

DPA 500N

DIGITAL POWER ANALYZER



FOR TESTS ACCORDING TO ...

- › EN 301489-1
- › EN 301489-17
- › EN 301489-24
- › EN 301489-7
- › 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 60601-1-2:2002
- › IEC 61000-3-11
- › IEC 61000-3-12
- › IEC 61000-3-2
- › IEC 61000-3-3
- › IEC 61000-4-15
- › IEC 61000-4-7
- › IEC 61326
- › JIS C 61000-3-2

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 the luminance or the spectral distribution of lighting systems. The impression of the unsteadiness of visual sensation induced by this light stimulus is called flicker.

The DPA500N harmonics and flicker analyzer is used for single phase applications.

HIGHLIGHTS

- › **FULL-COMPLIANT ACC. TO JIS 61000-3-2 (JAPANESE STANDARD)**
- › **EDITION 3 COMPLIANT FOR CLASS A**
- › **CLASS X FOR SPECIAL MEASUREMENTS**
- › **VARIABLE LIMIT VALUES**
- › **REAL-TIME DATA ACQUISITION**
- › **INTERNAL HARD DISK FOR DATA STORAGE**

APPLICATION AREAS

-  INDUSTRY
-  MEDICAL
-  BROADCAST
-  RESIDENTIAL
-  TELECOM

TECHNICAL DETAILS

BENEFITS

THE FULLY COMPLIANT HARMONICS AND FLICKER ANALYZER

The DPA 500N is a fully compliant analyzer for harmonics and flicker as per the latest IEC/EN 61000-3-2, IEC/EN 61000-3-3 and JIS C 61000-3-2 requirements. It follows the design specifications as per IEC/EN 61000-4-7:2002 and Am.1:2008 (for Class A instruments) and IEC/EN 61000-4-15:2003.

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 (up to 50A) 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. The built-in flicker impedance, which is automatically selected when doing flicker measurement, makes the DPA 500N a complete single-box unit for both harmonics and flicker analysis.

By means of an external current clamp (optional) the current range can be extended up to 140Arms and more.

SOFTWARE

DPA.CONTROL - THE CONTROL AND ANALYSING SOFTWARE FOR HARMONICS AND FLICKER

dpa.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.

dpa.control offers a powerful documentation capability with direct export to Word.

OTHER MODELS

DPA 500 HARMONICS AND FLICKER ANALYZER SERIES

EM TEST offers two models of analyzers for harmonics and flicker for single phase applications (DPA 500N) and three-phase applications (DPA 503). The three-phase analyzer DPA503 can be used for single phase analysis as well.

AUXILIARY DEVICES

ACS 500N6 - SINGLE PHASE AC VOLTAGE SOURCE 6KVA

The ACS 500N6 single phase AC voltage source is used to provide a pure AC supply voltage for harmonics and flicker analysis as recommended by IEC/EN 61000-3-2, IEC/EN 61000-3-3 and JIS C 61000-3-2. It offers a rated power of 6kVA and the output voltage ranges up to 300V. The ACS 500N6 AC voltage source is controlled by dpa.control.

ACS 500N2 - SINGLE PHASE AC VOLTAGE SOURCE 2KVA

The ACS 500N2 single phase AC voltage source is used to provide a pure AC supply voltage for harmonics and flicker analysis as recommended by IEC/EN 61000-3-2, IEC/EN 61000-3-3 and JIS C 61000-3-2. It offers a rated power of 2kVA and the output voltage ranges up to 300V. This AC voltage source is used for low-power applications. The ACS 500N2 AC voltage source is controlled by dpa.control.

TECHNICAL DETAILS

MEASURING SYSTEM

| | |
|------------------|-----------------------------------|
| Input channels | 2 (1x current & 1x 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 as per EN/IEC 61000-4-7 |

VOLTAGE INPUT

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

CURRENT INPUT

| | |
|----------------------|--|
| Input range internal | 16A continuous, 50A short time |
| Accuracy internal | Better than 0.4% of reading Better than 0.05% rel. to 16A |
| Input range external | Depending on CT model used. With optionally delivered CT max. 140A |
| 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 500mm |
| Weight | 13kg |
| Insulation | Input to case 3kV rms |
| Interface | USB for control and data transfer |

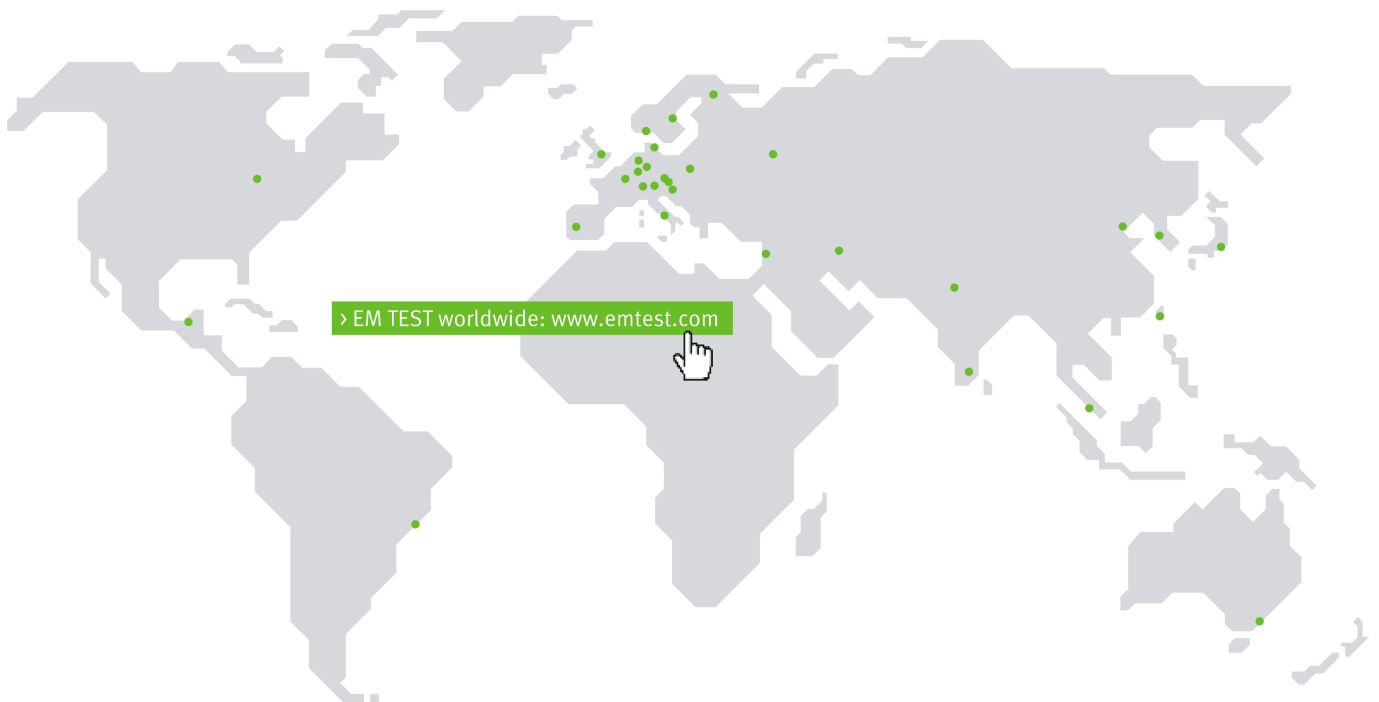
HARMONICS ANALYSIS

| | |
|----------------------|--|
| As per | EN/IEC 61000-3-2 JIS C 61000-3-2 EN/IEC 61000-3-12 with ext. CT |
| Design as per | EN/IEC 61000-4-7 (1991 & 2002 & Am.1:2008) |
| Harmonics | 1st - 50th order |
| Grouping | EN/IEC 61000-4-7 (2002 & Am.1:2008) for Interharmonics |
| Synchronization | PLL; accuracy better than 0.005% |
| Measuring window | Rectangular window with 8, 10, 12 or 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 capacity of the hard-disk (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(V), THD(I), Crest factor(V), Crest factor(I) |

FLICKER ANALYSIS

| | |
|------------------------------|--|
| As per | EN/IEC 61000-3-3 |
| Design as per | EN/IEC 61000-4-15 (1997 & 2003) 230V / 50Hz and 120V / 60Hz |
| Flicker impedance (built-in) | Line: 0.24ohm + j0.16ohm Neutral: 0.16ohm + j0.10ohm |
| 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 |

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.
Technical data subject to change without further notice.