

UCS500M/4

Ultra Compact Simulator for Household and Industrial Electronics EMC Testing with Optional ESD Available

The UCS500M/4 is an Ultra Compact Simulator that tests to IEC and European Community specifications for burst, surge, voltage dips and drops, magnetic fields and ESD air and contact discharge. The UCS500M/4 tests to levels up to 4400V. With the ESD option, the UCS500M/4 tests up to 15kV air and 8kV contact discharge. The UCS500M/4 has excess capability to support future standards modifications. It contains a built-in CDN to accommodate EUT power requirements to 250 volts and 16 amps. A special version can supply up to 32 amps if desired. The UCS500M/4 includes outputs for external single and three phase coupling networks. It can be operated from the front panel or remotely via standard RS232 and IEEE 488 data buses using the ISM IEC software. The standard software also provides complete test reports, which are easily converted to word via a standard RTF conversion feature.

SPECIFICATIONS

Optional Electrostatic Discharge (ESD) per IEC 61000-4-2, EN 61000-4-2, EN 50082-1/2, IEC 801-2, IEC 601-1-2

Air Discharge Mode (Discharge Unit Type P18)

Test Voltage	1-15kV
Discharge Capacitor	150pF $\pm$ 10%
Discharge Resistor	330 Ω $\pm$ 10%
Polarity	Positive/negative
Holding Time	>5s

Contact Discharge Mode (Discharge Unit Type P18)

Test Voltage	1-8kV
Discharge Capacitor	150pF $\pm$ 10%
Discharge Resistor	330 Ω $\pm$ 10%
Polarity	Positive/negative
Risetime of the Discharge	
Current	0.7ns-1.0ns

Peak Values of the Current

Test Voltage	First Peak Value	Current @30ns	Current @60ns
2kV	7.5A	4.0A	2.0A
4kV	15.0A	8.0A	4.0A
6kV	22.5A	12.0A	6.0A
8kV	30.0A	16.0A	8.0A

Trigger Mode

Single	Single discharge
Cont	Multiple discharges, controlled by the operator
Auto	Automatic discharge Controlled by the mainframe
Repetition rate Max.	10Hz, selectable
Discharge Mode	Air or contact discharge selectable
Preselector Counter	Preselection of the desired number of discharges
Beeper ON/OFF	Acoustical signal at each discharge



Electrical Fast Transients (Burst) per IEC 61000-4-4, draft revision IEC 61000-4-4, EN 50082-1/2, EN 61000-4-4, IEC 801-4, IEC 601-1-2

Test Level Output

Open Circuit	V=200V-4400V $\pm$ 10%
Wave Shape	5/50 ns $\pm$ 30%
Source impedance	Z _q = 50 Ω $\pm$ 20%
Polarity	Positive / negative

Trigger Circuit

Events trigger	Auto, Manual and External
Synchronization	0-360 degrees in 1° steps
Burst Duration	td=0.1 μ s-999.9 μ s
Burst Repetition Rate	tr=10 μ s-9999 μ s
Spike Frequency	f=0.1kHz-1000kHz
Test Duration	T=0:01min-99:59min, endless
No. of Pulses	Max. 10,000/s
CRO (Oscilloscope) Trigger	+5V signal

Output

Direct via 50W HV coaxial connector	
Coupling network to L, N, PE all combinations	
EUT Supply	AC 250V/16A DC 250V/10A

Test Routines

Quickstart	Recalls last test routine used. All parameters can be changed while testing.
Standard Test	Acc. IEC 61000-4-4
Service	Setup and printing
Additional routines	can be supported by ISM IEC software.



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Surge Immunity Requirements per IEC 61000-4-5, EN 50082-1/2, EN 61000-4-5, IEC 801-5, IEC 601-1-2

Test Level Output

Open Circuit Voltage	V=160V-4000V $\pm$ 10%
Wave Shape	1.2/50 μ s $\pm$ 20%
Short Circuit Current	2000A $\pm$ 10%
Waveshape	8/20 μ s $\pm$ 20%
Polarity	Positive / negative/alternating
Repetition Rate	Max. 1Hz (1s-100s)
Events Preselection	1-30,000 or endless
Counters	1-1,000,000

Trigger Circuit

Events trigger	Auto, Manual and External
Synchronization	0-360° in 1° steps

Output

Direct	HV-coaxial connector; Zi=2 Ω
Coupling network	
EUT Supply	AC 250V/16A DC 250V/10A
Coupling Mode	
Line (s) to Earth (PE)	All combinations Coupling capacitor 10 μ F Damping resistor 10 Ω Coupling capacitor 20 μ F Zi=2 Ω
Line to Line	

Measurements

Peak Voltmeter	4000V
Peak Current Meter	2000A
Oscilloscope Trigger (CRO)	5V Trigger
BNC Output MON U	10Vpk at 4kV
BNC Output MON I	10Vpk at 2kA

Test Routines

Quickstart	Recalls last test routine used. All parameters can be changed while testing.
Standard Test Routine	Acc. IEC 61000-4-5
Magnetic Field Test	Test routine according to IEC 61000-4-9 test level 100, 300 & 1000A/m cont. adjustable within Quickstart

Additional routines can be supported by ISM IEC software.

Magnetic Field Tests per IEC 61000-4-8 and -9

The test routines for handling the magnetic field tests are included in the internal UCS 500M/4 firmware. All functions to control external options such as voltage/current sources or magnetic field antennas are included. In addition to the standard UCS the following hardware is required:

Options required for Magnetic Field Test per IEC 61000-4-8

Magnetic field antenna (square 1mx1m coil MS 100)
External variac (MV2616 and transformer MC2630) to test 1, 3, 10, and 30A/m levels
External current transformer (MC26100) to test 100, 300 and 1000A/m levels (short term)

Options required for Pulse Magnetic Field Test per IEC 61000-4-9

Magnetic field antenna (square 1mx1m coil MS 100)
Mains Frequency 16-500Hz
Inrush Current >500A @ 250V

Power Fail Generator Voltage dips, drops and variations per IEC61000-4-11, EN 61000-4-11, EN 50082-1/2, IEC 601-1-2 EUT Supply

Channel PF1 & PF2	Max AC 250V/16A Max DC 250V/10A
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Trigger Circuit

Events trigger	Auto, Manual and External
Repetition Rate	10 μ s-99s
Duration Single Event	100 μ s-9999 μ s
Synchronization	0-360° in 1 degree steps
Number of Events	1-30,000/endless

Measurements

EUT Supply	AC/DC voltage read on LCD
BNC Output MON U	Measurement of the EUT supply
BNC Output MON I	Measurement of the EUT current and the inrush current
BNC Input CRO Trigger	Positive going edge, +5V
Control Voltage	0-10V for control of external Variac

Test Routines

Quickstart	Recalls last test routine used. All parameters can be changed while testing.
Standard Test Routine	Acc. IEC 61000-4-11
Magnetic Field Test	Test routine according to IEC 61000- 4 8 test level 1, 3, 10 and 30A/m using a variac and transformer MC2630. Test level 100, 300 and 1000A/m using variac and additional high current transformer (MC26100)
Voltage Variations	Programmable voltage variation w/ith ext. Variac according to IEC61000-4-11
Service	Setup and printing; service routines

General Data

Power Supply

Voltage	230V/115V + 105/-15% AC
Power Consumption	<75W
Frequency	50/60 HZ

Interfaces

Serial RS 232	1,200 - 19,200 Baud
Parallel IEEE	Address 1-31
Analog control output	0-10 DC control of external power supply
Printer	Via RS 232
External Coupling Devices	For Burst and Surge Outputs

Safety

Safety Circuit	External interlock capability
Warning Lamp	Control output (24VDC)
Design	Per IEC 1010, EN 61010

Dimensions

Housing	19"W x 5.25"H x 20"D
Weight	app. 25kg/55lb

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