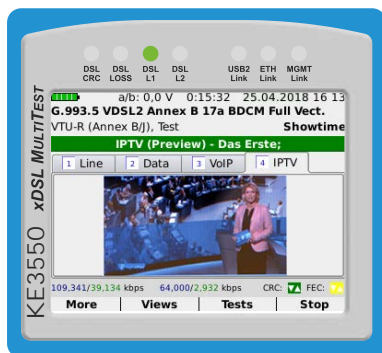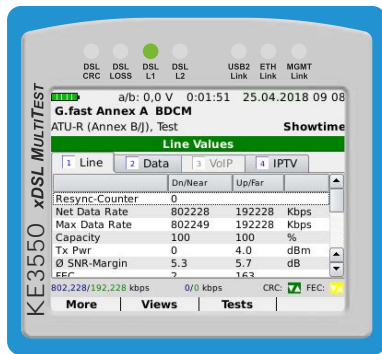# Next-Generation-xDSL Multitester

Ready for **All-IP!**
The entrance for measurements in the broadband network

■ KE3550

At a glance

- ■ ADSL−ADSL2+, VDSL2, VDSL2 (Vectoring / Super Vectoring), xDSL-Bonding and G.fast with auto service detection
- ■ Maximum transfer rates for performance measurements in gigabit networks
- ■ VoIP test incl. SIP trunk and Multi-Calling with extensive statistics
- ■ IPTV test with preview image and statistics as well as IPTV channel scan
- ■ Wi-Fi connectivity and Wi-Fi testing for triple play tests (data, VoIP, IPTV) and web browser
- ■ ISDN U_{K0} / S_0 and Analogue Test Phone Function
- ■ Coppertest (KECT), AC/DC measurements, resistance fault localization (RFL), TDR measurements
- ■ High frequency measurements for line qualification up to 31 MHz
- ■ Compatible with KE905 Remote for performing automated cable test sequences

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The **KE3550 *xDSL MultiTest*** is the multifunctional and modular test instrument at an affordable price. Even in the basic version, the KE3550 offers ICT specialists and service technicians a comprehensive range of features, making it the perfect companion in copper-bound broadband networks, with numerous expansion options.

In addition to ADSL1/2/2+ and VDSL2 including VDSL2 vectoring, the base configuration of the KE3550 also supports the latest VDSL2 standard SuperVectoring (VDSL 35b). At the press of a button, the connection to the respective service is started, which significantly speeds up and simplifies measurement applications. Optionally, the KE3550 can be extended to test G.fast.

The KE3550's modular platform supports additional functions such as ISDN and analogue test phone, Triple Play tests for IPTV and VoIP suitability as well as the possibility to perform extensive copper tests up to 31 MHz. This modular technology ensures a high degree of future and investment security and enables the technician to individually adapt the KE3550 to the requirements of the market, even after purchase.

Thanks to the intuitive operation and the ability to perform several tests in parallel, fault diagnosis in the network is carried out as quickly as possible. Service malfunctions caused by faults in the external cabling, the internal cabling or, for example, defective customer equipment, can be reliably pinpointed. The integrated high-performance battery ensures long use in the field.

Measured values are clearly displayed in tabular form and optionally also graphically and can be stored for documentation and managed with the supplied KE-Manager software. The transfer of the measurement results is also possible through the QR code display. Stored measurements can be retrieved and viewed in detail directly in the KE3550 for verification.

Equipped with the copper test module, automatic measuring sequences can be created in the KE3550, which considerably simplifies the measuring processes of the technicians in the field. In combination with the KE905 Remote, the necessary switches at the remote end are carried out automatically, there is no need for an additional person and the measuring insert is noticeably shortened.

Made in Germany

Optionen

xDSL

- ADSL−ADSL2+ Annex B/J or Annex A/M
- VDSL2 incl. VDSL2 Vectoring, profiles 8a/b/c/d,12a/b, 17a, 30a
- ADSL2+ and VDSL2 Bonding Annex A (ITU-T G.998.1/2/3)
- Super Vectoring (VDSL 35b), ITU-T G.993.2 Annex Q up to 35 MHz
- G.fast ITU-T G.9700/G.9701 up to 106 MHz
- Modem and router replacement mode
- Terminal mode for Triple Play tests (Data/VoIP/IPTV)
- IP speed test with automatic server search, iPerf speed test
- Time Trace for graphical representation of selected parameters

VoIP

- VoIP connections via xDSL/ETH/WLAN
- SIP Trunk and QoS support
- Multi Calling – up to 10 VoIP calls simultaneously
- Extensive VoIP statistics

IPTV

- IPTV connections via xDSL/ETH/WLAN
- Extensive IPTV statistics
- Preview function and Multistreaming
- IPTV channel scan with display of the switching time

Wi-Fi

- 2,4/5 GHz incl. SMA antenna (management interface) and Dualband Wi-Fi US
- Wi-Fi scan (SSID), send channel, signal strength, signal quality
- Graphical channel and access point overview
- Wi-Fi monitor (client scan)
- Triple Play tests (Data/VoIP/IPTV)
- IP speed test with automatic server search, iPerf speed test

Gigabit Ethernet port

- IP speed test with automatic server search, iPerf speed test
- Triple Play tests (Data/VoIP/IPTV)

ISDN/Analogue test phone

- ISDN S_0/U_{K0}/Analogue
- Extensive measurement functions
- BER test (Bit error rate test)
- D-channel monitoring

Coppertest with KECT

- Cable multimeter measurements: Current, voltage, insulation, resistance and capacitance, symmetry
- RFL measurement: Resistance fault localization after Murray and Küpfmüller
- TDR measurements for precise cable fault localization up to 6 km
- High-frequency measurements up to 31 MHz: Spectrum analysis, impedance measurement, reflection and unbalance loss (LLC), NEXT measurement, receive level, broadband noise and impulse noise
- Manual or automatable measuring sequences possible (autotest)
- Compatible with KE905 Remote, direct control of the line switch at the remote end to simplify the measurement process

Digital Multimeter (DMM)

- DMM quick test for in-house telecommunications cabling:
  Voltage, resistance and capacitance

|||||	Type	Description
Bundles		
TIP 0.49815-90	KE3550 All-IP / Wi-Fi package	0.49815 **KE3550 Base unit** ADSL-ADSL2+ Annex A/M or B/J; **VDSL2 Vectoring / Super Vectoring**, Profiles 8a/b/c/d, 12a/b, 17a, 30a, 35b; 0.49830-5 **VoIP tests** / 0.49830-5-10 **VoIP MultiCalling** 0.49840-17 **Wi-Fi Connect**, 2.4 / 5 GHz incl. SMA antenna; 0.49840-17-10 **Wi-Fi Tests**, Terminal mode
0.49815-91	KE3550 All-IP package	0.49815 **KE3550 Base unit** ADSL-ADSL2+ Annex A/M or B/J; **VDSL2 Vectoring / Super Vectoring**, Profiles 8a/b/c/d, 12a/b, 17a, 30a, 35b; 0.49830-5 **VoIP tests** / 0.49830-5-10 **VoIP MultiCalling**
0.49815-93	KE3550 xDSL / LAN tester package	0.49815 **KE3550 Base unit** ADSL-ADSL2+ Annex A/M or B/J; **VDSL2 Vectoring / Super Vectoring**, Profiles 8a/b/c/d, 12a/b, 17a, 30a, 35b; 0.49830-5 **VoIP tests** / 0.49830-5-10 **VoIP MultiCalling** 0.49420 KE7200 Ethernet FlexiTest Network tester with 2 remote units KE7010, PC software, test cable set and protective bag
xDSL Test device		
0.49815	KE3550	xDSL Multitester, xDSL and 1 GbE interface, ADSL 1/2/2+ Annex B / J or A / M **and VDSL 2 Vectoring / Super Vectoring** (Profiles 8a/b/c/d, 12a/b, 17a, 30a, 35b). Incl. high-performance battery, power supply unit, test leads and bag.
Options		
0.49830-30	G.fast	G.fast 106 MHz (ITU-T G.9700 / G.9701)
0.49830-40	Bonding	xDSL Bonding (ADSL / 2 / 2+, VDSL2 profile 17a, 30a) – Annex A only
Digital Multimeter		
0.49840-12	DMM	Digital multimeter: Voltage, resistance, capacitance, length
xDSL Time Trace		
0.49840-21	Time Trace	Graphical display of parameters over the entire measurement time: Status, Sync, FEC, CRC, SNR margin, Transfer rate, Bitswap, Retransmission
Coppertest upgrades		
0.49830-13	KECT	Line multimeter with high interference resistance, control functions for measuring aids such as KE905
0.49830-13-10	HF / LQ	High frequency (HF) measurements for qualification of copper lines up to 31 MHz (0.49830-13 KECT required)
0.49830-11	TDR	TDR up to 6 km line length at Ø 0.5 mm (0.49830-13 KECT required)
0.49830-13-20	RFL	Resistance fault localization after Murray and Küpfmüller, multisection support (0.49830-13 KECT required)
IP service tests		
0.49830-5	VoIP	VoIP tests (terminal emulation) with display of the quality parameters xDSL / Ethernet / Wi-Fi*
0.49830-5-10	VoIP MultiCalling	Up to 10 parallel VoIP calls including statistics for xDSL / Ethernet (0.49830-5 VoIP required)
0.49830-6	IPTV	IPTV tests (Set Top Box emulation) with display of the quality parameters xDSL / Ethernet / Wi-Fi*
0.49830-6-10	IPTV Scan	IPTV channel scan with display of the switching time (0.49830-6 IPTV required)
0.49840-17	Wi-Fi Connect	Wi-Fi connectivity, 2.4 / 5 GHz Wi-Fi management interface. Incl. SMA antenna.
0.49840-17-10	Wi-Fi Connect	Wi-Fi tests (terminal mode) 2.4 / 5 GHz, function and Triple Play tests (option-dependent, 0.49840-17 Wi-Fi required). Incl. Dualband Wi-FI USB adapter.
0.49840-15	IP speed Test	Speed test with automatic server search. Display of host and target server, upload and download speed as well as ping runtime.
0.49840-23	iPerf	Definable speed test for IP networks. Support of iPerf 2 and 3 in server/client mode via xDSL, Ethernet and Wi-Fi.
0.49840-22	Trace	Packet capturing of up to 99,999 packets, evaluable via Wireshark. Available for all broadband interfaces.
Telephony upgrades		
0.49810-25	ISDN	ISDN S_0-TE, U_{K0} (4B3T o. 2B1Q) and analogue interface
KE Manager option		
0.49830-15	Real time analysis	Detailed viewing of a running measurement on the PC and evaluation of long-term measurements in replay mode via KE Manager

	KE3550
Conformance ADSL1/2/2+	ITU-T G.992.5 (ADSL2+ incl. Annex A, B, J, M), ITU-T G.992.3 (ADSL2 incl. Annex A, B, J, L), ITU-T G.992.1 (G.DMT incl. Annex A, B, J) ATIS/ANSI T1.413 Issue 2 IEEE 802.3ah (PTM) ITU-T G.998.1/2 (Bonding)
VDSL2	ITU-T G.993.2 Annex A, B (Vectoring) ITU-T G.998.1/2 (Bonding with Profile 17a) Profiles: 8a/b/c/d, 12a/b, 17a, 30a and 35b (Annex Q) Band Plan: 997, 998, US0 IEEE 802.3ah (PTM)
G.fast	ITU-T G.9700/ G.9701
DSL parameters	Maximum achievable bit rates Attenuation/Bin (Hlog/bin), QLN/Bin, SNR/Bin Actual achieved bit rates Provider code, revision Actual achieved bit rateson bundled lines Interleave depth Latency mode: Fast, Interleaved Interleave delay Data mode: ATM, PTM Bit Swapping Capacitance (%) INP, G.INP Signal-to-noise ratio (SNR) Vectoring Output level Operation modes: PTM, ATM Attenuation LOSS, FEC, CRC, HEC, LOF, LOM, SES, UAS, ES Bits/bin LATN per Band, SATN per Band
Test interfaces	ADSL 1/2/2+/VDSL2/VDSL2-Vectoring/Super Vectoring/G.fast w/ auto detect. Ethernet 10/100/1000 Ethernet 10/100/1000 management port Web browser for service confirmation
Encapsulation	RFC 2684 with support for Bridged Ethernet (IPoE), IPoA (RFC 1577), PPPoE (RFC 2516), PPPoA/LLC and PPPoA/VC-MUX (RFC 2364)
Operation modes	DSL terminal, router and modem mode Transit mode with modem substitution (DSL/Ethernet) Ethernet terminal mode
Login format	Username and password with PAP/CHAP
Connection options	VoIP autoconfiguration at BNG NAT DHCP 60 autoconfiguration VLAN ID, VLAN tag LAN/WAN state VPI/VCI DNS, Gateway IPv4 and IPv6 DHCP Client/Server, DHCP provider class Signal strength
Ping test	Ping destination address: Gateway, IP address or URL Number of pings: 1 to 9999, unlimited Packet size: 56 to 2048 Bytes (default value 56) Timeout / Interval: 0 to 2000 seconds Results: Packets sent/recieved, average round-trip delay in ms
Traceroute test	Traceroute target: Gateway, IP address or URL Timeout: in seconds, devault value 1 s, up to 120 s Number of hops: 1 to 100 (default value 30) Results: Specification of the IP address of the hop and round-trip delay in ms
FTP / HTTP **data rate test***	Address: IP or URL * Perform up to 10 tests simultaneously Direction: Upload and / or download up to 800 MBit/s Results: Time, transmitted kB, rate in kBit/s Bookmarks: User-definable
Software options	VoIP test: IPTV test: Single, Multicall, QoS, SIP trunk, DSL and Ethernet Video standards: MPEG2, MPEG4 part 2 and 10, DSL and Ethernet Codecs: iLBC, G.711 A-law, G.711 µ-law, G.722, GSM, L16, Speex Programmable channel list, analyses up to zu 10 streams simultaneously Results: MOS, R factor, Latency jitter, Packets (loss, sent) Results: MOS, R factor, Latency jitter, Packets, Preview image
Interface options	xDSL Bonding module KECT Copper qualification uo to 31 MHz with telco multimeter TDR error detection / location ISDN U_{K0} / S_0 / Analogue interface Wi-Fi interface 2.4 / 5 GHz, 802.11b,g,n
Display	3,5" TFT display, RGB 240 x 320, sunlight-readable
Power supply	Extra powerful LiPo battery
Dimension	230 x 110 / 90 x 70 mm
Weight	1100 g
Housing	Impact resistant ABS with fall protection and highly impact resistant plexiglass display cover
Menu languages	

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