

# CWS 500N4

SIMULATOR FOR CONDUCTED, COMMON-MODE DISTURBANCES, AS PER IEC 61000-4-16, IEC 61000-4-19 ANNEX C, 0HZ (DC) TO 165KHZ



#### FOR TESTS ACCORDING TO ...

- > EN 61000-4-16
- > IEC 60255-22-7
- > IEC 60533
- > IEC 61000-4-16
- > IEC 61000-4-19, Annex C
- > IEC 61326
- > IEC 61543
- > IEC 61850-3
- > prTR 50579

#### CWS 500N4 - TESTING FOR IMMUNITY TO CONDUCTED, COMMON-MODE DISTURBANCES

The CWS 500N4 is the state-of-the-art solution in a compact single-box design to test for immunity to conducted, common mode disturbances in the frequency range 0Hz (DC) to 165kHz. Such test requirements are specified in IEC 61000-4-16 and cover continuous mode testing as well as short term testing with DC, 16 2/3Hz, 50Hz and 60Hz with 4 test levels each plus a sweep mode from 10Hz to 165kHz.

Additionally, the CWS 500N4 can be used for testing electricity metering equipment as per prTR 50579 and Draft standard IEC 61000-4-19, Annex C.

#### HIGHLIGHTS

- > **Most compact equipment for common-mode disturbances as per IEC 61000-4-16**
- > **Built-in LF signal generator and LF amplifier**
- > **Sweep mode capability 10Hz to 165kHz**
- > **Built-in rectifier module for DC testing**
- > **Option for Electricity Meter testing acc IEC 61000-4-19 Annex C**

#### APPLICATION AREAS



INDUSTRY



RESIDENTIAL

## TECHNICAL DETAILS

## TESTING AS PER IEC/EN 61000-4-16

| OUTPUT CHARACTERISTICS CONTINUOUS MODE |                             |
|--|-----------------------------|
| Test frequencies                       | DC, 16 2/3Hz, 50Hz and 60Hz |
| Signal level                           | 0.1 - 35Vrms or DC          |
| Test level 1                           | 1V continuous               |
| Test level 2                           | 3V continuous               |
| Test level 3                           | 10V continuous              |
| Test level 4                           | 30V continuous              |
| Output impedance                       | 50ohm $\pm$ 10%             |
| Total harmonics distortion             | < 10% (sinusoidal waveform) |
| Ripple on DC                           | < 5%                        |

| OUTPUT CHARACTERISTICS SHORT-TERM MODE |  |
|--|--|
| Test frequencies                       | DC, 16 2/3Hz, 50Hz and 60Hz  |
| Signal level                           | 1 - 330Vrms or DC  |
| Test level 1                           | 10V for 1s duration  |
| Test level 2                           | 30V for 1s duration  |
| Test level 3                           | 100V for 1s duration   |
| Test level 4                           | 300V for 1s duration   |
| Output impedance                       | 50ohm $\pm$ 10%  |
| Total harmonics distortion             | < 10% (sinusoidal waveform)  |
| Phase synchronisation                  | 0° $\pm$ 5%  |
| Ripple on DC                           | < 5%   |
| Fall/rise time                         | between 1us and 5us  |
| Note:                                  | These tests require either the optional MV 2606N2.2 motor variac or the optional programmable AC voltage source ACS 500N2.3. |

## TESTING AS PER IEC/EN 61000-4-16

| OUTPUT CHARACTERISTICS 15HZ - 165KHZ |                            |
|--------------------------------------|----------------------------|
| Frequency range                      | 10Hz to 165kHz             |
| Signal level                         | 0.1 to 35Vrms              |
| Test level 1                         | 1V - 0.1V - 1V             |
| Test level 2                         | 3V - 0.3V - 3V             |
| Test level 3                         | 10V - 1V - 10V             |
| Test level 4                         | 30V - 3V - 30V             |
| Output impedance                     | 50ohm $\pm$ 10%            |
| Total harmonics distortion           | < 1% (sinusoidal waveform) |

## MEASUREMENT

|         |                          |
|---------|--------------------------|
| Voltage | internal rms measurement |
|---------|--------------------------|

## TEST ROUTINES

|             |  |
|-------------|--|
| Quick Start | Immediate start; easy to use and fast discrete frequency testing |
| Service     | Service, Set-up  |

## TESTING OF ELECTRICITY METERING EQUIPMENT AS PER TR-EN 50579

| INTERFERENCES DISTURBANCES TESTING AS PER TR-EN 50579 AND IEC 61000-4-19 ANNEX C (OPTION) |  |
|---|--|
| Test frequencies  | 2kHz to 150kHz                               |
| Signal level  | Max. 3A up to 150kHz                         |
| Total harmonic distortion (THD)   | <5% at maximum level                         |
| Accuracy  | better than $\pm$ 5%                         |
| Frequency step  | Max. 1%                                      |
| Output impedance  | 1.0ohm (external decoupling impedance SH 1R) |

## TECHNICAL DETAILS

## GENERAL DATA

| INTERFACE          |   |
|--------------------|---|
| Serial interface   | USB   |
| Parallel interface | IEEE 488, addresses 1 - 30  |
| Fail 1             | BNC input; test will be stopped immediately (when input becomes active low)   |
| Fail 2             | BNC input; test will be stopped (when input becomes active low) and continued (input active high). After 10 fail events the test will be stopped. |

| GENERAL DATA   |   |
|----------------|---|
| Dimensions     | 19"/6HU,<br>555mm x 448mm x 286mm                         |
| Weight         | Approx. 30kg  |
| Supply voltage | 115V - 230V +10/-15%, 50/60Hz                             |
| Input power    | Max. 600W   |
| Fuses          | 2x6.3AT (115V) or 2x3.15AT (230V)<br>2x10AT for AC-source |
| Cooling        | Active cooling, air ventilation                           |
| Temperature    | 10°C - 40°C   |

## OPTIONS

| ACCESSORIES COUPLING NETWORK |   |
|------------------------------|---|
| CN 16-L2/L4                  | 2-wire/4-wire coupling network, switchable,<br>EUT Umax. AC: 440V 16.7Hz..60Hz<br>EUT Umax. DC: 125V<br>GEN IN Umax.: 330V AC/DC<br>Power dissipation: max. 40W   |
| CN 16-L2.1                   | 2-wire coupling network,<br>EUT Umax. AC: 300V 16.7Hz..60Hz<br>EUT Umax. DC: 220V<br>GEN IN Umax.: 330V AC/DC,<br>Power dissipation: max. 200W,<br>active cooling, overtemperature protection,<br>Mains: 85-265V AC 50/60Hz, Fuse 1AT |
| CN 16-L3                     | 3-wire coupling network,<br>EUT Umax. AC: 440V 16.7Hz..60Hz<br>EUT Umax. DC: 125V<br>GEN IN Umax.: 330V AC/DC<br>Power dissipation: max. 40W  |
| CN 16-L4/690V                | 4-wire coupling network,<br>EUT Umax. AC: 3x690V 50/60Hz<br>EUT Umax. DC: 125V<br>GEN IN Umax.: 330V AC/DC<br>Power dissipation: max. 40W   |
| CDN 16-L4/400V               | 4-wire coupling network, decoupling with isolation transformer<br>EUT Umax./ Imax.: 3x400V 16A<br>GEN IN Umax.: 330V AC/DC  |
| CN 16-L8                     | 8-wire coupling network,<br>EUT Umax. AC: 300V 16.7Hz..60Hz<br>EUT Umax. DC: 160V<br>GEN IN Umax.: 330V AC/DC,<br>Power dissipation: max. 40W   |
| CDN 16-T2                    | Telecom T-network, 60 VDC, 2A<br>EUT Umax.: 60V DC<br>EUT Frequency range: Telecom applications<br>GEN IN Umax.: 330V AC/DC   |
| CN 60255-22-7                | 4-wire coupling network as per IEC 60255-22-7, figs. 2, 3 and 4, common mode and differential mode coupling   |
| CN 61543                     | Coupling network as per IEC 61543 (100ohm)  |

## TECHNICAL DETAILS

## OPTIONS

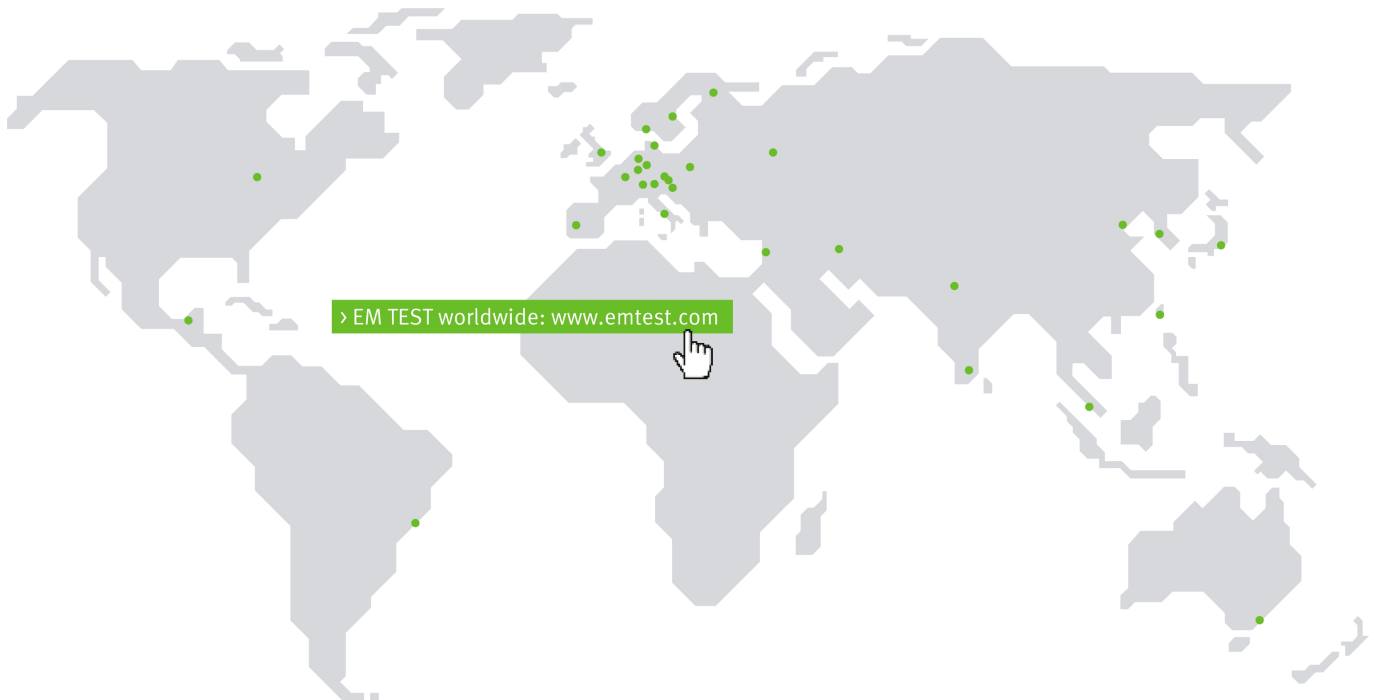
### ACCESSORIES AC SOURCES, SOFTWARE

|             |  |
|-------------|--|
| ACS 500N2.3 | AC power source 0 - 330VAC/2kVA, 10Hz - 80Hz, galvanically isolated; controlled by CWS 500N4 via serial interface<br>Mains supply: 230V/16A, 50/60Hz |
| MV 2606N2.2 | Motor variac 0 - 330VAC/2kVA, 50Hz/60Hz, galvanically isolated; controlled by CWS 500N4 via 0-10V analog output<br>Mains supply: 230V/9A, 50/60Hz    |
| icd.control | Extensive and most versatile remote control and reporting software. A standard library helps to configure the test setup.                            |

### EXTENSION FOR APPLICATION AS PER IEC 61000-4-19

|           |   |
|-----------|---|
| ELM set   | Electricity meter test set as per IEC 61000-4-19 Annex C included:<br>-SH 1R Shunt resistor box, decoupling impedance,<br>-Current meter ext., 5 1/2 digit, 150kHz, USB remote control with icd.control software,<br>-USB remote cable<br>-Cable set SH 1R to current meter   |
| ELM-R set | Electricity meter test set as per IEC 61000-4-19 Annex C included:<br>-CWS500N4 hardware upgrade<br>-SH 1R Shunt resistor box, decoupling impedance,<br>-Current meter ext., 5 1/2 digit, 150kHz, USB remote control with icd.control software,<br>-USB remote cable<br>-Cable set SH 1R to current meter<br>-Call representative for details |

# COMPETENCE WHEREVER YOU ARE



## CONTACT EM TEST DIRECTLY

### Switzerland

EM TEST (Switzerland) GmbH > Sternhofstraße 15 > 4153 Reinach > Switzerland  
 Phone +41 (0)61/7179191 > Fax +41 (0)61/7179199  
 Internet: [www.emtest.ch](http://www.emtest.ch) > E-mail: [sales.emtest@ametek.com](mailto:sales.emtest@ametek.com)

### Germany

EM TEST GmbH > Lünener Straße 211 > 59174 Kamen > Deutschland  
 Phone +49 (0)2307/26070-0 > Fax +49 (0)2307/17050  
 Internet: [www.emtest.com](http://www.emtest.com) > E-mail: [info.emtest@ametek.de](mailto:info.emtest@ametek.de)

### France

EM TEST FRANCE > Le Trident - Parc des Collines > Immeuble B1 - Etage 3 > 36, rue Paul Cézanne > 68200 Mulhouse > France  
 Phone +33 (0)389 31 23 50 > Fax +33 (0)389 31 23 55  
 Internet: [www.emtest.fr](http://www.emtest.fr) > E-mail: [info@emtest.fr](mailto:info@emtest.fr)

### Poland

EM TEST Polska > ul. Ogrodowa 31/35, 00-893 Warszawa > Polska  
 Phone +48 (0)518 64 35 12  
 Internet: [www.emtest.com/pl](http://www.emtest.com/pl) > E-mail: [info\\_polska.emtest@ametek.de](mailto:info_polska.emtest@ametek.de)

### USA / Canada

EM TEST USA > 9250 Brown Deer Road > San Diego > CA 92121  
 Phone +1 (858) 699 1685 > Fax +1 (858) 458 0267  
 Internet: [www.emtest.com](http://www.emtest.com) > E-mail: [sales.emtest@ametek.com](mailto:sales.emtest@ametek.com)

### P.R. China

E & S Test Technology Limited > Rm 913, Leftbank > No. 68 Bei Si Huan Xi Lu > Haidian District > Beijing 100080 > P.R. China  
 Phone +86 (0)10 82 67 60 27 > Fax +86 (0)10 82 67 62 38  
 Internet: [www.emtest.com](http://www.emtest.com) > E-mail: [info@emtest.com.cn](mailto:info@emtest.com.cn)

### Republic of Korea

EM TEST Korea Limited > #405 > WooYeon Plaza > #986-8 > YoungDeok-dong > Giheung-gu > Yongin-si > Gyeonggi-do > Korea  
 Phone +82 (31) 216 8616 > Fax +82 (31) 216 8616  
 Internet: [www.emtest.co.kr](http://www.emtest.co.kr) > E-mail: [sales@emtest.co.kr](mailto:sales@emtest.co.kr)

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.