

DPA 503N

3-PHASE DIGITAL POWER ANALYZER FOR HARMONICS & FLICKER TESTING



FOR TESTS ACCORDING TO ...

- > EN 301489-1
- > EN 301489-17
- > EN 301489-24
- > EN 301489-7
- > EN 61000-3-11
- > EN 61000-3-12
- > EN 61000-3-2
- > EN 61000-3-3
- > EN 61000-4-15
- > EN 61000-4-7
- > EN 61000-6-1
- > EN 61000-6-2
- > IEC 60601-1-2
- > IEC 61000-3-11
- > IEC 61000-3-12 Ed.2:2011
- > IEC 61000-3-2
- > IEC 61000-3-3
- > IEC 61000-4-15 Ed.2:2010
- > IEC 61000-4-7
- > IEC 61326
- > JIS C 61000-3-2

DPA 503N - FULL-COMPLIANT 3-PHASE HARMONICS AND FLICKER ANALYZER

Harmonics and interharmonics are caused by modern electronic power conditioning modules. Such, mostly non-linear, modules to control loads and to reduce power consumption is the source of voltage at unwanted frequencies superposed on the supply voltage.

Voltage fluctuations caused by varying load currents may influence luminance or spectral distribution of lighting systems.







The impression of unsteadies of visual sensation induced by this light stimulus is called flicker.

The DPA 503N is used for 3-phase applications but also supports single phase applications.

HIGHLIGHTS

- > Real-time data acquisition
- > Internal hard disk for data storage
- > 16-Bit A/D converter
- > 6 input channels
- > Wide-range current input up to 140Arms
- > Wide-range voltage input up to 530Vrms
- > High-sophisticated analyzing capability

APPLICATION AREAS

- | | |
|---|--|
|  INDUSTRY |  TELECOM |
|  MEDICAL |  RENEWABLE ENERGY |
|  BROADCAST | |
|  RESIDENTIAL | |

TECHNICAL DETAILS

MEASURING SYSTEM

Input channels	6 (3x current & 3x voltage)
Frequency range	15Hz - 3,000Hz
A/D converter	16 Bit
Controller	Embedded processor Pentium 200MHz
Signal processor	Motorola DSP
Memory	Internal hard disk
Category	Class I per IEC/EN 61000-4-7

VOLTAGE INPUT

Input range	10 - 530V rms
Overload	4,000V peak
Accuracy	Better than 0.4% of reading

CURRENT INPUT

Input range	Depending on used CT model. Max. 140A with delivered CT model
Accuracy external CT	Related to 16A 2 turns better than 0.8% 5 turns better than 0.6%

GENERAL DATA

Temperature	0°C - 40°C
Rel. humidity	10% - 90%, non-condensing
Power supply	85V - 255V, 47Hz - 63Hz
Power	Max. 50W
Dimension	19" 3HU: 133mm x 449mm x 400mm
Weight	12kg
Insulation	Input to case / input 3kV rms
Interface	USB for control and data transfer

HARMONICS ANALYSIS

As per	IEC/EN 61000-3-2 Ed.4 JIS C 61000-3-2 (2013) IEC/EN 61000-3-12:2011
Design as per	IEC/EN 61000-4-7 Ed.2.1 (2009) and IEC/EN 61000-4-7 Ed.1 (1991)
Harmonics	1st - 50th order
Grouping as per	IEC/EN 61000-4-7 (2009) for Interharmonics
Synchronization	PLL; accuracy better than 0.005%
Measuring window	Rectangular window (8,10,12,16 periods)
Algorithm	FFT
Smoothing filter	1st order 1,5s digital low pass filter (on/off), selectable
Anti-aliasing filter	> 90dB
Measurement duration	More than 30 hours, limited by the hard-disk capability (approx. 1MB/min of measuring data)
Display	Vrms, Irms, Ipeak, Vpeak
Harmonics	V, I, Phase, P, Q, S (2nd - 50th order)
Power information	P, Q, S, Power factor, THD(U), THD(I), Crest factor(u), Crest factor(i)

FLICKER ANALYSIS

As per	IEC/EN 61000-3-3 Ed.3 (2013) IEC/EN 61000-3-11
Design as per	IEC/EN 61000-4-15 (2010) 230V, 50/60Hz and 120V, 50/60Hz
Accuracy Pst and Plt	Better than 5%
Accuracy dmax, dc, dt	0.15%
Flicker data	Pst and Plt, Vrms, dmax, dc, dt, P50%S, P10%S, P3%S, P1%S, P0.1%
Maximum values	Pst, dmax, dc, dt
Observation period	Min. 1min, selectable

TECHNICAL DETAILS

OPTIONS

FLICKER IMPEDANCE AIF 503NX (OPTION; SEPARATE UNIT)

Models	AIF 503N16 (16 A) AIF 503N32.1 (32 A) AIF 503N63.1 (63 A) AIF 504N75.1 (75 A)
As per	IEC/EN 61000-3-3, IEC/EN 61000-3-11 and IEC 60725 for 3-phase applications
Zref	all models
Line L1, L2, L3	0.24ohm + j0.15ohm
Neutral	0.16ohm + j0.10ohm
Ztest	excluding model AIF 503N16
Line L1, L2, L3	0.15ohm + j0.15ohm
Neutral	0.10ohm + j 0.10ohm
Accuracy	Better than 3%
R.M.S. current	Depending on selected model
	Each inductor is designed as a non-saturable air coil and is matched manually to the specified value.

OUTPUT FOR VERY LOW CURRENT (AIF 503N OPTION)

VLCM Kit AIF 503N	
Measuring output	Separate output for very low current on phase L1
Current range	5mA - 500mA
Accuracy	< 1 % of measured value

COMPETENCE WHEREVER YOU ARE



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Information about scope of delivery, visual design and technical data correspond with the state of development at time of release. Subject to change without further notice.