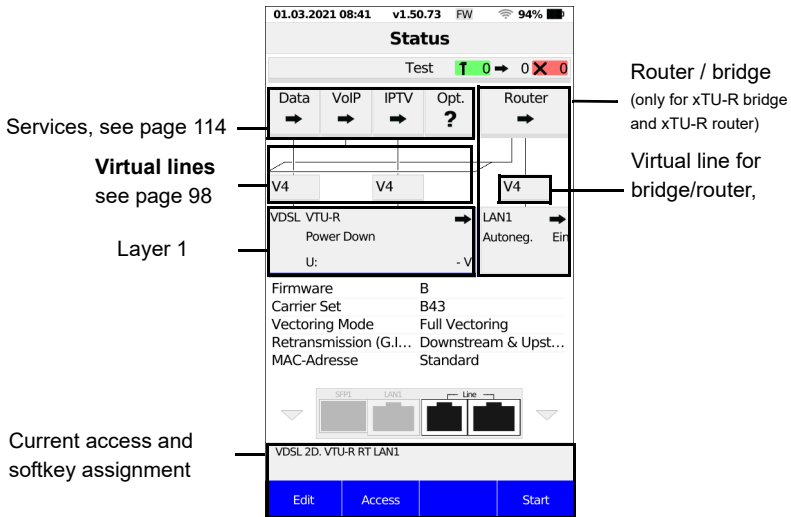
DHCP Client

0.0.0.0

VDSL 2w. VTU-R RT LAN1

Edit

Profile

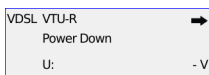


The status screen is divided into three levels that can be individually selected using the cursor keys of the ARGUS® keypad.

The status screen is described in greater detail using three display examples.

Level 1: physical layer (see image at left)

- <Edit> Configure physical layer
- <Access> Access selection
- <Start> Establishes physical layer of the selected access.



Level 2: Virtual lines (see middle illustration)

- <Edit> Configure virtual line, see page 104.



-Possible configurations:

- Protocol (IP, PPP, PPTP)
- ATM
- VLAN
- PPP (PPP profiles)
- PPTP
- IP version (IPv4, IPv6, dual)

- IPv4
- IPv6
- BGP
- Data log (for this VL)
- Profile name

<Profile> Configures the profile.



You can obtain further information on settings in the ARGUSpedia on the instrument.

Level 3: Services (see illustration at right)

<Edit> Assign a VL to a service and configure it

<Profile> Configure profile

<Start> Start service



The virtual line and the physical layer also start automatically when you press the softkey **<Start>**.

Depending on the status of the physical layer, the virtual lines or the services, the ARGUS® displays a variety of symbols in the status screen.

-  This service has not yet been assigned to a virtual line.
-  This service, VL or physical layer is idle.
-  This service is not available (bridge mode only).
-  Preparing activation of physical layer, VL or service.
-  Activating the physical layer, VL or service.
-  Physical layer, VL or service deactivated due to an unexpected occurrence.
-  Deactivating.
-  Synchronisation achieved (physical layer) or a VL or service was activated successfully without errors.
-  A test is currently running in this service.
-  An error occurred here. Reset with <Reset> to continue with the VL.

10.2 Virtual line profiles (VL profiles)

The various profile types are explained below:

Profiles (1 - 20), see page 35

- These contain the assignments of the services (Data, VoIP, IPTV, Opt.) to one or more virtual lines.
- In addition to the services, the settings for the bridge/router and the test parameter can be found here as well.
- Each profile can be assigned an individual profile name.

VL profiles (Virtual lines 1 - 20)

- These contain the layer 2/3 settings.
- VL profiles are assigned to services.
- One VL can be assigned to multiple services.
- PPP profiles can be assigned to the VL profiles.

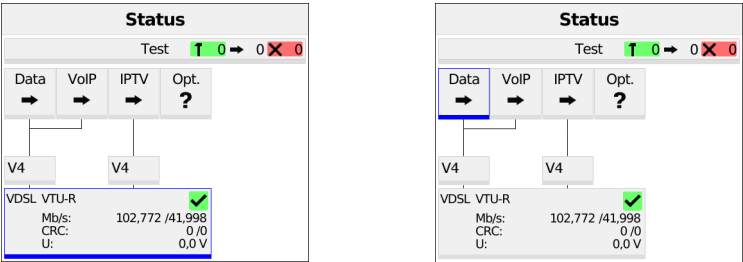
PPP profiles (1 - 20)

- They contain all relevant data for dialling.
- PPP profiles are assigned to VL profiles.
- A PPP profile can be assigned to multiple VL profiles.

10.3 Virtual line activation

A service or test must be started in order to activate a virtual line. To enable a test to be started, a service must be configured, and a virtual line assigned to it. In this example, the service DATA is configured and assigned to a virtual line.

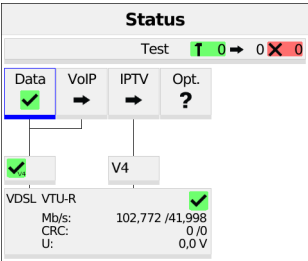
10.3.1 Starting a service



The VDSL connection is active (see image at right).

 Use the cursor keys to switch from the layer-1 box over the virtual line to the service Data.

 If the physical layer is not yet active, this is started automatically with the service or test.



<Start> Starts the service.

The physical layer (VDSL), the virtual line and the service Data are now active. This is indicated by a green check mark.

<Info> Displays service Data information (e.g. duration of activity).

<Stop> Terminates service Data.

For an explanation of the services, see page 114.

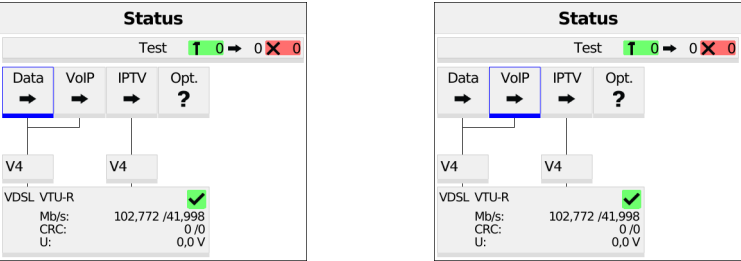
Single Tests	
IP Ping	www.argus.info
Traceroute	www.argus.info
Path MTU	www.argus.info
iperf Client	iperf Profile1
iperf Server	iperf Profile1
ARGUS® Real Speed Direct (iperf)	
ARGUS Server GER [10G]	
ARGUS® Real Speed Formal (RFC 6349)	
iperf Profile1	
HTTP Download	Server Profile1

The tests that can be run using the service Data are displayed.

<Setting> Configures the respective test (in this example IP ping). You can find a detailed description starting on page 116.

10.3.2 Assigning additional virtual lines

The ARGUS® can use multiple services concurrently (e.g. Data and VoIP) via a single virtual line. In this example, VDSL is active. The service Data is selected. The following explains how multiple services can be connected via a single virtual line.



 To configure a virtual line (in this example for the service Data) for other services, you must first stop the service. The physical layer remains active.

 The service VoIP is greyed out when the VoIP option is not set.

 Using the cursor keys, select the service VoIP.

◀

Service VoIP

▶

Virtual Line	VLAN 7 (PPP)
VoIP Account	VoIP Profile 1
VoIP QoS	▶

<Edit> Opens the configuration of the selected service (in this example VoIP).

Select "Virtual line".

✕

Virtual Line

✓

☐ No Virtual Line
☐ PPP ATM 1/32
☒ VLAN 7 (PPP)
☐ VLAN 8 (DHCP)
☐ No VLAN (DHCP)
☐ No VLAN (IP static)
☐ Virt. Profile 6
☐ Virt. Profile 7
☐ Virt. Profile 8

◀

Virtual Line

▶

Protocol	IP
ATM	▶
VLAN	No VLAN
PPP	▶
PPTP	0.0.0.0
IP Version	Only IPv4
IPv4	▶
IPv6	▶
TR-069	▶



Select the virtual profile you wish to edit. The selected profile appears in the display in blue.



Unavailable elements are greyed out, for instance when they are currently active.

<Edit> Edits the settings.

Edit the selected VL profile.



e.g. select PPP

Opens PPP profile selection.

X

PPP Profiles

✓

PPP Profile 1

☒

Provider: Manual

Username:

Password:

PPP Profile 2

☐

PPP Profile 3

☐

PPP Profile 4

☐

PPP Profile 5

☐

PPP Profile 6

☐

PPP Profile 7

☐

PPP Profile 8

☐

←

PPP Settings

Username

[Empty]

Password

[Empty]

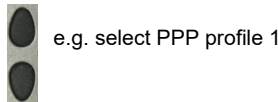
Set IP

No

Activation Delay

2 s

Select profile.



Up to 20 PPP profiles can be configured.

X

Press the Back key four times to return to the Service VoIP menu.

Status

Test

1

0

→

0

X

0

Data

VolIP

IPTV

Opt.

→

→

→

?

V4

V4

VDSL VTU-R

102,772 /41,998

✓

Mb/s:

0/0

CRC:

0,0 V

U:

0,0 V

Status

Test

1

0

→

0

X

0

Data

VolIP

IPTV

Opt.

→

✓

→

?

✓

V4

VDSL VTU-R

102,772 /41,998

✓

Mb/s:

0/0

CRC:

0,0 V

U:

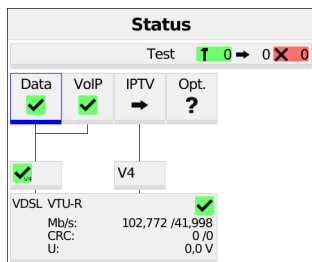
0,0 V

The services Data and VoIP are now connected to the physical layer (VDSL access) via a virtual line (see image at right).

<start> Starts the service VoIP

The service VoIP is now active (see image at right). You can now run a variety of tests via the service VoIP.

In the next step, you can activate a further service.

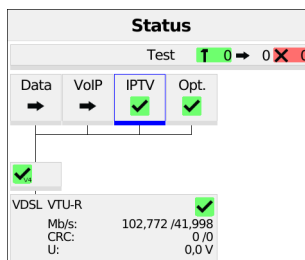
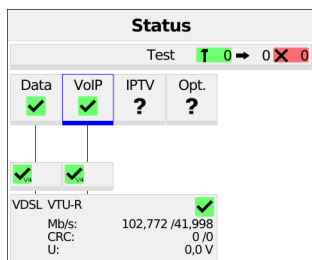


Select Data using the cursor keys and press <start> to activate the service.

The services Data and VoIP are active. You can now run a variety of tests via the services Data and VoIP.

The display and operation for IPTV and Opt. are the same as for VoIP.

Further examples of different virtual-line assignments:



Example 1 (illustration at left):

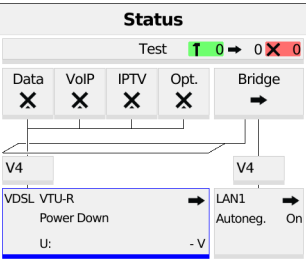
One virtual line is connected with the service Data and another with the service VoIP. The virtual line for VoIP can thus be used for different protocol data than the virtual line for Data.

Example 2 (illustration at right):

One virtual line was configured for the services VoIP, IPTV and Opt. In this example, the services IPTV and Opt. are active.

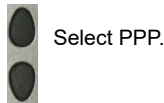
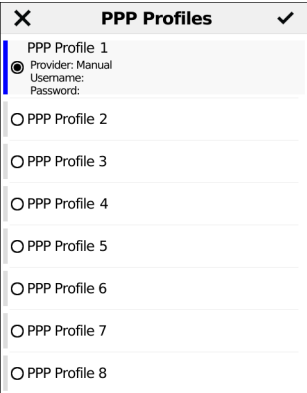
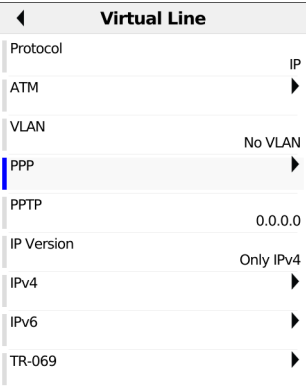


Up to four virtual lines can be established for the service IPTV. However, the ARGUS® only displays these as a single composite virtual line. A detailed description is provided in the chapter IPTV, see page 179.



Example 3:
In this example, each service was assigned a virtual line.
The services are unavailable because the ARGUS® is in bridge mode.

10.4 PPP wizard



Up to 20 PPP profiles can be configured.

<Edit> Edit the selected PPP profile.

10.5 Virtual line settings

The following virtual line settings can be configured:

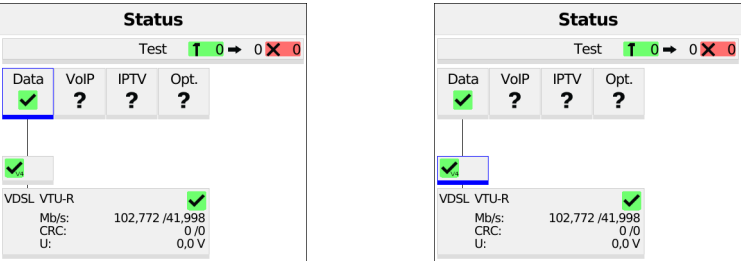
- Protocol
 - IP
 - PPP
 - PPTP
- ATM
 - VPI/VCI
 - Encapsulation
 - ATM with Ethernet
- VLAN
 - no VLAN
 - 1 VLAN tag
 - 2 VLAN tags (QinQ)
- PPP
 - PPP profile 1-20
 - Profile name
- PPTP
- APN
- IP version
 - IPv4 only
 - IPv6 only
 - Dual stack IPv4/IPv6
 - Dual stack lite
- IPv4
 - IP mode
 - Own IP address
 - Netmask
 - Gateway
 - DNS server
 - DHCP client
 - DHCP server
- IPv6
 - AFTR
 - DHCP client
- BGP
- Data log
- Profile name



You can obtain further information on settings in the ARGUSpedia on the instrument.

10.6 Displaying protocol statistics

Depending on the access mode and the protocol, the ARGUS® displays BRAS, IP, PPP, ATM or Ethernet statistics.



The physical layer, the virtual line and the service Data are now active.

- <Info> Shows G.fast and DSL results
- <stop> Physik, VL und Data deaktivieren

 Switches to the virtual line (VL) using the cursor keys or the touch screen.

VLAN 7 (PPP)		
BRAS Information		
AC Name	INTJ00-int	
Service Name	intec dualstack	
Session ID	14	
PPP User	user	
PPP Data Rate	Down	Up
[kbit/s]	n/r	n/r
PPP	Rx	Tx
Packets	40	30
Bytes	2723	1471
Ethernet	Rx	Tx
Frames	57	46
Bytes	4079	3625

When you select “Info”, the ARGUS® displays the BRAS (only for PPP protocol) and the IP, PPP and Ethernet information (only for PPP) protocol).

- Broadband Access Server (BRAS) information
- AC (access server) name: name of server
 - Service name: name of service
 - Session ID: Number of this connection

- PPP user

PPP information:

The ARGUS® displays the received (Rx) and transmitted (Tx) PPP packets and the bytes.

Ethernet information:

The ARGUS® displays the received (Rx) and transmitted (Tx) Ethernet frames and the bytes.

IPv6 Configuration	
Framed Prefix	
1	2001:db8:696c:100::/64
Global Unicast Address	
1	2001:db8:696c: 100:3559:2966:8674:8c6
Link Local Address	
1	fe80::3559:2966:8674:8c6
DNS Server Address	
1	2001:db8:c0a8:6e00::10

Assigned PPP Configuration	
IP	10.5.108.113
Gateway	10.5.108.90
DNS 1	192.168.100.10
DNS 2	192.168.100.10

IP information:

The ARGUS® displays the IP information as a function of the IP version.

IPv6 (illustration at left): The ARGUS® displays the IP configuration assigned by the server:

- Framed Prefix
- Global unicast address
- Link local address
- DNS address

IPv4 (illustration at right): The ARGUS® displays the IP configuration assigned by the server:

- Received IP address
- Gateway IP address
- Available DNS servers

PPP Trace	
Info	Time
> PADO rec.	11:57:00:010
< PADR sent	11:57:00:010
> PADS rec.	11:57:00:020
< LCP conf. req.	11:57:00:030
< LCP conf. req.	11:57:03:030
> LCP conf. req.	11:57:03:040
< LCP conf. ack.	11:57:03:040
> LCP conf. ack.	11:57:03:040
< LCP echo req.	11:57:03:050
< PAP auth. req.	11:57:03:060
> LCP echo req.	11:57:03:060
< LCP echo rep.	11:57:03:060
> LCP echo rep.	11:57:03:060

> PAP auth. ack.	11:57:03:070
SRD: n/r	
SRU: n/r	
< IPV6CP conf. req.	11:57:03:080
> IPCP conf. req.	11:57:03:090
< LCP prot. rej.	11:57:03:090
> IPV6CP conf. req.	11:57:03:090
< IPV6CP conf. ack.	11:57:03:090
> IPV6CP conf. ack.	11:57:03:090

<Trace> Opens a PPP trace, which displays the PPP login process. It also assigns the individual messages to times according to the ARGUS system clock.

Display of commands

- < = Command sent by ARGUS®
- > = Command sent by DSLAM
- PADI: PPPoE Active Discovery Initiation
- PADO: PPPoE Active Discovery Offer
- PADR: PPPoE Active Discovery Request
- PADS: PPPoE Active Discovery Session Confirmation
- PADT: PPPoE Active Discovery Termination
- IPv6 CP: IPv6 Control Protocol
- LCP: Link Control Protocol
- IPCP: Internet Protocol Control Protocol
- PAP: Password Authentication Protocol

Table of abbreviations:

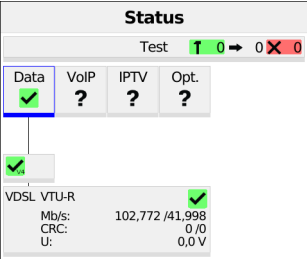
Abbreviation	Meaning
ack.	acknowledge
auth.	authentication
conf.	configuration
nak.	not acknowledge

prot.	protocol
rec.	received
rep.	reply
req.	request
rej.	rejected

11 Services + tests

The status screen (see explanation on page 98) shows four services. Each service can be used to conduct an entire suite of IP tests (see list below). It is also possible to start and stop each service independently of the others.

Example screen with the possible services:



- <Edit> Assigns the service a VL profile and configures the service.
- <Profile> Configures the profile.
- <Start> Activates the service. If virtual lines and the physical layer are not active, they are also automatically started.

See page 307 for an explanation of the symbols.

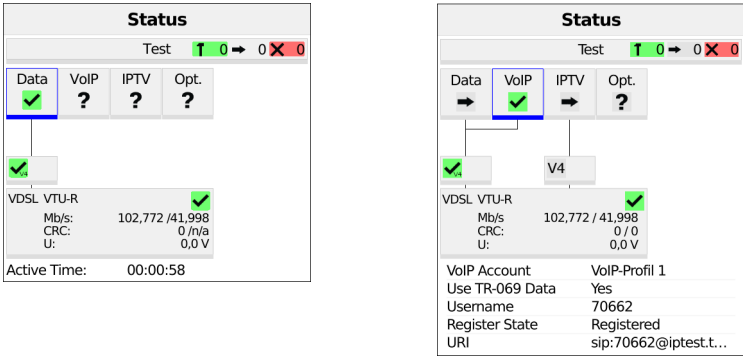
Once a service is activated, a variety of tests can be started using <Test>.

Services:			
Data ✓	VoIP ✓	IPTV ✓	Opt. ✓
- IP ping	- IP ping	- IP ping	- IP ping
- Traceroute	- Traceroute	- Traceroute	- Traceroute
- Path MTU	- Path MTU	- Path MTU	- Path MTU
- iperf-Client	- iperf-Client	- iperf-Client	- iperf-Client
- iperf-Server	- iperf-Server	- iperf-Server	- iperf-Server
- ARGUS® Real Speed Direct (iperf)	- ARGUS® Real Speed Direct (iperf)	- ARGUS® Real Speed Direct (iperf)	- ARGUS® Real Speed Direct (iperf)
- ARGUS® Real Speed Formal (RFC6349)	- ARGUS® Real Speed Formal (RFC6349)	- ARGUS® Real Speed Formal (RFC6349)	- ARGUS® Real Speed Formal (RFC6349)
- HTTP download	- VoIP call	- IPTV	- HTTP download
- HTTP upload	- VoIP call acceptance	- IPTV zapping test	- HTTP upload

- FTP download - FTP upload - FTP server - Web browser - Network scan - Port check	- VoIP call generator - Port check	- IPTV Monitor - Port check	- FTP download - FTP upload - FTP server - Web browser - Video on demand - Port check
*1 Ethernet only			

Possible tests that can be executed using the various services.

11.1 Displaying service statistics



The ARGUS® in the status screen. The physical layer, VL and service are active. The duration of the activity is shown beneath the physical layer (see image at left).

The VoIP call parameters are displayed here in the service VoIP (see image at right), see page 168.

12 IP tests

12.1 IP ping

In IP ping, the ARGUS® tests whether a connection to the internet service provider (ISP) or another computer or server address is possible via Ethernet, G.fast or xDSL using a DSLAM and the IP network. The ARGUS® sends a test packet to a specified IP address (remote station) and waits for a response packet. On the basis of the received response packet, it is possible to draw conclusions as to the availability and delay of the IP network. It is also possible to measure the maximum data packet size of the path.

The IP ping needs the following parameters:

Protocol-independent parameters

Opening of test parameters is described in the chapter "Configuring accesses", see page 31.

You can configure the following settings:

- IP address
- Number of pings
- Pause
- Packet size
- Fragmentation



You can obtain further information on settings in the ARGUSpedia on the instrument.

←

IP Address

⌕

☒ www.argus.info

☐ ipv6.argus.info

☐ 0.0.0.0

☐ 0.0.0.0

☐ 0.0.0.0

☐ 0.0.0.0

☐ 0.0.0.0

☐ 0.0.0.0

☐ 0.0.0.0

✕

IP Address

✓

☐ As IPv4 Address0.0.0.0

☐ As IPv6 Address::

☒ As Domain Namewww.argus.info

The ARGUS® displays the ten available slots for IP addresses. Mark the line with the IP address you wish to edit using the cursor keys or the touch screen (in this example the first slot is marked, see image at left).

<Edit> Edits the selected IP address.

The address can be saved in the form of an IPv4 number, IPv6 number or a name (see image at right).

Default: **www.argus.info**

✕

IPv4 Address

✓

0.0.0.0

Please enter an address between
0.0.0.0 and 255.255.255.255

1

2

3

A

B

C

4

5

6

D

E

F

7

8

9

:

-

⌕

*

0

#

.

ABC

✓

✕

IPv6 Address

✓

::

Please enter an address between
:: and
FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF

*1=A *2=B *3=C *4=D *5=E *6=F

1

2

3

A

B

C

4

5

6

D

E

F

7

8

9

:

-

⌕

*

0

#

.

ABC

✓

Enter the IPv4 (see left image) or IPv6 address (see right image) in numerical form. The editable area is highlighted in blue. Enter the address using the number keys.

<Delete> Deletes the place in front of the cursor.



When entering an IPv6 address, the letters A-F are available.

to



Adopts the marked IP address as the default.

Toggle entry using the softkey (right softkey changes the meaning when pressed).
Enters the address as name, see Access name, page 36. You can also enter the name by tapping characters on the touch screen.

<Abc>ABC> Entry begins with upper-case letters and continues in lower-case.

<ABC>123> Entry of upper-case letters.

<123>abc> Numerical entry.

<abc>Abc> Entry of lower-case letters.



Entry of special characters, e.g. @, /, -, ., ...

or



_, :, ~, +, ...

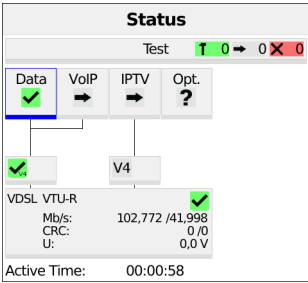
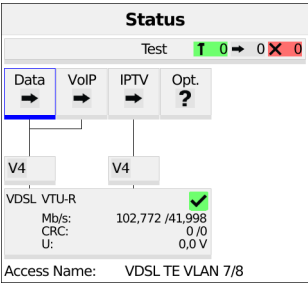


Moves the cursor in the display line.



For IPv6 addresses, you can use square brackets to include port information with IPv6 addresses in "IP address as name".

Starting IP ping (example access mode VTU-R, already active):



Connecting the service:

The profile shown in the display (in this example PPP VLAN 7/8) is used for IP ping.

<Edit> Assign a virtual line to the service Data.

If no xDSL or Ethernet connection is established, ARGUS® automatically connects at this point using the default profile (see page 53).

The service Data and the VDSL connection are active (see image at right).

<Info> Duration of activation

<Test> Opens test selection

<Stop> Deactivates the service

Single Tests	
IP Ping	www.argus.info
Traceroute	www.argus.info
Path MTU	www.argus.info
iperf Client	iperf Profile1
iperf Server	iperf Profile1
ARGUS® Real Speed Direct (iperf)	
ARGUS Server GER [10G]	
ARGUS® Real Speed Formal (RFC 6349)	
iperf Profile1	
HTTP Download	Server Profile1

IP Address	
☒	www.argus.info
☐	ipv6.argus.info
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0



Select IP ping.

<Setting> Change IP ping parameters.

The ARGUS® displays the addresses stored in the protocol.



Select the address for the ping; the default is indicated with ● .

<Edit> Edit address, see page 116.



In this example a ping test is conducted with IP version IPv4. Use with IPv6 is analogous.

Status	
Test ↑ 1 → 0 ✗ 0	
Data	VoIP
☒	☐
IPTV	Opt.
☐	☐
VDSL VTU-R ☒	
Mb/s:	102,772 /41,998
CRC:	0 /0
U:	0,0 V
IP Ping ↑	

Test Overview	
IP Ping	↑
Sent:	6
Received:	6
Current:	23 ms
Maximum:	23 ms

Test Overview	
IP Ping	→
Sent:	10
Received:	10
Average:	22 ms
Maximum:	23 ms

Pressing OK automatically starts the IP ping.

In the status screen, you can select <Test> (at the top) to see which IP ping is currently running (see image at left).

Selecting <Test> again opens the test overview. During the IP ping test, a green hammer can be seen to the right of "IP ping" (see top right image), and an arrow appears there after the IP ping test is complete (see bottom right image).

Display during the IP ping test:

- Number of test packets sent
- Number of response packets
- Current time in ms
- Maximum time in ms

Display after the IP ping test:

- Number of test packets sent
- Number of response packets
- Average time in ms
- Maximum time in ms

IP Ping	
Pings	
Sent	10
Received	10
Repeated	0
Checksum Error	0
Error	0
Times	
Minimum	22,595 ms
Maximum	23,838 ms
Average	22,910 ms
Configuration	
Packet Size	84 Byte

Target	
URL	www.argus.info
IPv4	185.224.154.37
Used Version	IPv4

<Detail> Opens a detailed overview of the test results.

The ARGUS® displays the results when the test is finished:

- Number of packets sent
- Number of packets received
- Number of packets repeated
- Checksum errors
- Number of packets received with error
- Minimum packet response time in ms

- Maximum packet response time in ms
- Average packet response time in ms
- Selected packet size in bytes
- Display of destination URL
- Display of IPv6 address
- Display of IPv4 address
- Indication whether IPv4 or IPv6 is used

<Restart> Starts a new IP ping test.

<Stop> Stops the IP ping test with the option to save.

Test Overview			
IP Ping	➡	IP Ping	🟢
Sent:	10	Sent:	7
Received:	10	Received:	7
Average:	22 ms	Average:	22 ms
Maximum:	23 ms	Maximum:	23 ms
IP Ping	🟢		
Sent:	2		
Received:	2		
Average:	22 ms		
Maximum:	22 ms		
Data VoIP IPTV Opt.			

Press Back to return to the test overview. You can start a new test as needed by selecting **<New>**. The xDSL link and the service are still connected (the connection can be disconnected in the status screen with **<Stop>**).

The test overview displays multiple active and completed tests (see image).

Status			
Test ↑ 0 ⇌ 0 ✖ 1			
Data ✖	VoIP ?	IPTV ?	Opt. ?
✖			
VDSL VTU-R ✓			
Mb/s: 102,772 / 41,998			
CRC: 0 / 0			
U: 0,0 V			
IP Ping ✖			

Error Details	
This test was stopped due to an error	
Origin of the error	PPP Layer

Error messages in IP ping

ARGUS® displays an X in a red field in the status for data and VL as soon as an error occurs (see image at left). Clicking "Info" displays the error message (see image at right).

Test Overview	
IP Ping ✖	
Unexpected test end	
Origin of the error	
PPP Layer	

Open the test overview to obtain more detailed information on the source of the error (see image).

12.2 Traceroute

In IP traceroute, the ARGUS® sends test packets and displays all hops and their response times on the way to the destination address. This data enables precise localisation of possible delays in the network.

The following parameters must be saved in the profile for the IP traceroute:

Protocol-independent parameters:

Opening of test parameters is described in the chapter "Configuring accesses", see page 31.

The following test parameters can be configured:

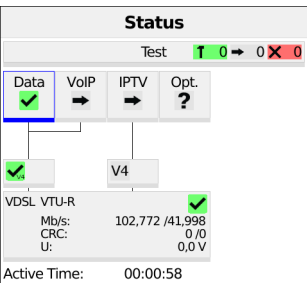
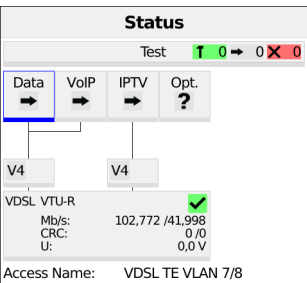
- IP address
- Maximum hops
- Probes
- Timeout



You can obtain further information on settings in the ARGUSpedia on the instrument.

Starting traceroute

(Example: access mode VTU-R, already active)



Connecting the service.

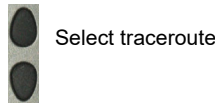
The profile shown in the display (in this example profile 1) is used for the traceroute test.

<Edit> Assign a virtual line to the service Data.

If no xDSL or Ethernet connection is established, the ARGUS® automatically connects at this point using the default profile (see page 53).
The service Data and the VDSL connection are active (see image at right).

Single Tests	
IP Ping	www.argus.info
Traceroute	www.argus.info
Path MTU	www.argus.info
iperf Client	iperf Profile1
iperf Server	iperf Profile1
ARGUS® Real Speed Direct (iperf) ARGUS Server GER [10G]	
ARGUS® Real Speed Formal (RFC 6349) iperf Profile1	
HTTP Download	Server Profile1

Traceroute	
IP Address	www.argus.info
Maximum Hops	25
Probes	3
Timeout	3,000 s

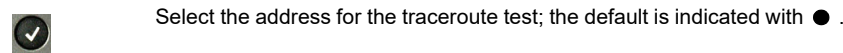


<Setting> Change traceroute parameters, see page 124.

IP Address	
☒	www.argus.info
☐	ipv6.argus.info
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0

Test Overview	
Traceroute	
Hops:	9

The ARGUS® displays the IP addresses or URLs saved in the protocol (see image at left).



<Edit> Edit address, see page 116.



In this example a traceroute test is conducted with IP version IPv4.
Use with IPv6 is analogous.

The traceroute test starts automatically.

Display during the traceroute test (see image at right):

- Current hop and probe, in this example:
7 - 1: i.e. 7th hop and 1st probe
- Response time of hop for current attempt (0.000 seconds)
- IP address of the current hop, with name if applicable

Traceroute		
Hop	Target	Time
1	10.5.100.1	0,005 s

2	192.168.100.1	0,006 s

3	62.155.244.90	0,010 s
	p3e9bf45a.dip0.t-ipconnect.de	
4	217.5.67.162	0,015 s
	f-ed12-i.F.DE.NET.DTAG.DE	

Target	
URL	www.argus.info
IPv4	185.221.105.52
Used Version	IPv4

Open “Details” to display the IP addresses of the individual hops and any names as well as their response times, for example: 217.5.90.126, 0.013 s.
This also shows the destination URL and the IP address as well as the IP version used.



Cancels test
Displays the test results up to this point, with possibility of saving
(automatic prompt).

Saving traceroute result see also IP ping (see page 122).

12.3 Path MTU test

The Path MTU test is a standalone part of ARGUS® Real Speed (RFC6349). The test determines the maximum packet size that can reach a destination without fragmenting packets.

The Path MTU test needs the following parameters:

Protocol-independent parameters:

Opening of test parameters is described in the chapter "Configuring accesses", see page 31.

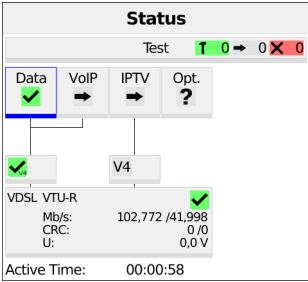
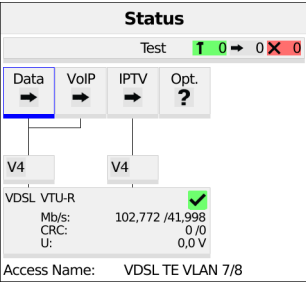
The following test parameters can be configured:

- IP Address
- Pause
- Timeout
- Number of Packets



You can obtain further information on settings in the ARGUSpedia on the instrument.

Starting Path MTU (Example: access mode VTU-R, already active):



Connecting the service.

The profile shown in the display is used for the Path MTU test.

<Edit> Assign a virtual line to the service Data.

If no xDSL or Ethernet connection is established, the ARGUS® automatically connects at this point using the default profile (see page 53).
The service Data and the VDSL connection are active (see image at right).

- <Info> Duration of activation
- <Test> Opens test selection
- <Stop> Deactivates the service

Single Tests	
IP Ping	www.argus.info
Traceroute	www.argus.info
Path MTU	www.argus.info
iperf Client	iperf Profile1
iperf Server	iperf Profile1
ARGUS® Real Speed Direct (iperf) ARGUS Server GER [10G]	
ARGUS® Real Speed Formal (RFC 6349) iperf Profile1	
HTTP Download	Server Profile 1

Path MTU	
IP Address	www.argus.info
Pause	1,000 s
Timeout	1 s
Number of Packets	3



- <Setting> Change Path MTU parameters.

The ARGUS® displays the addresses saved in the profile.

-  Select the address for the Path MTU test; the default is indicated with ●.
- <Edit> Edit the address.

 In this example a Path MTU test is conducted with IP version IPv4. Use with IPv6 is analogous.

Test Overview	
Path MTU	
Current Size	750 Byte
t:	00:00:03

Test Overview	
Path MTU	
Determined Size	1492 Byte

The Path MTU test starts automatically.
In the test overview you can observe the running test.

12.4 iperf Client

The iperf client is a data throughput test against an iperf server.

The iperf client needs the following parameters:

Protocol-independent parameters:

Opening of test parameters is described in the chapter "Configuring accesses", see page 31.

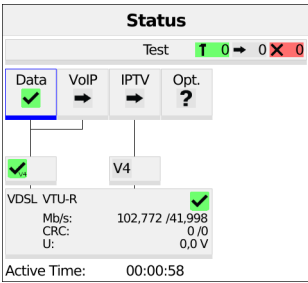
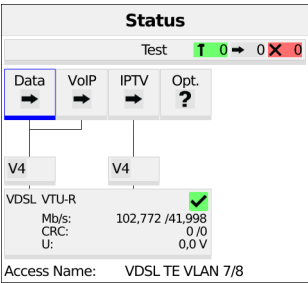
You can configure the following settings:

- IP Address
- Version
- Test Direction Version 2
- Test Direction Version 3
- Port Version 2
- Port Version 3
- Protocol
- Number of Parallel Streams
- Bandwidth Limit
- Test Duration
- Window Size
- Authentication
- Profile Name



You can obtain further information on settings in the ARGUSpedia on the instrument.

Starting iperf Client (Example: access mode VTU-R, already active):



Connecting the service.

The profile shown in the display is used for the iperf Client.

<Edit> Assign a virtual line to the service Data.

If no xDSL or Ethernet connection is established, the ARGUS® automatically connects at this point using the default profile (see page 53).

The service Data and the VDSL connection are active (see image at right).

<Info> Duration of activation

<Test> Opens test selection

<Stop> Deactivates the service

Single Tests	
IP Ping	www.argus.info
Traceroute	www.argus.info
Path MTU	www.argus.info
iperf Client	iperf Profile 1
iperf Server	iperf Profile 1
ARGUS® Real Speed Direct (iperf) ARGUS Server GER [10G]	
ARGUS® Real Speed Formal (RFC 6349) iperf Profile 1	
HTTP Download	Server Profile 1

X

iperf Profiles

✓

iperf Profile 1

iperf Profile 2

iperf Profile 3

iperf Profile 4

iperf Profile 5



Select iperf Client.

<Setting> Select iperf profile

<Edit> Change iperf client parameters

<Copy> Copy iperf profile

← iperf Profile	
IP Address	iptest.testnetz
Version	Version 3
Test Direction Version 2	Send
Test Direction Version 3	Send
Ports Version 2	5001
Ports Version 3	5201
Server Port Version 2	5001
Server Port Version 3	5201
Protocol	TCP
Number of Parallel Streams	3

Bandwidth Limit	No
Test Duration	30 s
Window Size	Standard
Authentication	▶
Profile Name	iperf Profile1

The ARGUS® displays the addresses saved in the profile.



Select the address for the iperf Client; the default is indicated with ●.

<Edit>

Edit the address.



In this example an iperf Client is conducted with IP version IPv4.
Use with IPv6 is analogous.

The iperf Client test starts automatically.

← Test Overview	
iperf Client	■
Dirac.	
Bandwidth:	
Transferred Data:	

In the test overview you can observe the running test.

12.5 iperf Server

The iperf server is the remote station for a data throughput test with an iperf client.

The iperf server needs the following parameters:

Protocol-independent parameters:

Opening of test parameters is described in the chapter "Configuring accesses", see page 31.

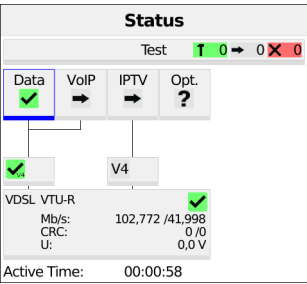
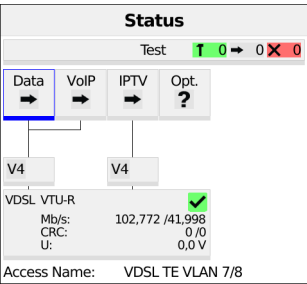
You can configure the following settings:

- IP Address
- Version
- Test Direction Version 2
- Test Direction Version 3
- Port Version 2
- Port Version 3
- Protocol
- Number of Parallel Streams
- Bandwidth Limit
- Test Duration
- Window Size
- Authentication
- Profile Name



You can obtain further information on settings in the ARGUSpedia on the instrument.

Starting iperf Server (Example: access mode VTU-R, already active):



Connecting the service.

The profile shown in the display is used for the iperf Server.

<Edit> Assign a virtual line to the service Data.

If no xDSL or Ethernet connection is established, the ARGUS® automatically connects at this point using the default profile (see page 53).

The service Data and the VDSL connection are active (see image at right).

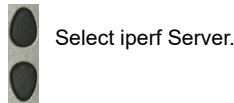
<Info> Duration of activation

<Test> Opens test selection

<Stop> Deactivates the service

Single Tests	
IP Ping	www.argus.info
Traceroute	www.argus.info
Path MTU	www.argus.info
iperf Client	iperf Profile 1
iperf Server	iperf Profile 1
ARGUS® Real Speed Direct (iperf) ARGUS Server GER [10G]	
ARGUS® Real Speed Formal (RFC 6349)	
HTTP Download	
Server Profile 1	

iperf Profiles	
☒	iperf Profile 1
☐	iperf Profile 2
☐	iperf Profile 3
☐	iperf Profile 4
☐	iperf Profile 5



<Setting> Select iperf profile.

<Edit> Change iperf server parameters.

<Copy> Copy iperf profile.

← iperf Profile	
IP Address	iptest.testnetz
Version	Version 3
Test Direction Version 2	Send
Test Direction Version 3	Send
Ports Version 2	5001
Ports Version 3	5201
Server Port Version 2	5001
Server Port Version 3	5201
Protocol	TCP
Number of Parallel Streams	3

Bandwidth Limit	No
Test Duration	30 s
Window Size	Standard
Authentication	▶
Profile Name	iperf Profile1

The iperf Server starts automatically.

← Test Overview	
iperf Server	
IPv4:	10.5.100.156
IPv6:	Not Used

In the test overview you can observe the running test.

12.6 ARGUS® Real Speed Direct (iperf)

ARGUS® Real Speed is a test in client/server mode against an iperf server.

The ARGUS® Real Speed Direct needs the following parameters:

Protocol-independent parameters:

Opening of test parameters is described in the chapter "Configuring accesses", see page 31.

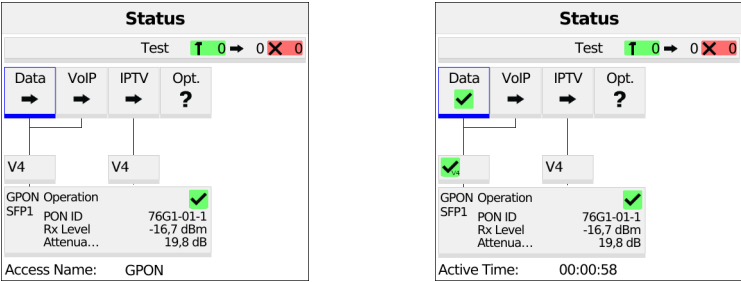
You can configure the following settings:

- IP Address
- Authentication
- Profile Name



You can obtain further information on settings in the ARGUSpedia on the instrument.

Starting ARGUS® Real Speed Direct (Example: access mode GPON, already active):



Connecting the service.

The profile shown in the display is used for the ARGUS® Real Speed Direct.

<Edit> Assign a virtual line to the service Data.

If no GPON or Ethernet connection is established, the ARGUS® automatically connects at this point using the default profile (see page 39).

The service Data and the GPON connection are active (see image at right).

- <Info> Duration of activation
- <Test> Opens test selection
- <Stop> Deactivates the service

Single Tests	
IP Ping	www.argus.info
Traceroute	www.argus.info
Path MTU	www.argus.info
iperf Client	www.argus.info
iperf Server	Version 3
ARGUS® Real Speed Direct (iperf) ARGUS Server GER [10G]	
ARGUS® Real Speed Formal (RFC 6349) iperf Profile 1	
HTTP Download	Server Profile 1
FTP Download	Server Profile 1

Real Speed Direct Profiles
☒ ARGUS Server GER [10G]
☐ RealSpeedDirect Pr: 2
☐ RealSpeedDirect Pr: 3



Select ARGUS® Real Speed Direct.

- <Setting> Change ARGUS® Real Speed Direct parameters.

The ARGUS® will display the addresses saved in the profile.



Select the address for the ARGUS® Real Speed Direct; the default is indicated with ●.

- <Edit> Edit address.



In this example an ARGUS® Real Speed Direct is conducted with IP version IPv4.
Use with IPv6 is analogous.

ARGUS® Real Speed Direct starts automatically.

Test Overview	
Real Speed Direct	
Status	Path MTU
t:	00:00:02

Test Overview	
Real Speed Direct	
Status	TCP Throughput Search free port
t:	00:00:22

In the test overview you can observe the running test.

12.7 ARGUS® Real Speed Formal (RFC6349)

ARGUS® Real Speed Formal is a throughput test according to RFC6349 against an iperf server.

The ARGUS® Real Speed Formal needs the following parameters:

Protocol-independent parameters:

Opening of test parameters is described in the chapter "Configuring accesses", see page 31.

You can configure the following settings in profiles:

- IP Address
- Version
- Test Direction Version 2
- Test Direction Version 3
- Port Version 2
- Port Version 3
- Protocol
- Number of parallel Streams
- Bandwidth Limit
- Test Duration
- Window Size
- Authentication
- Profile Name



You can obtain further information on settings in the ARGUSpedia on the instrument.

Starting ARGUS® Real Speed Formal (Example: access mode GPON, already active):

Status

Test 1 0 → 0 ✗ 0

Data

VolP

IPTV

Opt.

V4

V4

GPON Operation

SFP1

PON ID

Rx Level

Attenua...

76G1-01-1

-16,7 dBm

19,8 dB

Access Name: GPON

Status

Test 1 0 → 0 ✗ 0

Data

VolP

IPTV

Opt.

V4

GPON Operation

SFP1

PON ID

Rx Level

Attenua...

76G1-01-1

-16,7 dBm

19,8 dB

Active Time: 00:00:58

Connecting the service.

The profile shown in the display is used for the ARGUS® Real Speed Formal.

<Edit> Assign a virtual line to the service Data.

If no GPON or Ethernet connection is established, the ARGUS® automatically connects at this point using the default profile (see page 39).

The service Data and the GPON connection are active (see image at right).

- <Info> Duration of activation
- <Test> Opens test selection
- <Stop> Deactivates the service

Single Tests	
IP Ping	www.argus.info
Traceroute	www.argus.info
Path MTU	www.argus.info
iperf Client	www.argus.info
iperf Server	Version 3
ARGUS® Real Speed Direct (iperf)	ARGUS Server GER [10G]
ARGUS® Real Speed Formal (RFC 6349)	iperf Profile 1
HTTP Download	Server Profile 1
FTP Download	Server Profile 1

iperf Profile	
IP Address	77.162.61.39
Version	Version 3
Test Direction Version 2	Send
Test Direction Version 3	Send
Ports Version 2	5001
Ports Version 3	5201
Server Port Version 2	5001
Server Port Version 3	5301
Protocol	TCP

Number of Parallel Streams	3
Bandwidth Limit	No
Test Duration	30 s
Window Size	Standard
Authentication	▶
Profile Name	iperf Profile1



Select ARGUS® Real Speed Formal.

<Setting> Change ARGUS® Real Speed Formal parameters.

The ARGUS® will display the addresses saved in the profile.



Select the address for the ARGUS® Real Speed Formal; the default is indicated with ●.

<Edit> Edit address.



In this example an ARGUS® Real Speed Formal is conducted with IP version IPv4.
Use with IPv6 is analogous.

ARGUS® Real Speed Formal starts automatically.

Test Overview	
Real Speed Formal	▶
Status	
Path MTU	
t:	00:00:02

Test Overview	
Real Speed Formal	▶
Status	
TCP Throughput	
Search free port	
t:	00:00:22

In the test overview you can observe the running test.

12.8 HTTP download

In HTTP download, the ARGUS® downloads the data of a website or file. The ARGUS® displays the current "net download rate", the usable data of the IP packets, and following conclusion of HTTP download the average speed (for multiple download attempts).

The following parameters must be saved in the profile for the HTTP download:



No meaningful evaluations are possible for download tests with a duration of less than 10 seconds.

Therefore, the download file should be as large as possible (depending on the access speed). If the duration of the test is less than 10 seconds, the ARGUS® does not display any data rate or time.

Protocol-independent parameters:

Opening of test parameters is described in the chapter "Configuring accesses", see page 31.

The following test parameters can be configured:

- Server Profile
 - Server Address
 - FTP Port
 - Download Filename
 - Upload Filename
 - Upload Filesize
 - Username
 - Password
 - Number of Up-/Downloads
 - Number of Parallel Downloads
 - Number of Parallel Uploads
 - Profile Name



You can obtain further information on settings in the ARGUSpedia on the instrument.



If a www alias address is entered as the "Source/destination address", the ARGUS® downloads "only" the HTML page in HTML download. The ARGUS® does not evaluate the HTML code, so that any link to a "real" www address is not considered. In this case, the ARGUS® does not indicate an error, as the HTML page of the specified "Source/destination address" was loaded without error.



Be sure to enter the "source" address (server address and download file name) precisely as set out (upper/lower case). Otherwise the ARGUS® will return error 301 (Moved Permanently) or 404 (Not Found).

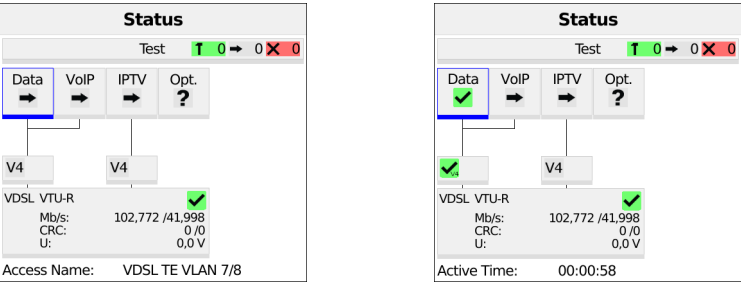


When requesting multiple download components, the ARGUS® may reduce the number of downloads depending on the server support, which can cause deviations from the set parameters. This can occur e.g. as soon as the size of the requested file is unknown.



If the download file name exceeds the maximum permissible length, you can work around this limit by fragmenting the address and additionally using the "Server" field. The server name may be up to 80 characters long, the file name 60 characters long.

Starting HTTP download (example: access mode VTU-R, already active)

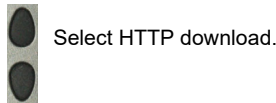
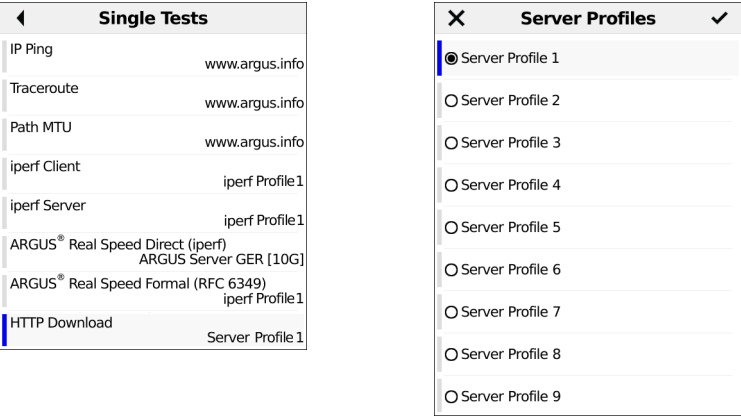


Connecting the service.

The profile shown in the display (in this example profile 1) is used for HTTP download.

<Edit> Adds a virtual line to the service Data.

If no connection is established, the ARGUS® automatically connects at this point using the default profile (see page 53).



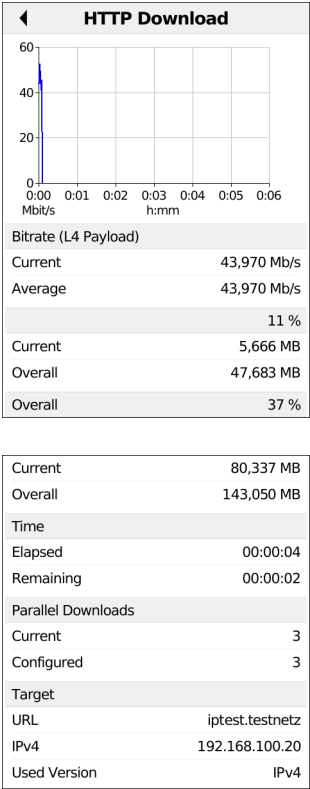
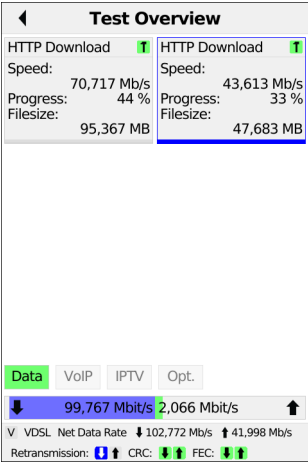
<Profile> Displays the available HTTP download profiles (see image at left).

Mark the server profile:
(default is indicated with ●).

The server profiles are also used for HTTP upload, FTP download and FTP upload.

<Edit> Edits the marked profile, changes the individual settings.

HTTP download starts automatically.



You can observe the running test in the test overview. You can access the long-term view (see images at right) via "Details".

Display during HTTP download::

- Current download/total number of downloads.
- Status
- Current net average download rate
- Current net average download rate
- Bytes transferred so far
- Size of downloaded file
- Data transferred so far
- Total data transferred
- Transfer time so far in h:min:s
- Remaining transfer time in h:min:s
- Number of parallel downloads
- Destination URL
- IP version and IP address used

Test overview display:

You can observe the running test or start a new test here, see page 197.

- | | |
|--------|-------------------------------|
| <New> | Selects a new single test. |
| <Stop> | Stops the HTTP download test. |

Save HTTP download result, see page 122.

12.9 FTP download

In FTP download, the ARGUS® downloads data in the form of a file. The ARGUS® displays the current net download rate, the usable data of the IP packets, and following conclusion of the test the average speed (for multiple download attempts).

 No meaningful evaluations are possible for download tests with a duration of less than 10 seconds. Therefore, the download file should be as large as possible (depending on the access speed). If the duration of the test is less than 10 seconds, the ARGUS® does not display any data rate or time.

Protocol-independent parameters:
Opening of test parameters is described in the chapter "Configuring accesses", see page 31. See HTTP download for an explanation of the test parameters.

Starting FTP download
The service Data is started in the same way as for HTTP upload.

Single Tests

iperf Client

iperf Profile1

iperf Server

iperf Profile1

ARGUS® Real Speed Direct (iperf)

ARGUS Server GER [10G]

ARGUS® Real Speed Fomal (RFC 6349)

iperf Profile1

HTTP Download

Server Profile 1

FTP Download

Server Profile 1

FTP Upload

Server Profile 1

FTP Server

21

Server Profiles

Server Profile 1

Server Profile 2

Server Profile 3

Server Profile 4

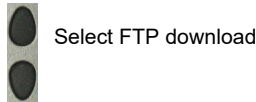
Server Profile 5

Server Profile 6

Server Profile 7

Server Profile 8

Server Profile 9



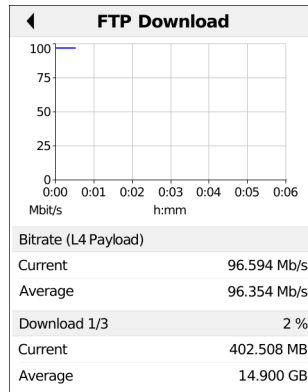
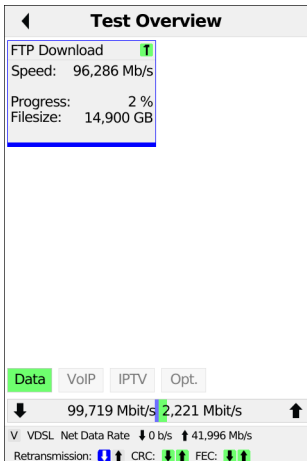
<Profile> Displays the available FTP download profiles.

Mark the server profile (default is indicated with ●).

The server profiles are also used for HTTP download, HTTP upload and FTP upload.

<Edit> Edits the marked profile, changes the individual settings.

FTP download starts automatically.



Current	80,337 MB
Overall	143,050 MB
Time	
Elapsed	00:00:04
Remaining	00:00:02
Parallel Downloads	
Current	3
Configured	3
Target	
URL	iptest.testnetz
IPv4	192.168.100.20
Used Version	IPv4

You can observe the running test in the test overview. You can access the long-term view (see images at right) via "Details".

Display during FTP download:

- Current download/total number of downloads
- Files already transferred (current/overall)
- Current net download rate
- Average download rate
- Currently transferred bytes
- Total file size to transfer
- Data transferred in test (current and total)

- Total data transferred
 - Current download time in h:min:s
 - Remaining transfer time
 - Number of parallel downloads
- <New> Select a new single test.
- <Stop> Stop the FTP download test.
- <Detail> Open the long-term view.

For saving results, see IP ping, page 122.

12.10 FTP upload

In FTP upload, the ARGUS® sends the data of a file to a server. The ARGUS® displays the current net upload rate, the usable data of the IP packets, and following conclusion of test, the average net speed (for multiple download attempts).



No meaningful evaluations are possible for upload tests with a duration of less than 10 seconds. Therefore, the upload file should be as large as possible (depending on the access speed). If the duration of the test is less than 10 seconds, the ARGUS® does not display any data rate or time.

Protocol-independent parameters:
Opening of test parameters is described in the chapter "Configuring accesses", see page 31. See HTTP download for an explanation of the test parameters.

Starting FTP upload
The service Data is started in the same way as for HTTP upload.

◀Single Tests

iperf Client	iperf Profile1
iperf Server	iperf Profile1
ARGUS® Real Speed Direct (iperf)	ARGUS Server GER [10G]
ARGUS® Real Speed Formal (RFC 6349)	iperf Profile1
HTTP Download	Server Profile 1
FTP Download	Server Profile 1
FTP Upload	Server Profile 1
FTP Server	

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✕Server Profiles✓

☒Server Profile 1

☐Server Profile 2

☐Server Profile 3

☐Server Profile 4

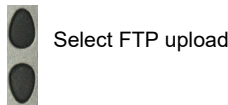
☐Server Profile 5

☐Server Profile 6

☐Server Profile 7

☐Server Profile 8

☐Server Profile 9



<Profile> Displays the available FTP upload profiles.

Mark the server profile (default is indicated with ●).
The server profiles are also used for HTTP download, HTTP upload and FTP download.

<Edit> Edits the marked profile, changes the individual settings.

FTP upload starts automatically.

Test Overview

FTP Upload

Speed: 37,682 Mb/s

Progress: 26 %

Filesize: 100,000 MB

Data

VoIP

IPTV

Opt.

0,638 Mbit/s

40,561 Mbit/s

V

VDSL

Net Data Rate

0 b/s

41,996 Mb/s

Retransmission:

CRC:

FEC:

FTP Upload

40

30

20

10

0

0:00

0:01

0:02

0:03

0:04

0:05

0:06

Mbit/s

h:mm

Bitrate (L4 Payload)

Current38,669 Mb/s

Average38,207 Mb/s

Upload 1/363 %

Current63,765 MB

Overall100,000 MB

Overall24 %

Current72,954 MB

Overall300,000 MB

Time

Elapsed00:00:16

Remaining00:00:05

Parallel Uploads

Current1

Configured1

Target

URLiptest.testnetz

IPv4192.168.100.20

Used VersionIPv4

You can observe the running test in the test overview. You can access the long-term view (see images at right) via "Details".

Display during FTP upload:

- Current upload
- Data already transferred (current/total)
- Current net upload rate
- Average net upload rate
- Currently transferred bytes
- Total file size
- Data transferred
- Total data to be transferred

- Current upload time in h:min:s
- Remaining transfer time

<New> Selects a new single test.
<stop> Stops the HTTP upload test.
<Detail> Opens the long-term view.

For saving results, see IP ping, page 122.

12.11 FTP server

In FTP server mode, the ARGUS® behaves like a server for FTP requests. In this mode, the ARGUS® serves FTP download and FTP upload requests. These requests can be sent from a second terminal device (e.g. another ARGUS® unit) via an xDSL or Ethernet access. This makes it possible to test end-to-end throughput and determine the maximum possible data rate for this access.

In the following, the throughput test is explained using the Ethernet interface as an example. This example uses two ARGUS® units: one as the FTP, one to send the FTP download request.

ARGUS® 1 - FTP server

No settings need to be configured on the ARGUS® used as the FTP server. The FTP server test just needs to be started on the selected interface.

Starting FTP server (example: Ethernet, already active)

The service Data is started in the same way as for HTTP upload.

Single Tests

HTTP Download	Server Profile 1
FTP Download	Server Profile 1
FTP Upload	Server Profile 1
FTP Server	21
Web Browser	http://www.argus.info
Port Check	Port Check Profile 1
VoIP Call	[Empty]
VoIP Call Acceptance	Automatic
VoIP Call Generator	[Empty]

Port

21

Please enter a value between 1 and 65535

1	2	3	A	B	C
4	5	6	D	E	F
7	8	9	:	-	<X>
*	0	#	.	ABC	✓

<Setting> Entry of the port. A value between 1 and 65535 is possible.

◀ FTP Server	
Status	
Status	Active
IPv4	10.5.100.188
Port	21

The ARGUS® uses the IP address configured under "own IP address" as the destination address (server) for the second ARGUS unit.

ARGUS® 1 now waits for an FTP request from a second terminal device (in this example the 2nd ARGUS® instrument).

The IP mode in this example is "static", the default IP netmask configuration is used.

ARGUS® 2 - FTP down/upload

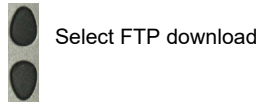
In principle, you can adopt the same configuration for the ARGUS® unit sending the FTP request (FTP download in this example) as in an FTP download test. The netmask and IP address (IP mode: static) should match the settings on ARGUS® 1.

Starting FTP download:

The service Data is started in the same way as for HTTP upload.

Single Tests	
iperf Client	iperf Profile1
iperf Server	iperf Profile1
ARGUS® Real Speed Direct (iperf)	ARGUS Server GER [10G]
ARGUS® Real Speed Formal (RFC 6349)	iperf Profile1
HTTP Download	Server Profile 1
FTP Download	Server Profile 1
FTP Upload	Server Profile 1
FTP Server	21

Server Profiles	
☒	Server Profile 1
☐	Server Profile 2
☐	Server Profile 3
☐	Server Profile 4
☐	Server Profile 5
☐	Server Profile 6
☐	Server Profile 7
☐	Server Profile 8
☐	Server Profile 9



Select FTP download

<Profile> Displays the available FTP download profiles.

Mark the server profile (default is indicated with ●).
The server profiles are also used for HTTP download, HTTP upload and FTP download.

<Edit> Edits the marked profile, changes the individual settings.

◀

Server Profile

Server Address	192.168.178.5
FTP Port	21
Download Filename	file
Upload Filename	file
Upload Filesize	100 MByte
Username	[Empty]
Password	[Empty]
Number of Up-/Downloads	1
Number of Parallel Downloads	3



You can obtain further information on settings in the ARGUSpedia on the instrument.

Only enter the address of ARGUS® 1 in the server profile of ARGUS® 2 as the server IP address.

In this case too, the download file name is the size of file to be downloaded.



No meaningful evaluations are possible for download tests with a duration of less than 10 seconds. Therefore, the upload file should be as large as possible (depending on the access speed). If the duration of the test is less than 10 seconds, the ARGUS® does not display any data rate or time.

See page 146 for displaying the FTP download result during the FTP download.

12.12 Web browser

The web browser can display HTML web pages.

Protocol-independent parameters:

Opening of test parameters is described in the chapter "Configuring accesses", see page 31.

<Setting> The address can be entered as either an IP number or a name (URL).
Default: **www.argus.info**

Starting the web browser

The service Data is started in the same way as for HTTP upload.

Single Tests

HTTP Download	Server Profile 1
FTP Download	Server Profile 1
FTP Upload	Server Profile 1
FTP Server	21
Web Browser	http://www.argus.info
Port Check	Port Check Profile 1
VoIP Call	[Empty]
VoIP Call Acceptance	Automatic

Start Pages

☒ http://www.argus.info

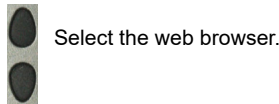
☐

☐

☐

☐

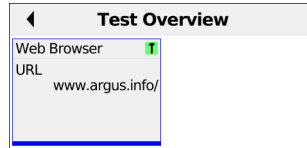
☐



Select the web browser.

Select the URL.
You can configure up to 20 URLs; see "Access name", page 35 for instructions.

If no connection is established, ARGUS® automatically connects at this point (see page 53).



The selected website opens (see image at left). You can view the destination URL in the test overview.

- <New> Selects a new single test.
- <Stop> Cancels the web browser.

Saving web browser result see also IP ping (see page 122).

12.13 Port Check

The port check checks the status of various configured ports against a dedicated server.

Protocol-independent parameters:

Opening of test parameters is described in the chapter "Configuring accesses", see page 31.

The following test parameters can be configured:

- IP Address
- Ports
- Timeout
- Username
- Password
- Profile Name



You can obtain further information on settings in the ARGUSpedia on the instrument.

Single Tests	
ARGUS® Real Speed Direct (iperf)	ARGUS Server GER [10G]
ARGUS® Real Speed Formal (RFC 6349)	iperf Profile1
HTTP Download	Server Profile 1
FTP Download	Server Profile 1
FTP Upload	Server Profile 1
FTP Server	21
Web Browser	http://www.argus.info
Port Check	Port Check Profile 1

Port Check Profiles	
☒	Port Check Profile 1
☐	Port Check Profile 2
☐	Port Check Profile 3
☐	Port Check Profile 4
☐	Port Check Profile 5



Select Port Check.

<Setting> Display of available port check profiles (1-5).

If a connection has not yet been established, it will be set up automatically at this point. (s. page 53)

Test Overview	
Port Check	
Port:	10002
Progress:	17 %

Port Check		
Current Data		
Port	8443	
Progress	15 %	
	TCP	UDP
Port	Up/Down	Up/Down
20	 	 
21	 	 
22	 	 
23	 	 
25	 	 
53	 	 
80	 	 
110	 	 
123	 	 

The test overview shows the port currently being checked and the progress. Clicking on the test overview provides an overview of the individual ports.

The result shows the incoming and outgoing status for TCP and UDP for each configured port.

The following symbols are used to indicate the status:

Symbol	Colour	Description
	grey	Blacklisted on the server side / Due to parallel running services
	green	Outgoing OK
	green	Incoming OK
	yellow	Port closed or timeout
	red	The service is not blacklisted, but another service is already running on this port.

<New> Selection of a new single test.

<Stop> Finish port check.

Save port check result, see also IP ping. (page 122).

13 VoIP tests

The ARGUS® operates as a VoIP terminal device with active acoustics, enabling voice links. Session Initiation Protocol (SIP) is available as a VoIP signalling protocol. Calls can be established both with and without registrar/proxy. The ARGUS® can be used to establish VoIP connections (DSL telephony) via xDSL, G.fast and Ethernet. To assess voice quality, the ARGUS® determines and displays the MOS/R-factor and the RTP datastream.

You can configure ten VoIP "accounts" (profiles):

Protocol-independent parameters:

Status

Test 1 0 0 X 0

Data

VoIP

IPTV

Opt.

✓

V4

?

VDSL VTU-R

Mb/s 102,772 / 41,998

CRC: 0 / 0

U: 0,0 V

VoIP Account

Use TR-069 Data

Username

Register State

URI

VoIP-Profil 1

Yes

70662

Registered

sip:70662@iptest.t...

✕

Profiles

✓

●

 PPP VLAN 7/8

PPP ATM 1/32

IP DHCP Client

IP static

Profile 5

Profile 6

Profile 7

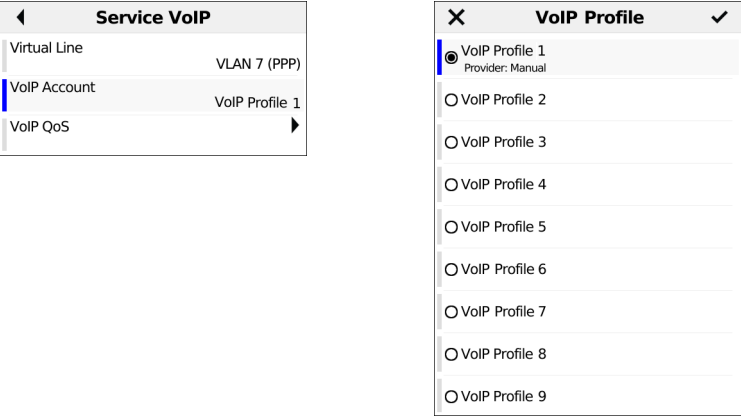
Profile 8

Profile 9

The ARGUS® status screen (see image at left).

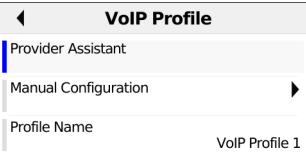
- <Edit> Assigns a virtual line to the service VoIP.
- <Profile> Profile settings, see page 39.
- <Start> Activates the service.

-  Select the profile you wish to edit (see image at right). The selected profile appears in the display in blue. The default profile is indicated with a ● in the display. The ARGUS® adopts the parameters from the default profiles for establishing the Ethernet, G.fast or xDSL connection and conducting the VoIP test.
-  The ARGUS® uses the marked profile as the preset profile and switches to the menu Settings.



The "Edit" softkey takes you to the Service VoIP menu (see picture on the left). Once you have selected the option VoIP account, you can edit the VoIP profiles (see image at right). A total of ten user-defined VoIP profiles are available.

<Edit> Edits the VoIP profile (see image at left).



You first need to decide whether you want to configure this using the wizard or manually.



The wizard only prompts for a subset of all configuration settings.

The following test parameters can be configured for the VoIP account:

- VoIP
 - Provider Assistant
- Manual Configuration
 - SIP Settings
 - NT Mode
 - NT Mode
 - Authentication
 - Server Accounts
 - Username
 - Password
 - Authentication
 - Caller ID
 - Registrar Server
 - Use Registrar
 - Registrar Server
 - Outbound Proxy
 - Use Proxy
 - Outbound Proxy/SBC
 - Outbound Proxy/SBC Port
 - DNS Resolution
 - SIP Trunk
 - Use SIP Trunk
 - CLIR
 - P Header
 - Own Basic Number
 - Own Extension (DDI)
 - Number Range
 - Use Number Range
 - Number Range
 - Transport Protocol
 - SIP Domain
 - SIP Realm
 - Listen Port
 - Remote Port
 - User Agent
 - Qualify
 - Registration Expire
 - Retry-After
 - Delete Existing Registrations
 - Via Header IP
 - Call Settings
 - CLIP No Screening
 - Use CLIP No Screening
 - CLIP Number
- Phone Settings
 - RTP
 - RTP Port Range
 - Encryption

- Silence Detection
- Jitter Buffer
- Codecs
- DTMF Settings
 - Mode (Tx)
 - Duration
- Certificate Check
- STUN Server
 - Use STUN
 - STUN Server
- Rated/Threshold Values
 - MOS Rated Value
 - Jitter Threshold
 - RTP Loss Threshold
- Profile Name

You can configure the following settings for VoIP QoS (quality of service):

- Layer 3 DiffServ
 - RTP (ToS/DSCP)
 - SIP (ToS/DSCP)
- Layer 2 VLAN Prio
 - RTP VLAN Prio
 - SIP VLAN Prio



You can obtain further information on settings in the ARGUSpedia on the instrument.

13.1 Starting VoIP telephony

(Example: VDSL access, already active)

Status

Test T 0 → 0 X 0

Data

VoIP

IPTV

Opt.

V4

V4

VDSL

VTU-R

Mb/s: 102,772 / 41,998

CRC: 0 / 0

U: 0,0 V

VoIP Account

VoIP Profile 1

Username

Authentication

Transport Protocol

TCP Fallback

SIP Domain

SIP Trunk

No

Status

Test T 0 → 0 X 0

Data

VoIP

IPTV

Opt.

V4

VDSL

VTU-R

Mb/s: 102,772 / 41,998

CRC: 0 / 0

U: 0,0 V

VoIP Account

VoIP-Profil 1

Use TR-069 Data

Yes

Username

70662

Register State

Registered

URI

sip:70662@iptest.t...

Connecting the service.

The profile selected for xDSL connection is also used for VoIP telephony.

<Edit> Edits the default virtual line profile.



The service VoIP is greyed out when the VoIP option is not set.

If no xDSL or Ethernet connection is established, the ARGUS[®] automatically connects at this point using the default profile (see page 53).

<Info> Duration of activation, see page 167.

<Test> Opens test selection.

<Stop> Deactivates the service.

Single Tests	
IP Ping	www.argus.info
Traceroute	www.argus.info
Path MTU	www.argus.info
Port Check	Port Check Profile 1
VoIP Call	[Empty]
VoIP Call Acceptance	Automatic
VoIP Call Generator	[Empty]

VoIP Destinations	
☐	0235190700
☒	89
☐	
☐	
☐	
☐	
☐	
☐	
☐	



Select VoIP call.

Marks the VoIP destination
(default is indicated with ●).

Scroll down with the cursor, mark a blank line and add a new VoIP destination using
<Edit>.

<Edit> Edits the VoIP number.

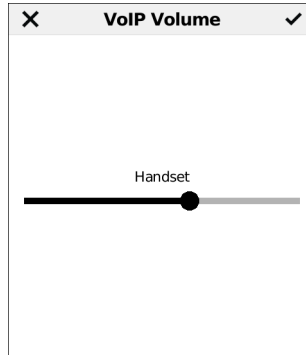
VoIP Overview	
Status	
State	--- 📞
Call Info	Connecting
From	
To	70662
Connecting Time	00:00:00
Codec	Unknown

Test Overview	
VoIP	📞 1
Outgoing To	89
MOS:	4,3
jitter:	0 ms

Connecting.

The ARGUS® displays its "own number" (from: 70662) and the number of the called subscriber (to: 89). The called subscriber has not yet accepted the call: call info "Connected" and yellow telephone handset symbol.

VoIP Overview			
Status			
State	Ok		
Call Info	Outgoing Call		
From	70662		
To	89		
Connecting Time	00:00:08		
Codec	G.711 A-law		
Overview	Tx	Rx	
MOS (G.107)	---	4,3	
Jitter	---	0,2 ms	
LOSS	---	0,00 %	
VLAN (Priority)	0	0	
ToS	0x00	0xB8	



The called subscriber has accepted the call (status "OK" and green check mark). The ARGUS[®] determines the MOS value and displays whether the voice quality attains the target MOS voice quality value (see page 216) ("OK" or "FAIL"). The ARGUS[®] also displays the classification of the MOS value according to ITU-T P.800 (in this example "good"). The duration of the call and the currently used voice codec (in this example G.711 A-law) are additionally displayed along with the RTP loss rate.

VoIP overview display (for transmitted and received packets including assessment)

- Status
- MOS value (FAR-MOS/MOS)
- Jitter in ms
- RTP loss rate
- VLAN (Prio) in hexadecimal
- TOS (hex) in hexadecimal



The FAR-MOS value is only displayed when the remote station supports RTCP.

See page 307 for the meanings of the symbols displayed.

- <Detail> Displays the VoIP parameters
- <Volume> Opens the volume control

MOS Info		
MOS (G.107)	Tx	Rx
Current	4,3	4,3
Average	4,3	4,3
Minimum	4,3	4,3
Maximum	4,3	4,3
Ideal	4,3	4,3
R-Factor	Tx	Rx
Current	91	90
Average	91	90

RTP Info	
Packets	
Received	1551
Sent	1549
Error Counter	
RTP Drop	0
RTP Error	0
RTP Jitter Rx	
Current	0 ms
Average	0 ms
Minimum	0 ms
Maximum	1 ms

RTP Packet Loss Rx	
Current	0,00 %
Average	0,00 %
Minimum	0,00 %
Maximum	0,00 %
Total	0

Display of MOS info (for transmitted and received packets):

- Current MOS
- Average MOS
- Min./max. MOS value
- Ideal MOS (possible MOS without interference, codec-dependent)

Display of further VoIP results:

Packet statistics:

- Received packets (Rx)
- Transmitted packets (Tx)
- Error counter:
 - RTP drop
 - RTP error
- RTP jitter Rx:
 - Current jitter
 - Average jitter
 - Minimum jitter
 - Maximum jitter
- Lost RTP packets (Rx)
 - Current, average, min. and max., total

RTCP content

Displays the statistics returned by the remote station.

- Current jitter of remote station Rx (far)
- Average jitter at remote station
- Maximum and minimum jitter of remote station
- Lost RTP packets at remote station
 - Rx (far): Total, current, average, min. and max.

- Network delay calculated from the transmission time of RTCP packets: current, average, min. and max.



If the message "no data" appears, that means that the remote station does not support RTCP.

VoIP Codec
Codec
G.711 A-law
G.711 μ -law

QoS Info		
QoS Information	Tx	Rx
VLAN ID	7	7 ✓
VLAN Priority RTP	0	0 ✓
VLAN Priority SIP	0	----
RTP ToS	0x00	0xB8 !
SIP ToS	0x00	----

The ARGUS® displays the available codecs of the remote station.

Display of QoS info (for transmitted and received packets including assessment)

- VLAN ID
- VLAN Prio RTP
- VLAN Prio SIP
- RTP ToS in hexadecimal
- SIP ToS in hexadecimal

Status	
Test 1 0 0 X 0	
Data ✓	VoIP ✓
IPTV ?	Opt. ?
V4	
VDSL VTU-R ✓	
Mb/s	102,772 / 41,998
CRC:	0 / 0
U:	0,0 V
VoIP Account	VoIP-Profil 1
Use TR-069 Data	Yes
Username	70662
Register State	Registered
URI	sip:70662@iptest.t...

Service VoIP	
Active	00:08:59
Profile	VoIP-Profil 1
Protocol	SIP
Username	70662

When you select "Info" in the status screen, the ARGUS® displays the duration of the active VoIP service, the protocol used and the user name.

<SIP> Displays registration details: status codes, registrar IP, registrar used, outbound proxy/SBC and URI used and more.

<Log.> Displays the VoIP service SIP commands, see page 168.

Incoming call:

◀ Service VoIP		
	Info	Time
>	SIP Register	12:08:00:000
<	401 Unauthorized	12:08:00:090
>	SIP Register	12:08:00:190
<	200 Ok	12:08:00:350
>	SIP Register	12:08:00:560
<	401 Unauthorized	12:08:00:920
>	SIP Register	12:08:01:250
<	SIP Options	12:08:01:670
>	200 Ok	12:08:02:090
<	200 Ok	12:08:02:560

◀ Service VoIP	
Register State	Registered
SIP Code	Ok
Registrar	
URL	_sip._udp.ipptest.testnetz
DNS Resolution	
IPv4	192.168.110.20
Received Reg.	192.168.110.20
URI	sip:70662@iptest.testnetz
Realm	iptest.testnetz

Before, during and after the connection, the ARGUS® displays the registration details. The setting "Use registrar" must be set to "yes" (see image at left).

The ARGUS® displays the SIP commands in the service VoIP (see image at right). A timestamp is added for all events.



The timestamp is generated using the ARGUS®-internal system time.

For further information, see page 314 "Software licenses".

◀ VoIP Overview	
Status	
State	--- 🟡
Call Info	Connecting
From	
To	70662
Connecting Time	00:00:00
Codec	Unknown

The ARGUS® can be called while the service VoIP is active. An incoming call is indicated by the yellow CALL symbol. The call can be accepted or refused.

For automatic call acceptance, you need to start the specific test "VoIP call acceptance", see page 171.

<Refuse> Refuses the call. Switches to status screen.

<Accept> Accepts the call. Switches to ARGUS® status.

VoIP results



You can obtain further information on the VoIP results in the ARGUSpedia on the instrument.

13.1.1 VoIP back-to-back

The ARGUS® permits a VoIP call to a second terminal device, e.g. another ARGUS® unit.
To enable calling, both ARGUS® instruments must be configured as follows:

	ARGUS® 1	ARGUS® 2
Access, see page 31	Ethernet IP-based	
Protocol	IP	
IP version	IPv4	
IP mode	Static IP	
Own IP address	In this example 10.0.0.1	In this example 10.0.0.2

ARGUS 1



ARGUS 2



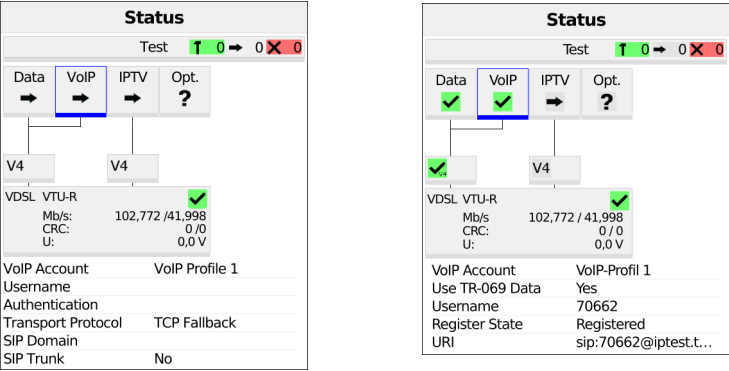
← ETH →

Now enter the IP address of ARGUS® 2 in ARGUS® 1 as the target telephone number to initiate a VoIP call. The IP address of ARGUS® 1 must be entered as the target telephone number in ARGUS® 2.

The call is connected just as for VoIP call/VoIP call acceptance, see page 171.

13.2 VoIP Call Acceptance

In the test "VoIP Call Acceptance", the ARGUS® behaves like a VoIP telephone. The VoIP call (see page 164) and the VoIP call acceptance parameters must be configured for the VoIP call acceptance test:

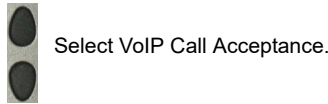
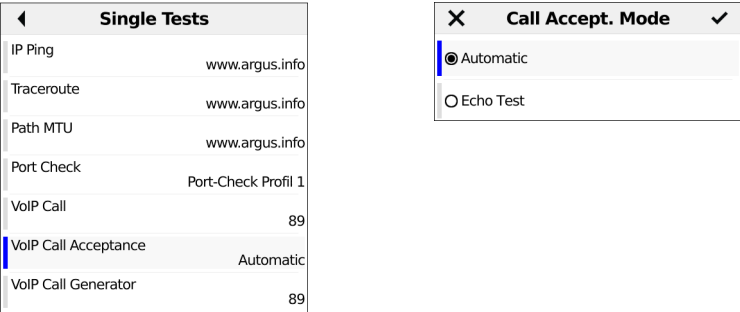


Connecting the service.

The profile selected for connection (in this example profile 1) is also used for VoIP call acceptance.

<Edit> Edits the default virtual line profile.

If no xDSL, G.fast or Ethernet connection is established, the ARGUS® automatically connects at this point using the default profile (see page 53).



<Setting> Opens call acceptance mode for VoIP Call Acceptance.

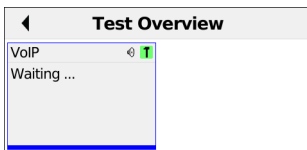
The test VoIP wait offers the following configuration options (see image bottom left):

- Automatic
- Echo test

Default: **Automatic**



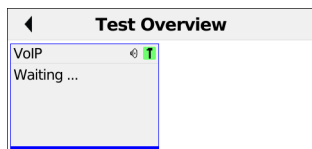
The ARGUS® uses the own number entered under SIP parameters (see page 168) as its own number.



VoIP Overview	
Status	
State	--- 📞
Call Info	Connecting
From	
To	70662
Connecting Time	00:00:00
Codec	Unknown

The ARGUS® waits for a VoIP call (see image left).

<Detail> Opens further information (see image right).



VoIP Overview		
Status		
State	Ok	
Call Info	Incoming Call	
From	89	
To	70662	
Connecting Time	00:00:08	
Codec	G.711 A-law	
Overview	Tx	Rx
MOS (G.107)	4,3	4,3
Jitter	0 ms	0,2 ms
LOSS	0,00 %	0,00 %
VLAN (Priority)	---	0
ToS	00 _{hex}	0xB8

The ARGUS® waiting for a VoIP call (see image at left).

The ARGUS® automatically accepts the call (see Setting page 172) (see image at right). The connection parameters are the same as for VoIP call and are explained on page 164 and following.

Disconnecting:



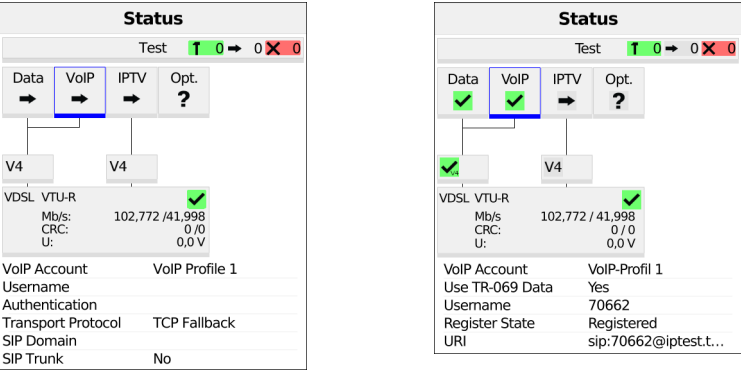
The connection is terminated as for IP ping.

However, pressing "Cancel" initially only disconnects (if a connection existed).

The ARGUS® remains registered with the registrar (service VoIP active) and remains available for the caller (an incoming call can be refused or accepted). Deactivate the service VoIP to terminate registration. However, the established access remains active.

13.3 VoIP call generator

(Example: VDSL access, already active)



The profile selected for connection (in this example PPP VLAN 7/8) is also used for the VoIP call generator.

<Edit> Edits the default virtual line profile.



The service VoIP is greyed out when the VoIP option is not set.

If no xDSL, G.fast or Ethernet connection is established, the ARGUS® automatically connects at this point using the default profile (see page 53).

<Info> Duration of activation, see page 167.

<Test> Opens test selection.

<Stop> Deactivates the service.

Single Tests	
IP Ping	www.argus.info
Traceroute	www.argus.info
Path MTU	www.argus.info
Port Check	Port-Check Profil 1
VoIP Call	89
VoIP Call Acceptance	Automatic
VoIP Call Generator	89

VoIP Call Generator

VoIP Destination

89

Ringing State Detection

☒



Selects VoIP call generator

In the next step, the VoIP destination can be selected and it can be specified whether ringing state detection should take place.

VoIP Destinations

☐ 0235190700

☒ 89

☐

☐

☐

☐

☐

☐

☐

Marks the VoIP destination (default is indicated with ●).

Scroll down with the cursor, mark a blank line and add a new VoIP destination using <Edit>.

<Edit> Edits the VoIP number.

VoIP Call Generator		
Call 1	Outgoing 	Hung Up 
Call 2	Outgoing 	Connected 
Call 3	Outgoing 	Started

Test Overview	
VoIP Call Generator	
To:	89
Successfull Calls	1
Ended Calls	1

Up to 30 consecutive VoIP calls to a configured VoIP destination are established. The connection is maintained until the test is stopped.

As soon as a call is refused, the ARGUS® stops establishing further calls. Existing calls remain connected. If the remote station hangs up a call, this is indicated for that call. The test remains active until you press the “Stop” softkey – even if the remote station has terminated all calls.

<Stop> Closes the call generator.

The number of successful calls is displayed. These are the calls that were still connected when the test was stopped. Calls that were refused or terminated by the remote station are not displayed.

<Restart> Restarts the VoIP call generator.

13.4 Advanced VoIP Call Generator

With the advanced VoIP call generator, significantly more than 30 calls are possible, depending on the configuration:

- Available for Ethernet LAN4
 - Up to 200 simultaneous calls are possible
 - When using TLS, 160 calls are still possible
 - When using RX-MOS value evaluation, 80 calls are still possible
- Available for Ethernet LAN1
 - Up to 120 simultaneous calls are possible
 - When using TLS, 80 calls are still possible
 - When using RX-MOS value evaluation, 34 calls are still possible

Single Tests	
Web Browser	http://www.argus.info
Network Scan	Automatic
Port Check	Port-Check Profile 1
VoIP Call	[Empty]
VoIP Call Acceptance	Automatic
VoIP Call Generator	[Empty]
Advanced VoIP Call Generator	[Empty]
IPTV	IPTV Profile 1
OTT (Adaptive Streaming)	OTT Profile 1

VoIP Call Generator	
VoIP Destination	[Empty]
Number of Calls	50
MOS Value Calculation	☒
Ringling State Detection	☒



Select the single test “Advanced VoIP Call Generator”.

In the next step, you can select the VoIP destination and the number of calls, and specify whether to calculate the MOS value or detect the ringing state.

Test Overview	
Advanced VoIP	1
To: 8050	
Successfull Calls	7
Ended Calls	0

VoIP Call Generator	
Overview	Against External
Number of Calls	14/50
	1 2 3 4 5 6 7 8 9 10
1	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
11	✓ ✓ ✓ ✓
21	
31	
41	

The Advanced VoIP Call Generator starts automatically.
You can monitor the ongoing test in the test overview.

Clicking on this test takes you to a detailed view where successful calls are marked with a check mark highlighted in green. Here, 14 out of 50 calls were successful.

VoIP Call Generator	
Overview	Against External
Number of Calls	16/34
	1 2 3 4 5 6 7 8 9 10
1	4,3 4,3 4,3 4,3 4,3 4,3 4,3 4,3 4,3 4,3
11	4,3 4,3 4,3 4,3 4,3 n/a
21	
31	

If MOS value calculation is enabled, the “MOS” soft key is available.
Here, a MOS value of 4.3 was calculated for all calls.

If a MOS value could not be calculated, “n/a” (not available) is displayed in the corresponding field.

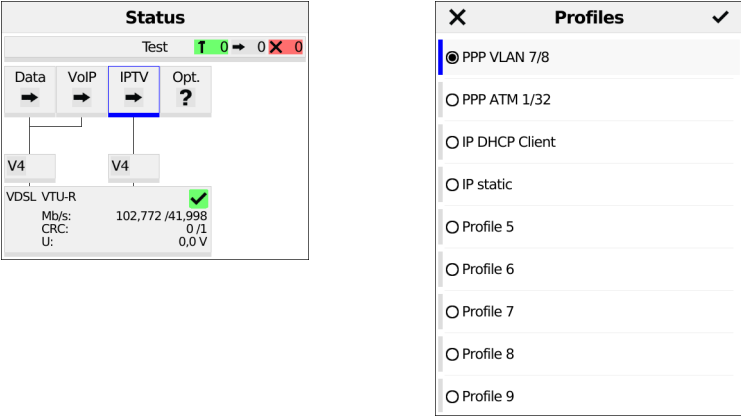
- <MOS> Display of the MOS value.
- <Status> Return to the detail view.

14 IPTV tests

14.1 IPTV

The ARGUS® requests a data stream from a server (depending on the access type, the ARGUS® replaces the set-top box (STB) or modem plus STB) and checks the regularity of the incoming packets, packet loss and the switch-on/switch-over time of the program. You can configure three user-defined IPTV profiles (where the xDSL, G.fast or Ethernet connection is already established, the connection parameters, e.g. the target value, are locked):

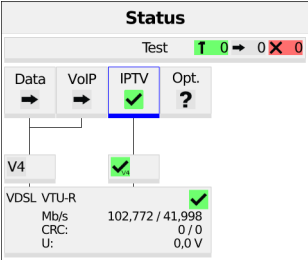
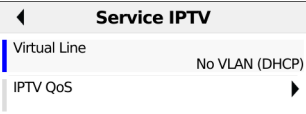
Protocol-independent parameters:



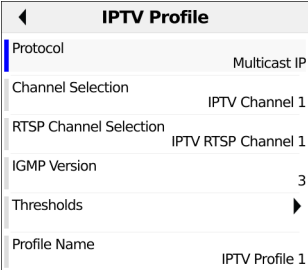
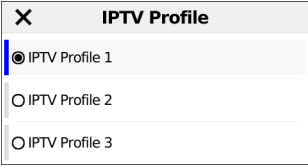
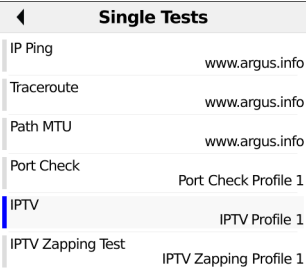
The IPTV-STB emulation is realised using the service IPTV.
The following example illustrates the procedure and its special features.

- <Edit> Assigns virtual lines to the service IPTV.
- <Profile> Profile settings, see page 39.
- <Start> Activates the service.

-  Select the profile you wish to edit. The selected profile appears in the display in blue. The default profile is indicated with a ● in the display. The ARGUS® adopts the parameters from the default profiles for establishing the Ethernet, G.fast or xDSL connection and conducting the IPTV test.
-  The ARGUS® uses the marked profile as the preset profile and switches to the menu setting.



Press the softkey “Edit” to configure the VL profile, then start the service IPTV.



Now you can select a single test, e.g. IPTV. A total of three user-defined IPTV profiles are available (see image at right). You can edit and modify the marked parameters.

You can configure the following settings for IPTV:

- Channel selection
- Multicast address
- Port
- Broadcaster name
- IP version
- limit values
- IGMP latency
- Sync error
- PCR jitter
- Error indication
- CC error
- CC error rate
- Audio bytes
- Video bytes
- RTP jitter
- RTP sequence error
- Current RTP loss rate
- Total RTP loss rate
- Profile name

You can configure the following settings for IPTV QoS (quality of service):

- Layer 3 DiffServ
- RTP (ToS/DSCP)
- Layer 2 VLAN Prio
- VLAN Prio



You can obtain further information on settings in the ARGUSpedia on the instrument.

14.1.1 Multiple virtual lines

The ARGUS® can use up to 4 virtual lines for the service IPTV. The IGMP virtual lines are used for transmission of the IGMP protocol and virtual lines 1-3 for receiving the video/ audio streams.

X

Virtual Line

✓

☐ No Virtual Line

☐ PPP ATM 1/32

☐ VLAN 7 (PPP)

☐ VLAN 8 (DHCP)

☐ No VLAN (DHCP)

☐ No VLAN (IP static)

☒ Intec VL PPP

☐ Virt. Profile 7

☐ Virt. Profile 8

X

Virtual Line

✓

IGMP VL: intec VL PPP

VL 1:

No VL

<Edit>

Edits the selected virt. profile (in this example virt. profile 1).

<More VLS>

Opens virtual line selection for the service IPTV.

<Insert>

Inserts further virtual profiles.

X

Virtual Line

✓

PPP ATM 1/32

VLAN 7 (PPP)

VLAN 8 (DHCP)

No VLAN (DHCP)

No VLAN (IP static)

☒ Virt. Profile 7

Virt. Profile 8

Virt. Profile 9

Virt. Profil 10

X

Virtual Line

✓

IGMP VL: intec VL PPP

VL 1:

Virt. Profile 7

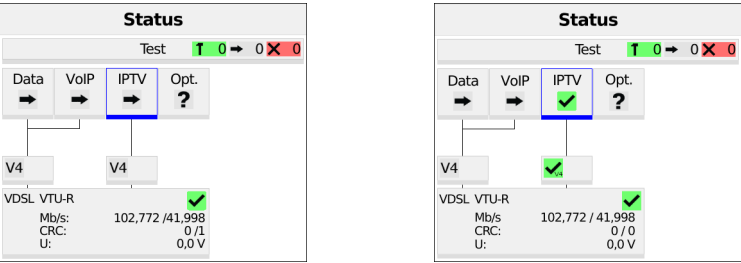
VL 2:

No VL

Adds selected VL profile for the service IPTV.

<Insert>	Inserts a further virtual profile.
<Edit>	Edits the selected virtual profile (in this example profile 3).
<More>	Opens further selection options.
<Delete>	Deletes the selected virtual profile (in this example profile 3).
<↓>	The marked profile is moved down one place in the list.
<↑>	The marked profile is moved up one place in the list.

Starting IPTV



Connecting the service.

The profile selected for xDSL connection is also used for IPTV.

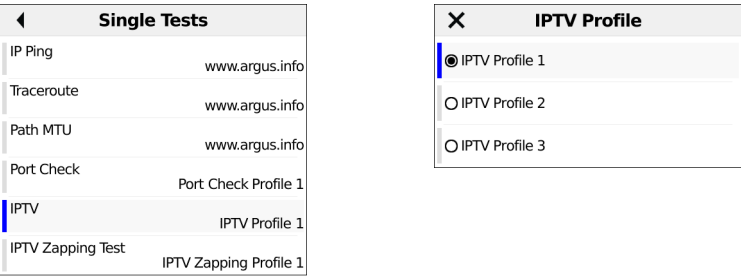
<Edit> Assigns a virtual line is assigned to the service IPTV or edits it.

If no xDSL connection is established, the ARGUS® automatically connects at this point using the default profile (see page 53).

<Info> Activation duration

<Test> Opens test selection

<Stop> Deactivates the service



<Profile> Displays the IPTV profiles, see page 193.

IPTV test

Test Overview	
IPTV	1
Das Erste	
Bitrate:	3,415 Mb/s
Loss:	0
Rate:	0,00 %

IPTV	
Bitrate	
Current	3,390 Mb/s
Packet Loss	
Sum	0
Packet Loss Rate	
Average	0,00 %
Delay Factor	
Current	9 ms
Minimum	8 ms
Maximum	18 ms
Average	11 ms
Media Loss Ratio	
Sum	0,00000 %

During the test, the ARGUS® displays the selected IPTV channel, the duration of the test and the current bitrate. If the set limits are exceeded, the IPTV test shows "FAIL" in the display, otherwise "OK".

The ARGUS® displays "FAIL" until the values fall below the threshold again.

<Channel> Selects a new channel.

<Test status> Displays test status without ending the test or starting a new test, see page 197.

<Total> Displays all IPTV statistics.



Cancels test.

Display:

- Current bitrate
- Number of packets lost during the test
- Display of packet loss rate in percent
- Display of delay (current, minimum, maximum, average)
- Display of media loss rate



The IPTV test runs until a new channel is selected.

<OK/FAIL> OK/FAIL overview of the IPTV test..

IPTV Ok/Fail		
IPTV Ok/Fail		
Current Loss Rate	0,00	Ok
Full Loss Rate	0,00	Ok
Sequential Error	0	Ok
RTP jitter	-	Ok
Latency	36	Ok
Audio Bytes	24472	Ok
Video Bytes	281152	Ok
Sync Errors	0	Ok
Error Indications	0	Ok
PCR jitter	1	Ok
CC Error	0	Ok
CC Error Rate	0,00	Ok

Display:

- Current loss rate in %
- Total loss rate in %
- Sequence errors
- RTP jitter
- Latency (in ms)
- Audio bytes (in Byte)
- Video bytes (in Byte)
- Sync error
- Error indication
- PCR jitter (in ms)
- CC errors
- CC error rate (in %)

IPTV-Ergebnisse



You can obtain further information on IPTV results in the ARGUSpedia on the instrument.

14.2 OTT

Adaptive streaming is available via the OTT single test. OTT is available on all IP-based connections through the IPTV service. The DASH and HLS streaming protocols are supported, as well as non-adaptive streaming such as MP4 or MOV files. Encrypted streams are not supported.

Single Tests

FTP Server

21

Web Browser

http://www.argus.info

Port Check

Port-Check Profile 1

VoIP Call

[Empty]

VoIP Call Acceptance

Automatic

VoIP Call Generator

[Empty]

IPTV

IPTV Profile 1

OTT (Adaptive Streaming)

OTT Profile 1

IPTV Zapping Test

IPTV Zapping Profile 1

OTT Profiles

☒ OTT Profile 1

☐ OTT Profile 2

☐ OTT Profile 3

Select OTT (Adaptive Streaming).

- <Setting>

Select OTT profile
- <Edit>

Change OTT parameters
- <Copy>

Copy OTT profile

OTT Profile

Stream Selection

OTT Stream 1

Profile Name

OTT Profile 1

Stream Selection

☒ OTT Stream 1

☐ OTT Stream 2

☐ OTT Stream 3

☐ OTT Stream 4

☐ OTT Stream 5

☐ OTT Stream 6

☐ OTT Stream 7

☐ OTT Stream 8

☐ OTT Stream 9

In the OTT profile, you can select and edit the OTT stream. There are a total of 10 OTT streaming entries available.

Stream

URL

[Empty]

Streamname

OTT Stream 1

URL

0/159 Characters

@ - _ . : & / ? # =

1 2 3 4 5 6 7 8 9 0

q w e r t z u i o p

a s d f g h j k l

^ y x c v b n m <1

123 < ?#@ ✓

Enter the URL (up to 159 characters). The URL is saved when you check the box.

Stream

URL

[Empty]

Streamname

OTT Stream 1

Streamname

OTT Stream 1

12/24 Characters

! " \$ % & / () =

1 2 3 4 5 6 7 8 9 0

Q W E R T Z U I O P

A S D F G H J K L

▲ Y X C V B N M <1

123 < ?#@ ✓

Here you can set the stream name (up to 24 characters).

OTT Profile

Stream Selection

OTT Stream 1

Profile Name

OTT Profile 1

X

Profile Name

✓

OTT Profile 1

12/24 Characters

! " § \$ % & / () =

1 2 3 4 5 6 7 8 9 0

Q W E R T Z U I O P

A S D F G H J K L

▲ Y X C V B N M <X>

123

?#@

✓

You can also set the profile name (up to 24 characters).

Test Overview

OTT

Initializing

Test Overview

OTT

OTT Stream 1

State: Stopped

When you select an OTT profile, the test starts immediately and the stream is requested.

Test Overview

OTT

DASH Test Stream

State: Active

Buffering: 60 %

Test Overview

OTT

DASH Test Stream

State: Active

The test is active and the buffers are filling up. Once the buffers are full, the stream starts playing.

08.12.25 11:14:38v5.12.2096%100%

OTT



Information

Bandwidth	20738.268 kbit/s
Audio Buffer	11114 ms
Video Buffer	9160 ms
Rebuffering Counter	0

	Avg. [kbit/s]	fps	Resolution
Down.	7496,400	50,0	1920x1080
Akt.	7496,400	50,0	1920x1080

WLAN Active	MFwlan	867 Mb/s
38:10:D5:DD:9E:1E	-40 dBm	100 %

Stream

Info

Volume

Stop

OTT Info

Information

Test Duration	00:00:27
Protocol	DASH
Bandwidth	21169,518 kbit/s
Audio Buffer	10048 ms
Video Buffer	10040 ms
Rebuffering Counter	0

Display of live video, buffer sizes, fps, and resolution.

- <Stream>

Switch to a different stream
- <Info>

Detailed information about the stream
- <Volume>

Adjusting the Volume
- <Stop>

Stop the stream

If a stream is requested for which ARGUS does not have a compatible audio codec, this is indicated accordingly on the screen.

The following audio codecs are supported:

- AAC-LC
- AC3
- MPEG-1 Layer 1 / Layer 2

◀ Avail. Bit Rates			
	Avg. [kbit/s]	fps	Resolution
☐	505,600	25,0	480x270
☐	1067,600	25,0	640x360
☐	2132,000	50,0	960x540
☐	4175,500	50,0	1280x720
☒	7496,400	50,0	1920x1080
☒ Automatic			

<Avail. Bit rates> Display of available bit rates

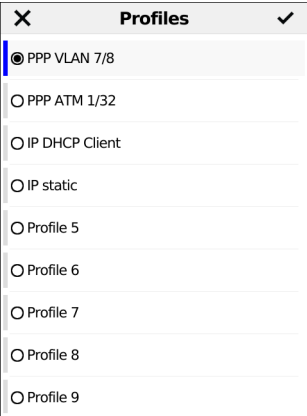
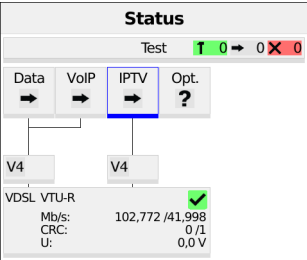
Here, you can manually select the bitrate. If you confirm your selection, that bitrate will be automatically selected, as indicated by a checkmark next to the selected bitrate.

14.3 IPTV Zapping Test

The ARGUS® checks the availability of TV channels. Additionally, the ARGUS® displays the switchover time between TV channels.

You can create three user-defined scan profiles. The following settings must be saved in the profile for the IPTV zapping test (when the xDSL, G.fast or Ethernet connection is already established, the connection parameters, e.g. target value, are locked):

Protocol-independent parameters:



<Edit> Assigns virtual lines to the service IPTV.

<Profile> Profile settings, see page 39.

<Start> Starts the service.



Select the profile you wish to edit. The selected profile appears in the display in blue. The default profile is indicated with a ● in the display. The ARGUS® adopts the parameters from the default profiles for establishing the Ethernet, G.fast or xDSL connection and conducting the IPTV scan.



The ARGUS uses the marked profile as the preset profile and switches to the menu setting.

X

IPTV Zapping Profile

✓

☒

IPTV Zapping Profile 1

☐

IPTV Zapping Profile 2

☐

IPTV Zapping Profile 3

◀

IPTV Zapping Profile

Protocol

Multicast IP

Channel Selection

RTSP Channel Selection

IGMP Version

3

Maximum Zapping Time

5 s

Profile Name

IPTV Zapping Profile 1

A total of three user-defined zapping profiles are available.

<Edit> Edits the marked zapping profile.

X

Channel List

✓

1: Das Erste

2: ZDF

3: WDR

4:

X

Channel List

✓

ZDF HD

ZDF infokanal

zdf.kultur

ZDFneo

3sat

ARTE HD

Ki Ka

PHOENIX

BR Nord

In the channel selection menu, the ARGUS® initially displays the TV channels already selected in the set order that was tested for the IPTV zapping test. If no channels have been selected yet, the list is empty.

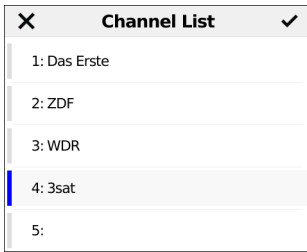
The list slots can be filled one after another. You can select up to 250 channels.

<Insert> Opens the channel list with the available channels.



Marks the channel
Channels already selected do not appear in the channel list (see image at right).

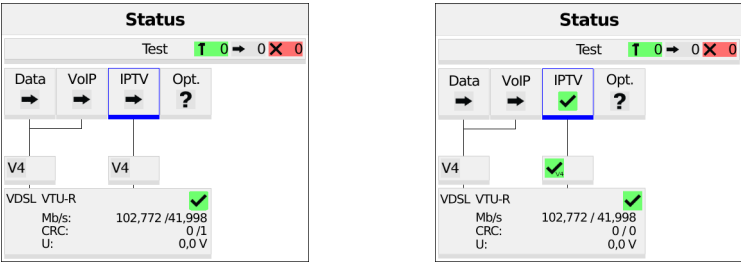
<Edit> Edits the marked channel:
- Enter the address (multicast IP and port number) of the TV channel.
- Enter any alias name for the TV channel (e.g. name of broadcaster).



Add the marked TV channel (in this example 3sat), then add the next channel. If at least two channels have been added to the list, you can change their position in the list using the following softkeys:

- <Delete>** Deletes the marked TV channel from the selection list.
- <Insert>** Opens the channel list with the available channels.
- <↓>** Moves the marked channel down one place in the list.
- <↑>** Moves the marked channel up one place in the list.

Starting the IPTV zapping test



Connecting the service.

The profile selected for xDSL connection is also used for IPTV..

<Edit> Assigns a virtual line to the service IPTV or edits it.

Activating the service IPTV.

If no xDSL connection is established, the ARGUS® automatically connects at this point using the default profile (see page 53).

- <Info> Duration of activation
- <Test> Opens test selection
- <Stop> Deactivates the service

Single Tests	
IP Ping	www.argus.info
Traceroute	www.argus.info
Path MTU	www.argus.info
Port Check	Port Check Profile 1
IPTV	IPTV Profile 1
IPTV Zapping Test	IPTV Zapping Profile 1

<Profile> Displays the IPTV zapping test profiles, see page 193.

Test Overview	
IPTV Zapping Test T	
Current Channel	
Das Erste	
Last Channel	
3SAT:	47 ms

IPTV Zapping Test	
Zapping Time	
Minimum	16 ms
Maximum	47 ms
Average	30 ms

The IPTV zapping test starts automatically.

Displays the time needed to switch between channels. If a TV channel cannot be received within the set interval, the ARGUS® displays "Failed".

<Test status> Displays test status without ending the test or starting a new test, see page 197.

For saving results, see IP ping, page 122.

15 Parallel tests

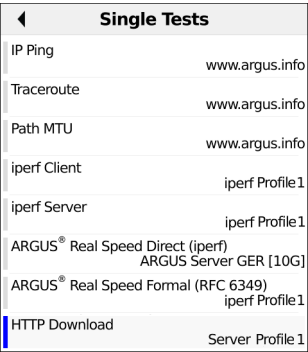
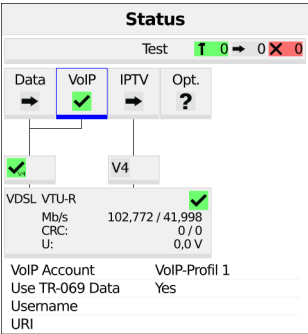
The ARGUS® permits parallel testing of different IP-based services (data, VoIP, IPTV and opt.) running on xDSL, G.fast or Ethernet interfaces. The settings for each test are described in the respective chapters.

The following tests can be run in parallel. Any combination of the tests listed here is possible. Up to ten tests can be conducted concurrently.

Service	Test	Remark
Data	IP Ping* ¹ , see page 116	For these tests, up to 10 tests can be conducted concurrently (incl. tests using the other services).
	Traceroute* ¹ , see page 124	
	Path MTU, see page 127	
	iperf Client, see page 129	
	iperf Server, see page 132	
	ARGUS® Real Speed Direct	
	ARGUS® Real Speed Formal	
	HTTP download, see page 140	
	FTP download, see page 145	
	FTP upload, see page 148	
	FTP server, see page 151	See remark for VoIP
	Web browser, see page 155	
	Network scan	
	Port check	
VoIP	VoIP call, see page 164	These tests can be combined with any other test. Please note that a total of ten simultaneous VoIP connections are possible.
	VoIP call acceptance, see page 171	
	VoIP call generator, see page 174	
IPTV	IPTV, see page 179	These tests can be combined with any other test. Note that only one IPTV test can be active at any time.
	IPTV zapping test, see page 192	
	OTT	

Opt.	IP Ping* ¹ , see page 116	For these tests, up to 10 tests can be conducted concurrently (incl. tests using the other services).
	Traceroute* ¹ , see page 124	
	Path MTU, see page 127	
	iperf Client, see page 129	
	iperf Server, see page 132	
	ARGUS® Real Speed Direct	
	ARGUS® Real Speed Formal	
	HTTP download, see page 140	
	FTP download, see page 145	
	FTP upload, see page 148	
	FTP server, see page 151	See remark for VoIP.
	Web browser, see page 155	
	Network scan	
	VoD	See remark for IPTV.
	* ¹ Also possible via the services VoIP and IPTV	

The possibility of parallel testing is illustrated using HTTP download and VoIP via the services Data and VoIP. Display and operation for further parallel tests, e.g. IPTV, is performed in the same way as for Data and VoIP.



ARGUS® status screen.

The VDSL VTU-R access shown in the example and the services Data and VoIP are active.

- <Info> Duration of activation.
- <Test> Opens test selection.
- <Stop> Deactivates the service.



- <Profile> Displays the available HTTP download profiles.

X

Server Profiles

✓

●

Server Profile 1

○

Server Profile 2

○

Server Profile 3

○

Server Profile 4

○

Server Profile 5

○

Server Profile 6

○

Server Profile 7

○

Server Profile 8

○

Server Profile 9

◀

Single Tests

IP Ping

www.argus.info

Traceroute

www.argus.info

Path MTU

www.argus.info

Port Check

Port Check Profile 1

VoIP Call

[Empty]

VoIP Call Acceptance

Automatic

VoIP Call Generator

[Empty]

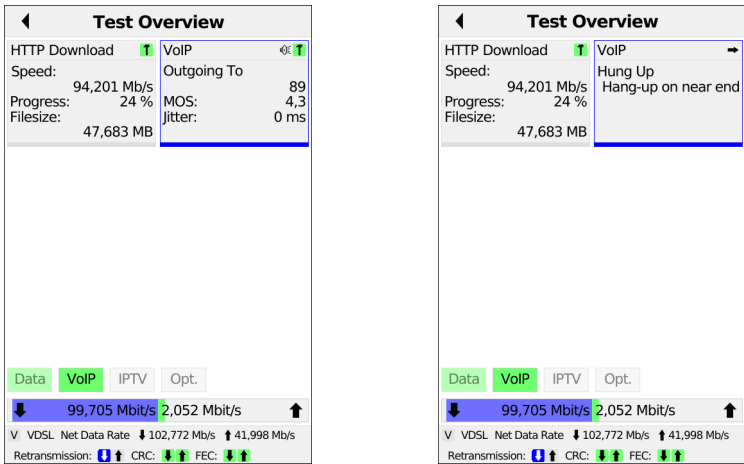
Mark the server profile:
(default is indicated with ●).

<Edit> Edits the marked profile, changes the individual parameters.

HTTP download starts automatically.

Display during HTTP download and test status: see “HTTP download” on page 140.

Select further test, e.g. VoIP call.



The ARGUS® executes an HTTP download and a VoIP call in parallel.

When more than one test is executed, you can select the tests with the left and right cursor keys or by tapping the touchscreen.
 For more than six tests, the test rows expand downwards.

- <New> Selects a new single test.
- <Stop> Stops the test, in this example VoIP call. Depending on the test, you can subsequently re-initialise it with <New>. The configuration remains unchanged.
- >Details> More information on the selected test.
- <Finish> Deletes the selected test. Prior to this action, tests can be saved.

The VoIP call is stopped (see image at right).

16 Fiber

The ARGUS® 300 combines numerous fiber test options such as OTDR and selective OPM as well as PON ID detection, PLOAM monitor, Fiber Inspection Tool, OLTS, ONT simulation and performance tests in one device and enables various tests on fiber optic interfaces.

16.1 Optical Power Meter

The ARGUS® OPM measures the optical performance of optical fibres (e.g. GPON) at various wavelengths. The power level is displayed live and can be stored in the device as a measurement protocol and QR code.

X

Access

✓

☒ Fiber Tests

☐ GPON

☐ XGS-PON

☐ Ethernet

☐ WLAN

☐ Copper Tests

☐ xDSL

☐ ADSL

☐ VDSL

X

Fiber Mode

✓

☐ Installation

☒ Optical Power Meter

☐ Fiber Inspection Tool

☐ Optical Loss Test

X

Interface

✓

☐ PON

☒ SFP1 (GPON)

☐ SFP1 (XGS-PON)

Select new fiber access and then “Optical Power Meter”. You can now select either the USB or SFP1 interface.

In this example, the ARGUS® Optical Power Meter in SFP form factor is used.



The measurement starts as soon as the optical power meter is selected in the Access menu.

You can set different wavelengths using the arrow keys.



The Power Meter measures from -60 to +6 dBm or from -50 to +16 dBm the light power of different wavelengths in a range from 850 to 1625 nm.

16.2 Selective OPM

The ARGUS® 300 has either a selective 3-fold, 4-fold or a 5-fold OPM with Through Mode. The Selective Triple OPM filters the downstream wavelengths of GPON (ITU-T G.984.3) at 1490 nm and XGS-PON (ITU-T G.9807.1) at 1577 nm and measures them simultaneously on a fiber optic line with high accuracy and unaffected by other light.

Despite this filtering, the Triple OPM can also be used to determine other wavelengths on the line, e.g. 1550 nm, by means of broadband measurement without having to change the plug. For this purpose, it offers the wavelength spectrum from 1270 to 1625 nm, which is common for standard OPMs, for measurement, which also covers the upstream wavelengths 1310 (GPON) and 1270 nm (XGS-PON). The 4- or 5-fold OPM, on the other hand, measures the downstream (1490, 1577) and upstream (1270, 1310) wavelengths filtered in through mode. The 5-fold OPM has an additional optional 1550 nm filter for video overlay measurements.

In order to be able to correctly assign the data streams for each subscriber, the OLT on the exchange side provides each ONT with a so-called PON ID. This ID and the transmission power of the OLT are read out without reconnection, and the insertion loss is also calculated directly.

The following important values are available:

- the filtered measurement of the optical power
- the broadband measurement (only 3xOPM)
- the optical attenuation of the line
- the xPON ID

In order to fully test a GPON or XGS-PON access in the event of a fault or to transfer it to continuous operation after rollout, it is necessary to set up the protocol, carry out the authentication process, check services such as VoIP or IPTV for functionality and simulate high-performance speed tests via FTP/HTTP upload and download or iperf in the same way as for other accesses.

To perform ONT simulation, see Operation on GPON or XGS-PON connection, and for IP and speed tests, see IP, VoIP and IPTV tests.



The Selective OPM must not be exposed to optical power levels greater than +18 dBm. Higher optical levels can lead to the destruction of the HW.



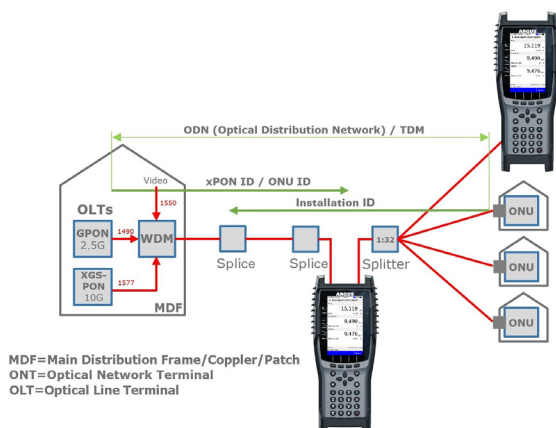
When working on and with optical lines, make sure that they are always plugged in in a perfectly clean condition. Check the cleanliness of your patch cable with an optical microscope, e.g. the Fiber Inspection Tool. Always use dust caps when jacks and cables are not in use.



When handling fiber optic cables, it is essential to observe the applicable occupational health and safety regulations.

Connection scenario Selective Optical Power Meter (5x OPM):

Connection of the ARGUS® to a PON branch



The following specifications apply to the Selective 3xOPM:

- Measuring range:
 - 1577 & 1490 nm (filtered): from -40 to +6 dBm
 - 1270, 1300, 1310, 1550, 1610, 1625 nm (broadband): from -50 to +13 dBm
- Accuracy: ± 0.5 dB
- Calibration conditions: -20 dBm, 23°C ± 5 K
- Connector: SC/APC
- Readout of PON ID and XGS-PON ID* via SC/APC, detection up to:
 - GPON ≥ -29 dBm
 - XGS-PON ≥ -30 dBm

The following specifications apply to the Selective 4x or 5xOPM with Through Mode:

- Measuring range:
 - Downstream (OLT socket):
 - 1577 & 1490 nm (filtered): from -40 to +9 dBm (max. power +18 dBm)
 - 1550 nm (filtered): from -40 to +16 dBm (max. power +18 dBm) (**only 5xOPM**)
 - Upstream (ONT socket):
 - 1310 & 1270 nm (filtered): from -35 to +10 dBm (max. power +18 dBm)
- Accuracy: filtered ± 0.5 dB
- Insertion loss: 1.5 dB
- Alien ONT detection (burst + permanent)
- Calibration conditions: -20 dBm, 23°C ± 5 K
- Connector: 2x SC/APC (ONT + OLT)
- Readout of PON ID and XGS-PON ID* via SC/APC, detection up to:
 - GPON ≥ -30 dBm
 - XGS-PON ≥ -29 dBm

* The network must provide the ID for this.

16.2.1 Selective OPM configuration

The setting of the connection type is explained in the chapter Configuring accesses, see page 27.

X

Access

✓

☒

Fiber Tests

☐

GPON

☐

XGS-PON

☐

Ethernet

☐

WLAN

☐

Copper Tests

☐

xDSL

☐

ADSL

☐

VDSL

X

Fiber Mode

✓

☒

Installation

☐

Optical Power Meter

☐

Fiber Inspection Tool

☐

Optical Loss Test

If no "3x OPM" access is preconfigured, a new access can be created via <New>. Select "Fiber tests" and then "Installation".

X

Interface

✓

☒

PON

☐

SFP1 (GPON)

☐

SFP1 (XGS-PON)

X

Mode

✓

☒

3x OPM Level (GPON / XGS-PON)

☐

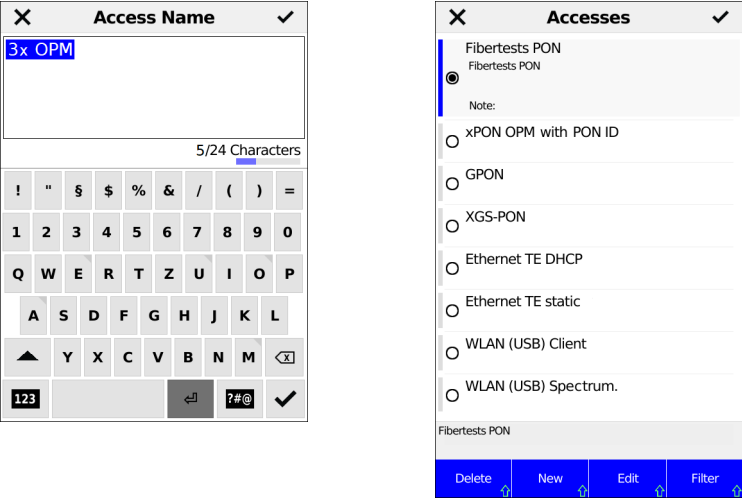
3x OPM Attenuation (GPON / XGS-PON)

☐

5x OPM (GPON / XGS-PON)

After confirming the interface "PON" you can select the 3x OPM.

Various individual tests can then be selected.



After confirming or changing the access name, it can be opened via the access menu. An access with the name "Fiber tests PON" has been created here.

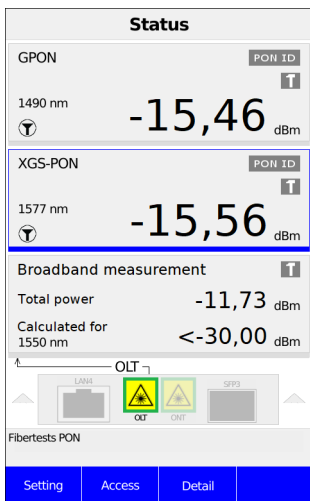
<Delete>	Delete the access
<New>	Create new access
<Edit>	Edit selected access
<Filter>	Filter access list

Note: Calling up functions via numeric keys/key combinations

Important functions/tests can be called up directly using the keys on the ARGUS® key-board. An overview of possible key combinations can be found on page 223.

16.2.2 Settings Selective OPM

When the 3x OPM (selective OPM) access is opened, measurement starts immediately. If nothing is connected yet, no or very low optical levels (e.g., <-40 dBm or <-30 dBm for broadband measurement) are displayed. If the ARGUS detects crosstalk, “-,-” is displayed.



- <Setting> Change settings
- <Access> Change access
- <Detail> Open details

The ARGUS[®] saves all relevant settings for a test with the accesses. Depending on the test situation, only the relevant settings are used. The default settings can be restored at any time.

The following settings can be made:

- Reference
- Broadband measurement
- Reference wavelength

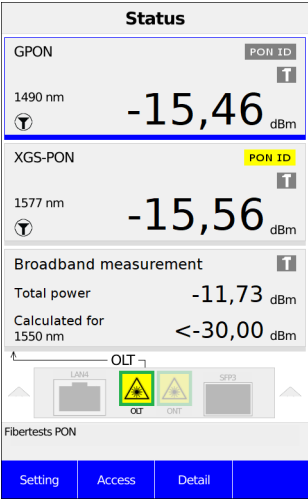
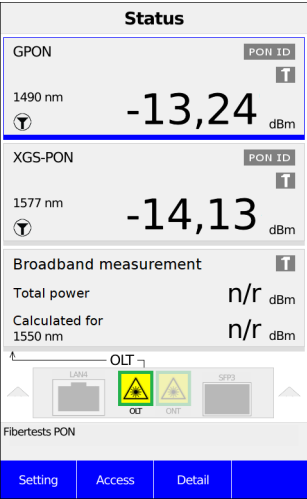


You can obtain further information on settings in the ARGUSpedia on the instrument.

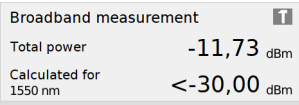
16.2.3 Starting the measurement

The measurement begins as soon as a fiber optic patch cable is plugged into the PON socket (SC/APC) at the foot end of the ARGUS®. First, the total light power (total power) is measured and displayed unfiltered using a broadband diode (broadband measurement). For the selected wavelength, a value is calculated from this and displayed (in the ex. for 1550 nm).

If an OLT, a PON remote station, is connected on the far side, it transmits at the corresponding wavelengths into the connected PON branch. This light then passes the corresponding filters for 1490 nm (GPON) and/or 1577 nm (XGS-PON).



The filtered optical level in dBm (indicated by a funnel symbol) then appears in the corresponding tile marked in blue.



Total optical power in dBm. The value includes the opt. levels for 1490 and 1577 nm. No value could be calculated for 1550 nm in this example.

For ARGUS OPM and 3xOPM:

The total power displayed corresponds to the sum of all optical signals on the line. The ARGUS converts this value to the wavelength set by the user (e.g. 1550 nm).

As the diode used measures all light components together, the result is only correct if only light of the set wavelength is actually present. If there are several wavelengths on the line, the result may be falsified.

Additionally for 3xOPM:

With the ARGUS 3xOPM, the levels for 1490 and 1577 nm can be measured separately (filtered) in addition to the broadband (unfiltered) measurement. If only these three or two of these three wavelengths are active on the fiber, the proportion for 1550 nm can be calculated by subtracting the others. The accuracy of this calculation depends on how accurate the individual values are - small measurement errors can have a greater influence on the result if large values are subtracted from each other.

<Setting>	Change settings
<Access>	Change access
<Detail>	Open details

 No PON ID found (grey).

 Readout of a PON ID has started (yellow).

 The read out PON ID is available (green).



Stylized PON socket. Attention laser radiation.



No query of the values from the OLT (grey).



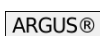
Query of values at OLT in progress (blue).



Measurement filtered.



Reference point OLT, if necessary with a transmission level transmitted by the OLT (Tx) (e.g. 3.60 dBm).



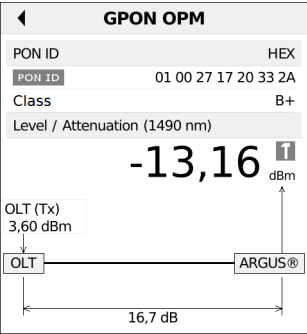
Reference point ARGUS[®]/3x OPM (Sel. OPM): The opt. level shown in large is measured at this point.

Alien Alien ONT detected (red).



Reference point: Appears only when the reference level is set. Set reference level is displayed above.

16,54 dB Attenuation calculated between the reference points in dB. Red = negative.



If you select the GPON tile by touch or via the <Detail> softkey, the GPON measurement details open (the XGS-PON tile behaves identically). Here, a PON ID was read out and displayed in hexadecimal format (other formats can be selected via the <Setting> softkey). An ODN class could be read from the OLT, in the example B+. At the reference point "ARGUS®", the following optical level was measured (in the example -13.16 dBm). The OLT has communicated a transmit level (OLT (Tx)) of 3.60 dBm. An attenuation of 16.7 dB is calculated from this between the OLT and the ARGUS®.

<Setting> Further settings possible (see below).
<Reference
Level> Setting a reference value (see below).

Settings	
Reference Level	
GPON PON ID Format	T-COM
Broadband Measurement	On
Reference Wavelength	1550 nm

Reference Level																									
GPON	0,00 dBm																								
XGS-PON	0,00 dBm																								
Broadband Meas.	0,00 dBm																								
Range: from -40,00 to 10,00 dBm																									
<table border="1"> <tbody> <tr> <td>1</td><td>2</td><td>3</td><td>A</td><td>B</td><td>C</td></tr> <tr> <td>4</td><td>5</td><td>6</td><td>D</td><td>E</td><td>F</td></tr> <tr> <td>7</td><td>8</td><td>9</td><td>:</td><td>-</td><td><X></td></tr> <tr> <td>*</td><td>0</td><td>#</td><td>,</td><td>ABC</td><td>✓</td></tr> </tbody> </table>		1	2	3	A	B	C	4	5	6	D	E	F	7	8	9	:	-	<X>	*	0	#	,	ABC	✓
1	2	3	A	B	C																				
4	5	6	D	E	F																				
7	8	9	:	-	<X>																				
*	0	#	,	ABC	✓																				

In the settings, the reference levels for GPON, XGS-PON and the broadband measurement can be defined at the same time. These must be in the value range from -40.00 to 10.00 dBm.

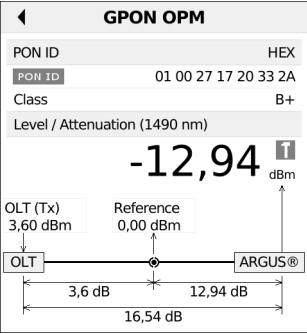
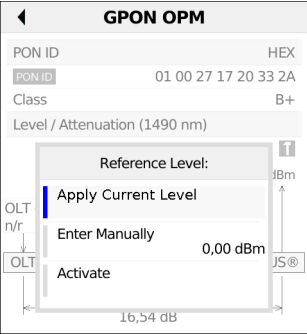
Furthermore, the following GPON PON ID formats can be selected:

- HEX
- ASCII
- T-COM
- KPN

If the broadband measurement is switched off in the settings, the corresponding tile is hidden in the status view.

The following reference wavelengths can be selected:

- 1270 nm
- 1300 nm
- 1310 nm
- 1550 nm
- 1610 nm
- 1625 nm



To set a reference value, select the <reference level> softkey. Here you can either accept the current level, enter a reference level manually (value between -40.00 dBm and 10.00 dBm) or activate / deactivate the reference level.

The defined reference level is marked with a point. Now the calculated attenuation between the OLT and the reference point as well as between the reference point and the ARGUS® can be found. Below this, the attenuation between the OLT and the ARGUS® is displayed.

The settings for XGS-PON are made in the same way as for GPON.

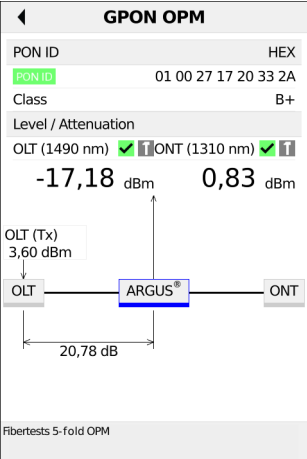
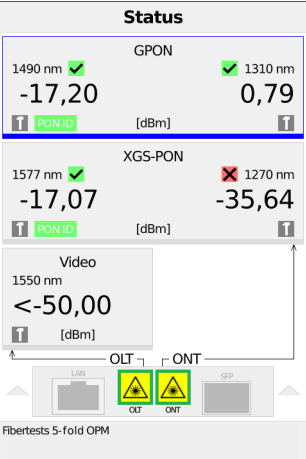
16.2.4 Measurements with the 4-fold or 5-fold OPM

The configuration of the “4-fold OPM” or “5-fold OPM” connection is the same as for the 3-fold OPM. In contrast to the 4-fold OPM, a wavelength of 1550 nm is also possible with the 5-fold OPM.

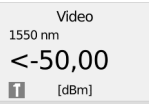
In the upstream, i.e. from the ONT, there is only a response if this was initiated by an OLT. If the line is interrupted in order to measure the downstream level, the ONT is simultaneously disconnected and silenced. The only way to reliably measure the upstream level is therefore to loop into the line in a kind of through mode. This requires two PON ports on the measuring device: one for the OLT side (down) and one for the ONT side (up). It is particularly important to influence the signal as little as possible. If possible, the insertion loss (IL) should not exceed 1.5 dB. For measurements with the 5-fold OPM, the OLT socket must therefore be connected to the fiber optic connection; the ONT socket is connected e.g. to a second ARGUS® or an ONT.



If an unauthorized terminal device that interferes with the entire PON line (so-called Alien-ONT) is found during the measurement (here: with the 5x OPM), this is indicated by the display of the word "Alien" highlighted in red.



When measuring (here: with the 5-fold OPM), the values for OLT and ONT are displayed separately.



In contrast to broadband measurement with the 3-fold OPM, a video overlay can be provided via broadcast signal for TV applications, for example, with the 5-fold OPM over 1550 nm - only in the downstream direction.

16.3 Single Tests

16.3.1 PON Level Check

The PON level check is a quick test for 1 fiber without necessary entries. There is no login to the OLT. The measured values are continuously updated.

Settings in access mode PON level check:

In the example, the PON level check was configured and selected as described in chapter "15.1.2 Settings Selective OPM" (see page 150).

X

Access

✓

☒ Fiber Tests

☐ GPON

☐ XGS-PON

☐ Ethernet

☐ WLAN

☐ Copper Tests

☐ xDSL

☐ ADSL

☐ VDSL

X

Fiber Mode

✓

☒ Installation

☐ Optical Power Meter

☐ Fiber Inspection Tool

☐ Optical Loss Test

X

Interface

✓

☒ PON

☐ SFP1 (GPON)

☐ SFP1 (XGS-PON)

X

Mode

✓

☒ 3x OPM Level (GPON / XGS-PON)

☐ 3x OPM Attenuation (GPON / XGS-PON)

☐ 5x OPM (GPON / XGS-PON)

X

Single Tests

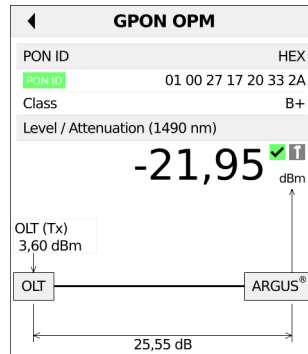
✓

☒ Only Status (PON Level Check)

☐ PON Installation

☐ PLOAM Monitor

If the access is now started, the level is automatically displayed:



<Access Parameters> Set PON ID format

The following PON ID formats can be selected under Access parameters:

- HEX
- ASCII
- T-COM
- KPN



You can obtain further information on the settings in the ARGUSpedia on the instrument.

The PON level check displays the following PON ID / port information:

- Rx Level
- Tx Level of the OLT
- Attenuation
- Class

16.3.2 PON Installation

The PON installation test is a guided measurement sequence with calculation of the set-point attenuation, automatic OK/n.OK evaluation and storage as a PDF measurement report.

Settings in access mode PON Installation:

In the example, the access PON Installation was configured and selected as described in chapter "15.1.2 Settings Selective OPM" (see page 150).

✕
Single Tests
✓

☐ Only Status (PON Level Check)

☒ **PON Installation**

☐ PLOAM Monitor

✕
Summary
✓

Fiber Tests Installation PON

Mode: 3x OPM

Measurement: PON Installation

Note:

✓: Save and quit wizard.

✕: Step back.

<Access Parameters>

Set PON ID Format

The following PON ID formats can be selected under Access parameters:

- HEX
- ASCII
- T-COM
- KPN



You can obtain further information on the settings in the ARGUSpedia on the instrument.

←

PON Installation

✓

Installer Last Name

D

Installer First Name

A

Company Name

Intec

Street

[Empty]

ZIP/City

[Empty]

Phone Number

[Empty]

✕

Wavelength

✓

☒ GPON (1490 nm)

☐ XGS-PON (1577 nm)

When you start the PON installation test, you first enter the employee name and the company address. Then select the wavelength.

✕

PON Installation

✓

Job Number

0

Area Code

0

Cabinet

0

Branch

0

AP

0

✕

Transmit Power

✓

☒ Auto OLT

☐ User/Manual

The customer-specific data can now be entered: job number, area code, cabinet, branch and AP. For the transmit power, you can choose between Auto OLT and user/manual (a value between 0.0 dBm and 9999.9 dBm is possible here).

✕

Max. Allowed Attenuation

✓

28.5

dB

Please enter a value between
0,0 dB and 99,9 dB

1

2

3

A

B

C

4

5

6

D

E

F

7

8

9

:

-

✕

*

0

#

,

ABC

✓

✕

No. of Fibers

✓

1

Please enter a value between
1 and 64

1

2

3

A

B

C

4

5

6

D

E

F

7

8

9

:

-

✕

*

0

#

.

ABC

✓

The maximum permissible attenuation is then entered (a value between 0.0 dB and 99.9 dB is possible here). Finally, enter the number of fibers (1 to 64 fibers are possible).

◀

PON Ready

Are all fibers properly connected?

◀

PON Installation

Target Attenu. to 28.5 dB

Fiber 1	- dB
PON ID	---

PON-Installation PONGPON (1490 nm)
0/1

Measurement

Save

After checking whether all fibers are properly connected, the measurement can be started.

<Measurement>

Measurement is started.

◀

PON Installation

OLT port / PON ID
correct?

01 00 27 17 20 33 2A

◀

PON Installation

Target Attenu. to 28.5 dB

Fiber 1	✓	24,90 dB
PON ID	01 00 27 17 20 33 2A	

After querying whether the OLT port / PON ID are correct, the measurement result is displayed.

16.3.3 PLOAM Monitor

The PLOAM monitor allows you to read out the PLOAM message from the PON ID.

Settings in access mode PLOAM Monitor:

In the example, the access PLOAM Monitor was configured and selected as described in chapter "15.1.2 Settings Selective OPM" (see page 150).

X

Single Tests

✓

☐ Only Status (PON Level Check)

☐ PON Installation

☒ PLOAM Monitor

X

Summary

✓

Fiber Tests Installation PON

Mode: 3x OPM

Measurement: PLOAM Monitor

Note:

✓: Save and quit wizard.

X: Step back.

<Access Parameters> Set PON ID format

The following PON ID formats can be selected under physical parameters:

- HEX
- ASCII
- T-COM
- KPN



You can obtain further information on settings in the ARGUSpedia on the instrument.

X PLOAM Monitor			
Time		Info (DS)	
11:57:00:000		No Message	
11:57:00:020		Upstream Overhead	
11:57:00:030		Extended Burst Length	
11:57:00:040		No Message	
11:57:02:430		PON ID	
11:57:04:150		No Message	
11:57:04:160		PON ID	
11:57:04:180		No Message	
11:57:05:810		PON ID	
11:57:05:820		No Message	
GPON (1490 nm)			
PON ID: 01 00 27 17 20 33 2A		Class:	B+
ONU List	Reset		

X PLOAM Monitor			
Time		Info (DS)	
11:57:00:000		No Message	
11:57:00:020		Upstream Overhead	
11:57:00:030		Extended Burst Length	
11:57:00:040		No Message	
11:57:02:430		PON ID	
GPON (1490 nm)			
PON ID: n/r		Class:	n/r
ONU List	Reset		

The PLOAM monitor displays the PLOAM message from the PON ID.

The <onu List> soft key displays the individual serial numbers (S/N), their status, the number of resynchronizations, and the ONT IDs.

16.4 Optical Loss Test

With the Optical Loss Test software option and the Optical Light Source, the ARGUS® 300 can be upgraded to an Optical Loss Test Set (OLTS). An OLTS calculates the signal loss (attenuation) in fiber optic cables and evaluates the quality of data transmission. It enables precise calculations of optical attenuation in both directions to support installation, maintenance and troubleshooting in fiber optic networks.

The Optical Loss Test Set is available for the ARGUS® 300 with 3xOPM. With the OLTS, a level measurement for an adjustable wavelength with attenuation calculation in relation to a reference value is possible. The Optical Light Source is available with either two (1310 & 1550 nm) or four wavelengths (1310, 1490, 1550 & 1625 nm).

XAccess✓

☒ Fiber Tests

☐ GPON

☐ XGS-PON

☐ Ethernet

☐ WLAN

☐ Copper Tests

☐ xDSL

☐ ADSL

☐ VDSL

XFiber Mode✓

☐ Installation

☐ Optical Power Meter

☐ Fiber Inspection Tool

☒ Optical Loss Test

First, a new access is created in the connection menu by first selecting Fiber tests and then Optical Loss Test.

✕

Interface

✓

☐ SFP1

☒ PON

✕

Access Name

✓

Optical Loss Test PON

21/24 Characters

! " § \$ % & / () =

1 2 3 4 5 6 7 8 9 0

Q W E R T Z U I O P

A S D F G H J K L

▲ Y X C V B N M ⌫

123 ⌵ ?#@ ✓

After selecting the PON interface, an access name is suggested, in this case Optical Loss Test PON.

✕

Summary

✓

Optical Loss Test PON

Note:

✓ : Save and quit wizard.
✕ : Step back.

✕

Accesses

✓

☒ Optical Loss Test PON

☐ Optical Loss Test PON

Note:

☐ Fibertests 3x OPM

☐ Fibertest Installation

☐ FIT SM APC

☐ PLOAM Monitor

Once you have confirmed the name and saved the access, the access is created and can be selected in the access menu.

Optical Loss Test

Wavelength:

1550 nm

Level [dBm]

Attenuation [dB]

Ref: -5.00

Rx: <-50.00

n/a

No OLS found!

LANA

PON

SFP3

Optical Loss Test PON

Reference

Wavelength

Stop

Optical Loss Test

Wavelength:

1310 nm

Level [dBm]

Attenuation [dB]

Ref: -5.00

Rx: -5.78

0.78

Wavelength:

1490 nm

Level [dBm]

Attenuation [dB]

Ref: -5.00

Rx: -5.75

0.75

Wavelength:

1550 nm

Level [dBm]

Attenuation [dB]

Ref: -5.00

Rx: -6.24

1.24

Detected OLS

Device

FHS2Q02F

Firmware

1.1

Optical Loss Test PON

Reference

Stop

The Optical Light Source must first be connected to the ARGUS® using a patch cable. Now press the  key on the OLS.

The optical light source has been recognized. It transmits an identifier that the ARGUS® can recognize and evaluate. The OLS always transmits with the same fixed transmission power (-5 dBm ±0.5 dB). The ARGUS® automatically recognizes the wavelength at which it is transmitting and displays the attenuation. The OLS can switch through the wavelengths one after the other.

Reference Level

1310 nm

-5.00

dBm

1490 nm

-5.00

dBm

1550 nm

-5.00

dBm

Range: from -50.00 to 10.00 dBm

1

2

3

A

B

C

4

5

6

D

E

F

7

8

9

:

-

X

*

0

#

.

ABC

<Reference> Accept current reference level, enter manually or deactivate.
A value range from -50.00 to 10.00 dBm can be set.

16.5 Fiber Inspection Tool

The Fiber Inspection Tool (FIT) is a USB video microscope for optical fiber inspection that detects scratches and defects on optical fibers.

✕

Access

✓

☒

Fiber Tests

☐

GPON

☐

XGS-PON

☐

Ethernet

☐

WLAN

☐

Copper Tests

☐

xDSL

☐

ADSL

☐

VDSL

✕

Fiber Mode

✓

☐

Installation

☐

Optical Power Meter

☒

Fiber Inspection Tool

☐

Optical Loss Test

✕

Connector Type

✓

☒

SM PC RL >= 45dB

☐

SM APC

☐

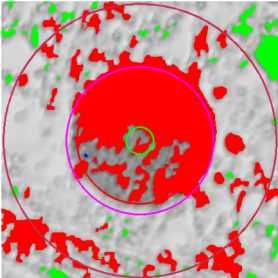
SM PC RL >= 26dB

☐

MM PC

Select new fiber access and then Fiber Inspection Tool. Now select the connector type (here SM PC RL >= 45 dB).

Fiber Inspection Tool



Result

SM PC RL >= 45dB

Fail

Zone	Scratch	Defect
A:Core	0	1
B:Cladding	0	5
D:Contact	0	52

Detail

Access

Save

Video

◀ Fiber Inspection Tool

A: Core Defect 0 μm - 25 μm	0
Not allowed	0
B: Cladding Defect 25 μm - 115 μm	2
No limit < 2 μm	0
5 between 2 μm and 5 μm	2
Not allowed > 5 μm	0
C: Adhesive Defect 115 μm - 135 μm	0
No limit	0
D: Contact Defect 135 μm - 250 μm	64
Not allowed > 10 μm	6
A: Core Scratch 0 μm - 25 μm	0
Not allowed	0
B: Cladding Scratch 25 μm - 115 μm	0
No limit <= 2 μm	0
Not allowed > 3 μm	0

Image

If the Fiber Inspection tool is now selected in the access menu, the measurement starts immediately. The current video image is automatically analyzed and the number of defects and scratches is displayed in an overview table sorted by zones (core, cladding, adhesive, contact).

<Details> Detailed display of defects and scratches (see image on the right).



Pass/fail evaluation is performed according to IEC 61300-3-35. The minimum particle size is 0.5 μm .



There are different adapters (tips) available for PC, UPC, APC and more, ask our support.

17 OTDR

An OTDR (Optical Time Domain Reflectometer) is the most accurate instrument for detecting fiber defects. It measures line and event attenuation, and from this, together with the propagation time of the reflected pulse, can determine the line length, splices and connectors. When measuring with two wavelengths, a bending radius violation (macro bend) can be detected and localized. The OTDR in the ARGUS® F00 is available with 1310 + 1650 nm or with 1310 + 1550 nm.

Using our event table, events are not only precisely characterized (connector, splice, bend, etc.), but also located with meter-level precision. A list of alarms shows quickly detected problems on the line. Simplified graphical operation allows each individual event to be selected by touch.

Other important parameters are also provided for the overall and partial path, such as the optical return loss (ORL) and the insertion loss (IL). The former provides information on how well the connector attenuates unwanted reflections - the value should be as high as possible. The second value indicates how well the useful signal can be inserted into the fiber - this value should be as low as possible.

The narrow pulse widths of at least 5 ns enable the detection of events at close range. In addition, the attenuation between two events that are only 3.5 m apart can be measured. The lead-in fiber shifts the dead zones of the device connector so that the first connector of the section under test can be evaluated.



When working on and with optical cables, make sure that they are always plugged in in a perfectly clean condition. Check the cleanliness of your patch cable with an optical microscope, e.g. the Fiber Inspection Tool from ARGUS®. Always use dust caps when sockets and cables are not in use.



When handling fiber optic cables, it is essential to observe the applicable health and safety regulations.



Measuring at a wavelength of 1310 or 1550 nm must not be carried out in a live system with the same wavelength. In live systems, you should always work with 1650 nm.



The OTDR from ARGUS® is supplied with a portsaver, which protects the actual socket of the OTDR. If the portsaver (0 dB attenuator) is worn, it can be easily replaced. Replacing the actual OTDR socket is time-consuming and requires the device to be sent in.



We generally recommend always using an appropriate lead-in fiber to ensure that the first connector on the section being tested can be clearly and reliably identified. If the attenuation of the connector at the end of the fiber is to be measured, a trailing fiber must be used to bring the signal level back within the range of a Rayleigh backscatter curve. Lead-in and trailing fibers can be supplied upon request.

The following specifications apply to our OTDR:

- Smart Auto, Expert or Real Time Mode (up to 4 Hz)
- Wavelengths: 1310 and 1650 nm (± 20 nm) or 1310 and 1550 nm (± 20 nm)
- Dynamic range¹: 20 dB at 100 ns; 37 dB at 1310 nm, 20 μ s; 35 dB at 1650 nm, 20 μ s
- Event dead zone²: 0.9 m
- Attenuation dead zone³: 3,5 m
- PON dead zone⁴: ≤ 25 m; typical 20 m
- Pulse width: 3, 5, 10, 20, 30, 50, 100, 200, 300, 500 ns; 1, 2, 3, 5, 10, 20 μ s
- Range settings: 250, 500 m; 1, 2, 5, 10, 15, 20, 40, 80, 160, 240 km*
- Data points: up to 300,000 points
- Data point spacing⁵: 5 cm to 32 m
- Distance accuracy: $\pm (1 \text{ m} + 0.003 \% * \text{distance} + \text{resolution})$
- Linearity: $\pm 0.05 \text{ dB/dB}$

* Max. range depends on fiber type (attenuation/km)

¹ SNR=1, 3-minute averaging

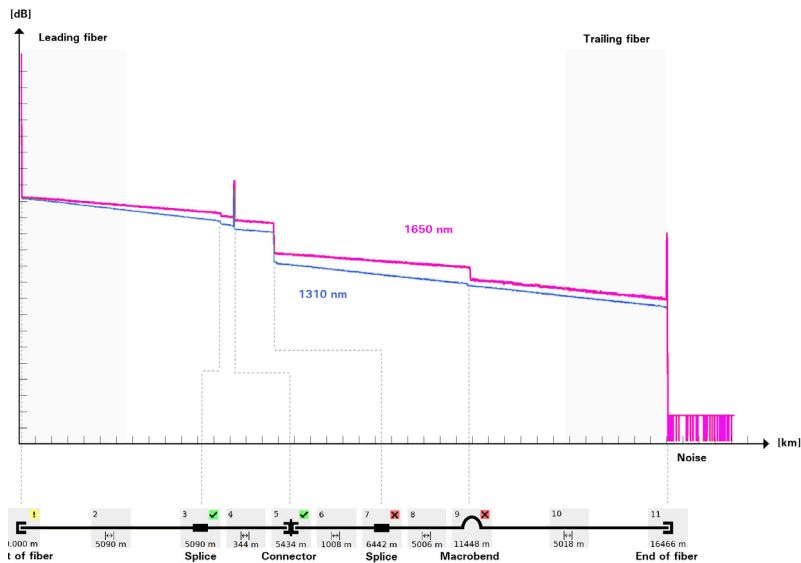
² Maximum distance between two points 1.5 dB down each side of a trace spike caused by an event with a -45 dB (or smaller) reflectance. Test pulse width is 5 ns.

³ Maximum distance from start of a -45 dB (or smaller) reflectance to the point where the trace returns to and stays within ± 0.5 dB of backscatter. Test pulse width is 5 ns.

⁴ Recovery to within 0.5 dB of backscatter after 1:16 splitter (≤ 13 dB loss) using 100 ns pulse width.

⁵ Expert mode, 3 or 5ns pulse width, Range ≥ 15 km

Example graph of an OTDR measurement:



17.1 Create an OTDR access

X

Access

✓

☒ Fiber Tests

☐ GPON

☐ XGS-PON

☐ Ethernet

☐ WLAN

☐ Copper Tests

☐ xDSL

☐ ADSL

☐ VDSL

X

Fiber Mode

✓

☐ Installation

☐ Optical Power Meter

☒ Optical TDR

☐ Optical Fault Finder

☐ Fiber Inspection Tool

☐ Optical Loss Test

If no "OTDR" access is preconfigured, a new access can be created via <New>.

Select new Fibertests access and then Optical TDR.

X

Access

✓

☐ Optical Loss Test

☒ Optical TDR

Optical TDR

Note:

☐ GPON

☐ xDSL xTU-R TE

☐ Ethernet LAN3 IP-based

☐ XGS-PON

☐ Fibertests Inst. XGS-PON

☐ G.fast 2D. FTU-C

Optical TDR

Delete

New

Edit

Filter

Once the access has been created, it can be opened via the access menu. An access with the name "Optical TDR" has been created here.

<Delete>	Delete access
<New>	Create new access
<Edit>	Edit selected access
<Filter>	Filter access list

Note:

Calling up functions via numeric keys/key combinations.

Important functions/tests can be called up directly using the keys on the ARGUS® keypad. An overview of possible key combinations can be found on page 239.

17.2 OTDR settings

After opening the OTDR access, one of three different OTDR tests can be selected, configured and started.

The following tests can be selected:

Auto. OTDR

With the automatic OTDR, the ARGUS® does everything automatically. Tests are carried out on all wavelengths and with all pulse widths. This test takes the longest, but delivers the best results. An event table and a graph are available.

Manual OTDR

The Manual OTDR is a freely configurable OTDR. Pulse width, fiber length, averaging time and much more can be configured individually. This allows you to work in a targeted and time-saving manner. An event table and a graph are available.

Real-Time OTDR

Real-time OTDR measures in real time. There is only one graph that shows changes on the fiber in real time. This makes it possible to detect temporary events or changes, for example. It can also be used to identify which fiber you are on.

OTDR

Auto. OTDR

Launch Quality Check: Aus
Fiber Type: G.652.A/B
Pass/Fail: ITU-T G.671

Manual OTDR

Wavelength: 1310/1650 nm
Pulse Width: 5 ns (0,5 m)
Average Time: 5 s
Trace Length: 1 km

Real-Time OTDR

Wavelength: 1650 nm
Pulse Width: 10 ns (1 m)
Trace Length: 1 km
Refresh Rate: 1 Hz



Optical TDR Active 1.2
OTDR-Profil 1

In this example, the Auto OTDR test was selected.

Auto. OTDR

Fiber Type G.652.A/B
Pass/Fail ITU-T G.671
Launch Quality Check ☒
Launch Fiber 0,000000 km
Tail Fiber 0,000000 km

Fiber Types

☒ G.652.A/B
☐ G.652.C/D
☐ G.653.A/B
☐ G.654.B/C
☐ G.655.C/D/E
☐ G.656
☐ G.657.A1/A2
☐ G.657.B2/B3
☐ Fiber Profile 9

If you now select the <Settings> softkey, you can change the fiber type, for example.

- <Settings>

Change settings
- <Access>

Change access

The ARGUS® saves all relevant settings for a test with the connections. Depending on the test situation, only the relevant settings are used. The default settings can be restored at any time (see page 287).

The following OTDR settings can be made:

- Wavelength (Manual OTDR & Real-Time OTDR only)
- Trace Length (Manual OTDR & Real-Time OTDR only)
- Pulse Width (Manual OTDR & Real-Time OTDR only)
- Averaging Time (Manual OTDR only)
- Refresh Rate (Real-Time OTDR only)
- Fiber Type
- Pass/Fail (Auto OTDR & Manual OTDR only)
- Launch Quality Check
- Launch fiber
- Tail fiber
- Profile name



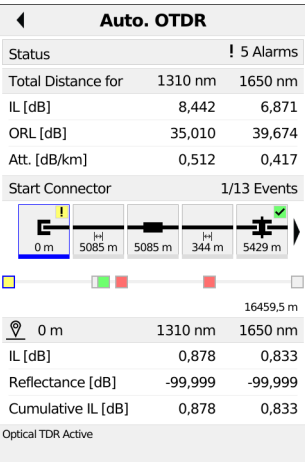
You can obtain further information on settings in the ARGUSpedia on the instrument.

17.3 Starting the OTDR measurement

After opening the OTDR connection, one of three different OTDR tests can be started.



If the launch quality check has been activated in the settings, a notification appears if the launch quality is poor. Once the problem has been successfully resolved, the selected OTDR test can be started.



The example shows an automatic OTDR measurement (Auto. OTDR).

The overall status shows the number of invalid events on the line (here: 5 alarms). The measurement results of the total distance per wavelength are displayed below:

- IL [+dB]: Insertion Loss
- ORL [+dB]: Optical return loss
- Att. [+dB/km]: Ø attenuation per kilometer

The graphical line visualization indicates the type and number of the event (here: start: connector, 1/13 events) and displays these using symbols. This is followed by a classification in the line context.

The following symbols can be displayed:

	Start connector The connection between OTDR and patch cable or launch cable.
	Fiber section between two events.
	Fusion splice: Fusion between two fibers by heat. Gainer: Signal amplification at the splice due to different backscatter coefficients.
	Connector Connects two fibers together mechanically.
	Macro bend Physical load on the fiber. The attenuation caused increases with the wavelength. In order to distinguish a splice from a bend, measurements must be taken with 2 different wavelengths.
	Macro bend on the connector
	Splitter, here: 1:8.
	Fiber end/break End point of the fiber. The end reflection depends on the fiber, the break shape and the ambient conditions.
	Evaluation ok.
	First threshold value exceeded.
	Second threshold value exceeded.
	Evaluation ok.
	First threshold value exceeded.

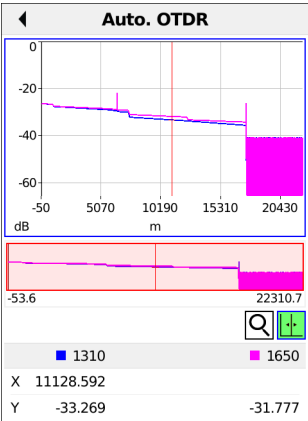
	Second threshold value exceeded.
	Selected event.
	Unmarked event.
	Length of section.
	Position in relation to the total distance.
	Position.

The last section displays the measurement results per wavelength for the selected track event:

- IL [+dB]: Insertion Loss
- Reflectance [-dB]: Reflection of the selected event
- Cumulative IL [+dB]: Cumulative insertion loss

<Alarms>	Change to detailed view of critical events
<Graph>	Display of the graphical evaluation
<Restart>	Restart measurement
<Finish>	Finish measurement

Alarms			
1: Start Connector			
 0 m	1310 nm	1650 nm	
IL [dB]	0,878 	0,833 	
Reflectance [dB]	-99,999 	-99,999 	
7: Splice			
 6439,22 m	1310 nm	1650 nm	
IL [dB]	2,078 	1,753 	
Reflectance [dB]	n/r	n/r	
9: Macrobend			
 11444,3 m	1310 nm	1650 nm	
IL [dB]	0,029 	1,153 	
Reflectance [dB]	n/r	n/r	



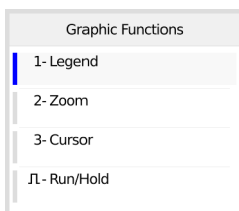
After selecting the <Alarms> softkey, the alarms that have occurred are displayed in the detailed view (see image on the left). The pass/fail evaluation of the events is carried out

per event and per wavelength 1310nm/1650nm. Different results may occur due to the threshold values.

After selecting the <Graph> softkey, the graphical evaluation is displayed (see image on the right).

Display of dB per meter:

- X-axis: dB
- Y-axis: meters



Graphic functions:

The graphic functions such as zoom and cursor are used to analyze the graphs in detail :



Exit menu without making changes.



This numeric key displays the legend.



This number key can also be used to switch the zoom function on and off within a graph.



This number key can be used to switch the cursor function on and off.



Run/Hold function for real-time analyses (Real-Time OTDR).



Automatically switches the view to the next graph and applies all the settings already made for these graphs.

If the symbol marked on the display is black and white (), it has not yet been zoomed.

If it has been zoomed, the symbol is green and black ().

<Zoom(y) +> Magnifies the center section of the graph (100%).

<Zoom(y) -> Reverses <Zoom(y)+> and undoes the magnification.



The zoomed area can be scrolled through horizontally using the cursor keys or by tapping on the bottom graphic.



The zoomed area can be scrolled through vertically using the cursor keys or by tapping on the bottom graphic.



Press the X button to return to the unzoomed view.

The cursor function is used to precisely measure the graphs.



Display cursor directly.

After starting the cursor function, a red cursor line is displayed in the middle of the graphic.

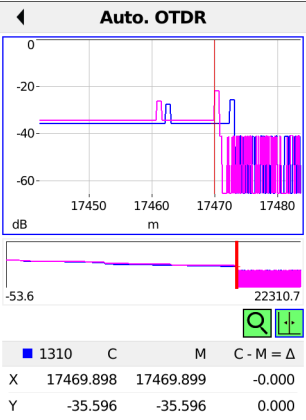
<Cursor> The cursor softkey can be used to switch the cursor on and off as required once it has been activated via the menu.



Use the "left" and "right" cursor keys to move the cursor to any point on the graph to measure it. To do this the upper graph must be marked with a blue frame. A short pressing of the cursor key moves the cursor one position further in the graph. If you hold down the cursor key, the steps that the cursor moves along the graph become larger and larger.



Use the vertical cursor keys to move the blue frame to the lower or upper graphic.



The zoom function and the cursor function can also be used in combination. However, the starting position of the cursor can vary. The graphic functions are available for all graphs. If the cursor is displayed and the zoom is used at the same time, both symbols are highlighted in green.

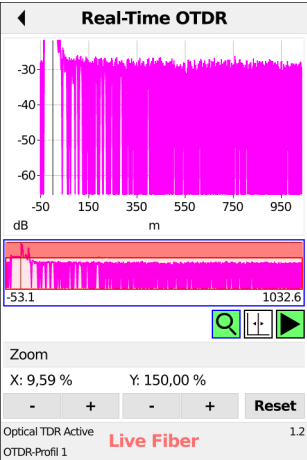
Live Fiber Detected

A live fiber was detected. Do you want to skip 1310 nm and continue with 1650 nm?

Optical TDR Active
OTDR-Profil 1

Live Fiber

1.2



If a live fiber is detected, this is displayed in red. This measurement is only possible with a wavelength of 1650 nm.

18 Operation on GPON or XGS-PON accesses

In conjunction with the ARGUS® GPON or XGS-PON or GPON+XGS-PON ONT, measurements can be performed directly on the optical fiber.

With an existing IP connection, all important services (including performance, speed and triple play tests) can be tested with the ARGUS®, either via IPv4 or IPv6.

The ARGUS® supports the following access modes:

GPON TE	Registration at the OLT Display of Rx level, PON ID, etc. Service tests such as speed tests, VoIP calls possible
GPON Bridge	Bridge Mode (GPON Bridge) s. Seite 248. Connection of the ARGUS® GPON ONT to the optical fiber. The ARGUS® replaces the modem and the PC.
GPON Router	Router Mode (GPON Router) s. Seite 250. Connection of the ARGUS® GPON ONT to the optical fiber. The ARGUS® replaces the modem and router.



The individual tests record and store data (e.g. traces of IP data). It is the user's responsibility to comply with the applicable legal requirements.



Never connect the GPON Transceiver Module directly to the OLT (max. - 8 dBm) without an attenuator. Danger of destruction!



In principle, the operating temperature range set out in "Technical data" (see S. 19) applies for operation. For ambient temperatures just below +50 °C, extended operation in high-performance modes can trigger the temperature-dependent ARGUS® protection functions described in the safety information (see S. 11).

18.1 Configuring a GPON TE

The setting of the connection type is explained in the chapter Configuring accesses, see page 27.

Accesses		✓
☐	Optical Loss Test	
☐	Fibertests Inst. GPON	★
☒	GPON	★
	GPON SFP1 ONT TE	
	Profile: PPP VLAN 7/8	
	Note:	
☐	xDSL xTU-R TE	
☐	Ethernet LAN3 IP-based	
☐	XGS-PON	★
☐	Fibertests Inst. XGS-PON	
☐	G.fast 2D. FTU-C	•

GPON Settings	
ONT SN/Modem ID	INGE3C010370
Password/Inst. ID	[Empty]
Req. ONT SN/Inst. ID	Off
Equipment ID	ARGUS300
SW Version	5.12.06
Interop Bits	0
Plug-in Type	1 GBASE-T Ethernet
MAC Address	Default
Gratuitous ARP	☒
PON ID Format	T-COM

The following settings can be made under physical parameters:

- ONT SN/Modem ID
- Password/Inst. ID
- Req. ONT SN/Inst.-ID
- Equipment ID
- SW Version
- Interop Bits
- Plug-in Type
- MAC Address
- Gratuitous ARP
- PON ID Format



You can obtain further information on settings in the ARGUSpedia on the instrument.

Establishing the GPON connection

Password/Inst. ID

0/10 Characters

1	2	3	4	5	6	7	8	9	0
q	w	e	r	t	z	u	i	o	p
a	s	d	f	g	h	j	k	l	
△	y	x	c	v	b	n	m	<X>	
123								?#@	✓

Status

Test **T** 0 → 0 **X** 0

Data	VolP	IPTV	Opt.
→	?	?	?

V4

GPON Operation		✓
SFP1	PON ID	76G1-01-1
	Rx Level	-32.2 dBm
	Attenua...	35.3 dB

OLT-FSZ	Slot	Port
76G1	01	1
Vendor ID		
Equipm. ID		
ONT ID		44
Level [dBm]	Rx	Tx
OLT	-	3,1
ONT	-32,2	1,7

After selecting the GPON access, the password or the installation ID is requested. The entry is saved and proposed again at the next startup.



A password or installation ID is required for active registration at the OLT. If necessary, a rediscovery must be performed beforehand so that a "new" ONT can log in.

As soon as the connection is established (LED Sync/1 continuously illuminated and green check mark in the layer-1 box), the ARGUS® determines the GPON connection parameters and displays these below the layer-1 box.

The layer-1 box displays the following information:

- Access and access mode
- PON ID
- Rx level
- Attenuation

GPON Phys. Param.			
State		Operation	
	OLT-FSZ	Slot	Port
	76G1	01	1
Vendor ID			
Equipm. ID			
ONT ID			44
ONT	Rx		Tx
Level [dBm]	-32,2		1,8
Power [mW]	0,0		1,5
OLT			Tx
Level [dBm]			3,1
Class			B+
AES			n/r
Line			
Attenuation [dB]			35,3

By selecting the <Info> softkey, the long view (see above) can be opened.
By selecting the <Sniffer> softkey, the logged-in ONTs or the login attempts of other ONTs can be displayed.
Selecting the <SFP> softkey opens a detailed view of the SFP parameters. Swiping up and down on the touchscreen or pressing the up and down cursor keys displays additional parameters.

SFP Parameter	
Vendor	
Name	intec GmbH
OUI (hex)	00 00 00
P/N	ARGUS GPON ONT
Rev.	1.0
S/N	INGE10128A19
Calibration Date	Not Calibrated
Specifics	
Wavelength	1310 nm
Transceiver	GPON
Encoding	NRZ
Medium	optical

GPON Info	
Detected Serial Numbers	
A16x11111144	ONT ID: 44

Selecting the <Trace> softkey opens a detailed view of the GPON Status Trace.

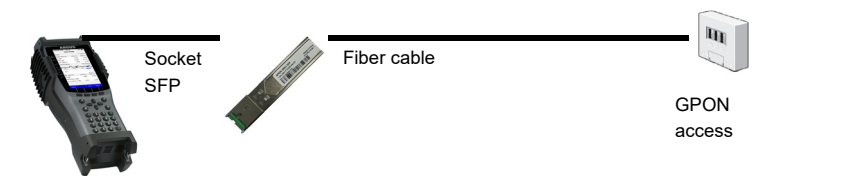
Trace		
Time		Info
10:50:00:000	--	Detecting
10:50:27:390	--	Initial
10:50:27:880	--	Standby
10:50:33:370	--	Serial Number
10:50:34:260	--	Ranging
10:50:34:460	--	Operation
10:50:34:510	--	Standby
10:50:39:440	--	Serial Number
10:50:40:330	--	Ranging
10:50:40:530	--	Operation



You can obtain further information on settings in the ARGUSpedia on the instrument.

18.2 The ARGUS® in Access Mode GPON bridge

In this case, the ARGUS® replaces the modem and the PC. It establishes a GPON connection and determines all relevant GPON connection parameters. The ARGUS® shows the GPON connection parameters on the display and optionally saves them after the connection is terminated.



Configuring the access mode GPON bridge

In the example, the GPON bridge mode was configured and selected as described in chapter "5 Configuring accesses" (see page 27).

X

Access Mode

✓

☐ GPON TE

☒ GPON Bridge

☐ GPON Router

Status

Test 1 0 → 0 X 0

Data X

VoIP X

IPTV X

Opt. X

Bridge →

V4

V4

GPON Power Down SFP1 →

LAN2 Autoneg. → On

ONT Serial Number A16x111111144

MAC Address Default

PON ID Format T-COM

Req. ONT SN/Inst. ID Off

SFP1

LAN1

LAN2

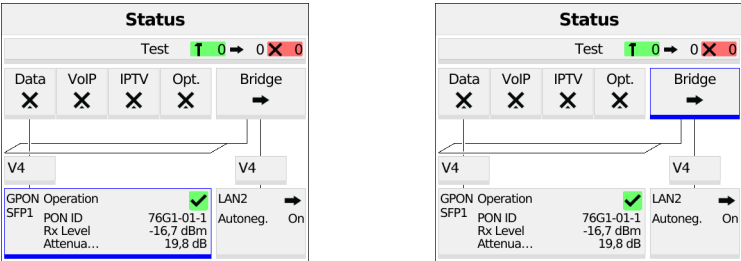
LAN3

- <Edit> GPON settings
- <Access> Change access
- <Start> Start GPON



Use the cursor keys or the touch display to switch to Bridge.

Establishing the GPON connection

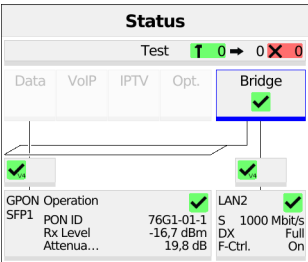


The GPON connection is established (green check mark in Layer 1 box).

<Edit> Bridge/Router parameter settings

The bridge can also be activated directly. If layer 1 has not yet been set up, it is automatically set up as well.

Establishing the GPON bridge



<Stop> Deactivates bridge mode.

<Info> Displays the activity of bridge mode.



Displays the connection parameters.

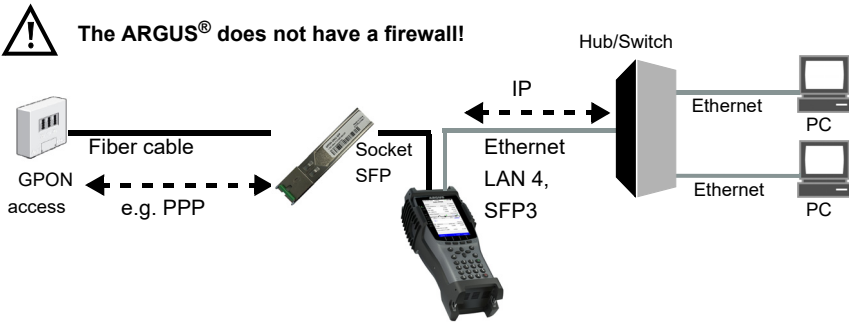


No tests are available when bridge mode is active.

Switches to the layer-1 box and other elements.

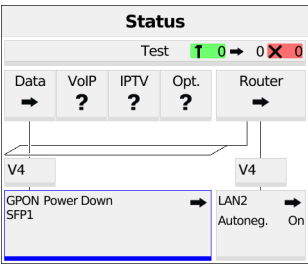
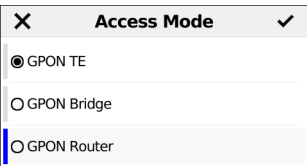
18.3 The ARGUS® in access mode GPON router

In router mode, the ARGUS® replaces both the modem and the router, so that multiple PCs can access a network connection (via a hub/switch). The IP addresses of the network are either issued statically or the ARGUS® is designated the DHCP server and assigns IP addresses to the connected PCs.

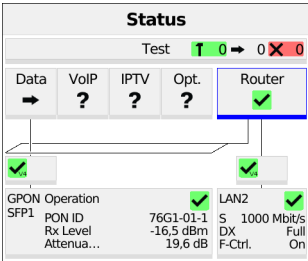
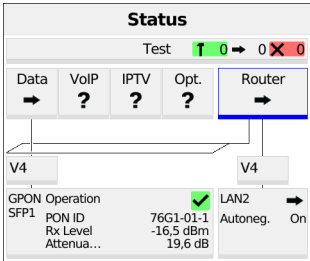


Settings in access mode GPON router

In this example, GPON router mode is configured and selected as described in Chapter 5, “Configuring accesses” (see page 27).



- <Edit> GPON settings
- <Access> Change access
- <Start> Start GPON



The GPON connection is established (see picture on the left).



Switch to router with the cursor keys or using the touch screen.



No tests are available when router mode is active.

The router can also be activated directly. If layer 1 has not yet been set up, it is automatically set up as well.

<Info> Display of the router mode activity.

<Stop> Deactivate router mode.



Display of connection parameters

19 Operation on a POTS access

 The voltages on the subscriber line may not exceed 130 VDC and should be free of AC voltage.

19.1 Setting the POTS Interface

Use the included connection cable to connect the ARGUS® (Line jack) to the POTS access to be tested. The setting of the connection type is explained in the chapter Configuring accesses, see page 31. In this example the POTS TE mode was selected.

X

Accesses

✓

☐ SHDSL 8D. EFM STU-R TE

☐ SHDSL 2D. TDM STU-R ples

☐ SHDSL 8D. TDM STU-R ples

☐ S2M TE

☐ SHDSL 2D. ATM STU-R TE

☐ S2M NT

☒ POTS TE

☐ POTS TE

Note:

☐ GPON

◀

POTS

Dial Mode

DTMF

Clip Mode

FSK

DTMF Parameters

▶

Flash Time

80 ms

The following settings can be made for POTS:

- Dial Mode
- Clip Mode
- DTMF Parameters
 - Level
 - Time
 - Interval
 - Default settings
- Flash-Time

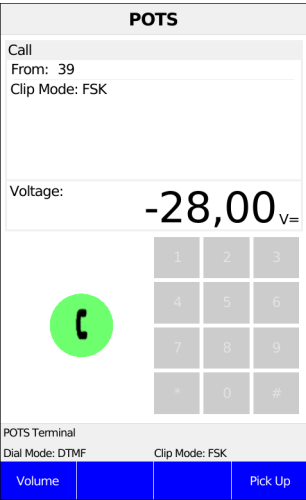
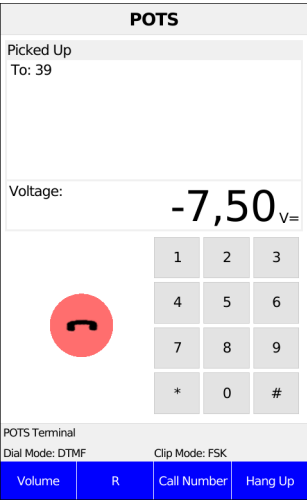


You can obtain further information on settings in the ARGUSpedia on the instrument.

19.2 Connection on a POTS access

Outgoing Calls

The ARGUS[®] sets up a connection to another terminal. If the terminal at the other end is a telephone, the handset integrated in the ARGUS[®] or a headset can be used to hold a conversation.



- <Volume>

Volume setting.
- <R>

Generating a FLASH signal.
- <Call Number>

The ARGUS[®] displays the last number dialed (redial) or that of the last caller.
- <Accept> OR 

Establishing a connection: Enter the phone number via the keypad. Each digit of the number is dialed individually. The ARGUS[®] will display the dialed number. As soon as the remote party accepts the call, a speech connection is established.

Incoming Call

The ARGUS[®] signals an incoming call both audibly and on the display (see picture on the right).

If the access supports CLIP, the ARGUS[®] will display the number of the caller.

<Accept> or

Accept call.



The call number received will be saved in the “Last caller” memory location.

20 Operation on an ISDN Access



The voltages on the subscriber line may not exceed 48 V (BRI S/T) and should be free of AC voltage.

20.1 Setting the ISDN Interface and Access Mode

Connect the supplied connection cable (BRI S/T) to the ARGUS® "Line" socket and your test connection.

Opening the test parameters is described in the chapter Configuring accesses (page 31). In this example the ISDN TE mode was selected.

BRI	
Test	1 0 → 0 X 0
ISDN BRI TE	B1 ✓ B2 ✓
Layer 3 DSS1	→
Layer 2 P-P (Point-To-Point)	✓
Layer 1 Slave	✓
Signal Level	
Ok	0.81 V
Line Voltage	
OK Normal	40.2 V=
L1 Status	
TE	Info 3
NT	Info 4
ISDN BRI TE P-P (Point-To-Point)	0.00 V
DSS1	0.0 V=
Setting	Access
Termination On	Start

Connection	
☒	Overlap Sending
☐	En-Block
☐	Redialing Number
☐	Last Caller

<Setting> Open the "ISDN BRI S/T settings" menu.

<Access> Switch to the connection menu.

<Termination on> Switch the termination on or off.

<Start> Repeat the B channel test.

After selecting "Test" one of the shown connections can be selected (see picture on the right).

The following settings can be made for BRI S/T:

- L1 permanent?
- Alerting mode
- BRI termination



You can obtain further information on settings in the ARGUSpedia on the instrument.

20.2 Initialization phase followed by a B channel Test

Initialization on a BRI S/T access

The ARGUS® will begin the initialization after taking over the existing, confirmed settings or new settings for the type of access and mode. Next the ARGUS® will setup Layer 1. While it is setting up Layer 1, the "Sync 1" LED above the display will blink. If the ARGUS® cannot setup Layer 1, it will display the message "No net". As soon as Layer 1 is successfully setup, the "Sync 1" LED will light continuously.

If everything has been detected without errors, the ARGUS® will display the type and mode of access found. Additionally, a qualitative assessment of the level will be displayed.

The ARGUS® will automatically determine the protocol (in both TE and NT mode) or use the protocol set manually (see page 19 protocol). On a bilingual access, the ARGUS® will use the DSS1 protocol.

The "Protocol" LED will light after the ARGUS® has set up Layer 3. At the same time the ARGUS® will start a B channel test and then display the results. If an error occurs in the B channel test (e.g. access is not plugged-in), the ARGUS® will display an error message.

20.3 Service check

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

X	Service	✓
☐	Speech	
☐	UDI 64 kBit	
☐	3.1 kHz Audio	
☐	7 kHz Audio	
☐	UDI-TA	
☒	Telephony ISDN	
☐	Fax G3	
☐	Fax G4	
☐	Mixed Mode	

X	B Channel	✓																								
1																										
Please enter a value between 1 and 2 (* = Automatic)																										
<table border="1"> <tbody> <tr> <td>1</td> <td>2</td> <td>3</td> <td>A</td> <td>B</td> <td>C</td> </tr> <tr> <td>4</td> <td>5</td> <td>6</td> <td>D</td> <td>E</td> <td>F</td> </tr> <tr> <td>7</td> <td>8</td> <td>9</td> <td>:</td> <td>-</td> <td><X></td> </tr> <tr> <td>*</td> <td>0</td> <td>#</td> <td>.</td> <td>ABC</td> <td>✓</td> </tr> </tbody> </table>			1	2	3	A	B	C	4	5	6	D	E	F	7	8	9	:	-	<X>	*	0	#	.	ABC	✓
1	2	3	A	B	C																					
4	5	6	D	E	F																					
7	8	9	:	-	<X>																					
*	0	#	.	ABC	✓																					

The test runs automatically. The ARGUS[®] will make a separate self call to test each of the user-specific services. However, the call will not be answered.

Enter the own (local) number of the access under test or select it from the speed-dialling memory.

The ARGUS[®] suggests the B channel used last. If you enter an "*", the ARGUS[®] will choose any B channel that is free.



There are PBXs that use separate call numbers for incoming and outgoing calls. In this case, for the Service tests, you can enter a "remote" call number that does not match the "own" number that is stored in the ARGUS[®]. If the Service check should extend outside of the local exchange, it is possible to perform the Service check in an end-to-end mode. In this case, you must enter the remote call number for a second terminal device. The ARGUS[®] will then automatically check whether the remote terminal can accept the call under the various services – in other words, whether it is "compatible" with these services.

Overlap sending (outgoing call)

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

◀

Connection

Service	Telephony ISDN
B Channel	1
From	
To	
CR Value	5
Length/Flag	1/1

1

2

3

4

5

6

7

8

9

*

0

#

◀

Call Clearing

Active Clearing	
Location	User
CR Value	5
Length/Flag	1/1

Enter phone number via keypad.



Simplified individual dialing via the telephone key



The ARGUS® will go directly to the Connection/Single Dial window regardless of the menu that is currently open.

The exchange tone sounds, after entering the phone number the connection is established.

En-bloc sending (outgoing call)

In en-bloc sending, the ARGUS® sends the entire dialling information in one block.

Redialling (outgoing call) + Last caller (incoming call)

The ARGUS® will set up a call using the last number dialled or the number of the last caller.

21 Operation on a PRI Access

21.1 Configuring the PRI Interface and Access Mode Settings

Use the included connection cable to connect the ARGUS® "PRI/EI" jack to the access to be tested. In this example the PRI TE mode was selected.

PRI

Test ↑ 0 0 X

ISDN PRI TE

Layer 3 DSS1 →

Layer 2 P-P (Point-To-Point) ↑

Layer 1 Slave ↑

Flags 00:04

Signal ✗ No AIS ✓

FAS ✗ No A-Bit ✓

Level Measurement

Signal Level No Signal 0.00 V

Line Voltage No Voltage 0.0 V=

ISDN PRI TE Signal: ✗

Lines: = Tx: 1/2 Rx: 4/5 CRC: ✓

Setting Access L1 Status Start

<Setting> Switch to the "PRI setting" menu.

<Access> Switch to the connection menu.

<L1 status> Open L1 status.

<Start> Start B-channel test.

The following settings can be made for PRI:

- Alerting mode
- PRI termination
- Sensitivity
- Sa5 bits
- Sa6 bits
- A-Bit
- CRC4 mode



You can obtain further information on settings in the ARGUSpedia on the instrument.

21.2 Initialization Phase including B-Channel Test

Initialization on a PRI network

As soon as Layer 1 is setup, the "Sync 1" LED 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.

The ARGUS® will begin to automatically determine the access configuration. After Layer 2 is set up, the "Protocol" 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 set up Layer 3.

During this phase, the ARGUS® displays the A bit of the remote side and the FAS. The protocol can only be determined when the A bit is not set. The FAS (Frame Alignment Signal) 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.

Press the <start> softkey to have the ARGUS® begin to test the availability of all 30 B-channels one after the other by occupying the B-channels. If the ARGUS® can place a call on a B-channel, it will be assumed that the B-channel is available in both directions; the B-channel test cannot distinguish between alternating and exclusively "outgoing" B-channels. If the connection is rejected, 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.

21.3 The L1 Status of a PRI Access

The ARGUS® displays the Layer 1 alarms and messages, 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).

L1 Status			
Flags			00:38
Signal	✖	Lines	=
No A-Bit	✔	No AIS	✔ !
CRC4det	✖	FAS	✖
E-Bit	✖	Code	HDB3
Sa5	Tx: 1111		Rx: 0000
Sa6	Tx: 0000		Rx: 0000
Level Measurement			
Signal Level	No Signal		0.00 V
Line Voltage	No Voltage		0.0 V=
Counter	Abs.	Rel.	
E-Bit Count	0		
CRC Error	0		0
Code Error	0		0
Frame Error	0		
ISDN PRI NT			Signal: ✖
Lines: = Tx: 4/5 Rx: 1/2			CRC: ✔
		X	Reset

<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 in 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.
 wires = means that Rx/Tx are normal
 wires X means that Rx/Tx are inverted

<Reset> Reset the History function and all counters.

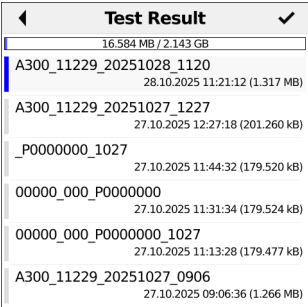
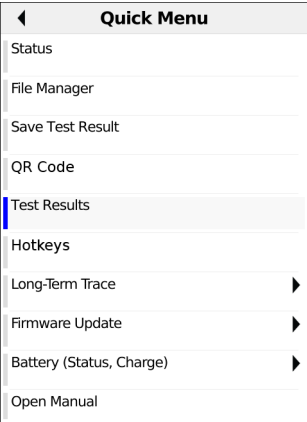


You can obtain further information on display contents in the ARGUSpedia on the instrument.

22 Test results

The saved test results are displayed either in the ARGUS® display or on the PC as a detailed measurement log.

The ARGUS® stores the test results together in 50 definable save slots. The system suggests "New result" as the default save name. The saved test results are also deleted when all configuration settings are reset.



The test results can be selected in the Quick Menu. By selecting a test result and then pressing the confirmation key, the test results are displayed.

- <More>

The "Sort" and "Rename" softkeys are displayed.
- <Sort>

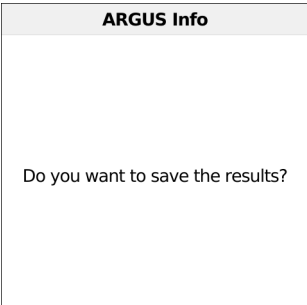
Sorting:
 - Ascending by name
 - Descending by name
 - Ascending by date
 - Descending by date
- <Rename>

Changes the name
- <Select all>

Selects all test results
- <Delete all>

Deletes one or all test results

22.1 Saving test results



You can save the result after the end of a test or after disconnecting a connection. The ARGUS® saves the test result in the first free slot. If all slots are occupied, you need to manually select a slot to overwrite

The ARGUS® automatically suggests a save name. The name is made up of:

- Device Type (here A300)
- Serial number (here 01324)
- Configured date (here 01 January 2021)
- Set time (here 09:15)

You can accept the displayed save name or enter a new one using the number keys. You can enter up to 24 characters. The ARGUS® displays the number of characters used so far.

Save name: Input see Access name page 35.

<Last name> The ARGUS® suggests the last save name used.

22.2 Sending test results to PC

The test results can be sent to the PC for visualization and archiving. Connect the ARGUS® (ARGUS® socket "USB-B") to the interface of your PC using the cable supplied and select A300 in the Explorer. The "results" folder now contains the test results that can be opened in the browser.

23 WLAN

The ARGUS® has WLAN interfaces.

23.1 WLAN Client

23.1.1 WLAN access

To view the surrounding WLAN networks, you must first create a WLAN access.

X

Access

✓

☐ Fiber Tests

☐ GPON

☐ XGS-PON

☐ Ethernet

☒ WLAN

☐ Copper Tests

☐ xDSL

☐ ADSL

☐ VDSL

X

Access Mode

✓

☒ Client

☐ Spectrum Analysis

X

Interface

✓

☐ USB 1/2

☒ Internal

To do this, select “WLAN” and then ‘Client’ from the access menu. If the device has an internal WiFi7 module, then select ‘Internal’. Otherwise, select the corresponding USB port where the WLAN stick is connected.

X

Profile

✓

☐ PPP VLAN 7/8

☐ PPP ATM 1/32

☒ IP DHCP Client

☐ IP static

☐ IP Profile 5

☐ IP Profile 6

☐ IP Profile 7

☐ IP Profile 8

☐ IP Profile 9

X

Access Name

✓

WLAN Internal Client

20/24 Characters

! " \$ % & / () =

1 2 3 4 5 6 7 8 9 0

Q W E R T Z U I O P

A S D F G H J K L

▲ Y X C V B N M ↵

123 ↶ ?#@ ✓

Now select the profile and enter the access name or accept the access name suggested by

the ARGUS[®], in this case WLAN Internal Client.

X

Summary

✓

WLAN Internal Client

Profile: IP DHCP Client

Note:

✓: Save and quit wizard.

✗: Step back.

X

Accesses

✓

WLAN Intern Client

WLAN Internal Client

☐

Profile: IP DHCP Client

Note:

☐

Fibertest Installation

☐

Optical Loss Test

☐

GPON

☐

XGS-PON

After confirming the summary with ✓ the access is created.

Status

Test

1 0 → 0 ✗ 0

Data

VolP

IPTV

Opt.

→

→

→

?

V4

V4

WLAN Scanning

Int. Access Points 2.4 GHz 0

Access Points 5 GHz 0

Access Points 6 GHz 0

WLAN Scanning

WLAN Scanning

MAC 98:FE:3E:A5:80:BB

Info

WPS

Stop

WLAN Networks

Last scan before: 00:00:03

FRITZ!Box 3490

-54 dBm

abcdefghijkl

-58 dBm

intec_wlan

-59 dBm

intec_gast

-61 dBm

PQtest2G4

-83 dBm

PQtest5G

-87 dBm

WLAN Scanning

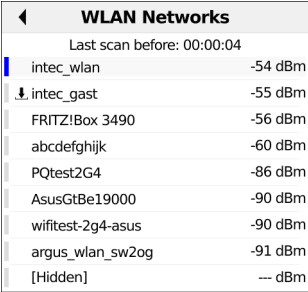
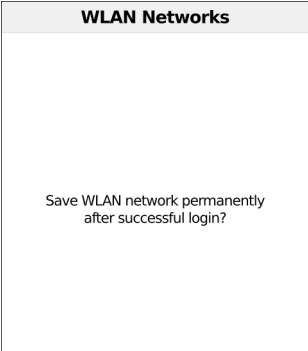
MAC 98:FE:3E:A5:80:BB

Menu ↑

Info

Connect

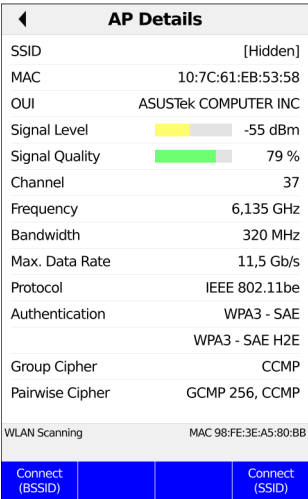
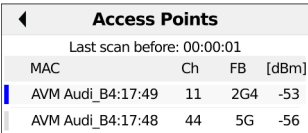
When you start the access, it will search for WLAN networks. Select the <Info> softkey to display the individual WLAN networks. To connect to one of them, select the <Connect> softkey.



After entering your username and password, if required, depending on the network properties, you will be asked whether you want to permanently save the WLAN network after successfully establishing a connection. If you confirm this with **<Yes>**, the symbol  will appear next to the WLAN network, in this case next to **intec_gast**.

23.1.2 Access Point Details

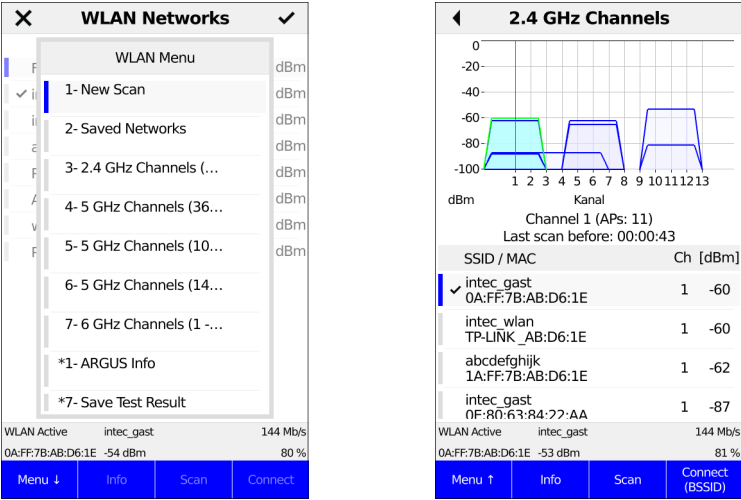
While searching for WLAN networks and when connected to a WLAN network, you can use the **<Info>** softkey to display further details about a WLAN network.



Selecting the **<Info>** softkey displays a list of individual access points for WLAN networks with multiple access points.

Selecting the **<Info>** softkey again displays the AP details of the selected access point. If a WLAN network is provided by only one access point, selecting the **<Info>** softkey will display the AP details directly. The color of the bar varies depending on the signal strength and signal quality (green = good, yellow = fair, red = poor).

23.1.3 Graphical overview of frequency bands



23.2 WLAN spectrum analysis

23.2.1 WLAN in the 2.4 GHz frequency range

Many WLAN networks and electrical devices such as motion detectors, baby monitors, and microwaves use the 2.4 GHz frequency band equally and thus interfere with each other. With the ARGUS® 2G4 Scope (WLAN spectrum analysis), these interference signals can be found in real time. The ARGUS® 2G4 Scope is a passive application and does not affect the WLAN. In addition to the typical sources of interference (see above), it is also possible to identify which channel existing routers are currently using. In the case of a permanent, irreparable interference source, it is possible to determine which WLAN channel is “furthest” away from the interference source and thus causes the least interference to your own WLAN.

X

Access

✓

☐ Fiber Tests

☐ GPON

☐ XGS-PON

☐ Ethernet

☒ WLAN

☐ Copper Tests

☐ xDSL

☐ ADSL

☐ VDSL

X

Access Mode

✓

☐ Client

☒ Spectrum Analysis

X

Interface

✓

☒ USB 1/2

To perform a WLAN spectrum analysis, you must first create a WLAN access. To do this, select “WLAN” from the access menu and then “Spectrum Analysis.” Next, select the USB interface.

✕

Profile

✓

☐ PPP VLAN 7/8

☐ PPP ATM 1/32

☒ IP DHCP Client

☐ IP static

☐ IP Profile 5

☐ IP Profile 6

☐ IP Profile 7

☐ IP Profile 8

☐ IP Profile 9

✕

Access Name

✓

WLAN USB 1/2 Spectr. A

23/24 Characters

! " § \$ % & / () =

1 2 3 4 5 6 7 8 9 0

Q W E R T Z U I O P

A S D F G H J K L

▲ Y X C V B N M ⌫

123 ⌵ ?#@ ✓

Now select the profile and enter the access name or accept the access name suggested by the ARGUS®, in this case WLAN USB 1/2 Spectrum A.

✕

Summary

✓

WLAN USB 1/2 Spectrum Analysis

Note:

✓: Save and quit wizard.
✕: Step back.

✕

Accesses

✓

☐ WLAN USB 1/2 Spectr. A.
WLAN USB 1/2 Spectrum Analysis

☒ WLAN Internal Client

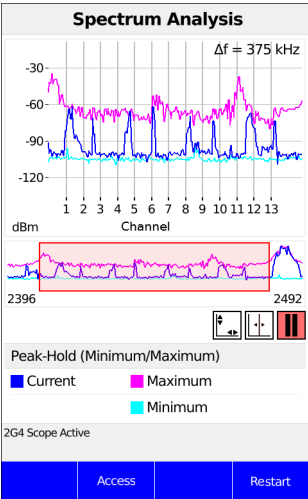
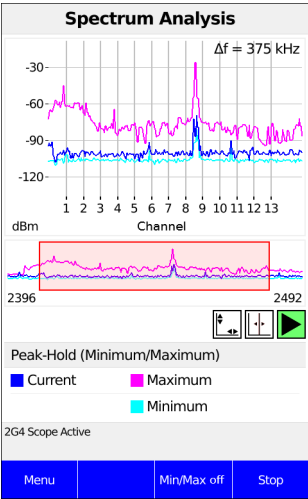
☐ Fibertest Installation

☐ Optical Loss Test

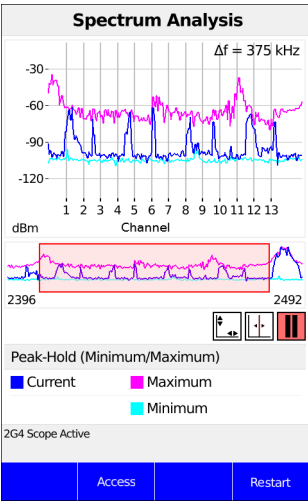
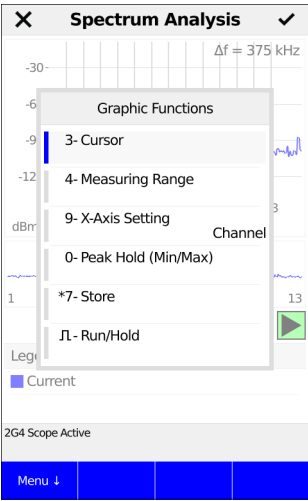
☐ GPON

☐ XGS-PON

After confirming the summary with the Checkmark key, the access is created. Once you have connected the ARGUS® 2G4 Scope to the USB interface, you can start the access.



Here you can see how a motion detector or microwave interferes with the WLAN.



Various functions can be selected using the **<Menu>** softkey. An explanation of these can be found under Graphics functions, s. page 303.

23.2.2 WLAN in the 5 GHz frequency range

In the 5 GHz frequency range, there is a prioritization of permitted applications. WLAN has the lowest priority and must take other applications such as RADAR (weather stations, airports) into account. Due to the regulations in the 5 GHz frequency range, a spectrum analysis to search for interference is not necessary.

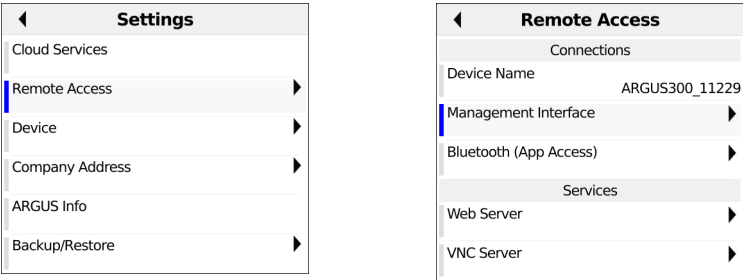
23.2.3 WLAN in the 6 GHz frequency range

There are regional differences in regulations governing the 6 GHz frequency range. In the EU, the range from 5945 to 6425 MHz (480 MHz) is reserved exclusively for WLAN. Spectrum analysis to locate interference is therefore not necessary.

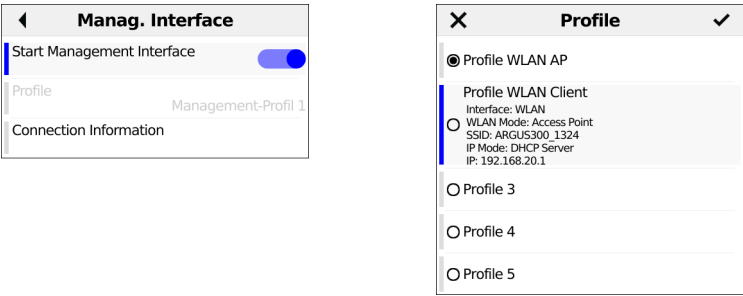
23.3 WLAN as a management interface

In the ARGUS[®], WLAN is also available as a management interface for various functions.

23.3.1 Switching on WLAN



After pressing the gear button, you reach the instrument settings. After selecting Remote Access, select Management Interface.



Here you can start the management interface and edit the profile.

-  For editing the profile, the Management Interfaced must be switched off.
-  Either ETH or WLAN can be selected as the management interface; the default setting is WLAN. You can change this under “Device settings/Management interface/Interface”. This is only possible when the management interface is greyed out under “Start/Management interface”; if WLAN or Interface is greyed out, switch off the management interface first.

23.3.2 WLAN Access Point

The WLAN interface is activated directly as an access point. ARGUS® is in access point mode (ARGUS®-AP). The WLAN icon in the status bar is green .

Select the WLAN named “Argus300_serial number” on a smartphone, tablet, or laptop and enter the password entered in ARGUS® to establish a WLAN connection with ARGUS®.



You can also access ARGUS® via WLAN and retrieve measured values using electronic order processing applications. Please contact our support team for more information.

23.3.3 WLAN Client

In WLAN client mode, the ARGUS® can be connected to an existing WLAN network.



In the IP settings, the IP mode “DHCP client” should be selected in order to automatically obtain an IP address from the WLAN network and not to integrate another DHCP server into the existing WLAN network.

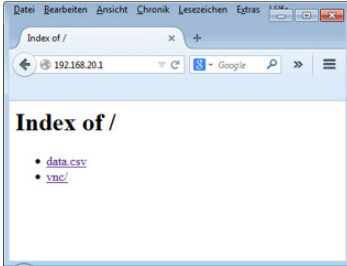
In the connection information, the list of found networks can be displayed using the <WLAN> softkey. Selecting a WLAN network and pressing the <Connect> softkey initiates the connection setup process and the request for the necessary information.

The status bar displays the following statuses with the Wi-Fi icon:

Symbol	Colour	Description:
 	flashing gray	search for WLAN networks
 	flashing yellow	Connect to a WLAN network
	green	Connected to WLAN network
	red	Connection to WLAN network failed / Aborted due to error

23.4 Test results via WLAN

If for example a laptop has a working WLAN connection with the ARGUS, you can open the Web server by entering the IP address of the ARGUS unit or myargus.info in your browser's address bar.



The measurement log with the name `data.csv` can be opened directly or saved on the laptop.

You can also use this functionality to save, delete and rename measurement logs. For this, you require a WebDAV application/app on your PC/laptop or smart phone/tablet.



The connection data of the last measurement are saved in the `.csv` file.



You may first need to activate the VNC server on the ARGUS.



Further information regarding the VNC server is available on request.



The ARGUS Web server has its own SSL certificate (myargus.info), which permits `https://` access.

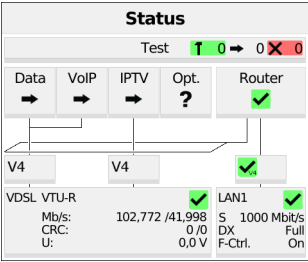


You can also access the ARGUS using WebDAV via myargus.info. By this means, you can download measurement logs in `.amp` format directly from the ARGUS via Ethernet or WLAN.

23.5 WLAN in router mode

If the WLAN interface in the ARGUS® is active, it is directly connected to the ARGUS® router.

If you want to use ARGUS® as a genuine WLAN access point (ARGUS®-AP) and use it as a gateway, for example, to start a download from a smartphone, the first step is to start a router access. In the example, a GPON router access is used for this purpose. An XGS-PON or ETH router connection is also possible.



If the router (see diagram) has been started, both WLAN and LAN1 are connected to the ARGUS router.

The smart phone, tablet or laptop can use the ARGUS as an access point. All applications such as data, VoIP or video that can be run e.g. on a smart phone can now be executed for testing via ARGUS - thus replacing all customer devices.

Devices connected to the ARGUS® router via LAN or WLAN can also communicate with each other. For example, if an FTP server is running on a client ARGUS® connected to the LAN, the FTP server can be accessed via WLAN management using a device. The devices can be reached via ping.

 WLAN and LAN are not linked via an Ethernet bridge. Each requires its own configuration. They may not be configured identically.
A test from WLAN to LAN or vice-versa is not possible.

24 ARGUS settings

The ARGUS can be custom-configured for special requirements. The default values are restored using "Reset" (see page 287).

24.1 Cloud services

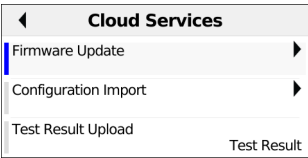
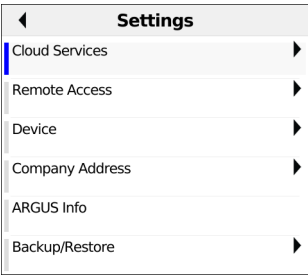
The ARGUS supports cloud services for communicating with its environment. These services enable the ARGUS to share data with other systems via its test interface. The ARGUS offers test interfaces for ADSL, VDSL, G.fast, SHDSL, Ethernet, GPON and WLAN. When connected via these interfaces and with the data service running, the ARGUS can download firmware updates, import a configuration and upload measurement logs..

- 

The cloud services are deactivated by default.
- 

At a minimum, the data service must be connected and successfully started via a VL using the corresponding test interface.
- 

The instrument only checks whether there is a different firmware on the server than the one it has loaded. Be aware of this if you have your own update server. Downgrades are possible, and can result in a loss of configuration data.



After pressing the gear button, you reach the instrument settings. After selecting the cloud services, select e.g. firmware update.

Select the cloud service you wish to configure and open it with  .
You must agree to the privacy policy before use.

The following cloud service parameters can be configured:

- Firmware update
 - Server
 - FTP Server address
 - User name
 - Password
 - Profile name
 - Check for updates
 - Updating
- Importing configurations
 - Server
 - FTP Server address
 - User name
 - Password
 - Profile name
 - Test
 - Import destination
 - Import
- Upload measurement log
 - Server
 - FTP Server address
 - User name
 - Password
 - Profile name



You can obtain further information on settings in the ARGUSpedia on the instrument.



Three server profiles are offered for server selection. All three profiles are identical, and differ only in their profile names:

- Server profile 1: Firmware
- Server profile 2: Configuration
- Server profile 3: Measurement log

You can also assign any name to the server profiles (Profile name) for your use, e.g. you can create two different profiles for importing configurations if measurement log uploading is not needed.



Only the server profile “Firmware” is preconfigured. When the server specified in this profile is used, the ARGUS always looks for a new firmware version on intec’s server. The ARGUS instrument logs onto the server with its serial number and IP address.



See page 307 for the meanings of all symbols used in the cloud updates.

24.1.1 Cloud update

The cloud update process is explained in the following. In this example, VDSL VTU-R mode is configured and selected as described in Chapter 5, “Configuring accesses” (see page 31). For details on configuring the firmware updates, see the chapter “ARGUS settings”, page 276.

 Never under any circumstances import a configuration when the ARGUS is operating in battery mode. Connect the ARGUS to the power adapter before importing a configuration.

Status

Test 1 0 → 0 ✗ 0

Data

VolP

IPTV

Opt.

V4

V4

VDSL VTU-R

Mb/s: 102,772 /41,998

CRC: 0/0

U: 0,0 V

Profile VDSL2 G.993.2 17a

Vectoring Off

Showtime 0:00:15

Parameter

Down/Near

Up/Far

Att. D. Rate

151915

51051

Output Power

+13,7

-3,5

CRC

0

0

Sollwert

Ok

Ok

V VDSL Net Data Rate

↓ 102,772 Mb/s

↑ 41,998 Mb/s

Retransmission: 1 1 CRC: 1 1 FEC: 1 1

Info

Stop

Connecting the service.

Status

Test 1 0 → 0 ✗ 0

Data

VolP

IPTV

Opt.

VDSL VTU-R

Mb/s: 102,772 /41,998

CRC: 0/n/a

U: 0,0 V

Active Time: 00:00:58

 See page 225 for important information on updating your ARGUS firmware.

The profile shown in the display (in this example profile 17a) is used for the cloud update.

<Info> Activation duration

<stop> Deactivates service

If no connection is established, ARGUS automatically connects at this point (see page 53).

The service Data and the VDSL connection are active.

- <Info> Activation duration
- <Test> Opens test selection
- <Stop> Deactivates the service

The blue "FW" in the status line indicates that a firmware update is available.



Use the menu key to switch to the Quick menu and start the firmware update.

The ARGUS automatically restarts after a successful firmware update.

24.1.2 Automatic configuration import

This function enables you to read out and adopt the ARGUS configuration file.



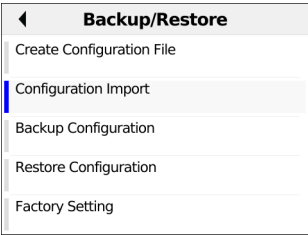
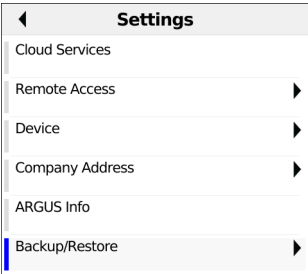
Never under any circumstances import a configuration when the ARGUS is operating in battery mode. Connect the ARGUS to the power adapter before importing a configuration.

Prerequisites:

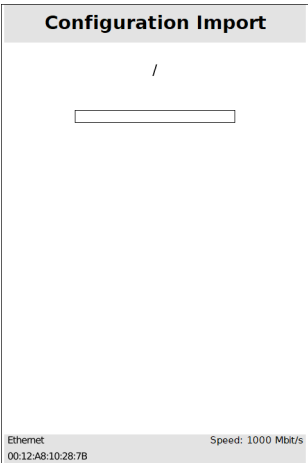
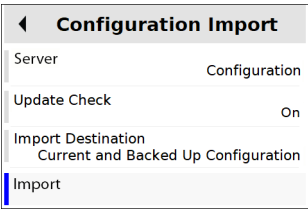
The instrument is connected to the interface (xDSL, G.fast, Ethernet or LTE).

The instrument must connect with the server, and a suitable configuration file for this instrument must be available.

If the configuration is not imported immediately, the instrument will display a corresponding message each time the instrument is powered up.



In the settings, select "Backup/Restore" and then "Configuration Import".



A new configuration file is available.

The configuration file is downloaded.

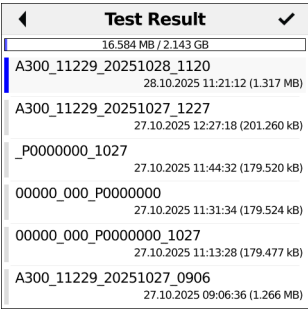
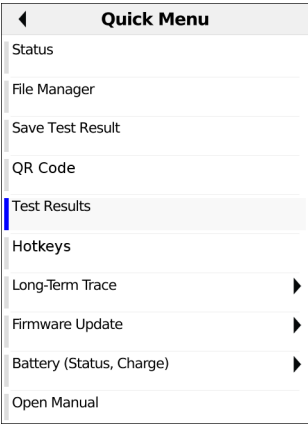


The instrument needs a few seconds before it can be restarted; this is indicated by an hourglass in the top right next to the battery indicator.

<Restart> Restarts device

24.1.3 Upload measurement logs

This function enables you to upload test results to an external server and download them again at a later date.



- <Order> Sorts test results by name or date (ascending or descending).
- <Select all> Selects all test results.
- <Delete> Deletes test result.

24.2 Remote access

The ARGUS® offers a wide variety of remote control functions. For instance, it can connect to a mobile end-user device (smart phone or tablet) via the WLAN interface, and can be remotely controlled from the mobile device.

The following test parameters can be configured for remote access:

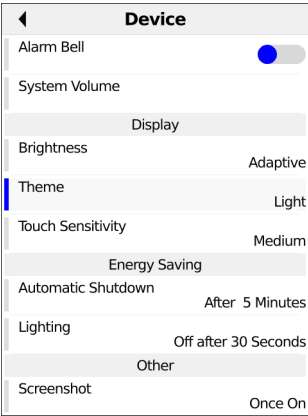
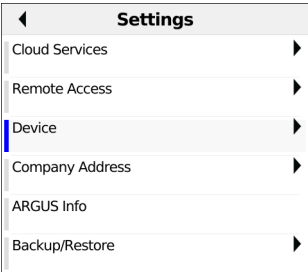
- Management interface
 - Start management interface
 - Select interface
- WLAN
 - SSID
 - Password
 - Channel
 - DHCP server
- IP settings
 - IP address
 - Netmask
 - Gateway
- Webserver
 - Start webserver
 - Password protection
- VNC server
 - Start VNC
 - Password protection
 - VNC scaling



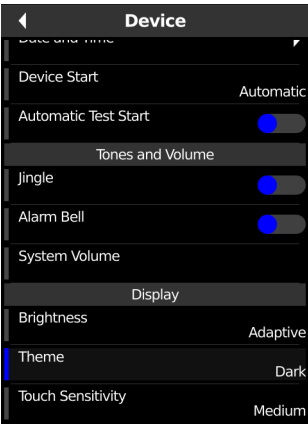
You can obtain further information on settings in the ARGUSpedia on the instrument.

24.3 Device settings

Changing a device setting is described using the setting "Design" as an example.



After pressing the gear button, you reach the instrument settings. After selecting Device, select e.g. Design.



The default is indicated with a ● in the display.



Mark the desired setting. The marked setting is highlighted in blue in the display.



Return to next-higher level menu without saving setting change.



Saves the setting change.

The following device parameters can be configured:

- Operating language
- LCD brightness
- Set date/time
- Ring volume
- Alarm tone
- Power-up tone
- Power-saving mode
- Software option
- Licenses
- Company address



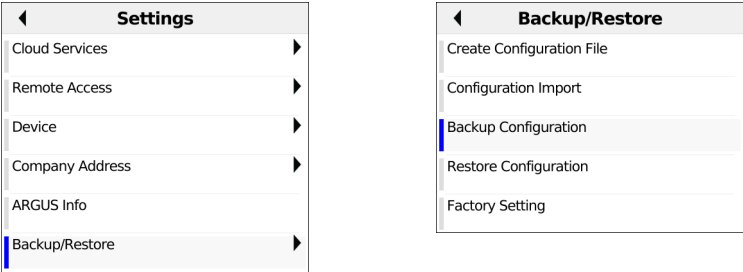
You can obtain further information on settings in the ARGUSpedia on the instrument.

24.4 Backing up and restoring settings

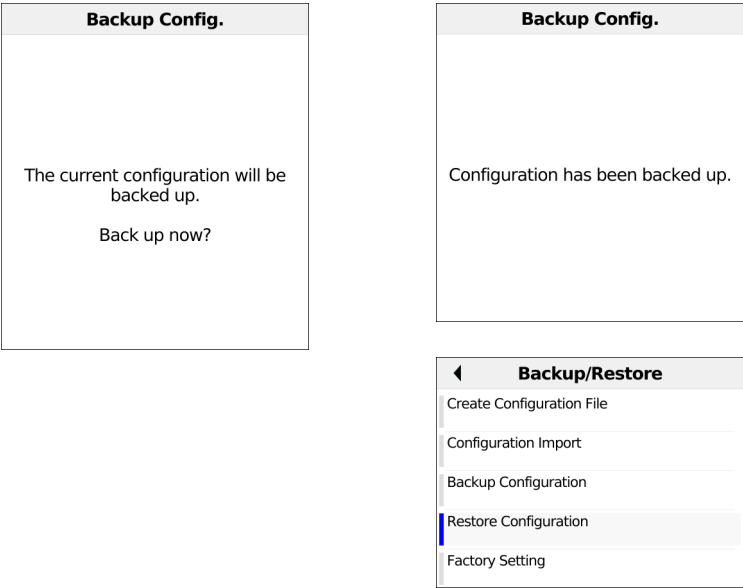
The ARGUS® offers multiple functions for backing up and restoring settings. In addition to the actual backup/recovery of the settings configured in the ARGUS®, these also include the options of restoring the factory defaults and importing configurations to overwrite the current one.

24.4.1 Backup/restore

With the ARGUS®, you can back up all settings (call numbers, PPP user name, PPP password, IP addresses, profile names and more) and restore them if needed.



All settings made in the ARGUS® are backed up unchanged and can thus be restored later.



The settings are now backed up and can be restored as necessary.

Select "Restore Configuration".

 and  Restores the saved test settings.

 If no settings have been backed up, this function has the same effect as "Restore factory defaults". A security password is not required.

24.4.2 Restoring the factory settings

The ARGUS® resets all settings to the factory defaults.

 The call numbers, PPP user name, PPP password, IP addresses, profile names and all test results stored in the ARGUS® are deleted

Backup/Restore

Create Configuration File

Configuration Import

Backup Configuration

Restore Configuration

Factory Setting

Factory Setting

All settings are reset to factory settings!

All data will be deleted completely!

Reset now?

All parameters are reset to the factory defaults.

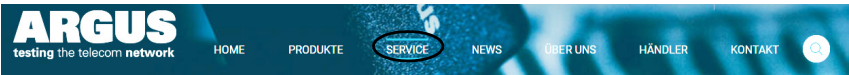
 If no settings have been backed up, this function has the same effect as "Restore factory defaults".

25 Update via PC

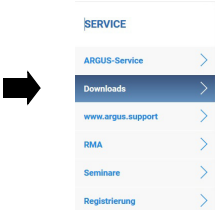
You can download firmware files online free of charge at www.argus.info/service and then upload them to the ARGUS®.

Go to the web page www.argus.info.

Click the menu option "Service" (highlighted in blue here) in the navigation bar.



In the drop-down Service menu, click the option "Downloads".



This opens up a product overview.



Select your ARGUS® instrument.

Once you select your device, you are automatically taken to the firmware updates.

ARGUS® 300



Overview

Technical Details

Accessories

ARGUS® 300 Enhancements

Datasheet

Manual

ARGUS® Config. Tool

Firmware

Professional articles

Please download only the version in your device, which is exclusively provided for your model. Otherwise you can cause damage, that will lead to a repairing with costs. The firmware must be unpacked beforehand when updating via the mass storage.

Please use only the version of the ARGUS® Configuration Tool that is identical to your firmware version. Other versions are not compatible. You can find the third-party components and license informations in the

PDF

PDF

for the ARGUS® 300.

ARGUS 300 FIRMWARE INCL MANUAL MENU (5.12 /)

010_ARGUS 300_Firmware_incl_manual_menu_-_V_5_12.zip (407.52 MB)

The ARGUS® 300 functions as a mass storage device and is connected to the PC via a USB cable. After downloading the firmware, load it onto your ARGUS® 300 using Windows Explorer.

Quick Menu

Status

File Manager

Save Test Result

QR Code

Test Results

Hotkeys

Long-Term Trace

Firmware Update

Battery (Status, Charge)

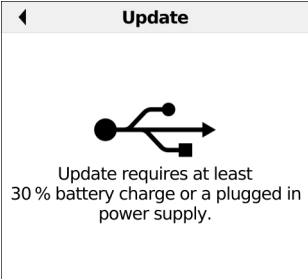
Open Manual

Firmware Update

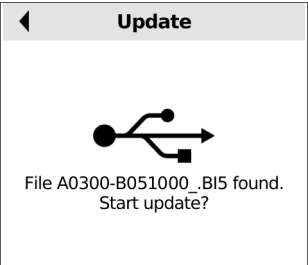
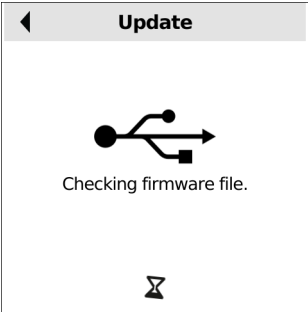
Cloud Update

ARGUS Mass Storage

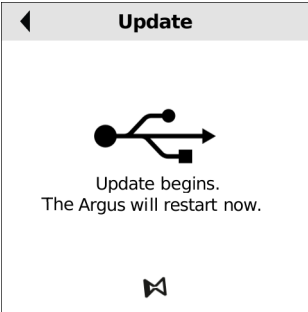
Next, select “Firmware update” in the quick menu (illustration at left). Then select ARGUS® Mass Storage (see image at right).



When updating the firmware the ARGUS[®] instrument must be charged to at least 30 % capacity or connected to a power adapter. You are prompted to confirm the ARGUS[®] connecting to the PC as a USB mass storage device (see image at right).



Once the ARGUS[®] is connected to the PC, the firmware file is displayed when you press Start.



The update is now started. This requires a restart of the ARGUS[®].

Important information on updating your ARGUS® firmware:

- An ARGUS® USB cable is required for updating (USB cable with micro-USB plug).
- You should back up the configuration and measurement logs to a PC before performing an update.
- Do not switch off the ARGUS® during the update.
- Be sure to observe the messages in the ARGUS® display.



If problems occur because of a failure to follow these safety instructions, repeat the update process up to three times.

Each repetition makes it possible to overwrite further faulty software components.

26 Using the battery pack

Changing the battery pack

Power down the ARGUS® and disconnect the power adapter. Then release the two screws securing the battery pack.

Handling the battery pack

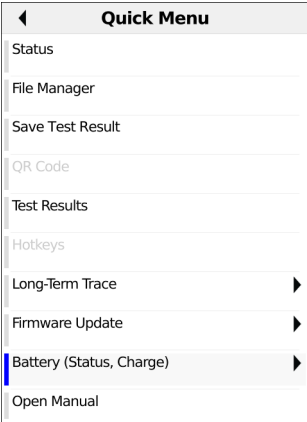


The ARGUS® may only be operated using the battery pack supplied with the device; connecting other power supply units to the contacts of the device will damage the ARGUS®.

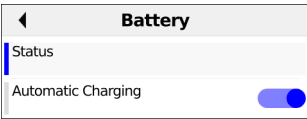
- Only charge the supplied battery pack in the ARGUS®.
- Do not use the ARGUS® battery pack in other devices.
- Power adapters from other ARGUS® instruments are not compatible with the ARGUS® 300. Attempting to connect the power adapter of another device to the ARGUS® 300 can damage the socket.
- Active charging of the battery pack and automatic charging (on by default) may only be carried out in a temperature range of 0 °C to +40 °C.
- Charge the battery pack completely at least once a month (even if the device has not been used for a longer period!).
- The lithium ion battery pack should be stored with a charge of 40 to 60 %. When storing the device for longer periods, you should refresh this charge level every six months. To prevent full discharge, remove the battery pack from the device for long-term storage.
To maximise battery life, do not store the battery long-term at temperatures above +50 °C.
- See the chapter Safety information (page 9) for detailed information on using and transporting the lithium ion battery pack safely.

Status

The ARGUS® indicates the current state of the battery graphically in the display when no power adapter is connected. A battery symbol flashes in the display when it is down to a power reserve of approx. 8 minutes (depending not the operating mode). Tone errors, and in extreme cases malfunctions, can occur in this period. Connect the power adapter. The ARGUS® can recharge the battery completely when the power adapter is connected. The ARGUS® power pack does not require manual discharge. A complete charging cycle can take up to approx. 6 hours.



Battery Status	
State	Discharging
Power Supply Plugged In	No
Learning actual battery capacity	No
Remaining Charge	100 %
Battery Capacity	95 %
Discharge Cycles	40
Actual Voltage	8111 mV
Actual Current	-560 mA
Temperature	27,5 °C
Battery Type	100
Date (WW/YY)	13/17



When the power adapter is connected, you can view the battery status in the quick menu. This displays the voltage, current level, temperature and other parameters during the charging process.

Automatic battery charging in the background

ARGUS Manager			
		Management Profile (Management Profile 1)	Management (On)
Bluetooth Pairing Mode	Bluetooth (App Access) (Off)	Web Server Start (Off)	VNC Server Start (Off)
Update Firmware	Brightness (Adaptive)	Automatic Shutdown (After 5 Minutes)	Automatic Charging (On)
Start ARGUS Support	Test Result Upload (FTP)		

ARGUS Manager			
		Management Profile (Management Profile 1)	Management (On)
Bluetooth Pairing Mode	Bluetooth (App Access) (Off)	Web Server Start (Off)	VNC Server Start (Off)
Update Firmware	Brightness (Adaptive)	Automatic Shutdown (After 5 Minutes)	Automatic Charging (Off)
Start ARGUS Support	Test Result Upload (FTP)		

In the ARGUS[®] Manager, you can toggle “Automatic charging (on)” to “Automatic charging (off)” and back by tapping this option. When automatic charging is on, the ARGUS[®] charges the battery automatically in the background when the mains adapter is connected as soon as the battery status falls below a threshold value (battery symbol in display).

Quick Menu	
Status	
File Manager	
Save Test Result	
QR Code	
Test Results	
Hotkeys	
Long-Term Trace	▶
Firmware Update	▶
Battery (Status, Charge)	▶
Open Manual	

Battery	
Status	
Automatic Charging	☒

You can also toggle automatic charging on and off in the quick menu.

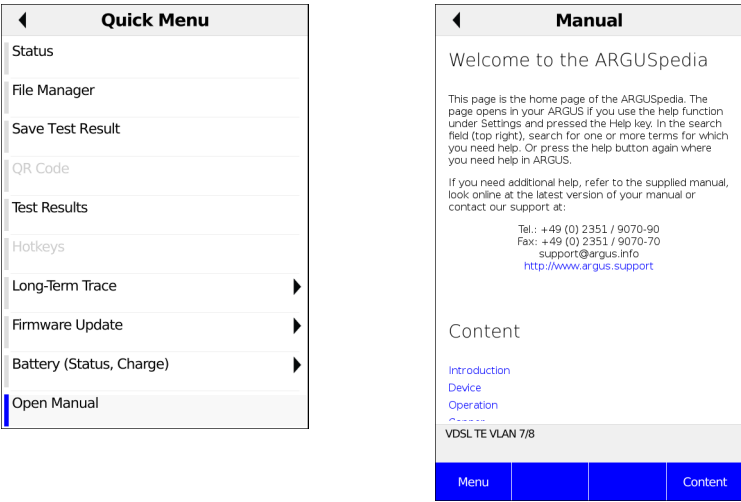


When the ARGUS[®] is disconnected from the power adapter before that battery is completely charged, the ARGUS[®] does not automatically continue charging when it is subsequently reconnected because the charge is no longer below the threshold.

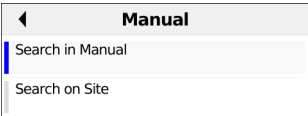
27 ARGUSpedia

The ARGUSpedia is an internal help function with lots of information about the device and settings. It is an important supplement to this manual.

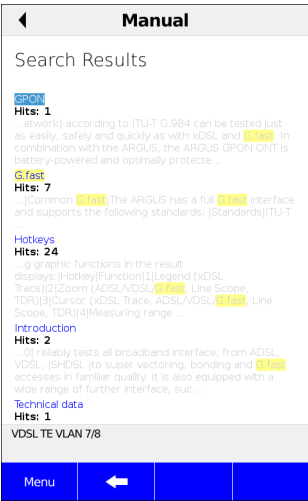
Select “Open Manual” in the Quick Menu to open the ARGUSpedia.



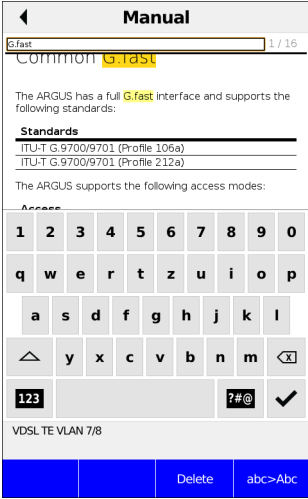
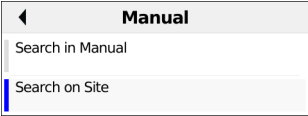
Now you can either navigate via the links in the content menu or search in the Manual or on the site that you are actually on by selecting the Softkey „Menu“.



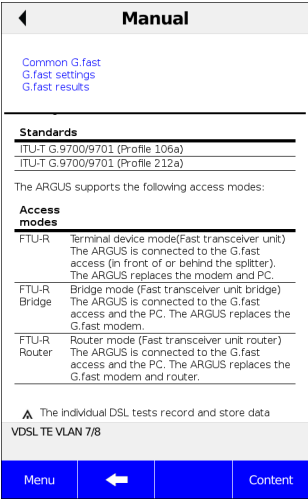
After selecting „Search in Manual“, you can enter a search term.



Now you get a list of search results. The search term is highlighted in yellow. In addition, it is indicated how many hits there are on the respective pages.



After selecting „Search on Site“, you can enter a search term. All results on this page are highlighted in yellow.



On many pages, you can jump to specific sections. These sections are shown on the top of the page after using the softkey „Content“. Just tap on them or use the cursor keys to jump to one of these sections.

28 ARGUS® Mobile App

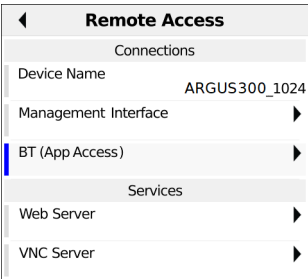
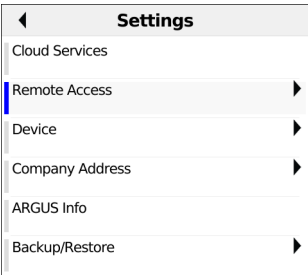
The ARGUS® Mobile app enables quick and easy transfer of measurement logs from the ARGUS® to the app via Bluetooth.



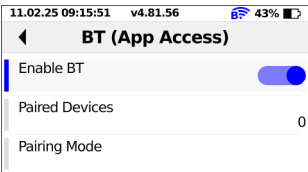
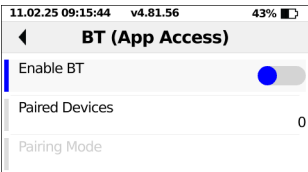
The ARGUS® Mobile App can be downloaded here for free:
<https://play.google.com/store/apps/details?id=info.argus.argusmobile&hl=en-us>



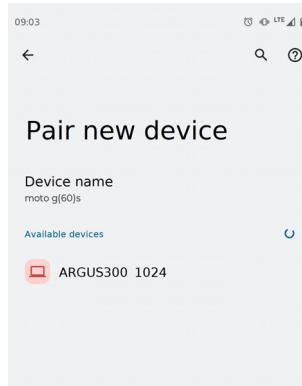
Apple App Store: <https://apps.apple.com/de/app/argus-mobile-app/id6480200403?l=en-GB>



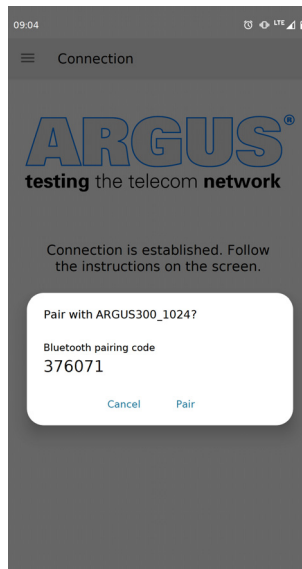
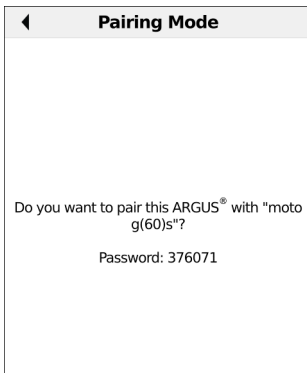
Press the wheel key to access the device settings. First select Remote access, then BT (App Access).



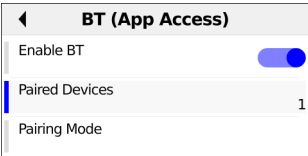
Bluetooth can now be activated there. If Bluetooth is switched on, you can recognize this by the blue symbol in the status bar: . The pairing mode can only be selected when Bluetooth is switched on.



The pairing mode in the ARGUS® must be open so that it can pair with the ARGUS® Mobile app. Bluetooth must also be activated on the smartphone or tablet. Then select "Pair new device" and select the corresponding ARGUS® (here: ARGUS300_1024).

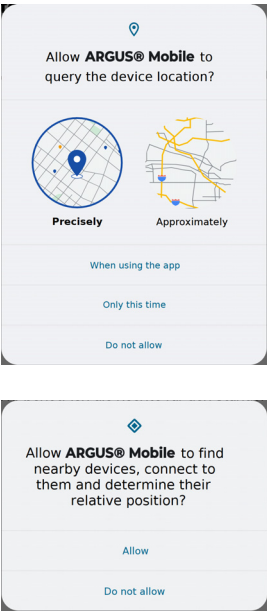
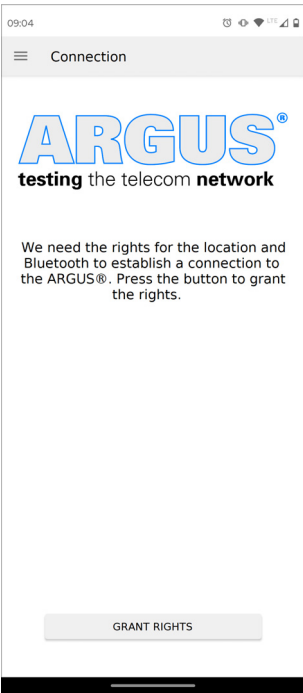


A pairing code appears on both devices, which must be confirmed on both devices.



The paired device is now also visible on the ARGUS®.

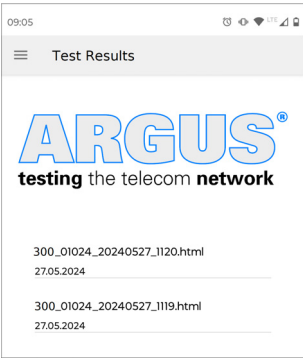
<Delete> Delete paired device.



When using the ARGUS® Mobile app for the first time, you must grant it rights to the device location and to connect to nearby devices.



The ARGUS® Mobile app displays the ARGUS® to which it is currently connected. Another ARGUS® in the nearby area can be selected via “Change ARGUS®”. After selecting the menu icon, you can display the test results that are on the ARGUS®.



Display of the available test results. After selecting one of the test results, the data will be downloaded from the ARGUS®. They can then either be viewed or shared.



Display of a test result.

29 Appendix

A) Hotkeys

Graphic functions:

After starting the xDSL interface or a test such as line monitor or TDR, you can use the following graph functions in the result displays:

Hotkey	xDSL Trace	ADSL/VDSL, G.fast	Line scope	TDR
Number key 1	Name	-	-	-
Number key 2	-	Zoom	Zoom	Zoom
Number key 3	Cursor	Cursor	Cursor	Cursor
Number key 4	-	-	Measuring range	Measuring range
Number key 5	-	-	Total power	Pulse width/ amplitude
Number key 6	-	-	-	Cable type/VoP
Number key 7	-	-	Probe	-
Number key 8	-	-	Symmetry	-
Number key 9	-	Setting x-axis	Time/FFT	-
Number key 0	-	Min/max	Peak-hold	-
Number key #	-	-	100 Ω input resistance	-
	-	Continue	-	-
	-	-	Start/stop	Start/stop
Press one after another  and 	-	-	Reference curve	Reference curve

Hotkey assignment

You can call important functions/tests directly using the keys of the ARGUS® keypad. Depending on the selected access type (GPON, xDSL and Ethernet in this example), different hotkeys can be used:

Hotkey	Service	GPON	ADSL/ VDSL/ G.fast	SHDSL	ETH
	Status screen	-	X	X	X
	VoIP call	-	X	X	X
Press one after another  and 	Displays ARGUS®-specific information such as ARGUS® type, software version, serial number, own MAC address, software options, user information (see below)	-	X	X	X
Number key 3	Selection of the service	-	X	X	-
Number key 3	IP addresses	X	-	-	-
Number key 4	Selection of the service	-	X	X	-
Number key 4	IP addresses	X	-	-	-
Number key 5	Selection of the server profile	X	X	X	-
Number key 6	Test overview	X	X	X	-
Number key 7	Selection of the server profile	X	X	X	-
Number key 9	Selection of the IPTV profile	X	X	X	-

ARGUS Info	
Type:	ARGUS 300
SW Version:	B5.11.05D_ [1112-2]
Date:	22.10.25
Serial Number:	11229
Line/ETH:	00:12:A8:11:2B:DD
2. ETH (BR/RT):	00:12:A8:10:2B:DD
SSID:	ARGUS300_11229
SW Options:	
ADSL Annex A/L/M	
ADSL Annex B/J	

VDSL
VDSL Bonding
VDSL2 Long Reach
VDSL2 Long Reach Bonding
G.fast 106 MHz
G.fast 212 MHz
G.fast Bonding
G.fast FTU-C
BRI
POTS
Ethernet
Ethernet SFP

Among other details, the ARGUS® info displays the ARGUS® type, the software version, the set software options and the serial number.

2.5GigE
10GigE
GPON
GPON ONT
PON Installation Test
PON Installation
XGS-PON
XGS-PON ONT
WLAN Client
WLAN Extended
WLAN Spectrum Analysis

WLAN URX M.2
WLAN URX USB
G.hn
TR-069
xPON Optical Power Meter
1550 nm OPM
Optical Power Meter
PON ID
Optical Switch ONT
PLOAM Monitor
Optical Loss Test
Optical Fault Finder

Fiber Inspection Tool (USB)
VoIP
IPTV
ARGUS® Real Speed Formal (RFC 6349)
Y.1564
Loop
Traffic Generator
RFC2544
ARGUS® Real Speed Direct (iperf)
Network Scan

Port Check
Line Scope
TDR
ADSL/VDSL Long-Term Trace

Option Key

0		

Serial Number: 11229

1	2	3	A	B	C
4	5	6	D	E	F
7	8	9	:	-	↩
*	0	#	.	ABC	✓

[illegible]

Select the <option> softkey to enter the option key.

Use the <User Info> softkey to enter user information with a length of up to 50 characters.

B) Symbols



The following symbols can be displayed in the ARGUS status line.

Symbol	Colour	Purpose	Description
	Black	Battery pack	This symbol shows the current battery status.
	Blue	Cloud update	The firmware can now be updated.
	Grey	Cloud update	The update function is active but no update can be found. For example, due to an incorrect server path.
	Blue	Configuration import	A configuration file has been found.
	Grey	Configuration import	The configuration check is active but no configuration can be found. For example, due to an incorrect server path.
	Grey	Variable	Importing a configuration or executing a test.
	Green	WLAN	WLAN is active. ARGUS is now in access-point mode.
	Grey	WLAN	WLAN is not active.
	Grey	Ethernet	The management interface Ethernet is selected.
	Green	Ethernet	The management interface Ethernet is active.
	Black	Volume	Signal tone deactivated.
	Black	Volume	Signal tone activated.



The following symbols can appear in the ARGUS main display area.

Symbol	Colour	Description
	Grey	The service is not yet assigned to a virtual line.
	Grey	This service, VL or physical layer is idle.
	Grey	The service is unavailable.
	Yellow	Activating the physical layer, VL or service.
	Yellow	Physical layer, VL or service deactivated due to an unexpected occurrence.
	Yellow	Deactivating.
	Green	Synchronisation achieved (physical layer) or a VL or service was activated successfully.
	Green	A test is currently running in this service.
	Red	An error has occurred.
	Grey	Preparing activation of physical layer, VL or service.
	Orange	The Tx and Rx values are not equal in the VoIP QoS test.
	Green	Test running.

	Red	Test stopped.
	Green	Graphs are zoomed.
	White	Graphs are not zoomed.
	Green	Cursor is activated.
	White	Cursor is deactivated.
	Blue	Access, access filter or menu entry has been added as a favorite.
	Blue	Autostart: Selected access starts immediately.



The following symbols are displayed in this field.

Symbol	Colour	Description
	Green	No CRC errors occurred in the last second.
	Red	No FEC errors occurred in the last second in upstream and downstream.
	Green/ Red	No upstream CRC errors occurred in the last second in upstream.
	Red/ Green	No FEC errors occurred in the last second in downstream.
	Blue/ Grey	Retransmission configured but not active.
	Blue	Retransmission active.
	Red	Retransmission active; errors occurring.

C) VoIP-SIP status codes

SIP requests:

The six basic requests/methods:

- INVITE** Invites the user to call (initiates session)
- ACK** Confirms an INVITE request
- BYE** Terminates the session
- CANCEL** Cancels the connection process
- REGISTER** Provides subscriber availability information (host name, IP address)
- OPTIONS** Provides information on supported functions of the SIP telephones involved in the call

SIP responses:

SIP responses follow on the SIP requests. There are six basic SIP response types with numerous variants.

- 1xx** Provisional responses
(e.g. 180 shows ring at recipient)
- 2xx** Successful responses
- 3xx** Redirect responses
- 4xx** Client failure responses
- 5xx** Server failure responses
- 6xx** Global failure responses

ARGUS display: code no.	Meaning	Explanation
100	Trying	Trying to connect
180	Ringing	The phone at the other end is ringing.
181	Call Being Forwarded	The call is being forwarded.
182	Call Queued	The call is in a wait loop.
183	Session Progress	The call is being setup.
200	OK	Everything is all right.
202	Accepted	Connection has been accepted.
300	Multiple Choices	There is no unique destination address for the remote end. Please select one.
301	Moved Permanently	The call is permanently forwarded.
302	Moved Temporarily	The call is temporarily forwarded.
305	Use Proxy	A proxy must be used.

380	Alternative Service	Alternative service.
400	Bad Request	The request is not OK.
401	Unauthorized	You are not authorized.
402	Payment Required	Payment is required.
403	Forbidden	This is not permitted.
404	Not Found	The remote end was not found or does not exist.
405	Method Not Allowed	Method (e.g. SUBSCRIBE or NOTIFY) is not allowed.
406	Not Acceptable	The call's options are not allowed.
407	Proxy Authentication Required	The proxy must be authenticated.
408	Request Timeout	The time for the request has been exceeded (timeout).
409	Conflict	There is a conflict.
410	Gone	The subscriber can no longer be reached.
411	Length Required	The length must be supplied.
413	Request Entity Too Large	The values are too long.
414	Request URI Too Long	The URI is too long. (Destination address)
415	Unsupported Media Type	The codec is not supported.
416	Unsupported URI Scheme	The URI scheme is not supported. ? (Destination address)
420	Bad Extension	The extension is wrong.
421	Extension Required	An extension is necessary.
423	Interval Too Brief	There is a problem with the SIP parameters. (Register Expire is too short)
480	Temporarily Unavailable	The subscriber is currently not reachable.
481	Call/Transaction Does Not Exist	This connection does not exist (any longer).
482	Loop Detected	A redirection loop has been detected.
483	Too Many Hops	Too many redirects.
484	Address Incomplete	The SIP address is incomplete or faulty.
485	Ambiguous	The SIP address is ambiguous.
486	Busy Here	Subscriber is busy.
487	Request Terminated	The request has been terminated.
488	Not Acceptable Here	The call cannot be accepted.
491	Request Pending	A request is waiting.
493	Undecipherable	Decryption error.
500	Server Internal Error	Internal error in the server.
501	Not Implemented	The requested method (functionality) has not been implemented.
502	Bad Gateway	The gateway is bad.
503	Service Unavailable	The service is not available.

504	Server Time-Out	The gateway did not respond in time.
505	Version Not Supported	The SIP protocol version is not supported.
513	Message Too Large	The message length is too long. Use TCP.
600	Busy Everywhere	All terminals are busy at the remote end.
603	Declined	The remote station declined the call.
604	Does Not Exist Anywhere	The subscriber no longer exists.
605	Not Acceptable	Impermissible SIP request.

D) Vendor identification numbers

Abbreviation	Vendor
ALCB	Alcatel (STMicroelectronics)
ANDV	Analog Devices
BDCM	Broadcom
GSPN	Globespan
IKNS	Ikanos
IFTN	Infineon
META	Metanoia
STMI	STMicroelectronics
TSTS	Texas Instruments

E) Software licenses

The ARGUS firmware contains code from open-source packages published under a variety of licenses (GPL, LGPL, MIT, BSD, etc.).

Additional information can be found on the internet at: <http://www.argus.info/en/service/downloads>. After selecting your device type, you can download a PDF with the software licenses.

If you are interested in the sources listed under GPL/LGPL, please contact support@argus.info. intec Gesellschaft für Informationstechnik mbH will provide you with a machine-readable copy of the source texts for a nominal fee to defray the costs of the physical copying process. This offer is valid for 3 years.

F) Abbreviations

Characters

.bis	Reference to SHDSL.bis (Enhanced SHDSL)
2B1Q	2 binary 1 quaternary - line code
3PTY	Three party service
4B3T	4 binary 3 ternary - a modified monitored sum 43-code (MMS43)
Δf	Bandwidth
Ω	Ohm (electrical resistance)

A

a	a-wire (tip)
A	Ampere (electrical current)
A3K1H	Audio 3,1 kHz
A7kHz	Audio 7 kHz
AAL	ATM adaptation layer
AC	Alternating Current or Access Server
ACS	Auto Configuration Server
ADSL	Asymmetric Digital Subscriber Line
AFTR	Address Family Transition Router
AI	Action indicator
AIT	Application information table
AMP	ARGUS measurement protocol
ANSI	American National Standards Institute
Anx.	Annex
AOC	Advice of charge
AOC-D	Advice of charge Charging information during the call
AOC-E	Advice of charge Charging information at the end of the call
APC	Angled Physical Contact
APN	Access Point Name
ARP	Address Resolution Protocol
AS	Available Second
ASCII	American Standard Code for Information Interchange
ATM	Asynchronous Transfer Mode
ATU-R	ADSL Transceiver Unit - Remote
Auto-MDI-X	Automatic Medium Dependent Interface Crossing
Avg	Average
B	
b	b-wire (ring)
BC	Bearer capability

BER	1. Basic Encoding Rules 2. Bit error rate
BERT	Bit error rate test
BGP	Border Gateway Protocol
BNG	Broadband Network Gateway
BR	Bridge
BRAS	Broadband access server
BRI	Basic rate interface
C	
C	Celsius
c₀	Speed of light
CALL PROC	CALL PROCeeding Message
CAT	Conditional access table
CC	Continuity counter
CCBS	Completion of calls to busy subscriber
CCNR	Call complete no response
CD	Call deflection
CDN	see also CDPN
CDPN	CalleD party number
CF	Call forwarding
CFB	Call forwarding busy
CFNR	Call forwarding no reply
CFU	Call forwarding unconditional
CGN	see also CDPN
CGPN	CallinG party number
CLIP	1. Calling Line Identification Presentation 2. Clipping
CLIR	Calling Line Identification Restriction
CNS	CLIP-no screening
CO	Central office
Codec	Coder decoder
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
CONN	CONNect Message
CONN ACK	CONNect ACKnowledge message
CQE	Conversational Quality Estimated
CR	Call reference
CRC	Cyclic redundancy check
CT	Call transfer
CUG	Closed user group
CW	Call waiting

D	
dB	Decibel
dBm/Hz	Performance measurement with the reference quantity 1 mW (milliwatt) per hertz
DC	Direct Current
DCE	Data communication equipment
DDI	Direct dialling in
DDM	Digital diagnostic mode
DF	Delay factor
DHCP	Dynamic Host Configuration Protocol
diffserv	Differentiated services
DIN	Deutsches Institut für Normung - German Institute for Standardization
DISC	DISConnect message
DL	Download
DMT	Discrete Multitone Transmission
DNS	Domain Name System
DPBO	Downstream power backoff
DS	Downstreamband
DSCP	Differentiated services codepoint
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
DSS1	Digital Subscriber Signalling System No. 1
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Frequency
DTU	Data Transmission Unit
E	
E1	Primary Rate Interface
EARFCN	EUTRA Absolute radio-frequency channel number
EC	European Community
ECT	Explicit Call Transfer
E-DSS1	European Digital Subscriber Signalling System Number 1
EFM	Ethernet in the First Mile (Protokoll see IEEE 802.3ah)
EFS	Error Free Seconds
EIT	Event Information Table
ElektroG	Elektro- und Elektronikgerätegesetz, German law governing electrical and electronic devices
EMC	Electromagnetic compatibility
EN	European standard
EoA	Ethernet over ATM
EOC	Embedded operations channel
ES	Errored seconds

ESHDSL	Enhanced SHDSL (SHDSL.bis)
ete	end-to-end
ETH	Ethernet
ETR	Expected Throughput Rate
ETSI	European Telecommunications Standards Institute
F	
F	Farad (unit of electrical capacitance)
Fax G3	Telefax group 3
Fax G4	Telefax group 4
FEC	Forward error correction
FFT	Fast Fourier transform
FIT	Fiber Inspection Tool
FSK	Frequency shift keying
FTP	File Transfer Protocol
FTTH	Fiber to the home
FTTx	Fiber to the x (generic term for the different types of fiber optic connections; x = corresponding endpoint of the fiber optic cable)
FW	
	Firmware
G	
G.fast	G.fast access to subscriber terminal
GB	Gigabyte
Gbit/s	Gigabits per second
GCID	Global Cell ID
G.hs	ITU-T G.994.1 Handshake procedure
GigE	Gigabit Ethernet
GND	Ground (earth)
GPON	Gigabit Passive Optical Network
GUI	Graphical User Interface
H	
h	hour
HD	High definition
HDLC	High-level data link control
HDSL	High bit rate digital subscriber line
HEC	Header error checksum
hex	Hexadecimal
HLC	High layer compatibility
HLOG	Amplitude of transmission function per tone
HOLD	Call hold
HRX-Wert	Hypothetical reference value
HTTP	Hypertext Transfer Protocol
Hz	Hertz (measuring unit of frequency)

I	
IAD	Integrated access device
ID	Identifier
IEEE	Institute of Electrical and Electronics Engineers
IGMP	Internet Group Management Protocol
INFO	INFOrmation Message
INP	Impulse noise protection
IL	Insertion loss
IP	Internet Protocol
IPCP	Internet Protocol Control Protocol
IPoA	Internet Protocol over ATM
IPoE	Internet Protocol over Ethernet
IPTV	Internet Protocol Television
IPv4	Internet Protocol Version 4
IPv6	Internet Protocol Version 6
ISO	International Standards Organization
Iso.	Isolation resistance measurement
ISP	Internet service provider
ITSP	Internet telephony service provider
ITC	Independent TC
ITU	International Telecommunication Union
K	
KB	Kilobyte
kbit/s	Kilobits per second
L	
L1	Layer 1 in the OSI reference model
L2	Layer 2 in the OSI reference model
L3	Layer 3 in the OSI reference model
LACP	Link Aggregation Control Protocol
LAN	Local Area Network
LAPD	Link access procedure for D-channels
LCD	Liquid crystal display
LCN	Logical channel number
LCP	Link Control Protocol
LED	Light-emitting diode
LLC	Low layer compatibility
LLDP	Link Layer Discovery Protocol
LOS	Loss of synchronize
LOSWS	Loss of sync word seconds
LQ	Line qualification
LQO	Listening quality objective

LTE	Long Term Evolution
M	
m	Meter
mA	Milliampere
MAC	Media Access Control
MB	Megabyte
Mbit/s	Megabits per second
MCC	Mobile Country Code
MCID	Malicious call identification
MDF	Main Distribution Frame
MDI	Media Delivery Index (RFC 4445)
MLR	Media loss rate
MM	Multi mode
MMS	Microsoft Media Server Protocol
MNC	Mobile Network Code
Modem	Modulator-demodulator
MOS	Mean opinion score (ITU-T P.800)
MPEG	Moving Picture Experts Group
MSA	Multiple source agreement
MSN	Multiple Subscriber Number
MTU	Maximum Transmission Unit
mV_{pp}	Millivolt peak-to-peak
N	
n/a	not available
n/r	not received
n/u	not used
NAT	Network address translation
NGN	Next generation network
NIT	Network information table
nm	Nanometer
NOK	Not OK
NP	Numbering plan
NSAP	Network service access point
NSF	Network specific facilities
NT	Network termination
NTR	Network timing reference
O	
OAM	Operation, Administration and Maintenance
ODN	Optical Distribution Network
OLS	Optical Light Source
OLT	Optical Line Termination

OM	Omni Mode
ONT	Optical Network Termination
ONU	Optical Network Unit
OoS	Out of Sequence
OPM	Optical Power Meter
ORL	Optical Return Loss
OSI	Open Systems Interconnection
OTDR	Optical Time Domain Reflectometer
OUI	Organizationally unique identifier
P	
P/N	Part number
PABX	Private automatic branch exchange
PADI	PPPoE active discovery initiation
PADO	PPPoE active discovery offer
PADR	PPPoE active discovery request
PADS	PPPoE active discovery session confirmation
PADT	PPPoE active discovery termination
PAM	Pulse amplitude modulation
PAP	Password Authentication Protocol
PAT	Program association table
PC	Personal computer
PCR	Program clock reference
PD	Protocol discriminator
PDU	Protocol data unit
PEN	Private Enterprise Number
PID	Packet identifier
PIN	Personal Identification Number
PLOAM	Physical Layer Operations, Administration and Maintenance
PLR	Packet loss ratio
PMT	Program map tables
PON	Passive Optical Network
POTS	Plain old telephone service (PSTN)
P-P	Point-to-point
P-MP	Point-to-multipoint
PMMS	Power measurement modulation session
PMS	Physical media specific
PPP	Point-to-Point Protocol
PPPoA	Point-to-Point Protocol over ATM
PPPoE	Point-to-Point Protocol over Ethernet
PPTP	Point-to-Point Tunneling Protocol
PSD	Power spectral density

PSI	Program specific information
PWR	Power
Q	
Q in Q	IEEE 802.1.ad, S-VLAN
QLN	Quiet line noise
QoS	Quality of service
R	
R	Ring (b-wire)
RC	Resistance (R) and capacitance (C)
REIN	Repetitive electrical impulse noise
REL	RELease message
REL ACK	RELease ACKnowledge message
REL COMPL	RELease COMPLete message
RF	Radio frequency
RFC	Request for comments
Ring	b-wire
RJ	Registered jack (standardised socket)
RoHS	Restriction of hazardous substances
RT	Router
RTCP	Real-Time Control Protocol
RTP	Real-Time Transport Protocol
RTSP	Real-Time Streaming Protocol
Rx	Received
S	
s	second
S/N	Serial number
SBC	Session Border Controller - Outbound Proxy
SCI	Sending complete indication
SDT	Service description table
Segm.	Segmented
SES	Severely errored second
SFF	Small form factor
SFP	Small form factor pluggable
SFP+	Small form factor pluggable plus
SHDSL	Single-Pair High-speed Digital Subscriber Line
SHINE	Single high impulse noise event
SIM	Subscriber Identity Module
SINR	Signal-to-interference-plus-noise ratio
SIP	Session Initiation Protocol
SM	Single mode
SNR	Signal-to-noise ratio

SNRM	Signal-to-noise ratio margin
SPB	Shortest Path Bridging
Spch	Speech (dt. Sprache)
SRU	SHDSL regeneration unit
SRV	Service record
SSID	Service Set Identifier
SSL	Secure Sockets Layer
STB	Set-top box
STU-C	SHDSL Transceiver Unit - Central Office
STU-R	SHDSL Transceiver Unit - Remote
STUN	Session Traversal Utilities for NAT
SUB	Subaddressing
SUSP	SUSPend message
T	
T	1. Tip (a-wire)
	2. Trigger
TAC	Type Approval Code
TC	1. Trellis code
	2. Transmission convergence
TCP	Transmission Control Protocol
TC-PAM	Trellis-coded pulse amplitude modulation
TDM	Time division multiplex
TDR	Time domain reflectometry
TDT	Time and date table
TE	TErминаl, terminal equipment
TEI	Terminal endpoint identifier
Tel31	Telephony 3.1 kHz
Tel7k	Telephony 7 kHz
TFT	Thin Film Transistor
TLS	Transport Layer Security
TM	Test manager
ToN	Type of Number
ToS	Type of service
TP	Terminal portability
TPID	Tag Protocol Identifier
TRG	Tip, Ring, Ground
TS	1. Technical specification
	2. Transport stream
TTX	Teletext
Tx	Transceived

U

UDP	User Datagram Protocol
UL	Upload
UPC	Ultra Physical Contact
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
US	VDSL: Upstream band or SHDSL: Unavailable second
USB	Universal Serial Bus
UTC	Coordinated Universal Time
UII	User-user info
UUS	User-to-user signalling

V

V	Volt
V/2	Pulse propagation time
VC	Virtual channel
VCC	1. Virtual channel connection 2. Voltage at the common collector
VCI	Virtual channel identifier
VC-MUX	Virtual circuit multiplexing
VDSL	Very High Speed Digital Subscriber Line
VFL	Visual Fault Locator
ViSyB	Video syntax-based
ViTel	Video telephony
VLAN	Virtual Local Area Network
VL	Virtual line
VLC	Video LAN client
VNC	Virtual Network Computing
VoD	Video on demand
VoIP	Voice over Internet Protocol
VoP	Velocity of propagation
VPI	Virtual path identifier
V_{pp}	Volt peak-to-peak
VTU-R	VDSL Transceiver Unit - Remote

W

WebDAV	Web-based Distributed Authoring and Versioning
WDM	Wavelength Division Multiplexing
WEEE	Waste Electrical and Electronic Equipment
WLAN	Wireless Local Area Network
WLAN AP	Wireless Local Area Network Access Point

	X
xDSL	Collective term for the different DSL variants
XGS-PON	10 Gigabit Symmetric PON
xPON	GPON and/or XGS-PON
xTU-C	xDSL Transceiver Unit - Central Office
xTU-R	xDSL Transceiver Unit - Remote
	Z
Z	Apparent resistance

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