CE - TESTER

Compact EMC-tester acc. to the following standards:

BURST:
IEC/EN 61000-4-4, Ed.2
SURGE:
IEC/EN 61000-4-5, Ed.2
Magnetic field 50/60 Hz:
IEC/EN 61000-4-8
Magnetic field 8/20 µs:
IEC/EN 61000-4-9
Voltage dips/variation:
IEC/EN 61000-4-11, Ed.2

The CE-TESTER is a compact EMC test unit designed for testing electromagnetic immunity against pulsed and conducted interference. Demonstrating such immunity is generally a requirement for compliance with the requirements of the European EMC directive, a necessary step leading to the final attachment of the CE Mark.

CE-TESTER features a microprocessor controlled user interface and display unit for ease of use. The microprocessor allows the user to execute either standard test routines, or a ´user defined´ test sequence. The test parameters, which are shown on the built in display, are easily adjusted by means of the rotary encoder. A standard parallel interface provides the ability to print a summary of the test parameters whilst testing is being carried out.

Moreover, all generator functions, including the settings of the built-in Coupling-/Decoupling Network, may be computer controlled via the isolated optical interface. The software program CE-TEST allows full remote control of the test generator and documentation and evaluation of test results. The CE-TESTER excels by its compact design, simple handling and precise reproducibility of test impulses. The generator uses maintenance-free semiconductor switches.

In it’s basic configuration the CE-TESTER includes an Electrical Fast Transient Generator (EFTG), a Combination Wave Generator (CWG) and a Coupling-/Decoupling Network (CDN) for single-phase power supply lines.

As an option simulation of voltage dips and voltage variations acc. to IEC/EN 61000-4-11 can be included. Additional accessories allow the testing of immunity against both pulsed and power frequency magnetic fields acc. to IEC/EN 61000-4-8 and IEC/EN 61000-4-9.

The Electrical Fast Transient Generator sub-unit delivers fast transient pulses with waveform 5/50 ns. Amplitude, frequency, duration and repetition rate of the bursts are fully adjustable. The four standard IEC/EN 61000-4-4 test levels may be easily selected by push button or all parameters may be adjusted individually. Actual test parameters are displayed on the screen. The generator is used for immunity test of electrical and electronically devices and systems, full compliant to IEC/EN 61000-4-4. The performance of the generator exceeds the requirements of these standards in all respects. The maximum burst frequency is 1 MHz.

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The Combination Wave Generator sub-unit is a combined impulse-current-/impulse-voltage generator which, for high-impedance loads, RL > 100Ω, delivers a standard impulse voltage with waveform 1.2/50 µs and, for short-circuited output, a standard impulse current with waveform 8/20 µs.

The built-in capacitive Coupling-/Decoupling Network allows superimposition of the combination wave generator's output to the mains voltage of the device under test. The test set-up is suitable for surge immunity testing of electronic systems and devices full compliant to IEC/EN 61000-4-5 and IEEE 587. In addition, the generator may be used for surge testing of components and devices, as well as for galvanic coupling of surges to cable shields, shielded enclosures and cabinets.

Optionally the CE-TESTER can include a trigger able power supply switch, which allows the simulation of the voltage dips specified in IEC/EN 61000-4-11. Variation of power supply voltage is controlled by use of an external, motor driven variac. Control of the external power source is included in the mainframe.

An Induction Coil may also be specified which, in conjunction with the CWG output, is used to simulate pulsed magnetic fields according to IEC/EN 61000-4-9. Combined with the external power source the Induction Coil can be used to simulate power frequency magnetic fields according to IEC/EN 61000-4-8.

Additional Coupling-/Decoupling Networks, covering three-phase power supply lines, DC supply lines and signal lines are also available, as well as Capacitive Coupling Clamps for coupling to shielded interconnection lines.

Technical specification:	**CE-TESTER**
Mainframe:	
Microprocessor controlled LCD module	8*40 characters
Parallel printer interface for on-line documentation	25-way ´D´ connector
Optical-interface for remote control of the generator	built-in
External Trigger input / output	10 V at 1 kΩ
Coupling-/Decoupling Network for power supply lines, built-in	L1, N, PE
nominal voltage, nominal current ac/dc	250 V, 16 A ≈ / 10 A =
coupling impedance (generator dependent)	33 nF / 18 µF / 9µF+10Ω
Diagnostic input for monitoring of the test device	4 channels, 5 V - Level
Connector for external safety interlock loop	24 V =
and external red and green warning lamps acc. to VDE 0104	230 V, 60W
Mains power	230 V, 50/60 Hz
Dimensions: desk top case W * H * D	471*156*520 mm^3
Weight	25 kg

BURST **acc. to IEC 61000-4-4, EN 61000-4-4 (Ed.2, 2004)**

Waveform	5/50 ns
Source impedance	50 Ω
Polarity, selectable	pos/neg/alt
Pulse output voltage, adjustable	200 V - 4500 V
Burst frequency, adjustable	1.0 kHz - 1.0 MHz
Burst duration, adjustable	0,01 ms - 25 ms
Burst repetition rate, adjustable	10 ms - 1000 ms
HV output for external coupling devices	coaxial
Monitor output for pulse output voltage	ratio = 100:1 ± 5%, 50 Ω

SURGE **acc. to IEC 61000-4-5, En 61000-4-5 (Ed.2, 2005)**

Test voltage, (open circuit condition)	0.1 - 4.5 kV ± 10 %
Waveform acc. to IEC 60	1.2 / 50 µs ± 20 %
Test current, (short circuit condition)	0.1 - 2.25 kA ± 10 %
Waveform acc. to IEC 60	8 / 20 µs ± 20%
Polarity of output voltage/current, selectable	pos/neg
maximum stored energy	120 Joule
charging time for max. charging voltage	< 10 s
HV-output: isolated from ground	HV-OUT
Mains synchronous triggering:	
Phase shifting, digitally selectable	0 - 360 °
Display of peak values of pulse voltage and current	
Monitor output for pulse output voltage	ratio = 1000 : 1 ± 5%
Monitor output for pulse output current	10 V ≡ 5 kA ± 5%

POWER FAIL **acc. to IEC 61000-4-11, EN 61000-4-11 (Ed.2, 2003)**

Rated current	16 A
Inrush current, max	500 A
Monitor output for mains voltage and mains current	built-in
Display of mains voltage, mains current and inrush current	
Interface for control of an external power source	

OPTION 1: **Software CE-TEST for remote control**
incl. 5 m fibre-optic cable and PC-interface

OPTION 2	**External power source**	**VPS 250-16**
	Output voltage, adjustable	0 - 250 V
	Rated current	16 A
	Control via interface of CE-TESTER	

OPTION 3	**Induction Coil**	**HI 100**
	Dimensions	1000*1000*600 mm^3
	Coil factor	1.0 ± 10%

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System configuration:

The CE-TESTER and its sub-units are available in different configurations:

CE-TESTER 1	including SURGE and BURST
CE-TESTER 2	including SURGE, BURST and POWER FAIL SWITCH
EFTG 4510c	Stand alone BURST generator
CE-SURGE	Stand alone SURGE generator
CE-SURGE 1	SURGE generator, can be updated to a CE-TESTER
CE-SURGE 2	SURGE generator and POWER FAIL SWITCH, can be updated to a CE-TESTER.
PFS 2516	Stand alone POWER FAIL SIMULATOR including: POWER FAIL SWITCH and Variable Power Source VPS 250-16

Typical configurations:

CE-TESTER + CDN 4416
for 3-phase testing

CE-TESTER + VPS 250-16
for testing Surge, Burst,
voltage dips and variation.