ARGUS® 165

x D S L + G i g E   C O M B I   T E S T E R

IPv6 READY

Traffic generator

Rate [kBit/s]		Tx|Rx
Line	1000012	999967
Frame	987008	986963
Frames		Tx|Rx
OK	1788253	1787318
NOK	-	0
Duration:		0:00:22

Status

ARGUS® 165

ADSL
VDSL
SHDSL
ETH
SFP
ISDN
POTS
Cu
TDR
Data 101101011011
IP TV
Vo IP
MOS
PC
USB

intec
GESELLSCHAFT FÜR
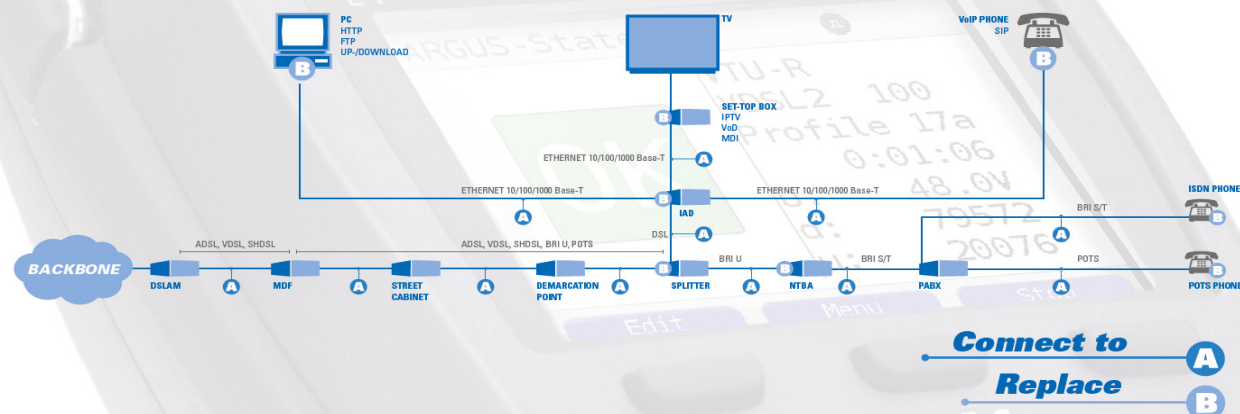INFORMATIONSTECHNIK mbH

Where to use the ARGUS?

Connect to **A**
Replace **B**

xDSL + GigE Combi tester

The ARGUS®165 combines all standard broadband interfaces (ADSL, VDSL, SHDSL) and fast Gigabit Ethernet interfaces with comprehensive Triple Play test functions in one measurement device. Without having to swap modules, the user can select or change the interface via the intuitive menu and perform tests at the push of a button.

The ARGUS®165 supports this with, amongst other things, two SFP slots and a copper-based Gigabit Ethernet interface. Thanks to the various Gigabit Ethernet SFPs, the tester offers the greatest possible compatibility for connection to fiber-based interfaces. It is thus possible to carry out Triple Play and performance tests directly on FTTx or GigE components via the GigE interface (copper or fiber).

Dual GigE and performance testing

A further option offered by the ARGUS®165 is the possibility of using two Gigabit Ethernet interfaces simultaneously (Dual GigE). It is thus not necessary to use a second device for end-to-end tests. Using a loop function and a traffic generator, the user can analyze the capacity of Ethernet segments or devices at full wire-speed (1 Gbit/s). Throughput tests in accordance with RFC 2544 are thus also possible. For HTTP and FTP downloads the interfaces can reach speeds of up to 200 Mbit/s.

Inspect PoE and Ethernet cabling

If the Ethernet cabling is defective, the ARGUS®165 can imme-diately locate the source of the fault through its comprehensive cabling tests. In this way, as well as shorts, opens and mismatches, amongst other things, the delay or polarity of wire pairs can also be determined.

In addition, it is possible to check whether the receiver provides the voltage for different PoE categories.

Triple Play and IPv6*

Optionally, Triple Play test functions can be added to the ARGUS®165, too. In this way, IPTV quality of service can also be checked by means of STB emulation and VoD testing, channel scanning, IPTV long-term analysis or using the Media Delivery Index (MDI). Data services and VoIP (incl. MOS) can be tested via the xDSL and Gigabit Ethernet interfaces.

Optionally, several of these IP tests can also be carried out via the new more powerful IPv6* protocol.

Additional features

The handheld tester also enables physical analysis of DSL copper wires (Cu tests) using the Line Scope; the time and frequency domain (FFT) are displayed in real time. Using the optional Active Probe II, even high-impedance measurements on a DSL connection in use are possible without interfering. Power spectral density (PSD) and noise can also be measured using a spectrum analysis (DMT Analysis). An RC test is also possible, providing the distance to short or open.

A TDR (Time Domain Reflectometry) function for measuring line lengths and locating the faults is available, too.

Additionally, the well-known ARGUS test features are available for testing directly on ISDN BRI S/T/U and POTS accesses.

Easy operation

The ARGUS®165 is also extremely easy to use. It has got a large (320 x 240 pixels) colour display, uses softkeys and has not only a USB client but also a USB host interface*. For a long operation time, the tester is equipped with a powerful, field replaceable Lithium-Ion battery pack.

intec Gesellschaft für Informationstechnik

With more than 20 years of experience, intec GmbH is one of the leading suppliers of xDSL, ISDN and IP measurement technology in Europe. With the ARGUS® range, intec is offering practical solutions for installation and troubleshooting of xDSL and ISDN connections. Developed specifically for the needs and daily use by technicians working for international network operators, service providers and installation companies.

More than 60 000 ARGUS®testers are already in the field with companies such as Deutsche Telekom, Vodafone, Telefonica, KPN, British Telecom and Telekom Austria who are completely satisfied in the quality of "Made in Germany" intec products.

Preliminary data sheet: Technical data subject to change without notice

ARGUS® 165

VDSL2, ADSL2+, SHDSL multi-pair, GigaBit Ethernet (Cu + SFP), ISDN, POTS, Copper (Cu) and Triple Play services tester

ARGUS®165 is a compact all-in-one handheld tester for testing all important broadband customer interfaces.

Broadband interfaces:
- Synchronisation with the DSLAM (xTU-C) and evaluation of all relevant line parameters and error counters
- Including bridge, router and PC replacement mode
- **ADSL2/2 +** modem simulation, ADSL tester, ATU-R
  - Supports ITU-T G.992.5 et alii; Annex A+B+J,+L+M; INP, SRA
  - Display of Bits, SNR, QLN and Hlog/tone graphs
- **VDSL2** modem simulation, VDSL tester, VTU-R
  - Supports ITU-T G.993.2 (8, 12, 17, 30 MHz + var. bandplans)
  - Display of Bits, SNR, QLN and Hlog/tone and stream graphs
- **G.SHDSL** modem simulation, STU-R and STU-C
  - Connection dial-up incl. Line Probing (PMMS) acc. to ITU
  - Available for SHDSL 2-, 4-, 6- and 8-wire interfaces
  - Supports ITU-T G.991.2, G.hs, ETSI 101524, G.SHDSL.bis
  - Supports the following TC sub layers: ATM, EFM, TDM*
- **GigaBit Ethernet** interfaces for different Ethernet tests
  - 2 GigaBit Ethernet interfaces (10/100/1000 Base-T), RJ-45
  - 2 integrated SFP slots for the use with various SFP modules, with support for the following SFP types, e. g. 100 Base-FX/LX, 1000 Base-SX/ZX/LX and 1000 Base-BX
  - Supports Dual GigE (SFP to SFP or SFP to RJ-45)

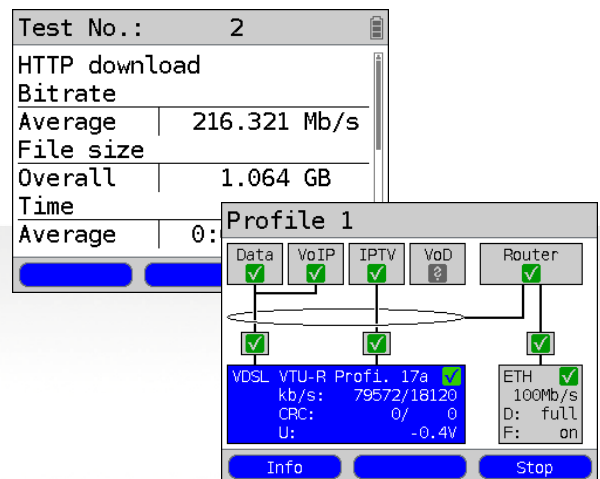**Triple Play testing via xDSL and GigaBit Ethernet:**
- **ATM layer** tests when using ADSL2/2+ and SHDSL-ATM
  - ATM OAM ping and ATM OAM cell loop, VPI/VCI scan
- **Data:** testing the data throughput (IPv4 and IPv6*)
  - IP ping and trace route tests (BRAS info, PPP trace, VLAN)
  - HTTP- and FTP download tests up to 200 Mbit/s
  - FTP server test, up-/download from ARGUS to ARGUS
- **Voice:** testing of VoIP connections based on SIP standard
  - VoIP terminal simulation, incl. acoustics (various codecs)
  - OK/FAIL evaluation and display of quality parameters
  - Evaluation of VoIP speech quality / Qualtiy of service (QoS):
    - MOS_{CQE} (ITU-T P.800) based on E model (ITU-T G.107)
- **Video:** testing Quality of IPTV services (QoS)
  - Stream request (STB mode), IPTV channel scan and more
  - OK/FAIL evaluation and display of quality parameters
  - Determination of MDI (Media Delivery Index), RFC 4445

Ethernet tests:
- **Cabling tests** for checking the Ethernet wiring
  - Detecting shorts, opens and mismatches and lots more
  - Probing of PoE classes (Power over Ethernet)
- **Performance tests** across different layers (1 Gbit/s):
  - Loop and traffic generator (different packet sizes)
  - GigE throughput tests* acc. to RFC 2544 up to 1 Gibt/s

Circuit-switched interfaces:
- **ISDN:** integrated comprehensive ISDN test set
  - BRI U interface (2B1Q or 4B3T*) acc. to ANSI T1.601
  - BRI S/T interface acc. to ITU-T I.430, TE and NT modes
  - D channel monitoring and leased lines on BRI S/T interface
  - Auto. testing of services and suppl. services, BERT, etc.
- **POTS:** integrated comprehensive POTS butt set (analog)
  - With DTMF and CLIP display, including pulse dial mode
  - Non-intrusive high-Z monitor, incl. voltage measurement

```
Test No.:      2
HTTP download
Bitrate
Average  │  216.321 Mb/s
File size
Overall  │    1.064 GB
Time
Average  │   0:
```

```
Profile 1
Data  VoIP  IPTV  VoD    Router
 ✓     ✓     ✓    ?       ✓

 ✓           ✓            ✓
VDSL VTU-R Profi. 17a ✓  ETH    ✓
  kb/s:  79572/18120     100Mb/s
  CRC:       0/    0    D:  full
  U:         -0.4V       F:   on
  Info              Stop
```

Copper testing (Cu tests):
- **RC measurement:** Resist., capacitance, continuity check
  - Including loop length calculation (distance to open / short)
  - DC voltage measurement: up to +200 V; res.: 0.1 V; ±2 %
- **Line Scope:** high performance real time line monitor with display of frequency domain (FFT) and time domain
  - Input impedance: 3.6 kΩ || 20 pF, adjustable gain
  - Frequency range: 20 kHz to 30 MHz; res.: 1 kHz; acc: ±0.1 %
  - Level range (at 0 dB): -130 to +10 dBm/Hz, res.: 0.1 dB; ±1 dB
  - Voltage in time domain, AC: 40 V_{pp}; res.: 2 mV_{pp}
  - Input protection, DC: 250 V; AC: 100 V_{pp}
- **DMT Analysis:** Power spectral density (PSD) assessment helps detecting noise, using 4096 DMT tones (e.g. VDSL2)
  - Impedance: 100 Ω
  - Frequency range: 130 kHz to 30 MHz (-3 dB); 4.3 kHz; ±0.1 %
  - Level range: -140 to -40 dBm/Hz; resolution: 0.1 dB
- **ARGUS Active Probe II*:** high-impedance probe
  - Impedance: 70 kΩ || < 1pF; range: 10 kHz to 30 MHz (±1.5 dB)
  - Switch between sym./asymmetric measurement mode
  - Power supplied by ARGUS USB host interface
- **TDR:** Time Domain Reflectometry function for measuring line lengths and locating the faults
  - Measuring range: 3.5 up to 6000 m; res.: 0.3 %/range; ±2 %
  - Pulse width (adjustable): 15 ns to 16 µs, amplitude: 5 or 20 V
  - Velocity of propagation (VoP): 30 % up to 99.9 %

Documentation and Analysis:
- **Documentation** of all parameters recorded to test reports (in device and on PC) via automatic access tests
- **Data transfer** to PC via USB client interface using Mini-USB
- **Update Tool** to carry out FW updates for free
- **WINplus** PC software for generating, saving, archiving and printing test reports and for configuring the ARGUS®
- **WINanalyse** PC software for analysis (including WINplus)
  - Graphical online long-term trace for ADSL, VDSL and IPTV
  - ISDN D channel clear text decoding* for protocol analysis

Further highlights:
- Brilliant QVGA colour display (LCD), 320 x 240 pixels
- Lightweight, compact and easy to use
- Intuitive menu navigation and instant readiness for operation
- Free firmware and software updates (WINplus/WINanalyse) via www.argus.info/en

ARGUS® 165

Technical Features:

- **Power supply** by a Li-ion battery pack or mains adaptor
- **Hotkeys** for quick start of various tests
- **Power management**, user configurable
- **Keypad:** 18 keys, 4 cursor keys, 3 context-sensitive softkeys
- **LCD colour display** (QVGA - 320 x 240 pixels), backlit
- **6 LEDs** indicating the status + Ethernet port LEDs
- **Handset** with integrated earpiece and microphone
- **CE marking:** complies with CE directives
- **User safety:** fulfills EN 60950-1:2006-11
- **RoHS** conformance according to WEEE directive

Interfaces:

- **2 x RJ45** jacks for ISDN, POTS, copper tests and xDSL
- **1 x Ethernet** (10/100 Base-T), RJ-45 management port
- **2 x Ethernet** (10/100/1000 Base-T), RJ-45 test ports
- **2 x SFP slots** (100 Base-FX/LX, 1000 Base-SX/LX/ZX/BX)
- **USB client** interface (type mini B)
- **USB host** interface (type A)
- **Headset** jack (TRS 2.5 mm, approx. 3/32'')

Environmental conditions:

- **Operating temperature:** 0 °C (+32 °F) up to +50 °C (+122 °F)
- **Storing temperature:** -20 °C (-4 °F) up to +60 °C (+140 °F)
- **Relative humidity:** up to 95 %, non-condensing

Dimensions:

- **Size:** H x W x D: 254 x 99 x 73 mm (10.0 x 3.9 x 2.9 in)
- **Weight:** approx. 880 g (1.94 lbs) - incl. battery pack

Standard package:

xDSL basic package (incl. GigE) with battery pack, mains adaptor, tailored test leads for chosen interfaces and options, Mini-USB cable, WINplus PC software (with CD and Manual), rubber holster, English manual and carrying case

Basic packages:

ARGUS 165 GigE + ADSL Annex A + L + M
Order number: 116500

ARGUS 165 GigE + ADSL Annex B + J
Order number: 116530

ARGUS 165 GigE + ADSL Annex A + B + J + L + M
Order number: 116550

ARGUS 165 GigE + VDSL2
Order number: 116570

ARGUS 165 GigE + SHDSL-2-w
Order number: 116580

intec

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*Options:

Additional interfaces:
(Additional test leads included, if required)
ADSL Annex A + L + M interface
Order number: 016505 (interface*) or 016545 (add. SW option*)
ADSL Annex B + J interface
Order number: 016506 (interface*) or 016546 (add. SW option*)
VDSL2 interface
Order number: 016508
SHDSL 2 wire interface
Order number: 016510
SHDSL 4 wire interface
Order number: 016511
SHDSL 8 wire interface
Order number: 016518
SFP support incl. Dual GigE
Order number: 016565 (SFP module not included)
ISDN BRI U (TE) interface
Order number: 015051 (2B1Q) or 015050 (4B3T*)
POTS TE interface
Order number: 015016
ISDN BRI S/T (TE/NT) and POTS interface
Order number: 016517 (incl. ISDN 128kBit BERT and X.31)

Additional test features:
(Depends on existing interfaces)
VoIP test (ADSL, VDSL2, SHDSL, GigE)
Order number: 016530 (in basic package 115162 incl. Ethernet)
IPTV test (ADSL, VDSL2, SHDSL, GigE)
Order number: 016535 (in basic package 115162 incl. Ethernet)
TDR (Time Domain Reflectometer)
Order number: 015052
ARGUS Active Probe II*
Order number: 015091 (probe for DMT Analysis and Line Scope)

Additional PC software:
(for Windows operating systems)
WINanalyse online (only key, no CD and Manual)
Order number: 016562
WINanalyse (incl. CD and Manual)
Order number: 016542

* We would be glad to provide further details and information about additional accessories on request.