

# ARGUS® 260

B R O A D B A N D T E S T E R

**G.fast**

**VDSL**

**ADSL**

**GPON**

**SFP**

**GigE**

**OPM**

**OFF**

**FIT**

**FTTH  
FTTx**

**POTS**

**ISDN**

**Cu**

**TDR**

**RFL**

**Data**  
101101011011

**IP  
TV**

**Vo  
IP**

**USB**

**WLAN**

**WLAN**

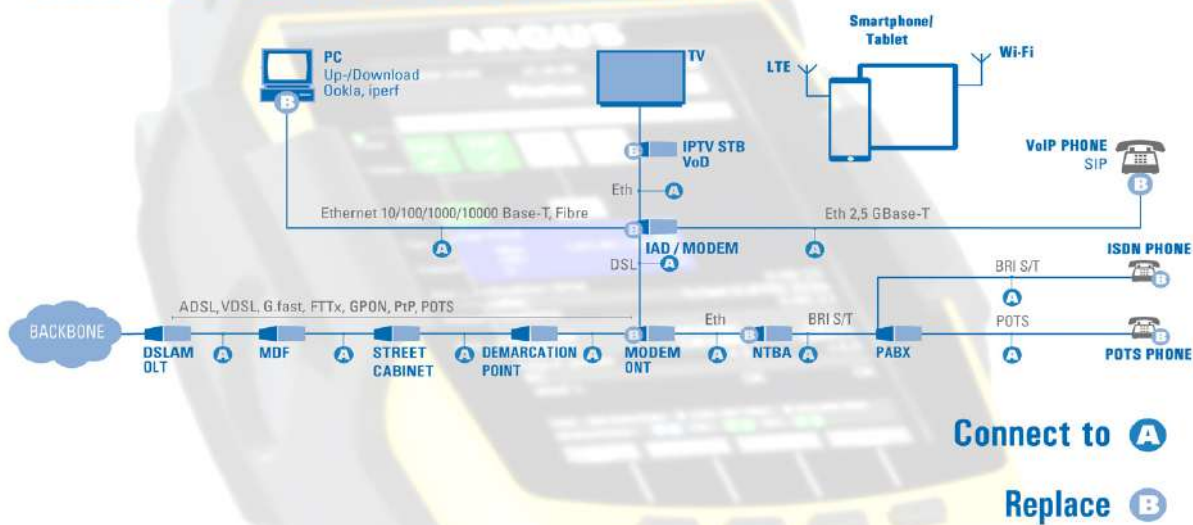


data sheet: technical data subject to change.

**intec**

GESELLSCHAFT FÜR  
INFORMATIONSTECHNIK mbH

## Where to use the ARGUS?



### ARGUS® 260: The broadband tester

The new ARGUS® 260 all-in-one tester delivers improved performance for testing broadband interfaces. The high-quality multifunction tester is ideally equipped for the expansion of future networks.

### Modern design and new housing concept

Its robust design combines the requirements for a compact hand-held meter in daily field use with the performance of a high-end tester. As the first ARGUS® tester with touch-screen display, it enables intuitive navigation of the familiar ARGUS® menu structure. Thanks to the use of numerous graphical elements, the redesigned GUI makes this sophisticated multifunction tester as easy to use as a smartphone. A new, innovative internal help function supports rapid, reliable interpretation of test results.

### All necessary broadband interfaces

The ARGUS® 260 reliably tests all broadband interfaces, from GPON and G.fast (106 + 212 MHz) to super vectoring, Bonding, ADSL and VDSL accesses, in the uncompromising quality you have come to expect. It is also equipped with a wide range of further interfaces and test functions, such as 2.5 Gigabit Ethernet, WLAN, copper, TDR, RFL, triple play and many more.

### Additional features

The integrated WIFI interface enables the ARGUS® 260 to communicate with its environment directly - a PC link is no longer required. Once integrated in your job management system, the ARGUS 260® marks the advent of a new generation of broadband testing.

### intec Gesellschaft für Informationstechnik mbH

intec Gesellschaft für Informationstechnik mbH has been successfully developing products for the international telecom markets for 30 years. Meanwhile specialized in high-quality telecommunication measuring devices, we belong to the leading suppliers of xDSL, IP and fiber optic measuring technology in Europe and beyond.

The ARGUS® product range provides a convenient solution for commissioning and troubleshooting on xDSL and Ethernet 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.

Our customers have appreciated the quality of our products and services for many years. In the last 20 years alone, we have delivered more than 100,000 ARGUS® testers worldwide - many of them to international companies such as Deutsche Telekom, KPN or Austria Telecom.



ARGUS® MADE IN GERMANY

Specification Broadband Interfaces:

General:		Application, Settings + Results:	
<b>G.fast Tester</b>	G.fast Modem Simulation, FTU-R, CPE G.fast Bridge + G.fast Router ITU-T G.9700/9701 Profile 106a/212a Time Division Duplexing (TDD)	<b>G.fast / VDSL / ADSL</b>	<b>G.fast / VDSL</b>
<b>VDSL Tester</b>	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, 35b Bonding	<ul style="list-style-type: none"> <li>Net Data Rate d/u [kBit/s]</li> <li>Attainable Data Rate d/u [kBit/s]</li> <li>Relative Capacity d/u [%]</li> <li>SNR Margin /Loop Attenuation d/u [dB]</li> <li>Output Power d/u [dBm]</li> <li>Interleave Delay d/u [ms]</li> <li>Impulse Noise Protection d/u [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 d/u</li> <li>Retransmission d/u (G.INP)</li> <li>Vendor, far/near [Name/ Number]</li> <li>Modem Trace</li> <li>Bits/SNR/QLN/Hlog/Noise Graphs</li> <li>OK /Fail Evaluation: Bitrate, CRC, FEC</li> <li>DC Voltage, UDC</li> </ul>	<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 R/C [dB]</li> <li>EFM Statistics: Frames + Bytes</li> </ul>
<b>ADSL Tester</b>	ADSL Modem Simulation, ATU-R, CPE ADSL Bridge + ADSL Router ITU-T G.992.1, Annex A+B (ADSL) ITU-T G.992.2, Annex A (G.lite) ITU-T G.992.3, Annex A+B+L+M (ADSL2) ITU-T G.992.5, Annex A+B+J+M (ADSL2+)	<ul style="list-style-type: none"> <li>Link Status, Autonegotiation, far/near</li> <li>Auto-MDI(X) Function</li> <li>Speed (10, 100, 1000 Mbit/s)</li> <li>Duplex Mode (full, half) / Flow Control</li> <li>Polarity/Wire Pair (+/-)</li> <li>Pair skew/Wire Pair [ns]</li> <li>Frames (Rx/Tx) [Number]</li> <li>Errors, Bytes (Rx/Tx) [Number]</li> <li>Collisions [Number]</li> </ul>	<ul style="list-style-type: none"> <li>Vectoring Mode</li> <li>Graphical Long-time Trace in ARGUS®</li> </ul>
<b>GigE Tester</b>	Ethernet according to IEEE 802.3 1 x 10/100/1000 Base-T (RJ45/8P8C) • 2.5 GBase-T (IEEE 802.3bz, NBase-T) 1 x SFP Interface, supports: • 100 Base-FX/LX • 1000 Base-BX/LX/SX/ZX • 2.5 GBase-T (IEEE 802.3bz, NBase-T) • FTTx (PtP), Active Ethernet DDM according to SFF-8472	<ul style="list-style-type: none"> <li>Link Status / Link Speed</li> <li>ONT Status / OLT Tx Power</li> <li>Optical Network Unit ID (ONU ID)</li> <li>Passive Optical Network ID (PON ID, Vendor + Equipment ID / Version)</li> </ul>	<ul style="list-style-type: none"> <li>SFP: Digital Diagnostic Mode (DDM): - Manufacturer Name, OUI, Item Number, Revision, Serial Number, Date, Coding, Medium, Speed - Optical Level (Tx/Rx), ±3 dB - Optical class of the OLT - Optical, PWR (Tx/Rx), ±3 dB - Temperature, Voltage, Current (Tx) - Max. Cable Length (Cu, SM, MM/OM1-4)</li> </ul>
<b>GPON Tester</b>	GPON Modem Simulation, ONT, CPE ITU-T G.984 via ARGUS® GPON ONT • GigaBit Passive Optical Network DDM accord. to SFF-8472 (see Ethernet)	<ul style="list-style-type: none"> <li>guided measurement sequence</li> <li>target attenuation can be entered as threshold value</li> <li>automatic OK /Fail evaluation</li> <li>PDF measurement protocol</li> <li>SFP parameters (s. Eth/GPON)</li> </ul>	<ul style="list-style-type: none"> <li>GPON Modem Trace</li> <li>Serial Number / Password Configurable</li> <li>Scan PLOAM message (ONU ID, S/N)*</li> <li>SFP: Digital Diagnostic Mode (DDM)</li> <li>Optical Level (Rx), ±0.7 dB</li> <li>Optical Line Attenuation in dB</li> </ul>
<b>PON installation test</b>	GPON installation test PON level check	<ul style="list-style-type: none"> <li>calibrated measurement of the insertion loss with ±0.5 dB accuracy</li> <li>Assistance for up to 64 fibers</li> <li>Evaluation PON-ID</li> <li>Query of the job data</li> </ul>	
<b>WLAN</b>	WLAN Access Point Mode WLAN Client Mode IEEE 802.11b/g/n (2.4 GHz) IEEE 802.11a/an/ac (5 GHz)* • via WLAN USB Stick or • internal FPC Antenna • WEP to WPA2 Enterprise	<ul style="list-style-type: none"> <li>WLAN Access Point Scan - Number / List Access Points - Network/Name (SSID) - Signal Strength (RSSI) [dBm] - Signal Quality [%] - MAC Address of AP - Used Channel/Frequency - Used Protocol - Negotiated Encryption - Authentication - Group Cipher, Pairwise Cipher</li> </ul>	<ul style="list-style-type: none"> <li>Access Point Mode (WLAN Router) for mobile devices - IP Tests (Data, VoIP, IPTV)</li> <li>AP Management (save etc.)</li> <li>Test Result Upload via Web Server, WebDAV and FTP</li> <li>Configuration Download via WebDAV and FTP</li> <li>Remote Control via VNC, Web Server - Firmware Update via FTP Download</li> </ul>
<b>WLAN spectrum analysis</b>	<ul style="list-style-type: none"> <li>optional: ARGUS® 2G4 Scope graph. WLAN spectrum analysis for 2.4 GHz for the specific WLAN troubleshooting</li> </ul>	<ul style="list-style-type: none"> <li>Real-time Analysis /Graphics</li> <li>passive (no WLAN Interference)</li> <li>Channel Load</li> <li>Graphical representation</li> </ul>	<ul style="list-style-type: none"> <li>Detection of - Bluetooth Devices - Motion Sensors - Microwave Ovens - Baby Phones</li> </ul>

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Specifications Protocol and IP tests (Triple Play):

General:	Applications, Settings + Results:	
<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> <li>Automatic receiving of connection-dependent dial-in data: PPP, VoIP (phone number)</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 (Download Tester)</b> PC/Terminal Simulation IP Ping Test Traceroute Test HTTP Up-/Download Test FTP Up-/Download Test FTP Server Test Webbrowser Ookla iperf ARGUS® Real Speed	<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> </ul> </li> <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> </ul>	<ul style="list-style-type: none"> <li>Round Trip Time (min/max/avg) [ms]</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> <li>Transfer Time /Remaining Time [h:min:s]</li> </ul> </li> <li>Speedtest® by Ookla                             <ul style="list-style-type: none"> <li>Download /Upload Speed</li> <li>Latency, Jitter, Packet Loss</li> <li>Server Selection via Server ID</li> </ul> </li> <li>iperf v2 /3                             <ul style="list-style-type: none"> <li>Client /Server Mode</li> <li>TCP Throughput Down- /Upload</li> <li>ARGUS® against ARGUS®</li> </ul> </li> <li>ARGUS® Real Speed                             <ul style="list-style-type: none"> <li>Evaluation according to RFC 6349</li> </ul> </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) Call Generator (up to 30 Calls)	<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/μ-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),</li> <li>Error Counter: RTP Drop, RTP Error</li> <li>RTP Jitter Rx (current/avg/min/max)</li> <li>Lost RTP Packets (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> <li>Simulation (VoIP NT)</li> </ul>
<b>IPTV Tests (IPTV Tester)</b> IPTV Device Simulation IPTV STB Simulation (Set-top Box) OK/Fail Evaluation IPTV Channel Scan IPTV Monitor (IPTV passive)	<ul style="list-style-type: none"> <li>Configuration in IPTV Profiles (3): Editable Channel List (up to 250 Channels), Multicast IP + Port, Channel Name, IGMP version</li> <li>Thresholds 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>Display of Selected IPTV Channel, Test Duration, current Bitrate, OK or Fail</li> <li>Packets Loss (current/min/max/avg) [Number]</li> </ul>	<ul style="list-style-type: none"> <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/...), 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> </ul>

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## Specifications Ethernet and Fiber Tests:

General:		Applications, Settings + Results:	
<b>Ethernet Cable Tests</b>	<ul style="list-style-type: none"> <li>Ethernet Port LED Flash</li> </ul>	<ul style="list-style-type: none"> <li>Port LED Flash with Timing</li> </ul>	
<b>Network Scan</b>	<ul style="list-style-type: none"> <li>Auto Mode (manual, autom.)</li> <li>Network Address + Net Mask Configurable</li> <li>Client Information: IP + Open Ports, MAC, Computer Name, NetBIOS Name</li> </ul>	<ul style="list-style-type: none"> <li>Display of Detected Services, e. g. Mail, Print, Web, File, Database and many more</li> <li>Display of DHCP Discovery, Gateway, DHCP + DNS Server, Net Mask, No. of Detected Clients/Subnet</li> <li>Number of Open Ports/Clients</li> </ul>	
<b>ARGUS OPM</b> Optical Power Meter	<ul style="list-style-type: none"> <li>Optical Power Meter in SFP form factor</li> <li>Powerful InGaAs Photo Diode</li> <li>Optical Level Measurement with wavelengths from 850, 1300, 1310, 1490, 1550, 1610, 1650 nm</li> <li>Measuring range: -60 dBm up to +6 dBm, ± 0.25 dB</li> </ul>	<ul style="list-style-type: none"> <li>Live display of the level</li> <li>Storage of the measurement in measurement protocols</li> <li>Output in QR code</li> <li>Robust and protected by use in SFP slot</li> <li>Optional Calibration at 1310, 1490 and 1550 nm (-20 dBm), 20 °C</li> </ul>	
<b>Optical Fault Finder</b>	<ul style="list-style-type: none"> <li>simple fault finder</li> <li>detects different types of optical faults</li> <li>up to 15 event with one test</li> </ul>	<ul style="list-style-type: none"> <li>distance to every event</li> <li>robust and protected by use in SFP slot</li> </ul>	
<b>Fiber Inspection Tool</b> Video Microscope	<ul style="list-style-type: none"> <li>USB Microscope for the ARGUS</li> <li>optical Fiber Inspection</li> <li>manual Focusing with separate key</li> <li>optional: Autofocus</li> <li>digital Zoom</li> <li>Pass /Fail evaluation according to IEC 61300-3-35</li> </ul>	<ul style="list-style-type: none"> <li>min. Particle Size 0.5 µm</li> <li>Defects: Core, Cladding, Adhesive, Contact</li> <li>Scratches: Core, Cladding, Adhesive, Contact</li> <li>different Tips /Adapters included in scope of delivery</li> <li>PC, UPC, APC</li> <li>Single Mode /Multi Mode</li> </ul>	

## Specifications ISDN:

General:		Applications, Settings + Results:	
<b>BRI S Interface</b> ITU-T I.430 BRI S Terminal BRI S Telephone BRI S TE Simulation	<ul style="list-style-type: none"> <li>BRI S TE Mode, Terminal device simulation</li> <li>Autom. Detection of Connection Configuration</li> <li>L2 Mode: automatic, P-P, P-MP</li> <li>Test Availability of B Channels</li> <li>BRI S Level and Voltage Evaluation</li> <li>Protocol: DSS1</li> </ul>	<ul style="list-style-type: none"> <li>Display L1, L2 and L3 of B Channel Status</li> <li>incoming /outgoing Call</li> <li>Display of Call Parameters</li> <li>own Acoustics</li> <li>Connection: Call (Single/Block Dial)</li> </ul>	

## Specifications POTS:

General:		Applications, Settings + Results:	
<b>POTS Tester</b> Analogue Tester POTS Butt Set POTS Terminal Simulation POTS Monitor	<ul style="list-style-type: none"> <li>Fully-fledged POTS Butt Set, POTS Phone</li> <li>POTS Terminal Equipment (TE)</li> <li>Analogue Phone w/ DTMF + Pulse Dial</li> <li>Incl. Fully-fledged Analogue Acoustics</li> <li>High-impedance Listening on POTS</li> <li>Configurable DTMF Signal Level</li> </ul>	<ul style="list-style-type: none"> <li>Voltage Measurement + Display Polarity when Hook-on and Hook-off</li> <li>CLIP + Caller-ID according to ETS 300 659/778</li> <li>Supports FSK + Display of Caller ID</li> <li>FLASH Function (40 up to 1000 ms)</li> </ul>	

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## Specifications Cable Multimeter:

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 200 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 200 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>0.1 % of the capacity against ground</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 40 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 mA to 150 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 @ 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 @ 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>RFL</b> Resistance troubleshooting	<ul style="list-style-type: none"> <li>Display of:                             <ul style="list-style-type: none"> <li>- Resistance to error (R<sub>x</sub>), distance to error</li> <li>- Resistance from fault to short-circuit (R<sub>y</sub>)</li> <li>- Loop resistance (R<sub>s</sub>), cable length</li> <li>- Fault resistance (R<sub>fault</sub>)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Measuring ranges:                             <ul style="list-style-type: none"> <li>- Loop resistance (R<sub>s</sub>): 10..9999 Ω</li> <li>- Fault resistance (R<sub>fault</sub>): 0..20 MΩ</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Accuracy R<sub>x</sub> at L<sub>x</sub>/L = 0.1                             <ul style="list-style-type: none"> <li>- R<sub>s</sub> = 2000 Ω: ± 0.3 % ± 0.05 Ω</li> <li>- R<sub>s</sub> = 200 Ω: ± 1.0 % ± 0.06 Ω</li> </ul> </li> </ul>
<b>Remote Kit Control</b>	<ul style="list-style-type: none"> <li>Use ARGUS to control different Remote Kits to switch the Line on the remote side, e.g. TX916                             <ul style="list-style-type: none"> <li>- Short-circuit</li> <li>- Exchange connect</li> <li>- Open circuit</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>- Loop</li> <li>- Tone mode</li> <li>- switch 2 ports simultaneously</li> </ul> </li> </ul>	
<b>Other Functions:</b>	<ul style="list-style-type: none"> <li>Autotest</li> </ul>	<ul style="list-style-type: none"> <li>Fast cable check</li> </ul>	<ul style="list-style-type: none"> <li>Signature detection (e.g. PPA)</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>

data sheet: technical data subject to change.

## 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 Mismatches, Bridged Taps/Stubs, Moisture, Loading Coils, Loose Contacts and more</li> <li>Pre-configured List of Cable Types, Velocity of Propagation (VoP): 30 % (45 m/μs) up to 99.9 % (149.7 m/μs), Line Resistance, Mutual Capacitance</li> <li>Measurement Range: 3.5 up to 6000 m</li> </ul>	<ul style="list-style-type: none"> <li>Res.: 0.025 % of Measurement Range; Accuracy: ±2 %</li> <li>Graphical Display of Reflection Course</li> <li>Configurable gain: -26 dB up to +44 dB</li> <li>Config. Pulse: 5 ns up to 3.2 μs, Pulse Height: 5 V and 20 V</li> <li>Dynamic range: 60 dB / Amplification Level</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 Oscilloscope RF Current Clamp	<ul style="list-style-type: none"> <li>Monitoring in Time/Frequency Domain on all Types of Lines for Telecommunications and on active Lines with up to 200 VDC and 40 Vpp</li> <li>Modem Finder, via Handshake Tones</li> <li>Frequency Range: 20 kHz up to 35 MHz</li> <li>Resolution: 67 Hz up to 8.625 kHz or 0.025 % of Measurement Range, Accuracy: ±2 dB</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> <li>Config. Gain FFT: -26 dB up to +20dB</li> </ul>	<ul style="list-style-type: none"> <li>For Identification and Detection of different Access Types</li> <li>Graphical Display of FFT [dBm/Hz] and of Time (Oscilloscope)</li> <li>Config. X-Axis: FFT or Time [μs]</li> <li>Autom. Trigger in Time Domain</li> <li>Zoom + Cursor for a Detailed Analysis</li> <li>Save + Set of Reference Curve</li> <li>Start/Stop and Peak Hold Function</li> <li>Peak Hold Function (Min/Max Trailing)</li> <li>Symmetry Toggling (see Active Probe)</li> <li>Detection of Disturbers/Disturbing Signals</li> </ul>
<b>ARGUS Active Probe II*</b> Passive, High-impedance Intrusion	<ul style="list-style-type: none"> <li>Input Impedance: 70 kΩ, &lt;1 pF</li> <li>Frequency Range: 10 kHz up to 35 MHz</li> <li>2 x 4 mm Banana Jacks</li> </ul>	<ul style="list-style-type: none"> <li>Hiding the Useful Signal Symmetry/Asymmetry Toggling - Attenuation Symmetric: 14.5 dB</li> <li>Data Transfer to ARGUS via RJ45</li> </ul>

Documentation and Analysis
<ul style="list-style-type: none"> <li><b>Documentation</b> of all parameters recorded to test reports (in device and on PC) via automatic access tests</li> <li>Transfer of test results via <b>QR code</b> to a smartphone or via WLAN, ETH or DSL to cloud (FTP server)</li> <li>Free of charge firmware updates via <b>cloud</b> or <b>ARGUS update tool</b> (<a href="http://www.argus.info">www.argus.info</a>)</li> <li><b>WLAN</b> for transf. test results to systems of an electronic order processing system, remote control via smartphone</li> </ul>

Device Specifications	
<b>Technical Features:</b> <ul style="list-style-type: none"> <li>Hotkey</li> <li>Power management</li> <li>Keypad</li> <li>TFT colour display</li> <li>6 LEDs</li> <li>Handset</li> <li>ARGUSpedia</li> <li>CE marking</li> <li>User safety</li> <li>RoHS conformance</li> </ul>	<ul style="list-style-type: none"> <li>Quick start of various tests</li> <li>User configurable</li> <li>18 keys, 4 cursor keys, 4 context-sensitive softkeys</li> <li>800 x 480 pixels, backlit, incl. touchscreen</li> <li>Indicating the status + Ethernet port LEDs</li> <li>Integrated earpiece and microphone</li> <li>Integrated help function</li> <li>Complies with CE directives</li> <li>Fulfills EN 60950-1:2006-11</li> <li>Conformance according to WEEE directive</li> </ul>
<b>Interfaces:</b> <ul style="list-style-type: none"> <li>1x RJ-45, 1x RJ-11</li> <li>1x Ethernet</li> <li>1x SFP port</li> <li>USB client interface, 2x USB host interface</li> <li>WLAN</li> </ul>	<ul style="list-style-type: none"> <li>For xDSL, G.fast, POTS, U, R and C Measurement</li> <li>10/100/1000 Base-T/ 2.5 GBase-T, RJ-45 test port</li> <li>100 Base-FX/LX, 1000 Base-SX/LX/ZX/BX, 2.5 GBase-T</li> <li>Type micro B, Type A</li> <li>IEEE802.11a/b/g/n</li> </ul>
<b>Environmental conditions:</b> <ul style="list-style-type: none"> <li>Temperature range for charging battery pack</li> <li>Max. Operating temperature (endurance tests)</li> <li>Max. Operating temperature (in battery mode)</li> <li>Operating temperature (with power/car adapter)</li> <li>Storing Temperature</li> <li>Relative humidity</li> </ul>	<ul style="list-style-type: none"> <li>0 °C (+32 °F) up to +40 °C (+104 °F)</li> <li>0 °C (+32 °F) up to +40 °C (+104 °F)</li> <li>-10 °C (+14 °F) up to +50 °C (+122 °F)</li> <li>0 °C (+32 °F) up to +40 °C (+104 °F)</li> <li>-20 °C (-4 °F) up to +60 °C (+140 °F)</li> <li>Up to 95 %, non-condensing</li> </ul>
<b>Dimensions:</b> <ul style="list-style-type: none"> <li>Size</li> <li>Weight</li> </ul>	<ul style="list-style-type: none"> <li>H x W x D: 300 x 128 x 84 mm (11.81 x 5.04 x 3.31 in)</li> <li>&lt;1.500 g (3.31 lbs) ARGUS incl. battery pack</li> </ul>

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## Standard Package:

Basic device incl. Gigabit-Ethernet interface (10/100/1000 Base-T), ADSL (Annex A+L+M) + VDSL2 (up to profile 35b), Bridge/router mode, Wi-Fi-Management, IP+Download package (IP ping, traceroute test, HTTP/FTP download, FTP upload/server, Speedtest® by Ookla), Line scope, Network scan, Web browser, Cloud services, Lithium-Ion battery pack, Mains adaptor, Shock absorbing rubber jacket, Carrying case, 2 wire cable + xDSL adaptor, Micro USB cable, Carrying strap, Hand strap and English manual

## Additional Options:

• <b>ADSL Annex B + J Enhancement</b>		Order number: 026008
• <b>VDSL2 Bonding Enhancement (up to Profile 35b)</b>	requires Art.No.: 026045, incl. Bonding Cable	Order number: 026050
• <b>G.fast Enhancement (Profile 106a and 212a)</b>		Order number: 026045
• <b>Time Domain Reflektometer (TDR)</b>	up to 6 km	Order number: 026040
• <b>Copper Package (Cable Multimeter/DMM)</b>	incl. banana cable red/black + green	Order number: 026010
• <b>RFL Option</b>	requires Art.No.: 026010	Order number: 026055
• <b>ARGUS Active Probe II (high impedance probe for Line Scope)</b>		Order number: 015091
• <b>ARGUS RF Current Clamp</b>		Order number: 000265
• <b>Optical Light Source (OLS)</b>		Order number: 000280
• <b>2,5 Gigabit Ethernet Interface</b>	10/100/1000/2.5 GigE via RJ45 and SFP	Order number: 020035
• <b>GPON Option</b>	incl. ARGUS GPON ONT SFP, incl. SC/LC-APC patch cable	Order number: 026076
• <b>GPON Option, calibrated</b>	incl. Art.No.: 026076 + initial calibration of the level measurement	Order number: 026077
• <b>PON Installation Test</b>	incl. Art.No.: 026077	Order number: 026078
• <b>OPM Option</b>	incl. ARGUS Optical Power Meter (SFP), type 6006	Order number: 026080
• <b>Optical Fault Finder Option</b>	w/o OFF SFP (000275)	Order number: 026083
• <b>Fiber Inspection Option</b>	w/o Fiber Inspection Tool	Order number: 026094
• <b>Wi-Fi Test Interface</b>	w/o Wi-Fi USB stick (000250)	Order number: 026059
• <b>ARGUS 2G4 Scope (2.4 GHz Spectrum Analysis)</b>	incl. USB 2G4 Scope stick	Order number: 000240
• <b>VoIP Option</b>	incl. MOS value, Call generator, NT Sim., SIP trunk	Order number: 026060
• <b>IPTV Option</b>	incl. IPTV STB mode, IPTV passive, channel scan	Order number: 026065
• <b>Entertain Package</b>	incl. VoIP and IPTV Option	Order number: 026067
• <b>ARGUS Real Speed</b>	RFC 6349, incl. iPerf v2/ v3	Order number: 026056
• <b>iPerf v2/ v3</b>	Client/ Server	Order number: 026068
• <b>ISDN BRI S/T TE Interface</b>	requires Art.No.: 026045	Order number: 026016
• <b>POTS Option</b>	POTS	Order number: 026070
• <b>SFP Support</b>	supports various SFP types	Order number: 026042

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

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