



## DPA 503N Digital Power Analyzer

### DPA 503N - full-compliant three phase harmonics and flicker analyzer

The DPA 503N is a fully compliant three phase power analyzer for harmonics and flicker as per the latest IEC/EN 61000-3-2 and -12, IEC/EN 61000-3-3 and -11 as well as JIS 61000-3-2 and -12 requirements. It follows the design specifications as per IEC/EN 61000-4-7 (for Class I instruments) and IEC/EN 61000-4-15.

### MAIN FEATURES

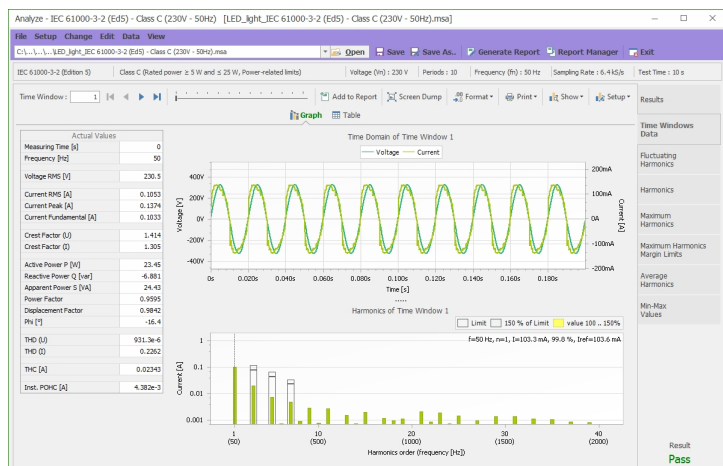
- Real-time data acquisition
- Internal hard disk for data storage
- 16-Bit A/D converter
- Wide-range current input
- Wide-range voltage input
- High-sophisticated analyzing capability
- USB interface for control and data transfer
- Control of external flicker impedance AIF 503N

Based on a real-time kernel and equipped with its own harddisk it allows to record the measuring data continuously without any gaps or overlapping. The rectangular measurement window is synchronized to each group of 10 or 12 cycles of the mains supply frequency (50Hz or 60Hz) by means of a digital PLL (Phase Lock Loop). A wide-range current input avoids loss of measured data due to range switching that would occur when using different shunt resistors.

The classification of the measurement can be selected at any time, before or after the measurement has been performed. During all measurements the AC supply voltage is measured simultaneously with the current.

Together with a three phase flicker impedance AIF 503N (available with 16, 32, 63 or 75 A) it forms a complete harmonics and flicker measurement system. The AIF 503N incorporates the reference impedance  $Z_{ref}$  (IEC 61000-3-3) as well as the test impedance  $Z_{test}$  (IEC 61000-3-11). By adding the VLCM option, the measurement range can be extended down to the mA range (single phase) to measure low power EUTs (i.e. LEDs).

### net.control - the control and analysing software for harmonics and flicker



net.control is the software tool needed for the operation of the harmonics and flicker analysing system. It offers all features to control the DPA 500N, to upload the recorded measuring data and for the classification and analysis. It includes analysis as per the latest standards as well as procedures following the former standard requirements. An easy Fail/Pass function allows fast analysis while detailed data is available for extended analysis and EUT evaluation purposes. net.control offers a powerful documentation capability with direct export to Word.

**Technical Specifications**

Measuring system	
Voltage	3 channels (L1, L2, L3) 10 - 530 Vrms (4 kVpeak), 16 bit, 15 - 3000 Hz Accuracy: $\pm 0.04\%$ of range $\pm 0.30\%$ of reading
Current	3 channels (L1, L2, L3) internal: 0 - 16 / 32 / 63 or 75 A rms (depending on AIF 503 N model) external: depending on current transformer used Accuracy: $\pm 0.1\%$ of range $\pm 0.70\%$ of reading $\pm 0.08\%$ of (frequency / 1000)
Processing	Embedded processor (Pentium 200 MHz), signal processor (Motorola DSP), memory (internal hard disk, approx. 1 MB/min data, more than 30 hours recording time), USB interface (control and data transfer)
Harmonics	
Analyzer	Class 1 instrument according IEC 61000-4-7 Ed. 1 and Ed. 2.1 for IEC 61000-3-2, IEC 61000-3-12 (with external current transformer), JIS 61000-3-2 and related standards
Harmonics analysis	1 <sup>st</sup> to 50 <sup>th</sup> harmonic, rectangular measurement window (8, 10, 12 or 16 periods), 16 bit ADC, anti-aliasing filter (> 90 dB), FFT algorithm, smoothing filter (1 <sup>st</sup> order 1.5s digital low pass filter, on/off selectable), grouping (on/off), PLL synchronization
Flicker	
Flicker meter	according IEC 61000-4-15 for IEC 61000-3-3, IEC 61000-3-11 and related standards (120 / 230 V, 50 / 60 Hz) Accuracy: better than 5% (as defined by IEC 61000-4-15) Observation period: Pst minimum 1 minute, selectable
Analysis	Pst, Plt, Vrms, dc, dt, dmax, Tmax, P50%S, P10%S, P3%S, P1%S, P0.1%
Impedance	built-in Zref according IEC 60725 (line 0.24 $\Omega$ + j0.15 $\Omega$ and neutral 0.16 $\Omega$ + j0.10 $\Omega$ )

**General Specifications**

Environment	0 - 40 °C, 10 - 90 % (non-condensing), 3 kV insulation voltage (input to housing)
Mains supply	85 - 225 V, 47 - 63 Hz, max. 50 W
Dimensions	19" 3HU housing, 133 x 449 x 500 mm / 5.2 x 17.7 x 19.7"
Weight	13 kg / 28.7 lbs

**Available Options & Accessories**

AIF 503N	Flicker impedance with 16, 32, 63 or 75 Arms (depending on model), with Zref and Ztest (except AIF 503N16), AIF 503N16 is a table-top unit, other models are mounted in a rack (AIF 503Nx.1 models) that offers space for DPA 503N and VLCM Kit mounting
VLCM Kit DPA 503N	Low current measurement option for DPA 503N. Additional low current clamp 5A/1V with jumper on the front panel, incl. a 19" frontpanel for rack mounting in AIF 503Nx.1 or other rack
ACC	ISO 17025 accredited calibration

For a complete harmonics and flicker test setup, an AC source is required which provides a clean sinusoidal voltage signal. For three phase applications a choice of sources is available: ACS 503N series for simple AC applications and NetWave series to cover also immunity tests (i.e. IEC 61000-4-13). All sources are fully compliant and meet the requirements of IEC 61000-3-2, IEC 61000-3-3 and IEC 61000-4-7 in perspective of voltage and current signal quality (harmonics, accuracy, stability etc.).

**Available single phase sources**

Source	ACS 500N16 / 30 / 60 / 90	NetWave 20 / 30 / 67 / 90 / 108 (various models)
Power	16 - 90 kVA	20 to 108 kVA
Voltage range	0 - 300 VAC	0 - 300 V / 360 / 400 V
max. current	18 - 75 A / phase	26 - 100 A / phase
Frequency range	10 to 80 Hz	0 to 5000 Hz
Mode	AC	AC + DC

