

# Technical Specification

No. E-CDN2000-06-32.doc

Revised: 17. December 2012

## 1 CDN Type **CDN2000-06-32**

<b>1</b>	<b>CDN Type CDN2000-06-32</b>	<b>1</b>
1.1	Introduction	1
<b>2</b>	<b>General</b>	<b>2</b>
2.1	Brief description of the coupling de-coupling network	2
2.2	Explanation of the term CDN2000-06-32, application range	2
2.3	Standards, applications	2
<b>3</b>	<b>CDN circuit, wave shapes definition</b>	<b>3</b>
3.1	Wave shape definition	4
3.2	Mechanical dimensions, climatic conditions	4
3.3	Technical data	5

### 1.1 Introduction

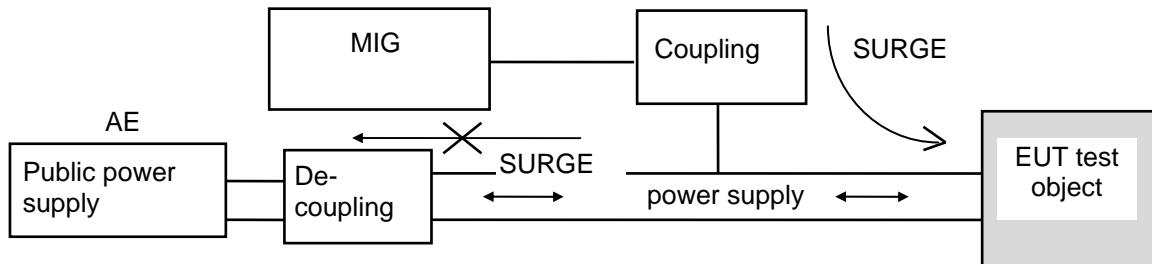
The CDN2000-06-32 coupling network can be used together with Generators from the MIG and TRA range. The CDN allows SURGE, Ring wave and EFT pulses to be superimposed onto single and three phase power supply lines.

The CDN2000-06-32 can be used as a coupling network with the following testers:

- MIG0603INx range testers with single phase coupling network included, extending the application range to three phase
- MIG0603OS2 without any coupling filter
- MIG1203CWG (6kV CWG only)
- TRA3000, TRA2000, TRA2004, TRA2006

## 2 General

### 2.1 Brief description of the coupling de-coupling network



The MIG combination wave testers generates a surge pulse with a voltage wave shape 1,2/50  $\mu$ s at "no load" and a current wave form 8/20  $\mu$ s at short circuit. The Surge should only influence the EUT and not the public power supply, therefore the Surge must be coupled to EUT with very low attenuation and must have a very high attenuation to the public power supply.

The different coupling paths can manually selected on the front of the CDN.

### 2.2 Explanation of the term CDN2000-06-32, application range

Explanation of the term CDN2000-06-32

C = coupling, D = de-coupling, N = network, 06 = designed for maximum voltage 1,2/50  $\mu$ s in kV, 25 = maximum allowed ac current per phase.

**Up to 6 kV 1,2/50  $\mu$ s the following CDN can be used:**

CDN2000-06-32 or all 12 kV CDN-MIG12x

**Up to 12 kV 1,2/50  $\mu$ s the following CDN can be used:**

CDN-MIG12-32

### 2.3 Standards, applications

IEC 61000-4-5, EN 61000-4-5, 1995 Electromagnetic compatibility (EMC) - Part 4 Testing and measuring techniques - Section 5: Surge immunity test.

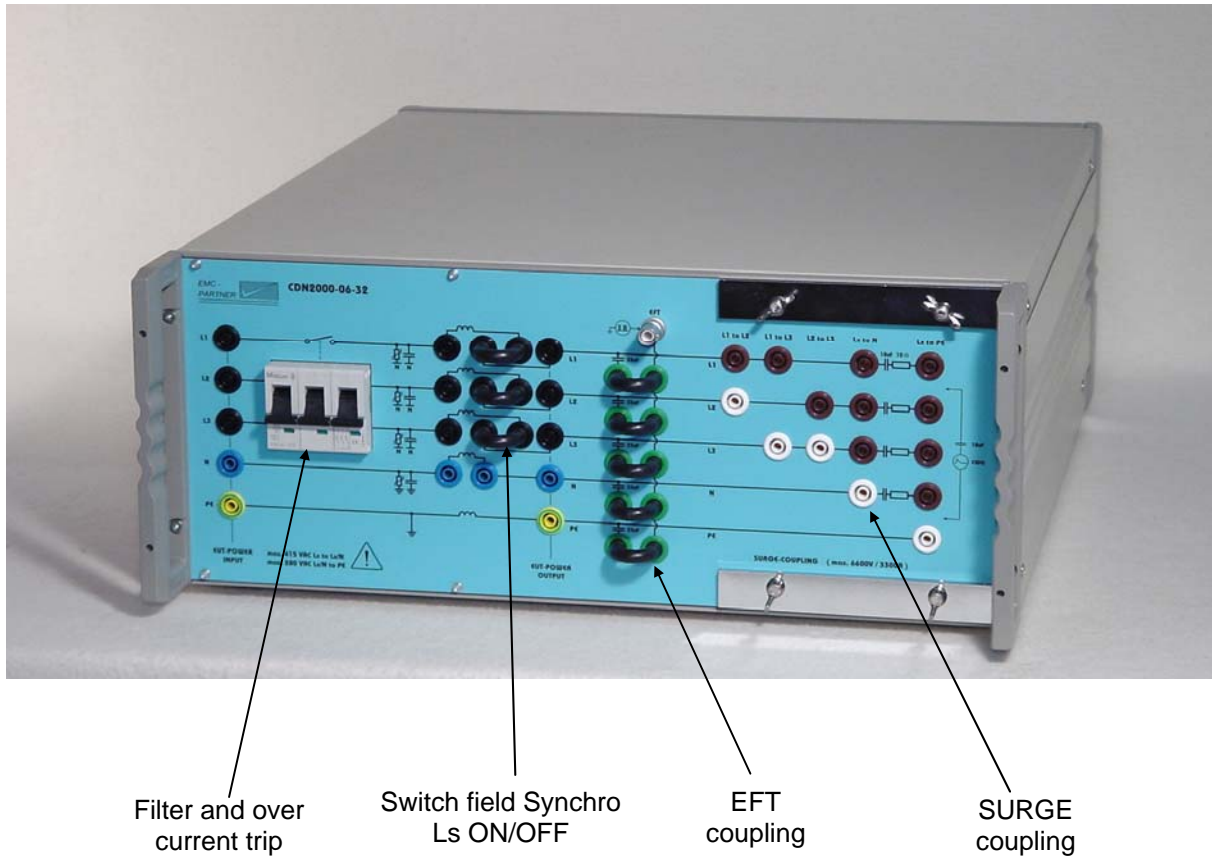
ANSI / IEEE 62.45: 1992 Guide on surge testing for equipment connected to low voltage AC power circuit.

The Ring wave part:

IEC 61000-4-12, EN 61000-4-12, 1995 Electromagnetic compatibility (EMC) - Part 4 Testing and measuring techniques - Section 12: oscillatory wave immunity test.

### 3 CDN circuit, wave shapes definition

The power line input and outputs are located on the front of the CDN

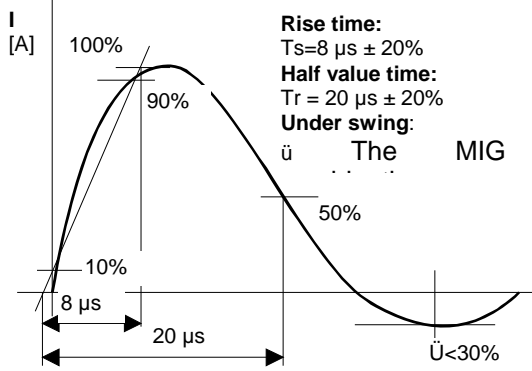


On the left hand side are the power line inputs and in the middle the power line outputs. On the right hand the SURGE and RING WAVE coupling is located.

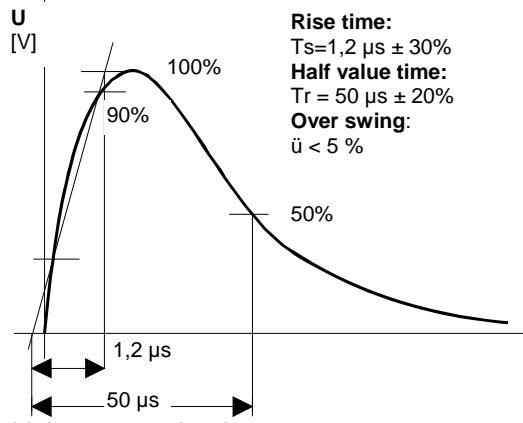
All coupling path must be switched manually.

### 3.1 Wave shape definition

Definition of the waveforms:

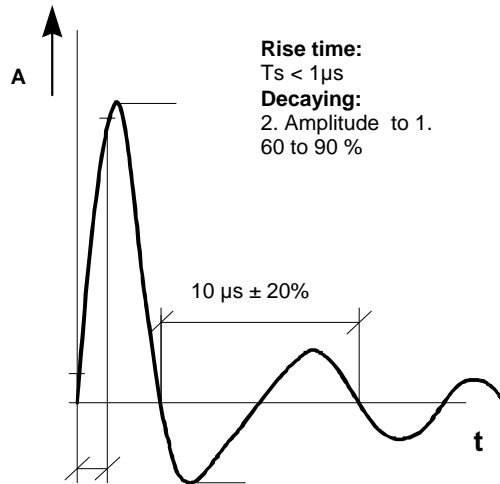
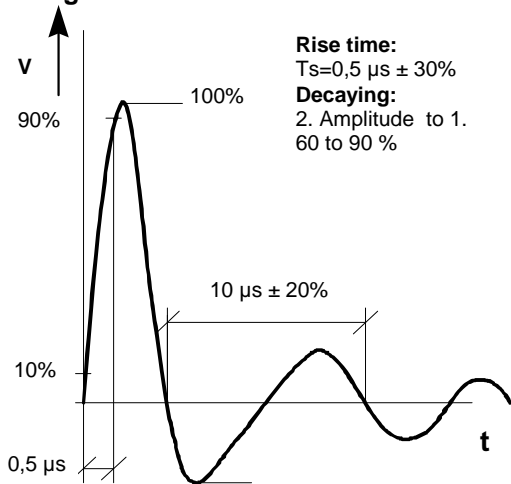


Current into short circuit



Voltage at no load

#### Voltage and Current waveform and tolerances Ring wave



### 3.2 Mechanical dimensions, climatic conditions

MIG type	Dimensions [mm]	Weight [kg]	Versions
	width x depth x height		
CDN2000-06-32	550 x 450 x 190	28	19" 4UH

Environment conditions		
Temperature range	°C	0 to 35 °C
Humidity	rh %	25 to 80%
Pressure	kPa	86 to 106

### 3.3 Technical data

<b>Coupling:</b>	Connection between the TRANSIENT TESTER and the supply lines of the test object.
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<b>SURGE</b>	Coupling path selection	manual on the front panel
IEC 61000-4-5	L1-PE, L2-PE, L3-PE, N-PE	10 Ohm 9µF plus 2 Ohm generator
	L1-L2, L2-L3, L1-L3, L1-N, L2-N, L3-N	2 Ohm Generator plus 18µF
Maximum voltage	6000 V	Pulse form 1.2/50µs
Damping	corresponds to IEC 61000-4-5	

<b>EFT:</b>		
IEC 61000-4-4	L1+L2+L3+N+PE - Ref. GND	Coupling capacitance 33 nF
damping	corresponds to IEC 61000-4-4	

<b>DIPS:</b>		
IEC 61000-4-11	The serial inductance can be bypassed in each phase	The rise time of the interruption correspond with IEC 61000-4-11 1 to 5 µs

<b>De-coupling:</b>		
SURGE	corresponds to IEC 61000-4-5	
EFT	corresponds to IEC 61000-4-4	

<b>Mains supply EUT/ac:</b>		<b>Special CDN see correction</b>
Mains voltage	Phase - Phase	420 V max
	Phase - Null	240 V max.
	Phase - Earth	240 V max.
Synchronisation	Possible on each phase of the mains supply voltage.	
Nominal current	per phase	32 A
Over-current trip	constant current: Short time	Trip at 32 A 125 A to 250 A magnetic trip <1s

<b>Supply EUT/dc</b>		
Supply voltage	Phase - Phase or Phase - neutral	110V
Nominal current		30 A
<b>Supply EUT/dc</b>	with over current trip bypassed	
Supply voltage	Phase - Phase or Phase - Null	220V
Nominal current	L to L/N L1//L2 to L3//N	30 A 60 A

**Ring Wave**

<b>Coupling:</b>	Connection between the impulse tester and the power supply line to the EUT.	
Coupling path	Manual selection of the coupling path on the front panel, coupling impedance see tester manual	
IEC 61000-4-12	L1-PE, L2-PE, L3-PE, N-PE L1-L2, L2-L3, L1-L3, L1-N, L2-N, L3-N	Tester: Z = 12 Ω - 10 μF Z = 32 Ω - 3 μF
Maximum Voltage	6'000 V	Wave form 0.5/100 kHz
Damping	corresponds to IEC 61000-4-12	see test report
<b>De-Coupling:</b>		
	corresponds to IEC 61000-4-12	see test report

<b>Power supply EUT/ ac</b>		
Nominal voltage	Phase - Phase	420 V maximal
	Phase - Null	240 V maximal
	Phase - Earth	240 V maximal
Synchronisation	onto different phases possible L1, L2 and L3.	
Nominal current	pro Phase	32 A
Over current protection switch	Continuous current: Short time current:	125 up to 250 A switching at <1s

<b>Power supply EUT/ dc</b>	<b>with over current circuit breaker</b>	
Nominal voltage	Phase - Phase or Phase - Neutral	60 V
Nominal current		32 A

<b>Power supply EUT/ dc</b>	<b>without over current circuit breaker</b>	
Nominal voltage	Phase - Phase or Phase - Neutral	220 V
Nominal current	Phase to Phase	32 A
Nominal current	L1/L2 to L3/N	63 A