CDN T SERIES

COUPLING / DECOUPLING NETWORK (CDN) FOR UNSCREENED BALANCED PAIRS

CDN T400A basic network and ADR T444

- **Coupling networks designed for IEC / EN 61000-4-6**
- **T series for unscreened balanced pairs**
- **1 mm banana sockets for CDN T2-10 and CDN T4-10**
- **D Sub 25 adapters to RJ11 and RJ45 sockets for CDN T2xxA, CDN T4xxA and CDN T8 products**

IEC / EN 61000-4-6 specifies the design and performance of a range of coupling / decoupling networks (CDNs). Each CDN is specific to the type of cable and the intended signal carried on the cable. Teseq offers an extensive range of CDNs which fully comply with the requirements of the standard and provide a simple and reliable method of injecting RF energy into the equipment under test (EUT).

CDN T246A, T410A, T411A, T440A, T442A, T443A, T444A, T445A and T4A

This series is specially designed for testing single pair, with CDN T4xxA single and double pair, applications. Each CDN T2xxA and CDN T4xxA consist of one basic network (CDN T200A and CDN T400A) with D-Sub-25- connectors. The connections to a different pin configurations of the modular connectors (RJ11 / RJ45) in use is performed in adapters. An adapter set (ADR Txxx) consists of two same connecting adapters for the EUT- and AE- port and at least one set is part of each CDN of this series. Additional adapter sets are available. Teseq offers different kinds of CDN, prepared for the most important fixed pin- arrangements of RJ11 / RJ45- connectors.

CDN T8

The CDN T8 is designed for tests on up to four unscreened balanced pairs. It consists of one basic network (CDN T800) with D-Sub-25- connectors and two adapter sets (ADR Txxx) for RJ11 and RJ45. An adapter set (ADR Txxx) has two similar connecting adapters for the EUT- and AE- port. The ADR T800 gives the connection to RJ45 sockets with pin-arrangements of EIA / TIA T568A respectively T568B. The adapter set ADR T811 offers application for RJ11.

CDN T8-10

CDN T2-10, T4-10 and T8-10

This series is specially designed for testing at a 10 kHz start frequency as required by standards like Namur NE21 and IEC 60945. Further CDN T2-10 and CDN T4-10 allow testing up to 300 MHz as required by CISPR 15. CDN T8-10 is made for four unscreened balanced pairs, allows testing up to 230 MHz and supports Ethernet with 1000BaseT. EUT and AE port are supplied with RJ45. CDN T2-10 and CDN T4-10 are supplied with 1 mm banana sockets for easy adaptation for different single pair, with CDN T4-10 double pair, applications. The optional available adapter AD RJ11 and AD RJ45 provide the connection between the CDN T2-10 or CDN T4-10 with RJ11 or RJ45 plugs of the test cable.

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Technical specifications T type

Model	CDN T8-10	CDN T4-10	CDN T2-10
Frequency range:	10 kHz to 230 MHz	10 kHz to 300 MHz	10 kHz to 300 MHz
Line parameters: Connector (EUT and AE port): Application: PoE:	4 pairs RJ45 1000BaseT PoE+	2 pairs 1 mm banana 10 / 100BaseT, ISDN PoE+	1 pair 1 mm banana Telecom, UP0 -
Power ratings (EUT and AE port) AC max. voltage (line to ground): DC max. voltage (line to ground): Current max.: Test voltage:	 63 V 100 V 600 mA (line), 1.2 A (pair) 200 VDC, 2 s	 63 V 100 V 600 mA (line), 1.2 A (pair) 200 VDC, 2 s	 63 V 100 V 600 mA (line) 200 VDC, 2 s
Common mode impedance (EUT port) 10 kHz to 26 MHz: 26 MHz to 80 MHz: 80 MHz to (230) 300 MHz:	 150 Ω ±20 Ω 150 Ω +60 Ω / -45 Ω 150 Ω +60 Ω / -60 Ω	 150 Ω ±20 Ω 150 Ω +60 Ω / -45 Ω 150 Ω +60 Ω / -60 Ω	 150 Ω ±20 Ω 150 Ω +60 Ω / -45 Ω 150 Ω +60 Ω / -60 Ω
Coupling path (RF port / EUT port) Connector (RF port): RF voltage:	 BNC 50 Ω <20 V	 BNC 50 Ω <20 V	 BNC 50 Ω <20 V
Voltage division factor (RF port to EUT port)	10 kHz to 230 MHz: 10 dB ±1 dB	10 kHz to 300 MHz: 10 dB ±1 dB	10 kHz to 300 MHz: 10 dB ±1 dB
Transmission bandwidth (EUT to AE)*) (wanted signal):	>80 MHz sin.	>80 MHz sin.	>80 MHz sin.
Crosstalk (EUT and AE port) 1 MHz to 100 MHz:	≥61 dB to ≥21 dB	≥61 dB to ≥21 dB	-
Longitudinal conversion loss (LCL), typical values (EUT port) 150 kHz / 1.5 MHz: 30 MHz:	 >75 dB >60 dB	 >75 dB >60 dB	 >75 dB >60 dB
Decoupling of CM disturbance (RF port / AE port) 10 kHz: 1.5 MHz / 30 MHz: 80 MHz: 230 MHz:	 >20 dB >55 dB >45 dB >35 dB	 >20 dB >55 dB >45 dB >35 dB	 >20 dB >55 dB >45 dB >35 dB

*) 3 dB bandwidth, all balanced parameters in relation to a symmetrical load of 100 Ω

CDN T SERIES

COUPLING / DECOUPLING NETWORK (CDN) FOR UNSCREENED BALANCED PAIRS

Technical specifications T type

Model	CDN T8	CDN T411A, T440A, T442A, T443A, T444A, T445A and T4A	CDN T246A
Frequency range:	150 kHz to 80 MHz	150 kHz to 80 MHz	150 kHz to 80 MHz
Line parameters: Connector (EUT and AE port): Application: PoE:	1 up to 4 pair(s) D-Sub adapter to RJ45 / RJ11 as given in the next table PoE+	1 up to 2 pair(s) D-Sub adapter to RJ45 / RJ11 as given in the next table PoE+	1 pair D-Sub adapter to RJ45 / RJ11 as given in the next table -
Power ratings (EUT and AE port) AC max. voltage (line to ground): DC max. voltage (line to ground): Current max.: Test voltage:	 63 V 100 V 600 mA (line), 1.2 A (pair) 200 VDC, 2 s	 63 V 100 V 600 mA (line), 1.2 A (pair) 200 VDC, 2 s	 63 V 100 V 600 mA (line) 200 VDC, 2 s
Common mode impedance (EUT port) 150 kHz to 26 MHz: 26 MHz to 80 MHz:	 150 Ω ±20 Ω 150 Ω +60 Ω / -45 Ω	 150 Ω ±20 Ω 150 Ω +60 Ω / -45 Ω	 150 Ω ±20 Ω 150 Ω +60 Ω / -45 Ω
Coupling path (RF port / EUT port) Connector (RF port): RF voltage:	 BNC 50 Ω <15 V	 BNC 50 Ω <15 V	 BNC 50 Ω <15 V
Voltage division factor (RF port to EUT port):	9.5 dB ±1 dB	9.5 dB ±1 dB	9.5 dB ±1 dB
Transmission bandwidth (EUT to AE)*):	>100 MHz sin.	>100 MHz sin.	>100 MHz sin.
Crosstalk (EUT and AE port) 1 MHz to 100 MHz:	≥61 dB to ≥21 dB	≥61 dB to ≥21 dB	-
Longitudinal conversion loss (LCL), (EUT port) 150 kHz / 1.5 MHz: 30 MHz:	 >75 dB >60 dB	 >75 dB >50 dB	 >75 dB >50 dB
Decoupling of CM disturbance (RF port / AE port) 150 kHz: 1.5 MHz: 30 MHz: 80 MHz:	 >35 dB >55 dB >55 dB >45 dB	 >35 dB >55 dB >55 dB >40 dB	 >35 dB >55 dB >55 dB >40 dB

*) 3 dB bandwidth, all balanced parameters in relation to a symmetrical load of 100 Ω

CDN T SERIES

COUPLING / DECOUPLING NETWORK (CDN) FOR UNSCREENED BALANCED PAIRS

Product range

CDN type	Product name	Line type	Application	Adapter name	Connector EUT and AE port
T2	CDN T2-10	1 pair	German Telecom UPN (U_{P0}), Siemens UPN (U_{P0})	-	1 mm banana
T2	CDN T246A	1 pair	Siemens UPN (U_{P0})	ADR T246	D-Sub 25/RJ45
T4	CDN T4-10	2 pairs	German Telecom, US standard, ISDN, ATM, Ethernet 10BaseT and 100BaseT	-	1 mm banana
T4	CDN T411A	up to 2 pairs	German Telecom, US standard	ADR T411	D-Sub 25/RJ11
T4	CDN T442A	up to 2 pairs	ISDN basic rate access S0	ADR T442	D-Sub 25/RJ45
T4	CDN T443A	up to 2 pairs	ISDN primary rate access (2Mbps)	ADR T443	D-Sub 25/RJ45
T4	CDN T444A	up to 2 pairs	10BaseT, 100BaseT	ADR T444	D-Sub 25/RJ45
T4	CDN T445A	up to 2 pairs	ATM, FDDI	ADR T445	D-Sub 25/RJ45
T4	CDN T4A	up to 2 pairs	as given in the table “Application & adaptation”	ADR T411, ADR T442, ADR T443, ADR T444, ADR T445	D-Sub 25/RJ45, D-Sub 25/RJ11
T8	CDN T8-10	4 pairs	Ethernet 1000BaseT	-	RJ45
T8	CDN T8	up to 4 pairs	as given in the table “Application & adaptation”	ADR T800 ADR T811	D-Sub 25/RJ45, D-Sub 25/RJ11

CDN T SERIES

COUPLING / DECOUPLING NETWORK (CDN) FOR UNSCREENED BALANCED PAIRS

CDN T411A

CDN T4AS in storage case

CDN T8 with ADR T800 adapter set

Application & adaptation

CDN type	Adapter name	Socket	Application	Pair 1		Pair 2		Pair 3		Pair 4	
T2	ADR T246	RJ45	Siemens UPN (U_{P0})	3,4	5,6						
T4	ADR T411	RJ11	German Telecom, US standard	5	2	4	3				
T4	ADR T442	RJ45	Token ring, ISDN basic rate access / S0	4	5			3	6		
T4	ADR T443	RJ45	ISDN primary rate access (2Mbps)	4	5	1	2				
T4	ADR T444	RJ45	10BaseT, 100BaseTX			1	2	3	6		
T4	ADR T445	RJ45	ATM, FDDI, TP-PMD			1	2			7	8
T8	ADR T811	RJ11	German Telecom, US standard	3	4	1	6	2	5		
T8	ADR T800	RJ45	100BaseT4, 100Base VG-AnyLan, 1000BaseT, Token ring, ISDN, 10BaseT, 100BaseTX, ATM, FDDI, TP-PMD	4	5	1	2	3	6	7	8

Mechanical specifications

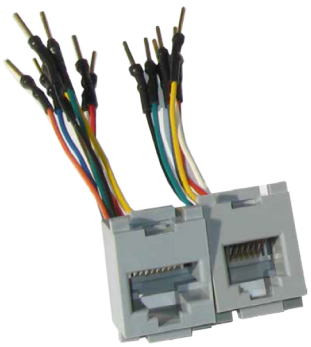
Size (W x H x D):	105 mm x 65 mm x 110 mm
Weight:	approx. 0.5 kg

CDN T SERIES

COUPLING / DECOUPLING NETWORK (CDN) FOR UNSCREENED BALANCED PAIRS

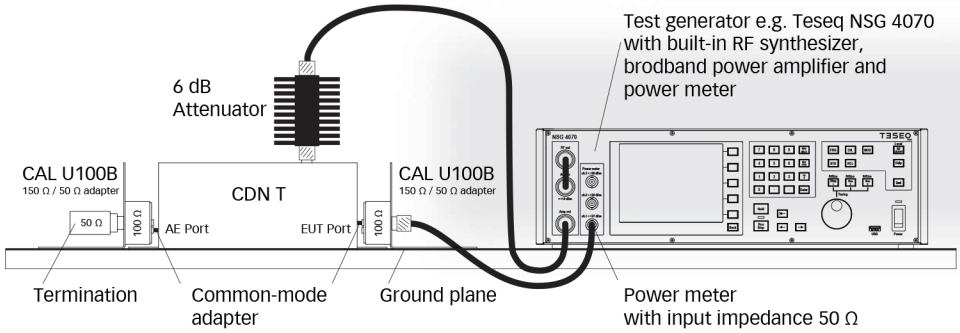
CDN T2-10

CDN T4-10

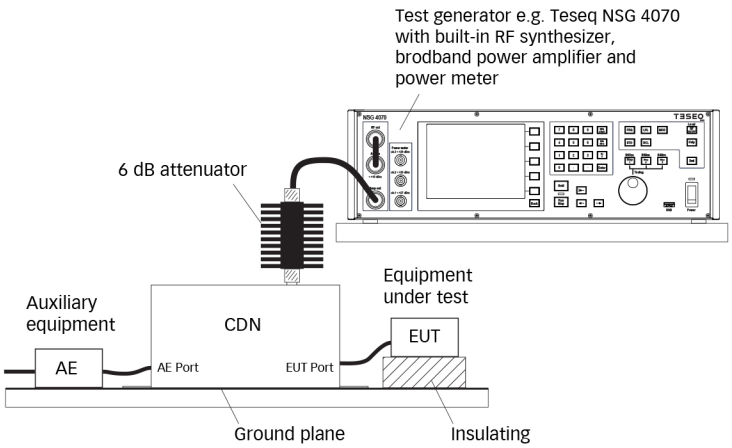


Adapter AD RJ45 or AD RJ11

Example of test set-up calibration



Example of EUT test set-up



CDN T SERIES

COUPLING / DECOUPLING NETWORK (CDN) FOR UNSCREENED BALANCED PAIRS

Model No. and options

Product	Description	Order code
CDN T246A	Coupling Decoupling Network for IEC 61000-4-6, type T200A with RJ45 adapter set (ADR T246) in storage case	254624
CDN T246AS	Coupling Decoupling Network for IEC 61000-4-6, type T200A with RJ45 adapter set (ADR T246) and calibration adapter in storage case, includes 2x CAL U100B, 2x SAR T801, SAR M116, A 50-N	254625
CDN T2-10	Coupling Decoupling Network for IEC 61000-4-6, type T2, 10 kHz to 300 MHz, 1 mm banana	243771
CDN T2-10S	Coupling Decoupling Network for IEC 61000-4-6, type T2, 10 kHz to 300 MHz, 1 mm banana, incl. calibration adapter in storage case, includes 2x CAL U100B, 2x SAR T2x0, SAR M116, A 50-N	247842
CDN T4A	Coupling Decoupling Network for IEC 61000-4-6, type T400A with with 5 different adapter sets (ADR T411, T442, T443, T444 and T445) in storage case	254626
CDN T4AS	Coupling Decoupling Network for IEC 61000-4-6, type T400A with 5 different adapter sets (ADR T411, T442, T443, T444 and T445) and calibration adapter (CAL U100, TRA U150 and 2x SAR T801) in storage case, includes 2x CAL U100B, 2x SAR T801, SAR M116, A 50-N	254627
CDN T411A	Coupling Decoupling Network for IEC 61000-4-6, type T400A with RJ11 (ADR T411) adapter set in storage case	254628
CDN T442A	Coupling Decoupling Network for IEC 61000-4-6, type T400A with RJ45 (ADR T442) adapter set in storage case	254630
CDN T443A	Coupling Decoupling Network for IEC 61000-4-6, type T400A with RJ45 (ADR T443) adapter set in storage case	254631
CDN T444A	Coupling Decoupling Network for IEC 61000-4-6, type T400A with RJ45 (ADR T444) adapter set in storage case	254632
CDN T445A	Coupling Decoupling Network for IEC 61000-4-6, type T400A with RJ45 (ADR T445) adapter set in storage case	254633
CDN T4-10	Coupling Decoupling Network for IEC 61000-4-6, type T4, 10 kHz to 300 MHz, 1 mm banana	243769
CDN T4-10S	Coupling Decoupling Network for IEC 61000-4-6, type T4, 10 kHz to 300 MHz, 1 mm banana, incl. calibration adapter in storage case, includes 2x CAL U100B, 2x SAR T4x0, SAR M116, A 50-N	243770
CDN T8	Coupling Decoupling Network for IEC 61000-4-6, type T800, 80 MHz, with RJ 11 and RJ 45 adapter sets in storage case, suitable for 1 Gbps and PoE application	244156
CDN T8S	Coupling Decoupling Network for IEC 61000-4-6, type T800, 80 MHz, with RJ 11 and RJ 45 adapter sets and calibration adapter in storage case, suitable for 1 Gbps and PoE application includes 2x CAL U100B, 2x SAR T801, SAR M116, A 50-N	244157
CDN T8-10	Coupling Decoupling Network for IEC 61000-4-6, type T8, 10 kHz to 230 MHz, RJ45	243772
CDN T8-10S	Coupling Decoupling Network for IEC 61000-4-6, type T8, 10 kHz to 230 MHz, RJ45, incl. calibration adapter in storage case, includes 2x CAL U100B, 2x SAR T802, SAR M116, A 50-N	247844
CDN Txxx-TC	Traceable calibration (ISO17025) for IEC 61000-4-6 requirements, order only with device CDN T type	97-241924
CAL U100B	Universal calibration unit (150 Ω / 50 Ω adapter)	247825
IMA U100	Universal impedance measuring adapter (0 Ω)	239902
ADR T2X0	Arranging adapter set for CDN T200A with 1 mm banana to RJ11 and RJ45	242030
ADR T4X0	Arranging adapter set for CDN T400A with 1 mm banana to RJ11 and RJ45	242045

CDN T SERIES

COUPLING / DECOUPLING NETWORK (CDN) FOR UNSCREENED BALANCED PAIRS

Model No. and options (continued)

Product	Description	Order code
AD RJ11	Adapter 1 mm banana to RJ11 (two pieces)	248763
AD R45	Adapter 1 mm banana to RJ45 (two pieces)	248764
ADR T411	Arranging adapter set for CDN T400A with RJ11, German Telecom, Siemens, (UP0)	242021
ADR T442	Arranging adapter set for CDN T400A with RJ45.2, ISDN basic rate access, (S0)	242022
ADR T443	Arranging adapter set for CDN T400A with RJ45.3, ISDN primary rate access (2Mbps)	242023
ADR T444	Arranging adapter set for CDN T400A with RJ45.4, 10BaseT, 100BaseT	242024
ADR T445	Arranging adapter set for CDN T400A with RJ45.5, ATM, FDDI	242025
ADR T800	Arranging adapter set for CDN T800A with RJ45	242049
ADR T811	Arranging adapter set for CDN T800A with RJ11	242051
SAR M116	Adapter 4 mm banana	239915
SAR T2X0	Common mode adapter for 2x 1 mm banana	248717
SAR T4X0	Common mode adapter for 4x 1 mm banana	248718
SAR T801	Common mode adapter for Sub-D 25	242430
SAR T802	Common mode adapter for RJ45 (unscreened)	242428
A 50-BNC	Termination 50 Ohms, BNC type, male	AX-006042
A 50-N	Termination 50 Ohms, N type, male, 1 Watt, 2.5 GHz	AX-000452