CDN HSS-2

COUPLING DECOUPLING NETWORK FOR UNSHIELDED SYMMETRICAL HIGH SPEED COMMUNICATION LINES

- **CDN for 1.2/50 µs pulse as per IEC 61000-4-5 Edition 3**
- **CDN for up to 8 wire unshielded twisted pair (UTP)**
- **Coupling to 1, 2 or 4 pairs**
- **ISDN, 10/100BaseT, 1000BaseT**
- **PoE applicable**

The Coupling Decoupling Network CDN HSS-2 is designed for convenient surge testing with 1.2/50 µs pulses, as defined in IEC/EN 61000-4-5, on unshielded symmetrical high speed telecommunication lines e.g. Ethernet. Coupling modes to 1, 2 or 4 pairs are given and coupled with 40 Ω in series with a capacitive coupling element. The CDN HSS-2 allows testing on ISDN and Ethernet with 10/100BaseT and 1000BaseT as well. Power over Ethernet (PoE) is applicable.
With a surge test voltage of 2 kV is the maximal residual voltage at the AE port only 65 V due to the excellent decoupling network. Additional decoupling elements are not required to protect the auxiliary equipment (AE). The high decoupling provides an AE independent pulse shape for the EUT testing. A high measurement reproducibility is given by using the CDN HSS-2. The decoupling network is in accordance with IEC 61000-4-5 Edition 3.
It can be used with Teseq's NSG series or any industry standard surge generator with the appropriate connector adapter.

Technical specifications

Circuit diagram:	according to Fig. 11 of IEC 61000-4-5 Ed. 3
Max. surge test voltage:	2 kV* (1.2/50 µs pulse as per IEC/EN 61000-4-5)
Max. surge test current:	50 A (8/20 µs pulse as per IEC/EN 61000-4-5)
Coupling mode:	Common mode to 1, 2 or 4 pairs with respect to CDN chassis
Coupling elements:	40 Ω in series with capacitive coupling elements
Max. residual test voltage at AE port:	65 V (at 2 kV surge test voltage)
Surge input connector:	HV connector female (Fischer D103A023)
Applications:	ISDN, 10/100BaseT, 1000BaseT etc., switchable per jumper, PoE applicable
Cable type:	8 wire unshielded twisted pair (UTP)
Insertion loss, typical:	9 dB at 100 MHz
Other typical network limits:	TIA-568-A Category 5-TSB95 Link
Max. operating speed:	1000BaseT
Max. operating voltage:	100 VDC between pairs
Max. operating current:	1 A (rated for Power over Ethernet)
Connection (EUT port, AE port):	RJ45 female

*) +10 % tolerance allowed

Mechanical specifications

Size (W x H x D) in mm:	200 x 200 x 470
Weight:	approx. 15 kg

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Typical results of the CDN HSS-2's 1000 BaseT network performance (Limits as given for cable category 5-TSB95 Link)

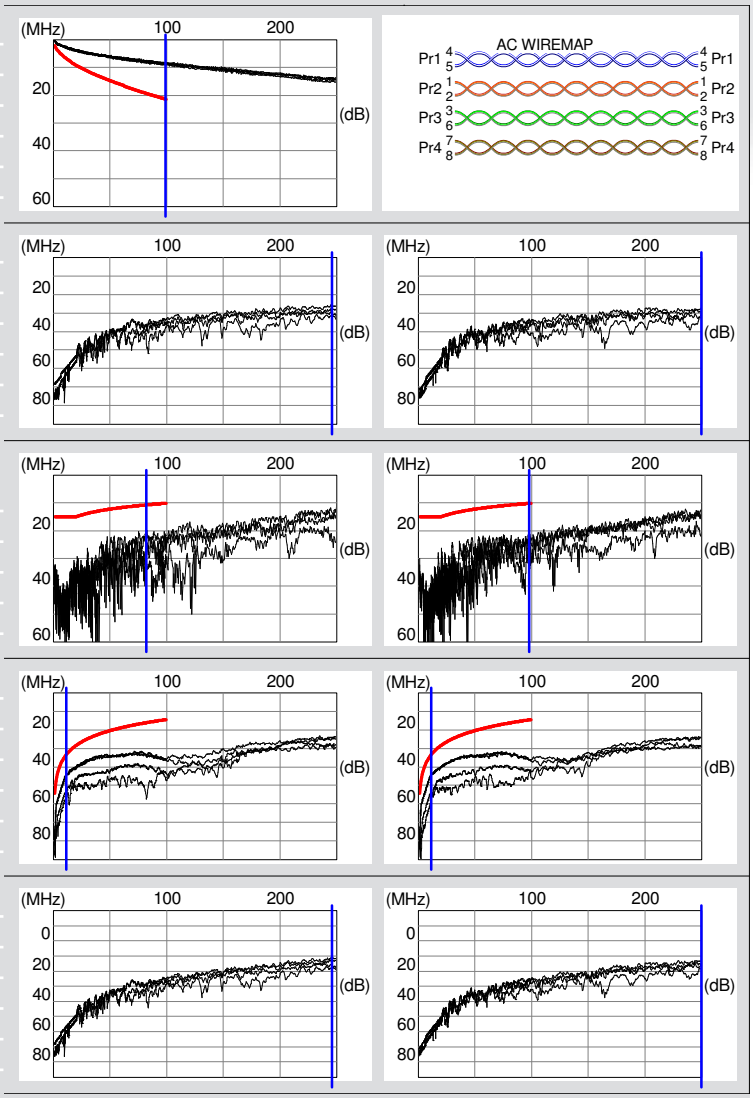
Insertion loss		
Worst pair:	4 (7, 8)	
Value:	9.2 dB	
Limit:	21.3 dB	
Values margin:	12.1 dB	
Frequency:	99.25 MHz	

NEXT	**@WS**	**@DR**
Worst pair:	3 (3, 6)	3 (3, 6)
Value:	25.5 dB	27.1 dB
Limit:		
Values margin:		
Frequency:	246 MHz	250 MHz

Return loss	**@WS**	**@DR**
Worst pair:	3 (3, 6)	3 (3, 6)
Value:	20.0 dB	19.8 dB
Limit:	10.7 dB	10.2 dB
Values margin:	9.3 dB	9.6 dB
Frequency:	82.25 MHz	97.75 MHz

ELFEXT	**Atten(TX)**	**Atten(RX)**
Worst combination:	3 (3, 6)	4 (7, 8)
Value:	43.4 dB	43.1 dB
Limit:	33.3 dB	9.8 dB
Values margin:	11.13 dB	9.8 dB
Frequency:	11.13 MHz	11.13 MHz

ACR²	**@WS**	**@DR**
Worst combination:	3 (3, 6) 3 (3, 6)	
Value:	10.5 dB	12.7 dB
Limit:	-	-
Values margin:	-	-
Frequency:	246.0 MHz	250.0 MHz



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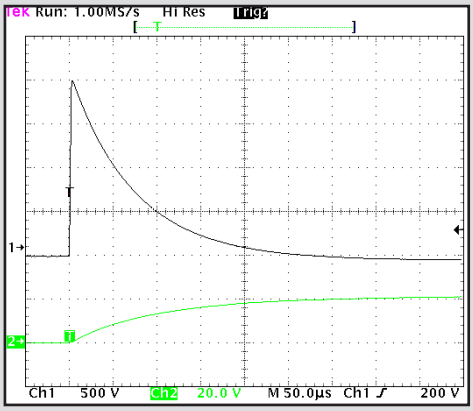
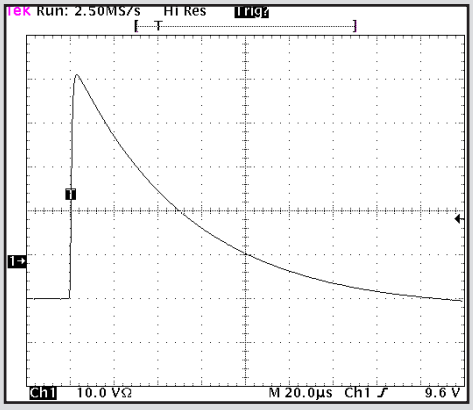
CDN HSS-2, view to the EUT port

Typical voltage waveform at the open-circuit EUT- and shorted AE port of the CDN HSS-2



CDN HSS-2, view to the AE port

Typical current waveform at the short-circuit EUT port of the CDN HSS-2



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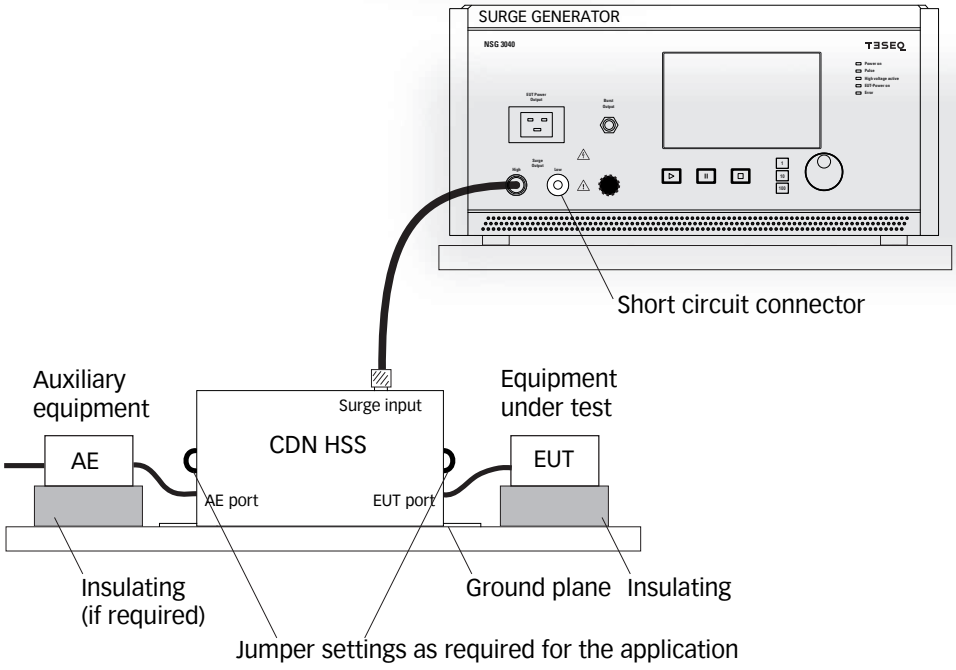
Setup example with CDN HSS-2



Model No. and options

Product picture	Product name	Description	Part number
	CDN HSS-2	CDN for 2 kV surge pulse 1.2/50 µs IEC/EN 61000-4-5 on unshielded symmetrical high speed telecommunication lines	243826
	CDN HSS-TC	Traceable calibration (ISO17025), order only with the device, only in conjunction with the surge generator	97-243826
	CDN HSS-DAkkS	DAkkS accredited calibration (ISO17025), order only with the device, calibration recommended in conjunction with the surge generator	98-243826

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Required options for using NSG 3040 / 3060 or Modula

Product picture	Product name	Description	Part number
	INA 6549	HV cable, 2 m, with Fischer 105 to Fischer 103 connectors for NSG 3000 series to CDN 117, 118 and HSS	403-634
	SHO F105	Short circuit connector Fischer 105	244759

Required options for using NSG 2050

Product picture	Product name	Description	Part number
	INA 371	HV cable, 0.8 m with connectors Lemo KAB-FFA.3Y to Fischer 103 for NSG 2050 series to CDN 117, 118 and HSS	244780
	SHO Lemo	Short circuit connector Lemo KAB-FFA.3Y	244755

Required options for using generators with 4 mm safety banana output

Product picture	Product name	Description	Part number
	INA 371UCS	HV cable 0.8 m with 4 mm safety banana to Fischer 103 connectors for generators with banana output to CDN 118 and CDN HSS-2	244787

Teseq GmbH
Landsberger Str. 255 · 12623 Berlin · Germany
T +49 30 56 59 88 35 F +49 30 56 59 88 34
info.rf.cts@ametek.com **www.teseq.com**

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