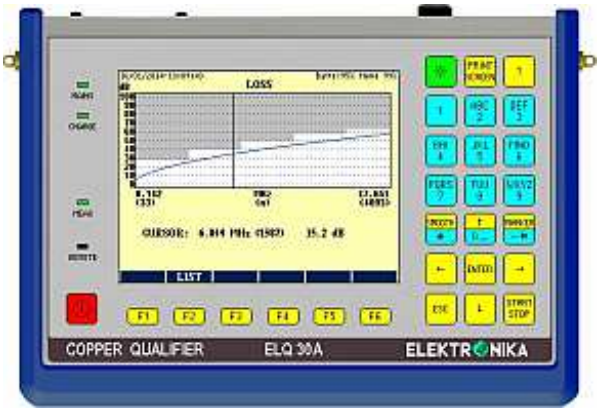
IS THIS PAIR SUITABLE FOR YOUR SYSTEM? IF NOT WHERE IS THE FAULT?

ELQ 30A+ COPPER QUALIFIER GIVES THE ANSWER!



FIVE INSTRUMENTS IN ONE

- **200 Hz to 35 MHz Transmitter**

Generating Sinus and MTTS test signals.

- **200 Hz to 35 MHz Receiver**

For selective and wideband measurements.

- **Spectrum Analyzer**

For disturbing noise and PSD measurement

- **High Resolution TDR**

For the location of bridged taps, splits etc.

- **Active AC-DC Fault Locator Bridge**

For the location of resistive and capacitive faults.

MAIN FEATURES

ELQ 30A+ is a hand held battery operated instrument intended for the pre-qualification, installation, fault location and maintenance of balanced copper pairs.

- **Single Sided Measurements**

ELQ 30A+ provides numerous single sided measuring modes like: Transmitter, Selective and Wide band Receiver, Spectrum Analyzer, Wide Band Noise, Impulsive Noise, Impedance, Return Loss, Balance and NEXT (Loss) measurements.

- **Automatic Single Ended Test Sequences**

ELQ 30A+ provides single sided test sequences to estimate the data transfer capacity of the tested lines used for different xDSL systems without the aid of far end device or a second operator.

- **Automatic Master Slave Measurements**

ELQ 30A+ provides pre-defined easy to use automatic Master-Slave test sequences. ELQ 30A+ can be programmed as MASTER and SLAVE as well.

- **Pre-programmed Tolerance Masks**

Tolerance masks of cable parameters as Loss, LCL, Return Loss, Impedance, and the principal system parameters are pre-programmed for VDSL, ADSL, SHDSL, HDSL, ISDN and VF lines

- **Automatic Data Rate Calculation**
- **Immediate PASS/FAIL indication**

When the automatic test sequence is ready an immediate PASS/FAIL indication is provided by comparing the test results with the tolerance masks and the required data rate with the calculated achievable rate. The test results can be stored in the memory of instrument or transferred to PC.

- **TDR**

For the location of cable faults causing impairment of xDSL services. Manual and auto modes are provided.

- **Active AC-DC Fault Locator Bridge**

For the location of resistive and capacitive cable faults. Manual and auto modes are provided

- **New !! 35 MHz Frequency Range**

ELQ 30A+ provides the qualification of cables used for the new VDSL2+ systems

- **New !! Measurement beside Vectored Groups**

ELQ 30A+ provides special non-disturbing Master-Slave test for Cables Containing Vectored Groups.

- **New !! DPBO Dependent Templates**

ELQ 30A+ provides ESEL, MUS dependent templates and achievable rate calculation for the local subscriber lines when the local DSLAM is working with reduced transmit power

- **New !! UPBO Dependent Templates**

For the qualification of VDSL2 lines when the modems are working with distance dependent reduced transmit power.

- **PC Supported Spectrogram**

The purpose of Spectrogram PC program is to discover the disturbers causing considerable service impairment to communication systems. In this mode ELQ 30A+ performs spectrum measurements in every second for a long time up to 72 hours. The PC displays the results on “water-fall” diagram.

- **Long Time Micro Interruption Measurement**

ELQ 30A+ detects the micro interruptions according to ITU O.62 and provides detailed information about the number and relative duration of interruptions

- **Long Time Impulse Noise Measurement**

ELQ 30A+ displays the counted impulses in histogram form with 60 time slots providing information about the time distribution.

- **Simultaneous Event Counting**

Providing simultaneous phase hit, gain hit, impulse noise, and interruption counting

- **Group Delay Distortion Measurement**

ELQ 30A+ applies the multi tone test method given in the rec. ITU-T O.81 Appendix I

- **PC Control Program**

Provided for result transfer, setup transfer and parameter edition.

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LINE QUALIFICATION

MANUAL MEASUREMENTS WITH ONE ELQ 30A+

- **Transmitting**
  One Frequency Test Signal
  30 / 36 Frequency MTTS Test Signal
- **Receiving**
  One Frequency
  30 / 36 Frequency MTTS Signal
  Wideband
- **Single-End Insertion Loss**
  FDR/TDR Combination
- **NEXT**
  One Frequency / Sweep
- **LCL Balance**
  One Frequency / Sweep
- **Impedance**
  One Frequency / Sweep
- **Return loss**
  One Frequency / Sweep
- **Noise**
  Wideband / Weighted / Psophometric
- **Impulse Noise**
  Short Time
  Long Time with Histogram up to 72 hours
- **Spectrum Analyzer**
  With Spectral Trace as Reference
- **Spectrogram**
  Water fall diagram up to 72 hours
- **Echo test**
  With 1020 Hz signal packets
- **Telephone Simulator**

MANUAL MEASUREMENTS WITH TWO ELQ 30A+

- **Double-End Insertion Loss**
  One Frequency
  30 / 36 Frequency MTTS Signal
- **Micro Interruption**
  List and 240 Point Histogram
- **Noise with tone**
  With 1020 Hz Notch Filter
- **Phase jitter and Frequency error**
  With 1020 Hz Test Signal
- **Simultaneous Event counters**
  Simultaneously counting amplitude & phase hits
  Interruptions and noise impulses
- **Group delay distortion measurement**
  With 36 Frequency MTT Test Signal

AUTOMATIC SINGLE ENDED TEST SEQUENCES

Selectable Measurements for xDSL systems

- **Insulation Resistance**
  Between a-b, a-E, b-E
- **Voltage Measurement**
  Between a-b, a-E, b-E
- **Capacitance**
  Between a-b, a-E, b-E
- **Single End Loss estimation**
  With ~300 Frequencies
- **Noise spectrum**
  With ~300 Frequencies
- **Bit load calculation**
  Both Directions
- **Achievable bit rate estimation**
  Both Directions
- **LCL Balance**
  Near End
- **Return loss Measurement**
  Near End
- **Impedance**
  Near End
- **NEXT**

AUTOMATIC MASTER SLAVE TEST SEQUENCES

Selectable Measurements for xDSL systems

- **Double End Loss**
  With ~300 Frequencies
- **Noise spectrum**
  With ~300 Frequencies
- **Bit load calculation**
  Both Directions
- **Achievable bit rate calculation**
  Both Directions
- **LCL Balance**
  Both Ends
- **Return loss Measurement**
  Both Ends
- **Impedance**
  Both Ends
- **NEXT**
  Both Ends
- **FEXT**
  Both Ends
- **ESEL Measurement**
  Up to120 dB

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PRE-PROGRAMMED STANDARD PARAMETER SETS

STANDARD VDSL SYSTEMS

VDSL 2 (ITU-T G.993.2) 35 MHz
- 998-E35-M2x-A
- 998-ADE35-M2x-A
- 998-ADE35-M2x-M
- 998-ADE35-M2x-B
- 998-ADE35-M2x-BV (Beside vectored groups)

VDSL 2 (ITU-T G.993.2) Over ISDN
- 998-M2x-B-8
- 998-M1x-B
- 998-M2x-B
- 998-M2x-B-17
- 998-M2x-B-17V (Beside vectored groups)

VDSL 2 (ITU-T G.993.2) without US0
- 998-M1x-NUS0
- 998-M2x-NUS0
- 998-E17-M2x-NUS0

VDSL 2 (ITU-T G.993.2) Over POTS
- 997-M1c-A-7
- 997-M2x-A
- 998-M1x-A
- 998-M2x-A

VDSL 2 (ITU-T G.993.2) Over POTS, extended US0
- 998-M2x-M-8
- 997-M1x-M-8
- 997-M2x-M-8
- 997-M1x-M
- 997-M2x-M
- 998-M2x-M
- 998-M2x-M-17
- 998-M2x-M-17V (Beside vectored groups)

STANDARD ADSL SYSTEMS

ADSL2+ (ITU–T G.992.5 Annex A, B, I, J, M)
Spectrum: FDD/EC, ADLU selectable 32 to 64

ADSL2 (ITU–T G.992.3 Annex A, B, I, J, M)
Spectrum: FDD/EC, ADLU selectable 32 to 64

ADSL (ITU–T G.992.1 Annex A, B)
Spectrum: FDD/EC

ADSL G.LITE2 (ITU–T G.992.4 Annex A, I)
Spectrum: FDD/EC

READSL2 (ITU–T G.992.3 Annex L)
Spectrum: FDD/EC Up band: wide/narrow

STANDARD SHDSL SYSTEMS

SHDSL 2W (ITU–T G.991.2 Annex B)
16 TC PAM
32 TC PAM

SHDSL 4W (ITU–T G.991.2 Annex B)
16 TC PAM
32 TC PAM

STANDARD HDSL SYSTEMS

HDSL (ITU–T G.991.1)
2B1Q, CAP

STANDARD ISDN SYSTEMS

ISDN ITU–T G.962
Basic/Primary Rate

STANDARD VOICE FREQUENCY SYSTEMS

ITU-T M.1020, ITU-T M.1025, ITU-T M.1040
Active / Passive, Leased / Switched

SYSTEM INDEPENDENT TEST SEQUENCES

ELQ 30A+ provides system independent test sequences to measure selected cable parameters:
- Over pre-programmed frequency ranges (10 selectable ranges are available)
- With a user defined fix frequency
- ESEL measurement up to 120 dB (option)

LONG TIME SPECTROGRAM MEASUREMENT

The **Spectrogram PC Program** is an excellent tool of ELQ 30A+ to discover the disturbers causing considerable service impairment to communication systems. The trouble shooting is usually very difficult because:
- **The disturbing signals appear in unpredictable times**
- **They appear in unpredictable frequency ranges**

In **Spectrogram** mode ELQ 30A+ performs spectrum measurements in every second. The results are directly transferred to PC via USB port or indirectly by means of a memory stick when the measurement is completed.

Utilizing the large memory capacity and large display of PC the spectrogram program shows the results in form of "Waterfall" diagram in which:
- **The time is displayed on the vertical axis**
- **The frequency is displayed on the horizontal axis**
- **The level is interpreted in form of colors**

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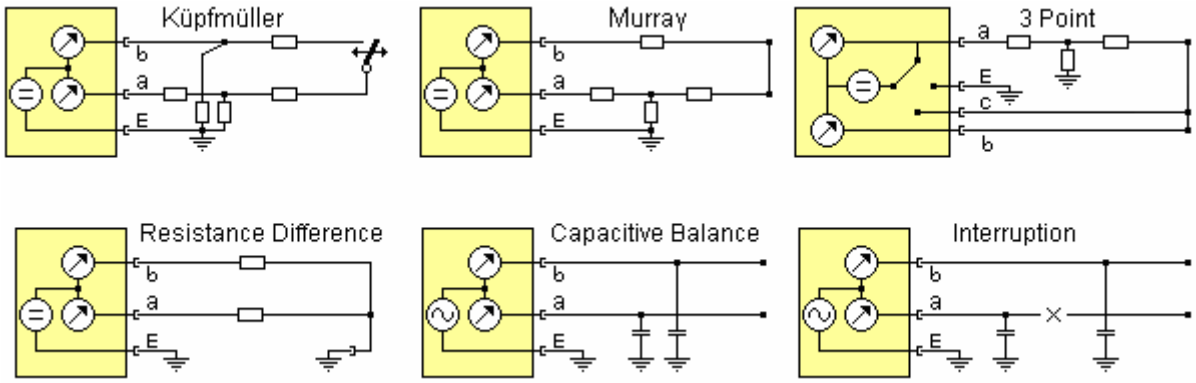
FAULT LOCATION with BRIDGE MEASUREMENTS

The bridge of ELQ 30A+ provides numerous tools for cable fault location:

- Cable parameter measurements
- DC AC fault location methods
- Automatic test sequences making the work quicker and more effective



CABLE PARAMETER MEASUREMENTS

- **AC DC Voltage measurement**
  Between the two wires
  Between wires and the ground
- **Resistance measurement**
  2 Wire (Loop resistance)
  2 Wire and ground
- **Insulation Resistance measurement**
  Physical and 2 Pole
- **Capacitance measurement**
  Physical, 2 Pole and
  With short circuit (Rec. EN 50289-1-5: 2001)
  DC capacitance measurement

DC FAULT LOCATION

- **Resistance Difference Measurement**
  In sensitive / protected modes
- **Murray Method**
  In sensitive / protected modes
- **Küpfmüller Method**
  In sensitive / protected modes
- **3 Point Method**
  In sensitive / protected modes
- **Repeated Küpfmüller Method (DC)**
  With histogram

AUTOMATIC TEST SEQUENCES

- **Quick Test**
  To get a quick information about an unknown pair without going to the other end of the tested cable (AC DC Voltage, Insulation, Capacitive balance)
- **Quality Test**
  To help the user to produce detailed acceptance protocol for a known good pair with the remote controlled loop closing device ELC 30 on the far end (Insulation, Capacitance, Capacitive balance R loop Resistance difference)
- **Pair Condition Survey**
  To help for the user to find the proper method to locate the fault of a faulty pair

AC FAULT LOCATION

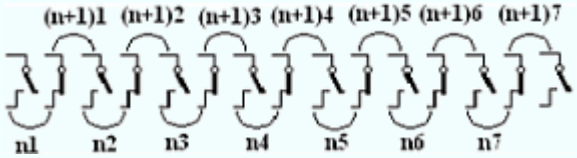
- **Capacitive Balance Measurement**
  In sensitive / protected modes
- **Interruption Measurement**
  In sensitive / protected modes
- **Repeated Küpfmüller Method (AC)**
  With histogram

REPEATED KÜPFMÜLLER METHOD

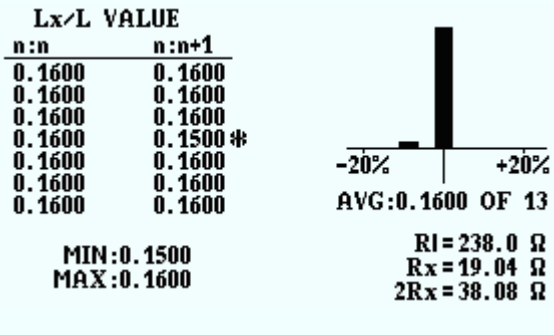
That method is a sequence of Küpfmüller measurements consisting of 15 part measurements alternating :

- **8 measurements with open loop**
- **7 measurements with closed loop**

The alternating measurements provide 14 Lx/L values



The obtained Lx/L results of the test sequence are displayed in two columns and a histogram



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SPECIFICATIONS

Transmitter

Outputs (Balanced)
- 10 kHz to 35 MHz ..... 100, 135, 150 Ω
- 200 Hz to 10 kHz ..... 600 Ω

Frequency
- Frequency Range ..... 200 Hz to 35 MHz
- Frequency resolution ..... 1 Hz
- Frequency accuracy..... $2x10^{-6}$ ±1 Hz

Transmitting modes .....One frequency/MTTS/Sweep

Output level
- 10 kHz to 35 MHz .....+10 to –40 dBm
- 200 Hz to 10 kHz .....+4 to –45 dBm
- Level Resolution .....0.1 dB

Accuracy at 0 dBm
- 200 Hz to 10 kHz .....±0,5 dB
- 10 kHz to 5 MHz .....±0.3 dB
- 5 MHz to 35 MHz .....±1 dB

Receiver

Inputs (Balanced)
- 10 kHz to 35 MHz .....100, 135, 150 Ω or High
- 200 Hz to 10 kHz .....600 Ω or High

Selective Level Measurement

Frequency
- Frequency Range ..... 200 Hz to 35 MHz
- Frequency resolution ..... 1 Hz
- Frequency accuracy..... $2x10^{-6}$ ±1 Hz

Receiving modes .....One frequency/MTTS/Sweep

Band width
- 200 Hz to 10 kHz .....20 Hz
- 10 kHz to 5 MHz 20, 200 Hz, 1.74, 1.95, 3.1 kHz
- 5 MHz to 18 MHz ..... 200 Hz, 1.74, 1.95, 3.1 kHz
- 18 MHz to 35 MHz .....1.74, 1.95, 3.1 kHz

Measuring Range
- 10 kHz to 35 MHz ..... -120 to +10 dBm
- 200 Hz to 10 kHz ..... -120 to +4 dBm
- Level Resolution .....0.1 dB

Accuracy at 0 dBm
- 200 Hz to 10 kHz .....±0,5 dB
- 10 kHz to 5 MHz .....±0.3 dB
- 5 MHz to 35 MHz .....±1.5 dB

Wideband Level Measurement

Frequency Range..... 200 Hz to 35 MHz

Measuring Range
- 10 kHz to 35 MHz ..... -50 to +10 dBm
- 200 Hz to 10 kHz ..... -50 to +4 dBm
- Level Resolution .....0.1 dB

Accuracy at 0 dBm
- 200 Hz to 10 kHz .....±0,5 dB
- 10 kHz to 5 MHz .....±0.3 dB
- 5 MHz to 30 MHz .....±1.5 dB

Spectrum Analyzer

Frequency range .....200 Hz to 35 MHz

Line impedances
- 10 kHz to 35 MHz ..... 100, 135, 150 Ω or High
- 200 Hz to 10 kHz ..... 600 Ω or High

Display range .....down to -140 dBm/Hz

Maximum input level
- 200 Hz to 10 kHz ..... +4 dBm
- 10 kHz to 35 MHz ..... +10 dBm
- With high impedance active probe..... +20 dBm

Bandwidth and frequency step

Frequency Range	Bandwidth & Freq. Step
35 MHz	500 Hz to 100 kHz
30 MHz	500 Hz to 100 kHz
18 MHz	500 Hz to 60 kHz
12 MHz	500 Hz to 40 kHz
9 MHz	500 Hz to 30 kHz
3 MHz	500 Hz to 10 kHz
1.5 MHz	500 Hz to 5 kHz
600 kHz	500 Hz to 2 kHz
300 kHz	500 Hz to 1 kHz
20 kHz	50 Hz to 100 Hz
4 kHz	10 Hz to 20 Hz
0.3 kHz	1 Hz

Number of displayed frequencies.....300
Saving of result.....the actual content of display
Evaluation..... NORM, PEAK, AVG, SAVG
Units ..... dBm, dBm/Hz

LCL Measurement

Impedance
- 10 kHz to 35 MHz .....100, 135, 150 Ω
- 200 Hz to 10 kHz .....600 Ω

Display range ..... 0 to 70 dB

Accuracy at 35 dB with special balanced cable
- 200 Hz to 100 kHz ..... ±2 dB
- 100 kHz to 5 MHz ..... ±1 dB
- 5 MHz to 30 MHz ..... ±2,5 dB

Impedance Measurement

Measuring range
- 10 kHz to 35 MHz .....50 to 400 Ω
- 200 Hz to 10 kHz .....300 to 1600 Ω

Accuracy
- 200 Hz to 10 kHz .....± 10% ± 5 Ω
- 10 kHz to 18 MHz .....±5% ± 5 Ω
- 18 MHz to 30 MHz .....±10% ± 5 Ω

Return Loss Measurement

Impedance
- 10 kHz to 35 MHz .....100, 135, 150 Ω
- 200 Hz to 10 kHz .....600 Ω

Display range ..... 0 to 40 dB

Accuracy at 20 dB
- 200 Hz to 18 MHz ..... ±2 dB

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Single-End Insertion Loss Measurement

Frequency ranges .....1.5, 3, 9, 12, 18, 30, 35 MHz
Line length range..... 100 m to 6 km
Direct measurement..... 100 kHz to 6 MHz or
up to 45 dB cable loss
Extrapolation .....Over 6 MHz or
Over 45 dB cable loss
Vertical scale .....0 to 80 dB
Accuracy.....2 to 4 dB
(The accuracy and the maximum length
depend on the cable conditions)

Next / Loss Measurement

Frequency range ..... 200 Hz to 35 MHz
Impedances
10 kHz to 35 MHz..... 100, 135, 150 Ω Balanced
200 Hz to 10 kHz..... 600 Ω Balanced
Measuring modes..... One frequency, Sweep
Measuring range
NEXT.....up to 80 dB
LOSS.....up to 90 dB

Wideband Noise Measurement

Frequency range ..... 200 Hz to 35 MHz
Filters for noise Measurements..... Psophometric
3,1 kHz Flat, 1020 Hz Notch
ADSL, ADSL 2+, VDSL 1
VDSL 2-8,VDSL 2-12,
VDSL 2-17, VDSL 2-30, VDSL2-35
Measuring time..... selectable 1sec to 72 hours
Evaluation.....For 1 sec to 1 min quasi analogue
Over 1 min.....Histogram with 60 time slots

Impulse Noise Measurement

Pulse width ..... >500 ns
Interval size ..... 10 ms
Threshold range .....1 to 500 mV
Maximum count 65000
Measuring time..... selectable 1sec to 72 hours
Evaluation..... For 1 to 30 sec numeric
Over 30 sec.....Histogram with 60 time slots

Micro Interruption Measurement

Test signal ..... 1020 Hz, 0 to –30 dBm
Impedance..... 600 Ω
Threshold below the normal level ....3, 6, 10, 20 dB
Accuracy of Threshold
For 3, 6, 10 dB .....± 1 dB
For 20 dB .....± 2 dB
Measuring time..... selectable 4min to 72 hours
Interruption Categories..... 0.6 ms to 3 ms
3 ms to 30 ms
30 ms to 300 ms
300 ms to 1 min
>1 min
Evaluation..... Relative duration, Errored sec
Count & time distribution / category

Phase Jitter & Frequ. Error Measurement (O.91)

Test signal ..... 1020 Hz, 0 to –30 dBm
Range.....0.2 to 30.0 degrees p-p
Filter.....4 to 300 Hz

Simultaneous Event Counting

Measurement times .....5, 15, 30, 60 min
Test signal.....1020 Hz, 0 to –30 dBm
Maximum counts for each counter.....65000
Amplitude Hit Counter (O.95)
Threshold range..... 2 to 9 dB
Guard interval.....4 ms
Dead time.....125 ±25 ms
Dead time after interruption (>10 dB drop) .....1 s
Phase Hit Counter (O.95)
Threshold range..... 5 to 45 °
Guard interval.....4 ms
Dead time.....125± 25 ms
Interruption Counter (O.61)
Threshold ..... 6, 10 dB
Guard interval.....2 ms
Dead time.....3 ±1 ms
Impulsive Noise Counter (O.71)
Filter .....1020 Hz Notch
Guard interval.....20 µs
Dead time.....125 ±25 ms
Threshold range..... 0 to –50 dBm

Group Delay Distortion (O.81 app. I)

Test signal.....36MTT, 200 to 3700 Hz
Output level..... -20 dBm/tone (3dBm peak)
Input level range .....-50 to –10 dB/tone
Group delay distortion range.....0 to 5 ms
Resolution .....1 µs

TDR Measurements

Measuring Modes
Single pair L1
Single pair with auto configuration.....L1 AUTO
Single pair long time L1LT
Comparison to memory.....L1 & M, L1-M
XALK point location ..... XTALK
XALK with auto configuration .....XTALK AUTO
Impedance .....100 Ω
Measuring ranges .....16m to 32 km
Zoom .....1 to 5
Gain range ..... 0 to 90 dB
Pulse Amplitude ..... ~3 V
Pulse width.....6 ns to 6 µs
Propagation velocity
V/2.....45 to 150 m/µs
VOP..... 30 - 99%
Accuracy ..... ±0.5% ±1m

Telephone Simulator

Dialing .....Pulse & Tone
Storage of phone numbers ..... Provided
Indications
Line voltage..... up to 100V
Line current ..... up to 100 mA
Ringing voltage .....up to 100V p-p

Echo Test

Measuring range .....0 to 2500 ms
Resolution .....5 ms
Display range .....0 to -90 dB

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SPECFICATIONS OF AC-DC BRIDGE

MEASUREMENTS

Voltage
DC voltage. ..... up to 400 V
AC voltage..... up to 250 V eff
Accuracy ..... ±3% ±1 V
Frequency range ..... 15 to 300 Hz
Input resistance..... 1 or 2 M Ω

Loop Resistance
Measuring range ..... 1 Ω to 10 kΩ
Accuracy ..... ±0.3% ±0.1 Ω

Resistance Difference
Loop resistance range..... 10 Ω to 5 k Ω
Accuracy..... ±0.3% of RI ±0.2 Ω

Insulation Resistance
Measuring range ..... 10 kΩ to 1000 MΩ
Measuring voltage..... 100/250 V
Accuracy
10 kΩ to 300 MΩ ..... 10% ±1 kΩ
Over 300 MΩ..... 20% ±1 MΩ

Capacitance
Measuring range ..... 10 nF to 2 µF
Measuring voltage..... 11 Hz, 5 V
Accuracy ..... ±2% ±0.2 nF

Capacitive Balance
Measuring range ..... 1 nF to 2 µF
Measuring voltage..... 11 Hz, 5 V
Accuracy of Lx/L value..... ±0.2 % ± 0.2 nF

DC Fault Location
Test Methods..... Murray, Küpfmüller, 3Point
Loop resistance range..... 1 Ω to 10 kΩ
Fault resistance range..... up to 100 MΩ
Measuring voltage..... 100 V
Accuracy (RI=2 kΩ, Lx/L=0,1 to 1)
Fault resistance < 1MΩ..... ± 0.2 %
Fault resistance 1 MΩ to 5 MΩ ..... ± 0.3 %
Fault resistance 5 MΩ to 25 MΩ ..... ± 0.5 %
Fault resistance 25 MΩ to 100 MΩ ..... ± 2 %

AC Fault Location Interruption
Range..... up to 20 km (Depends on cable type)
Accuracy..... ±2% ±0.2 nF

REPEATED TWO POLE DMM MEASUREMENTS

Disturbing Voltage
DC voltage. ..... up to 400 V
AC voltage ..... up to 250 V eff
Accuracy ..... ±3 % ±.1 V
Frequency range..... 15 to 300 Hz
Input resistance ..... 2 MΩ

Loop Resistance
Measuring range ..... 1 Ω to 10 kΩ
Accuracy ..... ±0.5 % ±0.2 Ω

Insulation Resistance
Measuring range. ..... 10 kΩ to 1000 MΩ
Measuring voltage..... 100 V
Accuracy (without disturbing voltages)
in % of test result up to 300 MΩ..... 20 %

DC Current
Measuring range. ..... 5 µA to 0,1A
Accuracy ..... ±3 % 0.1 µA

Capacitance
Measuring range ..... 10 nF to 2 µF
Measuring voltage ..... 11 Hz, 5 V
Accuracy ..... ±3% ±0.3 nF

AUTOMATIC TEST SEQUENCES

Quick Test
Purpose ..... to get a quick information about an unknown pair

Quality Test
Purpose ..... help for the user to produce detailed acceptance protocol for a known good pair

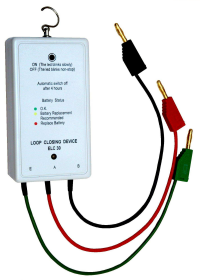
Pair Condition Survey
Purpose ..... help for the user to find the proper method to locate the fault of a faulty pair

LOOP CLOSING DEVICE ELC 30 (HW option)

Functions

Opening or closing the far end of tested pair when just one person wants to perform a measurement during which the far endings should be opened or closed (e.g. Küpfmüller method).

The device is remote controlled over the tested pair by ELQ 30A+



Specifications

Connectors..... 4 mm banana plugs
Power supply
AA size alkaline battery cells..... 3 pieces
Operation time ..... ca. 1000 hours
Auto power off..... 4 hours
Dimensions ..... 110 x 60 x 25 mm
Weight (Including battery pack) ..... ca. 0,2 kg

ELEKTRONIKA Telecommunications Test Equipment
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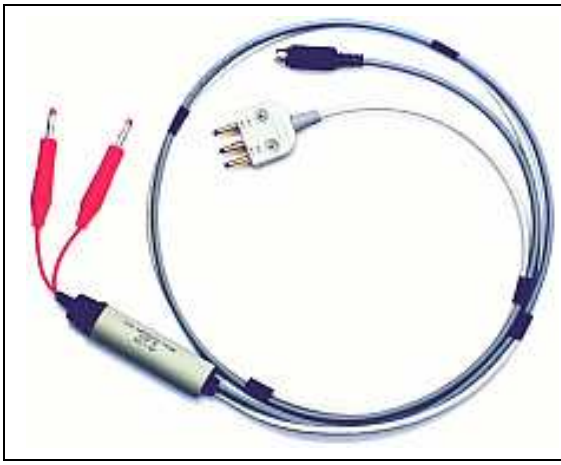
HIGH IMPEDANCE PROBE ELQP 30 (HW option)



Purpose

The ELQP 30 active probe is intended for PSD spectrum measurement on working lines when test instrument should be connected parallel with the operating modems and the regular measuring cables can not be used because the digital systems are extremely sensitive for the capacitive load

Specifications

Frequency range ..... 10 kHz to 35 MHz
Attenuation ..... 15 dB
Input Impedance ..... 5 kOhm II 5pF
Accuracy
10 kHz to 25 kHz ..... ±1dB
25 kHz to 5 MHz ..... ±0.3 dB
5 MHz to 35 MHz ..... ±1.5dB
Powered ..... from ELQ 30A+

GENERAL SPECIFICATIONS

Power supply

Internal rechargeable NIMH battery pack
Operation time ..... approx. 8 hours
(Without backlight)

Charging

(Without taking the battery pack out)
From 230V mains ..... with mains adapter
From 12V car battery ..... with car adapter
Fast charging time ..... less than 3 hours

Display ..... 320 x 240 Color LCD -TFT

Connectors

For mains or 12V car adapter ..... 2.1/5.5 mm coaxial
Power supply for active probe Mini-din-4P
Line connectors ..... 4 mm banana sockets
USB A ..... USB host port for USB stick
(FAT16, FAT32 file system supported)
USB B ..... USB device port to connect PC

Over voltage protection

Between a and b or ground ..... 200V DC
Longitudinal voltage ..... 60V AC

Ambient temperature ranges

Reference ..... 23±5°C
Rel. humidity 45% to 75%
Normal operation ..... 0 to +40°C
Rel. humidity 30% to 75% *(<25g/m^3)
Limits of operation ..... -5 to +45°C
Rel. humidity 5% to 95% *(<29g/m^3)
Storage and transport ..... –40 to +70°C
Rel. humidity 95% at +45°C *(<35g/m^3)
* without condensation

Dimensions ..... 224 x 160 x 65 mm
Weight ..... approx. 1.5 kg

ORDERING INFORMATION

COPPER QUALIFIER ELQ 30A+ 433-000-000P

Including:

Operating manual & Calibration Certificate
2 Measuring cables (yellow & green)
2 Special Balanced Measuring Cables (L1, L2)
USB cable and USB stick
Mains adapter
Carrying case

HW options

High Impedance Probe ELQ P30 410-000-000
Loop closing device ELC 30 421-000-000
Car lighter power adapter EAA 10 367-000-000

SW options for xDSL line qualification

DPBO, UPBO Dependent Templates . SW 433-920-000
ESEL Measurement up to 120 dB.
ESEL and KLo dependent data rate calculation.

Single End Line Test. ..... SW 433-640-000
Single-End loss estimation and
Automatic line test with data rate estimation

Test Beside Vectored Groups. SW-433-910-000
Non-disturbing test beside VDSL2 groups.
Non-disturbing test beside 35 MHz Vplus groups.

Spectrogram Measurement ..... SW 433-570-000
PC program and instrument SW

Spectral Trace as Reference ..... SW 433-950-000
Stored spectrum as reference and
System dependent PSD as reference

Parameter Editor ..... SW 433-930-000
PC program and instrument SW

SW options for voice frequency measurement

VF Line qualification ..... SW 433-940-000
Group delay, Jitter & Frequ Difference,
Echo and Event counter measurements

Micro Interruption Analysis ..... SW 433-530-000
Time distribution of interruptions in 240 time slots

SW options for bridge measurement

Test of loaded cables SW-433-650-000
Test of multi section cables SW-433-660-000

ELEKTRONIKA reserves the right to change specifications without prior notice ! 28.11.2016

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