

# 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 60255-26
- > 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 - 35 Vrms 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 ± 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 ± 10%  |
| Total harmonics distortion             | < 10% (sinusoidal waveform)  |
| Phase synchronisation                  | 0° ± 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 ± 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 ± 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. |

| SOFTWARE    |  |
|-------------|--|
| icd.control | Extensive and most versatile remote control and reporting software. A standard library helps to configure the test setup. Part of delivery |

| 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..80Hz,<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..80Hz,<br>EUT Umax. DC: 220V,<br>GEN IN Umax.: 330V AC/DC,<br>Power dissipation: max. 200W,<br>active cooling, overtemperature protection,<br>Mains: 85-265 V 50/60Hz, Fuse 1AT |
| CN 16-L3                     | 3-wire coupling network,<br>EUT Umax. AC: 440V 16.7Hz..80Hz,<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  |
| CN 16-L8                     | 8-wire coupling network,<br>EUT Umax. AC: 300 V 16.7Hz..80Hz,<br>GEN IN Umax.: 330 V AC/DC,<br>EUT Umax. DC: 160V,<br>Power dissipation: max. 40W   |
| CDN 16-L2                    | 2-wire coupling network, decoupling with isolation transformer,<br>EUT Umax. / Imax.: 300V 16A<br>GEN IN Umax.: 330VAC  |
| CDN 16-L4/400 V              | 4-wire coupling network, decoupling with isolation transformer<br>EUT Umax. / Imax.: 3x480V 16A,<br>GEN IN Umax.: 330VAC  |
| CDN 16-T2                    | Telecom T-network, 60VDC, 2A,<br>EUT Umax.: 60VDC,<br>EUT Frequency range: Telecom applications,<br>GEN IN Umax.: 330V AC/DC,   |

**TECHNICAL DETAILS**

**OPTIONS**

| ACCESSORIES COUPLING NETWORK |   |
|------------------------------|---|
| CN 60255-22-7                | 4-wire coupling network for common mode and differential mode coupling as per:<br>IEC 60255-26, figs. A1, A2 and A3, previous<br>IEC 60255-22-7, figs. 2, 3 and 4 |
| CN 61543                     | Coupling network as per IEC 61543 (100ohm)  |

| AC SOURCES  |  |
|-------------|--|
| 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    |

**OPTIONS**

| 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 ELM, 1R and 100R,<br>Shunt resistor box and 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 ELM to current meter  |
| ELM-R set (upgrade)                             | Electricity meter test set as per IEC 61000-4-19 Annex C included:<br>-CWS500N4 hardware upgrade and calibration,<br>-SH ELM, 1R and 100R,<br>Shunt resistor box and 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 ELM to current meter<br>-Call representative for details |

# 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.