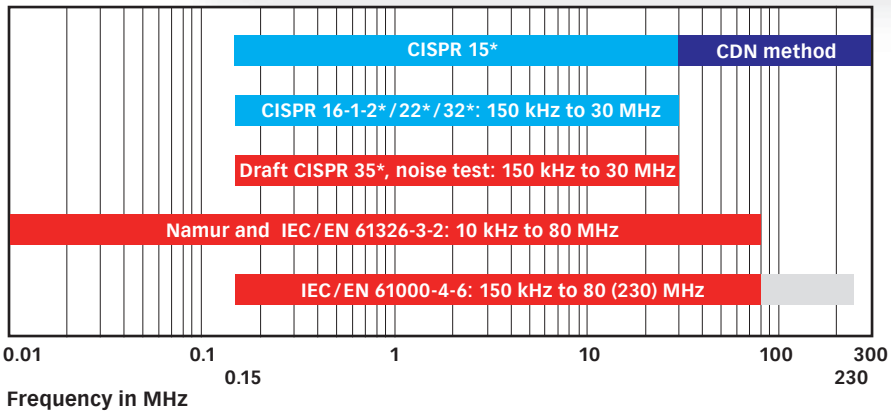
COUPLING DECOUPLING NETWORKS FOR IEC / EN 61000-4-6

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). Each CDN is also useable for emission testing, special types are meet the requirements of CISPR 15, CISPR 16-1-2, CISPR 22, CISPR 32, CISPR 35, NAMUR NE 21 and IEC / EN 61326-3-2.

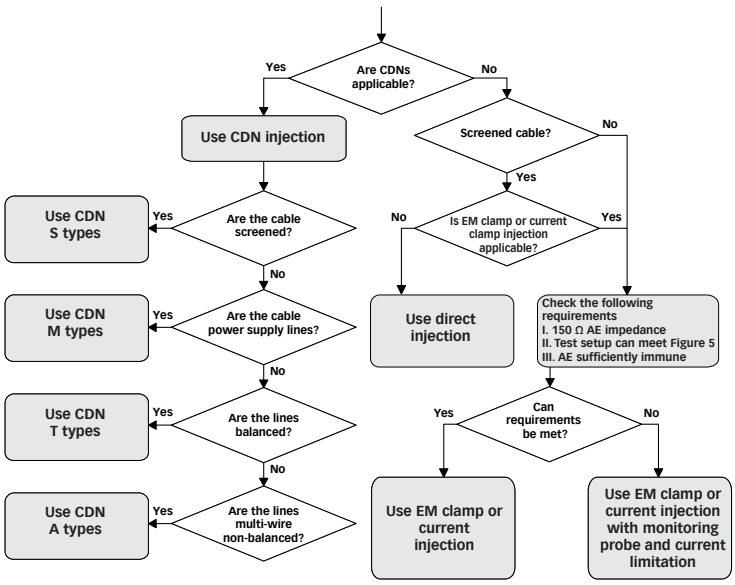


Frequency in MHz

Emissions testing, Immunity testing, Extended range

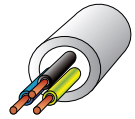
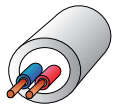
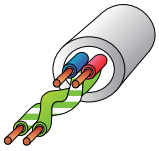
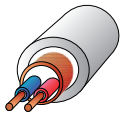
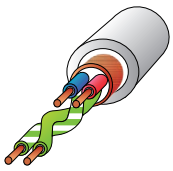
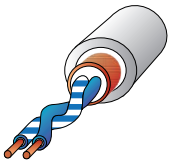
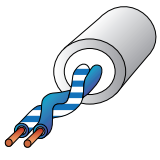
* Standard contains additional requirements for the CDN.

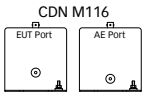
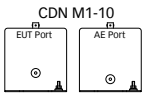
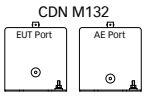
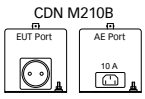
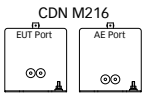
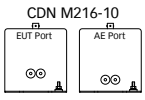
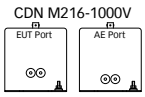
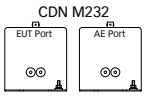
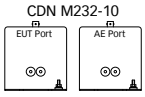
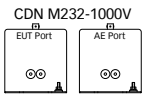
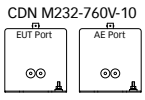
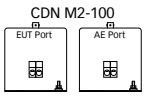
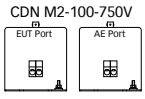
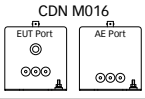
IEC / EN 61000-4-6: Rules for selecting the injection method



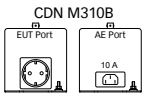
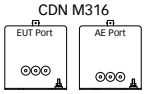
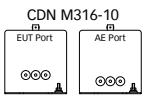
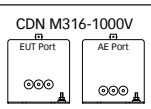
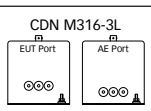
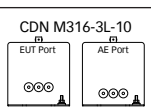
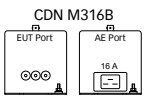
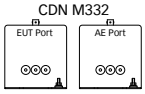
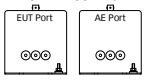
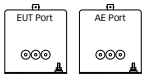
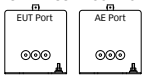
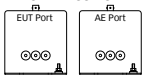
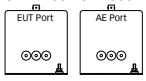
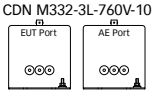
AMETEK®
COMPLIANCE TEST SOLUTIONS

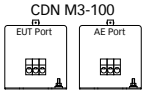
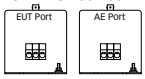
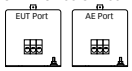
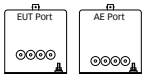
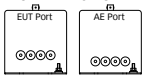
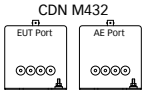
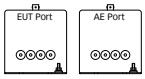
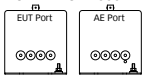
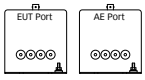
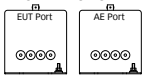
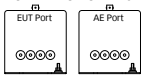
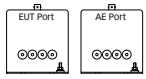
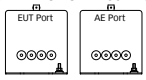
TESEQ
Advanced Test Solutions for EMC

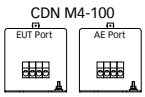
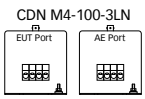
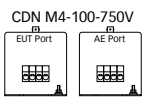
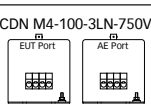
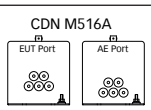
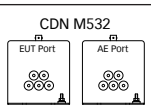
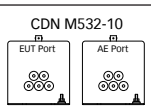
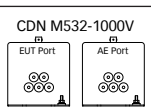
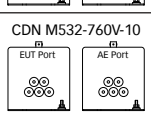
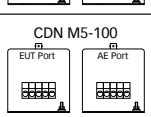
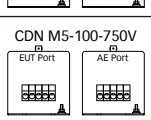
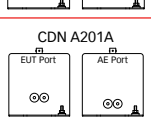
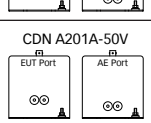
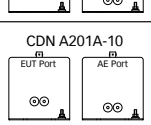
Cable type	CDN type	Application	Product range
	**M type**	Used for unscreened AC or DC power supply applications.	M1 for one line, M2 for two lines, M2/3 switchable for two or three lines, M3 for three lines, M4 for lines and M5 for five lines "-10 types" for frequency range 10 kHz to 80 MHz, "-3L and -3LN types" for connections without PE "-750V, -760V, -1000V types" for higher EUT voltages
	**AF type**	Used for all unscreened, unbalanced lines, carrying low current.	Types with 4 mm banana sockets: AF2 for two lines, AF3 for three lines, AF4 for lines, AF5 for five lines, AF7 for 7 lines and AF8 for 8 lines Types with D-Sub connector: AF8 for 8 lines, AF12 for 12 lines and AF15 for 15 lines "-10 types" for frequency range 10 kHz to 80 MHz
	**CAN bus type**	Specially designed to test the unscreened CAN bus.	Types with D-Sub connector for unscreened four or five lines "-10 types" for frequency range 10 kHz to 80 MHz
	**S type**	Used for screened cables.	Types with D-Sub connector for screened lines with up to 25 lines: "-10 types" for frequency range 10 kHz to 80 MHz Type with DIN connector
	**S type coaxial**	Used for coaxial cables.	Types with coaxial connector: See also product range Impedance Stabilization Networks for ISN S501A, S502A, S751 and S752.
	**S type for USB and HDMI**	Specially designed to test the USB and HDMI	CDN USB/c, USB/p, CDN USB3.0, CDN HDMI
	**ST type**	Used for testing screened, balanced lines for telecommunication ports on ITE equipment.	CDN ST08A See also product range Impedance Stabilization Networks for ISN ST08.
	**T type**	Used for unscreened, balanced lines for telecommunication ports on ITE equipment.	CDN T2-10, T210A...T246AS, T4-10, T411A...T4AS CDN T8, T8-10 See also product range Impedance Stabilization Networks for ISN T2A, T4A, ISN T8 and ISN T8-CAT6.

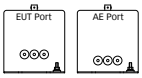
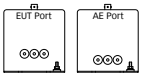
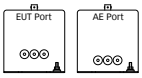
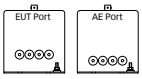
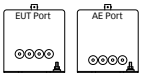
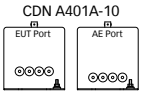
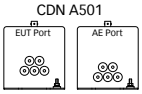
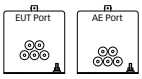
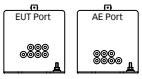
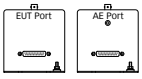
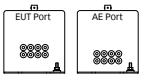
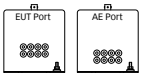
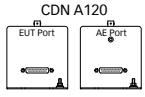
Product	Drawing	Frequency range	CDN type and application	EUT / AE connector type	CDN case size	Immunity testing IEC/EN 61000-4-6	Immunity testing 10 kHz to 80 MHz	Emission meas. CISPR 15 ed.8 (CDN method)	Emission meas. CISPR 22/32 (ISN/AAN)	Number of lines	Max. EUT current in A (50/60 Hz)	Max. EUT voltage in V AC* [DC]*	Max. RF voltage V	3 dB bandwidth (sinusoidal)
CDN M116		150 kHz to 230 (300) MHz	CDN M 1 1 PE line	4 mm safety banana sockets	1	■		■		1	16 (1)	—	20	—
CDN M1-10		10 kHz to 80 MHz	CDN M 1 1 PE line	4 mm safety banana sockets	1	■	■			1	16 (0.3)	—	20	—
CDN M132		150 kHz to 230 (300) MHz	CDN M 1 1 PE line	4 mm safety banana sockets	1	■		■		1	32 (1)	—	20	—
CDN M210B		150 kHz to 230 (300) MHz	CDN M2 2 power lines (L+N or DC+/DC-)	AE: IEC 60320 C14 EUT: CEE 7/17	1	■		■		2	10	250 (433) [800]	30	—
CDN M216		150 kHz to 230 (300) MHz	CDN M2 2 power lines (L+N or DC+/DC-)	4 mm safety banana sockets	1	■		■		2	16	250 (433) [800]	30	—
CDN M216-10		10 kHz to 80 MHz	CDN M2 2 power lines (L+N or DC+/DC-)	4 mm safety banana sockets	1	■	■			2	16	250 (433) [800]	30	—
CDN M216-1000V		150 kHz to 230 (300) MHz	CDN M2 2 power lines (L+N or DC+/DC-)	4 mm safety banana sockets	1	■		■		2	16	500 (1000) [2000]	30	—
CDN M232		150 kHz to 230 MHz	CDN M2 2 power lines (L+N or DC+/DC-)	4 mm safety banana sockets	4	■				2	32	300 (520) [600]	30	—
CDN M232-10		10 kHz to 80 MHz	CDN M2 2 power lines (L+N or DC+/DC-)	4 mm safety banana sockets	4	■	■			2	32	300 (520) [600]	30	—
CDN M232-1000V		150 kHz to 230 MHz	CDN M2 2 power lines (L+N or DC+/DC-)	4 mm safety banana sockets	4	■				2	32	500 (1000) [2000]	30	—
CDN M232-760V-10		10 kHz to 80 MHz	CDN M2 2 power lines (L+N or DC+/DC-)	4 mm safety banana sockets	4	■	■			2	32	500 (760) [1000]	30	—
CDN M2-100		150 kHz to 80 MHz	CDN M2 2 power lines (L+N or DC+/DC-)	Terminal block, wire cross section max. 25 mm²	5	■				2	100	300 (520) [600]	30	—
CDN M2-100-750V		150 kHz to 80 MHz	CDN M2 2 power lines (L+N or DC+/DC-)	Terminal block, wire cross section max. 25 mm²	5	■				2	100	750 (750) [1000]	30	—
CDN M016		150 kHz to 230 (300) MHz	CDN M2/3 switchable 2/3 power lines (L+N or L+N+PE)	4 mm safety banana sockets	1	■		■		2/3	16	250 (433) [800]	30	—

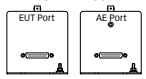
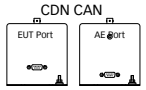
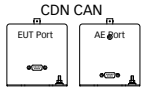
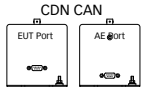
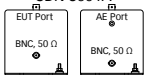
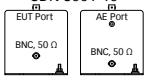
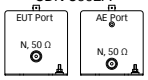
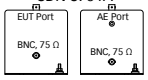
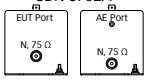
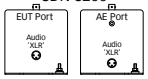
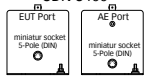
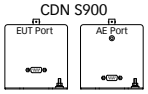
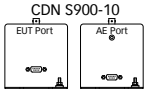
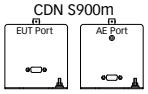
*) Line to ground voltage, in round brackets line to line AC voltage, in square brackets line to line DC voltage

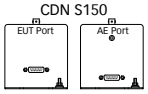
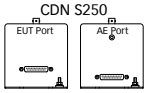
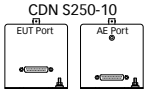
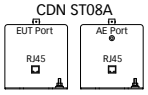
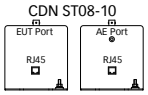
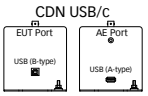
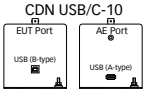
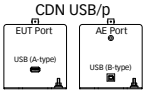
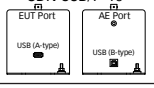
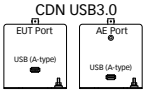
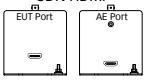
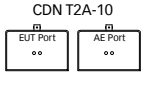
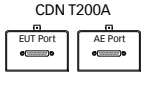
Product	Drawing	Frequency range	CDN type and application	EUT / AE connector type	CDN case size	Immunity testing IEC/EN 61000-4-6	Immunity testing 10 kHz to 80 MHz	Emission meas. CISPR 15 ed.8 (CDN method)	Emission meas. CISPR 22/32 (ISN/AAN)	Number of lines	Max. EUT current in A (50/60 Hz)	Max. EUT voltage in V AC* [DC]*	Max. RF voltage V	3 dB bandwidth (sinusoidal)
CDN M310B		150 kHz to 230 (300) MHz	CDN M3 3 power lines (L+N+PE)	AE: IEC 60320 C14 EUT: Schuko CEE 7/4	1	■		■		3	10	250 (433) [800]	30	—
CDN M316		150 kHz to 230 (300) MHz	CDN M3 3 power lines (L+N+PE)	4 mm safety banana sockets	1	■		■		3	16	250 (433) [800]	30	—
CDN M316-10		10 kHz to 80 MHz	CDN M3 3 power lines (L+N+PE)	4 mm safety banana sockets	1	■	■			3	16	250 (433) [800]	30	—
CDN M316-1000V		150 kHz to 230 MHz	CDN M3 3 power lines (L+N+PE)	4 mm safety banana sockets	1	■				3	16	500 (1000) [2000]	30	—
CDN M316-3L		150 kHz to 230 (300) MHz	CDN M3 3 power lines (3L)	4 mm safety banana sockets	1	■		■		3	16	250 (433) [800]	30	—
CDN M316-3L-10		10 kHz to 80 MHz	CDN M3 3 power lines (3L)	4 mm safety banana sockets	1	■	■			3	16	250 (433) [800]	30	—
CDN M316B		150 kHz to 230 (300) MHz	CDN M3 3 power lines (L+N+PE)	AE: IEC 60320 C20 EUT: 4 mm safety banana sockets	1	■		■		3	16	250 (433) [800]	30	—
CDN M332		150 kHz to 230 MHz	CDN M3 3 power lines (L+N+PE)	4 mm safety banana sockets	4	■				3	32	300 (520) [600]	30	—
CDN M332-10		10 kHz to 80 MHz	CDN M3 3 power lines (L+N+PE)	4 mm safety banana sockets	4	■	■			3	32	300 (520) [600]	30	—
CDN M332-1000V		150 kHz to 80 MHz	CDN M3 3 power lines (L+N+PE)	4 mm safety banana sockets	4	■				3	32	500 (1000) [2000]	30	—
CDN M332-760V-10		10 kHz to 80 MHz	CDN M3 3 power lines (L+N+PE)	4 mm safety banana sockets	4	■	■			3	32	500 (760) [1000]	30	—
CDN M332-3L		150 kHz to 230 MHz	CDN M3 3 power lines (3L)	4 mm safety banana sockets	4	■				3	32	300 (520) [600]	30	—
CDN M332-3L-1000V		150 kHz to 80 MHz	CDN M3 3 power lines (3L)	4 mm safety banana sockets	4	■				3	32	500 (1000) [2000]	30	—
CDN M332-3L-760V-10		10 kHz to 80 MHz	CDN M3 3 power lines (3L)	4 mm safety banana sockets	4	■	■			3	32	500 (760) [1000]	30	—

Product	Drawing	Frequency range	CDN type and application	EUT/AE connector type	CDN case size	Immunity testing IEC/EN 61000-4-6	Immunity testing 10 kHz to 80 MHz	Emission meas. CISPR 15 ed.8 (CDN method)	Emission meas. CISPR 22/32 (ISN/AAN)	Number of lines	Max. EUT current in A (50/60 Hz)	Max. EUT voltage in V AC* [DC]*	Max. RF voltage V	3 dB bandwidth (sinusoidal)
CDN M3-100		150 kHz to 80 MHz	CDN M3 3 power lines (L+N+PE)	Terminal block, wire cross section max. 25 mm²	5	■				3	100	300 (520) [600]	30	—
CDN M3-100-3L		150 kHz to 80 MHz	CDN M3 3 power lines (3L)	Terminal block, wire cross section max. 25 mm²	5	■				3	100	300 (520) [600]	30	—
CDN M3-100-750V		150 kHz to 80 MHz	CDN M3 3 power lines (L+N+PE)	Terminal block, wire cross section max. 25 mm²	5	■				3	100	750 (750) [1000]	30	—
CDN M3-100-3L-750V		150 kHz to 80 MHz	CDN M3 3 power lines (3L)	Terminal block, wire cross section max. 25 mm²	5	■				3	100	750 (750) [1000]	30	—
CDN M416A		150 kHz to 230 MHz	CDN M4 4 power lines (3L+PE)	4 mm safety banana sockets	1	■				4	16	300 (520) [600]	30	—
CDN M416A-3LN		150 kHz to 230 MHz	CDN M4 4 power lines (3L+N)	4 mm safety banana sockets	1	■				4	16	300 (520) [600]	30	—
CDN M432		150 kHz to 230 MHz	CDN M4 4 power lines (3L+PE)	4 mm safety banana sockets	4	■				4	32	300 (520) [600]	30	—
CDN M432-10		10 kHz to 80 MHz	CDN M4 4 power lines (3L+PE)	4 mm safety banana sockets	4	■	■			4	32	300 (520) [600]	30	—
CDN M432-1000V		150 kHz to 80 MHz	CDN M4 4 power lines (3L+PE)	4 mm safety banana sockets	4	■				4	32	500 (1000) [2000]	30	—
CDN M432-760V-10		10 kHz to 80 MHz	CDN M4 4 power lines (3L+PE)	4 mm safety banana sockets	4	■	■			4	32	500 (760) [1000]	30	—
CDN M432-3LN		150 kHz to 230 MHz	CDN M4 4 power lines (3L+N)	4 mm safety banana sockets	4	■				4	32	300 (520) [600]	30	—
CDN M432-3LN-10		10 kHz to 80 MHz	CDN M4 4 power lines (3L+N)	4 mm safety banana sockets	4	■	■			4	32	300 (520) [600]	30	—
CDN M432-3LN-1000V		150 kHz to 80 MHz	CDN M4 4 power lines (3L+N)	4 mm safety banana sockets	4	■				4	32	500 (1000) [2000]	30	—
CDN M432-3LN-760V-10		10 kHz to 80 MHz	CDN M4 4 power lines (3L+N)	4 mm safety banana sockets	4	■	■			4	32	500 (760) [1000]	30	—

Product	Drawing	Frequency range	CDN type and application	EUT / AE connector type	CDN case size	Immunity testing IEC/EN 61000-4-6	Immunity testing 10 kHz to 80 MHz	Emission meas. CISPR 15 ed.8 (CDN method)	Emission meas. CISPR 22/32 (ISN/AAN)	Number of lines	Max. EUT current in A (50/60 Hz)	Max. EUT voltage in V AC* [DC]*	Max. RF voltage V	3 dB bandwidth (sinusoidal)
CDN M4-100		150 kHz to 80 MHz	CDN M4 4 power lines (3L+PE)	Terminal block, wire cross section max. 25 mm²	5	■				4	100	300 (520) [600]	30	—
CDN M4-100-3LN		150 kHz to 80 MHz	CDN M4 4 power lines (3L+N)	Terminal block, wire cross section max. 25 mm²	5	■				4	100	300 (520) [600]	30	—
CDN M4-100-750V		150 kHz to 80 MHz	CDN M4 4 power lines (3L+PE)	Terminal block, wire cross section max. 25 mm²	5	■				4	100	750 (750) [1000]	30	—
CDN M4-100-3LN-750V		150 kHz to 80 MHz	CDN M4 4 power lines (3L+N)	Terminal block, wire cross section max. 25 mm²	5	■				4	100	750 (750) [1000]	30	—
CDN M516A		150 kHz to 230 MHz	CDN M5 5 power lines (3L+N+PE)	4 mm safety banana sockets	1	■				5	16	300 (520) [600]	30	—
CDN M532		150 kHz to 230 MHz	CDN M5 5 power lines (3L+N+PE)	4 mm safety banana sockets	4	■				5	32	300 (520) [600]	30	—
CDN M532-10		10 kHz to 80 MHz	CDN M5 5 power lines (3L+N+PE)	4 mm safety banana sockets	4	■	■			5	32	300 (520) [600]	30	—
CDN M532-1000V		150 kHz to 80 MHz	CDN M5 5 power lines (3L+N+PE)	4 mm safety banana sockets	4	■				5	32	500 (1000) [2000]	30	—
CDN M532-760V-10		10 kHz to 80 MHz	CDN M5 5 power lines (3L+N+PE)	4 mm safety banana sockets	4	■	■			5	32	500 (760) [1000]	30	—
CDN M5-100		150 kHz to 80 MHz	CDN M5 5 power lines (3L+N+PE)	Terminal block, wire cross section max. 25 mm²	5	■				5	100	300 (520) [600]	30	—
CDN M5-100-750V		150 kHz to 80 MHz	CDN M5 5 power lines (3L+N+PE)	Terminal block, wire cross section max. 25 mm²	5	■				5	100	750 (750) [1000]	30	—
CDN A201A		150 kHz to 230 (300) MHz	CDN AF2 for unscreened unbalanced 2 lines application	4 mm safety banana sockets	1	■		■		2	4	250 [300]	30	20 kHz
CDN A201A-50V		150 kHz to 230 (300) MHz	CDN AF2 for unscreened unbalanced 2 lines application, no resistors against ground	4 mm safety banana sockets	1	■		■		2	4	50 [50]	30	20 kHz
CDN A201A-10		10 kHz to 80 MHz	CDN AF2 for unscreened unbalanced 2 lines application	4 mm safety banana sockets	1	■	■			2	4	250 [300]	30	20 kHz

Product	Drawing	Frequency range	CDN type and application	EUT/AE connector type	CDN case size	Immunity testing IEC/EN 61000-4-6	Immunity testing 10 kHz to 80 MHz	Emission meas. CISPR 15 ed.8 (CDN method)	Emission meas. CISPR 22/32 (ISN/AAN)	Number of lines	Max. EUT current in A (50/60 Hz)	Max. EUT voltage in V AC* [DC]*	Max. RF voltage V	3 dB bandwidth (sinusoidal)
CDN A301A		150 kHz to 230 (300) MHz	CDN AF3 for unscreened unbalanced 3 lines application	4 mm safety banana sockets	1	■		■		3	4	250 [300]	30	20 kHz
CDN A301A-50V		150 kHz to 230 (300) MHz	CDN AF3 for unscreened unbalanced 3 lines application, no resistors against ground	4 mm safety banana sockets	1	■		■		3	4	50 [50]	30	20 kHz
CDN A301A-10		10 kHz to 80 MHz	CDN AF3 for unscreened unbalanced 3 lines application	4 mm safety banana sockets	1	■	■			3	4	250 [300]	30	20 kHz
CDN A401A		150 kHz to 230 (300) MHz	CDN AF4 for unscreened unbalanced 4 lines application	4 mm safety banana sockets	1	■		■		4	4	250 [300]	30	20 kHz
CDN A401A-50V		150 kHz to 230 (300) MHz	CDN AF4 for unscreened unbalanced 4 lines application, no resistors against ground	4 mm safety banana sockets	1	■		■		4	4	50 [50]	30	20 kHz
CDN A401A-10		10 kHz to 80 MHz	CDN AF4 for unscreened unbalanced 4 lines application	4 mm safety banana sockets	1	■	■			4	4	250 [300]	30	20 kHz
CDN A501		150 kHz to 230 (300) MHz	CDN AF5 for unscreened unbalanced 5 lines application	4 mm safety banana sockets	1	■		■		5	4	160 [250]	30	20 kHz
CDN A501-10		10 kHz to 80 MHz	CDN AF5 for unscreened unbalanced 5 lines application	4 mm safety banana sockets	1	■	■			5	4	160 [250]	30	20 kHz
CDN A701		150 kHz to 230 (300) MHz	CDN AF7 for unscreened unbalanced 7 lines application	4 mm banana sockets	1	■		■		7	2	160 [250]	30	20 kHz
CDN A800		150 kHz to 230 (300) MHz	CDN AF8 for unscreened unbalanced 8 lines application	25 pin D-sub female	1	■		■		8	0.2	63 [100]	15	20 kHz
CDN A800-10		10 kHz to 80 MHz	CDN AF8 for unscreened unbalanced 8 lines application	25 pin D-sub female	1	■	■			8	0.2	63 [100]	15	20 kHz
CDN A801		150 kHz to 230 (300) MHz	CDN AF8 for unscreened unbalanced 8 lines application	4 mm banana sockets	1	■		■		8	2	160 [250]	30	20 kHz
CDN A801-10		10 kHz to 80 MHz	CDN AF8 for unscreened unbalanced 8 lines application	25 pin D-sub female	1	■	■			8	2	160 [250]	15	20 kHz
CDN A120		150 kHz to 230 (300) MHz	CDN AF12 for unscreened unbalanced 12 lines application	25 pin D-sub female	1	■		■		12	0.2	63 [100]	15	20 kHz

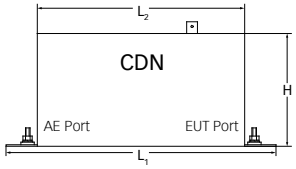
Product	Drawing	Frequency range	CDN type and application	EUT/AE connector type	CDN case size	Immunity testing IEC/EN 61000-4-6	Immunity testing 10 kHz to 80 MHz	Emission meas. CISPR 15 ed.8 (CDN method)	Emission meas. CISPR 22/32 (ISN/AAN)	Number of lines	Max. EUT current in A (50/60 Hz)	Max. EUT voltage in V AC* [DC]*	Max. RF voltage V	3 dB bandwidth (sinusoidal)
CDN A150		150 kHz to 230 (300) MHz	CDN AF15 for unscreened un-balanced 15 lines application	25 pin D-sub female	1	■		■		15	0.2	63 [100]	15	20 kHz
CDN CAN-U4		150 kHz to 230 MHz	CDN for unscreened CAN bus with 4 lines	9 pin D-sub female	1	■				4	3/0.5	48 [48]	20	30 MHz
CDN CAN-U4-10		10 kHz to 80 MHz	CDN for unscreened CAN bus with 4 lines	9 pin D-sub female	1	■				4	3/0.5	48 [48]	20	30 MHz
CDN CAN-U5		150 kHz to 230 MHz	CDN for unscreened CAN bus with 5 lines	9 pin D-sub female	1	■				5	3/0.5	48 [48]	20	30 MHz
CDN S501A		150 kHz to 230 MHz	CDN S1 for coaxial line 50 Ω	BNC 50 Ω, female	1	■			■	1	0.25	250	20	2 GHz
CDN S501-10		10 kHz to 80 MHz	CDN S1 for coaxial line 50 Ω	BNC 50 Ω, female	1	■	■		■	1	0.25	250	20	2 GHz
CDN S502A		150 kHz to 230 MHz	CDN S1 for coaxial line 50 Ω, double screened	N 50 Ω, female	1	■			■	1	0.25	250	20	2 GHz
CDN S751A		150 kHz to 230 MHz	CDN S1 for coaxial line 75 Ω	BNC 75 Ω, female	1	■			■	1	0.25	250	20	2 GHz
CDN S752A		150 kHz to 230 MHz	CDN S1 for coaxial line 75 Ω, double screened	N 75 Ω, female	3	■			■	1	0.25	250	20	2 GHz
CDN S200		150 kHz to 230 MHz	CDN S2 for 2 wires, screened line	XLR, female	1	■				2	0.25	150	20	20 kHz
CDN S400		150 kHz to 230 MHz	CDN S4 for 4 wires, screened line	5 pin DIN socket	1	■				4	0.25	34	20	20 kHz
CDN S900		150 kHz to 230 MHz	CDN S9 for 9 wires, screened line	9 pin D-sub female	1	■				9	0.25	150	20	20 kHz
CDN S900-10		10 kHz to 80 MHz	CDN S9 for 9 wires, screened line	9 pin D-sub female	1	■	■			9	0.25	150	20	20 kHz
CDN S900m		150 kHz to 230 MHz	CDN S9 for 9 wires, screened line	9 pin D-sub male	1	■				9	0.25	150	20	20 kHz

Product	Drawing	Frequency range	CDN type and application	EUT / AE connector type	CDN case size	Immunity testing IEC/EN 61000-4-6	Immunity testing 10 kHz to 80 MHz	Emission meas. CISPR 15 ed.8 (CDN method)	Emission meas. CISPR 22/32 (ISN/AAN)	Number of lines	Max. EUT current in A (50/60 Hz)	Max. EUT voltage in V AC* [DC]*	Max. RF voltage V	3 dB bandwidth (sinusoidal)
CDN S150		150 kHz to 230 MHz	CDN S15 for 15 wires, screened line	15 pin D-sub female	1	■				15	0.25	150	20	20 kHz
CDN S250		150 kHz to 230 MHz	CDN S25 for 25 wires, screened line	25 pin D-sub female	1	■				25	0.25	150	20	20 kHz
CDN S250-10		10 kHz to 80 MHz	CDN S25 for 25 wires, screened line	25 pin D-sub female	1	■	■			25	0.25	150	20	20 kHz
CDN ST08A		150 kHz to 230 MHz	CDN for screened and balanced telecommunication lines, Ethernet 10BaseT, 100BaseT, 1000BaseT, 10GBaseT and others	RJ45 socket	1	■			■	8	1	100	20	250 MHz
CDN ST08-10		10 kHz to 80 MHz	CDN for screened and balanced telecommunication lines, Ethernet 10BaseT, 100BaseT, 1000BaseT, 10GBaseT and others	RJ45 socket	1	■	■		■	8	1	100	20	250 MHz
CDN USB/C		150 kHz to 230 MHz	CDN USB for central devices, USB up to 2.0	AE: USB "A"type EUT: USB "B"type	1	■				4	1	100	20	80 MHz
CDN USB/C-10		10 kHz to 80 MHz	CDN USB for central devices, USB up to 2.0	AE: USB "A"type EUT: USB "B"type	1	■	■			4	1	100	20	80 MHz
CDN USB/P		150 kHz to 230 MHz	CDN USB for peripheral devices, USB up to 2.0	AE: USB "B"type EUT: USB "A"type	1	■				4	1	100	20	80 MHz
CDN USB/P-10		10 kHz to 80 MHz	CDN USB for peripheral devices, USB up to 2.0	AE: USB "B"type EUT: USB "A"type	1	■	■			4	1	100	20	80 MHz
CDN USB3.0		150 kHz to 230 MHz	CDN USB, up to 3.0	AE: USB "A"type EUT: USB "A"type	1	■				9	1	100	20	-
CDN HDMI		150 kHz to 230 MHz	CDN for high speed HDMI with HDCP, HEC (Ethernet), ARC and DSC	HDMI socket	3	■				19	-	100	20	-
CDN T2A-10		10 kHz to 80 MHz	T2 for 1 unscreened balanced wire pair	1 mm banana sockets	2	■		■		2	0.6	63	20	100 MHz
CDN T246A		150 kHz to 80 MHz	T2 for 1 unscreened balanced wire pair, German Telecom, Siemens, UP0	25 pin D-sub female with adapter to RJ45: ADR T246	2	■				2	0.4	63	15	100 MHz
CDN T4A-10		10 kHz to 80 MHz	T4 for 2 unscreened balanced wire pairs	1 mm banana sockets	2	■		■		4	0.6	63	20	100 MHz

Product	Drawing	Frequency range	CDN type and application	EUT / AE connector type	CDN case size	Immunity testing IEC/EN 61000-4-6	Immunity testing 10 kHz to 80 MHz	Emission meas. CISPR 15 ed.8 (CDN method)	Emission meas. CISPR 22/32 (ISN/AAN)	Number of lines	Max. EUT current in A (50/60 Hz)	Max. EUT voltage in V AC* [DC]*	Max. RF voltage V	3 dB bandwidth (sinusoidal)
CDN T411A		150 kHz to 80 MHz	T4 for up to 2 unscreened balanced wire pairs, German Telecom, US standard	25 pin D-sub female with adapter to RJ11: ADR T411	2	■				2 4	0.4	63	15	100 MHz
CDN T442A		150 kHz to 80 MHz	T4 for up to 2 unscreened balanced wire pairs, ISDN basic rate access S0	25 pin D-sub female with adapter to RJ45: ADR T442	2	■				2 4	0.4	63	15	100 MHz
CDN T443A		150 kHz to 80 MHz	T4 for up to 2 unscreened balanced wire pairs, ISDN primary rate access (2Mbps)	25 pin D-sub female with adapter to RJ45: ADR T443	2	■				2 4	0.4	63	15	100 MHz
CDN T444A		150 kHz to 80 MHz	T4 for up to 2 unscreened balanced wire pairs, Ethernet 10BaseT, 100BaseT	25 pin D-sub female with adapter to RJ45: ADR T444	2	■				2 4	0.4	63	15	100 MHz
CDN T445A		150 kHz to 80 MHz	T4 for up to 2 unscreened balanced wire pairs, ATM, FDDI	25 pin D-sub female with adapter to RJ45: ADR T445	2	■				2 4	0.4	63	15	100 MHz
CDN T4A		150 kHz to 80 MHz	T4 for up to 2 unscreened balanced wire pairs with 5 adapter sets	25 pin D-sub female with adapter to RJxx: ADR T411, T442, T443, T444, T445	2	■				2 4	0.4	63	15	100 MHz
CDN T8A-10		10 kHz to 80 MHz	T8 for 4 unscreened balanced wire pairs, Ethernet 1000BaseT	RJ45 socket	2	■	■			8	0.6	63	20	100 MHz
CDN T8		150 kHz to 80 MHz	T8 for up to 4 unscreened balanced wire pairs with 2 adapter sets, Ethernet 10BaseT, 100BaseT, 1000BaseT and others	25 pin D-sub female with adapter to RJxx: ADR T811, T800	2	■				2 4 6 8	0.4	63	15	100 MHz

*) Line to ground voltage, in round brackets line to line AC voltage, in square brackets line to line DC voltage

CDN case size



CDN dimensions in mm	CDN case size 1 e.g. CDN M016	CDN case size 2 e.g. CDN T	CDN case size 3 e.g. CDN HDMI	CDN case size 4 e.g. CDN Mx 32A	CDN case size 5 e.g. CDN Mx 100A
Length L_1	240	110	285	470	470
Length L_2	180	102	235	420	420
Width	100	105	100	160	200
Height	100	55	100	160	200

COUPLING DECOUPLING NETWORK FOR EMISSION MEASUREMENT (CDNE)

CISPR 15 edition 9 offers different methods for the measurement of radio disturbance characteristics of electrical lighting equipment. One of these is the CDNE method. This method specifies the use of a coupling/decoupling network for emission measurement (CDNE) to measure disturbance voltages in the 30 to 300 MHz frequency range. This method enables EUTs to be connected directly to the CDNE, allowing a single conducted emission measurement to replace a lengthy radiated emission test.
The Teseq CDNEs are compliant with the actual versions of CSIPR 16-1-2, CISPR 16-2-1 and CISPR 15 edition 9.
Using a CDNE instead of CDN offers improved measurement reproducibility due to standard's requirements for more restrictive limits of asymmetrical impedance, phase angle, symmetrical impedance and internal attenuation.

CISPR 15 edition 9 requires the termination of the mains supply cable of the EUT with a CDNE positioned on the reference-ground plane for the OATS, SAC or FAR measurement method. The receiver port of the CDNE is terminated with a 50 Ω impedance.

	Drawing	Frequency range	CDN type and application	EUT/AE connector type	Immunity testing	Emission meas. CISPR 15	Emission testing draft CISPR 16-1-2	Number of lines	Max. EUT current in A	Max. EUT voltage in V for AC*	Transducer factor in dB	Internal attenuator
CDNE M210	CDNE M210 EUT Port AE Port	30 MHz to 300 MHz	M2, L, N or DC	4 mm safety banana sockets	-	■	■	2	10	300 (520)	20	■
CDNE M310	CDNE M310 EUT Port AE Port	30 MHz to 300 MHz	M3, L, N, PE	4 mm safety banana sockets	-	■	■	3	10	300 (520)	20	■
CDNE M310-USJP	CDNE M310-USJP EUT Port AE Port	30 MHz to 300 MHz	M3, L, N, PE	AE: IEC C14 EUT: NEMA 5-15	-	■	■	3	10	125 (125)	20	■

*) Line to ground voltage, in brackets line to line voltage

IMPEDANCE STABILIZATION NETWORK (ISN), ASYMMETRIC ARTIFICIAL NETWORK (AAN)

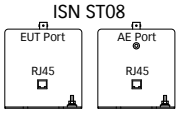
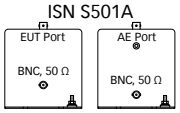
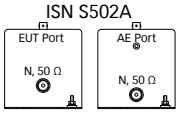
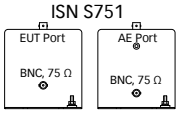
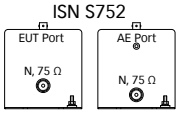
Impedance stabilization networks (ISN, or with CISPR 16-1-2 called AAN: asymmetric artificial network) are defined for measuring of conducted common mode disturbances at information technology equipment (ITE) as required in CISPR 22 and CISPR 32. The ISN is placed between the equipment under test (EUT) and auxiliary equipment (AE) or load which are necessary for the operation of the EUT. The ISN establishes the common-mode termination impedance for the EUT's telecommunications port during measurement and emulates the unsymmetrical contribution (longitudinal conversion loss, LCL) of the connected line. Different ISNs are available in relation to the line category, line numbers and pin-arrangement. The ISN must not affect the normal quality of the wanted symmetrical signal.
The CISPR 16-1-2 gives additional requirements and provides examples and measurements for the networks. The ITU-T recommendations G.117 and O.9 offers the background knowledge for measurements on symmetrical telecommunication lines.
Further the ISNs (with exception ISN T8) can be used as coupling/decoupling network as defined in IEC/EN 61000-4-6 „Immunity to conducted disturbances, induced by radio frequency fields".

Cable type	Number of pairs	Refers to figure in CISPR 32	Measurement type	Product
Balanced unscreened	1 (2 wire) 2 (4 wire) 3 (6 wire) 4 (8 wire)	Figure G.1 to Figure G.3 Figure G.2 to Figure G.3 Figure G.3 Figure G.3	Voltage	ISN T 
Balanced unscreened	>4		Voltage and current	CVP, CSP 
Screened or coaxial	n/a	Figure G.9 for coaxial Figure G11 for multi-conductor	Voltage	ISN S ISN ST 
Screened or coaxial	n/a		Voltage or current	CVP, CSP 
Unbalanced	n/a		Voltage and current	CVP, CSP 
AC Mains	n/a	AMN CISPR 16-1-2:2003 Figure 4 and Figure 5	Voltage	NNB 

	Drawing	Frequency range	CDN type and application	EUT/AE connector type	Immunity testing IEC/EN 61000-4-6	Emission meas. CISPR 22/32	Regarding figure in CISPR 32	Number of lines	Changeable adapter wiring	LCL values	Max. EUT current in A (per wire)	Max. EUT voltage in V for AC/DC	Max. RF voltage in V	3 dB bandwidth (sinusoidal)
ISN T2A	ISN T200A 	150 kHz to 30 (80) MHz	T2 for 1 unscreened balanced pair with adapter ADS T246 and ADS T2X0	RJ11 RJ45 1 mm	■	■	G.2	2	■	55/40 65/50	0.6	63/ 100	15	100 MHz
ISN T216A	ISN T200A 	150 kHz to 30 (80) MHz	T2 for 1 unscreened balanced pair, UP0 with RJ11, with adapter ADS T216	RJ11	■	■	G.2	2		55/40 65/50	0.6	63/ 100	15	100 MHz
ISN T246A	ISN T200A 	150 kHz to 30 (80) MHz	T2 for 1 unscreened balanced pair, UP0 with RJ45, with adapter ADS T246	RJ45	■	■	G.2	2		55/40 65/50	0.6	63/ 100	15	100 MHz
ISN T4A	ISN T400A 	150 kHz to 30 (80) MHz	T4 for up to 2 unscreened balanced pairs, with adapter ADS T411, T442, T443, T444 and T4x0	RJ11 RJ45 1 mm	■	■	G.2	2 4	■	55/40 65/50	0.6	63/ 100	15	100 MHz
ISN T411A	ISN T400A 	150 kHz to 30 (80) MHz	T4 for up to 2 unscreened balanced pairs, German Telecom, US standard, with adapter ADS T411	RJ11	■	■	G.2	2 4		55/40 65/50	0.6	63/ 100	15	100 MHz
ISN T442A	ISN T400A 	150 kHz to 30 (80) MHz	T4 for up to 2 unscreened balanced pairs, ISDN basic rate access S0, with adapter ADS T442	RJ45	■	■	G.2	2 4		55/40 65/50	0.6	63/ 100	15	100 MHz
ISN T443A	ISN T400A 	150 kHz to 30 (80) MHz	T4 for up to 2 unscreened balanced pairs, ISDN primary rate access (2Mbps), with ADS T443	RJ45	■	■	G.2	2 4		55/40 65/50	0.6	63/ 100	15	100 MHz
ISN T444A	ISN T400A 	150 kHz to 30 (80) MHz	T4 for up to 2 unscreened balanced pairs, Ethernet 10BaseT, 100BaseT, with adapter ADS T444	RJ45	■	■	G.2	2 4		55/40 65/50	0.6	63/ 100	15	100 MHz
ISN T4X0A	ISN T400A 	150 kHz to 30 (80) MHz	T4 for up to 2 unscreened balanced pairs, with changeable adapter ADS T4X0	RJ11 RJ45 1 mm	■	■	G.2	2 4	■	55/40 65/50	0.6	63/ 100	15	100 MHz
ISN T8	ISN T800 	150 kHz to 30 MHz	T8 for up to 4 unscreened balanced pairs, Ethernet 10BaseT, 100BaseT, 1000 BaseT and others, with adapter ADS T800 and T8X0	RJ11 RJ45 1 mm		■	G.3	2 4 6 8	■	55/40 65/50	0.6	63/ 100		100 MHz
ISN T8-Cat6	ISN T8-Cat6 	150 kHz to 30 (80) MHz	T8 for up to 4 unscreened balanced pairs, Ethernet 10BaseT, 100BaseT, 1000 BaseT and others	RJ45	■	■	G.3	2 4 6 8		75/60	0.6	63/ 100	15	250 MHz

FIX ISN: Option for ISN T series

The magnetic fixture for ISNs (Impedance Stabilization Network) improves the earth connection to steel surfaces as typical used for Faraday cages. Its design provides a constant and stable pressure of the ISN enclosure against the ground plane. The standard CISPR 22/ 32 allows to place the ISNs also to a vertical ground plane which can be done easily with the use of FIX ISN.

	Drawing	Frequency range	CDN type and application	EUT/AE connector type	Immunity testing IEC/EN 61000-4-6	Emission meas. CISPR 22/32	Regarding figure in CISPR 32	Number of lines	Changeable adapter wiring	LCL values	Max. EUT current in A (per wire)	Max. EUT voltage in V for AC/DC	Max. RF voltage in V	3 dB bandwidth (sinusoidal)
ISN ST08		150 kHz to 230 MHz	For screened and balanced telecommunication lines, Ethernet 10BaseT, 100BaseT, 1000BaseT, 10GBaseT and others	RJ45	■	■	G.11	8			1.2	100	20	250 MHz
ISN S501A		150 kHz to 230 MHz	For coaxial telecommunication lines with 50 Ω	BNC	■	■	G.9	1			0.25	250	20	2 GHz
ISN S502A		150 kHz to 230 MHz	For coaxial telecommunication lines with 50 Ω, double screened	N	■	■	G.9	1			0.25	250	20	2 GHz
ISN S751		150 kHz to 230 MHz	For coaxial telecommunication lines with 75 Ω	BNC	■	■	G.9	1			0.25	250	20	2 GHz
ISN S752		150 kHz to 230 MHz	For coaxial telecommunication lines with 75 Ω, double screened	N	■	■	G.9	1			0.25	250	20	2 GHz

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CDN selection chart by Teseq® August 2018

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