

Technical Specification

No. E-CDN-A-3P100-AC-DC.doc
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1 CDN Type **CDN-A-3P100-AC-DC**

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1.1 Introduction

The CDN-A-3P100-AC-DC coupling network can be used together with specially modified Generators only. The CDN allows SURGE, and EFT pulses to be superimposed onto AC or DC. power supply lines u to 1000V.

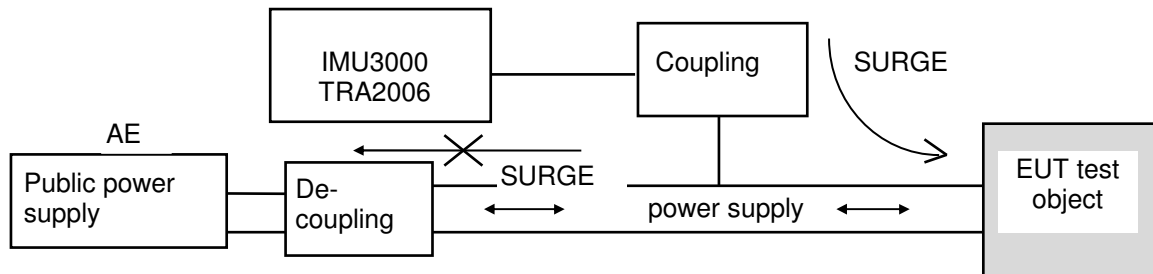
Two versions of CDN-A-3P100-AC-DC are available for use with the following testers only:

PN: 106689 IMU3000, IMU4000

PN: 105849 TRA2006

2 General

2.1 Brief description of the coupling de-coupling network



Combination wave testers generate a surge pulse with voltage wave shape 1,2/50 μ s at "no load" and a current wave form 8/20 μ 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.

Coupling path selection can be either manual or automatic.

2.2 Explanation of the terms used in CDN-A-3P100-AC-DC

Explanation of the term CDN-A-3P100-AC-DC

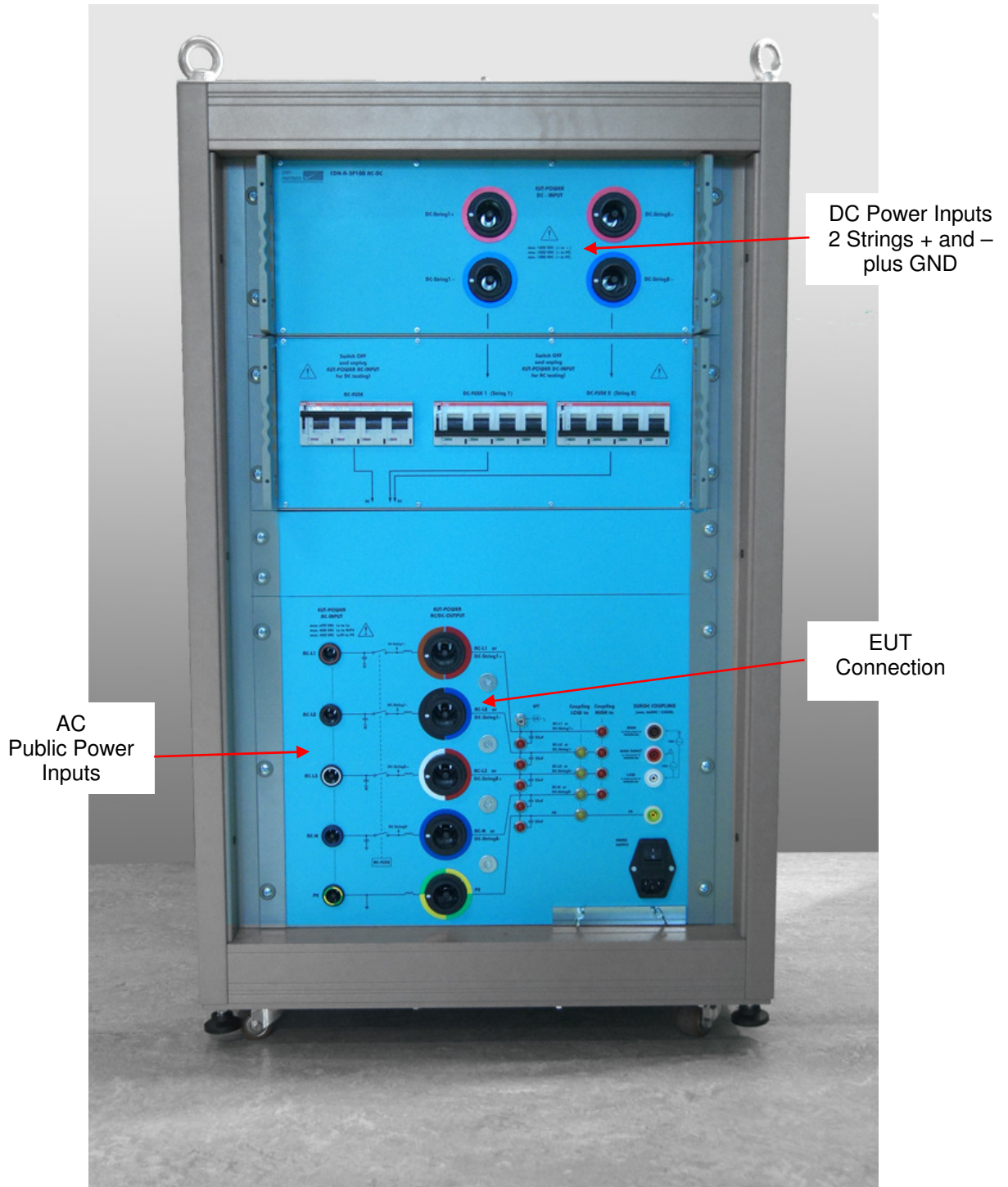
C = coupling, D = de-coupling, N = network, A = automatically operated, 3P = three phase, 100 = maximum allowed AC or DC current.

2.3 Standards, applications

IEC 61000-4-5, EN 61000-4-5	Electromagnetic compatibility (EMC) - Part 4 Testing and measuring techniques - Section 5: Surge immunity test.
ANSI / IEEE 62.45	Guide on surge testing for equipment connected to low voltage AC power circuit
IEC 61000-4-4, EN 61000-4-4	Electromagnetic compatibility (EMC) - Part 4 Testing and measuring techniques - Section 4: Electric Fast Transient test

3 CDN circuit, wave shapes definition

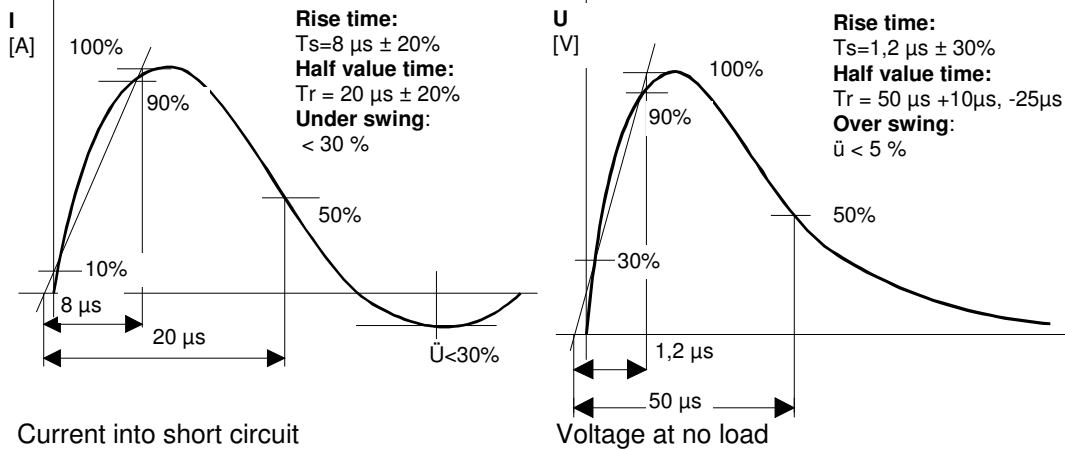
The power line and d.c. inputs and outputs are located on the front of the CDN.
On the left hand side are the EUT power line inputs



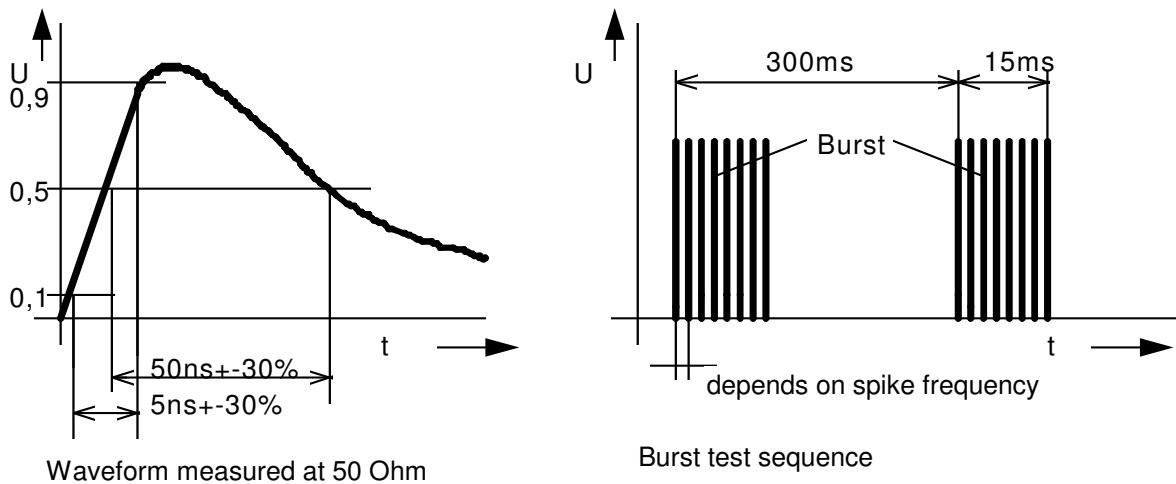
3.1 Wave shape definition at the CDN outputs

Definition of the waveforms:

Combination Wave (Surge)



EFT (Burst)



3.2 Mechanical dimensions, climatic conditions

Dimensions:		
Housing	[mm] l x b x h	600 x 650 x 1050
Weight	[kg]	179
Inputs and outputs	on the front panel	

Environmental condition:		
Temperature range	°C	0 to 35 °
Humidity	rh %	25 to 80%
Pressure	kPa	86 to 106

3.3 Technical data

3.3.1 Impulse Parameters

Coupling a.c. power line:	Connection between the generator and the power supply line to the EUT.	
SURGE	Automatic selection of the coupling path	on display or software TEMA
IEC 61000-4-5 Ed.2	L1-PE, L2-PE, L3-PE, N-PE	10 Ω 9μF plus 2 Ω within generator
	L1-L2, L2-L3, L1-L3, L1-N, L2-N, L3-N	2 Ω generator plus 18μF
Damping	correspond to IEC 61000-4-5 Ed.3	
EFT:	Automatic selection of the coupling path	on display or software TEMA
IEC 61000-4-4	L1-GND, L2-GND, L3-GND, N-GND, PE-GND	GND = reference ground = reference ground plane
	L1+ L2 + L3 + N + PE to GND	10 nF per path
De-coupling:		
SURGE	corresponds to IEC 61000-4-5 Ed.3	
EFT:		
damping	corresponds to IEC 61000-4-4 Ed.3	

Coupling d.c. line:	Connection between the generator and the string 1 and string 2 lines to the EUT.	
SURGE	Automatic selection of the coupling path	on display or software TEMA
IEC 61000-4-5 Ed.2	String1 +,-,GND Coupling + to GND or – to GND	10 Ω 9μF plus 2 Ω within generator Select L1 to GND or L2 to GND
	String2 +,-,GND Coupling + to GND or – to GND	10 Ω 9μF plus 2 Ω within generator Select L3 to GND or N to GND
Damping	String1 +,- Coupling + to –	2 Ω generator plus 18μF Select L1 to L2
	String2 +,- Coupling + to -	2 Ω generator plus 18μF Select L3 to N
Damping	correspond to IEC 61000-4-5 Ed.3	
De-coupling:		
SURGE	correspond to IEC 61000-4-5 Ed.3	
EFT:		
IEC 61000-4-4	2 STRINGS + and - to- Ref. GND or +/- to Ref. GDN Coupling capacitance 33 nF	Impulse out EFT coax cable
damping	corresponds to IEC 61000-4-4	

3.3.2 EUT Power AC

Power supply EUT/ ac		Versions:
Nominal voltage	Phase – Phase $f \leq 60$ Hz	Max. 690 V
	Phase - Null	Max. 400 V
	Phase - Earth	Max. 400 V
Voltage Fluctuation		$\pm 10\%$ of Nominal Voltage
Synchronisation	Onto different phases possible L1, L2 and L3. Automatically switched with the coupling path, or external or „OFF“	
Nominal current rms	per phase	100 A a.c. $f \leq 60$ Hz
Voltage drop	< 10 V per phase or neutral	at 100 A per phase
Over current protection switch	Continuous current: Short time current:	switching at 100 A up to 500 A switching at < 2 s

3.3.3 EUT Power DC

Power supply EUT/dc:		
Mains voltage d.c.	STRINGS 1 and 2 + to - Insulation between string 1 and 2	1000 V max 1000V max
	+ to GND	1000 V max. ¹⁾
	- to GND	1000 V max. ¹⁾
Nominal current	per line	100 A



1000V is only possible with modified generator e.g. TRA2006. Modification made to order. Without modification, the maximum voltage to GND is limited to 280V.

4 Accessory for IMU3000 and IMU4000



ADAPTER BOX TRA-ACC is required to connect CDN to an IMU3000 or IMU4000 instrument.

5 Connection Diagram

