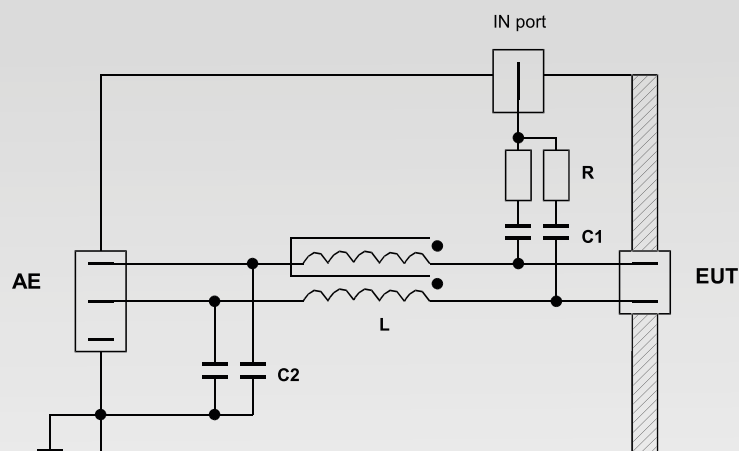


## Description

CDN-AF type networks are required for coupling and decoupling disturbing signals to an unshielded cable with non-balanced lines.



Simplified diagram for the circuit of CDN-AF2



### Type CDN-AF2/3/4/5/8

RF-in		EUT / AE	
Frequency range (RF In)	(10 kHz) 150 kHz – 80 MHz / 230 MHz (300 MHz)	Maximum Input Voltage AC	100 V
Power Rating (RF In)	6 W (continuous)	Maximum Input Voltage DC	150 V
Decoupling attenuation (RF In – AE)	> 20 dB (150 kHz – 230 MHz)	Current Rating (AE – EUT)	1 A
	> 40 dB (1 MHz – 100 MHz)	Insertion loss (AE – EUT)	< 1dB (DC – 100 kHz)
Insertion loss (RF In – EUT)	10 dB ± 1 dB (150 kHz – 80 MHz);	Connectors	Terminal block, safety banana jack
	10 dB + 3 dB (150 kHz – 230 MHz)	<b>Mechanical Data</b>	
Connector	BNC	Dimensions (B x H x T)	160mm x 84.5mm x 240mm

### Ordering Informations

CDN-AF2, terminal block 2 pole, 150 kHz – 300 MHz	CDN-AF4-10k-MC, 4mm safety banana jack, 10 kHz – 80 MHz
CDN-AF2-MC, 4mm safety banana jack, 150 kHz – 300 MHz	Calibration adapter, CDN-AF4 / T4
CDN-AF2-10k-MC 4mm safety banana jack, 10 kHz – 230 MHz	CDN-AF5-MC, 4mm safety banana jack, 150 kHz – 230 MHz
Calibration adapter, CDN-AF2 / T2	CDN-AF5-10k-MC, 4mm safety banana jack, 10 kHz – 230 MHz
CDN-AF3, terminal block 3 pole, 150 kHz – 230 MHz	CDN-AF8, terminal block 8 pole, 150 kHz – 230 MHz
CDN-AF3-MC, 4mm safety banana jack, 150 kHz – 230 MHz	Calibration adapter, CDN-AF8
CDN-AF3-10k-MC 4mm safety banana jack, 10 kHz – 230 MHz	CDN-AF8-10k-Sub-D, 9-pin Sub-D, 10 kHz – 230 MHz
CDN-AF4, terminal block 4 pole, 150 kHz – 230 MHz	Calibration adapter, CDN-AF8-Sub-D, CDN-CAN-L5
CDN-AF4-MC, 4mm safety banana jack, 150 kHz – 230 MHz	CDN-AF9, terminal block 9 pole, 150 kHz – 230 MHz
Calibration adapter, CDN-AF9	

# COUPLING / DECOUPLING NETWORKS – CDN M1 / 2 / 3 / 4 / 5

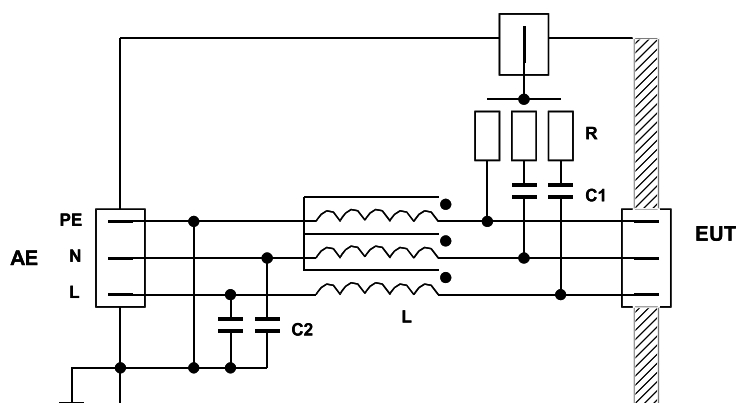
acc. to IEC/EN 61000-4-6



## Description

CDN M-types are used for all power supply lines. Numerous types are available for EUT voltages of up to 1000 VAC and EUT currents of up to 100 A.

Type	CDN-M1/2/3/4/5	CDN-M2/3/4/5/-HV	CDN-M2/3/4/5-63A/100A
<b>RF-in</b>			
Frequency range (RF In)	(10 kHz) 150 kHz – 80 MHz / 230 MHz (300 MHz)		
Power Rating (RF In)	6 W (continuous)		
Decoupling attenuation (RF In – AE)	> 30 dB (150 kHz – 80 MHz) 10 dB + 5 dB (80 MHz – 230 MHz)	> 30 dB (150 kHz – 80 MHz) > 15 dB (80 MHz – 230 MHz)	
Insertion loss (RF In – EUT)	10 dB +2/-1 dB (150 kHz – 80 MHz) 10 dB +2/-1 dB (150 kHz – 80 MHz)	10 dB +2/-1 dB (150 kHz – 80 MHz) 10 dB + 5 dB (80 MHz – 230 MHz)	
Connector	BNC		
<b>EUT / AE</b>			
Maximum Input Voltage AC (Line-PE)	280 V	600 V (1000 V VHV-Types)	600 V
Maximum Input Voltage AC (Line-Line)	485 V	1000 V (1700 V VHV-Types)	1000 V
Maximum Input Voltage DC	500 V	1000 V	6000 V
Current Rating (AE – EUT)	16 A / 32 A / 63 A / 100 A; (M1 / M2+3 IPE <0.5 A)		
Insertion loss (AE – EUT)	< 1dB (DC – 100 kHz)		
Connectors	4 mm safety banana jack	6 mm round connectors for current > 32 A <b>Adequate safety test leads are included</b>	
<b>Mechanical Data</b>			
Dimensions (B x H x T)	160mm x 84.5mm x 240 mm	200mm x 122.5 mm x 400 mm	



*Simplified diagram for the circuit of CDN-M3 used with unscreened supply (mains) lines*

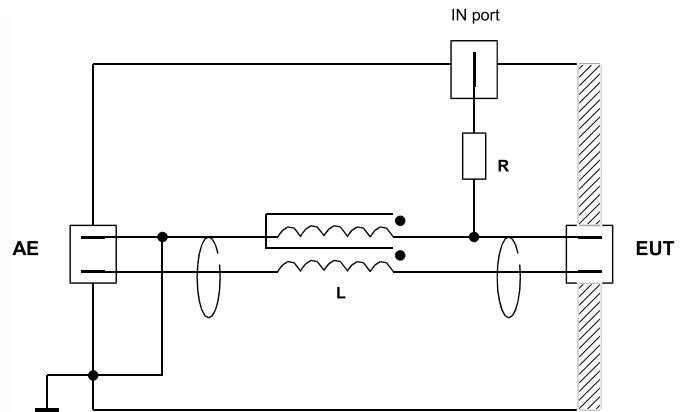
## Ordering Informations

CDN-M1, 4mm safety banana jack, 150 kHz – 230 MHz	CDN-L1, 4mm safety banana jack, 150 kHz – 230 MHz
CDN-M1-10k, 4mm safety banana jack, 10 kHz – 230 MHz	CDN-M2, 4mm safety banana jack, 150 kHz – 300 MHz
CDN-M2-10k, 4mm safety banana jack, 10 kHz – 230 MHz	CDN-M2-32A, 4mm safety banana jack, 150 kHz – 230 MHz
CDN-M2-32A-HV, 4mm safety banana jack, 150 kHz – 230 MHz	CDN-M2-63A-HV, 6mm round connector, 150 kHz – 80 MHz
CDN-M2-100A-HV, 6mm round connector, 150 kHz – 80 MHz	CDN-M2+3, 4mm safety banana jack, 150 kHz – 300 MHz
CDN-M2+3-10k, 4mm safety banana jack, 10 kHz – 230 MHz	CDN-M2+3-32A, 4mm safety banana jack, 150 kHz – 230 MHz
CDN-M3, 4mm safety banana jack, 150 kHz – 300 MHz	CDN-M3-L, L1/L2/L3, 4mm safety banana jack, 150 kHz – 230 MHz
CDN-M3-32A, 4mm safety banana jack, 150 kHz – 230 MHz	CDN-M3-L1L2N-32A, L1/L2/N, 4 mm safety banana jack, 150 kHz – 230 MHz
CDN-M3-L-32A, L1/L2/L3, 4mm safety banana jack, 150 kHz – 230 MHz	CDN-M3-L-32A-10k, L1/L2/L3, 4mm safety banana jack, 10 kHz – 230 MHz
CDN-M3-32A-HV, 4mm safety banana jack, 150 kHz – 80 MHz	CDN-M3-L-32A-HV, 4mm safety banana jack, 150 kHz – 80 MHz
CDN-M4-32A-10k, 4mm safety banana jack, 10 kHz – 230 MHz	CDN-M4-32A-HV, 4mm safety banana jack, 150 kHz – 80 MHz
Calibration adapter, CDN-M1 / -M2 / -M3	CDN-M4-N-32A-HV, 4mm safety banana jack, 150 kHz – 80 MHz
CDN-M4-63A-HV, 6mm round connector, 150 kHz – 80 MHz	CDN-M4-N-63A-HV, L1/L2/L3/N, 6mm round connector, 150 kHz – 80 MHz
CDN-M4-100A-HV, 6mm round connector, 150 kHz – 80 MHz	CDN-M4-N-100A-HV, L1/L2/L3/N, 6mm round connector, 150 kHz – 80 MHz
CDN-M5, 4mm safety banana jack, 150 kHz – 230 MHz	CDN-M5-32A, 4mm safety banana jack, 150 kHz – 230 MHz
CDN-M5-32A-HV, 4mm safety banana jack, 150 kHz – 80 MHz	CDN-M5-32A-VHV, 4mm safety banana jack, 150 kHz – 80 MHz
CDN-M5-63A-HV, 6mm round connector, 150 kHz – 80 MHz	CDN-M5-100A-HV, 6mm round connector, 150 kHz – 80 MHz
Calibration adapter, CDN-M4 / -M5	Calibration adapter "Delta", CDN-M4 / -M5
Calibration adapter, CDN-M4-63A / -M5-63A	Calibration adapter, CDN-M4-100A / -M5-100A

Mounting bracket for calibration adapter incl. 50/150 Ohm adapter and 50 Ohm termination

## Description

For coupling and decoupling of interference signals on screened lines CDN S-Types are used. Despite the variety of connectors the interference signal is in all cases coupled to the cable shield via a 100 Ω resistor. A device for direct coupling is also available (without decoupling network).



Simplified diagram for the circuit of CDN-S1

Type	CDN-S1	CDN-S2	CDN-S4	CDN-S8	CDN-S9	CDN-S15	CDN-S25
<b>RF-in</b>							
Frequency range (RF In)	150 kHz – 230 MHz						
Power Rating (RF In)	6 W (continuous)						
Decoupling attenuation (RF In – AE)	> 35 dB (150 kHz – 80 MHz) > 30 dB (80 MHz – 230 MHz)						
Insertion loss (RF In – EUT)	10 dB ± 1 dB (150 kHz – 80 MHz); 10 dB + 3 dB (80 MHz – 230 MHz)						
Connector	BNC						
<b>EUT / AE</b>							
Maximum Input Voltage AC	150 V					600 V (1000 V VHV-Types)	600 V
Maximum Input Voltage DC	200 V					1000 V (1700 V VHV-Types)	1000 V
Current Rating (AE – EUT)	1.5 A					1000 V	6000 V
Insertion loss (AE – EUT)	< 1dB (0 – 10 MHz) < 10 dB (10 MHz – 500 MHz)						
Connectors	BNC	XLR	5-pin XLR	8-pin Mini-DIN	9-pin Sub-D	15-pin Sub-D	25-pin Sub-D
<b>Mechanical Data</b>							
Dimensions (B x H x T)	160mm x 84.5mm x 240 mm						

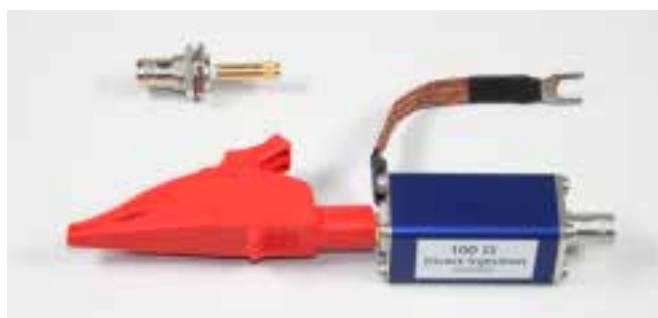
Type	USB-C	USB-P	HDMI	Firewire	USB-3.0	RJ45-S
<b>RF-in</b>						
Frequency range (RF In)	(10 kHz) 150 kHz – 230 MHz					
Power Rating (RF In)	6 W (continuous)					
Decoupling attenuation (RF In – AE)	> 50 dB (150 kHz – 80 MHz) > 25 dB (80 MHz – 230 MHz)				> 30 dB (150 kHz – 230 MHz) > 15 dB (80 MHz – 230 MHz)	
Insertion loss (RF In – EUT)	10 dB ± 1 dB (150 kHz – 80 MHz) 10 dB + 3 dB (80 MHz – 230 MHz)				10 dB ± 1 dB (150 kHz – 80 MHz) 10 dB + 3 dB (80 MHz – 230 MHz)	
Connector	BNC					
<b>EUT / AE</b>						
Maximum Input Voltage AC	100 V					
Maximum Input Voltage DC	150 V					
Current Rating (AE – EUT)	0.5 A					
Current Rating (AE – EUT)	0.5 A				0.9 A	1.0 A
Insertion loss (AE – EUT)	< 1dB (DC – 10 MHz) < 10 dB (10 MHz – 500 MHz)				< 0.3 dB (DC – 10 MHz) < 1 dB (10 MHz – 100 MHz) < 3 dB (100 MHz – 500 MHz)	
Connectors	EUT: USB-B AE: USB-A	EUT: USB-A AE: USB-B	HDMI 19-pol	Firewire 6-pol	USB-3.0	Shielded RJ45 jack
<b>Mechanical Data</b>						
Dimensions (B x H x T)	160mm x 84.5mm x 240 mm					

## Direct injection device

100 Ω connector for RF disturbances 150 kHz – 230 MHz

The disturbing signal coming from the test generator is injected on to screened and coaxial cables via a 100 Ω resistor (even if the shield is ungrounded or grounded at one end only). In between the auxiliary equipment (AE) and the injection point, a decoupling circuit shall be inserted as close as possible to the injection point. To increase decoupling and to stabilize the circuit, a ground connection shall be made from the screen of the direct injection device's input port to the ground reference plane.

Electrical Data	
Frequency range (RF In)	150 kHz – 230 MHz
Common mode impedance (IN/OUT)	100 Ω
Power Rating (RF In)	6 W (continuous)
Connector Out	Alligator clip; max. cable diameter 30 mm
Connector In	BNC



## Ordering Informations

CDN-S1, BNC, 150 kHz - 230 MHz	CDN-S1-10k, BNC, 10 kHz - 230 MHz
CDN-S1-75Ω, BNC, 150 kHz - 230 MHz	Calibration adapter, CDN-S1
CDN-S2, XLR, 150 kHz - 230 MHz	CDN-S2-10k, XLR, 10 kHz - 230 MHz
Calibration adapter, CDN-S2	CDN-S3-10k, XLR, 10 kHz - 230 MHz
Calibration adapter, CDN-S3	CDN-S4, 5-pin XLR, 150 kHz - 230 MHz
Calibration adapter, CDN-S4	CDN-S8, 8-pin Mini-DIN, 150 kHz - 230 MHz
Calibration adapter, CDN-S8	CDN-S9, 9-pin Sub-D, 150 kHz - 230 MHz
CDN-S9-10k, 9-pin Sub-D, 10 kHz - 230 MHz	Calibration adapter, CDN-S9
CDN-S15, 15-pin Sub-D, 150 kHz - 230 MHz	Calibration adapter, CDN-S15
CDN-S25, 25-pin Sub-D, 150 kHz - 230 MHz	Calibration adapter, CDN-S25
CDN-USB-C, EUT: USB-B, AE: USB-A, 150 kHz - 230 MHz	CDN-USB-C-10k, EUT: USB-B, AE: USB-A, 10 kHz - 230 MHz
Calibration adapter, CDN-USB-C	CDN-USB-P, EUT: USB-A, AE: USB-B, 150 kHz - 230 MHz
CDN-USB-P-10k, EUT: USB-A, AE: USB-B, 10 kHz - 230 MHz	Calibration adapter, CDN-USB-P, as well for USB-3.0
CDN-USB-3.0, EUT: USB-A, AE: USB-A, 150 kHz - 230 MHz	CDN-RJ45-S, shielded RJ45, 150 kHz - 230 MHz
CDN-RJ45-S-10k, shielded RJ45, 10 kHz - 230 MHz	Calibration adapter, CDN-RJ45-S
CDN-Firewire, 6 pole IEEE 1394 receptacle, 150 kHz - 230 MHz	Calibration adapter, CDN-Firewire
CDN-HDMI, 19-pole HDMI 1.3 receptacle, 150 kHz - 230 MHz	Calibration adapter, CDN-HDMI
Mounting bracket for calibration adapter incl. 50/150 Ohm adapter and 50 Ohm termination	Device for direct injection; 100 Ohm; alligator clip; calibration adapter included





## Description

For coupling and decoupling disturbing signals to an unshielded cable with balanced lines, T-type CDNs shall be used.

Type	CDN-T2/T4/T8	CDN-RJ11/RJ45
<b>RF-in</b>		
Frequency range (RF In)	(10 kHz) 150 kHz – 80 MHz / 230 MHz	
Power Rating (RF In)	6 W (continuous)	
Decoupling attenuation (RF In – AE)	> 20 dB (150 kHz – 230 MHz)	
Insertion loss (RF In – EUT)	10 dB ± 1 dB (150 kHz – 230 MHz)	
Connector	BNC	
<b>EUT / AE</b>		
Maximum Input Voltage AC	100 V	
Maximum Input Voltage DC	150 V	
Current Rating (AE – EUT)	0.5 A	
Insertion loss (AE – EUT)	< 1 dB (DC – 1 MHz)	< 1 dB (DC – 10 MHz)
	< 10 dB (1 MHz – 100 MHz)	< 10 dB (10 MHz – 100 MHz)
Connectors	Terminal block	RJ11 / RJ45 jack
<b>Mechanical Data</b>		
Dimensions (B x H x T)	160mm x 84.5mm x 240mm	

## Ordering Informations

CDN-T2, terminal block 2 pole, 150 kHz – 230 MHz	CDN-T2-10k, terminal block 2 pole, 10 kHz – 80 MHz
Calibration adapter, CDN-T2 / -AF2	CDN-T4, terminal block 4 pole, 150 kHz – 230 MHz
CDN-T4-10k, terminal block 2 pole, 10 kHz – 80 MHz	Calibration adapter, CDN-T4 / -AF4
CDN-T8, RJ45 jack 8 pole, 150 kHz – 230 MHz	Calibration adapter, CDN-RJ11
CDN-RJ45, RJ45 jack, 150 kHz – 230 MHz	Calibration adapter, CDN-RJ45 / -T8

Mounting bracket for calibration adapter incl. 50/150 Ohm adapter and 50 Ohm termination

# COUPLING / DECOUPLING NETWORKS – CDN-CAN-L5 / CDN-CAN-L4

acc. to IEC/EN 61000-4-6

Type	CDN-CAN-L5	CDN-CAN-L4
RF-in		
Frequency range (RF In)	150 kHz – 230 MHz	
Power Rating (RF In)	6 W (continuous)	
Decoupling attenuation (RF In – AE)	PIN 2+7: > 35 dB (150 kHz – 230 MHz) PIN 3+6+9: > 35 dB (150 kHz – 200 MHz); > 25 dB (200 MHz – 230 MHz)	PIN 2+7: > 35 dB (150 kHz – 230 MHz) PIN 3+9: > 35 dB (150 kHz – 200 MHz); > 25 dB (200 MHz – 230 MHz)
Insertion loss (RF In – EUT)	10 dB ± 1 dB (150 kHz – 230 MHz)	
Connector	BNC	
EUT / AE		
Maximum Input Voltage AC	50 V	
Maximum Input Voltage DC	50 V	
Current Rating (AE – EUT)	PIN 2+7 = 0.5 A; PIN 3+6+9 = 3 A	PIN 2+7 = 0.5 A; PIN 3+9 = 3 A
Insertion loss (AE – EUT)	PIN 2+7: < 1 dB (DC – 10 MHz); < 10 dB (10 MHz – 500 MHz) PIN 3+6+9: < 1 dB (DC – 100 kHz)	PIN 2+7: < 1 dB (DC – 10 MHz); < 10 dB (10 MHz – 500 MHz) PIN 3+9: < 1 dB (DC – 100 kHz)
Connectors	9-pol SUB-D socket	
Mechanical Data		
Dimensions (B x H x T)	160mm x 84.5mm x 240 mm	

## Ordering Informations

CDN-CAN-L5, 9-pol Sub-D socket, 150 kHz – 230 MHz

Calibration adapter, CDN-AF8-Sub-D, CDN-CAN-L5

CDN-CAN-L4, 9-pol Sub-D socket, 150 kHz – 230 MHz

