COM-POWER CORPORATION

Impedance Stabilization Network (ISN)

ISN T2

Features

- **Frequency Range: 150 kHz to 30 MHz**
- **For disturbance measurements on a single, unshielded, balanced pair**
- **Provided with Cat. 3 & Cat. 5 LCL Adapters**
- **Circuit concept per figure D.1 of EN 55022: 2010+AC:2011 (CISPR 22: 2008, Edition 6.0)**
- **Meets applicable requirements of EN 55022: 2010+AC:2011 (CISPR 22: 2008, Edition 6.0) and CISPR 16-1-2: 2014, Edition 2.0**

ISN Concept & Advantages

The ISN (Impedance Stabilization Network) was developed in order to provide a means by which common mode disturbance voltage (a.k.a.: conducted emission) measurements could be made on unshielded, balanced telecommunication ports with up to four, unshielded, balanced pairs.

The basic concept of the ISN is similar to that of an LISN (Line Impedance Stabilization Network) for disturbance voltage measurements on power lines, insofar as they both:

a) connect in series with, and impose a defined impedance on, the lines under test; thereby providing a distinct advantage over current or voltage probe measurements, where the impedance of the lines is largely uncontrolled.

b) provide isolation between the input and output ports, which:

1) minimizes the influence of the [unknown] input impedance on the impedance of the network.

2) reduces the contribution of unwanted [ambient] signals to the measurement results.

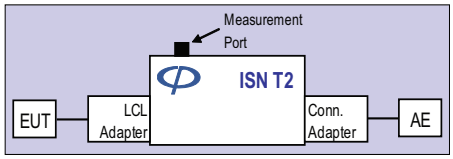
The ISN is used for measurements on lines which host various types of high-speed, symmetric (differential-mode) communications, often operating within the same frequency band over which the measurements are performed. It is for this reason that, from a differential-mode perspective, the ISN should not impede the wanted signal path [thru-put], but should impede the path to the measurement port, as the intent of the test is not to limit the level of the wanted signals. In addition, the ISN measures all conductors of the line simultaneously with respect to ground, thereby measuring only the common-mode voltages, and not the differential.

In contrast, the LISN is used to measure each current carrying conductor individually, with reference to ground, making no distinction between, and therefore measuring, both differential and common mode voltages. In most cases, it need only pass the power frequencies (50 or 60 Hz), far below those frequencies over which measurements are performed.

Description/Application

The Com-Power ISN T2 is used for common-mode disturbance voltage measurements on ports with a single, unshielded, balanced pair for Cat. 3 or Cat. 5 cabled networks.

The RF input/output port is a 50Ω female BNC connector, located on the top of the ISN. The ISN is equipped with D-sub 25 pin female connectors located on the front and rear panels for connection to the LCL and connecting adapter, respectively.



The LCL and connecting adapters are available with either RJ-11 or RJ-45 connectors for connection to the EUT and AE. The pin arrangement of the adapters is as given in the following table:

CONNECTOR TYPE	A1	B1
RJ-11	2,3	4,5
RJ-45	3,4	5,6

For non-standard pin arrangements, the ISN can also supplied with user-configurable LCL and connecting adapters which can be configured for any pin arrangement.

The ISN and LCL adapters are individually tuned and calibrated to meet the applicable requirements of EN 55022 (CISPR 22) and CISPR 16-1-2. The calibration data and certificate are provided, with NIST traceability. Recognized ISO 17025 accredited calibration is also available upon request.

Also available from Com-Power is our ISN Calibration Kit, which includes all of the necessary accessories for complete calibration of the ISN and LCL adapters. A step-by-step procedure, including test setup diagrams is provided with the calibration kit, which is sold separately.

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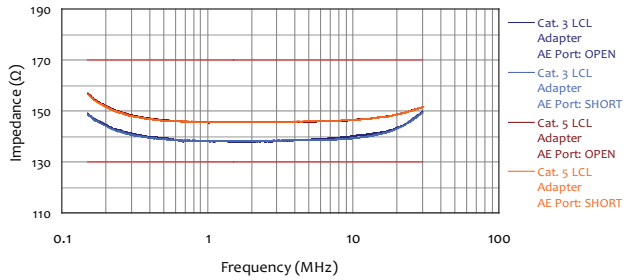
Specifications

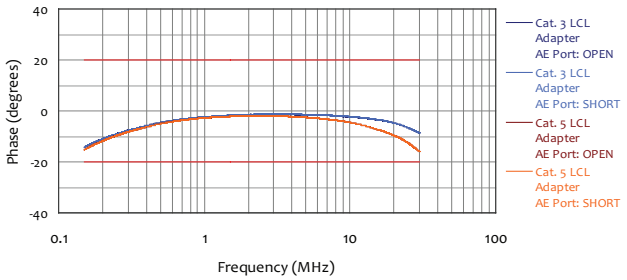
Product Name	Impedance Stabilization Network (ISN)	
Specifications	EN 55022 (CISPR 22), CISPR 16-1-2	
Frequency Range	150 kHz to 30 MHz	
Line Parameters	(1) unshielded balanced pair	
Voltage Rating (EUT/AE Port)	50 VDC / 32 VAC (line to ground @ 50/60 Hz)	
Current Rating (EUT/AE Port)	800 mA (per line), 1.6 Amps (per pair)	
Transmission Bandwidth (wanted signal)	100 MHz	
Impedance/Phase (150 kHz to 30 MHz)	150Ω ±20Ω, 0° ±20° *[see graphs below]*	
Voltage Division Factor	9.5 dB ±1 dB *[see graphs below]*	
Isolation (Decoupling Attenuation) *[see graph below]*	*150 kHz to 1.5 MHz*	>35 dB to >55 dB *(increasing linearly with the log of freq.)*
	1.5 MHz to 30 MHz	>55 dB
Longitudinal Conversion Loss	*[see graph below]*	
Insertion Loss of Symmetric Circuit	*[see graph below]*	
Dimensions	10.8" x 4.5" x 3.8" (275 mm x 115 mm x 96 mm)	
Weight	2 lbs (0.91 kg)	

All specifications are subject to change without notice.
All values are typical, unless specified.

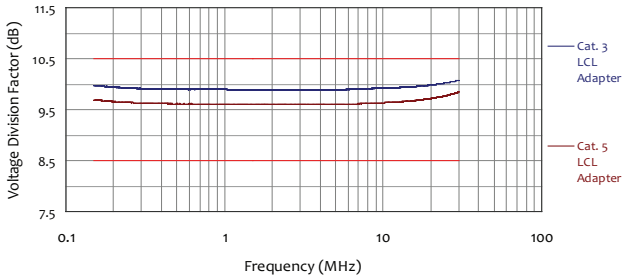
Impedance



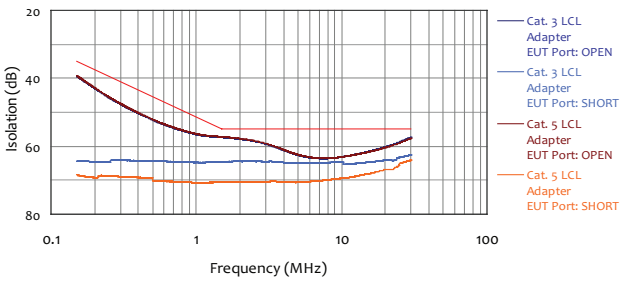
Phase



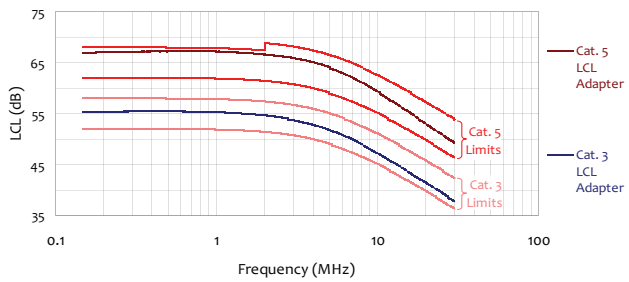
Voltage Division Factor



Isolation



Longitudinal Conversion Loss (LCL)



Insertion Loss of Symmetric Circuit