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UCS 500N5

MULTIFUNCTIONAL TESTGENERATOR FOR TRANSIENTS (EFT/BURST, SURGE & POWER FAIL) UP TO 5.5KV

FOR TESTS ACCORDING TO ...

› EN 300329
› EN 300340
› EN 300342-1
› EN 300386 V1.3.2
› EN 301489-1
› EN 301489-17
› EN 301489-24
› EN 301489-7
› EN 50121
› EN 55024
› EN 61000-4-11
› EN 61000-4-29
› EN 61000-4-4
› EN 61000-4-5
› EN 61000-4-8
› EN 61000-4-9
› EN 61000-6-1
› EN 61000-6-2
› FCC 97-270 (part 68)
› IEC 60255-22-5
› IEC 61000-4-11
› ...

UCS 500N5 - COMPACT TESTER FOR EFT/BURST, SURGE AND POWER FAIL

The UCS 500N5 ultra-compact simulator is the most versatile tester to cover transient and power fail requirements according to international standards (basic and generic standards) and product/product family standards. The UCS 500N5 is the most economic solution for tests during development as well as for full-compliant immunity tests and CE Marking for single phase DUT with the ability to be extended for testing three-phase DUTs by means of an automatically controlled external coupling network up to 200A.
EM TEST supplies a large range of accessories for the various applications such as magnetic field tests.

HIGHLIGHTS

› **Burst module (IEC/EN 61000-4-4) up to 5.5kV**
› **Surge module (IEC/EN 61000-4-5) up to 5kV**
› **PowerFail module (IEC/EN 61000-4-11)**
› **Magnetic field tests with optional accessoires**
› **Built-in single phase coupler 300V/16A**
› **Manual operation from front panel**
› **USB and GPIB-Bus for remote control**

APPLICATION AREAS

INDUSTRY
COMPONENTS
MEDICAL
BROADCAST
RESIDENTIAL
RENEWABLE ENERGY
TELECOM

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TECHNICAL DETAILS

BENEFITS

ALL IN ONE - ALL WHAT YOU NEED FOR YOUR TESTS

The UCS 500N5 includes everything necessary to conduct fully compliant tests. The power mains supply for the controls and for the DUT is separate to render it more flexible to use with different DUT supply voltages.
The UCS 500N5 can be operated manually from the front panel or by remote via the built-in USB or GPIB interface.
Fail inputs allow to control an ongoing test sequence based on the status of the DUT. Monitoring outputs (BNC) are offered for easy signal measurement and verification.
Safety features such as interlock and warning lamp control are available.
Pre-programmed Standard Test routines allow highest user convenience. Still the UCS 500N5 offers the Quick Start test routine where parameters can be changed on-line during the test to evaluate the susceptibility level of an individual DUT.

OPERATION

EASY TO OPERATE

Front panel menu and function keys enable the user to program his test routines quickly and accurately. The cursor allows fast control of all test parameters of the programmed routine, thus test procedures are simplified and confidence is generated that every step is carried out correctly.

SOFTWARE

IEC.CONTROL SOFTWARE FOR CONTROL AND DOCUMENTATION

Outstanding user convenience, clearly structured windows and operation features and the EM TEST standards library along with the flexibility to generate user specific test sequences very easily are the main features of iec.control software. The software is automatically configured according to the connected EM TEST generators. Extensive reporting capabilities help the user to create test reports that meet international requirements.
iec.control is supported by Windows XP, Windows Vista, Windows 7 and Windows 8. Remote control is achieved either via USB or GPIB. iec.control supports a wide range of GPIB cards of National Instruments.

OTHER MODELS

UCS 500N SERIES - COMPACT TESTERS UP TO 7KV

The UCS 500N ultra-compact testers for EFT/burst, Surge and Power Fail are available in different models; with voltage capability up to 5.5kV or up to 7kV.

TECHNICAL DETAILS

AUXILIARY DEVICES

CNI 503 - 3PHASE COUPLING/DECOUPLING NETWORKS FOR BURST AND SURGE

EM TEST offers a range of fully automatic 3-phase coupling/decoupling networks for burst and surge to extend the test capability for three-phase DUTs. The networks have a rated current of up to 200 A.

MV 2616 - MOTORISED VARIAC FOR VOLTAGE VARIATION

A motorised variac is offered as an alternative to the tapped autotransformers for voltage dips/interruptions and voltage variation tests as per IEC/EN 61000-4-11. The motorised variac can also be used for automated magnetic field tests.

V 4780 - TAPPED VOLTAGE TRANSFORMER FOR VOLTAGE DIPS

The V 4780 tapped autotransformer is designed to supply the required voltages as per IEC/EN 61000-4-11 Ed.2:2004 to perform voltage dips.

V 4780S2 - TAPPED VOLTAGE TRANSFORMER FOR VOLTAGE DIPS

The V 4780S2 tapped autotransformer is designed to supply the required voltages as per IEC/EN 61000-4-11 Ed.2:2004 to perform voltage dips and interruptions. Compared to the manually operated V 4780 the V 4780S2 model offers automatic change of taps according to the selected voltage level.

CNV 504/508 N- AND T SERIE - SURGE COUPLING/DECOUPLING NETWORKS FOR SIGNAL/DATA LINES

CNV 504/508 N- and T-series coupling/decoupling networks are available to perform surge tests on I/O lines, signal/data lines and telecom lines as per IEC/EN 61000-4-5 Ed 3.0

ACCESSORIES

MS 100N - MAGNETIC FIELD COIL FOR POWER-FREQUENCY AND PULSED MAGNETIC FIELDS

The MS 100N is a 1sqm magnetic field coil as specified in IEC/EN 61000-4-8 and IEC/EN 61000-4-9. Its design allows easy moving of the coil. The field coil is adjustable in height and allows for 360degr rotation.
To generate power-frequency magnetic fields in the lower range the current transformer MC 2630 is used while high-field strength above 100A/m requires the MC 26100 current transformer.

HFK - CAPACITIVE COUPLING CLAMP

Capacitive coupling clamp as per specification IEC/EN 61000-4-4.

ITP - IMMUNITY TEST PROBES

ITP is a tool being used for development test. It consists of a variety of electrical field probes. The probes allow to locate weak points within a system or on a PCB. The burst pulse is used to generate the disturbance signal.

CA EFT KIT - VERIFICATION KIT FOR EFT/BURST PULSES

As per IEC/EN 61000-4-4 Ed.2 the characteristic of the burst generator needs to be verified with two different loads, 50ohm and 1,000ohm. EM TEST offers a calibration kit consisting of the two loads and an adapter to verify the pulses at the DUT output.

CA HFK KIT - VERIFICATION KIT FOR CAPACITIVE COUPLING CLAMP

The IEC/EN 61000-4-4 Ed 3.0 published 2012 recomends the calibration of the capacitive coupling clamp into a 50ohm coaxial load.
The capacitive coupling clamp (HFK) is connected to the 50 ohm output of the EFT generator. A flexible insulated plate inside the HFK is connected to a coaxial 50 ohm load resistor for verificate the EFT / Burst wave of the capacitive coupling clamp.

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TECHNICAL DETAILS

ELECTRICAL FAST TRANSIENTS

BURST MODULE, EFT/N5	
	As per IEC/EN 61000-4-4 and EN 61000-6-1, -6-2
Test voltage	200V - 5,500V ± 10%; 100V - 2,750V ± 10% into 50ohm
Pulse shape	5/50ns into 50ohm and 1,000ohm
Rise time tr	5ns ± 30% into 50ohm; 5ns ± 30% into 1,000ohm
Pulse width td	50ns ± 30% into 50ohm; 50ns -15/+100ns into 1,000ohm
Source impedance	50ohm
Polarity	Positive/negative

TRIGGER CIRCUIT	
Trigger of bursts	Automatic, manual, external
Synchronization	0° - 360°, resolution 1° (16 - 500Hz)
Burst duration	td = 0.10ms - 999ms
Repetition rate	tr = 10ms - 9,999ms
Spike frequency	f = 0.1kHz - 1,000kHz
Test duration	T = 0:01min - 99:59min T › 99:59min --› endless

OUTPUTS	
Direct	Via 50ohm coaxial connector
Coupling mode	L, N, PE; all combinations
DUT supply	AC: 300V/16A; 50/60Hz DC: 300V/16A
CRO trigger	5V trigger signal for oscilloscope

ELECTRICAL FAST TRANSIENTS

TEST ROUTINES	
Quick Start	On-line adjustable parameters, easy-to-use
Standard Test routines	As per IEC/EN 61000-4-4, Levels 1 - 4 As per IEC/EN 61000-6-1, -6-2 Manual Standard Test routine
User Test routines	Synchronous burst release Random burst release Change voltage after T Frequency sweep within one burst Frequency sweep with constant number of pulses Frequency sweep with constant burst duration Change polarity after T

OPTIONS	
HFK	Capacitive coupling clamp as per IEC/EN 61000-4-4
KW50	100:1 divider, 50ohm
KW1000	500:1 divider, 1,000ohm
CA EFT kit	Kit for burst pulse verification consisting of KW50, KW1000 and adapter for DUT port in a plastic case for storage
CA HFK kit	Adapter set for capacitive coupling clamp calibration included: - Transducer plate as per IEC/EN 61000-4-4 Ed 3.0 - Support for positioning the KW 50 adapter on 100mm height as the capacitive coupling clamp
CA MC F	Adapter to match KW 50 load resistor to the EUT supply of 3-phase N-series coupling network
A6dB	6dB attenuator, 50ohm
ITP	Immunity test probes (electrical field generation)
ITP/H	Immunity test probe (magnetic field generation)

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TECHNICAL DETAILS

COMBINATION WAVE / SURGE

SURGE MODULE, VCS/N5	
	As per IEC/EN 61000-4-5 Ed 3.0 and IEC/EN 61000-6-1, -6-2
Voltage (o.c.)	160V - 5,000V ± 10%
Pulse front time	1.2us ± 30%
Pulse time to half value	50us ± 20%
Current (s.c.)	Max. 2,500A ± 10%
Pulse front time	8us ± 20%
Pulse time to half value	20us ± 20%
Polarity	Positive/negative/alternating
Event counter	1 - 30,000 or endless, selectable

TRIGGER CIRCUIT	
Release of pulses	Automatic, manual, external
Synchronization	0° - 360°, resolution 1°
Repetition rate	max. 1Hz (1s - 999s)

OUTPUTS	
Direct	Via HV connectors for external coupling networks (Zi = 2ohm with optional adapter IMN 2)
Coupling mode	Line to line Line(s) to ground
DUT supply	AC: 300V/16A; 50/60Hz DC: 300V/16A
CRO trigger	5V trigger signal for oscilloscope

MEASUREMENTS	
CRO Û-monitor	10Vp at 5,000V
CRO Î-monitor	10Vp at 2,500A
Peak voltage	5,000V in the LCD display
Peak current	2,500A in the LCD display
Overcurrent protection	Breaks the Surge test when the surge current is over the limit, Limitter for differential mode, Limitter for common mode

COMBINATION WAVE / SURGE

TEST ROUTINES	
Quick Start	One-line adjustable parameters, easy-to-use
Standard Test routines	As per IEC/EN 61000-4-5, Levels 1 - 4 As per IEC/EN 61000-6-1, -6-2 Manual Standard Test routine
User Test routines	Change polarity after n pulses Change coupling after n pulses Change voltage after n pulses Change phase angle after n pulses
Pulsed Magnetic Field	as per IEC/EN 61000-4-9 Test levels 100, 300 and 1,000A/m Test level steplessly adjustable under Quick Start

OPTIONS	
CNV504Nx	Coupling network for 4 signal/data lines as per IEC/EN 61000-4-5 Ed 3.0
CNV508Nx	Coupling network for 8 signal/data lines as per IEC/EN 61000-4-5 Ed 3.0
CNV 504T5	Coupling/decoupling network for unshielded symmetrical lines (communication lines) as per IEC/EN 61000-4-5 Ed.3 (fig. 10) for 4 lines.
CNV 508T5	Coupling/decoupling network for unshielded symmetrical lines (communication lines) as per IEC/EN 61000-4-5 Ed.3 (fig. 10) for 8 lines.
CNI 508N2 Assembly	Set of coupling/decoupling and protection networks for testing unshielded and shielded high-speed communication lines (Ethernet lines)
IMN 2	Impedance matching adapter to match direct output to 2ohm source impedance

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TECHNICAL DETAILS

POWER FAIL, DIPS & INTER-RUPTIONS, VOLTAGE VARIATIONS

POWER FAIL MODULE, PFS/N5	
	As per IEC/EN 61000-4-11, IEC/EN 61000-4-29 and IEC/EN 61000-6-1, -6-2
Channel PF1/PF2	AC voltage: max. 300V AC current: max. 16A DC voltage: max. 300V DC current: max. 16A
Frequency	16Hz - 500Hz and DC
Switching time	‹ 5us into a 100ohm resistive load
Inrush current	› 500A
Protection	Both channels are protected against short-circuit conditions.

TRIGGER CIRCUIT	
Trigger of events	Automatic, manual, external
Synchronization	0° - 360°, resolution 1° (16 - 500Hz)
Repetition rate	10ms - 9,999s
Event duration	20us - 9,999s

OUTPUTS	
DUT terminals	L, N and PE
CRO trigger	5V trigger signal for oscilloscope

MEASUREMENTS	
DUT voltage	In the LCD display
DUT current	In the LCD display
MON V	Measurement of the DUT voltage; built-in 100:1 divider
MON I	Measurement of the DUT current; 10mV/A; max. 1,000A

POWER FAIL, DIPS & INTER-RUPTIONS, VOLTAGE VARIATIONS

TEST ROUTINES	
Quick Start	On-line adjustable parameters, easy-to-use
Standard Test routines	As per IEC/EN 61000-4-11 for AC supplies As per IEC/EN 61000-4-29 for DC supplies As per EN 61000-6-1, -6-2 Manual Standard Test routine
User Test routines	Voltage variation, control of an external variac Change phase angle after n events Change event duration after n events Inverse mode
50/60Hz magnetic field	As per IEC/EN 61000-4-8 Test levels 1, 3, 10 and 30A/m with external current transformer MC 2630 Test levels 100, 300 and 1,000A/m with external current transformer MC 26100

OPTIONS	
V 4780	Tapped autotransformer as per IEC/EN 61000-4-11 Ed.2
V 4780 S2	Tapped autotransformer as per IEC/EN 61000-4-11 Ed.2 with automatic change of tap
MV 2616	Motorised variac (0 - 250V, 16A)
MS 100N	Magnetic field coil, 1m x 1m
MC 2630	Current transformer for magnetic fields up to 30A/m
MC 26100	Current transformer for magnetic fields up to 1,000A/m
CA PFS	Calibration box for inrush current verification as per IEC/EN 61000-4-11

TECHNICAL DETAILS

GENERAL DATA

INTERFACES	
Serial interface	USB
Parallel interface	IEEE 488, addresses 1 - 30
Analog output	0 - 10VDC to control an external transformer
CN interface	15pin SubD connector to control an external coupling network
Fail inputs	DUT monitoring via Fail1 and Fail2 input (one each)

DIMENSIONS	
Dimensions	19", 3HU,
Weight	approx. 25kg

MAINS	
Supply voltage	115V/230VAC +10%/-15%
Power	approx. 75W
Frequency	50/60Hz
Fuses	2 x T 2AT (230V) or 2 x T 4AT (115V)

SAFETY	
Safety standard	IEC/EN 61010
Security circuit	Control input (24VDC)
Warning lamp	Floating contact (max. 230V/6A)

ACCESSORIES INCLUDED	
Mains supply	Plug depends on the country of use
DUT supply	Plug depends on the country of use
DUT adapter	Socket depends on the country of use
	Operation manual, Calibration certificate, iec.control remote control software

OPTIONS	
CNI 503Ax	3-phase coupling/decoupling networks as per IEC/EN 61000-4-4 and -4-5 up to 200A per phase
iec.control 1	Remote control and documentation software, including standard test routines and reporting capabilities.

SPECIAL EQUIPMENT (ON REQUEST)

AVAILABLE MODELS:	
UCS 500N5.1	Ultra compact simulator with EFT/N5 up to 5.5kV, VCS/N5 up to 5kV and PFS/5; 1ph CDN 300V AC/DC (p-n) / 32A
UCS 500N5.2	Ultra compact simulator with EFT/N5, VCS/N5 and PFS/N5; 1ph CDN 400V AC/DC (p-n) / 16A
UCS 500N5.3	Ultra compact simulator with EFT/5, VCS/5 and PFS/N5; 1ph CDN 400VAC (L-N) / 32A
UCS 500N5.7	Ultra compact simulator with EFT/N5 and VCS/N5; 1ph CDN 300V (p-n) / 16A (but without PFS module)
UCS 500N5.8	Ultra compact simulator for EFT/N5 and PFS/N5; 1ph CDN 300V AC/DC (p-n) / 16A

COMPETENCE WHEREVER YOU ARE

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