



User Manual

HV Artificial Mains Network

LISN-CISPR25-250





The exclamation mark within an equilateral triangle displayed on product is to indicate users to read the manual before using product.
Users must adhere to all safety instructions of the product and related devices.



The lightning mark within an equilateral triangle displayed on product is to warn users that dangerous high voltage would occur inside the product. Don't open the enclosure of product in case of electric shock.

Warning:

- The product and related devices are working under high voltage; any inappropriate or careless operating will cause fatal injury to users.
- All the work relating to installation, connection, testing and maintenance of the product shall be carried out by professional personnel.
- Operation without ground connection is not allowed during test.
- Don't operate the product if a fire or explosion hazard exists.
- Operate the product in a dry place. If there is any condensate water in the product, please dry it before operating.
- The product must be used for special purposes as specified by the manufacturer.

The device is designed in accordance with IEC/EN 61010-1:2017(Safety requirements for electrical equipment for measurement, control, and laboratory use).

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1. LIMITED LIABILITY

The EMC Shop does not assume responsibility to any organization or any person, for the following items, including but not limited to:

- A** Any damage or loss not arising from the product quality issues, including but not limited to any direct or indirect, specific or consequential.
- B** Direct or indirect injury or damage to personnel or goods due to any installation or operation without following the user manual.
- C** Any malfunction and unexpected conditions caused by unauthorized and inappropriate disassembly, repair, modification or retrofitting.

2. PREFACE

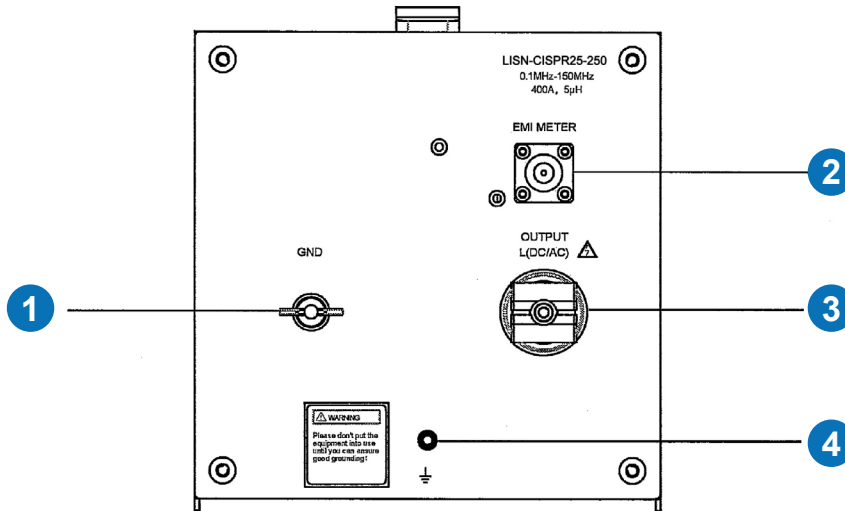
LISN-CISPR25-250 is used in tests of CISPR 25 and ISO 7637-4 to isolate automotive components with power supply and also can be used in E-car HV test.

3. TECHNICAL PARAMETERS

Standard	ISO 7637-4, CISPR 25
Frequency Range	0.1~ 150 MHz
Max. Con. Current	250 A
Max. Short-time Current	500 A
Max. Voltage (DC)	1000 V
Max. Voltage (AC 50/60 Hz)	700 V
Max. Voltage (AC 400 Hz)	300 V
Impedance	5 μ H 50 Ω
Dimensions	490 mm (L)×200 mm (W) ×215 mm (H)
Weight	Approx. 8.5 kg
Ambient Temperature	15 °C -35 °C
Relative Humidity	45% - 75%
Atmosphere Pressure Range	86 kPa - 106 kPa

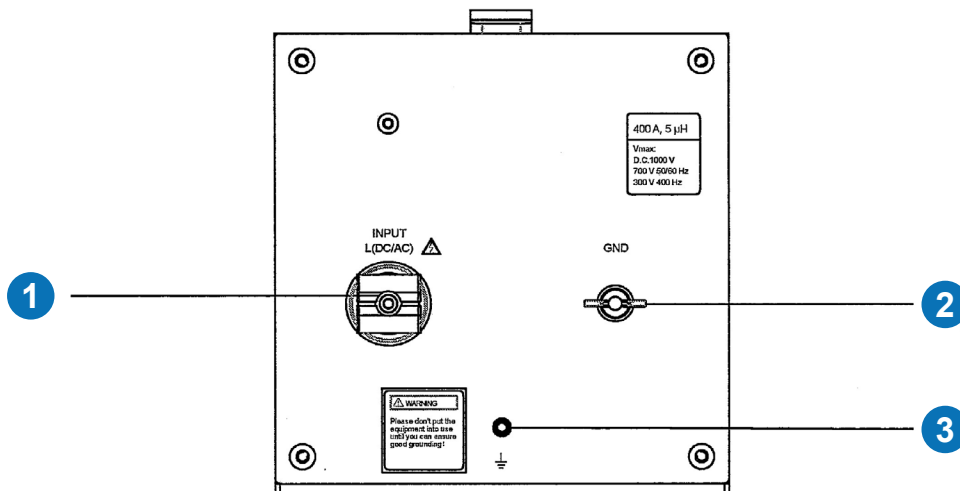
4. PARTS AND FUNCTIONS

<Front Panel>



- (1) Copper grounded port
- (2) Measurement port
- (3) Power Supply output port (connect with DUT)
- (4) Grounded port

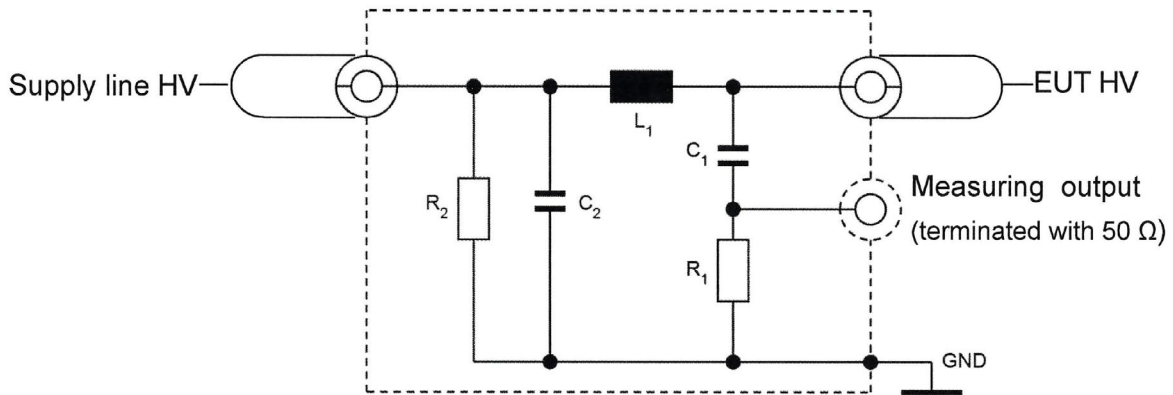
<Rear Panel>



- (1) Power supply Input port
- (2) Copper grounded port
- (3) Grounded port

5. SCHEMATIC DIAGRAM

The schematic diagram of LISN-CISPR25-250 is shown as follows.



- L1: 5 μ H
- C1: 0,1 μ F
- C2: 0,1 μ F (default value)
- R1: 1 K Ω
- R2: 1 MQ (discharging C2 to < 50 V_{DC} within 60 s)

IMPORTANT:

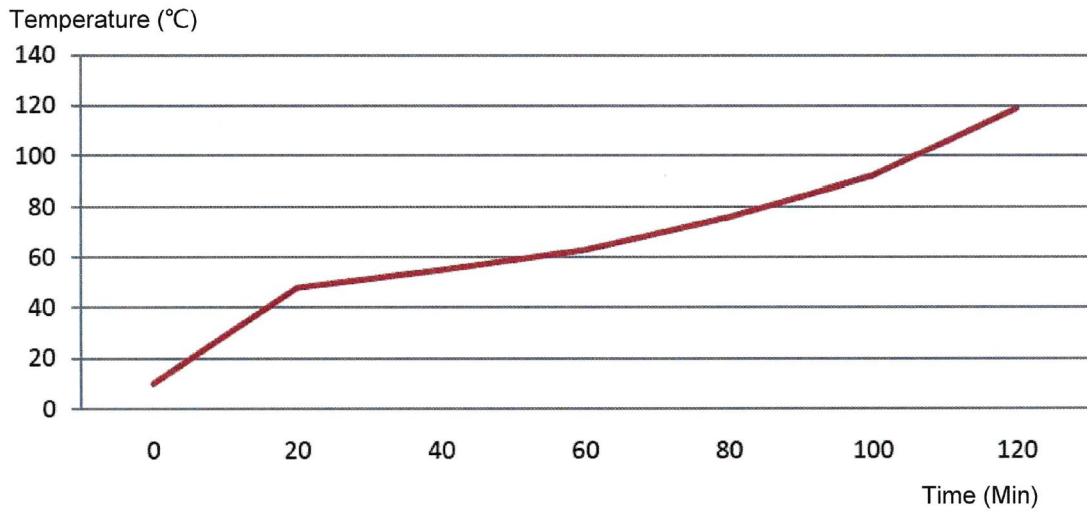
- The DUT voltage shall be within the rating range (DC1000V or 700V AC 50/60Hz), 300V(AC 400Hz) and its current shall be not exceed 150A or 500A for short term operations. The temperature rises to 110 C under tests with DUT 250A for 2 hours, and 110 °C under tests with DUT 400A for 10 minutes. In case of tests with bulk current, make sure to securely fasten the test cable on input/output port.
- The temperature of the front panel could reach 60 C when the equipment is continuously working under maximum rated power. Make sure the air in the test zone is flowable and don't cover any stuff on the equipment enclosure.
- When the equipment is used for the first time, it may generate the smell of coating and insulation material. The operator shall take precautionary measures to avoid inhalation of the gas. The smell will be vanished after using the equipment for several hours.
- There is high magnetic field and high-temperature risk during the current is injected. All the test work shall be operated by qualified personnel and safety precaution measure shall be considered before tests.
- Before connecting with power supply, make sure the product is reliably grounded.
- The rear panel is equipped with a 0.1 μ F capacitor. Prior to conducting the tests, make sure the voltage at the power input/output port is discharged to a safety voltage range.

The electric energy of EUT input port will be converted into thermal energy in the resistor of 50/ 50W. Please note that there is no any attenuation when RF energy is injected from EUT port to BNC output port. Higher RF disturbance voltage may destroy the connected RF test equipment. Whether to connect external attenuator (such as 20 dB) depends on test equipment performance and EUT disturbance voltage range.

6. HEAT UP CHARACTERISTICS

When the LISN-CISPR25-250 is loaded with 250 A, its temperature shows as follows.

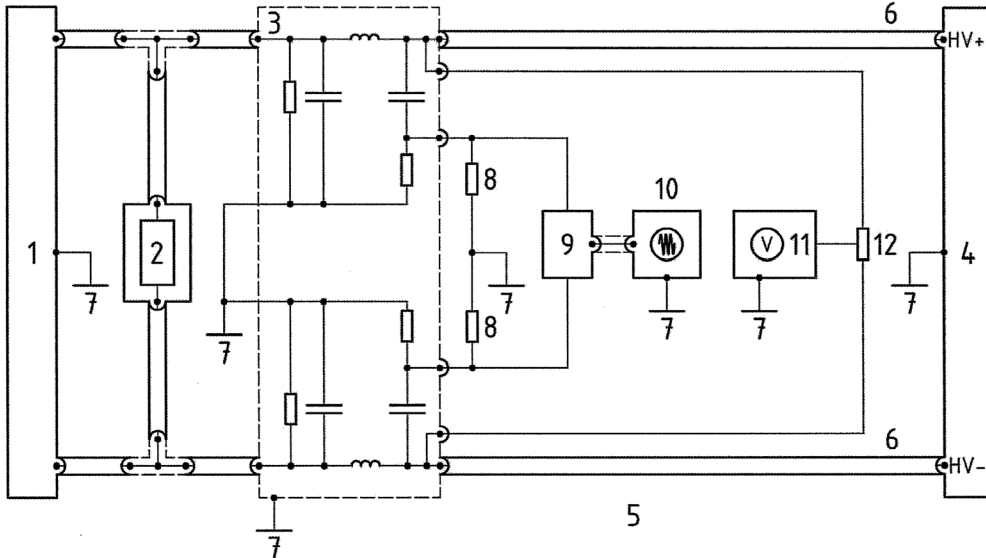
Time (Min)	0	20	40	60	80	100	120
Temperature (°C)	10	48	55	63	76	92	119



Heat up Curve under 250 A loading

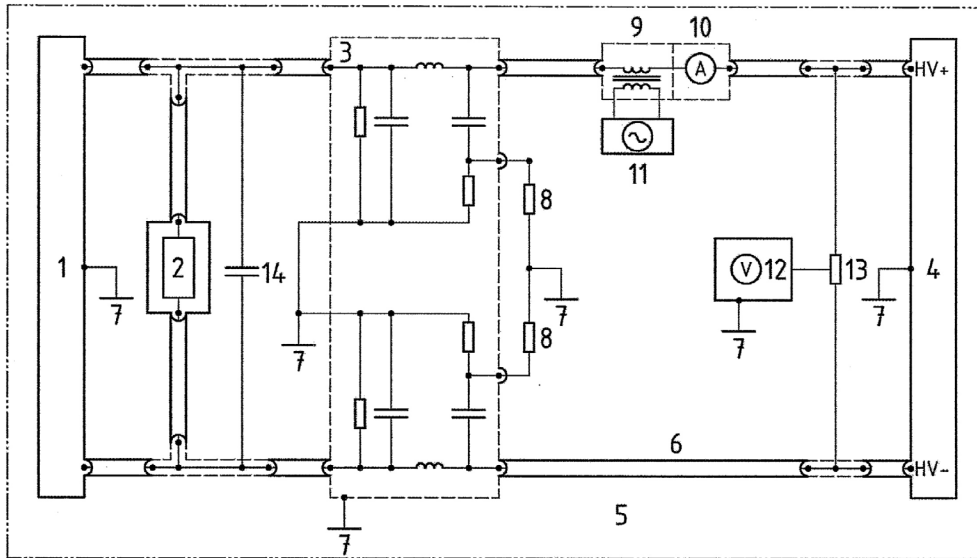
7. TEST SETUP

7.1 Test Setup for transient emission measurement according to ISO 7637-4



Key	
1	High voltage power supply (optional: shielded and/ or filtered)
2	Load for high voltage battery (if necessary)
3	Shielded high voltage artificial network
4	DUT
5	Ground plane
6	High voltage supply line
7	Ground connection
8	50 Ω termination
9	Balun transformer
10	Sine wave generator
11	Oscilloscope or waveform acquisition equipment
12	High voltage differential probe

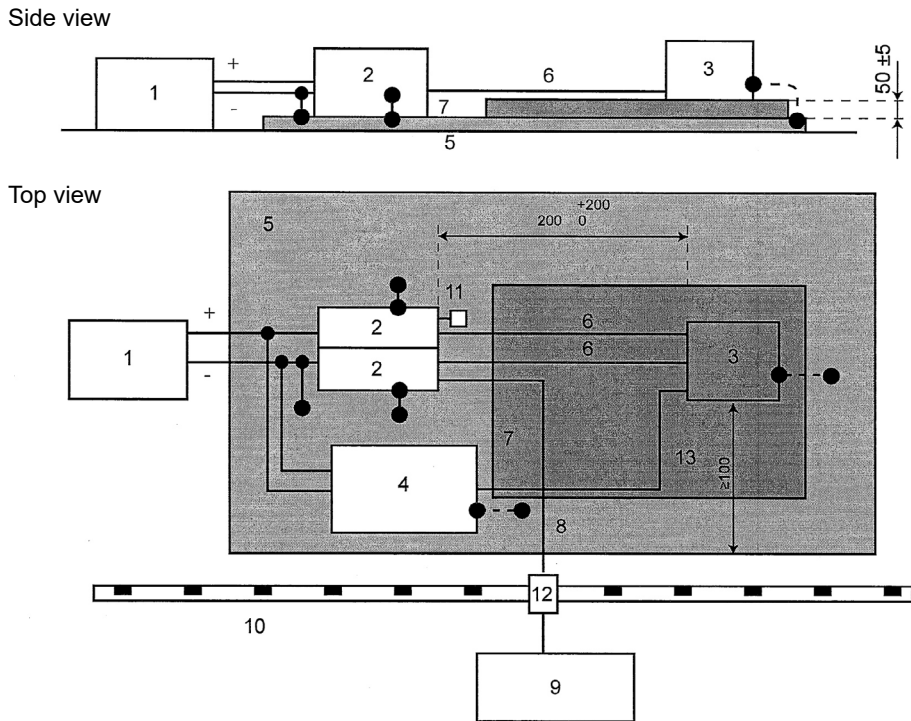
Transient immunity test setup for pulsed sinusoidal disturbances pulse A



Key	
1	High voltage power supply (optional: shielded and/ or filtered)
2	Load for high voltage battery (if necessary)
3	Shielded high voltage artificial network (HV-AN)
4	DUT
5	Ground plane
6	High voltage supply line
7	Ground connection
8	50 Ω termination
9	Coupling transformer
10	Current monitoring (optional)
11	Low frequency generator
12	Oscilloscope or waveform acquisition
13	High voltage differential probe
14	Capacitor $\geq 100 \mu\text{F}$ if using high voltage power supply instead of a battery

Transient immunity test setup for low frequency sinusoidal disturbances pulse B

7. 2 Test Setup for conducted emissions according to CISPR 25.

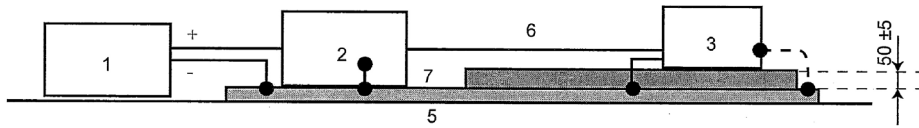


Conducted emissions - Example of test setup for EUT with power return line remotely grounded

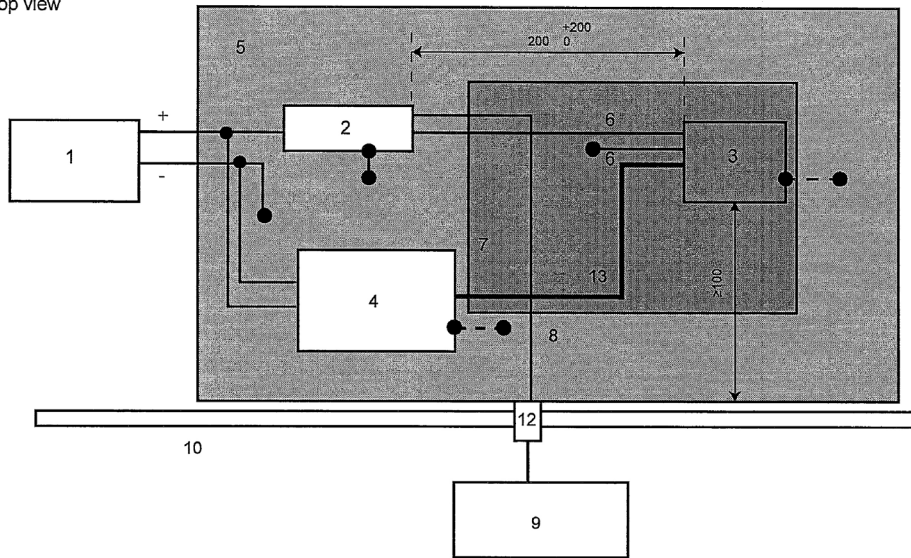
Key	
1	Power supply (may be placed on the reference ground plane)
2	Artificial network
3	EUT (housing grounded if required in test plan)
4	Load simulator (metallic casing grounded if required in test plan)
5	Reference ground plane
6	Power supply lines
7	Low relative permittivity support ($\epsilon_r \leq 1,4$)
8	High-quality coaxial cable e.g. double-shielded (50Ω)
9	Measuring instrument
10	Shielded enclosure
11	50Ω load
12	Bulkhead connector
13	Test harness (excluding power lines)

The EUT housing ground lead, when required in the test plan, should not be longer than 150 mm.

Side view



Top view



Conducted emissions - Example of test setup for EUT with power return line locally grounded

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1	Power supply (may be placed on the reference ground plane)
2	Artificial network
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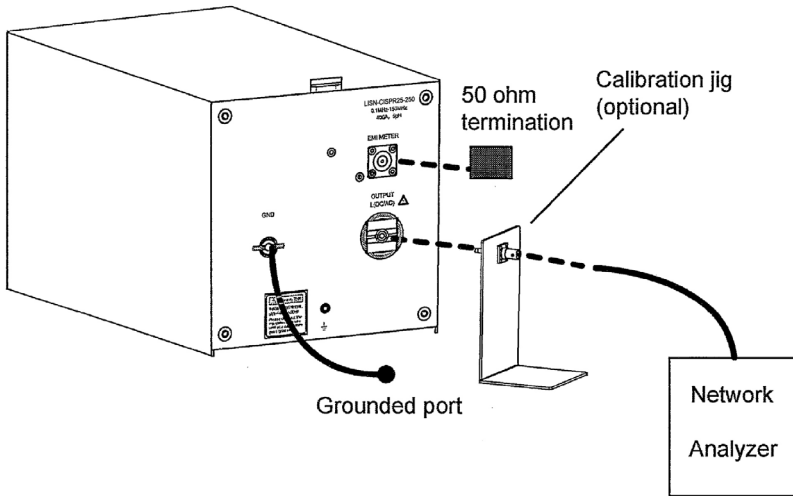
The EUT housing ground lead, when required in the test plan, should not be longer than 150 mm.

8. CALIBRATION

The product is entirely checked and calibrated as per international standard regulations before delivery. The date of calibration is recorded on Inspection Report of product. When the date displayed expires, it is necessary to recalibrate the product.

Users can calibrate the product by themselves or through contacting measurement organizations or manufacturer.

It's recommended to calibrate the product every one year.



a) Make a grounded connection for LISN-CISPR25-250.

b) Fix the calibration jig (optional) onto the power supply output port as per the illustration. The bottom part of the calibration jig should connect with ground reference plane.

c) Connect a 50 Ω termination port with measurement port [EMI METER].

9. ACCESSORIES

User Manual

10. AFTER-SALES SERVICE AND WINDOW FOR CUSTOMER CONSULTATION

For more information about product maintenance, parts purchase and other products, please visit website: <https://theemcshop.com>, Alternatively, you can contact us via e-mails at sales@theemcshop.com or scan the QR code below:

