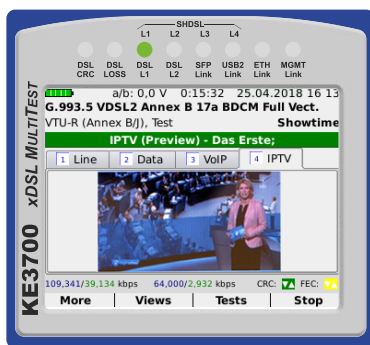
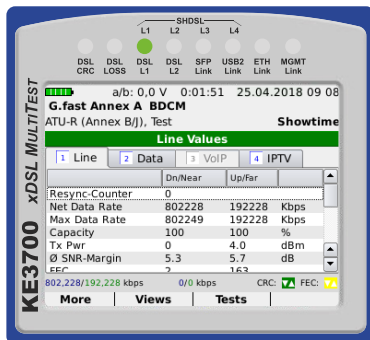


Next-Generation-xDSL Multitester

The **All-in-One solution** for measurements in the broadband network



KE3700



At a glance

- ADSL-ADSL2+, VDSL2, VDSL2 (Vectoring/Super Vectoring), xDSL-Bonding and G.fast with auto service detection
- SHDSL support, 2 to 8 wires
- SFP port for digital diagnostic mode, optical level/power meter, triple play tests
- 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 $U_{K0}/S_0/S_{2M}$ 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

The **KE3700 xDSL MULTITEST** is the ideal tool for service technicians of network operators and ITC specialists. Numerous hardware and software options make it possible to combine the functions of several test instruments in one housing – even at a later date.

The multifunctional KE3700 is ideally suited for the installation and interference suppression of the broadband services ADSL1/2+ / SHDSL / VDSL2, VDSL2 Vectoring as well as for the latest standards Super Vectoring (VDSL 35b) and G.fast. xDSL autodetect starts at the press of a button and automates the synchronisation process. Through Ethernet interfaces for copper and fibre optics, the KE3700 can also be used to perform testing tasks in gigabit networks based on FTTB and FTTH and also in the local customer network (LAN).

The modular concept of the KE3700 offers the user the possibility to combine the functions of several test devices, such as xDSL tester, VoIP/ISDN/Analogue test telephone, IPTV tester and cable fault measuring device in one housing. This modular technology ensures a high degree of future and investment security and allows the technician, even after purchasing the KE3700, to individually adapt the device to the requirements of the market.

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 xDSL autodetect function enables automatic synchronisation, the at-a-glance display guarantees a clear display of the test-relevant line and service parameters without laborious scrolling or time-consuming menu changes.

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 KE3700 for verification.

Equipped with the copper test module, automatic measuring sequences can be created in the KE3700, 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.

Features

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
- Terminal, modem and router substitute mode
- Terminal mode for Triple Play tests (Data/VoIP/IPTV)
- IP speed test with automatic server search
- xDSL Time Trace for graphical representation of selected parameters

VoIP

- VoIP connections over xDSL/ETH/SFP/Wi-Fi/SHDSL*
- SIP-Trunk and QoS support
- Multi Calling – up to 10 VoIP calls in parallel
- Extensive VoIP statistics

IPTV

- IPTV connections over xDSL/ETH/SFP/Wi-Fi/SHDSL*
- Extensive IPTV statistics
- Preview function and multistreaming
- IPTV channel scan with display of switching time

Wi-Fi

- 2.4/5 GHz, incl. SMA antenna (Management Interface) and Dualband Wi-Fi
- USB adapter (Test Interface)
- 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

Gigabit Ethernet ports

- SFP fibre optics or copper RJ45
- IP speed test with autom. server search
- Digital Diagnostics Monitoring (DDM)
- Optical power meter
- Triple Play tests (Data/VoIP/IPTV)

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

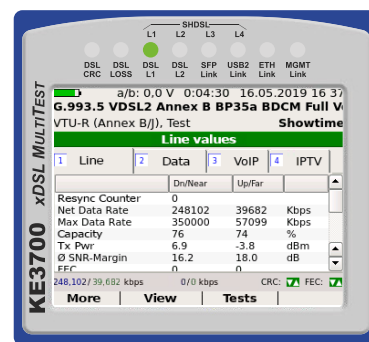
SHDSL 2- to 8-wire *

- Ethernet First Mile (EFM), TDM and ATM support
- Modem (STU-R) and DSLAM emulation (STU-C)
- IP speed test with automatic server search

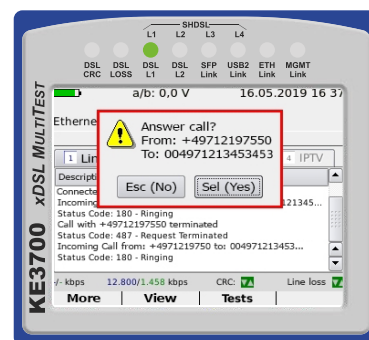
ISDN / Analogue *

- ISDN UK₀ / S₀ / Analogue
- Test telephone functionality
- BER test (Bit error rate test)
- D-channel monitoring
- S₂M for PMX connections (PRI)

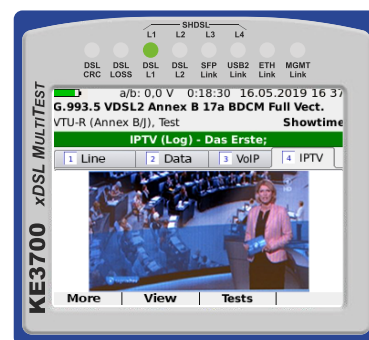
* on request



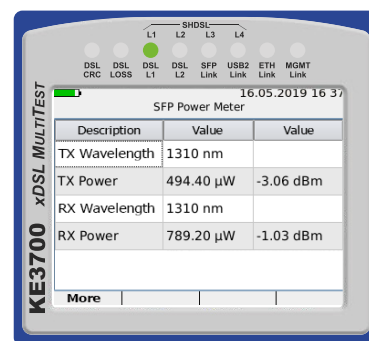
xDSL line values



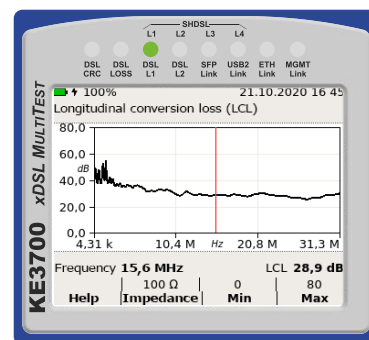
Incoming VoIP call



IPTV function test with preview image




Fibre optics power meter



LCL measurement on a copper wire pair

Icon	Type	Description
Bundles		
TIP 0.49840-90	KE3700 All-IP / Wi-Fi package	0.49840 KE3700 Base unit ADSL-ADSL2+ Annex A/M or B/J; 0.49830-20 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 ; 0.49830-3 SFP-Port for measurements in optical fibre networks (transceiver optional); 0.49840-17 Wi-Fi Connect , 2.4 / 5 GHz incl. SMA antenna; 0.49840-17-10 Wi-Fi Tests , Terminal mode
TIP 0.49840-91	KE3700 All-IP package	0.49840 KE3700 Base unit ADSL-ADSL2+ Annex A/M or B/J; 0.49830-20 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 ; 0.49830-3 SFP-Port for measurements in optical fibre networks (transceiver optional);
0.49840-93	KE3700 xDSL / LAN tester package	0.49840 KE3700 Base unit ADSL-ADSL2+ Annex A/M or B/J; 0.49830-20 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 ; 0.49830-3 SFP-Port for measurements in optical fibre networks; 0.49420 KE7200 Ethernet FlexiTest Network tester with 2 remote units KE7010, PC software, test cable set and protective bag
0.49840-94	KE3700 xDSL / VoIP / Coppertest package	0.49840 KE3700 Base unit ADSL-ADSL2+ Annex A/M or B/J; 0.49830-20 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 ; 0.49830-13 KECT Coppertest module (Cable multimeter); 0.49830-13-10 HF measurements for line qualification up to 31 MHz
xDSL Test device		
0.49840	KE3700	xDSL MultiTest, xDSL and 1 GbE interface, ADSL 1/2/2+, Annex B/J or A/M. Incl. high-performance battery, power supply unit, test leads and bag.
xDSL / High speed options		
0.49830-20	VDSL2 Vectoring	Upgrade VDSL2 Vectoring, Super Vectoring (VDSL 35b) Profiles 8a/b/c/d, 12a/b, 17a, 30a, 35b
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
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
Digital Multimeter		
0.49840-12	DMM	Digital-Multimeter: Spannung, Widerstand, Kapazität, Länge
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 terminal simulation with display of the quality parameters required for assessment xDSL / Ethernet / SFP* / Wi-Fi* / SHDSL*
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 Set Top Box emulation with display of the quality parameters required for assessment xDSL / Ethernet / SFP* / Wi-Fi* / SHDSL*
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	Connectivity, 2.4 / 5 GHz Wi-Fi management interface. Incl. SMA antenna.
0.49840-17-10	Wi-Fi Test	Wi-Fi terminal mode 2.4 / 5 GHz, function and triple play tests (option-dependent, 0.49840-17 Wi-Fi required). Incl. Wi-Fi 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.
Fibre / Copper module options		
0.49830-3	SFP port	SFP port for SFP copper or SFP fibre transceiver, Digital Diagnostic Mode, optical level / power meter, performance tests, Triple Play tests* (Transceiver optional)
0.49830-3-Soft	SFP activation	Activation of the existing SFP port of the 0.49830-25 ISDN option (0.49830-3 SFP port option is not required)
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
Symmetrical DSL		
0.49830-26 **	SHDSL **	SHDSL 2–8-wire interface
Telephony options		
0.49830-25 **	ISDN **	ISDN S ₀ -TE, U _{K0} and analogue interface with additional SFP port (must be activated with 0.49830-3-Soft). (4B2T also available)
0.49830-27 **	S2M **	S _{2M} Primary multiplex interface (only in conjunction with SHDSL option)

* (option-dependent) ** on request

 KE3700																					
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	<table border="0"> <tr> <td>Maximum achievable bit rates</td> <td>Attenuation/Bin (Hlog/bin), QLN/Bin, SNR/Bin</td> </tr> <tr> <td>Actual achieved bit rates</td> <td>Provider code, revision</td> </tr> <tr> <td>Actual achieved bit rates on bundled lines</td> <td>Interleave depth</td> </tr> <tr> <td>Latency mode: Fast, Interleaved</td> <td>Interleave delay</td> </tr> <tr> <td>Data mode: ATM, PTM</td> <td>Bit Swapping</td> </tr> <tr> <td>Capacitance (%)</td> <td>INP, G.INP</td> </tr> <tr> <td>Signal-to-noise ratio (SNR)</td> <td>Vectoring</td> </tr> <tr> <td>Output level</td> <td>Operation modes: PTM, ATM</td> </tr> <tr> <td>Attenuation</td> <td>LOSS, FEC, CRC, HEC, LOF, LOM, SES, UAS, ES</td> </tr> <tr> <td>Bits/bin</td> <td>LATN per Band, SATN per Band</td> </tr> </table>	Maximum achievable bit rates	Attenuation/Bin (Hlog/bin), QLN/Bin, SNR/Bin	Actual achieved bit rates	Provider code, revision	Actual achieved bit rates on 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
Maximum achievable bit rates	Attenuation/Bin (Hlog/bin), QLN/Bin, SNR/Bin																				
Actual achieved bit rates	Provider code, revision																				
Actual achieved bit rates on 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	<table border="0"> <tr> <td>ADSL 1/2/2+/VDSL2/VDSL2-Vectoring/Super Vectoring/G.fast w/ auto detect.</td> <td>Ethernet 10/100/1000</td> </tr> <tr> <td>Ethernet 10/100/1000 management port</td> <td>Web browser for service confirmation</td> </tr> </table>	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																
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	<table border="0"> <tr> <td>VoIP autoconfiguration at BNG</td> <td>NAT</td> </tr> <tr> <td>DHCP 60 autoconfiguration</td> <td>VLAN ID, VLAN tag</td> </tr> <tr> <td>LAN/WAN state</td> <td>VPI/VCI</td> </tr> <tr> <td>DNS, Gateway</td> <td>IPv4 and IPv6</td> </tr> <tr> <td>DHCP Client/Server, DHCP provider class</td> <td>Signal strength</td> </tr> </table>	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										
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	<p>Ping destination address: Gateway, IP address or URL</p> <p>Number of pings: 1 to 9999, unlimited</p> <p>Packet size: 56 to 2048 Bytes (default value 56)</p> <p>Timeout/Interval: 0 to 2000 seconds</p> <p>Results: Packets sent/received, average round-trip delay in ms</p>																				
Traceroute test	<p>Traceroute target: Gateway, IP address or URL</p> <p>Timeout: in seconds, default value 1 s, up to 120 s</p> <p>Number of hops: 1 to 100 (default value 30)</p> <p>Results: Specification of the IP address of the hop and round-trip delay in ms</p>																				
FTP/HTTP data rate test*	<p>Address: IP or URL</p> <p>Direction: Upload and/or download up to 800 MBit/s</p> <p>Results: Time, transmitted kB, rate in kBit/s</p> <p>Bookmarks: User-definable</p> <p>* Perform up to 10 tests simultaneously</p>																				
Software options	<table border="0"> <tr> <td> VoIP test: Single, Multicall, QoS, SIP trunk, DSL and Ethernet Codecs: iLBC, G.711 A-law, G.711 μ-law, G.722, GSM, L16, Speex Results: MOS, R factor, Latency jitter, Packets (loss, sent) </td> <td> IPTV test: Video standards: MPEG2, MPEG4 part 2 and 10, DSL and Ethernet Programmable channel list, analyses up to zu 10 streams simultaneously Results: MOS, R factor, Latency jitter, Packets, Preview image </td> </tr> </table>	VoIP test: Single, Multicall, QoS, SIP trunk, DSL and Ethernet Codecs: iLBC, G.711 A-law, G.711 μ -law, G.722, GSM, L16, Speex Results: MOS, R factor, Latency jitter, Packets (loss, sent)	IPTV test: Video standards: MPEG2, MPEG4 part 2 and 10, DSL and Ethernet Programmable channel list, analyses up to zu 10 streams simultaneously Results: MOS, R factor, Latency jitter, Packets, Preview image																		
VoIP test: Single, Multicall, QoS, SIP trunk, DSL and Ethernet Codecs: iLBC, G.711 A-law, G.711 μ -law, G.722, GSM, L16, Speex Results: MOS, R factor, Latency jitter, Packets (loss, sent)	IPTV test: Video standards: MPEG2, MPEG4 part 2 and 10, DSL and Ethernet Programmable channel list, analyses up to zu 10 streams simultaneously Results: MOS, R factor, Latency jitter, Packets, Preview image																				
Interface options	<p>xDSL Bonding module</p> <p>SHDSL 2- to 8-wire interface</p> <p>KECT Copper qualification up to 31 MHz with telco multimeter</p> <p>TDR error detection/location</p> <p>SFP port for copper, fibre (second GbE port); slide-in modules available optionally</p> <p>ISDN U_{K0}/S₀/Analogue interface</p> <p>S_{2M} primary multiplex interface</p> <p>Wi-Fi interface 2.4/5 GHz, 802.11b,g,n</p>																				
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	