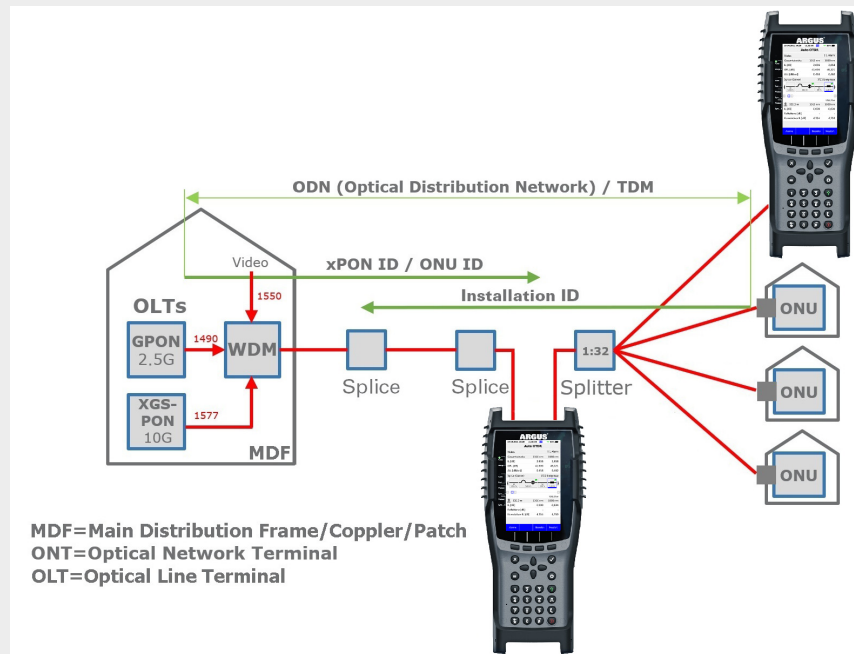


ARGUS® F300

UNIVERSAL FIBER TESTER



Data sheet: Technical data subject to change without notice



ARGUS® F300: the universal fiber tester

The ARGUS® F300 is a pure fiber tester that combines OTDR and selective OPM and is also able to determine and display the PON ID and XGS-PON ID. It is the only device in the world that combines these fiber test functions in one device.

Modern design and intuitive operation

Its robust design combines the requirements for a compact hand-held meter in daily field use with the performance of a high-end tester. The ARGUS® tester with touch-screen display enables intuitive navigation of the familiar ARGUS® menu structure. The operation is as easy as with a smartphone and an internal help function supports the rapid and reliable interpretation of test results.

Tests on mixed optical fiber accesses

The ARGUS® F300 reliably tests on GPON & XGS-PON interfaces in the quality you have come to expect. The selective 4-fold power meter can be switched into an existing PON connection in through mode, allowing the optical levels on the different downstream (OLT) & upstream (ONT) wavelengths for GPON and XGS-PON and a video overlay to be determined precisely at the same time. In this process, other transmitters that may be on the line (alien ONT) can be detected. In addition, the PON ID can be read out from the PLOAM message. A PLOAM monitor scans all ONU IDs and serial numbers of connected ONTs on a PON branch. With the 5xOPM, a video overlay via five separate filters is also possible as an option. On GPON as on XGS-PON, the ARGUS® can also perform a complete ONT simulation with IP and performance tests at up to 10 Gbit/s.

Additional features

The ARGUS® F300 also has many other test functions, such as WLAN analyzer, triple play tests such as VoIP, IPTV and data tests in the form of upload/download, ping and traceroute as well as iperf or high-performance IP speed tests directly on the fiber or on Ethernet. The OTDR measures the line and the event attenuation and, together with the propagation time of the reflected pulse, can determine the line length, splices and connectors. In addition, the Fiber Inspection Tool can be connected via USB, which detects scratches and defects on optical fibers and displays them as a video image and in tabular form.

intec Gesellschaft für Informationstechnik mbH

intec Gesellschaft für Informationstechnik mbH has been successfully developing products for the international telecom markets for 35 years. Meanwhile specialized in high-quality telecommunication measuring devices, we belong to the leading suppliers of fiber optic, G.fast, xDSL and IP measuring technology in Europe and beyond.

Our ARGUS® testers are ideal for developing and documenting new fiber optic infrastructure for the rapid expansion of modern optical networks. They simplify day-to-day work in the maintenance and testing of modern copper-based broadband interfaces as well as in the fiber-optic sector and support troubleshooting and fault location.

Our customers have appreciated the quality of our products and services for many years. This trust in our products has enabled us to supply more than 100,000 ARGUS® testers throughout the world during the last 20 years – a large majority of which have been delivered to international companies such as Deutsche Telekom, Vodafone, Telefonica, KPN or A1 Telekom Austria.



ARGUS® MADE IN GERMANY

Specifications Fiber Tests:

General:	Applications, Settings + Results:	
OTDR Optical Time Domain Reflectometry	<ul style="list-style-type: none"> for troubleshooting on optical lines Acceptance measurement and route analysis Smart Auto, Expert or Real Time Mode (up to 4 Hz) Wavelengths: 1310 and 1650 nm (± 20nm) or 1310 and 1550 nm (± 20nm) Dynamic range: 20 dB at 100 ns; 37 dB at 1310 nm, 20 µs; 35 dB at 1650 nm, 20 µs Event dead zone: 0.9 m Attenuation dead zone: 3.5 m PON dead zone: ≤ 25 m; typical 20 m 	<ul style="list-style-type: none"> Pulse width: 3, 5, 10, 20, 30, 50, 100, 200, 300, 500 ns; 1, 2, 3, 5, 10, 20 µs Range settings: 250, 500 m; 1, 2, 5, 10, 15, 20, 40, 80, 160, 240 km* Measuring points: up to 300.000 points Resolution: 5 cm to 32 m Distance Accuracy: ± (1 m + 0.003 % * distance + resolution) Linearity: ± 0.05 dB/dB <p>* Max. range depends on fiber type (attenuation/km)</p>
Selective xPON-OPM for GPON / XGS-PON 3xOPM	<ul style="list-style-type: none"> Measuring range: <ul style="list-style-type: none"> 1577 & 1490 nm (filtered): from -40 to +6 dBm (max. power +18 dBm) 1270 to 1310 nm (broadband): from -50 to +13 dBm (max. power +18 dBm) Accuracy: ±0,5 dB Calibration conditions: -20 dBm, 23°C ±5 K Connector: SC/APC, SFP+, LAN4 10 GBase-T Readout of PON ID and XGS-PON ID* via SC/APC, detection up to: <ul style="list-style-type: none"> GPON ≥ -29 dBm XGS-PON ≥ -27 dBm 	<ul style="list-style-type: none"> Full ONT simulation (GPON ONT or XGS-PON ONT) via additional GPON/XGS-PON SFP transceiver module IP/Performance tests via SFP+, LAN4 10/5/2.5/1 GBase-T, 100Base-Tx with up to 1 Gbit/s (max. 2.5 Gbit/s) Remote control of the OLS with switching of the wavelengths and transmission of the transmission power via TWIN mode (only in conjunction with OLS) <p>* The network must provide the ID for this.</p>
Selective Through Mode xPON-OPM for GPON/ XGS-PON 4xOPM opt. 5xOPM	<ul style="list-style-type: none"> Measuring range: <ul style="list-style-type: none"> Downstream (OLT socket): <ul style="list-style-type: none"> 1577 & 1490 nm (filtered): from -40 to +9 dBm (max. power +18 dBm) Upstream (ONT socket): <ul style="list-style-type: none"> 1310 & 1270 nm (filtered): from -35 to +10 dBm (max. power +18 dBm) opt. 1550 nm (filtered): from -40 to +16 dBm Accuracy: filtered ±0.5 dB Insertion loss: 1.5 dB Alien ONT detection (burst + permanent) Calibration conditions: -20 dBm, 23°C ±5 K 	<ul style="list-style-type: none"> Connector: 2x SC/APC (ONT + OLT), SFP+, LAN 10 GBase-T Full ONT simulation (GPON ONT or XGS-PON ONT) via additional GPON/XGS-PON SFP transceiver module Readout of PON ID and XGS-PON ID* via SC/APC, detection up to: <ul style="list-style-type: none"> GPON ≥ -29 dBm XGS-PON ≥ -27 dBm IP/Performance tests via SFP+, LAN 10/5/2.5/1 GBase-T, 100Base-Tx with up to 10 Gbit/s (opt.) <p>* The network must provide the ID for this.</p>
GPON tester	GPON Modem Simulation, ONT, CPE ITU-T G.984 via additional GPON Transceiver <ul style="list-style-type: none"> GigaBit Passive Optical Network DDM According to SFF-8472 (see Ethernet) Link Status ONT Status / OLT Tx Power Optical Network Unit ID (ONU ID) 	<ul style="list-style-type: none"> Passive Optical Network ID (PON ID, Vendor + Equipment ID / Version) GPON Bridge/Router* GPON Status Trace Serial Number / Password Configurable Scan PLOAM message (ONU ID, S/N)* SFP: Digital Diagnostic Mode (DDM) Optical Level (Rx), ±3 dB Optical Line Attenuation in dB
XGS-PON tester	XGS-PON Modem Simulation, ONT, CPE ITU-T G.9807.1 via additional XGS-PON Transceiver <ul style="list-style-type: none"> 10 GigaBit Symmetric Passive Optical Network DDM According to SFF-8472 (see Ethernet) Link Status ONT Status / OLT Tx Power Optical Network Unit ID (ONU ID) 	<ul style="list-style-type: none"> Passive Optical Network ID (PON ID, Vendor + Equipment ID / Version) XGS-PON Bridge/Router* XGS-PON Status Trace Serial Number / Password Configurable Scan PLOAM message (ONU ID, S/N)* Optical Level (Rx), ±3 dB Optical Line Attenuation in dB
PON installation test	GPON installation test PON level check <ul style="list-style-type: none"> guided measurement sequence target attenuation can be entered as threshold value automatic OK/Fail evaluation PDF measurement protocol 	<ul style="list-style-type: none"> SFP parameters (s. Eth/GPON) calibrated measurement of the insertion loss with ±0.5 dB accuracy Assistance for up to 64 fibers Evaluation PON-ID Query of the job data etc.
PLOAM-Monitor	(Physical Layer Operation Administration and Maintenance) <ul style="list-style-type: none"> Scan of PLOAM messages Message trace with timestamp 	<ul style="list-style-type: none"> PLOAM sniffer directly on the fiber via PON socket (no replugging) for GPON and XGS-PON



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External extensions:

General:	Applications, Settings + Results:	
Fiber Inspection Tool Video Microscope	<ul style="list-style-type: none"> • USB Microscope for the ARGUS • optical Fiber Inspection • manual Focusing with separate button • optional: Autofocus • digital Zoom • Pass /Fail evaluation according to IEC 61300-3-35 	<ul style="list-style-type: none"> • min. Particle Size 0.5 µm • Defects: Core, Cladding, Adhesive and Contact • Scratches: Core, Cladding, Adhesive and Contact • different Tips /Adapters included in delivery • PC, UPC, APC, others on request • Single Mode /Multi Mode
VFL Visual Fault Locator	<ul style="list-style-type: none"> • Mini Visual Laser Source • Output Power: 1 mW • Detecting Range: about 5 km • Wavelength: 650 nm 	<ul style="list-style-type: none"> • Laser Level: Class 2 • Connector: Un/FC • Modulation Frequency: CW / 2 Hz • Power Supply: 2 * AAA batteries
Optical Light Source	<ul style="list-style-type: none"> • Wavelength: 1310 nm, 1490 nm, 1550 nm +1625 nm (± 20 nm) • Stability: <ul style="list-style-type: none"> - Short term (15 minutes): 1310 nm < ±0,05 dB 1490 nm < ±0,10 dB 1550 nm < ±0,05 dB 1625 nm < ±0,10 dB - Long term (5 hours): 1310 nm < ±0,10 dB 1490 nm < ±0,20 dB 1550 nm < ±0,10 dB 1625 nm < ±0,20 dB • Connector: SC/APC with dust protection and protection against loss 	<ul style="list-style-type: none"> • Spectral width: 5 nm • Frequency: 270 Hz, 1 KHz, 2 KHz • Auto wavelength: protocol-based wavelength and TX power transmission • Power: -5 dBm ±0.5 dB • Auto power off / backlight • Power supply: 2x Ni-MH AA (2500 mAh), AC/DC charger • Dimension (L x W x H): 160 x 76 x 45 mm • Net weight: 270 g • Accessories: AC/DC charger, 2 x AA battery, calibration report • ARGUS® can be enhanced with an Optical Loss Test Set (separate option)

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Further specifications:

General:		Application, Settings + Results:	
GigE Tester 	Ethernet According to IEEE 802.3 LAN: <ul style="list-style-type: none"> 100/1000 Base-T, 2.5 GBase-T (2.5 GbE), 2500 BASE-T (IEEE 802.3bz, NBase-T), 5/10 GBase-T SFP: full SFP+ interface (FTTx, PtP) <ul style="list-style-type: none"> 100 Base-FX/LX (IEEE 802.3 Clause 26/58) 1000 Base-BX/LX/SX/ZX (IEEE 802.3 Clause 38 or 802.3z) 2.5 GBase-X (2.5GigE/2.5GbE) 10 GBase-T 	<ul style="list-style-type: none"> Link Status / Autonegotiation, far/near Auto-MDI(X) Function Speed (10, 100, 1000, 2500 Mbit/s) Duplex Mode (full, half)/Flow Control Polarity/Wire Pair (+/-) Pair skew/Wire Pair [ns] Frames (Rx/Tx) [Number] Errors, Bytes (Rx/Tx) [Number] Collisions [Number] 	<ul style="list-style-type: none"> SFP: Digital Diagnostic Mode (DDM): <ul style="list-style-type: none"> - DDM According to SFF-8472 - 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)
WLAN 	WLAN Access Point Mode WLAN Client Mode IEEE 802.11b/g/n (2,4 GHz) IEEE 802.11a/an/ac (5 GHz)* <ul style="list-style-type: none"> via WLAN USB Stick WEP To WPA2 Personal 	<ul style="list-style-type: none"> WLAN Access Point Scan <ul style="list-style-type: none"> - Number / List Access Points - Number 2.4 GHz / 5 GHz Networks - 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 	<ul style="list-style-type: none"> Access Point Mode (WLAN Router) for mobile devices IP Tests (Data, VoIP, IPTV) AP Management (save etc.) Test Result Upload via Web Server, WebDAV and FTP Configuration Download via WebDAV and FTP Remote Control via VNC, Web Server Firmware Update via FTP Download
ARGUS® WLAN Analyzer	<ul style="list-style-type: none"> Displaying the networks during existing WLAN connection Manual evaluation of channels possible in tabular and graphical form 	<ul style="list-style-type: none"> Searching for networks again during existing WLAN connection 	<ul style="list-style-type: none"> Advanced automated evaluation of found networks and display of all AP info
WLAN spectrum analysis	<ul style="list-style-type: none"> optional: ARGUS® 2G4 Scope graphical WLAN spectrum analysis for 2.4 GHz for the specific WLAN troubleshooting 	<ul style="list-style-type: none"> Real-time Analysis /Graphics passive (no WLAN Interference) Channel Load Graphical representation 	<ul style="list-style-type: none"> Detection of <ul style="list-style-type: none"> - Bluetooth Devices - Motion Sensors - Microwave Ovens - Baby Phones

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Specifications Protocol and IP tests (Triple Play):

General:	Applications, Settings + Results:	
Protocol Tests	<ul style="list-style-type: none"> Configurable MAC Address Use of Virtual Lines (VL): Maximum Flexibility as well as Control and Priorization under Real Conditions by Several VLs simultaneously One VL/Service each (Data, VoIP, IPTV, opt.) VL Configurable in Profiles (20) <ul style="list-style-type: none"> IP, PPPoE via xDSL, G.fast + Eth (PPTP) EoA, IPoA, PPPoA via ADSL VPI/VCI, VLAN (Modus, ID, Prio., TPID) PPP Profiles (Username, Password) IP Version (IPv4, IPv6, Dual) + DHCP Automatic receiving of connection-dependent dial-in data: PPP, VoIP (phone number) 	<ul style="list-style-type: none"> Display of BRAS Information <ul style="list-style-type: none"> AC Name, Service Name, Session ID Display of PPP Information <ul style="list-style-type: none"> PPP Packets/Bytes (Tx/Rx) PPP Trace (PPP Commands, Time) Display of IP Information <ul style="list-style-type: none"> IPv6: Global Unicast/Link Local Address IPv4: Assigned IP, Gateway, DNS Recording of a Data Log for Evaluation on PC (e. g. Wireshark)
Data Tests (Download Tester) PC/Terminal Simulation IP Ping Test Traceroute Test HTTP Up-/Download Test FTP Up-/Download Test FTP Server Test Webbrowser ARGUS® Real Speed Formal (RFC6349) ARGUS® Real Speed Direct (iperf)	<ul style="list-style-type: none"> Memory with up to 10 IP Addresses, (IPv4/6 Address as Number or Name) Number of Pings, Pause Configurable (Ping), Packet Size + Fragmentation Configurable Traceroute: Max. Hops, Probes + Timeout Conf. Down-/Upload: Server Profiles (10): Server Addr., File Name/Size, Number, Number of Parallel Downloads Configurable <ul style="list-style-type: none"> FTP: Username + Password Display Results IP Ping <ul style="list-style-type: none"> Display of Packets (Tx/Rx/repeated) Checksum Error [Number] Error Packets [Number] Display Results Traceroute <ul style="list-style-type: none"> Current Hop + Probe / List of Hops Response Time of Hops [s] IP Address of Current Hops 	<ul style="list-style-type: none"> Round Trip Time (min/max/avg) [ms] Display Results Down-/Upload <ul style="list-style-type: none"> Current/Total Number [Number] Already Loaded Data [%] Average Speed [Mbit/s] Loaded Bytes [MB] Transfer Time/Remaining Time [h:min:s] ARGUS® Real Speed Direct (iperf) <ul style="list-style-type: none"> Speedtests up to 10 Gbit/s, depending on utilization (min. 1 Gbit/s guaranteed) Client /Server Mode TCP Throughput Down- /Upload ARGUS® against ARGUS® ARGUS® Real Speed Formal (RFC6349) <ul style="list-style-type: none"> Evaluation according to RFC 6349
VoIP Tests (VoIP Tester) 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"> 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 Phone Settings: RTP Port Area, Silence Detection, Jitterbuffer, Codecs, DTMF STUN Server MOS Threshold for OK/Fail Evaluation VoIP QoS, Layer 3 Diffserv: RTP/SIP: ToS, DSCP VoIP QoS, Layer 2 VLAN Prio.: RTP/SIP: VLAN Prio. Codecs: G.711 (a-law/μ-law), G.722 Display of Own Number, Number of Called Person 	<ul style="list-style-type: none"> Duration of Connection [h:min:s] MOS Plain Text Evaluation, According to E Model R Factor, ITU-T G. 107 (current/avg), MOS (current/avg/min/max/ideal) Statistics: RTP Packets (Tx/Rx), Error Counter: RTP Drop, RTP Error RTP Jitter Rx (current/avg/min/max) Lost RTP Packages (avg/min/max) RTCP Contents: <ul style="list-style-type: none"> RTP Jitter far (current/avg/min/max) [ms] Lost RTP Packets of Remote Side Network Delay (current/avg/min/max) [ms] Display of Registration Details: SIP Codes, Registrar IP, Proxy, URI Simulation (VoIP NT)
IPTV Tests (IPTV Tester) 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"> Configuration in IPTV Profiles (up to 3): Editable Channel List (up to 250 Channels) Multicast IP + Port, Channel Name, IGMP version Threshold 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 Different VLs for IGMP + RTP Scan Profiles (3) Configurable: max. Zapping Time Display of Selected IPTV Channel, Test Duration, current Bitrate, OK or Fail Evaluation Packets Loss (current/min/max/avg) [Number] 	<ul style="list-style-type: none"> RTP/UDP Packet Loss Rate [%] Delay [ms] + Delay Factor [ms] Media Loss Rate (MLR) [%] IP Address of Channel + Port IGMP Latency (Activation Time) [ms] For Correlation: xDSL CRC Counters RTP Errors, RTP Sequence Errors 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 Codecs and PIDs (Packet Identifier) Channel Zapping Time (min/max/avg) [ms]

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Device Specifications

Technical Features:	
• Power supply	Li-ion battery pack or mains adaptor
• Hotkey	Quick start of various tests
• Power management	User configurable
• Keypad	18 keys, 4 cursor keys, 4 context-sensitive softkeys
• TFT colour display	800 x 480 pixels, backlit, incl. touchscreen
• 6 LEDs	Indicating the status + Ethernet port LEDs
• Handset	Integrated earpiece and microphone
• ARGUSpedia	Integrated help function
• CE marking	Complies with CE directives
• User safety	Fulfills EN 62368-1
• RoHS conformance	Conformance according to WEEE directive

Interfaces:	
• 1x Ethernet	100/1000 Base-T, 2.5 GBase-T, 5 GBase-T, 10000 Base-T/10 GigE
• 1x SFP+ port	100 Base-FX/LX, 1000 Base-SX/LX/ZX/BX, 2,5 GBase-T, 10 GBase-T/10 GigE
• USB client interface	Type micro B
• 2x USB host interface	Type A
• WLAN	IEEE802.11a/b/g/n/ac, ax detection

Environmental conditions:	
• Temperature range for charging battery pack	0 °C (+32 °F) up to +40 °C (+104 °F)
• Max. Operating temperature (endurance tests)	0 °C (+32 °F) up to +40 °C (+104 °F)
• Max. Operating temperature (in battery mode)	-10 °C (+14 °F) up to +50 °C (+122 °F)
• Operating temperature (with power/car adapter)	0 °C (+32 °F) up to +40 °C (+104 °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: 300 x 128 x 94 mm (11.81 x 5.04 x 3.70 in)
• Weight	approx. <2000 g (4.41 lbs, ARGUS incl. battery pack)

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** (www.argus.info)
- **WLAN** for transf. test results to systems of an electronic order processing system, remote control via smartphone.

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Standard Package:

Basic device incl. xPON-OPM + PON-ID for GPON/XGS-PON, OTDR, Speedtests up to 2.5 Gbit/s, Gigabit Ethernet interface (LAN/SFP+), Wi-Fi Management, IPv4/IPv6, IP+Download package (IP ping, traceroute test, HTTP/FTP download, FTP upload/server, Real Speed Direct), Web browser, Cloud services, SFP support, Lithium-Ion battery pack, Mains adaptor, Shock absorbing rubber jacket, Carrying case, appropriate cable set (depending on selected option, see below), Micro USB cable, Carrying strap, Hand strap and English manual

Basic packages:

- OTDR 1310 nm / 1650 nm Order number: 130600
- OTDR 1310 nm / 1550 nm Order number: 130601

Additional options:

- PON installation test w/o stick Order number: 030610
- Optical Light Source (1310, 1490, 1550, 1625 nm) external Order number: 000280
- Optical Light Source (1310, 1550 nm) external Order number: 000297
- Optical Loss Test inkl. 2λOLS SW-Option Optical Loss Test & 2λOLS: 1310 & 1550 nm Order number: 020061
- Optical Loss Test inkl. 4λOLS SW-Option Optical Loss Test & 4λOLS: 1310, 1490, 1550, 1625 nm Order number: 020062
- Fiber Inspection option w/o Fiber Inspection Tool, see accessories price list* Order number: 030694
- GPON-ONT for xPON-OPM incl. GPON Transceiver SFP Order number: 030602
- XGS-PON-ONT for xPON-OPM incl. XGS-PON Transceiver SFP Order number: 030603
- xPON 4xOPM incl. Through Mode + Up/Downstream level measurement Order number: 030608
- xPON 5xOPM incl. Through Mode + Up/Downstream level measurement Order number: 030604
- Speedtests up to 10 Gbit/s via Ethernet (LAN4, SFP4) + Fiber via Transceiver-SFP
incl. ARGUS® Real Speed Direct (iperf); incl. Ethernet Cat6 Patch Cable 1:1 (red); requires Art. No. 030604 Order number: 030606
- ARGUS® WLAN Analyzer requires order number 030659 Order number: 030654
- ARGUS® Real Speed Formal (RFC6349) incl. ARGUS® Real Speed Direct (iperf) Order number: 030656
- Wi-Fi test interface w/o Wi-Fi USB stick (000250), see accessories price list* Order number: 030659
- VoIP Option incl. MOS value, Call generator, NT Sim., SIP trunk Order number: 030660
- IPTV Option incl. IPTV STB mode, IPTV passive, channel scan Order number: 030665
- Triple Play package incl. VoIP and IPTV option Order number: 030667

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

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