

# ARGUS® 153

V D S L + A D S L T E S T E R



G.fast

VDSL

ADSL

GigE

LTE·))

Cu

TDR

Copper  
Box

Data  
101101011011

IP  
TV

Vo  
IP

USB

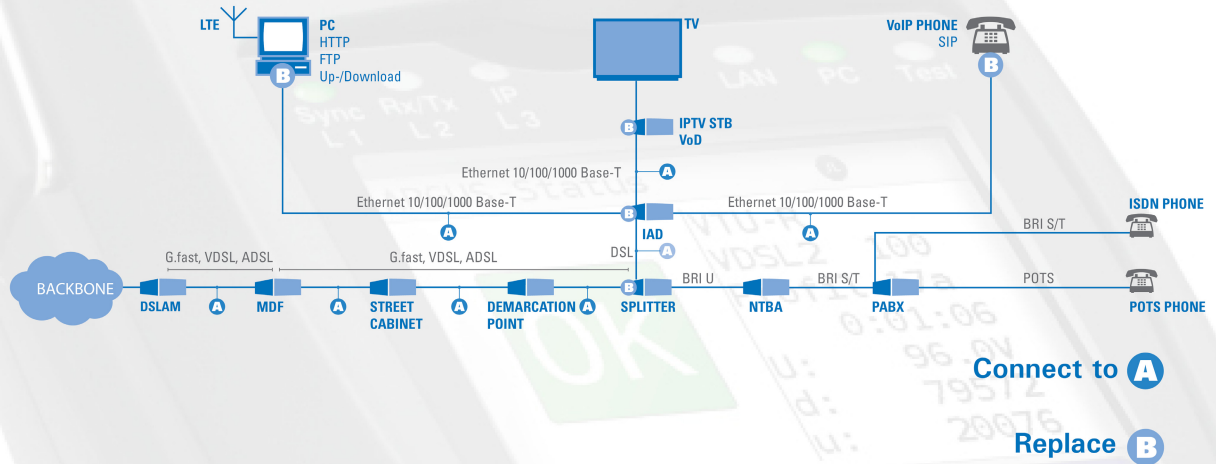
PC

WLAN·))

**intec**

GESELLSCHAFT FÜR  
INFORMATIONSTECHNIK mbH

## Where to use the ARGUS?



### The multifunctional instrument for the last mile

The ARGUS 153 is the low-cost, entry-level instrument for high-performance DSL interfaces such as super vectoring (VDSL2 profile 35b, 35b bonding) and G.fast as well as the still widely used ADSL.

Compact, robust and light: the ARGUS 153 multifunction (ADSL and VDSL) measuring device tests interfaces and services rapidly and reliably - and offers great value for money. This instrument lets you test VDSL2, ADSL, Ethernet and the physical characteristics of the subscriber line with no module changes. A high-quality, high-performance VDSL/ADSL chipset enables powerful test performance and rapid analyses. You can even upgrade the ARGUS 153 to a G.fast tester if necessary.

### Fast and simple commissioning of all-IP subscriber lines

The ARGUS 153 is thus the ideal instrument for fast, simple commissioning of all-IP subscriber lines. Triple-play testing (Data, VoIP and IPTV) is also available as an option. The versatile expansion possibilities also include e. g. TDR, DMM and line scope in the copper segment as well as WLAN and LTE in wireless.

**Your advantage:** The ARGUS 153 is a simple, low-cost and comprehensively expandable multifunction instrument, e.g. for transition to all-IP, that covers all the requirements for the last mile.

### intec Gesellschaft für Informationstechnik mbH

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 100,000 times.

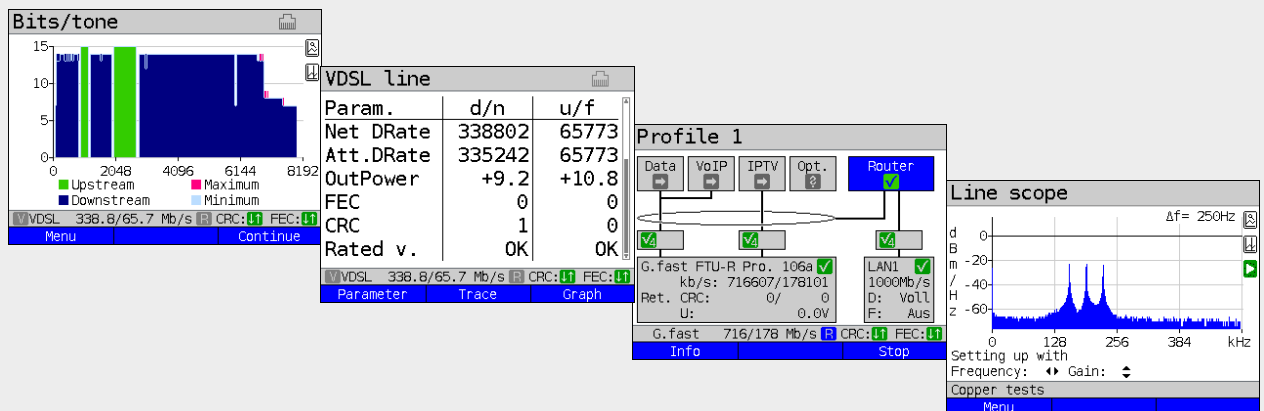
Companies such as Deutsche Telekom, Vodafone, Telefonica, KPN, British Telecom and Telekom Austria put their trust in the quality of the intec products, "Made in Germany".



ARGUS<sup>®</sup> MADE IN GERMANY

Specifications Broadband Interfaces:

General:		Application, Settings + Results:	
<p><b>G.fast Tester</b></p> <p><b>G.fast</b></p> <p>G.fast Modem Simulation, FTU-R, CPE G.fast Bridge + G.fast Router ITU-T G. 9700/9701 Profile 106a Time Division Duplexing (TDD)</p> <p><b>VDSL Tester</b></p> <p><b>VDSL</b></p> <p>VDSL2 Modem Simulation, VTU-R, CPE VDSL2 Bridge + VDSL2 Router ITU-T G.993.2 (Profiles 8, 12, 17a, 30a) ITU-T G.993.2 Annex Q (Profile 35b), Super Vectoring (Vplus) ITU-T G.993.5, G.vector (Vectoring) ITU-T G.998.4, G.INP (Retransmission) ITU-T G.998.2, G.bond (Bonding) 8, 12, 17a, 30a and 35b Bonding</p> <p><b>ADSL Tester</b></p> <p><b>ADSL</b></p> <p>ADSL Modem Simulation, ATU-R, CPE ADSL Bridge + ADSL Router ITU-T G.922.1, Annex A+B (ADSL) ITU-T G.922.2, Annex A (G.lite) ITU-T G.922.3, Annex A+B+L+M (ADSL2) ITU-T G.922.5, Annex A+B+J+M (ADSL2+)</p>	<p><b>G.fast / VDSL / ADSL</b></p> <ul style="list-style-type: none"> <li>Net Data Rate [kBit/s]</li> <li>Attainable Data Rate [kBit/s]</li> <li>Relative Capacity [%]</li> <li>SNR Margin / Loop Attenuation [dB]</li> <li>Output Power [dBm]</li> <li>Interleave Delay [ms]</li> <li>Impulse Noise Protection [Symbols]</li> <li>FEC + CRC, Far/Near [Errors]</li> <li>ES, SES, LOSS + UAS, Far/Near [sec]</li> <li>Reset / Resync [Number]</li> <li>Bitswap Events</li> <li>Seamless Rate Adaption (SRA)</li> <li>Retransmission (G.INP)</li> <li>Vendor, Far/Near [Name]</li> <li>Version, Far/Near [Number]</li> <li>Modem Trace</li> <li>Bits/SNR/QLN/Hlog Tone/Freq. Graphs</li> <li>OK/Fail Evaluation: Bitrate, CRC, FEC</li> <li>DC Voltage, UDC</li> </ul>	<p><b>G.fast / VDSL</b></p> <ul style="list-style-type: none"> <li>Signal Attenuation [dB]</li> <li>Showtime No Sync [Number]</li> <li>Seamless Rate Adaption (SRA)</li> <li>Data Transmission Unit (DTU)</li> <li>INP REIN + INP SHINE [Symbols]</li> <li>Expected Throughput Rate (ETR) [kBit/s]</li> <li>Electrical Length @1 MHz [dB]</li> <li>EFM Statistics: Frames + Bytes</li> </ul> <p><b>VDSL</b></p> <ul style="list-style-type: none"> <li>Vectoring Mode</li> <li>Graphic Long-time Trace In ARGUS</li> </ul> <p><b>ADSL</b></p> <ul style="list-style-type: none"> <li>Latency Mode</li> <li>Graphic Long-time Trace In ARGUS</li> <li>ATM Statistics: OAM Cells, User VCCs, AAL5 PDUs, Unmapped Cells/VPI/VCI</li> </ul>	
<p><b>GigE Tester</b></p> <p><b>GigE</b></p> <p>Ethernet According to IEEE 802.3 10/100/1000 Base-T (RJ45/8P8C)</p>	<ul style="list-style-type: none"> <li>Link Status / Autonegotiation, Far/Near</li> <li>Auto-MDIX Function</li> <li>Speed (10, 100, 1000 Mbit/s)</li> <li>Duplex Mode (Full, Half) / Flow Control</li> </ul>	<ul style="list-style-type: none"> <li>Polarity/Wire Pair (+/-)</li> <li>Pair skew/Wire Pair [ns]</li> <li>Frames, Bytes (Rx/Tx) [Number]</li> <li>Errors, Collisions [Number]</li> </ul>	
<p><b>LTE Scanner</b></p> <p><b>LTE</b></p> <p>LTE Tester Via LTE USB Stick</p> <ul style="list-style-type: none"> <li>Long Term Evolution (3.9G)</li> <li>800, 1600 and 2600 MHz</li> <li>2 x Ext. Antenna Connection (CRC-9)*</li> </ul>	<ul style="list-style-type: none"> <li>Automatic Frequency Band Selection</li> <li>SIM and PIN Necessary*</li> <li>LTE Provider [Name]</li> <li>Frequency (d/u) / Frequency Band [MHz]</li> <li>Codes and IDs: MCC, MNC, TAC, GCID</li> </ul>	<ul style="list-style-type: none"> <li>EARFC (EUTRA abs. RF channel no.)</li> <li>Signal Strength (RSRP) [dB]</li> <li>Signal Quality (RSRQ) [dB]</li> <li>SNR Margin (SINR) [dB]</li> <li>- Color Evaluation of RSRP, RSRQ, SINR</li> </ul>	
<p><b>WLAN Scanner</b></p> <p><b>WLAN</b></p> <p>WLAN Tester WLAN Access Point Mode IEEE 802.11a/b/g/n (2.4 GHz) IEEE 802.11ac (5 GHz)* Via WLAN USB Stick</p> <ul style="list-style-type: none"> <li>Internal FPC Antenna or</li> <li>External Antenna (RP SMA Socket)*</li> <li>WEP To WPA2 Enterprise</li> </ul>	<ul style="list-style-type: none"> <li>Access Point Mode (WLAN Router)</li> <li>WLAN for Smartphones/Laptops for:                             <ul style="list-style-type: none"> <li>- Downloading via xDSL/Ethernet</li> <li>- Browsing via xDSL/Ethernet</li> </ul> </li> <li>WLAN Scan (WLAN Terminal)</li> <li>Counter: Found Access Points</li> <li>List: Found Access Points</li> <li>Number 2.4 GHz / 5 GHz Networks</li> </ul>	<ul style="list-style-type: none"> <li>Network/Name (SSID)</li> <li>Signal Strength (RSSI) [dBm]</li> <li>Signal Quality [%]</li> <li>MAC Address of Access Points</li> <li>Used Channel/Frequency</li> <li>Used Protocol</li> <li>Negotiated Encryption / Authentication</li> <li>Group Cipher / Pairwise Cipher</li> </ul>	



Specifications ATM, Protocol + IP Tests (Triple Play):

General:	Applications, Settings + Results:	
<b>ATM Tests</b> ATM OAM Ping ATM OAM Cell Loop VPI/VCI Scan	<ul style="list-style-type: none"> <li>VPI/VCI Scan Range Configurable</li> <li>Number of Scans Configurable</li> <li>Timeout Configurable</li> <li>Display Active VPI/VCI Combination</li> </ul>	<ul style="list-style-type: none"> <li>Number of OAM Pings Configurable</li> <li>OAM Cell Type Configurable</li> <li>OAM Pings (Tx/Rx/lost) [Number]</li> <li>Round Trip Time (min/max/avg) [ms]</li> </ul>
<b>Protocol Tests</b>	<ul style="list-style-type: none"> <li>Configurable MAC Address</li> <li>Use of Virtual Lines (VL): Maximum Flexibility as Well as Control and Priorization under Real Conditions by Several VLS simultaneously</li> <li>One VL/Service Each (Data, VoIP, IPTV, opt.)</li> <li>VL Configurable in Profiles (20)                             <ul style="list-style-type: none"> <li>IP, PPPoE via xDSL, G.fast + Eth (PPTP)</li> <li>EoA, IPoA, PPPoA via ADSL</li> <li>VPI/VCI, VLAN (Modus, ID, Prio., TPID)</li> <li>PPP Profiles (Username, Password)</li> <li>IP Version (IPv4, IPv6, Dual) + DHCP</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Display of BRAS Information                             <ul style="list-style-type: none"> <li>AC Name, Service Name, Session ID</li> </ul> </li> <li>Display of PPP Information                             <ul style="list-style-type: none"> <li>PPP Packets/Bytes (Tx/Rx)</li> <li>PPP Trace (PPP Commands, Time)</li> </ul> </li> <li>Display of IP Information                             <ul style="list-style-type: none"> <li>IPv6: Global Unicast/Link Local Address</li> <li>IPv4: Assigned IP, Gateway, DNS</li> </ul> </li> <li>Recording of a Data Log for Evaluation on PC (e. g. Wireshark)</li> </ul>
<b>Data Tests (Data Tester)</b> PC/Terminal Simulation IP Ping Test Traceroute Test http Up-/Download Test ftp Up-/Download Test ftp Server Test Textbrowser	<ul style="list-style-type: none"> <li>Memory with up to 10 IP Addresses, IPv4/6 Address as Number or Name</li> <li>Number of Pings, Pause Configurable (Ping), Packet Size + Fragmentation Configurable</li> <li>Traceroute: Max. Hops, Probes + Timeout Conf.</li> <li>Down-/Upload Server Profiles (10): Server Addr., File Name/Size, Number, Number of Parallel Downloads Configurable                             <ul style="list-style-type: none"> <li>FTP: Username + Password</li> </ul> </li> <li>Display Results IP-Ping                             <ul style="list-style-type: none"> <li>Display of Packets (Tx/Rx/Repeated)</li> <li>Checksum Error [Number]</li> <li>Error Packets [Number]</li> <li>Round Tripe Time (min/max/avg) [ms]</li> <li>Display Results Traceroute</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Display Results Traceroute                             <ul style="list-style-type: none"> <li>Current Hop + Probe / List of Hops</li> <li>Response Time of Hops [s]</li> <li>IP Address of Current Hops</li> </ul> </li> <li>Display Results Down-/Upload                             <ul style="list-style-type: none"> <li>Current/Total Number [Number]</li> <li>Already Loaded Data [%]</li> <li>Average Speed [Mbit/s]</li> <li>Loaded Bytes [MB]</li> </ul> </li> <li>Transfer Time/Remaining Time [h:min:s]</li> </ul>
<b>VoIP Tests (VoIP Tester)</b> IP Telephone Simulation Testing of VoIP Connections incl. Acoustics (dif. Codecs) MOS Evaluation (ITU-T P.800)	<ul style="list-style-type: none"> <li>Configuration in VoIP Profiles (20): SIP Username, Password, Registrar Server, Outbound Proxy/SBC, Domain, Listen + Remote Port, Authentication, Caller ID, User Agent, Qualify, Process of Registration</li> <li>Phone Settings: RTP Port Area, Silence Detection, Jitterbuffer, Codecs, DTMF</li> <li>STUN Server</li> <li>MOS Threshold for OK/Fail Evaluation</li> <li>VoIP QoS, Layer 3 Diffserv: RTP/SIP: ToS, DSCP</li> <li>VoIP QoS, Layer 2 VLAN Prio.: RTP/SIP: VLAN Prio.</li> <li>Codecs: G.726 (16/24/32/40), G.729 (A/B), G.711 (a-law/<math>\mu</math>-law), G.722</li> <li>Display of Own Number, Number of Called Person</li> </ul>	<ul style="list-style-type: none"> <li>Duration of Connection [h:min:s]</li> <li>MOS Plain Text Evaluation, According to E Model R Factor, ITU-T G. 107 (current/avg), MOS (current/avg/min/max/ideal)</li> <li>Statistics: RTP Packets (Tx/Rx), Error Counter: RTP Drop, RTP Error</li> <li>RTP Jitter Rx (current/avg/min/max)</li> <li>Lost RTP Packages (avg/min/max)</li> <li>RTCP Contents:                             <ul style="list-style-type: none"> <li>RTP Jitter far (current/avg/min/max) [ms]</li> <li>Lost RTP Packets of Remote Side</li> <li>Network Delay (current/avg/min/max) [ms]</li> <li>Display of Registration Details: SIP Codes, Registrar IP, Proxy, URI</li> </ul> </li> </ul>
<b>IPTV Tests (IPTV Tester)</b> IPTV STB Simulation (Settopbox) OK/Fail Evaluation IPTV Channel Scan IPTV Monitor (IPTV passive) VoD Test*	<ul style="list-style-type: none"> <li>Configuration in IPTV Profiles (up to 3): Editable Channel List (up to 250 Channels) Multicast IP + Port, Channel Name, IGMP Version</li> <li>Limits for IPTV OK/Fail Evaluation: IGMP Latency, Sync Error, PCR Jitter, Error Indication, CC Errors, CC Error Rate, Audio + Video Bytes, RTP Jitter, RTP Sequence Error, Current + Total RTP Loss Rate</li> <li>Different VLS for IGMP + RTP</li> <li>Scan Profiles (3) Configurable: max. Zapping Time</li> <li>VoD Profiles (3) Configurable: Type of Stream, Server Address + Port, File Name, RTSP Type + Server Type, Jitterbuffer</li> <li>Limits for VoD OK/Fail Evaluation: PCR Jitter, Continuity Error</li> <li>Display of Selected IPTV Channel, Test Duration, Current Bitrate, OK or Fail Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>Packets Loss (current/min/max/avg) [Number]</li> <li>RTP/UDP Packet Loss Rate [%]</li> <li>Delay [ms] + Delay Factor [ms]</li> <li>Media Loss Rate (MLR) [%]</li> <li>IP Address of Channel + Port</li> <li>IGMP Latency (Activation Time) [ms]</li> <li>For Correlation: xDSL CRC Counters</li> <li>RTP Errors, RTP Sequence Errors</li> <li>MPEG Bitrate + Packets (min/max/ ...), Bytes (current/min/max/avg/Sum), PCR Jitter (current/min/max/avg) [ms], CC Errors + Error Rate (current/max) [%], Error Sync + Indication</li> <li>Codecs and PIDs (Packet Identifier)</li> <li>Channel Zapping Time (min/max/avg) [ms]</li> <li>VoD Error Status, Container Type, Packets, Bytes, Cont. Error, Bitrate and many more</li> </ul>












## Specifications Ethernet:

General:	Applications, Settings + Results:	
<b>Network Scan</b>	<ul style="list-style-type: none"> <li>• Auto Mode (manual, autom.)</li> <li>• Network Address + Net Mask Configurable</li> <li>• Display of DHCP Discovery, Gateway, DHCP + DNS Server, Net Mask, No. of Detected Clients/Subnet</li> </ul>	<ul style="list-style-type: none"> <li>• Number of Open Ports/Clients</li> <li>• Client Information: IP + Open Ports, MAC, Computer Name, NetBIOS Name</li> <li>• Display of Detected Services, e. g. Mail, Print, Web, File, Database and many more</li> </ul>
<b>Loop</b>	<ul style="list-style-type: none"> <li>• Layer Configurable (L1 to L3): MAC Modus (own MAC or all), VLAN Mode + ID, Prio., TPID Configurable, IP Mode and own IP Address</li> </ul>	<ul style="list-style-type: none"> <li>• Duration of Loop [h:min:s]</li> <li>• Looped Packets, Looped Packets/Second [Number]</li> <li>• Throughput [Mbit/s]</li> <li>• MAC Address</li> </ul>

## Specifications Copper Tests:

General:	Applications, Settings + Results:	
<b>TDR Test</b> Time Domain Reflectometer	<ul style="list-style-type: none"> <li>• Determination of the Loop Length</li> <li>• For Identification and Detection of Shorts, Opens, Impedance Mismatch, Bridged Taps/Stubs, Moisture, Loading Coils, Loose Contacts and more</li> <li>• Pre-configured List of Cable Types</li> <li>• Velocity of Propagation (VoP): 30 % (45 m/μs) up to 99,9 % (149,7 m/μs), Line Resistance, Mutual Capacitance</li> </ul>	<ul style="list-style-type: none"> <li>• Measurement Range: 3,5 up to 6000 m, Res.: 0,3 %; Acc.: ±2 %</li> <li>• Graphic Display of Reflection Course</li> <li>• Configurable Gain: -26 dB up to +44 dB</li> <li>• Config. Pulse: 15 ns up to 8 μs, Pulse Height: 5 V up to 20 V</li> <li>• Zoom + Cursor for a Detailed Analysis</li> <li>• Save + Set of Reference Curve</li> <li>• Start/Stop Function (Realtime Mode)</li> </ul>
<b>Line Scope</b> DSL Spectrum Analysis DSL Oszilloscope	<ul style="list-style-type: none"> <li>• Monitoring in Time/Frequency Domain on all Types of Lines for Telecommunications</li> <li>• Monitoring on Active Lines with up to 200 VDC and 100 Vpp</li> <li>• For Identification and Detection of Different Access Types (DSL, ISDN, ...)</li> <li>• Modem Finder, via Handshake Tones</li> <li>• Detection of Disturbers/Disturbing Signals</li> <li>• Frequency Range: 20 kHz up to 35 MHz</li> <li>• Resolution: 1 kHz, Accuracy: ±0,1 %</li> <li>• High-impedance or Line Termination:                             <ul style="list-style-type: none"> <li>- Input Impedance: 3,6 kΩ, &lt;10 pF</li> <li>- Switchable 100 Ω Input Resistance</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Graphic Display of FFT [dBm/Hz] and of Time (Oszilloscope)</li> <li>• Config. Gain FFT: -26 dB up to +20dB, Time Domain: ±0,1 V up to ±20 V</li> <li>• Configurable X-Axis: FFT or Time [μs]</li> <li>• Automatic Trigger in Time Domain</li> <li>• Zoom + Cursor for a Detailed Analysis</li> <li>• Save + Set of Reference Curve</li> <li>• Start/Stop Function (Realtime Mode)</li> <li>• Peak Hold Function (Min/Max Trailing)</li> <li>• Symmetry Toggling (see Active Probe)</li> </ul>
<b>ARGUS Active Probe II*</b>	<ul style="list-style-type: none"> <li>• ARGUS Active Probe II for Passive, High-impedance Intrusion on Active Connections (xDSL, POTS, ...)</li> <li>• Input Impedance: 70 kΩ, &lt;1 pF</li> <li>• Frequency Range: 10 kHz bis 35 MHz</li> </ul>	<ul style="list-style-type: none"> <li>• Hiding the Useful Signal Symmetry/Asymmetry Toggling - Attenuation Symmetric: 14,5 dB</li> <li>• 2 x 4 mm Banana Jacks</li> <li>• Data Transfer to ARGUS via RJ45</li> </ul>

Specifications ARGUS Copper Box:

General:			
	Measuring Range	Resolution	Accuracy
<b>DC Voltage; UDC (U =):</b> 	<ul style="list-style-type: none"> <li>0 V to 9.99 V</li> <li>10 V to 220 V</li> </ul>	<ul style="list-style-type: none"> <li>0.01 V</li> <li>0.1 V</li> </ul>	<ul style="list-style-type: none"> <li>± (0.5 % + 2 digits)</li> <li>± (0.5 % + 2 digits)</li> </ul>
<b>AC Voltage; UAC (U ~):</b> 	<ul style="list-style-type: none"> <li>0 V to 9.99 V</li> <li>10 V to 210 V</li> </ul> <p>Frequency: 10 Hz to 200 Hz; 0.2 Hz; ±(1.5 % + 2 digits), sinus</p>	<ul style="list-style-type: none"> <li>0.01 V</li> <li>0.1 V</li> </ul>	<ul style="list-style-type: none"> <li>± (2 % + 2 digits)</li> <li>± (1.5 % + 2 digits)</li> </ul>
<b>Capacitive Symmetry Balance; CSym:</b> 	<ul style="list-style-type: none"> <li>10 nF to 4 µF</li> </ul> <p>Dielectric strength for external voltage up to 17 V DC or 17 V AC (with a load 200 kΩ)</p>	<ul style="list-style-type: none"> <li>0.01 nF</li> </ul>	<ul style="list-style-type: none"> <li>relative capacity ± 0.1 %</li> </ul>
<b>Capacitance; C:</b> 	<ul style="list-style-type: none"> <li>0.01 nF to 9.99 nF</li> <li>10 nF to 99.99 nF</li> <li>100 nF to 999.9 nF</li> <li>1 µF to 8 µF</li> </ul> <p>Dielectric strength for external voltage up to 17 V DC or 17 V AC (with a load 200 kΩ). Measured by film capacitors</p>	<ul style="list-style-type: none"> <li>0.01 nF</li> <li>0.01 nF</li> <li>0.1 nF</li> <li>1 nF</li> </ul>	<ul style="list-style-type: none"> <li>± (4 % + 4 digits)</li> <li>± (4 % + 4 digits)</li> <li>± (3 % + 1 digit)</li> <li>± (3 % + 1 digit)</li> </ul>
<b>Isolation Resistance (105 V, max. 2 mA); Iso:</b> 	<ul style="list-style-type: none"> <li>0.1 kΩ to 99.9 kΩ</li> <li>100 kΩ to 999 kΩ</li> <li>1 MΩ to 9.99 MΩ</li> <li>10 MΩ to 99.9 MΩ</li> <li>100 MΩ to 1 GΩ</li> </ul> <p>Dielectric strength for external voltage up to 5 V DC or 30 V AC (with a load 200 kΩ)</p>	<ul style="list-style-type: none"> <li>0.1 kΩ</li> <li>1 kΩ</li> <li>10 kΩ</li> <li>100 kΩ</li> <li>100 kΩ</li> </ul>	<ul style="list-style-type: none"> <li>± (2 % + 1 digit)</li> <li>± (2 % + 1 digit)</li> <li>± (2 % + 1 digit)</li> <li>± (5 % + 1 digit)</li> <li>± (5 % + 1 digit)</li> </ul>
<b>Isolation Resistance (8 V, max. 9 mA); Iso:</b> 	<ul style="list-style-type: none"> <li>0.1 kΩ to 99.9 kΩ</li> <li>100 kΩ to 999 kΩ</li> <li>1 MΩ to 9.99 MΩ</li> <li>10 MΩ to 40 MΩ</li> </ul> <p>Dielectric strength for external voltage up to 5 V DC or 30 V AC (with a load 200 kΩ)</p>	<ul style="list-style-type: none"> <li>0.1 kΩ</li> <li>1 kΩ</li> <li>10 kΩ</li> <li>100 kΩ</li> </ul>	<ul style="list-style-type: none"> <li>± (2 % + 1 digit)</li> <li>± (2 % + 1 digit)</li> <li>± (2 % + 1 digit)</li> <li>± (5 % + 1 digit)</li> </ul>
<b>Resistive Symmetry Balance; RSym:</b> 	<ul style="list-style-type: none"> <li>10 Ω to 5 kΩ</li> </ul> <p>Dielectric strength for external voltage up to 30 V DC or 30 V AC (with a load 200 kΩ)</p>	<ul style="list-style-type: none"> <li>0.1 Ω</li> </ul>	<ul style="list-style-type: none"> <li>0.2 % of Rs ± 0.2 Ω</li> </ul>
<b>Loop Resistance; R:</b> 	<ul style="list-style-type: none"> <li>1 Ω to 999.9 Ω</li> <li>1 kΩ to 9.999 kΩ</li> <li>10 kΩ to 99.99 kΩ</li> <li>100 kΩ to 999.9 kΩ</li> <li>1 MΩ to 9.999 MΩ</li> <li>10 MΩ to 4.0 MΩ</li> </ul>	<ul style="list-style-type: none"> <li>0.1 Ω</li> <li>1 Ω</li> <li>10 Ω</li> <li>100 Ω</li> <li>1 kΩ</li> <li>10 kΩ</li> </ul>	<ul style="list-style-type: none"> <li>± (1 % + 3 digits)</li> <li>± (1 % + 1 digit)</li> <li>± (1 % + 1 digit)</li> <li>± (1 % + 1 digit)</li> <li>± (2 % + 1 digit)</li> <li>± (5 % + 1 digit)</li> </ul>
<b>DC Current; IDC (I =):</b> 	<ul style="list-style-type: none"> <li>0.1 mA to 500 mA</li> </ul>	<ul style="list-style-type: none"> <li>0.1 mA</li> </ul>	<ul style="list-style-type: none"> <li>± (2.5 % + 3 digits)</li> </ul>
<b>Unbalance at 1 MHz; LCL:</b> 	<ul style="list-style-type: none"> <li>0 dB to 55 dB</li> <li>55.1 dB to 65 dB</li> </ul> <p>The length of the test leads can influence the accuracy of the measurement. Dielectric strength for external voltage up to 3 V DC or 3 V AC. At an internal resistance of the source of 1 MΩ it will be measured up to 3.5 V DC / AC.</p>	<ul style="list-style-type: none"> <li>0.1 dB</li> <li>0.1 dB</li> </ul>	<ul style="list-style-type: none"> <li>± 1.5 dB</li> <li>± 3 dB</li> </ul>
<b>NEXT at 1 MHz; NEXT:</b> 	<ul style="list-style-type: none"> <li>0 dB to 65 dB</li> </ul> <p>Dielectric strength for external voltage up to 3 V DC or 3 V AC. At an internal resistance of the source of 1 MΩ it will be measured up to 3.5 V DC / AC.</p>	<ul style="list-style-type: none"> <li>0.1 dB</li> </ul>	<ul style="list-style-type: none"> <li>± 1 dB</li> </ul>
<b>Remote Kit Control:</b>	<ul style="list-style-type: none"> <li>Use ARGUS and ARGUS Copper Box to control different Remote Kits to switch the Line on the remote side.</li> </ul>		
<b>Other Functions:</b>	<ul style="list-style-type: none"> <li>Autotest</li> <li>Signature detection (e. g. PPA)</li> <li>Fast cable check</li> </ul>		
<b>Reference Conditions (calibration):</b>	<ul style="list-style-type: none"> <li>Temperature: 23 °C ± 5 °C</li> <li>Relative Humidity: 50 % ± 20 % Relative Humidity, non-condensing</li> </ul>		<ul style="list-style-type: none"> <li>Frequency of Measurement Type: 50 Hz ± 5 Hz, sinus</li> </ul>

## 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 or via WLAN, ETH or DSL to Cloud (FTP Server).
- Free of Charge Firmware Updates via **Cloud** or **ARGUS Update Tool**
- WLAN Extension for Transferring Test Results to Systems of an Electronic Order Processing System, Remote Control via Smartphone.
- Free Firmware and Software Updates Available via [www.argus.info](http://www.argus.info)

## Device Specifications

### Technical Features:

- |                             |  |
|-----------------------------|--|
| • <b>Power Supply</b>       | Li-Ion Battery Pack or Mains Adaptor                 |
| • <b>Hotkey</b>             | Quick Start of Various Tests                         |
| • <b>Power Management</b>   | User Configurable                                    |
| • <b>Keypad</b>             | 18 Keys, 4 Cursor Keys, 3 Context-Sensitive Softkeys |
| • <b>LCD Colour Display</b> | QVGA - 320 x 240 Pixels, Backlit                     |
| • <b>6 LEDS</b>             | Indicating the Status + Ethernet Port LEDS           |
| • <b>Handset</b>            | Integrated Earpiece and Microphone                   |
| • <b>CE Marking</b>         | Complies with CE Directives                          |
| • <b>User Safety</b>        | Fulfills EN 60950-1:2006-11                          |
| • <b>RoHS Conformance</b>   | Conformance According to WEEE Directive              |

### Interfaces:

- |                                |                                     |
|--------------------------------|-------------------------------------|
| • <b>RJ-45</b>                 | For xDSL and G.fast                 |
| • <b>Ethernet</b>              | 10/100/1000 Base-T, RJ-45 Test Port |
| • <b>USB Client Interface</b>  | Type Mini B                         |
| • <b>2x USB Host Interface</b> | Type A                              |
| • <b>WLAN</b>                  | IEEE802.11a/b/g/n                   |
| • <b>Headset</b>               | Jack (TRS 2.5 mm, approx. 3/32")    |

### Environmental Conditions:

- |                                |                                       |
|--------------------------------|---------------------------------------|
| • <b>Operating Temperature</b> | 0 °C (+32 °F) up to +50 °C (+122 °F)  |
| • <b>Storing Temperature</b>   | -20 °C (-4 °F) up to +60 °C (+140 °F) |
| • <b>Relative Humidity</b>     | Up to 95 %, Non-Condensing            |

### Dimensions:

- |                 |  |
|-----------------|--|
| • <b>Size</b>   | H x W x D: 235 x 97 x 65 mm (9.25 x 3.8 x 2.56 in) |
| • <b>Weight</b> | approx. 730 g (1.61 lbs, ARGUS incl. Battery Pack) |

Standard package:	
xDSL Basic Package with Bridge/Router Mode, IP Ping and Traceroute Test, IPv6, Line Scope, ATM Tests, Text Browser, Cloud Services, WINplus License (Download Version), Lithium-Ion Battery Pack, Mini USB Cable, Test Leads, Carrying Strap, Mains Adaptor, Hand Strap, English Manual and Menu Map	
<b>Basic Package:</b>	
• ARGUS 153 VDSL2 (inkl. Profile 35b / Super Vectoring)	Order Number 115702
<b>Additional Interface:</b> (Test Leads Included)	
• G.fast Interface	Order Number 015713
• VDSL2 Bonding (up to Profile 35b)	Order Number 015709
• ADSL Annex A + L + M Interface	Order Number 015705
• ADSL Annex B + J Interface	Order Number 015706
<b>Additional Test Features:</b> (Depends on Existing Interface)	
• WLAN Option	Order Number 015759
• LTE Option	Order Number 015756
• Download Package	Order Number 015729
• VoIP Test (ADSL, VDSL2, Ethernet)	Order Number 015730
• IPTV Test / IPTV ext. (ADSL, VDSL2, Ethernet)	Order Number 015737 / 015739
• VoIP + IPTV Package (ADSL, VDSL2, Ethernet)	Order Number 015733
• Network Scan	Order Number 015769
• Loop Function	Order Number 015728
• TDR (Time Domain Reflectometer)	Order Number 015751
• ARGUS Active Probe II	Order Number 015091
• ARGUS Copper Box	Order Number 015098
• WINplus (incl. CD and Manual)	Order Number 010012
* We would be glad to provide further details and information about additional accessories on request.	



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