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
- MEDICAL
- TELECOM
- 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
## OPTIONS

### FLICKER IMPEDANCE AIF 503NX (OPTION; SEPARATE UNIT)

<table>
<thead>
<tr>
<th>Models</th>
<th>AIF 503N16 (16 A)</th>
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<tbody>
<tr>
<td></td>
<td>AIF 503N32.1 (32 A)</td>
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<tr>
<td></td>
<td>AIF 503N63.1 (63 A)</td>
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<tr>
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<td>AIF 504N75.1 (75 A)</td>
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As per IEC/EN 61000-3-3, IEC/EN 61000-3-11 and IEC 60725 for 3-phase applications.

<table>
<thead>
<tr>
<th>Zref</th>
<th>all models</th>
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</thead>
<tbody>
<tr>
<td>Line L1, L2, L3</td>
<td>0.24ohm + j0.15ohm</td>
</tr>
<tr>
<td>Neutral</td>
<td>0.16ohm + j0.10ohm</td>
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</tbody>
</table>

Ztest excluding model AIF 503N16.

| Line L1, L2, L3 | 0.15ohm + j0.15ohm        |
| Neutral         | 0.10ohm + j0.10ohm        |

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)

<table>
<thead>
<tr>
<th>VLCM Kit AIF 503N</th>
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<tr>
<th>Measuring output</th>
<th>Separate output for very low current on phase L1</th>
</tr>
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<tbody>
<tr>
<td>Current range</td>
<td>5mA - 500mA</td>
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Accuracy < 1% of measured value
**COMPETENCE WHEREVER YOU ARE**

Contact EM TEST Directly:

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<tr>
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<th>Address</th>
<th>Phone Numbers</th>
<th>Internet</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switzerland</td>
<td>AMETEK CTS GmbH &gt; Sternenhofstraße 15 &gt; 4153 Reinach &gt; Switzerland</td>
<td>Phone +41 (0)61 204 41 11 &gt; Fax +41 (0)61 204 41 00</td>
<td>Internet: <a href="http://www.ametek-cts.com">www.ametek-cts.com</a> &gt; E-mail: <a href="mailto:sales.conducted.cts@ametek.com">sales.conducted.cts@ametek.com</a></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>AMETEK CTS Europe GmbH &gt; Customer Care Center EMEA &gt; Lünener Straße 211 &gt; 59174 Kamen &gt; Germany</td>
<td>Phone ++49 (0) 2307 26070-0 &gt; Fax ++49 (0) 2307 17050</td>
<td>Internet: <a href="http://www.ametek-cts.com">www.ametek-cts.com</a> &gt; E-mail: <a href="mailto:info.cts.de@ametek.com">info.cts.de@ametek.com</a></td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>AMETEK CTS Europe GmbH &gt; Biuro w Polsce &gt; ul. Twarda 44 &gt; 00-831 Warsaw &gt; Poland</td>
<td>Phone +48 (0) 518 643 12</td>
<td>Internet: <a href="http://www.ametek-cts.com">www.ametek-cts.com</a> &gt; E-mail: <a href="mailto:infopolska.cts@ametek.com">infopolska.cts@ametek.com</a></td>
<td></td>
</tr>
<tr>
<td>USA / Canada</td>
<td>AMETEK CTS US &gt; 52 Mayfield Ave &gt; Edison &gt; NJ 08837 &gt; USA</td>
<td>Phone +1 732 417 0501</td>
<td>Internet: <a href="http://www.ametek-cts.com">www.ametek-cts.com</a> &gt; E-mail: <a href="mailto:usasales.cts@ametek.com">usasales.cts@ametek.com</a></td>
<td></td>
</tr>
<tr>
<td>P.R. China</td>
<td>AMETEK Commercial Enterprise (Shanghai) Co. Ltd. &gt; Beijing Branch</td>
<td>Phone +86 10 8526 2111 &gt; Fax +86 (0)10 82 67 62 38</td>
<td>Internet: <a href="http://www.ametek-cts.com">www.ametek-cts.com</a> &gt; E-mail: <a href="mailto:chinasales@ametek.com">chinasales@ametek.com</a></td>
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</tr>
<tr>
<td>Republic of Korea</td>
<td>EM TEST Korea Limited &gt; #605 &gt; WooYeon Plaza &gt; #986-8 &gt; YoungDeok-dong &gt; Giheung-gu &gt; Yongin-si &gt; Gyeonggi-do &gt; Korea</td>
<td>Phone +82 (31) 216 8616 &gt; Fax +82 (31) 216 8616</td>
<td>Internet: <a href="http://www.emtest.co.kr">www.emtest.co.kr</a> &gt; E-mail: <a href="mailto:sales@emtest.co.kr">sales@emtest.co.kr</a></td>
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</tr>
<tr>
<td>Singapore</td>
<td>AMETEK Singapore Pte. Ltd &gt; No. 43 Changi South Avenue 2 &gt; 04-01 Singapore 48164</td>
<td>Internet: <a href="http://www.ametek-cts.com">www.ametek-cts.com</a> &gt; E-mail: <a href="mailto:singaporesales.cts@ametek.com">singaporesales.cts@ametek.com</a></td>
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<tr>
<td>Great Britain</td>
<td>AMETEK GB &gt; 5 Ashville Way &gt; Molly Millars Lane &gt; Wokingham &gt; Berkshire RG41 2 PL &gt; Great Britain</td>
<td>Phone +44 845 074 0660</td>
<td>Internet: <a href="http://www.ametek-cts.com">www.ametek-cts.com</a></td>
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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.