details

ARGUS®125

Next Generation Voice Tester (NGVT)
(Version: 11 / 2008)

Testing speech quality on all common interfaces

- **ISDN:** ARGUS®125 is a powerful ISDN tester, it includes:
  - PRI and BRI interface in TE and NT mode
  - PRI and BRI D channel monitoring (passive)
  - U interface (alternatively with 2B1Q or 4B3T)
  - Leased lines (BRI/PRI with and w/o D channel)
  - 128 kBit BERT* on U interface and BRI leased lines
  - E1-BERT* using all B channels simultaneously (MegaBERT*)
  - V5.1/V5.2 monitor* (up to 3 timeslots / multiple E1 links)
- **POTS:** integrated analog tester with support of DTMF and CLIP
  - 2-wire high-Z monitor with voltage measurement
- **ADSL** modem emulation* (ATU-R), supports various standards
- **Ethernet** interface* (10/100 Base-T), router / bridge mode
- **ATM** layer tests* w/ ATM-OAM ping/loop and VPI/VCI scan
- **IP** features* w/ IP ping, trace route test, (DHCP, VLAN)
  - Download test for throughput evaluation (HTTP, FTP up/down)
- **VoIP** testing function*, includes own acoustics and evaluates speech quality using MOS, directly via ADSL and/or Ethernet
- **RC measuring**, includes a loop length calculation
- Fully automated access tests with result documentation using test reports, stored in ARGUS® and/or on PC
- Transmits data to PC using USB or RS232 (EIA232) interface
- **WINanalyse***, PC software for D channel decoding and/or for executing an ADSL long term analysis, graphically demonstrated
- Easy-to-operate, user definable and predefined test scenarios
- Internally rechargeable standard batteries or mains powered
- Free software updates by download from www.argus.info

The **Next Generation Voice Tester** (NGVT) **ARGUS®125** can be equipped with a comprehensive spectrum of testing interfaces.
In addition to legacy interfaces such as ISDN BRI S/T and U, ISDN PRI, E1, and POTS, comprehensive test and measurement features for next generation accesses like ADSL* and Ethernet* are available now. Test out whether the local loop is ready to deliver ADSL services by connecting the **ARGUS®125** to various spots – at the end point, the junction box, the cross box – to evaluate and optimize the local loop.

Optional test capabilities are available to both objectively and subjectively evaluate the speech quality of VoIP* calls via the ADSL* or Ethernet* interfaces. Amongst others, the well-known E-model (ITU-T G.107), delivering a mean opinion score (MOS)*, can be utilized to determine the QoS.

Assured by its intuitive menu navigation and the graphical indication of all important test results, the **ARGUS®125** is easy-to-operate. The internal memory capacity allows to record and store monitored data, without having to connect to a PC. Additionally, the USB interface affords a high-speed data transmission between the tester and the PC. The built-in speaker and microphone enable service technicians to place real speech calls via the various interfaces and to evaluate the quality of each voice transmission actively.

Using the RC measuring, complemented by a loop length calculation, physical impairments of the local loop can be detected and the distance to the open and short respectively can be assessed.
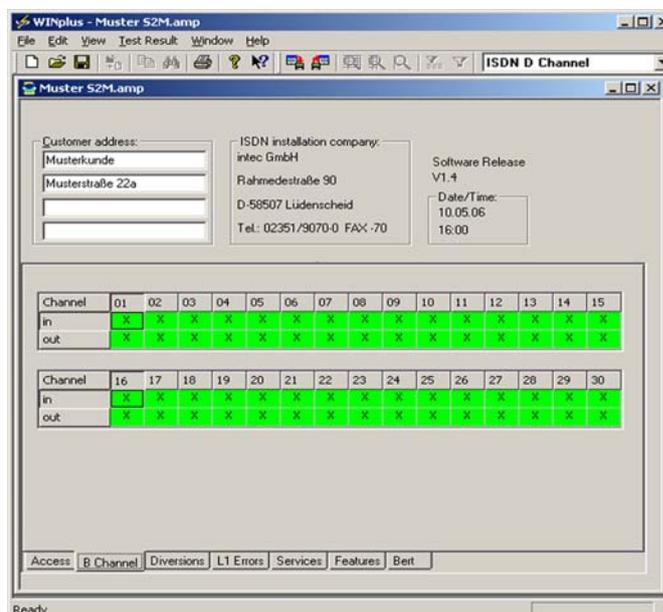
(Display of the PRI B channel configuration with WINplus)

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ARGUS®125 – ISDN PRI features

- E1-PRI interface in accordance with ETS 300 011, ITU-T G.703 HDB3 Code, automatic CRC detection
- Operation directly on the PRI's U interface, 4 wire (TE/NT mode)
- Operation modes:
  - TE mode (terminal simulation) NT mode (network simulation)
  - D channel monitor mode (high impedance), passive overplugging to PRI-access with online recording on PC or the internal memory, internal decode
  - D channel trace in TE/NT mode to PC or memory, int. decode
  - Supports internal decode
- Automatic detection of protocol and access-configuration (CRC on/off): DSS1
- Additional protocols: Cornet-T / N / NQ, QSIG, VN4
- Layer 1 alarms (CRC-4, AIS, FAS, E-Bit, A-Bit, frame error, code error, Sa_x display)
- Layer 1 master/slave operation, TE/NT using Sa_x commands
- Automated test scenarios for access verification and data saving in the ARGUS® for creating test reports
- Automatic service test: determines which ISDN services are available on this access, in send and receive direction
- Automatic test of the supplementary services
  - for DSS1: tests automatically CLIP, CLIR, COLP, COLR, CFU, HOLD, TP, CFB, CFNR, AOC-D/E, CCBS, CCNR, CW, MCID, ECT, 3PTY, DDI, MSN, SUB, UUS, CUG, CD, support of keypad protocol an „CLIP no Screening"
- Telephone functions with call-hot-button
  - Call number memory for 10 numbers or keypad protocol commands, X.31 test number, own number, redialing
  - Displays for incoming calls: calling and called number, B channel, service, type of number and numbering plan, display info elements, SUB address and UUS-1 data
  - Displays during and at the end of call: AOC-D, AOC-E w/ clearing cause by number/text and including location, display of info elements, DTMF data
- Selectable B channel, en-bloc or overlap signaling
- Bit error rate test (BERT), evaluated in accordance w/ ITU-T G.821
  - Extended self-call or end-to-end BERT
  - Displays bit errors and bit errors rate, OK/NOK evaluation
  - G.821 analysis: ES, EFS, SES, US, DM and OK evaluation
  - Selectable services, manual injection of bit errors
  - Bit pattern in acc. w/ ITU-T O.150: 2E11-1, 2E15-1, user defined
  - Measuring time: 1 min up to infinite
  - Loop box for all or selected B channels
  - Audible alarms for bit errors and LOS, LOS counter
  - Simultaneous E1 BERT on all B channels (MegaBERT*)
  - Multiple links of loop box and self-call simultaneously
- Configuration of type of number an numbering plan
- Tests of ISDN leased lines:
  - Telephone function and BERT
  - Selectable B channel and two concurrent BERT
  - Loop box for all or selected B channels
- TE/NT-simulation with different ISDN-services
- Displays most important clearing causes by number/text incl. loc.

ARGUS®125 – ISDN BRI features

- BRI interface in accordance with ITU-T I.430
- operation modes:
  - TE (terminal simulation), NT mode (network simulation), like PRI
  - Monitor, passively monitoring the BRI, functional range like PRI
- Automatic detection of access configuration:
  - Point-to-point (P-P) or point-to-multipoint (P-MP)
  - Detection of DSS1 protocol
- Additional protocols: Cornet-T / -N / -NQ, QSIG, VN4
- Display of layers 1, 2, 3 and the B channel status
- Display of layer 1 info (info 0 up to info 4)
- MSN-interrogation (depends on the support of the exchange)
- Automatic test of ISDN services and supplementary services
  - Similar to the functional range of PRI
- Bus status test with interrogation; setup, display and clearing of the active call diversions CFU, CFB, CFNR for all services
- Two connections simultaneously (loop box and extended self-call)
- Automatic X.31 test in D and B channel
  - "Packet data in D channel available?"
  - Automatic detection of the TEIs activated in the frame handler
  - Simulation of X.31(D)-terminal to X.25 network
- Measurement of delay, round trip delay and inter-channel delay
- Layer 1 tests: measurement and evaluation of the phantom feed (OK, NORMAL or restricted power) and the layer 1 send/receive signal level of the NTBA or PABX
- D channel BERT with various bit pattern, like PRI (compatible with other testers)

ARGUS®125 – ISDN U interface features

- U interface in accordance with ETR 80 / ANSI T1.601
- Line coding: 4B3T or 2B1Q available
- Test in TE mode on U interface same as on BRI/PRI
- Measurement of U interface voltage and OK evaluation
- Programmable DC load (up to 1200 mW, incl. U/I measurement)
- High-Z monitor with listen-to on U interface (q. v. POTS)

ARGUS®125 – Analog features (POTS)

- POTS interface with DTMF and pulse dial mode
- Flash function (40-1000 ms)
- Loop current limiting
- POTS voltage measurement incl. polarity (for hook-on / hook-off)
- CLIP and other caller ID services acc. ETS 300 659/778
- Supports display FSK and DTMF caller ID
- Adjustable DTMF signal level, signal and interval length
- High-Z monitor with non-intrusive listen-to on POTS (like on U)
  - Measurement of voltage incl. polarity
    in TE mode up to 150 V
    in monitor mode up to 250 V
  - Online display of CLIP, date, time, caller ID services
  - Online display of DTMF dialing tones incl. A, B, C, D, *, #

ARGUS®125 – ADSL2/2+, ADSL interface features*

- ATU-R simulation for ADSL2+, ADSL2 and ADSL
- Standards supported: ANSI T1.413.2, ITU-T G.992.1 (G.DMT) Annex A / B, ITU-T G.992.3 Annex A / B / L (Reach Extended) / Appendix 1, ITU-T G.992.5
- Versions available for: ADSL over POTS (Annex A) and ADSL over ISDN (Annex B) are both available in the same tester
- Automatically measures and displays the following upstream / downstream parameters of the line:
  - ATM maximum bit rates
  - ATM fast or interleaved bit rate
  - Line bit rate and relative capacity
  - On-screen bits/tone and SNR/Tone histogram of the carrier load
  - Noise margin
  - Output power
  - Line attenuation
  - Applied SRA mode (Seamless Rate Adaption)
- ADSL cell and bit error statistics (upstream / downstream):
  - CRC (Cyclic Redundancy Check)
  - FEC (Forward Error Correction)
  - HEC (Header Error Checksum)
  - Fast / interleaved bit error
  - Fast / interleaved erroneous seconds
- On-screen event trace with timestamps
- PASS/FAIL result according to user defined QoS thresholds
- ARGUS®125 also displays the manufacturer of the ATU-C
- Build-in POTS microfilter (mini splitter)
- Graphical preparation of ADSL synchronization loss and error counters above the time, using WINanalyse*
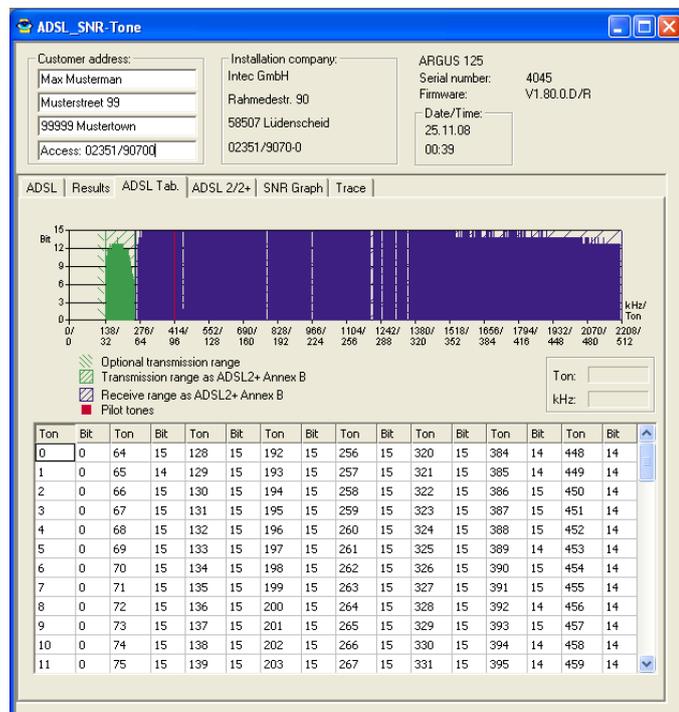
(ADSL access test report viewed by PC software WINplus)

ARGUS®125 – ATM layer tests* *(part of the ADSL option)*

- OAM F5 loopback support
- VPI/VCI scan returns list of available VPI/VCI
- ATM Ping (end-to-end or segmented)
  - Min., max., average delay, selectable number of pings
- ATM statistics:
  - Rx/Tx total cell and OAM/AAL cell counters
  - Rx-CRC error counter, counter for unmapped cells
- displays last unmapped VPI/VCI
- Setup multiple VCs (virtual channel)

ARGUS®125 – IP features* *(part of the ADSL option)*

Test the internet connectivity to the ISP and the real download rates:
- Protocols: PPPoE, PPPoA, IP over ATM, Eth. over ATM, IP, PPTP
- Display of PPP assignments: local/remote IP address, DNS
- VLAN support (VLAN ID configurable)
- User selectable WAN or default WAN MAC address
- DNS client / server mode (DNS relaying), support of two DNS
- DHCP client / server, PPP (IPCP) und static IP address
- NAT/PAT address resolution (NAT can also be disabled)
- PAP or CHAP authentication
- PING test for response time analysis:
  - Displays sent, received and lost packets, min. / max. / average time, errors
  - User defined IP packet size, delay time, number of pings or endless mode
- Trace route test for extended PING analysis with hop count, IP address of hop and name lookup, delay per hop
- Download test by HTTP / FTP; Upload test by FTP
- Recording of the internet login sequence and other IP tests in PCAP file format for an advanced protocol analysis using e. g. Wireshark (Ethereal) on a PC or notebook

ARGUS®125 – VoIP testing features*

- Integr. acoustics, codecs: ITU-T G.711a-/µ-law, 723.1, 726, 729
- Evaluates speech quality using MOS (Mean Opinion Score) in acc. with ITU-T G.107, adjustable thresholds w/ OK/NOK evaluation
- Simulation of incoming and outgoing SIP calls
- Auto answer mode of incoming calls (echo test)
- Configurable simulation parameter:
  - User name and password, silence detection, jitter buffer
  - STUN server, codec, codec choice and priority
  - SIP registrar (+ port), user agent, domain, authentication
  - Listen/remote port, caller ID, ToS, DTMF mode, qualify, expiry
  - and additionally (e. g. SBC/outbound proxy/port and so on)
- Displayed results of the simulation:
  - Used STUN server, MOS score, RTP/RTCP statistics
  - Incoming and outgoing call, display of call progress
  - Name, alias and IP address of the remote station
  - Displays the call duration
  - Codec, throughput, delay, packet delay, packet jitter and loss
- Displays VoIP statistics, SIP status log and so on

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ARGUS®125 – Ethernet interface features*

- Ethernet (10/100Base-T) interface
- Configurable link parameters of the Ethernet interface:
  - Autonegotiation on/off: duplex mode (full/half), speed (10 or 100 Base-T), flow control on/off,
- Tests on the Ethernet port of a ADSL modem as an user PC (PC replacement mode), e. g. via PPP: quod vide IP features
- ADSL modem replacement mode (bridge mode)
  - Bridge mode for PPPoE, bridged Ethernet
  - Router mode for PPPoE, PPPoA, IPoA, EoA
    - DHCP client/server and DHCP auto mode or static IP address
    - User defined DHCP address range and lease time
    - Support of DNS relaying
- Recording of the internet login sequence and other IP tests in PCAP file format for an advanced protocol analysis using e. g. Wireshark (Ethereal) on a PC or notebook

ARGUS®125 – RC measuring function

- Loop resistance measurement - accuracy 10%
  - Range: 100 Ohm …20k Ohm
  - Resolution: < 1k:+/- 10 Ohm, > 1k:+/- 100 Ohm
- Open capacitance measurement - accuracy 10 %
  - Range: 1nF…1µF
  - Resolution: 1nF…1µF +/- 1/10 nF
- Including loop length calculation
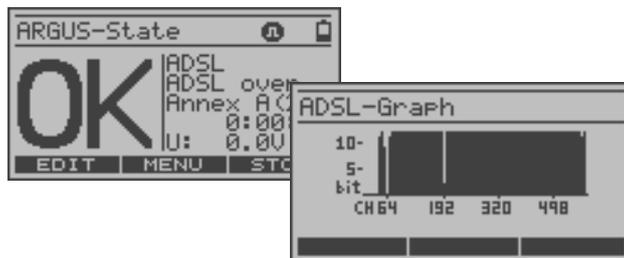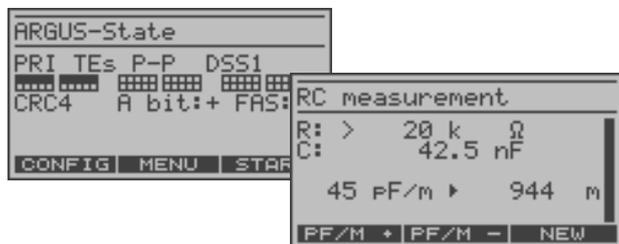
Technical details:

- Power supply: alternatively supplied from standard rechargeable batteries (internally charged) or via mains adaptor
- Start quickly various tests using special hotkeys and help
- User configurable power management
- Keypad: 18 standard keys, 4 cursor keys, 3 context-specific keys
- LC display: 8 lines graphic display, backlighted
- 6 LEDs to indicate status + 2 LAN connector LEDs
- Interfaces: 2 x RJ-45 ISDN / line input, Ethernet (10/100 Base-T), USB interface and serial RS232 interface to PC (RJ-10), headset and DC connector
- Environmental conditions:
  - Operating temperature: 0° up to +50 ° C
  - Storing temperature: -15° up to +70°
  - Up to 95 % relative humidity, non-condensing
- Dimensions: H 235 mm, W 97 mm, D 55 mm
- Weight: ca. 600 g
- CE marking: complies with CE directives
- User safety: EN 61010-1, EN 60950
- Standard package: ARGUS® with rechargeable batteries, mains adaptor, cable set for PRI, BRI, U interface and POTS, WINplus PC software, manual, carrying case and strap, USB cable

*Options:

- ADSL option (including bridge mode, ATM layer tests, IP features)
- Ethernet option (10/100Base-T) interface
- VoIP option (terminal equipment simulation, including MOS)
- PESQ testing* on U, BRI, PRI, POTS as well as VoIP* via ADSL* and Ethernet* (for further information quod vide ARGUS®SQT)
- WINanalyse PC software (for D channel decoding and for graphical preparation of ADSL synchronization loss/errors above the time)
- Serial interface cable (RJ10 adapts DE9 (COM-Port))
- ARGUS® car charger (compatible with 12V cigar lighter receptacle)
- 128kBit BERT on U interface and BRI leased lines
- V5.1/V5.2 monitor (up to 3 time slots / multiple E1 links)
- MegaBERT option (bit error rate test on all B channels)
- Headset (with three-pole, 2.5 mm stereo jack plug)
- Calibration certificate
- ARGUS® carrying hook with clippers
- Various PRI access cables:
  - BNC and banana plug
  - LSA cable set
  - HICOM adaptor
  - ISEP cable

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