

Power - Analysis - Hand tools for the measurement of conducted noise voltage in allusions to EN 55011 22



CE

RoHS
2002/95/EC

The innovative designers and EMC - specialists of Bajog electronic GmbH developed a transient noise analysis, power hand-held device.

The technical, economic needs of customers and prospects for this unit were:

- the measurement must be aligned to existing standards and do not allow undefined, imaginary values
- the device should scan the noise voltage at low frequencies (<1 KHz -> 500KHz)
- the device should meet the basic functions of an analyzer and should show same results in comparative measurements with each corner frequencies
- the handling of the handset must be easy and misinterpretations must be avoid
- the unit should have an acceptable sales price

This requirement was primarily requests by:

- Building biologists worldwide
- Electro Masters
- Electronics firms
- Electrician, energy and building
- Guild Electric (HK)
- Industry Systems engineer
- Electronics for machines and drive systems – and by directed environmentally concerned residents to Bajog electronic.

The special feature of this handset network analysis is:

- The small size (handheld)
- The direct measurement of the power
- The accuracy of the measurements (noise) in accordance with EN 55 011 .. 22 in the lower frequency range
- Ease of use
- The flexible use as a simple substitute for a network analyzer and test receivers

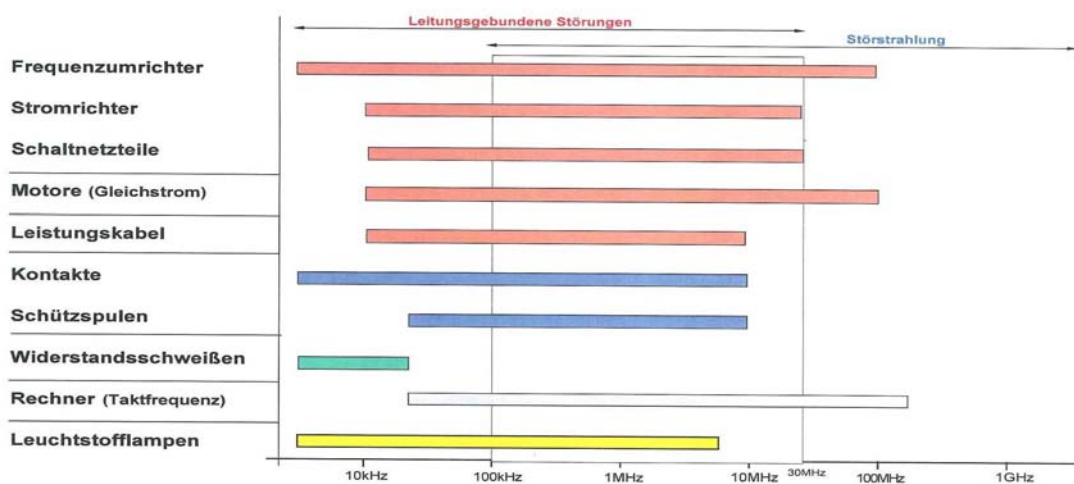
Purpose:

Frequency (IGBT) Thyristorenschaltungen, phase angle controls, contactor and switches etc. apply with a high energy content in some cases up to 10KV/ μ s in house and public utilities. This causes in the short and medium term plant outages and equipment damage.

Analyzers and test receivers typically start with the scan at 10 kHz to > 30 MHz. Network analyzers and network recorders capture though cos phi harmonics, power interruptions and voltage variations are to 61000ff, but they are not able to show the actual power quality and the associated interference to EN 55011 in the lower frequency range <10 kHz and thus to analyze the underlying sources.

However, but exact these measurements yield a meaningful estimate of the network conditions and possible destructive interference in the supply network.

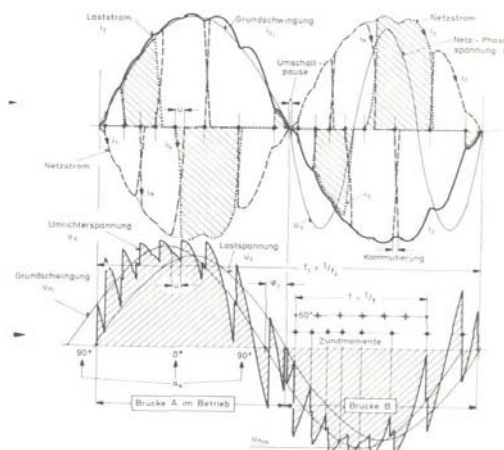
Frequenzspektren von Störquellen



Grafik 1

Graph 1 shows the different clock frequencies, which constantly pulses with high energy content into the supply network.

Beside of the harmonics wave generation primarily narrowband spikes and transients, which are quite capable to transcend a long distance are considerable to damage in parallel network operated devices and systems. (primarily compensation systems, capacitors, controllers, PC, etc.)



The impact on power quality in the lower frequency range by a single 6-pulse rectifier is shown on the left graphic .

Graphic 2

For an CE – conform measurement are the following devices are requested:

- LISN according CISP 16 / EN 55016 -1-2
- Spectrum Analyzer or
- Measuring Receiver
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These desktop devices are usually very complex in handling and very expensive

In addition, these desktop devices are very sensitive concerning impact and shock and are not capable for continuous transport with temperature variations (summer / winter).

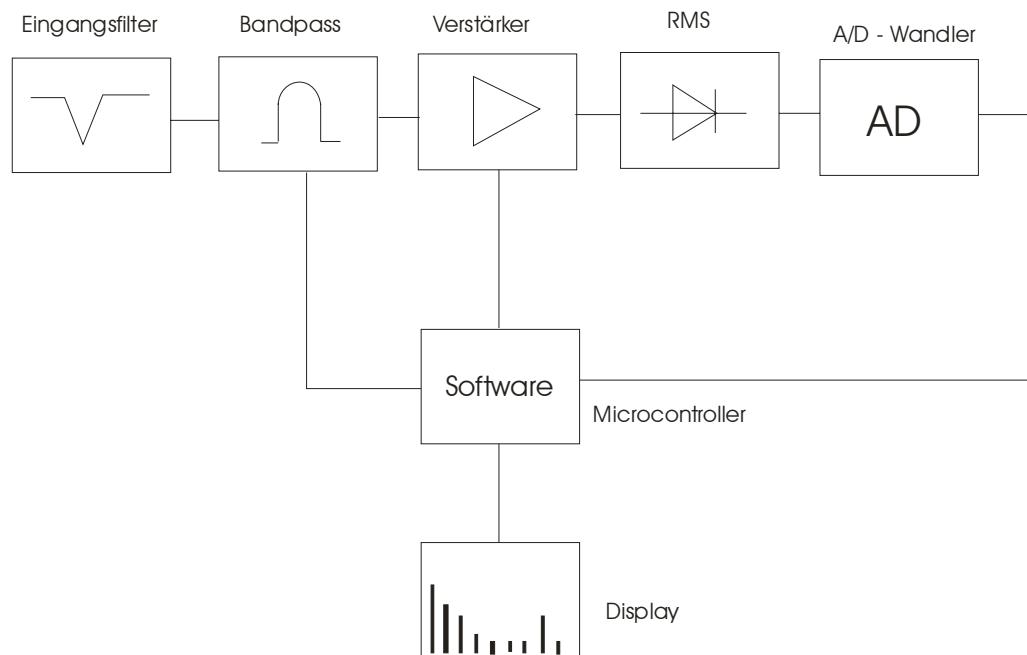
The newly developed network analysis handset NA 01-10 and 02-12 offer the ideal complement to standard desktop devices (analyzers and test receivers).

The development of NA 01-10 and NA 02-12 focused primarily on the measurement and detection of high-energy noise in the lower frequency range and links like a bridge between the measurement capabilities of network recording equipment acc. EN 61000 ff (flicker, harmonics, power fluctuations, etc.) and applicable standards EN 55011 ... 22 for interference measurement in the range of 150 KHz to 30 MHz (Conducted).

These two special measuring equipment - portable NA 01-10 and NA 02-12 can not be obtained in any trade, and they are so far unique in the world.
Utility model protection has been filed!

The basic principle and the technical construction of the new handset NA 01-10 and NA 02 - 12 is mainly due to a special, customized input-output coupling filter unit (new) with a coupled amplifier to a low-pass combination with part of the program (additional software) and an A / D converter to output in real noise standard value dB μ V.

SD - memory card allows the transmission of measurement results to a PC or computer system



Conclusion 1:

It is understandable that the power - Analysis - handheld NA 01-10 and NA 02-12 is not fully functional like an expensive Analyzer, or measuring receiver with a value of € 50,000 – and can not be replaced one by one, but this is not attended

The cost-effectiveness of an EN-compliant measurement unit is achieved when the basic functions of an analyzer can be used with different cutoff frequencies. The respective cut-off frequencies are recorded and evaluated with a larger bandwidth.

So it is possible to display in a range of <1 KHz to> 500 KHz all known sources of interference in the form of an interference voltage measurement to receive comparative figures to an analyzer

Conclusion 2:

Interference components in the upper MHz range, did not have the energy to act on destructive devices and systems on line and are often detected as a radiating system emitter.

Therefore, it makes no sense - and is also economically untenable for a handset – to include these frequencies (MHz range) into the analysis.

The handset NA 01-10 and NA 02-12 detects only the described power range of all noise sources, indicating EN-compliant.

With this innovative development are two different networks - Analysis - Hand tools available. Noise voltages can be measured in two ways:



Decoupling unit ASK 06 by Bajog

1) NA 01 -10: Via 50 ohm - BNC connector. The analyzing signal is supplied by an artificial network, or a suitable out decoupling adapter (like ASK 06 of Bajog electronic)

2) NA 02 - 12: is used like a 250 VAC 50/60Hz. device and measure directly on the socket inserted. The decoupling unit is already implemented and no additional network or decoupling adapter is required

Both hand-held instruments allow the direct measurement of the power net under load.

This is the only way to detect responsible sources and causes of undefined operating conditions, disturbances and destruction of equipment and systems without any additional devices or mechanical work..

In addition, there is an economically attractive and unique alternative compare to complex and expensive network analyzers and test receivers

Additional information

Bajog electronic offers a LISN – application in form of decoupling hand held device for network analyzers and test receiver according CISP16 / EN 55016 -1-2 for interference voltage measurement under load (on site).

This decoupling hand held device (ASK 06), can be used for the above described hand-held instruments NA 01-10 and NA 02 - 12, as well as commercially available analyzers and test receivers with BNC - 50 Ohm connectors.

This unit replaces an artificial network and transmits the noise part at 50 Ohms to each analyzer / test receiver and blank out the 50/60 Hz - from mains frequency.

Ask for us, it will be worthwhile for you. Get informed of our EMC specialists and expert advice.