ARGUS® *162*

V D S L + A D S L   C O M B I   T E S T E R

VDSL

ADSL

SFP

GigE

LTE·))

ISDN

POTS

Cu

TDR

Copper Box

LAN
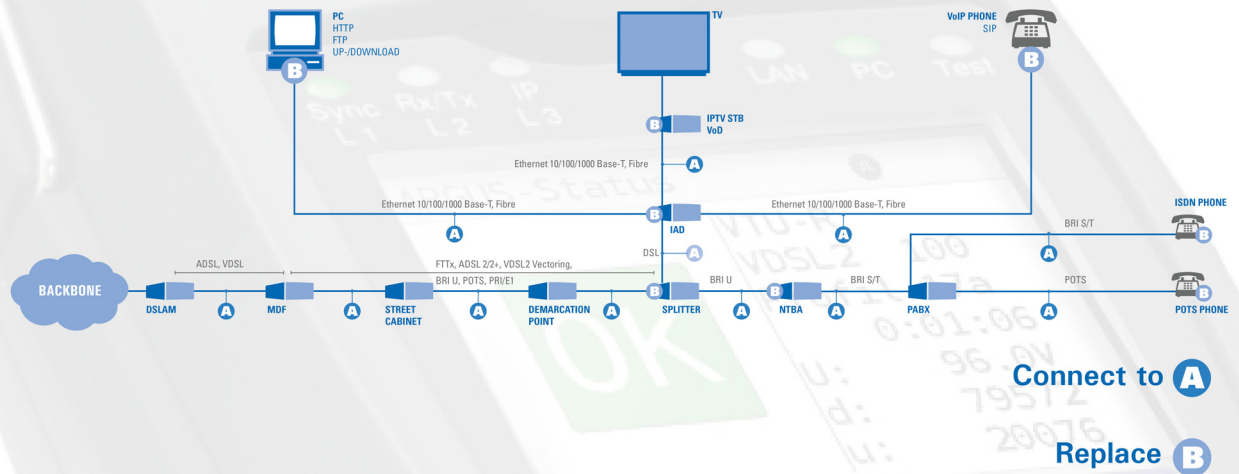
Data
101101011011

IP TV

Vo IP

MOS

PESQ

USB

WLAN·))

intec

GESELLSCHAFT FÜR
INFORMATIONSTECHNIK mbH

Where to use the ARGUS?

PC
HTTP
FTP
UP-/DOWNLOAD

TV

VoIP PHONE
SIP

IPTV STB
VoD

Ethernet 10/100/1000 Base-T, Fibre

Ethernet 10/100/1000 Base-T, Fibre

Ethernet 10/100/1000 Base-T, Fibre

ISDN PHONE

IAD

BRI S/T

DSL

ADSL, VDSL

FTTx, ADSL 2/2+, VDSL2 Vectoring,
BRI U, POTS, PRI/E1

BRI U

BRI S/T

POTS

BACKBONE

DSLAM

MDF

STREET CABINET

DEMARCATION POINT

SPLITTER

NTBA

PABX

POTS PHONE

Connect to Ⓐ

Replace Ⓑ

xDSL combi tester with fibre optics

The combi tester for latest turbo internet: The ARGUS 162 combines the capabilities of a tester for day-to-day installation with those of a tester for high-speed interfaces, such as GPON (FTTH) or LTE.

In addition, it is equipped with a powerful and versatile SFP slot (FTTx) and a copper-based Gigabit Ethernet interface which can, for example, provide a full ONT or xDSL modem simulation. Furthermore, ARGUS 162 is available with an optional integrated ADSL interface (Annex A + B + J + L + M) and supports VDSL2 Vectoring (G.vector: ITU-T G.993.5) as well as all well-known handset functionalities for ISDN BRI S/T/U, PRI/E1 and POTS if needed.

Triple Play and Quality of Service (QoS)

HTTP and FTP downloads can be performed via Gigabit Ethernet and FTTx with speeds of multiple 100 Mbit/s. It is possible to subject these Ethernet and fibre accesses to the same practical stress tests as ADSL and VDSL interfaces. Such tests can be simply started and stopped at any time by the user, for example in the form of parallel triple-play tests. Those additional triple-play tests like data, VoIP and IPTV can also be activated by key later in the field, when required. The ARGUS 162 therefore not only simulates the terminal equipment such as VoIP phone, PC or TV set-top box (STB), but also identifies all the important quality parameters (QoS) such as the VoIP speech quality according to the MOS method (Mean Opinion Score). The multifunctional combi tester also performs various IP tests using the IPv6 protocol, which becomes more common, even in the dual-stack operation mode. Furthermore, the ARGUS 162 supports the setup of several virtual connections (VLANs, PPP connections).

Ethernet TDR and Copper tests

In order to measure loop lengths and identify incorrect wiring, the tester supports cabling tests (Ethernet TDR) and, on the last mile, copper tests (Cu tests) as well as a TDR (Time Domain Reflectometer) analysis. Also, unwanted interferers can be localized promptly by spectral analysis with the Line-Scope (up to 30 MHz). The compact ARGUS Copper Box can optionally measure all important electrical values of the local loop such as DC and AC voltage, DC current, isolation and loop resistance,

capacitance or longitudinal balance (LCL: ITU-T O. 9) and near-end crosstalk (NEXT) between tip, ring and ground wire - all completely automated and in real time. The ARGUS Copper Box also provides the advantage that it can be combined with various ARGUS testers and only has to be connected in the field, when one really needs it.

Additional features

Without changing modules, it is possible to select the different interfaces via the intuitive menu and test them with the press of a single button. High user-friendliness is ensured by very short boot and changeover times. Alongside the ease of use is raised by the possibility to do detailed adjustments as well as by the use of the completely pre-configured profiles with a wide range of various settings and identifiers (e.g. PPP) for all the access types an operator offers. Its low weight and the user-friendly, manageable size make the ARGUS 162 an all-rounder, which lithium-ion battery pack ensures long operating times in the field.

Easy operation

The large 320 x 240 pixel colour display and an intuitive menu structure, among other things, guarantee user-friendly operation. A high-performance Li-Ion battery pack ensures long operating times in the field.

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".

ARGUS® 162

VDSL2, ADSL2/2 + , GigE (Cu + SFP), ISDN, POTS, copper as well as Triple Play services tester

ARGUS®162 is a compact universal handheld tester for testing all important high-speed broadband interfaces.

Broadband interfaces:
- Synchronisation with 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.998.4, G.INP (Retransmission)
  - Supports ITU-T G.993.5, G.vector (Vectoring)
  - Display of Bits, SNR, QLN and Hlog/tone graphs
- **Gigabit Ethernet** interface for Triple Play and Ethernet tests
  - 1 Gigabit Ethernet test interface (10/100/1000 BT), RJ-45
  - 1 integrated SFP slot for the use with various SFP modules
  - 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

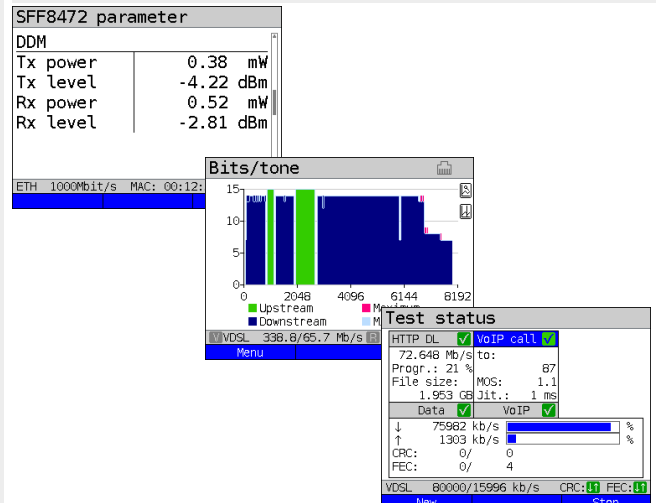**Parallel Triple Play testing via xDSL and GigE:**
- **ATM layer** tests when using ADSL and ADSL2/2+
  - ATM-OAM ping and ATM-OAM cell, VPI/VCI scan
- **Data:** testing the data throughput (IPv4 and IPv6)
  - IP ping and trace route tests (BRAS info, PPP trace, VLAN)
  - HTTP- and FTP download tests multiple 100 Mbit/s
  - FTP server test, up-/download from ARGUS to ARGUS
  - Ethernet network scan (DHCP discovery, clients, services)
  - Text browser function, displays important web messages
- **Voice:** testing VoIP connections based on SIP, IPv4/IPv6
  - VoIP terminal simulation, incl. acoustics (various codecs)
  - OK/FAIL evaluation of the VoIP speech quality (QoS) acc. to:
    - 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 IPTV and VoD services (STB mode)
  - Stream request (set-top box mode), IPTV channel scan
  - OK/FAIL evaluation and display of quality parameters (QoS)

Ethernet tests:
- **Ethernet TDR** for checking the Ethernet wiring
- **LAN cabling tests**, incl. Wiremap and PoE/PoE+ class check*

Circuit-switched interfaces:
- **ISDN:** integrated comprehensive ISDN test set
  - ISDN 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
  - E1 BERT simultaneously using all B channels (MegaBERT)
  - Auto. testing of services and suppl. services, BERT, etc.
- **POTS:** integrated comprehensive POTS test set (analog)
  - With DTMF and CLIP display, including pulse dial mode
  - Non-intrusive high-Z monitor, incl. voltage measurement
- **PESQ** for BRI S/T/U and POTS

Copper testing:
- **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; acc.: ±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 range in time domain, AC: 40 V_{pp}; resolution: 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
  - Power supplied by ARGUS USB host interface
- **TDR:** Time Domain Reflectometry function for measuring line lengths and locating the faults
  - Measuring range: 3 up to 6,000 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 (Details, 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 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-specific softkeys
- **LCD colour display** (QVGA - 320 x 240 pxs.), backlit
- **LEDs:** 6 LEDs to indicate the status + Ethernet LEDs
- **Handset** with integrated earpiece and microphone
- **CE marking:** complies with CE directives
- **User safety:** fulfils EN 60950-1:2006-11
- **RoHS** conformance acording to WEEE directive

Interfaces:

- **2 x RJ-45** jacks for xDSL, URC, POTS and ISDN
- **1 x Ethernet** (10/100/1000 Base-T), RJ-45 test port
- **1 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** plug socket (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:** < 900 g (< 1.98 lbs) (incl. battery pack)

Standard package:

ARGUS 162 with Li-Ion battery pack, mains adaptor, minimum one DSL interface w/ test leads, mini USB cable, RC measurement, WINplus PC (download version), printed user manual, ribbon hook, hand strap and carrying case

Basic packages:

ARGUS 162 ADSL Annex A + L + M
Order number: 116320
ARGUS 162 ADSL Annex B + J
Order number: 116232
ARGUS 162 ADSL Annex A + B + J + L + M
Order number: 116252
ARGUS 162 VDSL2 (incl. Vectoring)
Order number: 116272

*Options:

Additional interfaces: (test leads included)
VDSL2 interface (incl. Vectoring)
Order number: 016208
ADSL Annex A + L + M interface
Order number: 016205 (interface) or 016245 (extension)
ADSL Annex B + J interface
Order number: 016206 (interface) or 016246 (extension)
GPON software option
Order number: 016292
SFP support
Order number: 016290
LTE option
Order number: 016256
LAN cabling tests
Order number: 016261
POTS interface
Order number: 016216
ISDN BRI U (TE) interface
Order number: 015051 (2B1Q) or 015050 (4B3T*)
ISDN BRI S/T TE and POTS interface
Order number: 016217
ISDN BRI NT (incl. 128kBit-BERT, X.31)
Order number: 016215
ISDN PRI/E1 TE/NT/Monitor (incl. MegaBERT)
Order number: 016220

Additional test features: (depends on existing interface)
Ethernet Loop (10/100 Base-T)
Order number: 016228
IP Download package
Order number: 016229
VoIP test (via ADSL, VDSL, Ethernet)
Order number: 016230
IPTV / IPTV ext. (via ADSL, VDSL, Ethernet)
Order number: 016237 / 016239
VoIP + IPTV package
Order number: 016233
TDR (Time Domain Reflectometer)
Order number: 015052
ARGUS Active Probe II
Order number: 015091 (for Line Scope)
ARGUS Copper Box
Order number: 015095
PESQ (VoIP, ISDN and POTS)
Order number: 016225
WLAN option / WLAN kit (each incl. access point)
Order number: 016250 / 016251

Additional PC software: (for Windows operating systems)
WINanalyse (download version)
Order number: 015062
WINanalyse (incl. CD and Manual)
Order number: 015042

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

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