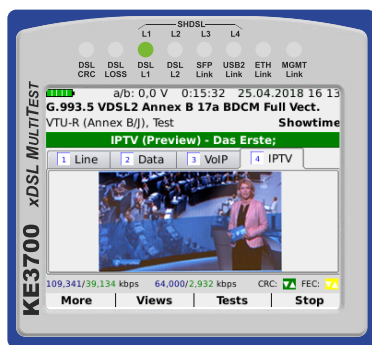
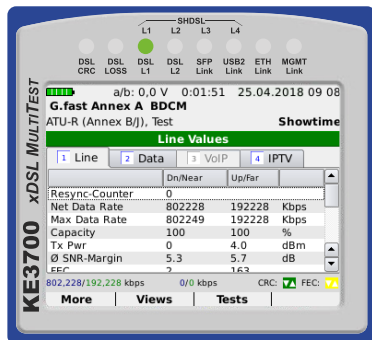


Next-Generation-xDSL Multitester

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 Services Detection
- SHDSL support, 2 to 8 wires
- SFP port for Digital Diagnostic Mode, optical level/power meter, triple play tests, GPON-ONT
- Maximum Throughput Rates for Performance Measurements in Gigabit Networks
- VoIP tests incl. SIP trunk and Multi-Calling with extensive statistics
- IPTV tests with IPTV scan and preview image as well as statistics
- Wi-Fi connectivity and triple play tests (data, VoIP, IPTV) with web browser
- ISDN $U_{K0}/S_0/S_{2M}$ and Analogue Test Handset Function
- Copper test (KECT), DC measurements, resistance fault localization (RFL), TDR measurements, remote control KE905 line change-over switch
- High frequency measurements for line qualification up to 31 MHz

The **KE3700 xDSL MULTITEST** is the ideal tool for service technicians of network operators and ITC specialists - for testing tasks of current and future broadband technologies. The new version 2 contains several improvements compared to its predecessor, including more powerful hardware and optimized edge protection.

A versatile and revolutionary multitester for broadband services ADSL1/2/2+/SHDSL/VDSL2, VDSL2 vectoring, for the new technologies Super Vectoring (Vplus) Bandplan 35b Annex Q and G.fast as well as for GPON and Ethernet PtP in FTTH networks.

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 autotest function enables automatic synchronization, 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. The large colour display of the KE3700 is protected by safety glass and can even be read in sunlight.

Measured values are displayed clearly 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.



Options

xDSL

- ADSL–ADSL2+ Annex A/M or Annex B/J
- 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 emulation mode
- Terminal mode for Triple Play tests (Data/VoIP/IPTV)
- IP speed test with automatic server search
- Time trace for graphical representation of selected parameters

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

VoIP

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

IPTV

- IPTV- connections over xDSL/SHDSL/ETH/SFP/Wi-Fi
- 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 USB adapter (test interface)
- Wi-Fi scan (SSID), channel, signal level, 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 optical fibre or copper RJ45
- Load generator, IP speed test with automatic server search
- Digital Diagnostics Monitoring (DDM)
- Optical power meter
- Triple Play tests (Data/VoIP/IPTV)

ISDN/Analogue

- ISDN S_0/U_{K0} /analogue
- Test handset functionality
- BER test (Bit error rate test)
- D-channel monitoring
- S_2M for PMX connections

Coppertest with KECT

- Telco multimeter measurements for troubleshooting: Current, voltage, insulation, resistance and capacitance, symmetry
- RFL measurement: Resistance error localisation after Murray and K upfm uller
- 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 pulse noise
- Manual or automatable measurement sequences possible (autotest)
- Compatible with KE905 Remote, direct control of the line switch at the far end to simplify the measurement process.

Digital Multimeter (DMM)

- DMM quick test for, for example, in-building telecommunications cabling: Voltage, resistance and capacitance with length calculation.



Image shows KE3700 with optical fibre module



Image shows KE3700 with KECT module

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; 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
0.49840-92	KE3700 Telephony 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; 0.49830-25-4B3T ISDN U_{ko} / S_o / Analogue Telephony option
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 A/M or B/J. 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 profiles 17a, 30a) – Annex A only
Symmetrical DSL		
0.49830-26	SHDSL	SHDSL 2 – 8-wire interface
xDSL Time Trace		
0.49840-21	Time Trace	Graphical display of parameters over the entire meas. time: Status, Sync, FEC, CRC, SNR margin, Transfer rate, Bitswap, Retransmission
Digital Multimeter		
0.49840-12	DMM	Digital multimeter: Voltage, resistance, capacitance, length
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 emulation with display of the quality parameters required for xDSL / Ethernet evaluation
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 xDSL / Ethernet evaluation, stream preview
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 incl. SMA antenna, Wi-Fi scan (SSID), transmission channel, WPA, WPA2, WEP, WPS, Management
0.49840-17-10	Wi-Fi Test	Wi-Fi terminal device mode 2.4/5 GHz, performance tests, Triple Play tests (option dependent, 0.49840-17 Wi-Fi required)
0.49840-14	Load Generator	Load Generator for Ethernet interfaces (Copper and Fibre)
0.49840-15	IP Speed Test	Speed test with automatic server search. Display of host and target server, up- and download speed and ping runtime
Telephony options		
0.49830-25	ISDN 2B1Q	ISDN S ₀ -TE, U _{ko} 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)
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 (option dependent)
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





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

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

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/received, average round-trip delay in ms

Traceroute test

Traceroute target: Gateway, IP address or URL
Timeout: in seconds, default 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: 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
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Interface options

xDSL Bonding module
SHDSL 2- to 8-wire interface
KECT Copper qualification up to 31 MHz with telco multimeter
TDR error detection/location
SFP port for copper, fibre (second GbE port) or GPON (ONT),
Slide-in modules optionally available
ISDN U_{ko}/S_o/Analogue interface
S₂₀ primary multiplex 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

