

ARGUS[®] 145 PLUS

TRIPLE PLAY + xDSL COMBI TESTER



VDSL

ADSL

SHDSL

ETH

ISDN

POTS

Cu

Data
101101011011

IP
TV

Vo
IP

MOS

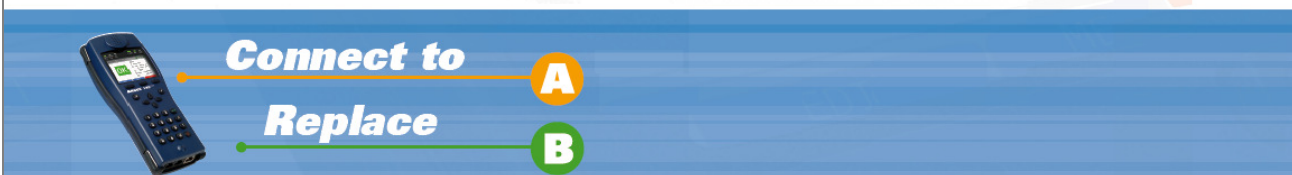
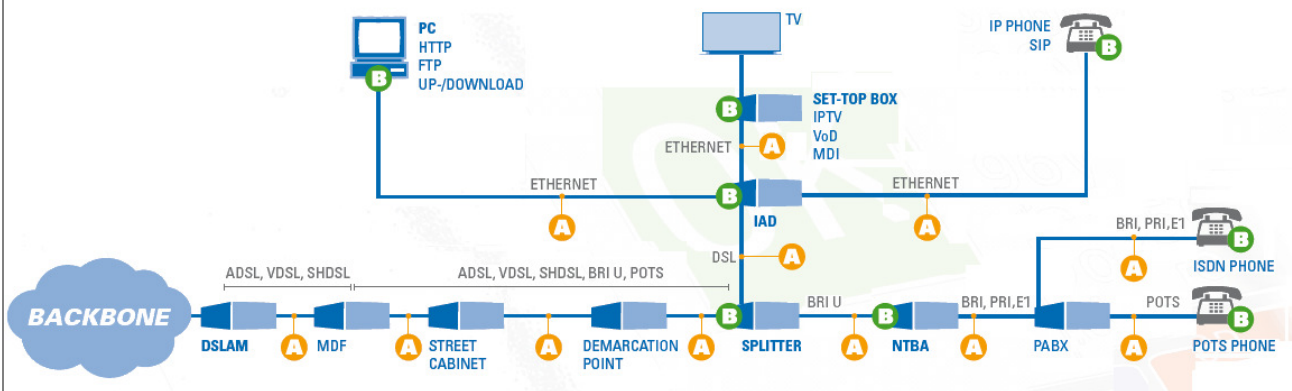
PESQ

PC

USB

intec

GESELLSCHAFT FÜR
INFORMATIONSTECHNIK mbH



The compact all-rounder

Universal xDSL + ISDN + Triple Play test set

The ARGUS® 145^{PLUS} tests VDSL2, ADSL, SHDSL, Ethernet plus ISDN PRI, E1, BRI S/T/U and POTS accesses as well - integrating all interfaces into a single lightweight unit. Switching between different interfaces is a matter of seconds - it can be carried out conveniently via the user menu. This all-rounder includes separate chipsets for ADSL, VDSL2 and SHDSL to ensure a superior performance on all accesses.

Lineman's handset for POTS, ISDN and VoIP

In addition to its functionality as an analogue handset and as a comprehensive ISDN tester, it also offers support for testing VoIP via all xDSL interfaces and on Ethernet. Besides simulating a terminal, it also offers extensive QoS parameters and evaluates voice quality in accordance with various proven techniques, e.g. MOS or PESQ*.

Testing E1 and ISDN PRI interfaces

The ISDN PRI/E1 interface also permits comprehensive service testing as it is standard for the ISDN BRI S/T/U interfaces. It provides PRI specific test functions such as a MegaBERT for performing a framed or unframed bit error rate test (BERT) utilizing the entire 2 Mbit/s of bandwidth.

Long-term analysis

In addition, the test instrument (actively and passively) determines the Media Delivery Index (MDI) and evaluates IPTV and Video on Demand data streams. The ARGUS® 145^{PLUS} is also well equipped for checking Internet connections as it has IP ping and trace route functions as well as upload and download tests. Completing the package, it can operate in xDSL bridge and router modes and can also perform an IPTV or xDSL online trace when used in combination with the PC software WINanalyse.

Copper test set

When it comes to physical layer testing, resistance and capacitance (RC) measurements on the subscriber line are available. To track down faults, the DMT Analysis and Line Scope tools allow a spectrum analysis of the entire xDSL frequency range (up to 30 MHz).

Despite its broad range of functions for measurements using the latest interfaces, the ARGUS® 145^{PLUS} is a very handy and compact (highly integrated) device that can easily be taken to any location and is ready for operation in a flash.

Easy operation

The ARGUS® 145^{PLUS} 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 time of operation, the tester is equipped with a powerful, replaceable Lithium-Ion battery pack.

intec Gesellschaft für Informationstechnik

The intec Gesellschaft für Informationstechnik mbH is developing high-quality products for the international telecommunications market for more than 20 years and is one of the leading vendors of xDSL, ISDN and IP measurement technology in Europe today.

The successful ARGUS measurement equipment enables its users to conveniently and safely commission and troubleshoot xDSL and ISDN accesses as well as services like VoIP and IPTV based on these interfaces.

ARGUS testers are designed to meet the day-to-day needs of field technicians; consequently intec engineers focus on ensuring high-quality measurement in a compact device that is exceptionally easy to use.

The portfolio of ARGUS testers, software and analysers benefits from progressive development and is kept up-to-date with support for the latest standards for all the common access types and protocols as well as for the newest features of the Next Generation Networks (NGN) and Triple Play services.

Throughout the world, numerous telecommunication companies have come to appreciate and rely on the advantages offered by intec equipment; to name just a few Deutsche Telekom, Saudi Telecom, Telefonica, KPN, British Telecom and Telekom Austria.

VDSL2, ADSL2+, SHDSL multi-pair, Ethernet, ISDN (BRI S/T/U, PRI, E1), POTS, copper (Cu) and Triple Play services tester

ARGUS[®] 145^{PLUS} is a compact universal all-in-one handheld device for testing all common customer interfaces

Broadband interfaces:

- Synchronisation with DSLAM (xTU-C) and evaluation of all relevant connection parameters and error counters
- Including bridge, router and PC replacement modes
- Separate DSL chipsets ensure high performance
- **ADSL2/2+** and ADSL modem simulation, ATU-R
 - Shows bits, SNR, QLN and Hlog/tone graphs
 - Supports ITU-T G.992.5 et alii; Annex A, B, M*, INP, SRA
 - Online trace for a long-term analysis of ADSL parameters
- **VDSL2** modem simulation, VTU-R
 - Shows bits, SNR, QLN and Hlog/tone and stream graphs
 - Supports ITU-T G.993.2 (all profiles and bandplans)
 - Online trace for a long-term analysis of VDSL parameters
- **G.SHDSL** modem simulation, STU-R and STU-C
 - Connection dial-up incl. Line Probing (PMMS) acc. to ITU-T
 - Available for SHDSL 2-, 4-, 6-* and 8-wire bonding
 - Supports ITU-T G.991.2, G.hs (handshake), ETSI 101524, G.SHDSL.bis (Enhanced SHDSL - ESHDSL), IEEE 802.3 ah
 - Supports the following SHDSL modes: ATM, EFM, TDM*
- **Ethernet** interfaces for test and management purposes
 - Two Ethernet interfaces (10/100 Base-T), Autonegotiation
 - Supports Ethernet terminal mode (PC replacement)

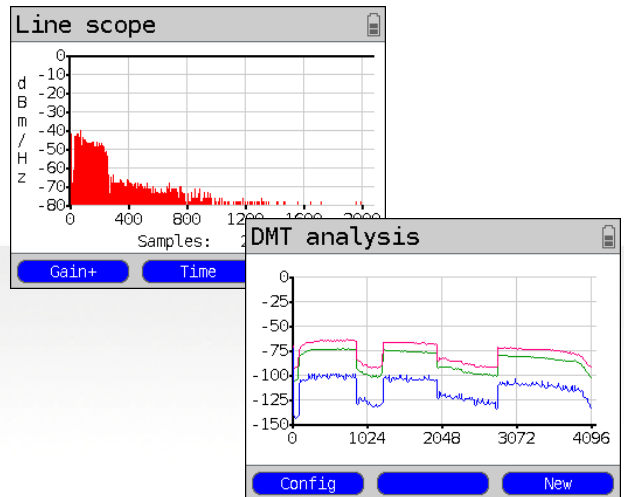
Triple Play testing

via ADSL2+, VDSL2, SHDSL multi-pair and Ethernet:

- **ATM layer** tests when using ADSL2/2+ and SHDSL ATM
 - ATM OAM ping and ATM OAM cell loop, VPI/VCI scan
 - ATM BERT* (bit error rate test on ATM layer)
- **Data:** testing the data throughput, establishing a PPP login
 - IP ping and trace route tests (BRAS info, PPP trace, VLAN)
 - Download tests for throughput determination (parallel tests) (HTTP download, FTP up-/download)
 - FTP server test*, up-/download from ARGUS to ARGUS
- **Voice:** testing of VoIP (Voice over IP) connections (SIP)
 - VoIP terminal simulation, including acoustics (misc. codecs)
 - OK/FAIL evaluation and display of quality parameters (QoE)
 - Evaluation of the VoIP speech quality directly on xDSL:
 - 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)
 - IPTV online trace for performing a long-term analysis
 - Determination of MDI (Media Delivery Index), RFC 4445

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
- **WINplus** PC software for generating, saving, archiving and printing test reports and for configuring the ARGUS
 - Includes the free ARGUS[®] Update Tool
- **WINanalyse** PC software for analysis (including WINplus)
 - Graphical online long-term trace for xDSL and IPTV
 - ISDN D channel clear text decoding* for protocol analysis
 - Graphical display of bit error rate tests (MegaBERT)



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
 - Testing of BRI S/T and PRI leased lines (E1, 2 Mbit/s)
 - E1 BERT simultaneously using all B channels (MegaBERT)
 - Automatic testing of services and supplementary services
 - Evaluation of the ISDN speech quality directly on BRI S/T/U:
 - Via PESQ* (ITU-T P.862) + MOS_{LQ0}* w/ PESQ server SW*
- **POTS:** integrated comprehensive POTS butt set (analogue)
 - With DTMF and CLIP display, including pulse dial mode
 - Non-intrusive high-Z monitor, incl. voltage measurement
 - Evaluation of the speech quality directly on POTS:
 - Via PESQ* (ITU-T P.862) + MOS_{LQ0}* w/ PESQ server SW*

Copper testing (Cu tests):

- **RC measurement:**
 - Resistance and capacitance checks of the local loop
 - Including a loop length calculation
 - DC voltage measurement: up to +200 V; resolution 0.1 V; $\pm 2\%$
- **Line Scope:** high performance real time line monitor with display of frequency domain (FFT) and time domain
 - Input impedance: 3.6 k Ω || 20 pF, adjustable gain
 - Frequency range: 20 kHz - 30 MHz; resolution: 1 kHz; $\pm 0.1\%$
 - AC voltage measurement: 40 V_{pp}; resolution: 2 mV_{pp}
 - Electric strength DC: 250 V; AC: 100 V_{pp}
- **DMT Analysis:** Power spectral density (PSD) assessment helps detecting noise, using 4096 tones (e.g. VDSL2); with graphical indication of min., max. and average values
 - Input impedance: 100 Ω
 - Frequency range: 130 kHz - 30 MHz (-3 dB); 4.3 kHz; $\pm 0.1\%$
 - Level range: -140 to -40 dBm/Hz; 0.1 dB
- **ARGUS Active Probe I*:** high-ohmic active probe
 - Input impedance: 12.4 k Ω || 5pF
 - Frequency range: 3 kHz - 30 MHz (-3 dB)
 - Power supplied by ARGUS USB host interface

Further highlights:

- Large brilliant QVGA colour display (LCD), 320 x 240 pixels
- Lightweight, compact and easy to use; all functions integrated
- Intuitive menu navigation and instant readiness for operation
- Free firm- and software updates via www.argus.info

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
- **Top quality** management, DIN EN ISO 9001:2008 certified

Interfaces:

- **2 x RJ-45** jacks for xDSL and ISDN
- **2 x Ethernet** (10/100 Base-T)
- **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: 235 x 97 x 55 mm (9.25 x 3.8 x 2.2 in)
- **Weight**: approx. 795 g (1.75 lbs) - incl. battery pack

Standard package:

ARGUS[®] with battery pack, mains adaptor, tailored test leads for chosen interfaces and options, Mini-USB cable, RC measurement, Line Scope, DMT analysis, WINplus PC software, English manual, carrying strap and case

Basic packages:

ARGUS 145 plus ADSL Annex A

Order number: 115002

ARGUS 145 plus ADSL Annex B

Order number: 115032

ARGUS 145 plus ADSL Annex A + B

Order number: 115052

ARGUS 145 plus VDSL

Order number: 115102

ARGUS 145 plus SHDSL-2-w

Order number: 115132

ARGUS 145 plus ISDN PRI/E1

Order number: 115162



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Options:

Additional interfaces:

(Every option includes additional test leads, if required)

ADSL Annex A interface

Order number: 015005 (interface*) or 015045 (add. SW option*)

ADSL Annex B interface

Order number: 015006 (interface*) or 015046 (add. SW option*)

VDSL2 interface

Order number: 015008

SHDSL 2-wire interface

Order number: 015010

SHDSL 4-wire interface

Order number: 015011

SHDSL 8-wire interface

Order number: 015013

ISDN BRI U (TE) interface

Order number: 015050 (4B3T*) or 015051 (2B1Q)

ISDN BRI S/T (TE/NT) and POTS interface

Order number: 015017 (including ISDN 128kBit BERT and X.31)

ISDN PRI/E1 (TE/NT) interface

Order number: 015020 (including MegaBERT)

Additional test features:

(Depends on existing interfaces)

PESQ (VoIP, ISDN and POTS)

Order number: 015025

VoIP tests (ADSL, VDSL, SHDSL, Ethernet)

Order number: 015030 (including MOS evaluation)

IPTV tests (ADSL, VDSL, SHDSL, Ethernet)

Order number: 015035 (incl. IPTV online trace and MDI analysis)

ARGUS Active Probe I*

Order number: 015090 (probe for DMT Analysis and Line Scope)

Additional PC software:

WINanalyse

Order number: 015042 (for Windows operating systems)

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