



## DPA 503N & AIF 503N

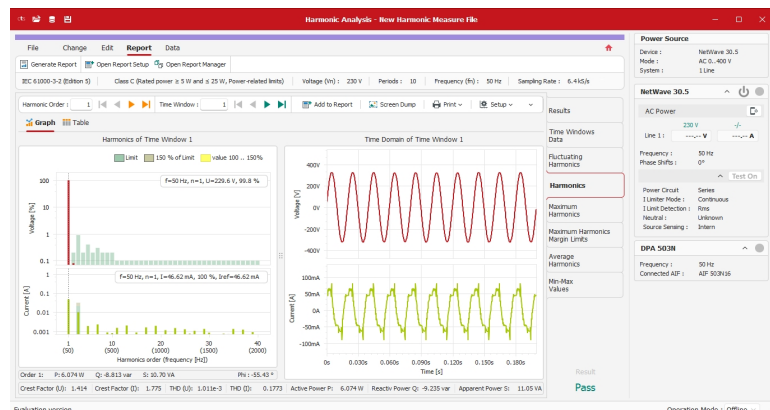
### 3-phase Harmonics and Flicker System

#### DPA 503N & AIF 503N - full-compliant three phase harmonics and flicker measurement system

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.

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).

#### Compliance Test Studio 23 - the control and analysing software for harmonics and flicker



## MAIN FEATURES

- compact harmonics and flicker system
- digital power analyzer / flicker meter according IEC
- integrated and switchable flicker impedance  $Z_{ref}$  and  $Z_{test}$
- wide harmonics measurement range
- IEC 61000-3-2 / -12 harmonics
- IEC 61000-3-3 / -11 flicker
- comprehensive analysis and report software

Compliance Test Studio 23 (CTS 23) is the software tool needed for the operation of the harmonics and flicker analysing system. It offers all features to control the DPA 503N and AIF 503N, 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. CTS 23 offers a powerful documentation capability with direct export to Word, PDF and other file formats.

### Technical Specifications - DPA 503N

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%
Software	net.control / Compliance Test Studio 23
Harmonics	IEC 61000-3-2 editions 1, 2, 2.1, 3.2, 4, 5 and 5.1 for Class A, B, C and D devices IEC 61000-3-12 editions 1 and 2 JIS C 61000-3-2 editions 2011 and 2019 EN 12015 2014 IEC 61000-3-16 edition 1 ECE R10 revision 5 and 6 Ecodesign LED (CELEX 2019/2020)
Flicker	IEC 61000-3-3 editions 1.2, 2, 3 and 3.2 IEC 61000-3-11 editions 1 and 2 DIN EN 61000-3-3 Beiblatt 1 ECE R10 revision 5 and 6
Features	standard library with pre-programmed setups, gapless recording with post-processing analysis and change of standard/classification, PASS/FAIL evaluation, test report generator (customizable), advanced analysis with access to detailed test data

### General Specifications - DPA 503N

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
Control	USB interface for direct control, Ethernet control if built inside AIF 503Nx.4 (though Ethernet to USB adapter)
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

ACC	ISO 17025 accredited calibration
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**Technical Specifications - AIF 503N**

	AIF 503N16	AIF 503N16.4	AIF 503N32.4	AIF 503N63.4	AIF 503N75.4
					
Current standard range	1 - 16 A	1 - 16 A	1 - 32 A	1 - 63 A	1 - 75 A
additional ranges					
Low Current	not available		0.1 - 10 A, included		
Very Low Current	not available		5 - 500 mA, optional VLCM Kit DPA 503N		
Voltage			3 x 400V $\pm 10\%$		
Frequency			47 - 63 Hz		
Impedance $Z_{ref}$			included, according IEC 60725		
			line 0.24 $\Omega$ + j0.15 $\Omega$ and neutral 0.16 $\Omega$ + j0.10 $\Omega$		
Impedance $Z_{test}$		not included		included	
				line 0.15 $\Omega$ + j0.15 $\Omega$ and neutral 0.10 $\Omega$ + j0.10 $\Omega$	

**General Specifications - AIF 503N**

	AIF 503N16	AIF 503N16.4	AIF 503N32.4	AIF 503N63.4	AIF 503N75.4
Dimensions	19" 3HU housing, 133 x 449 x 500 mm / 5.2 x 17.7 x 19.7"	19" rack, 25 HU, mounted on wheels		19" rack, 38 HU, mounted on wheels	
Weight	20 kg / 44 lbs	100 kg / 220 lbs		220 kg / 485 lbs	250 kg / 551 lbs
Mains supply		115 / 230 V, 50 / 60 Hz Hz, max. 200 W			
Control	by DPA 503N	Ethernet interface to control DPA 503N (through included Ethernet to USB adapter)			
Environment		0 - 40 °C, 10 - 90 % (non-condensing), 3 kV insulation voltage (input to housing)			

**Available Options & Accessories**

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.4
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