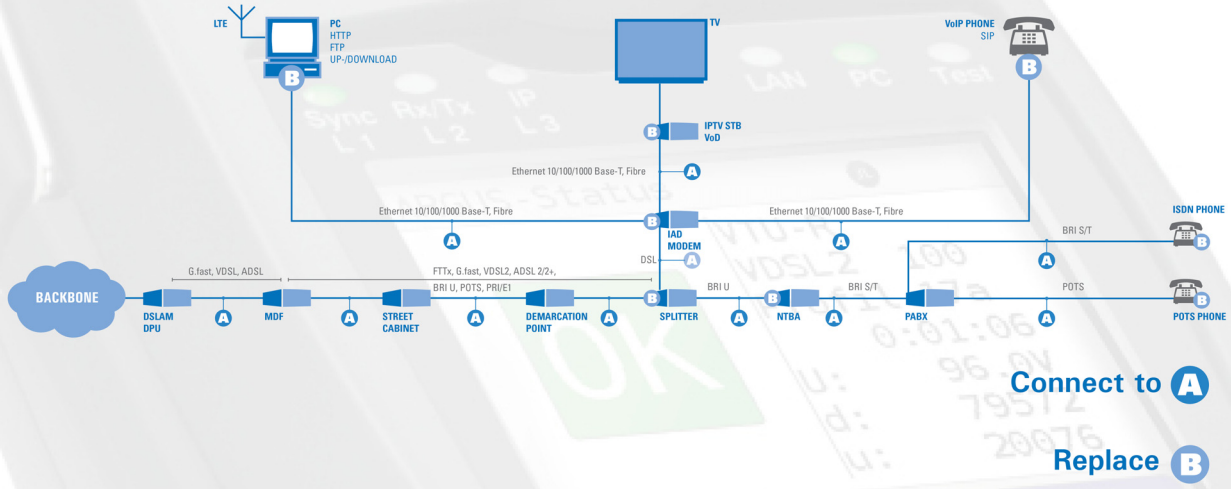
ARGUS® 165

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

ADSL
VDSL
SHDSL
GigE
SFP
LTE
ISDN
POTS
Cu
TDR
Copper Box
Data
IP TV
VoIP
MOS
PESQ
PC
USB
WLAN

intec
GESELLSCHAFT FÜR
INFORMATIONSTECHNIK mbH

Where to use the ARGUS?



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).

Performance testing

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 mulitple 100 Mbit/s.

Inspect Ethernet cabling

If the Ethernet cabling is defective, the ARGUS 165 can immediately 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.

Paralell Triple Play tests

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 and channel scanning. 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 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.
A 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.
If necessary, these tests can also be considerably extended in the field by simply connecting the compact ARGUS Copper Box via USB, thus enabling all important electrical parameters such as voltage, current, isolation resistance, LCL (ITU-T 0.9) and NEXT (at 1 MHz), and many more, to be automatically and quickly determined via tip, ring and ground.
Additionally, the well-known ARGUS test features are available for testing directly on ISDN BRI S/T/U, PRI/E1 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 two USB host interfaces. For a long operation time, the tester is equipped with a powerful, field replaceable Lithium-Ion battery pack.

intec Gesellschaft für Informationstechnik

With over 25 years of experience in this sector, intec GmbH can be considered to be one of the leading providers of xDSL, ISDN and IP-measurement technology in Europe.
The ARGUS product range provides a convenient solution for commissioning and troubleshooting on xDSL and ISDN connections. Specifically designed for user requirements in daily, praxis-related operations for international network operators, service providers and installation companies. The ARGUS measuring devices have already been purchased more than 90,000 times.
Companies such as Deutsche Telekom, Vodafone, Telefonica, KPN, British Telecom and Telekom Austria put their trust in the quality of the intec products, "Made in Germany".

VDSL2, ADSL2+, SHDSL multi-pair, GigE(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), DPU or OLT and evaluation of important line parameters and error counters
- Including bridge, router and PC replacement mode
- Graphical ADSL and VDSL long-term trace in the device

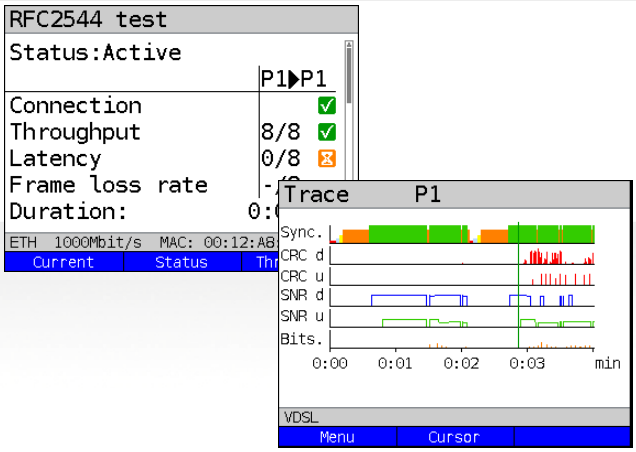
- **ADSL2/2+** modem simulation, ADSL tester, ATU-R
  - Supports ITU-T G.992.5 et alii; Annex A+B+J+L+M; INP, SRA
  - Display of Bits, SNR, QLN and Hlog/tone graphs
- **VDSL2** modem simulation, VDSL tester, VTU-R
  - Supports ITU-T G.993.2 (8, 12, 17, 30 MHz + var. bandplans)
  - Supports ITU-T G.993.5, G.vector (Vectoring)
  - Supports ITU-T G.998.4, G.INP (Retransmission)
  - Display of Bits, SNR, QLN and Hlog/tone 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, e. g. 100 Base-FX/LX, 1000 Base-SX/ZX/LX and 1000 Base-BX
  - DDM in acc. to SFF8472, Tx/Rx optical Level/PWR; ±3 dB
- **LTE** extension*, incl. LTE scanner and data tests
- **GPON** modem simulation* (ONT), incl. throughput tests

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 with multiple 100 Mbit/s
  - FTP server test, up-/download from ARGUS to ARGUS
  - Ethernet-networkscan (DHCP discovery, clients, services)
  - Text browser function, displays important web messages
- **Voice:** testing of VoIP connections based on SIP, IPv4/IPv6
  - 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)
    - PESQ (ITU-T P.862) in combination with PESQ server SW
- **Video:** testing Quality of IPTV services (QoS)
  - Stream request (STB mode), IPTV channel scan and more
  - OK/FAIL evaluation and display of quality parameters

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
  - PRI/E1 interface acc. to ITU-T I.431, TE and NT modes
  - D channel monitoring on BRI and PRI interfaces
  - E1 BERT simultaneously using all B channels (MegaBERT)
  - 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
- **PESQ** for BRI S/T/U and POTS



Ethernet tests:

- **Ethernet TDR** for checking the Ethernet wiring
- **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 Gbit/s as well as latency and frame loss

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 || 30 pF, adjustable gain
  - Frequency range: 20 kHz to 30 MHz; res.: 1 kHz; acc: ±0.1 %
  - Level range: -120 to +10 dBm/Hz, res.: 0.1 dB; ±2 dB (at 0 dB)
  - Voltage in time domain, AC: 40 V_{pp}; res.: 2 mV_{pp}
- **ARGUS Active Probe II:** high-impedance probe
  - Impedance: 70 kΩ || < 1 pF; range: 10 kHz to 30 MHz (±1.5 dB)
  - Switch between sym./asymmetric measurement mode
- **TDR:** Time Domain Reflectometry function for measuring line lengths and locating the faults
  - Measuring range: 3.5 up to 6000 m; res.: 0.25 %/range; ±2 %
  - Pulse width (adjustable): 15 ns to 8 µs, amplitude: 5 or 20 V
  - Velocity of propagation (VoP): 30 % up to 99.9 %
- **ARGUS Copper Box:** expanding the copper tests
  - Determines all important electric variables
  - e.g. U, I_{DC}, R, R-ISO, capacitive and resistive symmetry, capacitance, LCL and NEXT at 1 MHz for the line (see ARGUS Copper Box data sheet)
  - Automatic TRG measurements (Tip, Ring, Ground)
  - Remote control of various remote kits

Documentation and Analysis:

- **Documentation** of all parameters recorded to test reports (in device and on PC) via automatic access tests
- Transfer of test results via **QR code** to a smartphone
- **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)
  - ISDN D channel clear text decoding for protocol analysis
- **WLAN** extension for transferring test results to systems of an electronic order processing system, acces point mode (browsing, download) and remote control via smartphone

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 xDSL, URC, POTS and ISDN
- **2 x Ethernet** (10/100/1000 Base-T), RJ-45 test ports
- **2 x SFP slot** (100 Base-FX/LX, 1000 Base-SX/LX/ZX/BX)
- **USB client** interface (type mini B)
- **2 x USB host** interfaces (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. 920 g (2.03 lbs)(ARGUS incl. battery pack)

Standard package:

xDSL basic package (incl. GigE and SFP use) with battery pack, mains adaptor, tailored test leads, mini-USB cable, WINplus (download version), pinted user manual, rubber holster, ribbon hook, hand strap 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 (incl. Vectoring)
Order number: 116570

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

*Options:

Additional interfaces: (test leads included)

VDSL2 interface (incl. Vectoring)
Order number: 016508

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*)

SHDSL 2 / 4 / 8 wire interface
Order number: 016510 / 016511 / 016518

GPON software option
Order number: 016592

SFP support
Order number: 016590

LTE option
Order number: 016556

POTS TE interface
Order number: 015016

ISDN BRI U (TE) interface
Order number: 015051 (2B1Q) or 015050 (4B3T*)

ISDN BRI S/T (TE/NT) and POTS interface
Order number: 016517 (incl. ISDN 128kBit BERT and X.31)

ISDN PRI/E1 (TE/NT) interface
Order number: 016520 (incl. MegaBERT)

Additional test features: (depends on existing interfaces)

WLAN option / WLAN kit (each incl. access point)
Order number: 016550 / 016551

PESQ (VoIP, ISDN and POTS)
Order number: 016525

VoIP test (ADSL, VDSL2, SHDSL, GigE)
Order number: 016530

IPTV test / IPTV ext. (ADSL, VDSL2, SHDSL, GigE)
Order number: 016537 / 016539

VoIP + IPTV package
Order number: 016533

TDR (Time Domain Reflectometer)
Order number: 015052

ARGUS Copper Box
Order number: 015095

ARGUS Active Probe II
Order number: 015091 (probe for Line Scope)

Additional PC software: (for Windows operating systems)

WINanalyse license (download version)
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.

intec

GESELLSCHAFT FÜR
INFORMATIONSTECHNIK mbH

Rahmedestraße 90
D-58507 Lüdenscheid / Germany

Tel: +49 2351 9070-0
Fax: +49 2351 9070-70

E-Mail: sales@argus.info
Internet: www.argus.info/en