ISN T8-Cat6
IMPEDANCE STABILIZATION NETWORK (ISN) FOR UNSCREENED BALANCED PAIRS

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 T8-Cat6 is designed for measurements on up to four unscreened single balanced pairs with cable category cat. 6. It can also be used as CDN for immunity testing according IEC/EN 61000-4-6 up to 80 MHz.

- **For use with one, two, three, or four unscreened balanced pairs**
- **Refers schematic circuit example in CISPR 22/32 Figure D.3/G.3**
- **Intended for connection to cable category 6**
- **1000BaseT and PoE application**
- **Can be used as CDN for IEC/EN 61000-4-6 immunity tests**

Standards:
- **CISPR 16-1-2**
- **CISPR 22**
- **CISPR 32**
- **IEC/EN 61000-4-6**
- **And others**

Technical specifications

Frequency range:	150 kHz to 80 MHz
Line parameters:	1 up to 4 pair(s)
Power rating (EUT and AE port)	
AC max. voltage (line to ground):	63 V
DC max. voltage (line to ground):	100 V
Current max.:	600 mA (line), 1200 mA (pair)
Test voltage:	200 VDC, 2 sec
Common mode impedance (EUT port)	
150 kHz to 30 MHz:	150 Ω ±20 Ω
30 MHz to 80 MHz:	150 Ω +60 Ω / -45 Ω
Phase angle (EUT port) 150 kHz to 30 MHz:	0° ±20°
Coupling path (In/Out port/EUT)	
Connection:	BNC 50 Ω
RF voltage:	<15 V
Frequency range:	150 kHz to 80 MHz
Voltage division factor (RF input to EUT port)	
150 kHz to 30 MHz:	9.5 dB ±1 dB
30 MHz to 80 MHz:	9.5 dB ±2 dB
Transmission bandwidth* (wanted signal) EUT/AE: B3 dB	250 MHz sin. typical
LCL* (EUT)	
Cat. 6 150 kHz to 2 MHz:	75 dB to 74.4 dB ±3 dB
Cat. 6 2 MHz to 30 MHz:	74.4 dB to 59.3 dB +6/-3 dB
Decoupling of common mode disturbances (EUT/AE)	
150 kHz to 1.5 MHz/30 MHz:	≥35 dB to ≥55 dB/≥55 dB
Crosstalk* (PSELFEXT) (EUT/AE) 1 MHz to 250 MHz:	≥61 dB to ≥15 dB

*) all balanced parameters are in relation to a symmetrical load of 100 Ω

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ISN T8-Cat6
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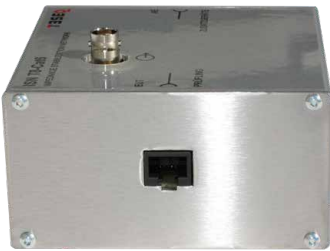
ISN T8-Cat6 with view to the EUT connection RJ45

Mechanical specifications

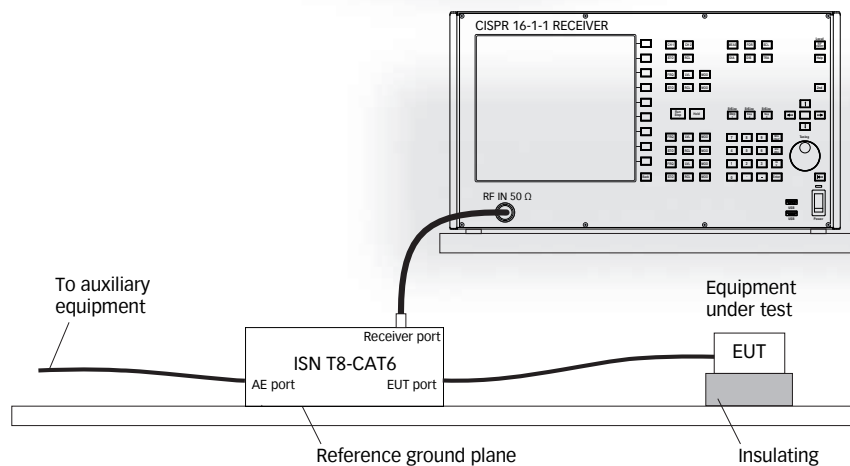|	
Dimensions in mm (W x H x D):	105 x 65 x 110
Dimensions in mm (W x H x D) (storage case):	400 x 300 x 110
Weight:	approx. 550 g
Weight (storage case with ISN):	approx. 1700 g

Application

Pin-arrangement for EIA/TIA T568B					
		Pair 1/ Pin 4,5	Pair 2/ Pin 1,2	Pair 3/ Pin 3,6	Pair 4/ Pin 7,8
Token ring, ISDN basic rate access/S0	RJ45	X		X	
ISDN primary rate access (2Mbps)	RJ45	X	X		
10BaseT, 100BaseTX	RJ45		X	X	
100BaseT4, 100Base VG-AnyLan, 1000BaseT	RJ45	X	X	X	X
ATM, FDDI, TP-PMD	RJ45		X		X
IBM 3270	RJ45		X		

ISN T8-Cat6

RF port for measuring receiver or generator

EUT port for RJ45

AE port for RJ45

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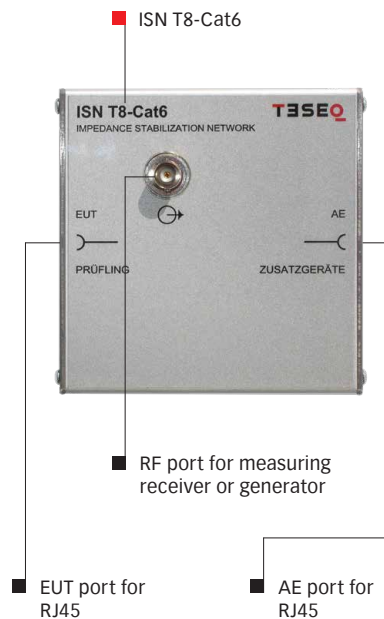
ISN T8-Cat6
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FOR UNSCREENED BALANCED PAIRS

Typical measuring setup

CISPR 16-1-1 RECEIVER

RF IN 50 Ω

To auxiliary equipment

Equipment under test

Receiver port
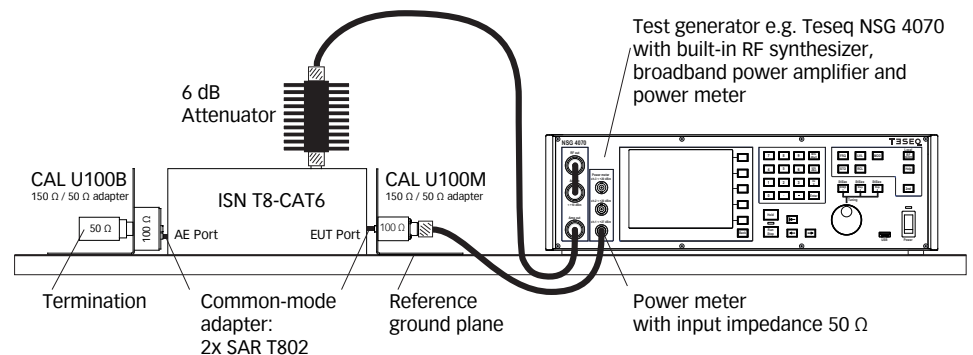
ISN T8-CAT6

AE port   EUT port

EUT

Reference ground plane

Insulating

Application for immunity testing

The described ISN T8-Cat6 is appropriate for immunity tests of IEC / EN 61000-4-6. Optional available are the parts for the level setting (test setup calibration) CAL U100B (150 Ω / 50 Ω adapter), CAL U100M (150 Ω / 50 Ω adapter), 2 x SAR T802 (common mode adapter for RJ45) and A 50-N (50 Ω termination, N type).

Typical setup for stress level setting according IEC / EN 61000-4-6

Test generator e.g. Teseq NSG 4070 with built-in RF synthesizer, broadband power amplifier and power meter

6 dB Attenuator

CAL U100B
150 Ω / 50 Ω adapter

ISN T8-CAT6

CAL U100M
150 Ω / 50 Ω adapter

NSG 4070

50 Ω   100 Ω   AE Port   EUT Port   100 Ω

Termination

Common-mode adapter: 2x SAR T802

Reference ground plane

Power meter with input impedance 50 Ω

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IMPEDANCE STABILIZATION NETWORK (ISN) FOR UNSCREENED BALANCED PAIRS

Model No. and options

Part number	Description
248715	ISN T8-Cat6 Impedance Stabilization Network (AAN) for CISPR 22/32/16-1-2 for up to eight balanced lines for cable cat.6 in storage case
97-248550	ISN T8-TC Traceable calibration (ISO17025), order only with ISN T8/T8-Cat6
98-248715	ISN T8-CAT6-ACC Accredited calibration (ISO17025), common mode impedance, VDF, decoupling factor, crosstalk, LCL
248580	CAS ISN Calibration kit for ISN T8 and ISN T4
248631	CAS ISN extension for cat. 6 Adapter parts for calibration of ISN T8-Cat6, requires CAS ISN
247825	CAL U100B Universal calibration unit (150 Ω/50 Ω adapter)
257138	CAL U100M Universal calibration unit (150 Ω/50 Ω adapter)
242428	SAR T802 Common mode adapter for RJ45 (unscreened)
257520	A 50-BNC Termination 50 Ohms, BNC type, male
257521	A 50-N Termination 50 Ω, N type, male, 1 Watt, 2.5 GHz

82-248715 E05 December 2021

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