

*Model 3850/2*

# Line Impedance Stabilization Network (LISN)

User Manual



 **ETS·LINDGREN**<sup>™</sup>  
An ESCO Technologies Company

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**Revision Record | MANUAL 3850/2 | Part #399139, Rev. E**

<b>Revision</b>	<b>Description</b>	<b>Date</b>
A–C	Initial Release; updates	December, 1996
D	Rebrand	October, 2008
E	Added product photos	February, 2009


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## Notes, Cautions, and Warnings

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	<p><b>Note:</b> Denotes helpful information intended to provide tips for better use of the product.</p>
<p><b>CAUTION</b></p>	<p><b>Caution:</b> Denotes a hazard. Failure to follow instructions could result in minor personal injury and/or property damage. Included text gives proper procedures.</p>
<p><b>WARNING</b></p>	<p><b>Warning:</b> Denotes a hazard. Failure to follow instructions could result in SEVERE personal injury and/or property damage. Included text gives proper procedures.</p>



See the ETS-Lindgren *Product Information Bulletin* for safety, regulatory, and other product marking information.

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## 1.0 Introduction

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The **ETS-Lindgren Model 3850/2 Line Impedance Stabilization Network (LISN)** is a two-channel low pass filter network used for conducted emissions measurement.



The Model 3850/2 is designed to isolate the equipment under test from an external power source while steering any radio frequency signals from the power line to a 50-ohm port. The conducted emissions measurements may be made in accordance with regulatory compliance standards.

### **ETS-Lindgren Product Information Bulletin**

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See the ETS-Lindgren *Product Information Bulletin* included with your shipment for the following:

- Warranty information
- Safety, regulatory, and other product marking information
- Steps to receive your shipment
- Steps to return a component for service
- ETS-Lindgren calibration service
- ETS-Lindgren contact information

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## 2.0 Maintenance

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### CAUTION

Before performing any maintenance, follow the safety information in the ETS-Lindgren *Product Information Bulletin* included with your shipment.



Maintenance of the Model 3850/2 is limited to external components such as cables or connectors.

Clean the exterior of the cabinet using a damp cloth and mild cleaner. Always unplug the unit before cleaning.

To prevent electrical shock, do not remove cover.

If you have any questions concerning maintenance, contact ETS-Lindgren Customer Service.

### Service Procedures

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For the steps to return a system or system component to ETS-Lindgren for service, see the *Product Information Bulletin* included with your shipment.

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### 3.0 Specifications

#### Electrical Specifications

<b>Frequency Range:</b>	9 kHz – 100 MHz (VDE 0876 specified curve $\pm$ 20%)
<b>Lines Plus Ground:</b>	2
<b>Network Inductance:</b>	50 $\mu$ H / 250 $\mu$ H
<b>Network Impedance:</b>	50 $\Omega$
<b>Current Rating:</b>	50 Amperes
<b>Maximum AC Voltage:</b>	250 VAC line-to-ground 440 VAC line-to-line
<b>Input Connectors:</b>	50 Amperes
<b>Output Connectors:</b>	50 Amperes
<b>Monitor Port:</b>	BNC 1 per line
<b>Environmental</b>	
<b>Installation:</b>	Indoor use only
<b>Altitude:</b>	15000 ft (4572 m) max
<b>Temperature:</b>	0°C to 40°C (32°F to 104°F)
<b>Relative Humidity:</b>	80% up to 31°C (87.8°F) decreasing linearly to 50% at 40°C (104°F)

#### Physical Specifications

<b>Height:</b>	34.9 mm (13.7 in)
<b>Width:</b>	51.4 mm (20.2 in)
<b>Depth:</b>	57.1 mm (22.5 in)
<b>Weight:</b>	20.4 kg (44.97 lb)

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## 4.0 Installation

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### CAUTION

Before connecting any components, follow the safety information in the ETS-Lindgren *Product Information Bulletin* included with your shipment.

### CAUTION

Overcurrent protection is not provided in the Model 3850/2. The unit must be connected to a power mains with properly rated mains protection.



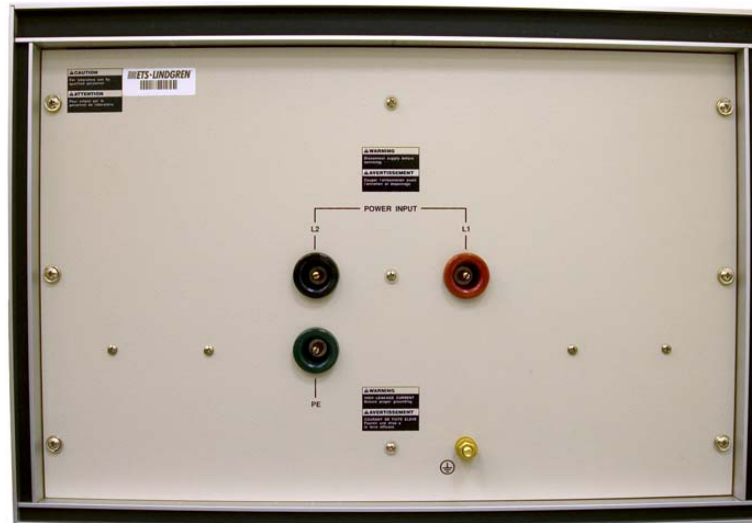
The Model 3850/2 is provided with a protective earthing connection. The unit should only be connected to a mains source which utilizes a protective earth conductor. Due to the high leakage current to ground inherent in this type of equipment, it is necessary to properly connect the Model 3850/2 to an appropriate earthing point on the power mains prior to energizing. This earthing point should be determined by an electrician authorized to perform such work by appropriate code or law. Any interruption of the protective conductor inside or outside of the unit is likely to make the Model 3850/2 dangerous. Intentional interruption is prohibited.

### CAUTION

The Model 3850/2 is provided with resistors to help bleed off high voltage transients, but it is advisable to connect the input and output connectors to their proper power lines and loads before connecting the monitor port to the measurement instrumentation; otherwise, power surges or transients can damage the test instrumentation mixers or attenuators.

## Power

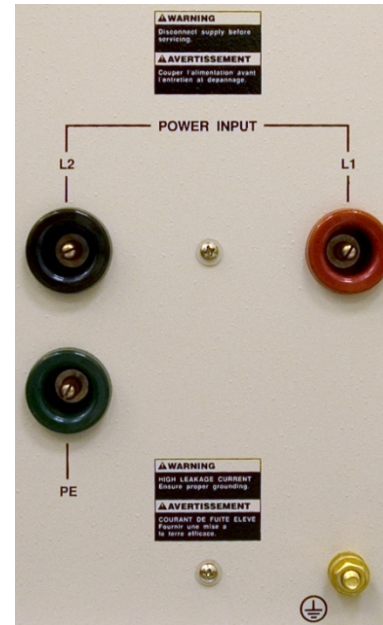
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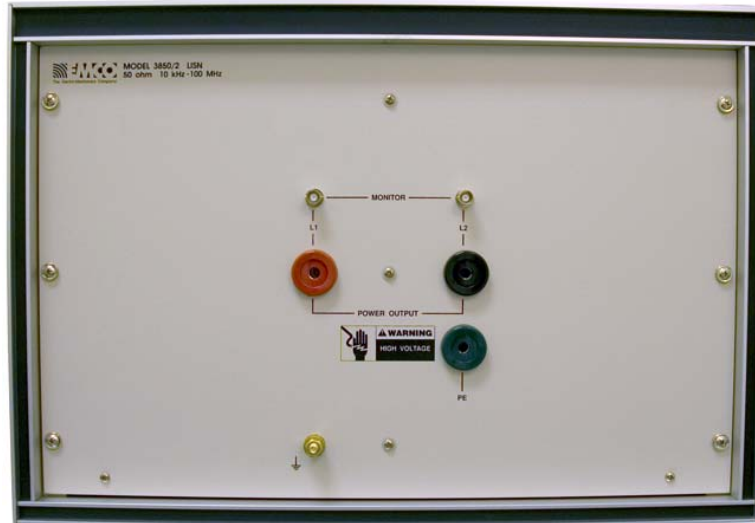
**Model 3850/2 Back Panel**

- The Model 3850/2 Line Impedance Stabilization Network (LISN) is nominally designed for a 50-ampere current capacity. Maximum line-to-line voltage must not exceed the voltage rating of the power connectors provided on the input and output of the unit. See *Specifications* on page 11 for the applicable maximum value.

- The input power connection to the line side of the Model 3850/2 is made through the red and black pin receptacles labeled **L1** and **L2** on the back panel. Power to the Model 3850/2 should be through a properly rated circuit breaker and/or a switch which can remove power from the unit in case of emergency. This device should be installed near the Model 3850/2.
- The green pin receptacle and the brass lug terminal are both connected to chassis ground. Prior to energizing the Model 3850/2, the earth connection from the power mains must be connected to the green pin receptacle.
- The brass lug terminal should be bonded to the ground plane of the conducted emissions test setup. This line does not provide high frequency isolation and should not carry any voltage above earth potential.

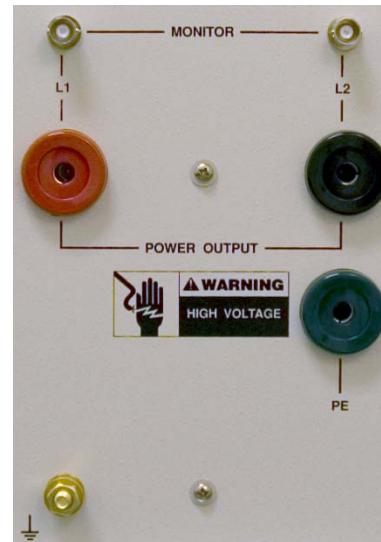


## Equipment Under Test



Model 3850/2 Front Panel

- The Equipment Under Test (EUT) is connected to the Model 3850/2 through the red and black socket receptacles located on the front panel.
- The ground connection to the EUT is made through the green socket receptacle.
- In normal operation, the radio frequency bonding stud on the front panel should be connected to the ground plane of the conducted emissions test setup by a grounding strap or braid.





## Spectrum Analyzer / Receiver

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- Use the BNC connectors on the front panel to connect the spectrum analyzer or EMI receiver. See page 16 for a view of the front panel connectors.
- The monitor port which is not being monitored should be terminated into a coaxial 50-ohm terminator.



Connect the input and output terminals to their proper mains connections and EUT connections before connecting the monitor port to the measurement instrumentation; otherwise, power surges may damage the test instrumentation mixers or attenuators.

- Removal of a terminator and connection to the BNC receptacle will not generate power surges.
- When the power is to be disconnected, remove the coaxial connection to the measurement instrumentation first to avoid possible damage.

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## Appendix A: Warranty

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See the *Product Information Bulletin* included with your shipment for the complete ETS-Lindgren warranty for your Model 3850/2 Line Impedance Stabilization Network (LISN).

### DURATION OF WARRANTIES FOR MODEL 3850/2

All product warranties, except the warranty of title, and all remedies for warranty failures are limited to two years.

Product Warranted	Duration of Warranty Period
Model 3850/2 Line Impedance Stabilization Network (LISN)	2 Years