



THURLBY THANDAR INSTRUMENTS

LISN1600



Line Impedance Stabilisation Network

- *Conformance to CISPR 16 from 9kHz to 30MHz*
- *16A continuous current rating (subject to connector)*
- *Built-in switchable limiter and attenuator*
- *Remote control of line source*
- *Artificial hand network*
- *Wide range of connectors available*

LISN 1600 Line Impedance Stabilisation Network

Fully conforming to the requirements of CISPR 16

The TTI LISN 1600 is a network which is placed between the AC line supply and the equipment under test in order to accurately measure the interference that the equipment is emitting at its supply input.

Regulations now exist that will place statutory limits upon these emissions. These regulations refer to the standard CISPR 16.

The LISN 1600 is intended for use with either a spectrum analyser or a measurement receiver. When used with a measurement device of suitable performance it can be used for actual conformance measurements.

16 Amps continuous current rating

The LISN 1600 has a continuous current rating of 16 Amps (except where limited by the fitting of a lower rated connector at the input or output).

This makes it suitable for use with virtually all types of single phase equipment.

Through Path

| | | |
|--------------------------|--|--------------|
| Circuits: | 2 wire plus Earth | |
| Power Input: | 3 Core 1.5mm ² cable, 2 metres long | |
| Power Output: | 3 pole socket to national requirements | |
| Maximum Voltage: | Line to Earth | Line to Line |
| DC | 250V | 250V |
| AC to 70Hz | 264V rms | 264V rms |
| AC 400Hz | 66V rms | 132V rms |
| AC 9kHz to 100MHz | 20V rms | 10V rms |
| Maximum Current: | 16 Amp continuous | |
| LF Resistance: | 135 mΩ including cable | |

Impedance Network

| | | |
|-----------------------------------|--|--|
| Type: | 50Ω/50uH ±20% to CISPR 16 Fig 4. | |
| Input Impedance Variation: | ±20% 9kHz to 30MHz to CISPR specification. | |

Isolation Filter Attenuation

| | Supply input to Measurement output | UUT Supply output to Supply input |
|----------|------------------------------------|-----------------------------------|
| 9kHz: | -15dB | -12dB |
| >150kHz: | -40dB | -40dB |

Measurement Circuit

| | |
|---------------------|--|
| Attenuation: | -0.5 dB nominal calibration factor |
| | -5 dB at 9kHz (to CISPR specification) |
| | ±0.3 dB variation 150kHz to 30MHz |
| | +0.5/-1.0 dB variation 30MHz to 100MHz |

9kHz to 30MHz range for measurements in bands A & B

CISPR 16 defines two measurement bands: band A for 10kHz to 150kHz and band B for 150kHz to 30MHz. The LISN 1600 correctly meets the impedance requirements for both bands.

A switchable 150kHz high pass filter is incorporated to limit low frequency signals (particularly AC line frequency) when measuring in band B. This helps limit the dynamic range requirements of the measuring device.

In addition, an extended frequency characteristic allows useful measurements to be made up to 100MHz.

Manual and remote control of source selection

The measurement circuit can be connected to either supply line or disconnected altogether for checking the noise floor.

Where automated measurement sequences are required, source selection can be performed remotely via built-in relays.

Source Selection:

Line 1 (Live), Line 2 (Neutral) or none. Selected by front panel switch or by remote control relays.

150kHz High pass filter:

Selected by front panel switch. -40dB at 50Hz, -1.0dB at 100kHz, -0.2dB at 150kHz, ± 0.3dB to 30MHz, ± 1.0dB to 100MHz

Connector: 50Ω BNC on front panel

Artificial Hand: 220 pF + 500Ω

Attenuator and Limiter

Selection:

By front panel rotary control.

- 1: Not in circuit
- 2: 10 dB attenuator + 9kHz HPF + Limiter.
- 3: 10 dB attenuator + 9kHz HPF + Limiter + 10 dB attenuator.

9kHz High pass filter:

-20dB at 50Hz, -1.0dB at 5kHz, -0.2dB at 9kHz.

Limiter threshold: > ± 1.5 V.

Clamping Level: < ± 4.0 V at 1 Amp.

Frequency Response:

± 0.3dB to 30MHz, ± 1.0dB to 100MHz.

Max. dissipation: 2 Watts.

Remote Control

Facilities:

Source selection of Line 1 (Live), Line 2 (neutral) or none. Front panel lamp indication of active circuit.

Relay Operating Voltage:

12 V dc nominal, limits 9 - 14 V.

Built-in voltage limiter and attenuators

The LISN 1600 incorporates a voltage limiter to protect the vulnerable input of the measuring device against damage from power-switching or interference transients.

To avoid the risk of introducing nonlinearity errors, the limiter diodes are held in reverse bias by built-in lithium batteries.

The limiter has a 10dB pre-attenuator and a switchable 10dB post-attenuator. If required, the whole limiter/attenuator network can be switched out.

The switchable 150kHz filter provides further protection when making band B measurements.

Artificial hand terminal for hand-held equipment

For testing hand-held apparatus which does not have an earth connection, an artificial hand terminal is provided.

This conforms to the definitions in BS800 and EN55014.

Relay coil resistance:

540Ω (22mA nominal operating current)

General

Operating Environment:

+5°C to +40°C, 20% to 90% RH.

Storage Environment:

-40°C to +65°C, 20% to 90% RH.

Size:

132(H) x 212(W) x 315(D)mm
3U high half-rack width case.

Weight:

6.5 kg

Safety:

A LISN is required by the CISPR specification to contain high value decoupling capacitors between the live circuits and earth. These capacitors pass large supply frequency leakage currents to earth, so for safe operation the LISN must be securely connected to a low impedance safety earth before power is applied.

It can not be operated through an earth leakage circuit breaker unless an isolating transformer is used.

With this exception, the LISN 1600 is designed to meet the requirements of IEC 1010-1.

Thurlby Thandar Instruments Ltd. operates a policy of continuous development and reserves the right to alter specifications without prior notice.